ZD410 Series ™

Desktop Printers

Service Manual

212286-001 Rev. B

Environmental Management

Do not dispose of this product in unsorted municipal waste. This product is recyclable, and should be recycled according to your local standards.

For more information, please see our website at:

Web address: www.zebra.com/environment

Document Conventions

Table 1 • Document Conventions

Alternate Color	
	If you are viewing this guide on-line, you can click the blue text used for cross-references or hyper-links to jump directly to other sections in the guide or to web sites on the Internet.
Command Line Examples, File Names, and Directories	
	Command line examples, file names, and directories appear in a `Typewriter style (Courier) mono-spaced` font. For example: **Table 2 • Type `ZTools` to get to the Post-Install scripts in the `/bin` directory.** Open the `Zebra<version number>.tar` file in the `/root` directory.
Icons and Advisory Words	
	The following icons and advisory words are used to draw your attention to certain areas of text.
	**Caution** • Warns you of the potential for electrostatic discharge.
	**Caution** • Warns you of a potential electric shock situation.
	**Caution** • Warns you of a situation where excessive heat could cause a burn.
	**Caution** • Advises you that failure to take or avoid a specific action could result in physical harm to **you**.
(No icon)	**Caution** • Advises you that failure to take or avoid a specific action could result in physical harm to the **hardware**.
	**Important** • Advises you of information that is essential to complete a task.
	**Note** • Indicates neutral or positive information that emphasizes or supplements important points of the main text.
	**Tools** • Tells you what tools you need to complete a given task.

Notes •

Contents

1

Introduction

This manual provides ZD410 printer repair, maintenance, and troubleshooting procedures for field engineers or technicians.

Follow the part replacement procedures as closely as possible. If you are unsure of any procedure, please contact your service representative or call the products technical support group at Zebra Technologies Corporation.

Zebra Technologies stocks all replacement parts for the printer. Be sure your facility stocks sufficient parts for the printer so that scheduled maintenance can take place in a timely manner.

How Repairs and Maintenance Procedures are Documented

This manual is a part of a multi-media service CD-ROM. It is designed to provide training and instruction for repair and maintenance of your Zebra printer.

Each ZD410 Series ™ printer Spares Kit has one or more repair procedures that support it. Most procedures include videos of the actual repair. The Replacing Parts section of this service manual includes a repair flow diagram. See a list of available Spare Parts Kits at:

http://www.zebra.com/parts

The videos are accessed via links in the electronic version of this manual with Adobe Reader version 9 or higher (PDF files). They consist of compressed movies in MP4 video format. Most of the videos do not have an audio track. The simplest procedures do not have video. The service videos are complemented by step by step instructions and additional information, such as cautions and warnings for your safety or to protect the printer from damage during service.

How to share access to the contents of this CD-ROM

This service CD-ROM has been designed to be copied to a PC or network server for sharing access. FOR YOUR INTERNAL USE ONLY! DO NOT COPY! DO NOT REDISTRIBUTE OR PLACE ON THE INTERNET!

Copy all the files in the root directory of this CD (i.e. D:\) including all the sub-directories, intact to a directory on your PC or network server. RunCD.exe file opens the service CD's user interface screen.

Do not change any file or sub-directory names or their locations relative to the location of the RunCD.exe file.

Thermal Printing

Caution • The printhead becomes hot while printing. To protect from damaging the printhead and risk of personal injury, avoid touching the printhead. Only use the cleaning pen to perform printhead maintenance.

Preparing a Static-Safe Work Area

Prepare a static-safe work area before opening the printer for repair. The area must include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for the technician. ESD protective devices are available from most electronic supply stores or by contacting 3M corporation at (800) 328-1368.

Caution • The discharge of electrostatic energy that accumulates on the surface of the human body or other surfaces can damage or destroy the printhead or electronic components used in this device. You must observe static-safe procedures when working with the printhead or the electronic components under the top cover.

Packaging

Printers are carton shipped and wrapped inside a protective bag. Keep all packing materials in case you need to reship the printer later or store the printer for any length of time.

Environmental and Shock Protection

Extreme temperature and humidity fluctuations or mishandling can damage the printer and power supply.

Allow 30 minutes or more before opening the printer's plastic bag. This time allows the printer to stabilize temperature especially after storage in a cool, dry location and then placed in a warmer, more humid location. Warm, humid air condenses on the cool components of the printer and this condensation may damage the components.

Move the printer carefully. Mechanical damage can certainly result from falls or rough handling.

Long Term Printer Inactivity or Storage

Over time the printhead may stick to the platen (drive) roller. To prevent this, always store the printer with a piece of media (a label or paper) between the printhead and platen roller. Do not ship the printer with a roll of media installed or damage to the printer or media may result.

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Cleaning and Maintenance

The printers are manufactured and tested under a strict quality management program. Zebra Technologies uses only high quality components and materials in its printers. Although only minimal routine maintenance is required, following these simple maintenance guidelines will ensure longer life with quality printing performance.

Cleaning

When you clean the printer, use one of the following supplies that best suits your needs:

Cleaning Supplies	Order Quantity	Intended Purpose
Cleaning pens (105950-035)	Set of 12	Clean printhead
Cleaning swabs (105909-057)	Set of 25	Clean media path, guides and sensors

You can find access to cleaning supplies at http://www.zebra.com/supplies.

The cleaning process takes just a couple of minutes using the steps outlined below.

Printer Part	Method	Interval
Printhead	Let the printhead to cool for a minute, then use a new cleaning pen to swab the dark line on the printhead cleaning from the center to the outside edges of the printhead. See *Cleaning the Printhead* on page 7	Clean the printhead after every 5 rolls printed
Platen roller	Before cleaning, remove the platen roller by releasing both the left and right platen bearings. Clean the roller thoroughly with 99% pure Isopropyl Alcohol and a cleaning swab or lint-free cloth. See *Platen Cleaning* on page 12	As needed.
Peel bar Media path	Clean it thoroughly with 99% pure Isopropyl Alcohol and a fiber-free cleaning swab or lint-free cloth. Let alcohol evaporate completely.	
Cutter Option	The cutter blade mechanism does not require maintenance cleaning. DO NOT clean the blade or mechanism with solvents or WD-40. This blade has a special coating to resist adhesives and wear.	
Exterior	Water-dampened cloth. See the 'Guide To Disinfecting and Cleaning Zebra® Healthcare Printers' on the Zebra Web site for the latest information on tested and approved cleaning materials, and cleaning methods.	As needed. Healthcare printers - cleaning frequency is set by medical policies and practices of your institution or governing agencies.
Interior	Gently brush out printer.	

Caution • Over time Adhesives and small pieces of media can transfer onto the printer components along the media path including the platen and printhead. This build-up can accumulate dust and debris. Failure to clean the printhead, media path and platen roller could result in inadvertent loss of labels, label jams and possible damage to the printer.

Important • Using too much alcohol can result in contamination of the electronic components requiring a much longer drying time before the printer will function properly.

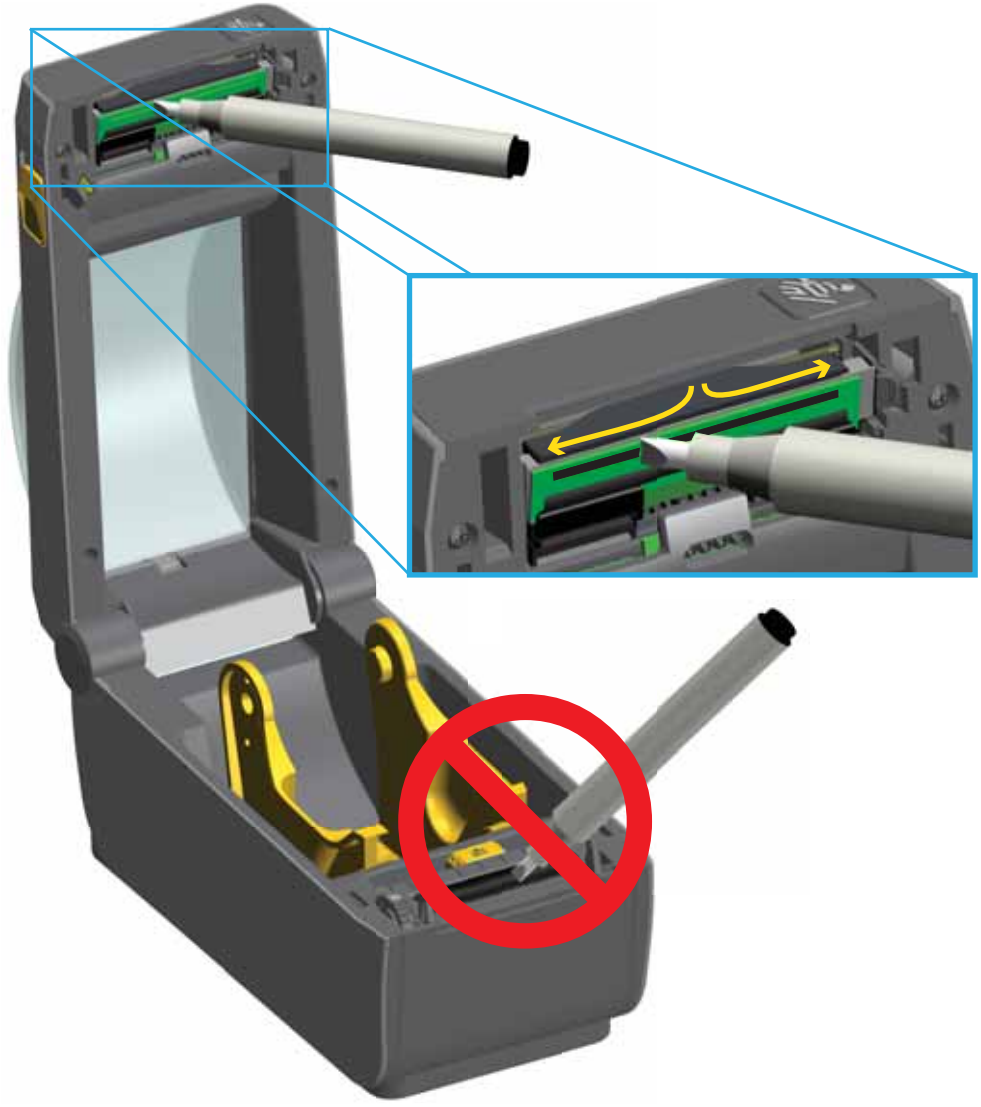
Cleaning the Printhead

Always use a new cleaning pen on the printhead (an old pen carries contaminants from its previous use that may damage the printhead).

Caution • The printhead becomes hot while printing. To protect from damaging the printhead and risk of personal injury, avoid touching the printhead. Use only the cleaning pen to perform maintenance.

When you load new media, you can also clean the printhead.

1. Rub the cleaning pen across the dark area of the printhead. Clean from the middle to the outside. This will move adhesive transferred from the edges of media to the outside of media path.
2. Wait one minute before closing the printer.

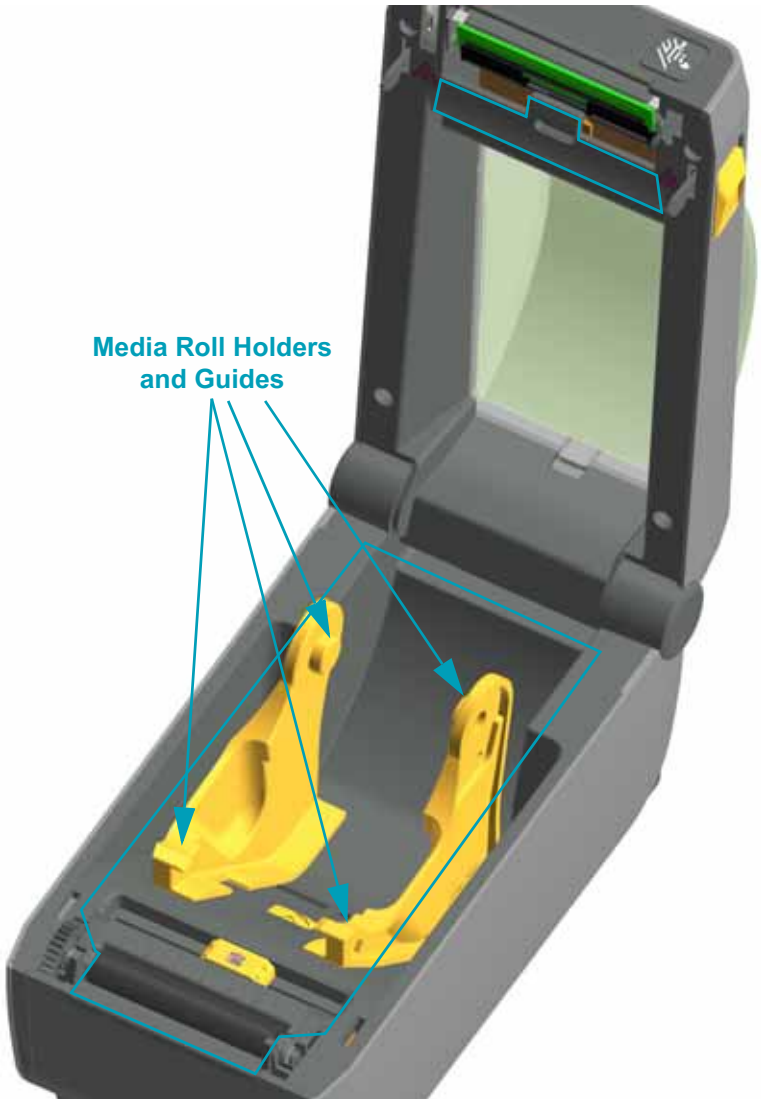


Media Path Cleaning

Use a cleaning swab and or a lint free cloth to remove debris, dust or crust that has built-up on the holders, guides and media path surfaces. Lightly moisten the swab or cloth with 99% pure Isopropyl Alcohol. For hard to clean areas, use extra alcohol on a cleaning swab to soak the debris to break up any adhesive that may have accumulated on surfaces in the media compartment.

Do not clean the printhead, movable sensor, or platen as part of this process.

1. Wipe the inside areas (outlined in blue) of the media compartment.
2. Wipe the inside surfaces of the roll holders and the underside of the media guides with a swab.
3. Wipe the movable sensor slide channel (but not sensor). Move the sensor to get to all areas.
4. Wait one minute before closing the printer. Discard the cleaning swab after use.



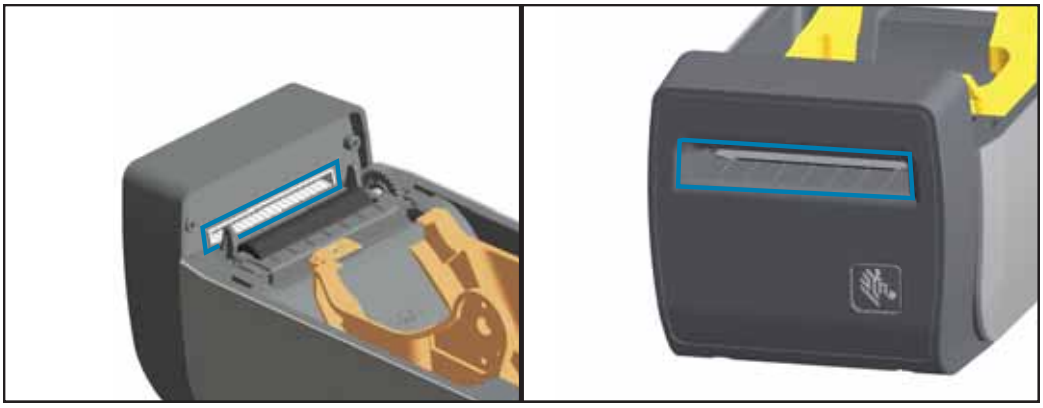
Cleaning the Cutter and Label Dispenser Options

This is a continuation of cleaning the media path for either option if it is installed on your printer.

Cutter

Clean the media path surfaces, but not the internal cutter blades or mechanism.

1. Wipe the ridges and the plastic surfaces of the media entry (inside) and exit slot (outside) of the cutter. Clean inside the areas outlined in blue.
2. Repeat as necessary to remove any adhesive or contaminate residue after it dries.

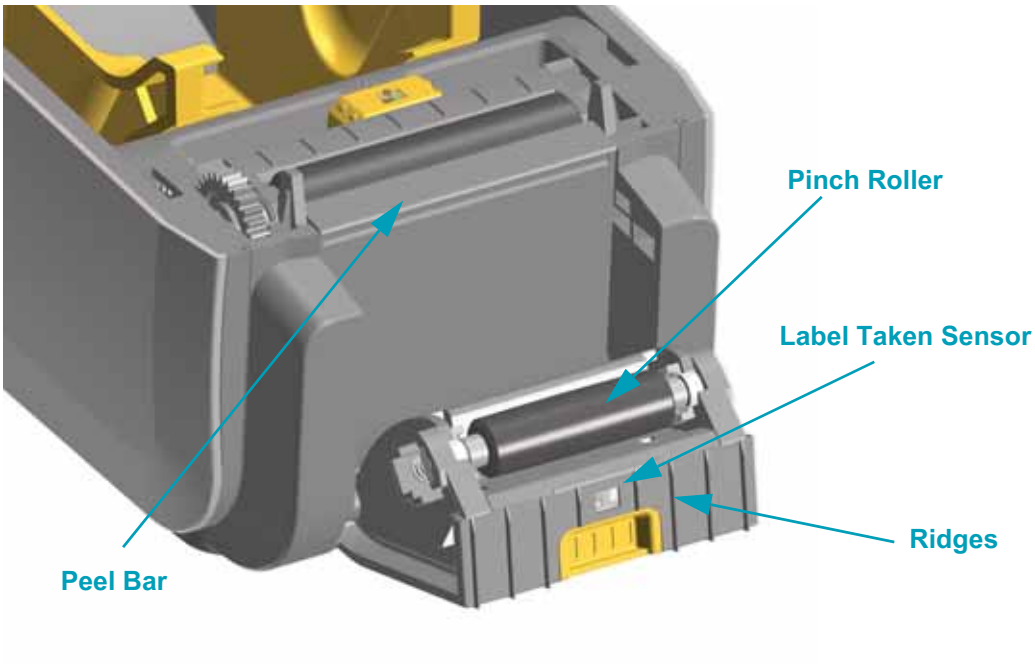


Cutter Facts

- Higher paper weights than the rated weight can cause the cutter blade to dramatically wear out quicker. The rated paper weights versus cutters designed function (full – standard option, partial – custom option, etc.) will also affect the cutter's rated paper weight and cutter life at those weights.
- The cutter is not designed to cut adhesive backed media, only label liners. Cutting through adhesive backed media normally will jam the cutter blade over time by leaving adhesive deposits. Common adhesives such as acrylic will build up on the fixed blade of the cutter. With the cutter's tight design tolerances required to deliver an accurate, clean cut every time, the cutter can not tolerate the balls of gum or fine layers of hardened adhesives building up on the fixed cutting blade. These materials can push the moving blade at an angle to the fixed blade causing the blade to bind.
- The printer uses a cutter jam detection algorithm to reverse a jammed cutter and flag a media error condition (with a red printer status LED and via printer interface communication). Cutting adhesive backed media, unapproved non-paper media or paper weights exceeding the rated paper range of the cutter are typically the cause of cutter jams.

Label Dispenser

3. Open the door and clean the peel bar, inner surfaces and ridges on the door.
4. Wipe the roller while rotating it. Discard the swab or cloth and clean again to remove residue.
5. Clean the sensor window. The window should be clear of streaks and residue.



Sensor Cleaning

Dust can accumulate on the media sensors. Do not use an air compressor to remove dust. Compressors add moisture, fine grit, and lubricant which can contaminate your printer.

1. Gently brush away dust or use a can of compressed air; if necessary, use a dry swab to brush away dust. If adhesives or other contaminants remain, use an 99% pure Isopropyl Alcohol moistened swab to break it up.
2. Use a dry swab to remove any residue that may be left from the first cleaning.
3. Repeat steps 1 and 2 as required until all residue and streaks are removed from the sensor.

Platen Cleaning

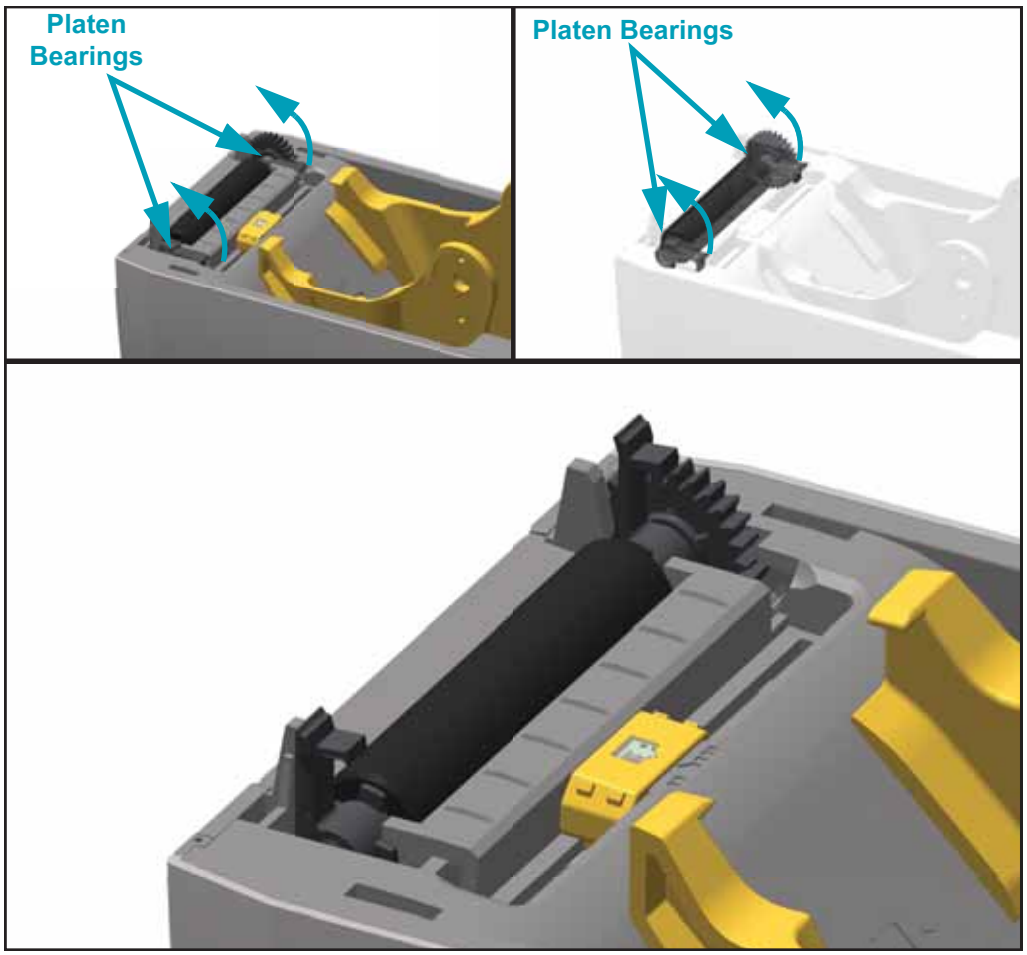
The platen (drive roller) normally does not require cleaning. Paper and liner dust can accumulate without affecting print operations.

Contaminants on the platen roller can damage the printhead or cause the media to slip or stick when printing. Adhesive, dirt, general dust, oils and other contaminants should be cleaned immediately off the platen.

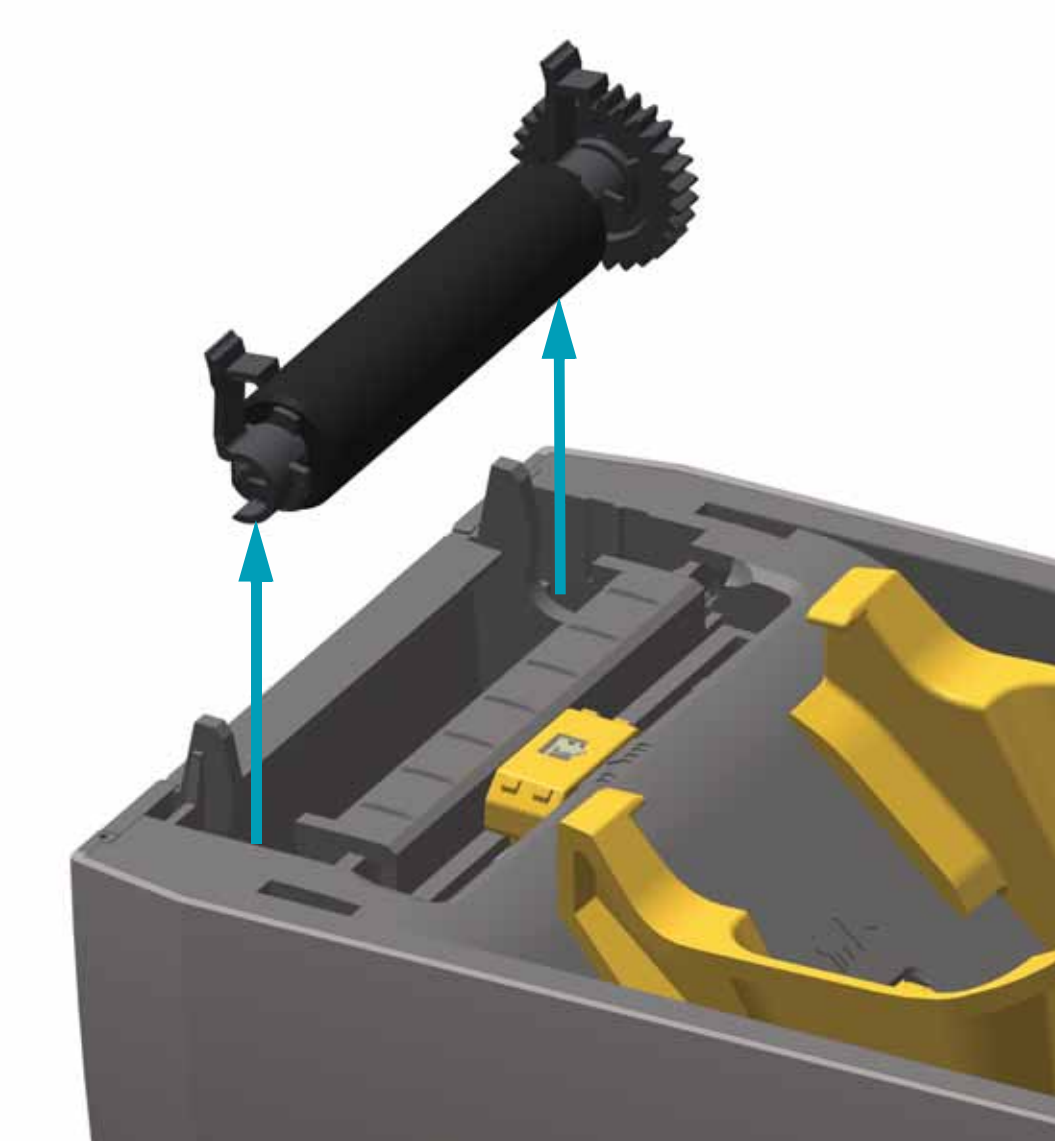
Clean the platen (and media path) whenever the printer has significantly poorer performance, print quality or media handling. The platen is the print surface and drive roller for your media. If sticking or jamming continues even after cleaning, you must replace the platen.

The platen can be cleaned with a fiber-free swab (such as a Texpad swab) or a lint free, clean, damp cloth very lightly moistened with 99% pure Isopropyl Alcohol.

