



S4M™

Industrial/Commercial Printer

Maintenance Manual

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About This Document



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Who Should Use This Document

This Maintenance Manual is intended for use by system technicians and repair personnel.

How This Document Is Organized

The Maintenance Manual is set up as follows:

Section	Description
<i>System Description on page 1</i>	This section provides an overview of the printer. Included are specifications of the printer and a brief explanation of each component and its function.
<i>Operations on page 31</i>	This section assists the technician with “out of the box” installation, initial setup, and printer operation.
<i>Troubleshooting on page 83</i>	This section provides information about LCD, print quality, communications, and other errors that you might need to troubleshoot. The tables provide symptoms, diagnoses of probable causes, and recommended actions that should result in proper printer operation. Working with these tables, the technician can diagnose printer faults and determine the needed repair.
<i>Preventive and Corrective Maintenance on page 105</i>	This section provides various levels of printer maintenance required for optimum performance. This section also provides information on cleaning and general maintenance, replacement of major assemblies, and mechanical adjustments.
<i>Maintenance and Drawings on page 313</i>	This section illustrates parts and assemblies common to the S4M and gives their maintenance part numbers.

Contacts

You can contact Zebra Technologies Corporation at the following.

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Technical Support via the Internet is available 24 hours per day, 365 days per year. Go to <http://www.zebra.com/support>.

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Document Conventions

The following conventions are used throughout this document to convey certain information.

Alternate Color (online only) Cross-references contain hot links to other sections in this guide. If you are viewing this guide online in .pdf format, you can click the cross-reference ([blue text](#)) to jump directly to its location.

LCD Display Examples Text from a printer's Liquid Crystal Display (LCD) appears in `Bubbl edot I CG` font.

Command Line Examples Command line examples appear in `Courier New` font. For example, type `ZTools` to get to the Post-Install scripts in the `bin` directory.

Files and Directories File names and directories appear in `Courier New` font. For example, the `Zebra<version number>.tar` file and the `/root` directory.

Icons Used



Caution • Warns you of the potential for electrostatic discharge.



Caution • Warns you of a potential electric shock situation.



Caution • Warns you of a situation where excessive heat could cause a burn.



Caution • Advises you that failure to take or avoid a specific action could result in physical harm to you.

Caution • (No icon) Advises you that failure to take or avoid a specific action could result in physical harm to the hardware.



Important • Advises you of information that is essential to complete a task.



Note • Indicates neutral or positive information that emphasizes or supplements important points of the main text.



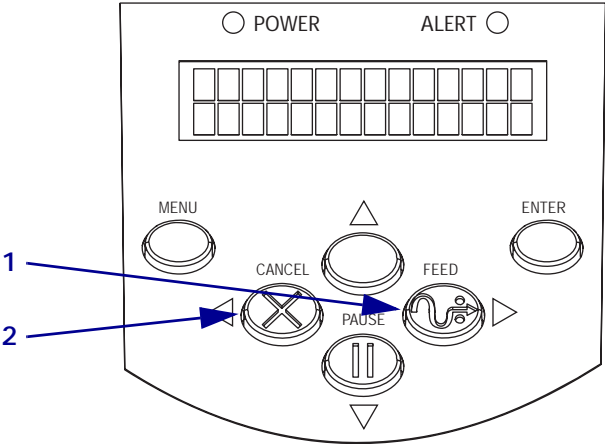
Example • Provides an example, often a scenario, to better clarify a section of text.



Tools • Tells you what tools you need to complete a given task.

Illustration Callouts Callouts are used when an illustration contains information that needs to be labeled and described. A table that contains the labels and descriptions follows the graphic. [Figure 1](#) provides an example.

Figure 1 • Sample Figure with Callouts



1	FEED button
2	CANCEL button



Notes • _____



System Description

This section provides an overview of the printer. Included are specifications of the printer and a brief explanation of each component and its function.

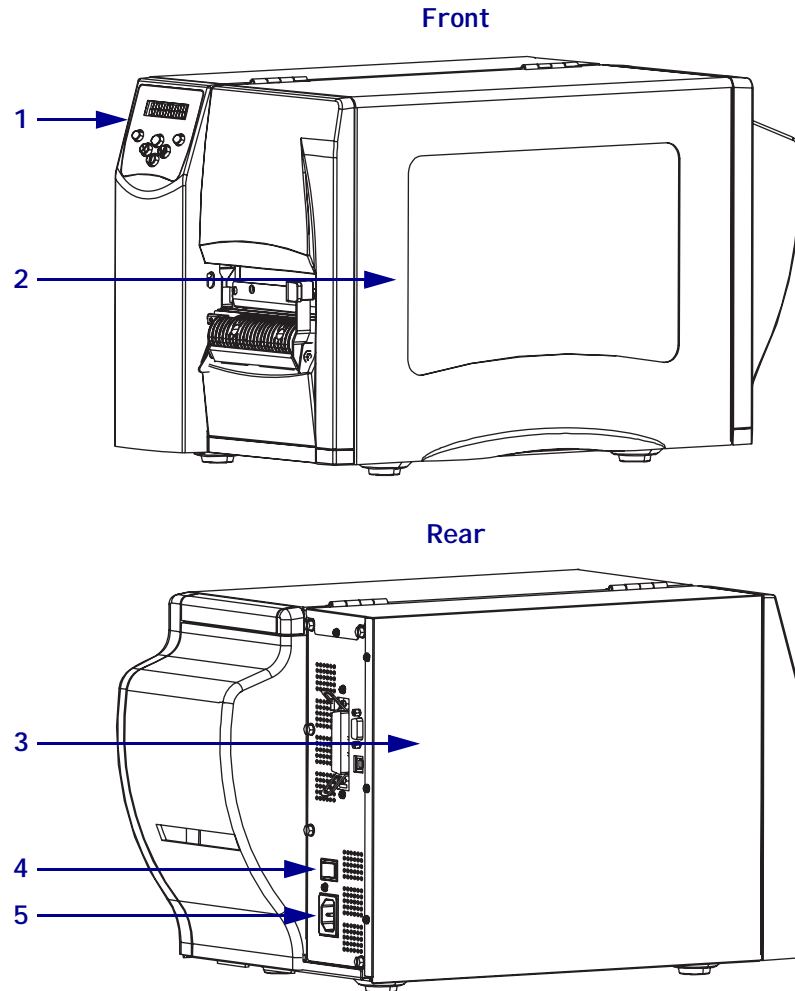
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External View

Figure 2 shows the outside of the printer.

Figure 2 • Exterior of Printer



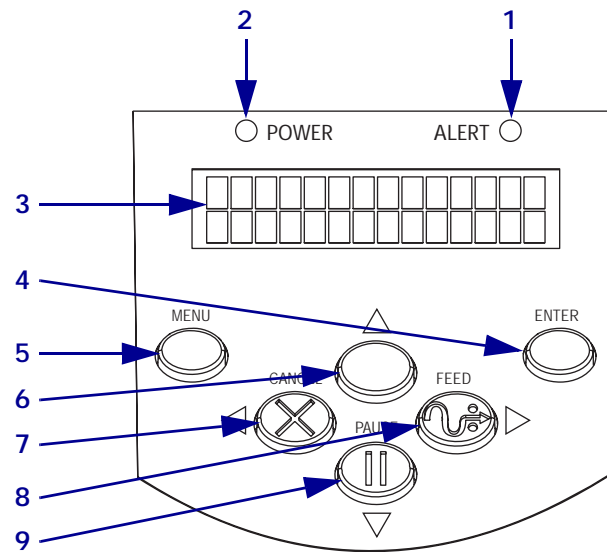
1	Control panel
2	Media door
3	Electronics cover
4	Power switch (● = Off, I = On)
5	AC power connector

Control Panel

All controls and indicators for the printer are located on the control panel (Figure 3).

- The **control panel Liquid Crystal Display (LCD)** shows the operating status and printer parameters.
- The **control panel buttons** are used to control the printer operations and to set parameters.
- The **control panel lights (LEDs)** show the printer's operating status or indicate which control panel buttons are active.

Figure 3 • Location of Control Panel Buttons and Lights



1	ALERT light
2	POWER light
3	LCD
4	ENTER button
5	MENU button
6	Up arrow button
7	CANCEL or Left Arrow button
8	FEED or Right Arrow button
9	PAUSE or Down Arrow button

Control Panel LCD

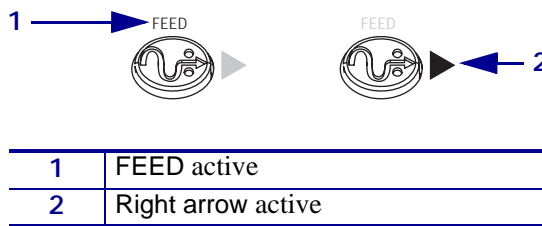
The control panel LCD functions differently in different printer modes.

- In **Operating mode**, the LCD displays the printer's status, sometimes in conjunction with a control panel light (see [Control Panel Lights on page 6](#)). When the printer is receiving data, the control panel shows the word **DATA** and cycles through a series of dots and spaces.
- In **Pause mode**, the printer stops printing temporarily.
- In **Setup mode**, you can use the control panel LCD to view or modify printer parameters (see [Control Panel LCD Display on page 54](#)).
- In **Error mode**, the LCD may display an alert or error message (see [LCD Error Messages on page 86](#)).

Control Panel Buttons










The printer has six basic control buttons on the control panel. Some of these buttons also function as navigational keys when the printer is in Setup mode. The current function of a particular button is determined by which light is illuminated next to it ([Figure 4](#)).

Figure 4 • Example of Active Control Panel Buttons



[Table 1](#) describes the function of each button. The MENU, PAUSE, and FEED buttons are active when the printer is in normal operating mode.




Table 1 • Control Panel Buttons

Button	Appearance	Function/Description
MENU		Enters and exits Setup mode.
ENTER		If a parameter or option in Setup mode needs to be selected, pressing ENTER selects the item. This button is active only when necessary.
CANCEL		CANCEL functions only in Pause mode. Pressing CANCEL once has these effects: <ul style="list-style-type: none"> • Cancels the label format that is currently printing. • If no label format is printing, the next one to be printed is canceled. • If no label formats are waiting to be printed, CANCEL is ignored. To clear the printer's entire label format memory, press and hold CANCEL.
FEED		Advances a blank label. <ul style="list-style-type: none"> • If the printer is idle or paused, the label is fed immediately. • If the printer is printing, the label is fed after printing finishes.
PAUSE		Stops and restarts the printing process or removes error messages and clears the LCD. When the printer is paused, the PAUSE light blinks. <ul style="list-style-type: none"> • If the printer is idle, it enters Pause mode immediately. • If the printer is printing, the label is completed before the printer pauses.
Left Arrow		When in Setup mode, scrolls the LCD to the previous parameter.
Right Arrow		When in Setup mode, scrolls the LCD to the next parameter.
Up Arrow		When in Setup mode, increases values or scrolls to the next option.
Down Arrow		When in Setup mode, decreases values or scrolls to the previous option.

Control Panel Lights

Table 2 describes lights on the control panel that indicate different printer conditions.

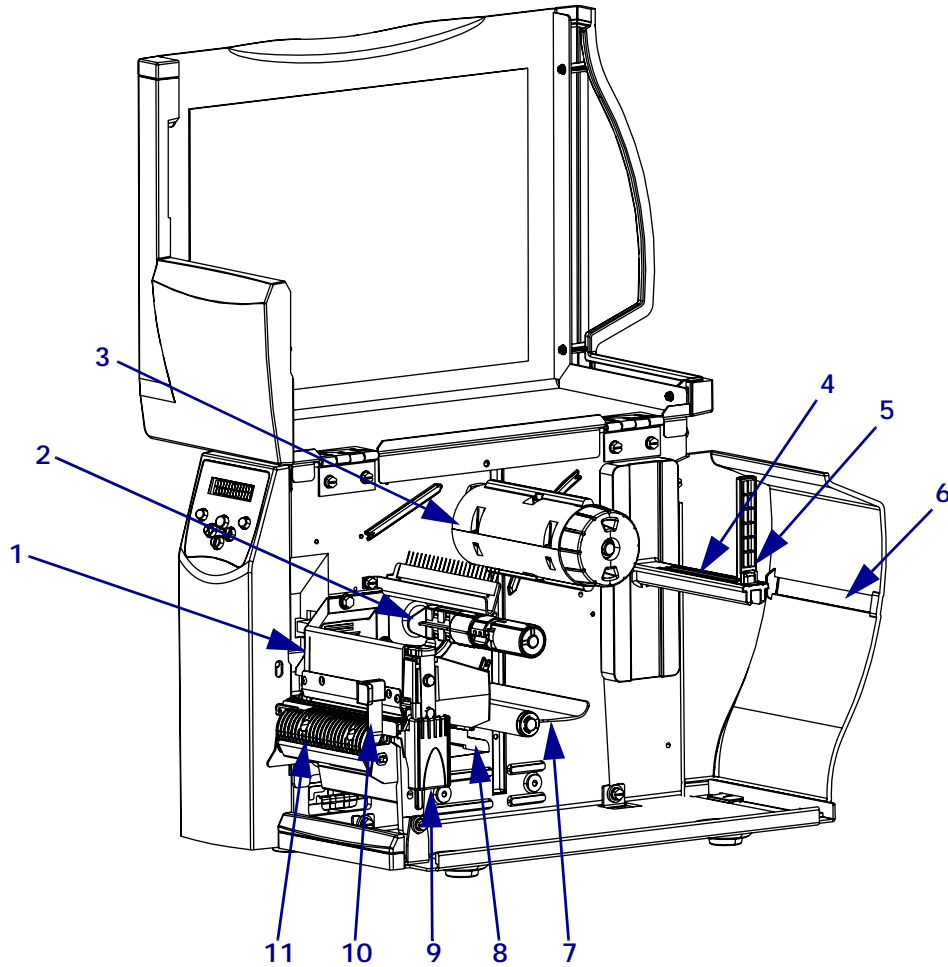
Table 2 • Control Panel Lights

Light	Appearance	Function/Description
POWER	● POWER	Indicates that the printer is on.
ALERT	ALERT ●	In an error or alert situation, the ALERT light operates as follows: <ul style="list-style-type: none"> • Remains on (solid) when the printer requires operator attention, such as when the print mechanism is open. • Flashes when the ribbon or media is out.
PAUSE (part of the PAUSE button)	PAUSE 	Flashes when the printer is in Pause mode unless the printer enters Setup mode and the down arrow becomes active.
FEED (part of the FEED button)	FEED 	On during normal printer operation, indicating that the printer can feed a blank label.
CANCEL (part of the CANCEL button)	CANCEL 	On when canceling a label format is a valid option.

Printer Media Compartment

Figure 5 shows a simplified view of the media compartment of your printer. Depending on installed options, your printer may look slightly different.

Figure 5 • Media Compartment



1	Printhead assembly
2	Ribbon supply spindle*
3	Ribbon take-up spindle*
4	Media supply hanger
5	Media supply guide
6	Fanfold media slot
7	Dancer assembly
8	Media guide
9	Printhead release latch
10	Peel release lever**
11	Peel assembly**

* Present only on printers that have the Thermal Transfer option installed.

** Present only on printers that have the Peel option installed.

Printer Language Modes

Depending on how your printer was ordered, it came from the factory with firmware that operates in or allows you to use certain commands for one of the following printer languages:

- Zebra Programming Language (ZPL)
- Eltron Programming Language (EPL)
- Datamax Programming Language (APL-D)
- Intermec Printer Language (APL-I)

Firmware Downloads

You may download S4M firmware to the printer at any time to change from one printer language to another. For the latest firmware versions and instructions for downloading them, go to <http://www.zebra.com/firmware>.



Note • When the printer changes from one printer language to another, error messages may appear on the LCD, and some control panel lights may activate in error mode. You may ignore these error messages and lights. When the firmware download is complete, reboot the printer and load printer defaults to return the printer to Operating mode.

Additional Printer Language Information

The following manuals contain specific information about the different printer language modes. Copies of these manuals are on the CD that came with your printer and at <http://www.zebra.com/manuals>.

- ZPL II Programming Guide, volumes 1 and 2
- EPL2 Programming Guide
- APL-D Reference Guide
- APL-I Reference Guide

Before You Begin

Review this checklist, and resolve any issues before you set up or use your printer.

- ❑ **Unpack and Inspect the Printer** Have you unpacked the printer and inspected it for damage? If you have not, see [Unpack and Inspect the Printer on page 10](#).
- ❑ **Select a Site** Have you selected an appropriate location for the printer? If you have not, see [Select a Site for the Printer on page 11](#).
- ❑ **Attach a Power Cord** Do you have the correct power cord for your printer? If you are unsure, see [Power Cord Specifications on page 12](#). To attach the power cord and connect the printer to a power source, see [Connect the Printer to a Power Source on page 12](#).
- ❑ **Connect to a Data Source** Have you determined how the printer will connect to a data source (usually a computer)? For more information, see [Select a Communication Interface on page 14](#).
- ❑ **Select Media** Do you have the correct media for your application? If you are unsure, see [Types of Media on page 18](#).
- ❑ **Select Ribbon** Do you need to use ribbon, and is the appropriate ribbon available, if needed? If you are unsure, see [Ribbon Overview on page 20](#).

Handling the Printer

This section describes how to handle your printer.

Unpack and Inspect the Printer

When you receive the printer, immediately unpack it and inspect for shipping damage.

- Save all packing materials.
- Check all exterior surfaces for damage.
- Raise the media door, and inspect the media compartment for damage to components.

If you discover shipping damage upon inspection:

- Immediately notify the shipping company and file a damage report.
- Keep all packaging material for shipping company inspection.
- Notify.



Important • Zebra Technologies Corporation is not responsible for any damage incurred during the shipment of the equipment and will not repair this damage under warranty.

Store the Printer

If you are not placing the printer into immediate operation, repackage it using the original packing materials. You may store the printer under the following conditions:

- Temperature: –40°F to 140°F (–40°C to 60°C)
- Relative humidity: 5% to 85%, non-condensing

Ship the Printer

If you must ship the printer:

- Remove any media or ribbon from the printer to avoid damaging the printer.
- Carefully pack the printer into the original container or a suitable alternate container to avoid damage during transit. A shipping container can be purchased from Zebra if the original packaging has been lost or destroyed.

Recycle the Printer



This printer is recyclable. If you must dispose of the printer, do not do so in unsorted municipal waste. Please recycle according to your local standards. For more information, see <http://www.zebra.com/recycle>.

Select a Site for the Printer

Consider the following when selecting an appropriate location for your printer.

Select a Surface

Select a solid, level surface of sufficient size and strength to accommodate the printer and other equipment (such as a computer), if necessary. The choices include a table, countertop, desk, or cart.

Provide Proper Operating Conditions

This printer is designed to function in a wide range of environmental and electrical conditions, including a warehouse or factory floor. For more information on the required conditions, see [General Specifications on page 22](#).

[Table 3](#) shows the temperature and relative humidity requirements for the printer when it is operating.

Table 3 • Operating Temperature and Humidity

Mode	Temperature	Relative Humidity
Thermal Transfer	40° to 104°F (5° to 40°C)	20 to 85% non-condensing
Direct Thermal	32° to 104°F (0° to 40°C)	20 to 85% non-condensing

Allow Proper Space

The printer should have enough space around it for you to be able to open the media door. To allow for proper ventilation and cooling, leave open space on all sides of the printer.



Caution • Do not place any padding or cushioning material behind or under the printer because this restricts air flow and could cause the printer to overheat.

Provide a Data Source

If the printer will be located away from the data source, the selected site must provide the appropriate connections to that data source. For more information on the types of communication interfaces, see [Select a Communication Interface on page 14](#).

Provide a Power Source

Place the printer within a short distance of a power outlet that is easily accessible.

Connect the Printer to a Power Source

The AC power cord must have a three-prong female connector on one end that plugs into the mating AC power connector at the rear of the printer. If a power cable was not included with your printer, refer to *Power Cord Specifications* on page 12.

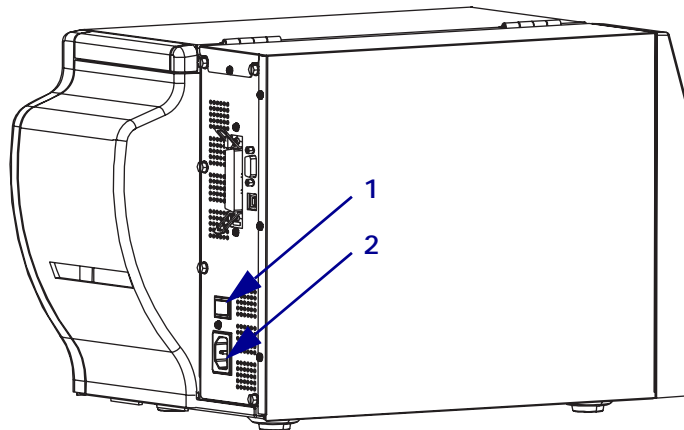


Caution • For personnel and equipment safety, always use an approved three-conductor power cord specific to the region or country intended for installation. This cord must use an IEC 320 female connector and the appropriate region-specific three-conductor grounded plug configuration.

To connect the printer to a power source, complete these steps:

1. Turn the printer power switch to the Off (O) position.
2. Refer to [Figure 6](#). Plug the power cord into the AC power connector on the rear of the printer.
3. Plug the other end of the power cord into a power outlet near the printer.

Figure 6 • Power Connection



1	Power switch
2	AC power connector

Power Cord Specifications

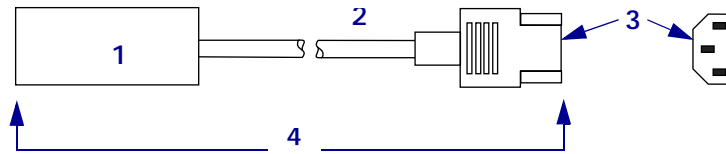


Caution • For personnel and equipment safety, always use an approved three-conductor power cord specific to the region or country intended for installation. This cord must use an IEC 320 female connector and the appropriate region-specific, three-conductor grounded plug configuration.

Depending on how your printer was ordered, a power cord may or may not be included. If one is not included or if the one included is not suitable for your requirements, refer to the following guidelines:

- The overall cord length must be less than 9.8 ft. (3.0 m).
- The cord must be rated for at least 10 A, 250 V.
- The chassis ground (earth) **must** be connected to ensure safety and reduce electromagnetic interference. The third wire in the power cord grounds the connection (Figure 7).

Figure 7 • Power Cord Specifications



1	AC power plug for your country—This should bear the certification mark of at least one of the known international safety organizations (Figure 8).
2	3-conductor HAR cable or other cable approved for your country.
3	IEC 320 connector—This should bear the certification mark of at least one of the known international safety organizations (Figure 8).
4	Length \leq 9.8 ft. (3 m). Rating 10 Amp, 250 VAC.

Figure 8 • International Safety Organization Certifications



Select a Communication Interface

The way that you connect your printer to a data source depends on the communication options installed in the printer. You may use any available connection to send commands and label formats from a host computer to the printer.

Caution • Connecting a data communications cable while the power is ON may damage the printer.

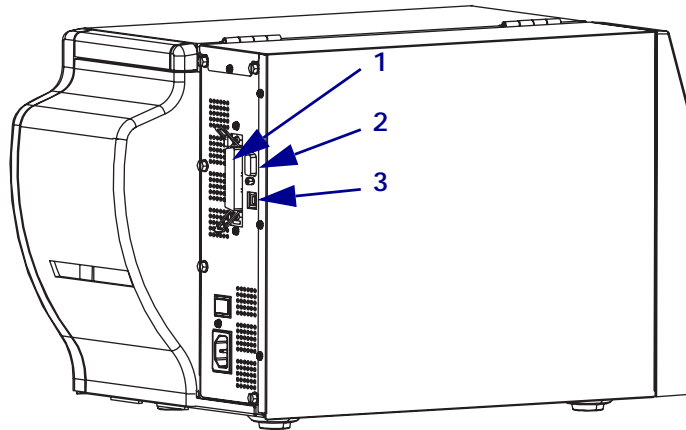


Note • You must supply all interface cables for your application. Refer to [Data Cable Requirements](#) on page 17 for specific cable requirements.

Connector Locations

Refer to [Figure 9](#). The printer comes standard with an Electronics Industries Association (EIA) RS-232 serial interface (DB-9 connector), an IEEE 1284 bidirectional parallel interface (unless replaced with an optional print server port), and a USB 1.1 port. You may use any of these interface methods to send commands and label formats from a host to the printer.

Figure 9 • Cable Connections



1	Parallel interface connector (not available on units that have an optional print server port)
2	DB-9 serial interface connector
3	USB 1.1 connector

Types of Connections

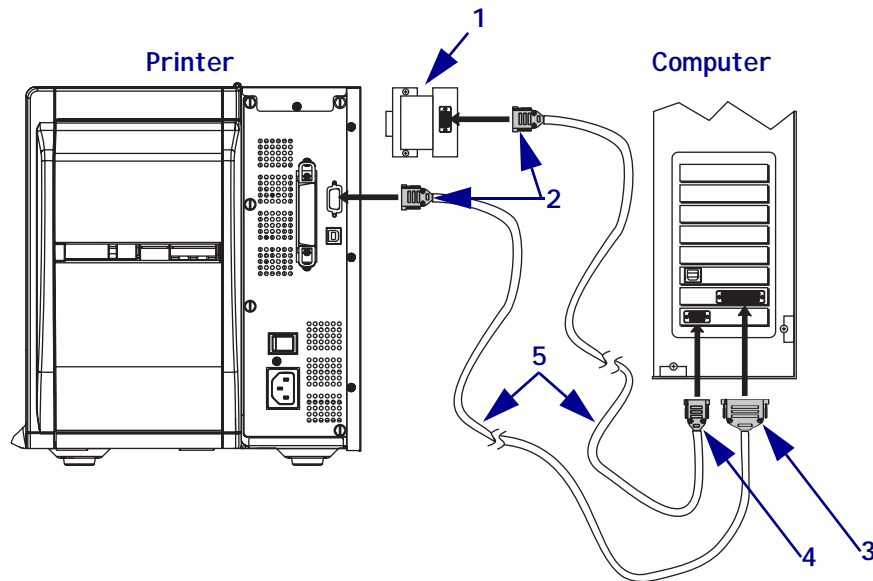
The method of connecting the printer to a data source depends on the communication options installed in the printer and the host. This section provides basic information about common interfaces.

When communicating via the serial data port (RS-232), the baud rate, number of data and stop bits, the parity, and the XON/XOFF or DTR control should be set to match those of the host computer. See [Password Level 3 Parameters on page 59](#) to configure these parameters. When communicating via the parallel port or the USB port, the previously mentioned parameters do not apply.

RS-232 Serial A serial communication method consisting of data and control signals; available as a standard feature on most PCs and other hosts. See [Serial Data Port on page 360](#).

- *Advantages:* Cables and connectors are readily available from computer equipment stores and suppliers; easy to connect; two-way communication between the host and the printer.
- *Disadvantages:* Slower than the parallel connection; limited to 50 feet (15.24 m) of cable.

Figure 10 • Communicating Using a Serial Data Port

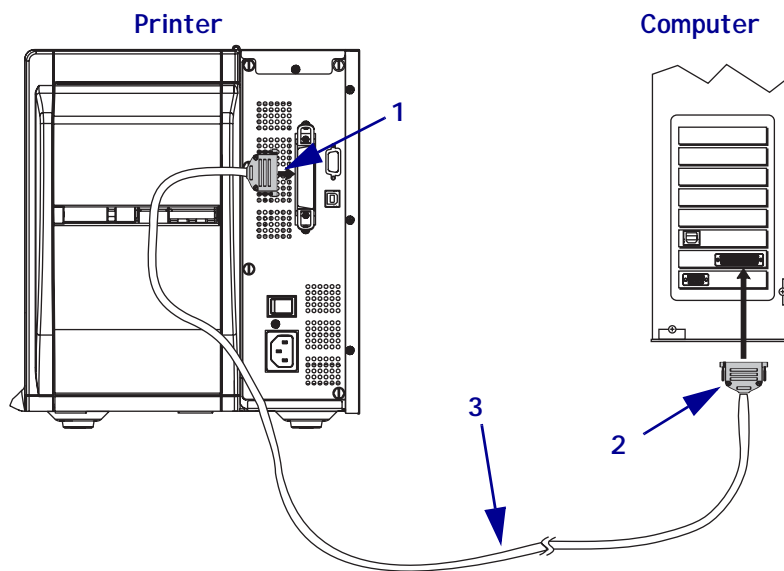


1	Null-modem adaptor (if using a standard modem cable)
2	9-pin male connector, connected to printer or null-modem adaptor
3	25-pin female connector, connected to computer
4	9-pin female connector, connected to computer
5	Maximum cable length = 50 ft. (15 m)

IEEE 1284 Bidirectional Parallel A common communication method available on most PCs and other hosts. See *Parallel Data Port on page 364*.

- *Advantages:* Fastest of the communication interfaces; cables and connectors are readily available from computer equipment stores and suppliers; two-way communication between the host and the printer; easy to connect.
- *Disadvantages:* Shorter recommended cable length of 6 feet (1.83 m) with a maximum of length 10 ft (3 m); many computers are equipped with only one parallel port, allowing only one IEEE 1284 bidirectional device to be connected at a time.

Figure 11 • Communicating Using a Parallel Port

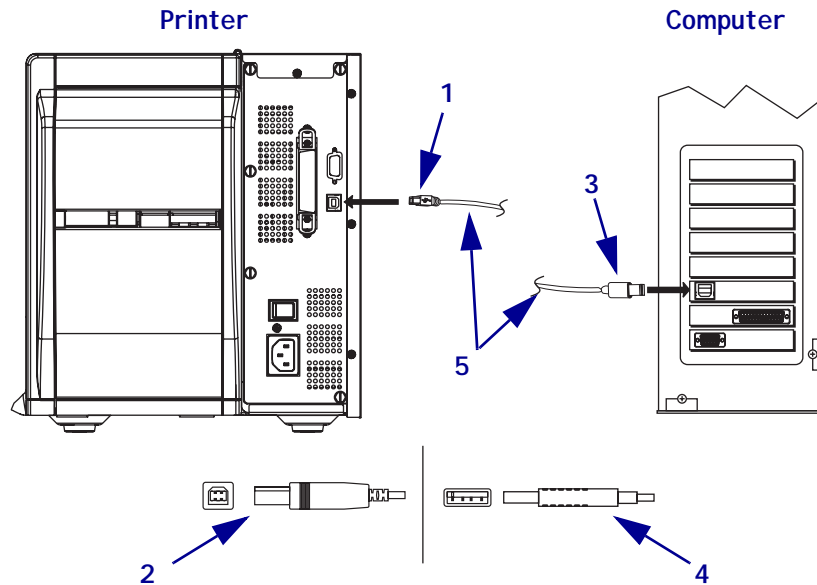


1	36-pin male connector, attaching to printer
2	25-pin male connector, attaching to computer
3	Maximum cable length = 10 ft. (3 m)

USB 1.1 Port Communicating using the USB port (see *Figure 12*) does not require special settings. See *USB 1.1 Port on page 366*.

- *Advantages:* Many computers are equipped with more than one USB port, allowing multiple USB devices to be connected at one time; cables and connectors are readily available from computer equipment stores and suppliers; two-way communication between the host and the printer; easy to connect.
- *Disadvantages:* Cable length limited to 16.4 ft. (5 m).

Figure 12 • Communicating Using a USB Port



1	“B” male connector, attaching to printer
2	“B” male connector, detail
3	“A” male connector, attaching to computer
4	“A” male connector, detail
5	Maximum cable length = 16.4 ft. (5 m)

Optional Print Servers Ethernet-based print servers also are available to connect your printer to a data source. Both wired and wireless options are available.

- With the ZebraNet Wireless Print Server board installed, a wireless PCMCIA card can be used to communicate with a network. For more information on this option, see the *ZebraNet Wireless Print Server User Guide*.
- ZebraNet 10/100 Print Server (10/100 PS). For more information on 10/100 PS, see the *ZebraNet 10/100 Print Server User and Reference Guide*.

Data Cable Requirements

Data cables must be fully shielded and fitted with metal or metallized connector shells. Shielded cables and connectors are required to prevent radiation and reception of electrical noise.

To minimize electrical noise pickup in the cable:

- Keep data cables as short as possible.
- Do not bundle the data cables tightly with the power cords.
- Do not tie the data cables to power wire conduits.



Note • Zebra printers comply with FCC Rules and Regulations, Part 15 for Class B Equipment using fully shielded, 6.5 ft. (2 m) data cables. Use of unshielded cables may increase radiation above the Class B limits.

Types of Media

The printer can use various types of media (Table 4). Zebra strongly recommends the use of Zebra-brand supplies for continuous 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 ensure against premature printhead wear.

Table 4 • Types of Media

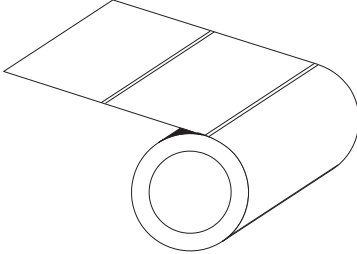
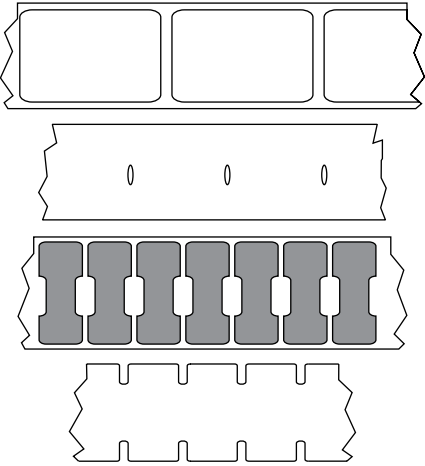
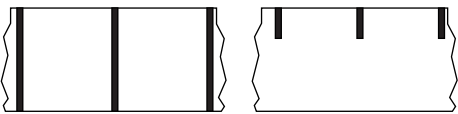
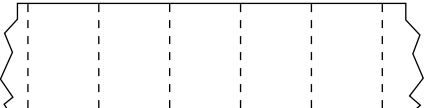
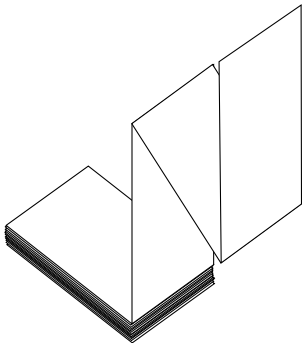
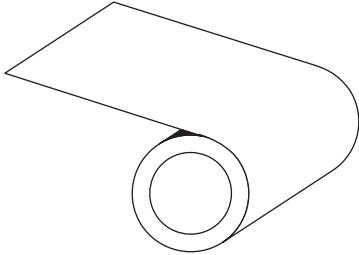
Media Type	How It Looks	Description
<p>Non-Continuous Roll Media</p>		<p>Roll media is wound on a core that can be 1 in. to 3 in. (25 to 76 mm) in diameter. Labels have adhesive backing that sticks them to a liner, and they are separated by gaps, holes, notches, or black marks. Tags are separated by perforations.</p> <p>Figure 13 • Non-Continuous Web Media</p>  <p>Figure 14 • Black Mark Media</p>  <p>Figure 15 • Tag Stock</p> 

Table 4 • Types of Media (Continued)

Media Type	How It Looks	Description
<p>Non-Continuous Fanfold Media</p>		<p>Fanfold media is folded in a zigzag pattern. Fanfold media can have the same label divisions as non-continuous roll media. The divisions would fall on or near the folds.</p>
<p>Continuous Roll Media</p>		<p>Continuous media is wound on a core and is without gaps, holes, notches, or black marks. This allows the image to be printed anywhere on the label. With continuous media, use the transmissive sensor so the printer can detect when the media runs out.</p>

Ribbon Overview



Note • This section applies only to printers that have the Thermal Transfer option installed.

Ribbon is a thin film that is coated on one side with wax, resin, or wax resin, which is transferred to the media during the thermal transfer process. The media determines whether you need to use ribbon and how wide the ribbon must be.

When ribbon is used, it must be as wide as or wider than the media being used. If the ribbon is narrower than the media, areas of the printhead are unprotected and subject to premature wear.

When to Use Ribbon

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 label scratch test, complete these steps:

1. Scratch the print surface of the media rapidly with your fingernail.
2. Did a black mark appear on the media?

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

Coated Side of Ribbon

Ribbon can be wound with the coated side on the inside or outside (Figure 16). This printer can only use ribbon that is coated on the outside. If you are unsure which side of a particular roll of ribbon is coated, perform an adhesive test or a ribbon scratch test to determine which side is coated.

Figure 16 • Ribbon Coated on Outside or Inside



Adhesive Test

If you have labels available, perform the adhesive test to determine which side of a ribbon is coated. This method works well for ribbon that is already installed.

To perform an adhesive test, complete these steps:

1. Peel a label from its liner.
2. Press a corner of the sticky side of the label to the outer surface of the roll of ribbon.
3. Peel the label off of the ribbon.
4. Observe the results. Did flakes or particles of ink from the ribbon adhere to the label?

If ink from the ribbon...	Then...
Adhered to the label	The ribbon is coated on the outer surface.
Did not adhere to the label	The ribbon is coated on the inner surface and cannot be used in this printer. To verify this, repeat the test on the other surface of the roll of ribbon.

Ribbon Scratch Test

Perform the ribbon scratch test when labels are unavailable.

To perform a ribbon scratch test, complete these steps:

1. Unroll a short length of ribbon.
2. Place the unrolled section of ribbon on a piece of paper with the outer surface of the ribbon in contact with the paper.
3. Scratch the inner surface of the unrolled ribbon with your fingernail.
4. Lift the ribbon from the paper.
5. Observe the results. Did the ribbon leave a mark on the paper?

If the ribbon...	Then...
Left a mark on the paper	The ribbon is coated on the outer surface.
Did not leave a mark on the paper	The ribbon is coated on the inner surface and cannot be used in this printer. To verify this, repeat the test on the other surface of the roll of ribbon.

General Specifications

General Specifications			
Height		11.6 in.	295 mm
Width		10.7 in.	272 mm
Depth		18.8 in.	477 mm
Weight (without options)		27.2 lbs.	12.4 kg
Electrical		90–264 VAC, 47–63 Hz, 4 Amps (300 W)	
Temperature	Operating	40° to 104°F	5° to 40°C
	Storage	–40° to 140°F	–40° to 60°C
Relative Humidity	Operating	20% to 85%, non-condensing	
	Storage	5% to 85%, non-condensing	
Communication Interface		<ul style="list-style-type: none"> • RS-232/CCITT V.24 serial data interface; 110 to 115000 baud, parity, bits/character, 7 or 8 data bit, and XON-XOFF, RTS/CTS or DTR/DSR handshake protocol required. 750mA at 5 V from pins 1 and 9. • USB 1.1 data interface • One of the following: <ul style="list-style-type: none"> • 8-bit parallel data interface; supports IEEE 1284 bidirectional parallel; nibble mode compliant. • 10/100 internal Ethernet • 802.11b wireless card support 	

Agency Approvals

Agency Approvals	<ul style="list-style-type: none"> • IEC60950-1 • EN55022: Class B • EN55024 • EN61000-3-2,-3-3
Product Markings	<ul style="list-style-type: none"> • cULus • CE Marking • FCC-B • ICES-003 • VCCI • C-Tick • NOM • CCC • GOST-R • S-Mark (Argentina) • MIC • BSMI

Printing Specifications

Printing Specifications			
Print resolution		203 dots/inch	8 dots/mm
		300 dots/inch	12 dots/mm
Dot size (width x length)	203 dpi	0.00492 in. x 0.00492 in.	0.125 mm x 0.125 mm
	300 dpi	0.0033 in. x 0.0039 in.	0.084 mm x 0.099 mm
Maximum print width	203 dpi	4.09 in.	104 mm
	300 dpi	4.1 in.	106 mm
Bar code modulus (X) dimension	203 dots/inch	5 mil to 50 mil	
	300 dots/inch	3.3 mil to 33 mil	
Programmable constant print speeds	203 dots/inch and 300 dots/inch	Per second:	Per second:
		2 in.	51 mm
	3 in.	76 mm	
	4 in.	102 mm	
	5 in.	127 mm	
	6 in.	152 mm	

Media Specifications

Media Specifications			
Label length	Minimum (Tear-Off)	0.7 in.	17.8 mm
	Minimum (Peel-Off)	0.5 in.	12.7 mm
	Maximum	39 in.	991 mm
Label width	Minimum	0.75 in.	19 mm
	Maximum	4.5 in.	114 mm
Total thickness (includes liner, if any)	Minimum	0.003 in.	0.076 mm
	Maximum	0.010 in.	0.25 mm
Maximum roll outside diameter	3-in. (76 mm) core	8 in.	203 mm
	1-in. (25 mm) core	6 in.	152 mm
Inter-label gap	Minimum	0.079 in.	2 mm
	Preferred	0.118 in.	3 mm
	Maximum	0.157 in.	4 mm
Ticket/tag notch size (width x length)		0.25 in. × 0.12 in.	6 mm × 3 mm
Hole diameter		0.125 in.	3 mm
Notch or hole position (Centered from inner media edge)	Minimum	0.15 in.	3.8 mm
	Maximum	2.25 in.	57 mm
Density, in Optical Density Units (ODU) (black mark)		> 1.0 ODU	
Maximum media density		≤ 0.5 ODU	
Transmissive Sensor	Fixed	7/16 in. (11 mm) from inside edge	

Ribbon Specifications



Note • This section applies only to printers that have the Thermal Transfer option installed.

Ribbon must be wound with the coated side out.

Ribbon Specifications			
Ribbon width (Zebra recommends using ribbon at least as wide as the media to protect the printhead from wear.)	Minimum	>2 in.*	51 mm*
	Maximum	4.3 in.	109 mm
Standard lengths	2:1 media to ribbon roll ratio	984 ft.	300 m
	3:1 media to ribbon roll ratio	1476 ft.	450 m
Ribbon core inside diameter		1 in.	25.4 mm

* Depending on your application, you may be able to use ribbon narrower than 2 in. (51 mm), as long as the ribbon is wider than the media being used. To use a narrower ribbon, test the ribbon's performance with your media to assure that you get the desired results.

Zebra Programming Language (ZPL II)

<ul style="list-style-type: none"> • Communicates in printable ASCII characters • Controlled via mainframe, mini, or PC • Downloadable graphics, scalable and bitmap fonts, label templates and formats • Object copying between memory areas (RAM and PC memory card) • Adjustable print cache • Data compression • Automatic memory allocation for “format while printing” 	<ul style="list-style-type: none"> • Status messages to host upon request • Format inversion (white on black) • Mirror image printing • Four-position field rotation (normal/0°, 90°, 180°, and 270°) • Slew command • Programmable label quantities with print and pause control • Automatic serialization of fields • User-programmable password
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Bar Codes

<p>Bar code modulus “X” dimensions</p> <ul style="list-style-type: none"> • Picket fence (non-rotated) orientation: <ul style="list-style-type: none"> • 203 dpi = 0.0049 in. mil to 0.049 in. • 300 dpi = 0.0033 in. mil to 0.033 in. • Ladder (rotated) orientation: <ul style="list-style-type: none"> • 203 dpi = 0.0049 in. mil to 0.049 in. • 300 dpi = 0.0039 in. mil to 0.039 in. 	<p>Linear bar codes</p> <ul style="list-style-type: none"> • Code 11 • Code 39 • Code 93 • Code 128 with subsets A/B C and UCC Case Codes • ISBT-128 • UPC-A • UPC-E • EAN-8 • EAN-13 • UPC and EAN 2 or 5 digit extensions • Plessey • Postnet • Standard 2 of 5 • Industrial 2 of 5 • Interleaved 2 of 5 • LOGMARS • MSI • Codabar • RSS-14
<p>Two-dimensional bar codes</p> <ul style="list-style-type: none"> • Code 49 • Maxi Code • PDF-417 • QR Code • Codablock • DataMatrix • Micro-PDF417 	
<p>Bar code ratios</p> <ul style="list-style-type: none"> • 2:1 • 7:3 • 5:2 • 3:1 	

Standard Font Matrices

Bit mapped fonts A, B, D, E, F, G, H, and GS are expandable up to 10 times, height and width independent. However, fonts E and H (OCR-B and OCR-A) are not in spec when expanded.

The Scalable Smooth Font (CG Triumvirate Bold Condensed) is expandable on a dot-by-dot basis, height and width independent, while maintaining smooth edges, to a maximum of 1500 × 1500 dots.

IBM Code Page 850 International characters are available in fonts A, B, D, E, F, G, and Ø through software control.

Table 5 • Font Matrix for 8 dot/mm (203 dpi) Printheads

Font	Matrix					Type*	Character Size						
	Height	Width	Baseline Dots	Inter-Character Gap	Cell Width		Font Matrix	Inches			Millimeters		
								Height	Width	Char/Inch	Height	Width	Char/mm
A	9	5	7	1	6	U-L-D	0.044	0.030	33.87	1.13	0.75	1.33	
B	11	7	11	2	9	U	0.054	0.044	22.58	1.38	1.13	0.89	
C,D	18	10	14	2	12	U-L-D	0.089	0.059	16.93	2.25	1.50	0.67	
E	28	15	23	5	20	OCR-B	0.138	0.098	10.16	3.50	2.50	0.40	
F	26	13	21	3	16	U-L-D	0.128	0.079	12.70	3.25	2.00	0.50	
G	60	40	48	8	48	U-L-D	0.295	0.236	4.23	7.50	6.00	0.17	
H	21	13	21	6	19	OCR-A	0.103	0.094	10.69	2.63	2.38	0.42	
GS	24	24	24	2	26	SYMBOL	0.118	0.128	7.82	3.00	3.25	0.31	
P	20	18	N/A	N/A	N/A	U-L-D	0.098	0.089	N/A	2.50	2.25	N/A	
Q	28	24	N/A	N/A	N/A	U-L-D	0.138	0.118	N/A	3.50	3.00	N/A	
R	35	31	N/A	N/A	N/A	U-L-D	0.172	0.153	N/A	4.38	3.88	N/A	
S	40	35	N/A	N/A	N/A	U-L-D	0.197	0.172	N/A	5.00	4.38	N/A	
T	48	42	N/A	N/A	N/A	U-L-D	0.236	0.207	N/A	6.00	5.25	N/A	
U	59	53	N/A	N/A	N/A	U-L-D	0.290	0.261	N/A	7.38	6.63	N/A	
V	80	71	N/A	N/A	N/A	U-L-D	0.394	0.349	N/A	10.00	8.88	N/A	
0	Default: 15 x 12					U-L-D	Scalable						

*U = Uppercase, L = Lowercase, D = Descenders

Table 6 • Font Matrix for 12 dot/mm (300 dpi) Printheads

Font	Matrix					Type*	Character Size					
	Height	Width	Baseline Dots	Inter-Character Gap	Cell Width	Font Matrix	Inches			Millimeters		
							Height	Width	Char/Inch	Height	Width	Char/mm
A	9	5	7	1	6	U-L-D	0.030	0.020	50.00	0.76	0.51	1.97
B	11	7	11	2	9	U	0.037	0.030	33.33	0.93	0.76	1.31
C, D	18	10	14	2	12	U-L-D	0.060	0.040	25.00	1.52	1.02	0.98
E	41	20	32	6	26	OCR-B	0.137	0.087	11.54	3.47	2.20	0.45
F	26	13	21	3	16	U-L-D	0.087	0.053	18.75	2.20	1.35	0.74
G	60	40	48	8	48	U-L-D	0.200	0.160	6.25	5.08	4.06	0.25
H	30	19	30	9	28	OCR-A	0.100	0.093	10.71	2.54	2.37	0.42
GS	24	24	24	2	26	Symbol	0.080	0.087	11.54	2.03	2.20	0.45
P	20	18	N/A	N/A	N/A	U-L-D	0.067	0.060	N/A	1.69	1.52	N/A
Q	28	24	N/A	N/A	N/A	U-L-D	0.093	0.080	N/A	2.37	2.03	N/A
R	35	31	N/A	N/A	N/A	U-L-D	0.117	0.103	N/A	2.96	2.62	N/A
S	40	35	N/A	N/A	N/A	U-L-D	0.133	0.117	N/A	3.39	2.96	N/A
T	48	42	N/A	N/A	N/A	U-L-D	0.160	0.140	N/A	4.06	3.56	N/A
U	59	53	N/A	N/A	N/A	U-L-D	0.197	0.177	N/A	5.00	4.49	N/A
V	80	71	N/A	N/A	N/A	U-L-D	0.267	0.237	N/A	6.77	6.01	N/A

*U = Uppercase, L = Lowercase, D = Descenders



Notes • _____



Operations

This section assists the technician with “out of the box” installation, initial setup, and printer operation.

