

ZD620 and ZD420

Desktop Printers with Link-OS[®]



Service Manual



ZEBRA

Copyright

© 2017 ZIH Corp. and/or its affiliates. All rights reserved. ZEBRA and the stylized Zebra head are trademarks of ZIH Corp., registered in many jurisdictions worldwide. All other trademarks are the property of their respective owners.

COPYRIGHTS AND TRADEMARKS: For complete copyright and trademark information, go to www.zebra.com/copyright

WARRANTY: For complete warranty information, go to www.zebra.com/warranty

END USER LICENSE AGREEMENT: For complete EULA information, go to www.zebra.com/eula

Terms of Use

Proprietary Statement: This manual contains proprietary information of Zebra Technologies Corporation and its subsidiaries (“Zebra Technologies”). It is intended solely for the information and use of parties operating and maintaining the equipment described herein. Such proprietary information may not be used, reproduced, or disclosed to any other parties for any other purpose without the express, written permission of Zebra Technologies.

Product Improvements: Continuous improvement of products is a policy of Zebra Technologies. All specifications and designs are subject to change without notice.

Liability Disclaimer: Zebra Technologies takes steps to ensure that its published Engineering specifications and manuals are correct; however, errors do occur. Zebra Technologies reserves the right to correct any such errors and disclaims liability resulting therefrom.

Limitation of Liability: In no event shall Zebra Technologies or anyone else involved in the creation, production, or delivery of the accompanying product (including hardware and software) be liable for any damages whatsoever (including, without limitation, consequential damages including loss of business profits, business interruption, or loss of business information) arising out of the use of, the results of use of, or inability to use such product, even if Zebra Technologies has been advised of the possibility of such damages. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Online resources available to support this printer

- ZD620 and ZD420 Desktop Printers User's Manual
- "How To" videos
- ZD620 or ZD420 Desktop Printer Product page links for printer specifications
- Printer accessory, supplies, parts, and software links
- Various setup and configuration guides
- Programmer's manuals
- Printer Drivers (Windows, Apple, OPOS, etc.)
- Printer Firmware
- Printer Fonts
- Utilities
- Knowledge base and support contacts
- Printer warranty and repair links

Use these links to get to your Online printer support resources:

- ZD620 Thermal Transfer Printer — www.zebra.com/zd620t-info
- ZD620 Direct Thermal Printer — www.zebra.com/zd620d-info
- ZD420 Thermal Transfer Ribbon Cartridge Printer — www.zebra.com/zd420c-info
- ZD420 Thermal Transfer Printer — www.zebra.com/zd420t-info
- ZD420 Direct Thermal Printer — www.zebra.com/zd420d-info

Other Valuable Printer Resources

Zebra has a large suite of free and fee based software, Apps (applications), and other technical resources for your Zebra Link-OS printer.

These are just some of the extensive software and resource areas available Online:

- Label Design software
- Printer Management tools
- Virtual Devices for legacy languages normally associated with other printer brands
- Cloud based Enterprise printer management and printing
- XML and PDF format file printing
- Oracle and SAP support
- IoT data tools (Zatar)
- A suite of Link-OS Mobile Apps (applications for phones, tablets, etc.)
- Link-OS software development kit (SDK)
- Additional Operating Systems (OS) and Service platforms

See ZebraLink, Zebra Link-OS, and Zatar from this Online link: www.zebra.com/software

Zebra OneCare Printer Service and Support

For maximum productivity, we can help your business ensure its Zebra printers are Online and ready for business. See the descriptions of the Zebra OneCare service and support options available for your printers Online at this link: www.zebra.com/zebraonecare

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

The following graphic icons are used throughout the documentation set. These icons and their associated meanings are described below.



Caution • If the precaution is not heeded, the user could receive minor or moderate injury.



Eye Injury Caution • If the precaution is not taken, the user's eyes could be damaged. EXAMPLE: Wear protective eyewear when installing or removing E-rings, C-clips, snap rings, springs, and mounting buttons. These are under tension and could fly off.



Electrical Shock Caution • If the precaution is not taken, the user could receive an electrical shock. EXAMPLE: Turn off (O) the printer and disconnect it from the power source before performing the following procedure.



Hot Surface Caution • If the precaution is not taken, the user could be burned. EXAMPLE: The printhead may be hot and could cause severe burns. Allow the printhead to cool.



Product Damage Caution • If the precaution is not taken, the product could be damaged. EXAMPLE: Unplugging the computer without properly shutting it down may corrupt the data on your hard drive.



ESD Caution • If the precaution is not taken, the product electronics could be damaged by an electrostatic discharge. EXAMPLE: Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.



Important • The text here indicates information that is important for the user to know. EXAMPLE: Run the setup.exe file for the product BEFORE connecting the product to your printer.



Note • The text here indicates information that is supplemental for the user to know and that is not required to complete a task. EXAMPLE: Refer to zebra.com for complete information on product warranties.

Contents

Copyright	2
Terms of Use	2
Online resources available to support this printer	3
Other Valuable Printer Resources	4
Zebra OneCare Printer Service and Support	4
Environmental Management	4
Document Conventions	5
• Contents	6
• Introduction	12
How Repairs and Maintenance Procedures are Documented	12
Thermal Printing	13
Preparing a Static-Safe Work Area	13
Packaging	13
Environmental and Shock Protection	13
Long Term Printer Inactivity or Storage	13
Real Time Clock (RTC)	14
Fuses	14
• Cleaning and Maintenance	15
Cleaning	15
Cleaning Supplies	15
Recommended Cleaning Schedule	16
Printhead	16
Standard Platen (Drive) Roller	16
Linerless Platen (Drive) Roller	16
Media Path	17
Interior	17
Exterior	17
Label Dispenser Option	17
Cutter Option	18
Cleaning the Printhead	19
ZD620 / ZD420 Direct Thermal Printers	19

Contents

ZD620 / ZD420 Thermal Transfer Printers	20
ZD420 Ribbon Cartridge Printers	21
Media Path Cleaning	22
Lower Half of ZD620/ZD420 Printers	22
Upper Half of ZD620/ZD420 Direct Thermal Printers	23
Upper Half of ZD620/420 Thermal Transfer Printers	23
Upper Half of ZD420 Thermal Transfer Ribbon Cartridge Printers	24
Cleaning the Cutter and Label Dispenser Options	25
Cutter Option Cleaning	25
Label Dispenser Option Cleaning	26
Sensor Cleaning	27
Lower Half of ZD620/ZD420 Printers	27
Upper Half of ZD620/ZD420 Direct Thermal Printers	28
Upper Half of ZD620/ZD420 Thermal Transfer Printers	28
Upper Half of ZD420 Ribbon Cartridge Printers	29
Platen Cleaning and Replacement	31
Removing the Platen Roller	32
Replacing the Printhead	35
ZD620 and ZD420 Direct Thermal	36
Removing the Printhead	36
Replacing the Printhead	38
ZD620 and ZD420 Thermal Transfer Ribbon Roll	41
Removing the Printhead	41
Replacing the Printhead	43
ZD420 Thermal Transfer Ribbon Cartridge	46
Printhead Removal	46
Updating Printer Firmware	50
USB Host	51
Using USB Host for Firmware Updates	52
Flash Drive Preparation and Firmware Update	52
Other Printer Maintenance	52
• Troubleshooting	53
Resolving Alerts and Errors	53
Alert: Printhead Open	53
Possible Cause - 1	53
Possible Cause - 2	53
Alert: Media Out	54
Possible Cause - 1	54
Possible Cause - 2	54
Possible Cause - 3	54
Possible Cause - 4	54
Possible Cause - 5	55

Contents

Possible Cause - 6	55
Alert: Ribbon In (ZD420 Cartridge Printer only)	56
Possible Cause - 1	56
Possible Cause - 2	56
Alert: Ribbon Out	57
Possible Cause - 1	57
Possible Cause - 2 (ZD420 Cartridge Printer only)	57
Possible Cause - 3 (ZD420 Cartridge Printer only)	57
Possible Cause - 4 (Standard Roll - Thermal Transfer Printers)	57
Alert: Ribbon Low (ZD420 Cartridge Printer only)	58
Possible Cause - 1	58
Alert: CUT ERROR	58
Possible Cause - 1	58
Alert: PRINTHEAD OVER TEMP	59
Possible Cause - 1	59
Possible Cause - 2	59
Alert: PRINTHEAD SHUTDOWN	59
Possible Cause - 1	59
Alert: PRINTHEAD UNDER TEMP	60
Possible Cause - 1	60
Possible Cause - 2	60
Alert: OUT OF MEMORY	61
Possible Cause - 1	61
Resolving Print Issues	62
Issue: General Print Quality Issues	62
Possible Cause - 1	62
Possible Cause - 2	62
Possible Cause - 3	62
Possible Cause - 4	62
Possible Cause - 5	62
Possible Cause - 6	63
Issue: No Print on the Label	63
Possible Cause - 1	63
Possible Cause - 2	63
Issue: Labels Are Distorted in Size or Print Area Start Position Varies	64
Possible Cause - 1	64
Possible Cause - 2	64
Possible Cause - 3	64
Possible Cause - 4	64
Communication Issues	65
Issue: Label Job Sent, No Data Transfer	65
Possible Cause	65
Issue: Label Job Sent, Skips Labels or Prints Bad Content	65

Contents

Possible Cause	65
Issue: Label Job Sent, Data Transfers, But No Print	66
Possible Cause - 1	66
Possible Cause - 2	66
Possible Cause - 3	66
Miscellaneous Issues	67
Issue: Settings are Lost or Ignored	67
Possible Cause - 1	67
Possible Cause - 2	67
Possible Cause - 3	67
Possible Cause - 4	67
Issue: Non-continuous labels act as Continuous labels..	68
Possible Cause - 1	68
Possible Cause - 2	68
Issue: Printer Locks-Up.	68
Possible Cause - 1	68
Issue: Erroneous Ribbon Cartridge Faults	68
Possible Cause	68
Printer Diagnostics	69
Power-On Self Test	69
SmartCal Media Calibration	70
Test Printing with the Configuration Report	71
Configuration Report (CANCEL Self Test)	72
Printer Network (and Bluetooth) Configuration Report.	73
Print Quality Report (FEED self test)	73
Reset Printer Factory Defaults (PAUSE + FEED Self Test).	77
Reset Network Factory Defaults (PAUSE + CANCEL Self Test)	77
Reset Button	78
Communication Diagnostics Test.	79
Sensor Profile.	80
Advanced Mode	82
Manual Media Calibration.	83
Manual Print Width Adjustment	84
Manual Print Darkness Adjustment	85
Factory Test Modes	86
• Required Tools	87
• Replacing Parts	88
Repair Procedure Sequence for ZD420 Cartridge Printers	89
Repair Procedure Sequence for Thermal Transfer ZD Printers	90
Repair Procedure Sequence for Direct Thermal ZD Printers	91
How to Determine a Repair Sequence for your Part	92
Repair Path Example	92

Contents

Repair Preparation and Post Repair Basic Operational Tests	93
ZD420 Cartridge Printer: Accessing the Printhead	94
ZD Thermal Transfer Printers: Accessing Inside the Cover	95
Disconnecting the Cover from the Ribbon Carriage	95
Re-connecting the Ribbon Carriage	96
Replacing the Printhead	97
ZD620 and ZD420 Direct Thermal Printhead	98
Removing the Printhead	98
Replacing the Printhead	100
ZD620 and ZD420 Thermal Transfer Ribbon Roll Printhead	103
Removing the Printhead	103
Replacing the Printhead	105
ZD420 Thermal Transfer Ribbon Cartridge Printhead	108
Printhead Removal	108
Replacing the Platen (Drive) Roller	112
Removing and Replacing Connectivity Modules	115
Replacing a Front Bezel Option (Tear-off, Dispense, Cut)	116
Removing the Printer Base for Repair Access	118
Replacing the Printer's Feet	119
Replacing the Window	120
Thermal Transfer Roll and Cartridge Printers	120
Direct Thermal Printer Window Replacement	121
Replacing the Motor	123
Replacing the Head-Up Sensor	125
Replacing the Main PCBA	127
Replacing the Movable Sensor	130
Replacing the Hinge in Thermal Transfer Printers	136
Replacing the Hinge in Direct Thermal Printers	140
Replacing the Cover Assembly on Thermal Transfer (Roll) Printers	142
Replacing the Cover Assembly on Cartridge Printers	143
Replacing the Cover Assembly on Direct Thermal Printers	145
Replacing the Cover - Thermal Transfer Printers	147
Replacing the Cover - Direct Thermal Printers	150
Replacing a 3-Button Control Panel PCBA	151
Replacing a LCD Control Panel PCBA	152
Replacing the Latch Assembly - Thermal Transfer Printers	153
Replacing the Latch Arm Assembly - Direct Thermal Printers	154
Replacing the Upper Array Sensor - Thermal Transfer Printer	158
Replacing the Upper Array Sensor - Thermal Transfer Printer	159
Replacing the Ribbon Roll Printer's Ribbon Trailer Sensor PCBA	162
Replacing the Cartridge Printer Ribbon Sensor PCBA	164
Replacing the Ribbon Carriage in Thermal Transfer (Roll) Printers	166
Replacing the Ribbon Transport	169

Contents

Replacing the Upper Media (Gap/Web) Sensor	172
Replacing the Print Mechanism or Upper Inner Frame	175
• Main PCBA Layout	179
Main Printed Circuit Board Assembly	180
Main Printed Circuit Board Assembly	181
• Cable Routing for ZD420c	182
ZD420c - Ribbon Cartridge printers	182
• Cable Routing for ZD420t	189
ZD620 and ZD420 Ribbon Roll Printers	189
• Cable Routing for ZD420d	197
ZD420c - Direct Thermal printers	197
• Media	201
Types of Thermal Media	202
Determining Thermal Media Types	202
General Media and Print Specifications	203
Label Dispenser (Peeler)	204
Standard (Media) Cutter	205
Linerless (Media) Cutter - Direct Thermal only	205
• ZPL Configuration	206
Managing the ZPL Printer Configuration	206
ZPL Printer Configuration Format	207
Configuration Setting to Command Cross-reference	208
Printer Memory Management and Related Status Reports	211
ZPL Programming for Memory Management	211

Introduction

This manual provides ZD420 and ZD620 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 designed to provide training and instruction for repair and maintenance of your Zebra printer.

Each Link-OS 4 inch Desktop printer Spares Kit has one or more repair procedures that support it. 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>

Thermal Printing



Hot Surface 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.



ESD Caution • The discharge of electrostatic energy that accumulates on the surface of the human body or other surfaces can damage or destroy the printhead and other 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.

Real Time Clock (RTC)

The Real Time Clock (RTC) is included with some ZD620 and ZD420 Ribbon Cartridge printers.

The clock's battery is rated to provide approximately ten (10) years of service and is not user replaceable. See a Zebra authorized service technician to replace the battery. See the warranty for your printer for more details at the Zebra Web site:

www.zebra.com/warranty



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.



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



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

Fuses

There are no replaceable fuses in ZD-Series printers or power supplies.

Cleaning and Maintenance

This section provides routine cleaning and maintenance procedures.

Cleaning

Your Zebra printer may require periodic maintenance to keep your printer functional and printing high quality labels, receipts, tags, etc.

Cleaning Supplies

The following printer cleaning supplies are recommended for use with your printer:

- **Printhead Cleaning Pens** for simple operator printhead cleaning
- **99% pure Isopropyl Alcohol** (Use a labeled dispenser. Never re-moisten cleaning materials used to clean the printer).
- **Fiber-free Cleaning Swabs** for media path, guides, and sensors **and Cleaning Wipes** for media path and interior (for example Kimberly-Clark Kimwipes).
- Can of Compressed Air.



Important • The cutter mechanism does not require maintenance cleaning. **DO NOT** clean the blade or mechanism. The blade has a special coating to resist adhesives and wear.



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.



Important • Do Not Use an air compressor in place of the can of compressed air. Air compressors have micro contaminants and particles the get into the air system and damage your printer.



Eye Injury Caution • Use eye protection to protect your eyes from flying particles and objects when using compressed air.

Get Zebra Supplies and Accessories for Cleaning Your Printer

Go to the Zebra Web site: www.zebra.com/accessories

Recommended Cleaning Schedule

Printhead

Interval: Clean the printhead after every roll printed.

Procedure: [Cleaning the Printhead](#)

Standard Platen (Drive) Roller

Interval: As needed to improve print quality. Platen rollers can slip causing print image distortion and in worst case scenarios not move the media (labels, receipts, tags, etc.).

Procedure: See [Platen Cleaning and Replacement](#).



Note • Standard platen rollers come in two colors, black (203 dpi) and gray (300 dpi).

Linerless Platen (Drive) Roller

Interval: If there is observed build-up of particles on the platen roller, use this procedure. The linerless platen normally does not require cleaning. The adhesive side of the media picks up particles as you print.

If the linerless media is sticking and binding in the printer, the linerless platen normally needs to be replaced. The silicon non-stick coating has been used up.



Important • Linerless platen rollers come in two colors, reddish-brown (203 dpi) and brown (300 dpi).



Important • Cleaning the roller with solutions or rubbing the delicate surface of this type of roller will permanently damage or shorten the usable life of the linerless platen.



Important • The platen roller can accumulate adhesive on the outer edges of the roller. After using many rolls of media, these 'rings' of adhesive can get dislodged when using the printer. These particle clumps can then get transferred to other areas in the printer, most importantly, the printhead.

Procedure: To remove adhesive particles, use the adhesive side of a piece of linerless media to gently press and remove the particles from the platen roller. Use the [Platen Cleaning and Replacement](#) procedure to get better access for particle removal.

Media Path

Interval: Clean as needed.

Method: Clean it thoroughly with fiber-free cleaning swabs and cloths moistened with 99% isopropyl alcohol. Let alcohol evaporate completely.

Procedure: See [Media Path Cleaning](#).

Interior

Interval: Clean the printer as needed.

Method: Use a soft cloth, brush or compressed air to wipe or blow dust and particles out of the printer. A 99% isopropyl alcohol and a fiber-free cleaning cloth can be used to dissolve contaminants like oils and grime.

Exterior

Interval: Clean as needed.

Method: Use a soft cloth, brush or compressed air to wipe or blow dust and particles out of the printer. The exterior of the printer can be cleaned using plain soap and water solutions to moisten the cloth. Only use the minimum amount of cleaning to avoid getting solution in the printer or other areas. Do not clean connectors or interior of the printer. with this method.

Healthcare Printer Models — The latest models now include Ultra-Violet (UV) and disinfectant-safe plastics for hospital and other similar environments. The user interface is sealed so it can be cleaned with the rest of the printer's exterior. 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.

Label Dispenser Option

Interval: As needed to improve label dispensing operations.

Procedure: See [Label Dispenser Option](#) cleaning.

Cutter Option

Interval: Not an operator serviceable component. **Do Not Clean** inside the cutter opening or blade mechanism. You may use the Exterior cleaning to clean the cutter bezel (housing).

Method: None at this time.

Procedure: None



Cut Warning • There are no operator serviceable parts in the cutter unit. Never remove the cutter cover (bezel). Never attempt to insert objects or fingers in to the cutter mechanism.



Important • The blade has a special coating to resist adhesives and wear. Cleaning it may ruin the blade.



Important • Using un-approved tools, cotton swabs, solvents (including alcohol), etc.; all may damage or shorten the cutter's usable life or cause the cutter to bind.

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).

When you load new media, you should clean the printhead for optimal print operations.



Hot Surface 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.

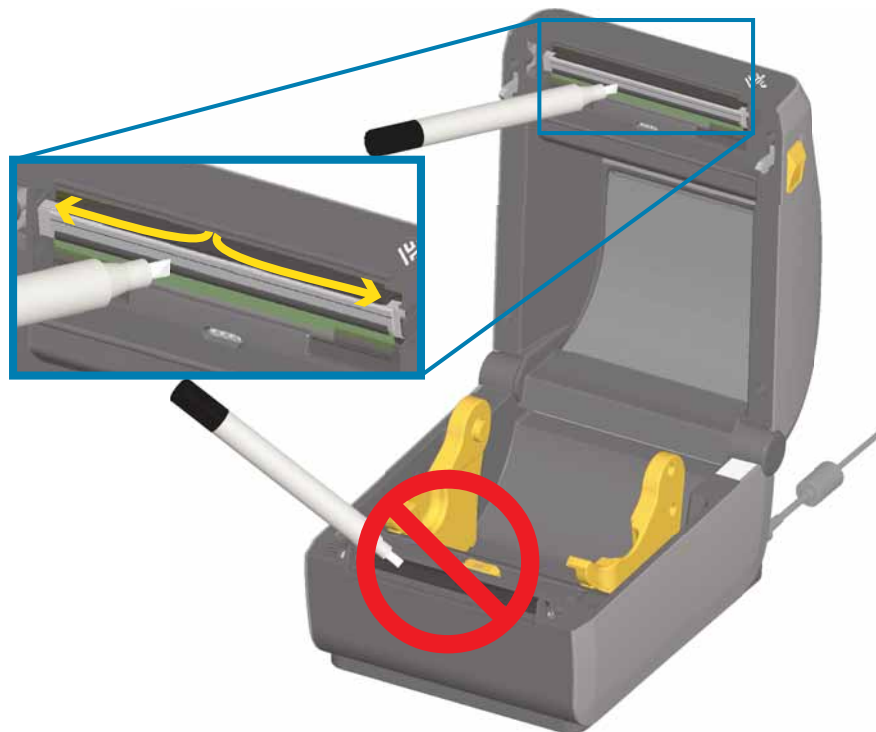


ESD Caution • The discharge of electrostatic energy that accumulates on the surface of the human body or other surfaces can damage or destroy the printhead and other electronic components used in this device. You must observe static-safe procedures when working with the printhead or the electronic components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

ZD620 / ZD420 Direct Thermal Printers

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

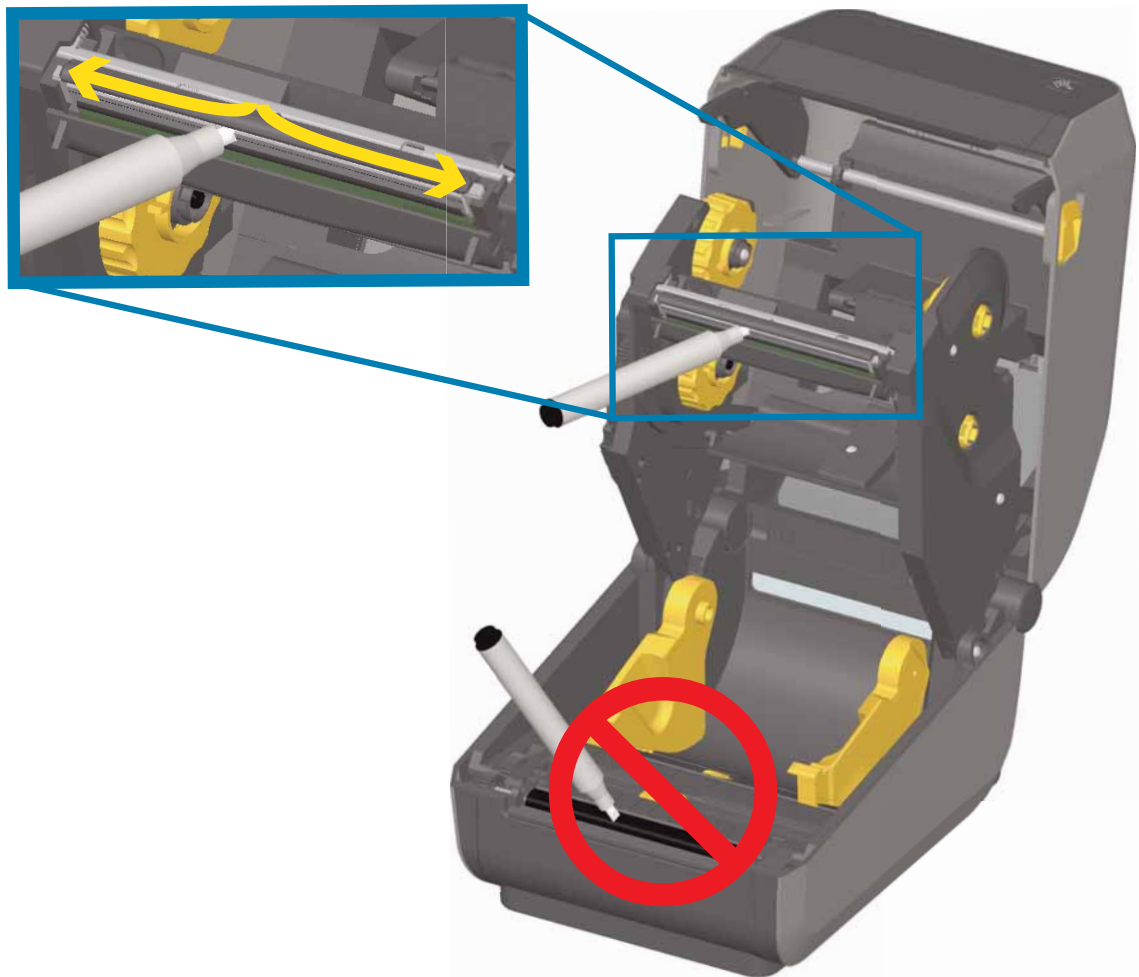
1. Rub the cleaning pen across the dark area of the printhead. Clean from the middle to the outside. This will move adhesive transferred from the edges of media to the outside of media path.
2. Wait one minute before closing the printer to allow the components to dry.



ZD620 / ZD420 Thermal Transfer Printers

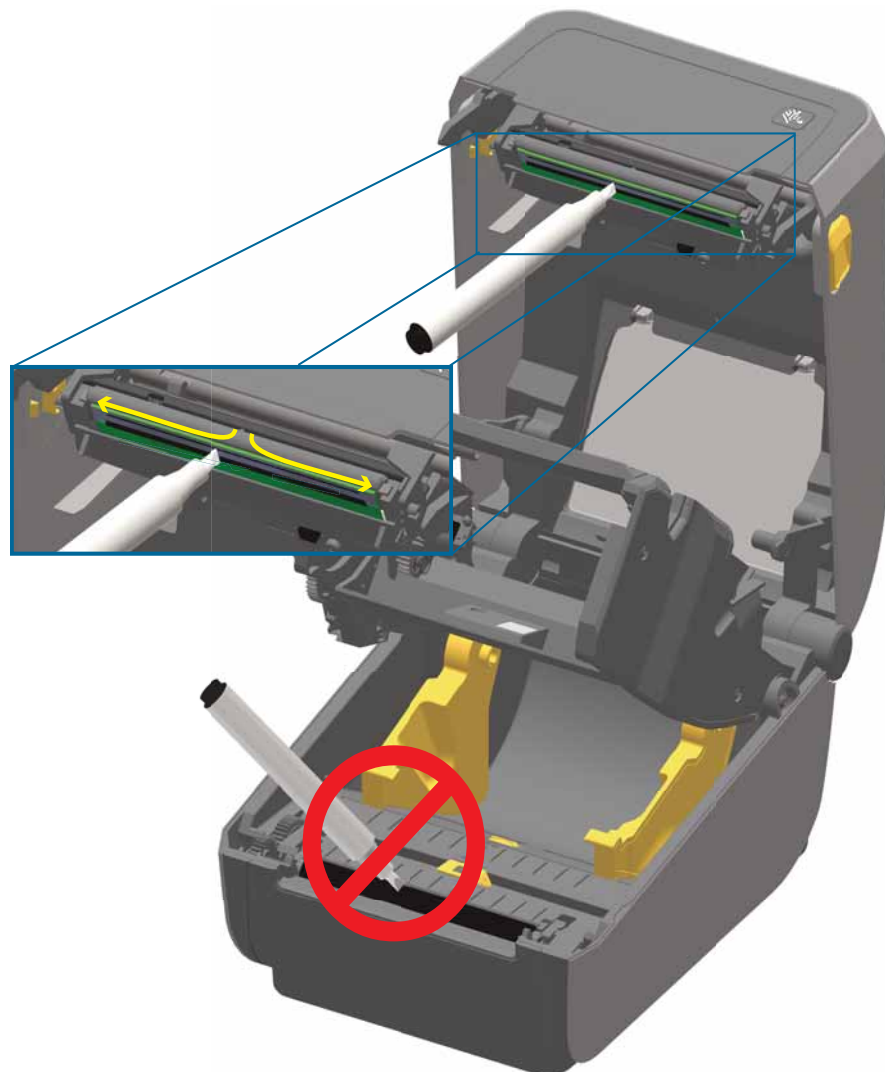
When you load new media or ribbon, you can also clean the printhead.

1. If transfer ribbon is installed, remove it before proceeding.
2. 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.
3. Wait one minute before closing the printer or loading ribbon to allow all components to dry.



ZD420 Ribbon Cartridge Printers

1. Pull the two (2) Release Arms out to release the Ribbon Drive Transport. See [Accessing the Printhead of the Ribbon Cartridge Printer](#) for more details.
2. Lift the Printhead Actuator Arm up to gain access to the printhead. 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 outer edges of media to the area outside of media path.
3. Wait one minute before closing the printer.



4. Release the Printhead Actuator Arm and then push the Ribbon Drive Transport into the Printhead Actuator Arm. The Release Arms will snap into place relinking the Ribbon Drive Transport to the top cover and the Printhead Actuator Arm.

Media Path Cleaning

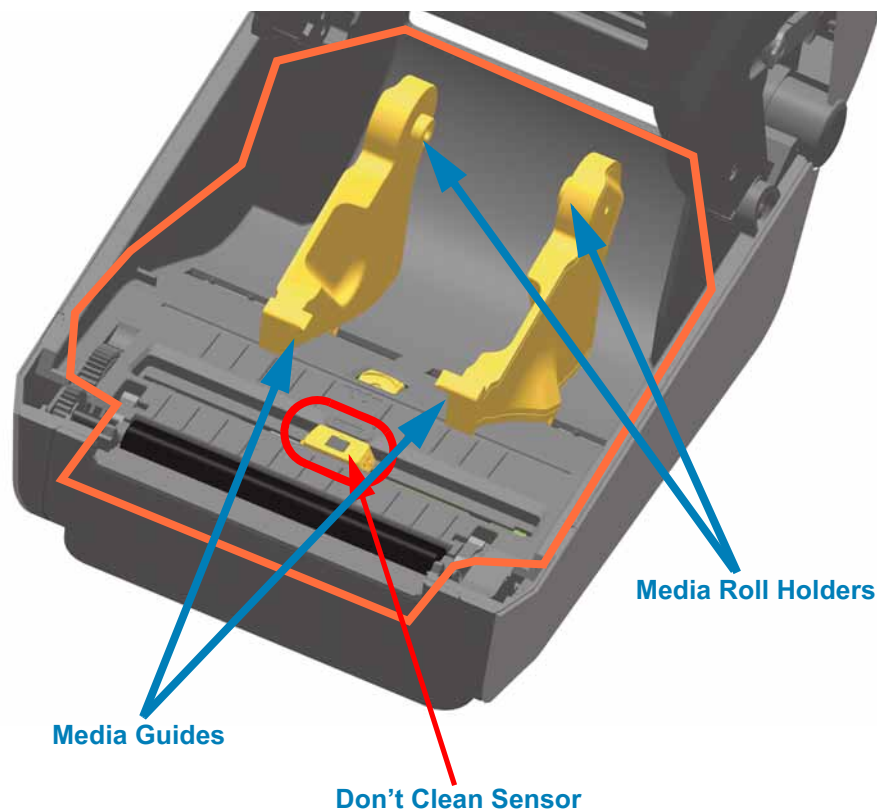
Use a cleaning swab and/or a lint free cloth to remove debris, dust or crust that has built-up on the holders, guides and media path surfaces. Lightly moisten the swab or cloth with 99% solution medical-grade alcohol. For hard to clean areas, use extra alcohol on a cleaning swab to soak the debris to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

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

Lower Half of ZD620/ZD420 Printers

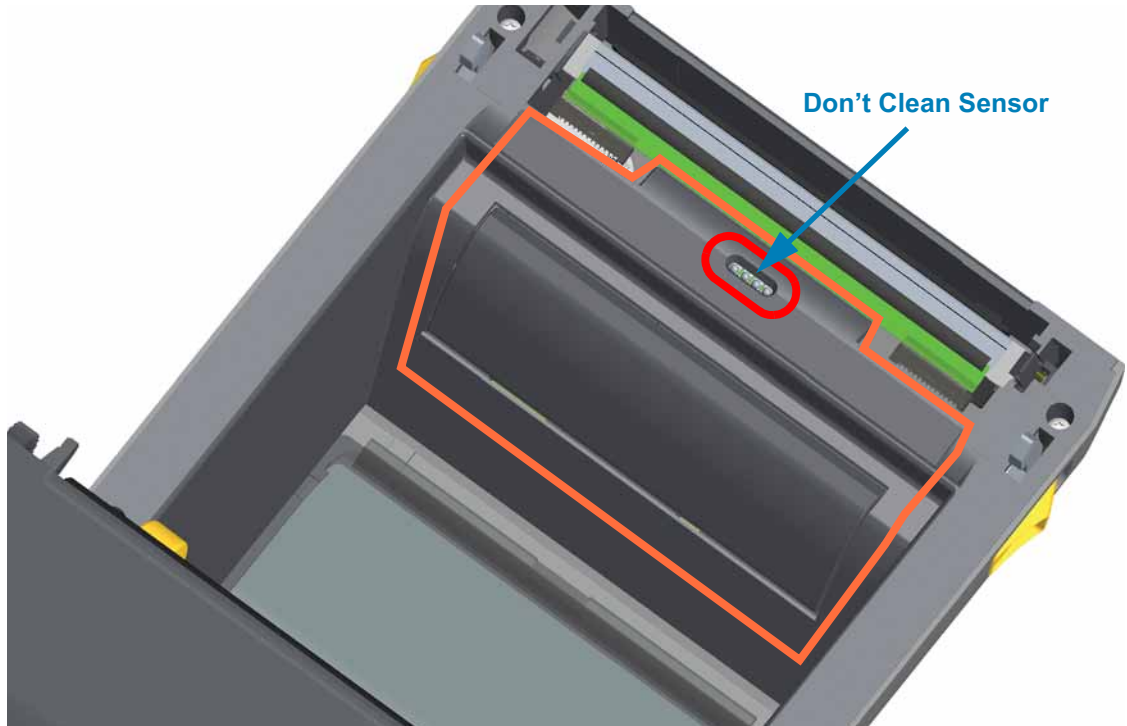
The lower half of these printers these printers get cleaned the same.

1. Wipe the inside surfaces of the roll holders and the underside of the media guides with a cleaning swabs and wipes.
2. Wipe the movable sensor slide channel (but not sensor). Move the sensor to get to all areas.
3. Wait one minute before closing the printer. Discard used cleaning supplies.



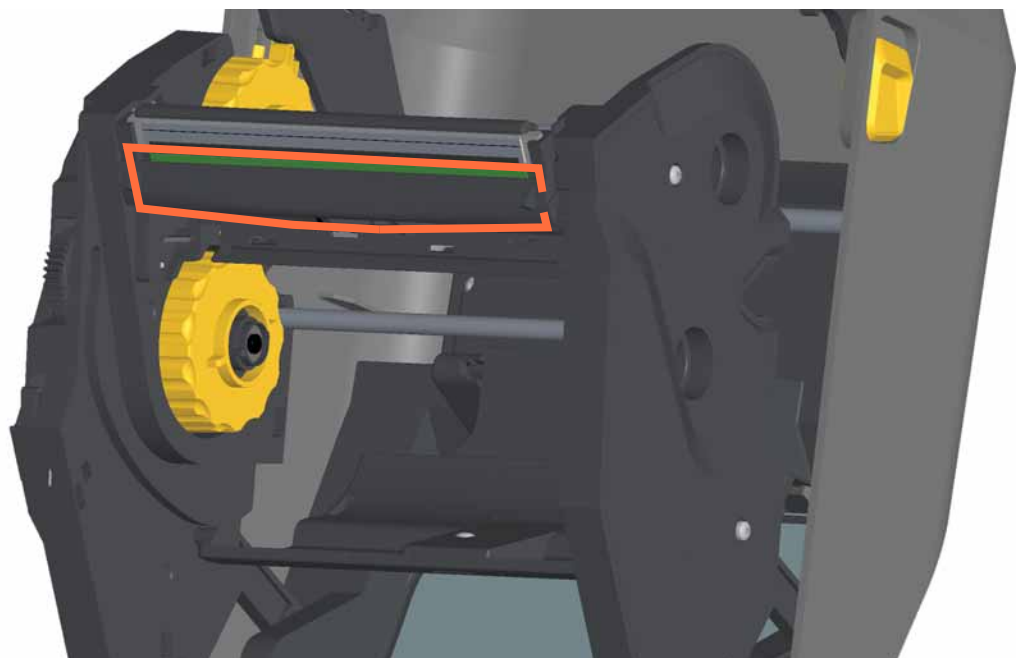
Upper Half of ZD620/ZD420 Direct Thermal Printers

1. Wipe the areas (outlined in orange) to remove adhesive and other contaminants. Do not clean the sensor array.



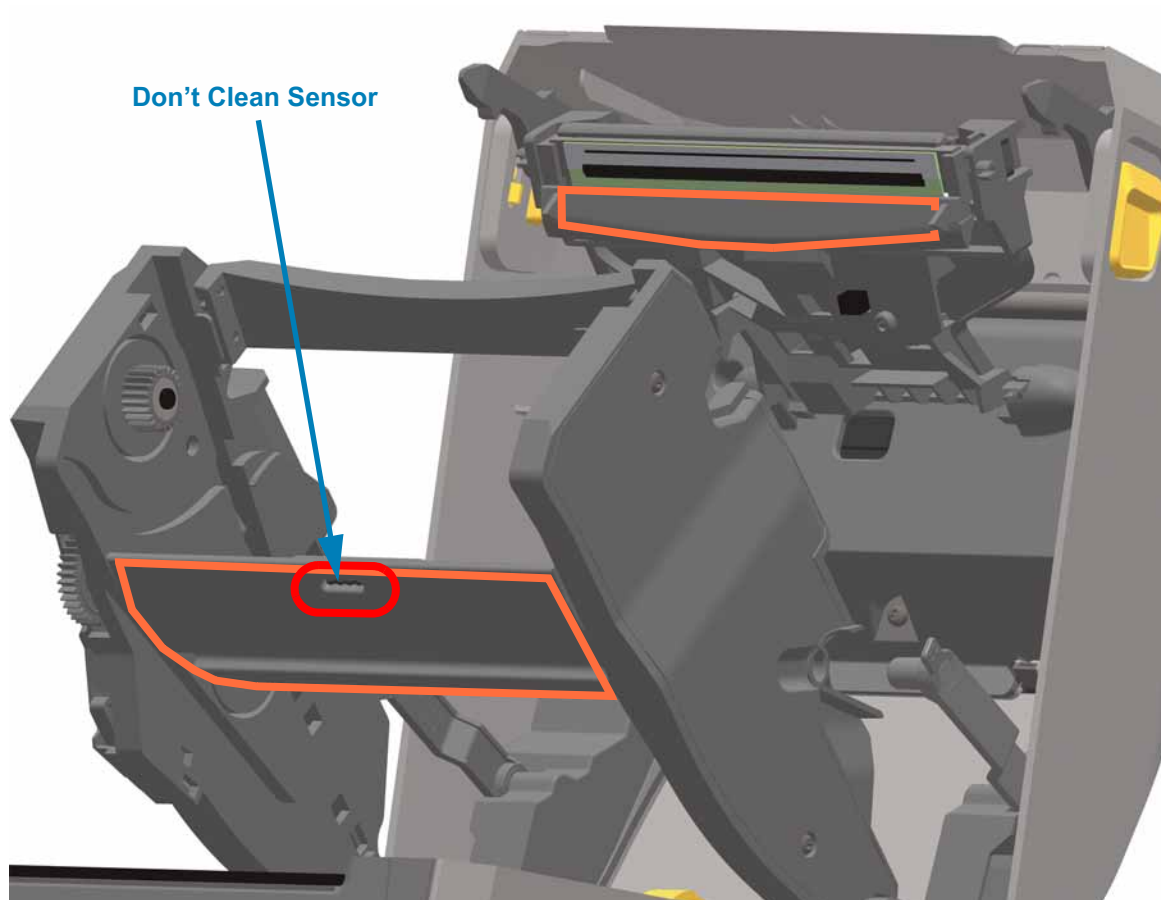
Upper Half of ZD620/420 Thermal Transfer Printers

1. Wipe the area (outlined in orange) near the printhead on the front of the ribbon carriage.



Upper Half of ZD420 Thermal Transfer Ribbon Cartridge Printers

1. Pull the two (2) Release Arms out to release the Ribbon Drive Transport. See [ZD420 Cartridge Printer: Accessing the Printhead](#) for more details.
2. Wipe the areas (outlined in orange) below the Printhead Actuator Arm and the Ribbon Drive Transport.



3. Release the Printhead Actuator Arm and then push the Ribbon Drive Transport into the Printhead Actuator Arm. The Release Arms will snap into place relinking the Ribbon Drive Transport to the top cover and the Printhead Actuator Arm.

Cleaning the Cutter and Label Dispenser Options

This is a continuation of cleaning the media path for either option, if installed.

Cutter Option Cleaning

The plastic media path surfaces can be cleaned but not the internal cutter blades or mechanism.



Important • The cutter blade mechanism does not require maintenance cleaning. DO NOT clean the blade. This blade has a special coating to resist adhesives and wear.

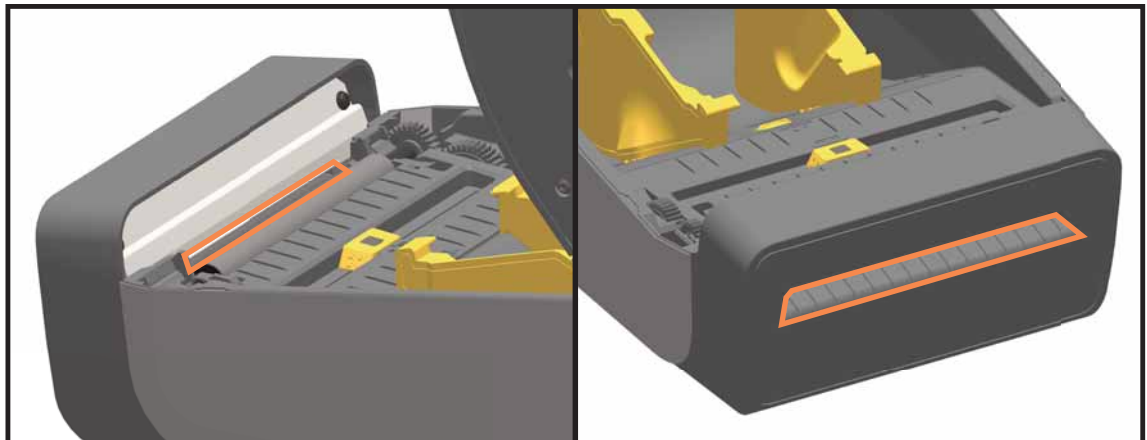


Cut Warning • There are no operator serviceable parts in the cutter unit. Never remove the cutter cover (bezel). Never attempt to insert objects or fingers into the cutter mechanism.



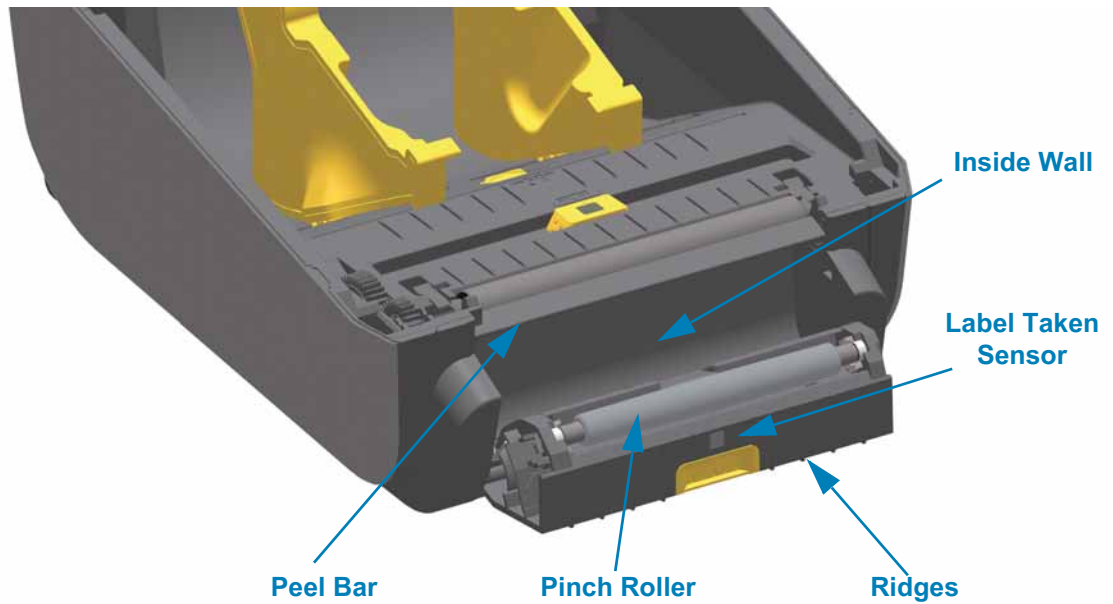
Note • Using un-approved tools, cotton swabs, solvents (including alcohol), etc. all may damage or shorten the cutter's usable life or cause the cutter to jam.

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 orange.
2. Repeat as necessary to remove any adhesive or contaminate residue after it dries.



Label Dispenser Option Cleaning

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

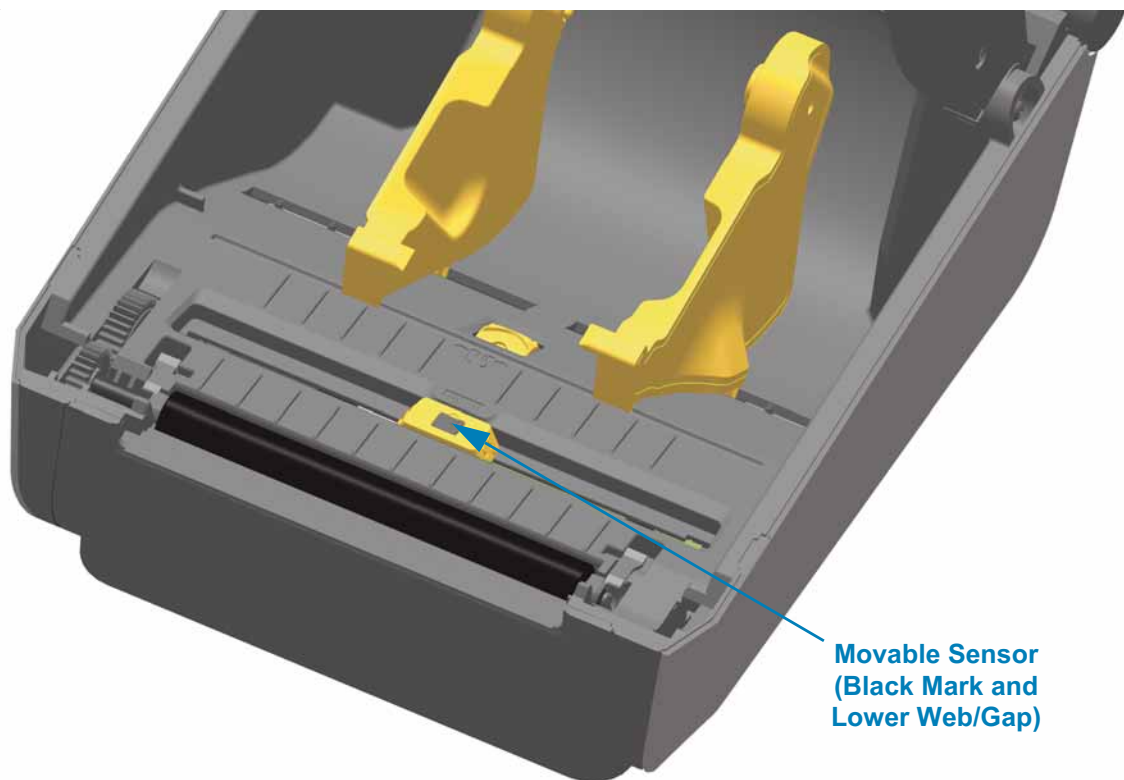


Sensor Cleaning

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.

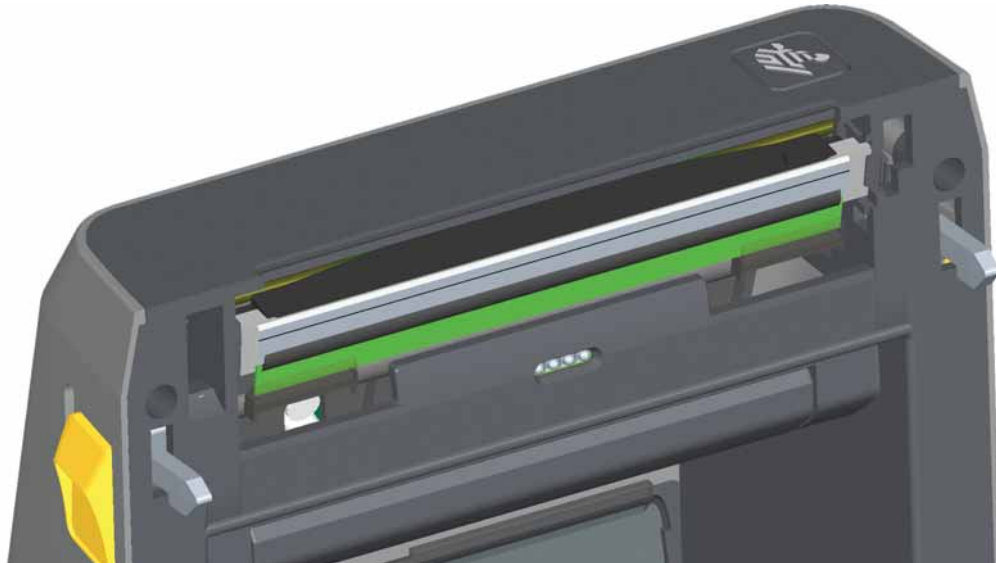
Lower Half of ZD620/ZD420 Printers

1. Clean the Movable Sensor's window. 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 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.



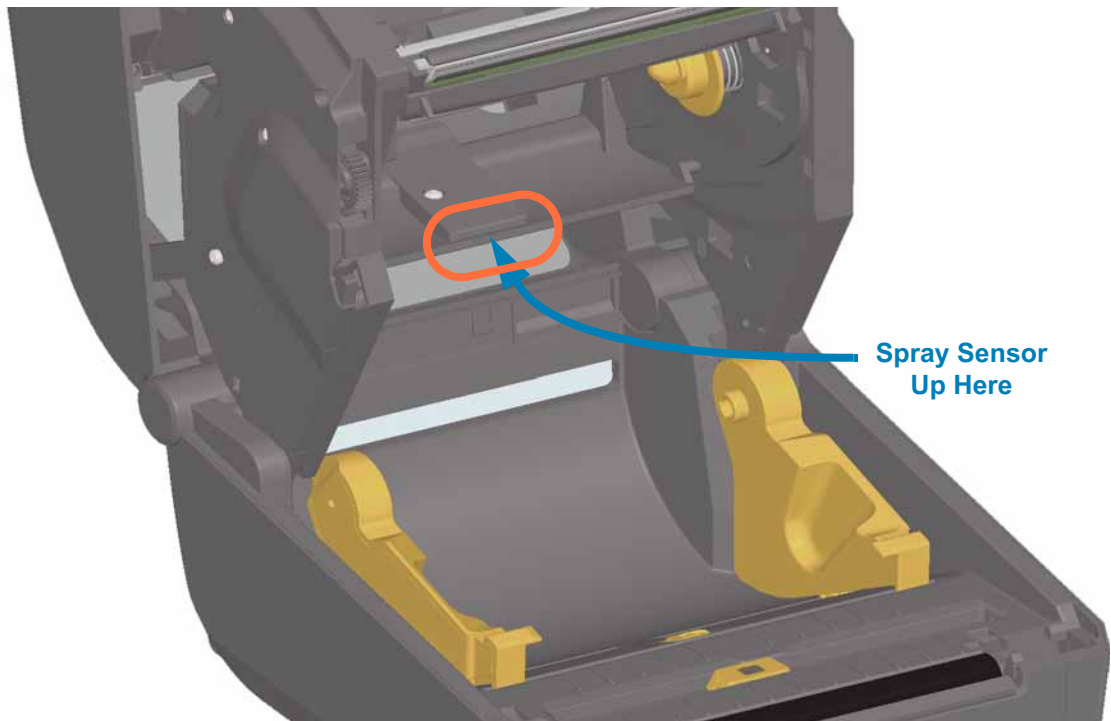
Upper Half of ZD620/ZD420 Direct Thermal Printers

1. Spray the Upper Web (Gap) Array Sensor below the printhead with a can of compressed air. If necessary, use an alcohol moistened swab to break up adhesive or other non-dust contaminants. Use a dry swab to remove any residue that may be left from the first cleaning.



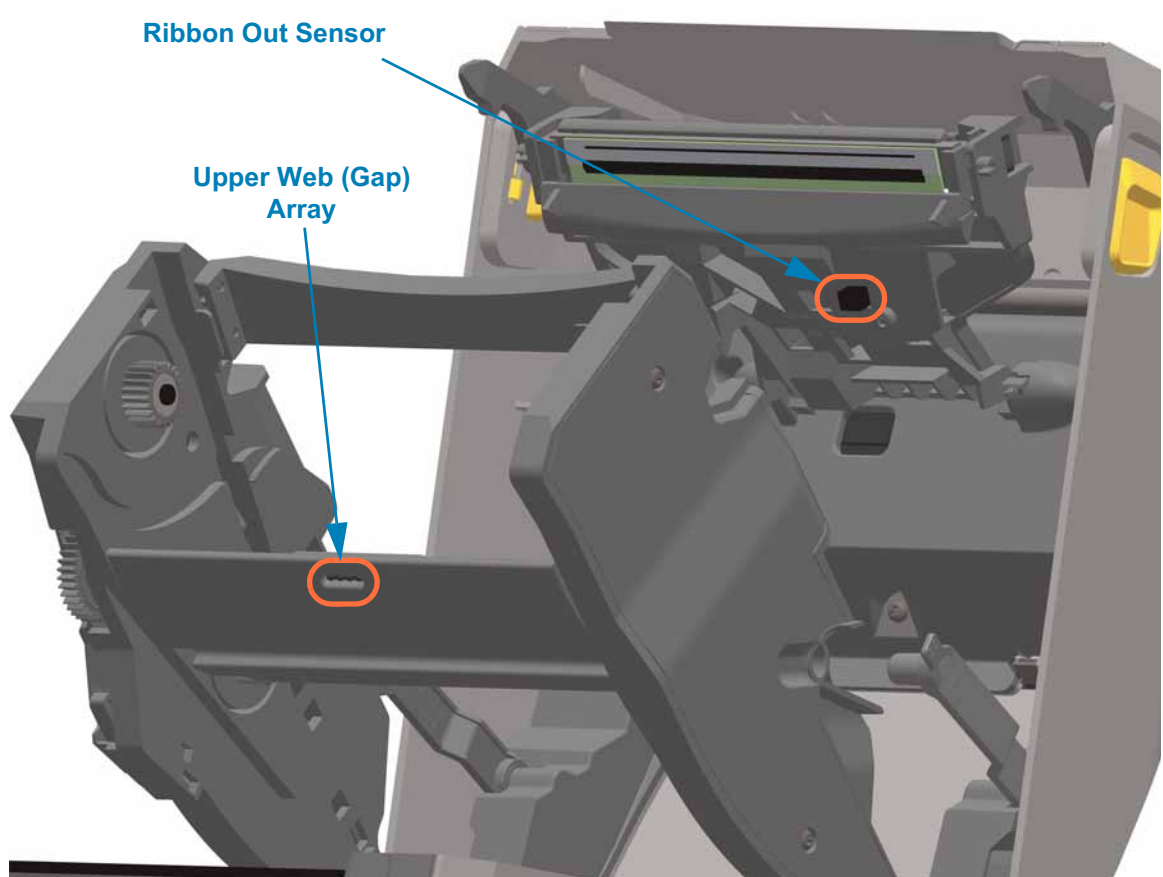
Upper Half of ZD620/ZD420 Thermal Transfer Printers

1. Spray the Upper Web (Gap) Array Sensor below the printhead with a can of compressed air. Complete sensor cleaning (very rare) requires a service technician



Upper Half of ZD420 Ribbon Cartridge Printers

1. Pull the two (2) Release Arms out to release the Ribbon Drive Transport. See [ZD420 Cartridge Printer: Accessing the Printhead](#) for more details.
2. Swing the Printhead Actuator Arm up until it touches the printer's top cover. Hold the Printhead Actuator Arm in this position for access to the area below the printhead, see the next graphic.
3. Spray the Upper Web (Gap) Array Sensor under the Ribbon Drive Transport and the Ribbon Out Sensor on the underside of the Printhead Actuator Arm with a can of compressed air. If necessary, use an alcohol moistened swab to break it up. Use a dry swab to remove any residue that may be left from the first cleaning.



Cleaning Ribbon Cartridge Sensor

4. **Ribbon Cartridge Sensor Pins - Only clean when the cartridges are failing detection.** Clean the Ribbon Cartridge interface pins with a gentle wiping from right to left. Up and down motions may damage the pins.



Platen Cleaning and Replacement

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

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.



Important • 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.

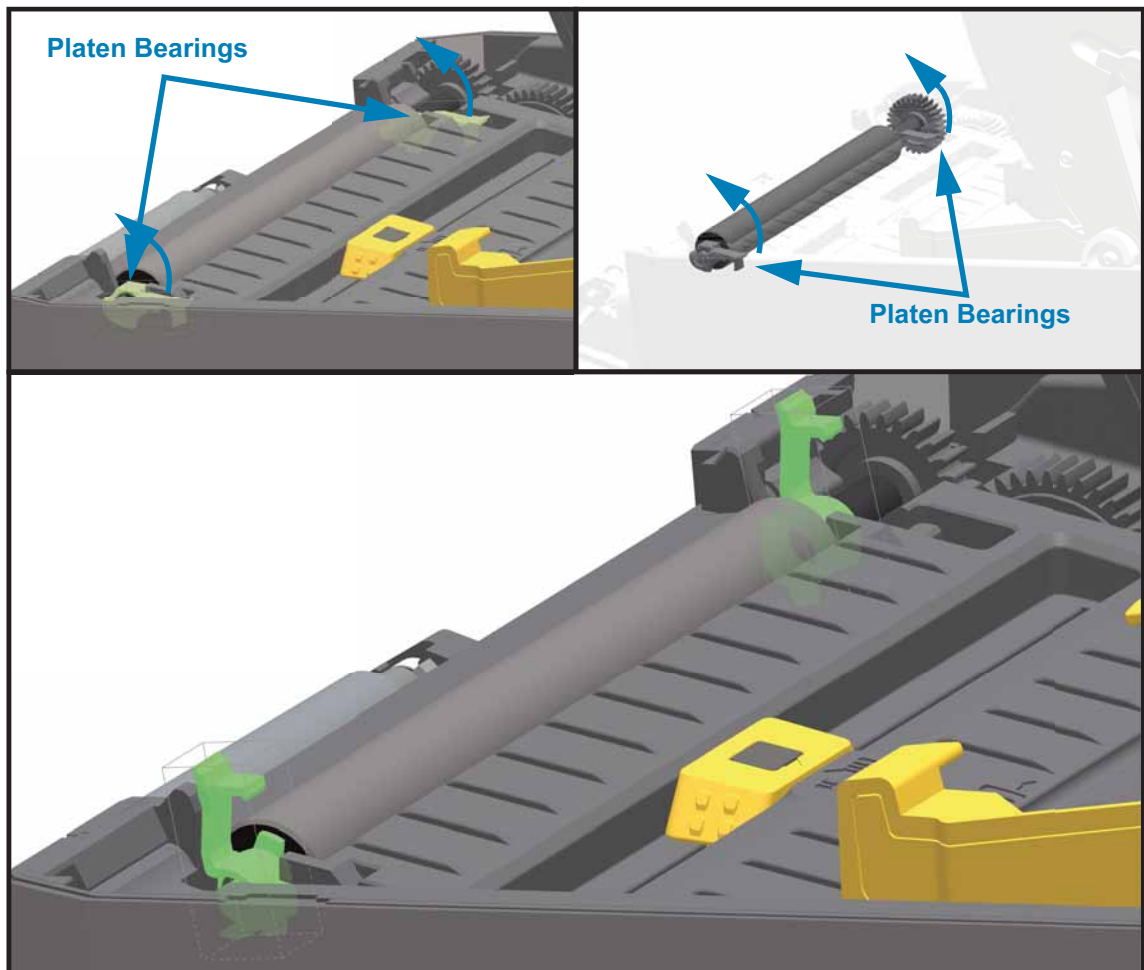


Important • **LINERLESS PLATENS** — Do not wash or scrub. Only remove adhesive particles by using the adhesive side of linerless media. Lightly touch the platen roller with a linerless label to lift particles off the exposed area of the platen roller and the media path areas.