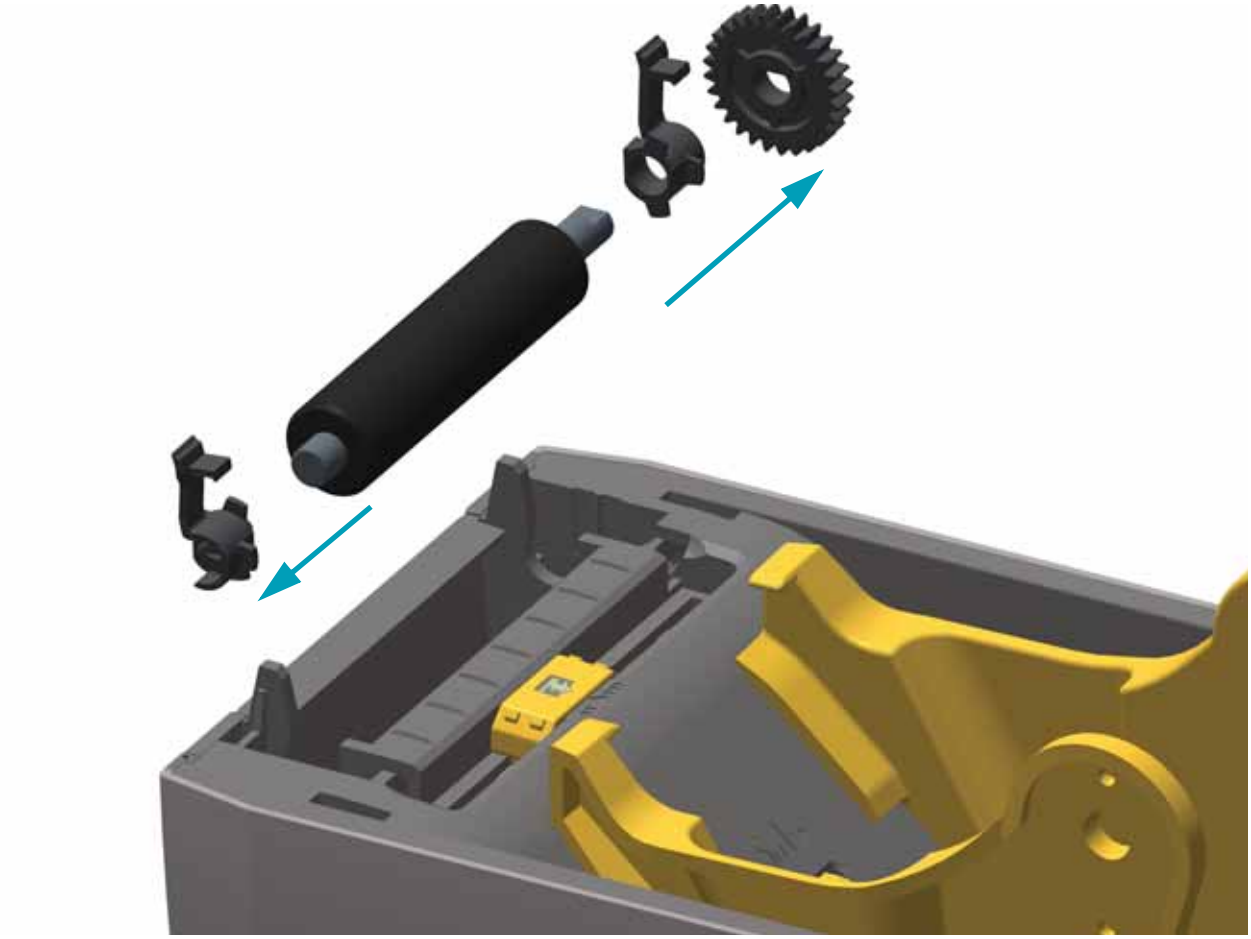
1. Open the cover (and dispenser door if the dispenser is installed). Remove media from platen area.
2. Pull the platen bearing latch release tabs on the right and left sides towards the front of the printer and rotate them up.



3. Lift the platen out of the printer's bottom frame.

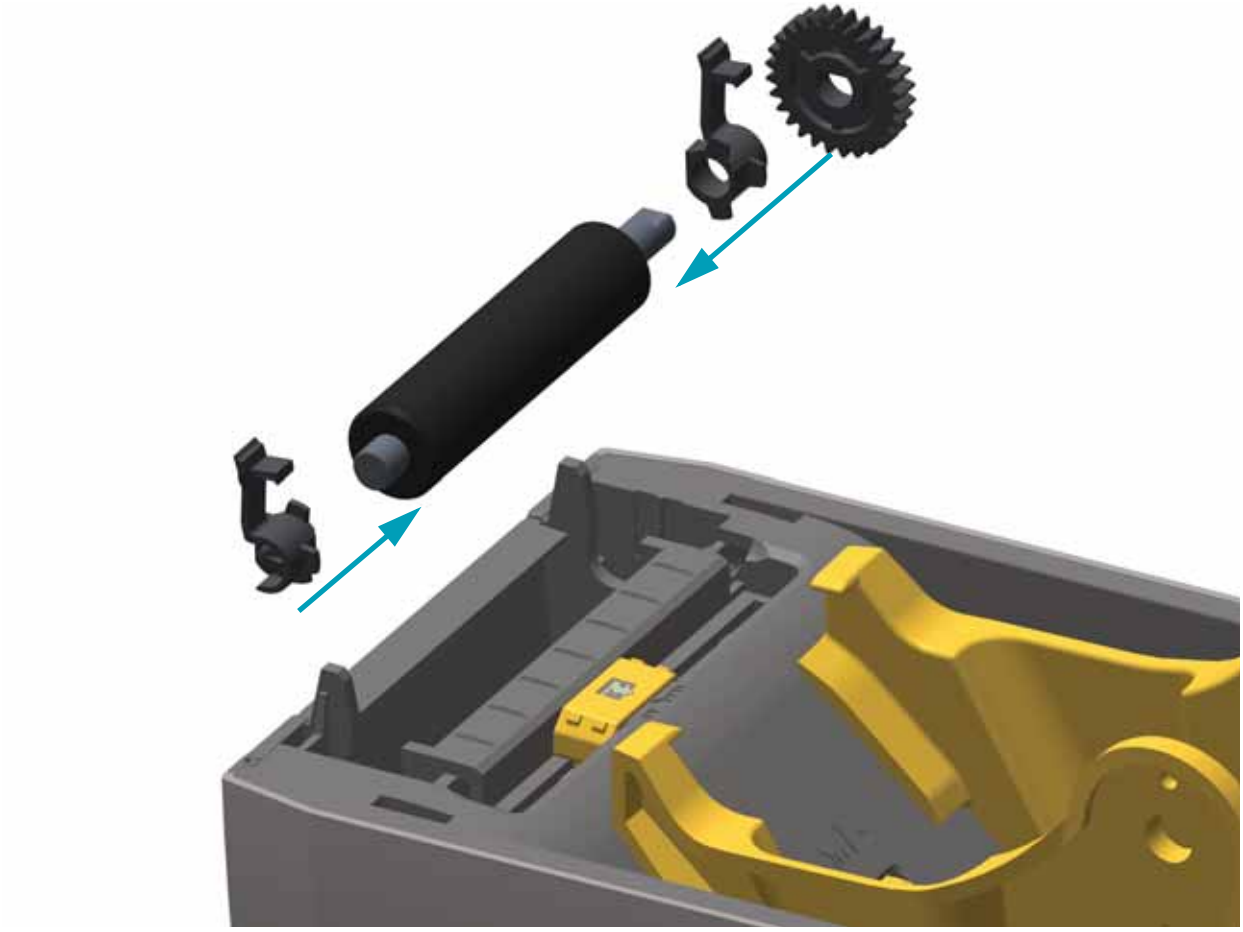


4. Slide the gear and the two (2) bearings off the shaft of the platen roller.



5. Clean the platen with the alcohol moistened swab or fiber free cloth. Clean from the center out. Repeat this process until all of the roller surface has been cleaned. If there has been heavy adhesive build-up or label jam, repeat with a new swab or cloth to remove residual contaminates. Adhesives and oils, for example, may be thinned by the initial cleaning but not completely removed.
6. Discard the cleaning swabs or cloth after use - do not reuse.

7. Make sure the bearings and drive gear are on the shaft of the platen roller.



8. Align the platen with the gear to the left and lower it into the printer's bottom frame.

9. Rotate the platen bearing latch release tabs down on the right and left sides towards the rear of the printer and snap them into place.

Allow the platen to dry for one minute before closing the dispenser door, media cover or loading labels.

Other Printer Maintenance

There are no user level maintenance procedures beyond those detailed in this section. See the *Troubleshooting* on page 17 for more information on diagnosing printer and print problems.

RTC Battery

The RTC (Real-Time Clock) battery is not operator replaceable. See a Zebra authorized service technician to replace the battery. The battery has been rated for up to ten (10) years of operation.

Caution • The printer has a three volt lithium battery. You can discern a low or flat battery if the printer provides a consistently delayed date stamp. Battery replacement must be performed by a qualified service technician. Only use a Zebra approved replacement battery.

Important • Recycle batteries according to local your guidelines and regulations. Wrap the battery when disposing (or storing) to avoid a short circuit.

DO NOT short circuit the battery. Short circuiting the battery may result in heat generation, fire or bursting.

DO NOT heat, disassemble or dispose of battery in fire.

Fuses

There are no replaceable fuses in the ZD410 Series ™ printer or power supply.

3

Troubleshooting

This section provides troubleshooting procedures.

Meaning of Indicator Lights

The indicator lights on the control panel show the current status of the printer.

Table 3 • Status of Printer As Shown by Indicator Lights

Typical Operating Conditions STATUS PAUSE DATA SUPPLIES NETWORK	
	The printer is ready.
	The printer is paused.
	The media supply is out. The printer needs attention and cannot continue without user intervention.
Special Error Conditions	
	There is a jam in the cutter.
	The printhead is open. The printer needs attention and cannot continue without user intervention.
	The printer is in Direct Thermal mode, which does not require ribbon; however, ribbon is installed in the printer.
	The printhead is over temperature.  **Caution •** The printhead may be hot and could cause severe burns. Allow the printhead to cool.
	The printhead is under temperature.
	The printhead was replaced with one that is not a genuine Zebra printhead. Install a genuine Zebra printhead to continue.
	The printer is unable to read the printhead type (dpi).
Printers with a Bluetooth LE option	
	Bluetooth LE is attempting to pair.
	Bluetooth LE has paired.

Table 3 • Status of Printer As Shown by Indicator Lights

Typical Operating Conditions STATUS PAUSE DATA SUPPLIES NETWORK	Steady Flashing Fade
Printers with a wired Ethernet (802.3) option	
	NETWORK light off No Ethernet link is available.
	A 100 Base link was found.
	A 10 Base link was found.
	An error condition exists. The printer is not connected to your network.
Printers with a Wi-Fi (802.11) option	
	The light flashes red while the printer associates with the network. The light then flashes yellow while the printer is authenticating with the network.
	The printer is connected to your network and the WiFi signal is strong.
	The printer is connected to your network and the WiFi signal is weak.
	An error condition exists. The printer is not connected to your network.

Printing Issues

This section helps you identify possible issues with printing or print quality, the possible causes, and the recommended solutions.

Table 4 • Printing Issues

Issue	Possible Cause	Recommended Solution
General print quality issues - The printed image does not look right.	The printhead is dirty.	Clean the printhead. See *Cleaning the Printhead* on page 7 and *Platen Cleaning* on page 12
	The printer is set at an incorrect darkness level and/or print speed.	For optimal print quality, set the darkness to the lowest possible setting for your barcodes and balance that with graphic and text quality in your application. Don not set print speeds above the manufacture maximum rated speed for your media or ribbon. You may want to perform the *Print Quality Report* on page 33 to determine the ideal darkness and speed settings for your application. See the ZPL Programmers manual or use the Windows driver, or Zebra Setup Utilities to set the print speed and darkness.level.
	You maybe using the wrong power supply.	Verify you are using the power supply that came with this printer.
	The printhead has worn out.	Replace the printhead. The printhead is a consumable item and will wear out due to friction between the media and printhead. Using unapproved media may shorten life or damage your printhead.
	The platen (drive) roller may need cleaning or replacement.	Clean or replace the platen (drive) roller. See *Platen Cleaning* on page 12 first.
No print on the label.	The media may not be direct thermal media when printing without ribbon (i.e. thermal transfer).	See the test procedure Determining Thermal Media Types in the printers user's guide.
	Media has been loaded incorrectly.	The media printable surface must face up towards the printhead. Follow the instructions for Loading Roll Media in the printers user's guide.

Table 4 • Printing Issues (Continued)

Issue	Possible Cause	Recommended Solution
Loss of printing registration on labels. Excessive vertical drift in top-of-form registration.	The platen roller is dirty.	Clean the printhead and platen roller. *Cleaning the Printhead* on page 7 and *Platen Cleaning* on page 12
	The media is loaded incorrectly.	Load media correctly. See Loading Roll Media in the printers user's guide.
Long tracks of missing print on several labels	Print element damaged.	Replace the printhead. See *Replacing the Printhead* on page 47.
Printing too light or too dark over the entire label	The media is not designed for high-speed operation.	Replace supplies with those recommended for high-speed operation.
Mis-registration /skips labels	The printer is not calibrated.	Calibrate the printer. See *Run a SmartCal Media Calibration* on page 28.
	Improper label format.	Check your label format and correct it as necessary.
Vertical drift in top-of-form position.	The printer is out of calibration.	Calibrate the printer. See *Run a SmartCal Media Calibration* on page 28.
	The platen (drive) roller is dirty.	Clean the printhead and platen (drive) roller. See *Cleaning the Printhead* on page 7 and *Platen Cleaning* on page 12
Vertical image or label drift.	The printer is using non-continuous labels but is configured in continuous mode.	Set the printer for the correct media type (gap/notch, continuous, or mark and calibrate the printer, if necessary (see *Sensor Profile* on page 37). See the ZPL Programmers manual or use the Windows driver to set to set media type.
	The media sensor is calibrated improperly.	Calibrate the media in the printer. See *Manual Media Calibration* on page 39.
	The platen (drive) roller is dirty.	Clean the printhead and platen (drive) roller. See *Cleaning the Printhead* on page 7 and *Platen Cleaning* on page 12.
	The media or ribbon is loaded incorrectly.	Ensure that the media and ribbon are loaded correctly. See Loading Roll Media in the printers user's guide and *Printer Configuration Report* on page 29.
	Incompatible media.	You must use media that meets the printer specifications. Ensure that the inter-label gaps or notches are 2 to 4 mm and consistently placed.

Table 4 • Printing Issues (Continued)

Issue	Possible Cause	Recommended Solution
The bar code printed on a label does not scan.	The bar code is not within specifications because the print is too light or too dark.	Perform the *Print Quality Report* on page 33. Adjust the darkness or print speed settings as necessary.
	There is not enough blank space around the bar code.	Leave at least 1/8 in. (3.2 mm) between the bar code and other printed areas on the label and between the bar code and the edge of the label.
	There is a void or missing print in a bar code (text or graphic) in a printed form. *Voids can look like a white bar area in a bar code.*	1. Preform *Cleaning the Printhead* on page 7 to remove contaminates on the printhead. Reprint and test the bar code. 2. Use the *Print Quality Report* on page 33 to see if the printhead has damaged printhead elements. Verify that the large black bar on the bottom of the printed test label does not have any streaks or voids after throughly cleaning the printhead. Call a service technician after cleaning the printhead.

Communications Problems

Table 5 identifies problems with communications, the possible causes, and the recommended solutions.

Table 5 • Communications Problems

Problem	Possible Cause	Recommended Solution
A label format was sent to the printer but was not recognized. The DATA light does not flash.	The communication parameters are incorrect.	Check the printer driver or software communications settings (if applicable). See the ZPL Programmers manual or use the Windows driver to set the printer to match the operation system settings.
		If you are using serial communication, check the serial port settings.
		If you are using serial communication, make sure that you are using a null modem cable or using a null modem adapter.
		Check the printer's handshake protocol setting. The setting used must match the one being used by the host computer.
		If a driver is used, check the driver communication settings for your connection.
A label format was sent to the printer. Several labels print, then the printer skips, misplaces, misses, or distorts the image on the label.	The serial communication settings are incorrect.	Ensure that the flow control settings match the host system.
		Check the printer driver or software communications settings (if applicable).
A label format was sent to the printer but was not recognized. The DATA light flashes but no printing occurs.	The prefix and delimiter characters set in the printer do not match the ones in the label format.	Verify the prefix and delimiter characters. See the ZPL Programmers manual to set these characters.
	Incorrect data is being sent to the printer.	Check the communication settings on the computer. Ensure that they match the printer settings.
		If the problem continues, check the label format.

Miscellaneous Issues

Table 6 identifies miscellaneous issues with the printer, the possible causes, and the recommended solutions.

Table 6 • Miscellaneous Printer ProblemTable 6s

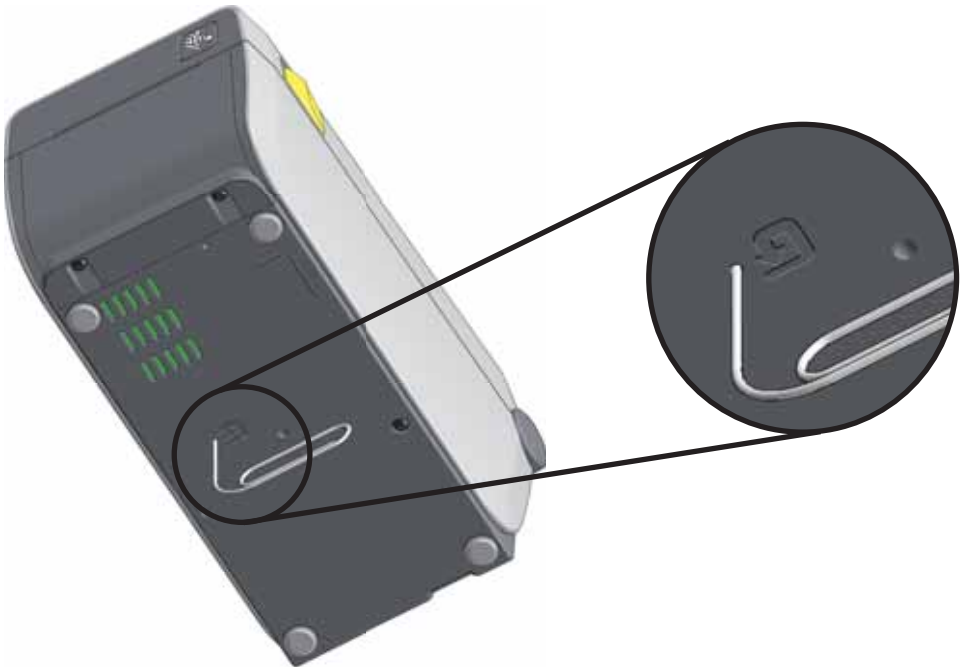
Problem	Possible Cause	Recommended Solution
Changes in parameter settings did not take effect.	Some parameters are set incorrectly.	1. Check the parameters and change or reset if necessary. 2. Turn the printer off (**O**) and then on (**I**).
	A firmware command turned off the ability to change the parameter.	Refer to the ZPL Programmers manual or call a service technician.
	A firmware command changed the parameter back to the previous setting.	
	If the problem persists, there may be a problem with the main logic board.	Call a service technician.
Non-continuous labels are being treated as continuous labels.	The printer was not calibrated for the media being used.	Calibrate the printer. See *Manual Media Calibration* on page 39.
	The printer is configured for continuous media.	Set the printer for the correct media type (gap/notch, continuous, or mark). Check the printer driver or software media settings or alternately use the ZPL Programmers manual to set the printer set media parameters.
All indicator lights are on and the printer locks up. - or- The printer locks up while running the Power-On Self Test.	Internal electronic or firmware failure.	Call a service technician.

Reset Button

In addition to the power on configurations described previously, the ZD410 has a dedicated reset button located on the bottom of the printer which can be pressed with a paper clip or similar small object.

Pressing the button has the following results based on the length of the button press:

0-1 second	No action
1-5 seconds	**Printer reset –** Printer performs a factory reset and will automatically print a configuration label (and network label if present)
6-10 seconds	**Network reset –** Printer drops connection to the network, and a network factory default reset occurs. Upon completion of the reset, a configuration and network configuration label are automatically printed.
More than 10 seconds	**Exits the factory defaults function** without resetting the printer or making changes



Reset Printer Factory Defaults

Performing this resets the printer configuration to the factory default values for the non-network printer settings. Perform a sensor calibration after this procedure. (See *Run a SmartCal Media Calibration* on page 28.)

To perform a Reset Printer Factory Defaults procedure (PAUSE + FEED Self Test), complete these steps:

1. Turn off (**O**) the printer.
2. Press and hold **PAUSE + FEED** while turning on (**I**) the printer.
3. Hold **PAUSE + FEED** until the Status indicator is the only indicator lit.

   The printer configuration is reset to the factory default values. No labels print at the end of this test.

Reset Network Factory Defaults

Performing this procedure resets the network configuration settings only to the factory default values.

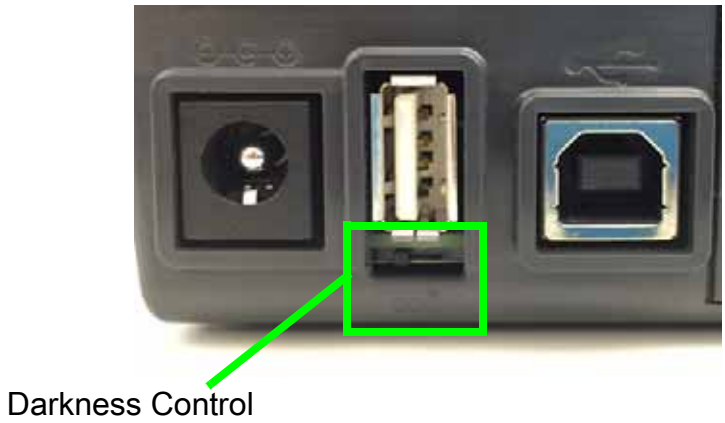
To perform a Reset Network Factory Defaults procedure (PAUSE + CANCEL Self Test), complete these steps:

1. Turn off (**O**) the printer.
2. Press and hold **PAUSE** + **CANCEL** while turning on (**I**) the printer.
3. Hold **PAUSE + CANCEL** until the Status indicator is the only indicator lit.

   The printer's network configuration is reset to the factory default values. No labels print at the end of this test.

Operator Darkness Control

The Operator Darkness Control switch allows the operator to change darkness setting for minor variations between printers and media.



The control switch has three (3) settings:

- Left: no effect (Low)
- Middle: increases darkness 3 levels (Medium)
- Right: increases darkness 6 levels (High).

Important • Setting the Darkness too high or too low may reduce Barcode readability.

Run a SmartCal Media Calibration

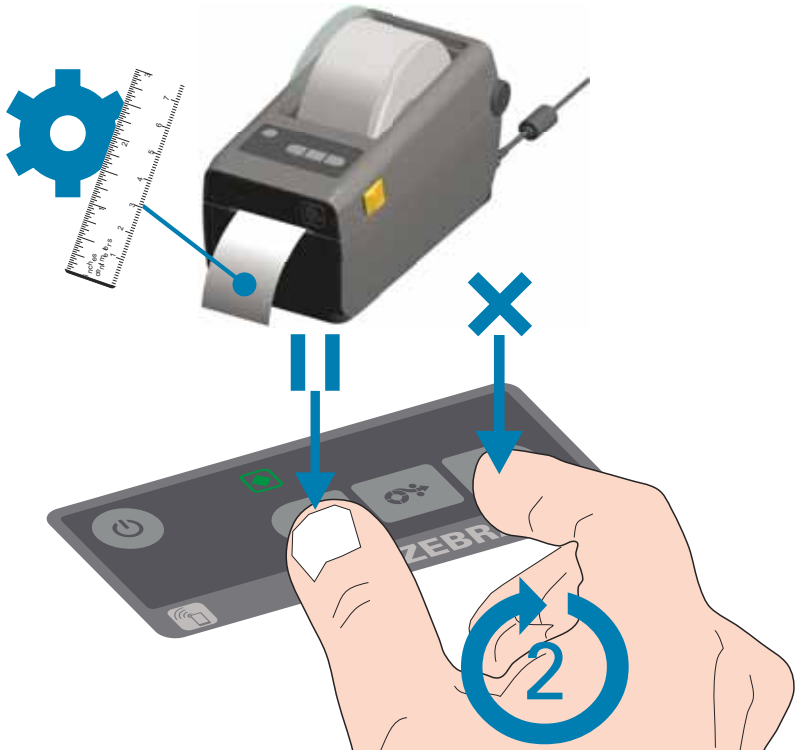
The printer needs to set the media parameters prior to printing optimal operation. The printer will automatically determine media type (web/gap, black mark/notch, or continuous) and measure media characteristics.

Note • After the initial calibration to a specific media is completed, it is not required to perform additional calibrations each time the media is replaced. The printer automatically measures the media to adjust for small changes in the media characteristics while printing.

Pressing the Feed (Advance) once or twice after a new roll of media (same batch) has been installed will synchronize the labels. It is then ready to continue printing.

SmartCal Procedure

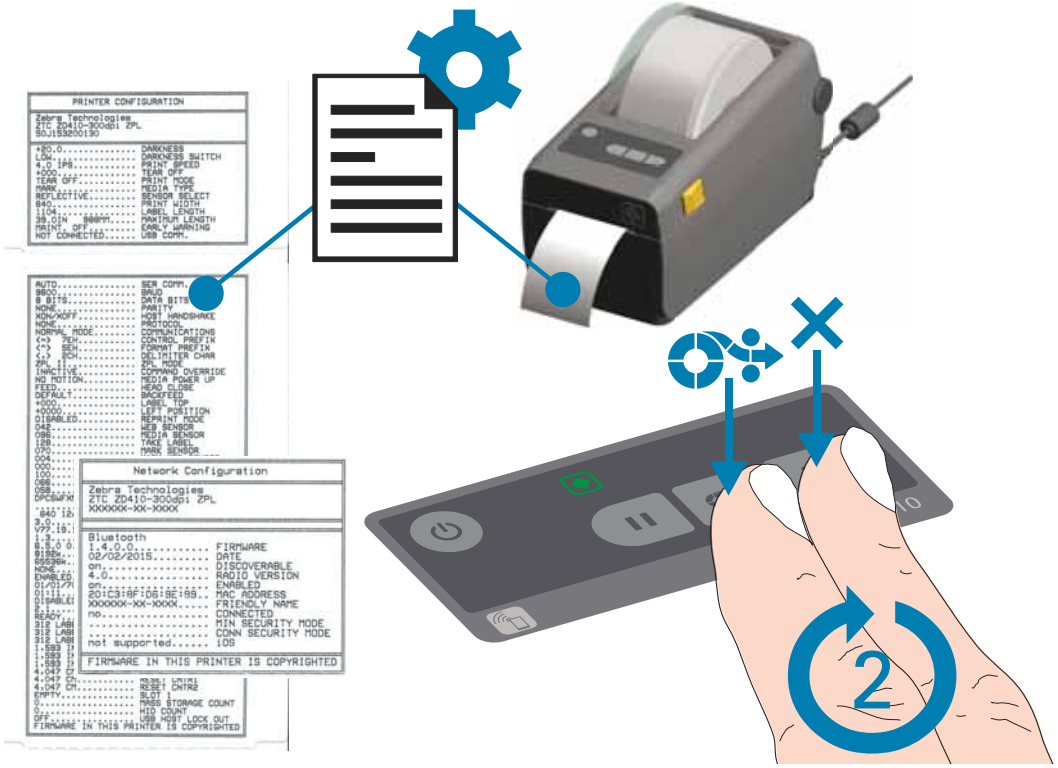
1. Make sure the media is loaded properly and the top cover of the printer is closed.
2. Press the POWER button to turn the printer on.
3. Once the printer is in the ready state (Status indicator ( ) is solid green), press and hold the PAUSE and CANCEL button for two (2) seconds and release.
4. The printer will measure a few labels and adjust media sensing levels.
5. When the printer stops, the Status indicator ( ) will turn solid green.



Printer Configuration Report

Before you connect the printer to a computer, make sure that the printer is in proper working order. You can do this by printing a configuration report. The information on the Configuration reports printout that may be helpful with printer installation and with troubleshooting your printer.

1. Make sure the media is properly inserted and the top cover of the printer is closed.
2. Turn the printer ON.
3. Once the printer is in the ready state (Status indicator ( ) is solid green), press and hold the **FEED and CANCEL** buttons for two (2) seconds and release.
4. .The Printer and Network Configuration Reports (shown below) will be printed.
5. When the printer stops, the Status indicator ( ) will turn solid green.



Configuration Report (Option #2)

The Configuration Report (CANCEL self test) prints a set of printer and network configuration reports.

To print the configuration report, complete these steps:

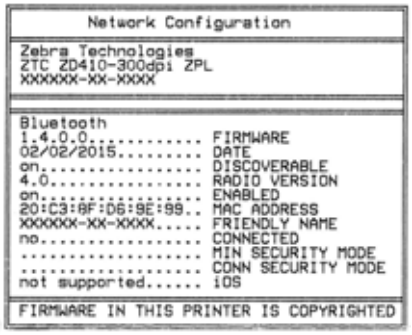
1. Make sure the media is properly loaded, the top cover of the printer is closed and printer power is off (**O**).
2. Press and hold **CANCEL button while setting the printer power to** on (**I**).
3. Hold **CANCEL button down** until the STATUS indicator is the only indicator lit.
4. The Printer and Network Configuration Reports (below) will be printed a couple of seconds after printer's display reports 'PRINTER READY'.