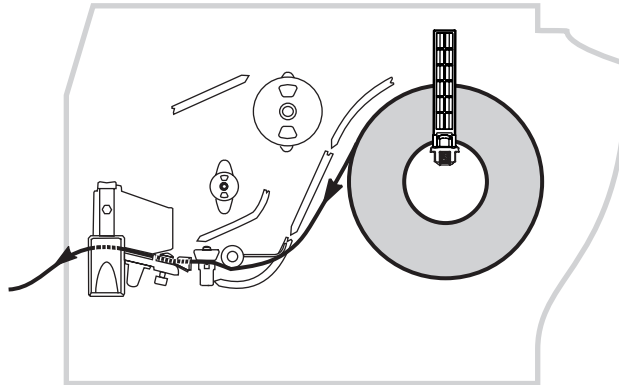
Contents

Load Media	32
Load Ribbon	36
Calibrate the Printer	41
Select or Adjust the Media Sensors	42
Adjust Printhead Pressure	44
Setup Mode	46
Password Protection of Parameters	47
Printing Configuration Labels	50
Select a Display Language	53
Control Panel LCD Display	54

Load Media

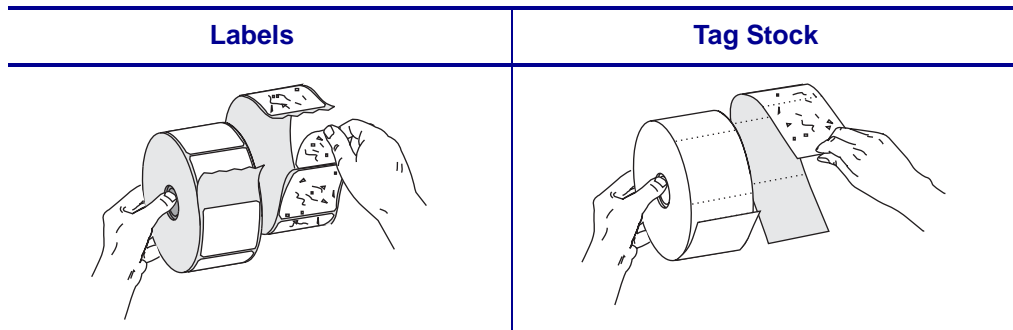
Use the instructions in this section to load roll media in Tear-Off mode (Figure 17). For instructions for loading fanfold media or for loading in different print modes, refer to the *User Guide*.

Figure 17 • Tear-Off Mode Media Path

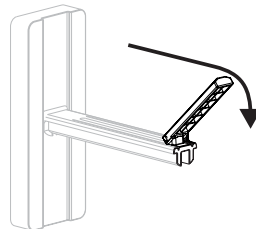


To Load Roll Media in Tear-Off Mode, complete these steps:

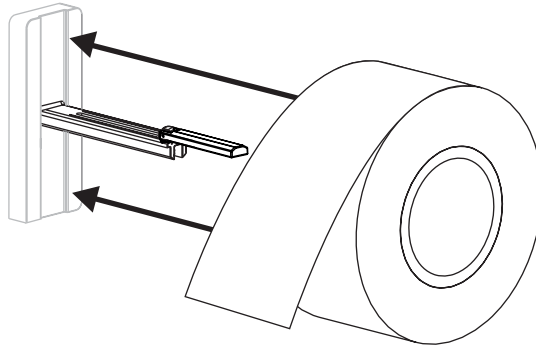
1. Remove and discard one full revolution of labels or tags and any liner.



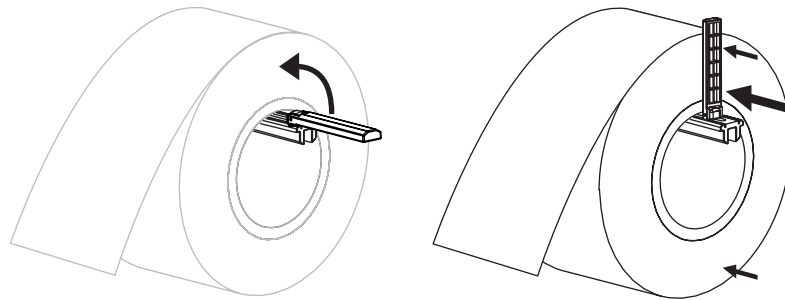
2. Flip down the media supply guide.



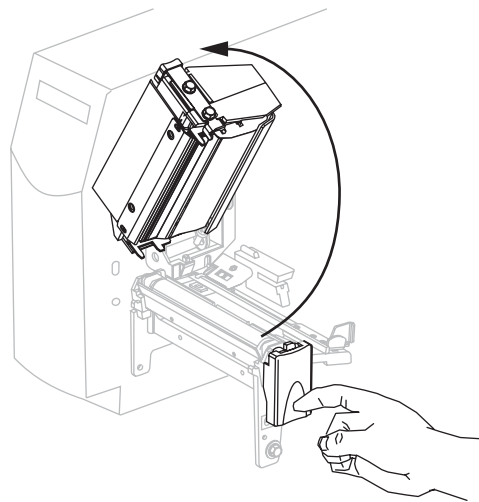
- Place the roll of media on the media supply hanger. Push the roll as far back as it will go.



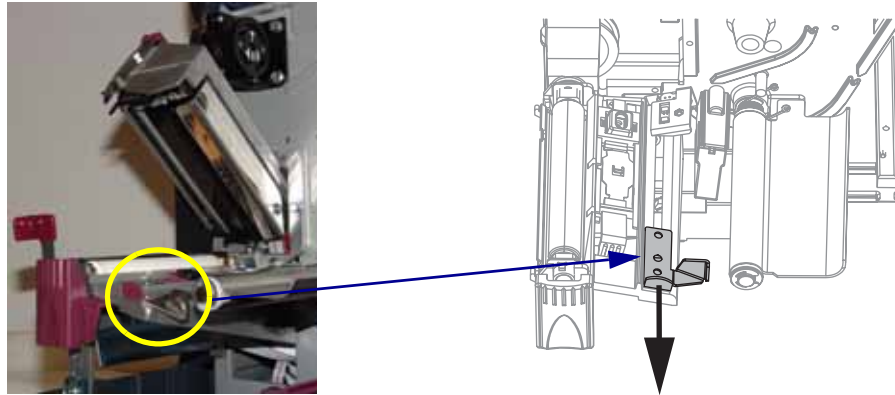
- Flip up the media supply guide, and then slide it in until it touches, but does not restrict, the edge of the roll.



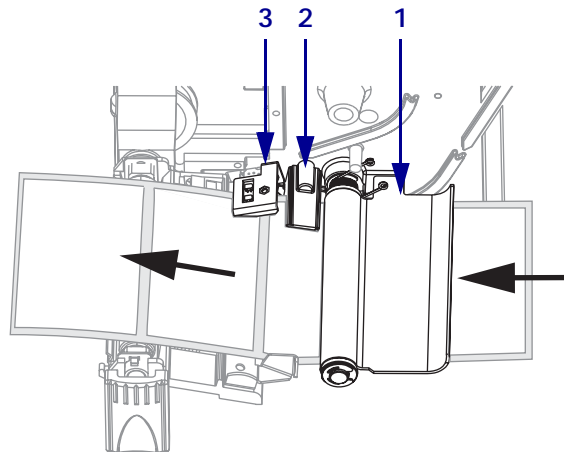
- Press the printhead release latch to open the printhead assembly. Lift the printhead until it latches open.



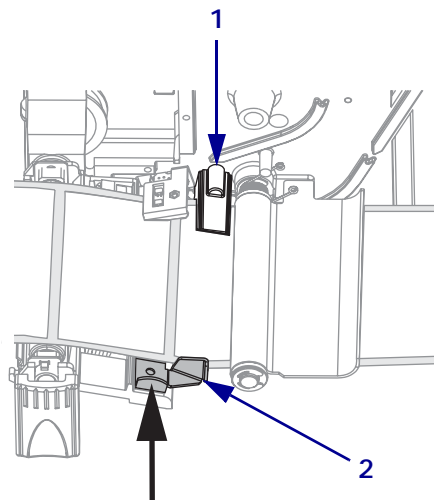
6. Slide out the media guide.



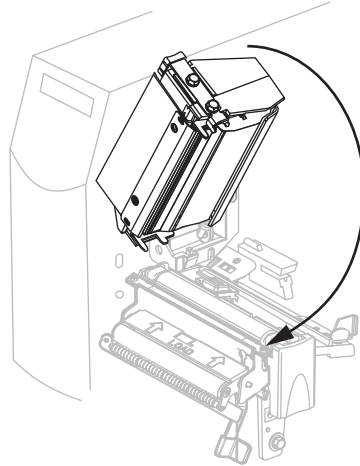
7. Feed the media under the dancer assembly (1), through the slot in the transmissive sensor (2), and under the ribbon sensor (3).



8. Push the media to the back of the transmissive sensor (1). Slide in the media guide (2) until it just touches the edge of the media.



9. Close the printhead assembly.



10. If the printer is paused (the PAUSE light is blinking), press PAUSE to enable printing.

Load Ribbon

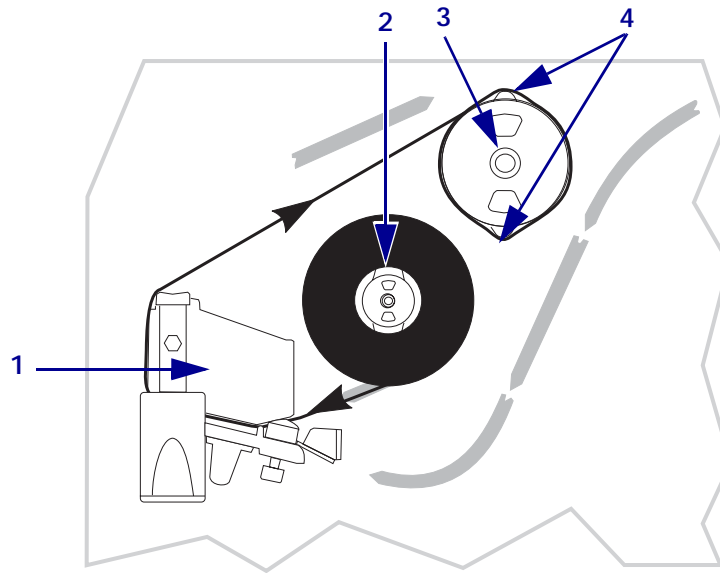


Note • This section applies only to printers that have the Thermal Transfer option installed.



Note • Always use ribbon that is wider than the media to protect the printhead from wear. For direct thermal printing, do not load ribbon in the printer.

Figure 18 • Ribbon Path

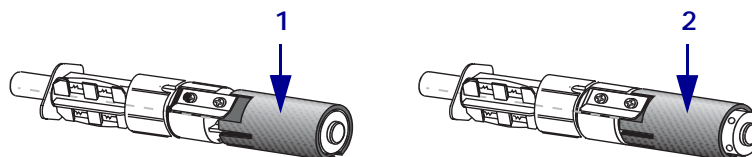


1	Printhead assembly
2	Ribbon supply spindle
3	Ribbon take-up spindle
4	Tension blades

To load ribbon, complete these steps:

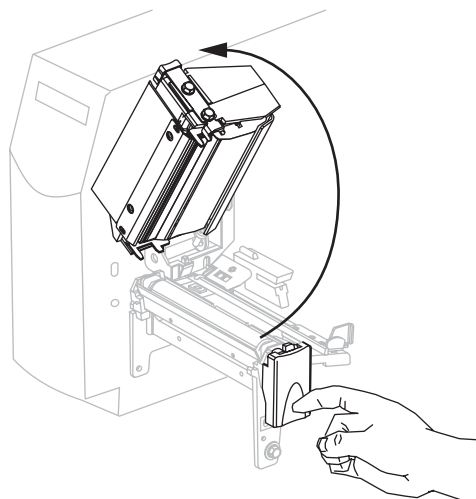
1. Set the ribbon supply spindle for normal or low tension.
 - To place the ribbon supply spindle in the **normal position**, firmly pull out the spindle end cap until it extends and clicks in place, as shown in [Figure 19](#). Use this setting for most applications.
 - To place the ribbon supply spindle in the **low-tension position**, firmly push in the end cap until it retracts and clicks in place, as shown in [Figure 19](#). Use this setting when using a narrow ribbon or if normal tension hampers ribbon movement.

Figure 19 • Ribbon Spindle—Normal and Low Tension



1	Normal Position (Spindle End Cap Extended)
2	Low-Tension Position (Spindle End Cap Retracted)

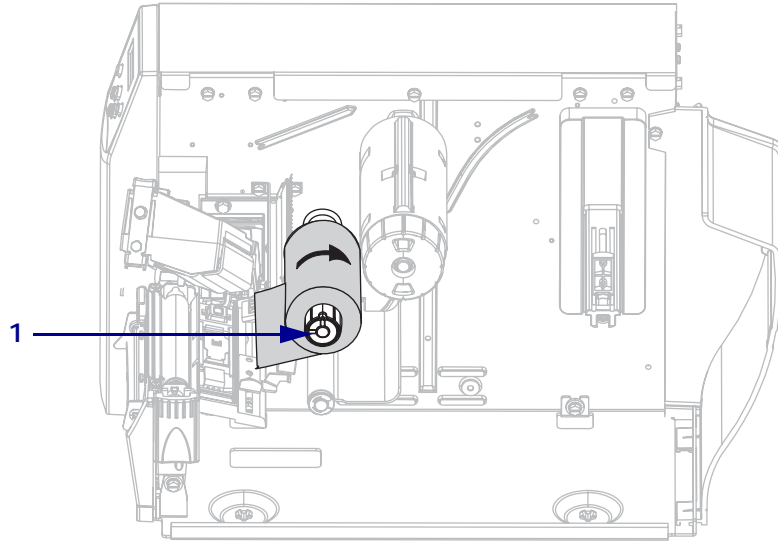
2. Press the printhead release latch to open the printhead assembly. Lift the printhead until it latches open.



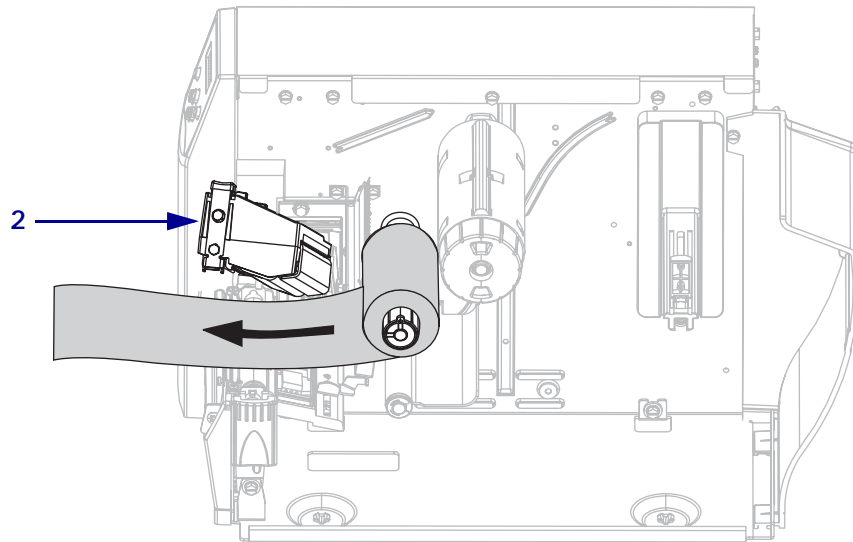
3. Orient the ribbon with the loose end unrolling clockwise.



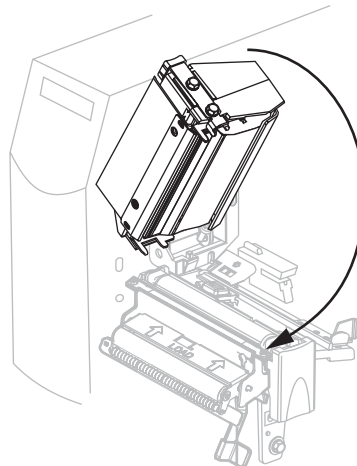
4. Place the ribbon roll onto the ribbon supply spindle (1) and push it all the way back.



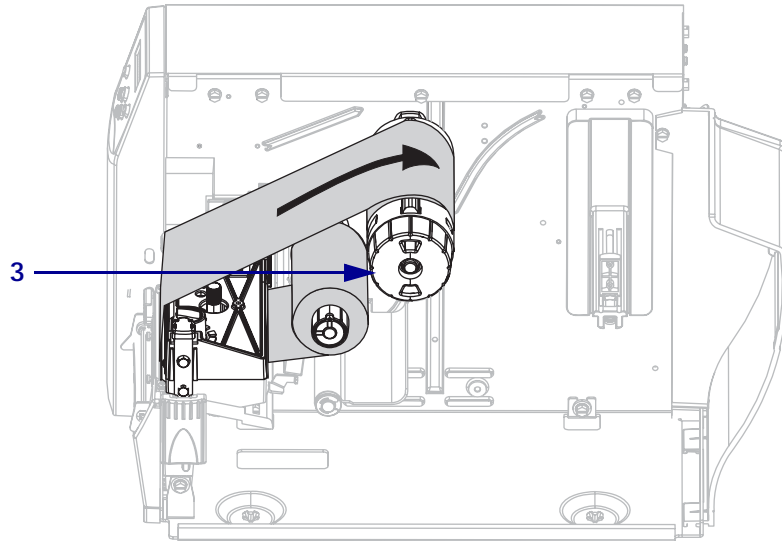
5. Pull the end of the ribbon under the printhead assembly (2) and out the front of the printer.



6. Close the printhead assembly.



7. Wind the ribbon clockwise onto the ribbon take-up spindle (3).



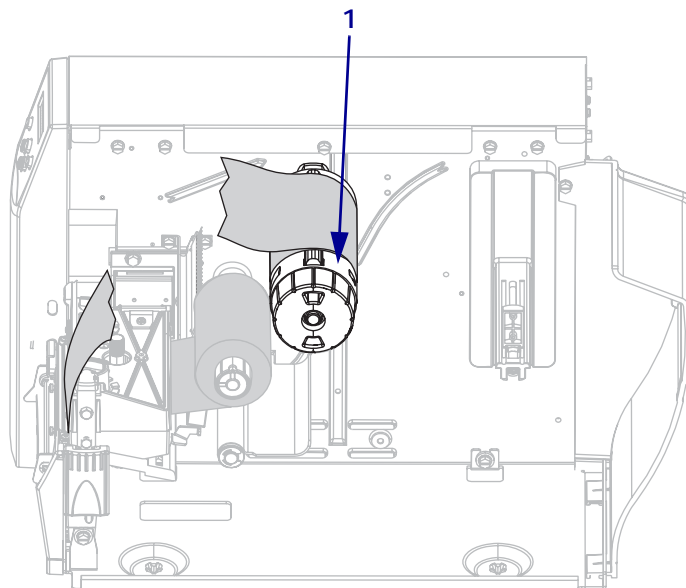
Remove Used Ribbon

Remove used ribbon from the printer after the ribbon runs out or when switching from thermal transfer mode to direct thermal mode.

To remove used ribbon, complete these steps:

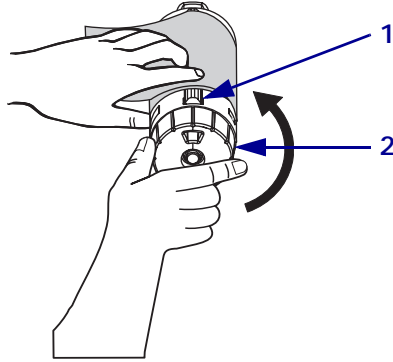
1. If the ribbon has not run out, cut or break it before the ribbon take-up spindle (1).

Caution • Do not cut the ribbon directly on the ribbon take-up spindle. Doing so may damage the spindle.

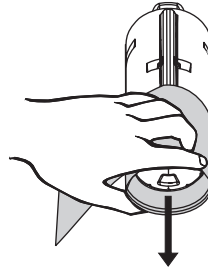


2. To loosen the ribbon, squeeze the ribbon against the ribbon take-up spindle tension blades (1). At the same time, turn the ribbon take-up spindle release knob counterclockwise (2).

The tension blades collapse into the ribbon take-up spindle, loosening the ribbon.



3. Slide the ribbon off of the ribbon take-up spindle.



Calibrate the Printer

Auto Calibration

By default, the printer automatically calibrates on power up or when the printhead is closed. During auto calibration, the printer determines the label length and sensor settings.

The results of the auto calibration are stored in the printer's memory and are retained even if printer power is removed. These parameters remain in effect until the next calibration is performed.

Manual Calibration

Perform a media and ribbon sensor calibration to reset the sensitivity of the sensors so the media and ribbon are detected more accurately. If you change the type of ribbon or media, your printer may operate better if you perform this calibration.

For instructions, refer to [Calibrate Media and Ribbon Sensors on page 67](#).

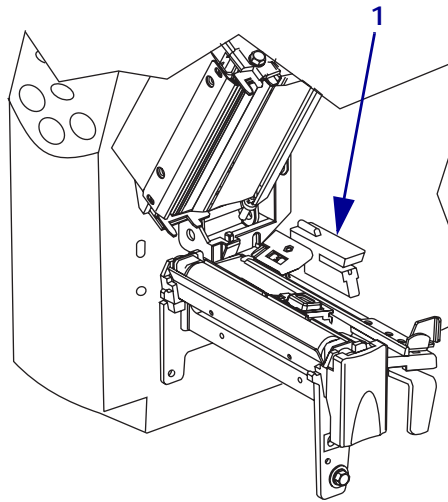
Select or Adjust the Media Sensors

This printer uses two types of media sensors: transmissive and reflective.

Select the Transmissive Sensor

The standard transmissive sensor ([Figure 20](#)) is in a fixed position and enabled from the control panel. For more information about the operation of this sensor, see [Select the Media Sensor](#) on page 56.

Figure 20 • Transmissive Sensor



1	Standard transmissive sensor
---	------------------------------

Adjust the Reflective Sensor

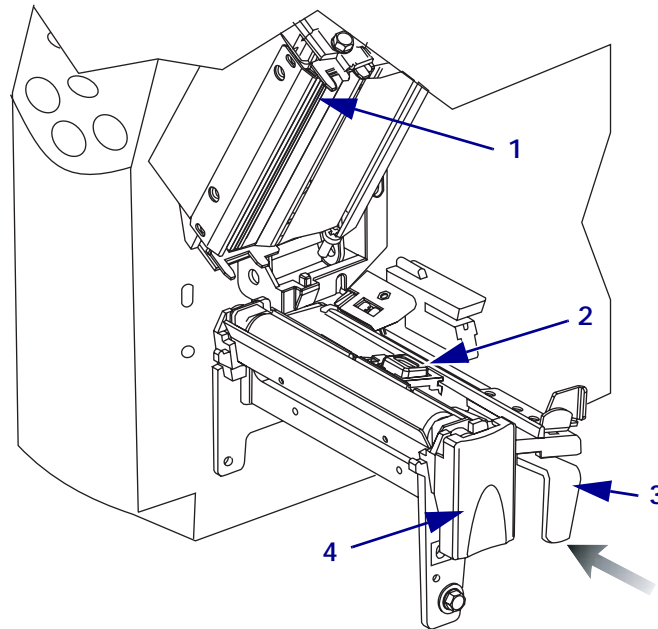
The reflective sensor is compatible with most types of media. With non-continuous media, the reflective sensor detects the start-of-label indicator (the notch, hole, black mark, or gap between die-cut labels). With both continuous media and non-continuous media, the sensor detects an out-of-paper condition. If you have difficulties with calibration while using this sensor, use the transmissive sensor (see [Select the Transmissive Sensor](#) on page 42).

Position the reflective sensor in the following way:

- directly under the notch, hole, or black mark with these types of labels
- anywhere along the width of the media if there is a gap between labels
- anywhere under the media for continuous media

The glow of the red light through the media may help you accurately position the sensor.

Figure 21 • Adjusting the Reflective Sensor



1	Printhead assembly
2	Reflective sensor
3	Reflective sensor positioning lever
4	Printhead release latch

To adjust the reflective sensor, complete these steps:

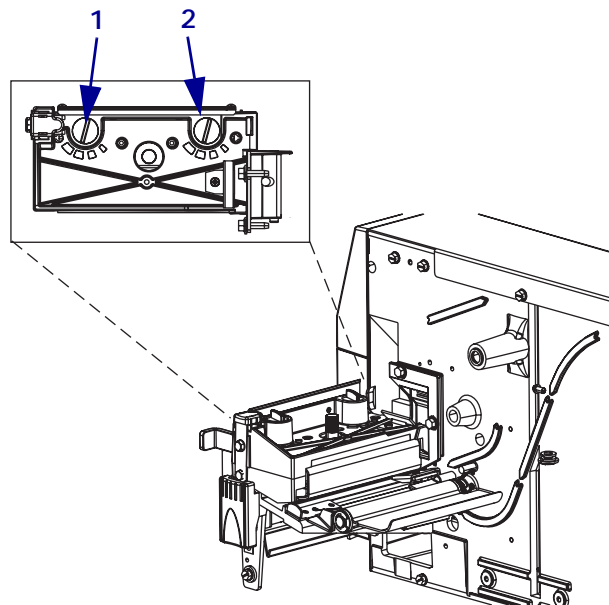
1. See [Figure 21](#). Press the printhead release latch.
2. Lift the printhead until it latches open.
3. Locate the reflective sensor positioning lever.
4. Move the reflective sensor positioning lever across the width of the media until the reflective sensor aligns with the gap or notch.
5. Close the printhead assembly.

Adjust Printhead Pressure

You may need to adjust printhead pressure if printing is too light on one side or if you use thick media.

See [Figure 22](#). The pressure adjustment dials have four possible settings designated by blocks of increasing size embossed on the print mechanism. The smallest block (fully counterclockwise) is considered position 1, and the largest block (fully clockwise) is considered position 4.

Figure 22 • Printhead Pressure Adjustment Dials



1	Outside dial
2	Inside dial

To set printhead pressure, complete these steps:

1. Use [Table 7](#) to select the initial dial settings for your media.

Table 7 • Printhead Pressure

Media Width	Inside Dial	Outside Dial
1 in. (25.4 mm)	3	1
2 in. (51 mm)	4	1
3 in. (76 mm)	3	2
3.5 in. and up (89 mm and up)	3	3

2. If necessary, adjust the pressure adjustment dials as follows:

If the media...	Then...
Requires higher pressure to print well	Increase both dials one position.
Shifts left while printing	Increase the outside dial setting one position, or decrease the inside dial setting one position.
Shifts right while printing	Increase the inside dial setting one position, or decrease the outside dial setting one position.
Prints too lightly on the left side of the label.	Increase the inside dial setting one position.
Prints too lightly on the right side of the label.	Increase the outside dial setting one position.

Setup Mode

After you have installed the media and ribbon and the Power-On Self Test (POST) is complete, the control panel displays **PRINTER READY**. You may now set printer parameters for your application using the control panel LCD and the buttons directly below it. If it becomes necessary to restore the initial printer defaults, see *FEED and PAUSE Self Test on page 103*.

Enter Setup Mode

To enter Setup mode, complete these steps:

1. Press MENU.
2. Use the left or right arrow to scroll through the parameters.

Leave Setup Mode

You can leave Setup mode at any time. As you leave Setup mode, you may choose to save or discard changes that you made, or you may return to where you were in Setup mode.

To exit Setup mode, complete these steps:

1. Press MENU.
The printer displays **SAVE CHANGES** and activates the ENTER button.
2. Do you wish to save changes that were made since you entered Setup mode?

If you wish to...	Then...
Save changes	<ol style="list-style-type: none"> a. Press ENTER. The printer saves changes and exits Setup mode.
Discard changes	<ol style="list-style-type: none"> a. Press the up or down arrow to select NO. b. Press ENTER. The printer discards changes and exits Setup mode.
Return to Setup mode	<ol style="list-style-type: none"> a. Press MENU or any arrow button. <ul style="list-style-type: none"> • MENU returns you to the same parameter. • The left arrow takes you to the previous parameter. • The right arrow takes you to the next parameter. • The up or down arrow scrolls to other options in the same parameter.

Password Protection of Parameters

The printer has four levels of passwords. When you enter Setup mode on the control panel, only those parameters that are not password-protected are displayed. To see more parameters, you must enter an appropriate password at the **ADVANCED SETUP** prompt. After you enter a password correctly, you do not have to enter it again until you leave and reenter Setup mode.

When you are prompted for a password, enter the password for the level displayed or for a higher level. Entering a higher level password will unprotect the parameters for that level and for all levels below it (for example, unprotecting level 4 parameters also unprotects levels 1, 2, and 3).

The password levels and default passwords are shown in [Table 8](#).

Table 8 • Password Levels and Defaults

Password Level	Features Controlled	Default Password
4	All features, including sensor adjustments and other sensitive parameters	9999
3	Installation and reconfiguration. The printer web-page interface also uses this password.	1 2 3 4
2	Label configuration operations (media type, label removal method, label length)	0000 (unprotected)
1	Darkness, Tear-Off position, label top	0000 (unprotected)

To enter a password when prompted, complete these steps:

1. When the printer displays **ADVANCED SETUP X**, press **ENTER**.
The printer displays **PASSWORD** and the number **0000**.
2. Enter the four-digit password for the password level displayed or for a higher level.
 - The left and right arrows change the selected digit position.
 - The up and down arrows change the value of the selected digit.
3. After entering the password, press **ENTER**.
If you entered a valid password, additional parameters are displayed.



Note • When you enter a password at an **ADVANCED SETUP** prompt, the first parameter that you see is determined in part by whether you pressed the right arrow or the left arrow to get to the **ADVANCED SETUP** prompt:

- If you used the right arrow, the first parameter that you see is based on the password level that the printer prompted for (see [Table 9](#)).
- If you used the left arrow, the first parameter that you see is based on which password you enter at the prompt, regardless of which password level the printer prompted for (see [Table 10](#)).

Table 9 • Right Arrow Used to Reach ADVANCED SETUP Prompt

Advanced Setup Level Prompted	Password Level Entered	First Parameter Seen
1	1, 2, 3, or 4	DARKNESS (top of level 1)
2	2, 3, or 4	MEDIA TYPE (top of level 2)
3	3 or 4	PRINT OUT (top of level 3)
4	4	LABEL LEVEL (top of level 4)

Table 10 • Left Arrow Used to Reach ADVANCED SETUP Prompt

Advanced Setup Level Prompted	Password Level Entered	First Parameter Seen
1	1	LABEL TOP (ZPL, EPL, APL-D) (bottom of level 1) Y FORMS ADJUST (APL-I) (bottom of level 1)
1, 2	2	LENGTH (bottom of level 2)
1, 2, 3	3	LANGUAGE (bottom of level 3)
1, 2, 3, or 4	4	LANGUAGE (bottom of level 4; LANGUAGE parameter appears in both level 3 and 4)

Changing Printer Passwords Using ZPL II

To change the password for any level, use the ^KP ZPL II command. The format is KP a , b where a is the password and b is the password level.

Password-Protect All Parameters. To password protect all parameters, send the ^KP ZPL II command with a different password for each level.

Disable Password To disable the password-protection feature for a particular level and those below it, set the password to 0000 using the ^KP ZPL II command. To enable the password-protection feature, send the ZPL II command with any non-zero number for a password.

Return to Default Passwords If you forget your passwords, the printer can be returned to the default factory settings, which makes the default passwords valid again. Use caution when returning the passwords to their default values because this also sets all other printer parameters back to their defaults.

To return the printer to the default factory settings using ZPL, send this command:

```
^XA
^JUF
^XZ
```

Printing Configuration Labels

After you load the media and ribbon (if necessary), print a printer configuration label and a network configuration label as records of your printer’s current settings. Keep the labels to use when troubleshooting printing problems. The options to print these labels are located in password level 3.

A configuration label lists the printer settings that are stored in configuration memory. A network configuration label lists the print server settings. For the correct settings, print a network configuration label after the printer connects to the network.




Note • If the printer is paused when you enter Setup mode, these labels will print after you exit Setup mode and resume printing.

To print a printer configuration label or a network configuration label, complete these steps:

1. On the control panel, press MENU.
The printer enters Setup mode and displays **DARKNESS**.
2. Press the left arrow.
If a password is set for any levels, the printer displays **ADVANCED SETUP** with the level number, and the ENTER button is enabled. If no passwords are set, the printer displays **LANGUAGE**.
3. What does the printer display?

If the printer displays...	Then...
ADVANCED SETUP 1	a. Press ENTER.
ADVANCED SETUP 2	The printer displays PASSWORD 0000 .
ADVANCED SETUP 3	b. Use the left and right arrows to enter the password for level 3 or 4. c. Press ENTER. The printer displays LANGUAGE . d. Use the left or right arrow to scroll through the parameters until you reach PRINT OUT .
ADVANCED SETUP 4	a. You do not need to enter a password to access this parameter. Use the left or right arrow to scroll through the parameters until you reach PRINT OUT .
LANGUAGE	a. Use the left or right arrow to scroll through the parameters until you reach PRINT OUT .

4. Select the type of label to print.

To print a...	Then...
Printer configuration label	<p>a. Scroll to SETTINGS.</p> <p>b. Press ENTER.</p> <p>A printer configuration label prints (Figure 23).</p> <p style="text-align: center;">Figure 23 • Printer Configuration Label</p>  <p>The screenshot shows a menu titled "PRINTER CONFIGURATION" with the following text:</p> <pre> Zebra Technologies ZTC S4M-200dpi ZPL 10.0..... DARKNESS 2 IPS..... PRINT SPEED +000..... TEAR OFF TEAR OFF..... REMOVAL WEB..... SENSOR TYPE THERMAL-TRANS..... RIBBON 0832 DOTS..... WIDTH 1228..... LABEL LENGTH AUTO..... MAXIMUM LENGTH GAP/NOTCH..... MEDIA TYPE NOT CONNECTED..... USB COMM. BIDIRECTIONAL..... PARALLEL COMM. RS232..... SERIAL COMM. 9600..... BAUD 8 BITS..... DATA BITS NONE..... PARITY XON/XOFF..... HOST HANDSHAKE NONE..... PROTOCOL 000..... NETWORK ID NORMAL MODE..... HEXDUMP <~> 7EH..... CONTROL PREFIX <^> 5EH..... FORMAT PREFIX <. > 2CH..... DELIMITER CHAR ZPL II..... ZPL MODE CALIBRATION..... MEDIA POWER UP CALIBRATION..... HEAD CLOSE DEFAULT..... BACKFEED +000..... LABEL TOP +0000..... LEFT POSITION DISABLED..... REPRINT MODE 029..... LABEL LEVEL 079..... PAPER OUT 087..... RIBBON OUT 036..... PAPER GAIN 026..... RIBBON GAIN +10..... LCD ADJUST DPSWFXM..... MODES ENABLED MODES DISABLED 832 8/MM FULL..... RESOLUTION V50.13.12 <-..... FIRMWARE V22 --- 1..... HARDWARE ID CUSTOMIZED..... CONFIGURATION 3264k..... R: RAM 2048k..... E: ONBOARD FLASH NONE..... FORMAT CONVERT FW VERSION..... IDLE DISPLAY 08/17/05..... RTC DATE 15:07..... RTC TIME NONE..... ZEBRA NET II NO..... RFID READY 3642 IN..... NONRESET CNTR 3642 IN..... RESET CNTR1 3642 IN..... RESET CNTR2 9251 CM..... NONRESET CNTR 9251 CM..... RESET CNTR1 9251 CM..... RESET CNTR2 FIRMWARE IN THIS PRINTER IS COPYRIGHTED </pre>

To print a...	Then...
Network configuration label	<p>a. Scroll to NETWORK.</p> <p>b. Press ENTER.</p> <p>A network configuration label prints (Figure 24). An asterisk designates whether the wired or wireless print server is active. If no wireless print server is installed, the wireless portion of the label does not print.</p> <p style="text-align: center;">Figure 24 • Network Configuration Label</p> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Network Configuration</p> <p>Zebra Technologies PRINTER MODEL XXXdpi USER-DEFINED TEXT</p> <p>NO..... WIRED PS CHECK? Printer..... LOAD LAN FROM?</p> <p>Wired</p> <p>ALL..... IP PROTOCOL 000.000.000.000... IP ADDRESS 000.000.000.000... SUBNET MASK 000.000.000.000... DEFAULT GATEWAY 000.000.000.000... WINS SERVER IP YES..... TIMEOUT CHECKING 0300..... TIMEOUT VALUE 0000..... ARP INTERVAL 9100..... BASE RAW PORT</p> <p>Wireless*</p> <p>ALL..... IP PROTOCOL 010.003.015.089... IP ADDRESS 255.255.255.000... SUBNET MASK 010.003.015.001... DEFAULT GATEWAY 010.003.001.015... WINS SERVER IP YES..... TIMEOUT CHECKING 0300..... TIMEOUT VALUE 0000..... ARP INTERVAL 9100..... BASE RAW PORT YES..... CARD INSERTED 015FH..... CARD MFG ID 000AH..... CARD PRODUCT ID 000e83df3bc7..... MAC ADDRESS YES..... DRIVER INSTALLED INFRASTRUCTURE..... OPERATING MODE vh-CTC-PRD..... ESSID 100..... TX POWER ON..... 1 Mb/s ON..... 2 Mb/s ON..... 5.5 Mb/s ON..... 11 Mb/s 11 Mb/s..... CURRENT TX RATE DIVERSITY..... RECEIVE ANTENNA DIVERSITY..... XMIT ANTENNA OPEN..... AUTH. TYPE OFF..... LEAP MODE 128-bit..... ENCRYPTION MODE 1..... ENCRYPT. INDEX 020..... POOR SIGNAL LONG..... PREAMBLE YES..... ASSOCIATED</p> <p style="text-align: center;">FIRMWARE IN THIS PRINTER IS COPYRIGHTED</p> </div>

Select a Display Language

The **LANGUAGE** parameter is included in password level 3 and level 4 so you can easily reach the parameter to select a familiar language if you cannot read the one being displayed.

To change the language displayed, complete these steps:

1. On the control panel, press MENU.

The printer enters Setup mode.

2. Press the left arrow.

If a password is set for level 3 or 4, the printer displays **ADVANCED SETUP** with the level number, and the ENTER button is enabled. If no passwords are set for level 3 or 4, the printer displays **LANGUAGE**.

3. What does the printer display?

If the printer displays...	Then...
ADVANCED SETUP 1 *	<ol style="list-style-type: none"> a. Press ENTER. The printer displays PASSWORD 0000 *. b. Use the left and right arrows to enter the password for level 3 or 4. c. Press ENTER. The printer displays LANGUAGE *.
ADVANCED SETUP 2 *	
ADVANCED SETUP 3 *	
ADVANCED SETUP 4 *	
LANGUAGE *	Continue with the next step.

* Displays in the last language selected.

4. Use the up and down arrows until you reach the language of your choice.

5. Press MENU.

The printer prompts you to accept changes.

6. Press ENTER to accept the language that you selected.

Control Panel LCD Display

Use the LCD display on the control panel to adjust printer settings.

Password Level 1 and 2 Parameters

Table 11 shows parameters in the order in which they appear when you press the right arrow after entering Setup mode. Throughout this process, press the right arrow to continue to the next parameter or the left arrow to return to the previous parameter in the cycle.

Table 11 • Printer Parameters, Password Levels 1 and 2 (Page 1 of 5)



Parameter	Explanation
DARKNESS (ZPL, APL-D, and APL-I modes) DENSITY (EPL mode only)	<p>Adjust Print Darkness</p> <p>The best darkness setting depends on a variety of factors, including ribbon type, labels, and the condition of the printhead. You may adjust the darkness for consistent high-quality printing.</p> <p> Important • Set the darkness to the lowest setting that provides good print quality. If the darkness is set too high, the ink may smear, the ribbon may burn through, or the printhead may wear prematurely.</p> <p> Note • The printer applies and saves the darkness setting immediately. Exiting Setup mode without saving changes does not restore the previous value.</p> <p>If printing is too light or if there are voids in the printed areas, increase the darkness. If the printing is too dark or if there is spreading or bleeding of printed areas, decrease the darkness. Darkness settings also may be changed by the driver or software settings.</p> <p>The <i>FEED Self Test on page 100</i> can be used to determine the best darkness setting. Because the darkness setting takes effect immediately, you can see the results on labels that are currently printing.</p> <p><i>Range (ZPL, APL-D, APL-I): 0.0 to +30.0</i> <i>Default Value (ZPL, APL-D, APL-I): +10.0</i> <i>Range (EPL): 7</i> <i>Default Value (EPL): 0 to 15</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up arrow to increase value. • Press the down arrow to decrease value.

Table 11 • Printer Parameters, Password Levels 1 and 2 (Page 2 of 5)



Parameter	Explanation
<p>TEAR OFF</p>	<p>Adjust Tear-Off Position</p> <p>This parameter establishes the position of the labels over the tear-off/peel-off bar after printing. Each press of a button adjusts the tear-off position by one dot row.</p> <p> Note • The printer applies and saves the tear-off setting immediately. Exiting Setup mode without saving changes does not restore the previous value.</p> <p><i>Range (ZPL, EPL, APL-I): -120 to +120</i></p> <p><i>Default Value (ZPL, EPL, APL-I): 0</i></p> <p><i>Range (APL-D): +00i to +999i (inches), 0m to 2537m (metric)</i></p> <p><i>Default Value (APL-D): +128i</i></p> <p> Note • The APL-D default value does not position the label over the tear-off/peel-off bar. This is done to work with existing DPL label formats that account for this positioning.</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up arrow to increase value. • Press the down arrow to decrease value.
<p>LABEL TOP (ZPL, EPL, and APL-D modes)</p> <p>X FORMS ADJUST (APL-I mode only)</p>	<p>Adjust Label Top Position</p> <p>The label top position adjusts the print position vertically on the label. Positive numbers adjust the label top position farther down the label (away from the printhead), and negative numbers adjust the position up the label (toward the printhead).</p> <p>The displayed value represents dots.</p> <p><i>Range (ZPL, EPL, and APL-I): -120 to +120</i></p> <p><i>Default Value (ZPL, EPL, and APL-I): 0</i></p> <p><i>Range (APL-D): -0.64i to 0.64i (when printer is set to operate in inches)</i></p> <p><i>Default Value (APL-D): 0</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
<p>Y FORMS ADJUST (APL-I mode only)</p>	<p>Adjust Label Left Position</p> <p>The label left position adjusts the print position horizontally on the label. Positive numbers move the left edge of the image toward the center of the label by the number of dots selected while negative numbers shift the left edge of the image toward the left edge of the label.</p> <p><i>Range: -120 to +120</i></p> <p><i>Default Value: 0</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.

Table 11 • Printer Parameters, Password Levels 1 and 2 (Page 3 of 5)

Parameter	Explanation
MEDI A TYPE	<p>Set Media Type</p> <p>Tells the printer which type of media you are using.</p> <p><i>Selections:</i></p> <ul style="list-style-type: none"> • GAP/NOTCH—Use for non-continuous web media, non-continuous fanfold media, and tag stock. • CONTINUOUS—Use for media that does not have divisions between labels. • MARK—Use for non-continuous black mark media. <p><i>Default Value:</i> GAP/NOTCH</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
SENSOR SELECT	<p>Select the Media Sensor</p> <p>Use the setting that gives the best results. You can use the reflective sensor for most media.</p> <ul style="list-style-type: none"> • REFLECTIVE—Use with black mark media and most other media types. • TRANSMISSIVE—Use with any media (other than black mark media) that does not work well with the reflective sensor. To use the transmissive sensor with media that has holes or notches, verify that the holes or notches pass through the sensor so that the sensor can detect them. If the holes or notches do not pass through the sensor, use the reflective sensor. <p><i>Default Value:</i> REFLECTIVE</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
REMOVAL	<p>Select the Label Removal Method</p> <p>The label removal must correspond to the print mode. Be sure to select a label removal mode that your hardware configuration supports because some of the selections displayed are for optional printer features.</p> <p><i>Selections:</i> TEAR, PEEL, CUTTER, REWIND, DELAYED CUT</p> <p><i>Default Value:</i> TEAR</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.

Table 11 • Printer Parameters, Password Levels 1 and 2 (Page 4 of 5)


Parameter	Explanation
PRINT SPEED	<p>Adjust Print Speed</p> <p>Adjusts the speed for printing a label (given in whole numbers of inches per second). Slower print speeds typically yield better print quality. Print speed changes take effect upon exiting Setup mode.</p> <p><i>Range:</i> 2 to 6 IPS</p> <p><i>Default Value (ZPL, APL-I):</i> 2 IPS</p> <p><i>Default Value (EPL, APL-D):</i> 6 IPS</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
PRINT WIDTH	<p>Set Print Width</p> <p>Print width determines the printable area across the width of the label.</p> <p> Important • Setting the width too narrow can result in portions of the label not being printed on the media. Setting the width too wide wastes formatting memory and can cause printing off the label and on the platen roller. This setting can affect the horizontal position of the label format if the image was inverted using the ^POI ZPL II command.</p> <p><i>Range:</i> 2 to 832 for 8 dots/mm, 2 to 1248 for 12 dots/mm</p> <p><i>Default Value:</i> 832 for 8 dots/mm, 1248 for 12 dots/mm</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
COMPAT. MODE (APL-D mode only)	<p>Set APL-D Compatibility Mode</p> <p>Sets compatibility with DPL printers.</p> <p><i>Selections:</i> ON, OFF</p> <p><i>Default Value:</i> OFF</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
CONTROL CODES (APL-D mode only)	<p>Set APL-D Control Codes</p> <p><i>Selections:</i> STANDARD, MAINFRAME</p> <p><i>Default Value:</i> STANDARD</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.

Table 11 • Printer Parameters, Password Levels 1 and 2 (Page 5 of 5)

Parameter	Explanation
RESOLUTION (APL-I mode only)	<p>Set Printer Resolution for APL-I</p> <p>Sets the dot size for backward compatibility with some older APL-I printers.</p> <p><i>Selections:</i> 5 MIL, 10 MIL, 15 MIL <i>Default Value:</i> 5 MIL</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
LENGTH	<p>Set Maximum Label Length</p> <p>Maximum label length is used in conjunction with the calibration procedure. The value of this setting is the maximum label length that is used during the media portion of the calibration process. Only a few labels are required to set media sensors. Always set the value that is at least 1 in. (25.4 mm) longer than the longest label to be used on the printer.</p> <p><i>Selections:</i> AUTO, < 1 INCH (25.4 mm) to < 39 INCH (991 mm) <i>Default Value:</i> AUTO</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.