Removing the Platen Roller

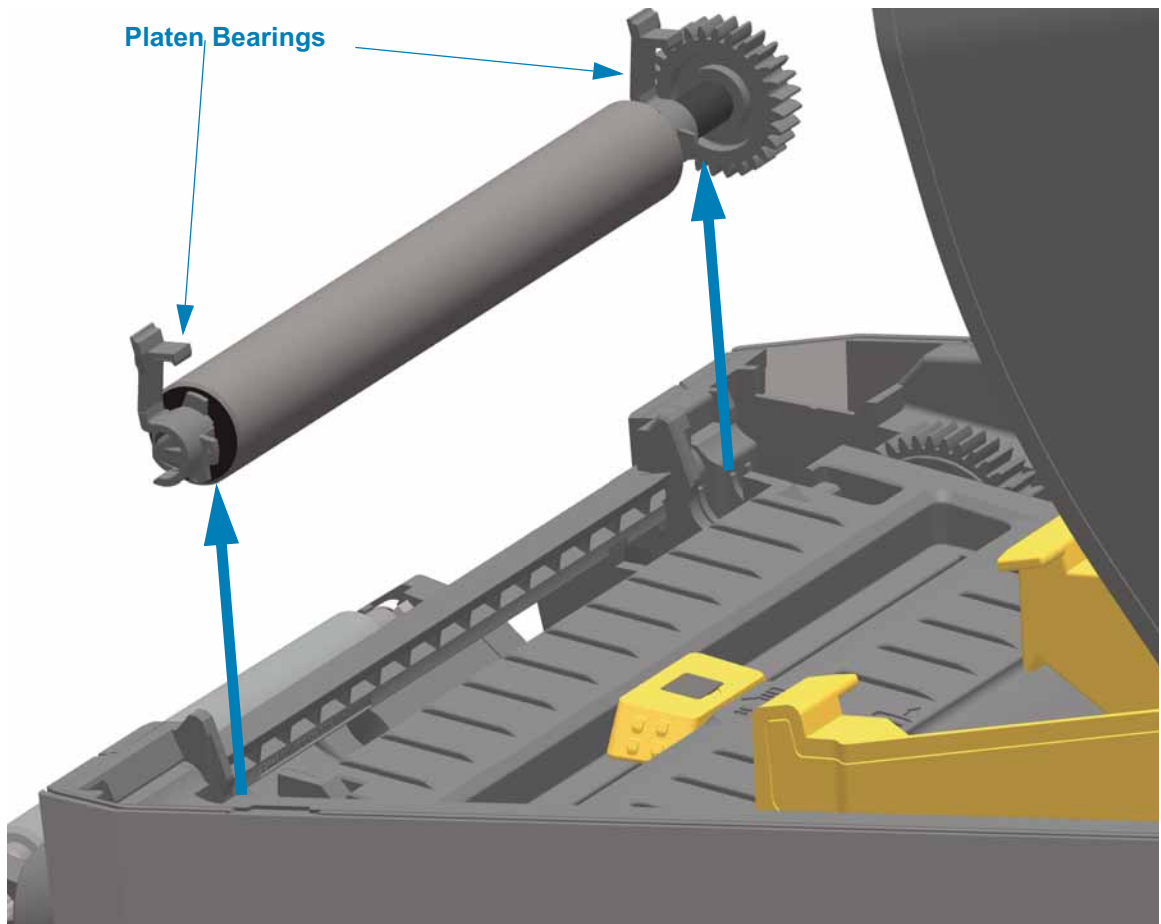
The platen can be cleaned with a fiber-free swab (such as a Texpad swab) or a lint free, clean, damp cloth very lightly moistened with medical grade alcohol (90% pure or better).

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.

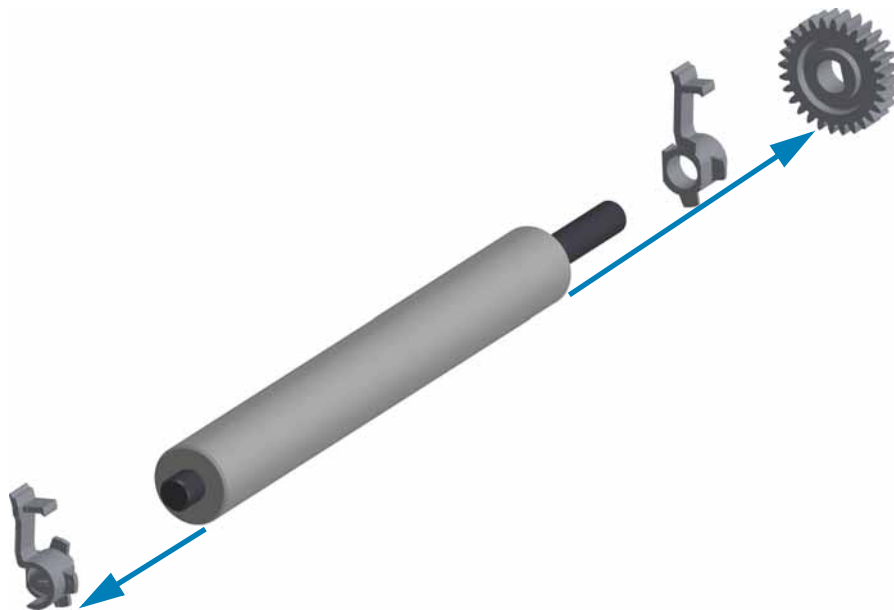


Cleaning and Maintenance

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.



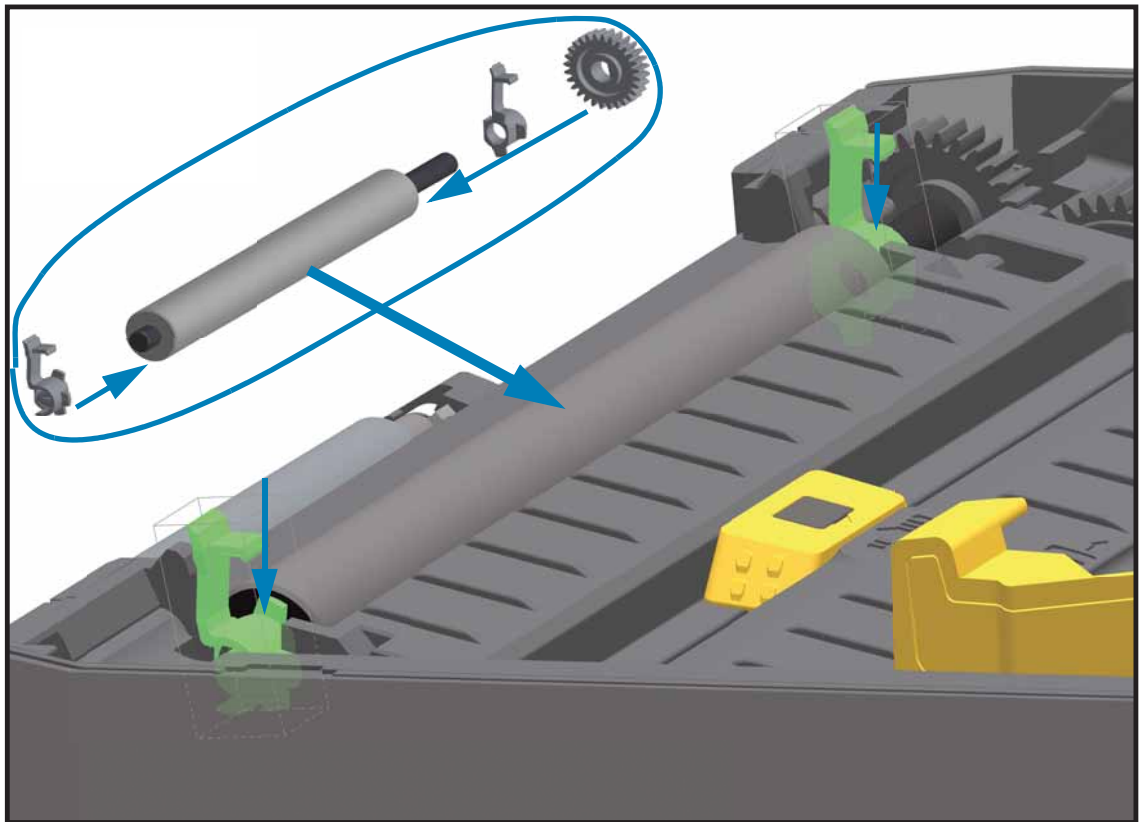
Cleaning and Maintenance

5. **Cleaning Only** — Clean the platen with the alcohol moistened swab. 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 to remove residual contaminants. Adhesives and oils, for example, may be thinned by the initial cleaning but not completely removed.



Important • LINERLESS PLATENS — Only use the adhesive side of a piece of linerless media to gently lift the particles from the platen roller for cleaning.

6. Discard the cleaning swabs 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.
10. Allow the printer to dry for one minute before closing the dispenser door, media cover or loading labels.

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.



ESD 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 • Unplug the printer from the power supply and allow the printer to cool to prevent injuries or damage to printer circuitry.

Use one of the following model specific procedures to replace the printhead.

- [ZD620 and ZD420 Direct Thermal](#)
- [ZD620 and ZD420 Thermal Transfer Ribbon Roll](#)
- [ZD420 Thermal Transfer Ribbon Cartridge](#)

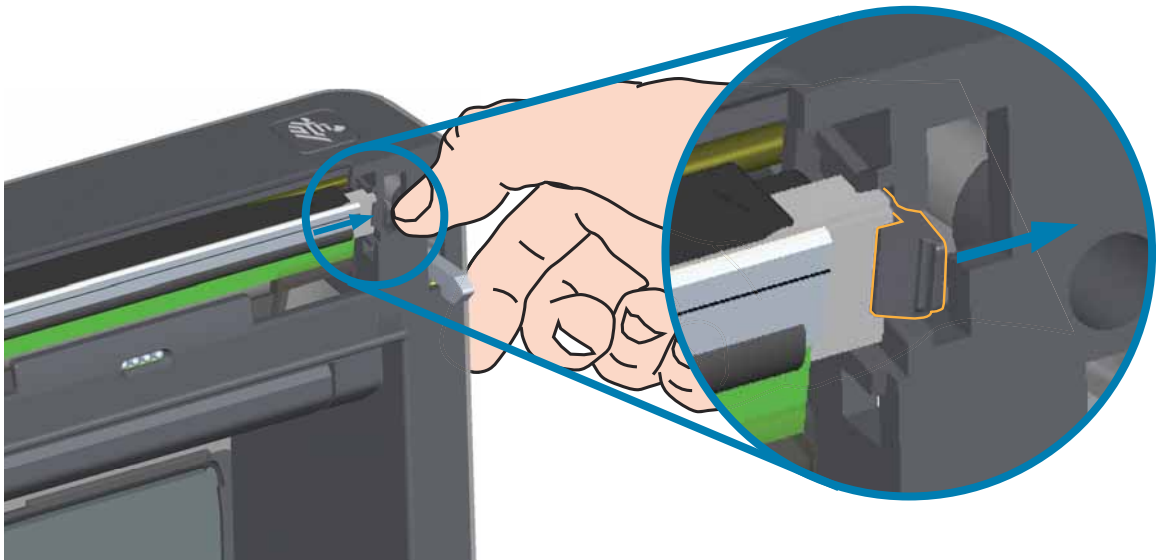
ZD620 and ZD420 Direct Thermal

Removing the Printhead

1. Turn the printer OFF. Open the printer.

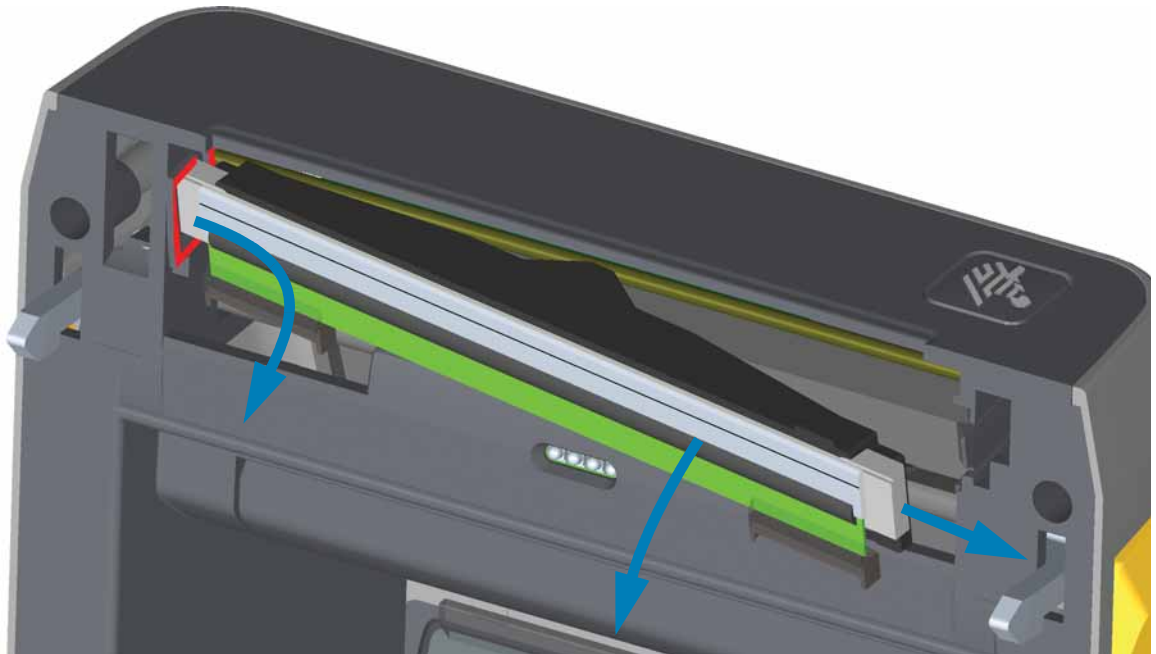


2. Push the printhead release latch away from the printhead. The right side of printhead releases.

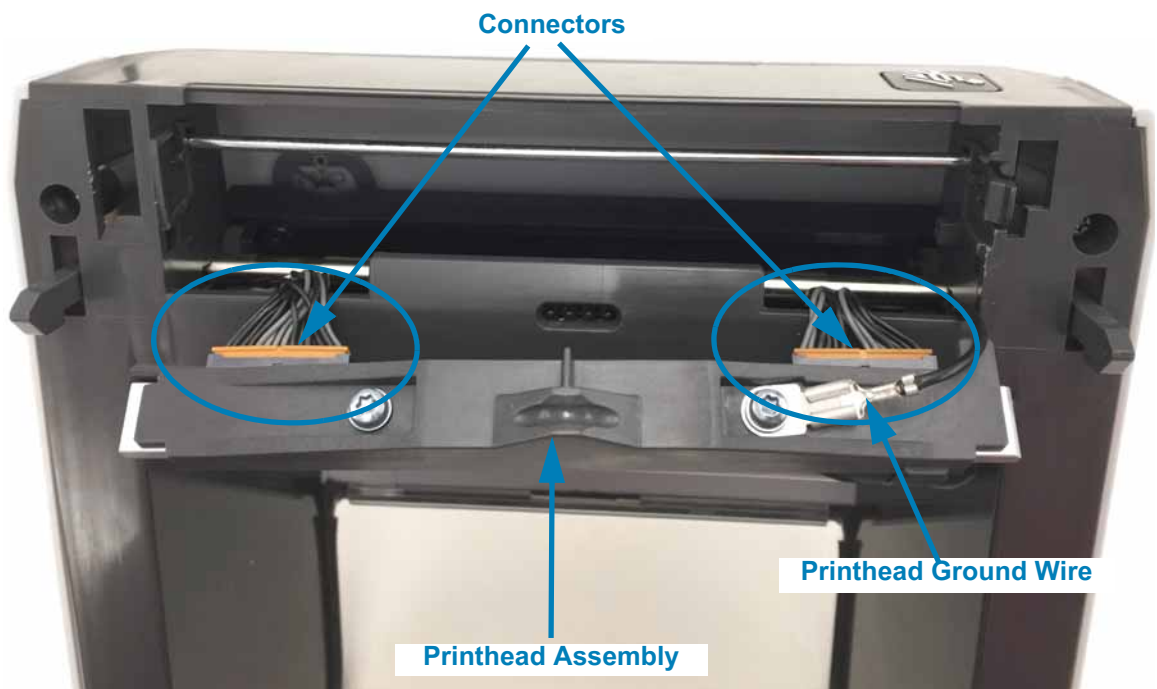


Cleaning and Maintenance

3. Swing the loose right side of the printhead out of the printer. Pull it out and to the right a little to get the left side of the printhead clear. Pull the printhead out and free of the top cover to gain access to its attached cables on the backside of the printhead. Note, the red highlights the left side printhead retainer slot.

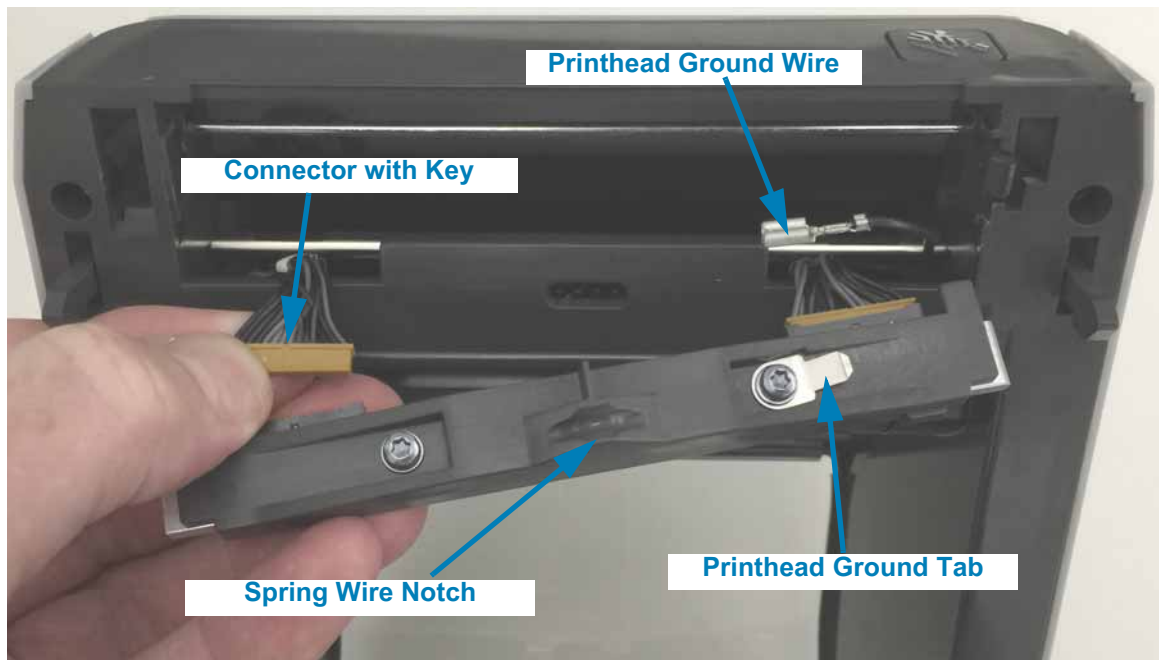


4. Gently but firmly pull the two printhead cable bundle connectors off of the printhead. Pull the ground wire off the printhead.

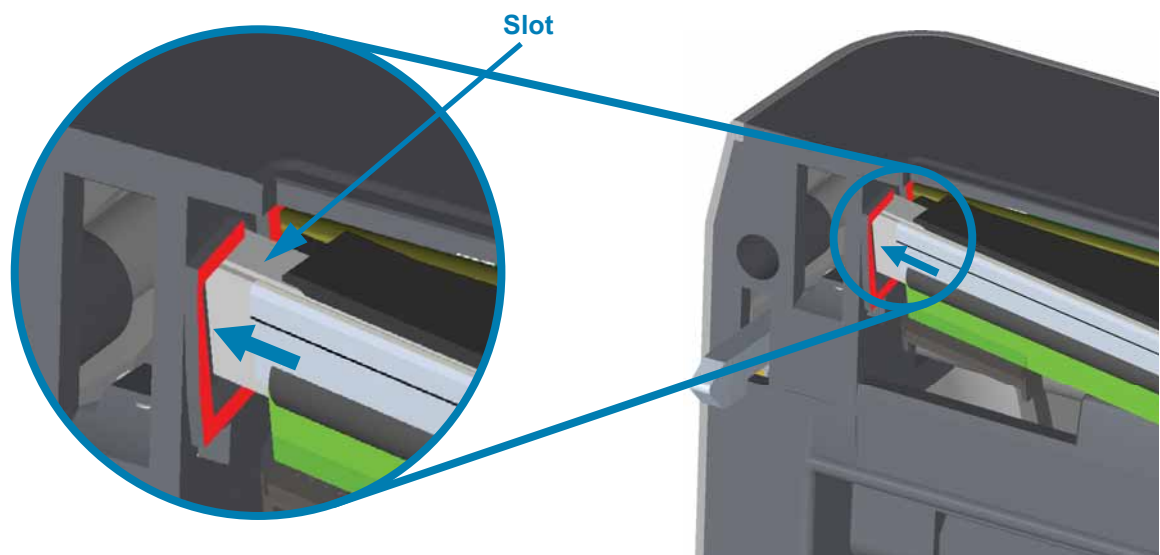


Replacing the Printhead

1. Push the right side printhead cable connector into the printhead. The connector is keyed to only insert one way.
2. Attach the ground wire to the printhead's ground tab.
3. Push the left side printhead cable connector onto the printhead.

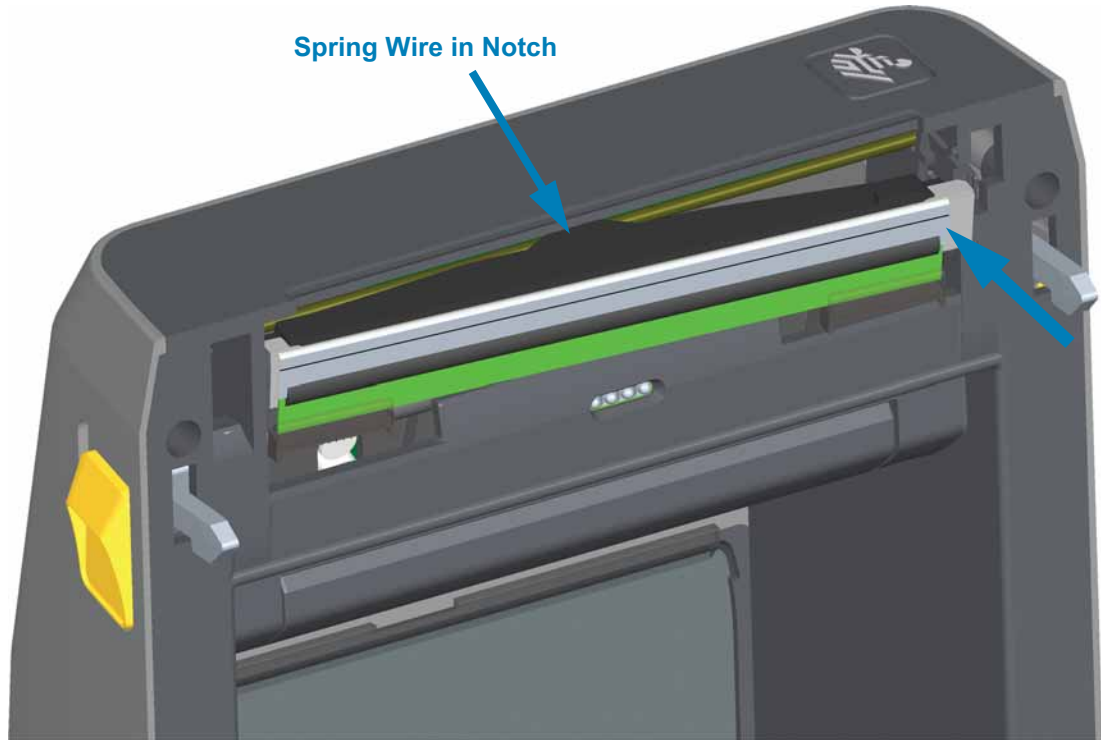


4. Insert the left side of the printhead assembly into the recessed slot (highlighted in red) on the left side of the printer.



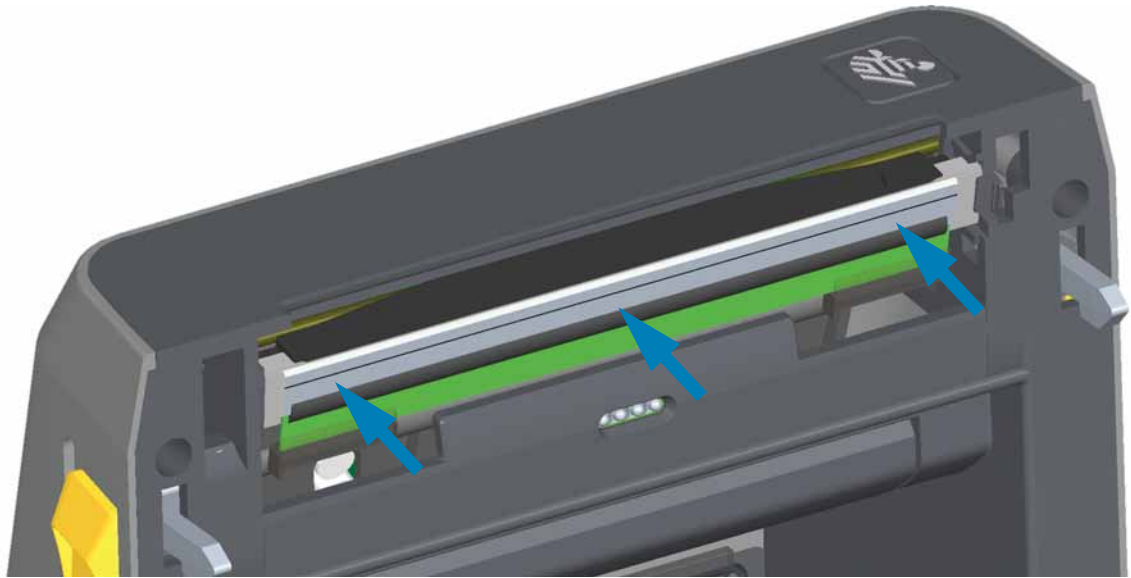
Cleaning and Maintenance

5. Align the Spring Wire Notch on the backside of the printhead to the Spring Wire. Push the right side of the printhead into the printer until the latch locks the right side of the printhead into the printer.



Cleaning and Maintenance

6. Verify that the printhead moves up and down freely when pressure is applied and remains locked when released.

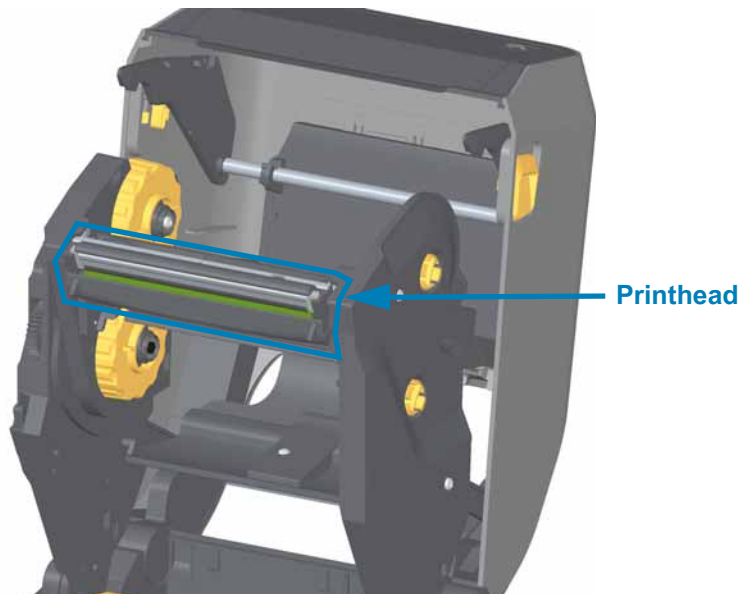


7. Clean the printhead. Use a new pen to wipe body oils (finger prints) and debris of the printhead. Clean from the center of the printhead to the outside. See [Cleaning the Printhead](#).
8. Reload media. Plug in the power cord, turn on the printer and print a status report to ensure proper function. See [Test Printing with the Configuration Report](#).

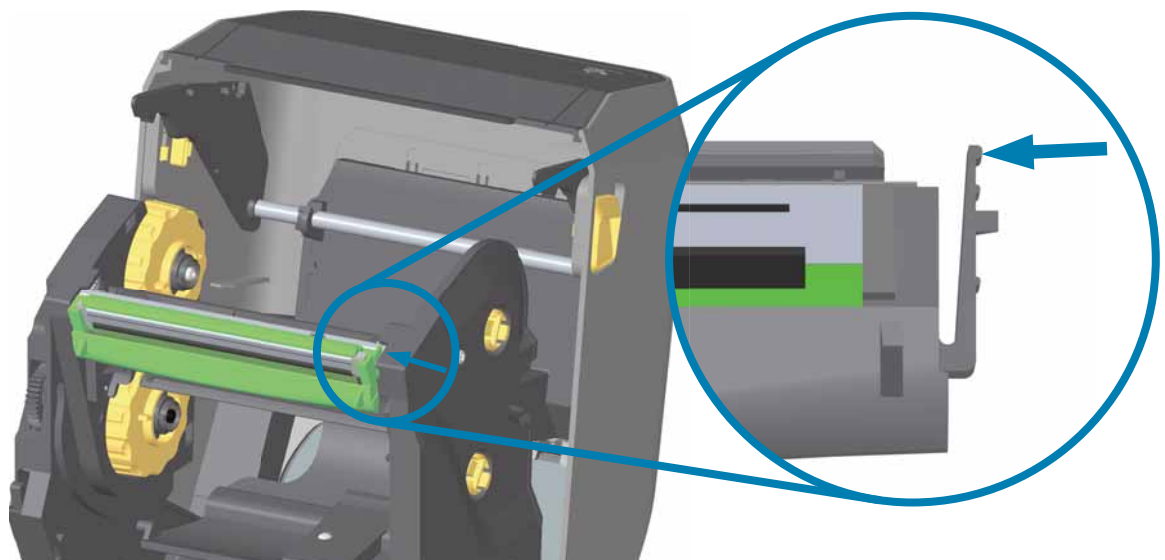
ZD620 and ZD420 Thermal Transfer Ribbon Roll

Removing the Printhead

1. Turn the printer OFF. Open the printer.

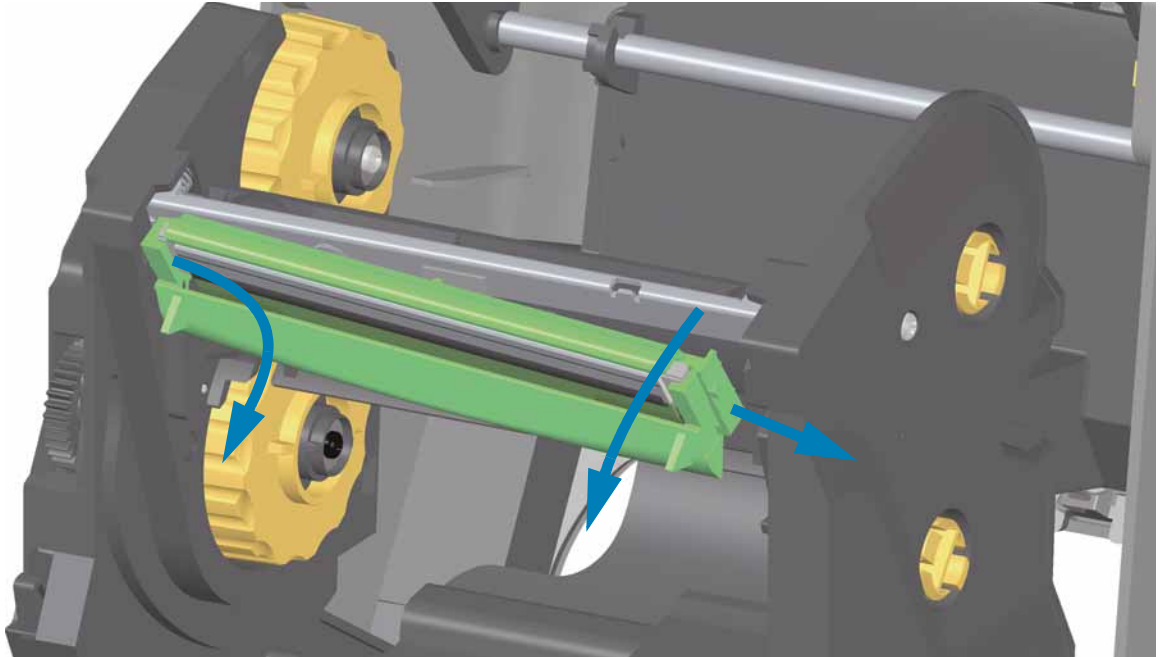


2. Push the printhead release latch toward the printhead (shown as green for visibility). The right side printhead releases down and away from the Printhead Actuator Arm.

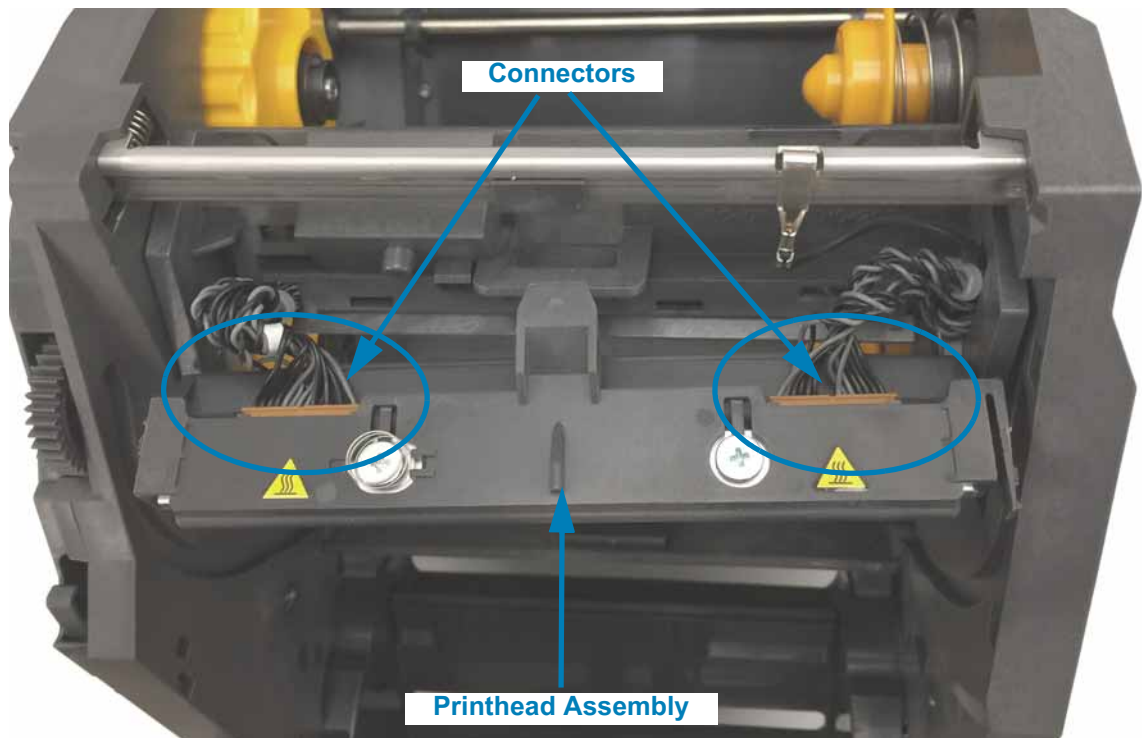


Cleaning and Maintenance

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 down and free of the ribbon carriage to gain access to its attached cables.



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

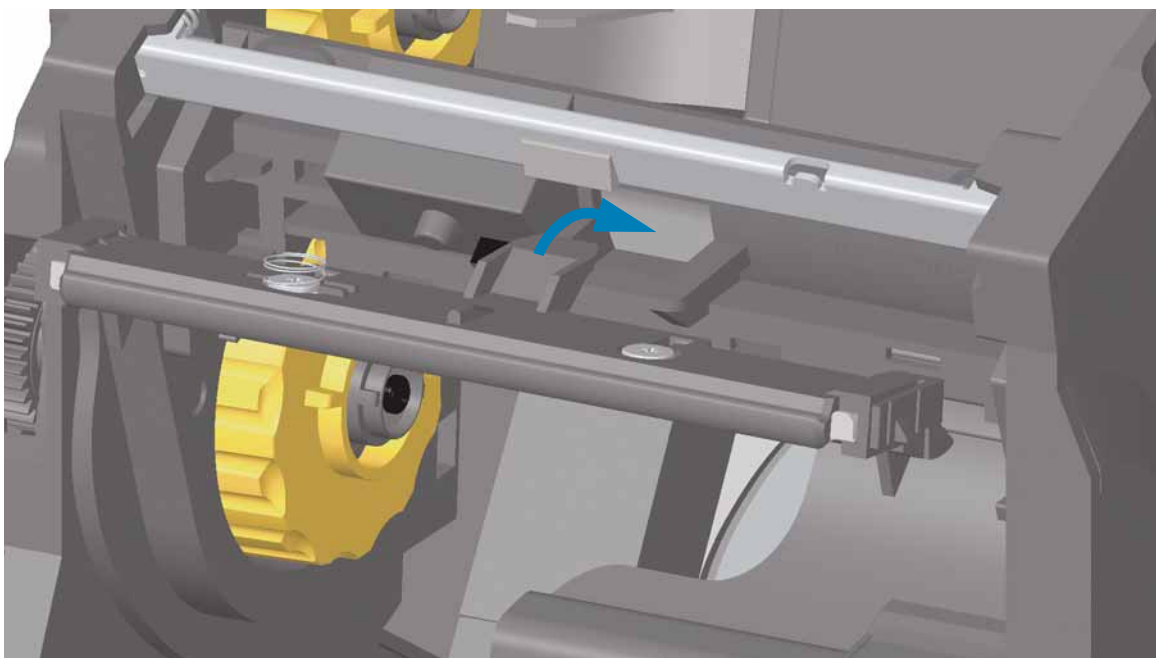


Replacing the Printhead

1. Push the right side printhead cable connector into the printhead. The connector is keyed to only insert one way.
2. Push the left side printhead cable connector onto the printhead.

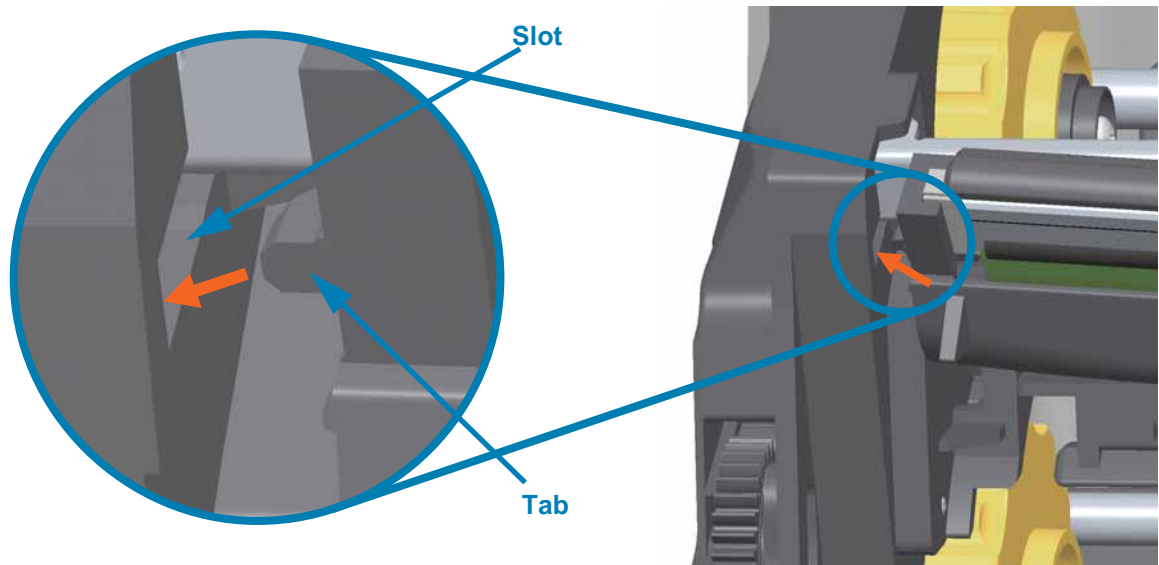


3. Insert the center tab on the printhead assembly into the center slot on the Printhead Actuator Arm.

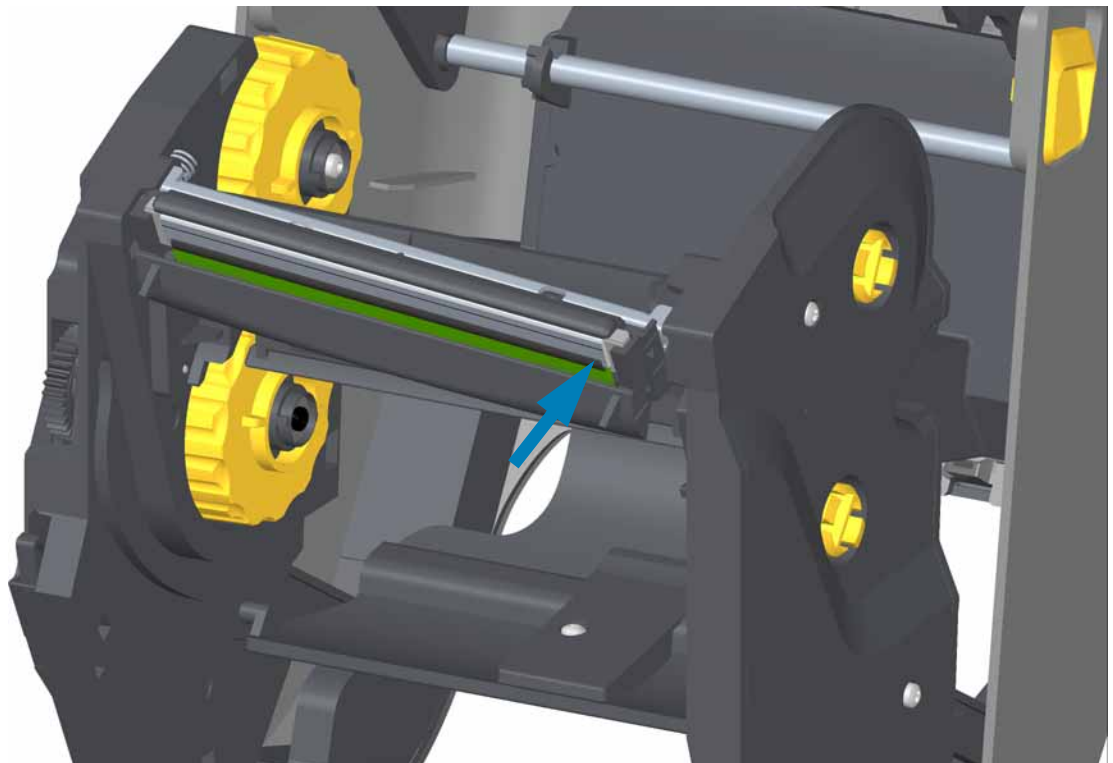


Cleaning and Maintenance

4. Insert the left side tab of the printhead assembly into the recessed slot on the left side of the Printhead Actuator Arm.

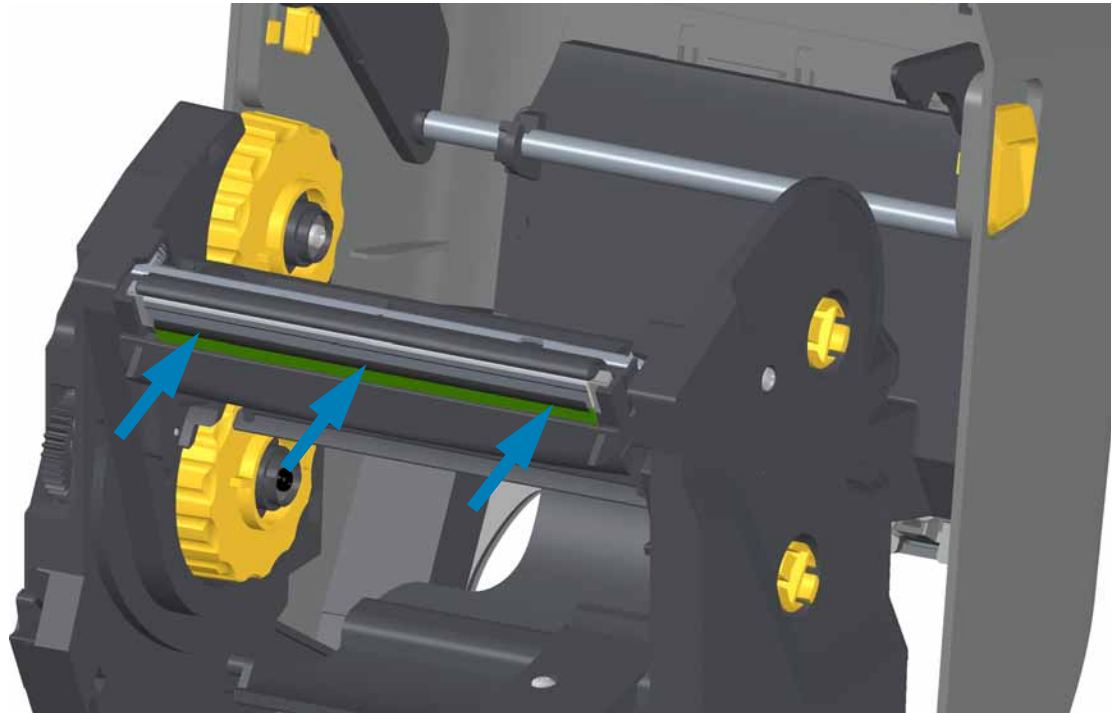


5. Push the right side of the printhead into the printer until the latch locks the right side of the printhead into the printer.



Cleaning and Maintenance

6. Verify that the printhead moves up and down freely when pressure is applied and remains locked when released.

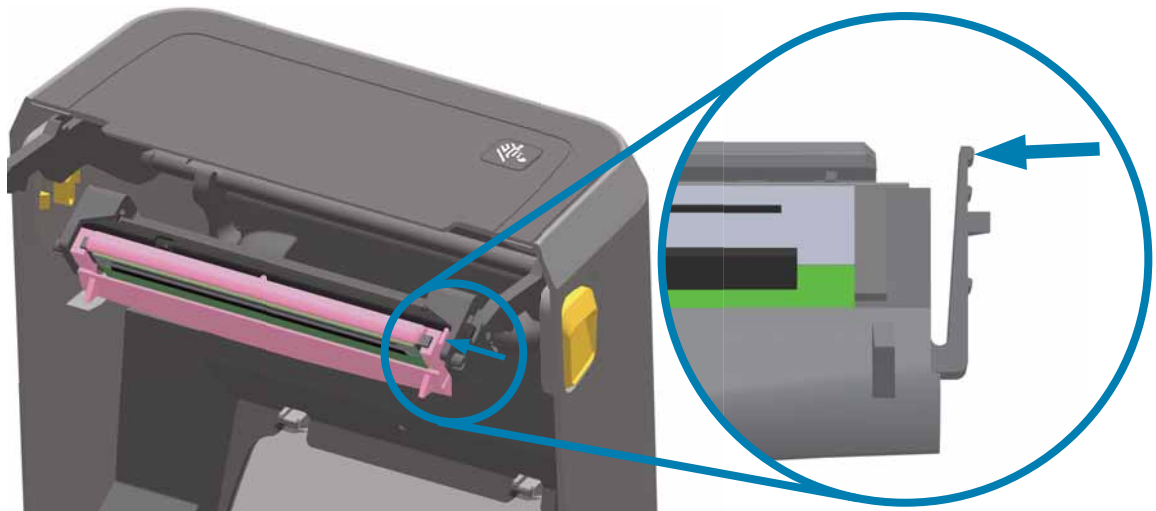


7. Clean the printhead. Use a new pen to wipe body oils (finger prints) and debris of the printhead. Clean from the center of the printhead to the outside. See [Cleaning the Printhead](#).
8. Reload media. Plug in the power cord, turn on the printer and print a status report to ensure proper function. See [Test Printing with the Configuration Report](#).

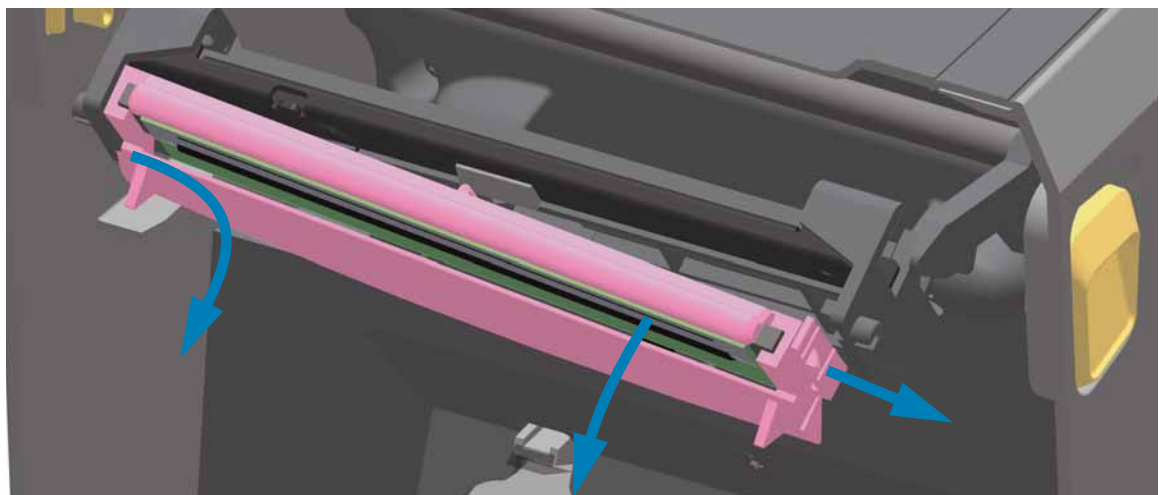
ZD420 Thermal Transfer Ribbon Cartridge

Printhead Removal

1. Turn the printer OFF. Open the printer.
2. Pull the two (2) Release Arms out to release the Ribbon Drive Transport. See [ZD420 Cartridge Printer: Accessing the Printhead](#) for more details.
3. Swing the Printhead Actuator Arm up until it touches the printer's top cover. Hold the Printhead Actuator Arm in this position for access to the printhead. Push the printhead release latch toward the printhead (shown as pink for visibility). The right side printhead releases down and away from the Printhead Actuator Arm.

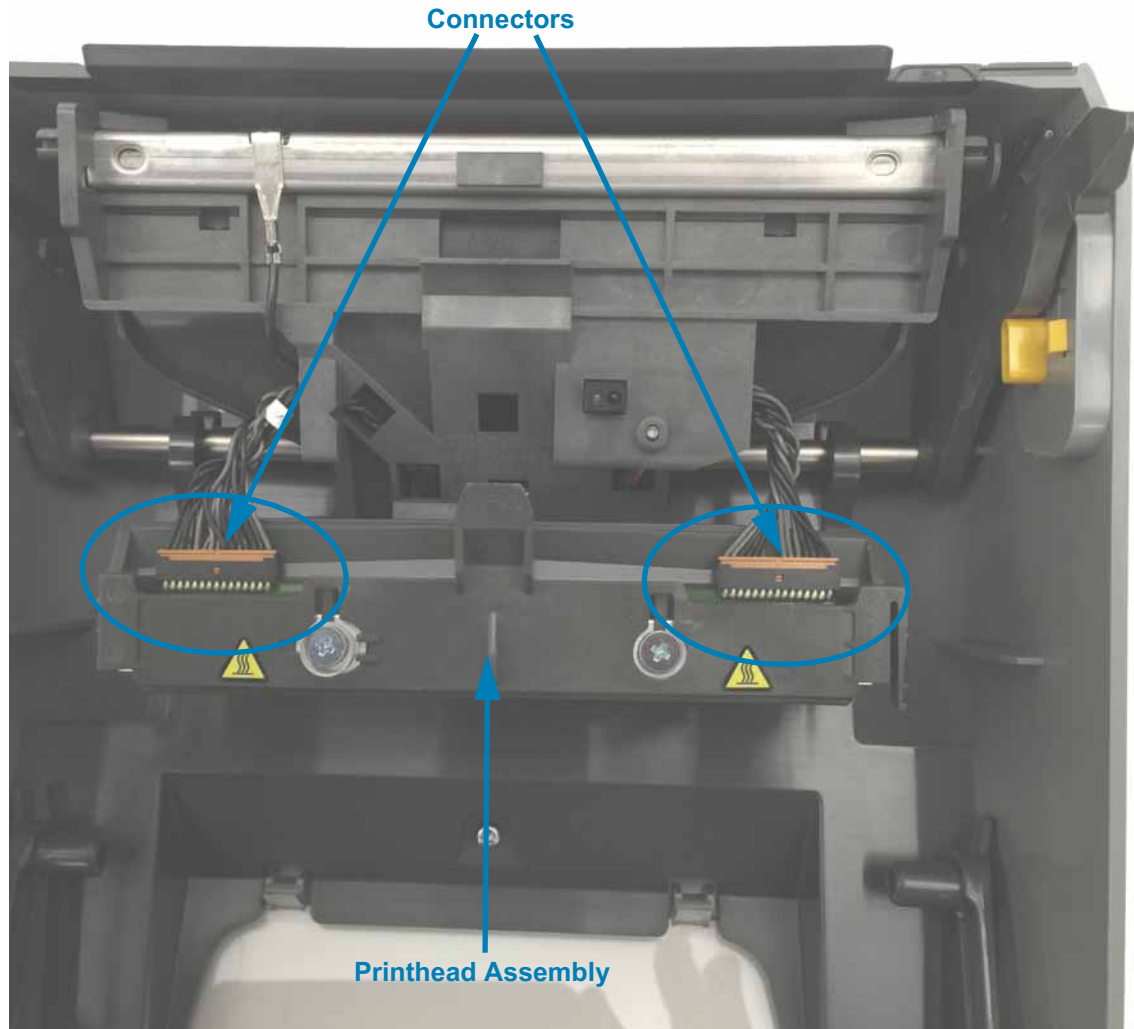


4. Swing the loose right side of the printhead out of the printer. Pull it to the right a little to get the left side of the printhead clear. Pull the printhead down and free of the Printhead Actuator Arm to gain access to its attached cables.



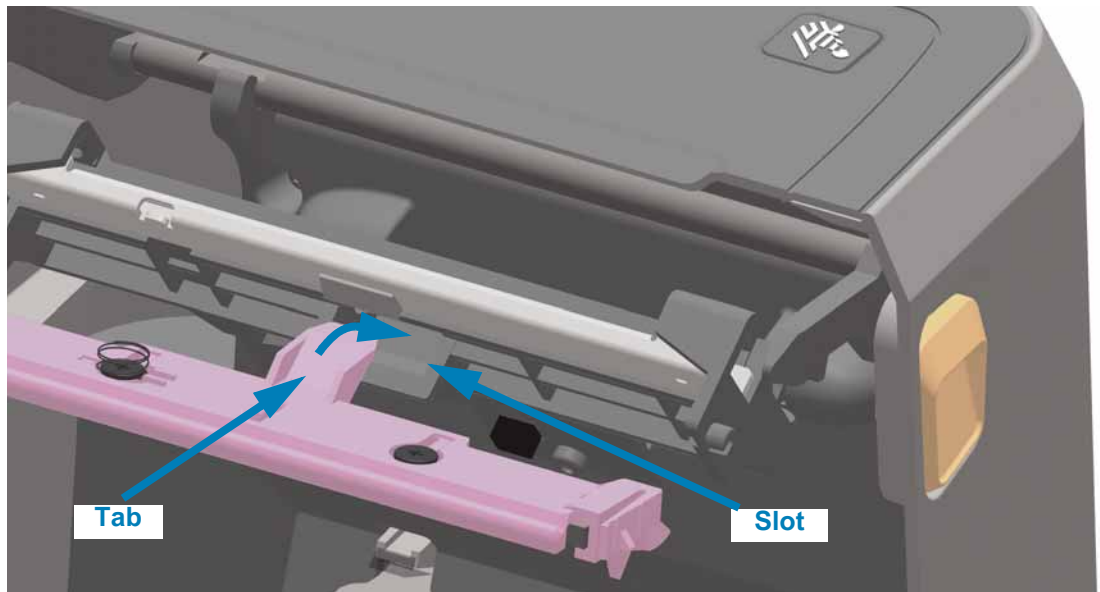
Cleaning and Maintenance

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

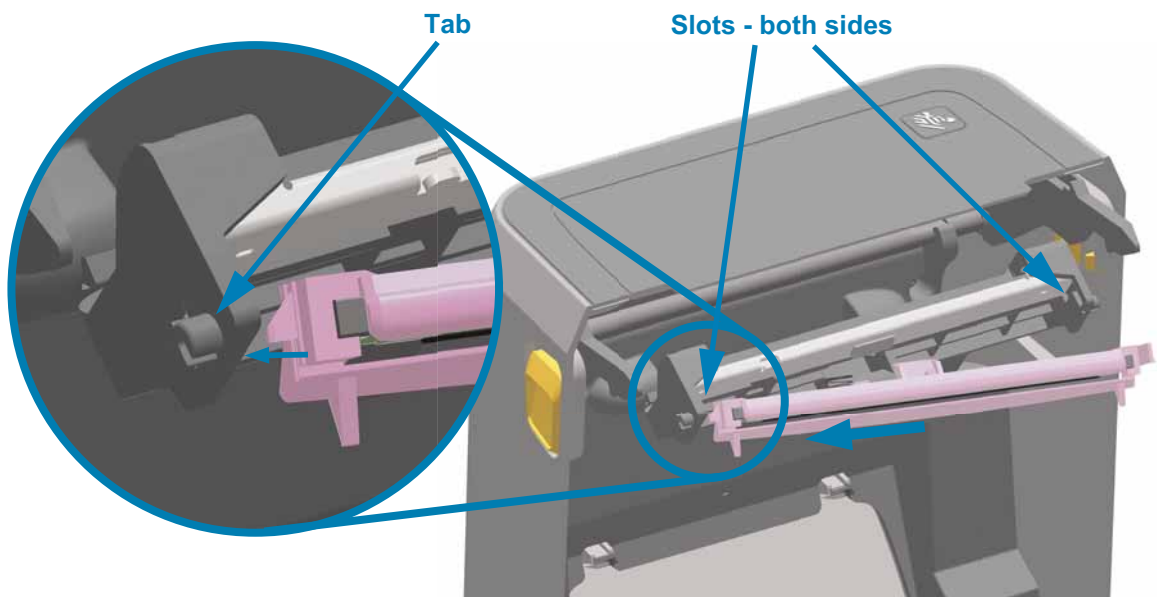


Replacing the Printhead

1. Push the right side printhead cable connector into the printhead. The connector is keyed to only insert one way.
2. Push the left side printhead cable connector onto the printhead.
3. Insert the center tab on the printhead assembly into the center slot on the Printhead Actuator Arm.

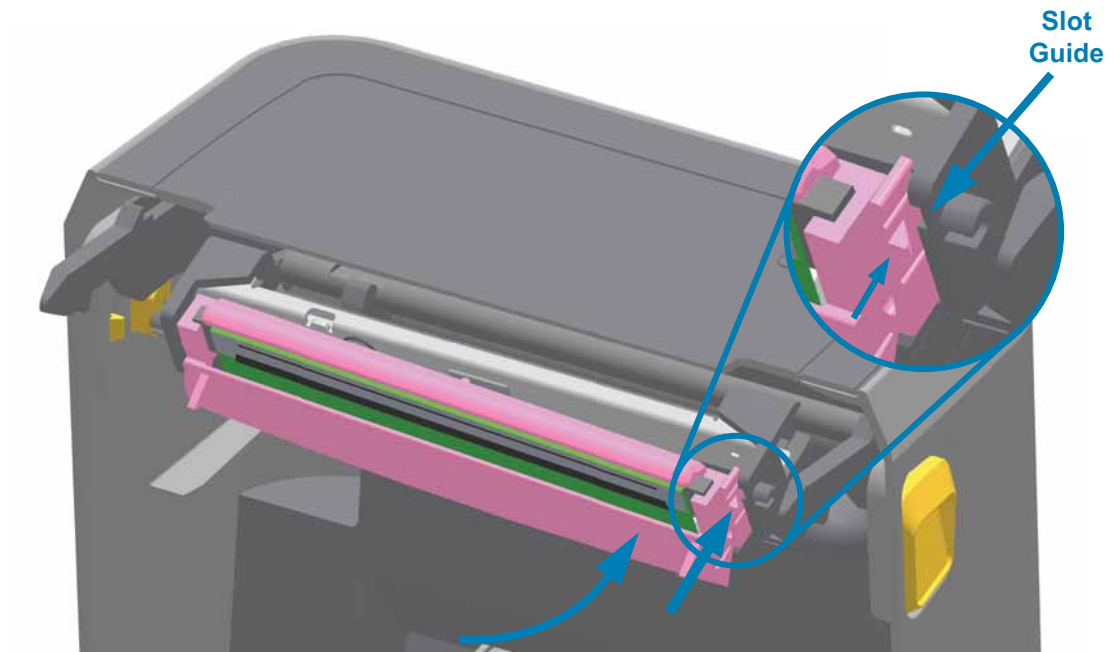


4. Insert the left side tab of the printhead assembly into the recessed slot on the left side of the Printhead Actuator Arm.

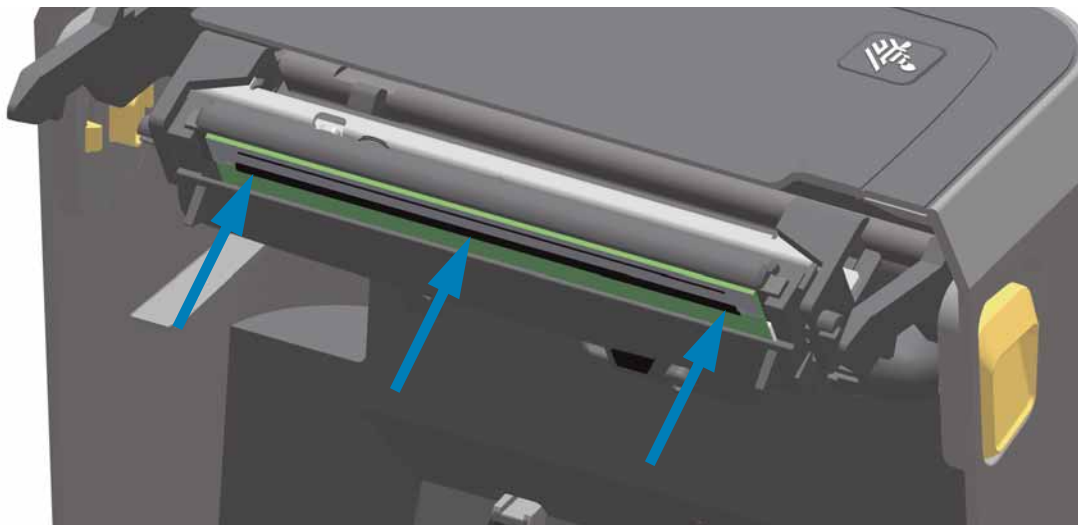


Cleaning and Maintenance

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



6. Verify that the printhead moves freely into the printer when pressure is applied (see arrow) and remains locked when pressure is released.



7. Clean the printhead by using a new cleaning pen to wipe body oils (finger prints) and debris off the printhead. See [Cleaning the Printhead](#).
8. Reload media. Turn on the printer and print a status report to ensure proper function. See [Test Printing with the Configuration Report](#).

Updating Printer Firmware

The printer's firmware may need to be updated periodically to get new features, improvements, and printer upgrades for media handling and communications.

Use Zebra Setup Utilities (ZSU) to load new firmware.

1. Open Zebra Setup Utilities.
2. Select your installed ZD620/ZD420 printer.
3. Click on the 'Open Printer Tools' button and a 'Tools' window will open.
4. Click on the 'Action' tab.
5. Load the printer with media.
6. Click on the text line - 'Send file'. The lower half of the window will present a filename and path with a Browse (...) button to select the latest firmware file you have downloaded from the Zebra Web site.
7. Observe the user interface and wait.