PRINTER CONFIGURATION

Zebra Technologies
ZTC ZD410-300dpi ZPL
50J153200130

+20.0	DARKNESS
LOW	DARKNESS SWITCH
4.0 IPS	PRINT SPEED
+000	TEAR OFF
TEAR OFF	PRINT MODE
MARK	MEDIA TYPE
REFLECTIVE	SENSOR SELECT
640	PRINT WIDTH
1104	LABEL LENGTH
39.0IN 988MM	MAXIMUM LENGTH
MAINT. OFF	EARLY WARNING
NOT CONNECTED	USB COMM.
AUTO	SER COMM. MODE
9600	BAUD
8 BITS	DATA BITS
NONE	PARITY
XON/XOFF	HOST HANDSHAKE
NONE	PROTOCOL
NORMAL MODE	COMMUNICATIONS
(~) 7EH	CONTROL PREFIX
(^) 5EH	FORMAT PREFIX
(,) 2CH	DELIMITER CHAR
ZPL II	ZPL MODE
INACTIVE	COMMAND OVERRIDE
NO MOTION	MEDIA POWER UP
FEED	HEAD CLOSE
DEFAULT	BACKFEED
+000	LABEL TOP
+0000	LEFT POSITION
DISABLED	REPRINT MODE
042	WEB SENSOR
096	MEDIA SENSOR
128	TAKE LABEL
070	MARK SENSOR
004	MARK MED SENSOR
000	TRANS GAIN
100	TRANS LED
068	MARK GAIN
058	MARK LED
DPCSWFXM	MODES ENABLED
	MODES DISABLED
640 12/MM FULL	RESOLUTION
3.0	LINK-OS VERSION
V77.19.14Z <-	FIRMWARE
1.3	XML SCHEMA
6.5.0 0.515	HARDWARE ID
8192K R:	RAM
65536K E:	ONBOARD FLASH
NONE	FORMAT CONVERT
ENABLED	IDLE DISPLAY
01/01/70	RTC DATE
01:11	RTC TIME
DISABLED	ZBI
2.1	ZBI VERSION
READY	ZBI STATUS
312 LABELS	NONRESET CNTR
312 LABELS	RESET CNTR1
312 LABELS	RESET CNTR2
1.593 IN	NONRESET CNTR
1.593 IN	RESET CNTR1
1.593 IN	RESET CNTR2
4.047 CM	NONRESET CNTR
4.047 CM	RESET CNTR1
4.047 CM	RESET CNTR2
EMPTY	SLOT 1
0	MASS STORAGE COUNT
0	HID COUNT
OFF	USB HOST LOCK OUT

FIRMWARE IN THIS PRINTER IS COPYRIGHTED



Network Configuration

Zebra Technologies
ZTC ZD410-300dpi ZPL
XXXXXX-XX-XXXX

Bluetooth

1.4.0.0	FIRMWARE
02/02/2015	DATE
on	DISCOVERABLE
4.0	RADIO VERSION
on	ENABLED
20:C3:8F:D6:9E:99	MAC ADDRESS
XXXXXX-XX-XXXX	FRIENDLY NAME
no	CONNECTED
	MIN SECURITY MODE
	CONN SECURITY MODE
not supported	iOS

FIRMWARE IN THIS PRINTER IS COPYRIGHTED

Printer Diagnostics

Printer diagnostic procedures and reports provide specific information about the condition of the printer.

Important • Use full-width media when performing these diagnostic procedures and reports.

Each self test is enabled by pressing a specific control panel key or combination of keys while turning on (I) the printer power. Keep the key(s) pressed until the first indicator light turns off. The selected self test automatically starts at the end of the Power-On Self Test.

Note •

- When performing these self tests, do not send data to the printer from the host.
- If your media is shorter than the label to be printed, the test label continues on the next label.
- When canceling a self test prior to its actual completion, always reset the printer by turning it off (**O**) and then on (**I**).
- If the printer is in dispense mode and the liner is being taken up by the applicator, the operator must manually remove the labels as they become available.

Power-On Self Test

A Power-On Self Test (POST) is performed each time the printer is turned on (I). During this test, the control panel indicators turn on and off to ensure proper operation. At the end of this self test, only the STATUS indicator remains lit. When the Power-On Self Test is complete, the media is advanced to the proper position.

Factory Test Modes

The printer includes print modes that are intended for factory test only. These tests can be useful in diagnosing print and drive train failures (printhead, platen, motor, gears, etc.). Inspect and clean the printhead, platen, and media path prior to resorting to these test modes for diagnosing print quality issues.

Test mode 1 is initiated by holding PAUSE while turning ON printer power. When activated, the printer will begin printing various test patterns used to evaluate printer performance.

Test mode 2 is initiated by holding PAUSE + FEED + CANCEL for two seconds while printer power is ON. When activated, the printer will begin printing various test patterns used to evaluate printer performance.

Note • Both of these test modes will consume a considerable amount of media as the tests are performed.

You can exit either of these test modes by:

- Pressing and holding POWER until the printer power is switched OFF.
- Pressing the Pause button (to pause printing) and holding the Cancel button for five(5) seconds will exit the Factory Test.

Print Quality Report

Different types of media require different darkness settings. This section contains a simple but effective method for determining the ideal darkness for printing bar codes that are within specifications.

During the Print Quality Report (FEED self test), a series of labels are printed at different darkness settings at two different print speeds. The relative darkness and the print speed are printed on each label. The bar codes on these labels may be ANSI-graded to check print quality.

During this test, one set of labels is printed at 2 ips, and another set is printed at 6 ips. The darkness value starts at three settings lower than the printer's current darkness value (relative darkness of –3) and increase until the darkness is three settings higher than the current darkness value (relative darkness of +3).

The speed at which labels are printed during this print quality test depends on the dot density of the printhead.

- 300 dpi printers: 7 labels are printed at the 2 ips and 4 ips print speeds.
- 203 dpi printers: 7 labels are printed at the 2 ips and 6 ips print speeds.

To perform a Print Quality Report, complete these steps:

1. Print a configuration label to show the printer's current settings.
2. Turn off (**O**) the printer.
3. Press and hold **FEED while setting the printer power to** on (**I**). Hold **FEED** until the Status indicator is the only indicator lit.

   The printer prints a series of labels (Figure 1) at various speeds and at darkness settings higher and lower than the darkness value shown on the configuration label.

Figure 1 • Print Quality Report

4. See Figure 2 and Table 7. Inspect the test labels and determine which one has the best print quality for your application. If you have a bar code verifier, use it to measure bars/spaces and calculate the print contrast. If you do not have a bar code verifier, use your eyes or the system scanner to choose the optimal darkness setting based on the labels printed in this self test.

Figure 2 • Bar Code Darkness Comparison

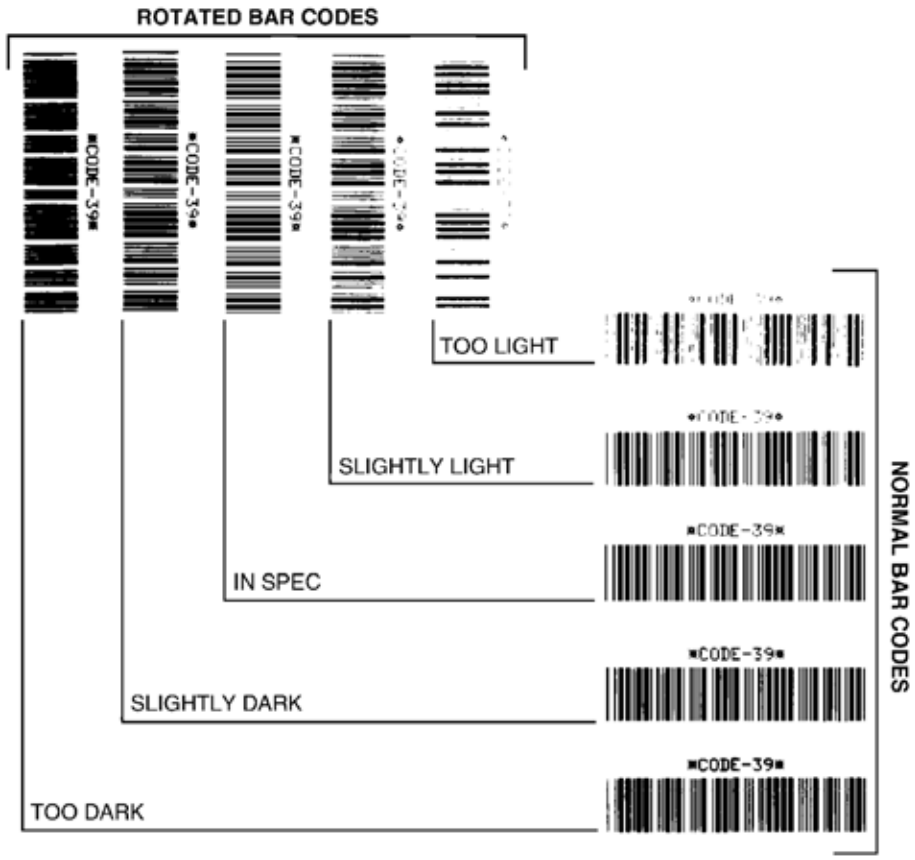


Table 7 • Judging Bar Code Quality

Print Quality	Description
Too dark	Labels that are too dark are fairly obvious. They may be readable but not “in-spec.” • The normal bar code bars increase in size. • The openings in small alphanumeric characters may fill in with ink. • Rotated bar code bars and spaces run together.
Slightly dark	Slightly dark labels are not as obvious. • The normal bar code will be “in-spec.” • Small character alpha numerics will be bold and could be slightly filled in. • The rotated bar code spaces are small when compared to the “in-spec” code, possibly making the code unreadable.
“In-spec”	The “in-spec” bar code can only be confirmed by a verifier, but it should exhibit some visible characteristics. • The normal bar code will have complete, even bars and clear, distinct spaces. • The rotated bar code will have complete, even bars and clear, distinct spaces. Although it may not look as good as a slightly dark bar code, the bar code will be “in-spec.” • In both normal and rotated styles, small alphanumeric characters look complete.
Slightly light	Slightly light labels are, in some cases, preferred to slightly dark ones for “in-spec” bar codes. • Both normal and rotated bar codes will be in spec, but small alphanumeric characters may not be complete.
Too light	Labels that are too light are obvious. • Both normal and rotated bar codes have incomplete bars and spaces. • Small alphanumeric characters are unreadable.

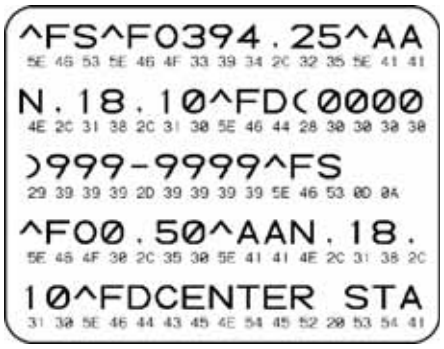
5. Note the relative darkness value and the print speed printed on the best test label.
6. Add or subtract the relative darkness value from the darkness value specified on the configuration label. The resulting numeric value is the best darkness value for that specific label/ribbon combination and print speed.
7. If necessary, change the darkness value to the darkness value on the best test label.
8. If necessary, change the print speed to the same speed as on the best test label.

Communication Diagnostics Test

The communication diagnostics test is a troubleshooting tool for checking the interconnection between the printer and the host computer. When the printer is in diagnostics mode, it prints all data received from the host computer as straight ASCII characters with the hex values below the ASCII text. The printer prints all characters received, including control codes such as CR (carriage return). Figure 3 shows a typical test label from this test.

Note • The test label prints upside-down.

Figure 3 • Communications Diagnostics Test Label



To use communications diagnostics mode, complete these steps:

1. Set the print width equal to or less than the label width being used for the test.
2. Set the DIAGNOSTICS MODE option to ENABLED. See the *User Guide* for methods for changing this setting.

   The printer enters diagnostics mode and prints any data received from the host computer on a test label
3. Check the test label for error codes. For any errors, check that your communication parameters are correct.

   Errors show on the test label as follows:

   - FE indicates a framing error.
   - OE indicates an overrun error.
   - PE indicates a parity error.
   - NE indicates noise.
4. Turn the printer off (**O**) and then back on (**I**) to exit this self test and return to normal operation.

Sensor Profile

Use the sensor profile image (which will extend across several actual labels or tags) to troubleshoot the following situations:

- The printer experiences difficulty in determining gaps (web) between labels.
- The printer incorrectly identifies preprinted areas on a label as gaps (web).
- The printer cannot detect ribbon.

With the printer in the Ready state, print a sensor profile in one of these ways:

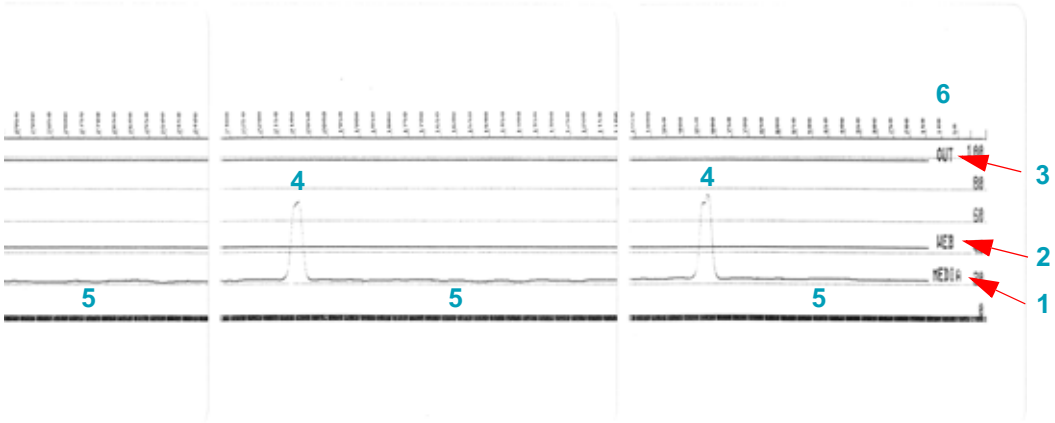
Using the buttons on the control panel	**a.** Turn off (O) the printer. **b.** Press and hold **FEED** + **CANCEL** while turning on (I) the printer. **c.** Hold **FEED** + **CANCEL** until the Status indicator is the only indicator lit.
Using ZPL	**a.** Send the **~JG** command to the printer. See the *Zebra Programming Guide* for more information about this command.

Compare your results to the examples shown in this section. If the sensitivity of the sensors must be adjusted, calibrate the printer (see *Manual Media Calibration* on page 39).

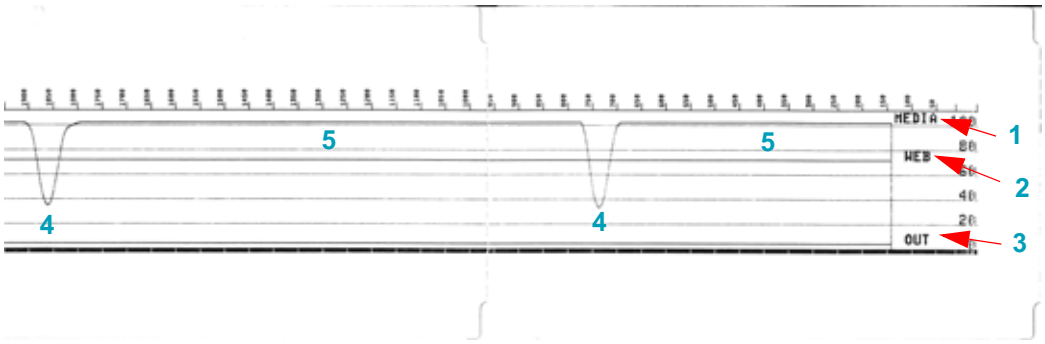
Media Sensor Profile (Figure 4) The line labeled MEDIA (1) on the sensor profile indicates the media sensor readings. The media sensor threshold settings is indicated by WEB (2). The media out threshold is indicated by OUT (3).The upward spikes (4) indicate gaps between labels (the web), the lines between the spikes (5) indicate where labels are located, and the numbered line at the top (6) provides measurement in dots from the start of the printout.

If you compare the sensor profile printout to a length of your media, the spikes should be the same distance apart as the gaps on the media. If the distances are not the same, the printer may be having difficulty determining where the gaps are located.

Figure 4 • Sensor Profile (Gap Media)



Sensor Profile



Advanced Mode

Advanced Mode is used to access several manual adjustment modes in the printer. Each manual adjustment mode is described in detail in the following sections.

To activate Advanced Mode, complete these steps:

1. Ensure media is loaded and printer power is ON.
2. Press PAUSE for two seconds, all indicators will flash yellow.
3. The STATUS indicator will show solid yellow, indicating the currently selected mode is:
   Manual Media Calibration.
4. Pressing FEED will sequentially cycle through all available modes.
5. Pressing PAUSE will activate the selected mode.
6. Pressing CANCEL will exit Advanced Mode.

Manual Media Calibration

While in Advanced Mode, pressing PAUSE while the STATUS indicator is illuminated yellow will start Manual Media Calibration.

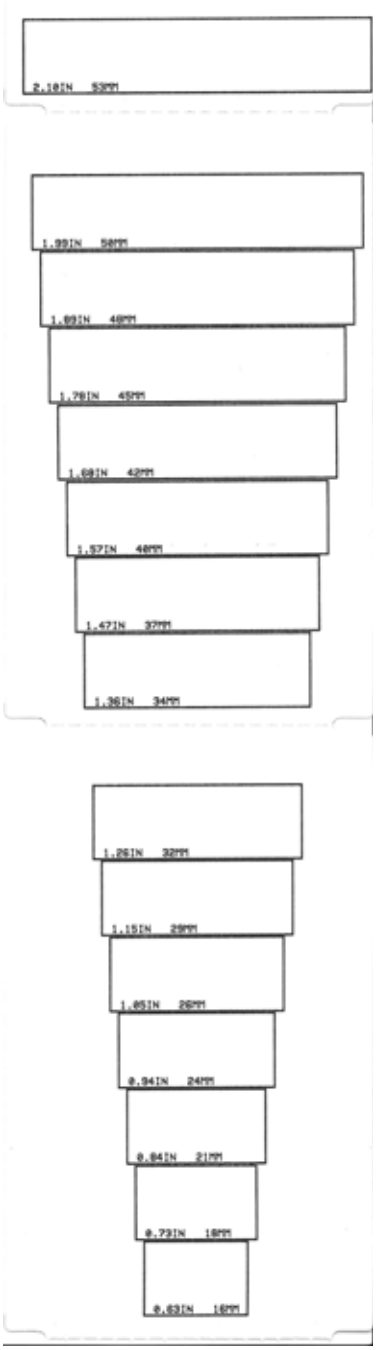
1. The MEDIA indicator will flash yellow then the PAUSE indicator will flash. Open the printer and verify the media sensor is in the center position for label gap (transmissive) sensing. Remove 3 inches or 80mm of labels from the liner. Place the label-less area of the liner over the platen (drive) roller with the leading edge of the first label under the media guides.
2. Close the printer and press PAUSE once. The MEDIA indicator will flash as the media liner is measured. When complete, the PAUSE indicator will begin flashing.
3. Open the printer and reposition the media so that a label is located directly above the movable sensor. Close the printer.
4. Press PAUSE once. The printer will feed and measure several labels. If the printer is able to determine the correct media type (gap, black mark or notch) and measure the media length, the printer will return to the READY state.

This advanced mode is typically used to calibrate the printer to media that is not correctly recognized during Smart Calibration. If your media uses black mark or notch sensing, ensure the media sensor is in to the proper location to “see” the mark or notch. If your media is pre-printed, either on the front of the label or on the back of the liner, position the sensor so that it is in a position with minimal printing. You may need to perform Manual Media Calibration several times, moving the media sensor, until the printer completes the calibration process and returns to the READY state.

Manual Print Width Adjustment

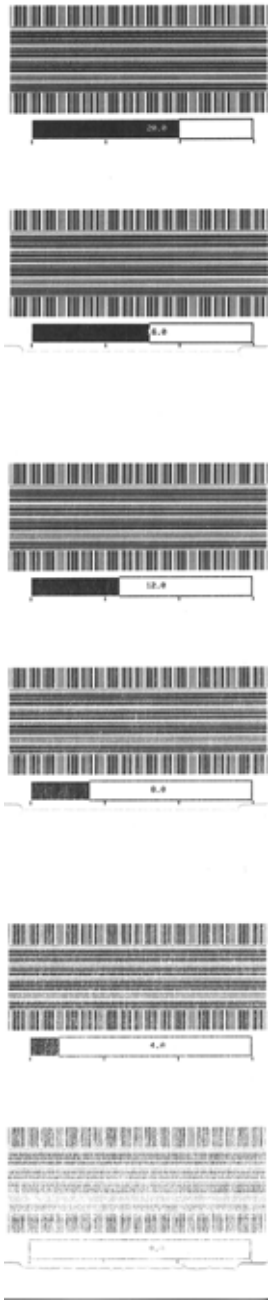
While in Advanced Mode, pressing PAUSE while the PAUSE indicator is illuminated yellow will start Manual Print Width Adjustment while in Advanced mode, see *Advanced Mode* on page 39. The printer will print a 16mm (0.63 inch) box and pause momentarily. The printer will then print a slightly larger box and again pause. When you see the printer print a box that matches the width of your media, press FEED to set the print width and return to READY state.

To return to the maximum print width setting, allow the printer to proceed without pressing the FEED button.



Manual Print Darkness Adjustment

Pressing PAUSE while the DATA indicator is illuminated yellow will start Manual Print Darkness Adjustment. The printer will print a test pattern showing the current darkness number and several Barcode patterns and then pause momentarily. The printer will then repeat the pattern with the next darkness level. When you see the printer print a pattern with solid even black lines, press FEED to set the darkness value and return to the READY state.



Using ZSU and ZPL Programming as a Repair Tool

The Zebra Setup Utilities (ZSU) used in combination with ZPL programming can provide you most of the information and control needed to test, update and communicate with the printer.

Use the Zebra Setup Utilities to run common activities, get status, send commands, download firmware, etc. Many of these functions are found in the printer driver or ZebraNet Bridge (which includes other tools to aid multi-printer management and roll-out). The free version supports up to three (3) individual Zebra printers. Purchasing the ZebraNet Bridge activates printer coping (cloning), one among several useful features for repairing Zebra printers.

The ZPL programming language includes Host Query (**~HQ** in general and **~HQES** in particular) command that allows a service engineer or technician to resolve failure and test operation. Many of the other **~H** commands can provide additional testing and information to help diagnosing printer issues. Use the 'Open Communication With Printer' in the ZSU to use this bi-directional command and response.

Use the 'Open Printer Tools' - 'Print' and 'Actions' tabs to do common service and functional testing of the printer. These include:

- Print configuration label (good to test printing and get status info)
- Feed one label (good to test motor, cutter, dispense, etc. function)
- Print object list (doing inventory of user content loaded into the printer)
- Calibrate media
- Load factory defaults
- Reset printer
- Enter and exit diagnostics mode (good for checking communications, marginal for testing)
- Send command
- Send a file (good for sending label forms (formats) and downloading firmware)

The ZSU does not let you activate ZBI used for customizing printer operations and non-Zebra printer emulation. Use the ZBI Key Manager software program to re-activate ZBI operation. You will need the purchased key to enable custom ZBI programming sent to the printer.

Example - Using the ~HQES command to the Head-Up Sensor

Connect the printer to a PC and run the ZSU. Select the printer and 'Open Communication With Printer'.

1. Remove media and ribbon from the printer. Leave the printer open.
2. Send the **~HQES** to the printer. Use the ZPL manual in the ~HQ command and note the 'Head Open' flag in Nibble 1.
3. Close the printer cover. Re-send the **~HQES** command and note the change in Nibble 1.

4

Required Tools

Tools • Make use of the following tools while performing replacement procedures:

- #10 Torx driver (ideally magnetized)
  Torxue value range — 0.53 +/-0.11 NM =4.7 inch*lb
- #6 Torx driver (ideally magnetized)
  Torxue value range — 0.53 +/-0.11 NM =4.7 inch*lb
- Small slot-head screwdriver
- Small pliers
- Printhead cleaning pen
- Fiber free swabs
- Lint free wipes, such as Kim-Wipes
- Isopropyl Alcohol - 99% pure solution

Notes • _____

_____

_____

_____

_____

_____

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5

Replacing Parts

In the event you must replace a part, review the repair path decision tree to see which procedures to perform. Read the steps in the required procedures to remove the old part and install the new part. Other required procedures may include cleaning or other maintenance after the part has been replaced.

Repair Procedure Sequence for ZD410 Printers

Before performing any procedure, make sure you remove the media from the printer and disconnect all printer power and interface cabling. The green blocks are stand alone or starting procedures needed to be performed to access other parts. Use the connecting arrowed lines to determine procedure order for your repair.

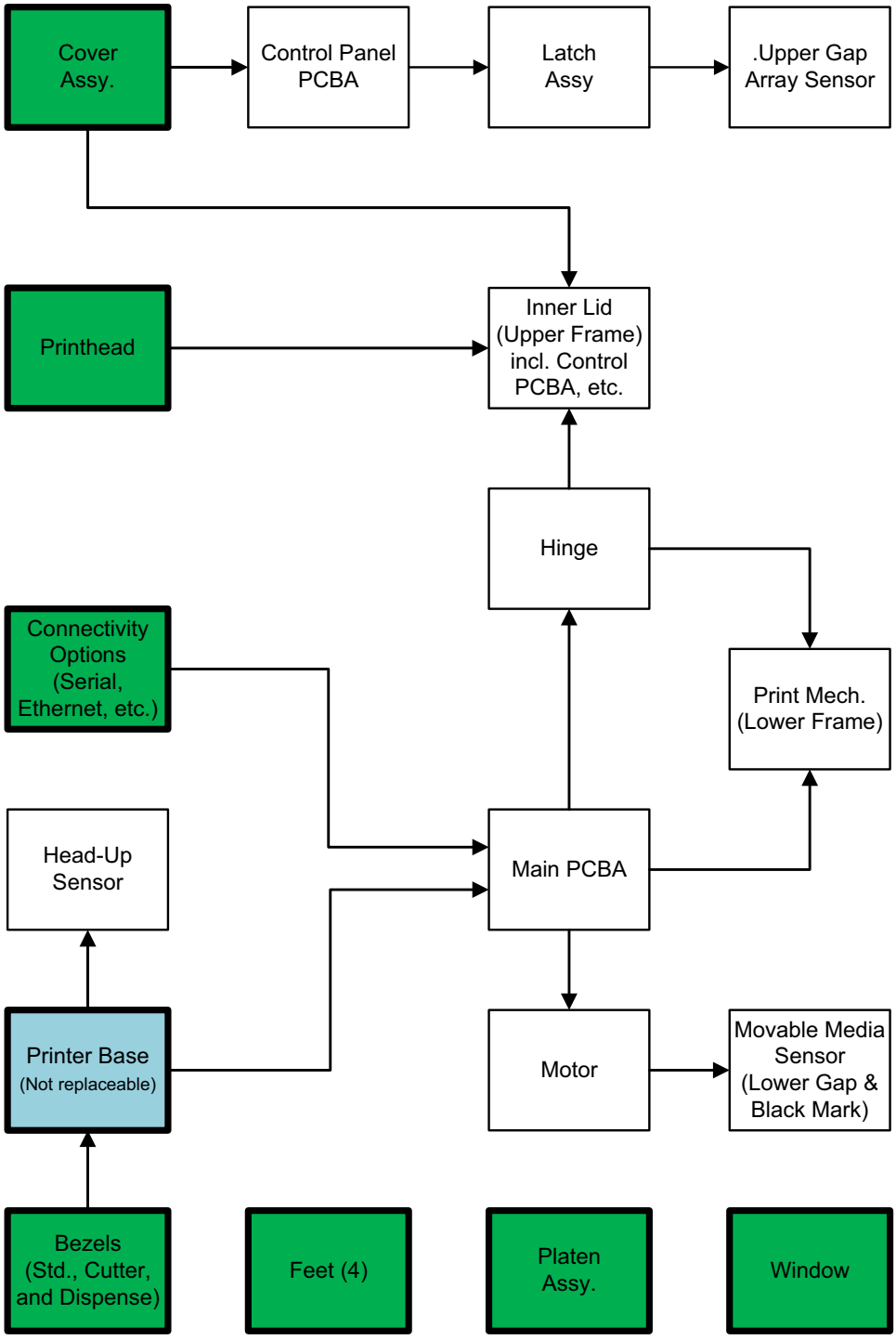


Figure 5 • Repair Path

Replacing the Printhead

If you need to replace the printhead, read the procedure and review the removal and installation steps before actually replacing the printhead.