Password Level 3 Parameters

Table 12 shows parameters in the order in which they appear when you press the right arrow after entering the Level 3 password. Throughout this process, press the right arrow to continue to the next parameter or the left arrow to return to the previous parameter in the cycle.

Table 12 • Printer Parameters, Password Level 3 (Page 1 of 10)

Parameter	Explanation
PRINT OUT	<p>Print Selected Labels</p> <p>This parameter allows you to print certain types of labels with information about the printer.</p> <p><i>Selections:</i></p> <ul style="list-style-type: none"> • SETTINGS—Prints a printer configuration label. See Printing Configuration Labels on page 50. • FORMATS (ZPL, EPL, APL-D)—Prints a label that lists the available fonts in the printer, including standard printer fonts plus any optional fonts. Fonts may be stored in RAM, Flash memory, optional memory cards, or font cards. • FORMATS (ZPL, EPL, APL-D)—Prints a label that lists the available formats stored in the printer’s RAM, Flash memory, or optional memory card. • BARCODES (ZPL only)—Prints a label that lists the available bar codes in the printer. • ALL (ZPL, EPL)—Prints labels that list the available fonts, bar codes, images, formats, and the current printer and network configurations. • IMAGES (ZPL, EPL, APL-D)—Prints a label that lists the images currently stored in the printer’s RAM, Flash memory, or optional memory cards. • NETWORK (ZPL only)—Prints a network configuration label. See Printing Configuration Labels on page 50. • APLI SW SETUP (APL-I only) • APLI HW SETUP (APL-I only) • APLI PRT QUAL (APL-I only) • APLI PITCH (APL-I only) <p>To print labels:</p> <ol style="list-style-type: none"> 1. Press the up or down arrow to display label choices. 2. Press ENTER to print the desired label.
MODULE A (APL-D mode only)	<p>Set Module A Storage Device for APL-D</p> <p><i>Selections:</i> NONE, RAM 1, RAM 2, FLASH 1, FLASH 2 <i>Default Value:</i> NONE</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.

Table 12 • Printer Parameters, Password Level 3 (Page 2 of 10)

Parameter	Explanation
MODULE B (APL-D mode only)	<p>Set Module B Storage Device for APL-D</p> <p><i>Selections:</i> NONE, RAM 1, RAM 2, FLASH 1, FLASH 2</p> <p><i>Default Value:</i> NONE</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
PARALLEL COMM.	<p>Set Parallel Communications</p> <p>Select the communications port that matches the one being used by the host computer.</p> <p><i>Selections:</i> UNIDIRECTIONAL, BIDIRECTIONAL</p> <p><i>Default Value:</i> UNIDIRECTIONAL</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
PRINT PAGE (APL-I mode only)	<p>Print Stored APL-I Page</p> <p>Up to 20 pages can be stored and printed.</p> <p><i>Selections:</i> 0 through 19</p> <p><i>Default Value:</i> 0</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
PRINT FORMAT (APL-I mode only)	<p>Print Stored APL-I Format</p> <p>Up to 100 formats can be stored and printed.</p> <p><i>Selections:</i> 0 through 99</p> <p><i>Default Value:</i> 0</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
BAUD	<p>Set Baud</p> <p>The baud setting of the printer must match the baud setting of the host computer for accurate communications to take place. Select the value that matches the one being used by the host computer.</p> <p><i>Selections:</i> 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200</p> <p><i>Default Value:</i> 9600</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.

Table 12 • Printer Parameters, Password Level 3 (Page 3 of 10)


Parameter	Explanation
DATA BITS	<p>Set Data Bits</p> <p>The data bits of the printer must match the data bits of the host computer for accurate communications to take place. Set the data bits to match the setting being used by the host computer.</p> <p> Note • Code Page 850 requires the data bits to be set to 8 bits.</p> <p><i>Selections: 7 BITS, 8 BITS</i> <i>Default Value: 8 BITS</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
STATUS RESPONSE (APL-I mode only)	<p>Send APL-I Status Response</p> <p>Determines if a response is sent after inquiry commands. The format is set with the RESPONSE FORMAT parameter.</p> <p><i>Selections: ON, OFF</i> <i>Default Value: ON</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
RESPONSE FORMAT (APL-I mode only)	<p>Select APL-I Response Format</p> <p>If STATUS RESPONSE is set to ON, this parameter determines the format of the response.</p> <p><i>Selections: ASCII, BINARY</i> <i>Default Value: ASCII</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
PARI TY	<p>Set Parity</p> <p>The parity of the printer must match the parity of the host computer for accurate communications to take place. Select the parity that matches the one being used by the host computer.</p> <p><i>Selections: NONE, ODD, EVEN</i> <i>Default Value: NONE</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.

Table 12 • Printer Parameters, Password Level 3 (Page 4 of 10)



Parameter	Explanation
HOST HANDSHAKE	<p>Set Host Handshake</p> <p>The handshake protocol of the printer must match the handshake protocol of the host computer for proper communications to take place. Select the handshake protocol that matches the one being used by the host computer.</p> <p><i>Selections (ZPL, APL-D):</i> XON/XOFF, DSR/DTR, RTS/CTS <i>Selections (EPL):</i> DTR & XON/XOF, DTR, XON/XOFF <i>Selections (APL-I):</i> XON/XOFF, DSR/DTR, RTS/CTS, APL-I <i>Default Value:</i> XON/XOFF</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
CONTROL CHAR (ZPL mode only)	<p>Set Control Character</p> <p>The printer looks for this two-digit hexadecimal character to indicate the start of a ZPL/ZPL II control instruction.</p> <p> Note • Do not use the same hexadecimal value for the control, command, and delimiter character. The printer must see different characters to work properly.</p> <p><i>Range:</i> 00 to FF <i>Default Value:</i> 7E (tilde—displayed as an arrow)</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
COMMAND CHAR (ZPL mode only)	<p>Set Command Character</p> <p>The command prefix is a two-digit hexadecimal value used as a parameter place marker in ZPL/ZPL II format instructions. The printer looks for this two-digit hexadecimal character to indicate the start of a ZPL/ZPL II format instruction. See the <i>ZPL II Programming Guide Volume I</i> for more information.</p> <p> Note • Do not use the same hexadecimal value for the control, command, and delimiter character. The printer must see different characters to work properly.</p> <p><i>Range:</i> 00 to FF <i>Default Value:</i> 5E (caret)</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.

Table 12 • Printer Parameters, Password Level 3 (Page 5 of 10)



Parameter	Explanation
DELI M. CHAR (ZPL mode only)	<p>Set Delimiter Character</p> <p>The delimiter character is a two-digit hexadecimal value used as a parameter place marker in ZPL/ZPL II format instructions. See the <i>ZPL II Programming Guide Volume I</i> for more information.</p> <p> Note • Do not use the same hexadecimal value for the control, command, and delimiter character. The printer must see different characters to work properly.</p> <p><i>Range:</i> 00 to FF <i>Default Value:</i> 2C (comma)</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
HEXDUMP (ZPL, EPL, APL-D modes)	<p>Hex Dump</p> <p>The hexadecimal dump mode is a troubleshooting tool for checking the interconnection between the printer and the host computer. When YES is selected, all data sent from the host computer to the printer prints as straight ASCII characters, with the hexadecimal value below the ASCII text. The printer prints all characters received, including control codes, such as CR (carriage return). A sample printout is shown in Communications Diagnostics Test on page 103.</p> <p><i>Selections:</i> NO, YES <i>Default Value:</i> NO</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
CHANGE RTC DATE	<p>Set RTC (Real-time clock) Date</p> <p>If RTC is installed, this parameter allows you to set the RTC date.</p> <p> Note • The printer saves the RTC date immediately.</p> <p>To modify this parameter:</p> <ol style="list-style-type: none"> 1. Press ENTER. The printer displays the current RTC date. 2. Modify the values as follows: <ul style="list-style-type: none"> • Press the right arrow to move to the next digit position. • To increase the value, press the up arrow. • To decrease the value, press the down arrow. 3. Press ENTER to accept the value shown.

Table 12 • Printer Parameters, Password Level 3 (Page 6 of 10)




Parameter	Explanation
CHANGE RTC TIME	<p>Set RTC (Real-time clock) Time If RTC is installed, this parameter allows you to set the RTC time.</p> <p> Note • The printer saves the RTC time immediately.</p> <p>To modify this parameter:</p> <ol style="list-style-type: none"> 1. Press ENTER. The printer displays the current RTC time. 2. Modify the values as follows: <ul style="list-style-type: none"> • Press the right arrow to move to the next digit position. • To increase the value, press the up arrow. • To decrease the value, press the down arrow. 3. Press ENTER to accept the value shown.
LOAD DEFAULTS	<p>Load Factory Defaults Sets all parameters back to factory defaults.</p> <p> Important • Use care when using this command. All printer parameters are reset to factory values with this command. If possible, print a configuration label to have as a record of the printer's settings before loading defaults.</p> <p>How to select this parameter:</p> <ol style="list-style-type: none"> 1. Press ENTER. The printer asks ARE YOU SURE? 2. To load factory defaults, press ENTER to select YES. To cancel, press any other key.
INIT FLASH MEM	<p>Initialize Flash Memory This parameter allows you to erase the printer's Flash memory.</p> <p> Important • The internal Flash memory is entirely erased with this command.</p> <p>To select this parameter:</p> <ol style="list-style-type: none"> 1. Press ENTER to select YES. The printer asks ARE YOU SURE? 2. To initialize Flash memory, press ENTER. To cancel, press any other key.

Table 12 • Printer Parameters, Password Level 3 (Page 7 of 10)


Parameter	Explanation
RI BBON	<p>Set Ribbon Use</p> <p> Note • This parameter appears only for printers that have the Thermal Transfer option installed.</p> <p>Specifies the printing method: thermal transfer (using ribbon) or direct thermal (no ribbon).</p> <p><i>Selections:</i></p> <ul style="list-style-type: none"> • YES (thermal transfer mode, with ribbon) • NO (direct thermal mode, no ribbon) <p><i>Default Value:</i> YES</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
ZPL OVERRI DE (ZPL mode only)	<p>Override Certain ZPL Commands</p> <p>Prevents the printer from accepting the following ZPL commands:</p> <ul style="list-style-type: none"> • ^MM (media mode) • ^MT (media type direct thermal or thermal transfer) • ^MN (media non-continuous or continuous) <p><i>Selections:</i></p> <ul style="list-style-type: none"> • NO—allows the printer to accept the listed ZPL commands. • YES—tells the printer to ignore the listed ZPL commands. <p><i>Default Value:</i> NO</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
EPL OVERRI DE (EPL mode only)	<p>Override Certain EPL Commands</p> <p>Prevents the printer from accepting certain EPL commands.</p> <p><i>Selections:</i></p> <ul style="list-style-type: none"> • DISABLED—allows the printer to accept the listed EPL commands. • ENABLED—tells the printer to ignore the listed EPL commands. <p><i>Default Value:</i> DISABLED</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.

Table 12 • Printer Parameters, Password Level 3 (Page 8 of 10)


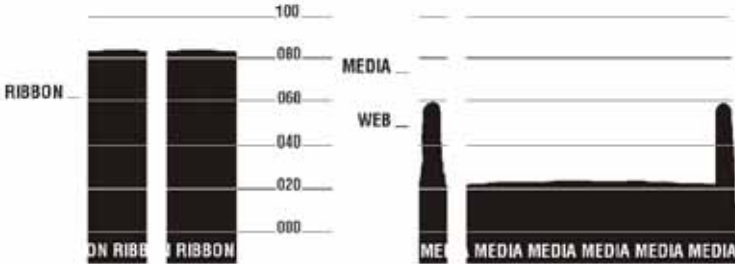
Parameter	Explanation
<p>SENSOR PROFILE</p>	<p>Print Sensor Profile</p> <p>Use the sensor profile (Figure 25) to troubleshoot registration problems that may occur if the media sensor detects preprinted areas on the media or if it experiences difficulty in determining web location. To adjust the sensitivity of the media and/or ribbon sensors, use <i>Calibrate Media and Ribbon Sensors</i> on page 67.</p> <p> Note • The ribbon portion of the label appears only for printers that have the Thermal Transfer option installed.</p> <p style="text-align: center;">Figure 25 • Sensor Profile</p>  <p>To select this parameter:</p> <ol style="list-style-type: none"> 1. Press ENTER to start this standard calibration procedure and print a media sensor profile.

Table 12 • Printer Parameters, Password Level 3 (Page 9 of 10)


Parameter	Explanation
<p>MEDI A/RI BBON CALI BRATE (Thermal Transfer only) MEDI A CALI BRATE (Direct Thermal only)</p>	<p>Calibrate Media and Ribbon Sensors</p> <p>Use this procedure to adjust the sensitivity of the printer’s sensors. In a printer that has the Thermal Transfer option installed, both media and ribbon sensors are adjusted. In a Direct Thermal printer (no Thermal Transfer option installed), only media sensors are adjusted, and the LCD displays for ribbon do not appear in this procedure.</p> <p> Important • This procedure must be followed exactly as presented. All of the steps must be performed even if only one of the sensors requires adjustment. You may press the left arrow at any step in this procedure to cancel the procedure.</p> <p>How to select this parameter:</p> <ol style="list-style-type: none"> 1. Press ENTER to start the calibration procedure. The LOAD BACKING/REMOVE RI BBON prompt displays. 2. Open the printhead. 3. Remove approximately 8 in. (203 mm) of labels from the backing, and pull the media into the printer so that only the backing is between the media sensors. 4. Remove the ribbon (if used). 5. Press the right arrow to continue. The message CALI BRATING PLEASE WAIT displays. The printer adjusts the scale (gain) of the signals that it receives from the media and ribbon sensors. On the sensor profile, this essentially corresponds to moving the peak of the graph up or down to optimize the readings for your application. RELOAD ALL displays. 6. Reload the media and ribbon (if used). 7. Close the printhead. 8. Press the right arrow to continue. The message CALI BRATING PLEASE WAIT displays. The printer does a calibration; during this process, the printer determines the label length. To see the new readings on the new scale, print a sensor profile.

Table 12 • Printer Parameters, Password Level 3 (Page 10 of 10)

Parameter	Explanation
LANGUAGE	<p>Select the Display Language</p> <p>This parameter allows you to display the control panel in the language of your choice. As soon as you select a language, all parameters are displayed in that language. Save changes as you exit Setup mode to save the language setting.</p> <p><i>Selections:</i> English (ENGLISH), Spanish (ESPAÑOL), French (FRANCAIS), German (Deutsch), Italian (ITALIANO), Norwegian (NORSK), Portuguese (PORTUGUES), Swedish (SVENSKA), Danish (DANSK), Spanish2 (ESPAÑOL2), Dutch (NEDERLANDS), Finnish (SUOMI), and Japanese.</p> <p><i>Default Value:</i> ENGLISH</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.

ZebraNet® Wired and Wireless Print Server LCD Displays

The menu options shown in Table 13 display only if you have the ZebraNet PrintServer II, or 10/100 PrintServer, or Wireless Print Server installed and are operating in ZPL or EPL mode. These parameters are considered part of Level 3.

Table 13 • Print Server LCD Displays (Page 1 of 2)




Parameter	Explanation
OBTAIN IP ADDRESS	<p>Obtain an IP Address</p> <p>Selects the method by which an IP address will be assigned to the printer. <i>Selections:</i> AUTO SELECT (dynamic), PERMANENT (user-specified) <i>Default Value:</i> AUTO SELECT</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
CHANGE IP ADDRESS	<p>Change the Printer's IP Address</p> <p>This parameter can be modified only when PERMANENT is selected for OBTAIN IP ADDRESS. <i>Selections:</i> 0 to 255 for each field <i>Default Value:</i> 0.0.0.0</p> <p> Note • Leading zeroes are not shown in the address. If an IP address contains more digits than can be displayed at one time, use the left or right arrows to scroll through the digits.</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
CHANGE SUBNET	<p>Change the Subnet</p> <p>This parameter can be modified only when PERMANENT is selected for OBTAIN IP ADDRESS. <i>Selections:</i> 0 to 255 for each field <i>Default Value:</i> 0.0.0.0</p> <p> Note • Leading zeroes are not shown in the address. If an IP address contains more digits than can be displayed at one time, use the left or right arrows to scroll through the digits.</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.

Table 13 • Print Server LCD Displays (Page 2 of 2)

Parameter	Explanation
CHANGE GATEWAY	<p>Change the Gateway</p> <p>This parameter can be modified only when PERMANENT is selected for OBTAIN IP ADDRESS.</p> <p><i>Selections:</i> 0 to 255 for each field</p> <p><i>Default Value:</i> 0.0.0.0</p> <p> Note • Leading zeroes are not shown in the address. If an IP address contains more digits than can be displayed at one time, use the left or right arrows to scroll through the digits.</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
CHANGE IP PROTOCOL	<p>Change the IP Protocol</p> <p>Determines the method(s) by which the print server (wired or wireless) receives the IP address from the server.</p> <p>This parameter can be modified only when AUTO SELECT is selected for OBTAIN IP ADDRESS.</p> <p><i>Selections:</i> ALL, GLEANING ONLY, RARP, BOOTP, DHCP, DHCP AND BOOT</p> <p><i>Default Value:</i> ALL</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.

Password Level 4 Parameters

Table 14 shows parameters in the order in which they appear when you press the right arrow after entering the level 4 password. Throughout this process, press the right arrow to continue to the next parameter or the left arrow to return to the previous parameter in the cycle.

Table 14 • Printer Parameters, Password Level 4 (Page 1 of 3)

Parameter	Explanation
LABEL LEVEL	<p>Adjust Label Level <i>Range: 0 to 100</i> <i>Default Value: 50</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
PAPER OUT	<p>Adjust Paper Out <i>Range: 0 to 100</i> <i>Default Value: 0</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
PAPER GAIN	<p>Adjust Paper Gain <i>Range: 0 to 255</i> <i>Default Value: calibrated value</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
RIBBON OUT	<p>Adjust Ribbon-Out Threshold <i>Range: 0 to 100</i> <i>Default Value: calibrated value</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
RIBBON GAIN	<p>Adjust the Ribbon Gain Sensor <i>Range: 0 to 255</i> <i>Default Value: calibrated value</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.

Table 14 • Printer Parameters, Password Level 4 (Page 2 of 3)

Parameter	Explanation
TAKE LABEL	<p>Adjust the Peel Sensor</p> <p>This parameter appears only if the Peel option is installed.</p> <p><i>Range:</i> 0 to 100 <i>Default Value:</i> 66</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> To increase the value, press the up arrow. To decrease the value, press the down arrow.
MEDIA POWER UP	<p>Select Media Power-Up Option</p> <p>This parameter sets the action of the media when you turn on the printer.</p> <p><i>Selections:</i> CALIBRATION, LENGTH, SHORT CAL, NO MOTION, FEED <i>Default Value:</i> CALIBRATION</p> <ul style="list-style-type: none"> Calibration—determines the length of the label and adjusts the sensor settings. Length—In continuous mode, feeds the last stored label length. In noncontinuous mode, calibrates based on the maximum label length setting (see Set Maximum Label Length on page 58). Short Cal—calibrates label length using the current sensor settings. No Motion—the media does not move. Press FEED to cause the printer to resynchronize to the start of the next label. Feed—feeds the labels to the first registration point. <p>To modify this parameter:</p> <ul style="list-style-type: none"> Press the up or down arrow to display other choices.
HEAD CLOSE	<p>Select Head Close Option</p> <p>This parameter sets the action of the media when you close the printhead.</p> <p><i>Selections:</i> CALIBRATION, LENGTH, SHORT CAL, NO MOTION, FEED <i>Default Value:</i> CALIBRATION</p> <ul style="list-style-type: none"> Calibration—determines the length of the label and adjusts the sensor settings. Length—In continuous mode, feeds the last stored label length. In noncontinuous mode, calibrates based on the maximum label length setting (see Set Maximum Label Length on page 58). Short Cal—calibrates label length using the current sensor settings. No Motion—the media does not move. Press FEED to cause the printer to resynchronize to the start of the next label. Feed—feeds the labels to the first registration point. <p>To modify this parameter:</p> <ul style="list-style-type: none"> Press the up or down arrow to display other choices.

Table 14 • Printer Parameters, Password Level 4 (Page 3 of 3)

Parameter	Explanation
LANGUAGE	<p>Select the Display Language</p> <p>This parameter allows you to display the control panel in the language of your choice. As soon as you select a language, all parameters are displayed in that language. Save changes as you exit Setup mode to save the language setting.</p> <p><i>Selections:</i> ENGLISH, Spanish (ESPAÑOL), French (FRANÇAIS), German (Deutsch), Italian (ITALIANO), Norwegian (NORSK), Portuguese (PORTUGUES), Swedish (SVENSKA), Danish (DANSK), Spanish2 (ESPAÑOL2), Dutch (NEDERLANDS), Finnish (SUOMI), and Japanese.</p> <p><i>Default Value:</i> ENGLISH</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.

Manufacturing Menu Parameters

The manufacturing menu is designed to simplify and speed up configuration changes by providing access to certain parameters from all password levels. For some parameters (such as **DARKNESS** or **DENSITY**), changes are saved immediately. For the remaining parameters, changes are saved automatically when you exit the manufacturing menu.

To access the manufacturing menu, complete these steps:

1. Turn Off (O) the printer.
2. Press and hold the up arrow.
3. Turn On (I) the printer. Continue holding the up arrow until the printer displays **PRINTER READY**.
4. Release the up arrow.
5. Press MENU.
The printer displays the parameters in the manufacturing menu. [Table 15](#) shows parameters in the order in which they appear when you press the right arrow. Throughout this process, press the right arrow to continue to the next parameter or the left arrow to return to the previous parameter in the cycle.
6. To exit from the manufacturing menu, press MENU.
The printer saves changes and returns to the **PRINTER READY** display.
7. To return to normal printer operation, turn the printer Off (O) and then back On (I).

Table 15 • Printer Parameters, Manufacturing Menu (Page 1 of 7)

Parameter	Explanation
PRINT OUT	<p>Print Selected Labels</p> <p>This parameter allows you to print certain types of labels with information about the printer.</p> <p><i>Selections:</i></p> <ul style="list-style-type: none"> • SETTINGS—Prints a printer configuration label. See Printing Configuration Labels on page 50. • FONTS (ZPL, EPL, APL-D)—Prints a label that lists the available fonts in the printer, including standard printer fonts plus any optional fonts. Fonts may be stored in RAM, Flash memory, optional memory cards, or font cards. • FORMATS (ZPL, EPL, APL-D)—Prints a label that lists the available formats stored in the printer’s RAM, Flash memory, or optional memory card. • BARCODES (ZPL only)—Prints a label that lists the available bar codes in the printer. • ALL (ZPL, EPL)—Prints labels that list the available fonts, bar codes, images, formats, and the current printer and network configurations. • IMAGES (ZPL, EPL, APL-D)—Prints a label that lists the images currently stored in the printer’s RAM, Flash memory, or optional memory cards. • NETWORK (ZPL only)—Prints a network configuration label. See Printing Configuration Labels on page 50. • APLI SW SETUP (APL-I only) • APLI HW SETUP (APL-I only) • APLI PRT QUAL (APL-I only) • APLI PITCH (APL-I only) <p>To print labels:</p> <ol style="list-style-type: none"> 1. Press the up or down arrow to display label choices. 2. Press ENTER to print the desired label.

Table 15 • Printer Parameters, Manufacturing Menu (Page 2 of 7)


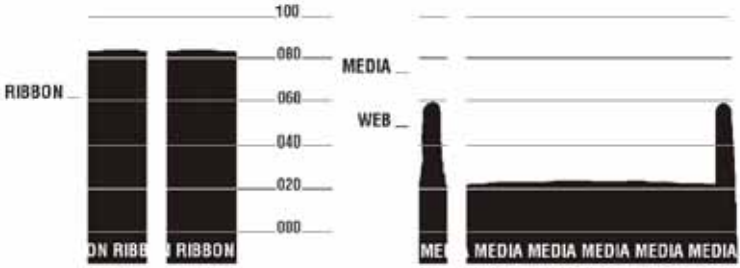
Parameter	Explanation
<p>SENSOR PROFILE</p>	<p>Print Sensor Profile</p> <p>Use the sensor profile (Figure 25) to troubleshoot registration problems that may occur if the media sensor detects preprinted areas on the media or if it experiences difficulty in determining web location. To adjust the sensitivity of the media and/or ribbon sensors, use <i>Calibrate Media and Ribbon Sensors</i> on page 67.</p> <p> Note • The ribbon portion of the label appears only for printers that have the Thermal Transfer option installed.</p> <p style="text-align: center;">Figure 26 • Sensor Profile</p>  <p>To select this parameter:</p> <ol style="list-style-type: none"> 1. Press ENTER to start this standard calibration procedure and print a media sensor profile.

Table 15 • Printer Parameters, Manufacturing Menu (Page 3 of 7)





Parameter	Explanation
<p>DARKNESS (ZPL, APL-D, and APL-I modes)</p> <p>DENSITY (EPL mode only)</p>	<p>Adjust Print Darkness</p> <p>The best darkness setting depends on a variety of factors, including ribbon type, labels, and the condition of the printhead. You may adjust the darkness for consistent high-quality printing.</p> <p> Important • Set the darkness to the lowest setting that provides good print quality. If the darkness is set too high, the ink may smear, the ribbon may burn through, or the printhead may wear prematurely.</p> <p> Note • The printer applies and saves the darkness setting immediately.</p> <p>If printing is too light or if there are voids in the printed areas, increase the darkness. If the printing is too dark or if there is spreading or bleeding of printed areas, decrease the darkness. Darkness settings also may be changed by the driver or software settings.</p> <p>The <i>FEED Self Test on page 100</i> can be used to determine the best darkness setting. Because the darkness setting takes effect immediately, you can see the results on labels that are currently printing.</p> <p><i>Range (ZPL, APL-D, APL-I): 0.0 to +30.0</i> <i>Default Value (ZPL, APL-D, APL-I): +10.0</i> <i>Range (EPL): 7</i> <i>Default Value (EPL): 0 to 15</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up arrow to increase value. • Press the down arrow to decrease value.
<p>TEAR OFF</p>	<p>Adjust Tear-Off Position</p> <p>This parameter establishes the position of the labels over the tear-off/peel-off bar after printing. Each press of a button adjusts the tear-off position by one dot row.</p> <p> Note • The printer applies and saves the tear-off setting immediately. Exiting Setup mode without saving changes does not restore the previous value.</p> <p><i>Range (ZPL, EPL, APL-I): -120 to +120</i> <i>Default Value (ZPL, EPL, APL-I): 0</i> <i>Range (APL-D): +00i to +999i (inches), 0m to 2537m (metric)</i> <i>Default Value (APL-D): +128i</i></p> <p> Note • The APL-D default value does not position the label over the tear-off/peel-off bar. This is done to work with existing DPL label formats that account for this positioning.</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up arrow to increase value. • Press the down arrow to decrease value.

Table 15 • Printer Parameters, Manufacturing Menu (Page 4 of 7)

Parameter	Explanation
MEDI A TYPE	<p>Set Media Type</p> <p>Tells the printer which type of media you are using.</p> <p><i>Selections:</i></p> <ul style="list-style-type: none"> • GAP/NOTCH—Use for non-continuous web media, non-continuous fanfold media, and tag stock. • CONTINUOUS—Use for media that does not have divisions between labels. • MARK—Use for non-continuous black mark media. <p><i>Default Value:</i> GAP/NOTCH</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
SENSOR SELECT	<p>Select the Media Sensor</p> <p>Use the setting that gives the best results. You can use the reflective sensor for most media.</p> <ul style="list-style-type: none"> • REFLECTIVE—Use with black mark media and most other media types. • TRANSMISSIVE—Use with any media (other than black mark media) that does not work well with the reflective sensor. To use the transmissive sensor with media that has holes or notches, verify that the holes or notches pass through the sensor so that the sensor can detect them. If the holes or notches do not pass through the sensor, use the reflective sensor. <p><i>Default Value:</i> REFLECTIVE</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.
REMOVAL	<p>Select the Label Removal Method</p> <p>The label removal must correspond to the print mode. Be sure to select a label removal mode that your hardware configuration supports because some of the selections displayed are for optional printer features.</p> <p><i>Selections:</i> TEAR, PEEL, CUTTER, REWIND, DELAYED CUT</p> <p><i>Default Value:</i> TEAR</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • Press the up or down arrow to scroll through the selections.

Table 15 • Printer Parameters, Manufacturing Menu (Page 5 of 7)

Parameter	Explanation
LENGTH	<p>Set Maximum Label Length</p> <p>Maximum label length is used in conjunction with the calibration procedure. The value of this setting is the maximum label length that is used during the media portion of the calibration process. Only a few labels are required to set media sensors. Always set the value that is at least 1 in. (25.4 mm) longer than the longest label to be used on the printer.</p> <p><i>Selections: AUTO, < 1 INCH (25.4 mm) to < 39 INCH (991 mm)</i></p> <p><i>Default Value: AUTO</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.
LCD ADJUST	<p>Change LCD Darkness</p> <p>This parameter changes the darkness of characters on the LCD.</p> <p><i>Range: 0 to 19</i></p> <p><i>Default Value: 10</i></p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To make the characters on the LCD darker, press the up arrow. • To make the characters on the LCD lighter, press the down arrow.

Table 15 • Printer Parameters, Manufacturing Menu (Page 6 of 7)



Parameter	Explanation
<p>MEDI A/RI BBON CALI BRATE (Thermal Transfer only) MEDI A CALI BRATE (Direct Thermal only)</p>	<p>Calibrate Media and Ribbon Sensors</p> <p>Use this procedure to adjust the sensitivity of the printer’s sensors. In a printer that has the Thermal Transfer option installed, both media and ribbon sensors are adjusted. In a Direct Thermal printer (no Thermal Transfer option installed), only media sensors are adjusted, and the LCD displays for ribbon do not appear in this procedure.</p> <p> Important • This procedure must be followed exactly as presented. All of the steps must be performed even if only one of the sensors requires adjustment. You may press the left arrow at any step in this procedure to cancel the procedure.</p> <p>How to select this parameter:</p> <ol style="list-style-type: none"> 1. Press ENTER to start the calibration procedure. The LOAD BACKING/REMOVE RI BBON prompt displays. 2. Open the printhead. 3. Remove approximately 8 in. (203 mm) of labels from the backing, and pull the media into the printer so that only the backing is between the media sensors. 4. Remove the ribbon (if used). 5. Press the right arrow to continue. The message CALI BRATING PLEASE WAIT displays. The printer adjusts the scale (gain) of the signals that it receives from the media and ribbon sensors. On the sensor profile, this essentially corresponds to moving the peak of the graph up or down to optimize the readings for your application. RELOAD ALL displays. 6. Reload the media and ribbon (if used). 7. Close the printhead. 8. Press the right arrow to continue. The message CALI BRATING PLEASE WAIT displays. The printer does a calibration; during this process, the printer determines the label length. To see the new readings on the new scale, print a sensor profile.
<p>TAKE LABEL</p>	<p>Adjust the Peel Sensor</p> <p>This parameter appears only if the Peel option is installed.</p> <p><i>Range:</i> 0 to 100 <i>Default Value:</i> 66</p> <p>To modify this parameter:</p> <ul style="list-style-type: none"> • To increase the value, press the up arrow. • To decrease the value, press the down arrow.

Table 15 • Printer Parameters, Manufacturing Menu (Page 7 of 7)

Parameter	Explanation
LOAD DEFAULTS	<p>Load Factory Defaults</p> <p>Sets all parameters back to factory defaults.</p> <p> Important • Use care when using this command. All printer parameters are reset to factory values with this command. If possible, print a configuration label to have as a record of the printer's settings before loading defaults.</p> <p>How to select this parameter:</p> <ol style="list-style-type: none"> 1. Press ENTER. The printer asks ARE YOU SURE? 2. To load factory defaults, press ENTER to select YES. To cancel, press any other key.
HEAD OPEN	<p>Show Printhead Status</p> <p>This menu item provides visual feedback for the adjustment of the head open sensor. If the printhead is open, OPEN displays. If the printhead is closed, CLOSED displays. This value cannot be changed through the control panel.</p>
DI RECT-THERMAL	<p>Select Direct-Thermal Configuration</p> <p>Direct-Thermal Only mode is a factory configuration setting for printers that are built without a ribbon handling system. Changing this parameter from NO to YES changes the printer configuration to Direct-Thermal Only operation after the printer power is cycled.</p> <p><i>Selections:</i></p> <ul style="list-style-type: none"> • NO—The printer has a ribbon system and should not operate in Direct-Thermal Only mode. • YES—The printer does not have a ribbon system and must operate in Direct-Thermal Only mode. <p><i>Default Value:</i> NO</p> <p>To modify this parameter:</p> <ol style="list-style-type: none"> 1. Press the up or down arrow to toggle between the selections. 2. If you changed to NO: <ol style="list-style-type: none"> a. Load printer defaults (see Load Factory Defaults on page 64) to enable the ribbon handling system. b. Perform media and ribbon calibration (see Calibrate Media and Ribbon Sensors on page 67). 3. Turn the printer power Off (O) and then back On (I).



Notes • _____



Troubleshooting

This section provides information about LCD, print quality, communications, and other errors that you might need to troubleshoot. The tables provide symptoms, diagnoses of probable causes, and recommended actions that should result in proper printer operation. Working with these tables, the technician can diagnose printer faults and determine the needed repair.

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General

Consult the troubleshooting tables in this section if you encounter a problem.

If you encounter a problem that you cannot correct with the aid of this manual, contact Zebra's Technical Support immediately to avoid or minimize printer downtime. Technical Support also can determine if the printer should be returned for repair.

Technical Support via the Internet is available 24 hours per day, 365 days per year. Go to <http://www.zebra.com/support>.

The Americas

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Troubleshooting Checklists

If an error condition exists with the printer, review this checklist:

- Is there an error message on the LCD? If yes, see *LCD Error Messages on page 86*.
- Did you receive a memory error? If yes, see *Memory Errors on page 89*.
- Are noncontinuous labels being treated as continuous labels? If yes, see *Calibrate Media and Ribbon Sensors on page 67*.
- Is the CHECK RIBBON light on when ribbon is loaded properly, or are noncontinuous labels being treated as continuous labels? If yes, see *Calibrate Media and Ribbon Sensors on page 67*.
- Are you experiencing problems with print quality? If yes, see *Print Quality Problems on page 90*.
- Are you experiencing communications problems? If yes, see *Communications Problems on page 94*.

If the labels are not printing or advancing correctly, review this checklist:

- Are you using the correct type of labels? Review the types of label in *Types of Media on page 18*.
- Are you using a label that is narrower than the maximum print width? See *Set Print Width on page 57*.
- Does the printhead need to be adjusted? See *Adjust Printhead Pressure on page 44* for more information.
- Do the sensors need to be calibrated? See *Calibrate Media and Ribbon Sensors on page 67* for more information.

If none of the above suggestions correct the problem, review this checklist:

- Perform one or more of the self-tests given in *Printer Diagnostics on page 97*. Use the results to help identify the problem.
- If you are still having problems, see *Contacts on page xxi* for customer support information.

LCD Error Messages

The LCD displays messages when there is an error. See [Table 16](#) for LCD errors, the possible causes, and the recommended solutions.

Table 16 • LCD Error Messages

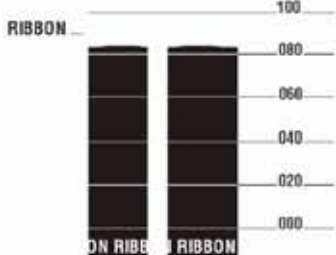
LCD Display/ Printer Condition	Possible Cause	Recommended Solution
<div style="border: 2px solid black; padding: 5px; text-align: center; width: fit-content; margin: 0 auto;"> ALERT RIBBON OUT </div> <p>The printer stops and the ALERT light flashes.</p>	In thermal transfer mode, ribbon is not loaded or incorrectly loaded.	Load ribbon correctly.
	In thermal transfer mode, the ribbon sensor is not detecting ribbon that is loaded incorrectly.	<ol style="list-style-type: none"> 1. Load ribbon correctly. 2. Calibrate the sensors. See Calibrate Media and Ribbon Sensors on page 67.
	In thermal transfer mode, media is blocking the ribbon sensor.	<ol style="list-style-type: none"> 1. Load media correctly. 2. Calibrate the sensors. See Calibrate Media and Ribbon Sensors on page 67.
	In thermal transfer mode, the printer did not detect the ribbon even though it is loaded correctly.	<ol style="list-style-type: none"> 1. Print a sensor profile. See Print Sensor Profile on page 66. The ribbon out threshold (marked by the word RIBBON) is likely too high, above the black area that indicates where the ribbon is detected. <div style="text-align: center; margin: 10px 0;">  </div> 2. Calibrate the sensors or load printer defaults. See Calibrate Media and Ribbon Sensors on page 67 or Load Factory Defaults on page 64.
	If you are using direct thermal media, the printer is waiting for ribbon to be loaded because it is incorrectly set for thermal transfer mode.	Set the printer for Direct Thermal mode. See Set Ribbon Use on page 65.

Table 16 • LCD Error Messages (Continued)









LCD Display/ Printer Condition	Possible Cause	Recommended Solution
<div style="border: 1px solid black; padding: 5px; text-align: center; font-weight: bold;"> WARNING RIBBON IN </div> <p>The ALERT light flashes.</p>	Ribbon is loaded, but the printer is set for direct thermal mode.	Ribbon is not required with direct thermal media. If you are using direct thermal media, remove ribbon unless you are using it to protect the printhead. This error message will not affect printing. If you are using thermal transfer media, which requires ribbon, set the printer for Thermal Transfer mode. See <i>Set Ribbon Use</i> on page 65.
<div style="border: 1px solid black; padding: 5px; text-align: center; font-weight: bold;"> ALERT PAPER OUT </div> <p>The printer stops and the ALERT light flashes.</p>	Media is not loaded or is loaded incorrectly.	Load media correctly.
	Misaligned media sensor.	Check position of the media sensor.
	The printer is set for noncontinuous media, but continuous media is loaded.	Install proper media type, or reset printer for current media type and perform calibration.
<div style="border: 1px solid black; padding: 5px; text-align: center; font-weight: bold;"> ALERT HEAD OPEN </div> <p>The printer stops and the ALERT light flashes.</p>	The printhead is not fully closed.	Close printhead completely.
	The head open sensor is not working properly.	Replace the sensor.
<div style="border: 1px solid black; padding: 5px; text-align: center; font-weight: bold;"> WARNING HEAD TOO HOT </div> <p>The printer stops and the ALERT light flashes.</p>	 <p>Caution • The printhead may be hot enough to cause severe burns. Allow the printhead to cool.</p>  <p>Caution • Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.</p>	
	The printhead is over temperature.	Allow the printer to cool. Printing automatically resumes when the printhead elements cool to an acceptable operating temperature.

Table 16 • LCD Error Messages (Continued)

LCD Display/ Printer Condition	Possible Cause	Recommended Solution
<div style="border: 2px solid black; padding: 5px; text-align: center; width: fit-content; margin: 0 auto;"> WARNING HEAD COLD </div> <p>The printer stops and the ALERT light flashes.</p>	 <p>Caution • An improperly connected printhead data or power cable can cause this error message. The printhead may be hot enough to cause severe burns. Allow the printhead to cool.</p>  <p>Caution • Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.</p>	
	<p>The printhead is under temperature.</p>	<p>Continue printing while the printhead reaches the correct operating temperature. If the error remains, the environment may be too cold for proper printing. Relocate the printer to a warmer area.</p>
	<p>The printhead data cable is not properly connected.</p>	 <p>Caution • Turn off (O) the printer before performing this procedure. Failure to do so can damage the printhead.</p> <ol style="list-style-type: none"> 1. Turn Off (O) the printer. 2. Disconnect and reconnect the data cable to the printhead. 3. Ensure that the cable connector is fully inserted into the printhead connector. 4. Turn on (I) the printer.
<div style="border: 2px solid black; padding: 5px; text-align: center; width: fit-content; margin: 0 auto;"> HEAD ELE. BAD </div> <p>The printer stops.</p>	 <p>Caution • The printhead may be hot enough to cause severe burns. Allow the printhead to cool.</p>  <p>Caution • Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.</p>	
	<p>The printhead is not installed. The printhead data cable is not connected. The printhead is bad.</p>	 <p>Caution • Turn off (O) the printer before performing this procedure. Failure to do so can damage the printhead.</p> <ol style="list-style-type: none"> 1. Turn Off (O) the printer. 2. Disconnect and reconnect the data cable to the printhead. 3. Ensure that the cable connector is fully inserted into the printhead connector. 4. Turn on (I) the printer. 5. If the problem persists, replace the printhead.

Memory Errors

The memory errors in [Table 17](#) indicate that the printer does not have enough memory to perform the function shown on the second line of the LCD.

Table 17 • Memory Errors

Problem/LCD Display	Possible Cause	Recommended Solution
OUT OF MEMORY CREATING BITMAP	Creating Bitmap The bitmap size (label length/width) does not fit in available memory.	<p>You may do any of the following:</p> <ul style="list-style-type: none"> • Press PAUSE. Send a ~HM ZPL command to the printer to display the amount of free memory. Then redesign the graphic/format to fit available memory, or remove items from memory to create more space. • Press PAUSE to skip the formatting step in process and proceed to the next step. With the printer paused, press CANCEL. The printer skips the current label formatting process and goes to the next label. • Turn the printer Off (O) and then On (I) to clear the printer's memory.
OUT OF MEMORY STORING BITMAP	Storing Bitmap Not enough memory is available to store the bitmap created.	
OUT OF MEMORY BUILDING FORMAT	Building Format Label is too complex.	
OUT OF MEMORY STORING FORMAT	Storing Format Format is too large to fit in available memory.	
OUT OF MEMORY STORING GRAPHIC	Storing Graphic The graphic image is too large to fit in available memory.	
OUT OF MEMORY STORING FONT	Storing Font Not enough memory available to store the font.	

Print Quality Problems

Table 18 identifies problems with print quality, the possible causes, and the recommended solutions.

Table 18 • Print Quality Problems



Problem	Possible Cause	Recommended Solution
General print quality issues	The printer is set at the incorrect print speed.	For optimal print quality, set the print speed to the lowest possible setting for your application via control panel, the driver, or the software. See Adjust Print Speed on page 57 . You may wish to perform the FEED Self Test on page 100 .
	You are using an incorrect combination of labels and ribbon for your application.	<ol style="list-style-type: none"> 1. Switch to a different type of media or ribbon to try to find a compatible combination. 2. If necessary, consult your authorized Zebra reseller or distributor for information and advice.
	The printer is set at an incorrect darkness level.	For optimal print quality, set the darkness to the lowest possible setting for your application via the control panel, the driver, or the software. See Adjust Print Darkness on page 54 . You may wish to perform the FEED Self Test on page 100 to determine the ideal darkness setting.
	The printhead is dirty.	<p>Clean the printhead according to the instructions in Clean the Printhead and Platen Roller on page 113.</p> <p> Caution • The printhead may be hot enough to cause severe burns. Allow the printhead to cool.</p> <p> Caution • Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.</p>
Wrinkled ribbon	Ribbon fed through the machine incorrectly.	See Load Ribbon on page 36 .
	Incorrect burn temperature.	Set the darkness to the lowest possible setting for good print quality. See Adjust Print Darkness on page 54 .
	Incorrect or uneven pressure.	Set the pressure to the minimum needed for good print quality. See Adjust Printhead Pressure on page 44 .
	Media not feeding properly; “walking” from side to side.	Make sure that media is snug by adjusting the media guide, or call a service technician.
Long tracks of missing print on several labels	Print element damaged.	Replace the printhead.
	Wrinkled ribbon.	See wrinkled ribbon causes and solutions in this table.

Table 18 • Print Quality Problems (Continued)


Problem	Possible Cause	Recommended Solution
Fine, angular gray lines on blank labels	Wrinkled ribbon.	See wrinkled ribbon causes and solutions in this table.
Printing too light or too dark over the entire label	Media or ribbon is not designed for high-speed operation.	Replace supplies with those recommended for high-speed operation.
	You are using an incorrect combination of labels and ribbon for your application.	<ol style="list-style-type: none"> 1. Switch to a different type of media or ribbon to try to find a compatible combination. 2. If necessary, consult your authorized Zebra reseller or distributor for information and advice.
	You are using ribbon with direct thermal media.	<p>Direct thermal media does not require ribbon. To check if you are using direct thermal media, perform the label scratch test in <i>When to Use Ribbon</i> on page 20.</p> <p>If you are using ribbon intentionally with direct thermal media, increase the darkness level, but note that high darkness levels may decrease printhead life. You may wish to perform the <i>FEED Self Test</i> on page 100 to determine the ideal darkness setting.</p>
	Incorrect or uneven printhead pressure.	Set the pressure to the minimum needed. See <i>Adjust Printhead Pressure</i> on page 44.
Smudge marks on labels	Media or ribbon is not designed for high-speed operation.	Replace supplies with those recommended for high-speed operation.
Misregistration/skips labels	The printer is not calibrated.	Recalibrate the printer.
	Improper label format.	Use correct label format.
Misregistration and misprint of one to three labels	The platen roller is dirty.	See <i>Clean the Printhead and Platen Roller</i> on page 113.
	Media does not meet specifications.	Use media that meets specifications.
Vertical drift in top-of-form position	<p>Normal tolerances of mechanical parts and printer modes.</p>  <p>Note • A vertical drift of ± 4 to 6 dot rows (approximately 0.5 mm) is within normal tolerances.</p>	<ol style="list-style-type: none"> 1. Calibrate the printer. 2. Adjust the label top position setting. See <i>Adjust Label Top Position</i> on page 55.
	The printer is out of calibration.	Recalibrate the printer.
	The platen roller is dirty.	See <i>Clean the Printhead and Platen Roller</i> on page 113.

Table 18 • Print Quality Problems (Continued)

Problem	Possible Cause	Recommended Solution
Vertical image or label drift	The printer is using noncontinuous labels but is configured in continuous mode.	Configure the printer for non-continuous and run calibration routine, if necessary.
	Improperly calibrated media sensor.	See <i>Calibrate Media and Ribbon Sensors</i> on page 67.
	The platen roller is dirty.	Clean the platen roller. See <i>Clean the Printhead and Platen Roller</i> on page 113.
	Improper printhead pressure settings (toggles).	Adjust the printhead pressure to ensure proper functionality.
	Improperly loaded ribbon or media.	Verify that the printer is loaded properly.
	Incompatible media.	Ensure that the interlabel gaps or notches are 2 to 4 mm and consistently placed. Media must not exceed minimum specifications for mode of operation.
The bar code printed on a label does not scan.	The bar code is not within specifications because the print is too light or too dark.	Perform the <i>FEED Self Test</i> on page 100. Adjust the darkness or print speed settings as necessary.
	Not enough blank space around the bar code.	Leave at least 1/8 in. (3.2 mm) between the bar code and other printed areas on the label and between the bar code and the edge of the label.

Calibration Problems

Table 19 identifies problems with calibration, the possible causes, and the recommended solutions.