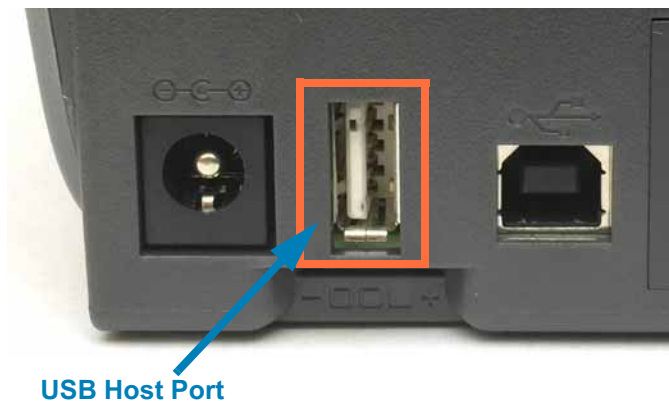
If the firmware version is different than the version installed on the printer, the firmware will download to the printer. The data indicator will flash green while the firmware is downloading. The printer will restart with all indicators flashing. When the firmware update has completed, the STATUS indicator will display solid Green as the firmware is validated and installed. A printer Configuration Report is automatically printed and the firmware update has been completed.

USB Host

The USB host port allows you to connect USB devices — such as a keyboard, scanner, or USB Flash (memory) drive — to the printer.

USB Host Port Uses

- Firmware updates,
- File transfers and management
- A port for low power USB data entry devices (keyboards, scales, scanners, and other wedge devices).



Important • The USB Flash drive must be formatted with the FAT file system. Filenames may be 1 to 16 alphanumeric characters (A, a, B, b, C, c, ..., 0, 1, 2, 3, ...) only. Only use ASCII characters. Do not use Asian characters, Cyrillic characters, or accented characters in file names. Some functions may not work properly if there are underscores in a file name. Use periods instead.

Using USB Host for Firmware Updates

The USB host port allows you to connect an USB Flash drive to the printer to perform firmware updates.

This is an example of using the powerful printer management, Zebra Mirror functions. See the printer ZPL programming manual — **Mirror** and **Set-Get-Do** (SGD) [usb.mirror](#) commands operation.



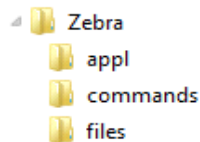
Note • See [Online resources available to support this printer](#) section for information and support links for your specific printer model.



Important • Supports USB Flash drives (or “thumb drive” or “memory stick”) up to 1 Terabyte (TB). The printer will not recognize drives larger than 1 TB.

Flash Drive Preparation and Firmware Update

1. On your USB Flash Drive, create the following:
 - a folder called Zebra
 - in that folder, create three sub-directories:
 - appl
 - commands
 - files



2. In the **/appl** folder, place a copy of the latest firmware for your printer.
3. Load the printer with media.
4. Insert the USB Flash drive into the USB host port on your printer.
5. Observe the user interface and wait.

If the firmware version on the USB Flash drive is different than the version installed on the printer, the firmware will download to the printer. The data indicator will flash green while the firmware is downloading. The printer will restart with all indicators flashing. When the firmware update has completed, the STATUS indicator will display solid Green as the firmware is validated and installed. A printer Configuration Report is automatically printed and the firmware update has been completed.

Remove the USB Flash drive from the printer.

Other Printer Maintenance

There are no user level maintenance procedures beyond those detailed in this section. See the [Troubleshooting](#) for more information on diagnosing printer and print problems.

Troubleshooting

This section provides troubleshooting procedures and information.

Resolving Alerts and Errors

Alert: Printhead Open

A print command or a FEED button has been pressed and the printer has detected that the printhead (cover) is not closed.



HEAD OPEN
CLOSE HEAD

Possible Cause - 1

The cover is open or has not been closed properly.

Resolution

Closed the cover/printhead. Push down on the front top corners of the printer's cover. You should normally hear and feel the cover latches snap in place to lock the cover closed for printing.

Possible Cause - 2

The printer's Head-Open switch needs service.

Resolution

Replace the Head-Up PCBA.

Alert: Media Out

A print command, a FEED button has been pressed, or you are printing; and the printer can not detect media in the print path.



Possible Cause - 1

There is no media (roll) in the printer.

Resolution

Load your chosen media in the printer and close the printer. You may need to press the FEED button once or the PAUSE button to get the printer to resume your print operation.

Possible Cause - 2

Open the printer: If there is a missing label on the roll between two labels at the end of a roll of labels, then this is the method used by the label roll manufacture to identify the end of the roll.

Resolution

Replace the empty media roll and continue printing. Do not power the print off or you will lose your print job.

Possible Cause - 3

Misaligned media sensor.

Resolution

Check the position of the media sensor.

The printer may need to be calibrated for the media after the adjusting the sensor location. See [SmartCal Media Calibration](#).

Possible Cause - 4

The printer is set for noncontinuous (labels or black mark) media, but continuous media is loaded.

Resolution

Check the position of the media sensor is in the center default location.

The printer may need to be calibrated for the media after the adjusting the sensor location. See [SmartCal Media Calibration](#).

Possible Cause - 5

The media sensor is dirty.

Resolution

Clean the Upper Web (Gap) Sensor Array and the lower Movable Media sensors. See [Sensor Cleaning](#).

Reload your media, adjust the Movable Media sensor's position for your media, and recalibrate the printer for the media. See [SmartCal Media Calibration](#).

Possible Cause - 6

The media sensing is not working. Possible data corruption of memory or faulty components.

Resolution

- 1 — Reload the printer's firmware. See [Updating Printer Firmware](#).
- 2 — If this does not fix this issue, replace the Upper Array Sensor.
- 3 — Replace the Main PCBA.

Alert: Ribbon In (ZD420 Cartridge Printer only)

A print command has been sent to the printer and it is in Direct Thermal Mode with Ribbon installed.



Note • The printer has two different heat settings - one for Direct Thermal and one for Thermal Transfer. They are designed to have equivalent print density/darkness at the same setting level.

STATUS PAUSE DATA SUPPLIES NETWORK



**WARNING
RIBBON IN**

Possible Cause - 1

There is a Ribbon Cartridge in the printer while the printer is set to Direct Thermal Mode (and printing on direct thermal media).

Resolution

Remove the ribbon cartridge from the printer without turning the printer OFF. Close the printer. You may need to press the FEED button once or the PAUSE button to get the printer to resume your print operation.

Possible Cause - 2

The printer is incorrectly set to Direct Thermal Mode when you are trying to print using Transfer Media and Ribbon Cartridge to print.

Resolution

Change the PRINT METHOD to THERMAL TRANS (Thermal Transfer) mode. The print format/form send for this print job may have Direct Thermal mode set with a `^MTD` set instead of `^MTT`. See the ZPL Programmer's Manual for details on printer programming. For printer links to manuals, see the [Online resources available to support this printer](#) section of this guide.

To change this setting on the dynamically:

- Use the printer's LCD user interface (if present) to change the setting.
- Use an Ethernet (LAN or WLAN) printer's Print Server Web page to access and set the PRINT METHOD to THERMAL TRANS (Thermal Transfer) mode.

Alert: Ribbon Out

- 1 — The printer is printing and stops while printing.
- 2 — A print job has been sent to the printer and the printer immediately reports this Alert.

STATUS PAUSE DATA SUPPLIES NETWORK



Possible Cause - 1

The printer has detected the end of the ribbon. The end of the ribbon has a reflective trailer on the end of Genuine Zebra Transfer Ribbon that the printer 'sees' as End of Ribbon.

Resolution

Remove the ribbon and replace the ribbon rolls or ribbon cartridge in the printer without turning the printer OFF. Close the printer. You may need to press the FEED button once or the PAUSE button to get the printer to resume your print operation.

Possible Cause - 2 (ZD420 Cartridge Printer only)

A ribbon cartridge needs to be loaded in the printer. The printer is set for Thermal Transfer Mode.

Possible Cause - 3 (ZD420 Cartridge Printer only)

The media sensing is not working. Possible dirty ribbon cartridge data chip or cartridge sensor contacts; data corruption of memory; or faulty cartridge or printer components.

Resolution

- 1 — Try another working ribbon cartridge, if available.
- 2 — Clean the Ribbon Cartridge chip with an alcohol moistened swab.
- 3 — Clean the Ribbon Cartridge Sensor's contact pins. See [Upper Half of ZD420 Thermal Transfer Ribbon Cartridge Printers](#) for cleaning instructions.
- 4 — Reload the printer's firmware. See [Updating Printer Firmware](#).
- 5 — If this does not fix this issue, replace the Ribbon Transport (to replace the Cartridge Sensor).
- 6 — Replace the Main PCBA.

Possible Cause - 4 (Standard Roll - Thermal Transfer Printers)

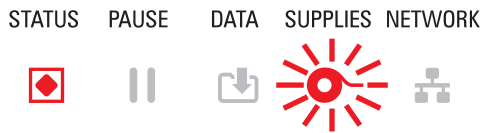
The media sensing is not working.

Resolution

- 1 — Reload the printer's firmware. See [Updating Printer Firmware](#).
- 2 — If this does not fix this issue, Replace the Ribbon Sensor.
- 3 — Replace the Main PCBA.

Alert: Ribbon Low (ZD420 Cartridge Printer only)

The printer reports this Alert.



Possible Cause - 1

The printer has calculated that the ribbon cartridge has only 10% of the ribbon left in the cartridge. The ribbon low value can be changed by programming.

Resolution

Check for the availability of ribbon cartridges. To change the Ribbon Low warning point, see the SGD commands. See the ZPL Programmer's Manual for details on printer programming. For printer links to manuals, see the [Online resources available to support this printer](#) section of this guide.

Alert: CUT ERROR

The cutter blade is bound and is not moving properly



Possible Cause - 1

Media, adhesive, or external object has stopped the cutter blade from operating.

Resolution

- 1 — Turn the printer off by holding the power using the POWER button down for 5 seconds. Wait for the printer to shutdown completely. Turn the printer on.
- 2 — If the printer does not recover from this error, replace the Cutter.



Cut Warning • There are no operator serviceable parts in the cutter unit. Never remove the cutter cover (bezel). Never attempt to insert objects or fingers in to the cutter mechanism.



Note • Using unapproved tools, cotton swabs, solvents (including alcohol), etc. all may damage or shorten the cutter's usable life or cause the cutter to jam.

Alert: PRINTHEAD OVER TEMP

1. The printhead is over temperature and paused to allow the printhead to cool.



PRINTHEAD OVER TEMP
PRINTING HALTED

Possible Cause - 1

The printer is printing a large batch job, typically with large amounts of print.

Resolution

The print operation will resume after the printhead has cooled.

Possible Cause - 2

The ambient temperature at the printers location exceeds the specified operating range. Sometimes, ambient temperatures in the printer can be higher if it is in direct sunlight.

Resolution

Move the printer location or cool ambient temperature where the printer is operating.

Alert: PRINTHEAD SHUTDOWN

1. The printhead is below operating temperature for proper printing.



PRINTHEAD SHUTDOWN
PRINTING HALTED

Possible Cause - 1

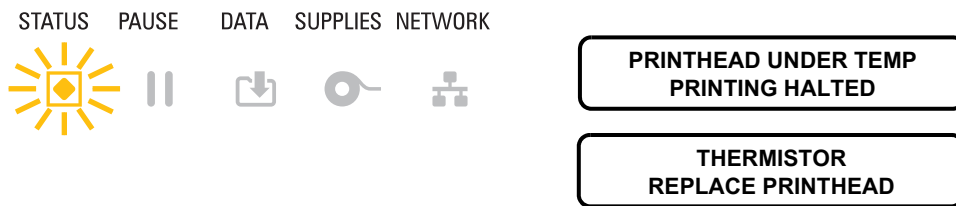
Printhead has had a critical temperature or power failure

Resolution

- 1 — Turn the printer off by holding the power using the POWER button down for 5 seconds. Wait for the printer to shutdown completely. Turn the printer on.
- 2 — If the printer does not recover from this error, replace the Printhead.
- 3 — Replace the Main PCBA.

Alert: PRINTHEAD UNDER TEMP

1. The printhead is below operating temperature for proper printing.



Possible Cause - 1

The ambient temperature at the printers location is below the specified operating range.

Resolution

Turn the printer off. Move the printer location and wait for it to warm naturally. Moisture may condense in and on the printer if the temperature changes too quickly.

Possible Cause - 2

The printhead thermistor has failed.

Resolution

- 1 — Turn the printer off by holding the power using the POWER button down for 5 seconds. Wait for the printer to shutdown completely. Turn the printer on.
- 2 — If the printer does not recover from this error, inspect the printhead cable.
- 3 — Replace the Printhead.
- 4 — Replace the Main PCBA.

Alert: **OUT OF MEMORY**

Can not store data in the printer in the specified memory location. There is not enough memory to perform the function specified on the second line of the error message.

STATUS PAUSE DATA SUPPLIES NETWORK



OUT OF MEMORY
STORING GRAPHIC

OUT OF MEMORY
STORING FORMAT

OUT OF MEMORY
STORING BITMAP

OUT OF MEMORY
STORING FONT

Possible Cause - 1

There is not enough memory to perform the function specified on the second line of the error message.

Resolution 1

- 1 — Free up some of the printer's memory by adjusting the label format or printer parameters to make the print area smaller.
- 2 — Remove unused graphics, fonts, or formats.
- 3 — Ensure that the data is not directed to a device that is not installed or is unavailable.

Resolving Print Issues

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

Issue: **General Print Quality Issues**

The printed image does not look right.

Possible Cause - 1

The printer is set at an incorrect darkness level and/or print speed.

Resolution

Perform the Print Quality Report (FEED self test) to determine the ideal darkness and speed settings for your application. Do not set print speeds above the manufacturer's maximum rated speed for your media (print material and ribbons both). See [Print Quality Report \(FEED self test\)](#).

Possible Cause - 2

The printhead is dirty.

Resolution

Clean the printhead. See [Cleaning the Printhead](#).

Possible Cause - 3

The platen roller is dirty or damaged.

Resolution

Clean or replace the platen. The platen can wear out or get damaged. See [Platen Cleaning and Replacement](#).

Possible Cause - 4

The printhead has worn out.

Resolution

Replace the printhead. The printhead can wear out and be damaged. See [Replacing the Printhead](#).

Possible Cause - 5

Thermal Transfer printing - Printing looks fuzzy, has smudge marks, or has voids or holes in print with no particular pattern.

Resolution

The print material (wax, wax-resin, or resin) may not match the material (paper, media coating, or synthetics) in use.

Set the printer for no higher than the maximum recommended print speed of the ribbon cartridge.

Possible Cause - 6

You may be using the wrong power supply.

Resolution

Verify you are using the power supply that came with this printer.

Issue: No Print on the Label

The printed image does not look right.

Possible Cause - 1

The media may not be direct thermal media (and is thermal media made for thermal transfer printers).

Resolution

See the test procedure, [Determining Thermal Media Types](#).

Possible Cause - 2

Media has been loaded incorrectly.

Resolution

The media printable surface must face up towards the printhead.

Issue: Labels Are Distorted in Size or Print Area Start Position Varies

Includes printed image that skips between labels (mis-registration).

Possible Cause - 1

Media has been loaded incorrectly or the movable media sensor is not set properly.

Resolution

Verify that the sensor is set and positioned correctly for your media type and sensing location.

Possible Cause - 2

The media sensors are not calibrated for your media length, physical properties, or sensing type (gap/notch, continuous, or mark).

Resolution

See [SmartCal Media Calibration](#). or if it still skips labels try a [Manual Media Calibration](#).

Possible Cause - 3

The platen (drive) roller is slipping or damaged.

Resolution

Clean or replace the platen. The platen can wear out or get damaged. See [Platen Cleaning and Replacement](#).

Possible Cause - 4

The printer has communication issues with cables or communication settings.

Resolution

See [Communication Issues](#).

Communication Issues

This section identifies problems with communications, the possible causes, and the recommended solutions.

Issue: Label Job Sent, No Data Transfer

A label format was sent to the printer but was not recognized. The DATA light does not flash.

Possible Cause

The communication parameters are incorrect.

Resolution - 1

Check the printer driver or software communications settings (if applicable).

Resolution - 2

Serial Port Only - Check the printer's handshake protocol and serial port settings. The setting used must match the one being used by the host computer.

Resolution - 3

The serial cable you are trying to use may not be a standard DTE or DCE type cable, is damaged, or is too long per the RS-232 Serial ports specifications.

Issue: Label Job Sent, Skips Labels or Prints Bad Content

A label format was sent to the printer. Several labels print, then the printer skips, misplaces, misses, or distorts the image on the label.

Possible Cause

The serial communication settings are incorrect.

Resolution - 1

Check the printer driver or software communications settings (if applicable). Ensure that the flow control settings and other serial port handshake setting match the host system.

Issue: Label Job Sent, Data Transfers, But No Print

A label format was sent to the printer but was not recognized. The DATA light flashes but no printing occurs.

Possible Cause - 1

The prefix and delimiter characters set in the printer do not match the ones in the label format.

Resolution

Verify the ZPL programmings prefix (COMMAND CHAR) and delimiter (DELIM./CHAR) characters. [Configuration Setting to Command Cross-reference](#).

Possible Cause - 2

Incorrect data is being sent to the printer.

Resolution

Check the communication settings on the computer. Ensure that they match the printer settings.

Possible Cause - 3

Incorrect data is being sent to the printer.

Resolution

Check the label format. See the ZPL Programmer's Manual for details on printer programming. For printer links to manuals, see the [Online resources available to support this printer](#) section of this guide.

Miscellaneous Issues

This section identifies miscellaneous issues with the printer, the possible causes, and the recommended solutions.

Issue: **Settings are Lost or Ignored**

Some parameters are set incorrectly.

Possible Cause - 1

Printer settings were changed without saving them.

Resolution

The ZPL `^JU` command was not used to save your configuration before turning the printer off. Cycle the printer OFF and then back ON to verify settings have been saved.

Possible Cause - 2

The label format/form commands or commands sent directly to the printer have syntax errors or have been used incorrectly.

- A firmware command turned off the ability to change the parameter.
- A firmware command changed the parameter back to default setting.

Resolution

See the ZPL programmer's guide to verify command usage and syntax. See the [Online resources available to support this printer](#) section for support links. to view the programmer' guide for your printer model.

Possible Cause - 3

The prefix and delimiter characters set in the printer do not match the ones in the label format.

Resolution

Verify the ZPL programming settings of the Control, Command and Delimiter settings are correct for your system software environment. Print a Configuration Report for these three (3) settings and compare it the commands in label format/form. See [Test Printing with the Configuration Report](#) and [Configuration Setting to Command Cross-reference](#).

Possible Cause - 4

The Main Logic board may not be working properly. Firmware is corrupted or the Main Logic board needs replacement.

Resolution

- 1 — Reset the printer to factory defaults. See [Reset Printer Factory Defaults \(PAUSE + FEED Self Test\)](#) or use the Zebra Setup Utility.
- 2 — Reload printer firmware. See [Updating Printer Firmware](#).
- 3 — If the printer does not recover from this error, replace the Main PCBA.

Issue: **Non-continuous labels act as Continuous labels.**

A non-continuous label format with matching media loaded in the printer, was sent to the printer but prints like it is continuous media.

Possible Cause - 1

The printer was not calibrated for the media being used.

Possible Cause - 2

The printer is configured for continuous media.

Resolution

Set the printer for the correct media type (gap/notch, continuous, or mark) and calibrate the printer using [SmartCal Media Calibration](#), if necessary use [Manual Media Calibration](#) f.

Issue: **Printer Locks-Up**

All indicator lights are on and the printer locks up or the printer locks up while restarting.

Possible Cause - 1

The printer memory has been corrupted by an unknown event.

Resolution - 1

- 1 — Reset the printer to factory defaults. See [Reset Printer Factory Defaults \(PAUSE + FEED Self Test\)](#) or use the Zebra Setup Utility.
- 2 — Reload printer firmware. See [Updating Printer Firmware](#).
- 3 — If the printer does not recover from this error, replace the Main PCBA.

Issue: **Erroneous Ribbon Cartridge Faults**

- 1 — **Ribbon Out** warning, but a ribbon cartridge is installed.
- 2 — **Ribbon Cartridge Authentication** error, but a Genuine Zebra Ribbon Cartridge is installed and has not been refurbished or altered.

Possible Cause

The Ribbon Cartridge Sensor Contact Pins or the Ribbon Cartridge's Smart Chip's contacts may be dirty or the chip may be damaged.

Resolution

- 1 — Clean the ribbon cartridge's smart chip contact, if they look contaminated, with alcohol and a lightly moistened cotton. Try a different cartridge if this does not work.
- 2 — Clean the Ribbon Cartridge Sensor Contact Pins - see [Cleaning Ribbon Cartridge Sensor](#).
- 3 — Reload printer firmware. See [Updating Printer Firmware](#).
- 4 — If the printer does not recover from this error, replace the Ribbon Transport (with the Cartridge Sensor PCBA).

Printer Diagnostics

Diagnostic reports, calibration procedures, restoring factory defaults and other diagnostics provide specific information about the condition of the printer.



Important • Use full-width media when performing self tests. If your media is not wide enough, the test labels may print on the platen (drive) roller.



Note • Diagnostic Testing Tips:

- 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 completion, always reset the printer by turning it OFF and then ON.
- 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.

Each self test is enabled by pressing a specific user interface button or combination of buttons while turning ON the printer power. Keep the button(s) pressed until the first indicator light turns off. The selected self test automatically starts at the end of the Power-On Self Test.

Power-On Self Test

A Power-On Self Test (POST) is performed each time the printer power is turned ON. 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.

SmartCal Media Calibration

SmartCal is used to quickly calibrate the printer to the media currently loaded. During SmartCal, the printer will automatically determine the media sensing type (gap, black line or notch) and then measure the length of the media.

To activate Smart Calibration, complete these steps:

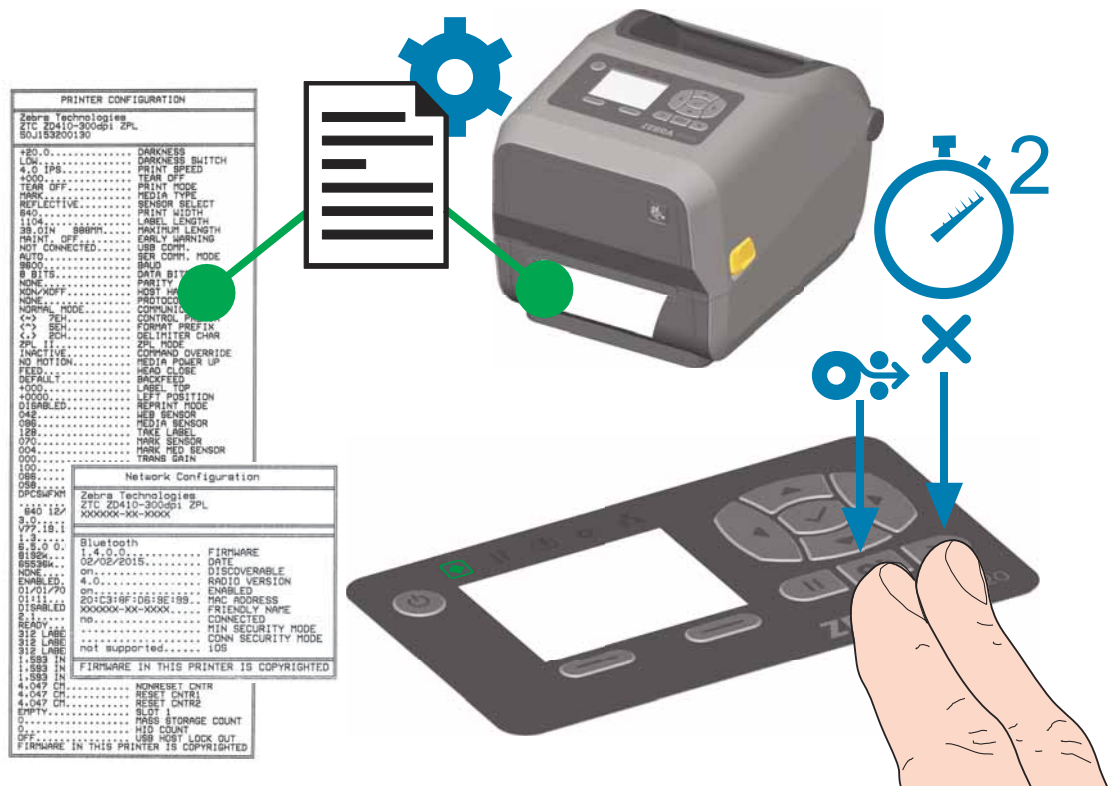
1. Make sure media is properly loaded, the printer cover is closed, and printer power is ON.
2. Press and hold PAUSE + CANCEL buttons for two seconds.
3. The printer will FEED and measure several labels. When done, the printer will return to READY status.

If the printer should fail to recognize and correctly calibrate to the media, please refer to the [Manual Media Calibration](#) procedure later in this section.

Test Printing with the 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 and ribbon cartridge (if you are thermal transfer printing) are loaded properly in the printer 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 (CANCEL Self Test)

The Configuration Report diagnostic prints a set of printer and network configuration reports.

To print the configuration report, complete these steps:

1. Make sure media is loaded, the printer cover is closed, and printer power is ON.
2. If printer power is OFF, press and hold CANCEL button while turning the printer power ON. Hold CANCEL button down until the STATUS indicator is the only indicator lit.

- or -

If printer power is ON, press FEED + CANCEL for two seconds.

3. The Printer and Network Configuration Reports (below) will be printed and the printer will return to READY status.

Sample Printer Configuration

PRINTER CONFIGURATION	
Zebra Technologies ZTC ZD620-203dpi ZPL 50J164202531	
+15.0.....	DARKNESS
LOW.....	DARKNESS SWITCH
8.0 IPS.....	PRINT SPEED
+000.....	TEAR OFF ADJUST
TEAR OFF.....	PRINT MODE
CONTINUOUS.....	MEDIA TYPE
TRANSMISSIVE.....	SENSOR SELECT
DIRECT-THERMAL.....	PRINT METHOD
830.....	PRINT WIDTH
2030.....	LABEL LENGTH
99.0IN.....	MAXIMUM LENGTH
PAINT OFF.....	EARLY WARNING
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
<>> 20H.....	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
045.....	WEB SENSOR
095.....	MEDIA SENSOR
128.....	TAKE LABEL
062.....	MARK SENSOR
004.....	MARK MED SENSOR
045.....	TRANS GAIN
034.....	TRANS LED
049.....	MARK GAIN
100.....	MARK LED
DPCSWM.....	MODES ENABLED
.....	MODES DISABLED
832 8/MM FULL.....	RESOLUTION
4.0.....	LINK-OS VERSION
V84.20.072P37536 <-	FIRMWARE
1.3.....	XML SCHEMA
6.5.0 0.770.....	HARDWARE ID
8132k.....	RAM
65536k.....	E: ONBOARD FLASH
NONE.....	FORMAT CONVERT
F4 VERSION.....	IDLE DISPLAY
06/08/17.....	RTC DATE
07:07.....	RTC TIME
DISABLED.....	ZBI
2.....	ZBI VERSION
READY.....	ZBI STATUS
178 LABELS.....	NONRESET CNTR
178 LABELS.....	RESET CNTR1
178 LABELS.....	RESET CNTR2
1.290 IN.....	NONRESET CNTR
1.290 IN.....	RESET CNTR1
1.290 IN.....	RESET CNTR2
3.277 CM.....	NONRESET CNTR
3.277 CM.....	RESET CNTR1
3.277 CM.....	RESET CNTR2
002 WIRED-SERIAL.....	SLOT
0.....	MASS STORAGE COUNT
0.....	HID COUNT
OFF.....	USB HOST LOCK OUT
FIRMWARE IN THIS PRINTER IS COPYRIGHTED	

Sample Network Configuration

Network Configuration	
Zebra Technologies ZTC ZD620-203dpi ZPL 50J164202531	
Wired.....	PRIMARY NETWORK
PrintServer.....	LOAD LAN FROM?
WIREFLESS.....	ACTIVE PRINTSRVR
Wired	
ALL.....	IP PROTOCOL
000.000.000.000.....	IP ADDRESS
000.000.000.000.....	SUBNET
000.000.000.000.....	GATEWAY
000.000.000.000.....	WINS SERVER IP
YES.....	TIMEOUT CHECKING
300.....	TIMEOUT VALUE
000.....	ARP INTERVAL
9100.....	BASE RAW PORT
9200.....	JSON CONFIG PORT
Wireless*	
ALL.....	IP PROTOCOL
172.029.016.028.....	IP ADDRESS
255.255.255.000.....	SUBNET
172.029.016.001.....	GATEWAY
172.029.001.003.....	WINS SERVER IP
YES.....	TIMEOUT CHECKING
300.....	TIMEOUT VALUE
000.....	ARP INTERVAL
9100.....	BASE RAW PORT
9200.....	JSON CONFIG PORT
INSERTED.....	CARD INSERTED
02dfh.....	CARD MFG ID
9134h.....	CARD PRODUCT ID
ac:3f:a4:89:17:b8.....	MAC ADDRESS
YES.....	DRIVER INSTALLED
INFRASTRUCTURE.....	OPERATING MODE
125.....	ESSID
18.0.....	CURRENT TX RATE
OPEN.....	WEP TYPE
NONE.....	WLAN SECURITY
1.....	WEP INDEX
000.....	POOR SIGNAL
LONG.....	PREAMBLE
YES.....	ASSOCIATED
ON.....	PULSE ENABLED
15.....	PULSE RATE
OFF.....	INTL MODE
USA/CANADA.....	REGION CODE
USA/CANADA.....	COUNTRY CODE
0x3FFFFFFF.....	CHANNEL MASK
Bluetooth	
4.3.1p1.....	FIRMWARE
02/13/2015.....	DATE
on.....	DISCOVERABLE
3.0/4.0.....	RADIO VERSION
on.....	ENABLED
ac:3f:a4:89:17:b9.....	MAC ADDRESS
50J164202531.....	FRIENDLY NAME
no.....	CONNECTED
1.....	MIN SECURITY MODE
no.....	CONN SECURITY MODE
supported.....	IOS
FIRMWARE IN THIS PRINTER IS COPYRIGHTED	

Printer Network (and Bluetooth) Configuration Report

ZD-Series printers with Wired or Wireless connectivity options installed will print an additional printer configuration report. This information needed to establish and trouble shoot Ethernet (LAN and WLAN), Bluetooth 4.1 and Bluetooth LE network printing. The following printout is printed with the ZPL ~WL command.

```

Network Configuration
Zebra Technologies
ZTC ZD620-203dpi ZPL
50J164202531

Wired..... PRIMARY NETWORK
PrintServer..... LOAD LAN FROM?
WIRELESS..... ACTIVE PRINTSRVR

Wired
ALL..... IP PROTOCOL
000.000.000.000... IP ADDRESS
000.000.000.000... SUBNET
000.000.000.000... GATEWAY
000.000.000.000... WINS SERVER IP
YES..... TIMEOUT CHECKING
300..... TIMEOUT VALUE
000..... ARP INTERVAL
9100..... BASE RAW PORT
9200..... JSON CONFIG PORT

Wireless*
ALL..... IP PROTOCOL
172.029.016.028... IP ADDRESS
255.255.255.000... SUBNET
172.029.016.001... GATEWAY
172.029.001.003... WINS SERVER IP
YES..... TIMEOUT CHECKING
300..... TIMEOUT VALUE
000..... ARP INTERVAL
9100..... BASE RAW PORT
9200..... JSON CONFIG PORT
INSERTED..... CARD INSERTED
02dfH..... CARD MFG ID
9134H..... CARD PRODUCT ID
ac:3f:a4:89:17:b8 MAC ADDRESS
YES..... DRIVER INSTALLED
INFRASTRUCTURE... OPERATING MODE
125..... ESSID
18.0..... CURRENT TX RATE
OPEN..... WEP TYPE
NONE..... WLAN SECURITY
1..... WEP INDEX
000..... POOR SIGNAL
LONG..... PREAMBLE
YES..... ASSOCIATED
ON..... PULSE ENABLED
15..... PULSE RATE
OFF..... INTL MODE
USA/CANADA..... REGION CODE
USA/CANADA..... COUNTRY CODE
0x3FFFFFFF..... CHANNEL MASK

Bluetooth
4.3.1p1..... FIRMWARE
02/13/2015..... DATE
on..... DISCOVERABLE
3.0/4.0..... RADIO VERSION
on..... ENABLED
AC:3F:A4:89:17:B9 MAC ADDRESS
50J164202531..... FRIENDLY NAME
no..... CONNECTED
1..... MIN SECURITY MODE
nc..... CONN SECURITY MODE
supported..... iOS

FIRMWARE IN THIS PRINTER IS COPYRIGHTED
    
```

iOS Bluetooth Support

- iOS devices have Bluetooth Classic 4.X (with 3.0 compatibility) when the Wi-Fi and Bluetooth Classic wireless connectivity option is installed in your printer and is noted as 'supported' on the bottom of the Bluetooth Configuration report.
- Some ZD420 series printers only have the Bluetooth LE (without Wi-Fi and classic Bluetooth). The iOS setting is noted on the bottom of the Bluetooth Configuration report as 'not supported' when the wireless connectivity option is not installed.

Print Quality Report (FEED self test)

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

Troubleshooting

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 barcodes on these labels may be ANSI-graded to check print quality.

During this test, one set of labels is printed at low speed, and another set is printed at the high speed. 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: prints 7 labels at 51mm/sec (2 ips) and 102 mm/sec (4 ips) print speeds.
- 203 dpi printers: prints 7 labels at 51mm/sec (2 ips) and 152 mm/sec (6 ips) print speeds.

To perform a Print Quality Report, complete these steps:

4. Print a configuration report to show the printer's current settings. Press and hold the FEED and CANCEL buttons for two (2) seconds to print the report.
5. Turn OFF the printer.
6. Press and hold FEED while setting the printer power to ON. Hold FEED until the Status indicator is the only indicator lit.

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

Figure 1 • Print Quality Report



Troubleshooting

- See [Figure 2](#) and [Table 1](#). Inspect the test labels and determine which one has the best print quality for your application. If you have a barcode verifier, use it to measure bars/spaces and calculate the print contrast. If you do not have a barcode 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 • Barcode Darkness Comparison

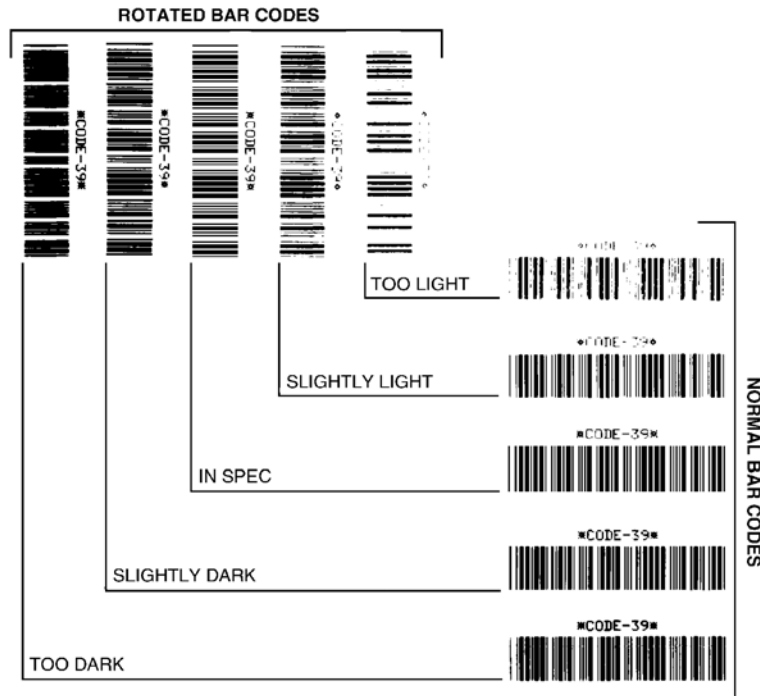


Table 1 • Visual Darkness Descriptions

Print Quality	Description
Too dark	<p>Labels that are too dark are fairly obvious. They may be readable but not “in-spec.”</p> <ul style="list-style-type: none"> • The normal barcode bars increase in size. • The openings in small alphanumeric characters may appear filled in. • Rotated barcode have bars and spaces run together.
Slightly dark	<p>Slightly dark labels are not as obvious.</p> <ul style="list-style-type: none"> • The normal barcode will be “in-spec.” • Small character alpha numerics will be bold and could be slightly filled in. • The rotated barcode spaces are small when compared to the “in-spec” code, possibly making the code unreadable.

Table 1 • Visual Darkness Descriptions

Print Quality	Description
“In-spec”	<p>The “in-spec” barcode can only be confirmed by a verifier, but it should exhibit the following visible characteristics.</p> <ul style="list-style-type: none"> • The normal barcode will have complete, even bars and clear, distinct spaces. • The rotated barcode will have complete, even bars and clear, distinct spaces. Although it may not look as good as a slightly dark barcode, the barcode will be “in-spec.” • In both normal and rotated styles, small alphanumeric characters look complete.
Slightly light	<p>Slightly light labels are, in some cases, preferred to slightly dark ones for “in-spec” barcodes.</p> <ul style="list-style-type: none"> • Both normal and rotated barcodes will be in spec, but small alphanumeric characters may not be complete.
Too light	<p>Labels that are too light are obvious.</p> <ul style="list-style-type: none"> • Both normal and rotated barcodes have incomplete bars and spaces. • Small alphanumeric characters are unreadable.

8. Note the relative darkness value and the print speed printed on the best test label.
9. 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.
10. If necessary, change the current darkness value to the darkness value on the best test label.
11. If necessary, change the current print speed to the speed value on the best test label.

Reset Printer Factory Defaults (PAUSE + FEED Self Test)

This resets the printer configuration to the factory default values for the non-network printer settings. Perform a sensor calibration after this procedure. (See [Manual Media Calibration](#).)

To perform a Reset Printer Factory Defaults procedure, complete these steps:

12. Turn OFF the printer.
13. Press and hold PAUSE + FEED while turning ON the printer.
14. 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 action.



Note • The printer has a reset button under the printer, see the printer's User's Guide.

Reset Network Factory Defaults (PAUSE + CANCEL Self Test)

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

To perform a Reset Network Factory Defaults procedure, complete these steps:

15. Turn OFF the printer.
16. Press and hold PAUSE + CANCEL while turning ON the printer.
17. Hold PAUSE + CANCEL until the STATUS indicator (◊) is the only indicator lit.

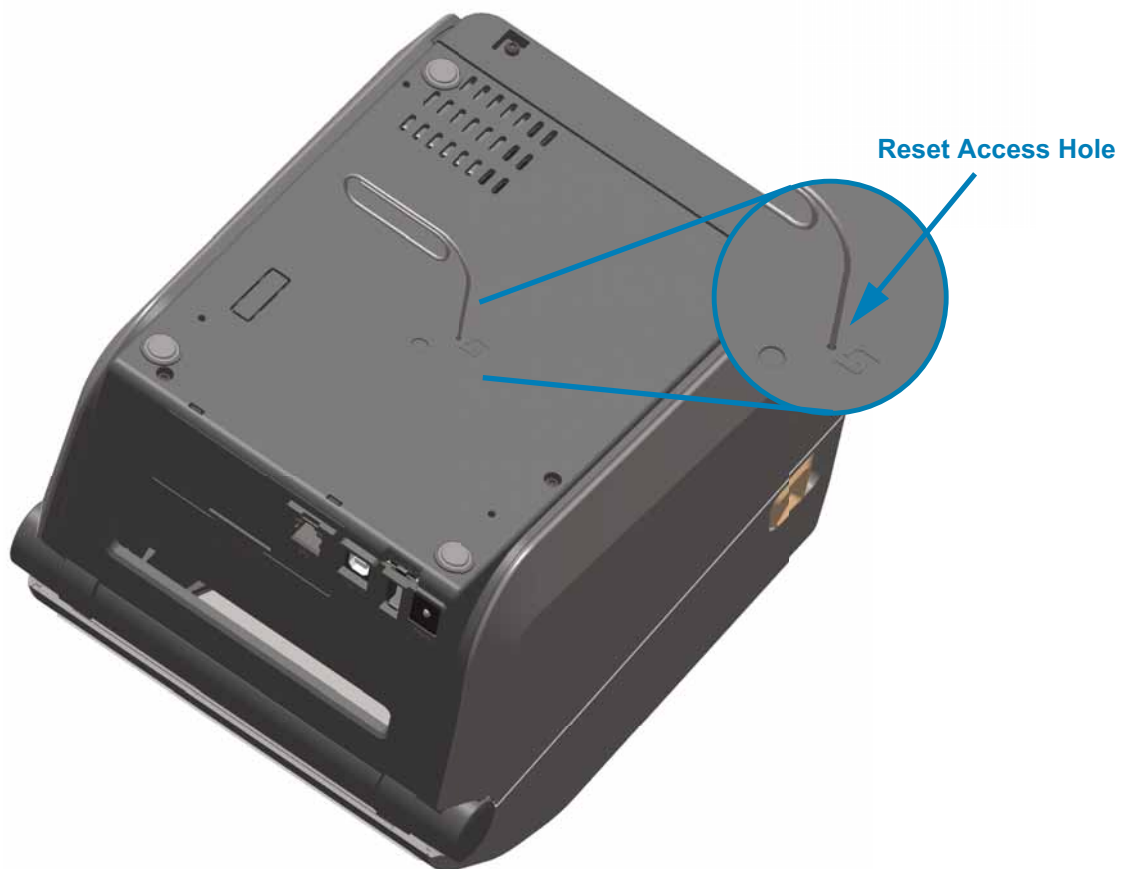
The printer's network configuration is reset to the factory default values. No labels print at the end of this action.

Reset Button

In addition to the power on configurations described previously, the ZD-Series printer has a dedicated reset button located on the bottom of the printer which can be pressed with a paperclip 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



Communication Diagnostics Test

The communication diagnostics test is a troubleshooting tool for checking the connection 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 as it exits the printer.

Figure 3 • Communications Diagnostics Test Label



To use communications diagnostics mode, complete these steps:


18. Ensure media is loaded and printer power is ON.
19. Set the print width equal to or less than the label width being used for the test.
20. Press and hold Pause + FEED for two seconds. When active, the STATUS indicator will alternate between green and yellow.
The printer enters diagnostics mode and prints any data received from the host computer on a test label
21. 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.
22. Press and hold Pause + FEED for two seconds or turn the printer power off (O) and then back ON to exit this self test and return to normal operation.

Sensor Profile

Use the sensor profile image (which will extend across several 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 user interface	<ol style="list-style-type: none"> Turn OFF the printer. Press and hold FEED + CANCEL while turning ON the printer. Hold FEED + CANCEL until the STATUS indicator () is the only indicator lit.
Using ZPL	<ol style="list-style-type: none"> Send the <code>~JG</code> command to the printer. See the Zebra Programming Guide for more information about this command.

Compare your results to the examples shown earlier in this section. If the sensitivity of the sensors must be adjusted, calibrate the printer (see [Manual Media Calibration](#)).

Media Sensor Profile (Figures 5 and 6)

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)

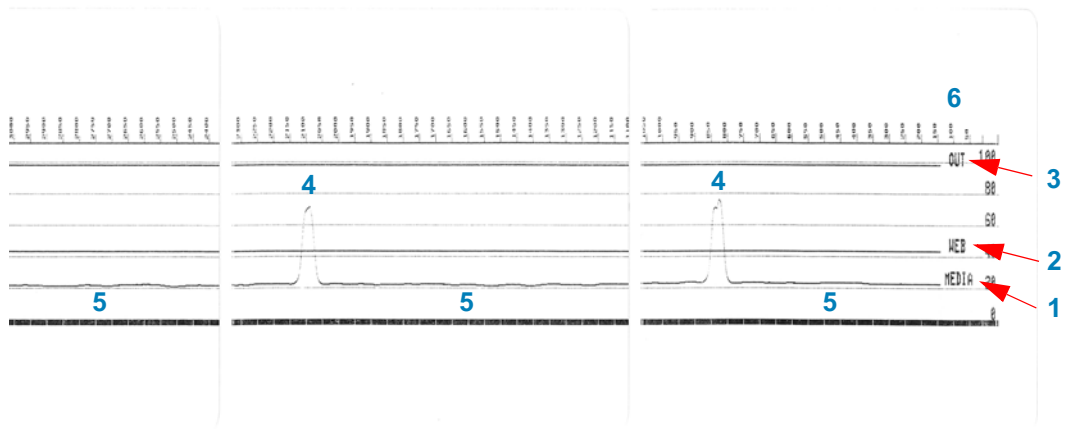
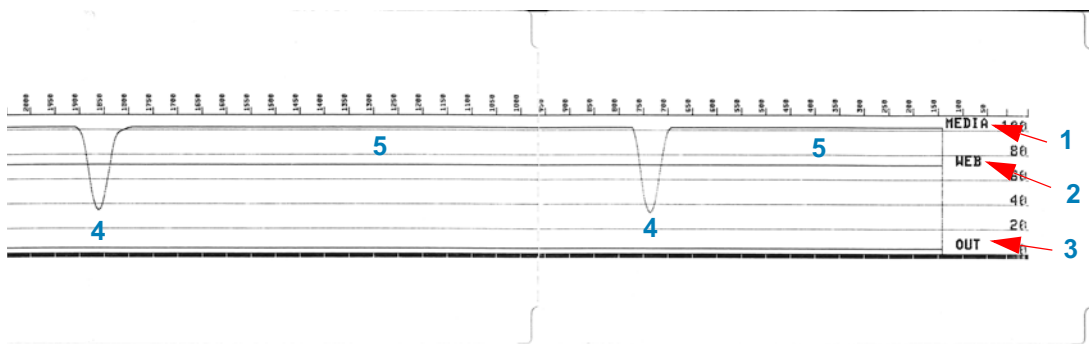



Figure 5 • Sensor Profile (Black Mark Tag Media)




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.

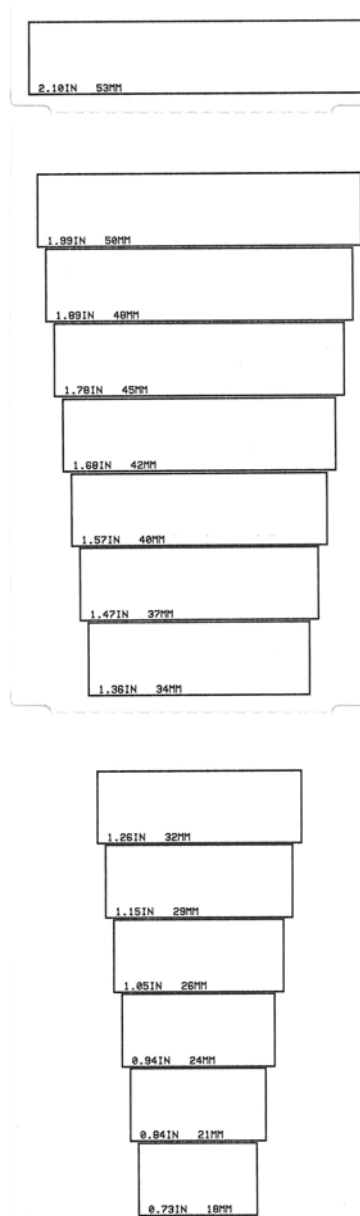
7. The MEDIA indicator () will flash yellow then the Pause indicator () will flash. Open the printer and verify the media sensor is in the center position for label gap (transmissive) sensing. Remove 3 inches or 80mm of labels from the liner. Place the label-less area of the liner over the platen (drive) roller with the leading edge of the first label under the media guides.
8. 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.
9. Open the printer and reposition the media so that a label is located directly above the movable sensor. Close the printer.
10. 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 the PAUSE button while the Pause indicator () is illuminated yellow will start Manual Print Width Adjustment while in Advanced mode, see [Advanced Mode](#). 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.



Factory Test Modes

The printer includes print modes that are intended for factory test only.

Test mode 1

Initiated by holding PAUSE button while turning ON printer power. When activated, the printer will begin printing various test patterns used to evaluate printer performance.

Test mode 2

Initiated by holding PAUSE + FEED + CANCEL button 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 button until the printer power is switched OFF.

Required Tools



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

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

Replacing Parts

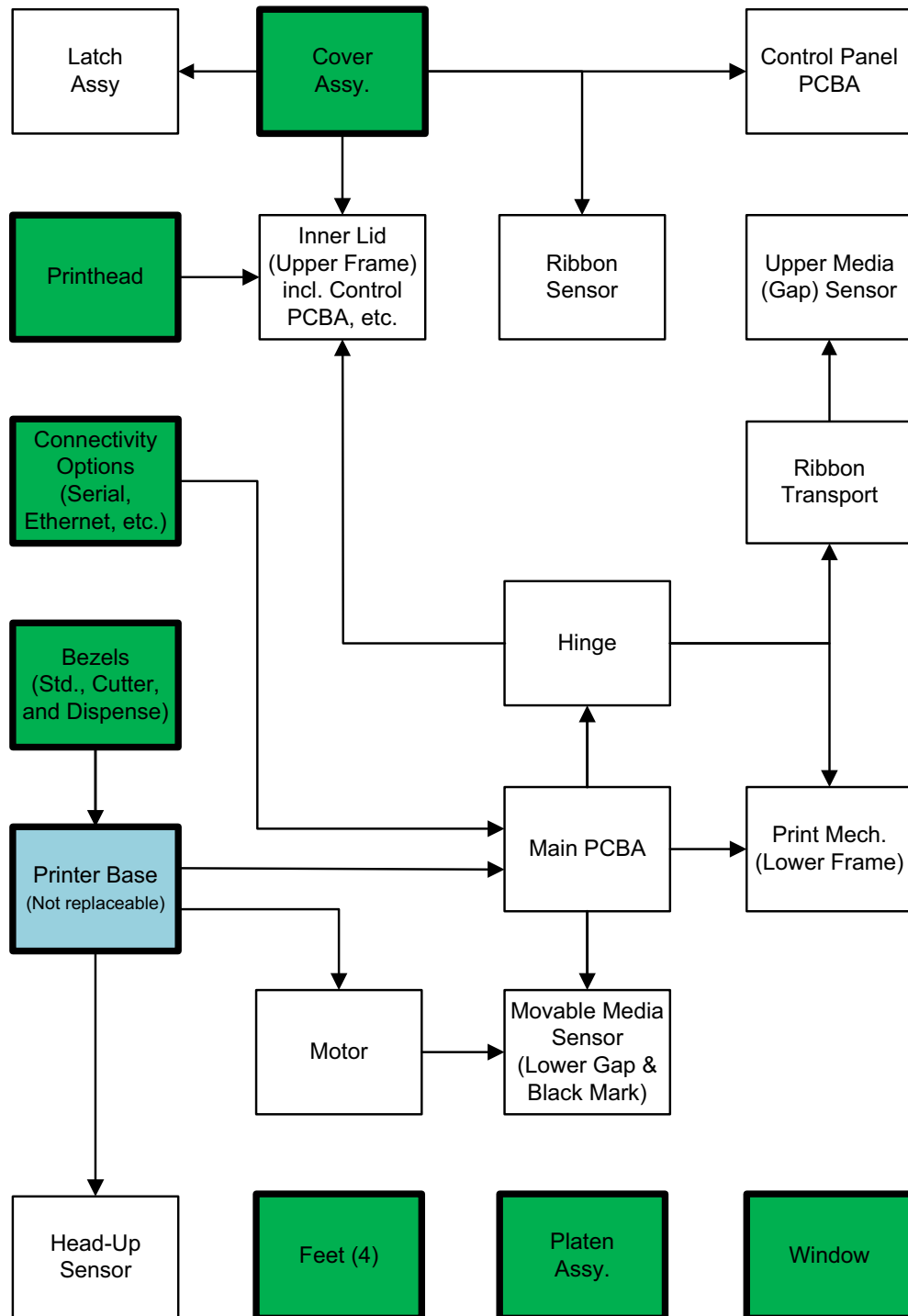
The part replacement procedures in this manual have been broken down into common procedures and sub-procedures with most aligning to spare parts. Each procedure lists which procedures and actions must precede it in order to perform the procedure. A “Repair Path” flow diagram is on the following page.

In the event you must replace a part, review the repair path flow diagram to see which procedures to perform. Read the part’s procedure to identify procedures and steps required to remove the old part and install the new part. Many repair sequences include simple functionality tests, cleaning or other operations after the spare has been replaced to verify the repair and printer state.

The Service CD (which also contains this manual) is designed to open this electronic service manual and its associated videos in the proper sequence of procedures and sub-procedures needed to remove and install a given spare part. The videos and procedures are broken down into small, easy to follow instructions.

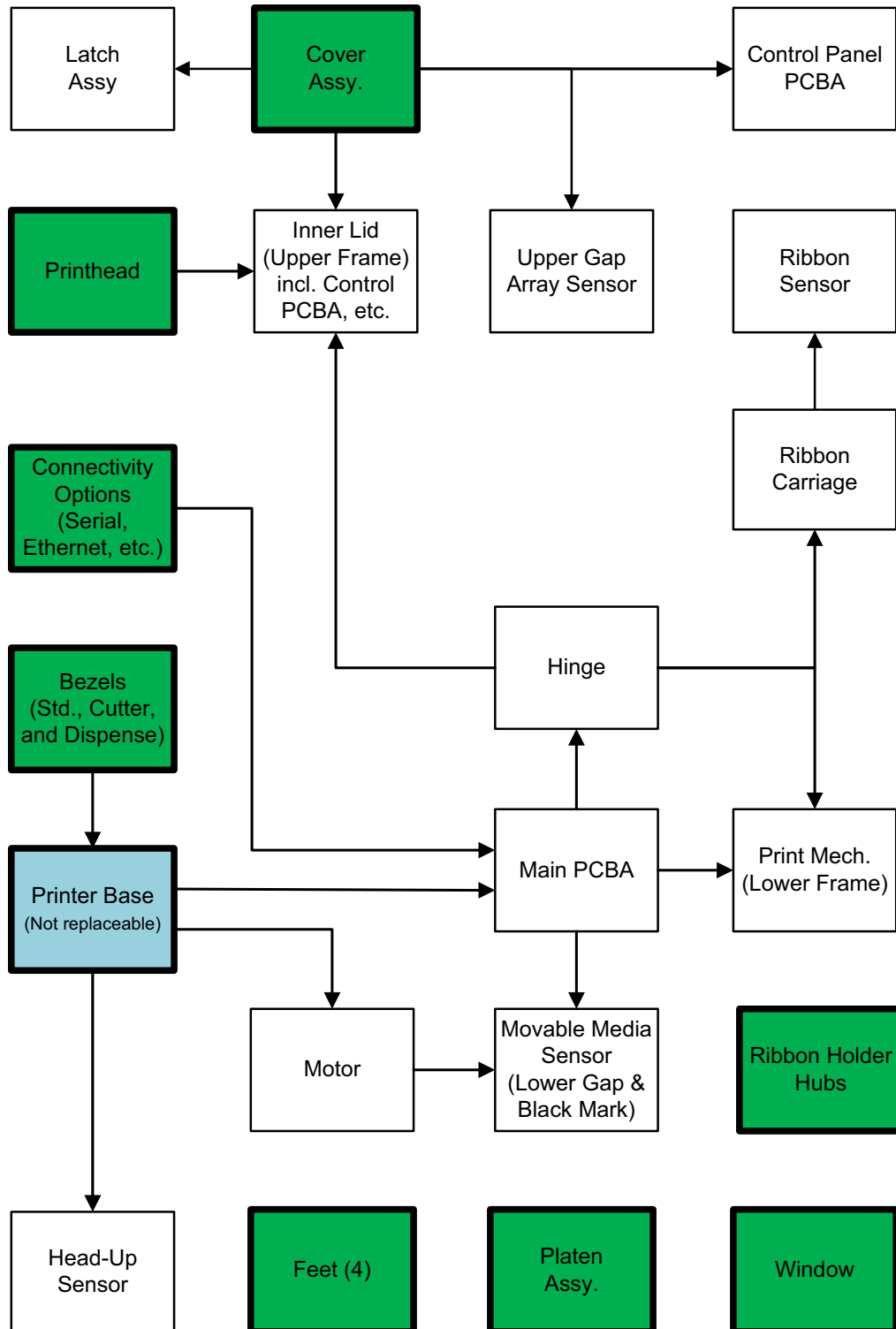
Repair Procedure Sequence for ZD420 Cartridge Printers

The “Repair Path” flow diagram shows the starting point (green blocks) to the endpoint – the replacement procedure for your spare part. The diagram does not include any general repair preparation or post repair operations that may be recommended for the printer.



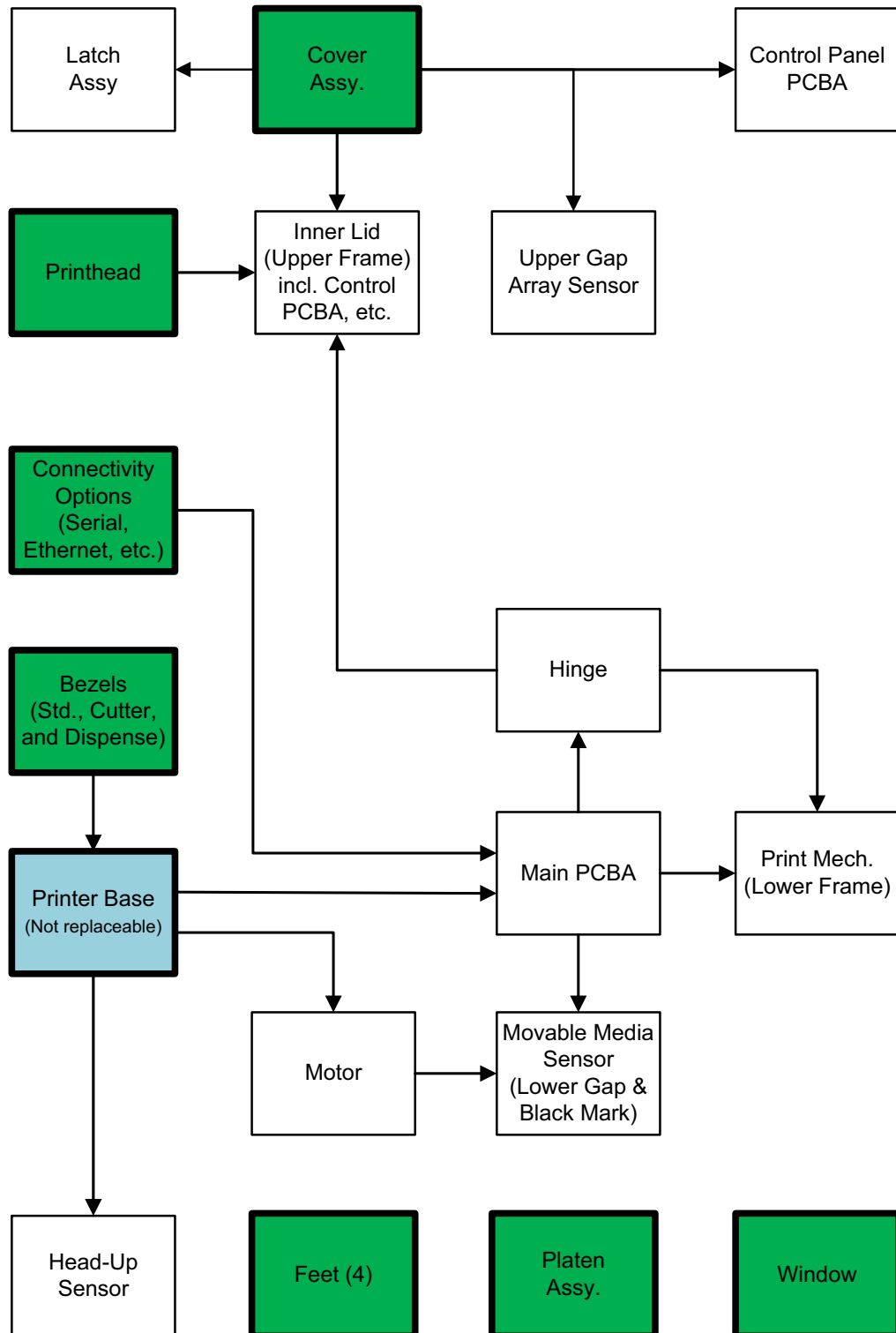
Repair Procedure Sequence for Thermal Transfer ZD Printers

The “Repair Path” flow diagram shows the starting point (green blocks) to the endpoint – the replacement procedure for your spare part. The diagram does not include any general repair preparation or post repair operations that may be recommended for the printer.



Repair Procedure Sequence for Direct Thermal ZD Printers

The “Repair Path” flow diagram shows the starting point (green blocks) to the endpoint – the replacement procedure for your spare part. The diagram does not include any general repair preparation or post repair operations that may be recommended for the printer.



How to Determine a Repair Sequence for your Part

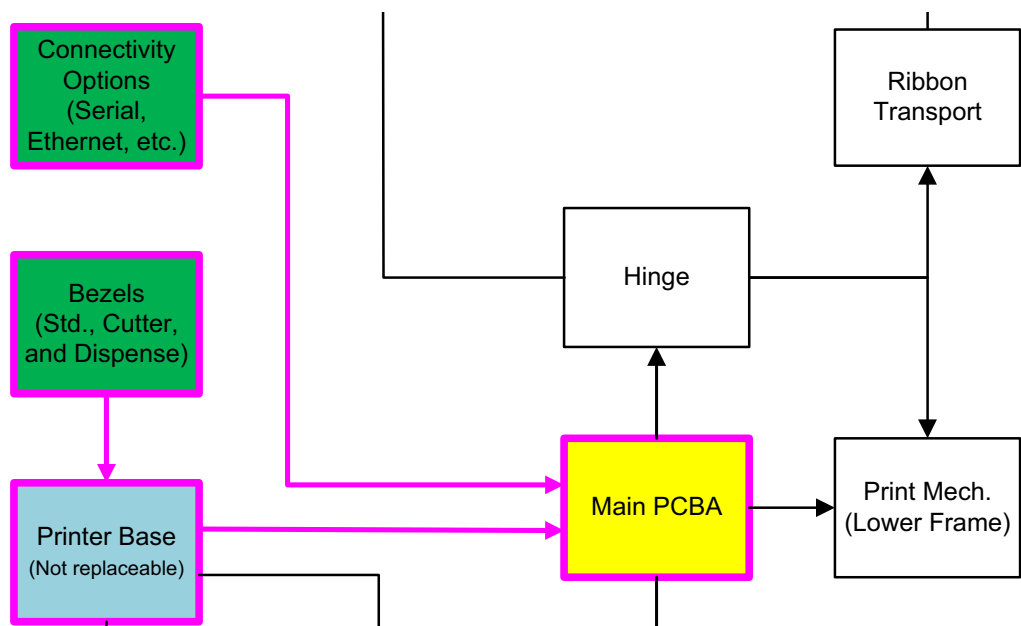
Repair procedures are broken down into sub-procedures that mainly align to spare parts. Many procedures require you to remove other parts to gain access to the part needing replacement. The green blocks represent stand alone or starting procedures needing to be performed to access other parts. Use the connecting arrow lines (going backwards and forward) to determine procedure order for your repair item. One or more starting procedure paths may be needed to access a given part being replaced. Individual repair procedures include references (and links) to prerequisite procedures (and the Service CD includes videos) for each procedure in repair order.