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

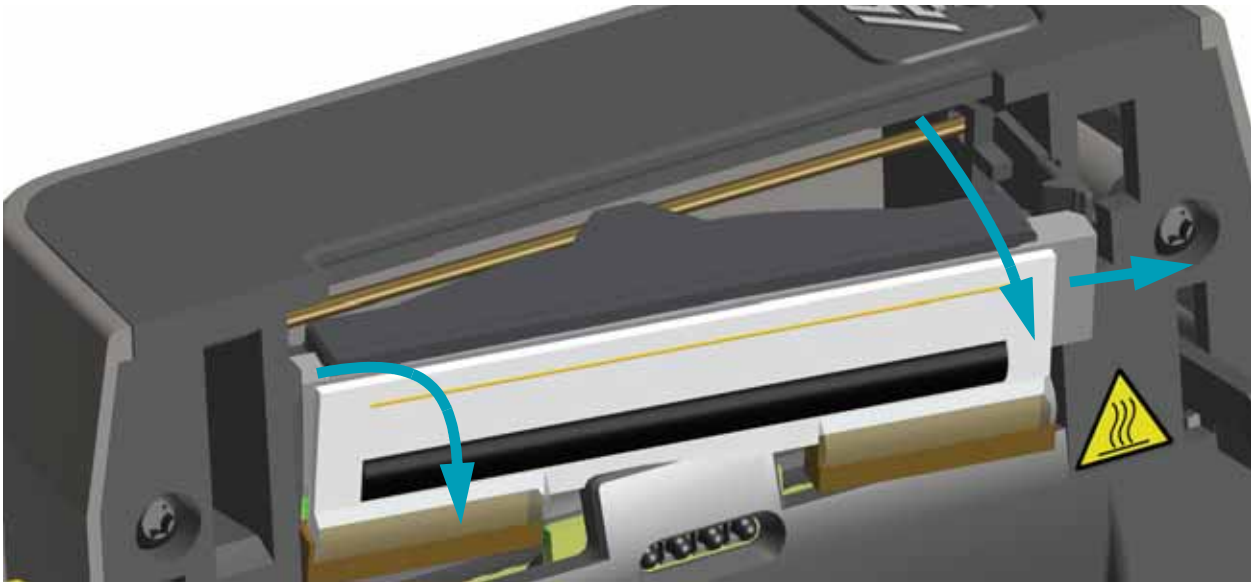
Caution • Turn the printer power off and unplug the power cord before replacing the printhead.

Before following the steps in this procedure, open the printer by pulling the release latches forward then lifting the top cover.

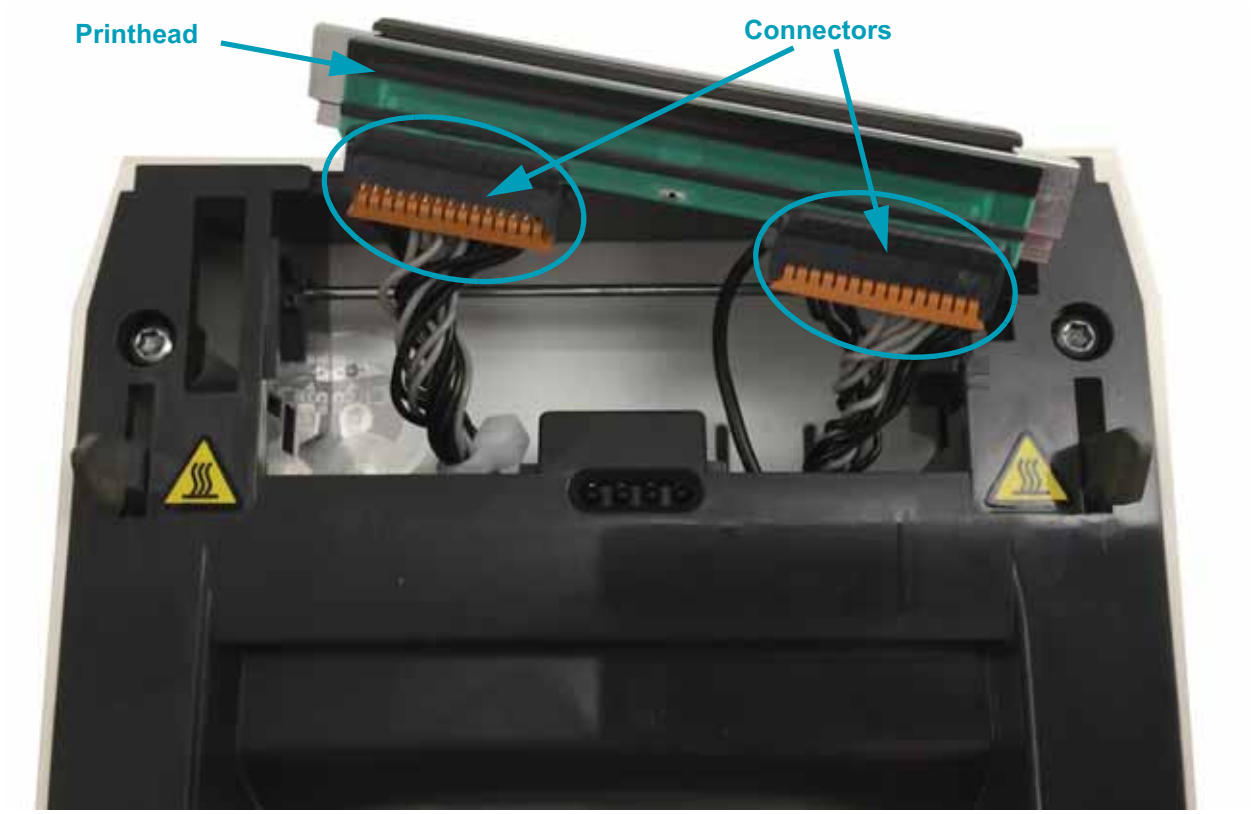
Removal

1. Turn the printer OFF. Open the printer.
2. Pull the printhead release latch on the right side of the printhead to the outside of the printer to release the printhead.

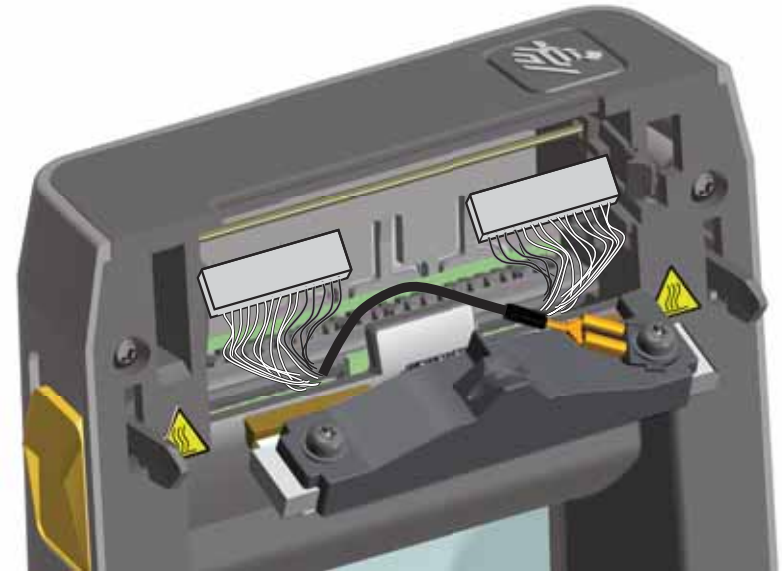
3. Swing the loose right side of the printhead out of the printer. Pull it to the right a little to get the left side of the printhead clear. Pull the printhead free to gain access to its attached cables.



4. Gently but firmly pull the two printhead cable bundle connectors off of the printhead.

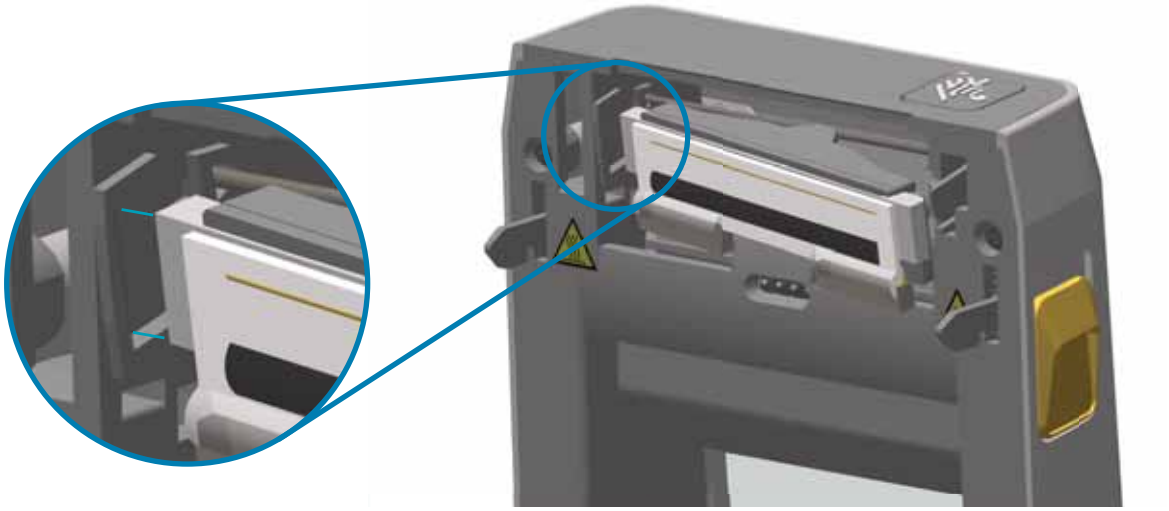


5. Gently but firmly pull the single black ground wire off the back side of the printhead.

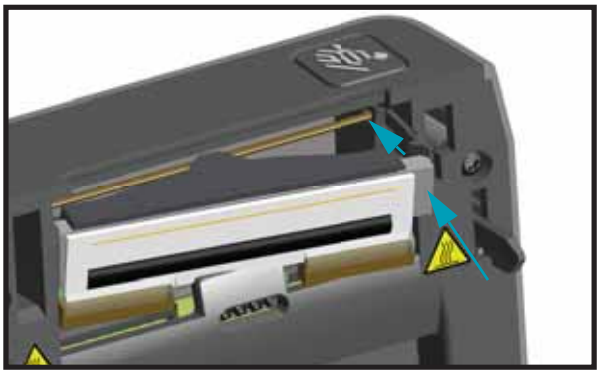


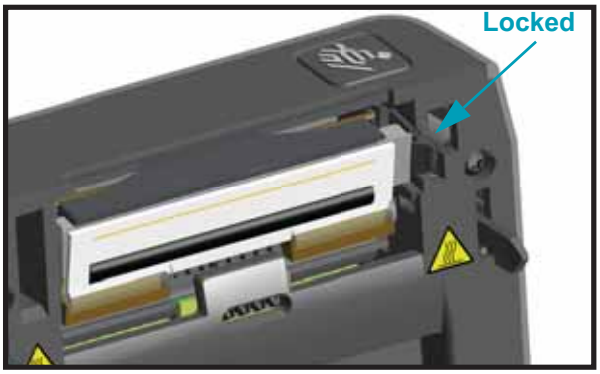
Installation

1. Push the right side printhead cable connector into the printhead. The connector is keyed to only insert one way.
2. Connect the single black ground wire spade lug connector onto the spade lug attached to the backside of the printhead.
3. Push the left side printhead cable connector onto the printhead.
4. Check that the ground wire and wire bundles are still connected to the printhead.
5. Insert the left side of the printhead assembly into the recessed area.



6. Push the right side of the printhead into the printer until the latch locks the right side of the printhead into the printer.





7. Verify that the printhead moves freely into the printer when pressure is applied and remains locked when pressure is released.

8. Clean the printhead by using a new cleaning pen to wipe body oils (finger prints) and debris off the printhead. Clean from the center of the printhead to the outside. See *Cleaning the Printhead* on page 7.

Reload media. Turn on the printer and print a status report to ensure proper function. See *Printer Configuration Report* on page 29.

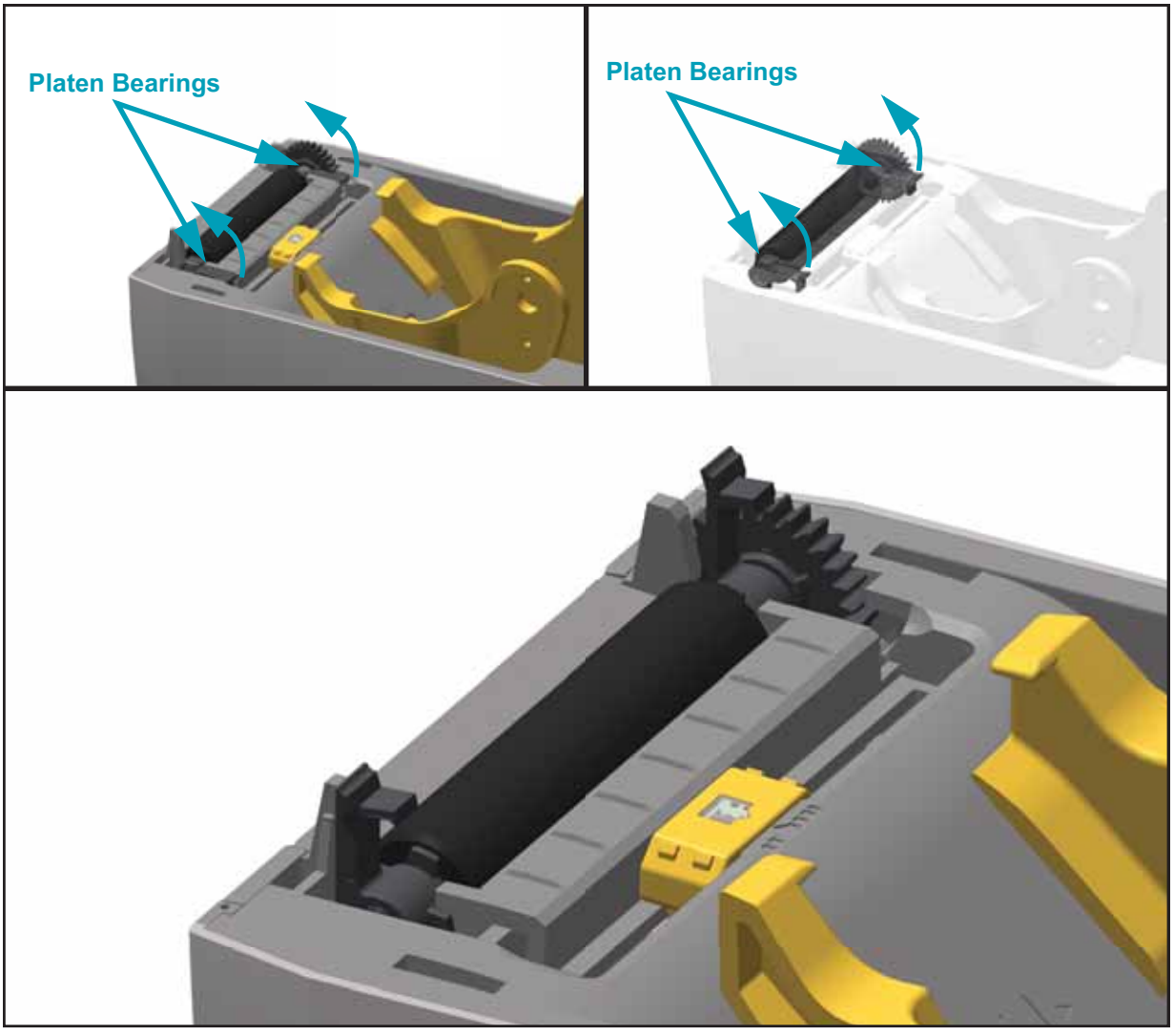
Replacing the Platen Assembly

If you need to replace the platen drive roller assembly, read the procedure and review the removal and installation steps before actually replacing the platen.

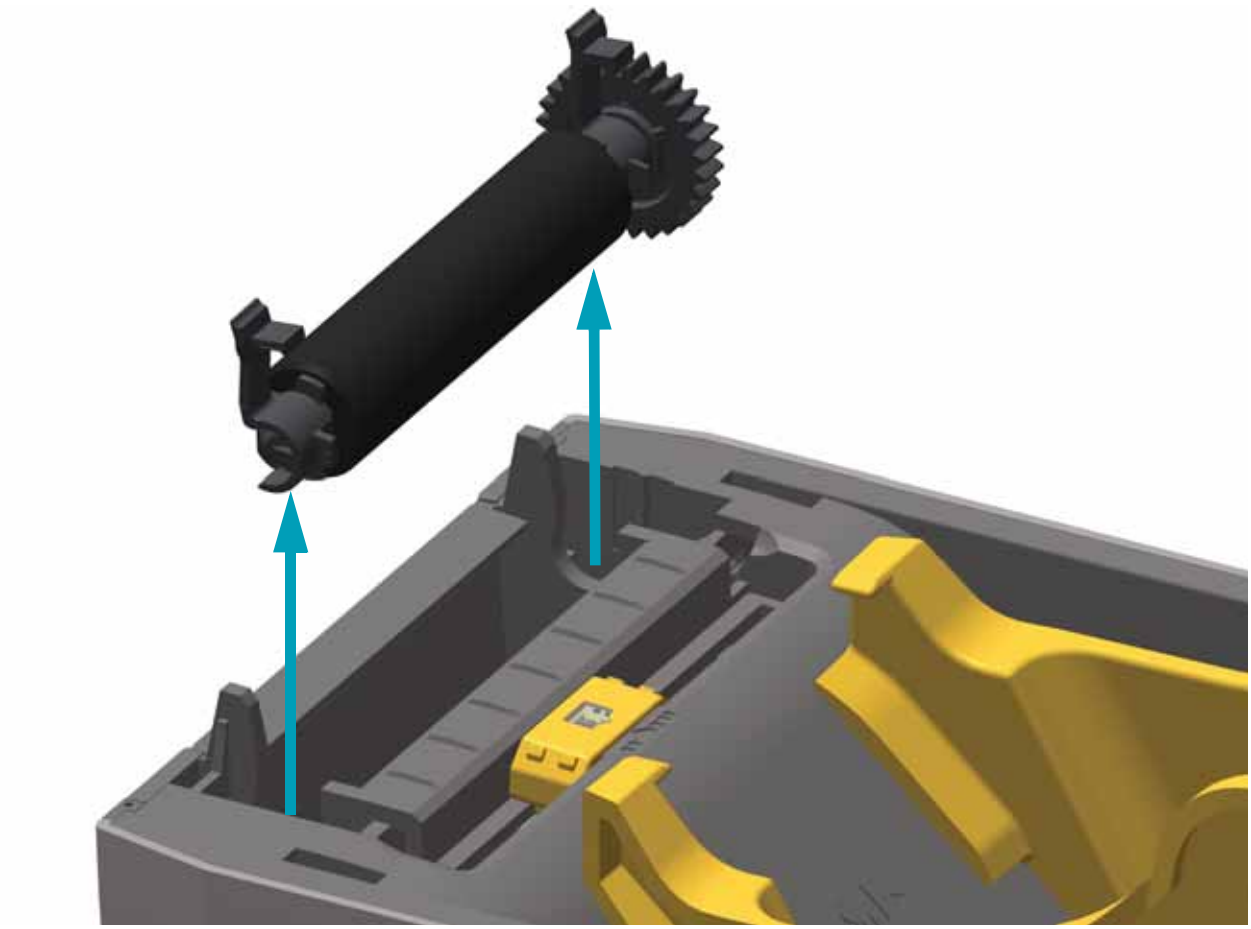
Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

Removal

1. Open the cover (and dispenser door if the dispenser is installed). Remove media from platen area.
2. Pull the platen bearing latch release tabs on the right and left sides towards the front of the printer and rotate them up.



3. Lift the platen out of the printer's bottom frame. Note the position of the platen assembly components to assist in assembling the new platen assembly.

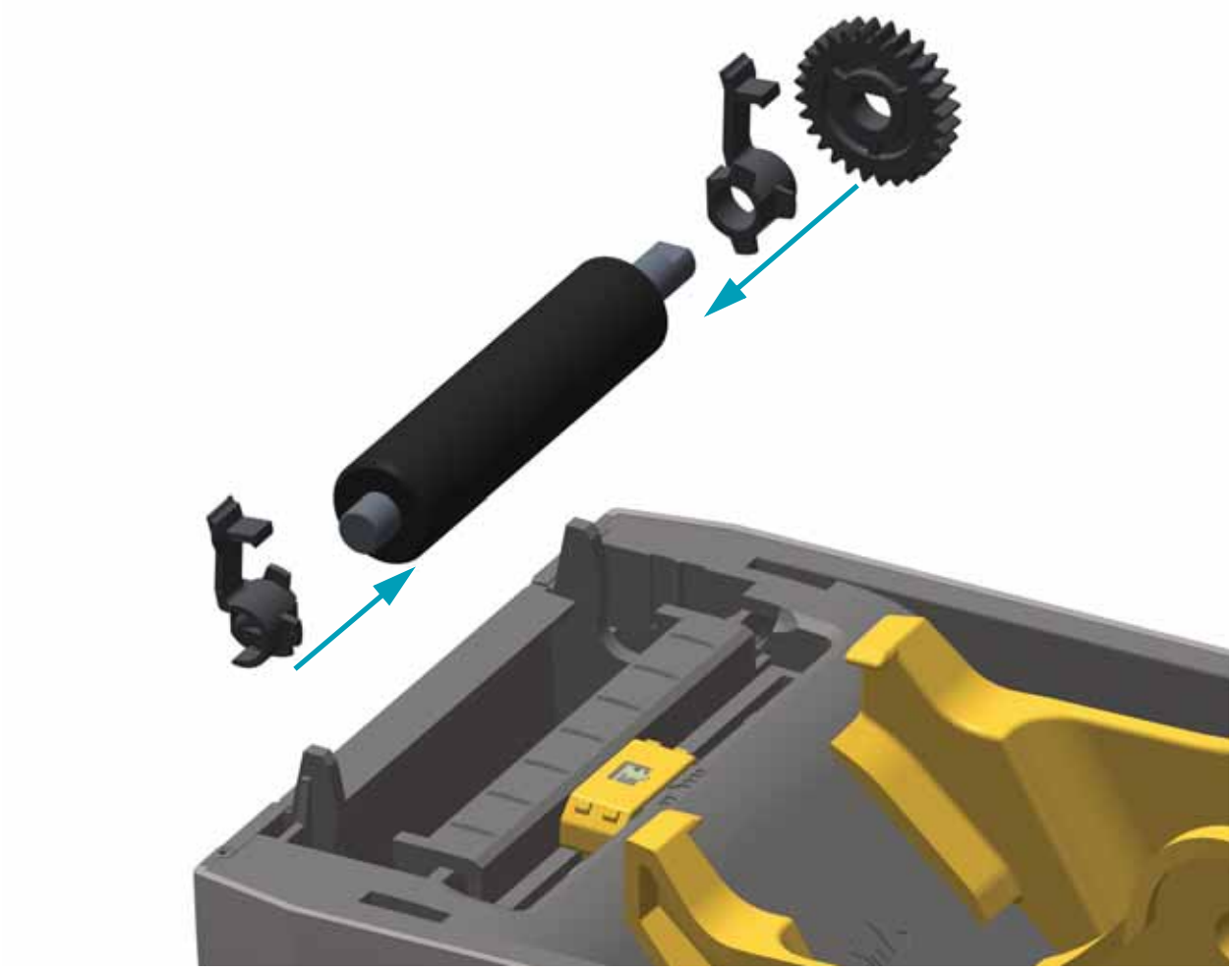


Installation

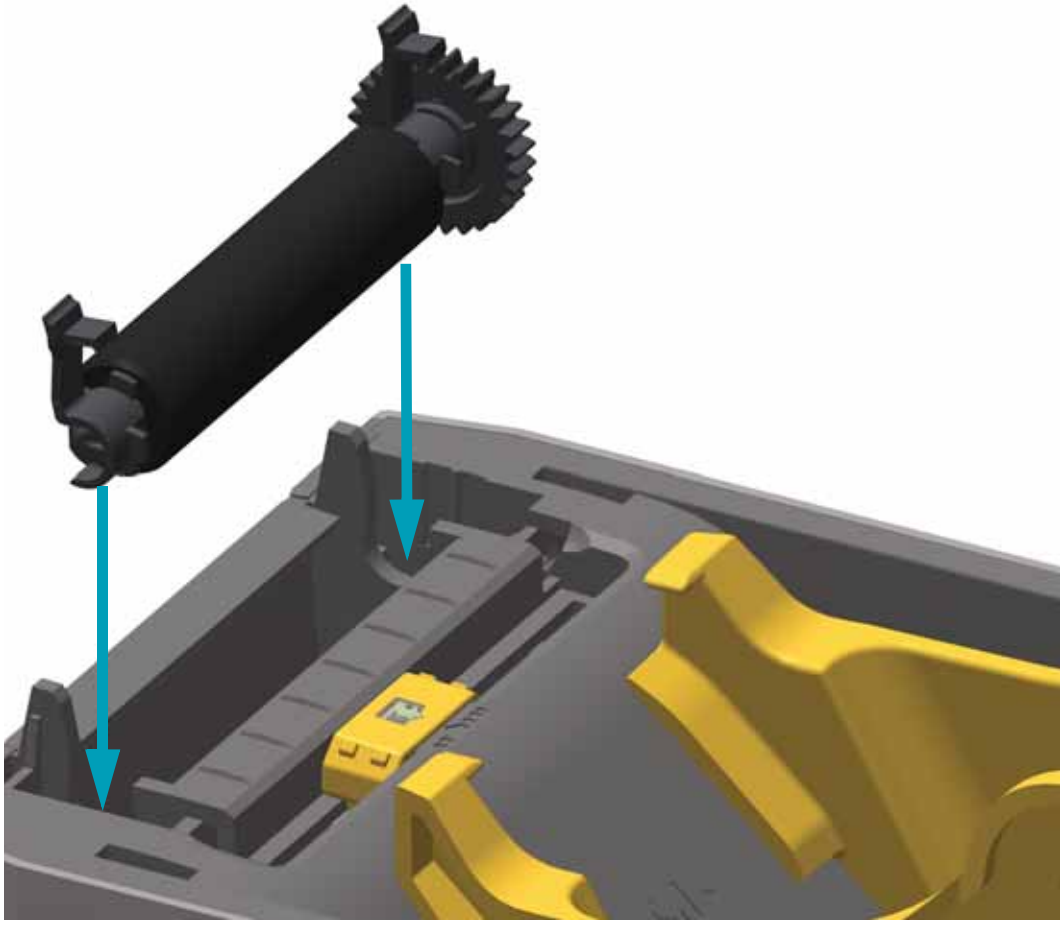
Your new platen may be dirty from shipping and handling. Inspect the platen for dirt and other contaminates. Clean if necessary.

Clean the platen with a 99% pure Isopropyl Alcohol moistened swab or fiber free cloth. Clean from the center out. Repeat this process until all of the roller surface has been cleaned.