Table 19 • Calibration Problems

Problem	Possible Cause	Recommended Solution
Loss of printing registration on labels. Excessive vertical drift in top-of-form registration.	Improperly positioned media guides.	Ensure that the media guides are properly positioned.
	Media type set incorrectly.	Set the printer for the correct media type (gap/notch, continuous, or mark). See <i>Set Media Type</i> on page 56.
	Incorrect sensor being used for the media type.	Manually select the correct sensor to use. See <i>Select the Media Sensor</i> on page 56.
Auto Calibrate failed.	Dirty platen roller.	Clean the platen roller according to the instructions in <i>Clean the Printhead and Platen Roller</i> on page 113.
	Improperly loaded media or ribbon.	Ensure that media and ribbon are loaded correctly.
	The sensors could not detect the media or ribbon.	Manually calibrate the printer (see <i>Calibrate Media and Ribbon Sensors</i> on page 67).
	Sensors dirty or media improperly positioned for the sensors to detect.	Ensure that the sensors are clean and that media is positioned properly.

Communications Problems

Table 20 identifies problems with communications, the possible causes, and the recommended solutions.

Table 20 • Communications Problems

Problem	Possible Cause	Recommended Solution
A label format was sent to the printer but was not recognized.	The communication parameters are incorrect.	Check the printer driver or software communications settings (if applicable).
		Make sure you are using the correct communication cable. See Data Cable Requirements on page 17 for the requirements.
		If a driver is used, check the driver communication settings for your connection.
A label format was sent to the printer. Several labels print, then the printer skips, misplaces, misses, or distorts the image on the label.	The serial communication settings are incorrect.	Ensure that the flow control settings match.
		Check the communication cable length. See Data Cable Requirements on page 17 for requirements.
		Check the printer driver or software communications settings (if applicable).
A label format was sent to the printer but was not recognized. No printing occurs.	The prefix and delimiter characters set in the printer do not match the ones in the label format.	Verify the prefix and delimiter characters. See Set Command Character on page 62 and Set Delimiter Character on page 63 for the requirements.
		Incorrect data is being sent to the printer.
	Incorrect data is being sent to the printer.	Ensure that the label format being used matches the operating language of the printer. See Printer Language Modes on page 8 .
		Check the communication settings on the computer. Ensure that they match the printer settings.
		If the problem continues, check the label format.

Ribbon Problems

Table 21 identifies problems that may occur with ribbon, the possible causes, and the recommended solutions.



Note • This section applies only to printers that have the Thermal Transfer option installed.

Table 21 • Ribbon Problems

Problem	Possible Cause	Recommended Solution
Broken or melted ribbon	Darkness setting too high.	<ol style="list-style-type: none"> 1. Reduce the darkness setting. 2. Clean the printhead thoroughly.
<p>The printer does not detect when the ribbon runs out.</p> <p>When the RIBBON parameter is set to AUTO, the printer remains in direct thermal mode (shown on the printer configuration label), even though ribbon is loaded correctly in the printer.</p>	<p>The ribbon-out threshold is set too high to detect the ribbon. On a sensor profile, the ribbon-out threshold (circled in Figure 27) appears above the black bars that indicate the ribbon. This happens if you calibrate the printer without ribbon and later insert ribbon without recalibrating the printer or loading printer defaults.</p> <p>Figure 27 • Ribbon-Out Threshold Too High</p>	<ol style="list-style-type: none"> 1. Print a sensor profile (see Print Sensor Profile on page 66), and note the location of the ribbon-out threshold (circled in Figure 27). 2. Calibrate the printer, this time using ribbon, or load printer defaults. See Calibrate Media and Ribbon Sensors on page 67 or Load Factory Defaults on page 64. <ul style="list-style-type: none"> Important • Loading defaults resets all printer parameters back to factory defaults. 3. Print another sensor profile, and compare it to the first one. 4. If the ribbon-out threshold is still too high, you may manually change the value. See Adjust Ribbon-Out Threshold on page 71.
The printer indicates that ribbon is out, even though ribbon is loaded correctly.	The printer was not calibrated for the label and ribbon being used.	Perform the calibration procedure in Calibrate Media and Ribbon Sensors on page 67 .

Miscellaneous Printer Problems

Table 22 identifies miscellaneous problems with the printer, the possible causes, and the recommended solutions.

Table 22 • Miscellaneous Printer Problems

Problem	Possible Cause	Recommended Solution
The LCD displays a language that I cannot read	The language parameter was changed through the control panel or a firmware command.	Perform the procedure in <i>Select a Display Language</i> on page 53.
The LCD is missing characters or parts of characters	The LCD may need replacing.	Run the <i>Power-On Self Test</i> on page 97 and check that the LCD display shows all characters. If not, replace the LCD.
Changes in parameter settings did not take effect	Parameters are set incorrectly.	1. Set parameters and save permanently. 2. Turn the printer power Off (O) and then On (I).
	A command turned off the ability to change the parameter.	Refer to the <i>Programming Guide</i> for the printer language being used.
	A command changed the parameter back to the previous setting.	Refer to the <i>Programming Guide</i> for the printer language being used.
	If the problem continues, there may be a problem with the main logic board.	Replace the main logic board.
The printer fails to calibrate or detect the top of the label.	The printer was not calibrated for the label being used.	Perform the calibration procedure in <i>Calibrate Media and Ribbon Sensors</i> on page 67.
	The printer is configured for continuous media.	Set the media type to noncontinuous media. See <i>Set Media Type</i> on page 56.
	The driver or software configuration is not set correctly.	Driver or software settings produce commands that can overwrite the printer configuration. Check the driver or software media-related setting.
Non-continuous labels are being treated as continuous labels.	The printer is configured for continuous media.	Set the media type to noncontinuous media. See <i>Set Media Type</i> on page 56.
	The printer was not calibrated for the media being used.	Perform the calibration procedure in <i>Calibrate Media and Ribbon Sensors</i> on page 67.
All lights are on, but nothing displays on the LCD, and the printer locks up.	Internal electronic or firmware failure.	Turn the printer power Off (O) and then On (I). If the printer locks up again, replace the main logic board.
The printer locks up while running the Power-On Self Test.	Main logic board failure.	Replace the main logic board.

Printer Diagnostics

Self tests and other diagnostics provide specific information about the condition of the printer. The self tests produce sample printouts and provide specific information that helps determine the operating conditions for the printer. The most commonly used are the Power-On and the CANCEL self tests.



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

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



Note •

- When performing these self tests, do not send data to the printer from the host.
- If your media is shorter than the label to be printed, the test label continues on the next label.
- When canceling a self test prior to its actual completion, always reset the printer by turning the printer power Off (O) and then On (I).

Power-On Self Test

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

To initiate the Power-On Self Test, complete these steps:

1. Turn On (I) the printer using the power switch located to the side of the control panel.
 The POWER LED illuminates. The other control panel LEDs and the LCD monitor the progress and indicate the results of the individual tests. All messages during the POST display in English; however, if the test fails, the resulting messages cycle through the international languages as well.

CANCEL Self Test

The CANCEL self test prints a configuration label (Figure 28).

To perform the CANCEL Self Test, complete these steps:

1. Turn Off (O) the printer.
2. Press and hold CANCEL while turning the printer On (I). Hold CANCEL until the first control panel light turns off.
A printer configuration label prints (Figure 28).

Figure 28 • Configuration Label



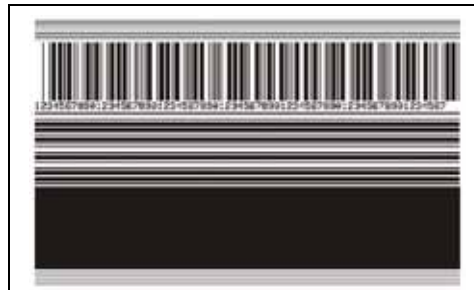
PAUSE Self Test

This self test can be used to provide the test labels required when making adjustments to the printer's mechanical assemblies or to determine if any printhead elements are not working. [Figure 29](#) shows a sample printout.

To perform a PAUSE self test, complete these steps:

1. Turn Off (O) the printer.
2. Press and hold PAUSE while turning the power On (I). Hold PAUSE until the first control panel light turns off.
 - The initial self test prints 15 labels at the printer's slowest speed, and then automatically pauses the printer. Each time PAUSE is pressed, an additional 15 labels print. [Figure 29](#) shows a sample of the labels.

Figure 29 • PAUSE Test Label



- While the printer is paused, pressing CANCEL alters the self test. Each time PAUSE is pressed, 15 labels print at 6 in. (152 mm) per second.
- While the printer is paused, pressing CANCEL again alters the self test a second time. Each time PAUSE is pressed, 50 labels print at the printer's slowest speed
- While the printer is paused, pressing CANCEL again alters the self test a third time. Each time PAUSE is pressed, 50 labels print at 6 in. (152 mm) per second.
- While the printer is paused, pressing CANCEL again alters the self test a fourth time. Each time PAUSE is pressed, 15 labels print at the printer's maximum speed.
- To exit this self test at any time, press and hold CANCEL.

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 bar codes that are within specifications.

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

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

To perform a FEED self test, complete these steps:

1. Print a configuration label to show the printer's current settings.
2. Turn Off (O) the printer.
3. Press and hold FEED while turning the power On (I). Hold FEED until the first control panel light turns off.

The printer prints a series of labels (Figure 30) at various speeds and at darkness settings higher and lower than the darkness value shown on the configuration label.

Figure 30 • FEED Test Label



- See [Figure 31](#) and [Table 23](#). Inspect the test labels and determine which one has the best print quality for your application. If you have a bar code verifier, use it to measure bars/spaces and calculate the print contrast. If you do not have a bar code verifier, use your eyes or the system scanner to choose the optimal darkness setting based on the labels printed in this self test.

Figure 31 • Bar Code Darkness Comparison

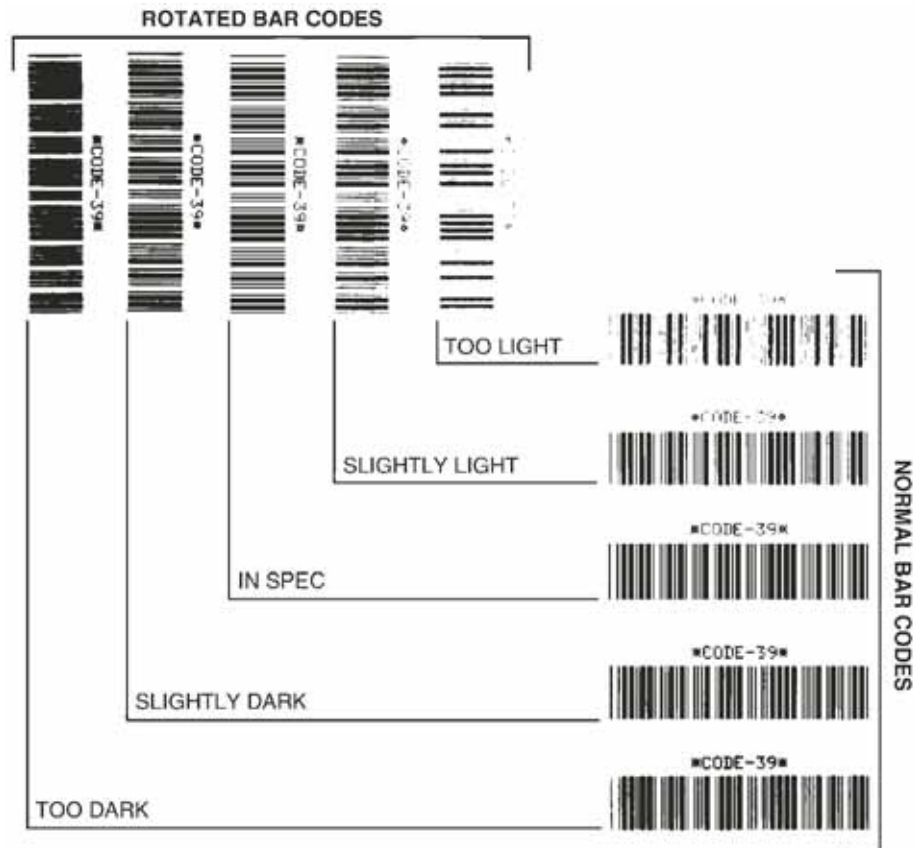


Table 23 • Judging Bar Code Quality

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 bar code bars increase in size. • The openings in small alphanumeric characters may fill in with ink. • Rotated bar code bars and spaces run together.
Slightly dark	<p>Slightly dark labels are not as obvious.</p> <ul style="list-style-type: none"> • The normal bar code will be “in-spec.” • Small character alpha numerics will be bold and could be slightly filled in. • The rotated bar code spaces are small when compared to the “in-spec” code, possibly making the code unreadable.
“In-spec”	<p>The “in-spec” bar code can only be confirmed by a verifier, but it should exhibit some visible characteristics.</p> <ul style="list-style-type: none"> • The normal bar code will have complete, even bars and clear, distinct spaces. • The rotated bar code will have complete, even bars and clear, distinct spaces. Although it may not look as good as a slightly dark bar code, the bar code will be “in-spec.” • In both normal and rotated styles, small alphanumeric characters look complete.
Slightly light	<p>Slightly light labels are, in some cases, preferred to slightly dark ones for “in-spec” bar codes.</p> <ul style="list-style-type: none"> • Both normal and rotated bar codes 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 bar codes have incomplete bars and spaces. • Small alphanumeric characters are unreadable.

5. Note the relative darkness value and the print speed printed on the best test label.
6. Add or subtract the relative darkness value from the darkness value specified on the configuration label. The resulting numeric value is the best darkness value for that specific label/ribbon combination and print speed.
7. If necessary, change the darkness value to the darkness value on the best test label. See [Adjust Print Darkness on page 54](#).
8. If necessary, change the print speed to the same speed as on the best test label. See [Adjust Print Speed on page 57](#).

FEED and PAUSE Self Test

Performing this self test temporarily resets the printer configuration to the factory default values. These values are active only until power is turned off unless you save them permanently in memory. If the factory default values are permanently saved, a media calibration procedure must be performed.

To perform a FEED and PAUSE self test, complete these steps:

1. Turn Off (O) the printer.
2. Press and hold FEED and PAUSE while turning the power On (I).
3. Hold FEED and PAUSE until the first control panel light turns off.

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

Communications Diagnostics Test

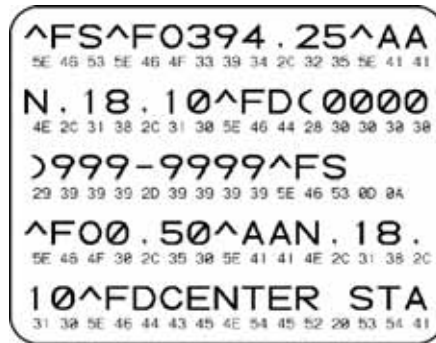
Do not perform the following test until all configuration and calibration parameters have been set. For configuration information, see [Control Panel LCD Display on page 54](#).

This test is controlled from the control panel LCD display. See [Hex Dump on page 63](#). [Figure 32](#) shows a typical printout from this test. Turn the printer power Off (O) and then back On (I) to exit this self test and return to normal operation.



Note • This test label prints upside-down.

Figure 32 • Communications Diagnostics Test Label





Notes • _____



Preventive and Corrective Maintenance

This section provides various levels of printer maintenance required for optimum performance. This section also provides information on cleaning and general maintenance, replacement of major assemblies, and mechanical adjustments.

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Safety Information



This section identifies general and specific safety information for the S4M printer.

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Personal Safety Tips



Caution • Risk of explosion if battery is replaced by an incorrect type, or in the wrong polarity.



Caution • For personnel and equipment safety, always use an approved three-conductor power cord specific to the region or country intended for installation. This cord must use an IEC 320 female connector and the appropriate region-specific, three-conductor grounded plug configuration.



Caution • Beware of “pinch points” on the printers, especially:

- Opening and closing the covers
 - Opening and closing the printhead
 - Rewind spindle
 - Platen roller
 - Peel assembly
-



Caution • 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.



Important • Do not wear loose clothing or jewelry such as rings, watches, or bracelets when servicing the printers.

Equipment Safety Tips

- The AC power plug and IEC 320 connectors on all Zebra Printers must bear the certification mark of at least one of the international safety organizations listed below.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing any maintenance.



Caution • Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.

Caution • Permanent damage to the Flash Memory will result if you turn on power to the print engine with Flash Memory chips installed in the wrong direction.

- Zebra printers comply with international regulations governing radiated emissions when using fully shielded data cables. Data cables must be fully shielded and fitted with metal or metallized connector shells. Required shielded data cables and connectors prevent radiation and reception of electrical noise. Use of unshielded data cables may increase radiated emissions above the regulated limits.
- Zebra recommends using Preventive Maintenance Kit (p/n 47362), or a solvent containing 90% isopropyl alcohol and 10% distilled water. Increase the percentage of alcohol as necessary for effective cleaning of:
 - printheads
 - platen rollers
 - peel-off rollers
 - pinch rollers
 - media paths
 - peel/tear bars
 - spindles
- Ribbons used in the printers must be as wide as or wider than the media. If the ribbon is narrower than the media, areas of the printhead will be unprotected and subject to premature wear.
- To ensure the printer has proper ventilation and cooling, do not place any padding or cushioning material under the unit because this restricts airflow.
- Install the printer on a solid, level surface of sufficient size and strength to accommodate the physical dimensions and weight of the unit. The area enclosure in which the printer will operate must meet the environmental conditions specified in the Maintenance Manual or User Guide. Electrical power must be available and in close proximity to the printer.



Notes • _____



Preventive Maintenance

This section contains procedures for routine preventive maintenance. An operator or technician may perform preventive maintenance, which consists of:

- Visual inspection
- Regular cleaning of the printhead, platen roller, peel roller, and pinch roller
- General cleaning of the print engine's interior and exterior

See [Table 24 on page 112](#) for the preventive maintenance cleaning chart.

Contents

Lubrication	112
Cleaning Procedures	112
Clean the Exterior	112
Clean the Printhead and Platen Roller	113
Clean the Media Compartment and Sensors	115
Clean the Peel-Off Assembly	116

Lubrication

No lubrication is needed for this printer.

Caution • Some commercially available lubricants will damage the finish and the mechanical parts if used on this printer.

Cleaning Procedures



Important • Zebra is not responsible for damage caused by the use of cleaning fluids on this printer.

Specific cleaning procedures are provided on the following pages. [Table 24](#) shows the recommended cleaning schedule.

Table 24 • Recommended Cleaning Schedule

Area	Method	Interval
Printhead	Solvent*	Direct Thermal Mode: After every roll of media (or 500 feet of fanfold media). Thermal Transfer Mode: After every roll of ribbon or three rolls of media. These intervals are intended as guidelines only. You may have to clean more often, depending upon your application and media.
Platen roller	Solvent*	
Media sensors	Air blow	
Ribbon sensor	Air blow	
Media path	Solvent*	
Ribbon path	Solvent*	
Pinch roller. (part of Peel-Off option)	Solvent*	
Tear-off/peel-off bar	Solvent*	Once a month.
Take-label sensor	Air blow	Once every six months.

* Zebra recommends using Preventive Maintenance Kit (part number 47362) or a solution of 90% Isopropyl and 10% deionized water)

Clean the Exterior

You may clean the exterior surfaces of the printer with a lint-free cloth and a small amount of a mild detergent, if necessary. Do not use harsh or abrasive cleaning agents or solvents.

Clean the Printhead and Platen Roller

You can minimize printhead wear and maintain print quality with regular preventive measures. Over time, the movement of media or ribbon across the printhead wears through the protective ceramic coating, exposing and eventually damaging the print elements (dots). To avoid abrasion:

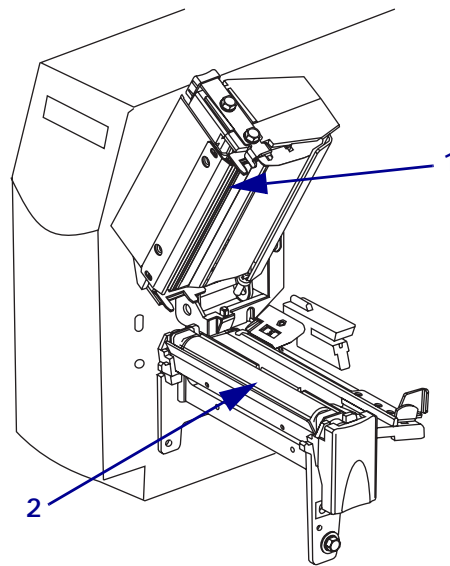
- Clean the printhead frequently, and use well-lubricated thermal transfer ribbons with backings optimized to reduce friction.
- Minimize printhead pressure and burn temperature settings by optimizing the balance between the two.
- Ensure that the thermal transfer ribbon is as wide or wider than the label media to prevent exposing the elements to the more abrasive label material.

For best results, clean the printhead after changing every roll of ribbon. Inconsistent print quality, such as voids in the bar code or graphics, may indicate a dirty printhead.



Note • The printer can remain on while you are cleaning the printhead. In this way, all label formats, images, and all temporary parameter settings stored in the printer's internal memory are saved. In addition, keep the peel engaged while cleaning the platen roller (media must be unloaded to do this) to reduce the risk of bending the tear-off/peel-off bar.

Figure 33 • Cleaning the Printhead and Platen Roller



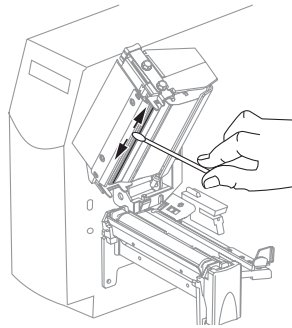
1	Printhead assembly
2	Platen roller



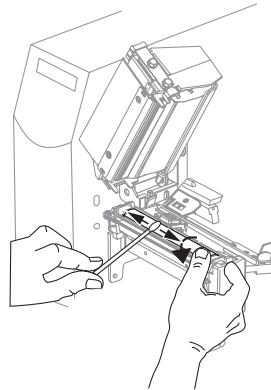
Caution • The printhead may be hot and could cause severe burns. Allow the printhead to cool.

To clean the printhead and platen roller, complete these steps:

1. Open the printhead assembly.
2. Remove the media and ribbon.
3. Using the swab from the Preventive Maintenance Kit (part number 47362) or a solution of 90% Isopropyl alcohol and 10% deionized water and a cotton swab, wipe along the brown strip on the printhead assembly from end to end. Allow the solvent to evaporate.



4. While manually rotating the platen roller, clean it thoroughly with the swab. Allow the solvent to evaporate.



5. Reload media and ribbon, and close the printhead assembly.



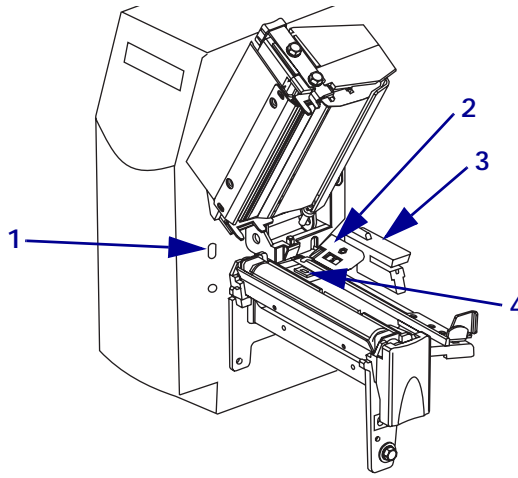
Note • If performing this procedure does not improve print quality, try cleaning the printhead with *Save-A-Printhead* cleaning film. This specially coated material removes contamination buildup without damaging the printhead. Call your authorized Zebra reseller for more information.

Clean the Media Compartment and Sensors

To clean the media compartment and sensors, complete these steps:

1. Brush or vacuum any accumulated paper lint and dust away from the media and ribbon paths.
2. Brush or vacuum any paper lint and dust away from the sensors (see [Figure 34](#)).

Figure 34 • Cleaning the Sensors



1	Take-label sensor
2	Ribbon sensor
3	Transmissive sensor
4	Reflective sensor

Clean the Peel-Off Assembly

The Peel-Off option is required.

The Peel assembly consists of several spring-loaded rollers to ensure the proper roller pressure. Use the peel release lever and your right hand to open and close the Peel assembly. Doing this will keep your fingers away from the rollers.



Caution • Do not use your left hand to assist in closing the Peel assembly. The top edge of the Peel roller/assembly could pinch your fingers.



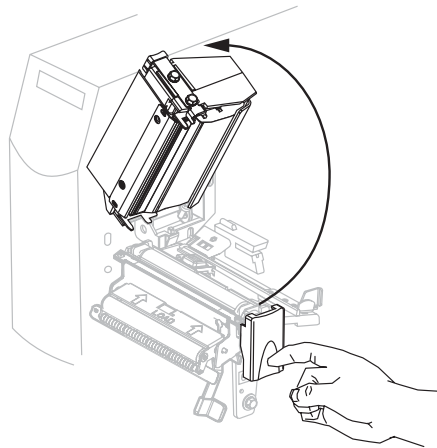
Caution • Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.



Caution • The printhead may be hot and could cause severe burns. Allow the printhead to cool.

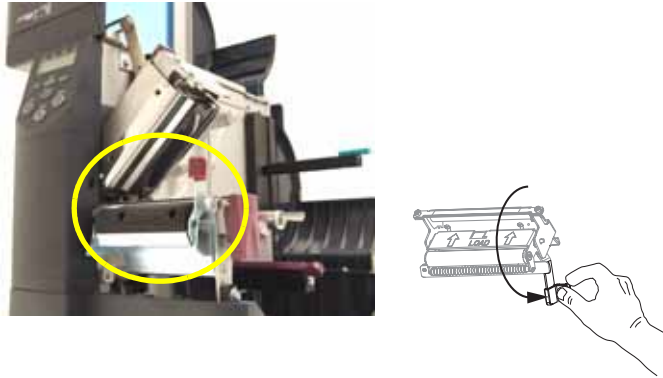
If adhesive buildup affects peel-off performance, complete these steps:

1. Press the printhead release latch to open the printhead assembly.

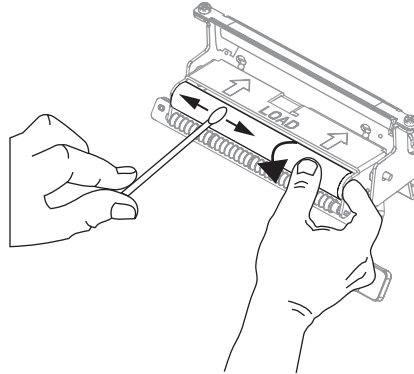


2. Lift the printhead until it latches open.

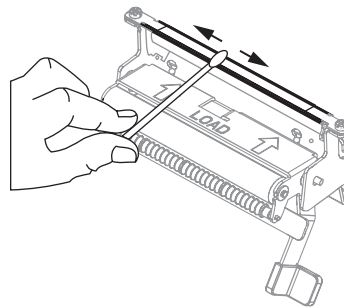
3. Open the peel assembly by pivoting the module toward you.



4. Remove any media backing to expose the pinch roller.
5. While manually rotating the pinch roller, clean it thoroughly with the swab from the Preventive Maintenance Kit (part number 47362) or a solution of 90% Isopropyl alcohol and 10% deionized water and a cotton swab. Allow the solvent to evaporate.



6. Use the swab to remove excess adhesive from the tear-off/peel-off bar. Allow the solvent to evaporate.



Important • Apply minimum force when cleaning the tear-off/peel-off bar. Excessive force can cause the tear-off/peel-off bar to bend, which could have a negative effect on peel performance.

7. Close the printhead assembly and the media door.
The printer is ready to operate.



Notes • _____



Corrective Maintenance

Corrective maintenance consists of the following:

- Troubleshooting printer faults to a modular level.
- Replacing or adjusting faulty or inoperable components.
- Returning the printer to proper operating condition.

Contents

Routine Referral Procedures (RRP)	121
Remove the Electronics Cover	122
Install the Electronics Cover	124
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Sensors	177
Drive System	199
Roller System	257
Printed Circuit Boards	273
Exterior Components	307

Required Tools

- Safety Glasses
- Standard screwdriver set
- Phillips screwdriver set
- Metric hex key (allen wrench) set
- Standard hex key (allen wrench) set
- Metric nut driver set
- Standard nut driver set
- Long needle nose pliers
- Four Inch (100 mm) Adjustable (Crescent) Wrench
- Antistatic wrist strap and mat
- Isopropyl Alcohol; Zebra's Preventive Maintenance Kit, part number 47362 or a solution of 90% alcohol/10% de-ionized water
- Cotton swabs and lint free cloths
- 0.060 inch feeler gauge or shim
- Punch set



Routine Referral Procedures (RRP)

Routine Referral Procedures are commonly used steps that are performed often during corrective maintenance. These procedures are referenced throughout this section of the manual.

Contents

Remove the Electronics Cover. 122
Install the Electronics Cover. 124

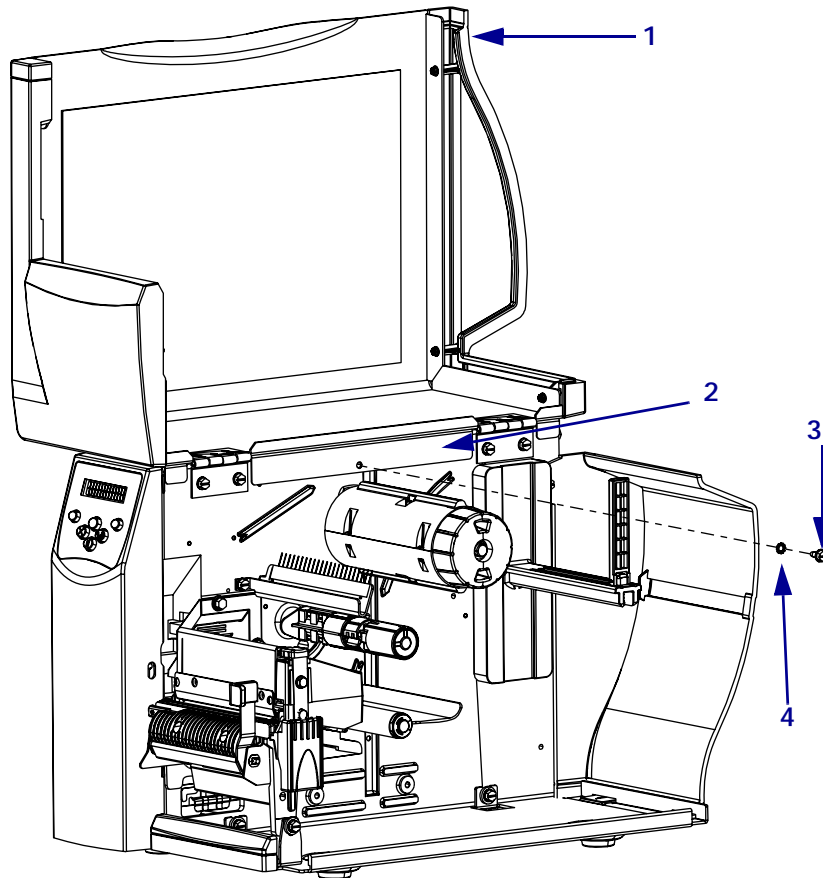
RRP No. 1: Remove the Electronics Cover



Note • Retain all parts removed during disassembly, unless otherwise directed.

1. Turn Off (O) the printer and disconnect the AC power cord and all data cables.
2. See [Figure 35](#). Remove the electronics cover mounting screw and washer and then close the media door.

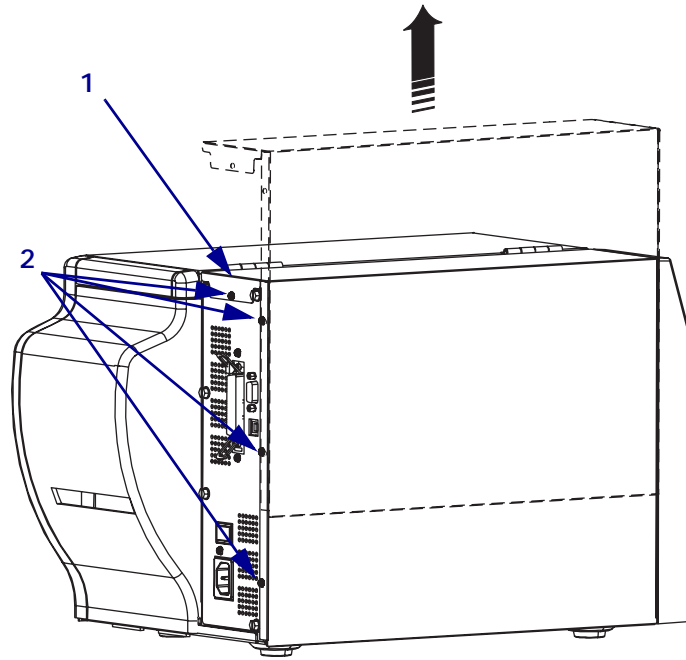
Figure 35 • Remove the Mounting Screw



1	Media Door
2	Electronics Cover Upper Flange
3	Electronics Cover Mounting Screw
4	Washer

3. See [Figure 36](#). Remove the four remaining mounting screws securing the electronics cover.
4. Remove the electronics cover by lifting straight up on the bottom lip of the electronics cover.

Figure 36 • Electronics Cover Removal



1	Electronics Cover
2	Mounting Screws (4)

RRP No. 2: Install the Electronics Cover

1. See [Figure 36 on page 123](#). Install the cover by aligning it and sliding down, ensuring the lower tabs are inside the base and the upper flanges are between the main frame and the media door.
2. Install the four mounting screws on the back of the printer.
3. See [Figure 35 on page 122](#). Open the media door and install the mounting screw and washer to secure the electronics cover.

Print System



This section provides replacement, conversion, and installation procedures for the S4M print system.

Contents

- Printhead Assembly 126
- Printhead Upgrade Option 130
- Print Mechanism 141
- Printhead Cables 151
- Printhead Release Latch 162
- Printhead Pressure Dials 169

Printhead Assembly

This procedure is for installing the Printhead Assembly. Read these instructions thoroughly before performing this procedure.



Caution • Turn OFF (O) the printer and disconnect it from the power source before performing the following maintenance.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Anti-Static Wriststrap and Mat
- 47362* Zebra Preventative Maintenance Kit
- Metric Nutdriver Set

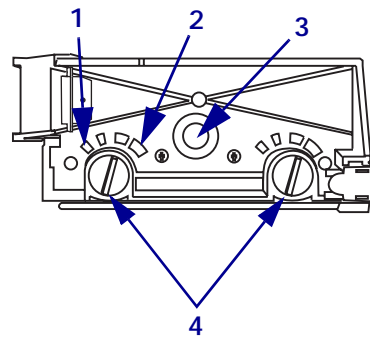
*. A solution of 90% isopropyl alcohol and 10% deionized water and clean swabs may be used in place of the Preventative Maintenance Kit.

Remove the Printhead



- Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.
Connect yourself to an antistatic device.
- Turn Off (O) the printer and disconnect the AC power cord and data cables.
- Open the media door and remove media and ribbon.
- See [Figure 37](#). Note the current printhead pressure dial settings, and then rotate the two printhead pressure dials to position #1.

Figure 37 • Printhead Pressure Knobs



Front of Printer

1	Position #1
2	Position #4
3	Thumbscrew
4	Printhead pressure dials (2)

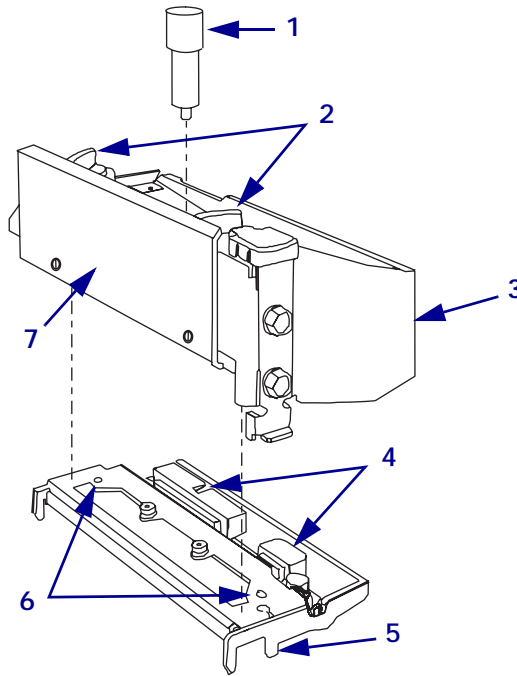
- See [Figure 38](#). Remove the printhead thumbscrew.



6. **Caution** • The printhead may be hot and could cause severe burns. Allow the printhead to cool.

Unlatch the print mechanism and lift and latch it in the open position.

Figure 38 • Printhead Assembly Mounting and Connections



1	Thumbscrew
2	Printhead pressure dials (2)
3	Print mechanism assembly
4	Printhead connectors
5	Printhead fork assembly
6	Locating holes
7	Ribbon guide plate

7. Slide the printhead fork assembly out of the print mechanism.
8. With the cable connectors exposed, carefully disconnect the two printhead cables from the printhead assembly. Remove and discard the old printhead assembly.

Install the New Printhead



1. **Caution** • An improperly connected printhead data or power cable may cause the printhead to generate excessive heat and/or a false HEAD COLD message to display while the printhead is hot enough to cause severe burns. Allow the printhead to cool.

Connect the printhead cables to the new printhead fork assembly and then carefully slide the assembly into the print mechanism.



Important • When mounting the printhead fork assembly onto the print mechanism, visually inspect and ensure the following:

- the cables are in their channels at the back of their carrier assembly
 - the power cable is under data cable
 - they are not binding on the print mechanism
2. Ensure the two locating protrusions on the print mechanism mounting plate snap into the locating holes on the printhead fork assembly.
 3. Try to move the printhead fork assembly back and forth to make sure that it is engaged; the assembly should not move. If the assembly moves, repeat [step 2](#).



Important • The printhead must be properly engaged with the ribbon guide plate to ensure proper print quality.

4. Secure the printhead to the mechanism with the previously removed thumbscrew and close the print mechanism.
5. Rotate the two printhead pressure dials to the desired position for your daily printing, as noted in [step 4](#) on [page 127](#).
6. **Caution** • Do not use sharp objects to clean the printhead or platen roller.

Clean the printhead and platen roller using Zebra Preventive Maintenance Kit (47362).

7. Reinstall media and ribbon and close the media door.
8. Reconnect the AC power cord and data cables.
9. Turn On (I) the printer.

Printhead Upgrade Option

This procedure is for converting the drive system and printhead from 203 to 300 dpi or 300 to 203 dpi on the S4M printer. Read these instructions thoroughly before attempting to changeover the printhead and drive system.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

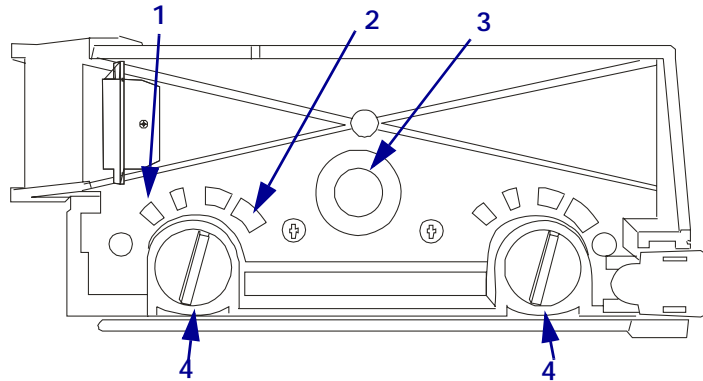
- | | |
|--|---|
| <input type="checkbox"/> Phillips Screwdriver Set | <input type="checkbox"/> Antistatic Wriststrap and Mat |
| <input type="checkbox"/> Metric Nutdriver Set | <input type="checkbox"/> Metric and inch Feeler Gauges, must include: 0.060 in. (1.5mm) |
| <input type="checkbox"/> 47362* Zebra Preventive Maintenance Kit | <input type="checkbox"/> Metric Hex Key (Allen wrench) Set |

*. A solution of 90% isopropyl alcohol and 10% deionized water and clean swabs may be used in place of the Preventative Maintenance Kit.

Remove the Printhead

1. Open the media door.
2. See [Figure 39](#). Rotate the two printhead pressure dials to the #1 position.

Figure 39 • Locate the Printhead Pressure Dials



1	Position number one
2	Position number four
3	Thumbscrew
4	Printhead pressure dials (2)

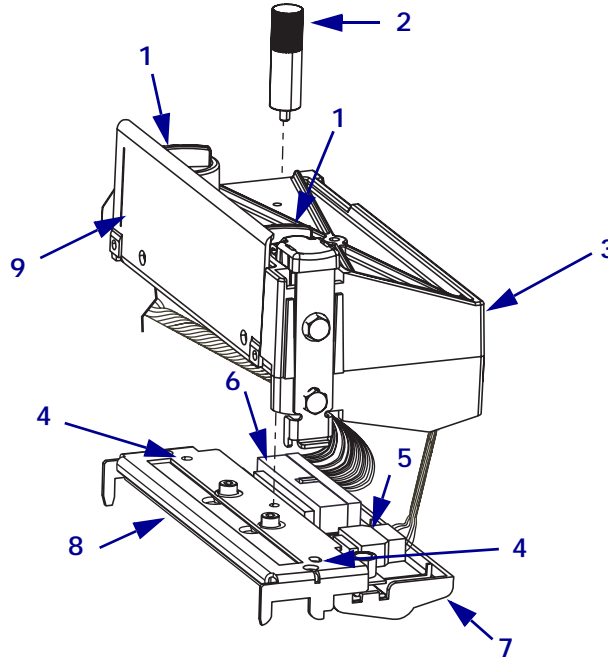
3. See [Figure 40](#). Remove the thumbscrew to loosen the printhead fork assembly.



4. **Caution** • Be sure the printhead is fully open and latched in the open position.

Unlatch the print mechanism and lift and latch it in the open position.

Figure 40 • Printhead Removal and Installation



1	Printhead pressure dial	6	Printhead data connector
2	Thumbscrew	7	Lower guide
3	Print mechanism assembly	8	Printhead fork assembly
4	Locating hole	9	Mounting plate
5	Printhead power connector		



5. **Caution** • The printhead may be hot and could cause severe burns. Allow the printhead to cool.

Slide the printhead fork assembly out from the print mechanism assembly to expose the printhead cable connectors.

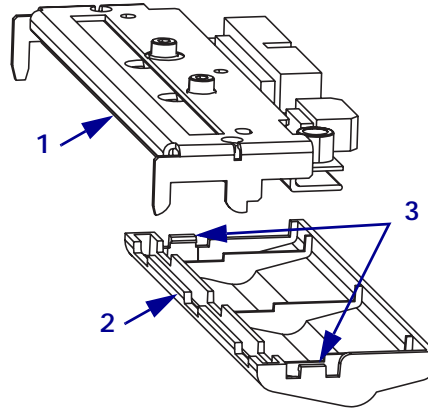


6. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device and disconnect both the printhead power and data cables and remove the printhead assembly.

7. See [Figure 41](#). Remove the lower printhead guide by pushing the tabs away from the fork assembly.

Figure 41 • Remove the Lower Guide



1	Printhead fork assembly
2	Lower guide
3	Tabs (2)

Install the Printhead

1. See [Figure 41](#). Install the lower guide on the new printhead fork assembly
2. Connect both printhead power and data cables to the printhead connectors and carefully slide them into position. Ensure the cables are in their proper channels and are not binding the printhead.



3. **Caution** • An improperly connected printhead data or power cable may cause the printhead to generate excessive heat and/or a false HEAD COLD message to display while the printhead is hot enough to cause severe burns. Allow the printhead to cool.

See [Figure 40 on page 132](#). Install the new printhead fork assembly.



Important • When mounting the printhead fork assembly onto the print mechanism, visually inspect and ensure the following:

- the cables are in their channels at the back of their carrier assembly
 - the power cable is under data cable
 - they are not binding on the print mechanism
4. Ensure the two locating protrusions on the print mechanism mounting plate snap into the locating holes on the printhead fork assembly. Move the assembly back and forth to be sure that it is engaged. There should be no movement.



Note • The printhead must be properly engaged with the ribbon guide plate to have the proper print quality.

5. Secure the printhead fork assembly to the printhead housing using the previously removed thumbscrew.
6. See [Figure 39 on page 131](#). Rotate the two printhead pressure dials back to their original position.
7. **Caution** • Do not use sharp objects to clean printhead or platen roller.

Clean the printhead and the platen roller.

Remove the Main Logic Board



1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

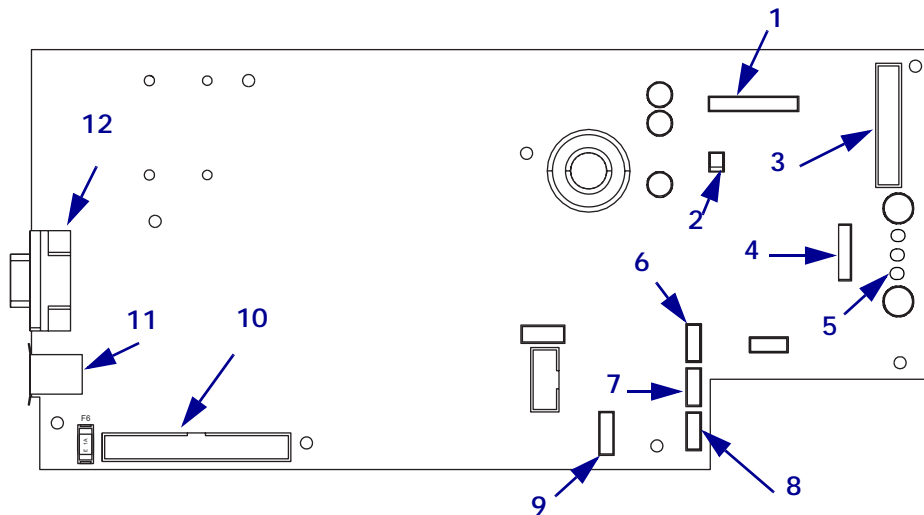
Connect yourself to an antistatic device.

2. Refer to [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 42](#). Remove all cables from the main logic board (MLB).



Note • Take note of the location of all connectors on the main logic board.

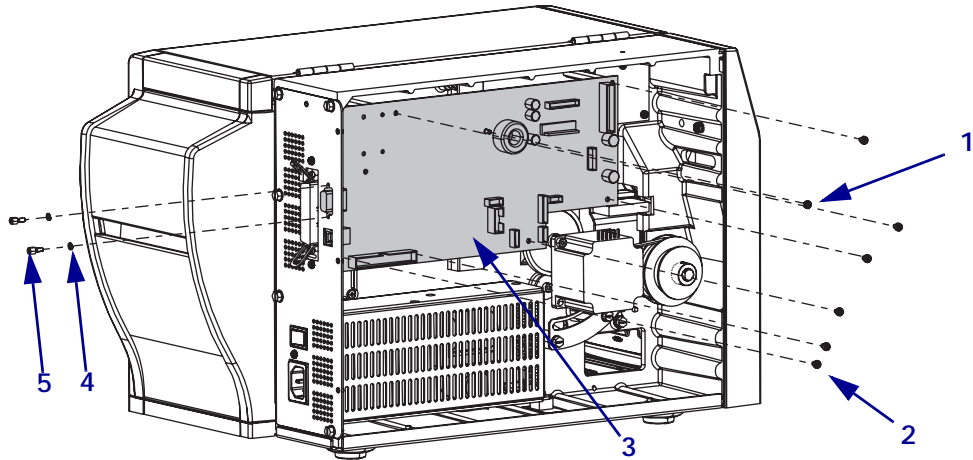
Figure 42 • Remove the Main Logic Board Connections



1	Printhead data (J3)	7	Transmissive sensor (P9)
2	Power-in (J8)	8	Reflective sensor (P7)
3	Front panel (J2)	9	Take-label sensor (J19)
4	Stepper motor (J9)	10	Communication expansion port (J17)
5	Booster board (J7)	11	USB port (J14)
6	Ribbon sensor (P4)	12	Serial port (J10)

4. See [Figure 43](#). Remove the six screws and one nut securing the main logic board to the main frame of the printer.
5. Remove the two studs and washers securing the serial port connector to the back of the printer.