After you have diagnosed and identified the part that needs replacing in your printer, you can use the repair flow charts to identify the prerequisite repair procedures needed to complete your repair. Alternately, you may go directly to the part's repair procedure and find the "Repair Prerequisites" with the hyper-linked references to the prerequisite procedures in proper repair sequence.

Repair Path Example

For this example, we have chosen the Main PCBA. It requires multiple paths to complete the repair.

During the troubleshooting process (for the purposes of this example), we have determined that the printer has a problem with the Main PCBA (yellow square below). By following the arrows leading into the Main PCBA repair square, we can see the Connectivity Options and the Printer Base precede the Main PCBA. The Connectivity Options procedure square is green to denote a starting procedure. It has no arrows leading into it, therefore no prerequisite procedures. The Printer Base has an arrow coming from the Bezel procedure square and it is a prerequisite for both the Printer Base and Main PCBA repair procedures by following all the arrows to the Main PCBA.



Repair Preparation and Post Repair Basic Operational Tests

To prevent additional damage or injury, the printer and its repair area needs to be prepared prior to repairing the printer.

Preparation



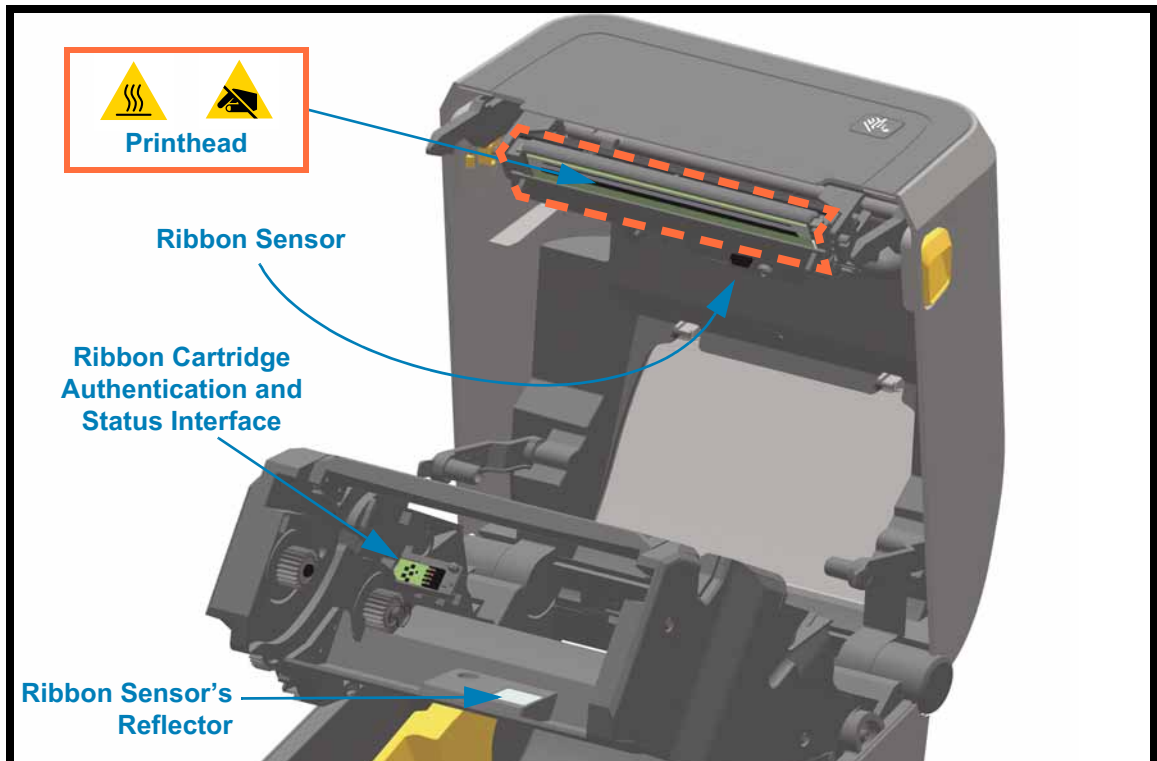
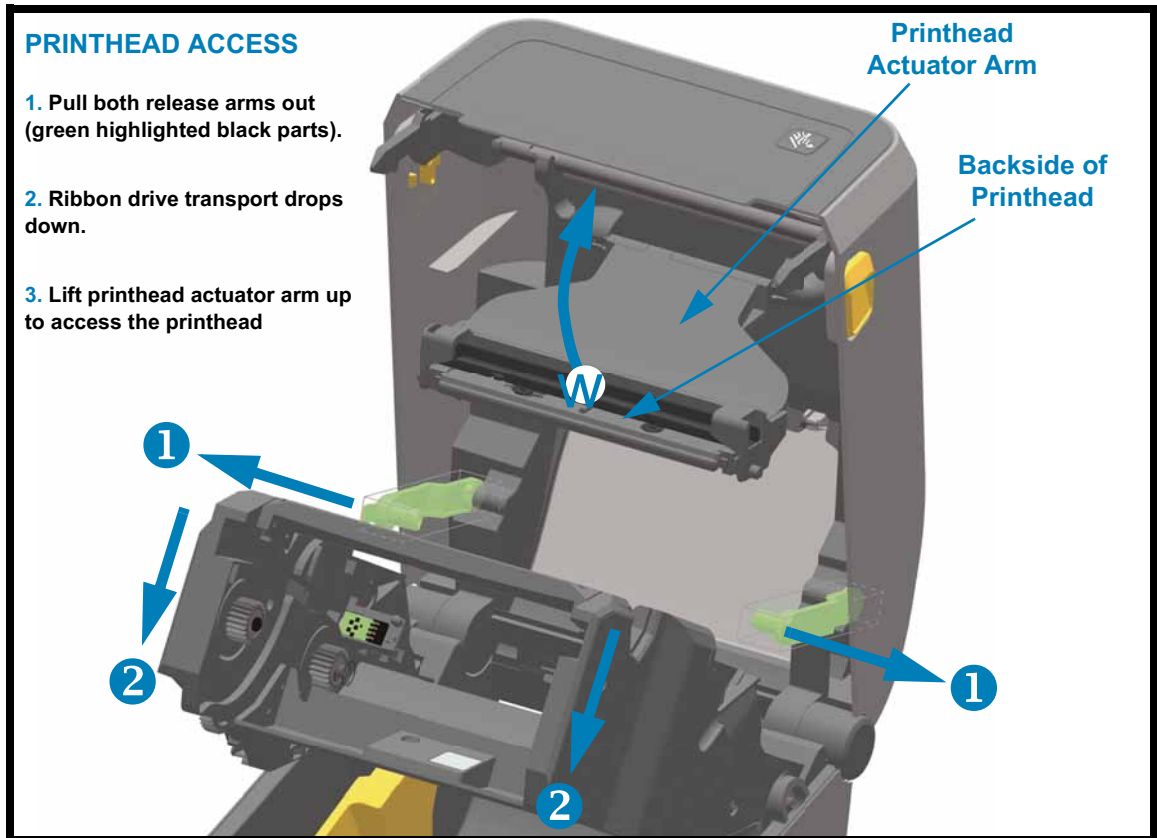
ESD Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

- The repair surface and area should be clean.
- Use electrostatic protection (grounded mats, ground straps, etc.).
- Remove all media and ribbon cartridges from the printer.
- Disconnect all cables and power from the printer.

Post Repair Cleaning and Basic Testing

1. Clean the printer. This will leave the printer in a optimal state and provide assurance the contamination has not migrated or been added during handling and repair.
 - [Cleaning the Printhead](#)
 - [Sensor Cleaning](#)
 - [Media Path Cleaning](#)
 - [Platen Cleaning and Replacement](#)
2. Load a full width roll of labels and a ribbon cartridge into the printer; see the printers user's guide for details.
3. Calibrate the media (see [SmartCal Media Calibration](#)).
4. Connect the printer to power and turn ON the printer. The printer runs self tests and configures itself for the options installed.
5. Set the print width to full width printing, if needed after troubleshooting and repair (see [Manual Print Width Adjustment](#)).
6. Print a Configuration Report to test printing and provide information on the status and configuration of the printer and its option (see [Test Printing with the Configuration Report](#)).
7. Attach the printer to Windows PC,

ZD420 Cartridge Printer: Accessing the Printhead

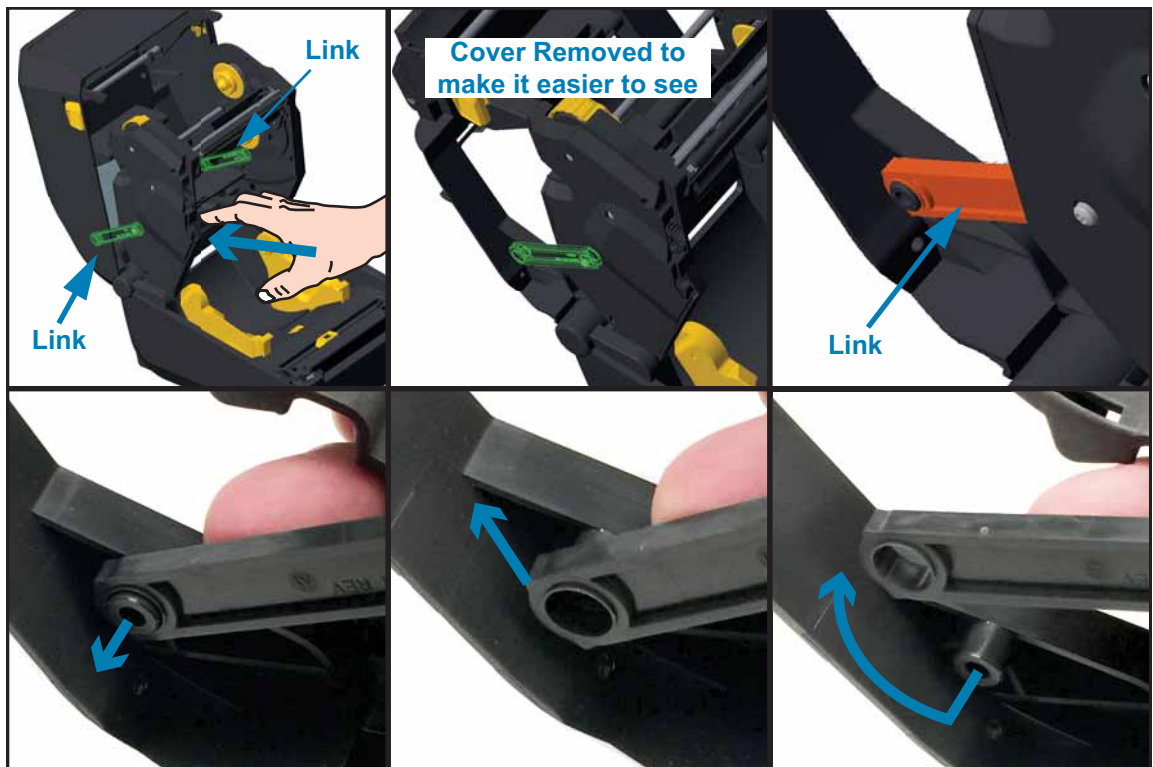


ZD Thermal Transfer Printers: Accessing Inside the Cover

Disconnecting the thermal transfer printer's inner cover top cover for the ribbon carriage makes it easier to access for repairs. It's a simple tool-less process to disconnect the two link arms holding them together.

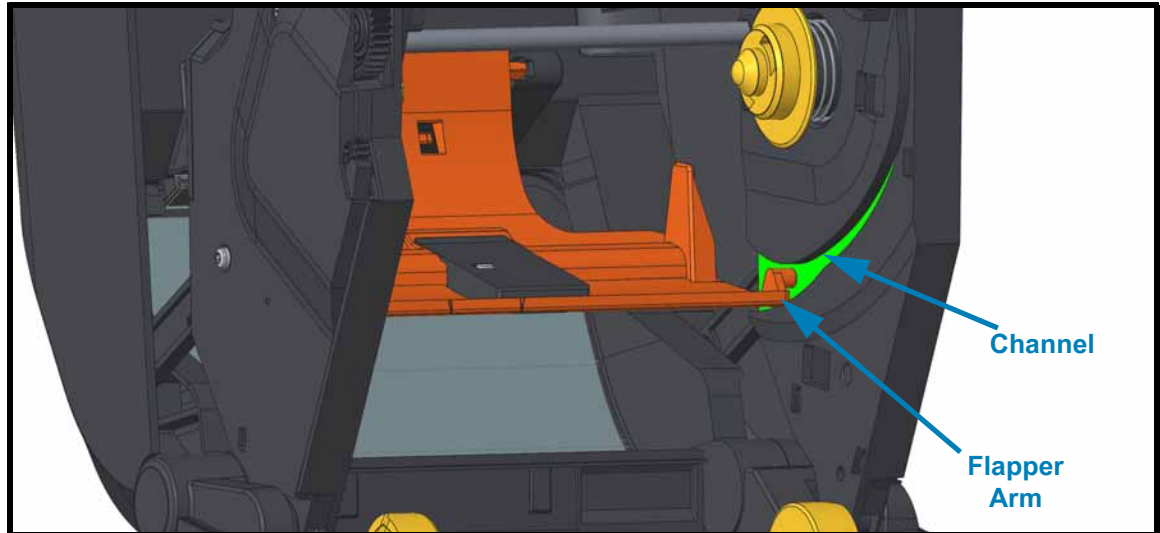
Disconnecting the Cover from the Ribbon Carriage

1. With the printer's cover open, slide your hand under the flapper arm (curved part) that slides into the ribbon carriage and is connected to the inner frame of the cover. Use your index finger to touch the left link arm where it contacts the inner frame.
2. Push the link arm towards the outside of the printer until it just clears the top of the post. Slide it up and off the post.
3. Repeat steps 1 and 2 to disconnect the right side link arm.
4. Pull the ribbon carriage down and towards the front of the printer while holding the cover in the full open position. The flapper arm will come loose and swing down into the inner cover.



Re-connecting the Ribbon Carriage

1. Swing the flapper arm (orange in drawing below) up and the ribbon carriage up so the two side post slide into the curved channels (green surface highlight channel) on the inside of the ribbon carriage.



2. The free ends of the links on the ribbon carriage go back on the posts on the inner frame of the top cover. Move the link arm and ribbon carriage to get the hole at the end of the link arm close to alignment and push the link arm up and over the post and release when centered. The link arm on the other side is now aligned and it is easy to push it over and on the post.
3. Verify that the top cover now opens and closes with the carriage moving with the cover.

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.

Preparation



ESD 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 • Unplug the printer from the power supply and allow the printer to cool to prevent injuries or damage to printer circuitry.

Use one of the following model specific procedures to replace the printhead.

- [ZD620 and ZD420 Direct Thermal Printhead](#)
- [ZD620 and ZD420 Thermal Transfer Ribbon Roll Printhead](#)
- [ZD420 Thermal Transfer Ribbon Cartridge Printhead](#)

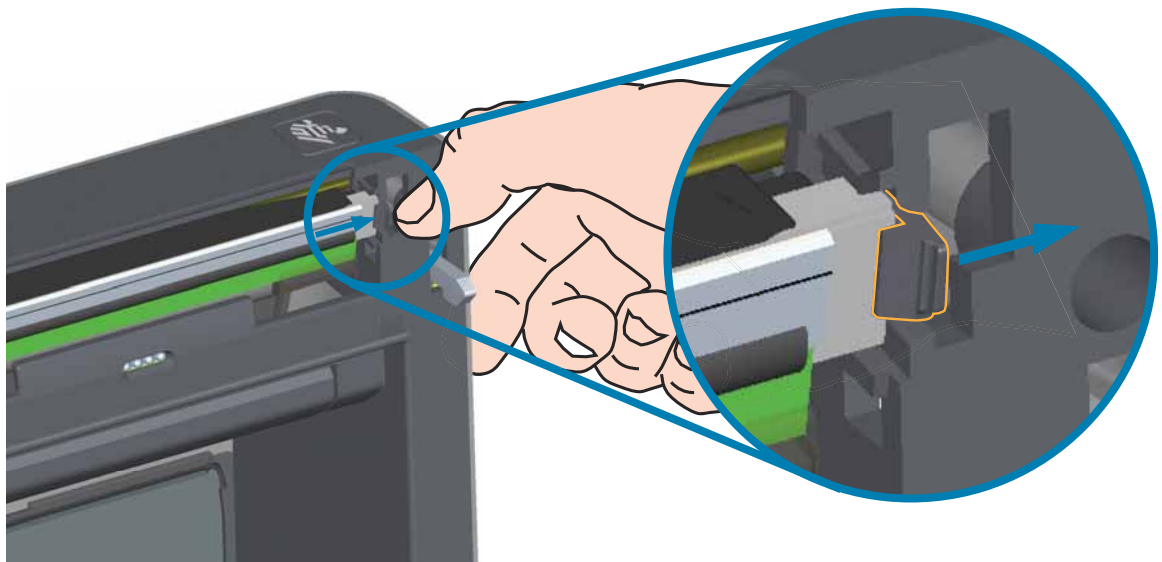
ZD620 and ZD420 Direct Thermal Printhead

Removing the Printhead

1. Turn the printer OFF. Open the printer.



2. Push the printhead release latch away from the printhead. The right side of printhead releases.

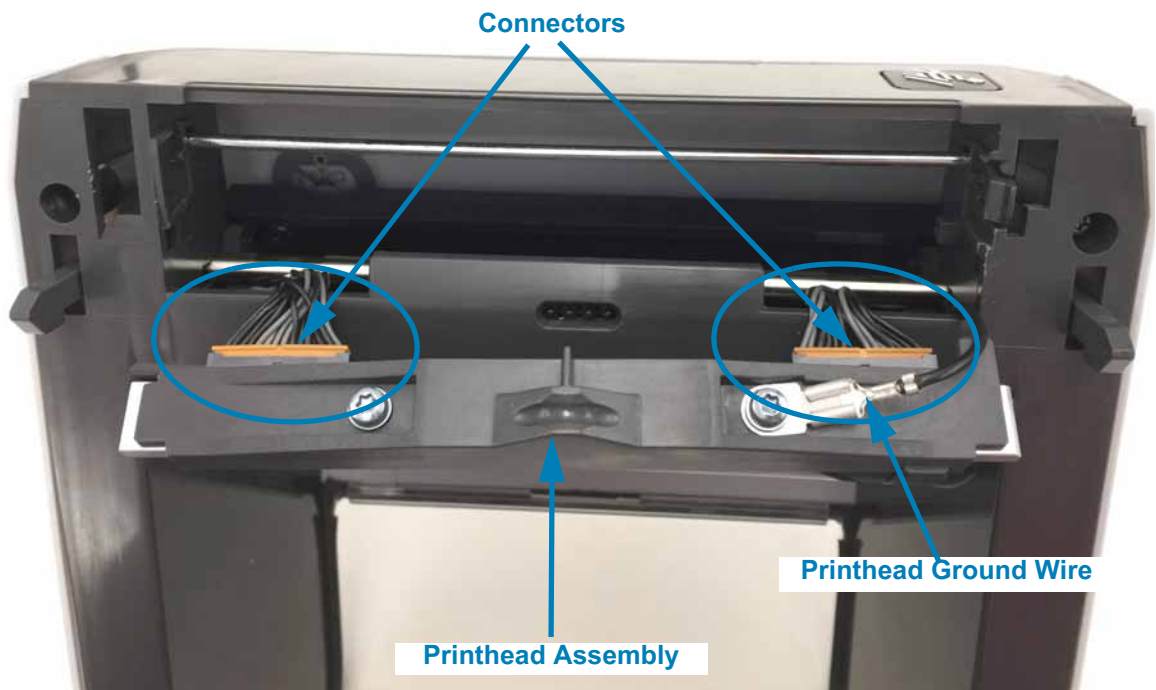


Replacing Parts

3. Swing the loose right side of the printhead out of the printer. Pull it out and to the right a little to get the left side of the printhead clear. Pull the printhead out and free of the top cover to gain access to its attached cables on the backside of the printhead. Note, the red highlights the left side printhead retainer slot.

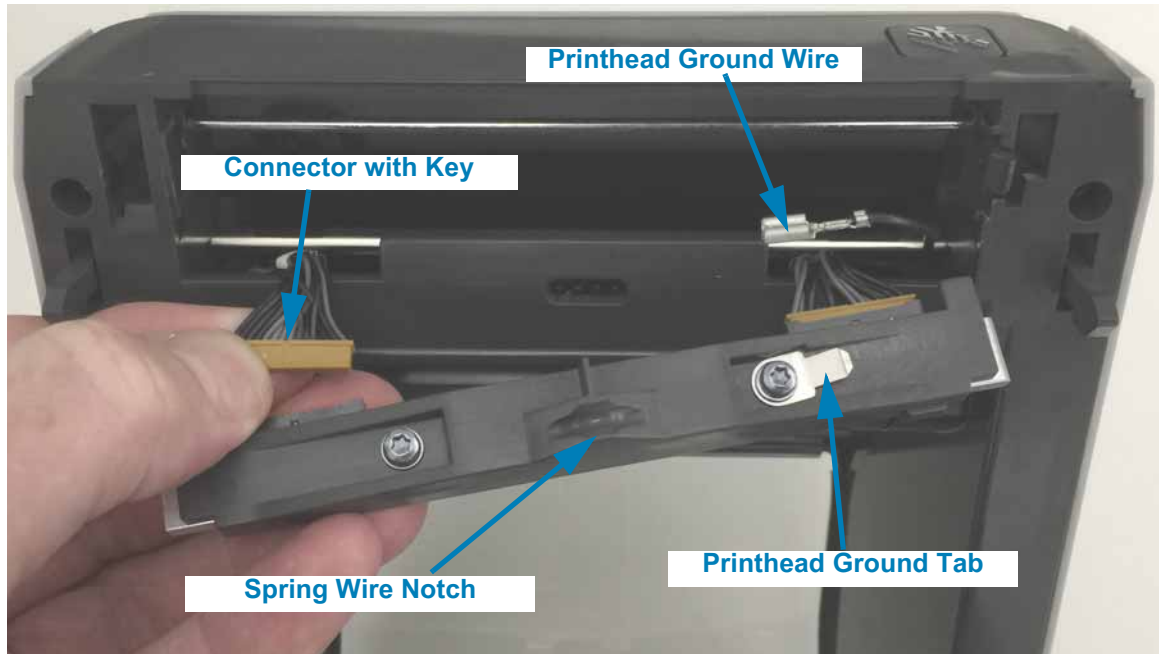


4. Gently but firmly pull the two printhead cable bundle connectors off of the printhead. Pull the ground wire off the printhead.

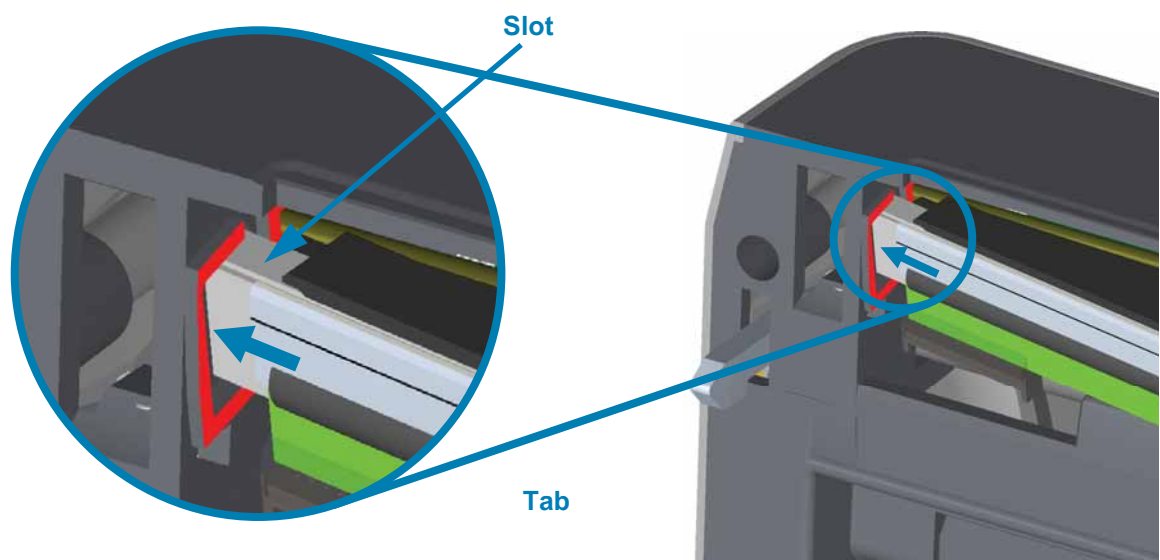


Replacing the Printhead

1. Push the right side printhead cable connector into the printhead. The connector is keyed to only insert one way.
2. Attach the ground wire to the printhead's ground tab.
3. Push the left side printhead cable connector onto the printhead.

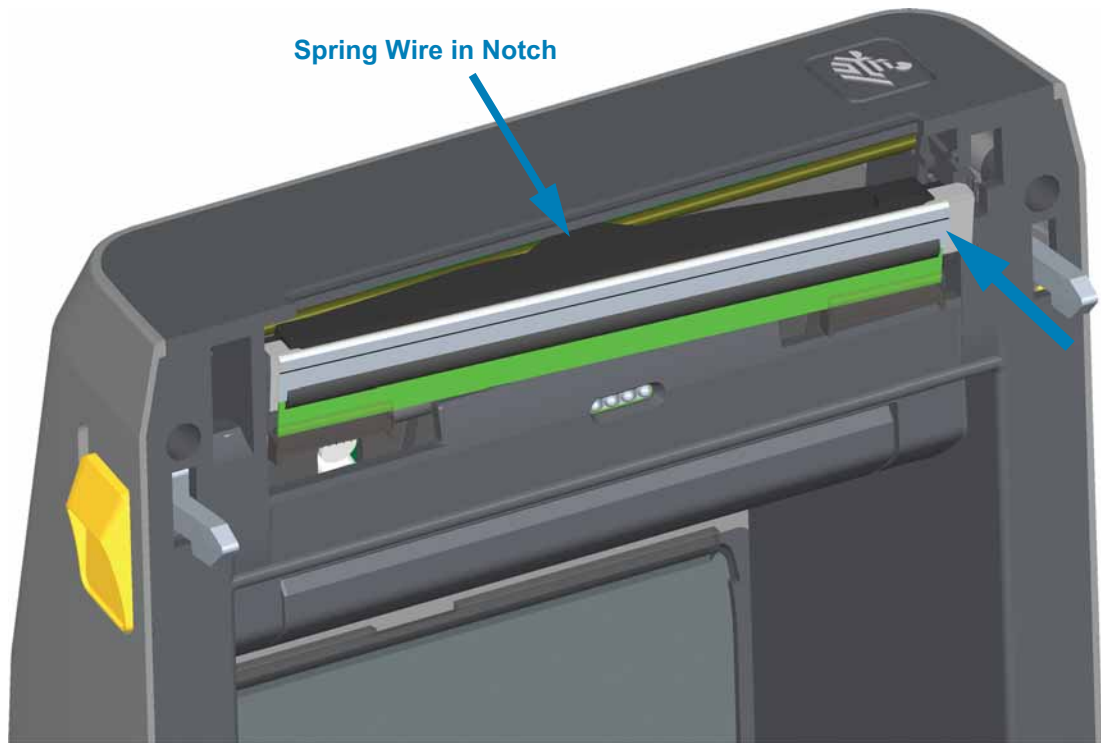


4. Insert the left side of the printhead assembly into the recessed slot (highlighted in red) on the left side of the printer.



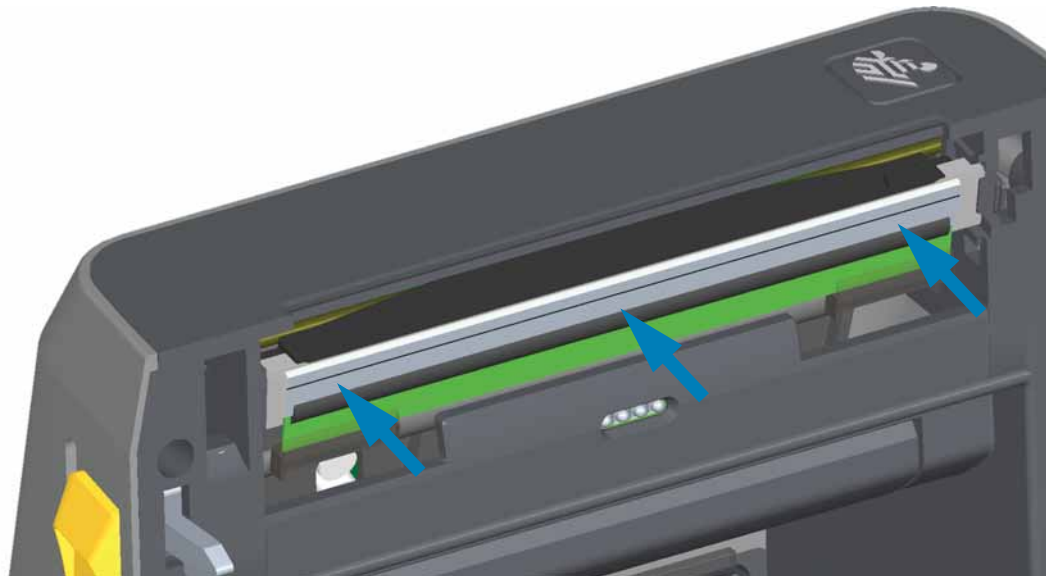
Replacing Parts

5. Align the Spring Wire Notch on the backside of the printhead to the Spring Wire. Push the right side of the printhead into the printer until the latch locks the right side of the printhead into the printer.



Replacing Parts

6. Verify that the printhead moves up and down freely when pressure is applied and remains locked when released.

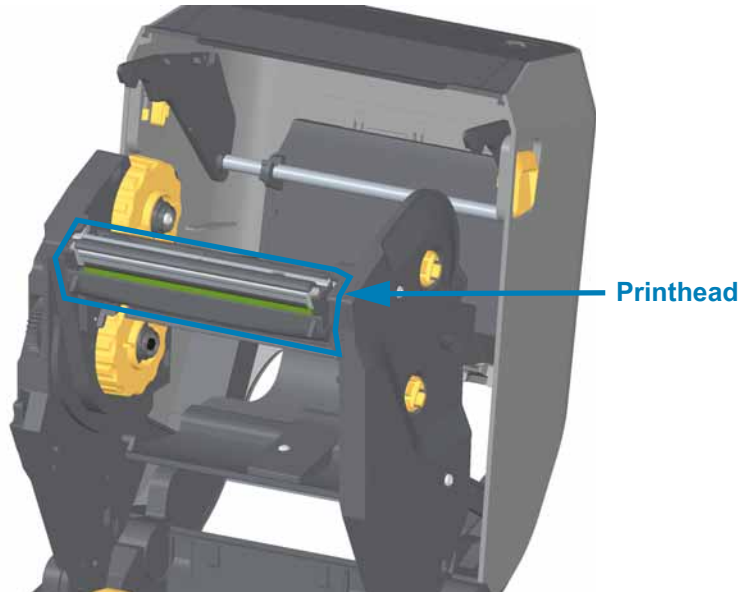


7. Clean the printhead. Use a new pen to wipe body oils (finger prints) and debris of the printhead. Clean from the center of the printhead to the outside. See [Cleaning the Printhead](#).
8. Reload media. Plug in the power cord, turn on the printer and print a status report to ensure proper function. See [Test Printing with the Configuration Report](#).

ZD620 and ZD420 Thermal Transfer Ribbon Roll Printhead

Removing the Printhead

1. Turn the printer OFF. Open the printer.

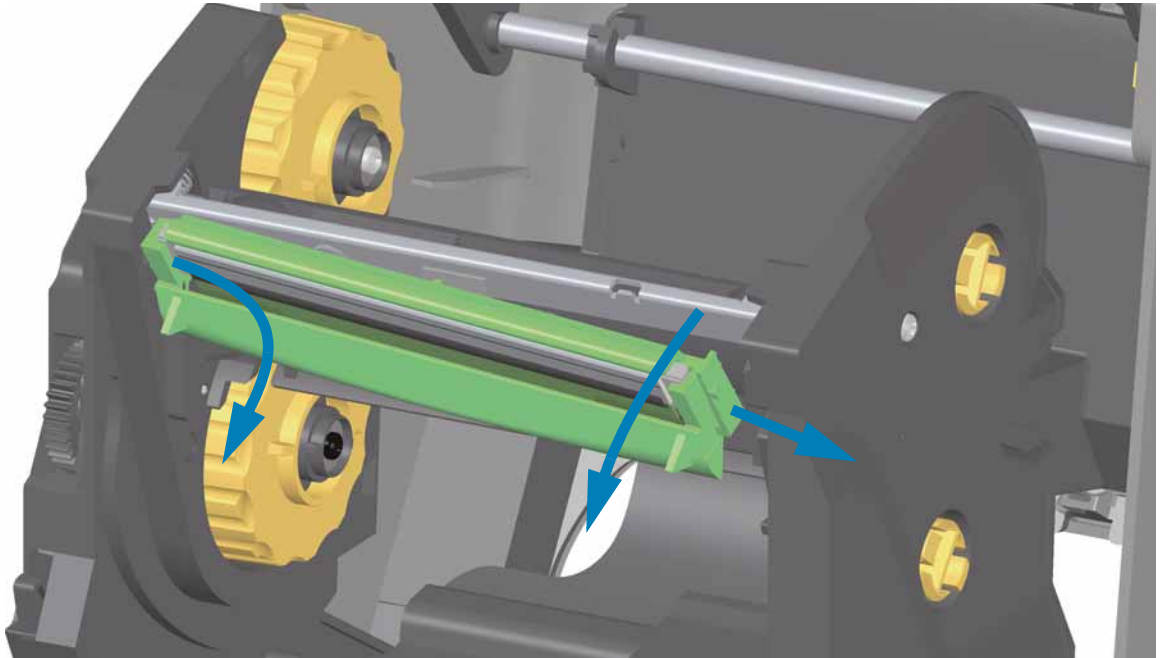


2. Push the printhead release latch toward the printhead (shown as green for visibility). The right side printhead releases down and away from the Printhead Actuator Arm.

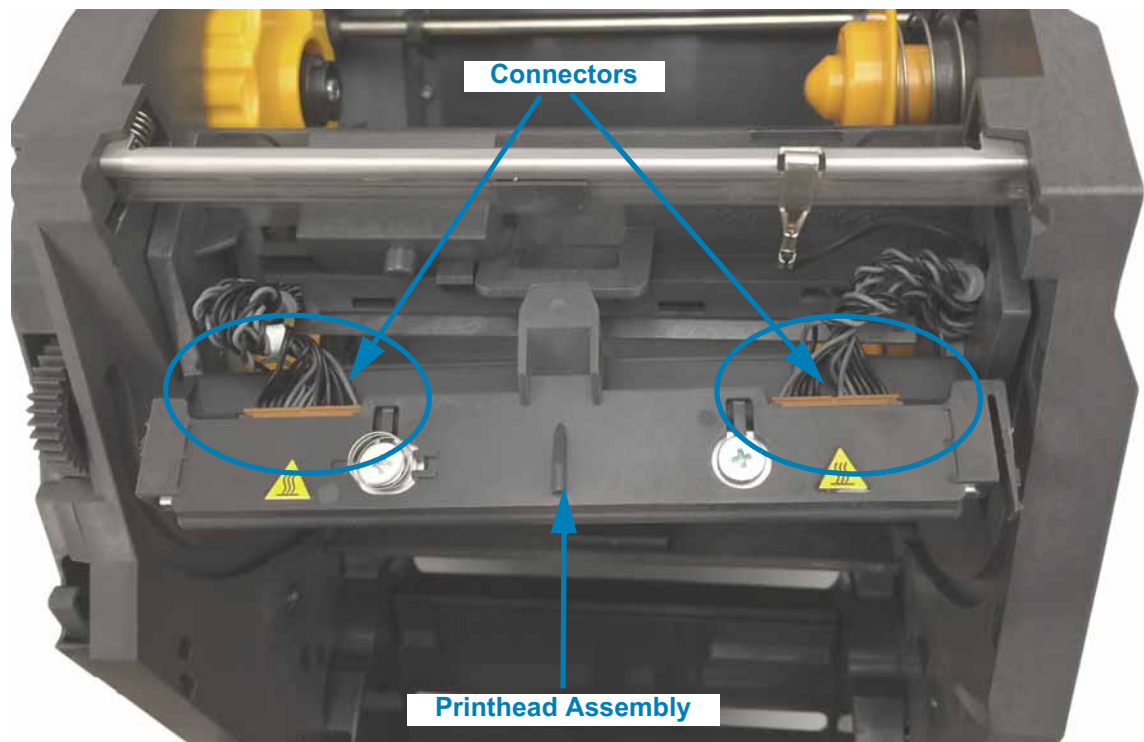


Replacing Parts

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 down and free of the ribbon carriage to gain access to its attached cables.



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

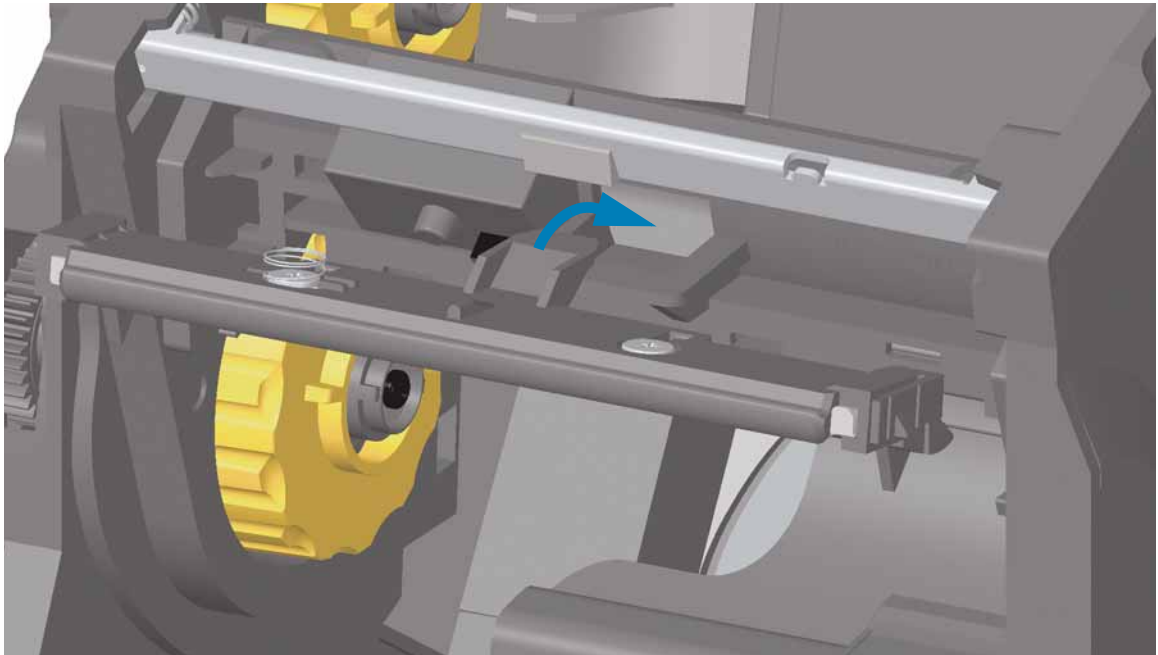


Replacing the Printhead

1. Push the right side printhead cable connector into the printhead. The connector is keyed to only insert one way.
2. Push the left side printhead cable connector onto the printhead.

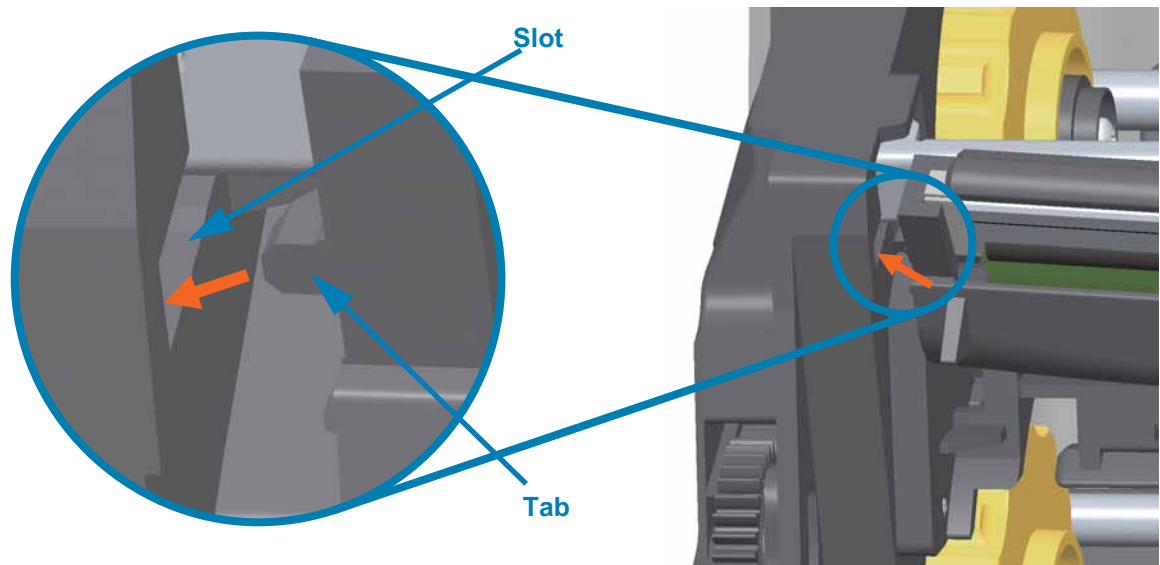


3. Insert the center tab on the printhead assembly into the center slot on the Printhead Actuator Arm.

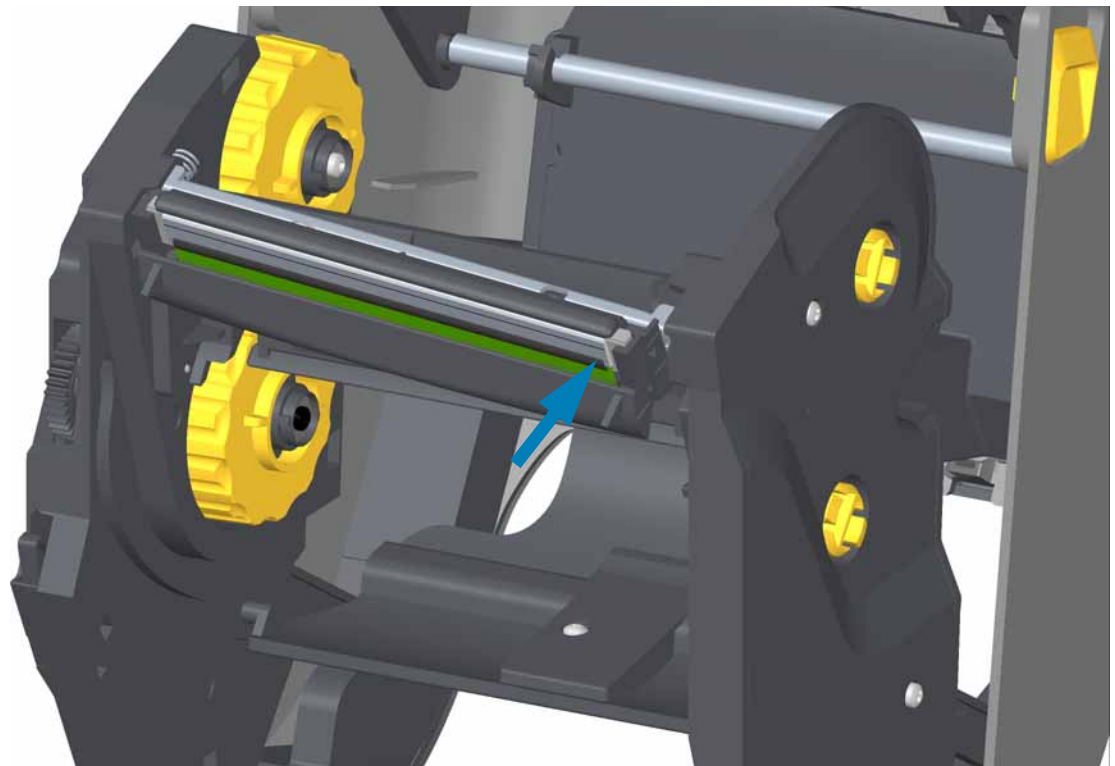


Replacing Parts

4. Insert the left side tab of the printhead assembly into the recessed slot on the left side of the Printhead Actuator Arm.

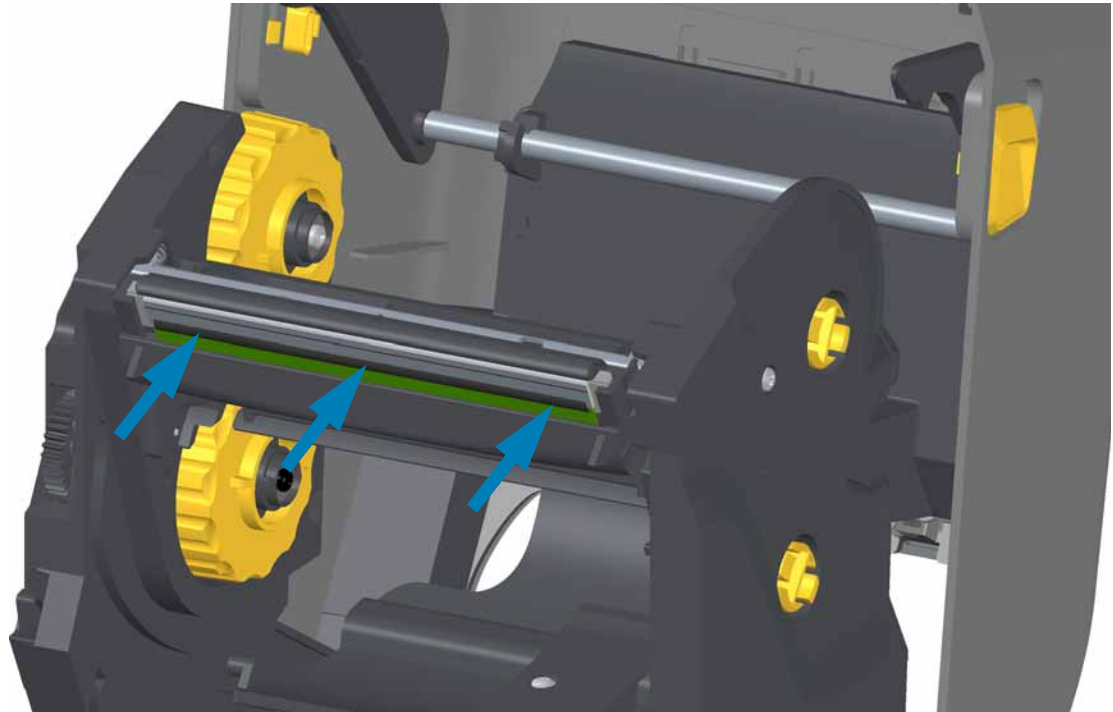


5. Push the right side of the printhead into the printer until the latch locks the right side of the printhead into the printer.



Replacing Parts

6. Verify that the printhead moves up and down freely when pressure is applied and remains locked when released.

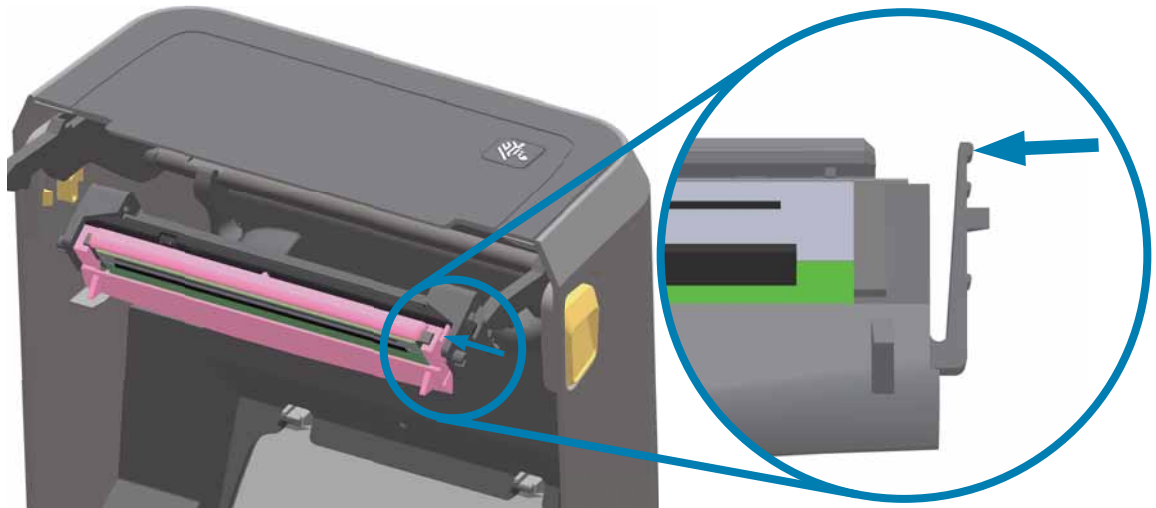


7. Clean the printhead. Use a new pen to wipe body oils (finger prints) and debris of the printhead. Clean from the center of the printhead to the outside. See [Cleaning the Printhead](#).
8. Reload media. Plug in the power cord, turn on the printer and print a status report to ensure proper function. See [Test Printing with the Configuration Report](#).

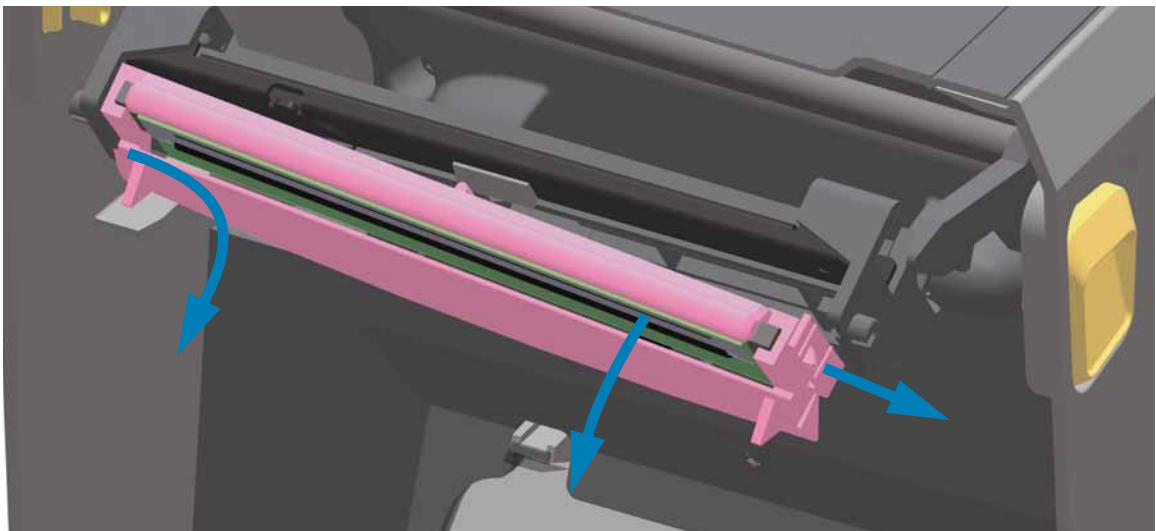
ZD420 Thermal Transfer Ribbon Cartridge Printhead

Printhead Removal

1. Turn the printer OFF. Open the printer.
2. Pull the two (2) Release Arms out to release the Ribbon Drive Transport. See [ZD420 Cartridge Printer: Accessing the Printhead](#) for more details.
3. Swing the Printhead Actuator Arm up until it touches the printer's top cover. Hold the Printhead Actuator Arm in this position for access to the printhead. Push the printhead release latch toward the printhead (shown as pink for visibility). The right side printhead releases down and away from the Printhead Actuator Arm.

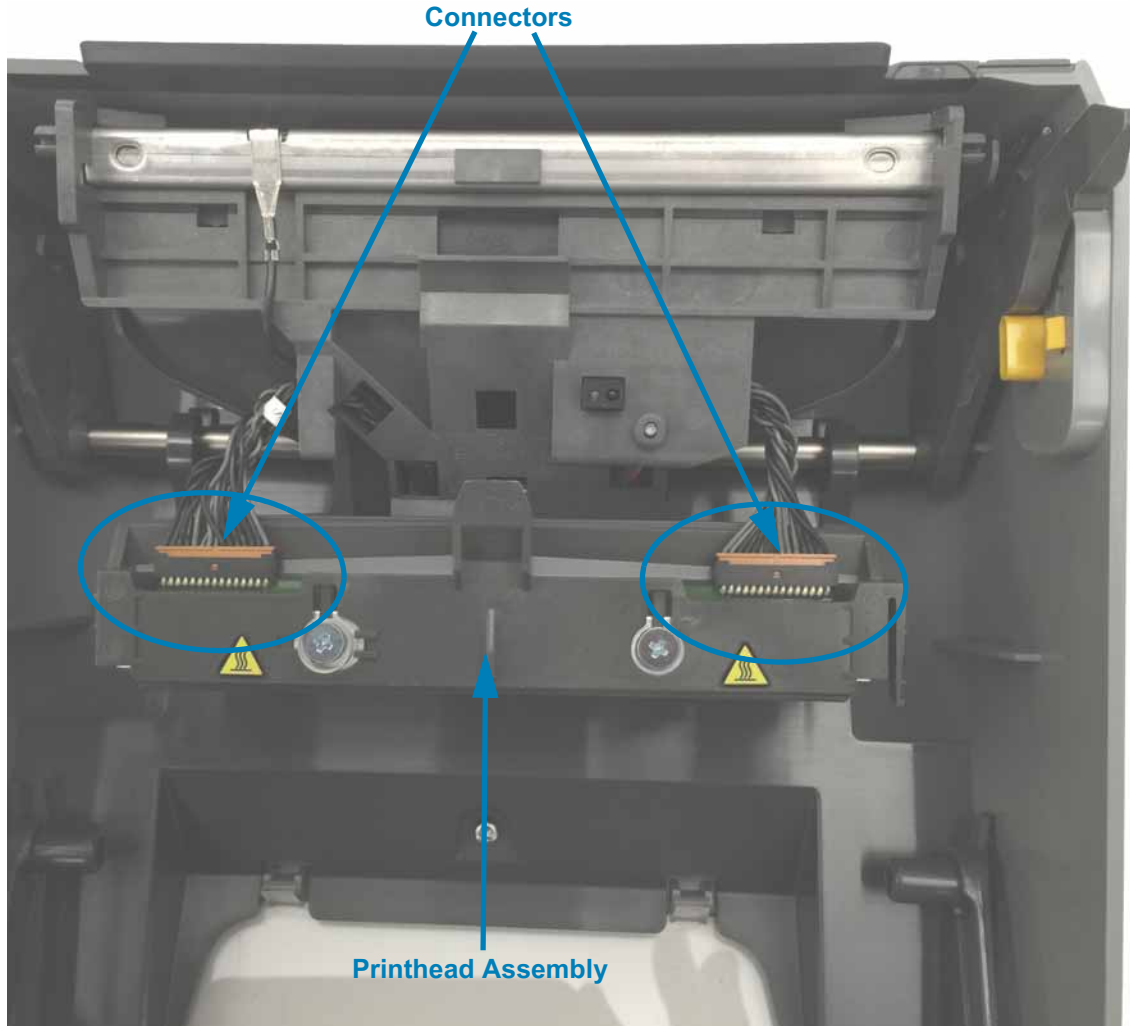


4. Swing the loose right side of the printhead out of the printer. Pull it to the right a little to get the left side of the printhead clear. Pull the printhead down and free of the Printhead Actuator Arm to gain access to its attached cables.



Replacing Parts

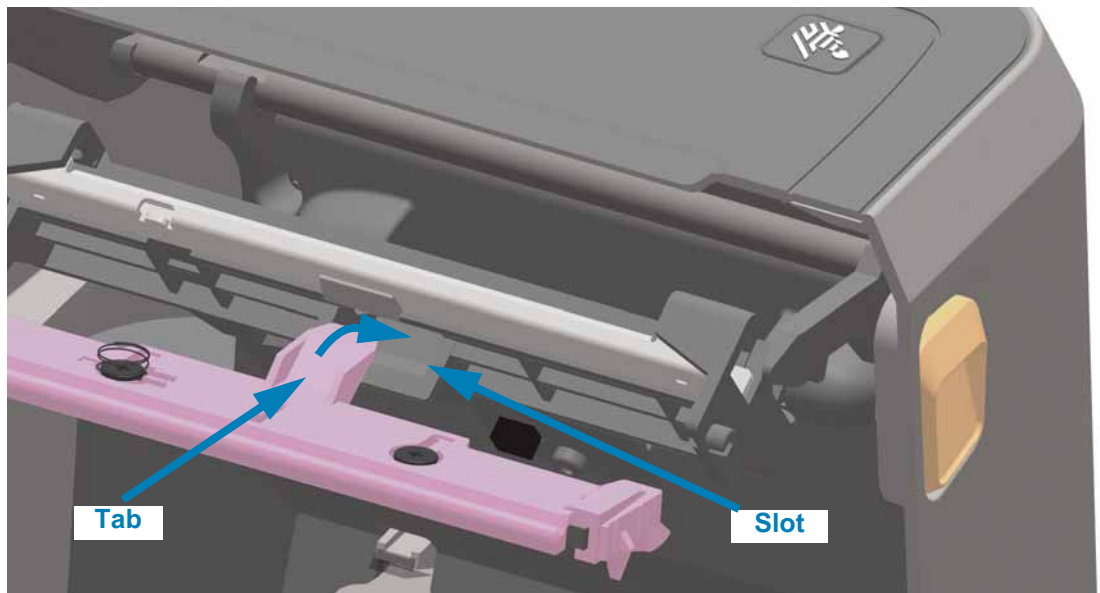
5. Gently but firmly pull the two printhead cable bundle connectors off of the printhead.



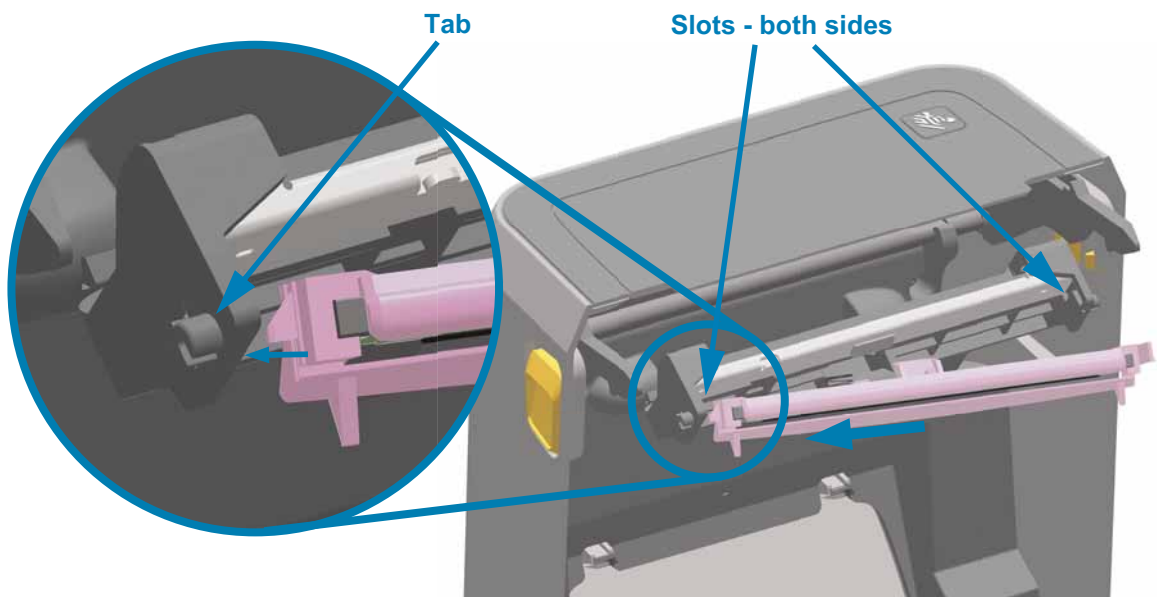
Replacing Parts

Replacing the Printhead

1. Push the right side printhead cable connector into the printhead. The connector is keyed to only insert one way.
2. Push the left side printhead cable connector onto the printhead.
3. Insert the center tab on the printhead assembly into the center slot on the Printhead Actuator Arm.

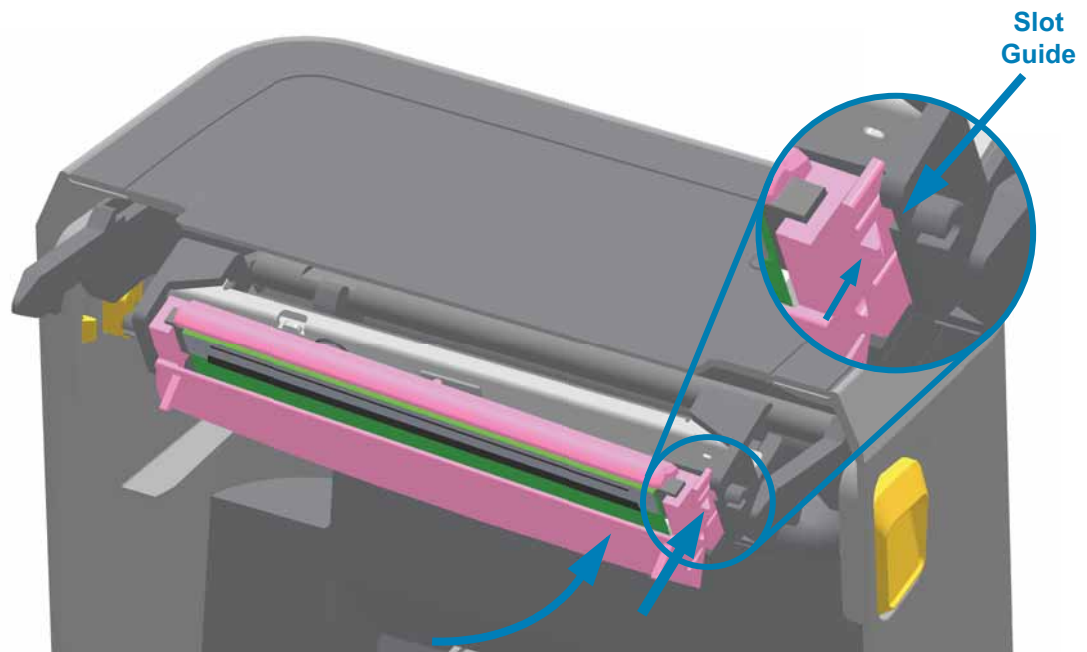


4. Insert the left side tab of the printhead assembly into the recessed slot on the left side of the Printhead Actuator Arm.