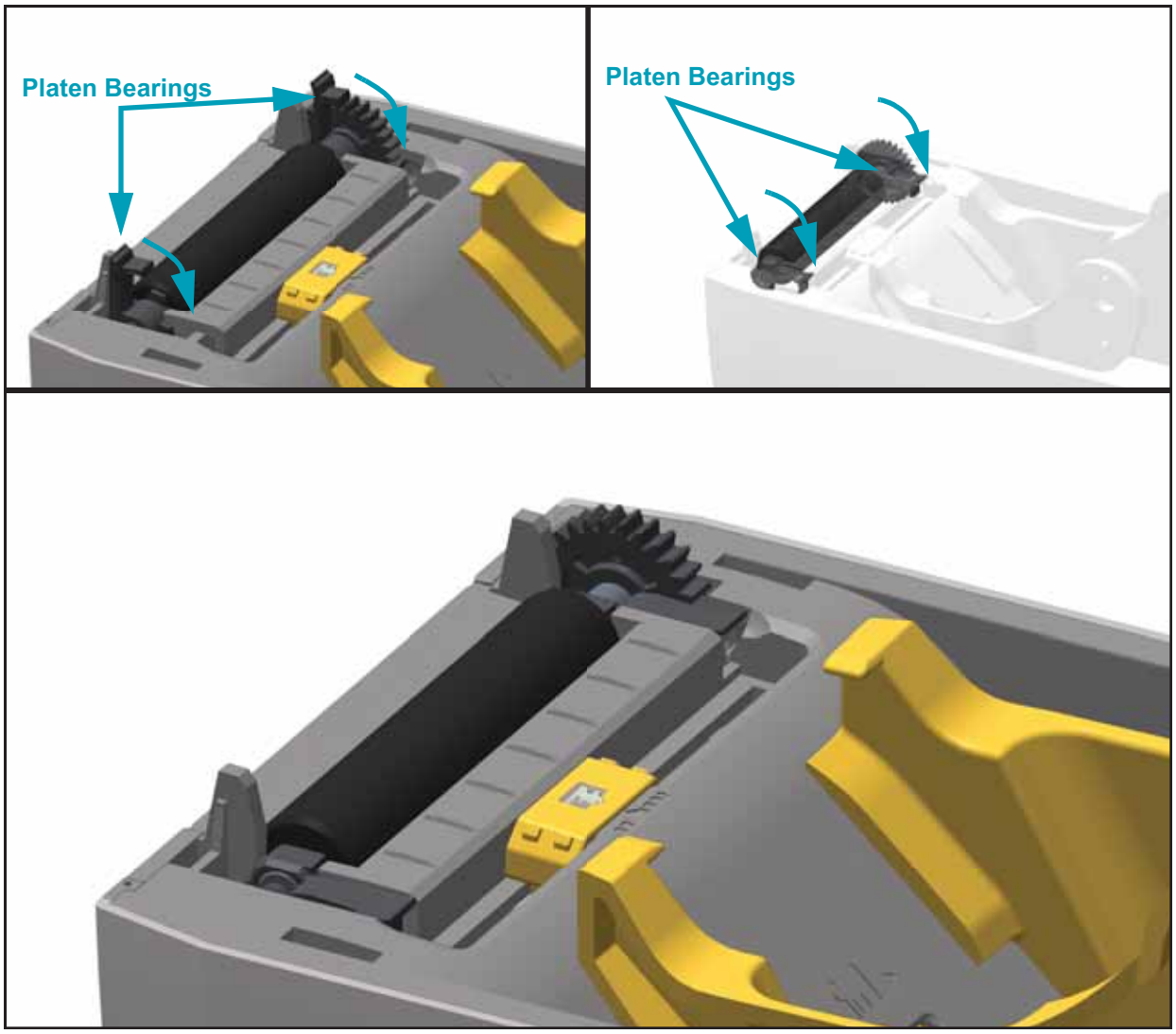
1. Make sure the bearings and drive gear are on the shaft of the platen roller, as shown below.



2. Align the platen with the gear to the left and lower it into the printer's bottom frame.



3. Rotate the platen bearing latch release tabs down on the right and left sides towards the rear of the printer and snap them into place.



Replacing the Printer's Feet

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

Installation

1. Turn the printer over with the bottom facing up.
2. Replace any missing feet as needed. Insert the adhesive backed rubber foot into the round foot holder. See below.

Replacing the Window

Open the printer gain access to the window release tabs

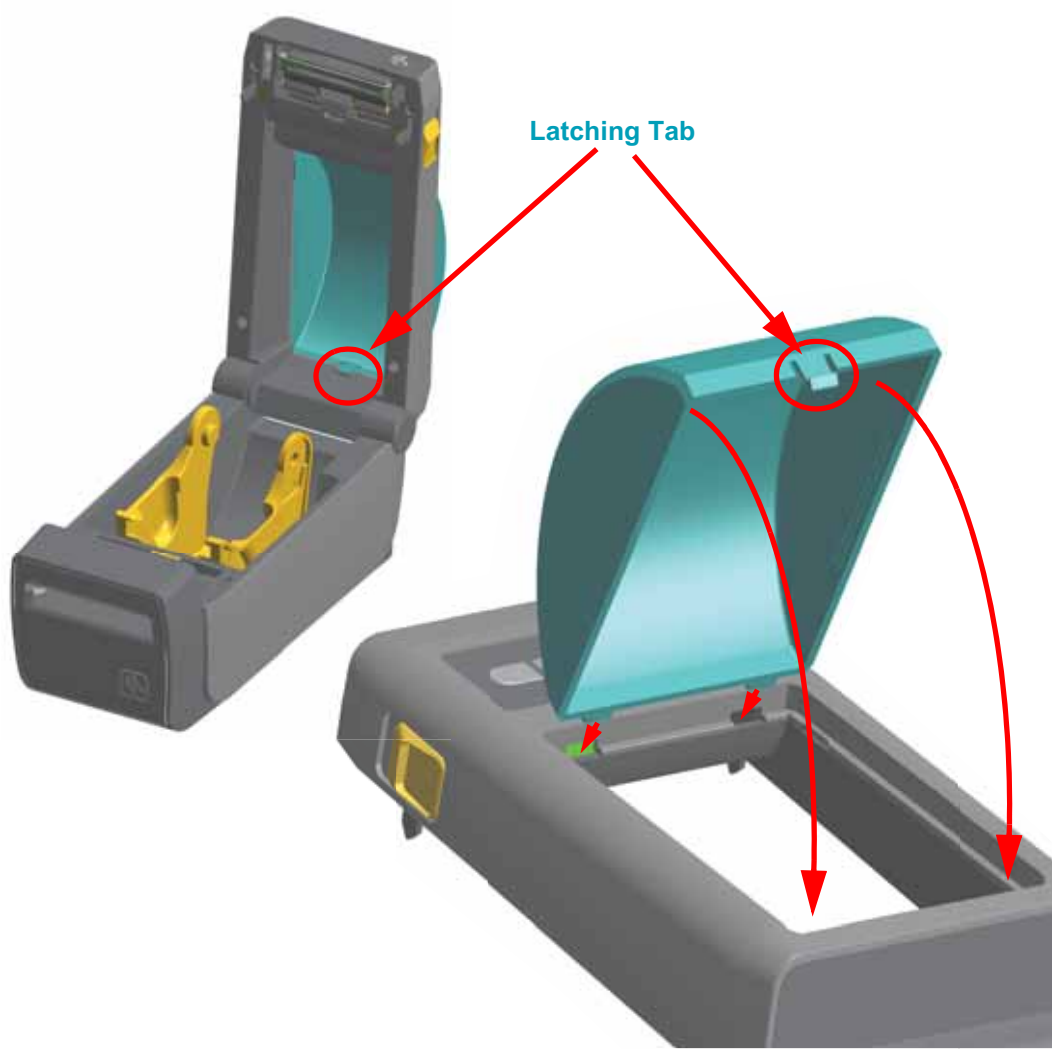
Removal

1. Use your finger (or a blunt tipped object) to push the windows release tab away from the inside rear wall of the cover to release the window.

Installation

1. Slide the two (2) tabs at the window part into the two (2) slots nearest to the front of the printer.
2. Swing the window down into the rear of the window recess area and press it into the cover to latch.

   You may want to leave the window's protective cover on until the printer is installed for use.

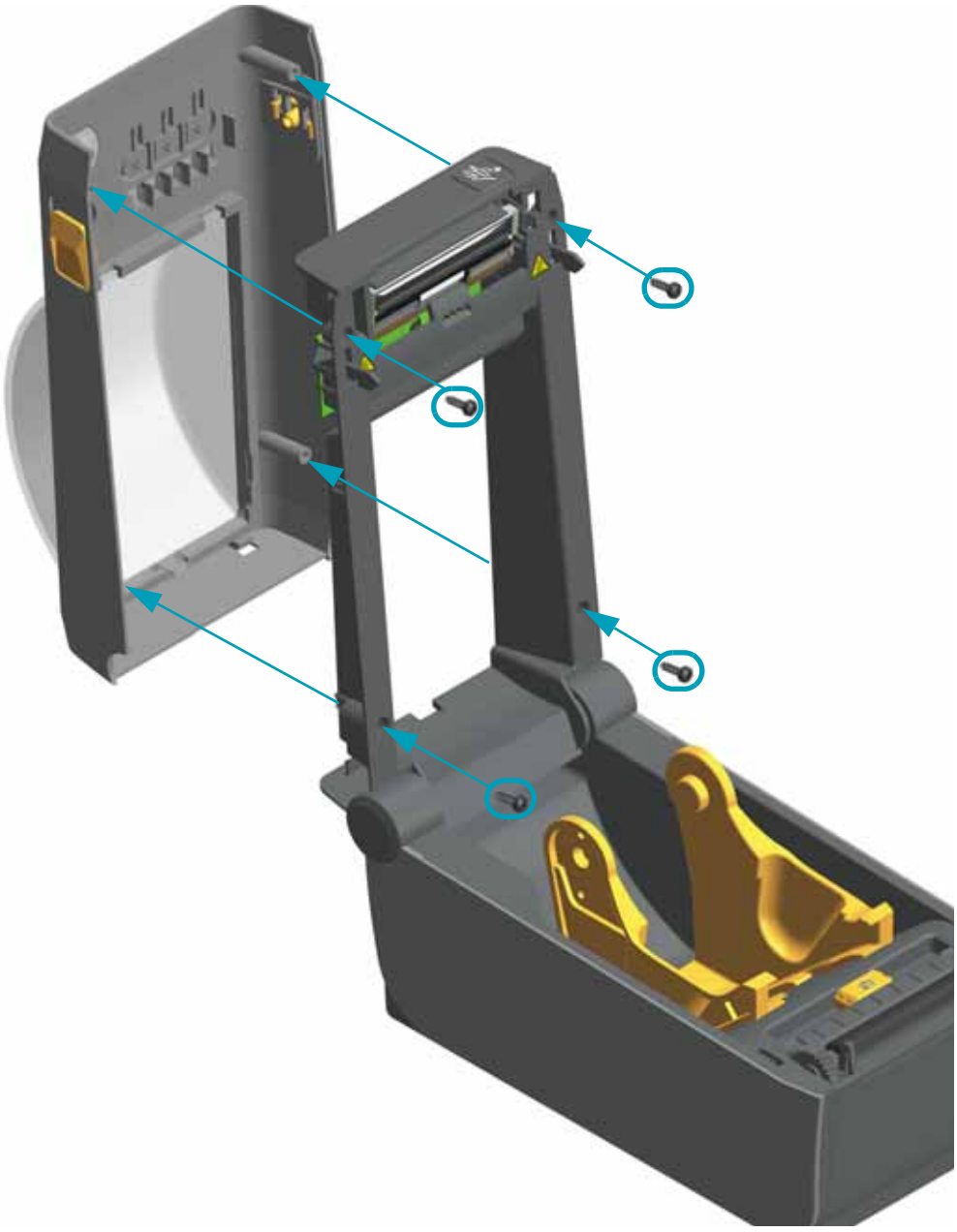


Replacing the Cover Assembly

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

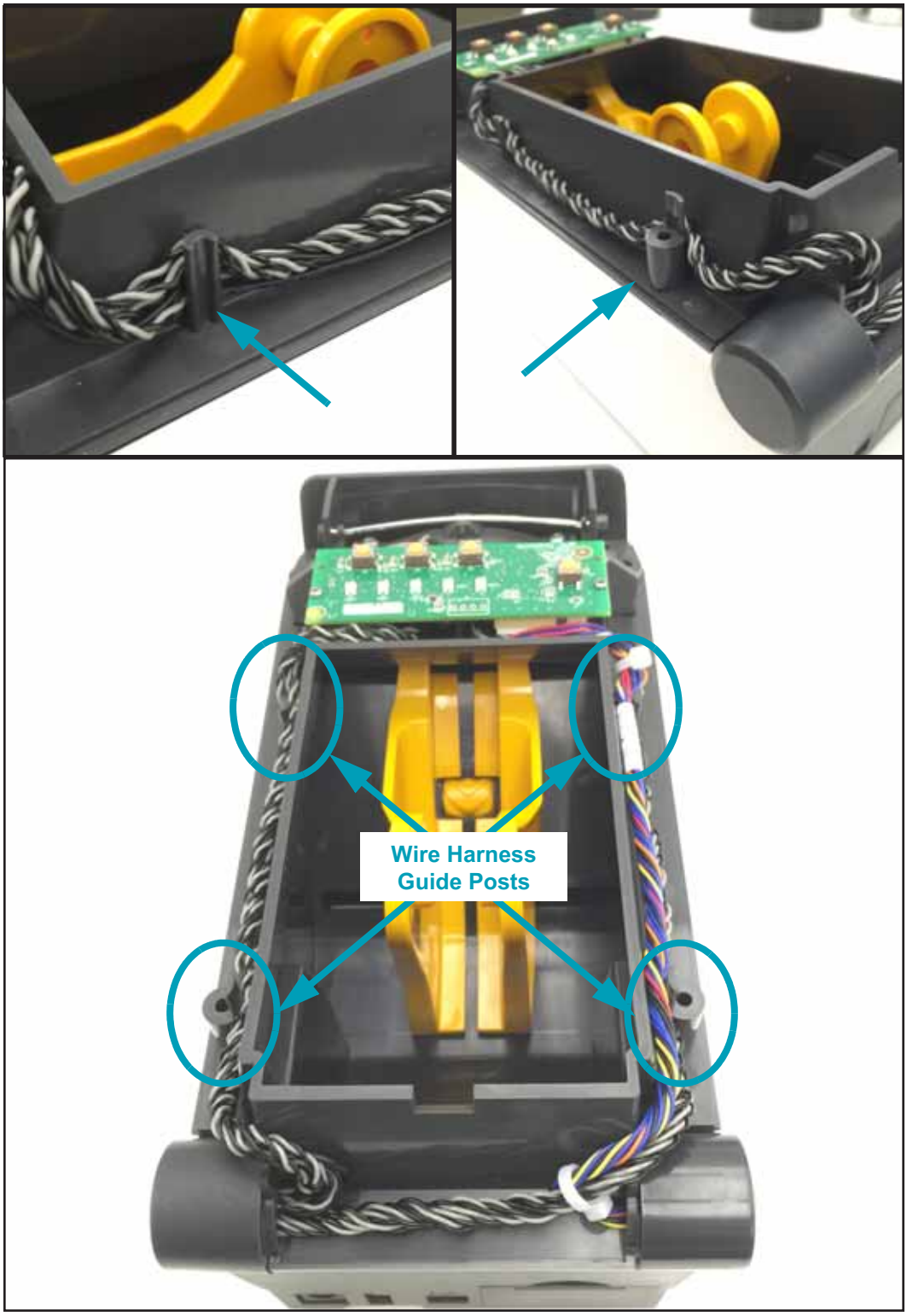
Removal

1. Using a Torx T10 driver, remove the four screws securing the top cover to the inner lid.
2. Remove the top cover.

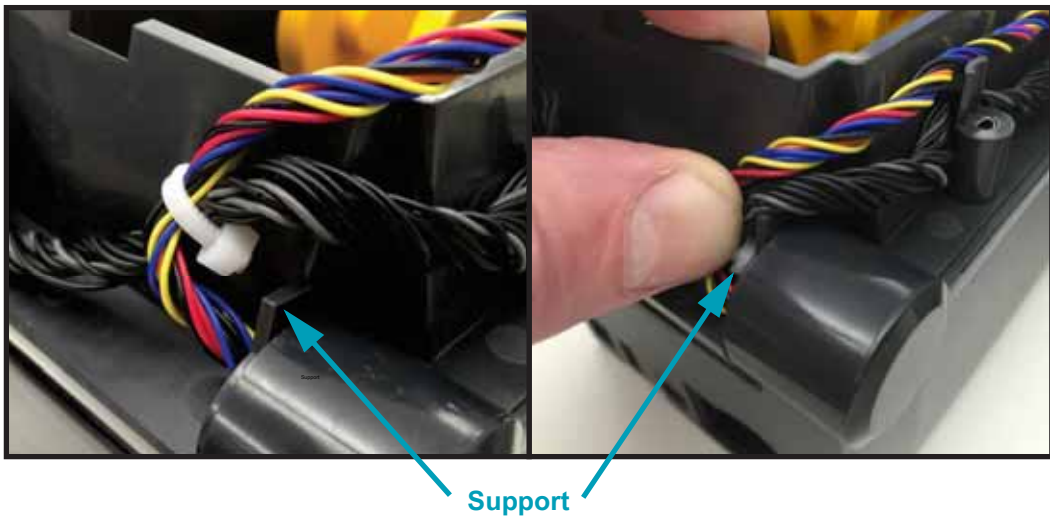


Installation

1. Verify that the wire harness is still in place with the wire harness routed between the inner wall and four (4) guide posts.



2. Verify that the wire harness is sitting on top of both cover wall supports. The wire must sit on top of the support or they may get pinched between the cover and the outer edge of the support. Damage to wires or fit issues with the cover may happen if they get pinched.

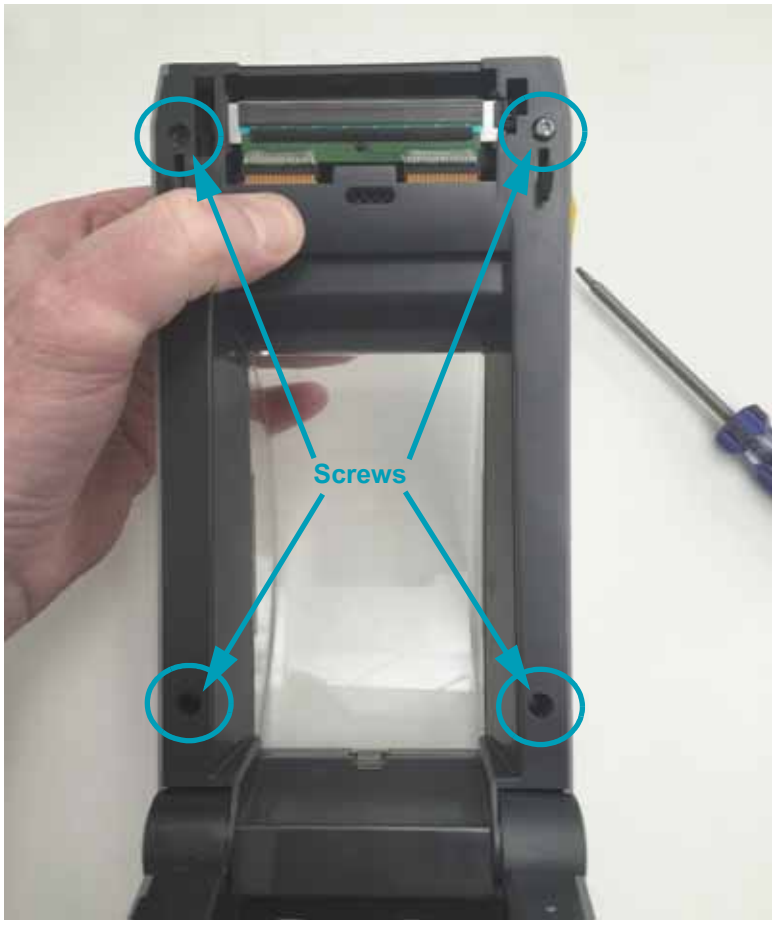


3. Center the cover and place it on the hinges at an angle and swing it down to engage with the upper inner frame.

4. Place the rear wire cover on the back edge of the inner frame. Swing it up into the back of the top cover and snap it in place.

5. Hold the top cover on the frame and use the cover latch to release and swing the cover and frame up.

6. Using a Torx T10 driver, secure the top cover to the inner lid using the four screws.



Replacing the Control Panel PCBA

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the Cover Assembly before performing this procedure.

Removal

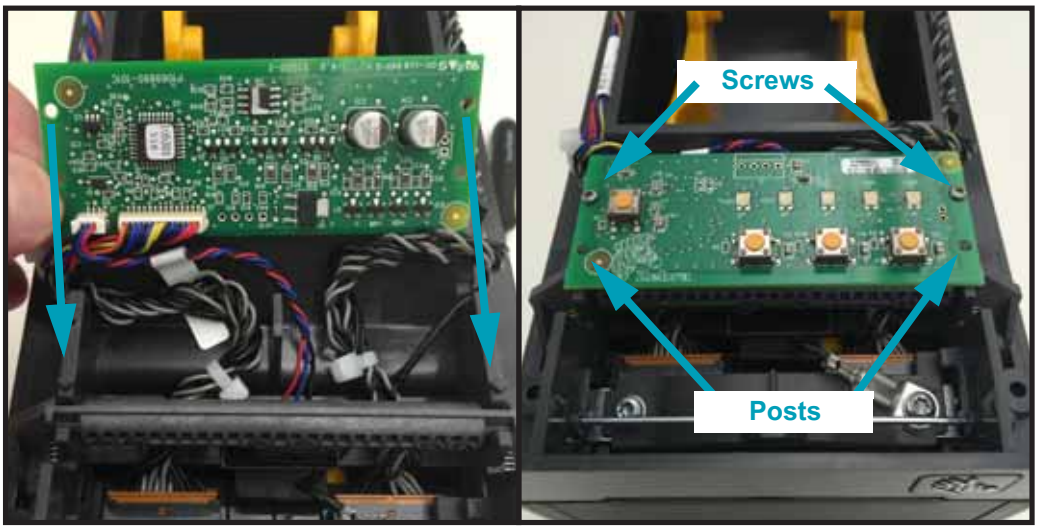
1. Using a Torx T6 driver, remove the two (2) screws securing the Control Panel PCBA to the inner frame.

2. Lift the Control Panel PCBA up. Pull the two cables off the bottom of the board and remove it.

Installation

1. Insert the two (2) disconnected cables into the new Control Panel PCBA.

2. Put the Control Panel PCBA on the inner frame. Align the to the two (2) mounting posts and secure it to the frame with two (2) Torx T6 screws.



Re-attach the Cover Assembly. Reload media. Plug in power, turn on the printer, run the SmartCal routine to calibrate the media, and then print a status report to ensure proper function.

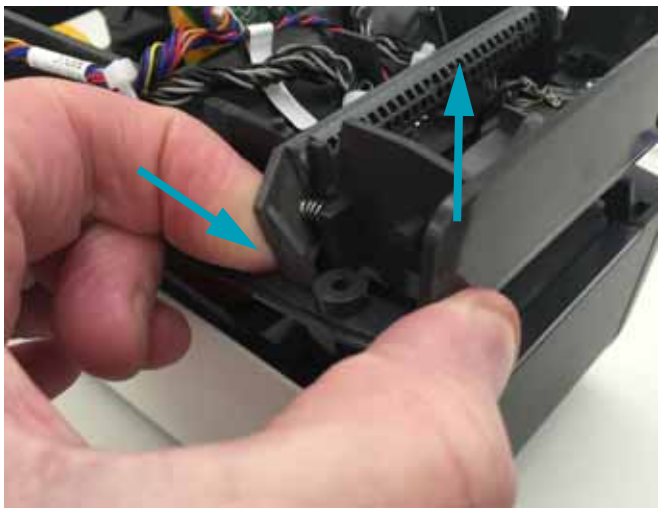
Replacing the Latch Assembly

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

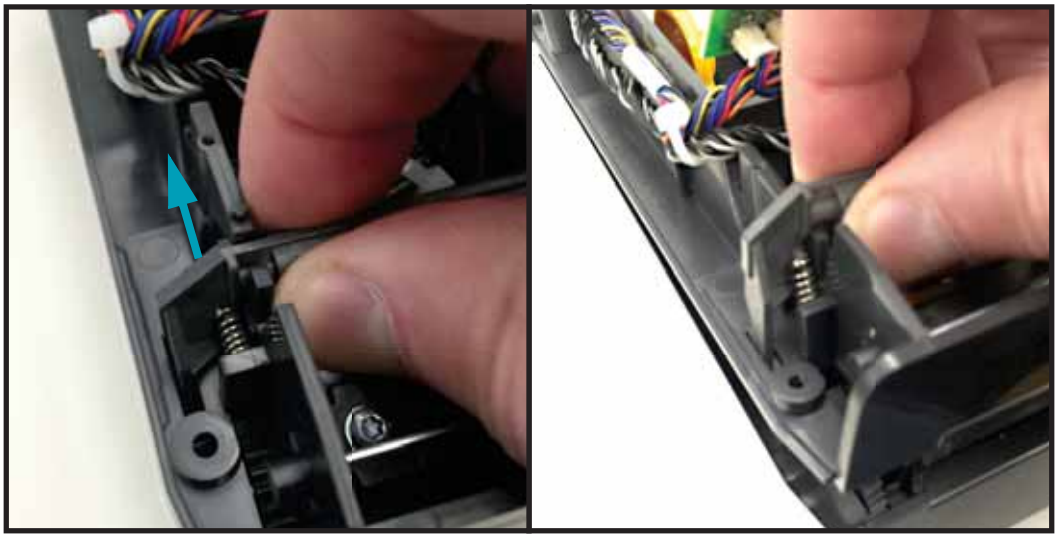
You must remove the Cover Assembly, loosen the Control Panel PCBA, and remove the Latch Assembly before performing this procedure.

Removal

1. The Latch (and springs) are snapped into the inner frame. To remove the Latch (and springs), pull the latch forward and lift the inner frame so the latch is not holding the frame lower half of the printer.

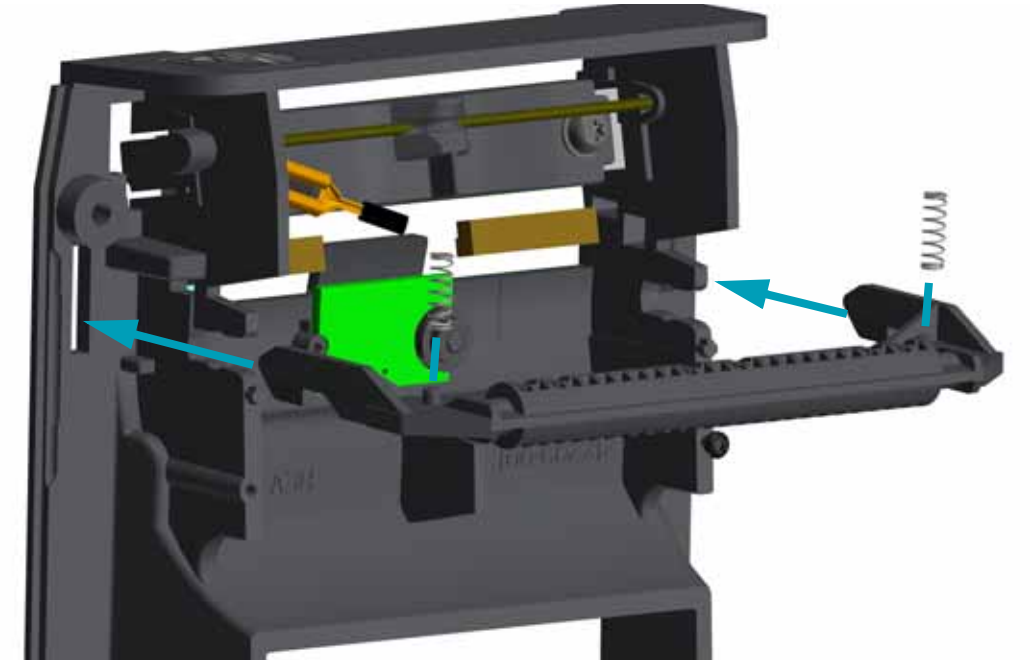


2. Lift one side of the Latch out of the inner frame with stead firm pressure. The spring may pop or fall out. Repeat on the other side of the Latch to completely remove the assembly (latch bar and springs).

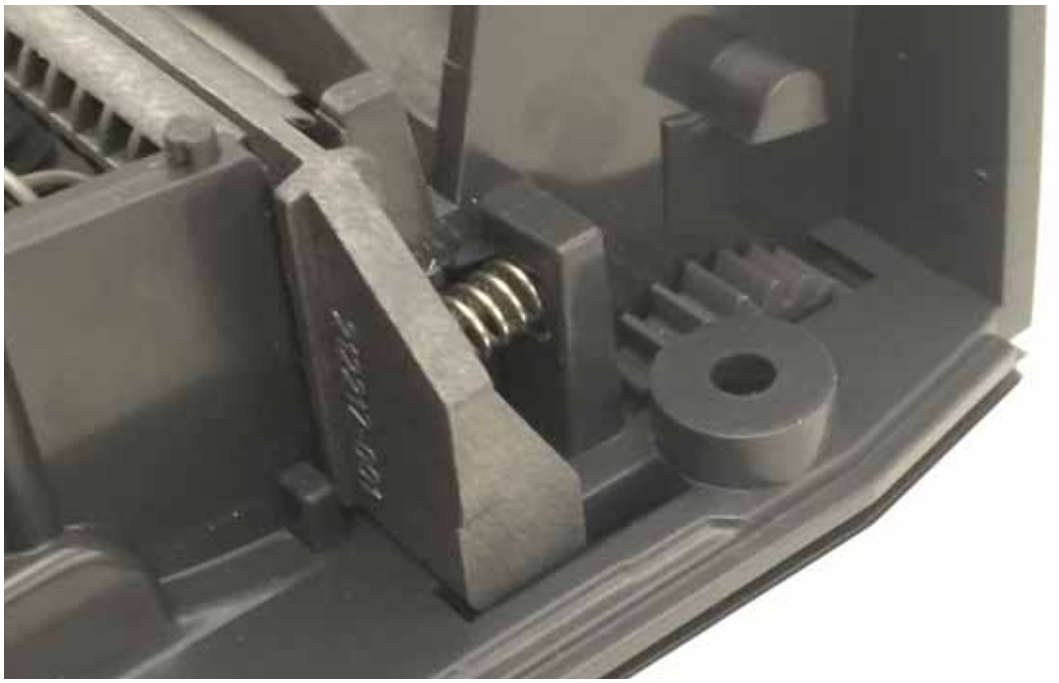


Installation

1. Align and insert the new Latch and press it into the inner fame.



2. Put the springs on each one of the spring posts on the Latch. Slide the other end of the springs into the square recessed area immediate across from the spring post. Use a small flat bladed screwdriver to guide the springs into the recessed areas.