Figure 43 • Remove the Main Logic Board



1	Main logic board nut
2	Main logic board mounting screws (6)
3	Main logic board
4	Lock washer (2)
5	Serial port mounting stud (2)

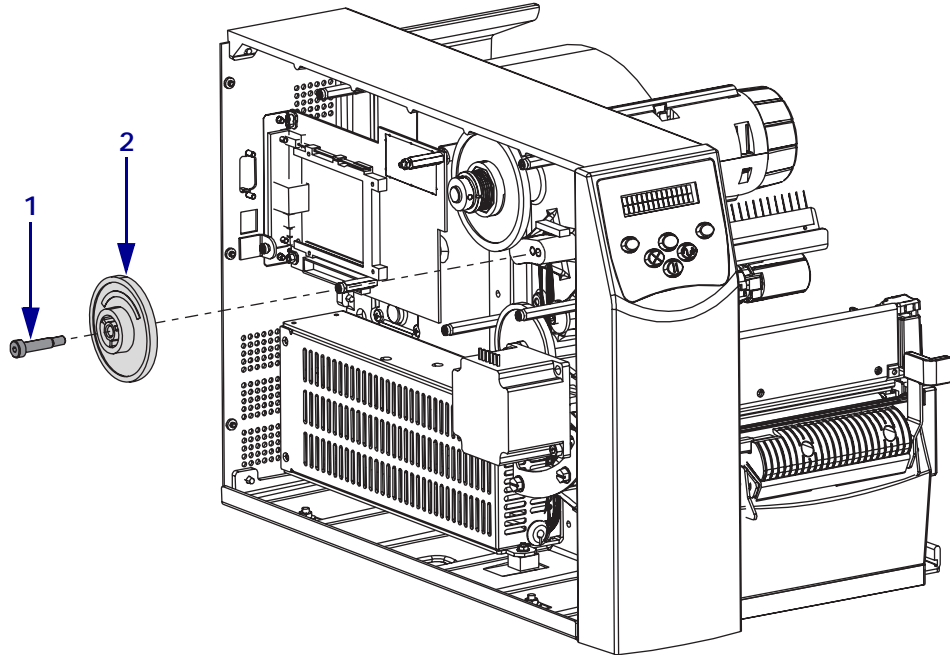
6. Remove the main logic board from the printer.

Conversion Procedure

The following steps will convert your printer from 203 dpi to 300 dpi. (To convert from 300 dpi to 203 dpi, the gears are installed in the opposite direction, with the smaller side of the pulley away from the printer when placed on the platen roller.)

1. See [Figure 44](#). Remove the compound gear mounting screw.

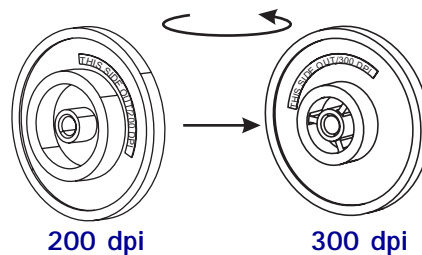
Figure 44 • Remove the Compound Gear



1	Mounting screw
2	Compound gear

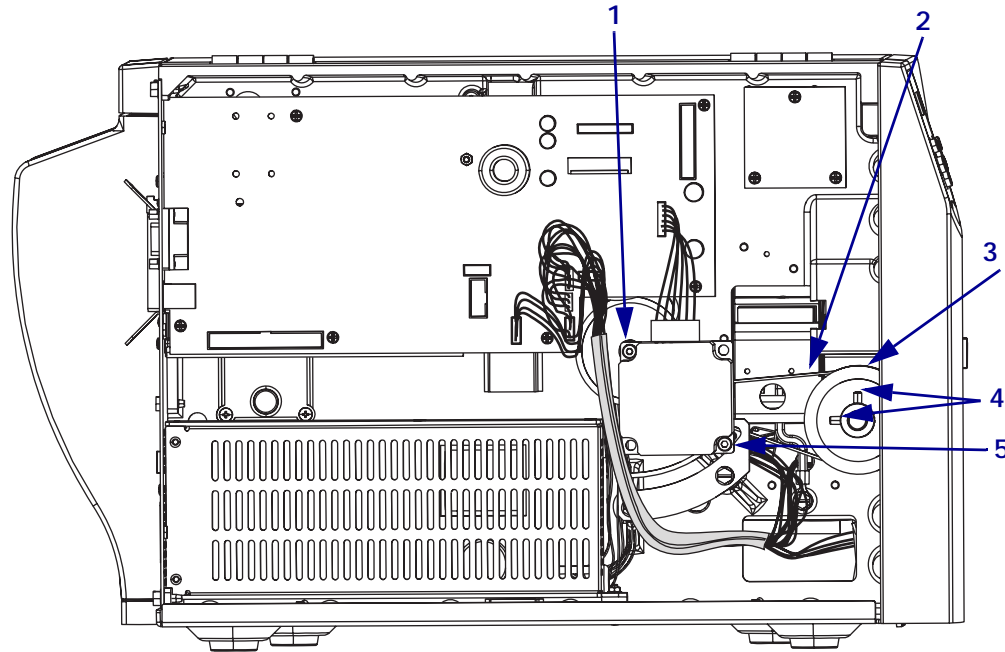
2. See [Figure 45](#). Turn the gear around and reinstall it in the adjacent mounting hole.
3. Ensure that it meshes properly with the clutch and the intermediate gears.

Figure 45 • Select the Compound Gear Position



- See [Figure 46](#). Using a hex key, loosen the stepper motor pivot screw and locking screw.

Figure 46 • Loosen the Stepper Motor



1	Pivot screw
2	Belt
3	Platen pulley
4	Platen pulley set screws (2)
5	Locking screw

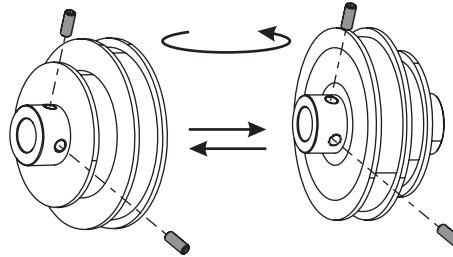
- Swing the stepper motor up to remove tension from the belt and tighten the locking screw in this position.
- Remove the belt from the stepper motor drive gear/pulley.
- Remove and retain the two set screws on the platen roller pulley. Remove the pulley and belt. Discard the belt.

8. See [Figure 47](#). Turn the pulley around and place it on the platen roller shaft.



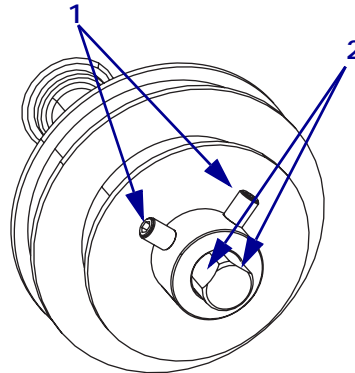
Note • Make sure there is approximately a 0.020 in. (0.5 mm) clearance between the platen roller pulley and the printer frame.

Figure 47 • Turn the Compound Pulley Around



9. Install the set screws in the outboard compound pulley. Rotate the compound pulley to align the set screws with the flat spots on the platen roller shaft.

Figure 48 • Align the Platen Roller Shaft



1	Set screws (2)
2	Flat spots (2)

10. Tighten the two set screws to secure the pulley to the platen roller shaft.
11. See [Figure 46 on page 137](#). Install the new belt supplied in the kit.
12. Loosen the locking screw and nut.



Note • The belt should deflect under finger pressure, but no more than ¼ inch (6 mm).

13. **Caution** • Do not over tighten the belt or damage to the bearings and platen roller will occur.

Rotate the motor down until the drive belt is just taut. Tighten the locking screw and then the pivot screw.

Reinstall the MLB

1. See [Figure 43 on page 135](#). Reinstall the MLB in the printer using the screws, nut, and studs and washers previously removed.
2. See [Figure 42 on page 134](#). Reconnect all the cables previously removed from the main logic board. Visually inspect and ensure the cables are in their proper location and seated in the connectors.

Reinstall the Electronics Cover

1. Refer to [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.

Verify the Installation

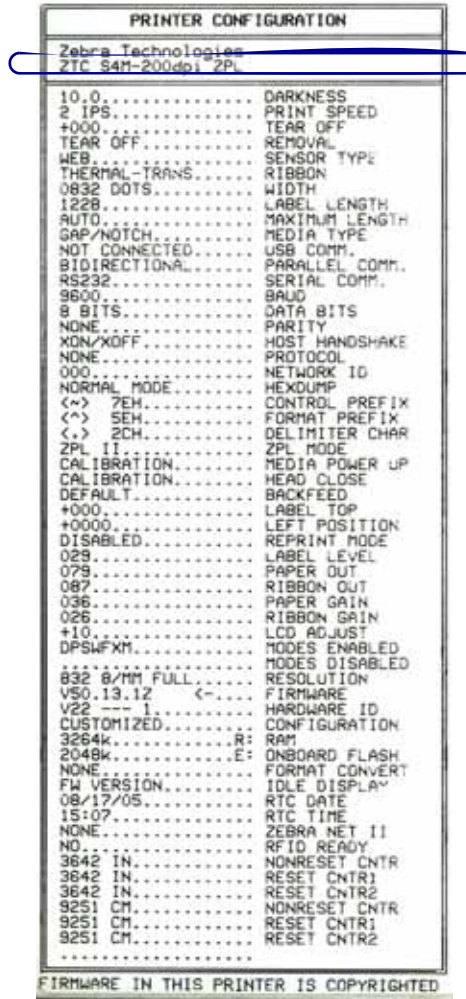
1. Press and hold CANCEL while turning On (I) the printer. A configuration label will print after the Power-On Self Test (POST) is completed.



Note • A 300 dpi configuration label prints smaller than a 203 dpi label.

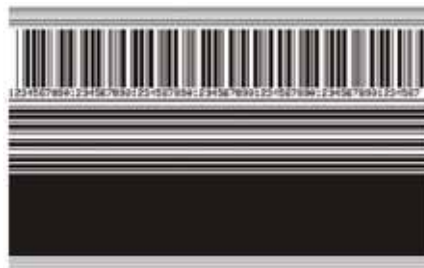
2. See [Figure 49](#). Verify that the dpi is correct.

Figure 49 • Configuration Label (200 dpi or 300 dpi)



3. Turn Off (O) the printer.
4. See Figure 50. Press and hold **PAUSE** while turning On (I) the printer. A Pause Test label will print to verify print quality.

Figure 50 • Pause Test Label



Print Mechanism

This procedure is for installing the print mechanism in the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- | | |
|---|---|
| <input type="checkbox"/> Phillips Screwdriver Set | <input type="checkbox"/> 4 inch crescent wrench |
| <input type="checkbox"/> Flat-Blade Screwdriver Set | <input type="checkbox"/> 47362 Zebra Preventative Maintenance Kit |
| <input type="checkbox"/> Metric Hex Key (Allen wrench) Set | <input type="checkbox"/> 77919 Pin Gauge (qty = 2) |
| <input type="checkbox"/> Anti-Static Wriststrap and Mat | <input type="checkbox"/> 77921 Cam |
| <input type="checkbox"/> Metric Nutdriver Set | <input type="checkbox"/> Q10011 Screw |
| <input type="checkbox"/> Metric and inch Feeler Gauges, must include: 0.060 in. (1.5mm) | |

Remove the Print Mechanism

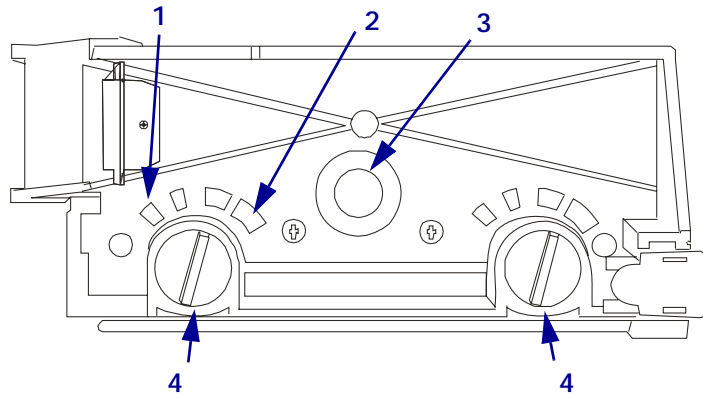


1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 51](#). Rotate the two printhead pressure dials to the #1 position.

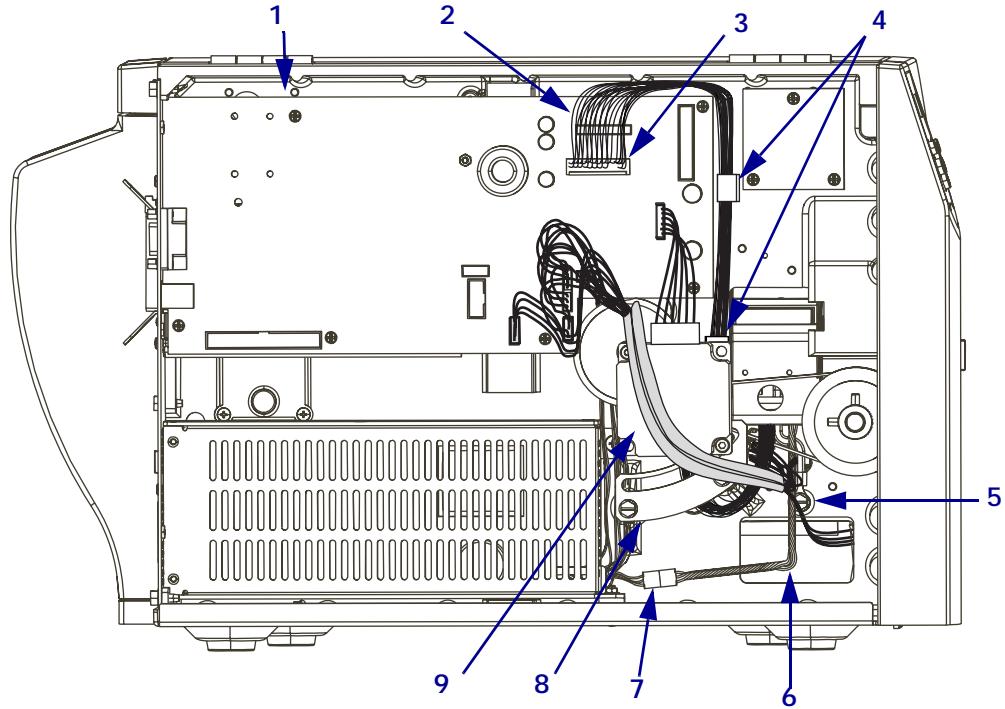
Figure 51 • Locate the Printhead Pressure Dials



1	Position number one
2	Position number four
3	Thumbscrew
4	Printhead pressure dials (2)

4. See [Figure 52](#). Remove any cable ties.
5. Disconnect the printhead data cable from the main logic board (MLB), J3.
6. Remove the printhead data cable from the cable clamps and pull it out from under the stepper motor and mounting bracket.
7. Disconnect the printhead power cable from the power supply connector.

Figure 52 • Disconnect the Print Mechanism

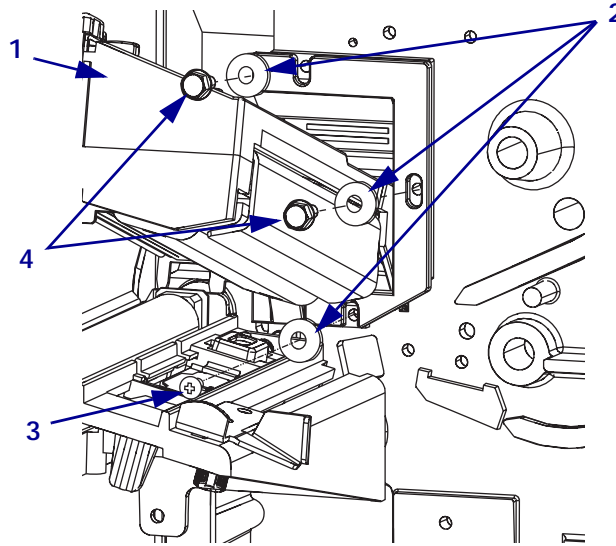


1	MLB	6	Printhead power cable
2	Printhead data cable	7	Power supply connector
3	MLB connector J3	8	Stepper motor mounting bracket
4	Cable clamp (2)	9	Stepper motor
5	Printhead ground strap		

8. Remove the printhead housing grounding strap mounting screw.

9. See [Figure 53](#). Loosen and remove the two hex head screws, one phillips head screw, and washers securing the printhead housing assembly.

Figure 53 • Printhead Housing Mounting Screws



1	Printhead housing
2	Washers (3)
3	Phillips head mounting screw
4	Hex head mounting screw (2)

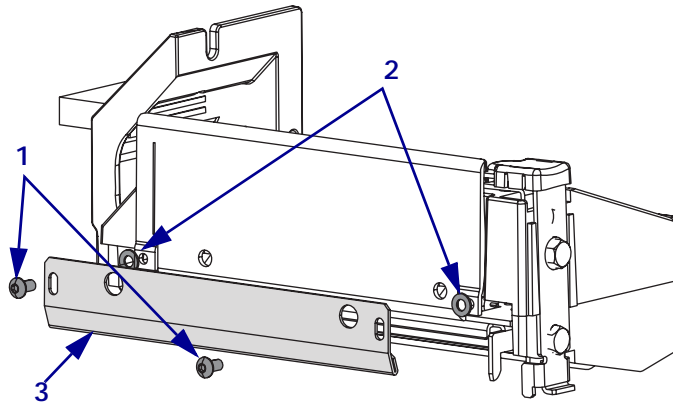
10. Remove the printhead housing assembly from the printer.

Install the New Print Mechanism

1. Are you installing the print mechanism on a Direct Thermal Only S4M printer?

If...	Then...
No	Continue to step 2 .
Yes	Caution • Be careful not to touch the printhead with any tools. This could damage the printhead. See Figure 54 . Remove the and discard the ribbon strip plate from the new print mechanism and then continue to step 2 .

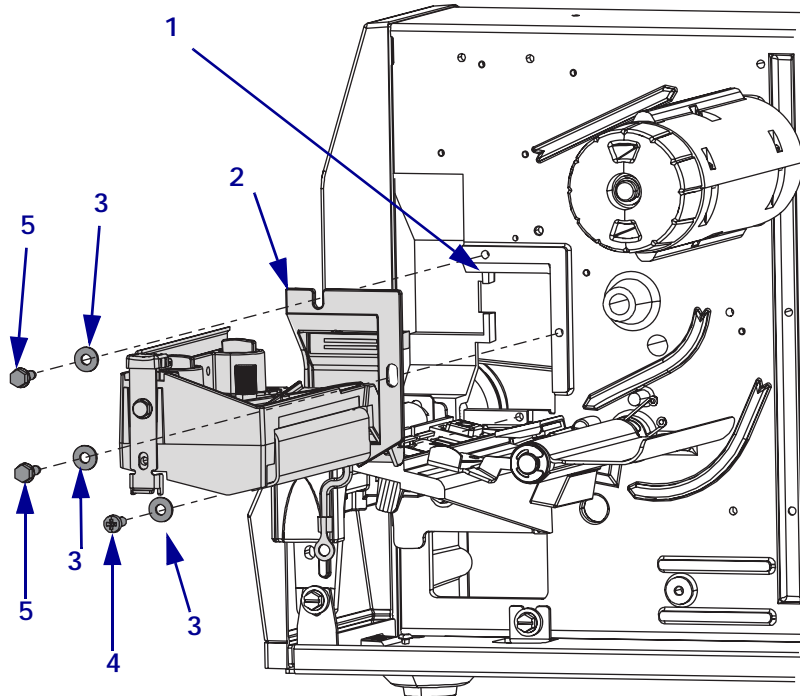
Figure 54 • Remove the Ribbon Strip Plate



1	Mounting screws (2)
2	Flat washers (2)
3	Ribbon strip plate

2. See [Figure 55](#). Feed the new cables through the print mechanism mounting hole.
3. Install the three printhead housing mounting screws and washers while ensuring that the print mechanism mounting slots are raised to the bottom of the mounting screws. Snug the three mounting screws at this time.

Figure 55 • Insert the Print Mechanism



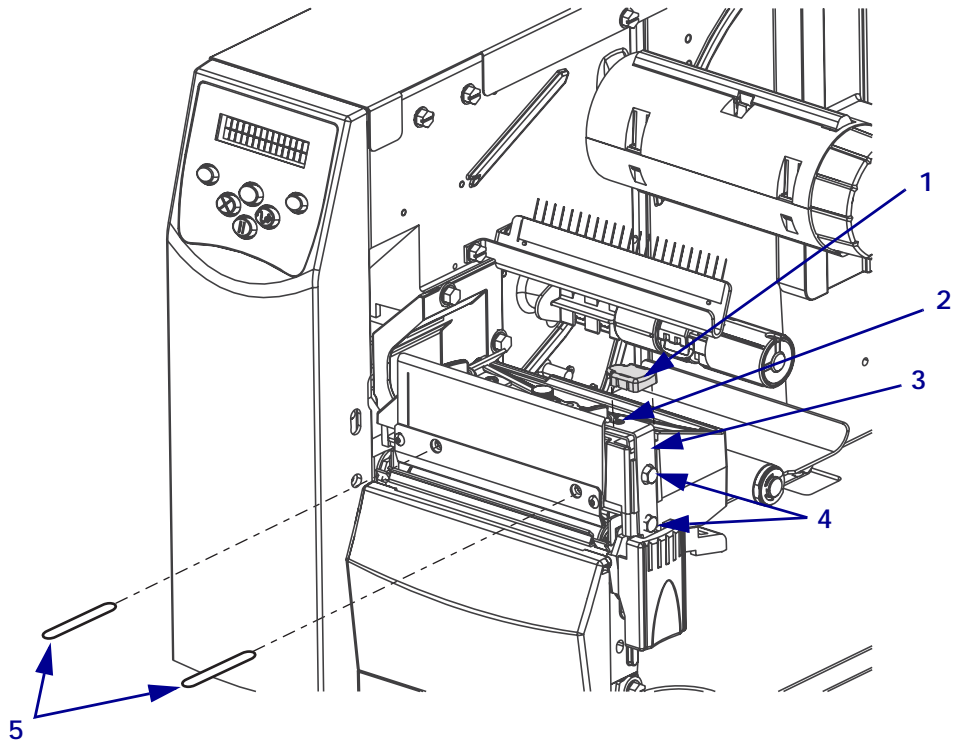
1	Print mechanism mounting hole
2	Print mechanism
3	Washers (3)
4	Phillips head mounting screw
5	Mounting screws (2)

4. See [Figure 52 on page 143](#). Route the printhead data cable down and up behind the stepper motor mounting plate and connect to J3 on the MLB.
5. Insert the data cable into the flat cable clamps
6. Connect the printhead power cable to the power supply cable.
7. Reinstall the ground strap.

Adjust the Print Mechanism

1. See [Figure 56](#). Remove the strike plate cap by gently prying up one snap tab with a small flat blade screwdriver. Loosen the strike plate mounting screws 1/2 turn.
2. See [Figure 51 on page 142](#). Set both printhead pressure dials to 3.

Figure 56 • Adjust the Print Mechanism



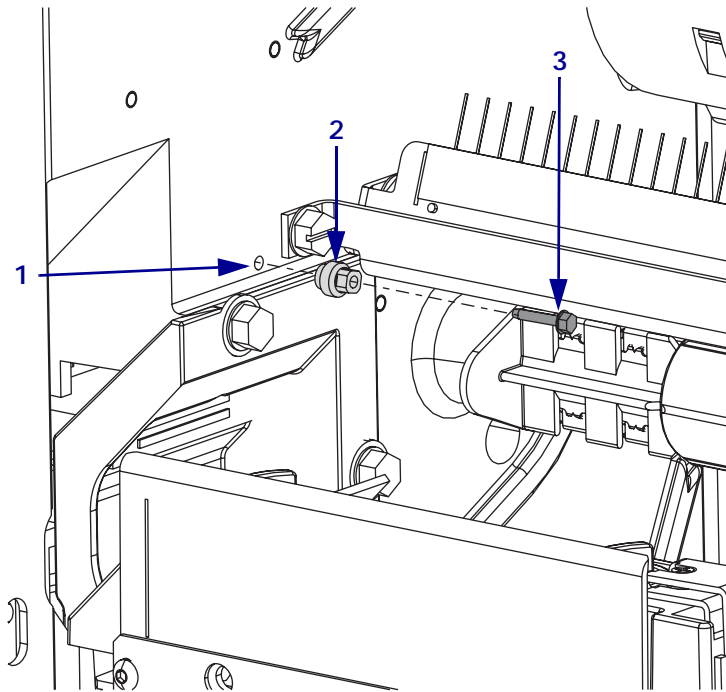
1	Strike plate cap
2	Adjustment screw
3	Strike plate
4	Strike plate mounting screws (2)
5	Print mechanism gap pin gauges (2)

3. See [Figure 57](#). Using the screw provided in the kit, install the print mechanism adjustment cam on the printer main frame.



Note • The cam should be in contact with print mechanism and only be snug to allow it to turn with the wrench.

Figure 57 • Install the Adjustment Cam



1	Cam mounting hole
2	Cam
3	Mounting screw

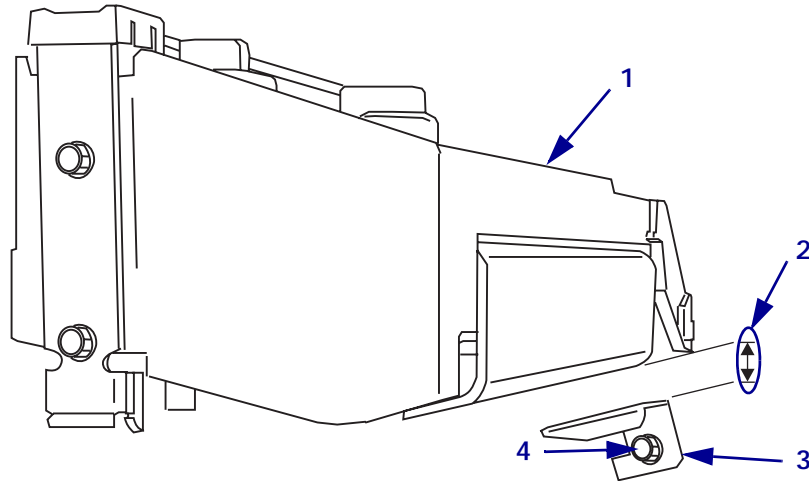
4. See [Figure 56 on page 147](#). Insert the print mechanism gap pin gauges through the holes that are provided in the front of the ribbon guide plate.
5. Place a 4 inch crescent wrench on the print mechanism adjustment cam. While turning the wrench counterclockwise, push in and pull out the inside gap pin gauge until a small amount of friction can be felt.
6. Tighten one of the print mechanism mounting screws.
7. After adjusting the inside pin gauge, use a screwdriver and turn the adjustment screw on top of the latch plate strike.
8. Push in and pull out the outside gap pin gauge until a small amount of friction can be felt.



Important • Check both pin gauges for equal amount of friction.

9. Tighten the latch plate strike screws.

10. Tighten the remaining print mechanism mounting screws when equal pressure is obtained.
11. See [Figure 58](#). Check the gap on the ribbon/printhead open sensor and adjust as necessary.

Figure 58 • Ribbon/Printhead Open Sensor

1	Printhead housing
2	Gap, 0.060 in. (1.5 mm) \pm 0.015 in. (0.381 mm)
3	Ribbon/Printhead open sensor
4	Mounting screw

12. Use a 0.060 in. (1.5 mm) feeler gauge and check the distance between the ribbon/head open sensor assembly and the printhead housing. If the distance is incorrect, loosen the mounting screw for the ribbon/head open sensor and adjust for the proper distance. Once this distance is achieved, tighten the mounting screw.

Reinstall the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. See [Figure 51 on page 142](#). Rotate the two printhead pressure dials to position 3.
3. Reconnect AC power cord and data cables.

Verify the Installation

1. See [Figure 59](#). Hold PAUSE and CANCEL while turning On (I) the printer.
A Pause and Cancel Self Test Label will print.

Figure 59 • PAUSE and CANCEL Test Label



2. Ensure that the black bar is mostly filled in solid and that the bottom line is parallel to the edge of the label. The black bar can have small voids of white.
3. If further adjustments are needed, repeat [step 4](#) through [step 12](#) starting on [page 148](#).
4. Repeat [step 1](#) through [step 3](#) as needed until even resistance is felt.
5. Replace the strike plate cap.
6. See [Figure 57](#). Remove the cam and cam mounting screw.

Printhead Cables

This procedure is for installing the printhead power and data cables in the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- | | |
|---|---|
| <input type="checkbox"/> Phillips Screwdriver Set | <input type="checkbox"/> 4 inch crescent wrench |
| <input type="checkbox"/> Flat-Blade Screwdriver Set | <input type="checkbox"/> 47362 Zebra Preventative Maintenance Kit |
| <input type="checkbox"/> Metric Hex Key (Allen wrench) Set | <input type="checkbox"/> 77919 Pin Gauge (qty = 2) |
| <input type="checkbox"/> Anti-Static Wriststrap and Mat | <input type="checkbox"/> 77921 Cam |
| <input type="checkbox"/> Metric Nutdriver Set | <input type="checkbox"/> Q10011 Screw (Cam and Pin Gauge) |
| <input type="checkbox"/> Metric and inch Feeler Gauges, must include: 0.060 in. (1.5mm) | |

Remove the Print Mechanism

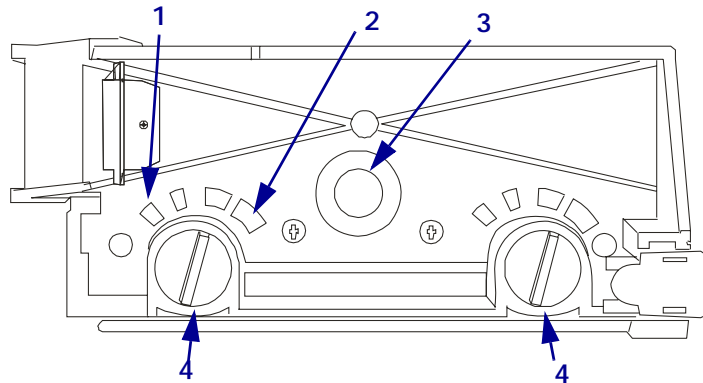


1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 60](#). Rotate the printhead pressure dials to the #1 position.

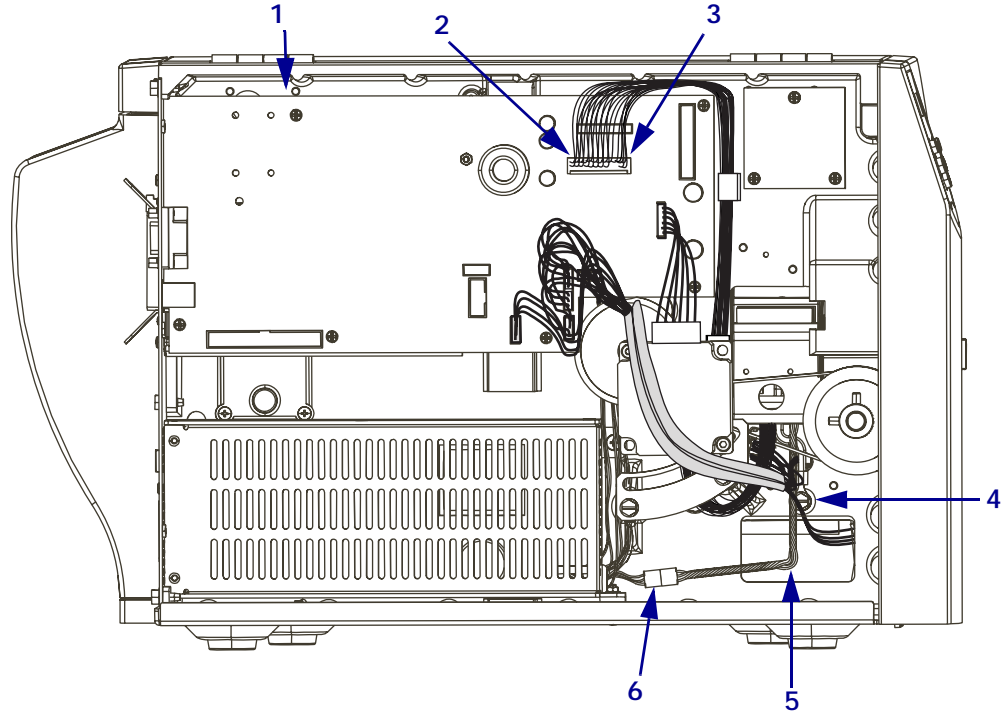
Figure 60 • Locate the Printhead Pressure Knobs



1	Position number one
2	Position number four
3	Thumbscrew
4	Printhead pressure dials (2)

4. See [Figure 61](#). Remove any cable ties.
5. Disconnect the printhead data cable from the main logic board (MLB).
6. Disconnect the printhead power cable from the power supply connector.

Figure 61 • Disconnect the Print Mechanism

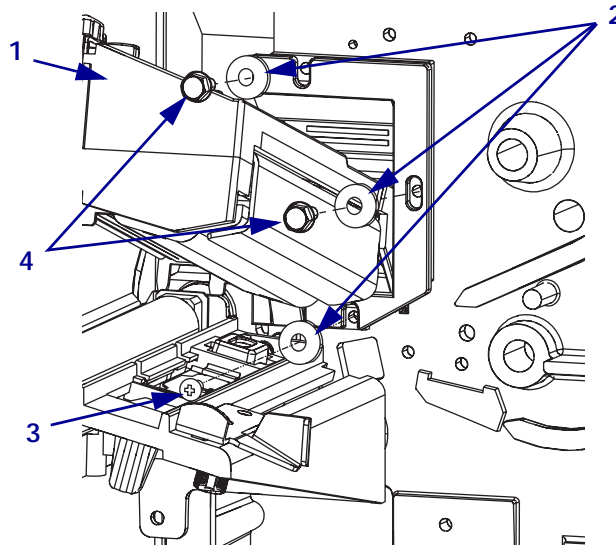


1	Main logic board (MLB)
2	Printhead data cable
3	MLB connector J3
4	Printhead ground strap
5	Printhead power cable
6	Power supply connector

7. Remove the printhead housing grounding strap mounting screw.

8. See [Figure 62](#). Loosen and remove the two hex head screws, one phillips head screw, and washers securing the main frame.

Figure 62 • Printhead Housing Mounting Screws



1	Print mechanism
2	Washers (3)
3	Phillips head mounting screw
4	Hex head mounting screws (2)

9. Remove the printhead housing assembly from the printer.

Remove the Old Printhead Cables

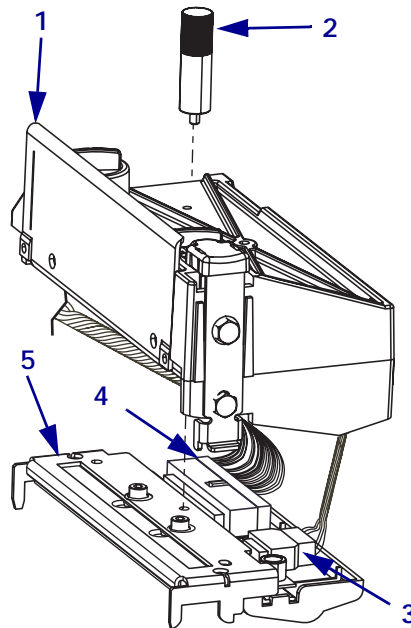


1. **Caution** • The printhead may be hot and could cause severe burns. Allow the printhead to cool.

See [Figure 63](#). Remove the thumbscrew.

2. Remove the printhead fork assembly from the print mechanism.

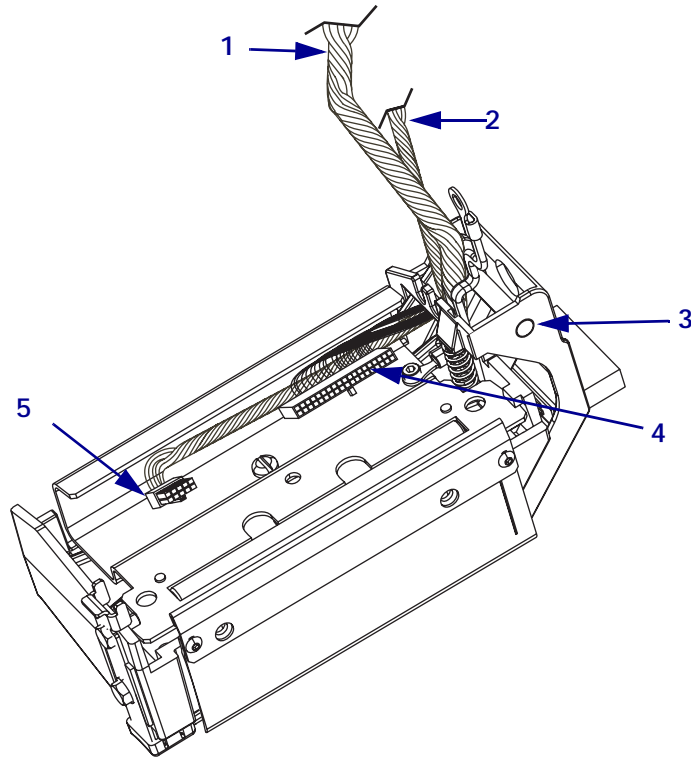
Figure 63 • Remove the Printhead Fork Assembly



1	Print mechanism
2	Thumbscrew
3	Printhead power cable
4	Printhead data cable
5	Printhead fork assembly

3. Disconnect the printhead power and data cables.
4. See [Figure 64](#). Lay the print mechanism on its top and slide the cables toward the hinge and out.

Figure 64 • Remove and Install the Cables



1	Printhead data cable
2	Printhead power cable
3	Hinge
4	Printhead data connector
5	Printhead power connector

Install the New Printhead Cables

1. See [Figure 64](#). Slide each of the cables through the hinge and into the print mechanism.



2. **Caution** • An improperly connected printhead data or power cable may cause the printhead to generate excessive heat and/or a false HEAD COLD message to display while the printhead is hot enough to cause severe burns. Allow the printhead to cool.

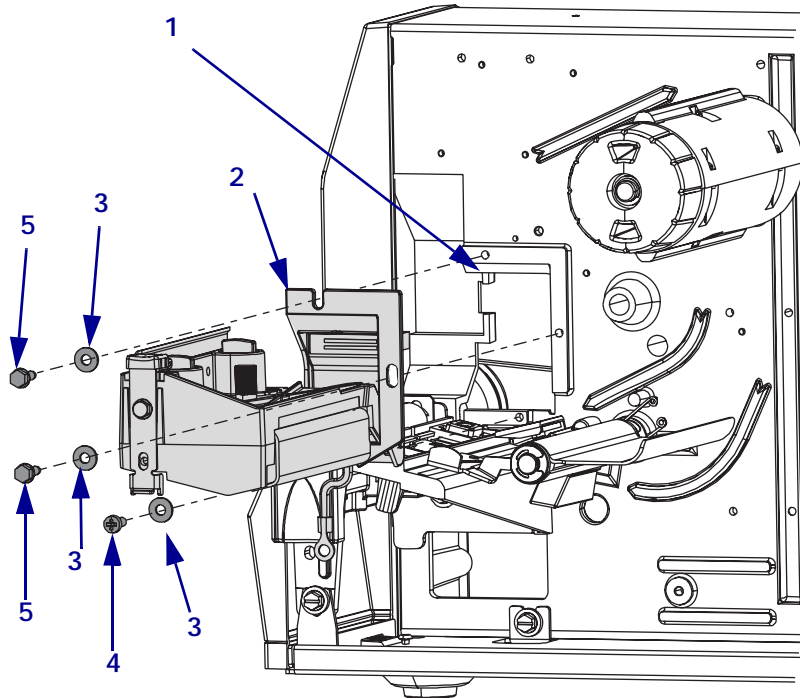
See [Figure 63](#). Connect the printhead cables to the printhead fork assembly.

3. Reinstall the printhead fork assembly into the print mechanism.
Ensure that the printhead cables are up and away from the printhead to avoid damage to the new cables and to allow the printhead to seat properly.
4. Use the thumbscrew removed previously to secure the printhead fork assembly.

Reinstall the Print Mechanism

1. See [Figure 65](#). Feed the new cables through the print mechanism mounting hole.
2. Install the three printhead housing mounting screws and washers while ensuring that the print mechanism mounting slots are raised to the bottom of the mounting screws. Snug the three mounting screws at this time.

Figure 65 • Insert the Print Mechanism



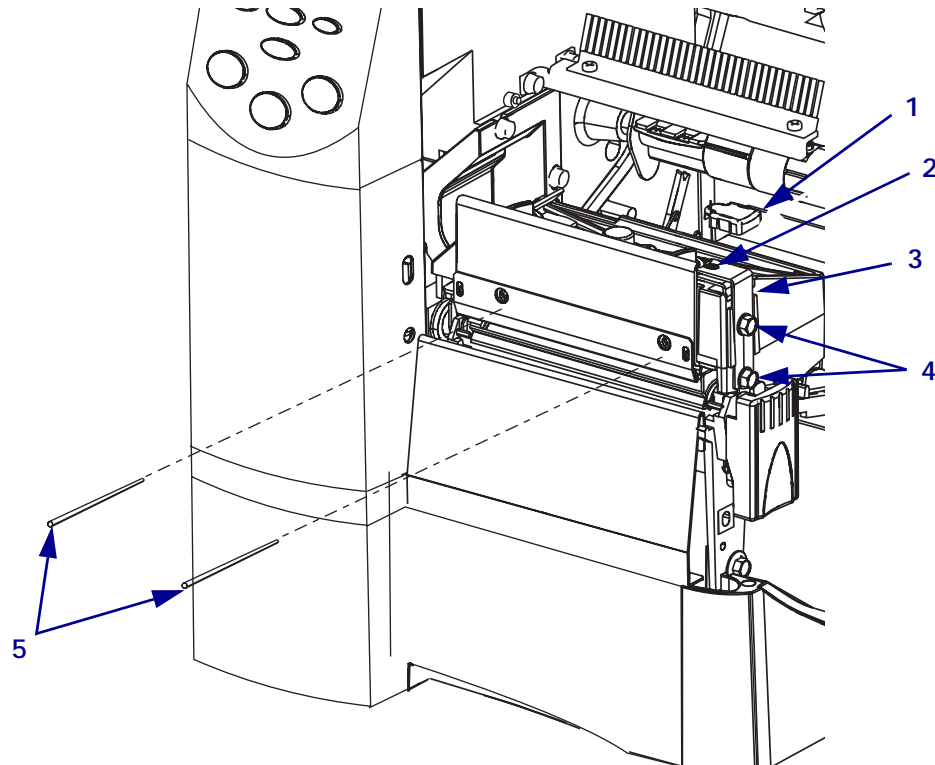
1	Print mechanism mounting hole
2	Print mechanism
3	Washers (3)
4	Phillips head mounting screw
5	Mounting screws (2)

3. See [Figure 61 on page 153](#). Route the printhead data cable down and up behind the stepper motor mounting plate and connect to J3 on the MLB.
4. Insert the data cable into the flat cable clamps.
5. Connect the printhead power cable to the power supply connector.

Adjust the Print Mechanism

1. See [Figure 66](#). Remove the strike plate cap by gently prying up one snap tab with a small flat blade screwdriver. Loosen the strike plate mounting screws 1/2 turn.

Figure 66 • Adjust the Print Mechanism



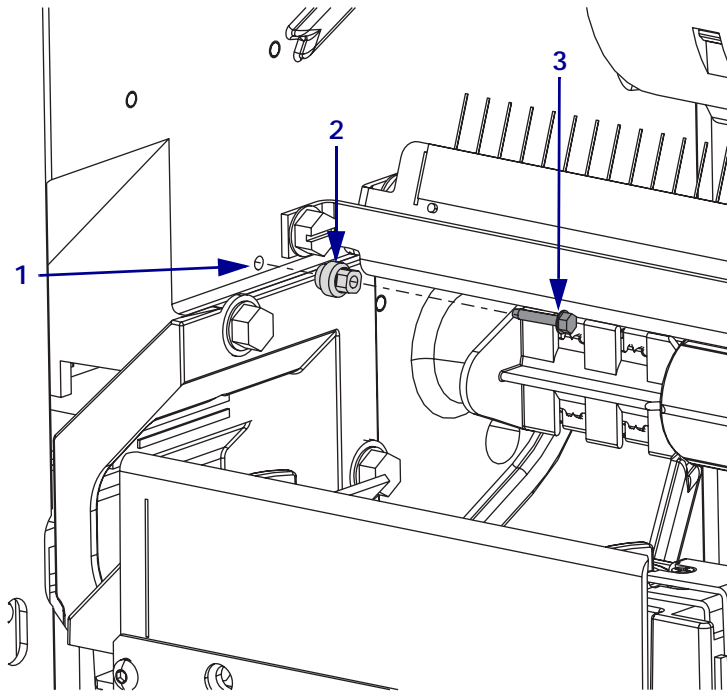
1	Strike plate cap
2	Adjustment screw
3	Strike plate
4	Strike plate mounting screws (2)
5	Print mechanism gap pin gauges (2)

- See [Figure 67](#). Using the screw provided in the kit, install the print mechanism adjustment cam on the printer main frame.



Note • The cam should be in contact with print mechanism and only be snug to allow it to turn with the 4 in. crescent wrench.

Figure 67 • Install the Adjustment Cam

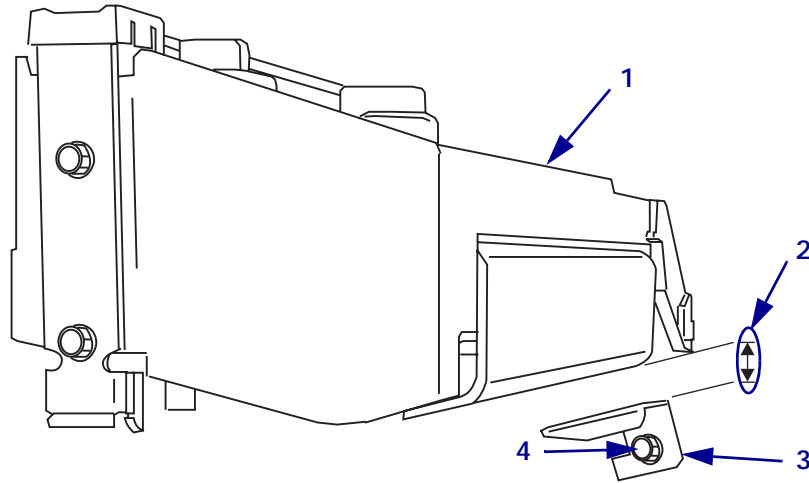


1	Cam mounting hole
2	Cam
3	Mounting screw

- See [Figure 66 on page 158](#). Insert the print mechanism gap pin gauges through the holes that are provided in the front of the ribbon guide plate.
- Place a 4 inch crescent wrench on the print mechanism adjustment cam. While turning the wrench counterclockwise, push in and pull out the inside gap pin gauge until a small amount of friction can be felt.
- After aligning the inside pin gauge, use a screwdriver and turn the adjustment screw on top of the latch plate strike.
- Push in and pull out the outside gap pin gauge until a small amount of friction can be felt. Double check both pin gauges for equal amount of friction.
- Tighten the latch plate strike screws.
- Tighten the print mechanism mounting screws when equal pressure is obtained.
- Remove and retain the cam and screw used for adjusting the print mechanism.