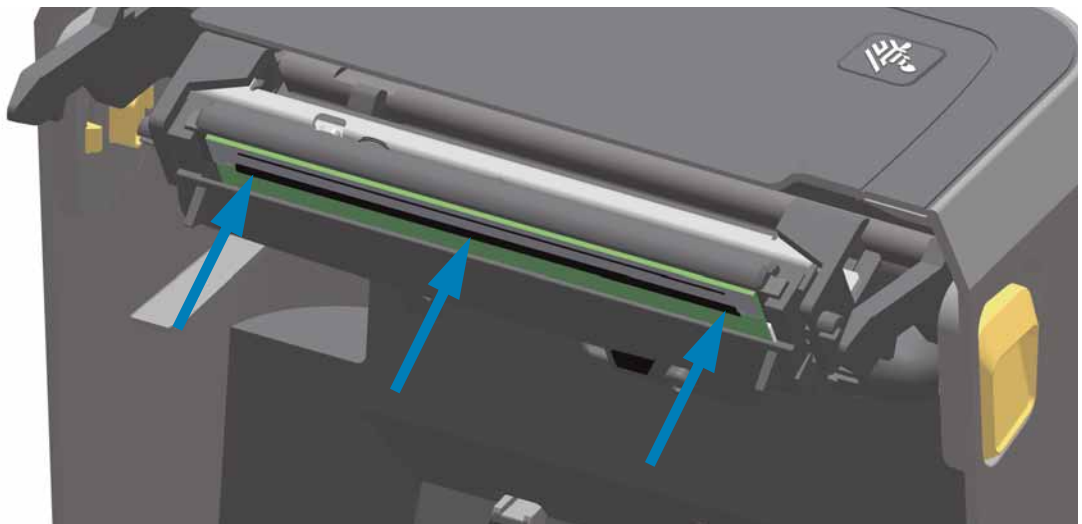


Replacing Parts

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



6. Verify that the printhead moves freely into the printer when pressure is applied (see arrow) and remains locked when pressure is released.



7. Clean the printhead by using a new cleaning pen to wipe body oils (finger prints) and debris off the printhead. See [Cleaning the Printhead](#).

Reload media. Turn on the printer and print a status report to ensure proper function. See [Test Printing with the Configuration Report](#).

Replacing the Platen (Drive) Roller

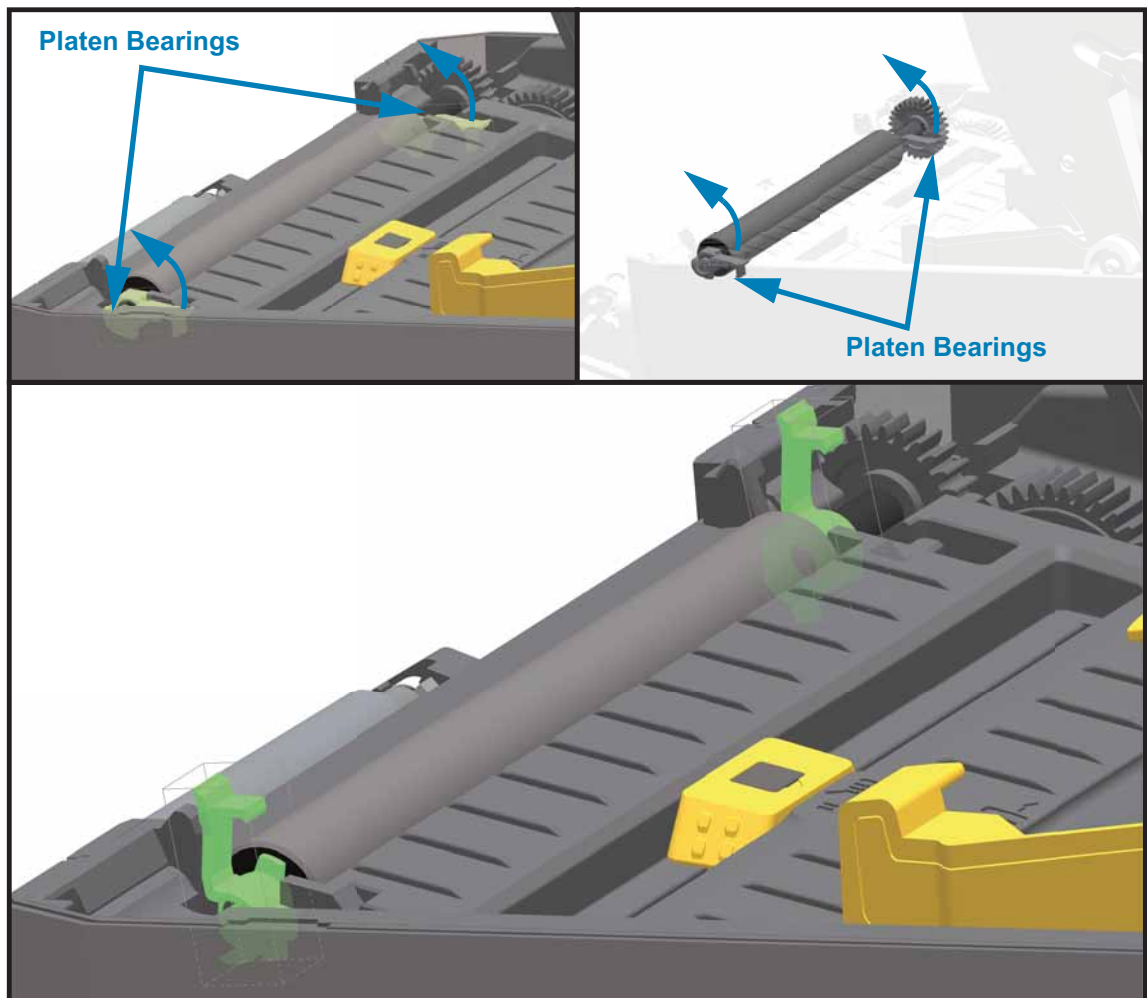
If you need to replace the platen drive roller assembly, read the procedure and review the removal and installation steps before actually replacing the platen.



ESD 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.

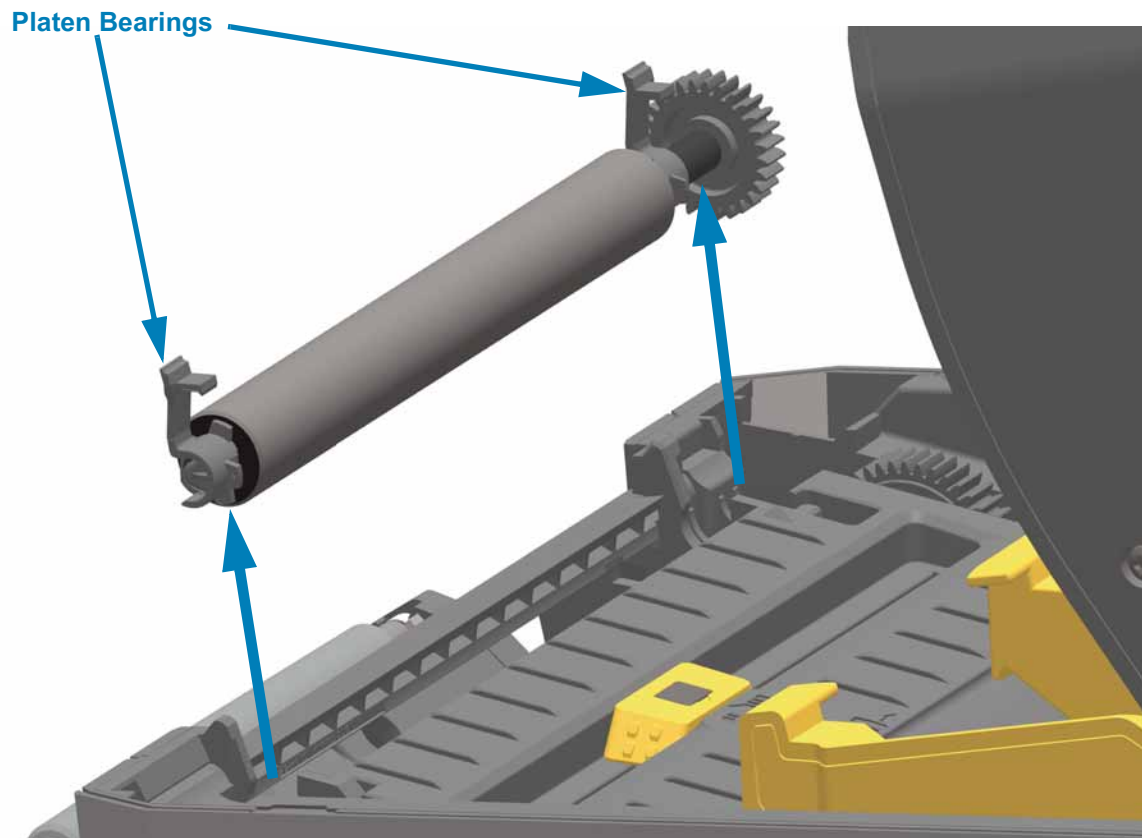
Removal

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.

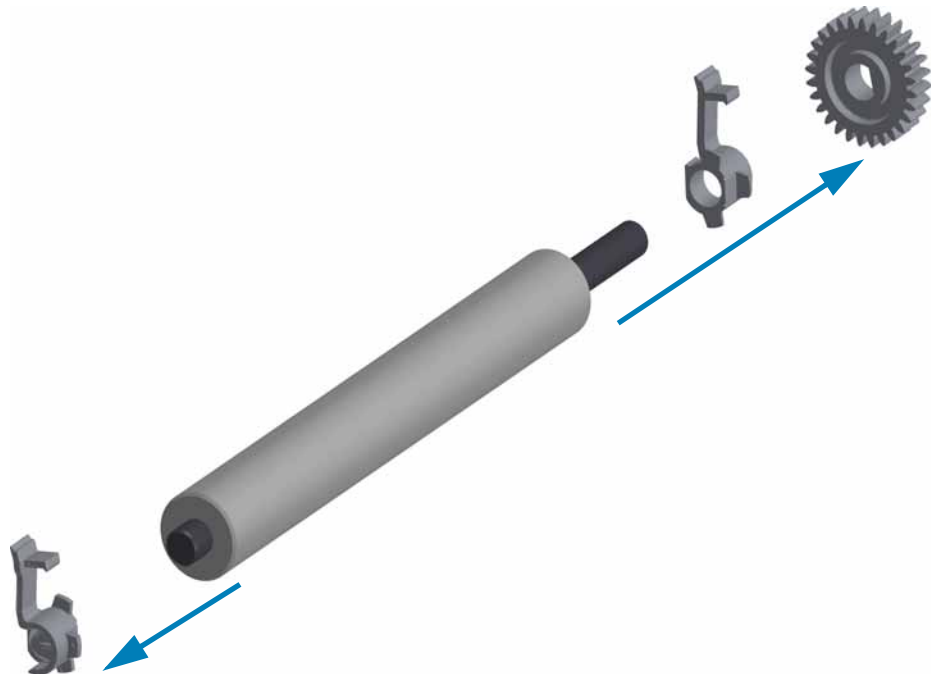


Replacing Parts

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.



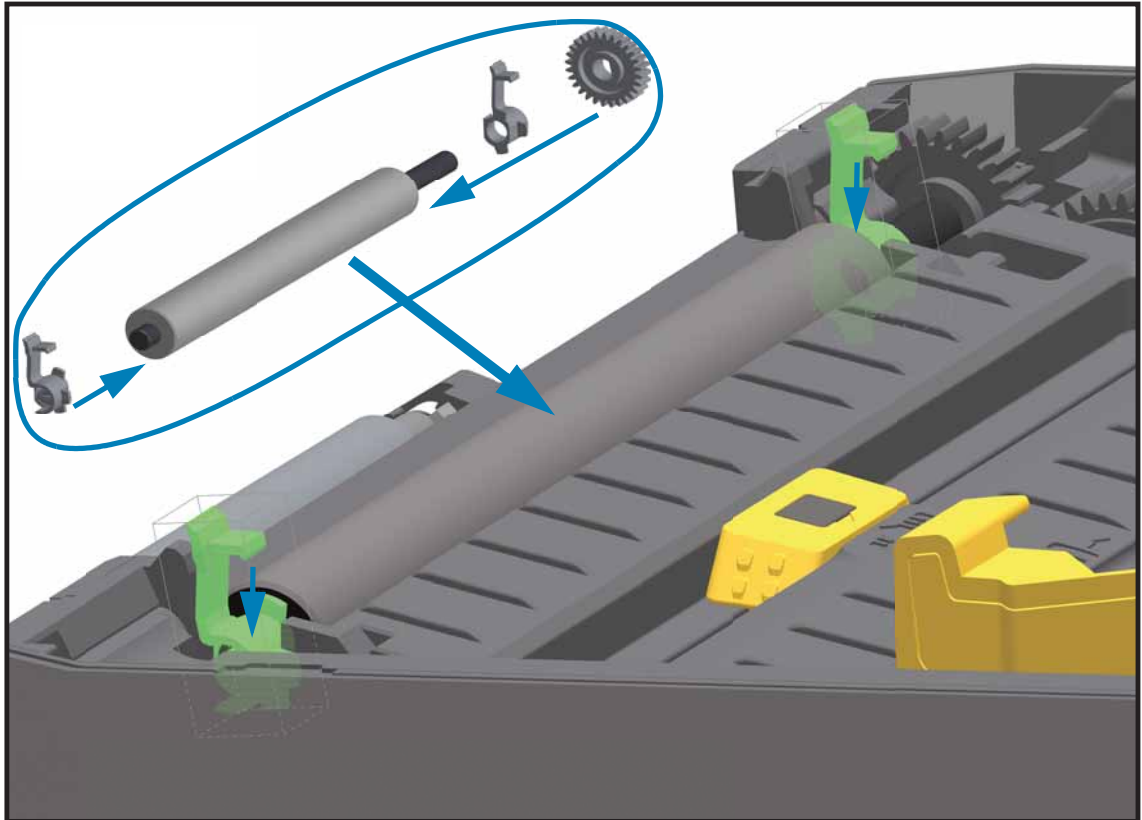
Replacing Parts

Installation

Your new platen may be dirty from shipping and handling. Inspect the platen for dirt and other contaminants. 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.



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.

If you cleaned the platen roller, allow the printer to dry for one minute before closing the dispenser door, media cover or loading labels.

Removing and Replacing Connectivity Modules

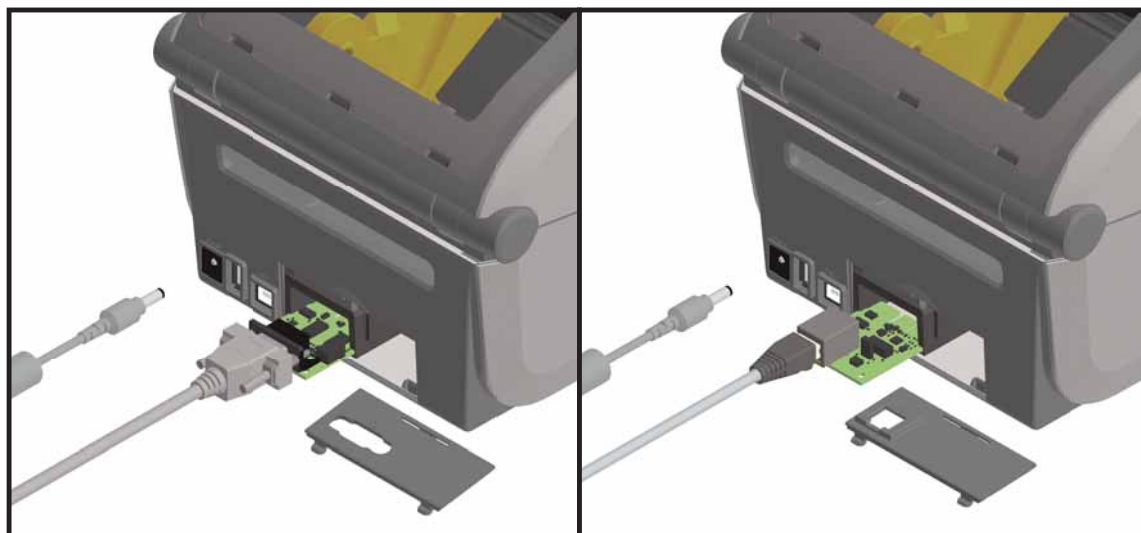


ESD Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

Connectivity modules can easily be removed for the purpose of reconfiguring a printer or repair. You should not remove and replace connectivity modules as a general practice.

Removal

1. Turn power off and disconnect the power cable. Remove the interface cables.
2. Remove the module access door. Push down on the top of the door with your finger tip. This releases the latch. Pull the door away and down to remove.
3. Re-attach an interface cable to the connectivity module and secure the cable.
4. Gently pull on the interface cable that is secured to the connectivity module. Slowly pull the module out of the printer.



Installation

1. With the module's access door removed, slide the connectivity module into the printer. Push the circuit card in slowly but firmly until the card is just past the inside lip of the access door.
2. Align the bottom of the connectivity module door cover to the bottom lip of the module access opening. Swing the door up and snap the cover closed.
3. Reconnect power. Turn power on and update the printer firmware which includes connectivity module updates to synchronize versions.

Replacing a Front Bezel Option (Tear-off, Dispense, Cut)

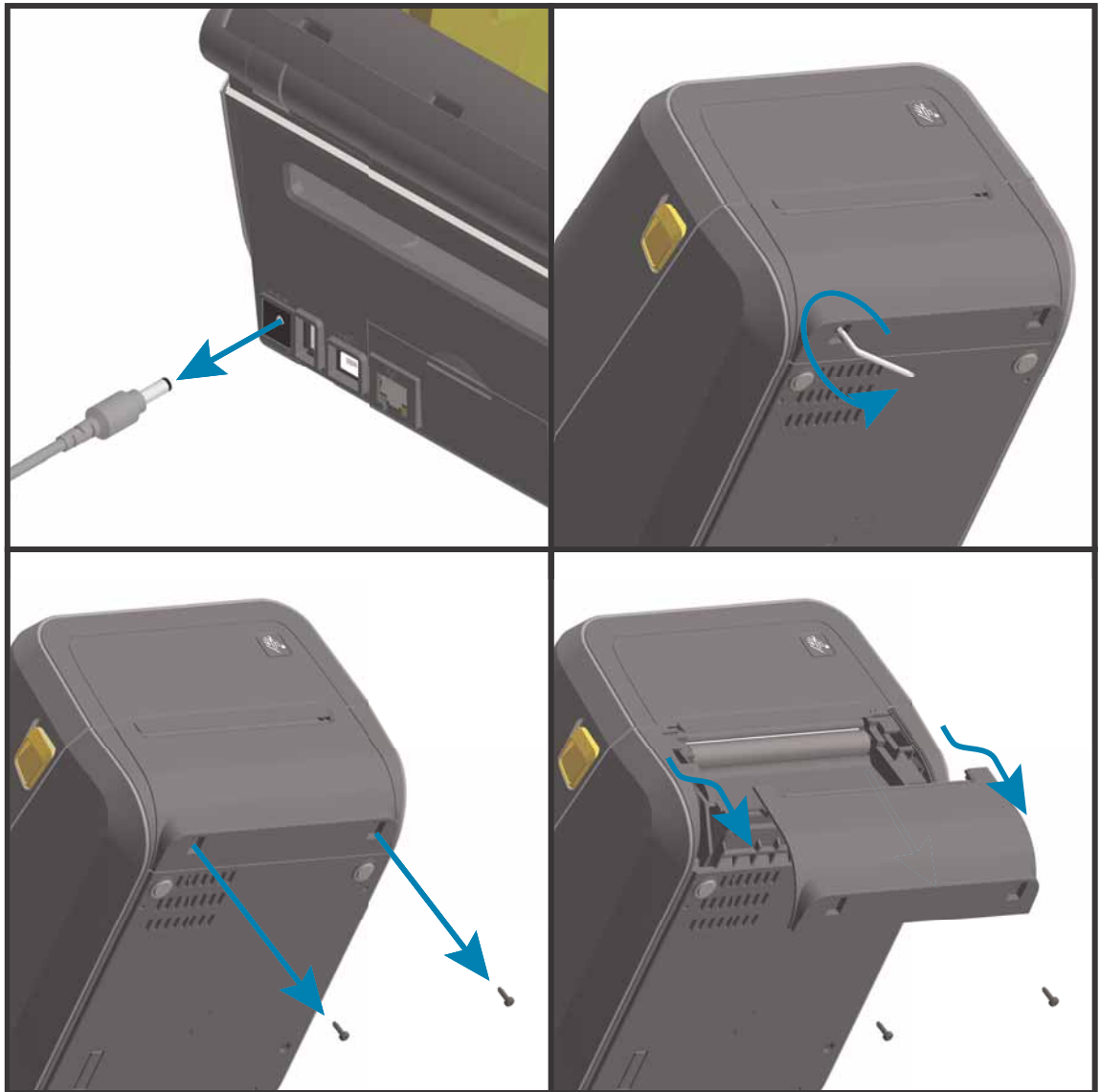


ESD Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

All three (3) of the front bezel options (standard tear-off bezel, the dispenser module, and cutter module) mount in the same way

Removal

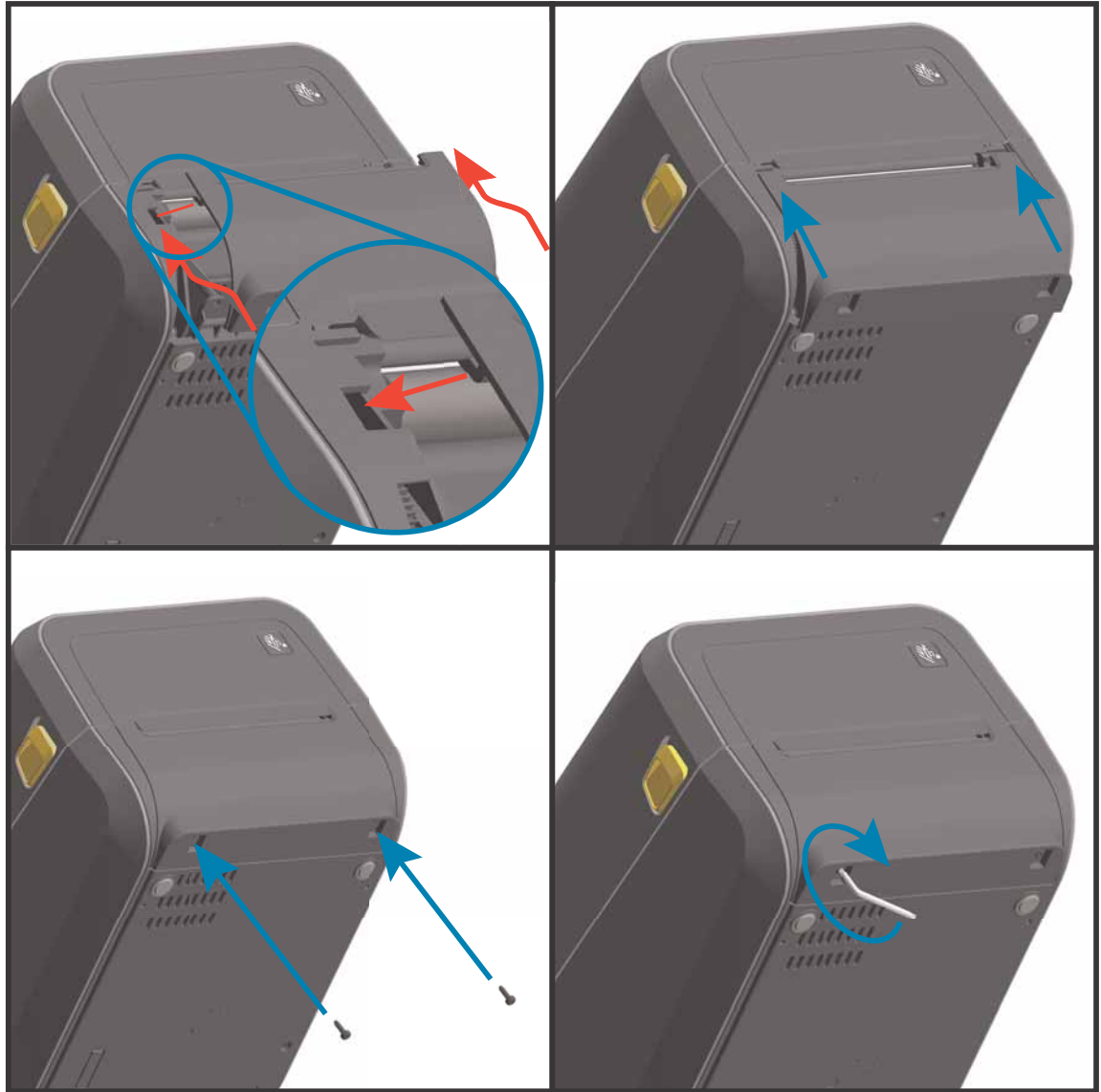
1. Turn the printer upside down. Remove the two (2) mounting screws with a Torx T10 driver or wrench. Save the screws.
2. Slide the bezel down the front and pull the loose bezel out.



Replacing Parts

Installation

1. Place the front bezel option and printer right side up with the top of the module even with the bottom of the top cover. Center and push the module into the front of the printer and slide it up until it stops.
2. Turn the printer upside down and attach the media exit option to the printer with the two screws using a Torx T10 driver or wrench.



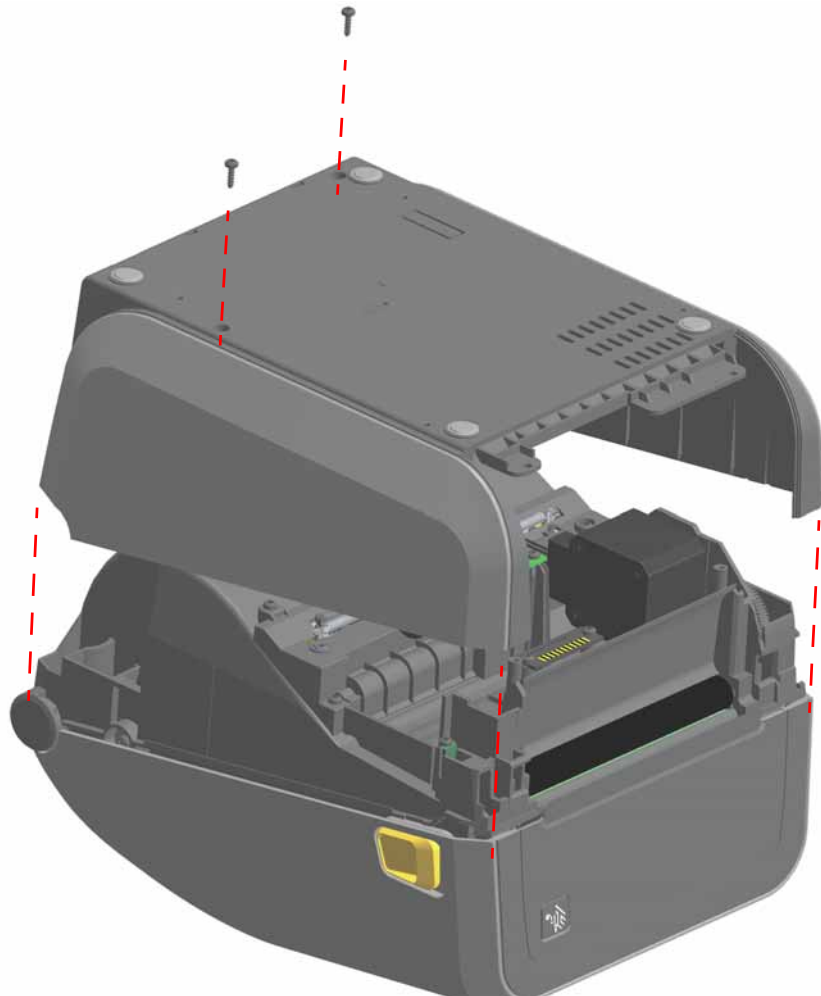
3. Reconnect power. Turn power on and update the printer firmware which includes connectivity module updates to synchronize versions.

Removing the Printer Base for Repair Access

The printer base (bottom cover) is not a spare part and must be replaced at a Zebra repair center.

Repair Prerequisites

You must remove the [Front Bezel Option](#) bezels (tear-off, dispenser, or cutter) before you can remove the printer base. Connectivity option PCBA's and bezel do not have to be removed to gain access to remove the base.



Removal

1. Remove the two (2) screws with a Torx T10 driver.
2. Lift the base off the printer.

Installation

1. Place the base on the lower printer's frame.
2. Secure the base with the two (2) screws using a Torx T10 driver.

Replacing the Printer's Feet

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

Repair Prerequisites

Open the printer to gain access to the window release tabs on the inside of the printer. For better access to the window, use the following:

- [ZD420 Cartridge Printer: Accessing the Printhead](#)
- [ZD Thermal Transfer Printers: Accessing Inside the Cover](#)

Thermal Transfer Roll and Cartridge Printers

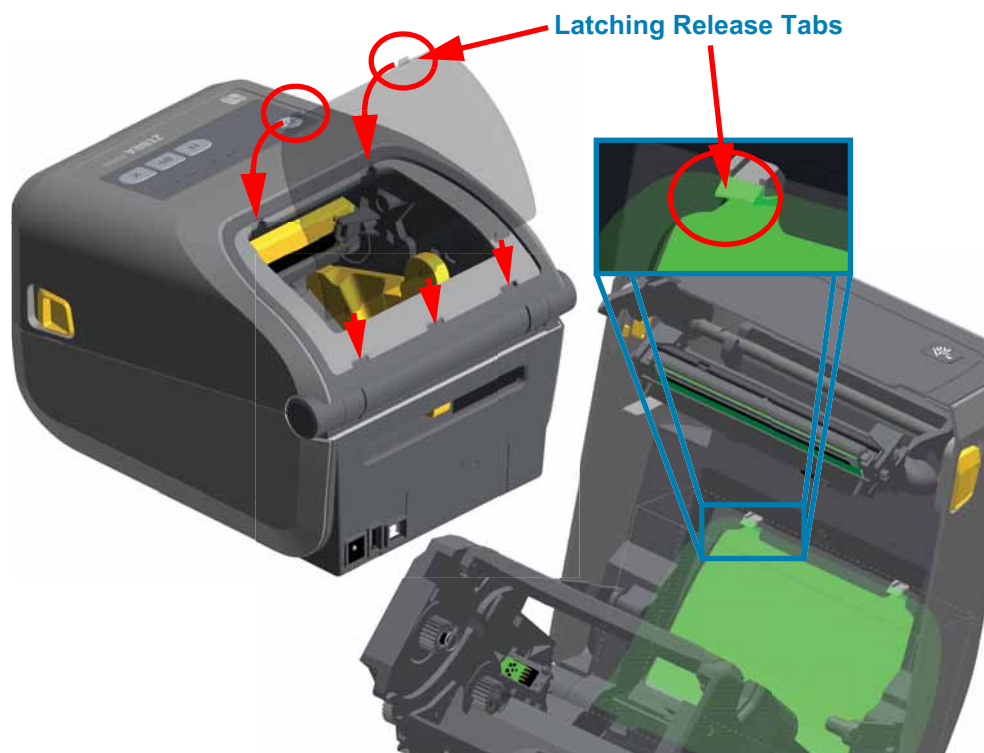
For Direct Thermal Printers see: [Direct Thermal Printer Window Replacement](#)

Removal

1. Use your finger to push the window's release tabs towards the middle area of the window.

Installation

1. Slide the three (3) tabs on the window part into the three (3) slots in the top cover at the rear of the printer.
2. Swing the window down into the front 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.



Direct Thermal Printer Window Replacement

Repair Prerequisites

Open the printer to gain access to the window release tabs on the inside of the printer.
Removal

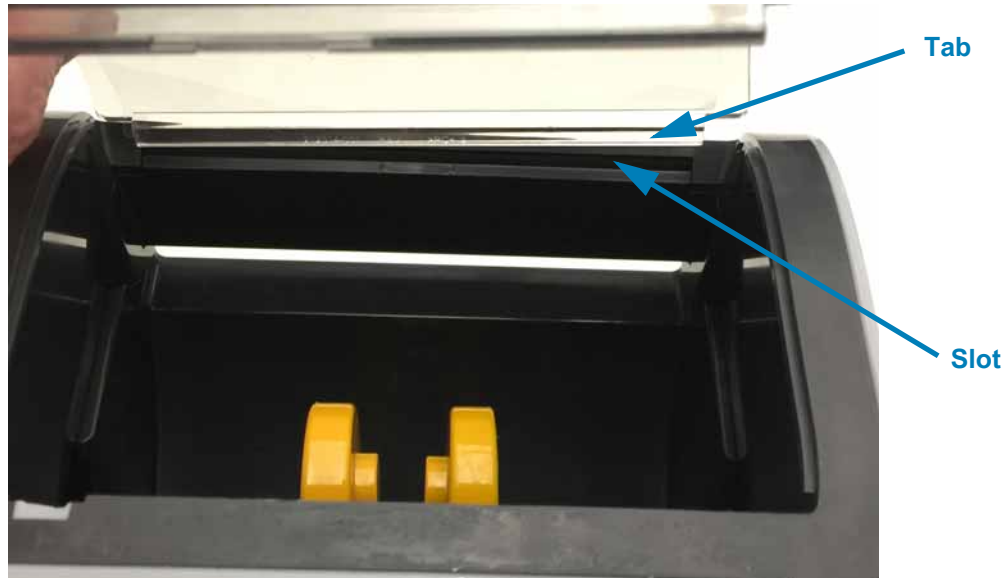
1. Use push the window out of the top cover. Press the middle of the window on the left side. Push it out and towards the cover hinge until you can see a gap between the window and cover. Continue to push while shifting your fingers to the right to side to release the window.



Replacing Parts

Installation

1. Slide the window's tab (window wide) into the slot on the back of the top cover at the rear of the printer.



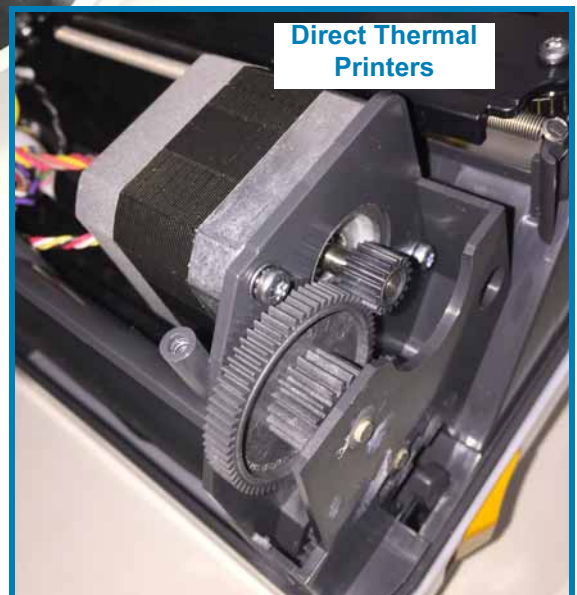
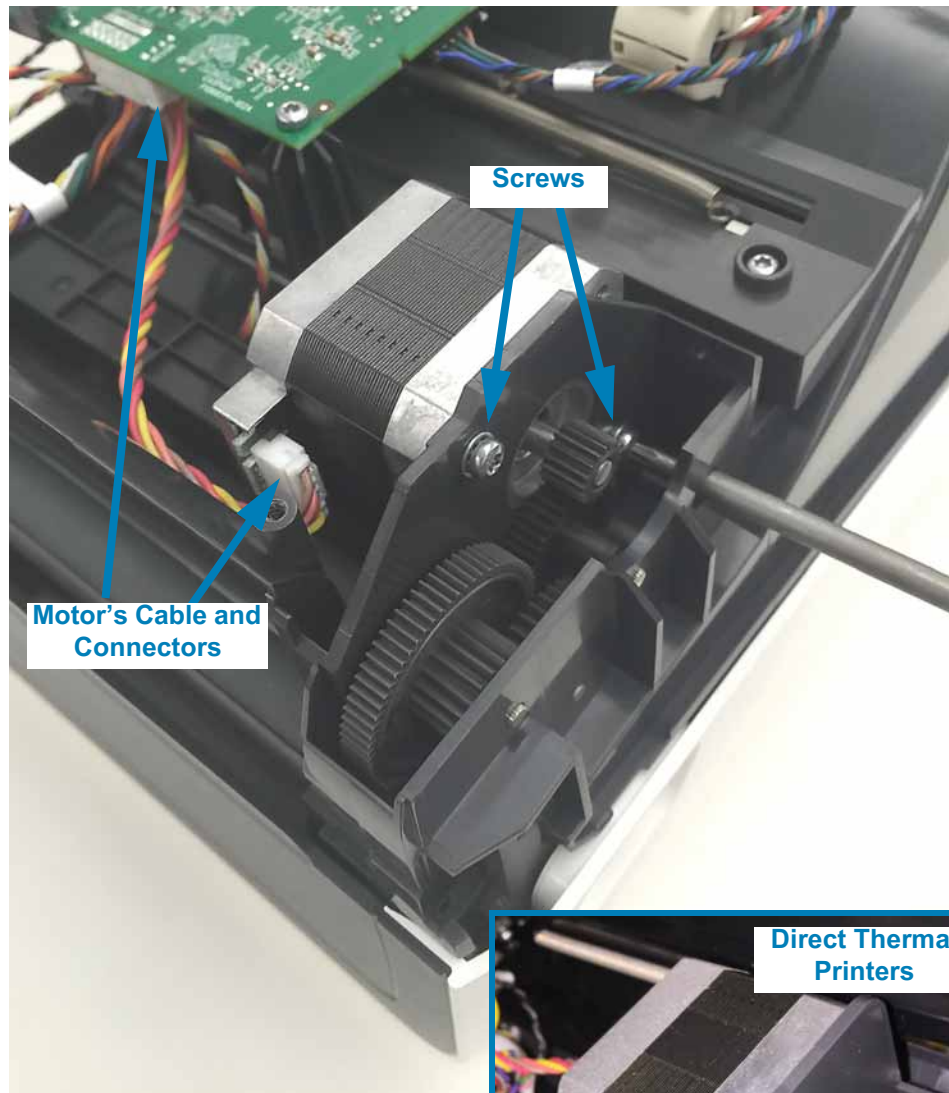
2. Swing the window down into the front of the window recess area. Push the lip of the window under the front edge of the window recess. The window lip will slide down and into place.



Replacing the Motor

Repair Prerequisites

You must remove the Main PCBA, (Direct Thermal only) Front Bezel Option (tear-off, dispenser, or cutter) and Printer Base before you can remove the motor.



Replacing Parts

Removal

1. Use a Torx T10 driver to remove the two (2) screws holding the motor to the inner frame. Pull the motor out of the gears and inner frame.
2. Disconnect the cable from the motor or PCBA on thermal transfer printers.

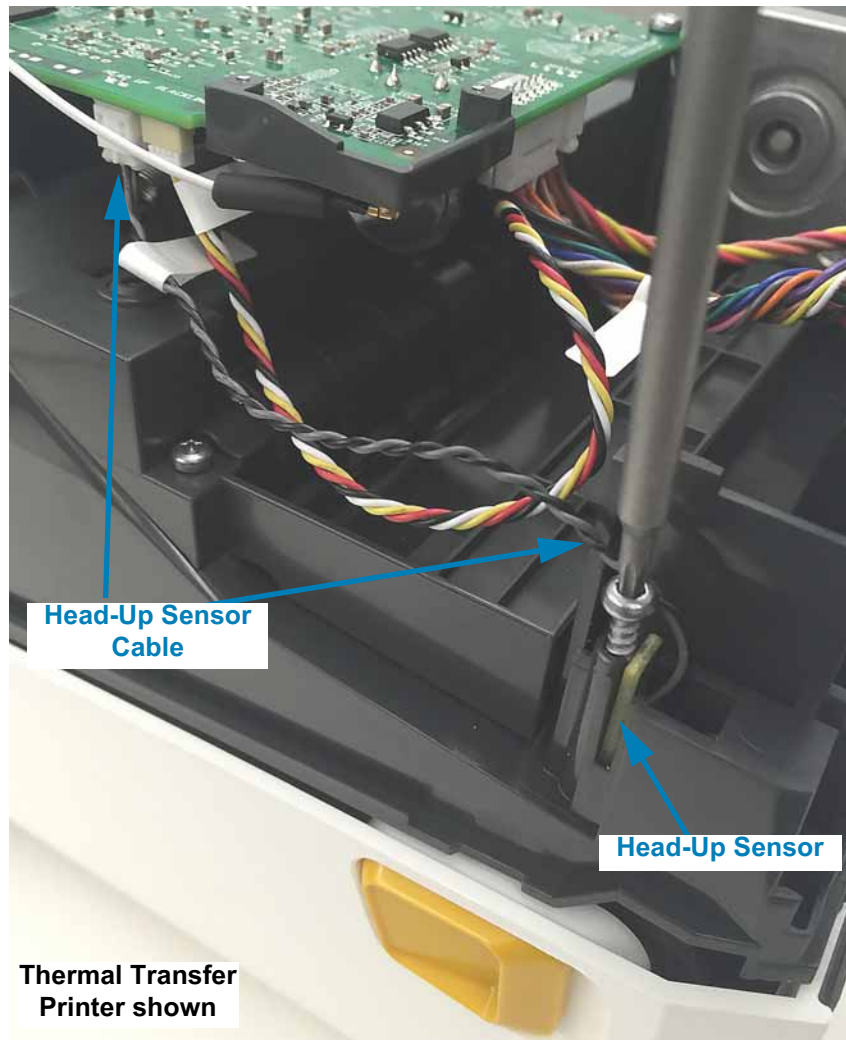
Installation

1. Connect the cable to the motor on thermal transfer printers.
2. Orient the motor with the cable connector facing the front of the printer for thermal transfer printers or down towards the inner frame on direct thermal printers. Insert the motor gear into the inner frame to mesh with the drive train gears. Secure the motor to the inner frame with the two (2) screws using a Torx T10 driver.

Replacing the Head-Up Sensor

Repair Prerequisites

You must remove the Front Bezel Option (tear-off, dispenser, or cutter) and Printer Base before you can remove the Head-Up Sensor.



Removal

1. Use a Torx T10 driver to remove the screw holding the Head-Up Sensor to the inner frame. Pull the sensor out of the inner frame.
2. Disconnect the cable from the Main PCBA.

Replacing Parts

Installation

1. Connect the cable to the Main PCBA.
2. Slide the Head-Up Sensor PCBA into the slot in the inner frame. The PCBA's switch will slide in easier if the top cover is not latched to the inner frame. The switch on the PCBA faces the front of the printer with the cable oriented towards the printer bottom. Secure it with the screw using a Torx T10 driver



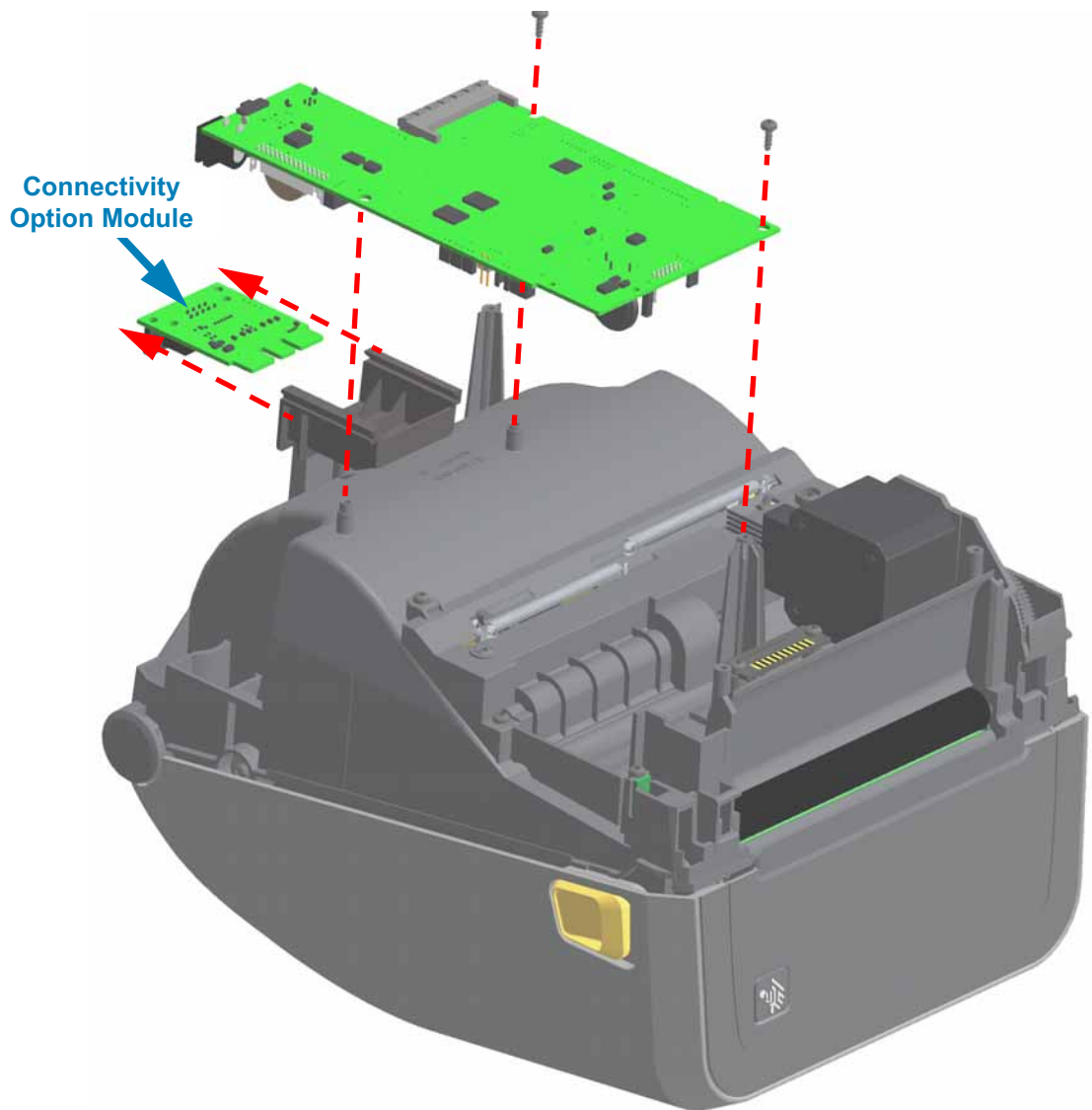
Replacing the Main PCBA

Repair Prerequisites

You must remove the Front Bezel Option (tear-off, dispenser, or cutter) and Printer Base before you can remove the Main PCBA. The Connectivity Option Modules PCBA can be removed during or prior to 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.



Replacing Parts

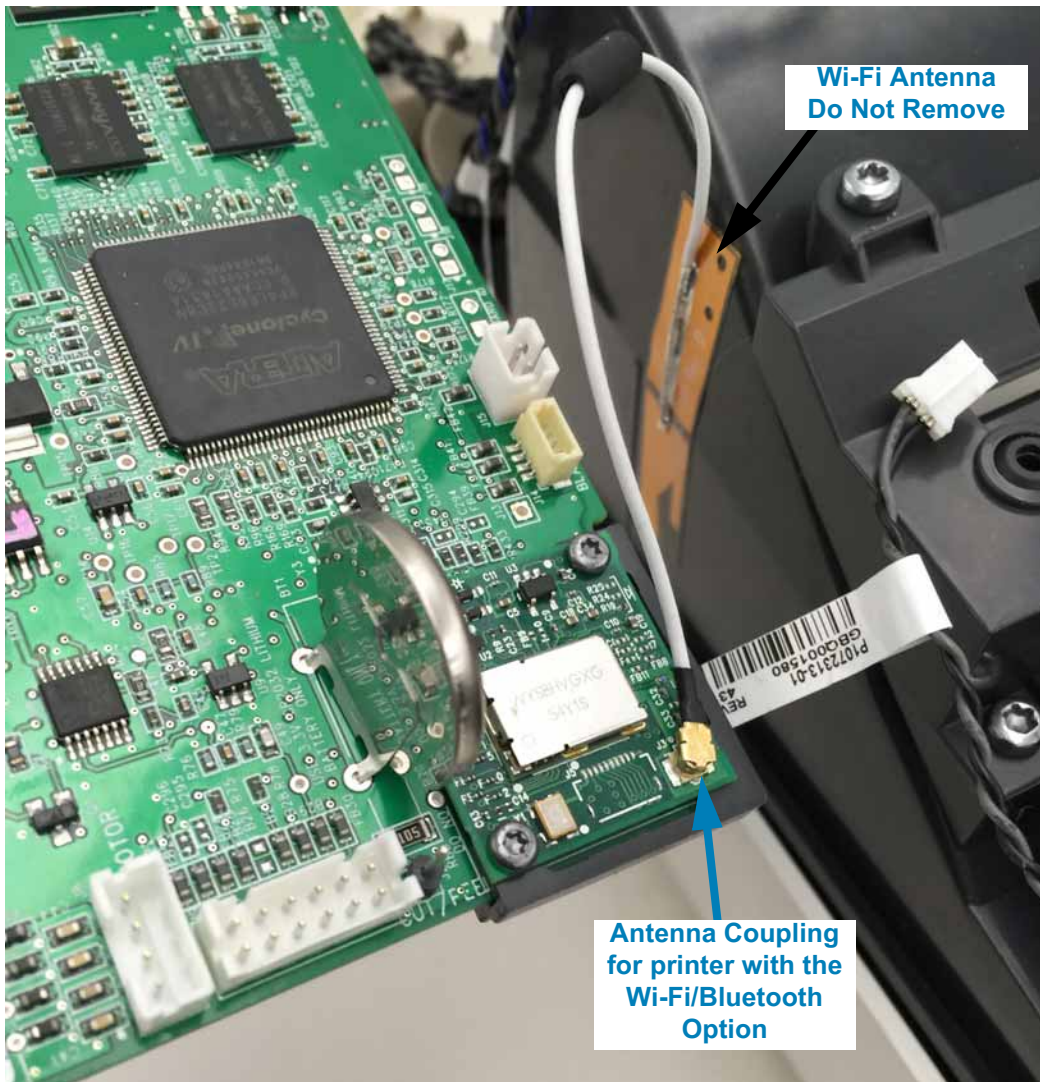
2. Loosen the two (2) screws retaining the Main PCBA. Lift the PCBA off the opposite side's mounting post. Slide the Main PCBA side ways, away from the Connectivity module's mounting bracket. Carefully lift the Main PCBA away from the printer to disconnect the wires from the board.
3. Carefully remove each connector from the Main PCBA:
 - a. Disconnect the PRINTHEAD cable from J23.
 - b. Disconnect the USER INTERFACE (control panel) cable from J10.
 - c. Disconnect the GAP (upper media) sensor cable from J22.
 - d. Disconnect the MOTOR cable from J8.
 - e. Disconnect the CARTRIDGE (reader) sensor cable from J1.
 - f. Disconnect the RIBBON sensor cable from J5.
 - g. Disconnect the CUT/PEEL (media handling option) cable from J9.
 - h. Disconnect the BLACKLINE (lower media) sensor cable from J14.
 - i. Disconnect the HEAD UP sensor cable from J16.
 - j. The Wi-Fi/Bluetooth option 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 fingers to disconnect and replace the antenna. Gently pull the coupling straight up (as close as you can get to the coupling).

Only printers with the Wi-Fi radio option have a separate antenna. All other Link-OS 4 inch Desktopprinters have an on-board antenna for Bluetooth LE operation.

Replacing Parts

Installation

1. Reattach the Antenna if this unit has the Wi-Fi/Bluetooth radio option (see below). 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.
5. Finish securing the Main PCBA to print mechanism with a screw to the mounting post near the motor.

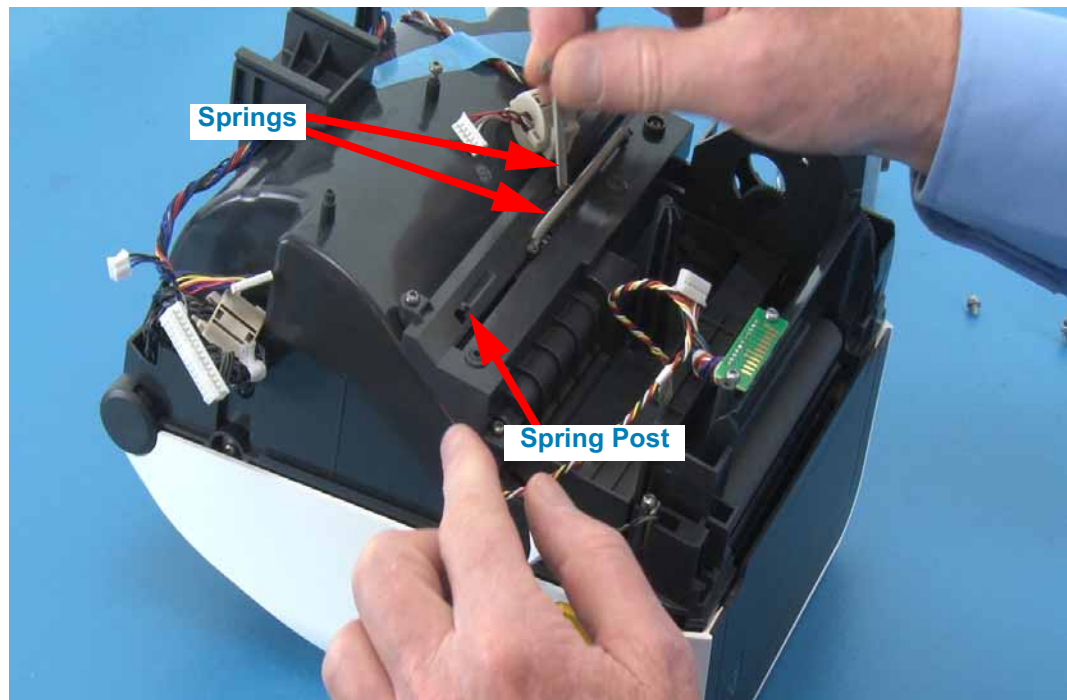
Replacing the Movable Sensor

Repair Prerequisites

You must remove the Front Bezel Option (tear-off, dispenser, or cutter), Printer Base, Motor, and the Main PCBA before you can remove the Movable Sensor.

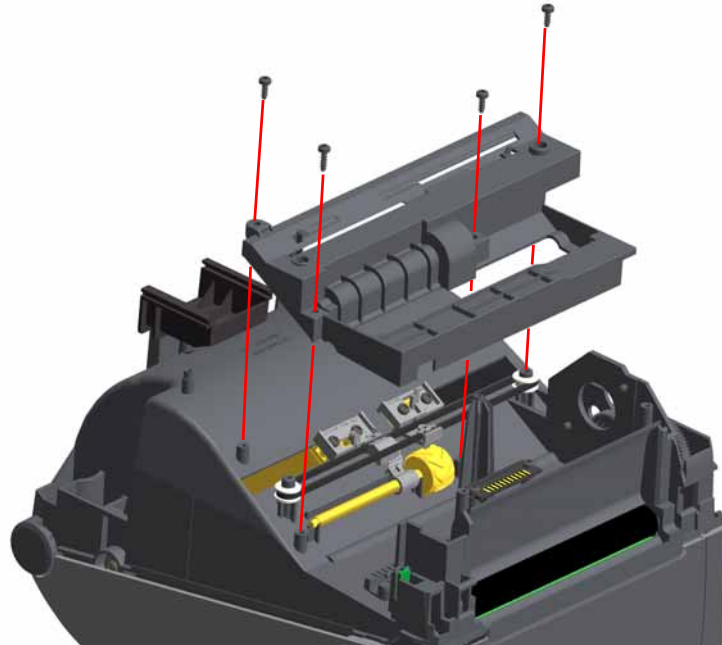
Removal

1. Remove the two (2) roll holder tension springs.

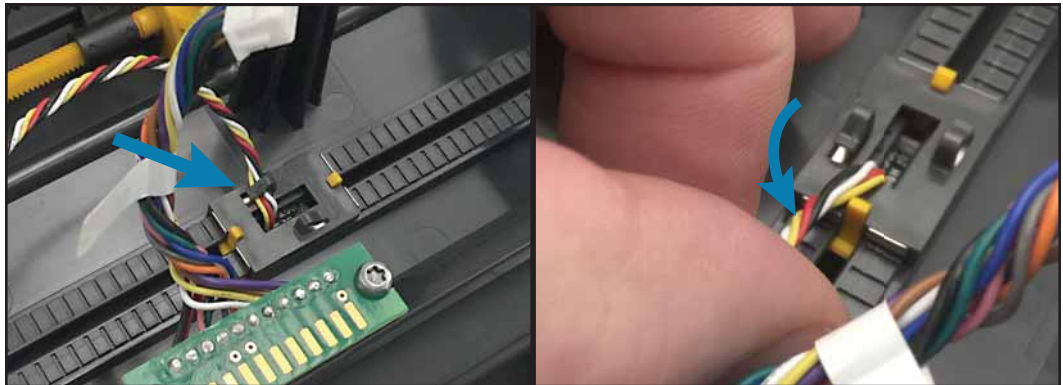


Replacing Parts

2. Use a Torx T10 driver to remove the four screws securing the roll holder cover bracket.

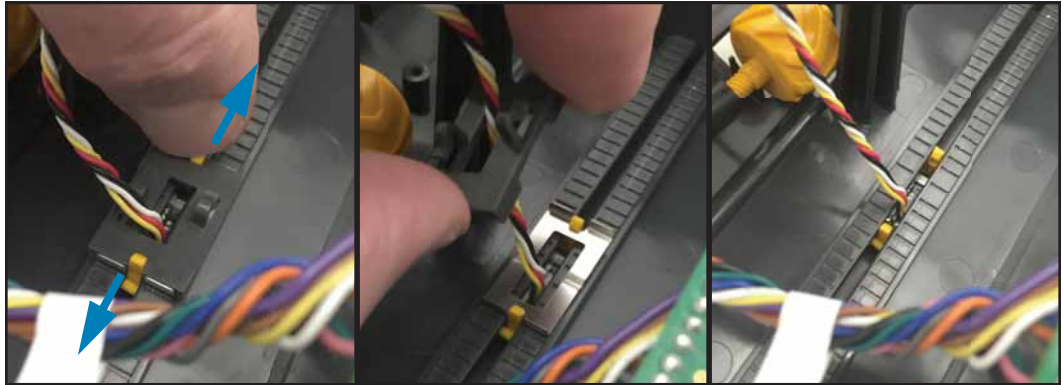


3. Un-hook the sensor's cable from the backside of the movable sensor.



Replacing Parts

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

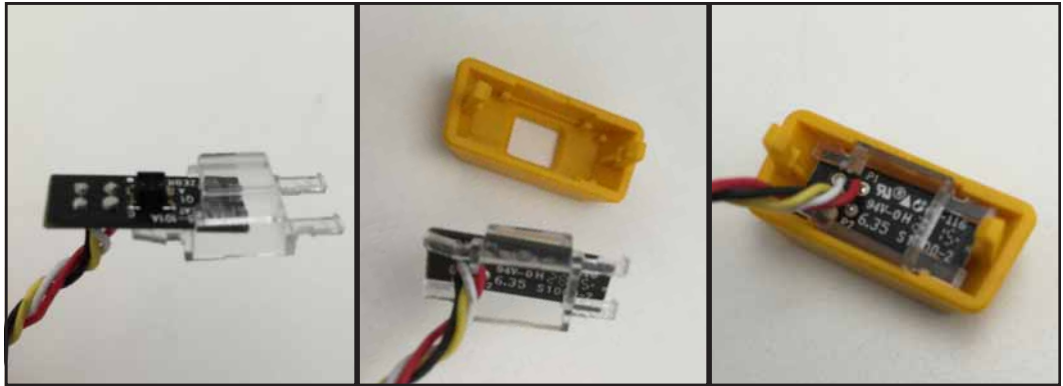


5. Pull the metal spring-lock and black plastic bracket out of the frame and clear of the sensor's cable. Open the printer. The gold sensor body, PCBA and cable can now be pulled out of the printer's inner cavity and movable sensor's recessed slide track.

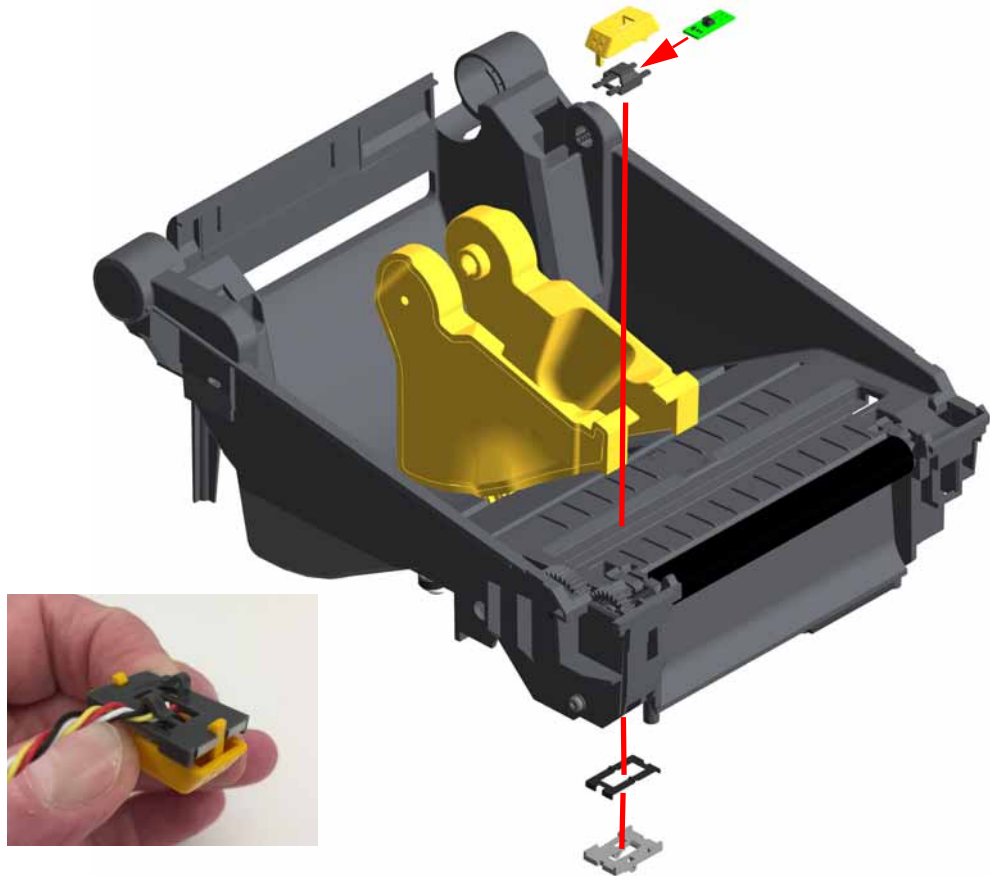
Replacing Parts

Installation

1. Slide the new sensor's PCBA and cable into the lens bracket for the PCBA. The cable is on the open end and hangs below the bracket.