Re-attach the Control Panel PCBA, and Cover Assembly. Reload media. Plug in power, turn on the printer, run the SmartCal routine to calibrate the media, and then print a status report to ensure proper function.

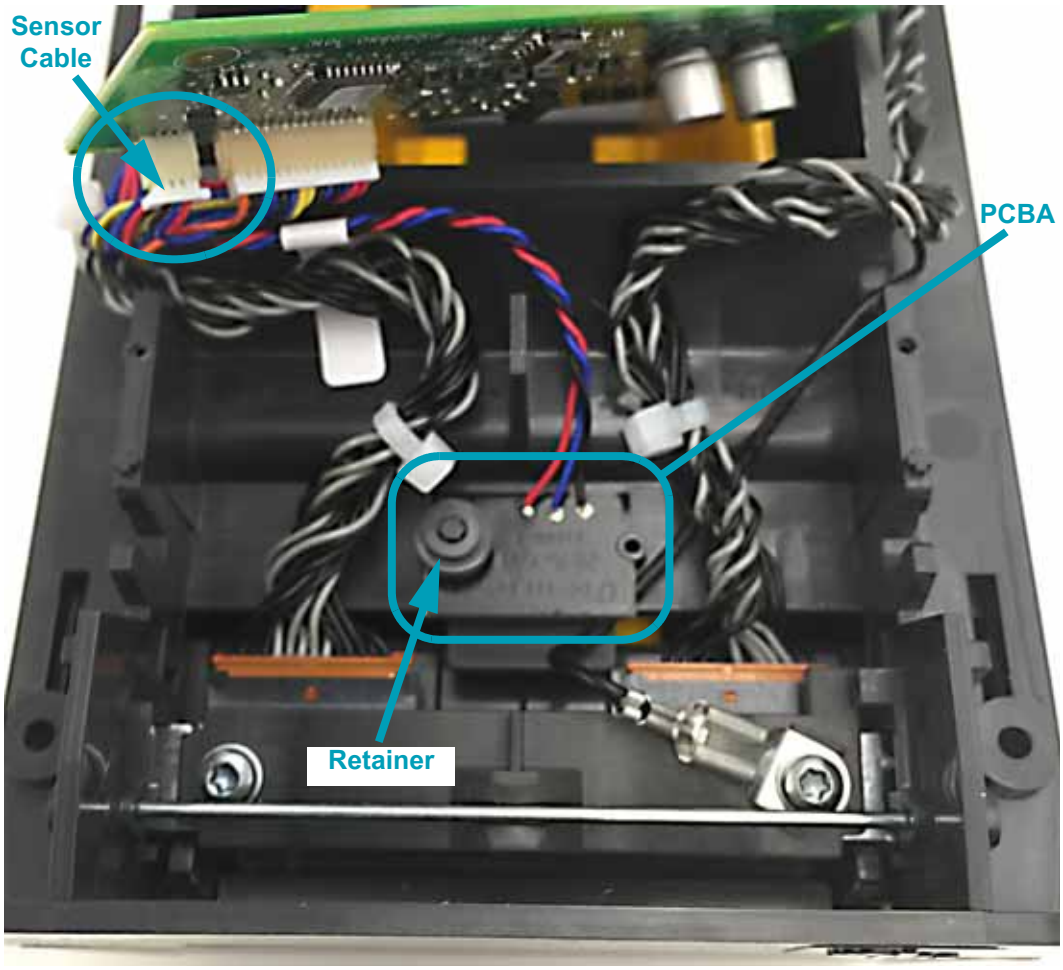
Replacing the Upper Gap Sensor

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the Cover Assembly, loosen the Control Panel PCBA, and remove the Latch assembly before performing this procedure.

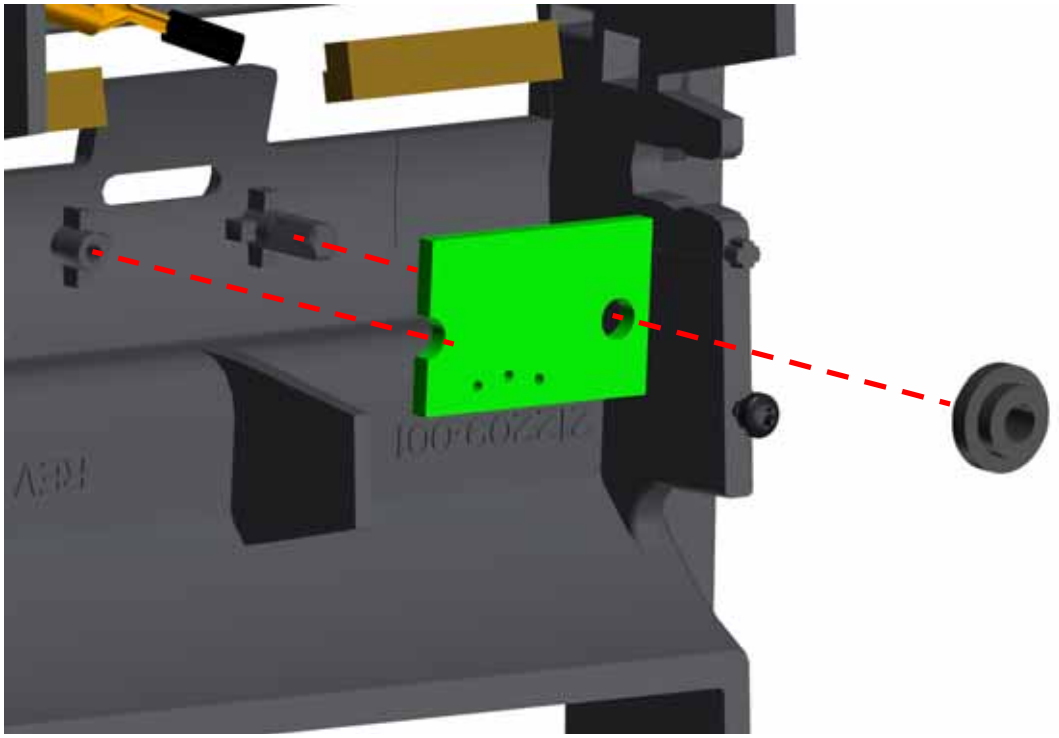
Removal

1. Disconnect the Upper Gap Sensor cable from the back side of the Control Panel PCBA.
2. With a small set of pliers, remove the press-fit retainer securing the Upper Gap Sensor PCBA to the inner frame.



Installation

1. Place the new Upper Gap Sensor PCBA onto the long guide post and align the half circle cut-out on the PCBA to the short post.
2. Push a new retainer filling onto the longer post until the PCBA is locked in place tight to the inner frame.



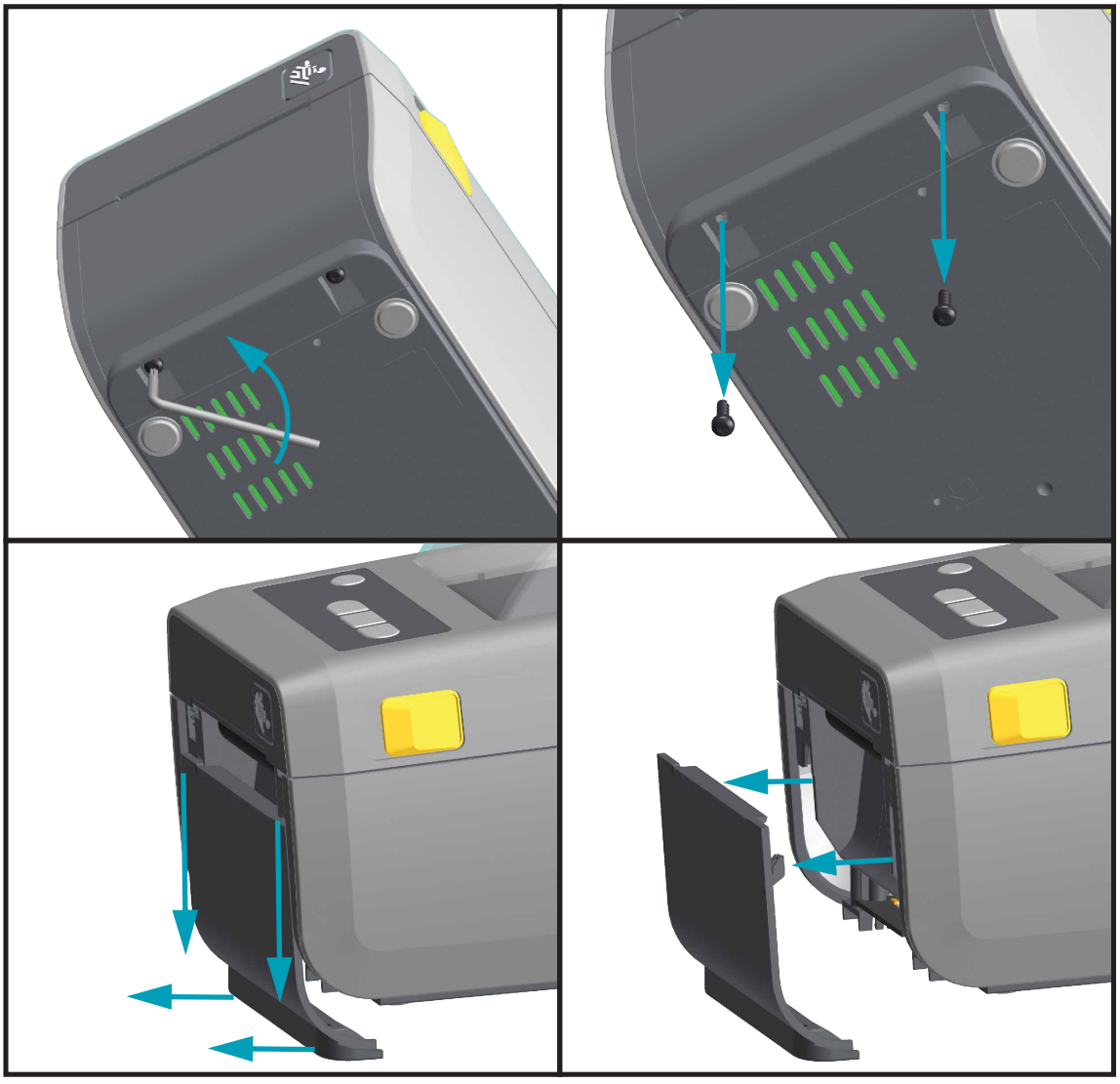
3. Attach the Upper Gap Sensors cable to the back of the Control Panel PCBA.

Re-attach the Latch Assembly, Control Panel PCBA, and Cover Assembly. Reload media. Plug in power, turn on the printer, run the SmartCal routine to calibrate the media, and then print a status report to ensure proper function.

Replacing a Front Bezel (Standard, Dispenser or Cutter)

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

1. Turn the printer upside down. Remove the two (2) mounting screws using a Torx T10 driver. Save the screws.
2. Slide the bezel down the front about 12.5 mm (0.5 inch) and pull the loose bezel out.
3. Reverse the process to install a bezel.



Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

Removing the Printer Base (Bottom Cover)

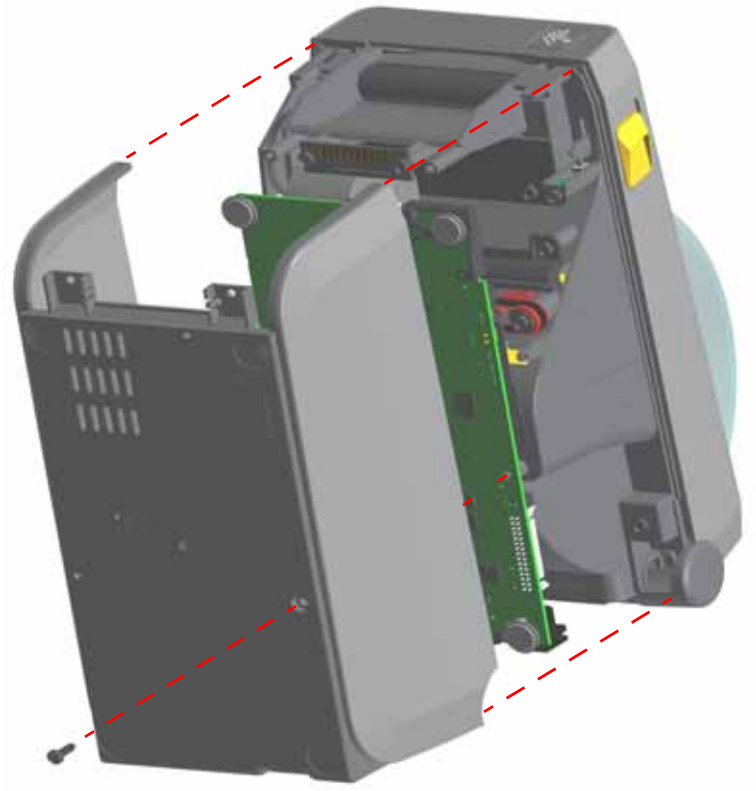
Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

The Printer Base does not have a Spare Part Kit.

The front bezel (Standard, Dispenser or Cutter) must be removed first.

Removal

1. Using a Torx T10 driver, remove the single screw holding the base to the bottom of the printer.
2. Lift the base off the bottom of the printer.



Installation

1. With the printer bottom facing up, place the base on the bottom of the printer.
2. Using a Torx T10 driver, install the single screw to secure the base to the bottom of the printer.

Reload media. Plug in power, turn on the printer, run the SmartCal routine to calibrate the media, and then print a status report to ensure proper function.

Replacing the Head Up Sensor

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the (front) Bezel and the Printer Base before performing this procedure.

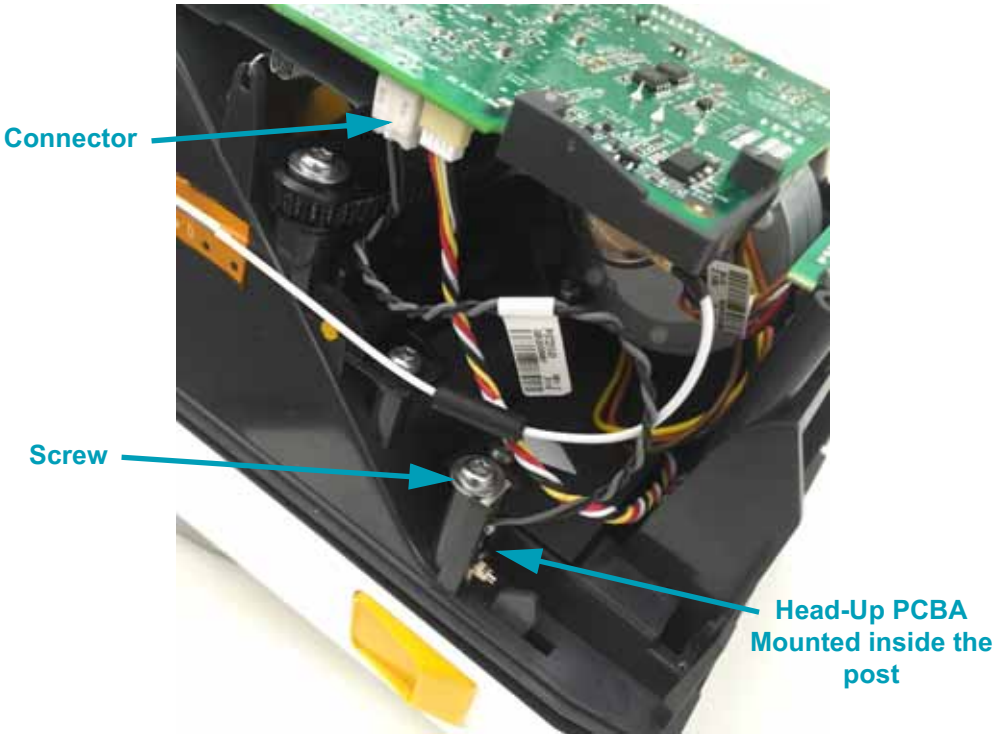
Removal

From beneath, the head up sensor is located on the antenna side of the printer towards the front of the media compartment.

1. Using a Torx T10 driver, remove the single screw holding the Head-Up Sensor PCBA to the inner frame. Slide the PCBA out of the mounting slot on the post.
2. Carefully pull the sensor's connector off of the Main PCBA.

Installation

1. Slide the new Head-Up PCBA into the mounting slot on the post.
2. Secure the PCBA to the post with the screw.
3. Plug the Head-Up sensor's cable into the Main PCBA.



Replace the Printer Base and (front) Bezel. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

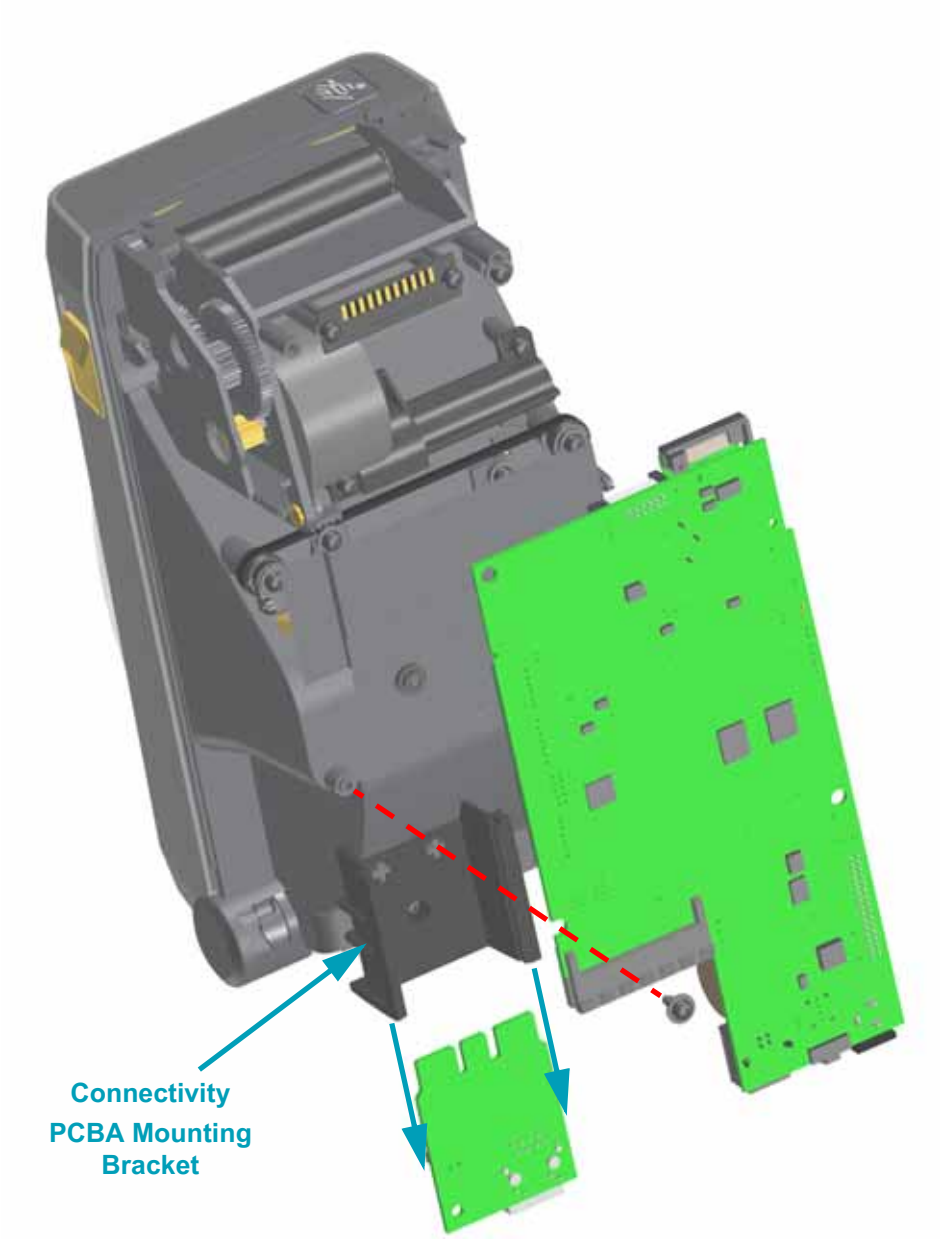
Replacing the Main PCBA

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

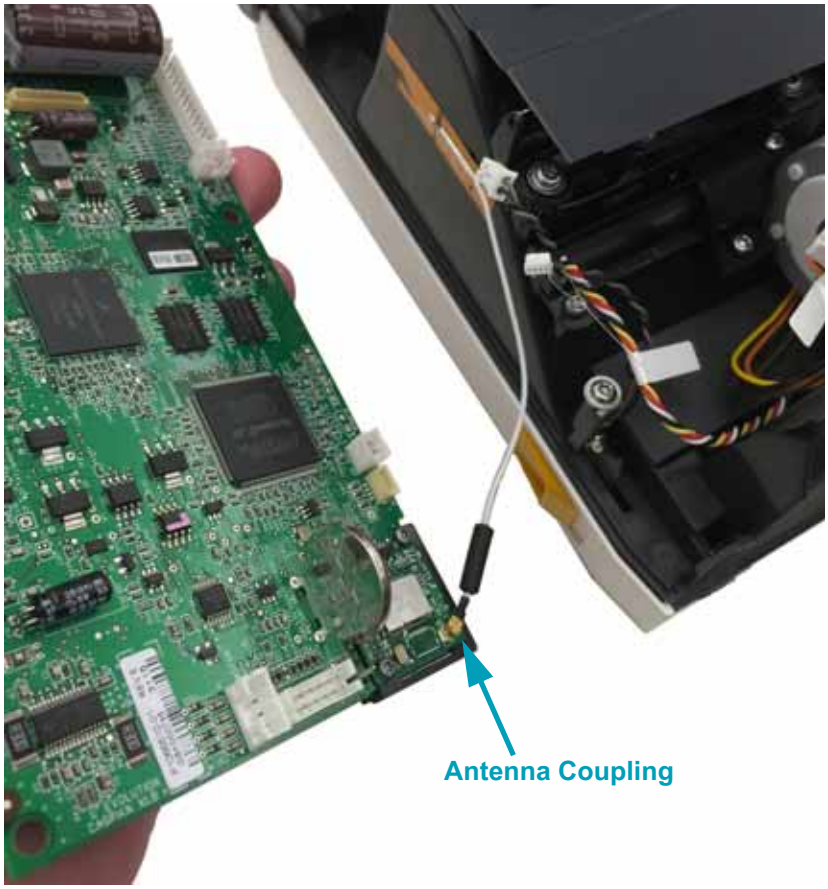
You must remove the (front) Bezel and the Printer Base before performing this procedure.

Removal

1. Remove any Connectivity option PCBA (Serial, Ethernet, etc.) that may be installed in the Connectivity slot. Slide it out of the Connectivity slot.



2. Loosen the single screw retaining the Main PCBA. Lift the PCBA off the opposite side's mounting post. Slide the Main PCBA away from the Connectivity module's mounting bracket. Carefully lift the Main PCBA away from the printer to disconnect the wires from the board. Carefully remove each connector from the main board:
    a. Disconnect the printhead cable from J23.
    b. Disconnect the interface (control panel) cable from J10.
    c. Disconnect the motor cable from J8.
    d. Disconnect the cut/peel (media handling option) cable from J9.
    e. Disconnect the blackline (lower media) sensor cable from J14.
    f. Disconnect the head-up sensor from J16.
    g. The Bluetooth/Wi-Fi antenna must be disconnected at the PCBA. The other end of the antenna cable is attached to the side wall of the printer with adhesive backing and should not be removed. Only use your fingers to gently remove and replace the antenna. Gently but firmly pull the coupling straight up (as close as you can get to the coupling).



Installation

1. Re-attach the Antenna. Use your finger only to apply a slow steady pressure directly above the Antenna Coupling Post.
2. Reconnect the cables to the main board. in reverse order for easiest access.
3. Slide the Main PCBA into the slot on the outside of the Connectivity PCBA Mounting Bracket and between the mounting post and loosened screw.
4. Align the Main PCBA to the other mounting post and tighten the loosened screw to secure the main board to the printer.

Replace the Printer Base and (front) Bezel. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

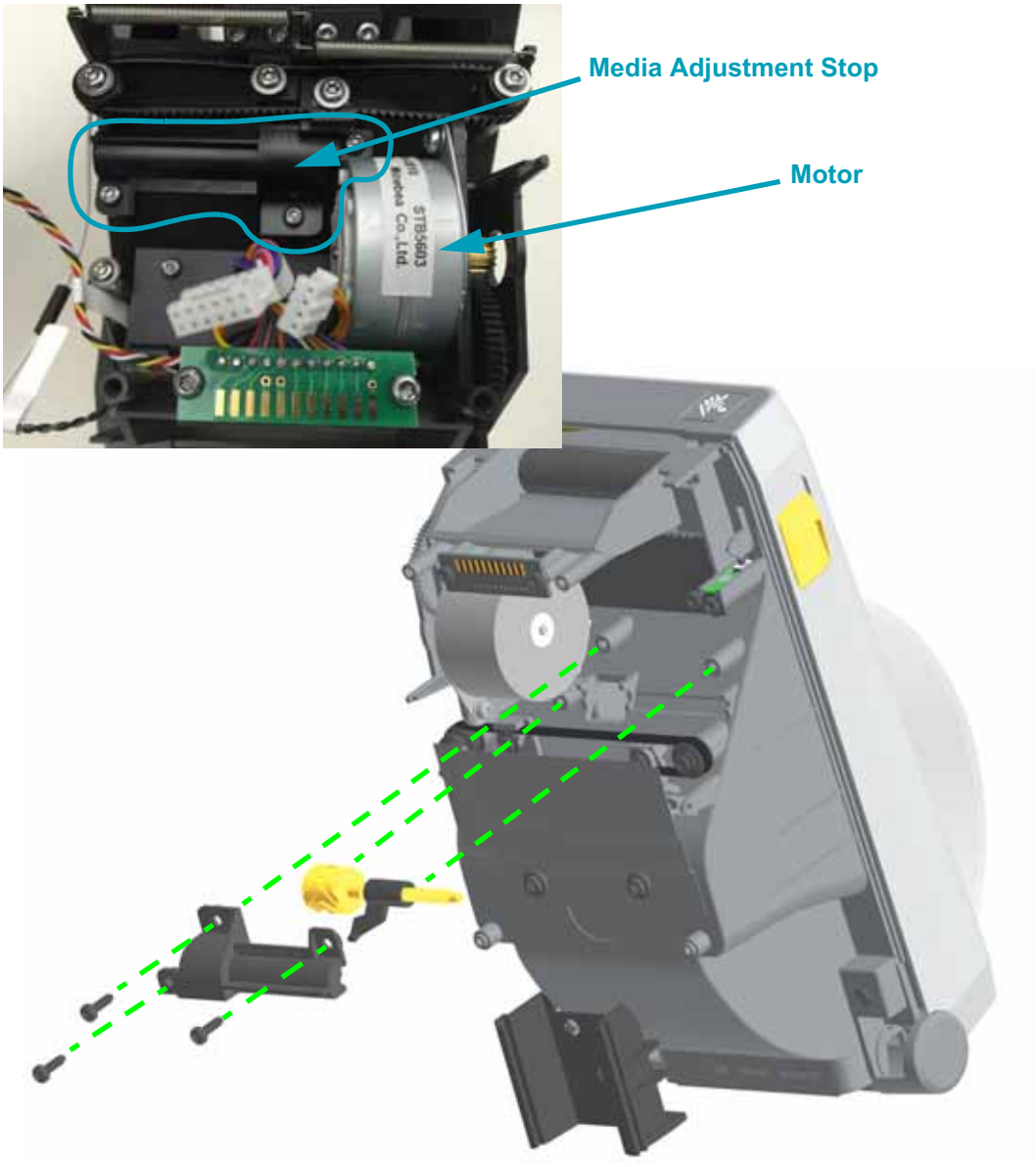
Replacing the Motor

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

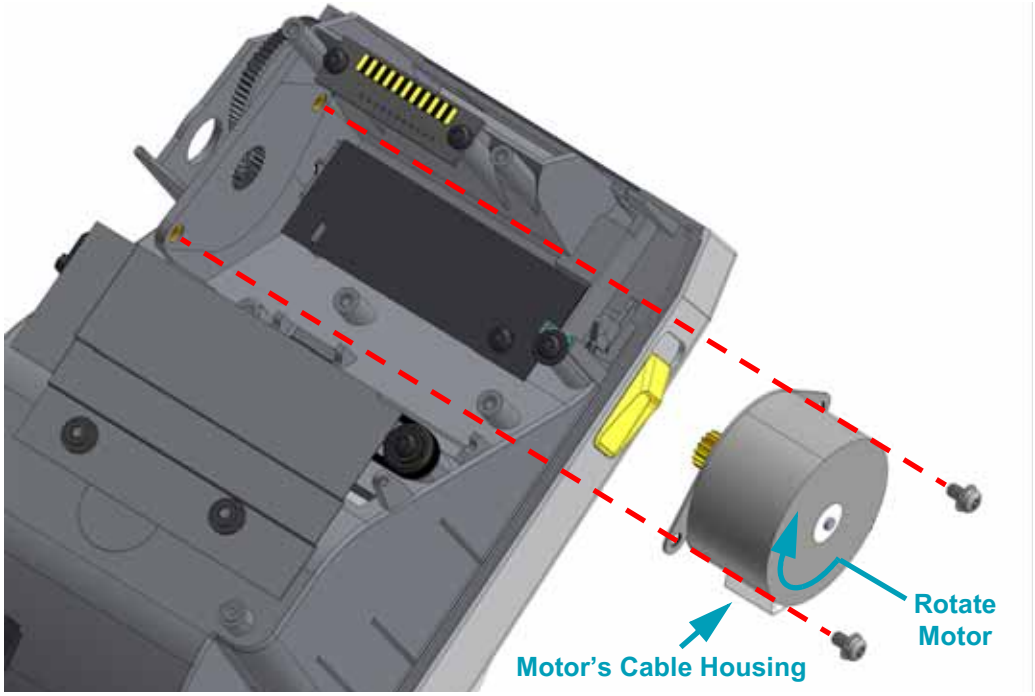
You must remove the (front) Bezel, the Printer Base, and the Main PCBA before performing this procedure.