10. Replace the strike plate cap.
11. See [Figure 68](#). Check the gap on the ribbon/printhead open sensor and adjust as necessary.

Figure 68 • Ribbon/Printhead Open Sensor



1	Printhead housing
2	Gap, 0.060 in. (1.5 mm) \pm 0.015 in. (0.381 mm)
3	Ribbon/Printhead open sensor
4	Mounting screw

12. Use a 0.060 in. (1.5 mm) feeler gauge and check the distance between the ribbon/head open sensor assembly and the printhead housing. If the distance is incorrect loosen the mounting screw for the ribbon/head open sensor and adjust for the proper distance. Once this distance is achieved, tighten the mounting screw.

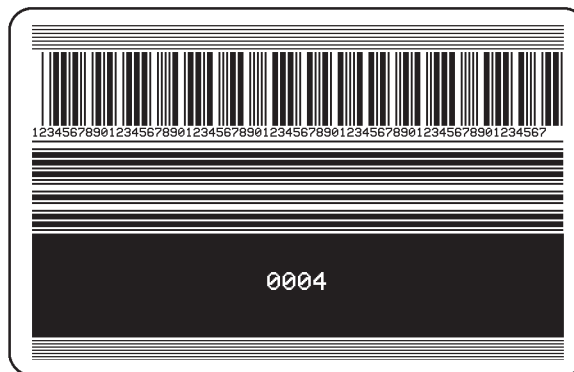
Reinstall the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.

Verify the Installation

1. See [Figure 60 on page 152](#). Rotate the two printhead pressure dials to the position 3.
2. Reconnect AC power cord and data cables.
3. See [Figure 69](#). Hold PAUSE and CANCEL while turning On (I) the printer; a Pause and Cancel Self Test Label will print.

Figure 69 • Pause and Cancel Label



4. Ensure that the black bar is mostly filled in solid and that the bottom line is parallel to the edge of the label. The black bar can have small voids of white.
5. If further adjustments are needed, repeat [step 3](#) through [step 11](#) starting on [page 159](#).

Printhead Release Latch

This procedure is for installing the printhead release latch in the S4M printer. Read these instructions thoroughly before performing this procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



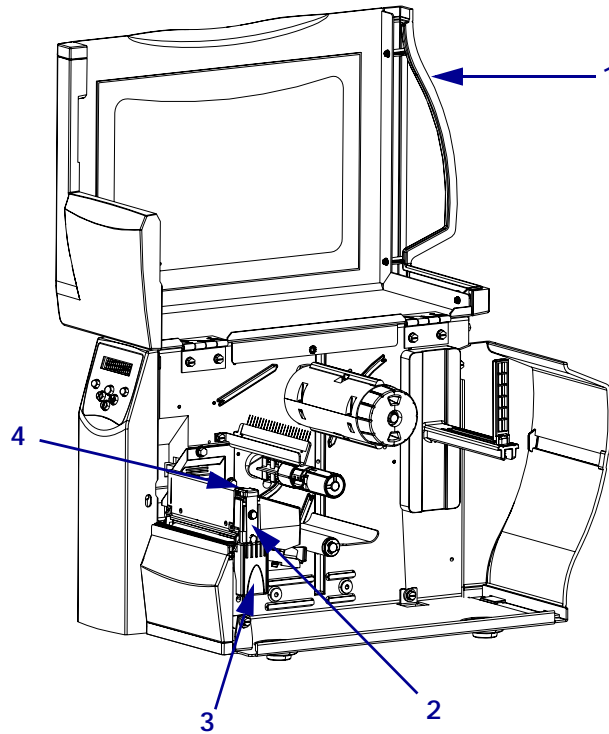
Tools • You need these tools to complete this procedure:

- | | |
|---|---|
| <input type="checkbox"/> Phillips Screwdriver Set | <input type="checkbox"/> Punch Set |
| <input type="checkbox"/> Flat-blade Screwdriver Set | <input type="checkbox"/> Safety Goggles |
| <input type="checkbox"/> Standard Nutdriver Set | <input type="checkbox"/> 4 inch crescent wrench |
| <input type="checkbox"/> Metric Nutdriver Set | <input type="checkbox"/> Small Hammer |

Remove the Old Latch

1. Turn Off (O) the printer and disconnect the AC power cord and data cables.
2. See [Figure 70](#). Open the media door and remove the ribbon and media.

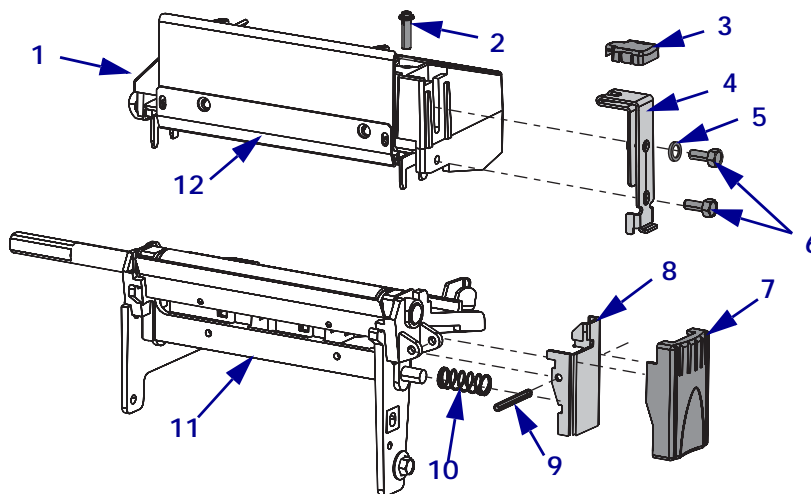
Figure 70 • Media Door and Latch Location (S4M)



1	Media door
2	Latch assembly
3	Latch plate cover
4	Strike plate cap

3. See [Figure 71](#). Remove the strike plate cap by placing a small screwdriver under the front edge and lifting upward.
4. Remove the latch cover.
5. Remove the two screws and the washer holding the latch strike plate to the side of the print mechanism.
6. Remove the adjustment screw from the print mechanism. You will have to pull out on the bottom of the strike plate while removing the screw.

Figure 71 • Remove the Latch Assembly



1	Print mechanism	7	Latch plate cover
2	Adjustment screw	8	Latch plate
3	Strike plate cap	9	Spring pin
4	Strike plate	10	Compression spring
5	Washer	11	Platen housing
6	Strike plate mounting screws (2)	12	Ribbon guide plate



7. **Caution** • 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.

Using a small punch, lightly tap the spring pin out from the **FRONT** of the platen housing (the direction is important). The compression spring may fall out.

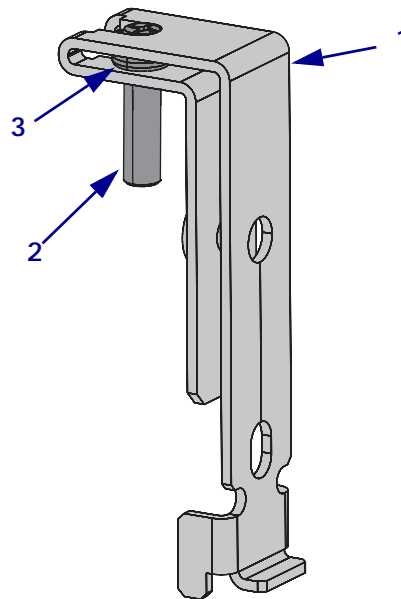


Important • Tap lightly when removing the spring pin. The platen housing is a cast housing and may break if hit too hard.

Install the New Latch Kit

1. See [Figure 71 on page 164](#). Install the compression spring on the platen housing post.
2. Align the latch with the spring pin holes.
3. Insert the spring pin through the front hole of the latch and through the platen housing. The rear hole in the latch is the only small one and you will need to tap on the spring pin.
4. Lightly tap the spring pin into the rear hole. Leave equal amounts of spring pin sticking out on each side of latch.
5. Install the strike plate partially into print mechanism.
6. See [Figure 72](#). Install the adjustment screw into the strike plate by sliding it in the opening with the shoulder below the top piece of sheet metal and above the bottom piece of sheet metal.

Figure 72 • Adjustment Screw Location



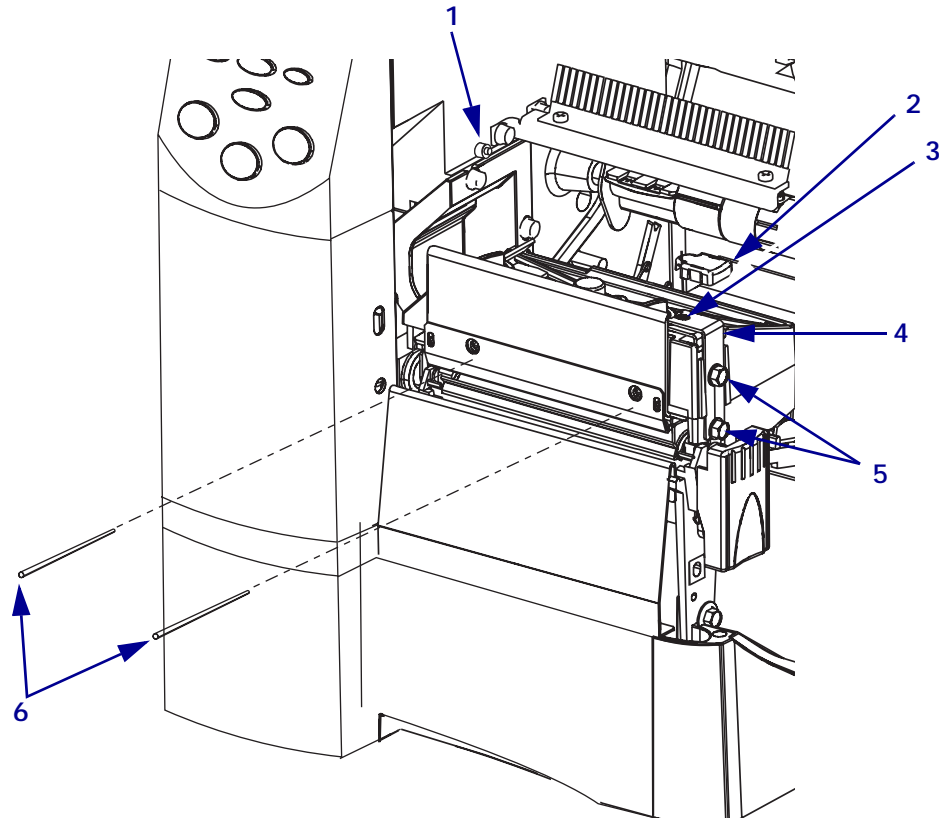
1	Strike plate
2	Adjustment screw
3	Adjustment screw shoulder

7. See [Figure 71 on page 164](#). Tighten the adjustment screw until the top of the strike plate is just below the top of the print mechanism.
8. Install the two mounting screws and washer through the strike plate and into the print mechanism. Do not tighten at this time; leave them approximately ½ turn loose. Latch the print mechanism.

Adjust the Print Mechanism

1. See [Figure 73](#). Insert the print mechanism gap pin gauges through the holes that are provided in the front of the ribbon guide plate.

Figure 73 • Adjust the Print Mechanism



1	Print mechanism adjustment cam
2	Strike plate cap
3	Adjustment screw
4	Strike plate
5	Strike plate mounting screws (2)
6	Print mechanism gap pin gauges (2)

2. Turn the adjustment screw until a small amount of friction is felt on the gap pin gauge.
3. Snug the two strike plate mounting screws.
4. Verify, with gap pin gauge, that the inside print mechanism adjustment is correct. A slight friction should be felt when sliding the inside pin in and out of the inside hole.

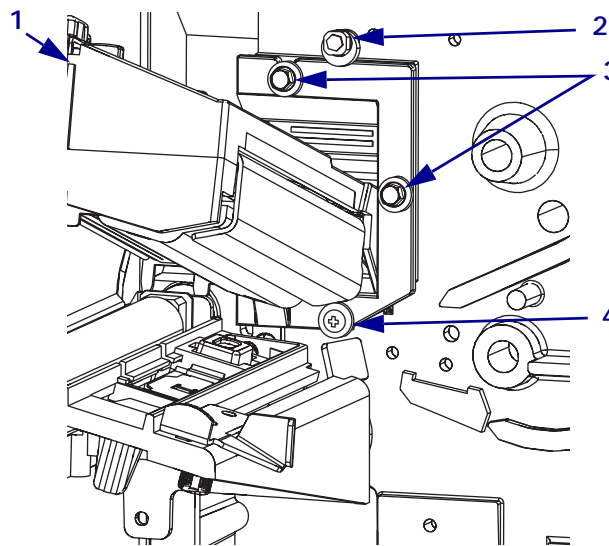
5. Is the adjustment acceptable?

If...	Then...
No	Continue with step 6 .
Yes	Go to step 13 .

6. Loosen the two strike plate screws.

7. See [Figure 74](#). Install the print mechanism adjustment cam on the printer frame with the screw provided in the kit.

Figure 74 • Print Mechanism Mounting Screws



1	Print mechanism
2	Adjusting cam
3	Hex head mounting screws (2)
4	Phillips head mounting screw

8. Slightly loosen the three screws that secure the print mechanism assembly to the mainframe.

9. Use a 4 inch crescent wrench on the print mechanism adjustment cam. While turning the wrench counterclockwise, push in and pull out the inside gap pin gauge until a small amount of friction can be felt. Snug the two hex head screws.

10. After aligning the inside gap pin gauge, verify that the outside adjustment is correct. Double-check both gap pin gauges for equal amount of friction. Tighten the latch strike plate screws.

11. See [Figure 74](#). Tighten the three printhead mechanism mounting screws when equal pressure is obtained.

12. Remove the print mechanism adjustment cam by removing the mounting screw.

13. See [Figure 71 on page 164](#). Install the strike plate cap.
14. Install the latch cover.
15. Reinstall the ribbon and media.
16. Close the media door and reconnect the AC power cord and data cables.
17. Turn On (I) the printer.

Printhead Pressure Dials

This procedure is for installing the printhead pressure dial on the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- | | |
|---|---|
| <input type="checkbox"/> Phillips Screwdriver Set | <input type="checkbox"/> Anti-Static Wriststrap and Mat |
| <input type="checkbox"/> Flat-blade Screwdriver Set | <input type="checkbox"/> Masking Tape |
| <input type="checkbox"/> Metric Nutdriver Set | |

Remove the Printhead



Note • Retain all parts removed during disassembly, unless otherwise directed.

1. Turn Off (O) the printer and disconnect the AC power cord and all data cables.
2. Open the media door, open the printhead, and remove media and ribbon.

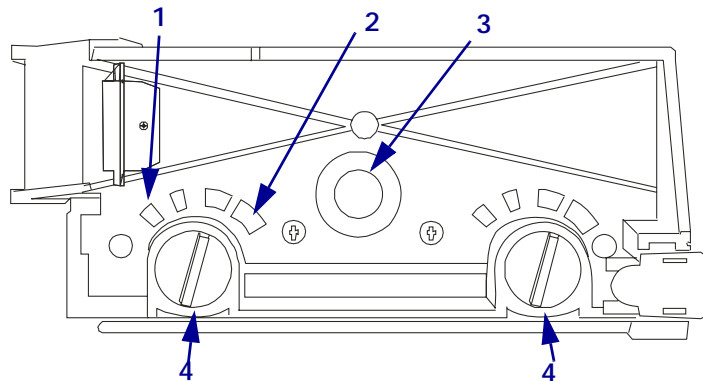


3. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device.

4. See [Figure 75](#). Rotate the printhead pressure dials to the #1 position.

Figure 75 • Locate the Printhead Pressure Dials



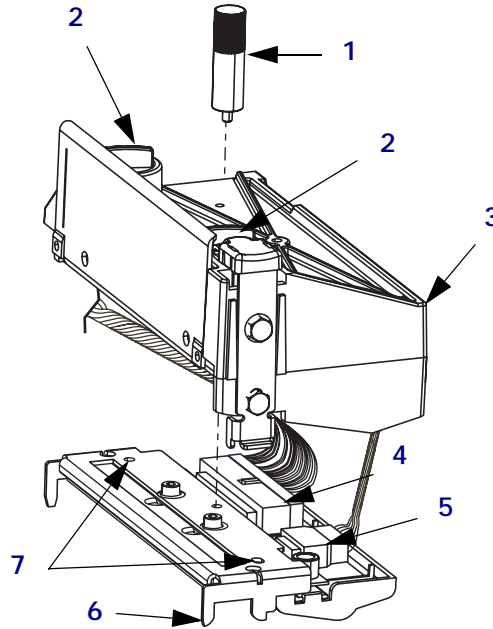
1	Position number one
2	Position number four
3	Thumbscrew
4	Printhead pressure dials (2)



5. **Caution** • The printhead may be hot and could cause severe burns. Allow the printhead to cool.

See [Figure 76](#). Remove the printhead thumbscrew.

Figure 76 • Remove the Printhead and Cable Connections



1	Thumbscrew	5	Printhead power cable
2	Printhead pressure dial	6	Printhead fork assembly
3	Print mechanism assembly	7	Locating holes
4	Printhead data cable		

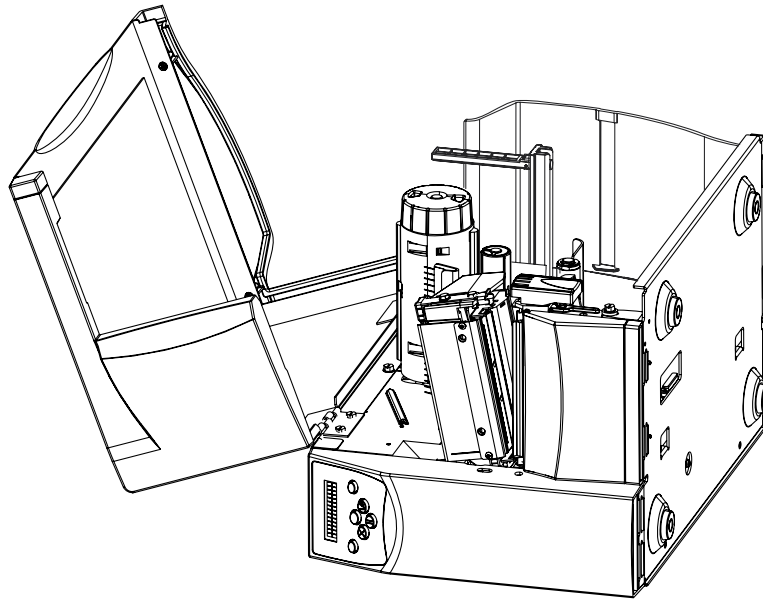
6. Open the print mechanism, and lift and latch it in the vertical position.
7. Slide the printhead fork assembly out of the print mechanism.
8. Disconnect the two printhead cables from the printhead assembly.
9. Remove the printhead assembly and set it aside on the anti-static mat.

Remove the Old Pressure Dials

To remove the pressure dials you must partially disassemble the print mechanism.

1. See [Figure 77](#). Place a soft pad down on your workbench and lay the printer on it with the electronics cover side down.
2. Open the media door.

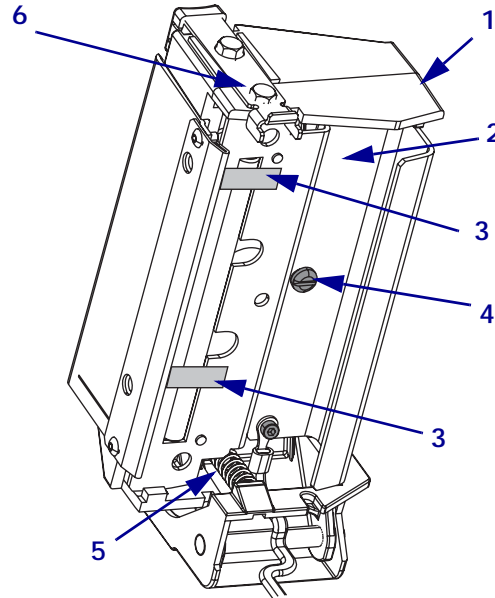
Figure 77 • Set the Printer on the Electronics Cover Side (S4M)



3. See [Figure 78](#). Put a piece of masking tape over the pressure roller to secure it to the pressure bracket.

This is being done for ease of reinstallation of the roller and bracket.

Figure 78 • Remove the Pressure Bracket and Roller



1	Print mechanism
2	Pressure bracket
3	Masking tape (2)
4	Pressure bracket mounting screw
5	Lifting spring
6	Lower print mechanism latch screw

- Loosen the lower print mechanism latch screw to allow the pressure bracket to be removed.

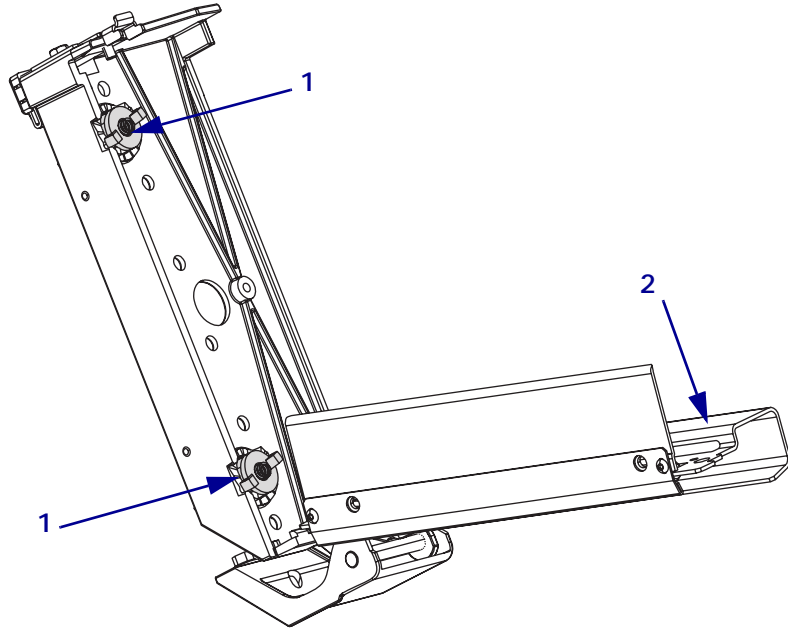


Important • To avoid print mechanism readjustment, do not loosen the top latch screw.

- Remove the pressure bracket mounting screw, and swing the bracket out of the way.

6. See [Figure 79](#). Lift the dials and springs out of the print mechanism.

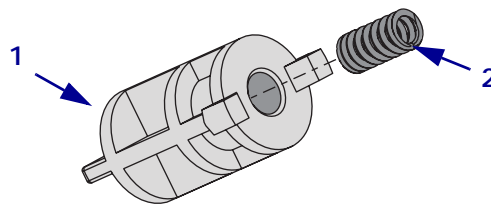
Figure 79 • Remove the Pressure Dials



1	Pressure dial and spring
2	Pressure bracket

7. See [Figure 80](#). Remove the springs from the old dials and place them in the new dials.

Figure 80 • Remove Springs



1	Pressure dial
2	Spring

Install the New Pressure Dials

1. See [Figure 79 on page 174](#). Insert the new dials and springs into the print mechanism.
2. See [Figure 78 on page 173](#). Reinstall the pressure bracket and roller and then remove the masking tape.
3. Retighten the lower print mechanism latch screw.
4. See [Figure 76 on page 171](#). Connect the printhead cables to the printhead fork assembly, and carefully slide the assembly into the print mechanism ensuring the data cable and power cable are kept away from the printhead lifting spring (see [Figure 78 on page 173](#)).
5. See [Figure 76 on page 171](#). Ensure the two locating protrusions on the print mechanism mounting plate snap into the locating holes on the printhead fork assembly. Move the assembly back and forth to be sure that it is engaged. There should be no movement.
6. Secure the printhead to the mechanism with the previously removed thumbscrew and close the print mechanism.
7. Set the printer up on the base.
8. Open the print mechanism and latch it in the open position.
9.

Caution • Do not use sharp objects to clean the printhead or platen roller.

Using the Zebra Preventive Maintenance Kit (Zebra part number 47362), clean the printhead and platen roller.

10. Reinstall media and ribbon.
11. See [Figure 75 on page 170](#). Rotate the two printhead pressure dials to the desired position for your daily printing.
12. Reinstall media and ribbon.
13. Close the media door.
14. Reconnect the AC power cord and data cables.
15. Turn On (I) the printer.



Notes • _____

Sensors



This section provides replacement and installation procedures for the S4M sensors.

Contents

Transmissive Sensor	178
Ribbon/Printhead Open Sensor	182
Reflective Media Sensor	187
Take-Label Sensor	191

Transmissive Sensor

This procedure is for installing the transmissive sensor in the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Wire Cutters
- AntiStatic Mat and Wrist Strap
- Safety Goggles
- Metric Nutdriver Set

Remove the Old Transmissive Sensor

Remove the Stepper Motor

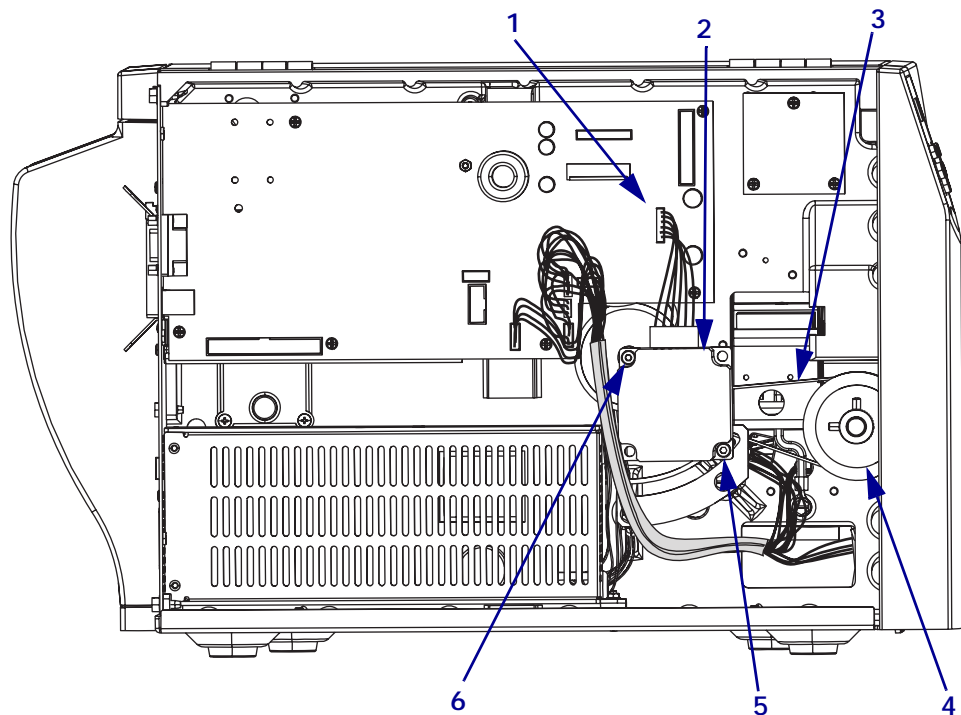


1. See [RRP No. 1 on page 122](#) and remove the electronics cover.
2. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device.

3. See [Figure 81](#). Locate the stepper motor and drive belt.

Figure 81 • Locate Drive System Components



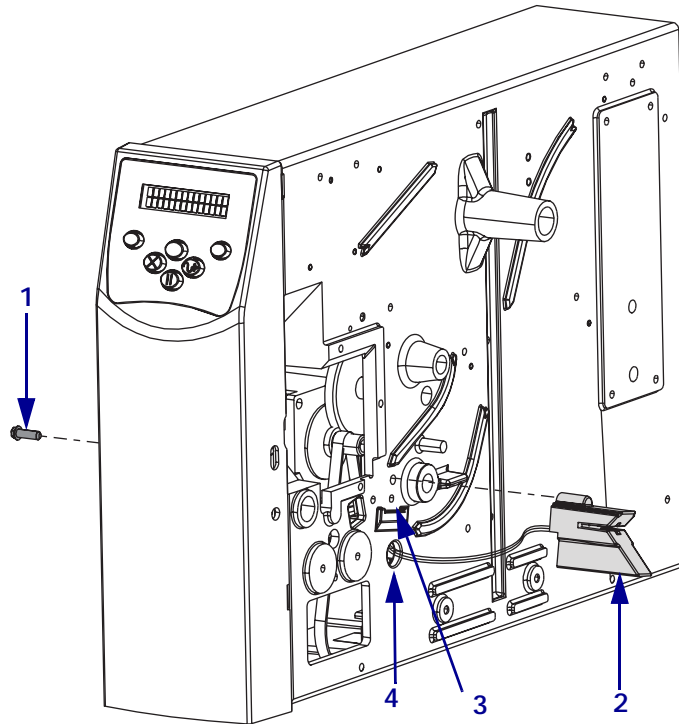
1	Main logic board (MLB) J9
2	Stepper motor
3	Drive belt
4	Platen pulley
5	Locking screw
6	Pivot screw

4. Disconnect the stepper motor cable from the main logic board (MLB), J9.
5. Remove the locking screw and nut.
6. Remove the pivot screw and then remove the stepper motor.

Remove the Old Transmissive Sensor

1. Disconnect the transmissive sensor from the main logic board (P9).
2. See [Figure 82](#). Remove the transmissive sensor mounting screw, and then remove the transmissive sensor.

Figure 82 • Remove the Transmissive Sensor



1	Mounting screw
2	Transmissive sensor
3	Guide pin hole
4	Access hole

Install the New Transmissive Sensor

1. See [Figure 82](#). Align the transmissive sensor to the main frame with the guide pin in the guide pin hole, and the mounting hole lining up with the mounting hole in the main frame.
2. Feed the sensor wires through the proper access hole under the printhead assembly.
3. Run the transmissive sensor wires through the protective wrap and then connect it to the main logic board (P9).

Reinstall the Stepper Motor and Gear/Pulley

1. See [Figure 81 on page 179](#). Install the stepper motor by sliding the gear/pulley through the drive belt. Secure in position with the pivot screw, but do not tighten at this time.
2. Reinstall the locking screw and nut, but do not tighten at this time



Note • Belt should deflect under finger pressure but no more than ¼ inch (6 mm).

3. Rotate the motor down until the drive belt is just taut. Tighten the locking screw and then the pivot screw.
4. Connect the stepper motor power cable to J9 on the MLB.
5. See [RRP No. 2 on page 124](#) and install the electronics cover.

Select the Media Sensor (password Level 2)

You must select the correct Sensor Select setting for your printer application. See [Select the Media Sensor on page 56](#) to change the setting using the control panel. Refer to the programming guide for your printer to change the setting using the programming commands.



Note • Changing the Sensor Select setting initiates an auto-calibration.

Ribbon/Printhead Open Sensor

This procedure is for installing the ribbon/printhead open sensor in the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



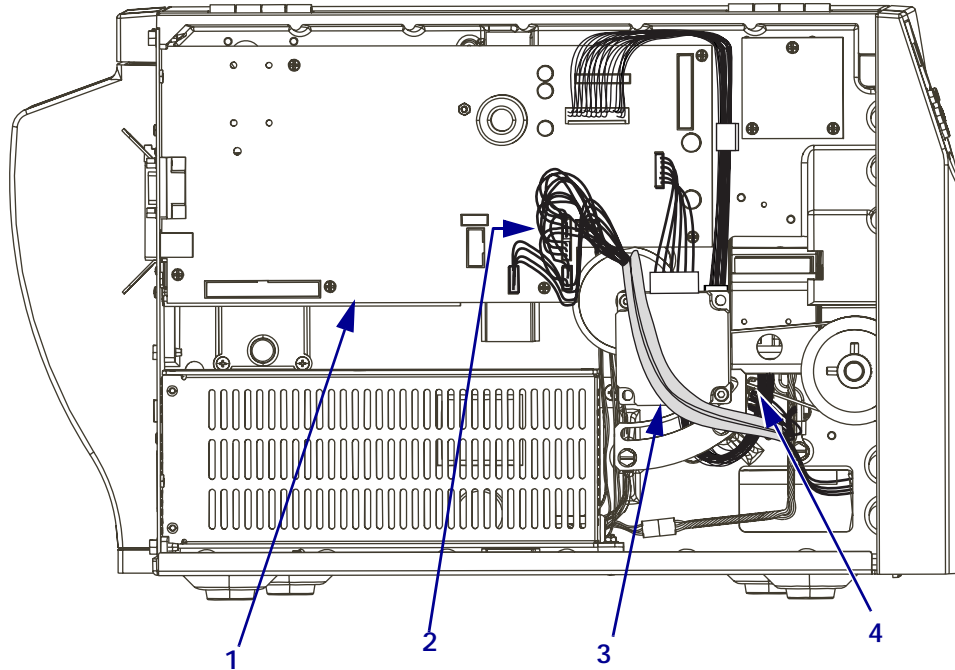
Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Metric Nutdriver Set
- Anti-Static Wriststrap and Mat
- Metric and inch Feeler Gauges, must include: 0.060 in. (1.5mm)

Remove the Old Sensor

1. See [RRP No. 1 on page 122](#) and remove the electronics cover.
2. See [Figure 83](#). Disconnect the sensor cable from the MLB (P4).
3. Remove the cable wires from the protective wrap.

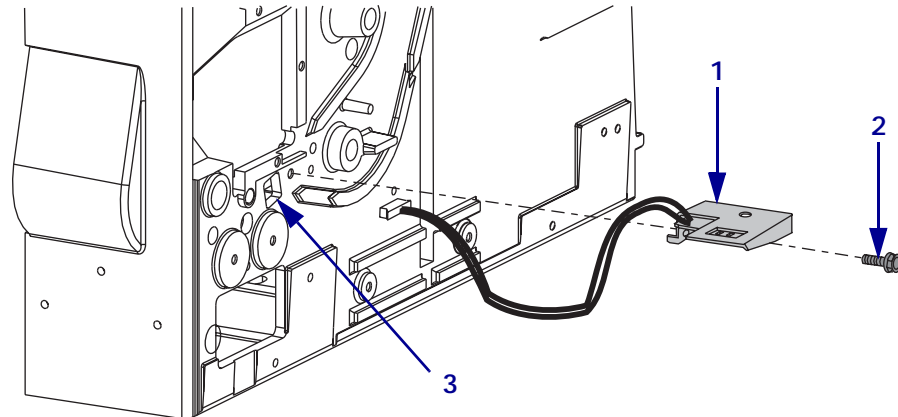
Figure 83 • Disconnect the Ribbon/Head Open Sensor (S4M)



1	Main logic board (MLB)
2	MLB connector (P4)
3	Protective wrap
4	Access hole

4. See [Figure 84](#). Remove the screw securing the ribbon/head open sensor assembly.
5. Pull the ribbon sensor cable and connector through the main frame.

Figure 84 • Ribbon Sensor Removal and Installation

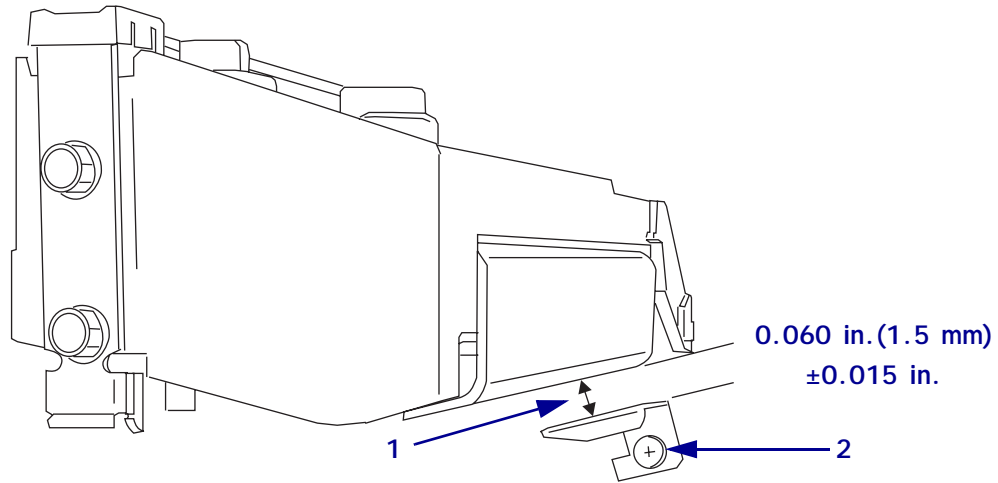


1	Ribbon/Head open sensor assembly
2	Mounting screw
3	Access hole

Install the New Ribbon/Head Open Sensor Assembly

1. See [Figure 84](#) and [Figure 83](#). Route the sensor wires, with connector, through the access hole in the printer mainframe.
2. Place the sensor cable wires back into the protective wrap.
3. Connect the media sensor cable to the main logic board at P4.
4. Install the ribbon/head open sensor to the mainframe with the new screw. Do not tighten it at this time.
5. See [Figure 85](#). Using a 0.060 ± 0.015 inch (1.5 mm) feeler gauge, check the distance between the ribbon/head open sensor assembly and the printhead mechanism assembly. Once this distance is achieved, tighten the mounting screw.

Figure 85 • Gap Measurement between Print Mechanism and Sensor



1	Gap
2	Mounting screw

Reinstall the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Install media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.
5. After the Power-on Self Test (POST), unlatch the printhead mechanism. Look at the front panel to ensure the error/alert LED flashes and the LCD displays **ALERT HEAD OPEN**.
6. Close the printhead.

Calibrate the Printer

Perform this procedure only if the thermal transfer option is installed.

1. Press **MENU** to enter the Setup Mode.
2. Press the right arrow (▶) until **ADVANCED SETUP 3** is displayed.
3. Press **ENTER**, the printer displays **PASSWORD** and the number 0000.
4. Enter the four-digit password for the password level displayed. The factory default password for is 1234.
 The left and right arrows change the selected digit position. The up and down arrows change the value of the selected digit.

5. After entering the password, press **ENTER**.
If you entered a valid password, additional parameters are displayed.
6. Press the right arrow (▶) until **MEDIA/RIBBON CALIBRATE** is displayed.
7. Press **ENTER** to start the calibration procedure.
The **LOAD BACKING/REMOVE RIBBON** prompt displays.
8. Open the printhead.
9. Remove approximately 8 in. (203 mm) of labels from the backing, and pull the media into the printer so that only the backing is between the media sensors.
10. Remove the ribbon.
11. Close the printhead.
12. Press **ENTER** to continue.
CALIBRATING PLEASE WAIT displays.
The printer adjusts the scale (gain) of the signals that it receives from the media and ribbon sensors based on the specific media and ribbon combination being used. On the sensor profile, this corresponds to moving the peak of the graph up or down to optimize the readings for your application.
When calibration is complete, **RELOAD ALL** displays.
13. Open the printhead and pull the media forward until a label is positioned under the media sensor.
14. Reload the ribbon (if used) and close the printhead.
15. Press **ENTER** to continue.
The printer performs an auto-calibration. During this process, the printer checks the readings for the media and ribbon based on the new scale established, determines the label length, and determines the print mode. To see the new readings on the new scale, print a sensor profile.
After the auto-calibration is complete, **MEDIA/RIBBON CALIBRATE** is displayed.
16. Press **MENU**.
SAVE CHANGES displays.
17. Press the up (▲) or down arrows (▼) to select **YES**.
18. Press **ENTER** to permanently save the calibration and return to **PRINTER READY**.

Reflective Media Sensor

This procedure is for installing the reflective media sensor in the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- | | |
|---|---|
| <input type="checkbox"/> Phillips Screwdriver Set | <input type="checkbox"/> Anti-Static Wriststrap and Mat |
| <input type="checkbox"/> Flat-blade Screwdriver Set | <input type="checkbox"/> Safety Goggles |
| | <input type="checkbox"/> Wire Cutters |



Note • Before starting, print a configuration label by pressing and holding CANCEL while turning On (I) the printer.

Remove the Electronics Cover



Note • Retain all parts removed during disassembly, unless otherwise directed.



1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

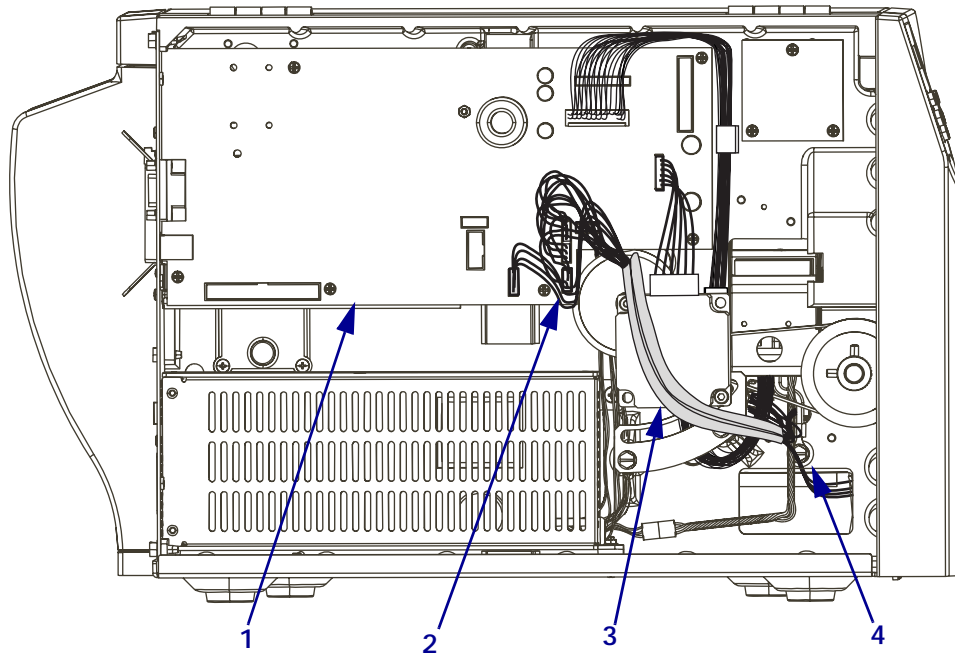
Connect yourself to an antistatic device.

2. Turn Off (O) the printer and disconnect the AC power cord and all data cables.
3. Open the media door and remove media and ribbon.
4. See [RRP No. 1 on page 122](#) and remove the electronics cover.

Remove the Old Media Sensor Assembly

1. See [Figure 86](#). Disconnect the media sensor connector from the MLB (P7).
2. Remove the wires from the protective wrap and then feed the wires with the connector through the access hole in the frame.

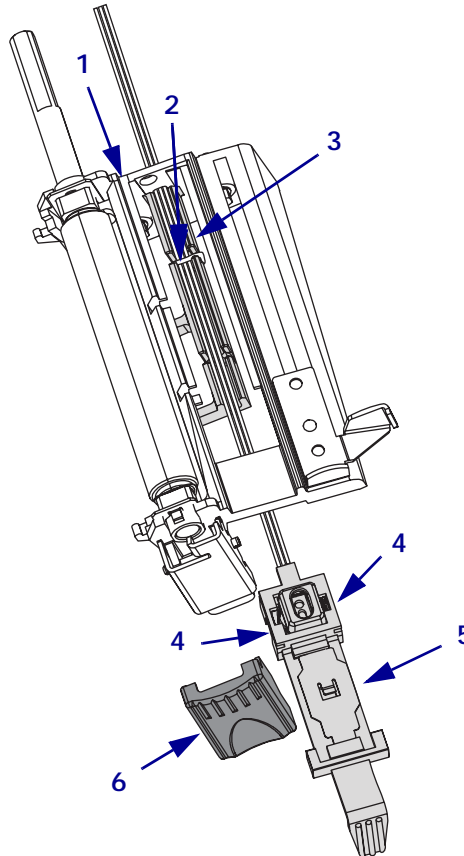
Figure 86 • Media Sensor Connection to MLB



1	Main logic board (MLB)
2	MLB connector P7
3	Protective wrap
4	Access hole

3. See [Figure 87](#). Cut the cable tie securing the media sensor wires inside the wire way of the platen roller housing.
4. Gently remove the latch cover.

Figure 87 • Media Sensor Removal



1	Platen roller housing
2	Cable tie
3	Wireway
4	Media sensor holder tabs (2)
5	Media sensor assembly
6	Latch cover

5. Slide the media sensor carrier all the way out until it stops, and then gently press down on the carrier and slide the carrier until it drops out of the platen housing.

Install the New Media Sensor Assembly

1. See [Figure 87 on page 189](#). Route the media sensor wires through the wireway in the platen roller assembly and through the access hole in the printer frame. Reinstall the cable tie previously cut in the wireway.



Note • Ensure the wire harness inside the platen roller housing wireway has no twists and travels freely the entire route.

2. Align the media sensor carrier slots with the slides provided on the platen roller assembly and slide the carrier part way in. Gently press down on the media sensor carrier and push the carrier past the stop.
3. Release the carrier and push it back and forth to verify traveling its entire route on the platen housing tracks. Reinstall the platen assembly latch cover.
4. Route the wires behind the ground strap from the printhead.
5. See [Figure 86 on page 188](#). Insert the wires into the protective wrap.
6. Connect the media sensor to the main logic board (P7).

Reinstall the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect the AC Power cord and data cables.
4. Turn On (I) the printer.

Take-Label Sensor

This procedure is for installing the take-label sensor board in the S4M printer. Read these instructions thoroughly before performing this procedure. Installing for the first time or replacing the take-label sensor board requires the partial disassembly of the printer.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Material

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Anti-Static Wriststrap and Mat
- Metric Nutdriver Set

Remove the Control Panel



Note • Retain all parts removed during disassembly, unless otherwise directed.

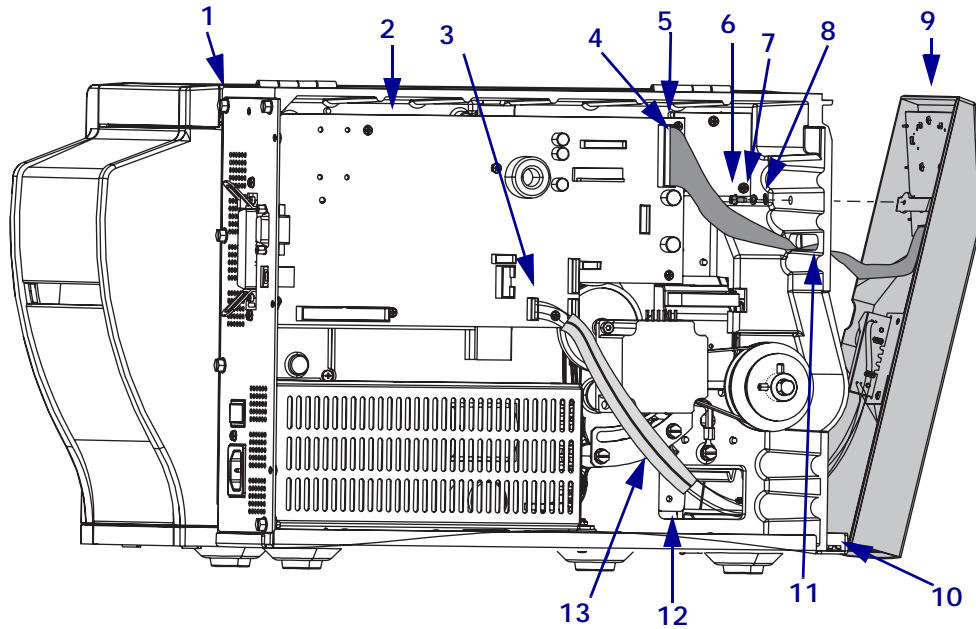


1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. Disconnect the control panel ribbon cable from J2 on the main logic board (MLB).
4. If installed, remove the take-label sensor cable from J19 on the MLB and then remove it from the conduit.