2. Snap the PCBA and bracket into the movable sensor body. The lens bracket should be flush with the top surface of the sensor body.



3. Place the sensor's cable and connector into sensor guide channel and cable slot. There is a wider opening on one end to allow the connector to slip through the slot.

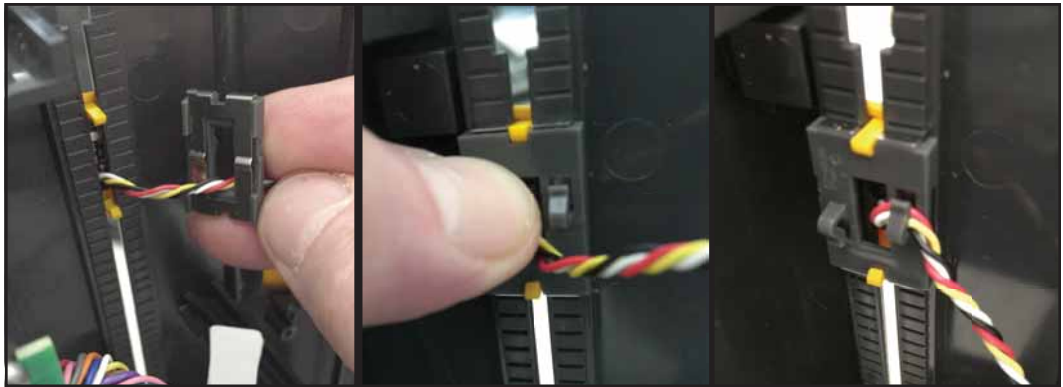
Replacing Parts

4. Align the (gold plastic) sensor body (with the sensor PCBA inside) to the movable sensor channel on the inside of the printer. The prongs go into the cable channel. The arrow point on the sensor body points to the rear of the printer.



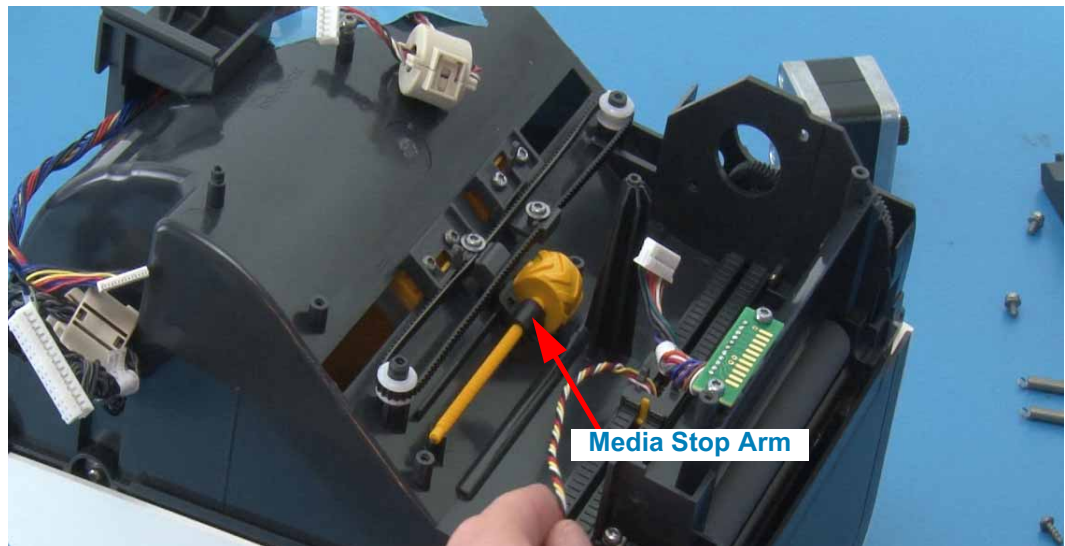
5. Put the sensor's cable into the center of the metal spring-lock with the metal spring-lock's notch facing the inner frame. Put the sensor's cable into the center of the black plastic bracket with the black plastic bracket's cable retainer (hooks) facing away from the inner frame.
6. Align the black plastic bracket to the metal spring-lock and lock them to the movable sensor. The prong's tabs will lock the bracket and spring in place.

Slide the movable sensor from end to end to verify that the bracket is lated properly.

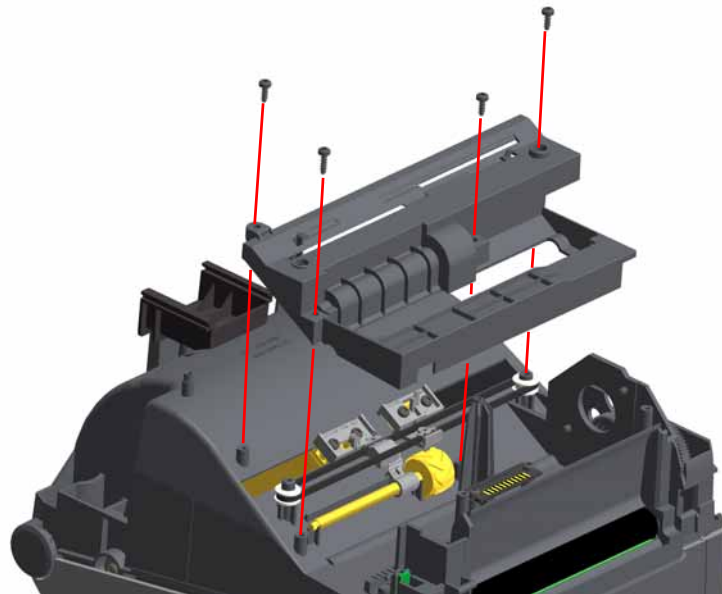


Replacing Parts

7. Verify that the Media Stop Arm on the gold thumb wheel's threaded shaft are both still in place on the inner frame.



8. Place the roll holder cover bracket over the movable sensor and roll holder components. The sensor's cable goes through the larger opening in the roll holder cover.

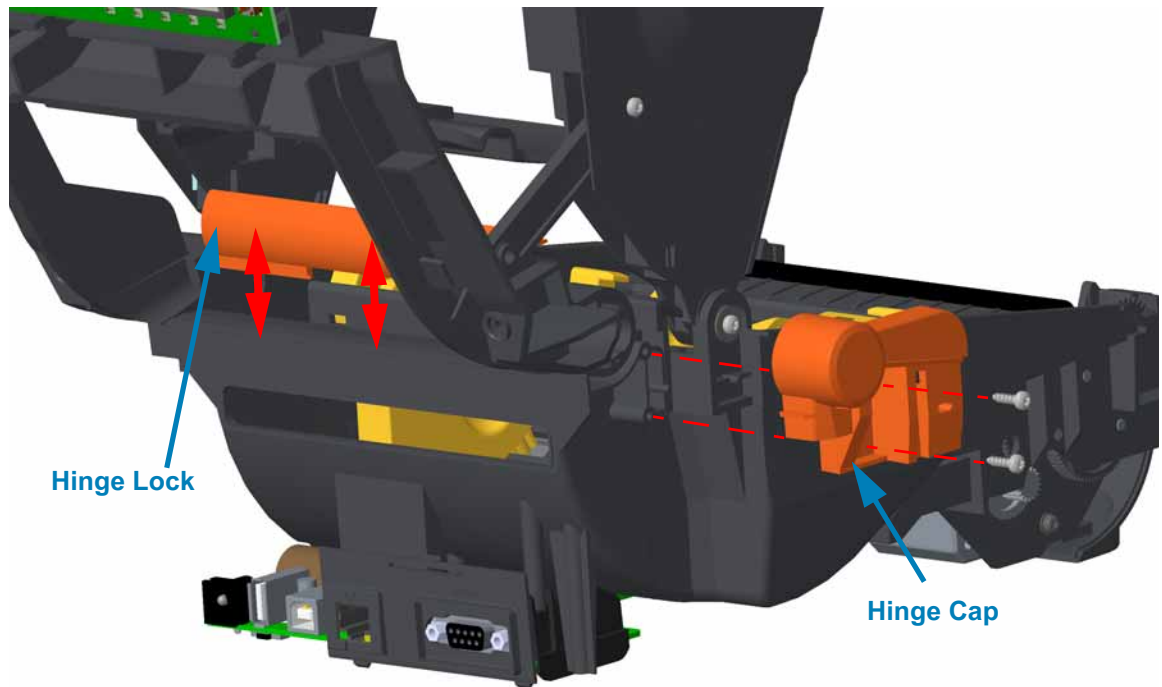


9. Use a Torx T10 driver to tighten the four screws securing the roll holder cover bracket to the inner frame.
10. Replace the two (2) roll holder tension springs.

Replacing the Hinge in Thermal Transfer Printers

Repair Prerequisites

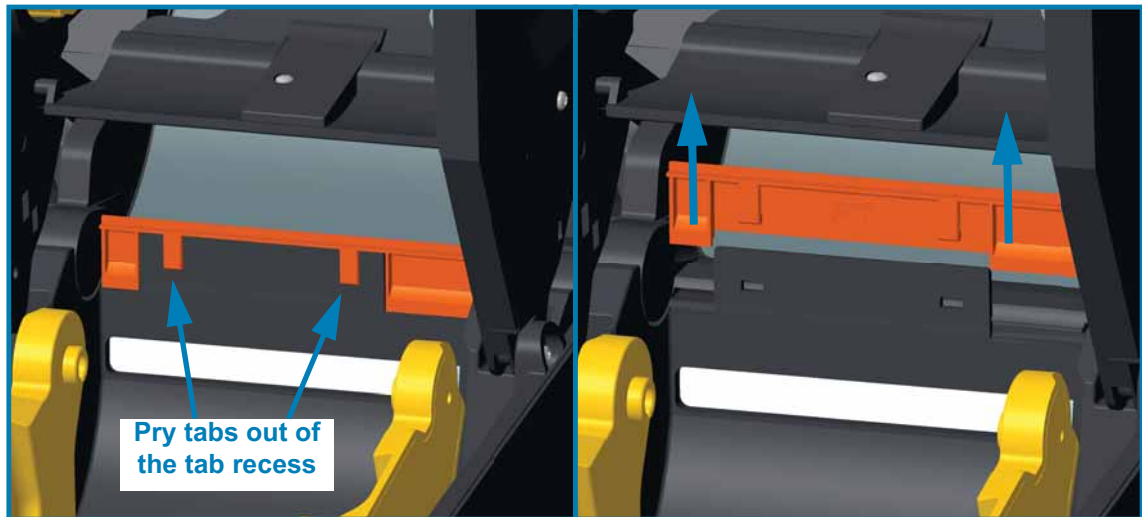
You must remove the Front Bezel Option (tear-off, dispenser, or cutter) and Printer Base before you can remove the Hinge. The Main PCBA can be removed to gain better access to cable connectors on the Main PCBA.



Replacing Parts

Removal

1. Open the printer (with bezel and printer base removed).
2. Remove the two (2) screws securing the hinge cap to the print mechanism (lower frame) using a Torx T10 driver.
3. Use a small flat bladed screwdriver to pry the two (2) tab locks on the hinge lock bracket on the inside of the printer. Lift the hinge lock bracket off to free the right hinge mechanism.

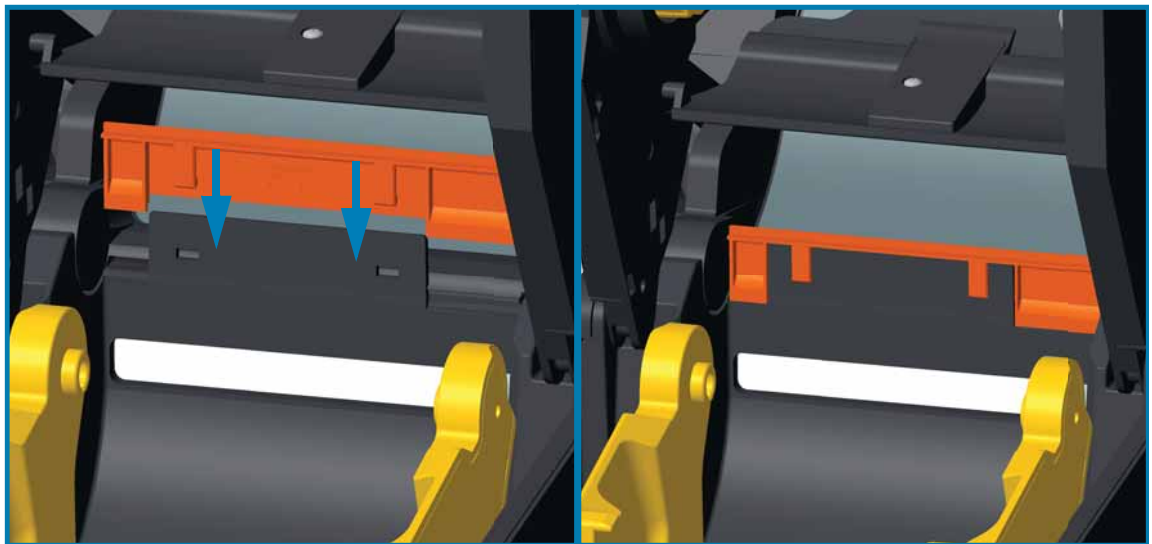
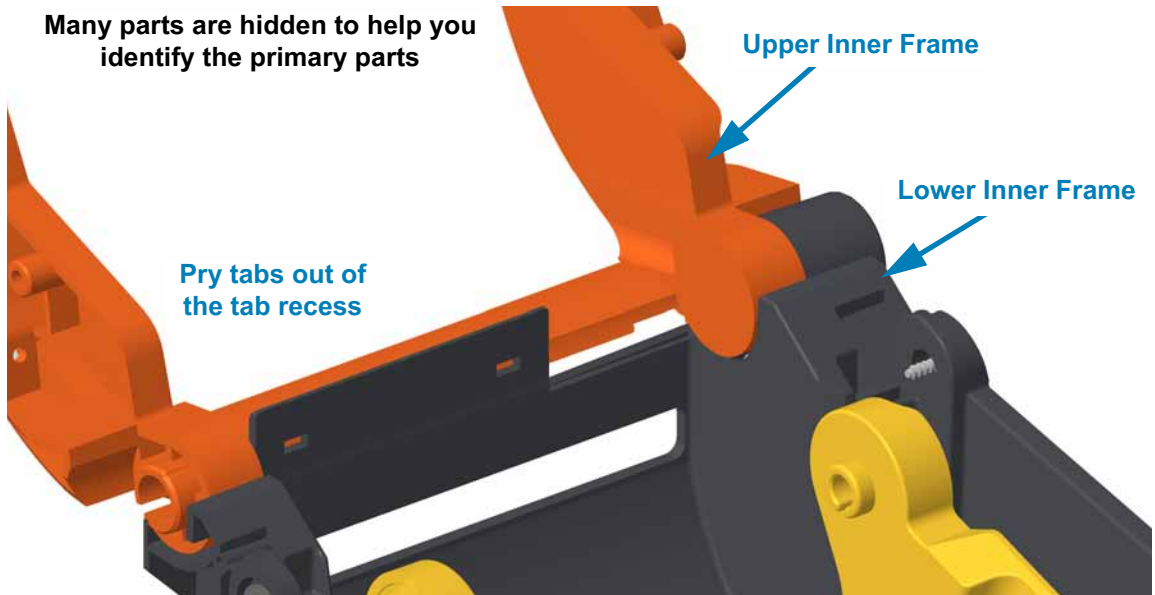


Replacing Parts

Installation

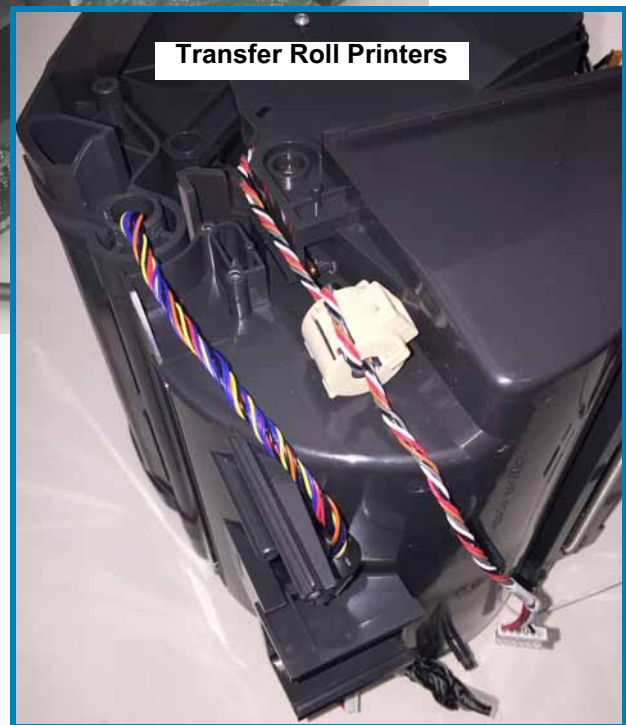
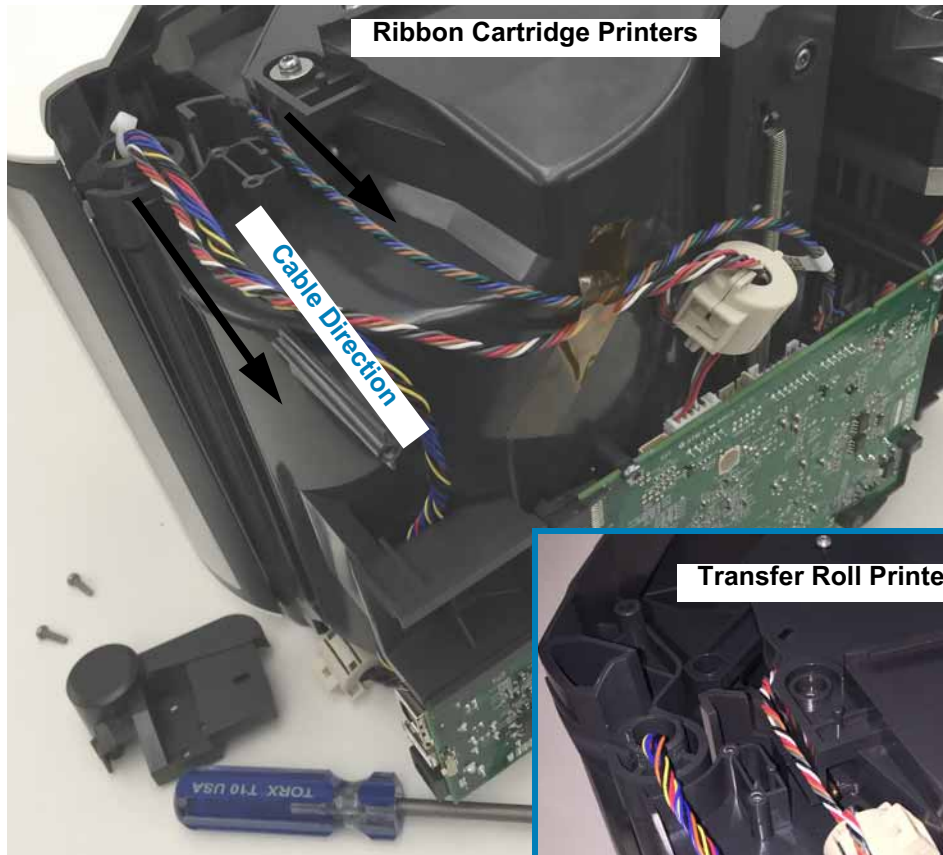
1. With the right side inner frame hinge in the right lower frame's hinge, push the hinge lock onto the rear wall of the lower inner frame.

Many parts are hidden to help you identify the primary parts



Replacing Parts

2. Align the cables exiting the center of the inner frames hinge joint and pull them straight down towards the bottom of the printer.
3. Align the sensor cable exiting the Ribbon Transport OR Ribbon Carriage where it joins the print mechanism (lower inner frame) and put the cable straight down into the channel in the print mechanism (lower inner frame) towards the bottom of the printer.



4. Place the Hinge on the printer and verify that the cables are not pinched between the inner frames.
5. Secure the Hinge to the frame with the two (2) screws using a Torx T10 driver.

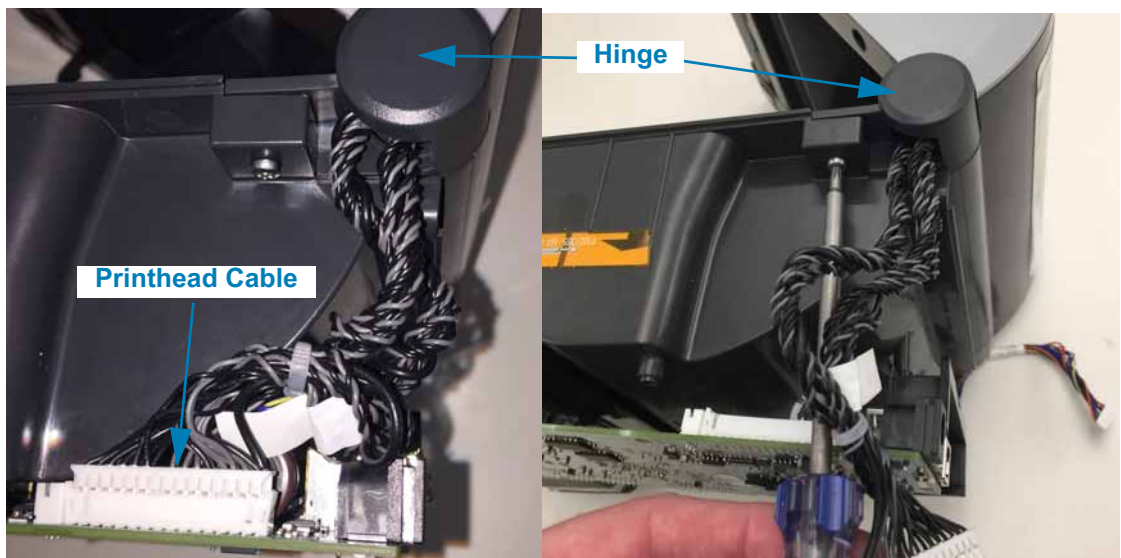
Replacing the Hinge in Direct Thermal Printers

Repair Prerequisites

You must remove the Front Bezel Option (tear-off, dispenser, or cutter) and Printer Base before you can remove the Hinge. The Main PCBA can be removed to gain better access to cable connector on the Main PCBA.

Removal

1. Open the printer (with bezel and printer base removed).
2. Disconnect the printhead cable from the Main PCBA.



3. Remove the screw securing the hinge cap to the print mechanism (lower frame) using a Torx T10 driver.
4. Pull the printhead cable out of the hinge.

Replacement

1. Put the printhead cable in the new hinge.
2. Put the hinge on the top cover and pull the printhead through the hinge to remove slack in the cable.
3. Align the hinge with the lower frame and swing the square end into the matching square on the lower frame.
4. Secure the Hinge to the frame with the screw using a Torx T10 driver.
5. Re-attach the printhead cable to the Main PCBA.



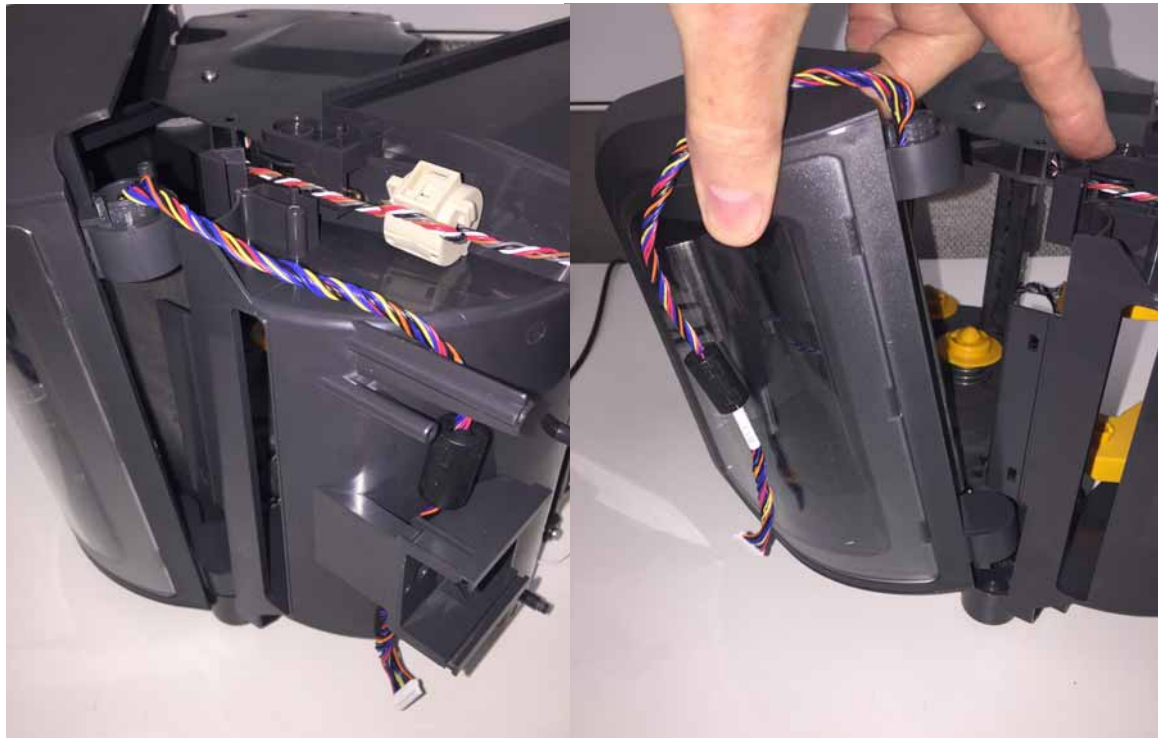
Replacing the Cover Assembly on Thermal Transfer (Roll) Printers

Repair Prerequisites

You must remove the Front Bezel Option (tear-off, dispenser, or cutter), Printer Base, the Main PCBA, and the Hinge before you can remove the Cover Assembly.

Removal

1. Pull the Control Panel (User Interface) cable (and connector) out of the Connectivity Module's mounting bracket. Turn the connector body parallel to the cable and remove. Do not remove the bracket.



2. Pull the Cover Assembly out of the left side hinge cap on the lower frame.

Replacement

1. Insert the Cover Assembly into the left side hinge cap on the lower frame.
2. Insert the Control Panel (User Interface) cable and connector through the Connectivity Module's mounting bracket and lower frame through to the right side of the printer. Turn the connector body parallel to the cable to push it through the bracket. Do not remove the bracket.

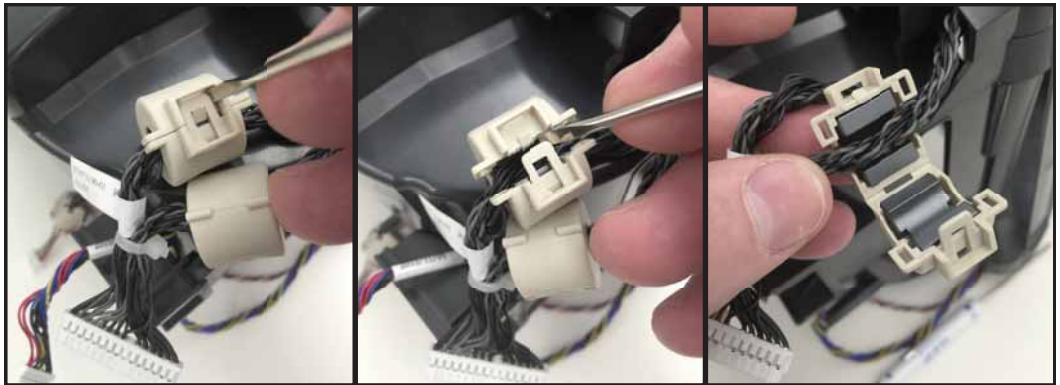
Replacing the Cover Assembly on Cartridge Printers

Repair Prerequisites

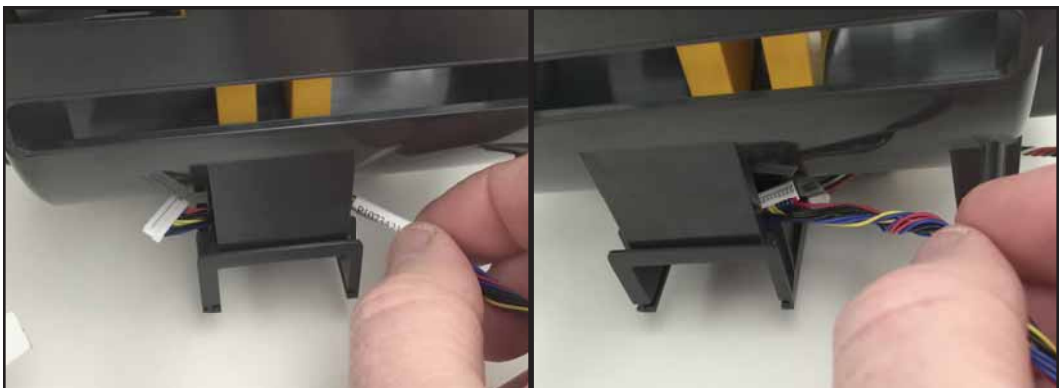
You must remove the Front Bezel Option (tear-off, dispenser, or cutter), Printer Base, the Main PCBA, and the Hinge before you can remove the Cover Assembly.

Removal

1. Remove the two (2) toroid clamps from the printhead cables exiting the right side cover hinge. Use a small flat bladed screw driver to gently pry the clamp's lock open.



2. Pull the Control Panel (User Interface) cable (and connector) out of the Connectivity Module's mounting bracket. Turn the connector body parallel to the cable and remove. Do not remove the bracket.



Replacing Parts

3. Pull the printhead cable and connector out through the lower frame's hinge cap.



Replacement

1. Insert the printhead cable and connector in the lower frame's hinge cap.
2. Align the Cover Assembly's left hinge with the lower frame's hinge cap and pull the printhead cable out while inserting it in the cover assembly's hinge.
3. Insert the Control Panel (User Interface) cable and connector through the Connectivity Module's mounting bracket and lower frame through to the right side of the printer. Turn the connector body parallel to the cable to push it through the bracket. Do not remove the bracket.
4. Replace the two (2) toroid clamps on the printhead cable

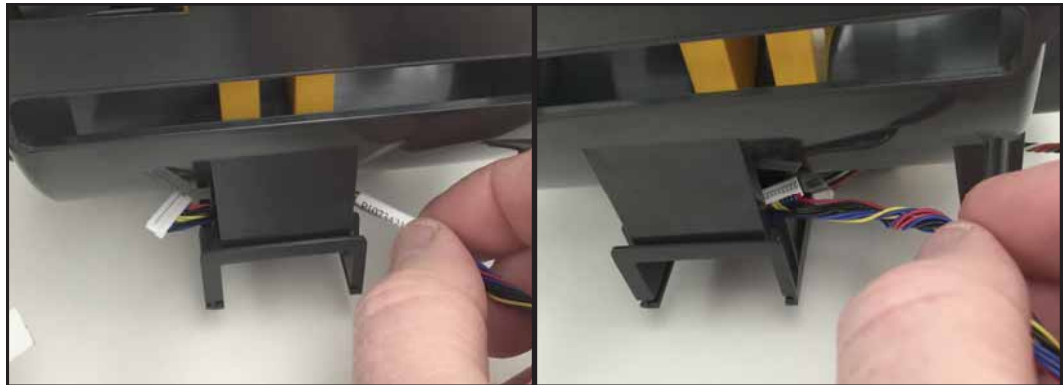
Replacing the Cover Assembly on Direct Thermal Printers

Repair Prerequisites

You must remove the Front Bezel Option (tear-off, dispenser, or cutter), Printer Base, loosen to access connectors on the Main PCBA, and the Hinge before you can remove the Cover Assembly.

Removal

1. With the printhead cable disconnected and out of the hinge, disconnect the Control Panel (interface) cable from the loose Main PCBA (if the Main PCBA has not been removed).
2. Pull the Control Panel (User Interface) cable (and connector) out of the Connectivity Module's mounting bracket. Turn the connector body parallel to the cable and remove. Do not remove the bracket.



3. Pull the Cover Assembly's left side hinge and Control Panel (User Interface) cable (and connector) out of the lower frames hinge cap.



Replacement

1. Insert the new Cover Assembly's Control Panel (User Interface) cable (and connector) into the lower frame's left side hinge cap.
2. Align the Cover Assembly's left hinge with the lower frame's hinge cap and pull the cable out while inserting it in the cover assembly's hinge.
3. Insert the Control Panel (User Interface) cable and connector through the Connectivity Module's mounting bracket and lower frame through to the right side of the printer. Turn the connector body parallel to the cable to push it through the bracket. Do not remove the bracket.
4. Reconnect the Control Panel (interface) cable to the loose Main PCBA (if the Main PCBA has not been removed).

Replacing the Cover - Thermal Transfer Printers



ESD 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.

Repair Prerequisites

Before you begin this procedure, turn the printer OFF, open the printer, and remove media or ribbon.

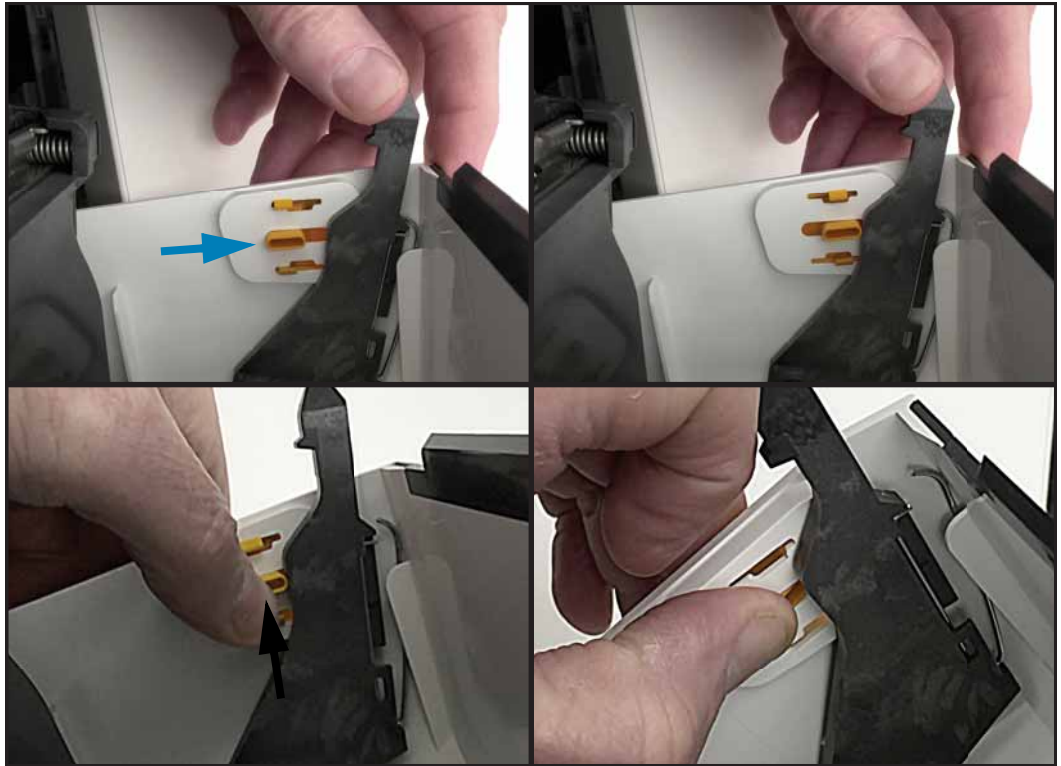
Exploded View Thermal Transfer Printer: Cartridge and Roll Printers are similar



Replacing Parts

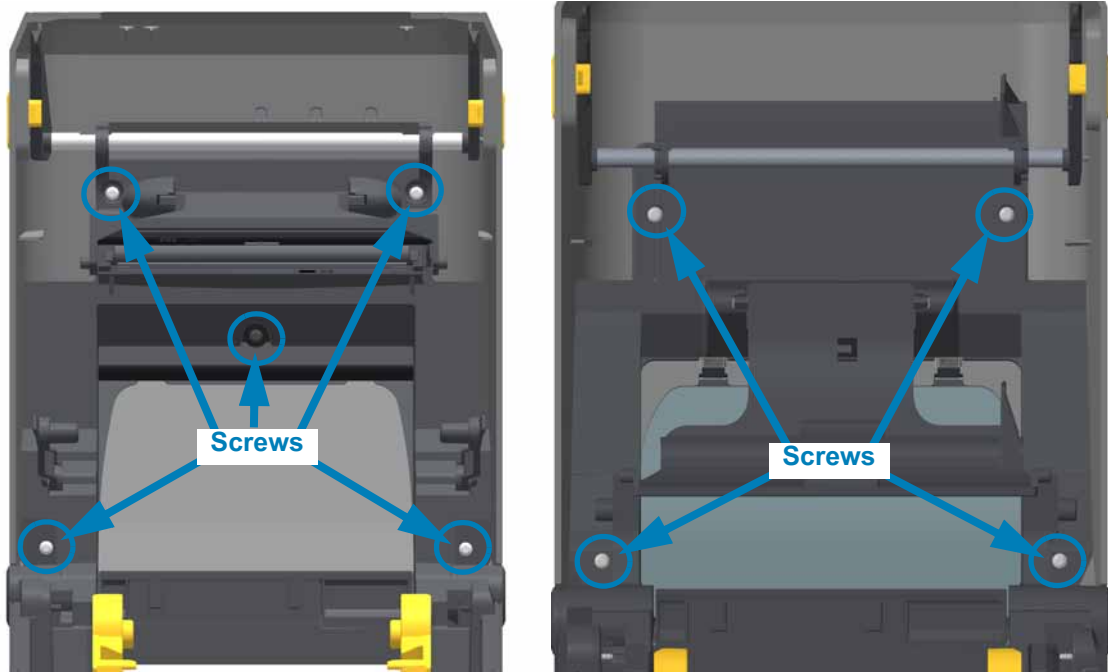
Removal

1. Slide both of the gold latch release slider buttons towards the front of the top cover. Stop sliding the gold buttons when they are slightly past the mid point in the slide channel. Push the button out of the slide channel (and cover) from the inside of the cover.



Replacing Parts

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



Installation

- Place the new cover on the top inner frame. Align the cover to the mounting holes.
- Use the mounting screws to secure the cover to the frame.
- Swing the latch arms up until it touches the front of the cover. Snap the gold latch release slider buttons into the right and left sides of the cover. Verify they slide freely and release the latch arm.
- Close the cover and verify the printer latches closed. Open and close the cover a few times to verify mechanism and latch function.

Replacing the Cover - Direct Thermal Printers



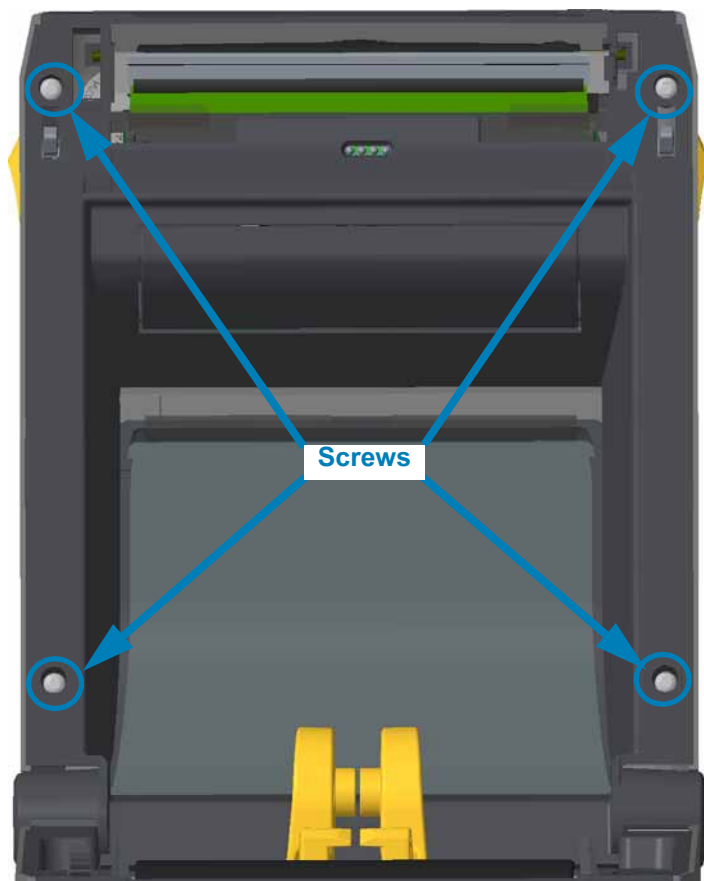
ESD Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

Repair Prerequisites

Before you begin this procedure, turn the printer OFF, open the printer, and remove media.

Removal

1. Using a Torx T10 driver, remove the four (4) screws securing the top cover to the inner lid.
2. Pull the cover off the upper inner frame.



Installation

1. Place the new cover on the top inner frame. Align the cover to the mounting holes.
2. Use the mounting screws to secure the cover to the frame.
3. Close the cover and verify the printer latches closed. Open and close the cover a few times to verify mechanism and latch function.

Replacing a 3-Button Control Panel PCBA

Repair Prerequisites

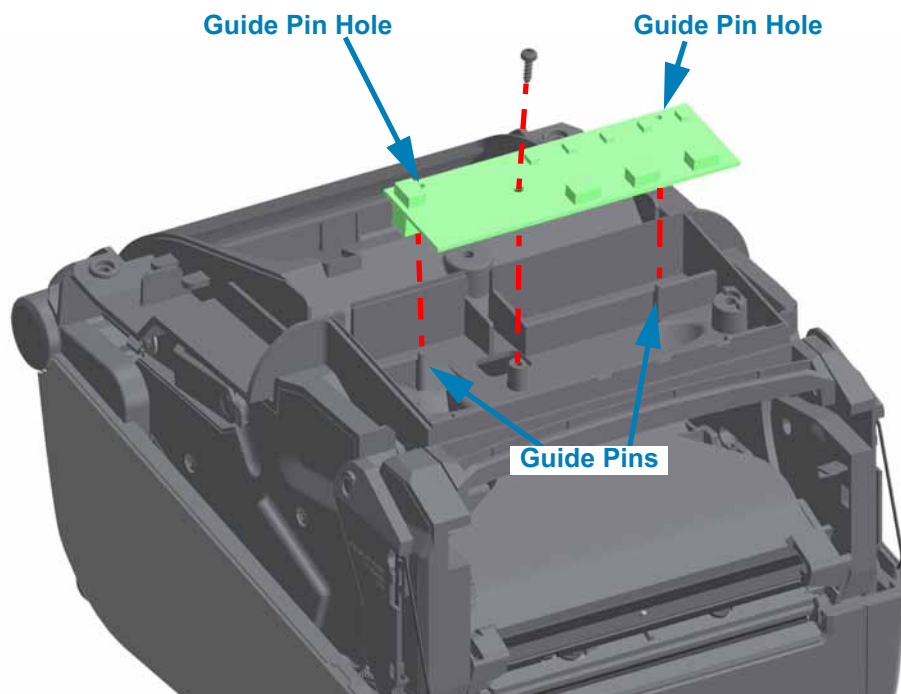
You must remove the Cover Assembly before performing this procedure.

Removal

1. With the Cover removed, use a Torx T10 driver to remove the screw holding the Control Panel PCBA to the inner frame.
2. Lift the PCBA off the inner frame and disconnect the cable(s) from the backside of the PCBA.

Installation

1. Reconnect the cable(s) to the new Control Panel PCBA.
2. Place the PCBA with the connector/cable side facing down onto the two (2) small guide pins molded into the top of the inner frame.



3. Secure the PCBA to the inner frame with the screw using a Torx T10 driver.

Replacing a LCD Control Panel PCBA

Repair Prerequisites

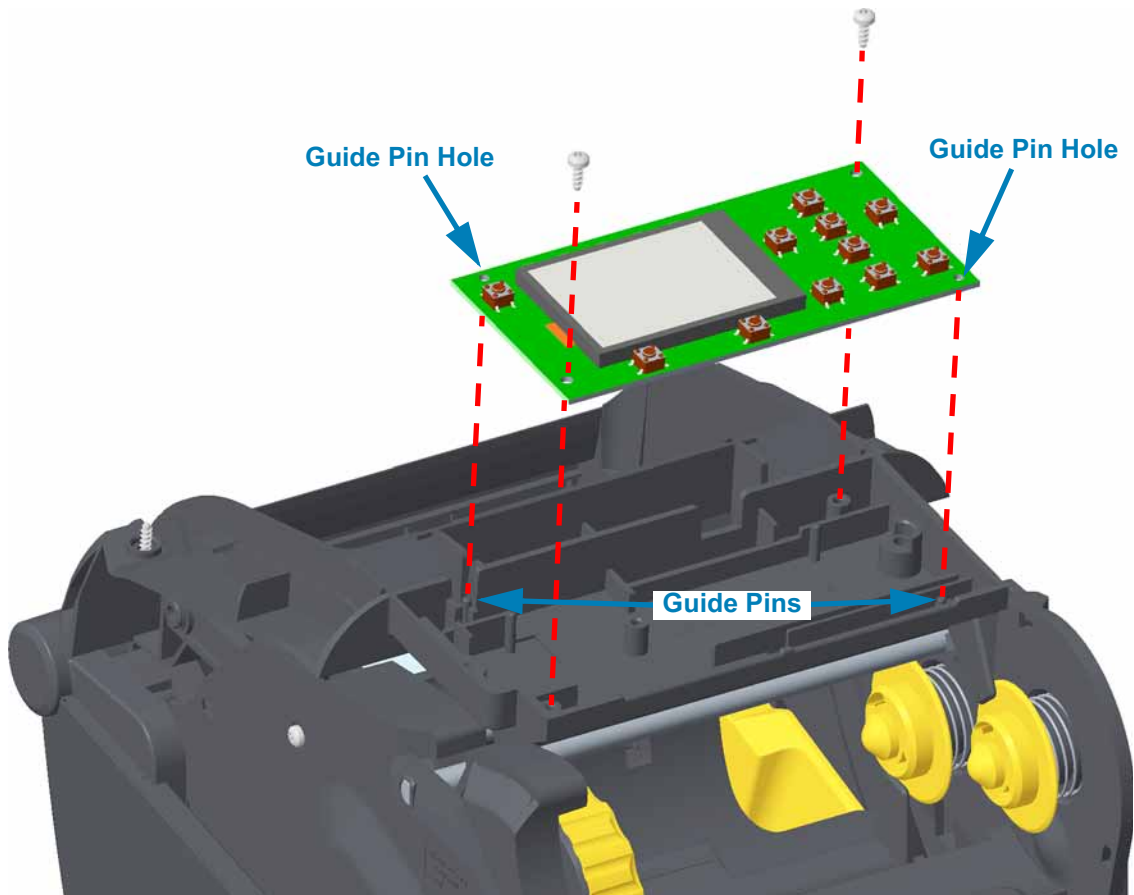
You must remove the Cover Assembly before performing this procedure.

Removal

1. With the Cover removed, use a Torx T10 driver to remove the 2 screws holding the LCD Control Panel PCBA to the inner frame.
2. Lift the PCBA off the inner frame and disconnect the cables from the backside of the PCBA.

Installation

1. Reconnect the cables to the new LCD Control Panel PCBA.
2. Place the PCBA with the connector/cable side facing down onto the two (2) small guide pins molded into the top of the inner frame.



3. Secure the PCBA to the inner frame with the 2 screws using a Torx T10 driver.

Replacing the Latch Assembly - Thermal Transfer Printers

Repair Prerequisites

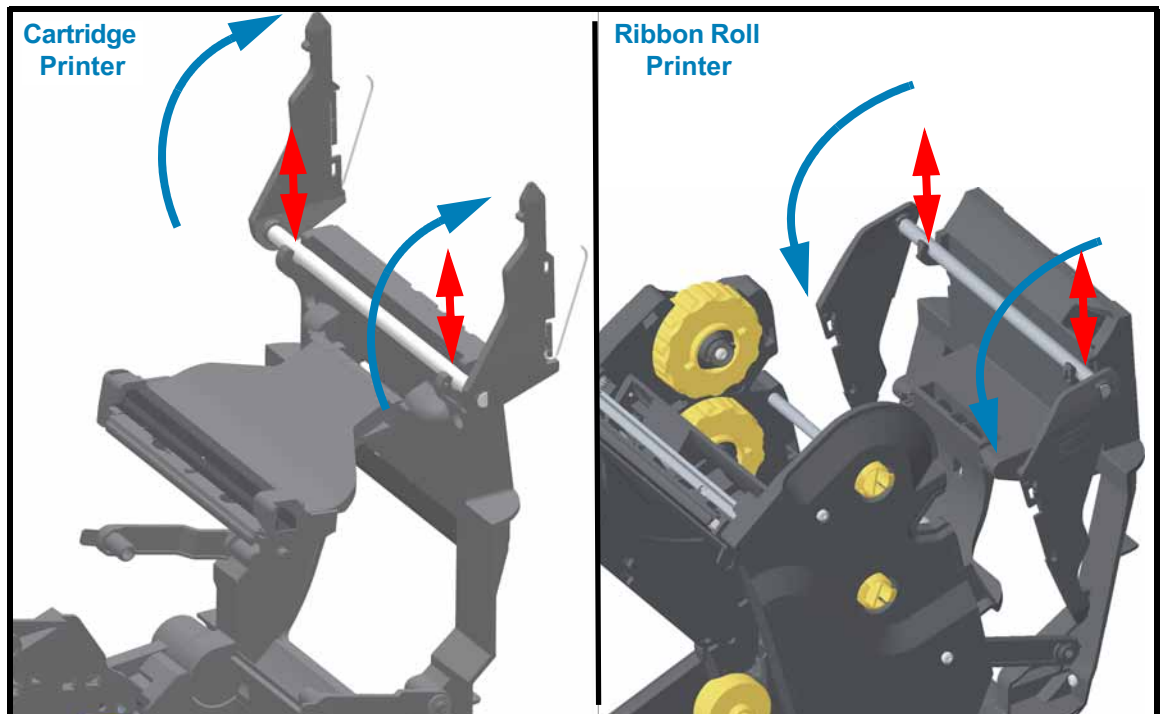
You must remove the Cover Assembly on thermal transfer printers before performing this procedure.

Removal

1. **Cartridge Printer** - With the Cover removed and inner frame in the full open position, rotate the latch assembly up and lift it out of the inner frame.
Ribbon Roll Printer - With the Cover removed and inner frame in the full open position, rotate the latch assembly down and lift it out of the inner frame.

Installation

1. With the inner frame in the full open position, slide the flat surface on the latch assembly's pivot bar into the two (2) molded 'C' shaped latch bar bearings at the top of the inner frame. Orient the latch arm assembly



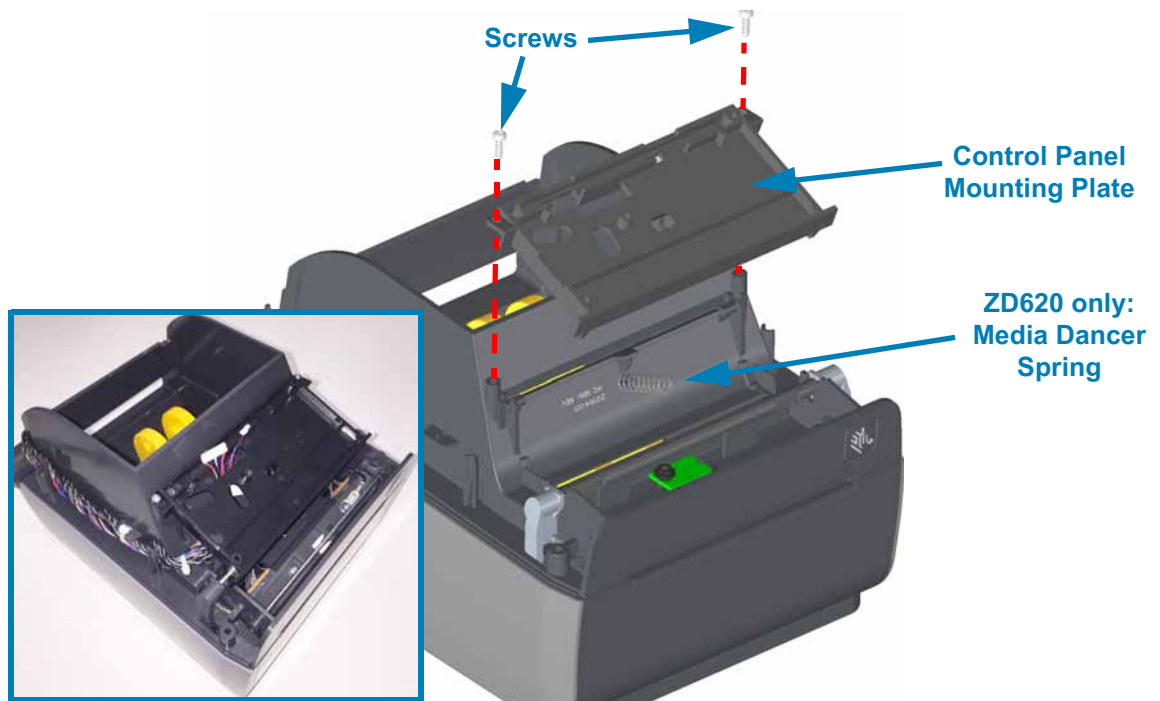
Replacing the Latch Arm Assembly - Direct Thermal Printers

Repair Prerequisites

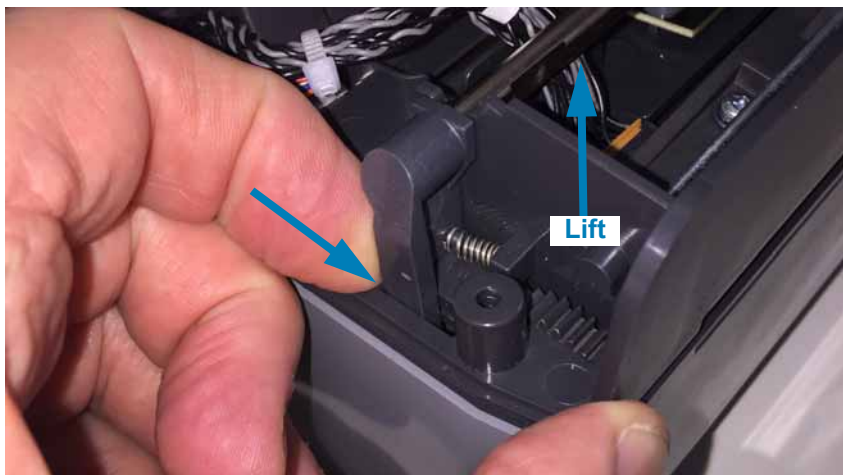
You must remove the Cover and the Control Panel PCBA before performing this procedure.

Removal

1. Remove the control panel mounting plate. It is attached to the inner frame by two (2) Torx T10 screws.

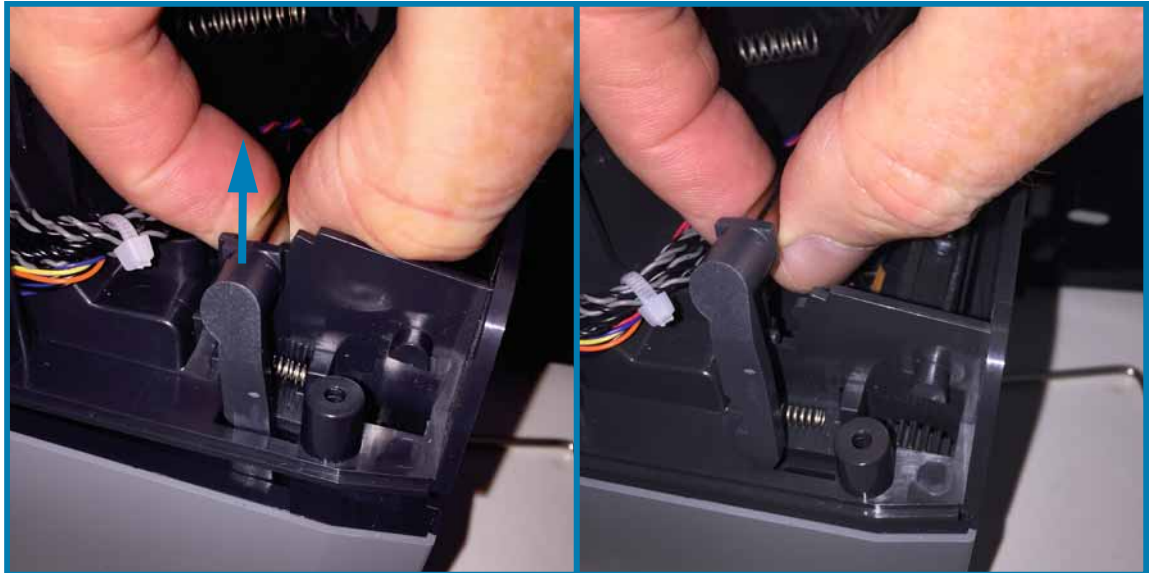
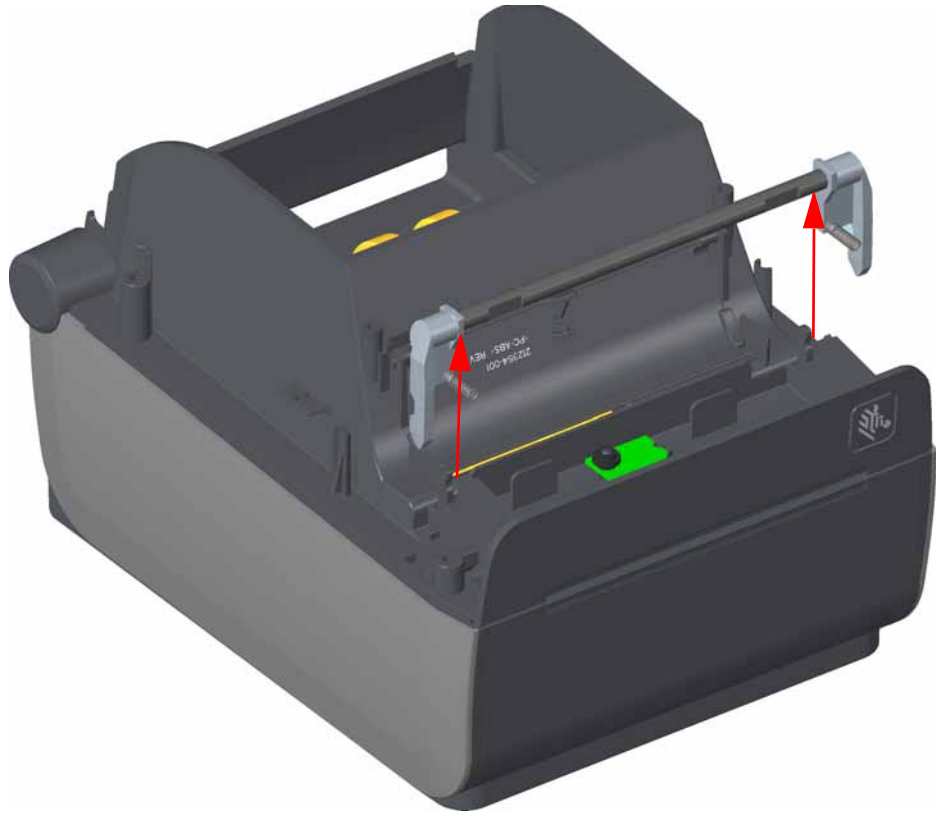


2. The inner frame may be latched into the inner frame. To release the latch arm assembly, pull the latch forward and lift the inner frame up.



Replacing Parts

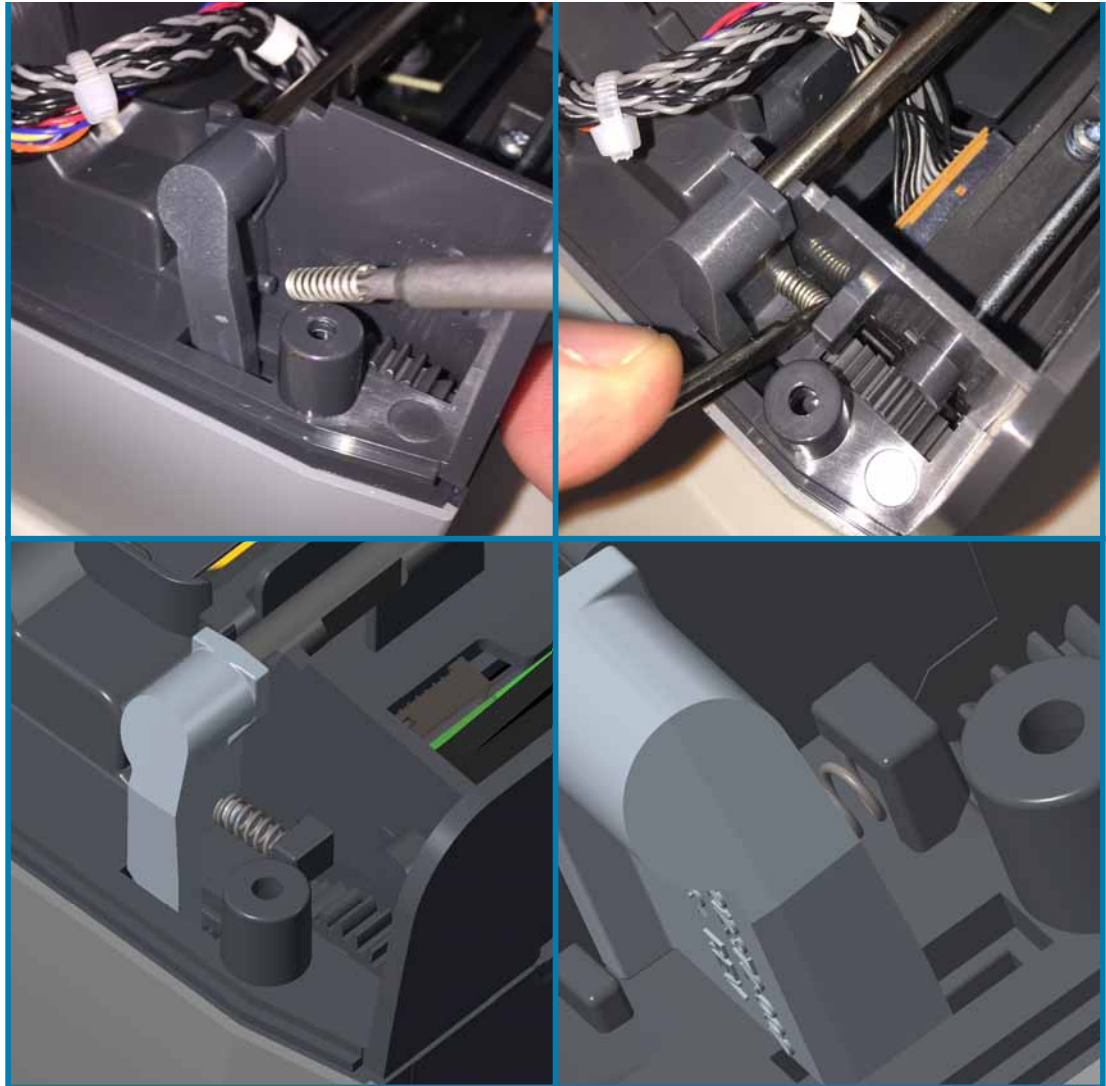
3. Lift one side of the latch assembly out of the inner frame with steady firm pressure. The spring may pop or fall out. Repeat on the other side of the latch to completely remove the assembly (latch bar and springs).