Removal

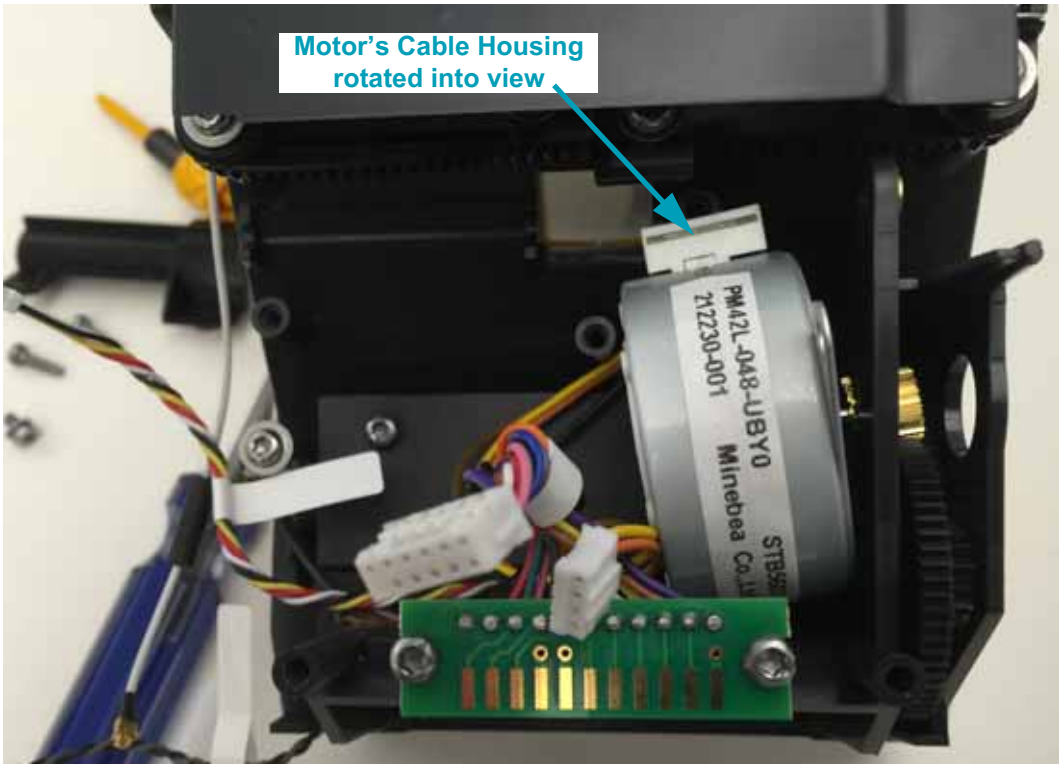
1. Disconnect the three (3) screws securing the Media Adjustment Stop components with a Torx T10 driver. Remove the screws, Media Adjustment Stop Housing, the threaded Media Stop Arm, and the gold thumb wheel with a threaded shaft.



2. Use Torx T10 driver to remove the two (2) screws securing the motor to the inner frame.

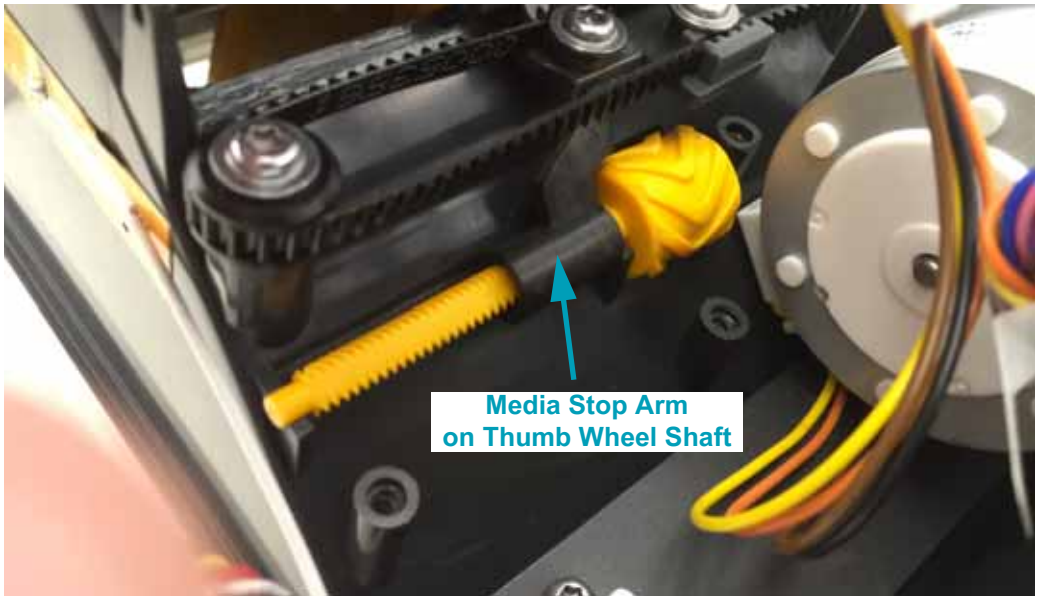


3. Rotate the motor to expose the cable module on the side of the motor housing and wiggle the motor out of the gear housing and the printer.



Installation

1. Align the motor with the cables down and the cable housing visible closest to the center of the printer. Slide the motor's gear into the gear housing, see the previous picture.
2. Rotate the motor (cable housing out of view) to align the mounting bracket holes to the two (2) brass threaded fittings on the side of the gear housing on the inner frame. Secure the motor to the frame with two (2) motor mounting screws going into the brass fittings.
3. Place the Media Stop Arm threaded on the gold thumb wheel's threaded shaft about 2 mm from the thumb wheel. Place it into the inner frame.



4. Place the Media Stop Housing on top of the Thumb Wheel and Stop. Secure it with the three (3) screws to the inner frame.

Replace the Main PCBA, the Printer Base and (front) Bezel. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

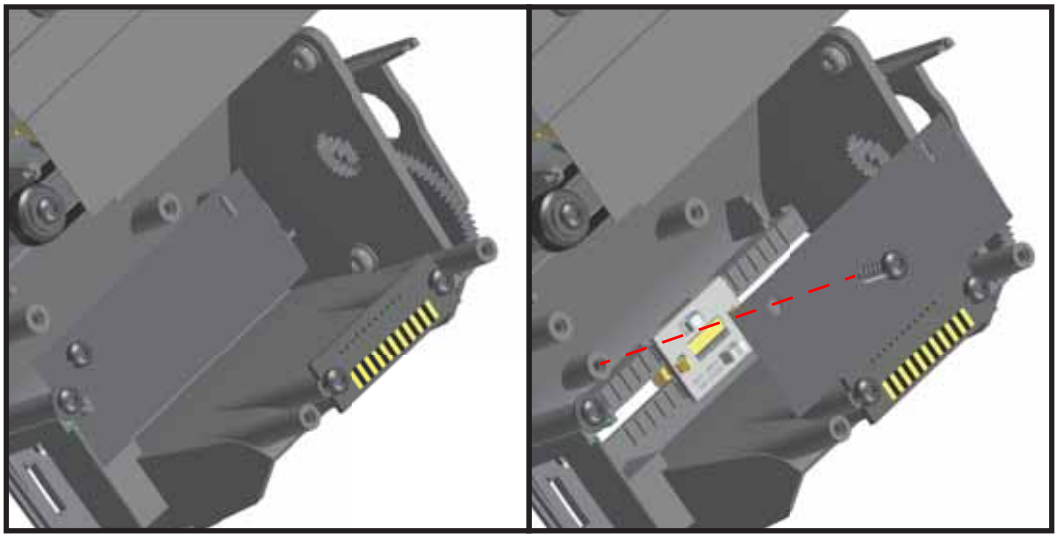
Replacing the Movable Sensor

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

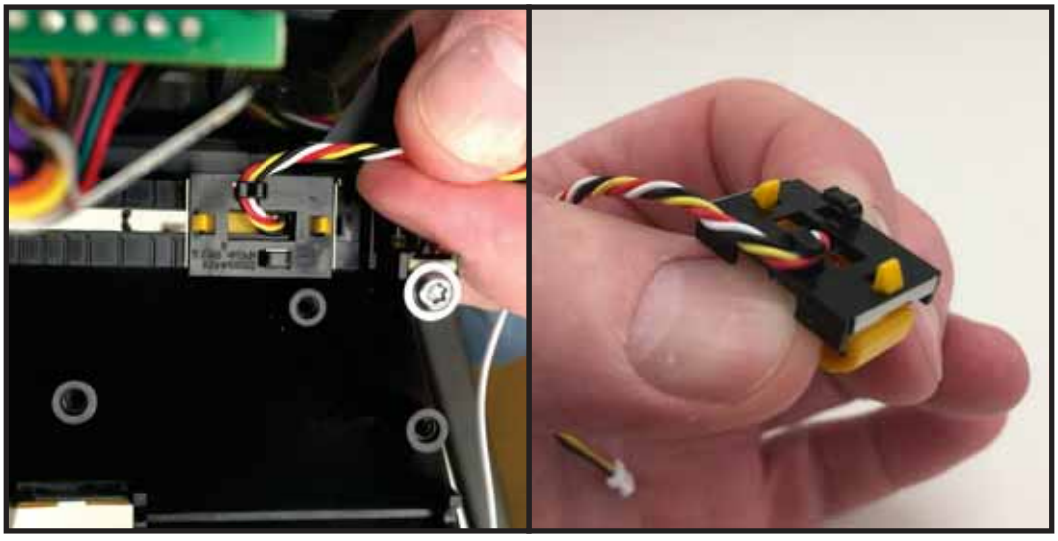
You must remove the (front) Bezel, the Printer Base, the Main PCBA, and Motor before performing this procedure.

Removal

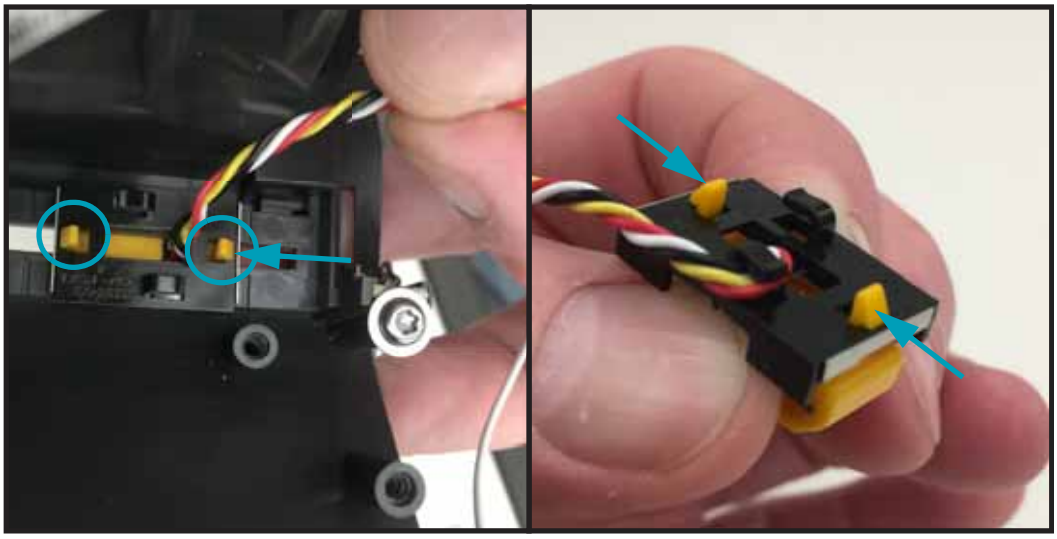
1. Remove the screw holding the plastic cover sheet to the inner frame using a Torx T10 driver.



2. Remove the single screw holding the sensor's bracket track to the chassis.
3. Un-hook the sensor's cable from the backside of the movable sensor.



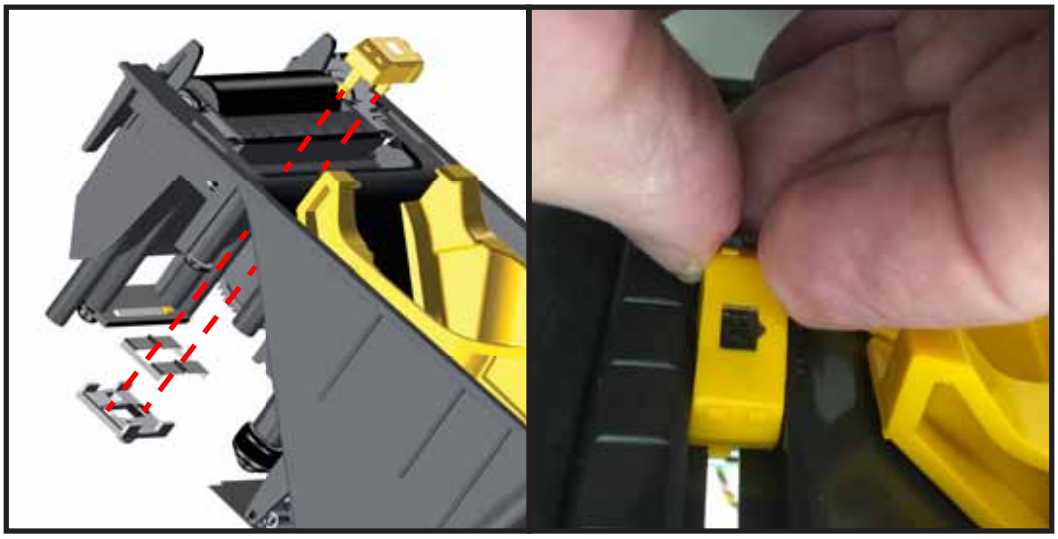
4. Un-snap the two gold prongs on the backside of the movable sensor. Push them toward the center of the movable sensor body to release the latching prongs.



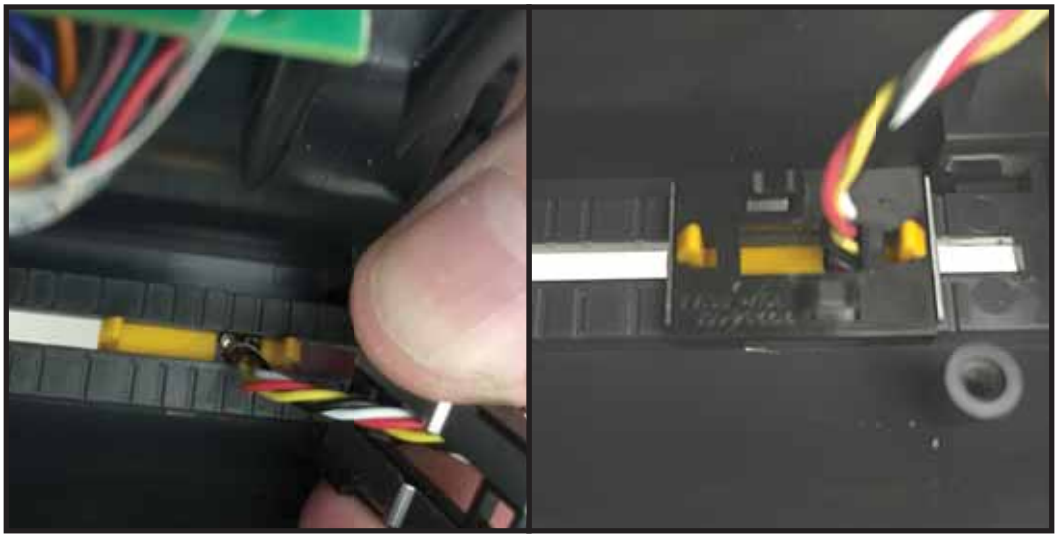
5. Pull the metal spring-lock and black plastic slide out of the frame and clear of the sensor's cable. The gold sensor body and PCBA can now be pulled out of the printer's inner cavity and movable sensor's recessed slide track.

Installation

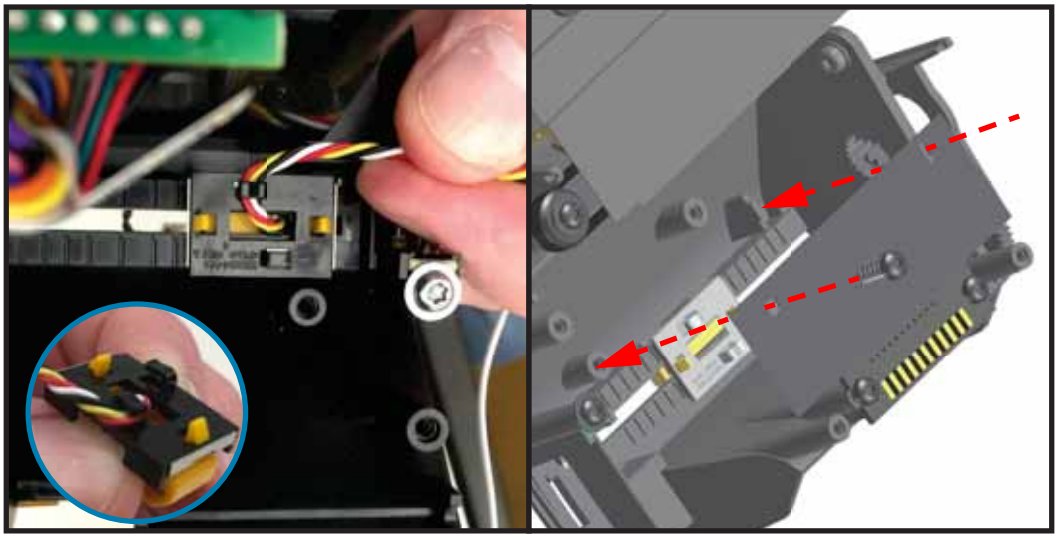
1. Place the sensor in the middle of the sensor's slide track in the chassis. The sensor's cable goes through the slot in the track



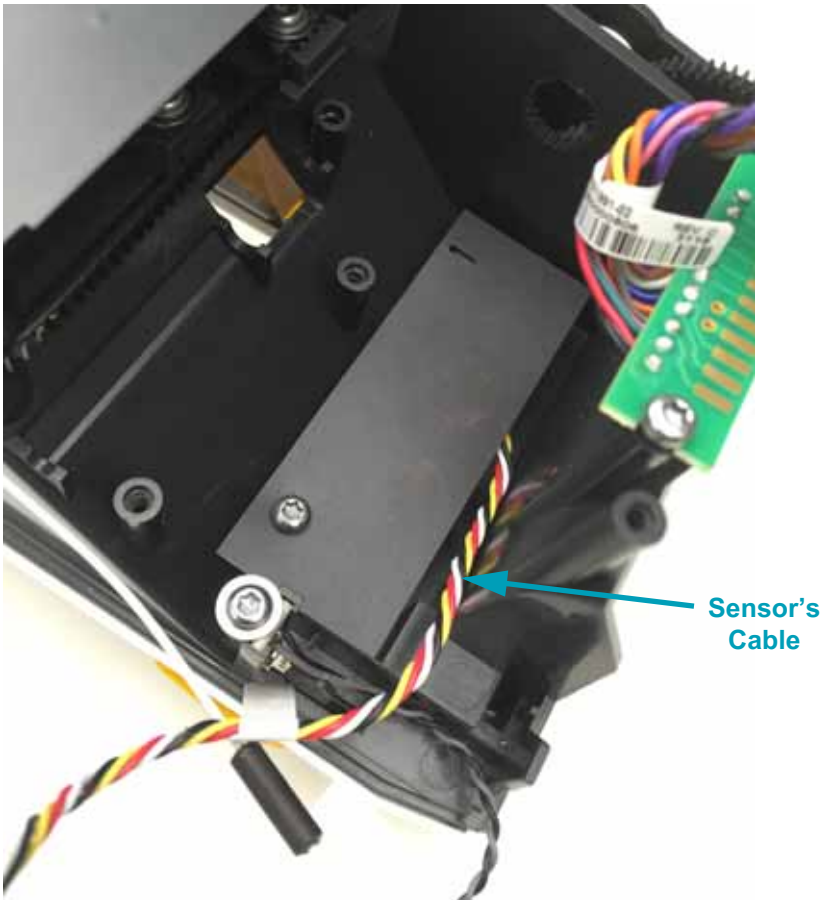
2. Put the sensor's cable through the metal spring-lock and black plastic slide. Align the two latching prongs protruding through the movable sensor track slot on the bottom of the inner frame through metal spring lock and into black plastic slide. Push the prongs into the slide to lock it into place.



3. Loop the sensor's cable through the hook closest to the front of the printer on the backside of the black plastic slide. Pull the cable towards the open side away from the motor.



4. Place the sensor cover over the sensor track and secure it with the screw.



Replace the Motor, Main PCBA, the Printer Base and (front) Bezel. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

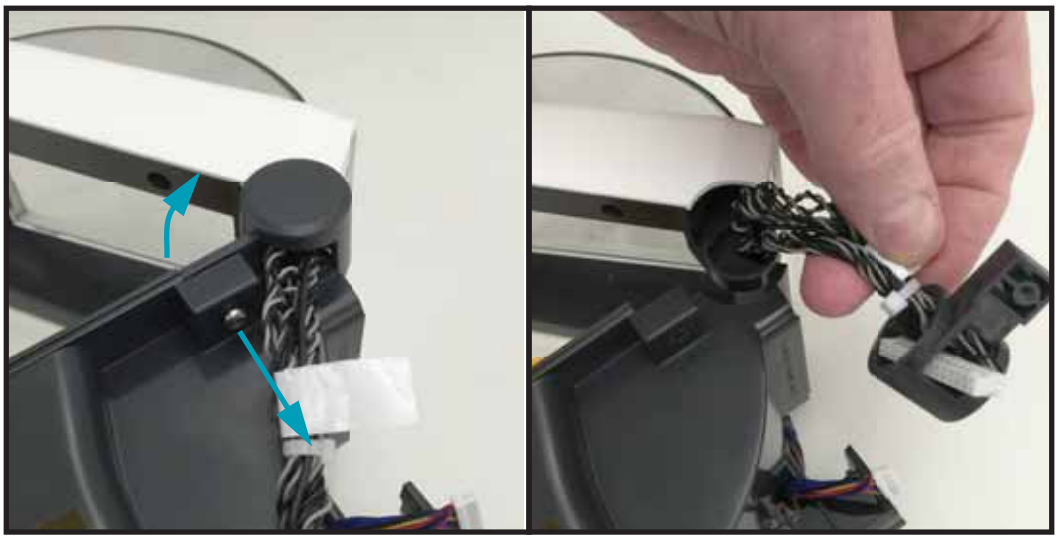
Replacing the Hinge

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the (front) Bezel, the Printer Base, and the Main PCBA before performing this procedure.

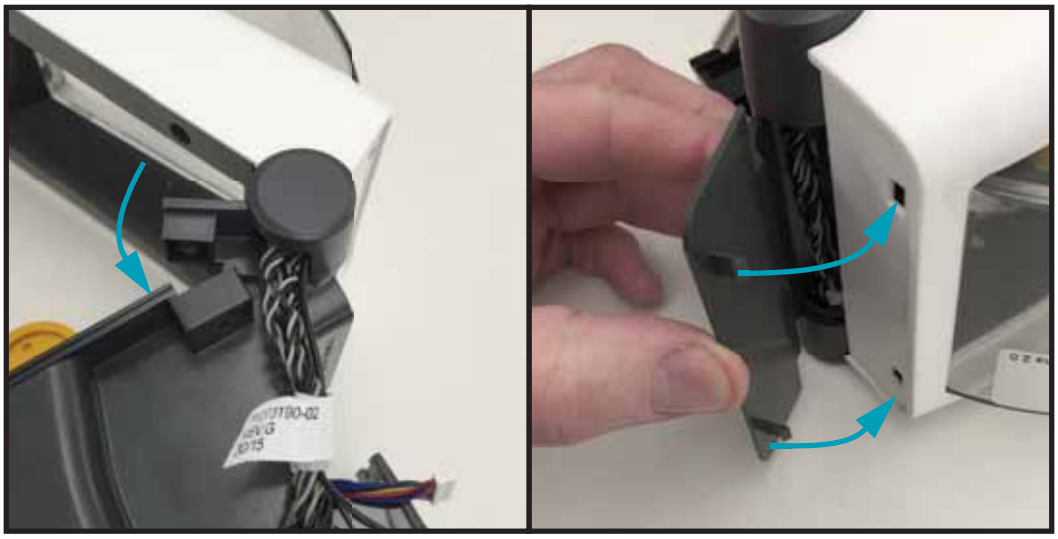
Removal

1. Place the printer on its left side with the cover open. Remove the screw securing the Hinge to the lower frame using a Torx T10 driver.
2. Rotate the loose Hinge towards the upper frame and pull it out of the side of the printer.
3. Pull the Printhead cable out of the Hinge.



Installation

1. Insert the Printhead cable through the Hinge.
2. Place the Hinge onto the upper frame's hinge body. Rotate the Hinge into the lower frame.
3. Secure the Hinge to the lower frame with the screw.