Figure 88 • Remove and Install the Control Panel



1	Main frame	8	Star washer
2	Main logic board (MLB)	9	Control panel
3	J19, Take-label sensor	10	Tab
4	Control panel cable	11	Cable access hole
5	J2, control panel	12	Access hole
6	Mounting screw	13	Conduit
7	Split washer		

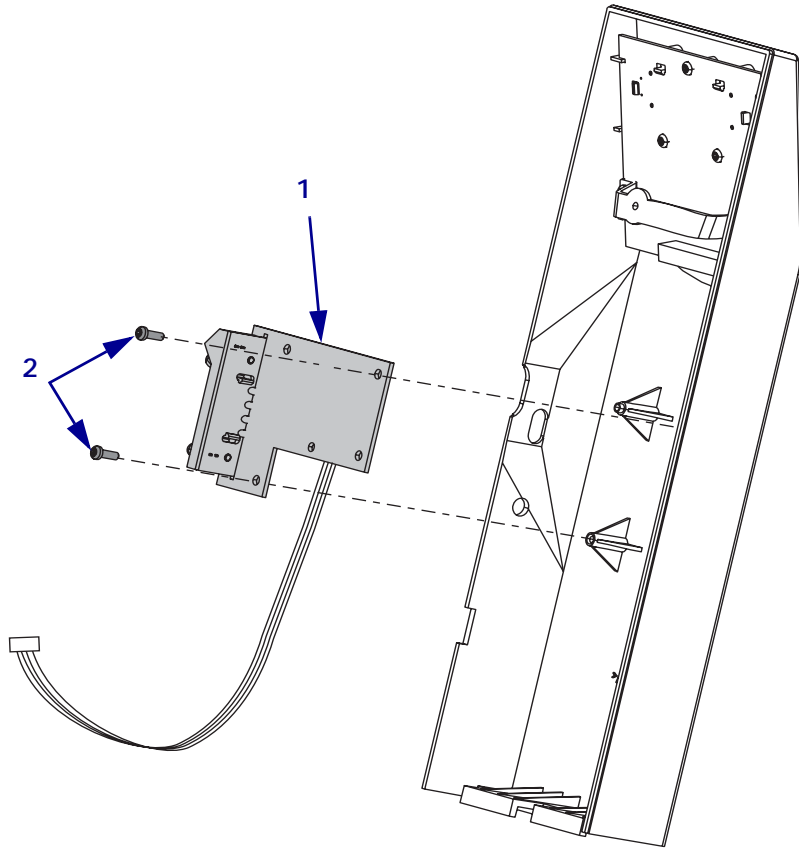
5. Remove the mounting screw and washers securing the control panel.
6. Tip the top of the control panel away from the main frame enough to release the two tabs inserted into the base and then pull it out of the base.
7. Carefully guide the control panel cable and the take-label sensor cable, if installed, through their access holes.
8. Are you replacing a defective take-label sensor?

If...	Then...
Yes	Continue with <i>Remove the Take-Label Sensor Board</i> on page 193.
No	Go to <i>Install the Take-Label Sensor Board</i> on page 194.

Remove the Take-Label Sensor Board

1. See [Figure 89](#). Locate the take-label sensor board on the control panel.
2. Remove and discard the mounting screws and then lift the board out of the control panel and discard it.

Figure 89 • Remove and Install the Take-Label Sensor

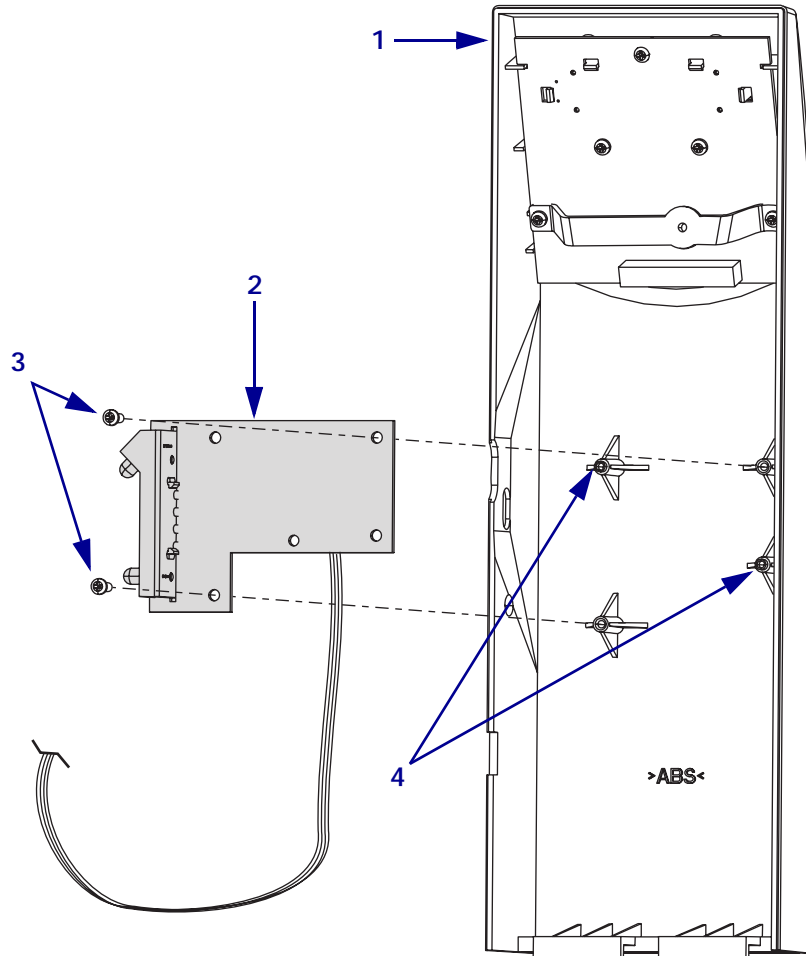


1	Take-label sensor board
2	Mounting screws (2)

Install the Take-Label Sensor Board

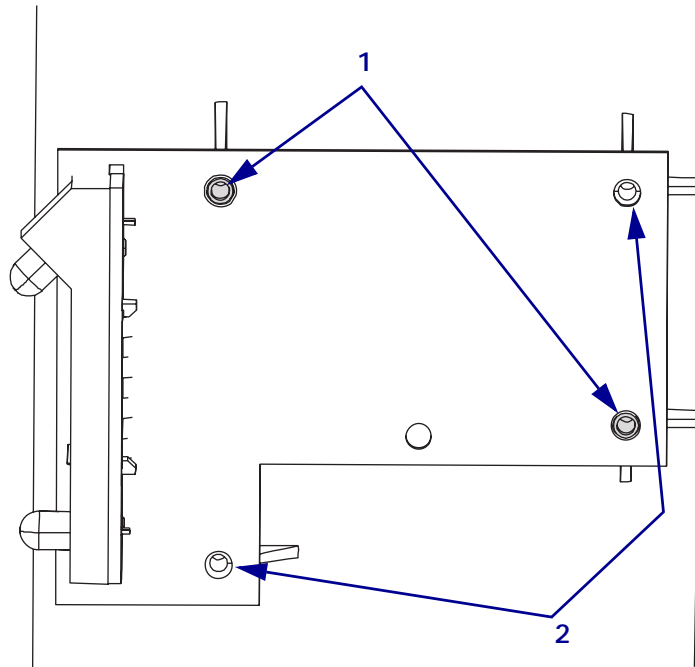
1. See [Figure 90](#). Align the take-label sensor board with the two guide posts and install it on the posts, ensuring the posts are inserted in the board.

Figure 90 • Install the Take-Label Sensor Board



1	Control panel
2	Take-label sensor board
3	Mounting screws (2)
4	Guide posts (2)

Figure 91 • Install the Take-Label Sensor Board on the Mounting Posts



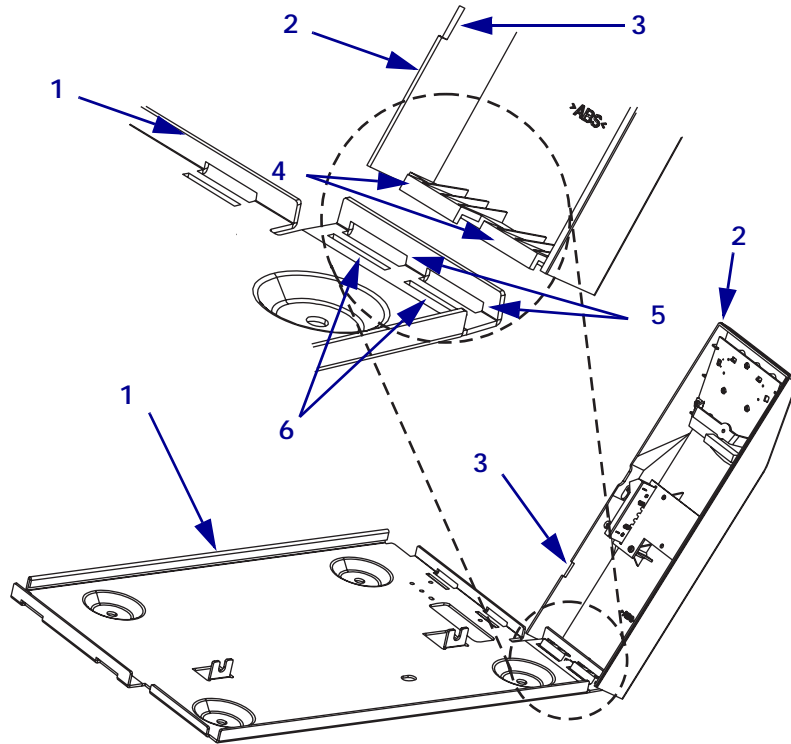
1	Mounting posts (2)
2	Screw holes (2)

2. Install the two mounting screws supplied in the kit.

Reinstall the Control Panel

1. Tip the top of the control panel away from the main frame and insert the two tabs in the mounting holes in the base.

Figure 92 • Install the Control Panel in the Base



1	Base
2	Control panel
3	Notch
4	Tabs (2)
5	Access holes (2)
6	Slots (2)

2. See [Figure 88 on page 192](#). Guide the control panel cable through the access hole in the front of the main frame. Connect it to J2 on the MLB.
3. Guide the take-label sensor cable around and through the lower access hole in the main frame.
4. Route the take-label sensor cable through the conduit and then connect it to J19 on the MLB.
5. See [Figure 92](#). Tip the top of the control panel toward the main frame ensuring the take-label sensor cable is in the notch in the control panel and between the main frame and the platen roller housing leg.

6. See [Figure 88 on page 192](#). Install the screw and washer to secure the control panel to the main frame.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.



Notes • _____

Drive System



This section provides replacement and installation procedures for the printer's drive system.

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Ribbon Take-Up Spindle Clutch	200
Ribbon Take-Up Spindle	207
Ribbon Supply Spindle	215
Media Hanger Assembly	223
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Gears and Pulley	230
Peel-Off/Tear-Off Bar	237
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Ribbon Take-Up Spindle Clutch

This procedure is for installing the Ribbon Take-up Spindle Clutch into the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Metric Hex Key (Allen Wrench) Set
- Metric Nutdriver Set
- Anti-Static Wriststrap and Mat
- Metric and inch Feeler Gauges, must include: 0.020 (.508mm)

Remove the Main Logic Board



Note • Retain all parts removed during disassembly, unless otherwise directed.



1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device.

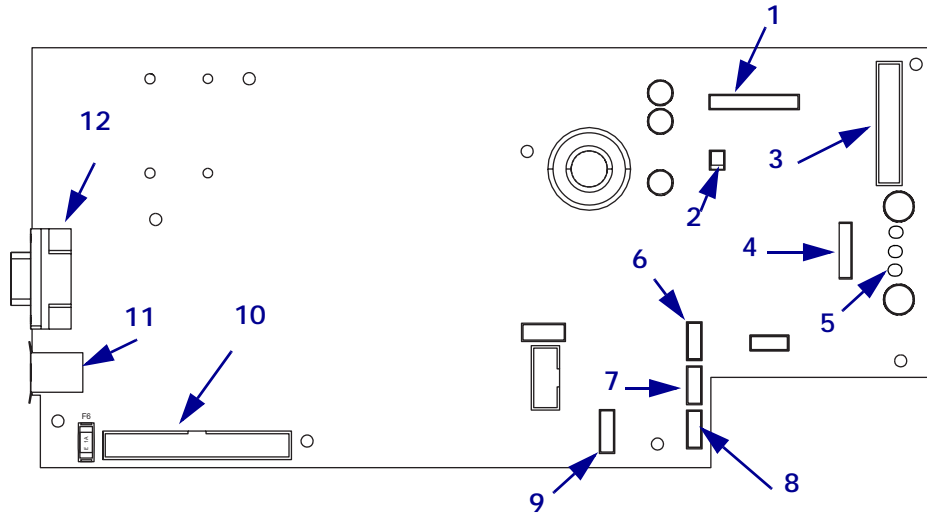
2. See [RRP No. 1 on page 122](#) and remove the electronics cover.

3. See [Figure 93](#). Remove all cables from the main logic board (MLB).



Note • Take note of the location of all cables on the main logic board.

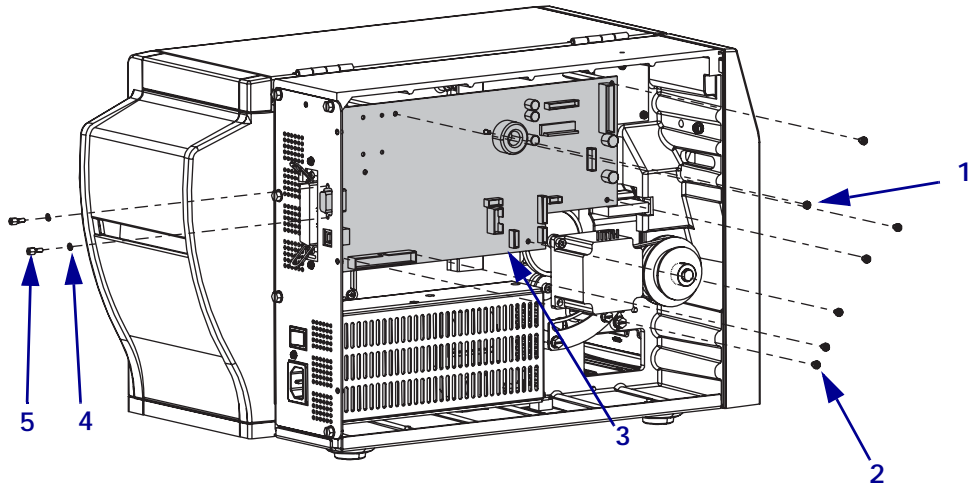
Figure 93 • Remove the Main Logic Board Connections



1	Printhead data (J3)	7	Transmissive sensor (P9)
2	Power-in (J8)	8	Reflective sensor (P7)
3	Front panel (J2)	9	Take-label sensor (J19)
4	Stepper motor (J9)	10	Communication expansion port (J17)
5	Booster board (J7)	11	USB port (J14)
6	Ribbon sensor (P4)	12	Serial port (J10)

4. See [Figure 94](#). Remove the six screws and one nut securing the main logic board to the frame of the printer.
5. Remove the two studs and washers securing the serial port connector to the back of the printer.

Figure 94 • Remove the Main Logic Board



1	Main logic board nut (1)
2	Main logic board mounting screws (6)
3	Main logic board (MLB)
4	Serial port mounting studs (2)

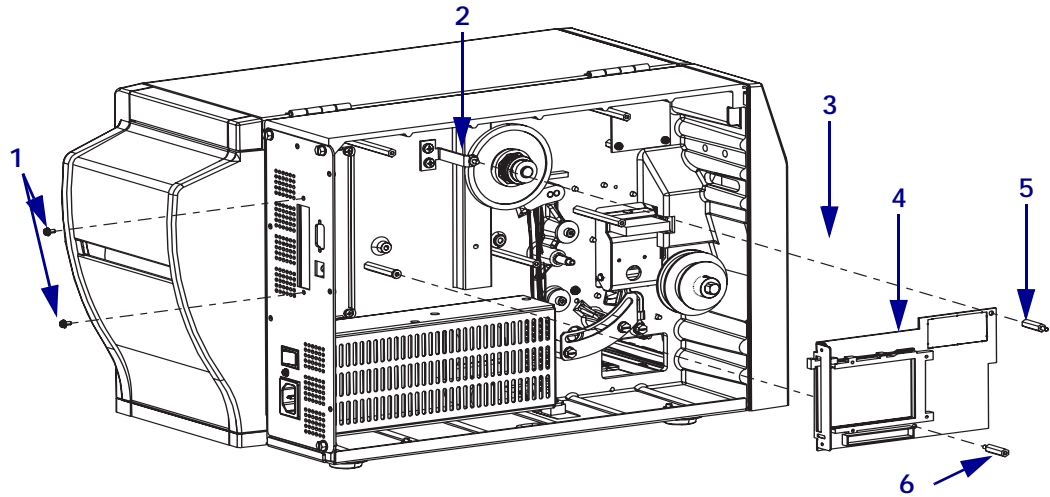
6. Remove the main logic board from the printer.
7. Do you have a wireless option board installed?

If...	Then...
No	Go to Remove the Old Ribbon Take-up Spindle Clutch on page 204.
Yes	Continue to next step.

Remove the Wireless Board

1. See [Figure 95](#). Remove the two mounting screws securing the wireless board to the back cover.

Figure 95 • Remove Wireless Board



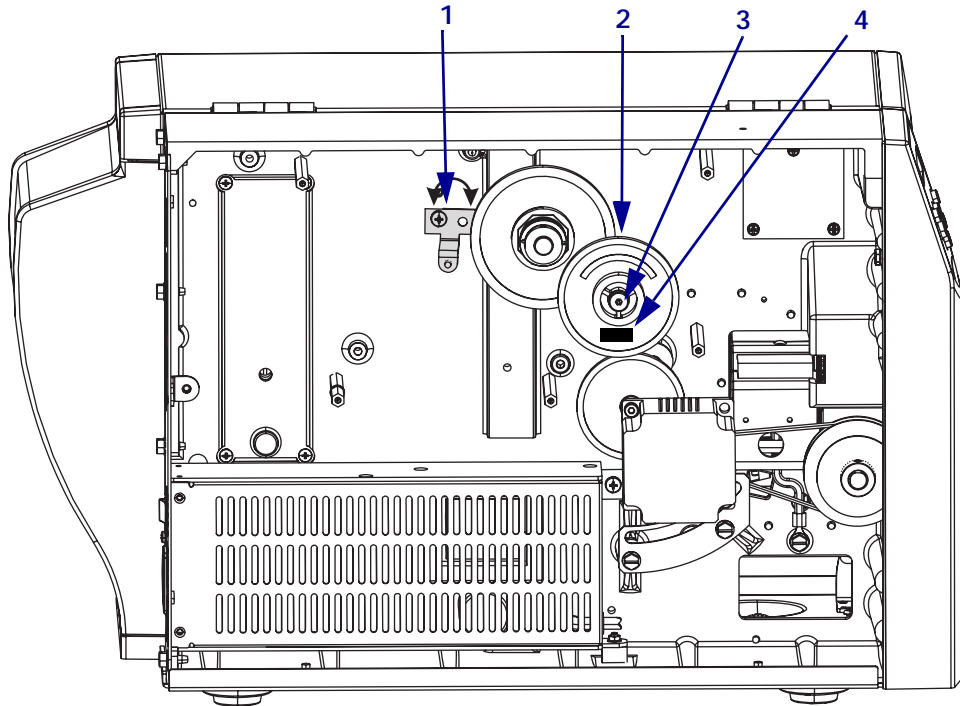
1	Mounting screws (2)
2	Mounting bracket
3	Bracket mounting screw
4	Wireless Option Board
5	Upper mounting standoff
6	Lower mounting standoff

2. Remove the upper mounting standoff.
3. Remove the lower mounting standoff.
4. Remove the wireless board and set it aside on the anti-static mat.

Remove the Old Ribbon Take-up Spindle Clutch

1. See [Figure 96](#). Remove the top mounting screw for the bracket and then loosen the bottom screw.
2. Move the mounting bracket to gain access to the ribbon take-up spindle clutch gear.

Figure 96 • Move the Mounting Bracket

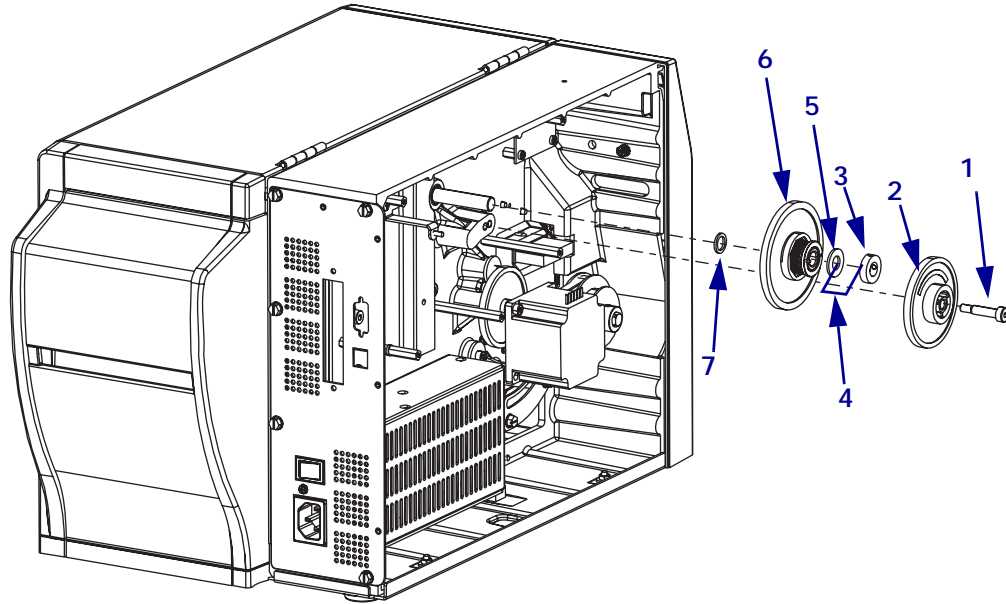


1	Bracket
2	Intermediate gear
3	Mounting screw
4	Mark the outside of the compound gear.

3. Mark the compound gear with a marker so you will know the proper position of the gear.
4. Remove the compound gear mounting screw.
5. Remove the compound gear.

6. See Figure 97. Loosen the two set screws on the ribbon take-up spindle collar and slide the collar off of the shaft.
7. Remove the plastic thrust washer, bearing, and clutch gear assembly from the shaft of the ribbon take-up spindle assembly.

Figure 97 • Ribbon Take-Up Spindle Assembly/Disassembly



1	Compound gear mounting screw
2	Compound gear
3	Collar
4	Clearance—0.020 in. (0.508 mm)
5	Thrust washer
6	Clutch gear w/spring
7	Washer

Install the New Clutch Assembly

1. See [Figure 97](#). Slide the clutch gear assembly, bearing, plastic thrust washer, and collar onto the end of the ribbon take-up spindle assembly shaft. Ensure the clutch assembly gear meshes with the compound gear.
2. Place a 0.020 in. (0.508 mm) feeler gauge between the thrust washer and the collar. From the media side, push in on the ribbon take-up spindle. Tighten the two set screws in the collar and ensure the ribbon take-up spindle turns freely.

Reinstall the Compound Gear

1. See [Figure 97 on page 205](#). Reinstall the compound gear with your mark facing out.
2. See [Figure 96 on page 204](#). Align the mounting bracket with the mounting hole and then reinstall the top mounting screw.
3. Tighten the bottom mounting screw.
4. Do you have a wireless option card?

If...	Then...
No	Continue to Reinstall the MLB .
Yes	See Figure 95 on page 203 . Reinstall the wireless option board.

Reinstall the MLB

1. See [Figure 94 on page 202](#). Reinstall the MLB.
2. See [Figure 93 on page 201](#). Reconnect all cables to the MLB.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.

Ribbon Take-Up Spindle

This procedure is for installing the Ribbon Take-Up Spindle into the S4M printer. Read these instructions thoroughly performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- | | |
|--|---|
| <input type="checkbox"/> Phillips Screwdriver Set | <input type="checkbox"/> Anti-Static Wriststrap and Mat |
| <input type="checkbox"/> Metric Hex Key (Allen Wrench) Set | <input type="checkbox"/> Metric and inch Feeler Gauges, must include: 0.020 (0.508mm) |
| <input type="checkbox"/> Metric Nutdriver Set | |

Remove the Main Logic Board



1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

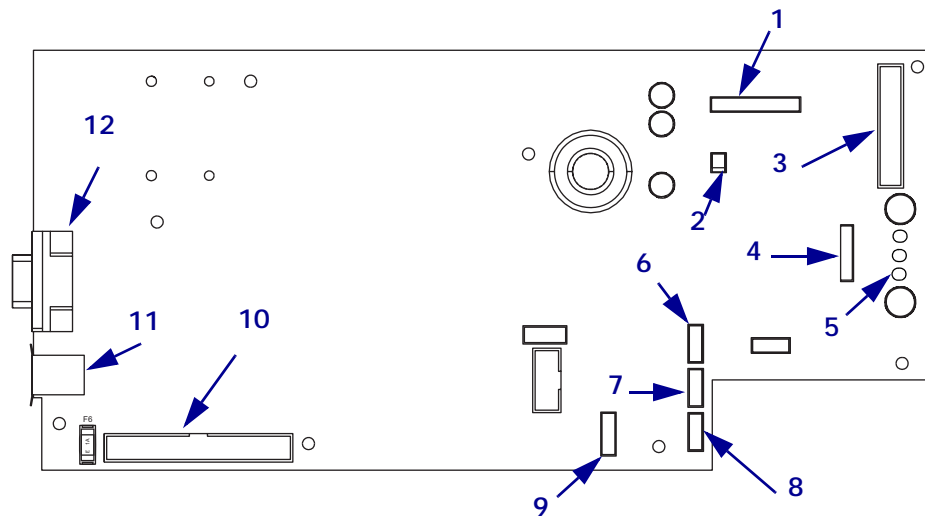
Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 98](#). Remove all cables from the main logic board (MLB).



Note • Take note of the location of all connectors on the main logic board.

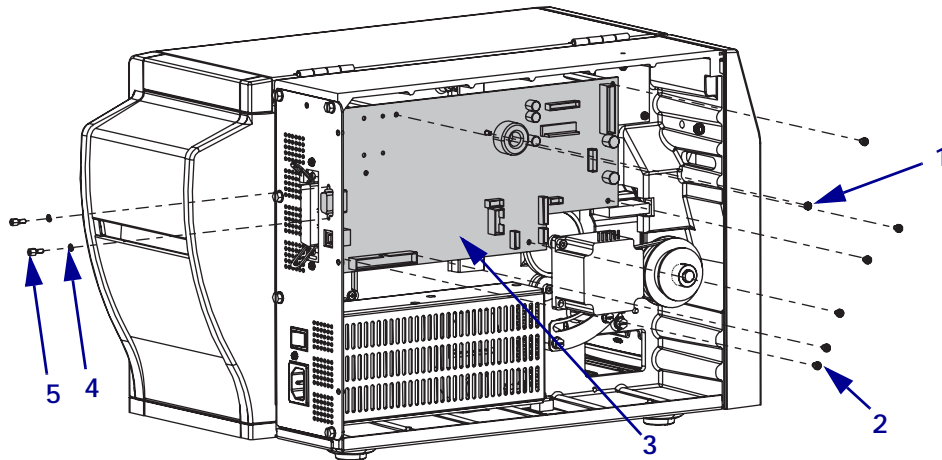
Figure 98 • Remove the Main Logic Board Connections



1	Printhead data (J3)	7	Transmissive sensor (P9)
2	Power-in (J8)	8	Reflective sensor (P7)
3	Front panel (J2)	9	Take-label sensor (J19)
4	Stepper motor (J9)	10	Communication expansion port (J17)
5	Booster board (J7)	11	USB port (J14)
6	Ribbon sensor (P4)	12	Serial port (J10)

4. See [Figure 99](#). Remove the six screws and one nut securing the main logic board to the frame of the printer.
5. Remove the two studs and washers securing the serial port connector to the back of the printer.

Figure 99 • Remove the Main Logic Board



1	Main logic board nut (1)
2	Main logic board mounting screws (6)
3	Main logic board (MLB)
4	Lock washers (2)
5	Serial port mounting studs (2)

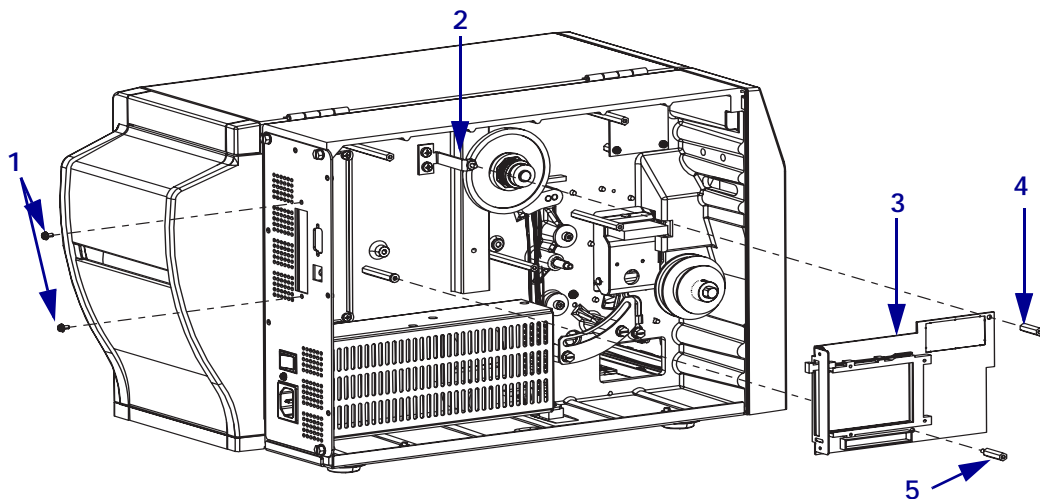
6. Remove the main logic board from the printer.
7. Do you have a wireless option board installed?

If...	Then...
No	Go to step 3 on page 211 .
Yes	Continue to Remove the Wireless Option Board on page 210

Remove the Wireless Option Board

1. See [Figure 100](#). Remove the two mounting screws securing the wireless board to the back cover.

Figure 100 • Remove Wireless Board



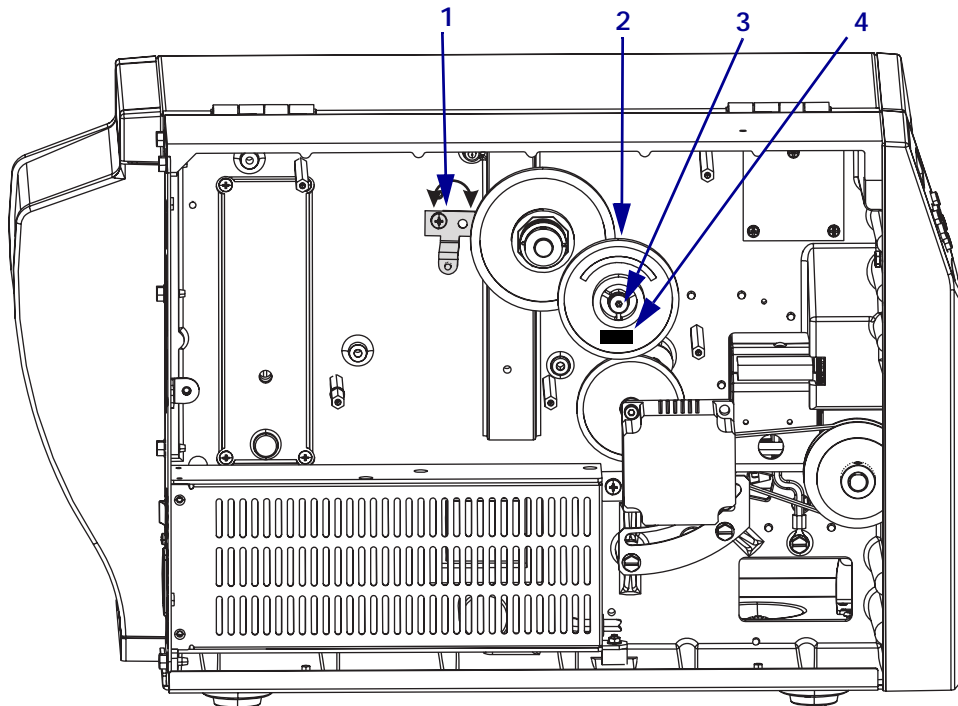
1	Mounting screws (2)
2	Mounting bracket
3	Wireless option board
4	Upper mounting standoff
5	Lower mounting standoff

2. Remove the upper mounting standoff.
3. Remove the lower mounting standoff.
4. Remove the wireless board and set it aside on the anti-static mat.

Remove the Old Ribbon Take-up Spindle Assembly

1. See [Figure 101](#). Remove the top mounting screw for the bracket and then loosen the bottom screw.
2. Move the mounting bracket to gain access to the ribbon take-up spindle clutch gear.

Figure 101 • Move the Mounting Bracket

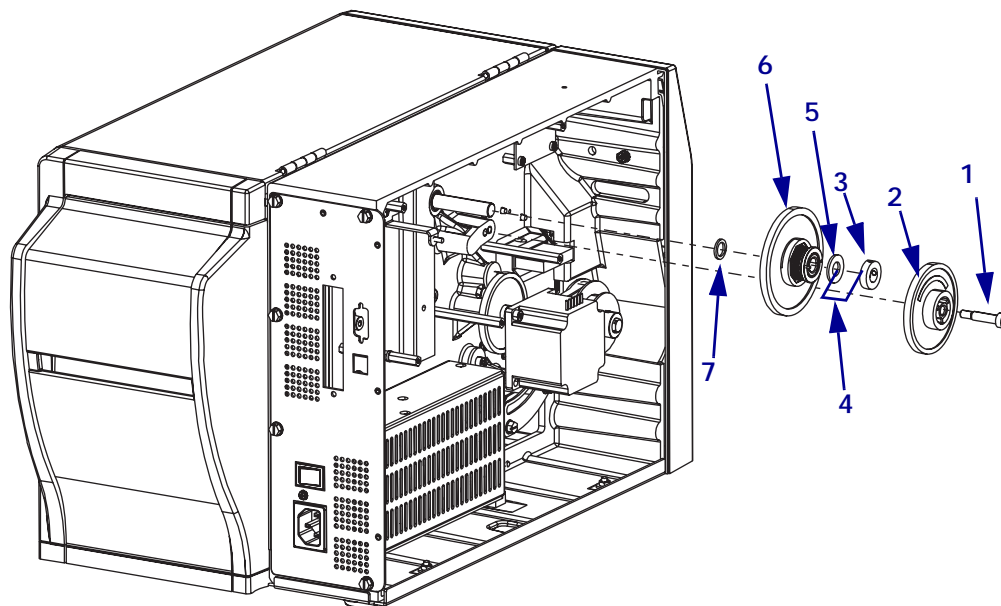


1	Bracket
2	Intermediate gear
3	Mounting screw
4	Mark the outside of the compound gear.

3. Mark the compound gear with a marker so you will know the proper position of the gear.
4. Remove the compound gear mounting screw.
5. Remove the compound gear.

6. See [Figure 103](#). Loosen the two set screws on the ribbon take-up spindle collar and slide the collar off of the shaft.
7. Remove the plastic thrust washer, bearing, and clutch gear assembly from the shaft of the ribbon take-up spindle assembly.

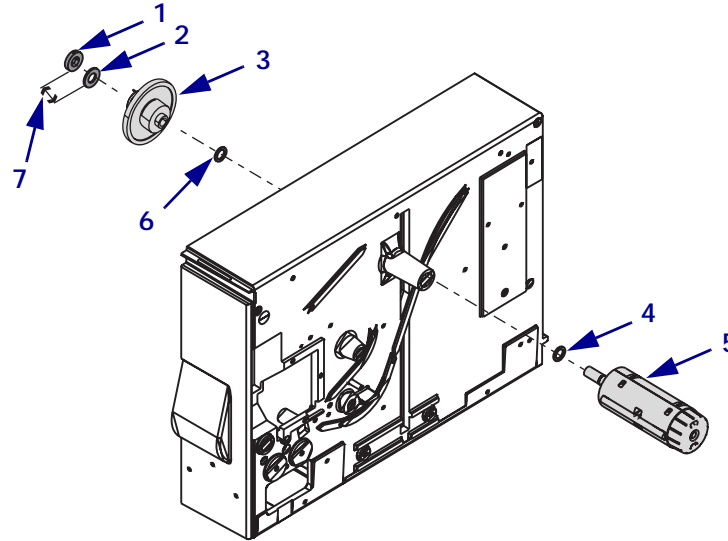
Figure 102 • Ribbon Take-Up Spindle Assembly/Disassembly



1	Compound gear mounting screw
2	Compound gear
3	Collar
4	Clearance—0.020 in. (0.508 mm)
5	Thrust washer
6	Clutch gear w/spring
7	Washer

- See [Figure 103](#). From the media side, remove the ribbon take-up spindle assembly and washer by sliding it out of the printer.

Figure 103 • Ribbon Take-Up Spindle Assembly/Disassembly



1	Collar	5	Ribbon take-up spindle assembly
2	Thrust washer	6	Washer
3	S4M clutch gear	7	Clearance—0.020 in. (0.508 mm)
4	Washer		

Install the New Ribbon Take-Up Spindle Assembly

- See [Figure 103 on page 213](#). Slide the washer removed previously onto the ribbon take-up spindle assembly shaft.
- On the media side, slide the ribbon take spindle shaft through the hole in the main frame.
- On the electronics side, place the washer, gear clutch assembly, plastic thrust washer, and collar onto the end of the ribbon take-up assembly shaft. Ensure the gear clutch assembly gear meshes with the other compound gear.
- Place a 0.020 in. (0.508 mm) feeler gauge between the thrust washer and the collar. From the media side, push in on the ribbon take-up spindle. Tighten the two screws in the collar and ensure the ribbon take-up spindle turns freely.

Complete the Installation

1. Did you remove a wireless option board?

If...	Then...
No	Continue to <i>Install the MLB</i> .
Yes	<ol style="list-style-type: none">a. See Figure 100 on page 210. Reinstall the wireless option board.b. Continue to <i>Install the MLB</i>.

Install the MLB

1. See [Figure 101 on page 211](#). Align the mounting bracket with the mounting hole and then reinstall the top mounting screw.
2. Tighten the bottom mounting screw.
3. See [Figure 99 on page 209](#). Reinstall the MLB.
4. See [Figure 98 on page 208](#). Reconnect all cables to the MLB.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.

Ribbon Supply Spindle

This procedure is for installing the ribbon supply spindle into the S4M printer. Read these instructions thoroughly before performing this procedure.

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Standard Hex Key (Allen Wrench) Set
- Metric Hex Key (Allen Wrench) Set
- Standard Open-End Wrench Set
- Metric Open-End Wrench Set
- Standard Nutdriver Set
- Anti-Static Wriststrap and Mat
- Metric Nutdriver Set
- 01773 Spindle Torque Adjustment Kit
- 77593 Remove Tool
- 77620 (Qty = 2) Washer
- 77598 Nut
- 77594 Screw M4 x 0.70 x 60 mm

Remove the Old Ribbon Supply Spindle



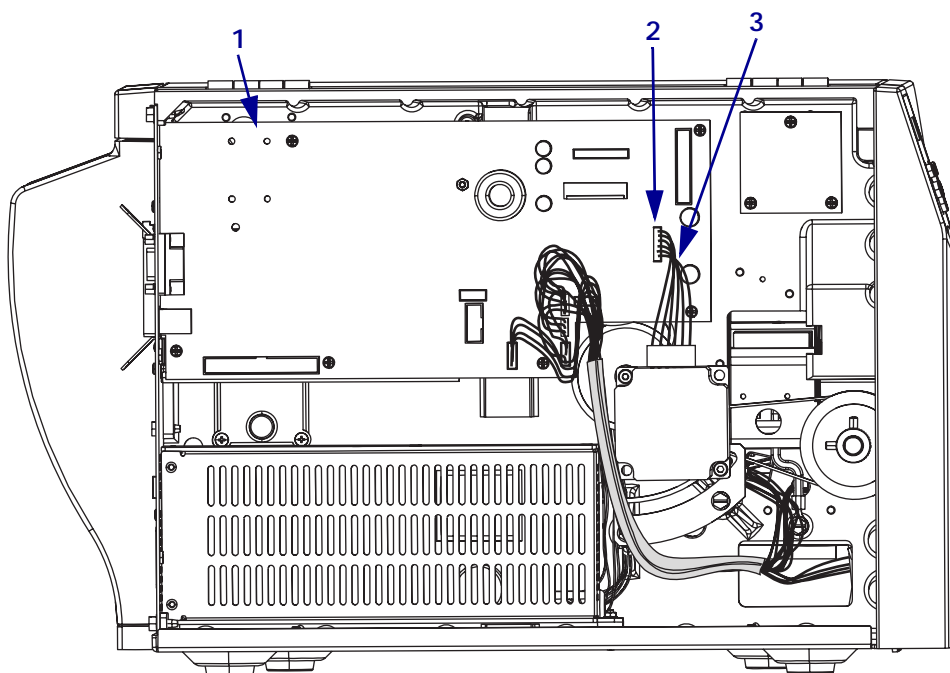
Note • Retain all parts removed during disassembly, unless otherwise directed.

1. See [RRP No. 1 on page 122](#) and remove the electronics cover.
2. See [Figure 105](#). Remove the stepper motor locking screw and the stepper motor pivot screw.



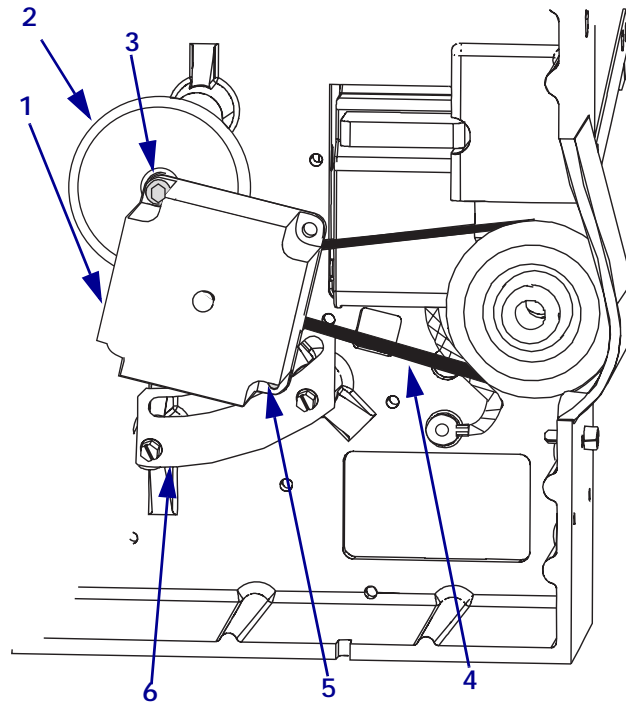
3. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Figure 104 • Disconnect the Stepper Motor



1	Main logic board (MLB)
2	Connector J9
3	Stepper motor cable

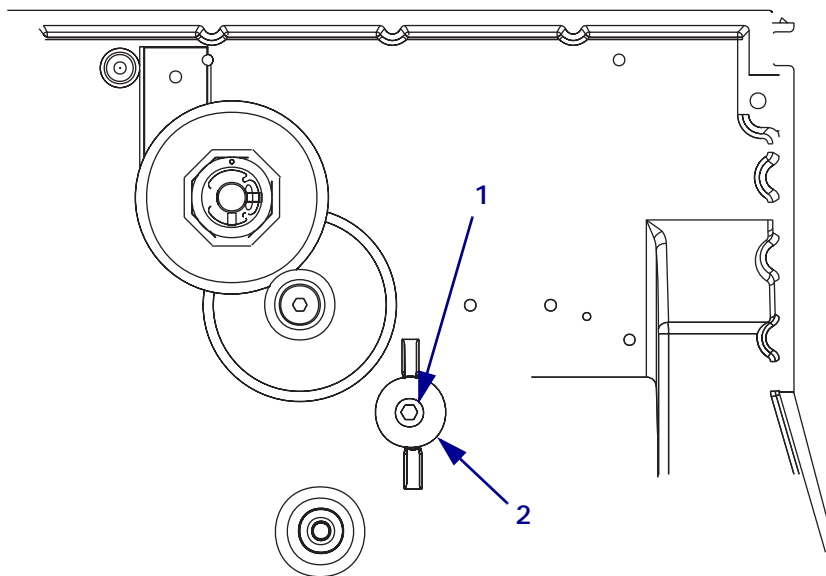
Figure 105 • Stepper Motor Removal and Installation



1	Stepper motor
2	Intermediate gear
3	Pivot screw
4	Belt
5	Locking screw
6	Pivot plate

4. See [Figure 106](#). Remove the ribbon supply spindle mounting screw and washer.

Figure 106 • Remove the Ribbon Supply Spindle Mounting Screw

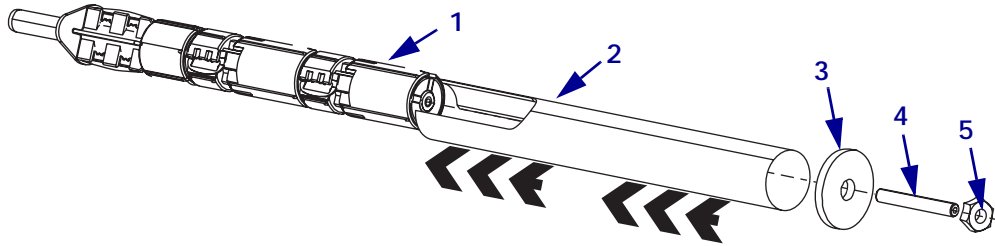


1	Ribbon spindle mounting screw
2	Ribbon spindle mounting washer

5. Push the spindle out of the main frame.

6. See [Figure 107](#). Slide the spindle remove tool over the ribbon supply spindle on the printer.
7. Install the screw into the end of the spindle assembly until it bottoms out.
8. Slide the washer over the end of the screw until it is against the remove tool.
9. Install the nut until it rests against the washer.