Replacing Parts

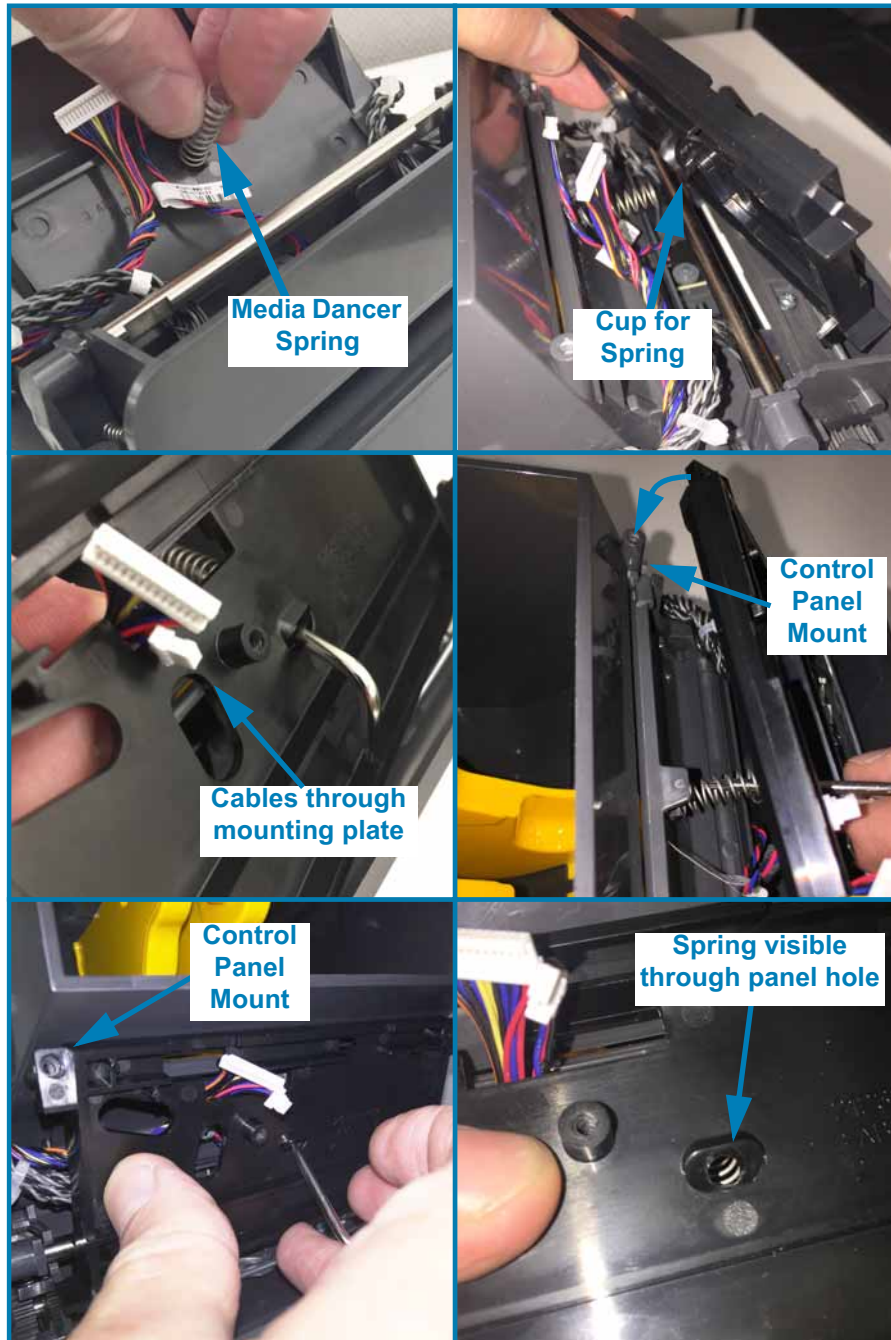
Installation

1. Align and insert the new latch assembly and press it into the inner frame.
2. Insert a latch spring on the small, short post on the front side of each latch arm. Slide the other end of the spring into the square recesses immediately across from the latch arms.



Replacing Parts

3. **ZD620 Printers only:** Place the media dancer's spring on the post (plus sign shape) in the middle of the inner frame.
4. Take the control panel mounting plate and insert the upper array sensor and control panel interface cables into the largest opening.
5. **ZD620 printers:** Align the media dancer spring to the cup on the back of the mounting plate. Put a small tool in the cup's hole to guide the spring into the cup.

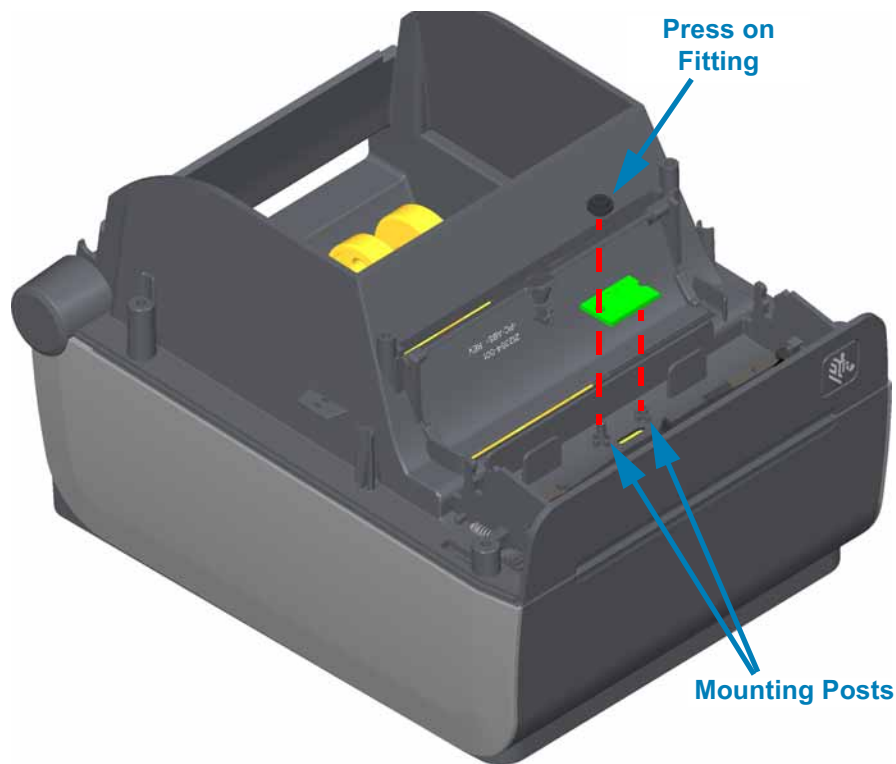


6. Place the mounting bracket on the two (2) mounting post on the inner frame and secure it to the inner frame with two (2) screws.

Replacing the Upper Array Sensor - Thermal Transfer Printer

Repair Prerequisites

You must remove the Cover Assembly, Control Panel PCBA (3-Button or LCD version) and Latch Assembly before performing this procedure. The Upper Array sensor is unplugged Control Panel PCBA.



Removal

1. Using a pliers or special tool lift the press on fitting securing the upper array sensor PCBA to the inner frame. Pull the PCBA off the posts.

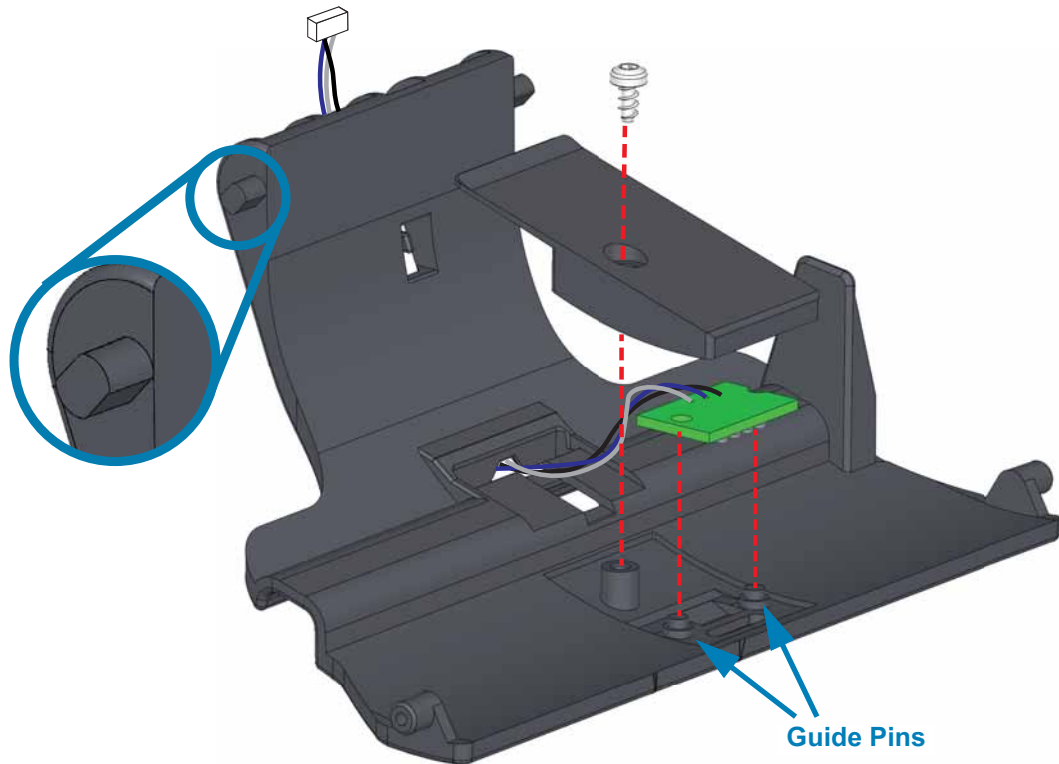
Installation

1. Put the Upper Array Sensor PCBA on the two guide pins with the row of LEDs in the slot and wires on top facing out and on the inside of the printer. Hold the PCBA on the posts while pressing the fitting on the long post to secure the PCBA to the inner frame.

Replacing the Upper Array Sensor - Thermal Transfer Printer

Repair Prerequisites

You must remove the Cover Assembly and the Control Panel PCBA (3-Button or LCD version) before performing this procedure. The Upper Array sensor is unplugged Control Panel PCBA.



Removal

1. Swing the Flapper Arm up. This aligns the flat surfaces on the on the arm's pivot posts. The narrower width can slide out of the two slots in the arm's pivot bracket. Slide the Flapper Arm out of the bracket.



Replacing Parts

2. Pull the sensor cable out of the out of the backside of the flapper arm.
3. Remove the screw securing the sensor cover from the top side of the Flapper Arm. Set the cover aside. Remove the sensor array PCBA and cable.

Installation

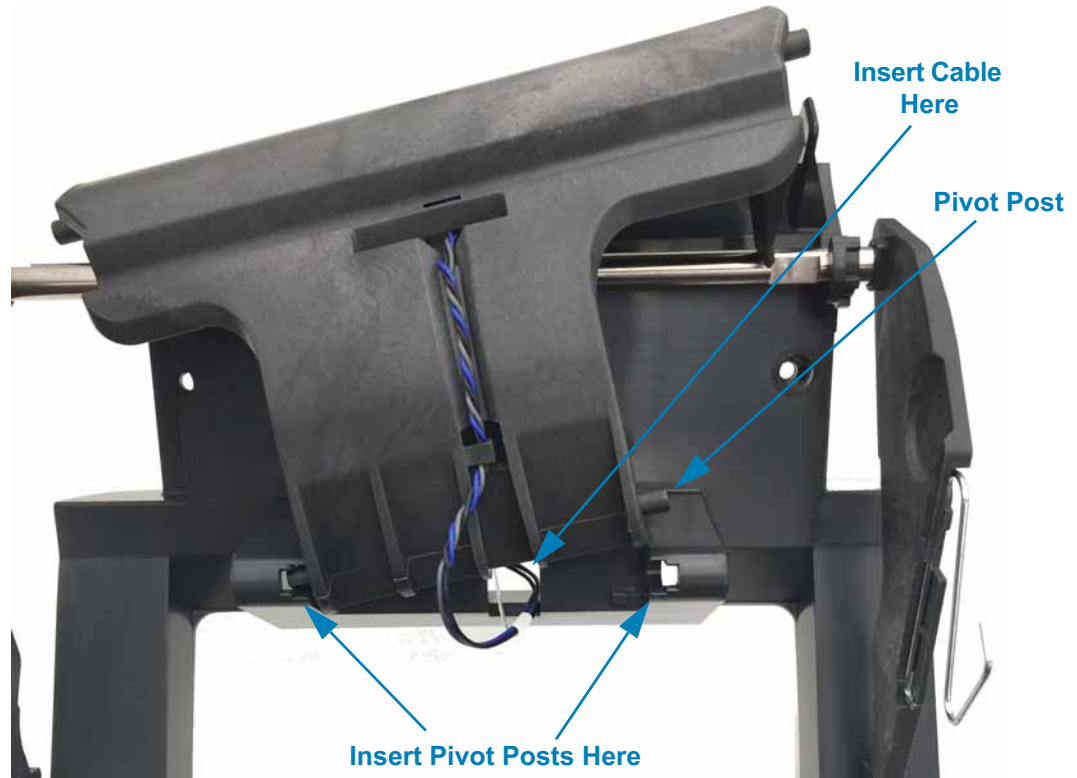
1. Insert the new PCBA's cable and connector into the hole in the center of the flapper and route it through the cable channel on the backside of the flapper arm.



2. Put the Upper Array Sensor PCBA on the two guide pins with the row of LEDs in the slot and wires on top facing out. Hold the PCBA on the posts while pulling the wires and cable connector to remove slack (out the back of the flapper arm to the top).
3. Place the sensor cover on top of the sensor PCBA and secure it with the screw. Verify that the wires are not pinched and the PCBA is still in place.

Replacing Parts

4. Insert the cable and connector through the hole in the inner frame's flapper arm pivot bracket. Insert the two flapper arm pivot post into the bracket. Swing the flapper arm down away from the top of the printer. This will lock the flapper arm in the bracket. Replace the control panel PCBA and cover to complete reassembly.



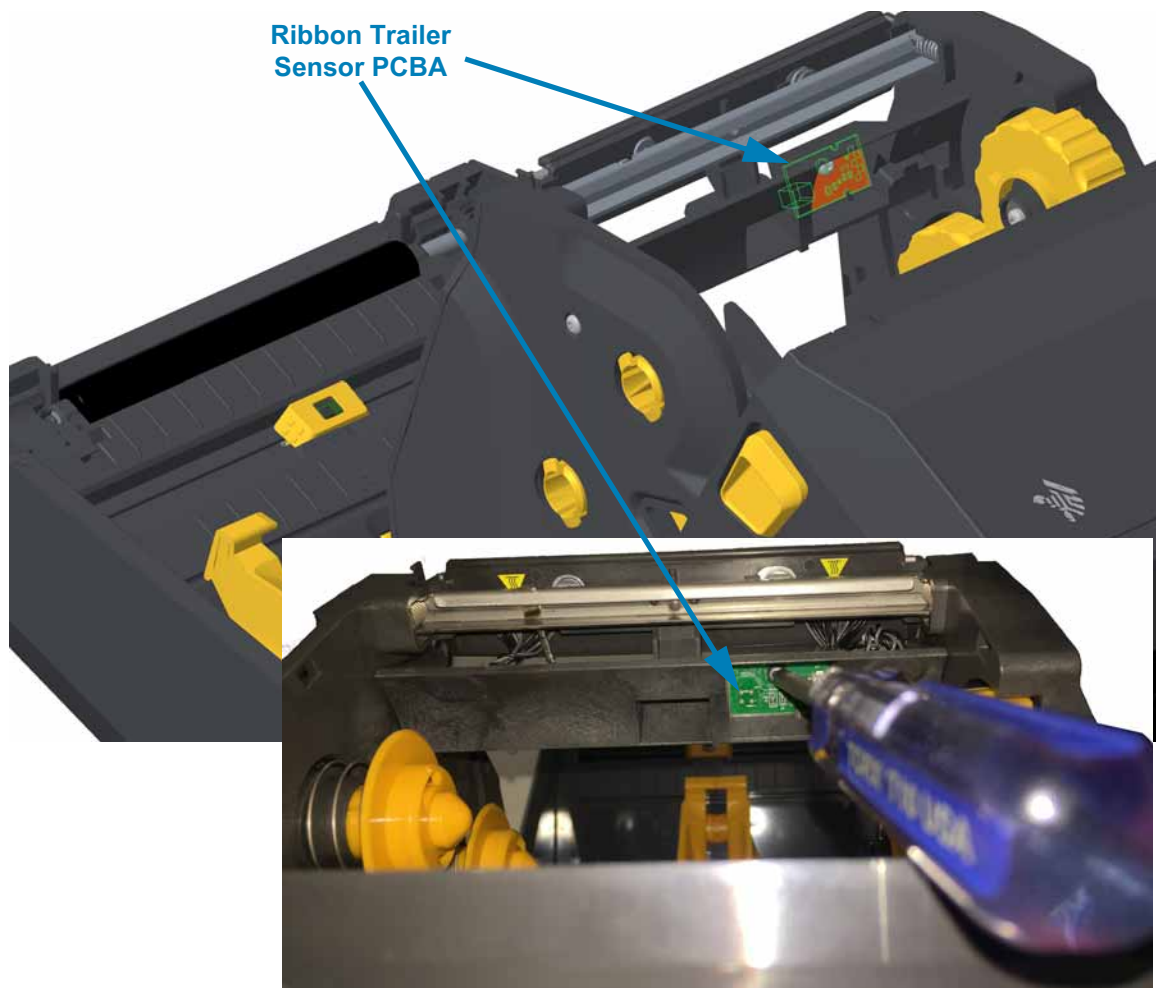
Replacing the Ribbon Roll Printer's Ribbon Trailer Sensor PCBA



ESD 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 printer. Remove the ribbon rolls.
2. Turn the printer around. Look down into the top of the ribbon carriage. Use a Torx T10 driver to remove the screw securing the Ribbon Sensor PCBA to the ribbon chassis's front cross member.



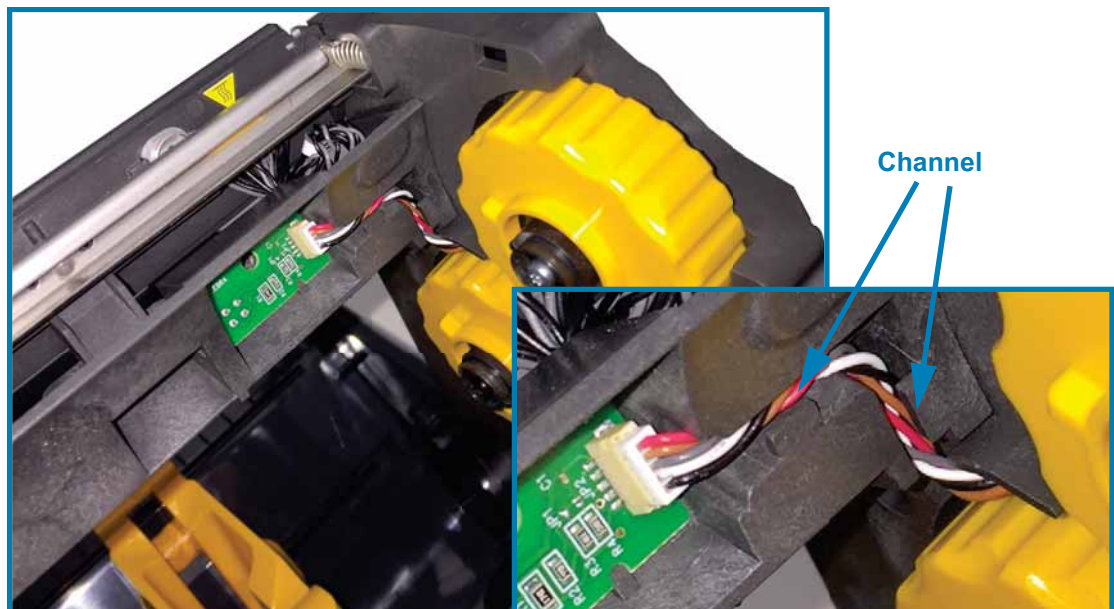
Replacing Parts

3. Push the PCBA out of the ribbon carriage cross member from the bottom and lift it up. Note the wire routing. Disconnect the cable's connector from the PCBA. The black sensor extending through the cross member is colored orange in this illustration.



Installation

1. Connect the cable to the to the new PCBA.
2. Place the sensor on the PCBA into the square hole in the cross member and secure it to the cross member with the screw.

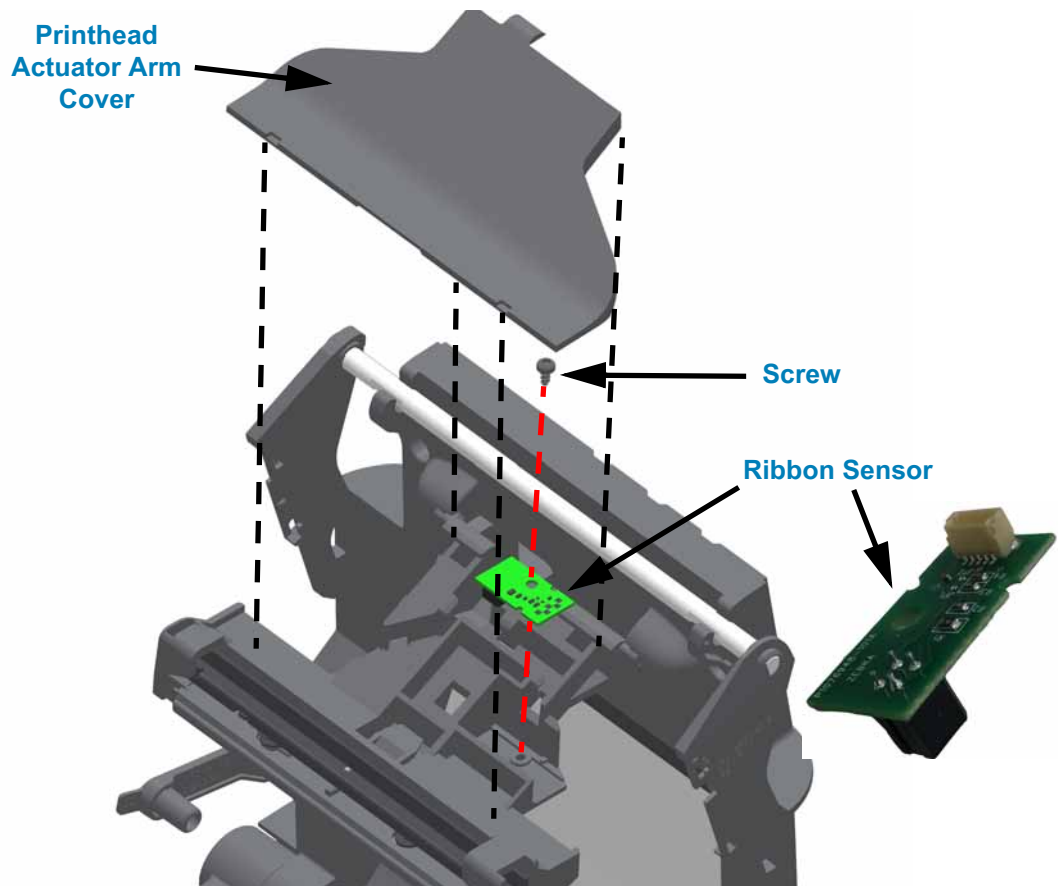


3. Verify the cable's wiring is routed in the channel (under the tabs).

Replacing the Cartridge Printer Ribbon Sensor PCBA

Repair Prerequisites

You must remove the Cover Assembly before performing this procedure.



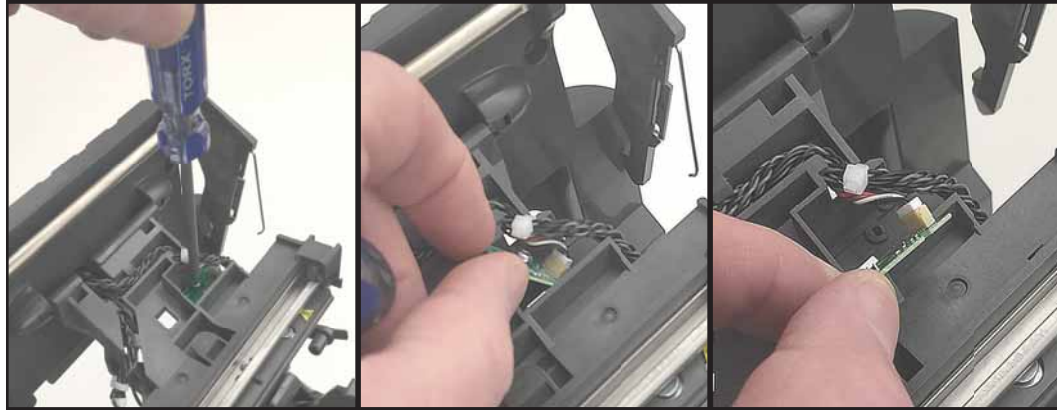
Removal

1. Pry the cover off the Printhead Actuator Arm with your hand. Grab the sides of the cover (close to Actuators Arm's hinge) and lift up. Swing it up and lift the cover out.



Replacing Parts

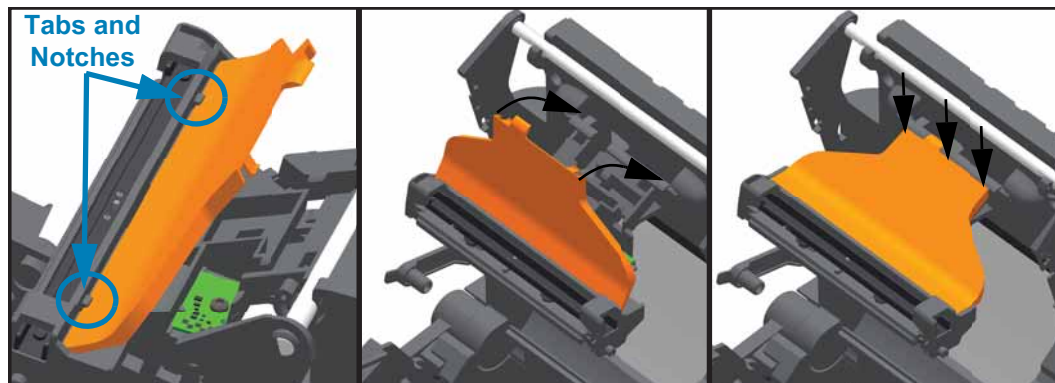
- Using a Torx T10 driver, remove the screw securing the Ribbon Sensor PCBA to the Printhead Actuator Arm. Lift the PCBA out. The printhead may be unlatched from the Printhead Actuator Arm if necessary to gain more clearance from the printhead cable, see [Removing the Printhead](#)



- Disconnect the cable from the PCBA.

Installation

- Connect the cable to the Ribbon Sensor PCBA.
- Place the PCBA with the black sensor body down into the Actuator Arm body. The connector/cable side is on the outer edge of the Actuator Arm body. Align the PCBA with the two notches and the screw hole in the Actuator Arm body.
- Secure the PCBA to the Actuator Arm body with screw using a Torx T10 driver.
- Place the Actuator Arm's cover back onto the Actuator Arm body. Slide the notches on the cover under the tabs on the Actuator Arm body. Swing the narrow end down into the arm's hinge. Press the cover into the Actuator Arm body to lock it in place.



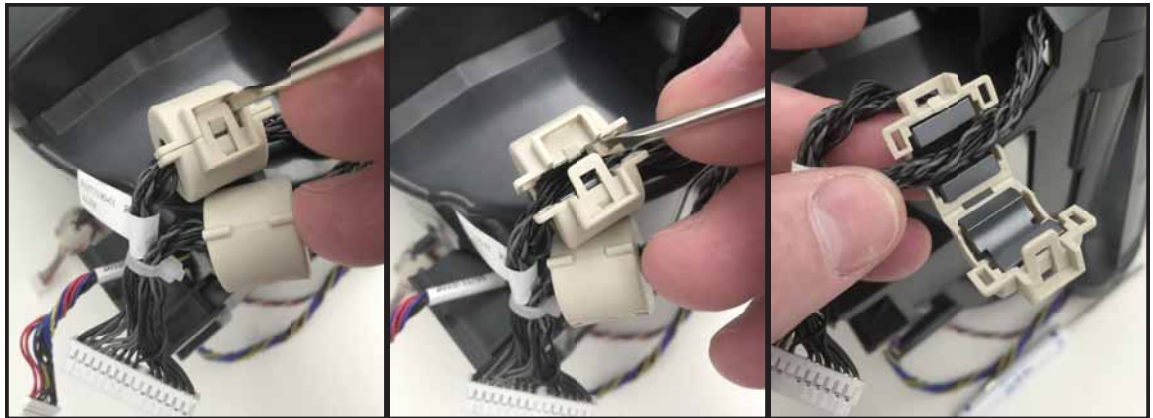
Replacing the Ribbon Carriage in Thermal Transfer (Roll) Printers

Repair Prerequisites

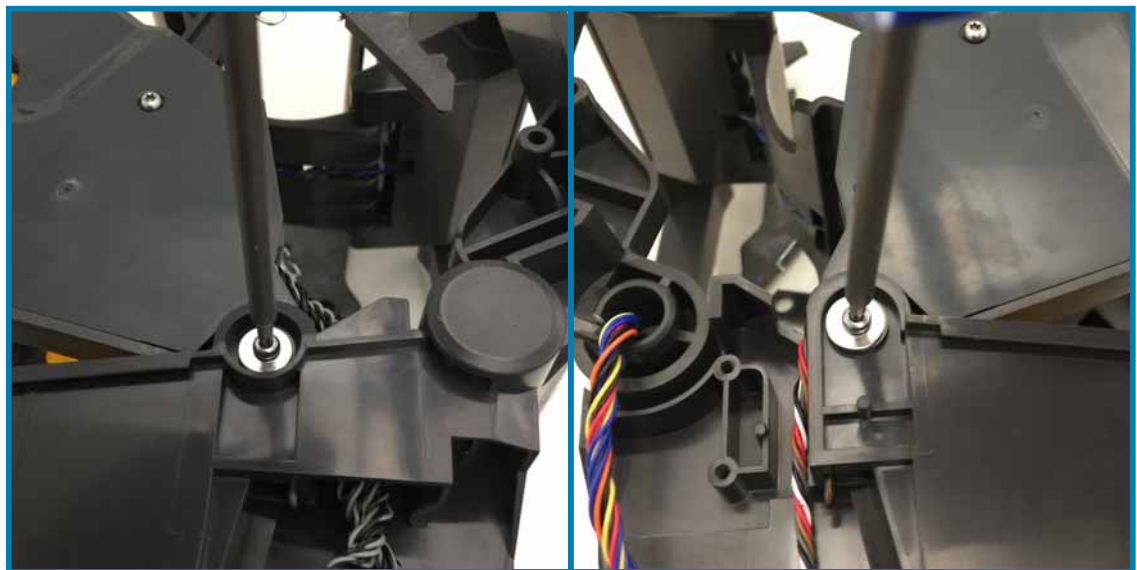
You must remove the Front Bezel Option (tear-off, dispenser, or cutter), Printer Base, Main PCBA, and Hinge before you can remove the Ribbon Carriage.

Removal

1. Remove the two (2) toroid clamps from the printhead cables exiting the right side cover hinge. Use a small flat bladed screw driver to gently pry the clamp's lock open.

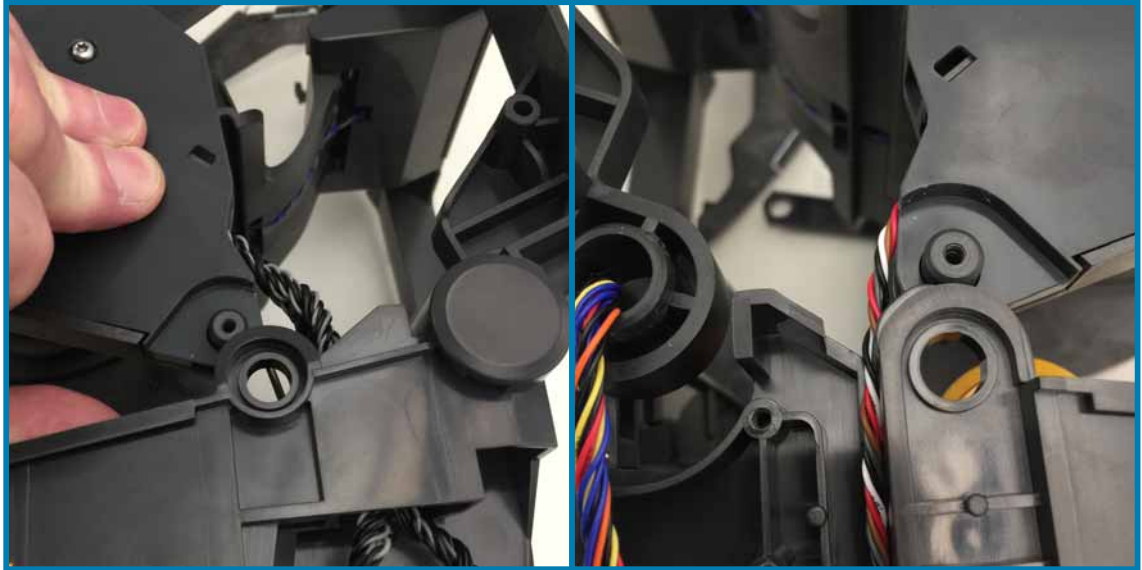


2. Remove the screw and washer on each side of the print mechanism at the Ribbon Carriage's hinges using a Torx T10 driver.



Replacing Parts

3. Push the Ribbon Carriage's hinge pin out of the hinge bracket molded into the print mechanism (lower frame) on the left side. The inner frame and transport both bend to allow you to get the pin out of the bracket.

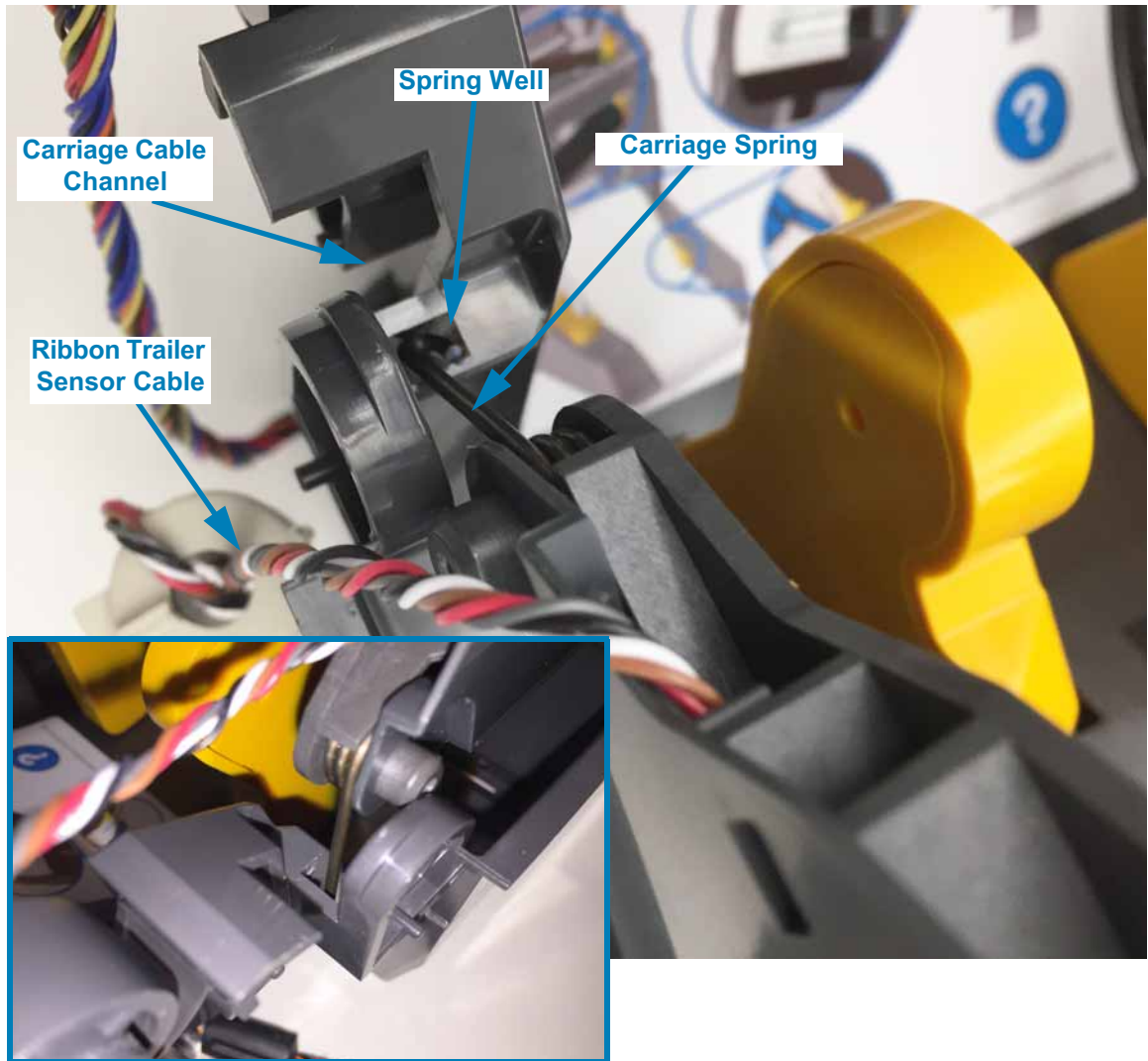


4. Pull the Ribbon Carriage up and way from the printer. Gently pull the printhead cables (and connectors) out of the well in the top of the lower frame.

Replacing Parts

Installation

1. Insert the printhead cable (and connector) into the opening between the right cover hinge and right ribbon carriage hinges.
2. Align the Ribbon Carriage with the two (2) hinge springs with the two (2) hinge spring wells in the top of the lower inner frame. Lower the springs into the wells until the carriage hinge pins and hinge brackets are close.



3. Push the right side transport hinge pin into the right side bracket on the inner frame. Repeat for the left side.
4. Pull the printhead cable completely through the lower frame to remove slack at the carriage hinge. Re-attach the two (2) toroid clamps to the two (2) branches of printhead cables below the hinge area.
5. Secure the Ribbon Carriage hinges to the print mechanism with a screw and washer on each side of the printer with a Torx T10 driver.

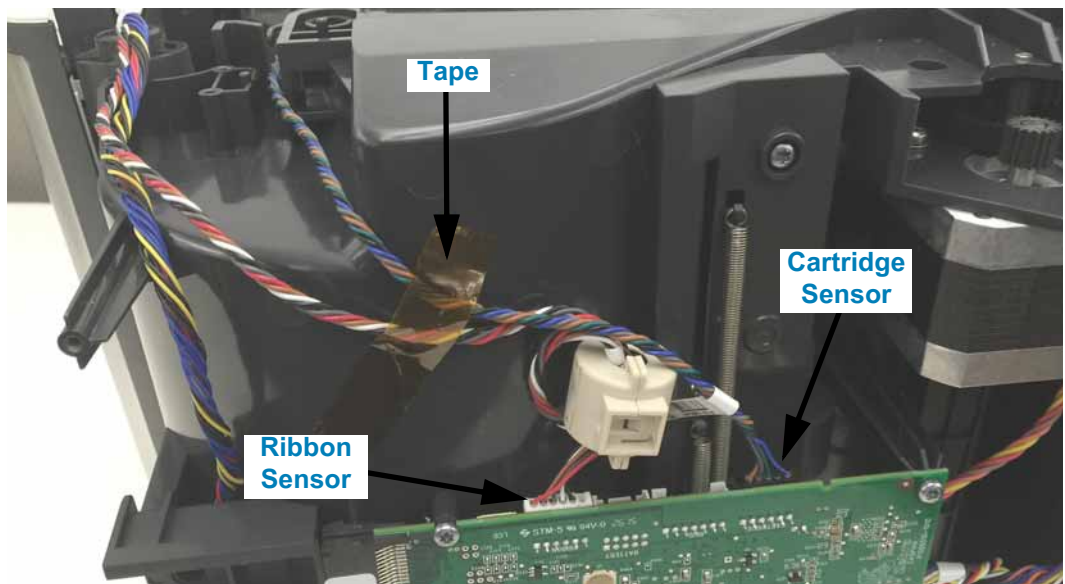
Replacing the Ribbon Transport

Repair Prerequisites

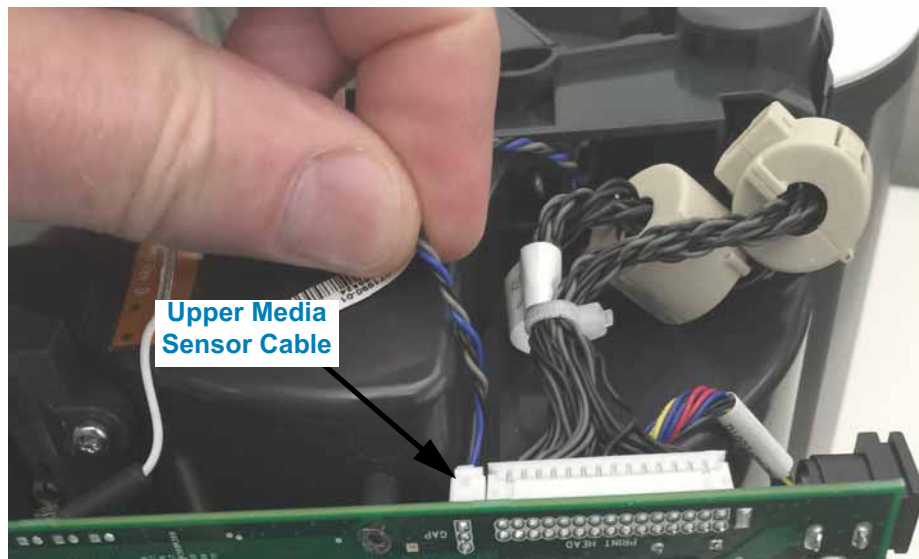
You must remove the Front Bezel Option (tear-off, dispenser, or cutter), Printer Base, and Hinge before you can remove the Ribbon Transport. The Main PCBA can be removed to gain better access to cable connectors on the Main PCBA.

Removal

1. Disconnect the (Ribbon) Cartridge Sensor cable from the Main PCBA. Loosen the tape holding the Cartridge Sensor and Ribbon Sensor (with toroid clamp) cables to the bottom of the lower frame.

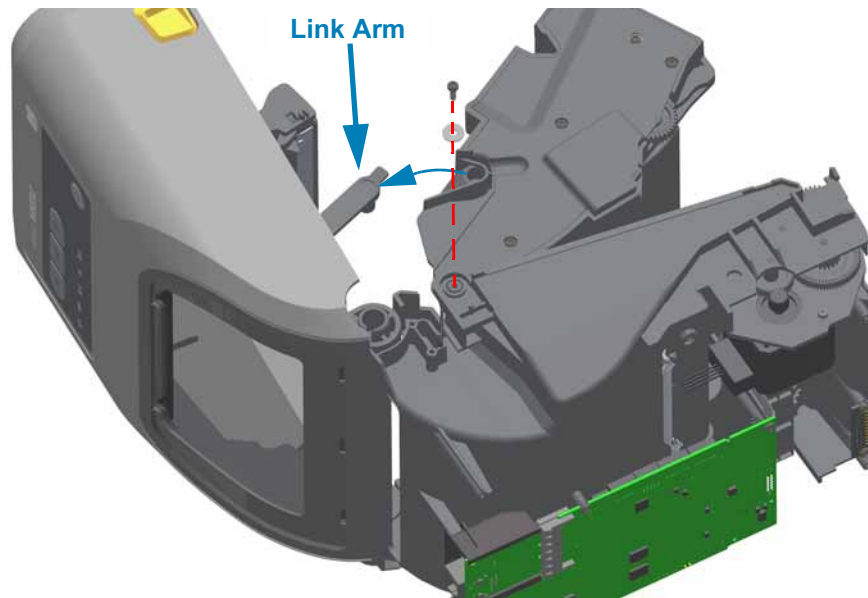


2. Disconnect the Upper (Gap/Web) Media Sensor cable from the Main PCBA.

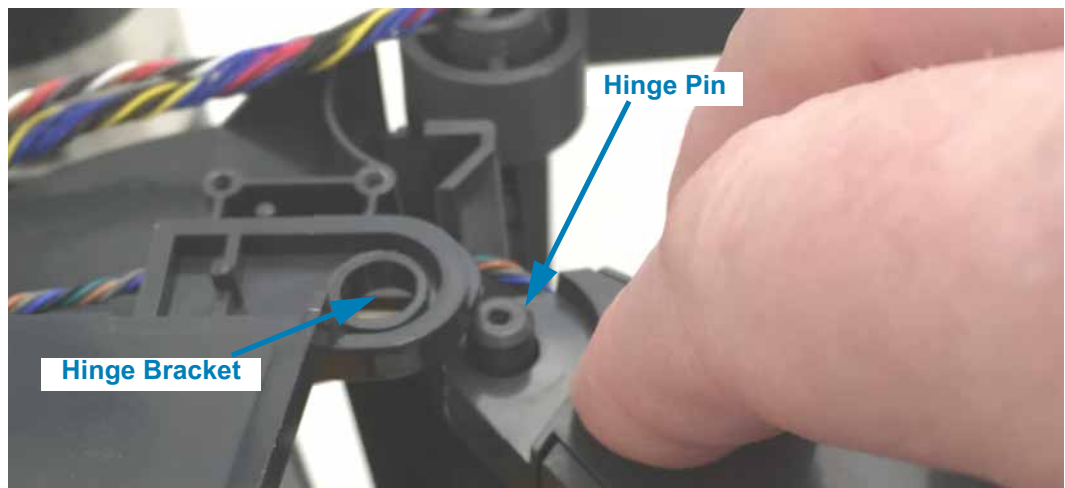


Replacing Parts

3. Disconnect the two link arms that connect the Ribbon Transport to the top cover (and upper frame).



4. Remove the screw and washer on each side of the print mechanism at the Ribbon Transport's hinge using a Torx T10 driver.

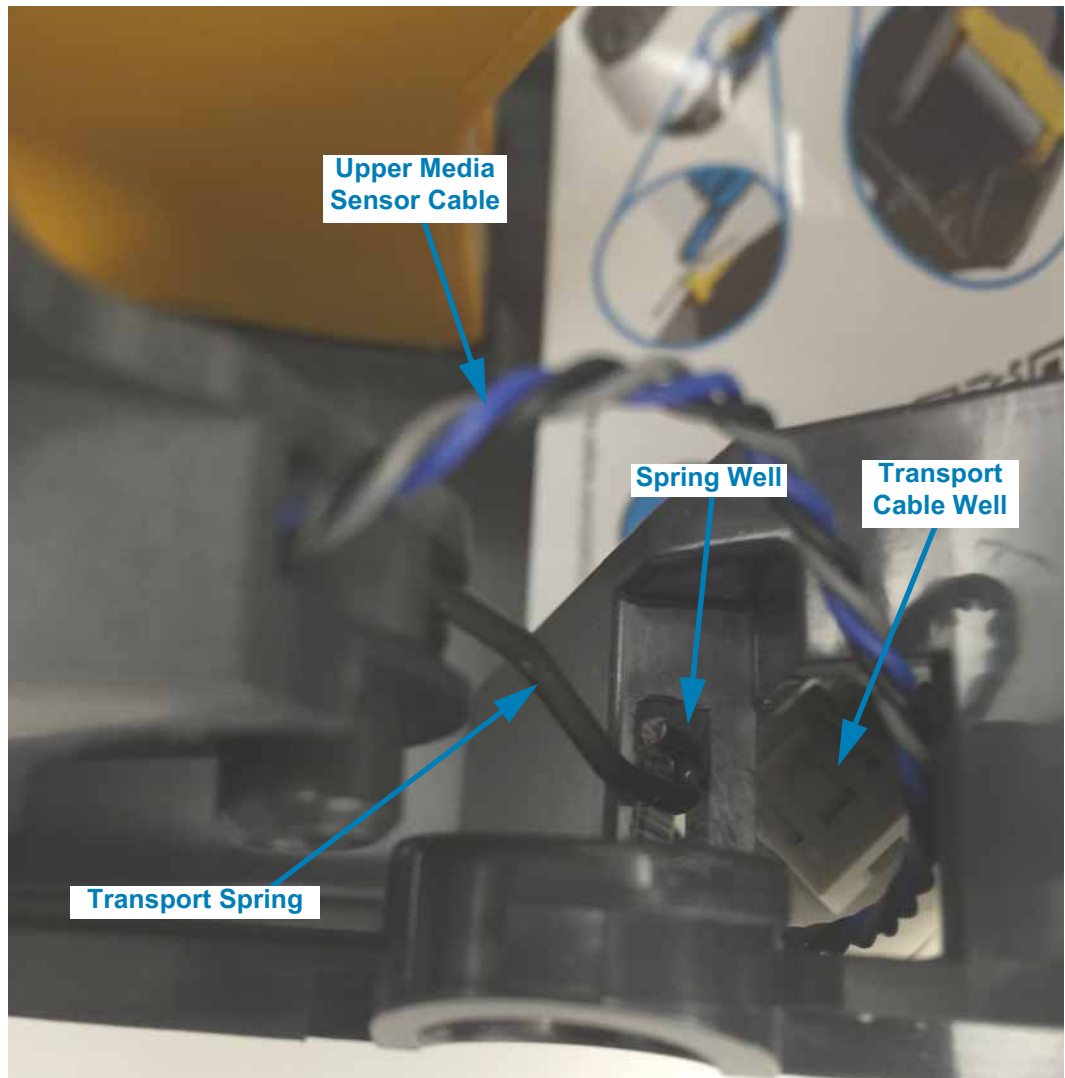


5. Push the Ribbon Transport's hinge pin out of the hinge bracket molded into the print mechanism (lower frame) on the left side. The inner frame and transport both bend to allow you to get the pin out of the bracket.
6. Pull the Ribbon Transport up and out of the printer. Gently pull the Upper Media Sensor's cable (and connector) out of the well in the top of the lower frame.

Replacing Parts

Installation

1. Align the Ribbon Transport with the two (2) hinge springs with the two (2) hinge spring wells in the top of the lower inner frame. Lower the springs into the wells until the transports hinge pins and hinge brackets are close.

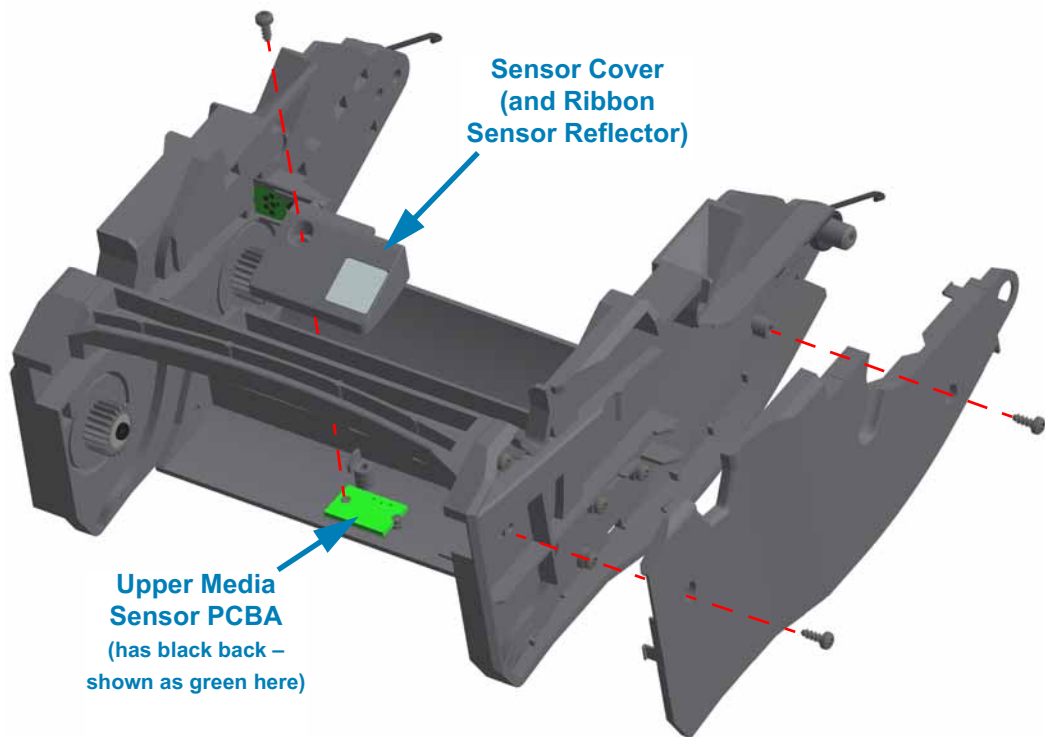


2. Push the right side transport hinge pin into the right side bracket on the inner frame. Repeat for the left side.
3. Insert the Upper Media Sensor cable (and connector) into the larger well on the top of the inner frame on the left side of the printer.
4. Plug the Cartridge Sensor and Upper Media Sensor cables into the Main PCBA.
5. Re-secure the Cartridge Sensor and Ribbon Sensor cables to the bottom of the print mechanism with tape.
6. Secure the Ribbon Transport hinge to the print mechanism with a screw and washer on each side of the printer with a Torx T10 driver.

Replacing the Upper Media (Gap/Web) Sensor

Repair Prerequisites

You must remove the Front Bezel Option (tear-off, dispenser, or cutter), Printer Base, Hinge, and Ribbon Transport before you can remove the Upper Media Sensor. The Main PCBA can be removed to gain better access to cable connectors on the Main PCBA.

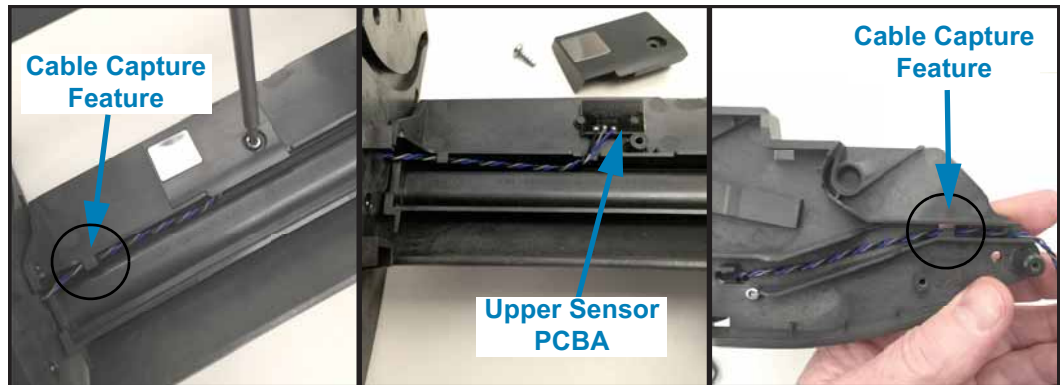


Removal

1. With the Ribbon Transport removed from the printer, remove the two (2) screws securing the lift side panel to the transport using a Torx T10 driver.
2. At the Ribbon Transport's hinge pin, lift the side panel off the transport. The side panel has snap to lock features that are holding the panel lightly in place. Continue lifting all the way around the side panel to release the latches and pull it away from the transport frame.

Replacing Parts

3. Remove the screw securing the Sensor Cover using a Torx T10 driver and remove the cover.



4. Locate the cable on side of the transport frame and pull it out. The cable channels include cable capture features to hold the cable in place during assembly. Pull the cable around them and then out of the transport frame through the inside of the transport's side frame.

Replacing Parts

Installation

1. Place the new Upper Media Sensor PCBA on the two (2) guide posts with the four (4) LEDs in the hole in the transport frame's cross member. The cable from the sensor PCBA exits toward the back of the transport (hinges in the back) and the cable sits in a notch in the cross member.



2. Place the Sensor Cover over the Upper Media Sensor PCBA and secure it and the PCBA to the frame with a screw using a Torx T10 driver. Verify that the cable is not pinched between the frame and the cover.
3. Put the cable's loose end with the connector through the transport's right inside wall and route the cable through the channel and under the cable capture feature.
4. From the outside of the transport frame's right side, gently pull the cable tight and route it through the cable channel and out over the hinge pin. Push the cable in the channel and under the cable capture feature. Pull the cable gently tight again to remove any slack.
5. Align and press the left side transport frame's cover pack onto the transport. Secure it to the frame with two (2) screws using a Torx T10 driver.

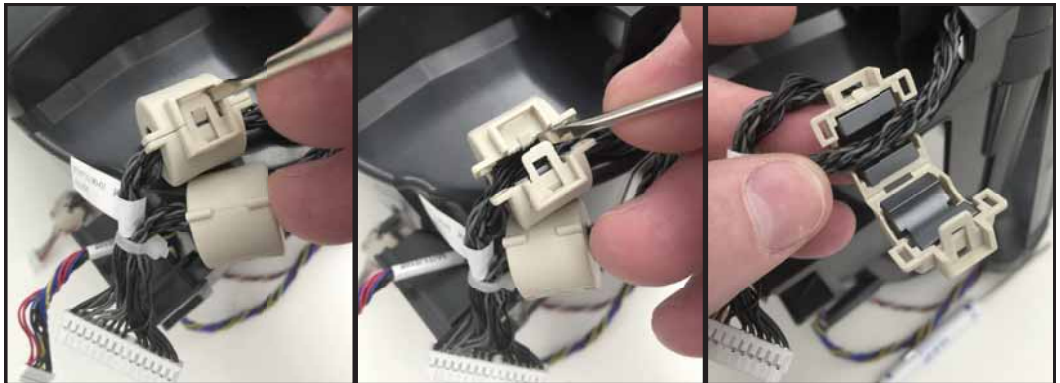
Replacing the Print Mechanism or Upper Inner Frame

Repair Prerequisites

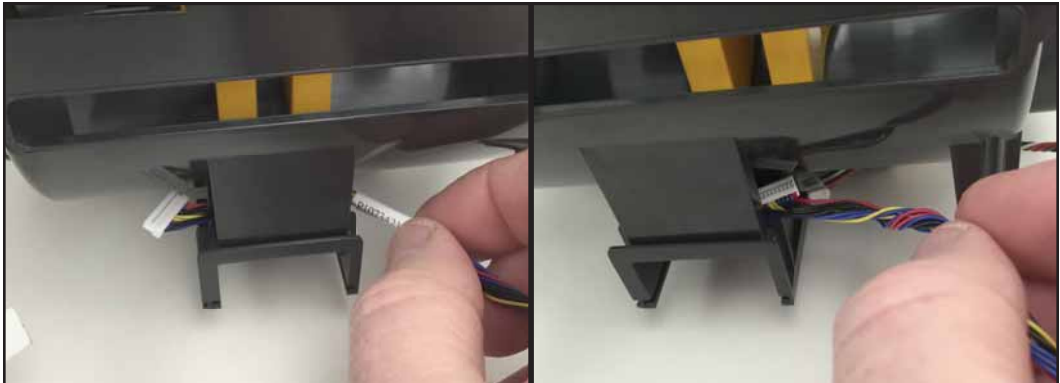
You must remove the Front Bezel Option (tear-off, dispenser, or cutter), Printer Base, Main PCBA, Hinge, and Ribbon Transport before you can remove the Print Mechanism or Upper Inner Frame.

Removal

1. Remove the two (2) toroid clamps from the printhead cables exiting the right side cover hinge. Use a small flat bladed screw driver to gently pry the clamp's lock open.



2. Pull the Control Panel (User Interface) cable (and connector) out of the Connectivity Module's mounting bracket. Turn the connector body parallel to the cable and remove. Do not remove the bracket.

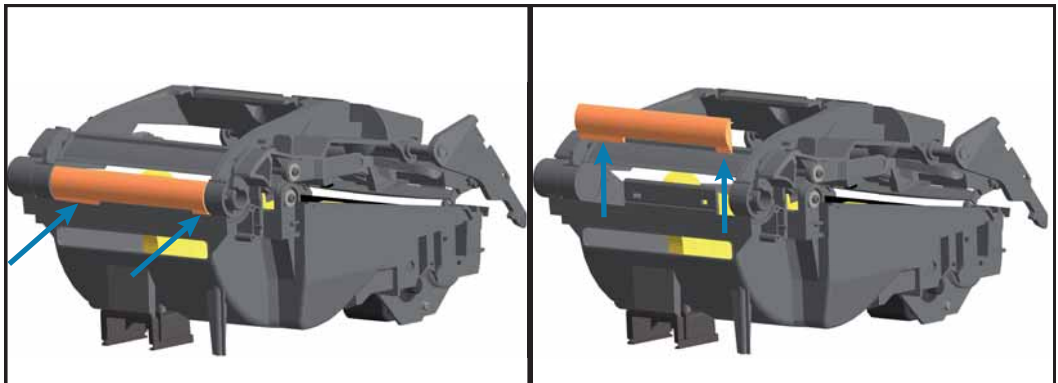


Replacing Parts

3. Close the upper frame with the printhead (on the actuator arm) and latch (arms) pointing towards the front of the printer.



4. Use the small flat bladed screwdriver to gently pry the left side of the rear hinge cover up from the print mechanism. Repeat for the right side and lift the hinge cover up and away from the printer.