4. Replace the rear cable cover on the cover.

Replace the Main PCBA, the Printer Base and (front) Bezel. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

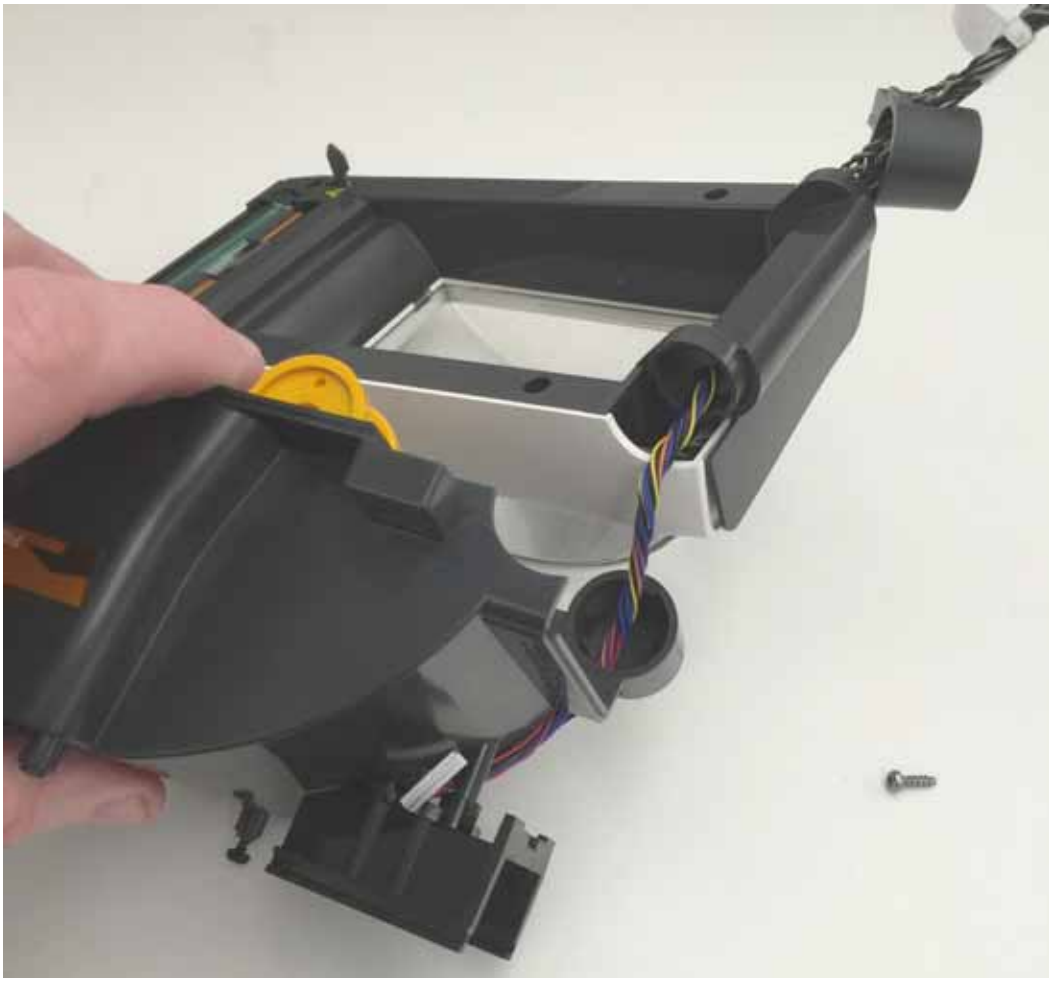
Replacing the Print Mechanism

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the (front) Bezel, the Printer Base, the Main PCBA, and the Hinge before performing this procedure.

Removal

1. With the Hinge removed, lift the Print Mechanism (lower frame) out of the fixed hinge on the lower frame.
2. Pull the Control Panel cable out of the Connectivity Card module and out of the fixed hinge on the lower frame.



Installation

1. Insert the Control Panel cable into the lower frames hinge and then through the lower frame and Connectivity Card slot bracket.
2. Align the upper and lower frames and insert the upper frame into the lower frame hinge.

Replace the Hinge, the Main PCBA, the Printer Base and (front) Bezel. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

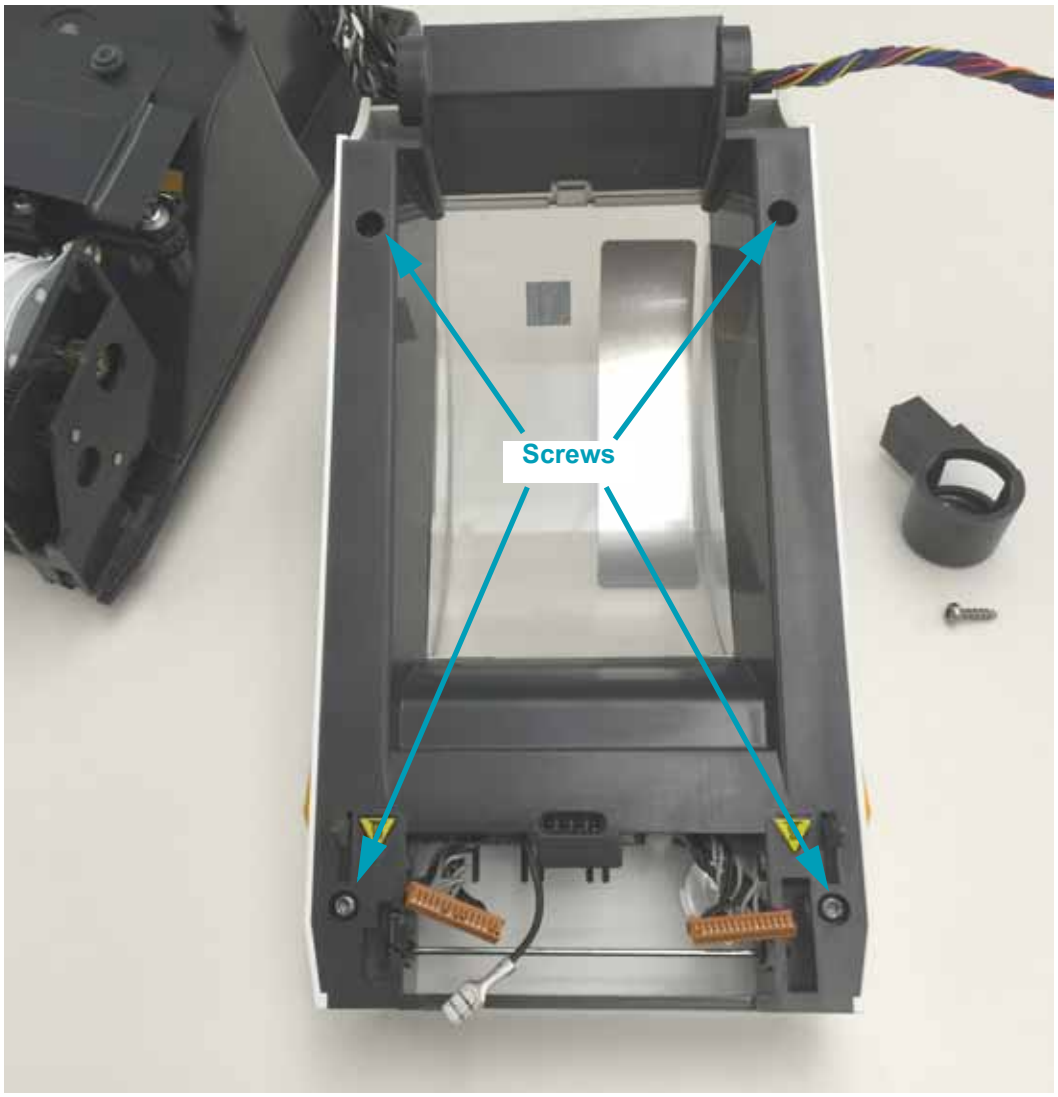
Replacing the Inner Lid

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the Printhead, (front) Bezel, the Printer Base, the Main PCBA, and the Hinge, and the Print Mechanism before performing this procedure.

Removal and Installation

1. With the upper and lower halves of the printer separated, remove the Cover Assembly the four (4) screws securing the cover to the inner frame.
2. Set the old Inner lid (upper fame and components) aside. The printhead should already be removed.

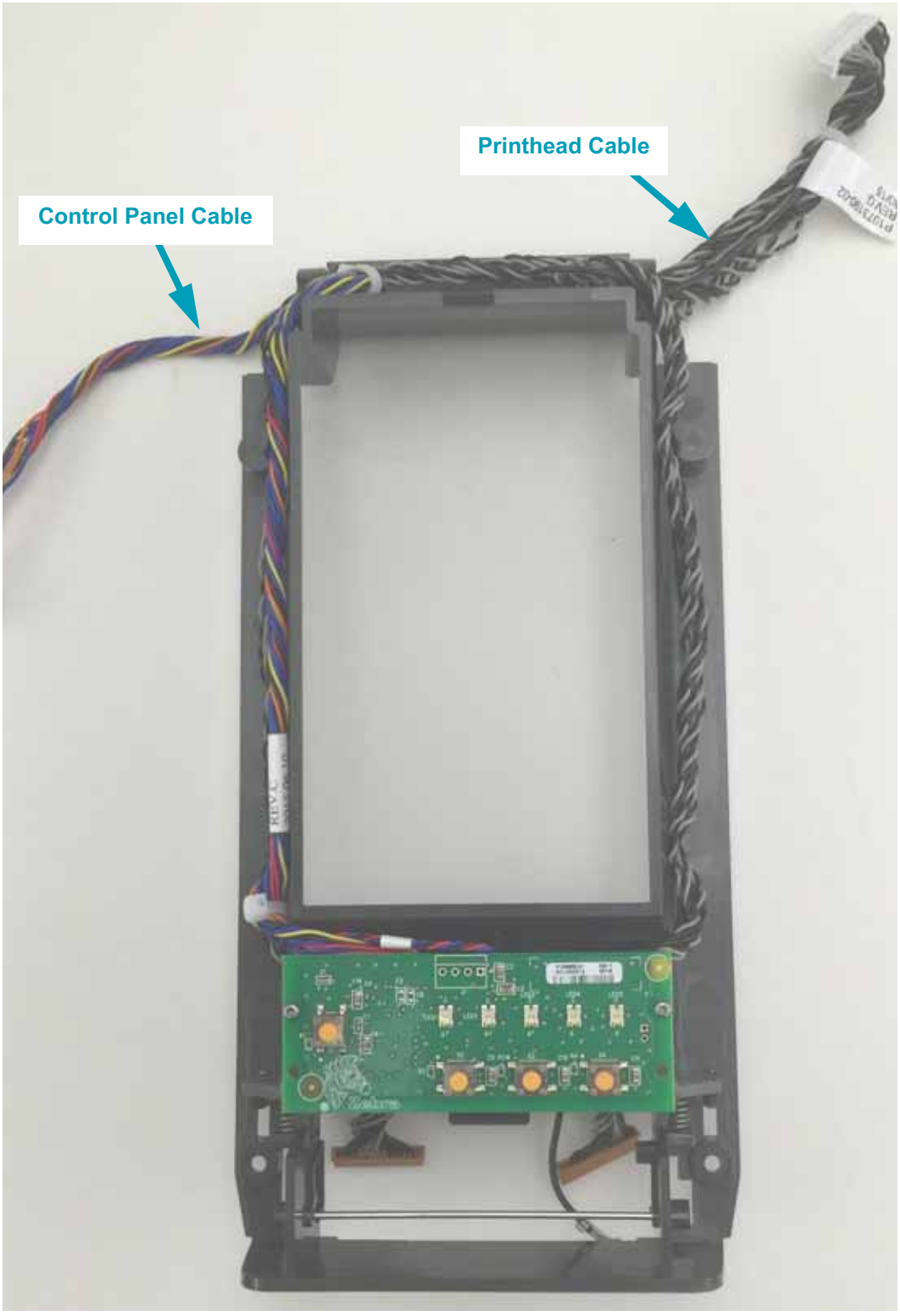


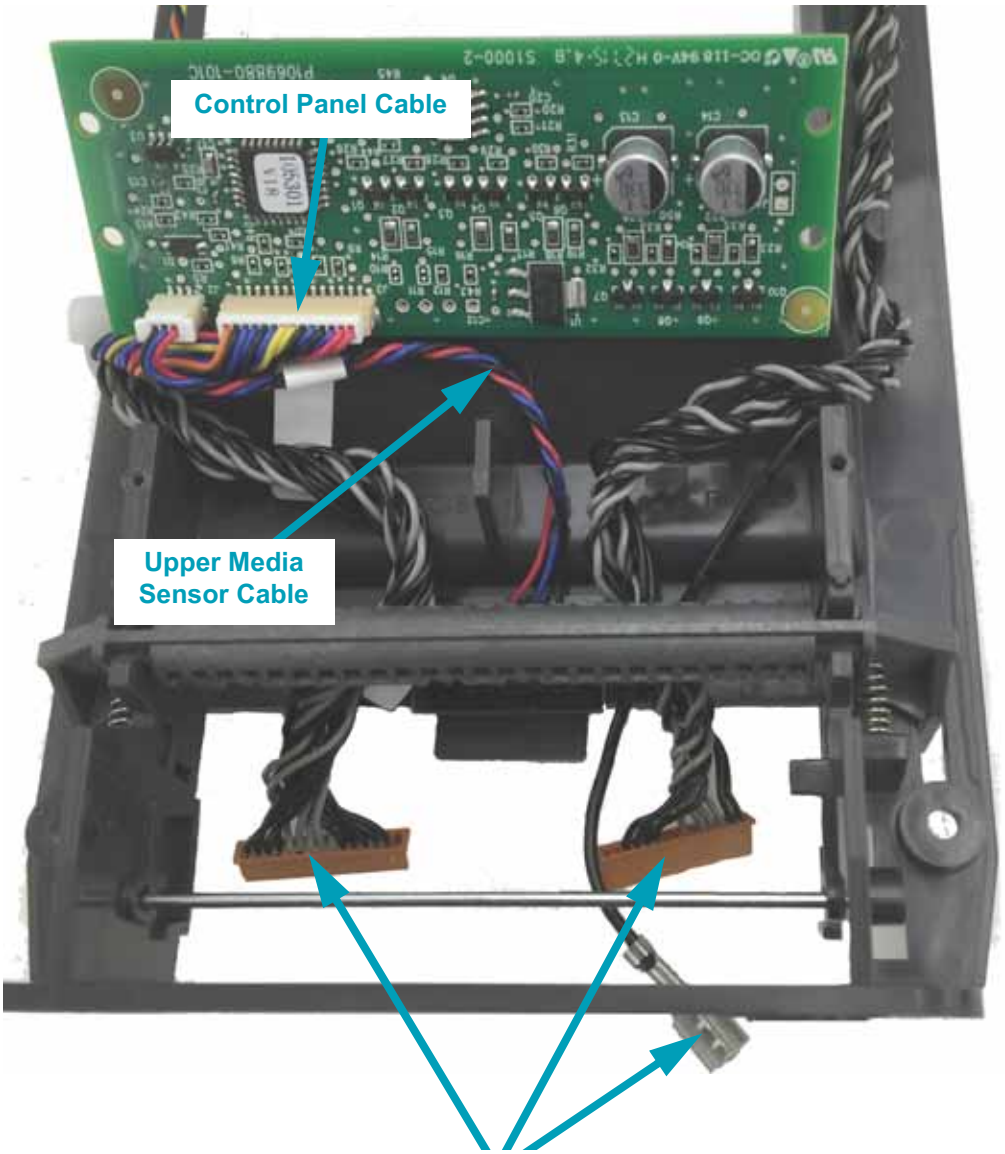
3. Install the printhead in the new Inner Lid. See *Replacing the Printhead* on page 47 for details.
4. Attach the Inner lid (without the Cover Assembly) to the Print Mechanism. See *Replacing the Print Mechanism* on page 83.
5. Attach the Hinge to connect the upper and lower printer section together. See *Replacing the Hinge* on page 81.
6. Attach the Cover Assembly to the Inner lid. See *Replacing the Cover Assembly* on page 58 and specially note cable routing instructions. Verify that the Printhead move freely when pressed.
7. Finish re-assembling the printer by installing the Main PCBA, Printer Base, and (front) Bezel to the printer.
8. Clean the printhead. See *Cleaning the Printhead* on page 7.

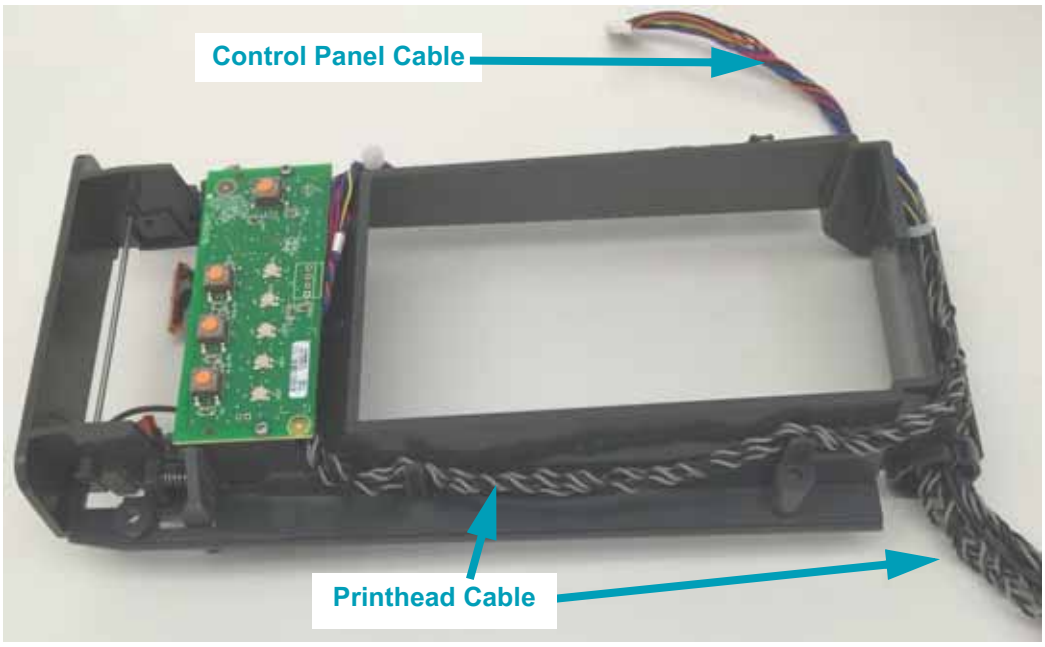
Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

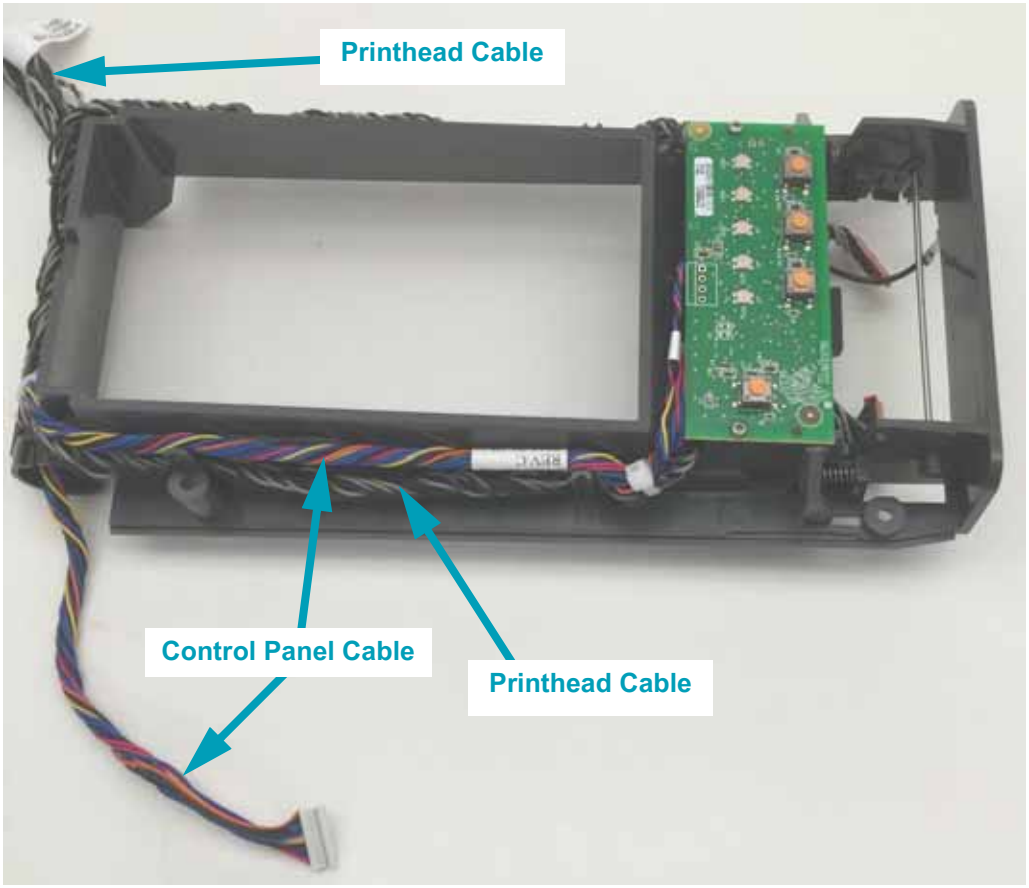
6

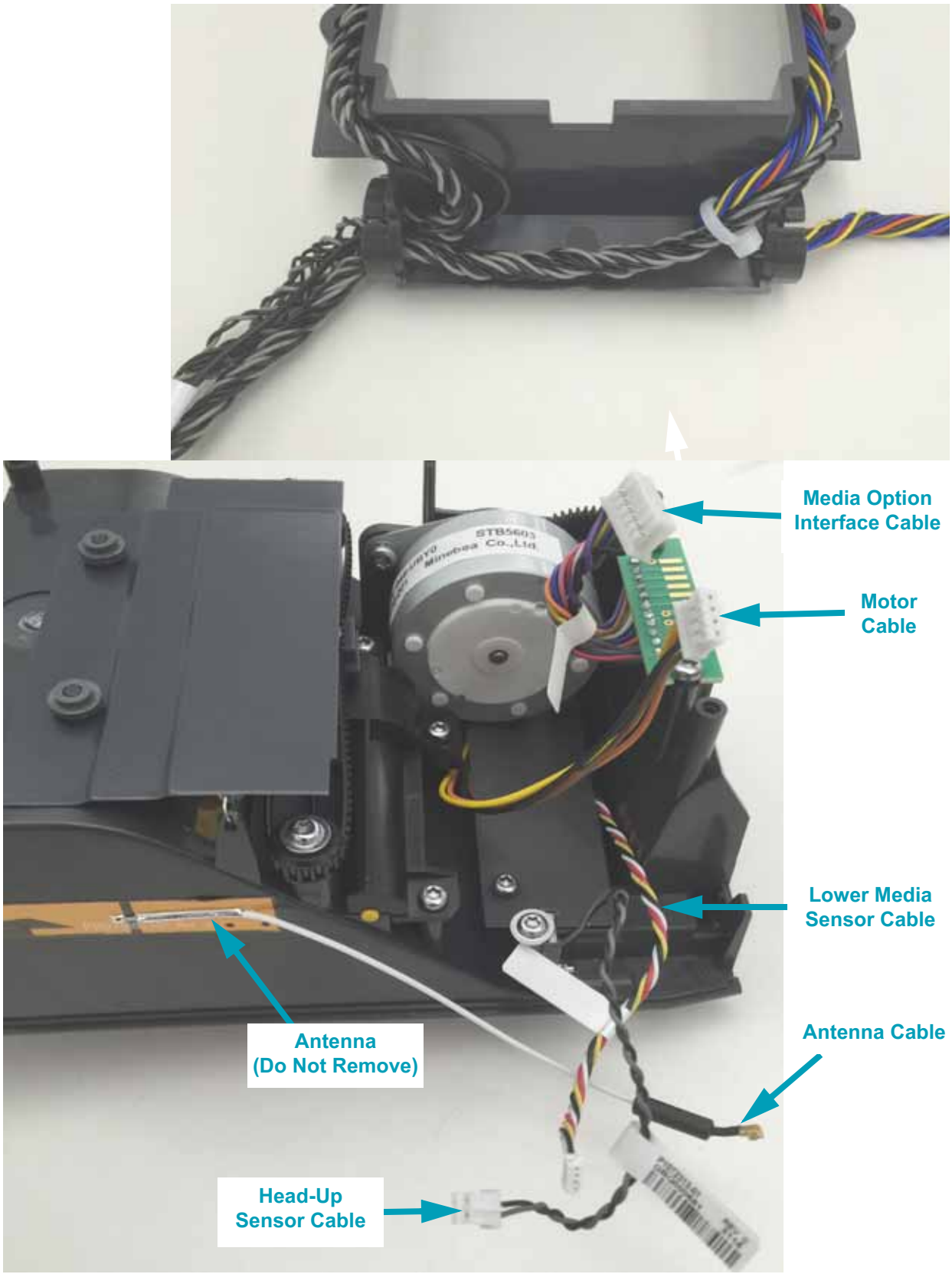
Cable Routing


Printhead Cable
Control Panel Cable


Control Panel Cable
Upper Media Sensor Cable
Printhead & Ground Connector
(part of the Printhead Cable)


Control Panel Cable
Printhead Cable


Printhead Cable
Control Panel Cable
Printhead Cable


Media Option Interface Cable
Motor Cable
Lower Media Sensor Cable
Antenna Cable
Antenna (Do Not Remove)
Head-Up Sensor Cable

Main Printed Circuit Board Assembly

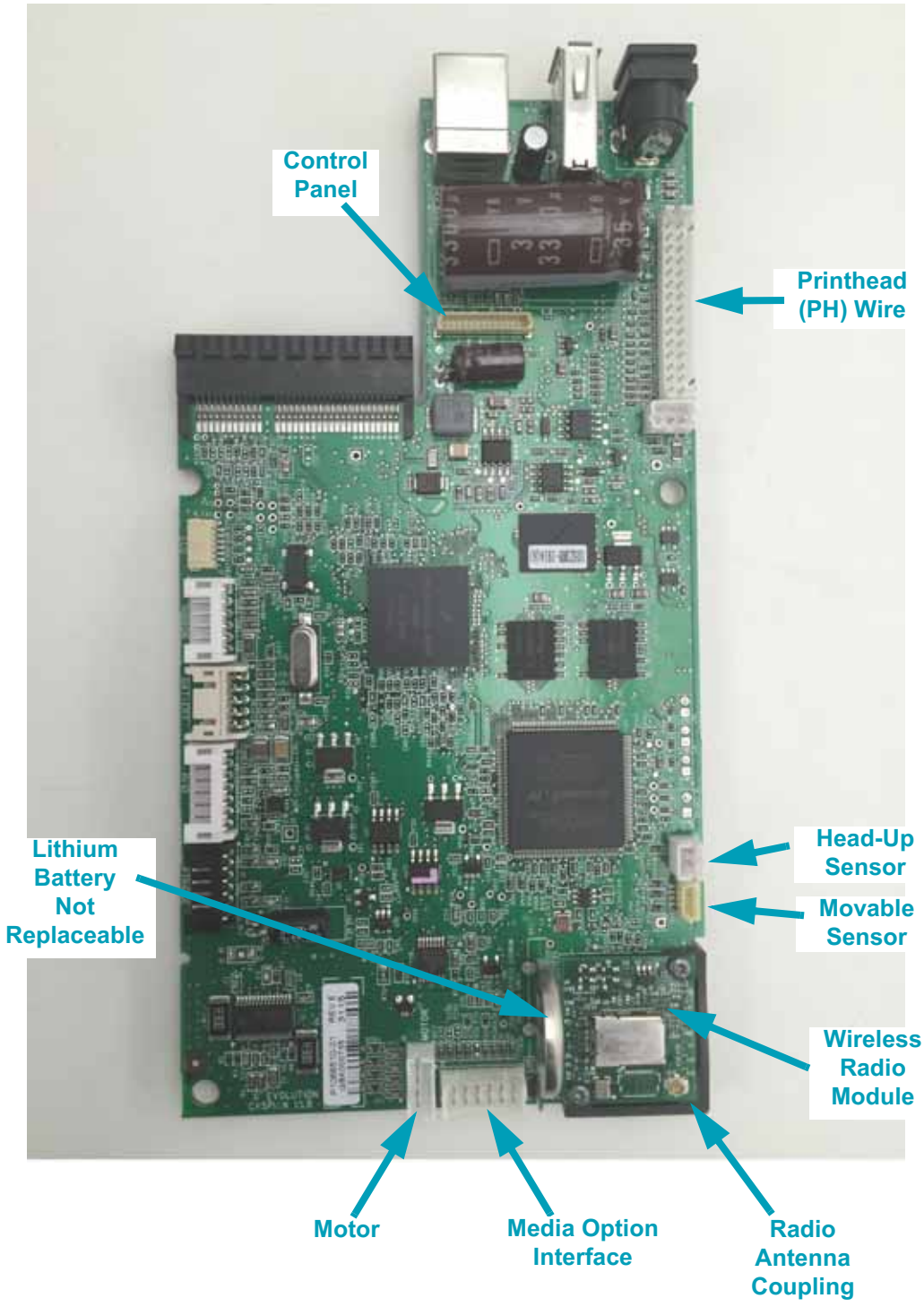


Figure 6 • Connectors on the Main Logic Board PCBA