5. Lift the upper frame assembly out of the right hinge on the print mechanism.

Replacing Parts

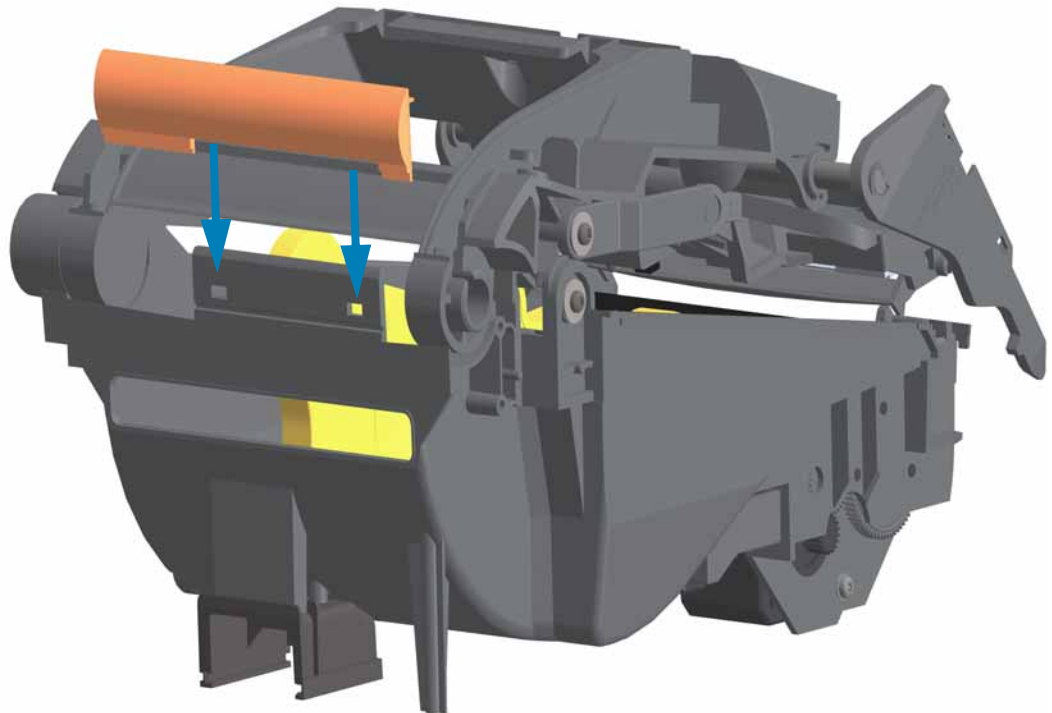
6. Pull the printhead cables and connector out of the right hinge (and out of the print mechanism too).



Replacing Parts

Installation

1. Insert the printhead cable and connector into the right hinge in the print mechanism.
2. Put the upper frame's right side hinge into the print mechanism's mating right side hinge while pulling the printhead cable through the hinge joint.
3. Close the upper frame with the printhead and latch arms pointing towards the front of the printer.
4. Slide the rear hinge cover down onto the upper part of the rear panel on the print mechanism. This will lock the right hinge in place.



5. Push the Control Panel (User Interface) cable and connector through the Connectivity Module's mounting bracket and lower frame. Turn the connector body parallel to the cable to push it through the bracket. Do not remove the bracket.

Main PCBA Layout

Main Printed Circuit Board Assembly

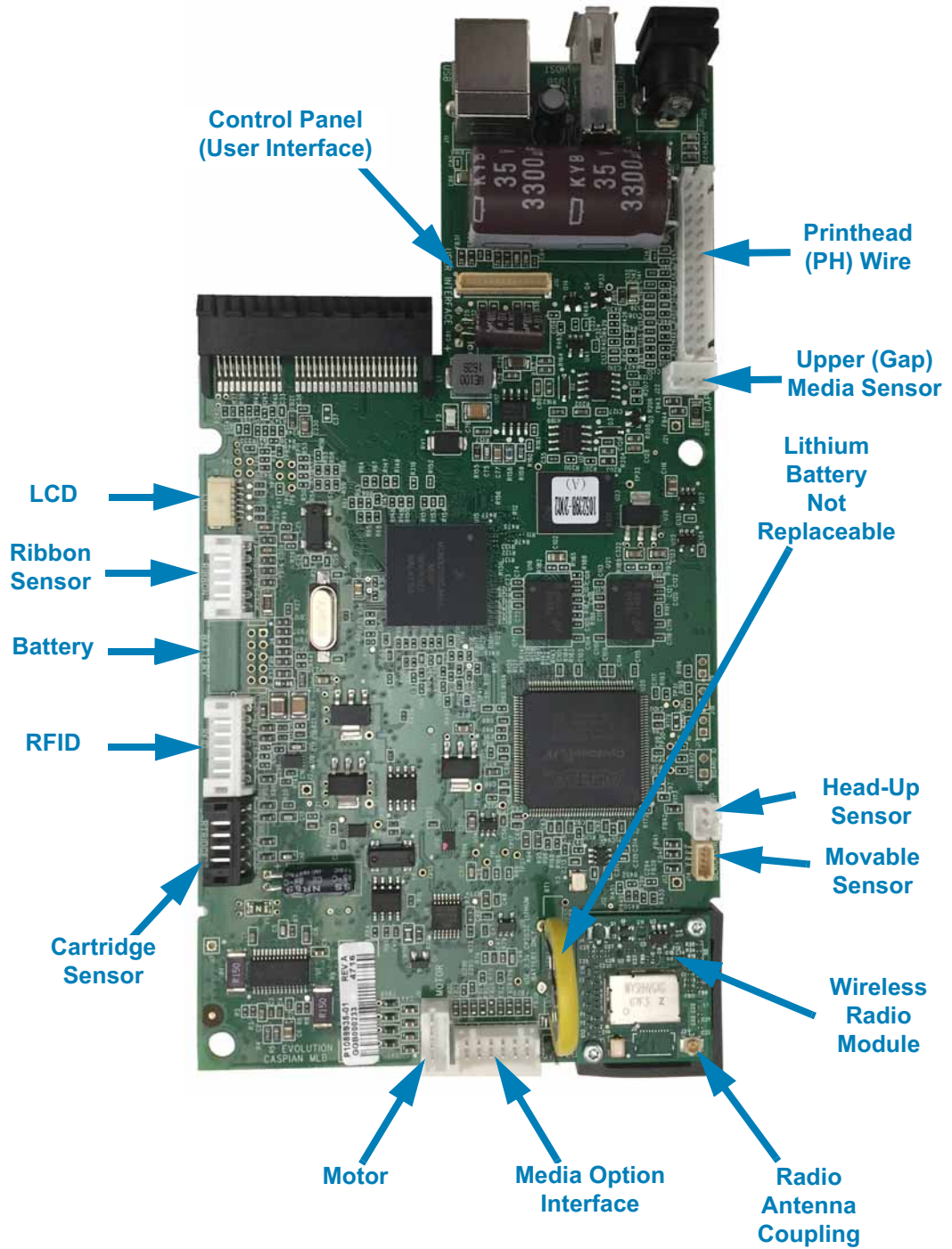


Figure 1 • Connectors on the Main Logic Board PCBA

Main Printed Circuit Board Assembly

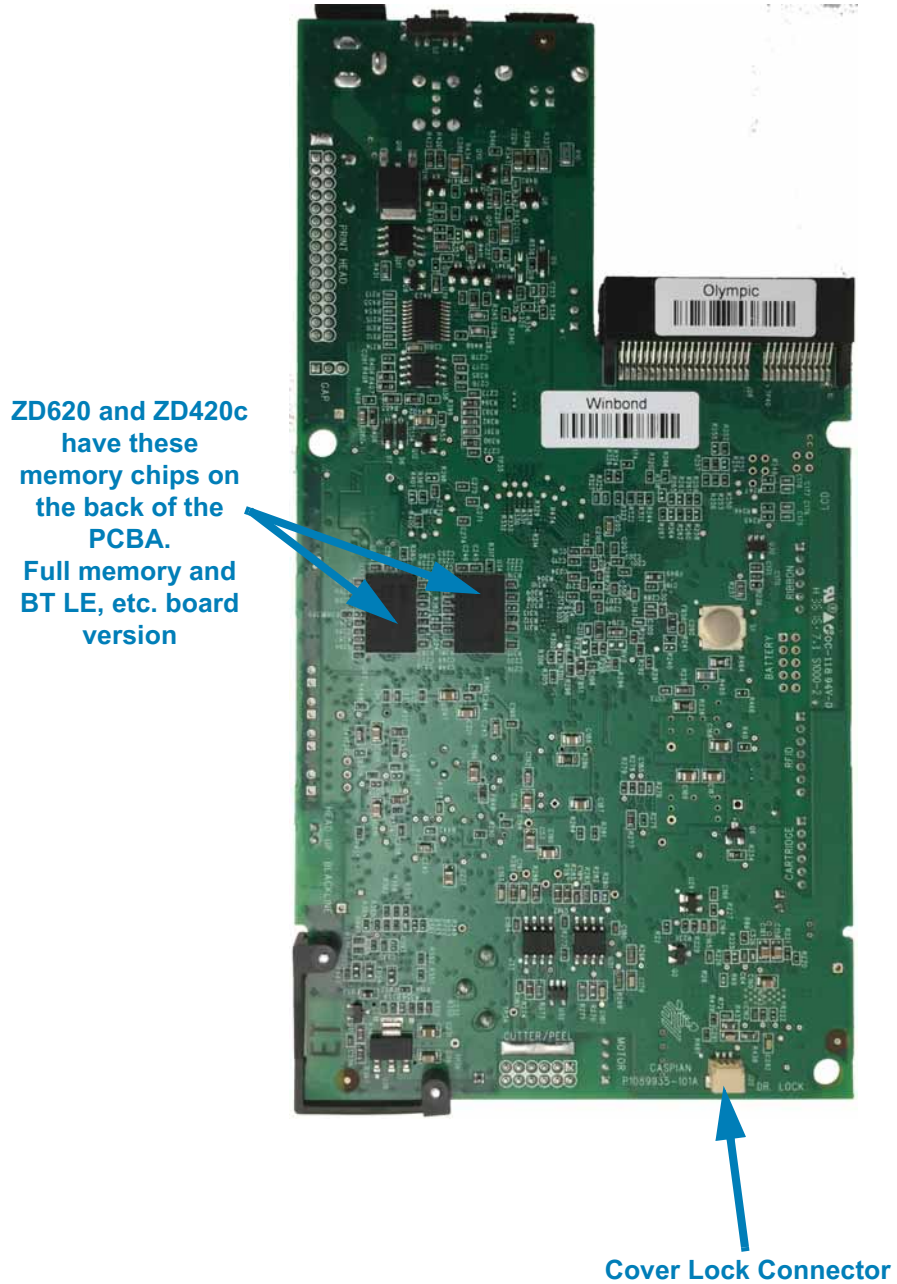


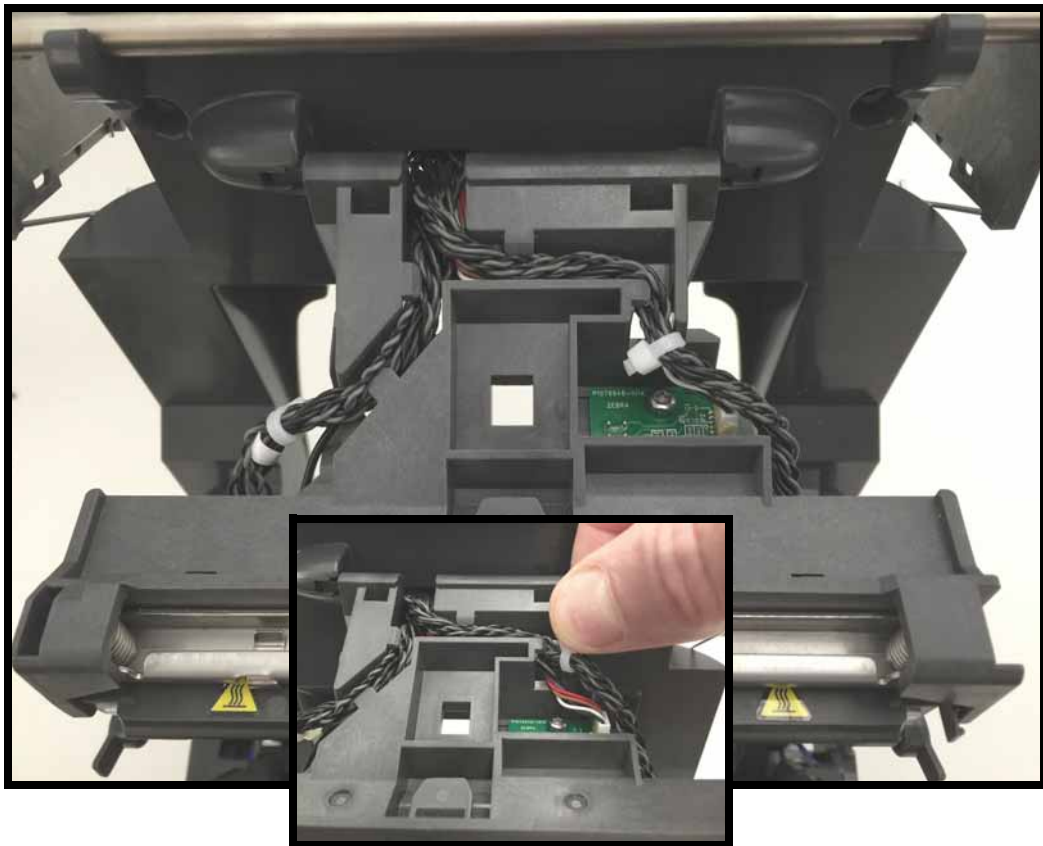
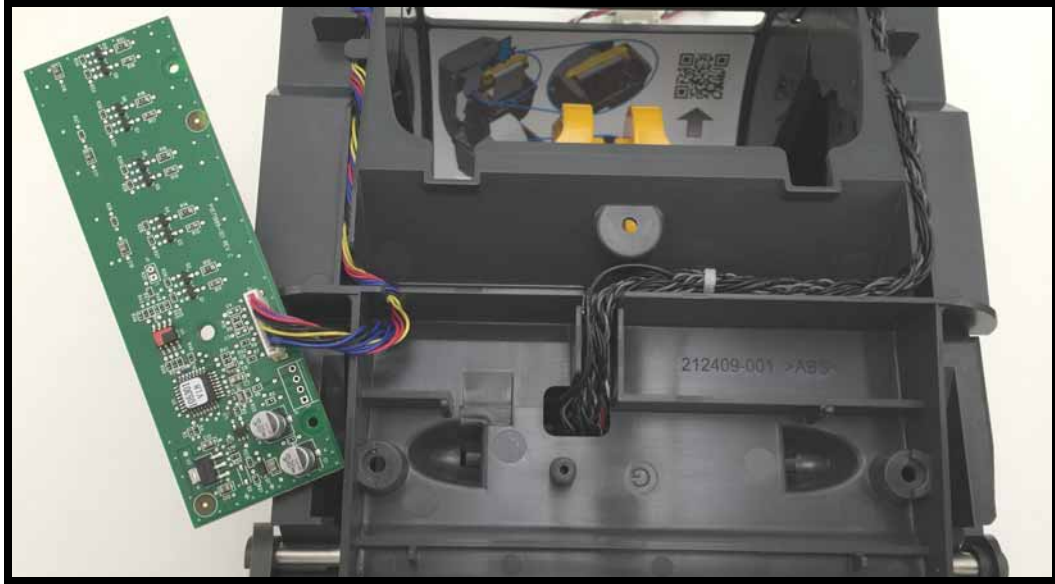
Figure 2 • Connectors on the Main Logic Board PCBA

Cable Routing for ZD420c

ZD420c - Ribbon Cartridge printers



Cable Routing for ZD420c



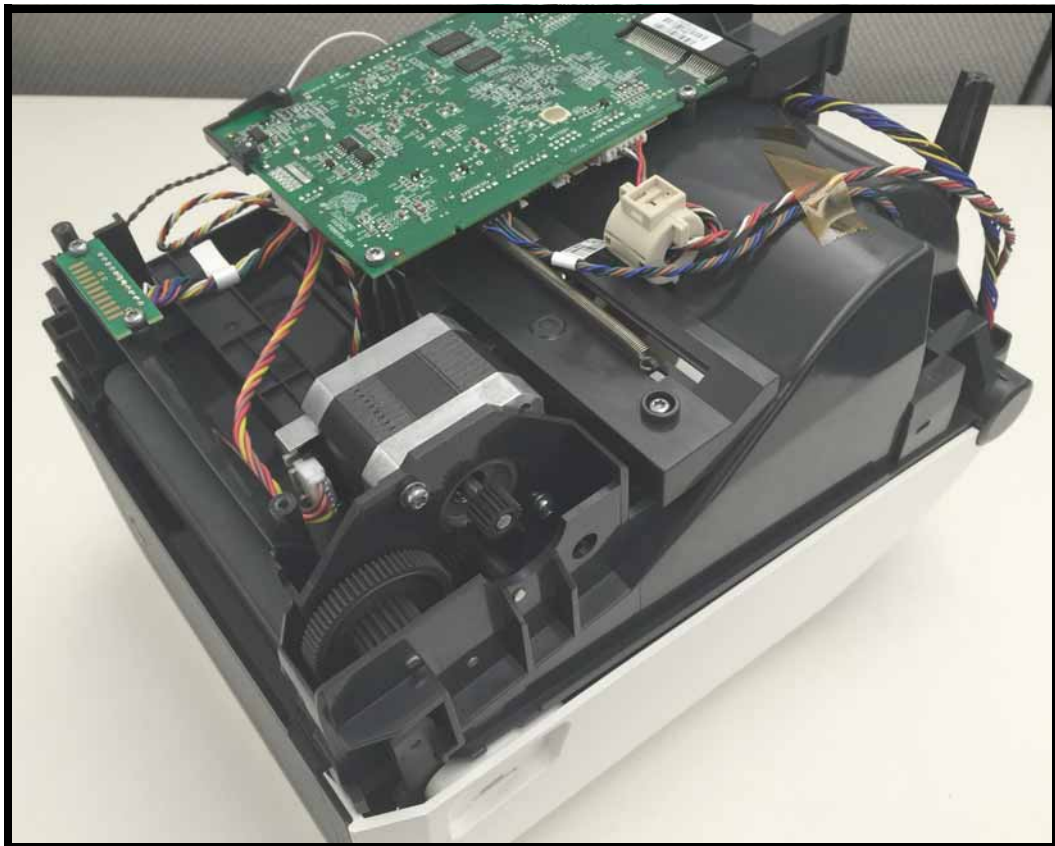
Cable Routing for ZD420c



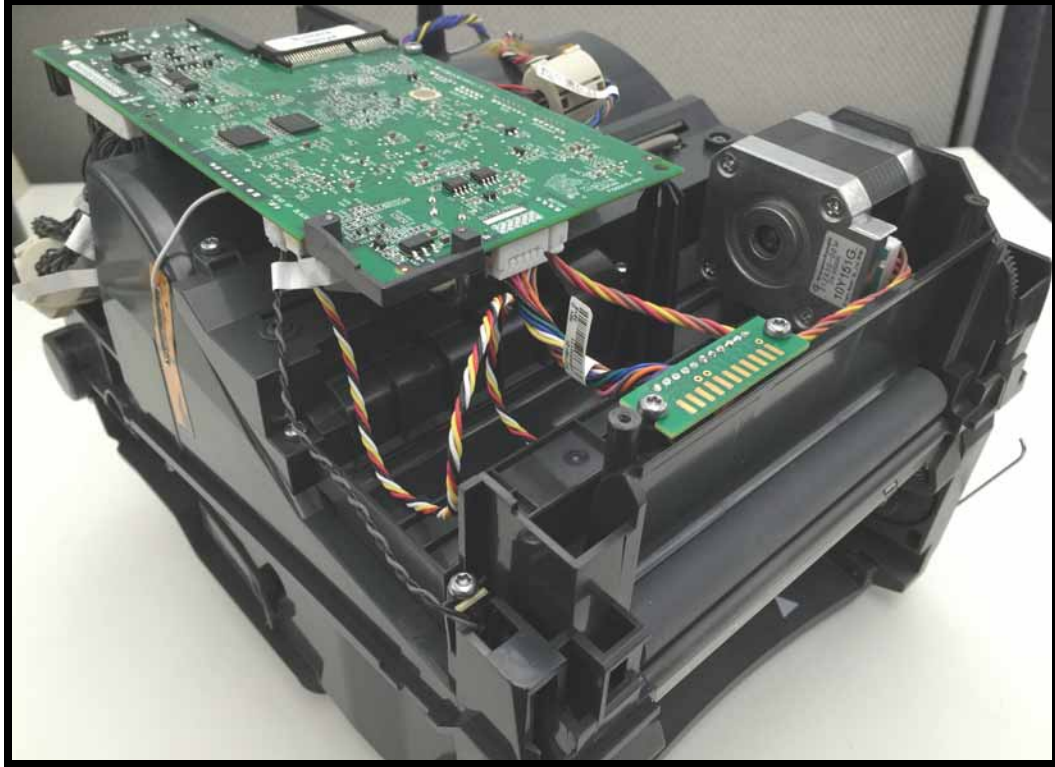
Cable Routing for ZD420c



Cable Routing for ZD420c



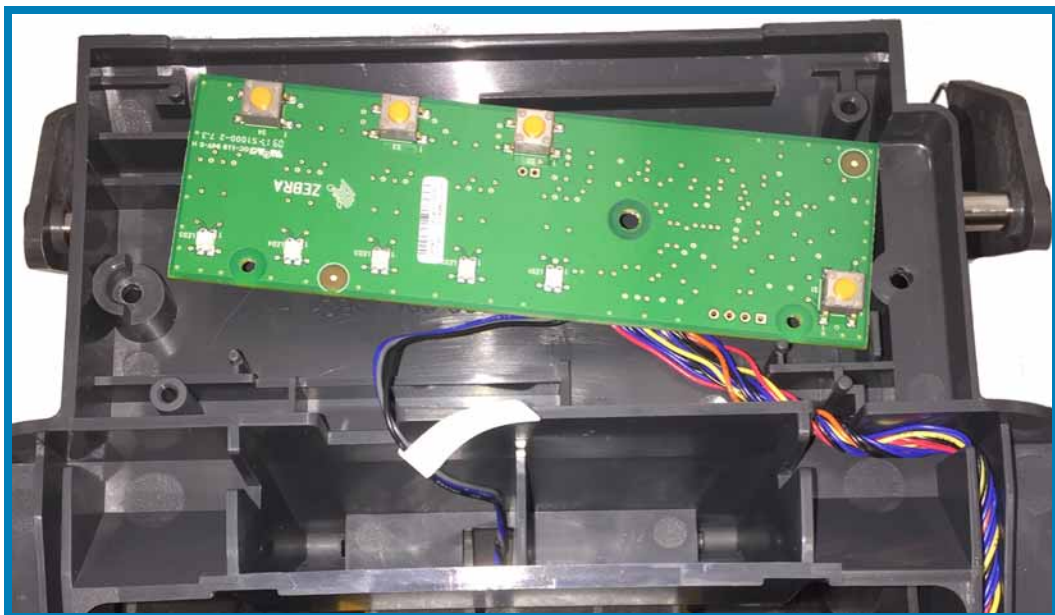
Cable Routing for ZD420c



Cable Routing for ZD420t

ZD620 and ZD420 Ribbon Roll Printers

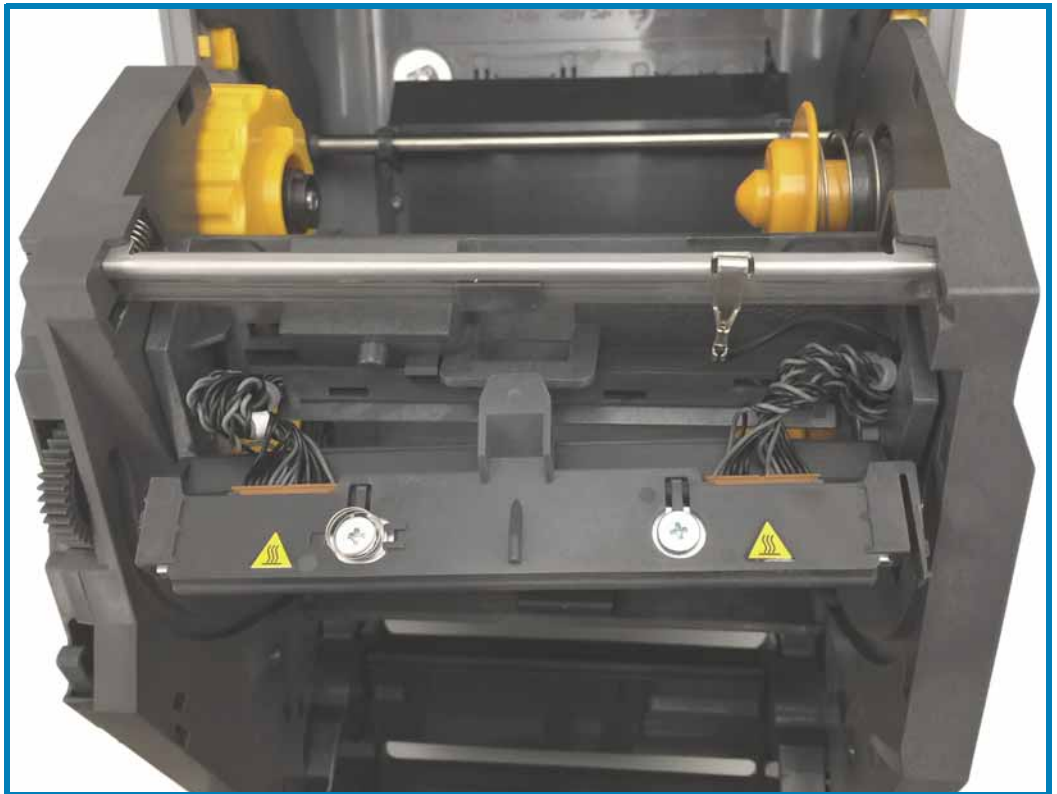
Cable Routing for ZD420t



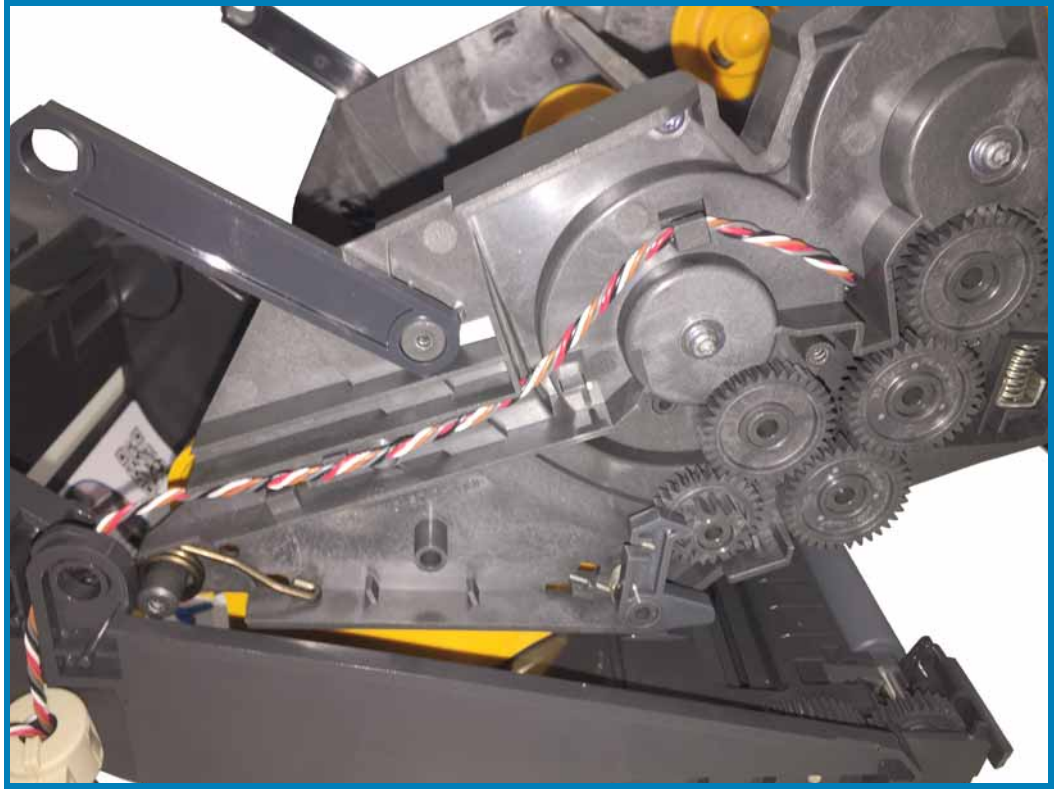
Cable Routing for ZD420t



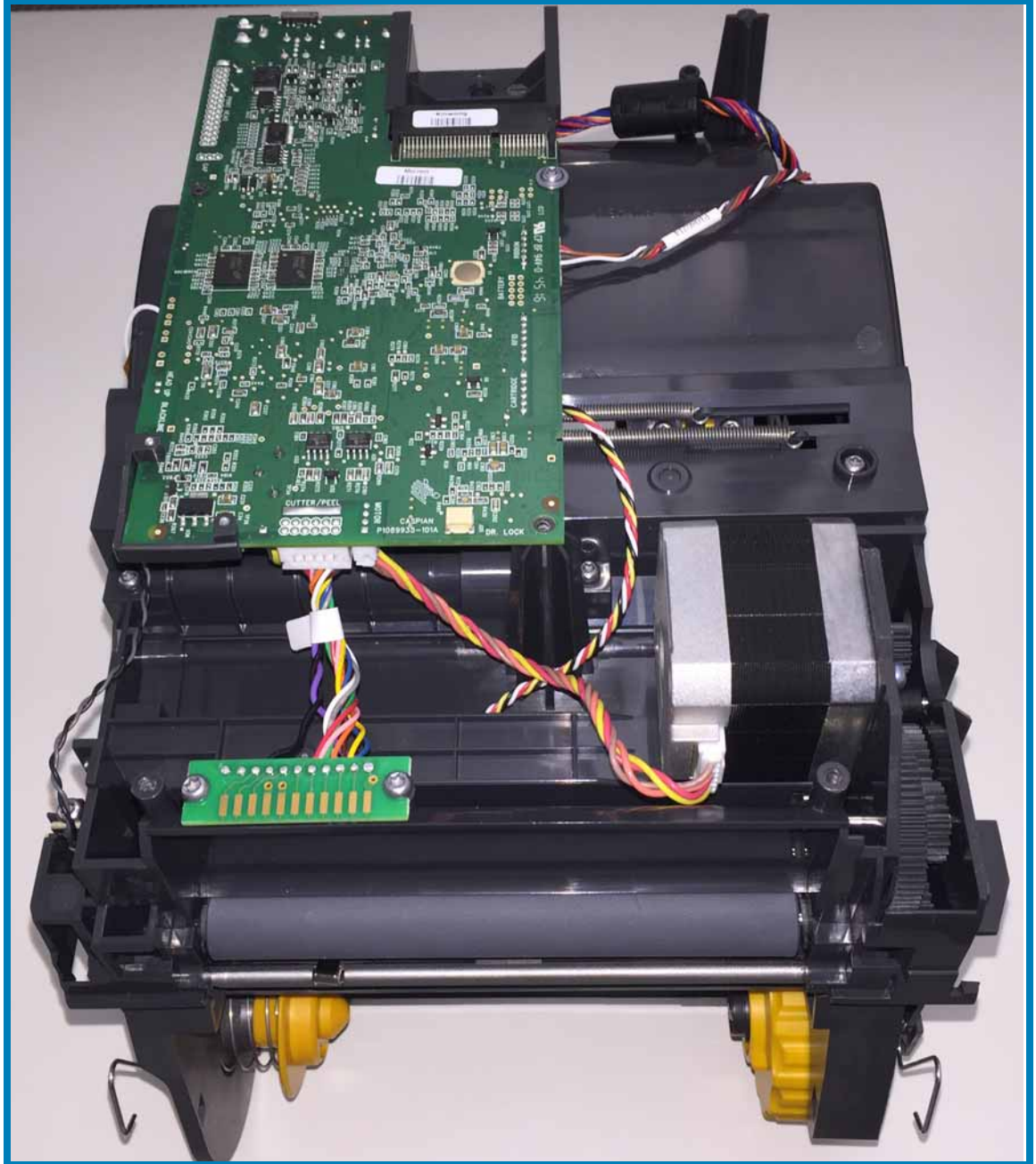
Cable Routing for ZD420t



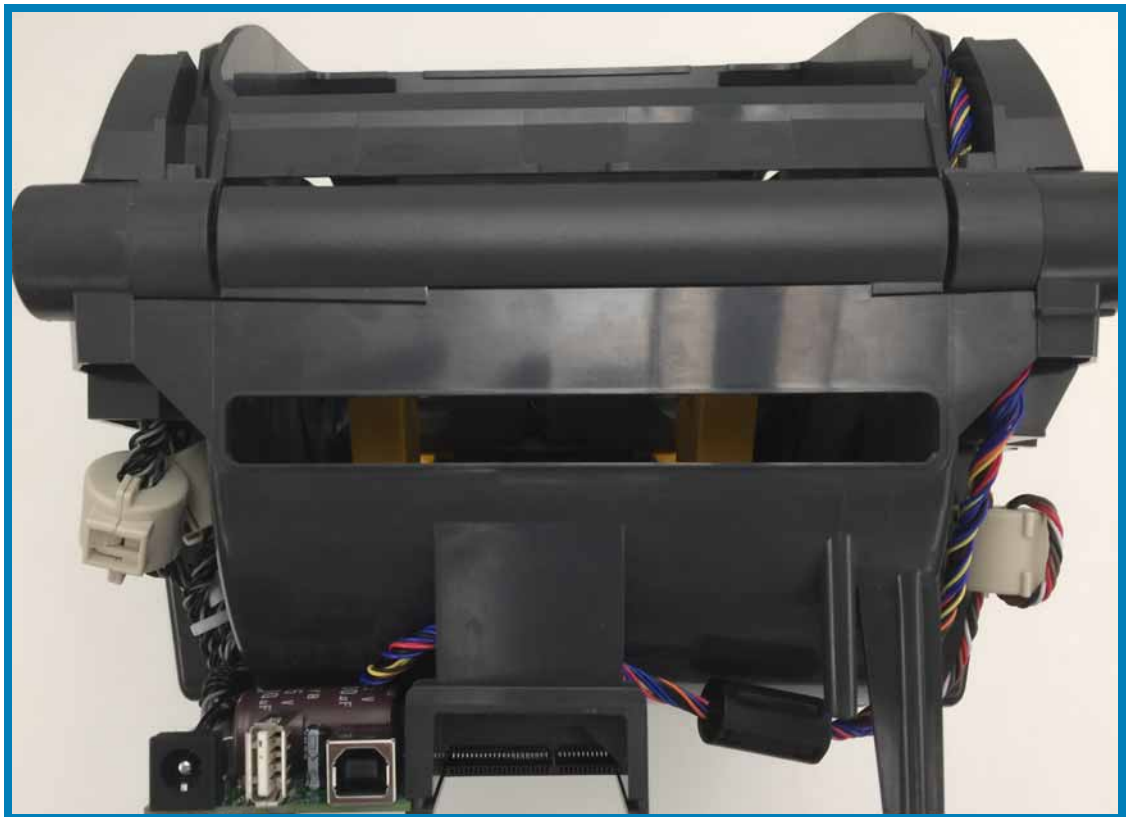
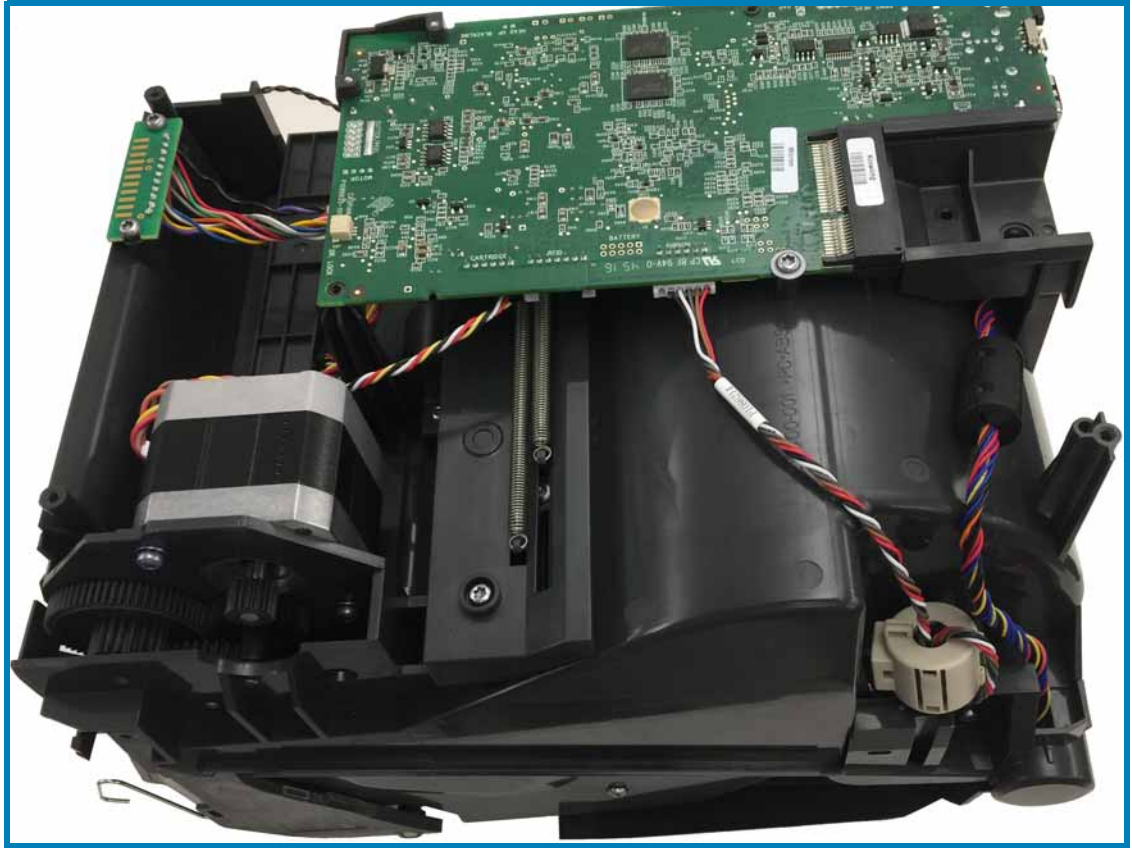
Cable Routing for ZD420t



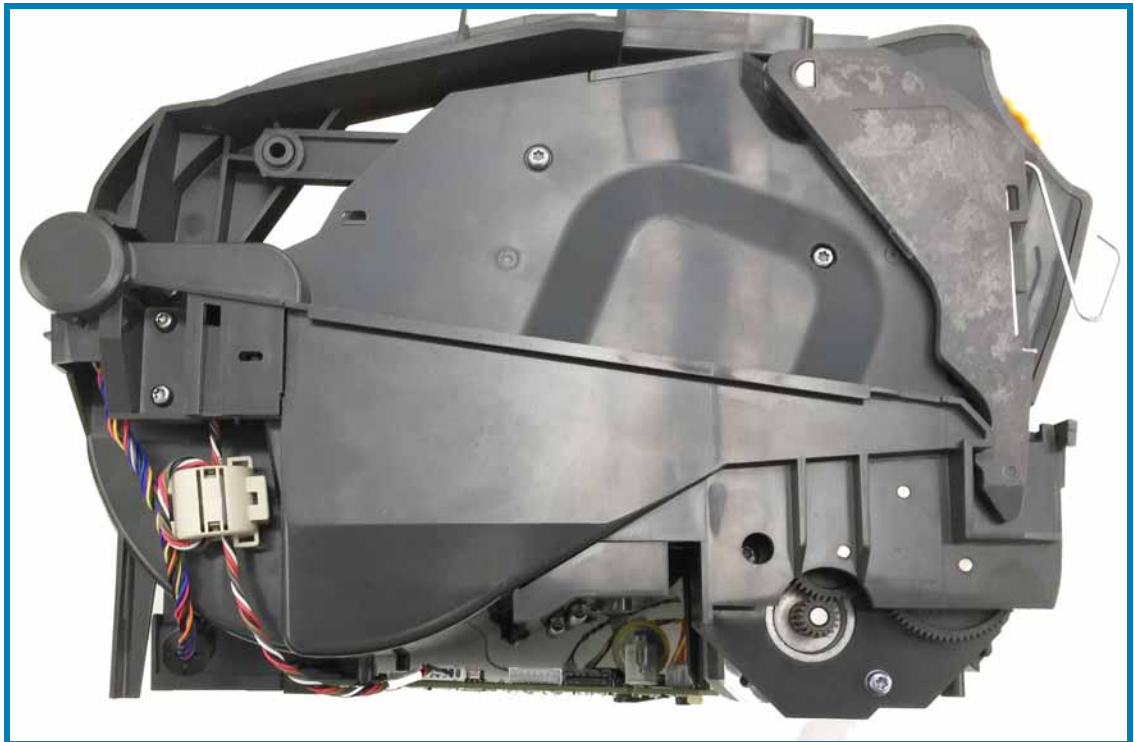
Cable Routing for ZD420t



Cable Routing for ZD420t



Cable Routing for ZD420t



Cable Routing for ZD420d

ZD420c - Direct Thermal printers



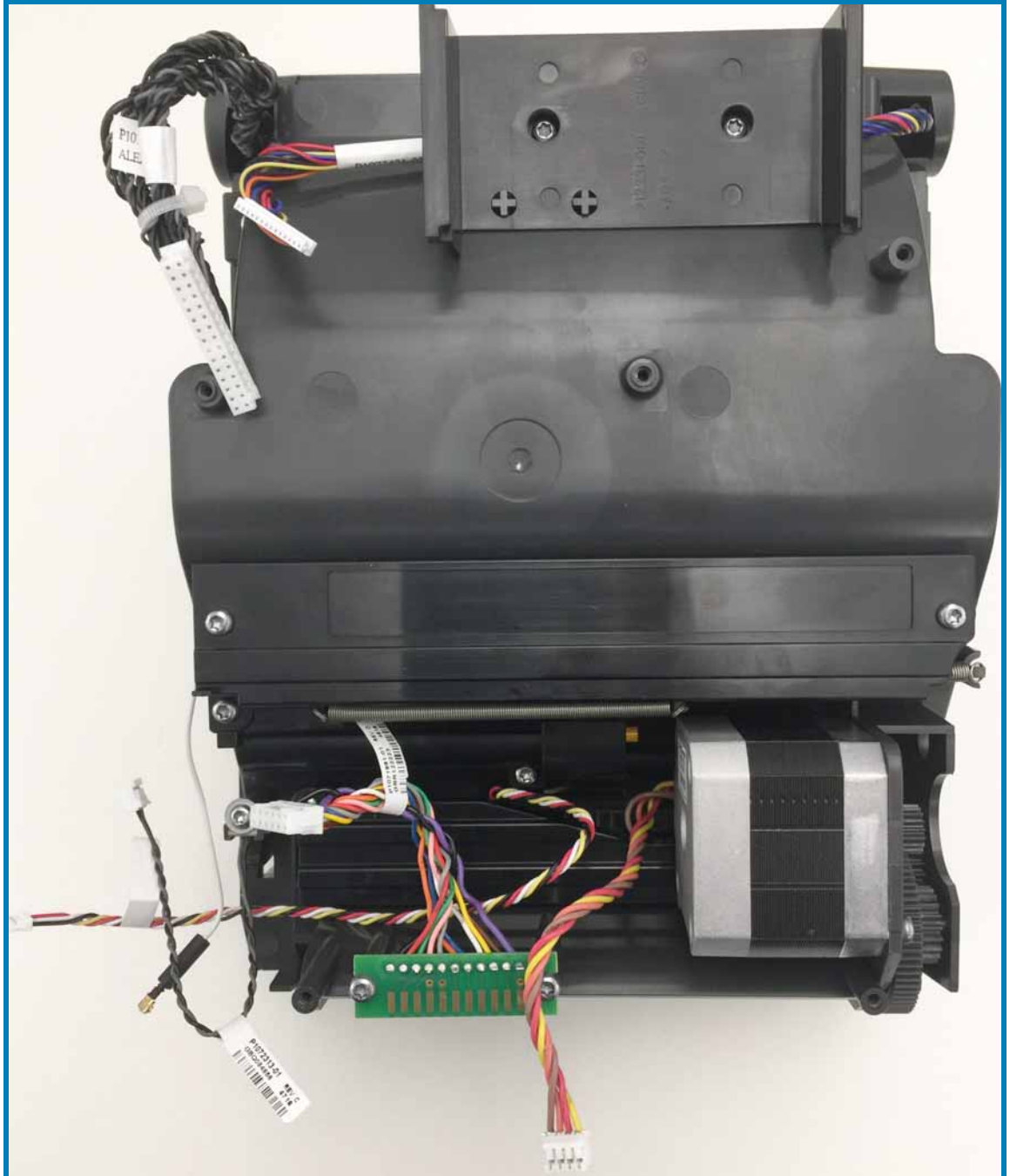
Cable Routing for ZD420d



Cable Routing for ZD420d



Cable Routing for ZD420d



Media

This section provides a simple media overview for your printer.

Types of Thermal Media



Important • Zebra strongly recommends the use of Zebra-brand supplies in order to ensure consistent high-quality printing. A wide range of paper, polypropylene, polyester, and vinyl stock has been specifically engineered to enhance the printing capabilities of the printer and to prevent premature printhead wear.

To purchase supplies, go to <http://www.zebra.com/howtobuy>.

- Your printer can use various types of media:
- **Standard media**—Most standard (non-continuous) media uses an adhesive backing that sticks individual labels or a continuous length of labels to a liner.
- **Continuous roll media**—Most continuous roll media is direct thermal media (similar to FAX paper) and is used for receipt or ticket style printing.
- **Tag stock**—Tags are usually made from a heavy paper (up to 0.0075in./0.19mm thick). Tag stock does not have adhesive or a liner, and it is typically perforated between tags.

The printer typically uses roll media, but you can use fan-fold or other continuous media too.

Determining Thermal Media Types

Thermal transfer media requires ribbon for printing while direct thermal media does not. To determine if ribbon must be used with a particular media, perform a media scratch test.

To perform a media scratch test, complete these steps:

1. Scratch the print surface of the media with a finger nail or pen cap. Press firmly and quickly while dragging it across the media surface. Direct thermal media is chemically treated to print (expose) when heat is applied. This test method uses friction heat to expose the media.
2. Did a black mark appear on the media?

If a black mark...	Then the media is...
Appears on the media	Direct thermal. No ribbon is required.
Does not appear on the media	Thermal transfer. A ribbon is required. Not supported by this printer.

General Media and Print Specifications

- **Direct Thermal** — Max. Media width: 108mm (4.25 inches)
- **Thermal Transfer** — Max. Media width: 118mm (4.65 inch)
- **All Printers** — Min. Media width: 15mm (0.585 inch)
- Media length:
 - 990mm (39 inches) max.
 - 6.35mm (0.25 inches) min. – Tear Off or Label
 - 12.7mm(0.50 inches) min. – Peel
 - 25.4mm (1.0 inch) min. - Cutter
- Media thickness:
 - 0.06mm (0.0024 inches) min. – all requirements
 - 0.1905mm (0.0075 inches) max. – all requirements
- Media Roll Outer Diameter (O.D.) max.: 127mm (5.0 inches)
- Media Roll Core Inner Diameter (I.D.):
 - 12.7mm (0.5 inch) I.D. - Standard roll configuration
 - 25.4mm (1 inch) I.D. - Standard roll configuration
 - 38.1mm (1.5 inches) I.D. - with optional media roll adapter
 - 50.8mm (2.0 inches) I.D. - with optional media roll adapter
 - 76.2mm (3.0 inches) I.D. - with optional media roll adapter
- Ribbon Rolls - 74 meter
 - Ribbon Length - 74 m (243 feet)
 - Ribbon Width Max. - 110 mm (4.33 inches)
 - Ribbon Width Min. - 33 mm (1.3 inches) ‡
 - Ribbon Core I.D. - 12.7mm (0.5 inches)
 - Wax, Wax/Resin, and Resin transfer materials
- Ribbon Rolls - 300 meter
 - Ribbon Length - 300 m (984 feet)
 - Ribbon Width Max. - 110 mm (4.33 inches)
 - Ribbon Width Min. - 33 mm (1.3 inches) ‡
 - Wax, Wax/Resin, and Resin transfer materials

‡ - Transfer ribbon should always cover the entire width of the media (and liner) to prevent damaging the printhead.

Media

- ZD420 Ribbon Cartridges
 - Ribbon Length - 74 m (243 feet)
 - Ribbon Width Max. - 110 mm (4.33 inches)
 - Ribbon Width Min. - 33 mm (1.3 inches) ±
 - Colors available in Black - Wax, Wax Resin, and Resin transfer materials
- Dot pitch:
 - 203 dpi: 0.125mm (0.0049 inches)
 - 300 dpi: 0.085mm (0.0033 inches)
- Barcode modulus x-dim:
 - 203 dpi: 0.005-0.050 inches
 - 300 dpi: 0.00327 - 0.03267 inches

Label Dispenser (Peeler)

The printer supports a field installed label dispense option with label taken sensor for batch processing of labels.

- Paper Thickness:
 - Min. 0.06 mm (0.0024 inches)
 - Max. 0.1905 mm (0.0075 inches)
- Media Width:
 - Min. 15 mm (0.585 inches)
 - Thermal Transfer Printers Max. 118 mm (4.65 inches)
 - Direct Thermal Printers Max. 108 mm (4.25 inches)
- Label Length:
 - All Printers Max. (theoretical): 990mm (39 inches)
 - Thermal Transfer Printers Max. (tested): 279.4mm (11 inches)
 - Direct Thermal Printers Max. (tested): 330mm (13 inches).
 - All Printers Min.: 12.7mm (0.5 inches).

Standard (Media) Cutter

The printer supports a field installed media cutter option for full width cutting of label liner, tag or receipt media.

- A medium duty cutter for cutting label liner and light tag media (LINER/TAG). Do not cut through labels, adhesive or embedded circuitry.
- Paper Thickness:
 - Min. 0.06 mm (0.0024 inches)
 - Max. 0.1905 mm (0.0075 inches)
- Cut Width:
 - Min. 15 mm (0.585 inches)
 - Thermal Transfer Printers Max. 118 mm (4.65 inches)
 - Direct Thermal Printers Max. 109 mm (4.29 inches)
- Minimum distance between cuts (label length): 25.4 mm (1 inch). Cutting shorter media lengths between the cuts may cause the cutter to jam or error.
- By design, the cutter is self cleaning and does not require preventive maintenance of the internal cutter mechanism.

Linerless (Media) Cutter - Direct Thermal only

The printer supports a field installed media cutter option for full width cutting of linerless media.

- A full width linerless media cutter (LINERLESS CUT).
- Paper Thickness:
 - Min. 0.06 mm (0.0024 inches)
 - Max. 0.1905 mm (0.0075 inches)
- Cut Width:
 - Min. 15 mm (0.585 inches)
 - Max. 118 mm (4.65 inches)
- Minimum distance between cuts (label length): 25.4 mm (1 inch). Cutting shorter media lengths between the cuts may cause the cutter to jam or error.
- By design, the cutter is self cleaning and does not require preventive maintenance of the internal cutter mechanism. See [Linerless Platen \(Drive\) Roller](#) cleaning and [Media Path Cleaning](#) to maintain optimal linerless media cut operation.

ZPL Configuration

This section provides an overview of managing printer configuration, the Configuring Status Report, and Printer and Memory Printouts.

Managing the ZPL Printer Configuration

The ZPL printer is designed to allow you to change printer settings dynamically for fast first label out printing. Printer parameters that are persistent will be retained for future formats to use. Those settings will remain in effect until they are changed by subsequent commands, the printer is reset, power is cycled, or when you restore a parameter that has a factory default by resetting the printer to factory defaults. The ZPL Configuration Update command (^JU) saves and restores printer configurations to initialize (or re-initialize) the printer with pre-configured settings.

- To keep settings after a power cycle or printer reset, a ^JUS can be sent to the printer to save all current persistent settings.
- The values are recalled with a ^JUR command to restore the last saved values to the printer.

ZPL stores all parameters at once with a single command mentioned above. The legacy EPL programming language (supported by this printer) changes and saves individual commands immediately. Most printer settings are shared between ZPL and EPL. For example, changing the speed setting with EPL will also change the speed set for ZPL operations. The changed EPL setting will persist even after a power cycle or reset issued by either printer language.

A printer Configuration Report is available to assist the developer. The Configuration Report lists operating parameters, sensor settings, and printer status. It can be accessed by using the procedure in [Test Printing with the Configuration Report](#). The Zebra Setup Utility and the ZebraDesigner™ Windows driver also print this report and other printer reports to help you manage your printer.

ZPL Printer Configuration Format

Managing more than one printer can be done by creating a printer configuration programming file to send to one or more printers or ZebraNet™ Bridge can be used to clone a printer's setup. Figure 1 below shows the basic structure of a ZPL programming configuration file.

See the ZPL programmer's guide and the [Configuration Setting to Command Cross-reference](#) to create a programming file. The Zebra Setup Utility (ZSU) can be used to send programming files to the printer. Windows Notepad (text editor) can be used to create programming files.

Figure 1 • Configuration Parameter Format Structure

^XA — Start Format Command

Format Commands are order sensitive

- a) General Print and command settings
- b) Media handling and behaviors
- c) Media print size

^JUS command to save

^XZ — End Format Command

Configuration Setting to Command Cross-reference

The Printer Configuration Report, shown below, provides a listing of a majority of the configurations settings that can be set by ZPL command.

Figure 2 • Configuration Report Printout

PRINTER CONFIGURATION	
Zebra Technologies ZTC ZD620-203dpi ZPL 50J164202531	
<pre> +15.0..... DARKNESS LOW..... DARKNESS SWITCH 8.0 IPS..... PRINT SPEED +000..... TEAR OFF ADJUST TEAR OFF..... PRINT MODE CONTINUOUS..... MEDIA TYPE TRANSMISSIVE..... SENSOR SELECT DIRECT-THERMAL..... PRINT METHOD 830..... PRINT WIDTH 2030..... LABEL LENGTH 39.0IN 988MM..... MAXIMUM LENGTH MAINT. OFF..... EARLY WARNING 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 045..... WEB SENSOR 096..... MEDIA SENSOR 128..... TAKE LABEL 062..... MARK SENSOR 004..... MARK MED SENSOR 046..... TRANS GAIN 034..... TRANS LED 049..... MARK GAIN 100..... MARK LED DPCSWFXM..... MODES ENABLED MODES DISABLED 832 8/MM FULL..... RESOLUTION 4.0..... LINK-OS VERSION V84.20.072P37536 <-..... FIRMWARE 1.3..... XML SCHEMA 6.5.0 0.770..... HARDWARE ID 8192k.....R: RAM 65536k.....E: ONBOARD FLASH NONE..... FORMAT CONVERT FW VERSION..... IDLE DISPLAY 06/08/17..... RTC DATE 07:07..... RTC TIME DISABLED..... ZBI 2.1..... ZBI VERSION READY..... ZBI STATUS 178 LABELS..... NONRESET CNTR 178 LABELS..... RESET CNTR1 178 LABELS..... RESET CNTR2 1,290 IN..... NONRESET CNTR 1,290 IN..... RESET CNTR1 1,290 IN..... RESET CNTR2 3,277 CM..... NONRESET CNTR 3,277 CM..... RESET CNTR1 3,277 CM..... RESET CNTR2 002 WIRED,SERIAL... SLOT 1 0..... MASS STORAGE COUNT 0..... HID COUNT OFF..... USB HOST LOCK OUT FIRMWARE IN THIS PRINTER IS COPYRIGHTED </pre>	<p style="color: #0070C0; font-weight: bold;">Sensor Settings used for Service Purposes</p>

ZPL Configuration

Table 1 • ZPL Commands and Configuration Report Callout Cross-Reference

Command	Listing Name	Description
~SD	DARKNESS	Default: 10.0
–	DARKNESS SWITCH	LOW (Default), MEDIUM, or HIGH
^PR	PRINT SPEED	Default: 152.4 mm/s / 6 IPS (max.) - 203 dpi 101.6 mm/s / 4 IPS (max.) - 300 dpi
~TA	TEAR OFF	Default: +000
^MN	MEDIA TYPE	Default: GAP/NOTCH
	SENSOR SELECT	Default: AUTO (^MNA - Auto-Detect)
^MT	PRINT METHOD	THERMAL-TRANS or DIRECT-THERMAL
^PW	PRINT WIDTH	Default: 448 (dots for 203 dpi) or 640(dots for 300 dpi)
^LL	LABEL LENGTH	Default: 1225 (dots) (dynamically updated while printing)
^ML	MAXIMUM LENGTH	Default: 39.0IN 989MM
–	USB COMM.	Connection Status: Connected / Not Connected
^SCa	BAUD	Default: 9600
^SC,b	DATA BITS	Default: 8 BITS
^SC,,c	PARITY	Default: NONE
^SC,,,,e	HOST HANDSHAKE	Default: AUTO
^SC,,,,,f	PROTOCOL	Default: NONE
— SGD —**	COMMUNICATIONS	Default: NORMAL MODE
	SER COMM. MODE	Default: AUTO
^CT / ~CT	CONTROL CHAR	Default: <~> 7EH
^CC / ~CC	COMMAND CHAR	Default: <^> 5EH
^CD / ~CD	DELIM./CHAR	Default: <, > 2CH
^SZ	ZPL MODE	Default: ZPL II
— SGD —**	COMMAND OVERRIDE	Default: INACTIVE
^MFa	MEDIA POWER UP	Default: NO MOTION
^MF,b	HEAD CLOSE	Default: FEED
~JS	BACKFEED	Default: DEFAULT
^LT	LABEL TOP	Default: +000
^LS	LEFT POSITION	Default: +0000
~JD / ~JE	HEXDUMP	Default: NO (~JE)
	REPRINT MODE	Default: DISABLED

From this point in the Configuration Receipt listing, the printout has sensor settings and values displayed to troubleshoot sensor and media operations. These are typically used by Zebra Tech Support to diagnose printer problems.

** - Not supported with a ZPL command, uses the Set Get Do command in the ZPL manual. See `device.command_override.xxxxx` in the ZPL Programmer's manual.

The configuration settings listed here resume after the **TAKE LABEL** sensor value. These listings contain printer features seldom changed from default or provide status information.

ZPL Configuration

Command	Listing Name	Description
^MP	MODES ENABLED	Default: CWF (See ^MP Command)
	MODES DISABLED	Default: (nothing set)
^JM	RESOLUTION	Default: 448 8/mm FULL (203 dpi) 640 8/mm FULL (300 dpi)
—	FIRMWARE	Lists ZPL Firmware Version
—	XML SCHEMA	1.3
—	HARDWARE ID	Lists Firmware Boot-block Version
	LINK-OS VERSION	
—	CONFIGURATION	CUSTOMIZED (after first use)
—	RAM	2104k..... R:
—	ONBOARD FLASH	6144k.....E:
^MU	FORMAT CONVERT	NONE
	RTC DATE	Date Displayed
	RTC TIME	Time Displayed
^JI / ~JI	ZBI	DISABLED (Requires key to enable)
	ZBI VERSION	2.1 (Displayed if installed)
	ZBI STATUS	READY
^JH ^MA ~RO	LAST CLEANED	X,XXX IN
	HEAD USAGE	X,XXX IN
	TOTAL USAGE	X,XXX IN
	RESET CNTR1	X,XXX IN
	RESET CNTR2	X,XXX IN
	NONRESET CNTR0 (1, 2)	X,XXX IN
	RESET CNTR1	X,XXX IN
	RESET CNTR2	X,XXX IN
	SLOT1	EMPTY / SERIAL / WIRED
	MASS STORAGE COUNT	0
	HID COUNT	0
	USB HOST LOCK OUT	OFF /ON
—	SERIAL NUMBER	XXXXXXXXXXXX
^JH	EARLY WARNING	MAINT. OFF

The printer has the ability to set a command or a group of commands once for all receipts (or labels) that follow. Those settings will remain in effect until they are changed by subsequent commands, the printer is reset, or you restore factory defaults.

Printer Memory Management and Related Status Reports

To help you manage printer resources, the printer supports a variety of format commands to manage memory, transfer objects (between memory areas, import and export), object naming, and provide various printer operating status reports. They are very similar to the old DOS commands like DIR (directory listing) and DEL (delete file). The most common reports are also part of the Zebra Setup Utility and ZebraDesigner™ Windows driver.

It is recommended that a single command be processed within this type of format (form). A single command is easily reused as a maintenance and development tool.

^XA — Start Format Command

A Single Format Command is recommended for purposes of reuse

^XZ — End Format Command

Many of the commands that transfer objects, manage and report on memory are control (~) commands. They do not need to be within a format (form). They will be processed immediately upon receipt by the printer whether in a format (form) or not.

ZPL Programming for Memory Management

ZPL has various printer memory locations that are used to run the printer, assemble the print image, store formats (forms), graphics, fonts and configuration settings.

- ZPL treats Formats (Forms), Fonts, and Graphics like files; and memory locations like disk drives in the DOS operating system environment:
 - Memory Object Naming: Up to sixteen (16) alphanumeric characters followed by a three (3) alphanumeric character file extension, for example:
123456789ABCDEF.TTF
Legacy ZPL printers with V60.13 firmware and earlier can only use the 8.3 file name format versus today's 16.3 file name format.
- Allows moving objects between memory locations and deleting objects.
- Supports DOS directory style file list reports as printouts or status to the host.
- Allows use of 'wild cards' (*) in file access

ZPL Configuration

Command	Name	Description
^WD	Print Directory Label	Prints a list of objects and resident barcodes and fonts in all addressable memory locations
~WC	Print Configuration Label	Prints a configuration Status Receipt (Label) Same as FEED Button mode one flash routine
^ID	Object Delete	Deletes objects from printer memory
^TO	Transfer Object	Used to copy an object or group of objects from one memory area to another.
^CM	Change Memory Letter Designation	Reassigns a letter designation to a printer memory area.
^JB	Initialize Flash memory	Similar to formatting a disk - erases all objects from the specified memory locations B: or E:.
~JB	Reset Optional Memory	Similar to formatting a disk - erases all objects from the B: memory (factory option).
~DY	Download Objects	Downloads and installs wide variety of printer usable programming objects: fonts (OpenType and TrueType), graphics, and other object data types. Recommendation: Use ZebraNet™ Bridge for downloading graphics and fonts in the printer.
~DG	Download Graphic	Downloads an ASCII Hex representation of a graphic image. This is used by ZebraDesigner™ (label creation application) for graphics.
^FL	Font Linking	Appends secondary TrueType font or fonts to the primary TrueType font to add glyphs (characters).
^LF	List Font Links	Prints a list of the linked fonts
^CW	Font Identifier	Assigns a single alphanumeric character as an alias to a font stored in memory.



Important • Some factory installed ZPL fonts in your printer cannot be copied, cloned or restored to your printer by reloading or updating firmware. If these license restricted ZPL fonts are removed by an explicit ZPL object delete command, they must be repurchased and reinstalled via a font activation and installation utility. EPL fonts do not have this restriction.