Figure 107 • Using the Remove Tool



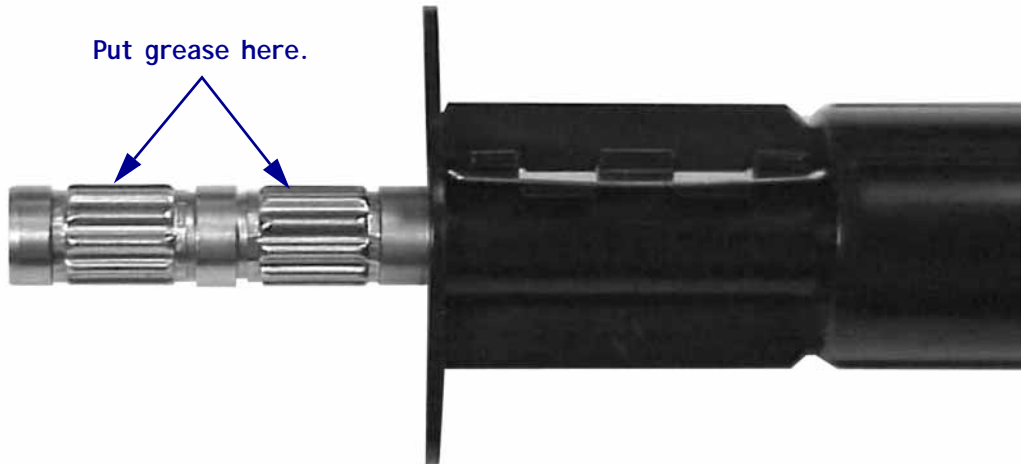
1	Spindle assembly
2	Spindle remove tool
3	Washer
4	Screw
5	Nut

10. While holding the remove tool and using the nut driver, turn the nut clockwise to remove the ribbon supply spindle from the printer.
11. Remove the nut, washer, and screw from the spindle.
12. Slide the remove tool from the spindle.

Install the New Ribbon Supply Spindle Assembly

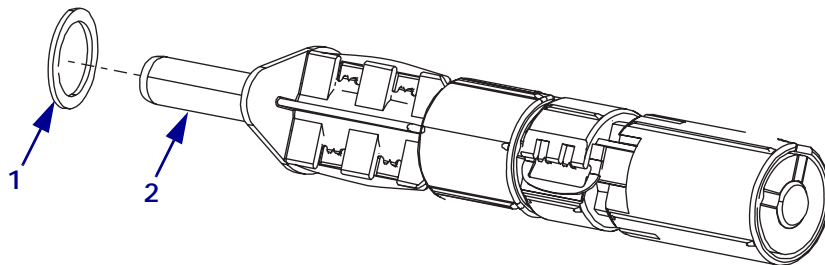
1. See [Figure 108](#). Place a small amount of grease on the tolerance rings of the ribbon supply spindle shaft.

Figure 108 • Lubrication



2. See [Figure 109](#). Install the thin washer onto the spindle shaft.

Figure 109 • Install the Thin Washer



1	Thin washer
2	Ribbon supply spindle shaft

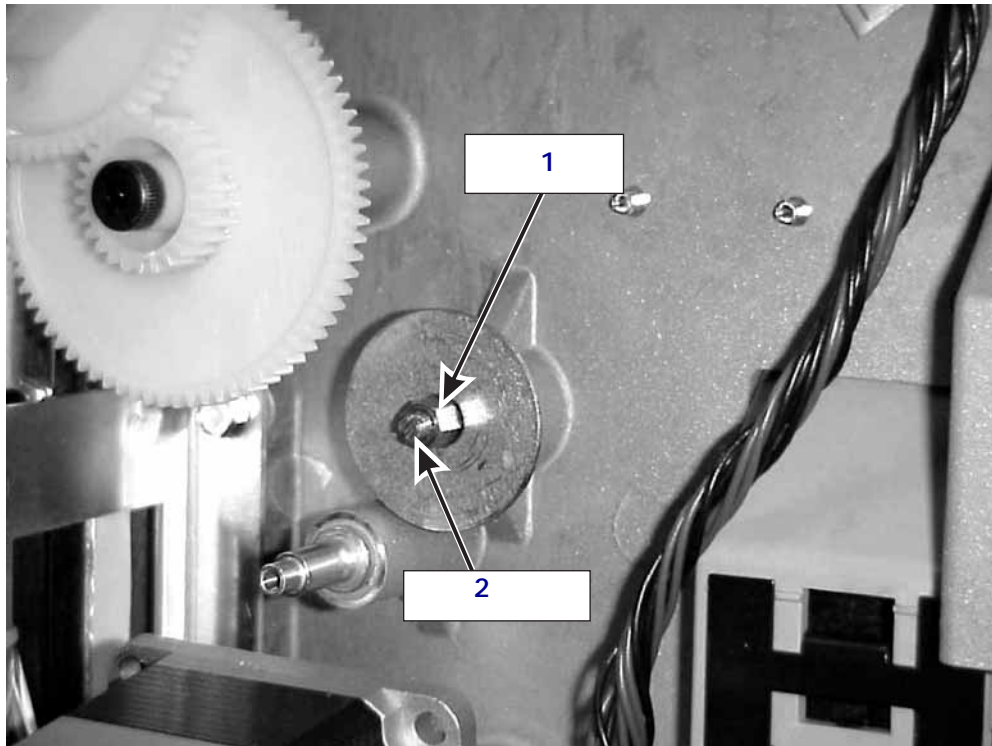
3. See [Figure 107 on page 219](#). Slide the remove tool onto the new spindle assembly, then gently push the ribbon supply spindle assembly into the printer main frame.



Note • In [step 3](#), do not use force or pound on the ribbon supply spindle or the remove tool.

4. See [Figure 110](#). Install the tool screw into the spindle shaft until it bottoms out.
5. Slide the washer over the end of the screw until it is against the main frame.
6. Install the nut until it rests against the washer.

Figure 110 • Spindle Installation



1	Nut
2	Screw

7. While holding the remove tool, turn the nut clockwise to draw the ribbon supply spindle into the printer. Once the spindle is in the printer, turn the spindle nut $\frac{1}{2}$ turn counterclockwise and remove the screw, nut, and washer.
8. Reinstall the spindle mounting screw and washer previously removed.
9. See [Figure 105 on page 217](#). Reinstall the intermediate gear, ensuring the gears mesh properly.
10. Loosely reinstall the stepper motor using the pivot screw, locking screw, and adjustment nut.



Note • The belt should have some deviation, but no more than $\frac{1}{4}$ inch.

11. While lifting up on the stepper motor, reinstall the drive belt. Release the stepper motor to provide tension on the belt.
12. Ensure the belt tension is correct and tighten the locking screw to secure the motor.
13. Tighten the pivot screw.
14. See [Figure 104 on page 216](#). Reconnect the stepper motor cable to J9 on the MLB.

15. Set the tension on the ribbon supply spindle to either the high or low setting depending on the width of the ribbon.



Note • If your ribbon is wide, use the high tension setting. If you experience ribbon slippage, use the low tension setting.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.

Media Hanger Assembly

This procedure is for installing the media hanger assembly into the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Anti-Static Wriststrap and Mat
- Metric Nutdriver Set

Remove the Main Logic Board



- Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

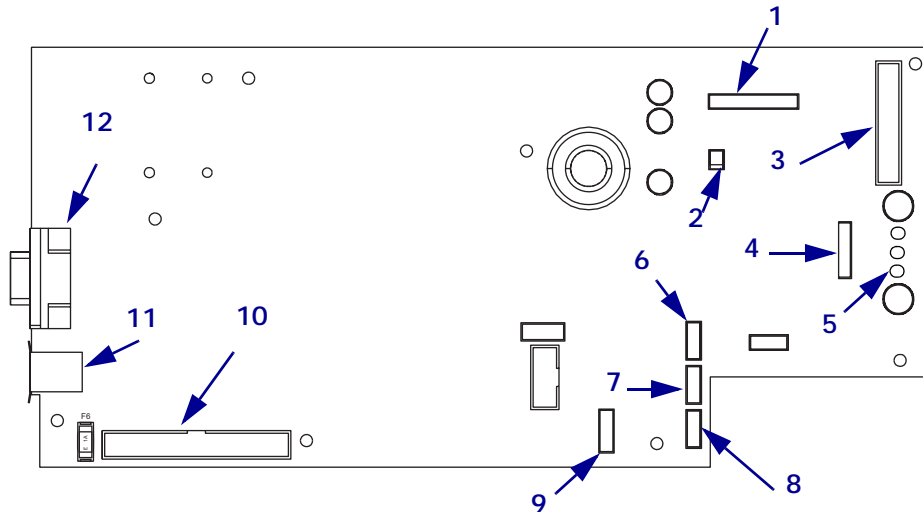
Connect yourself to an antistatic device.

- See [RRP No. 1 on page 122](#) and remove the electronics cover.
- Open the media door and remove the media and ribbon
- See [Figure 111](#). On the electronics side, disconnect all cables from the main logic board.



Note • Take note of the orientation of all cables on the main logic board.

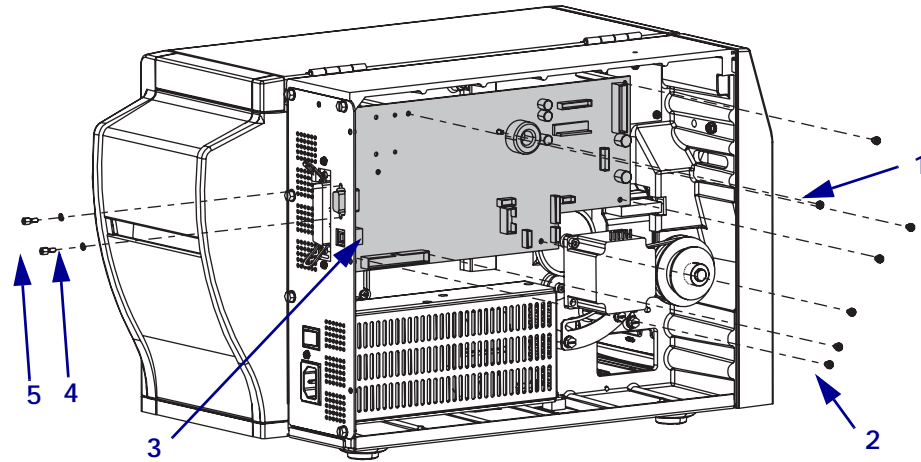
Figure 111 • Disconnect the Main Logic Board Connections



1	Printhead data (J3)	7	Transmissive sensor (P9)
2	Power-in (J8)	8	Reflective sensor (P7)
3	Front panel (J2)	9	Take-label sensor (J19)
4	Stepper motor (J9)	10	Communication expansion port (J17)
5	Booster board (J7)	11	USB port (J14)
6	Ribbon sensor/head open (P4)	12	Serial port (J10)

5. See [Figure 112](#). Remove the six screws and one nut securing the main logic board to the back of the printer.
6. Remove the two studs and washers securing the serial port connector to the printer.

Figure 112 • Remove the Main Logic Board

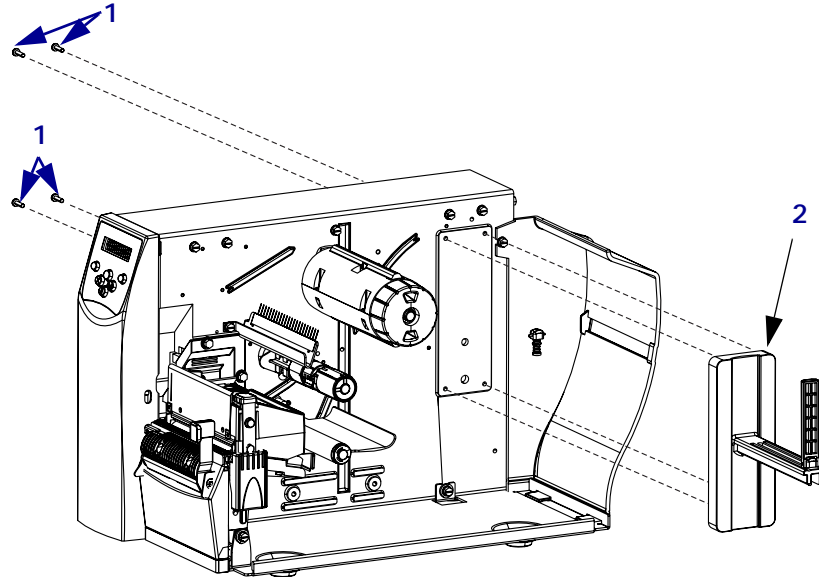


1	Main logic board nut
2	Main logic board mounting screws (6)
3	Main logic board (MLB)
4	Lock washers (2)
4	Serial port mounting studs (2)

7. Remove the main logic board from the printer.

8. See [Figure 113](#). Remove the four hanger mounting screws and then remove the hanger from the printer.

Figure 113 • Remove/Install the Hanger Assembly



1	Hanger assembly mounting screws (4)
2	Hanger assembly

Install the New Hanger Assembly Kit

1. See [Figure 113](#). Install the new hanger assembly using the four mounting screws removed previously.
2. See [Figure 112 on page 225](#). Install the main logic board in the printer using the six mounting screws and one nut removed previously.
3. Reinstall the two studs and washers securing the serial port.
4. See [Figure 111 on page 224](#). Reconnect all the cables previously disconnected from the main logic board. Visually inspect and ensure the cables are in their proper location and seated in the connectors.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect the AC Power cord and data cables.
4. Turn On (I) the printer.

Stepper Motor and Gear/Pulley

This procedure is for installing the stepper motor and gear/pulley in the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Anti-Static Wriststrap and Mat
- Metric Hex Key (Allen Wrench) Set
- Metric Nutdriver Set

Remove the Old Stepper Motor

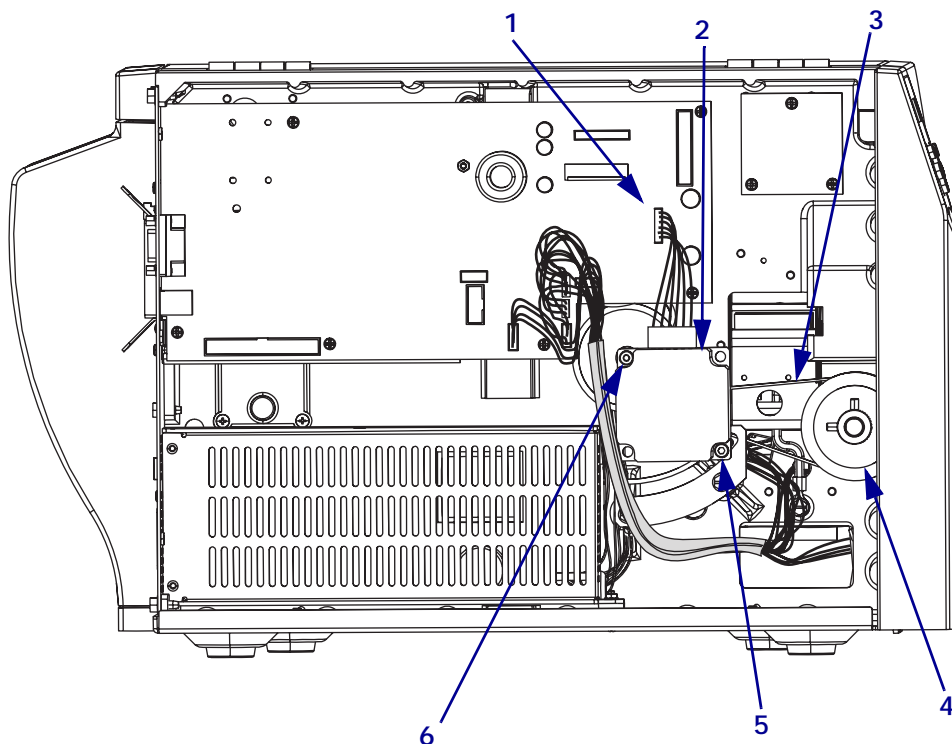


1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 114](#). Locate the stepper motor and drive belt.

Figure 114 • Locate Drive System Components



1	MLB J9
2	Stepper motor
3	Drive belt
4	Platen pulley
5	Locking screw
6	Pivot screw

4. Disconnect the stepper motor cable from the main logic board (MLB), J9.
5. Remove the locking screw and nut.
6. Remove the pivot screw and then remove the stepper motor.

Install the New Stepper Motor and Gear

1. See [Figure 114 on page 228](#). Install the stepper motor by sliding the gear/pulley through the drive belt. Secure in position with the pivot screw, but do not tighten at this time.
2. Reinstall the locking screw and nut, but do not tighten at this time



Note • Belt should deflect under finger pressure but no more than ¼ inch (6 mm).

3. Rotate the motor down until the drive belt is just taut. Tighten the locking screw and then the pivot screw.
4. Connect the stepper motor power cable to J9 on the MLB.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.

Gears and Pulley

This procedure is for installing the drive system maintenance kit into the S4M printer. Read these instructions thoroughly before attempting to perform this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Anti-Static Wriststrap and Mat
- Metric Hex Key (Allen Wrench) Set
- Metric Nutdriver Set

Remove the Main Logic Board



1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

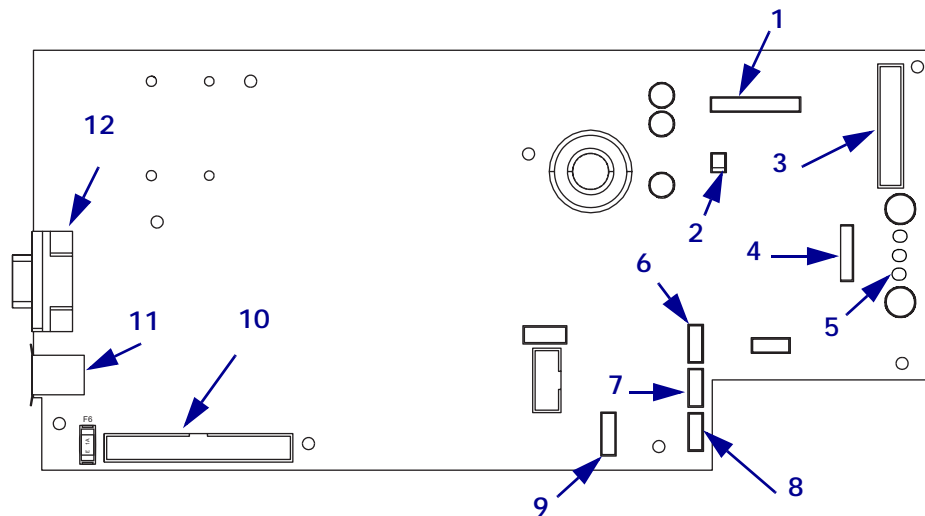
Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 115](#). Remove all cables from the main logic board (MLB).



Note • Take note of the location of all cables on the main logic board.

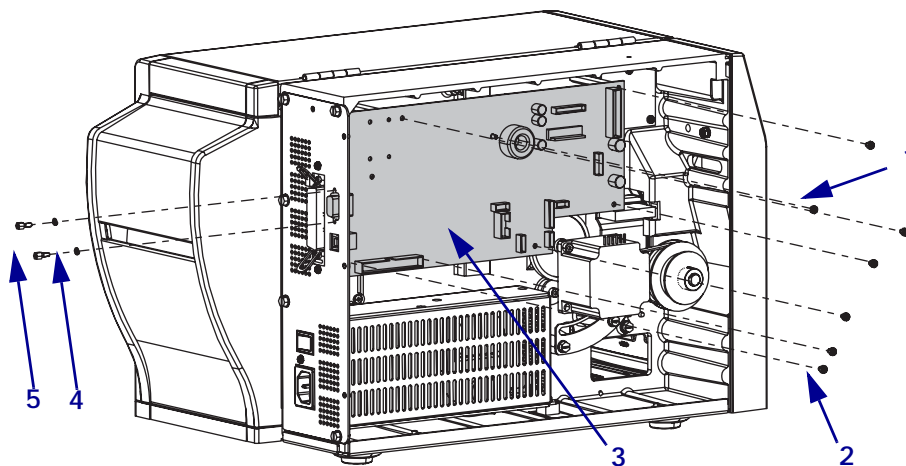
Figure 115 • Remove the Main Logic Board Cables



1	Printhead data (J3)	7	Transmissive sensor (P9)
2	Power-in (J8)	8	Reflective sensor (P7)
3	Front panel (J2)	9	Take-label sensor (J19)
4	Stepper motor (J9)	10	Communication expansion Port (J17)
5	Booster board (J7)	11	USB port (J14)
6	Ribbon Sensor/Head Open (P4)	12	Serial port (J10)

4. See [Figure 116](#). Remove the six screws and one nut securing the main logic board to the frame of the printer.
5. Remove the two studs and washers securing the serial port connector to the back of the printer.

Figure 116 • Remove the Main Logic Board



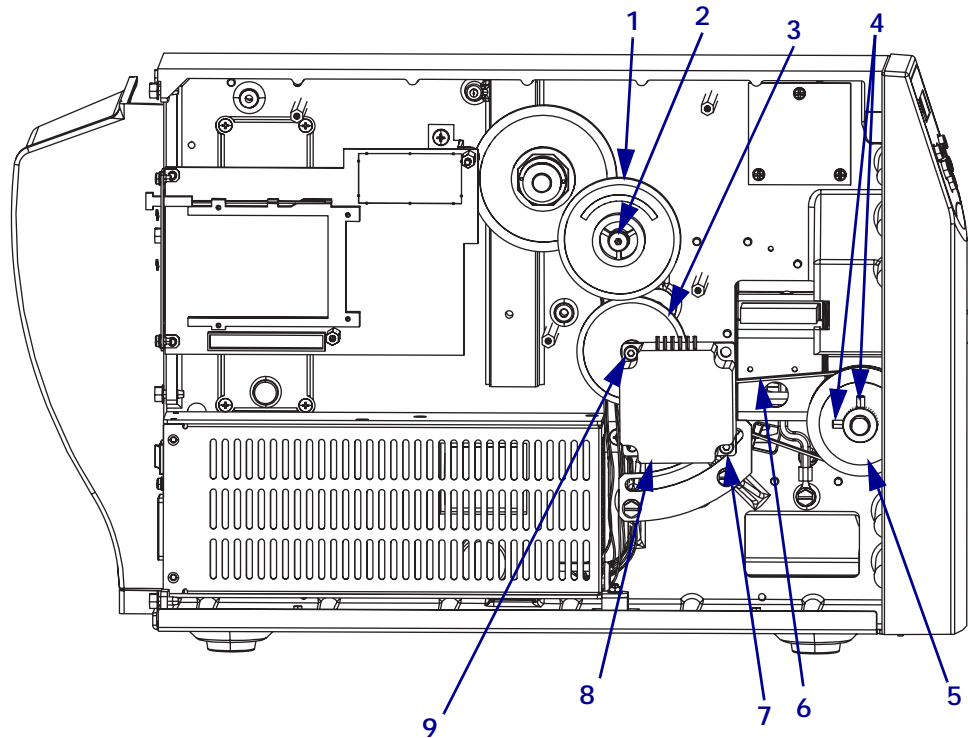
1	Main logic board nut (1)
2	Main logic board mounting screws (6)
3	Main logic board (MLB)
4	Serial port mounting studs (2)
5	Lock washers (2)

6. Remove the main logic board from the printer.

Remove the Drive Belt

1. See Figure 117. Locate the stepper motor and drive belt.

Figure 117 • Locate Drive System Components



1	Compound gear	6	Drive belt
2	Mounting screw	7	Locking screw
3	Intermediate gear	8	Stepper motor
4	Set screws (2)	9	Pivot screw
5	Compound pulley		

2. Loosen the pivot screw and locking screw, then remove the stepper motor and remove the drive belt.



Note • The compound pulley has two drive wheels that allow for 200 or 300 dpi operation. Note the location and orientation of the drive belt on the pulley before removing.

Remove the Stepper Motor, Pulley, and Gears

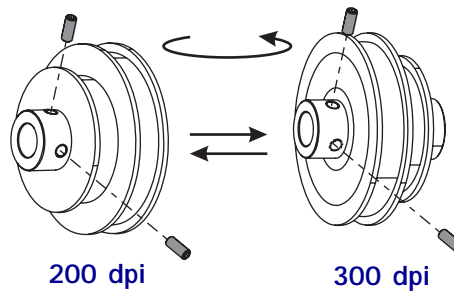
1. Remove the locking screw and nut.
2. Remove the pivot screw and then remove the stepper motor and set it aside.
3. Remove the intermediate gear.
4. Remove the compound gear mounting screw.
5. Loosen the two set screws and remove the platen roller pulley. Note the orientation of the pulley.

Install the New Gears and Compound Pulley

1. See [Figure 118](#). What is the dpi for your printer?

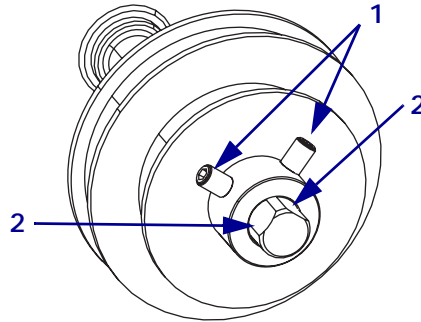
If...	Then...
200 dpi	Install the set screws as shown for 200 dpi.
300 dpi	Install the set screws as shown for 300 dpi.

Figure 118 • Select the Orientation of the Compound Pulley and Set Screws



- See [Figure 119](#). Slide the pulley onto the platen pulley shaft in the proper orientation and align the set screws with the flat spots on the platen roller shaft.

Figure 119 • Align Flat Spots on the Shaft



1	Set screws (2)
2	Platen roller shaft flat spots

- See [Figure 117](#). Leave approximately 1/32 in. (0.80 mm) from the main frame and tighten the set screws.
- Install the intermediate gear, stepper motor, and drive belt. Secure in position with the pivot screw, do not tighten at this time.
- Reinstall the locking screw and nut, do not tighten at this time.



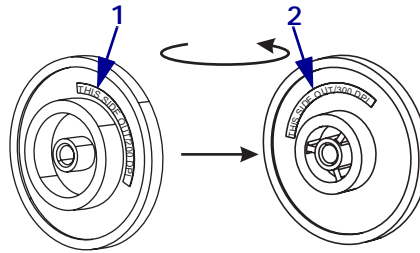
Note • The belt should deflect under finger pressure but no more than ¼ inch (6 mm).

- Rotate the motor down until the drive belt is just taut. Tighten the locking screw and then the pivot screw.

Caution • Do not over tighten the belt, damage to the bearings and platen roller will occur.

7. See [Figure 120](#). Select the proper orientation for the compound gear, 200 or 300 dpi.

Figure 120 • Select the Proper Compound Gear Position



1	For 200 dpi, face this side out
2	For 300 dpi, face this side out

8. Install the compound gear and slightly tighten the mounting screw. Ensure all gears mesh together and then tighten the mounting screw.

Reinstall the MLB

1. See [Figure 116 on page 232](#). Reinstall the MLB.
2. See [Figure 115 on page 231](#). Reconnect all cables to the MLB.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.

Peel-Off/Tear-Off Bar

This procedure is for installing the peel-off/tear-off bar in the printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



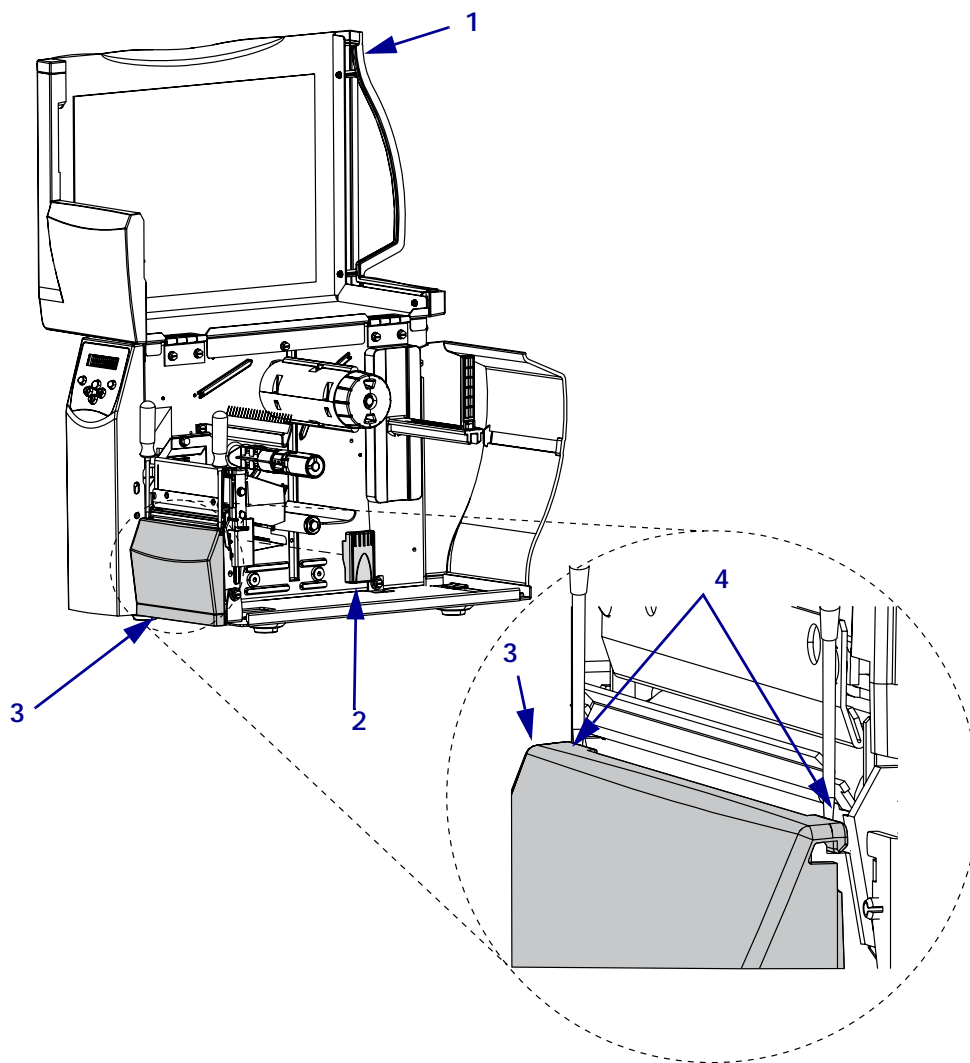
Tools • You need these tools to complete this procedure:

- 2.5 mm Hex Key (Supplied)

Remove the Front Cover

1. Turn Off (O) the printer and remove the AC power cord and data cables.
2. Open the media door and remove the media and ribbon.
3. See Figure 121. Carefully remove the latch cover.
4. Using a small flat-blade screwdriver, pry the front cover off.

Figure 121 • Remove the Latch and Front Covers

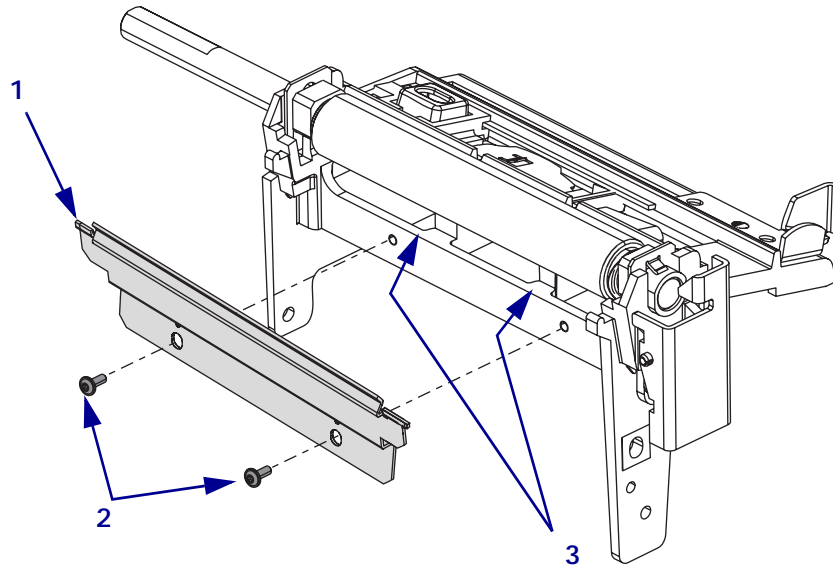


1	Media door
2	Latch cover
3	Front cover
4	Flat-blade screwdriver

Replace the Peel-Off/Tear-Off Bar

1. Remove the two peel-off/tear-off bar mounting screws.

Figure 122 • Remove and Install the Peel-Off/Tear-Off Bar



1	Peel-off/tear-off bar
2	Peel-off/tear-off bar mounting screws (2)
3	Rest the bumps on the housing here

2. Lift the peel-off/tear-off bar out of the platen housing.
3. Install the new peel-off/tear-off bar into the platen housing. Do not tighten the mounting screws at this time.



Note • You may find it is easier to insert the left side first.

4. Lift the peel-off/tear-off bar up slightly. Push the peel-off/tear-off bar back against the horizontal mounting bar of the platen housing and then back down until the bumps are resting on the mounting bar.
5. Tighten the mounting screws while keeping pressure down on the peel-off/tear-off bar.
6. See [Figure 121 on page 238](#). Reinstall the front cover.
7. Reinstall the latch cover.
8. Reinstall the media and ribbon.
9. Reconnect the AC power cord and apply power.

Peel Option

This procedure is for installing the peel option into the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



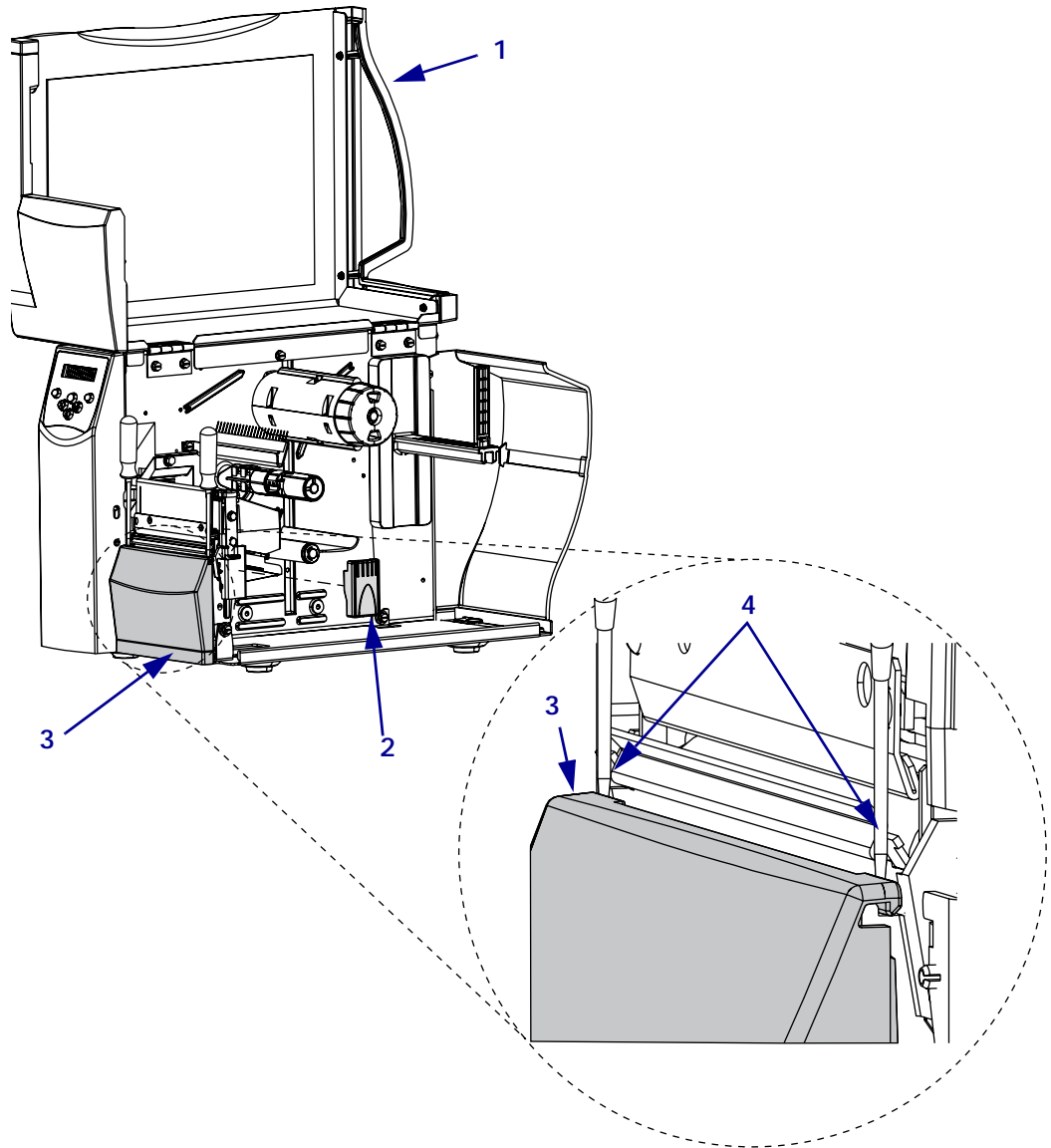
Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Flat-Blade Screwdriver Set
- Metric Hex Key (Allen Wrench) Set

Remove the Front Cover

1. Turn Off (O) the printer and remove the AC power cord and data cables.
2. Open the media door and remove the media and ribbon.
3. See Figure 123. Carefully remove the latch cover.
4. Using a small flat-blade screwdriver, pry the front cover off.

Figure 123 • Remove the Latch and Front Covers



1	Media door
2	Latch cover
3	Front cover
4	Use flat-blade screwdriver here

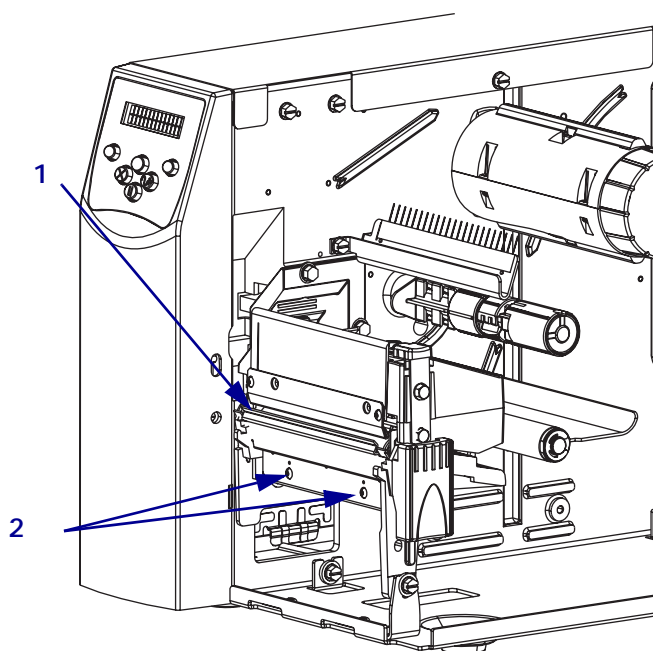
5. Reinstall the latch cover.
6. Do you have an existing peel option?

If...	Then...
No	Continue to next step.
Yes	Go to <i>Remove the Peel Assembly</i> on page 243.

Remove the Tear Bar

1. See [Figure 124](#). Remove the two tear bar mounting screws.

Figure 124 • Remove the Tear Bar



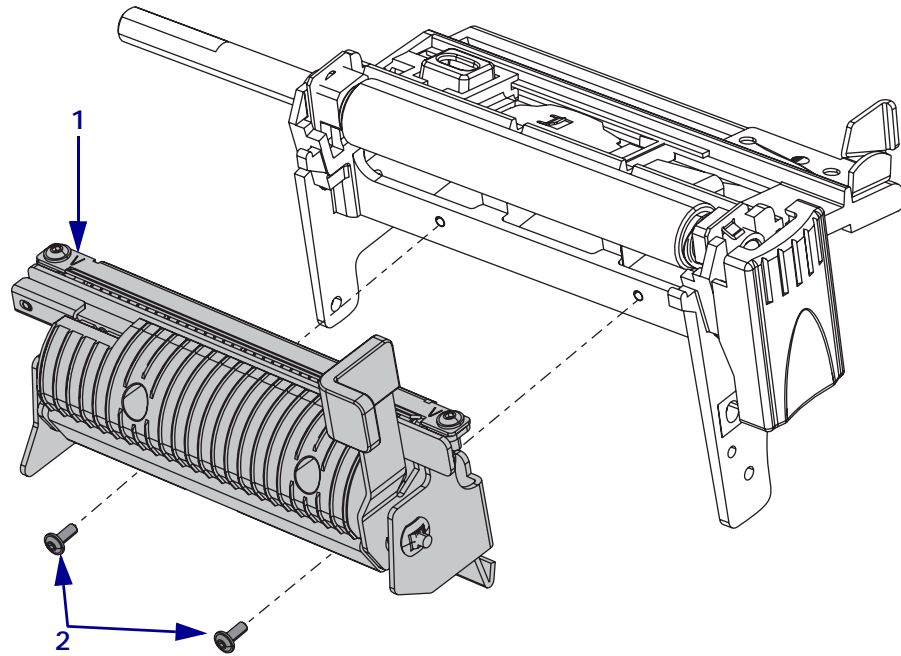
1	Tear bar
2	Mounting screws (2)

2. Remove the tear bar.
3. Go to *Install the Peel Assembly* on page 244.

Remove the Peel Assembly

1. See [Figure 125](#). Remove the two mounting screws and then remove the peel assembly.

Figure 125 • Remove Old Peel Assembly

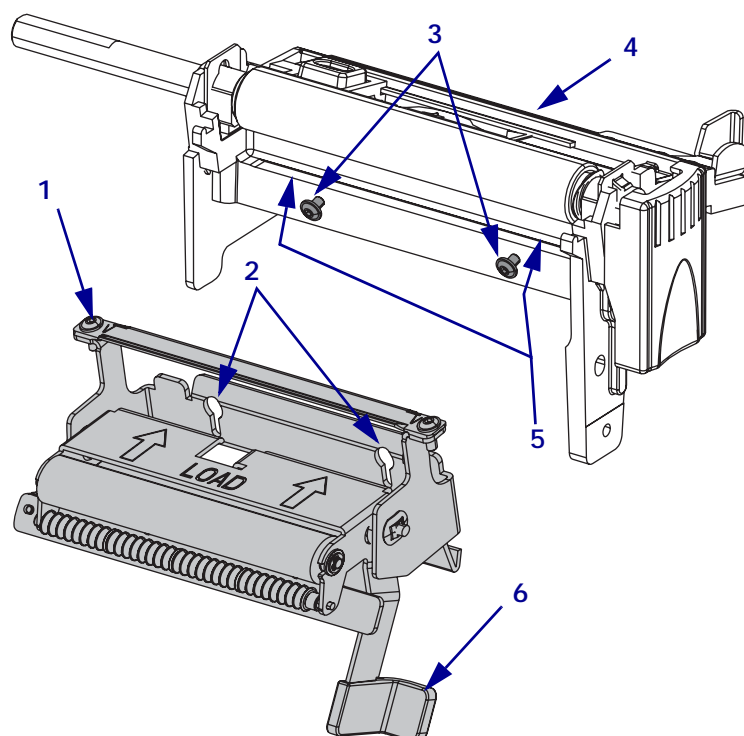


1	Peel assembly
2	Mounting screws (2)

Install the Peel Assembly

1. See [Figure 126](#). Using the hex key (Allen wrench) supplied, install the two mounting screws from the kit into the tear bar mounting screw holes. Tighten them to within 1/8 in. of the platen housing.

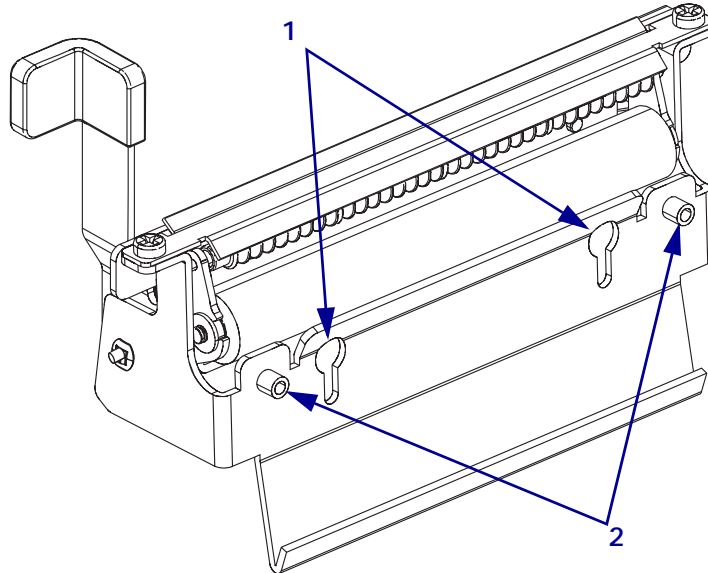
Figure 126 • Install Peel Assembly



1	Peel assembly
2	Mounting slots (2)
3	Mounting screws (2)
4	Platen housing
5	Rest pems on housing here
6	Peel lever

2. See [Figure 127](#). Notice the pems and the mounting slots.

Figure 127 • Rear View of Peel Assembly



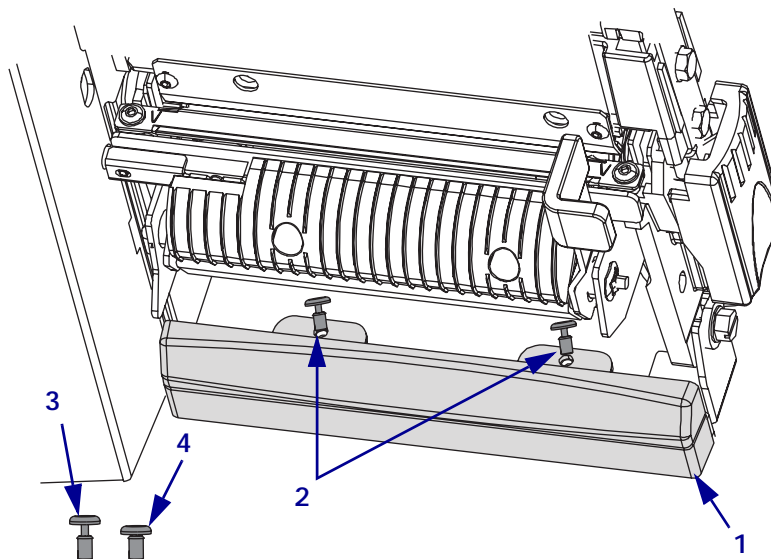
1	Mounting slots (2)
2	Pems (2)

3. See [Figure 126 on page 244](#). Install the peel assembly with the pems to the rear and the opening in the mounting slot to the top.
 - a. Insert the mounting slot opening over the two screws and lift up on the assembly.
 - b. Now push the assembly back against the vertical surface of the platen housing then down, so that the pems are resting on the horizontal surface of the platen housing.
4. Maintain a slight pressure downward on the peel assembly to keep the pems on the horizontal surface, and tighten the mounting screws.

Install the New Front Cover

1. See [Figure 128](#). Insert the front cover mounting tabs through the mounting holes in the base.
2. Install the two rivets through the two tabs and into the base mounting holes.

Figure 128 • Install the Front Cover



1	Front cover
2	Plastic rivets (2_
3	Rivet open
4	Rivet closed

3. Reinstall the media and ribbon.
4. Reinstall the AC power cord and data cables.
5. Turn On (I) the printer.

Select the Peel Mode

1. Press **MENU** to enter the Setup Mode.
2. Use the left or right arrow to scroll through the parameters until **REMOVAL** is displayed.
3. Use the up or down arrow until **PEEL** is displayed.
4. Press **MENU**.
The printer displays **SAVE CHANGES** and activates the **ENTER** button.
5. Press **ENTER**.
The printer saves changes and exits Setup mode

Static Brush

This procedure is for installing the static brush assembly in the printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

- S4M User CD
- S4M User Guide
- S4M Quick Reference Guide

Tools Required



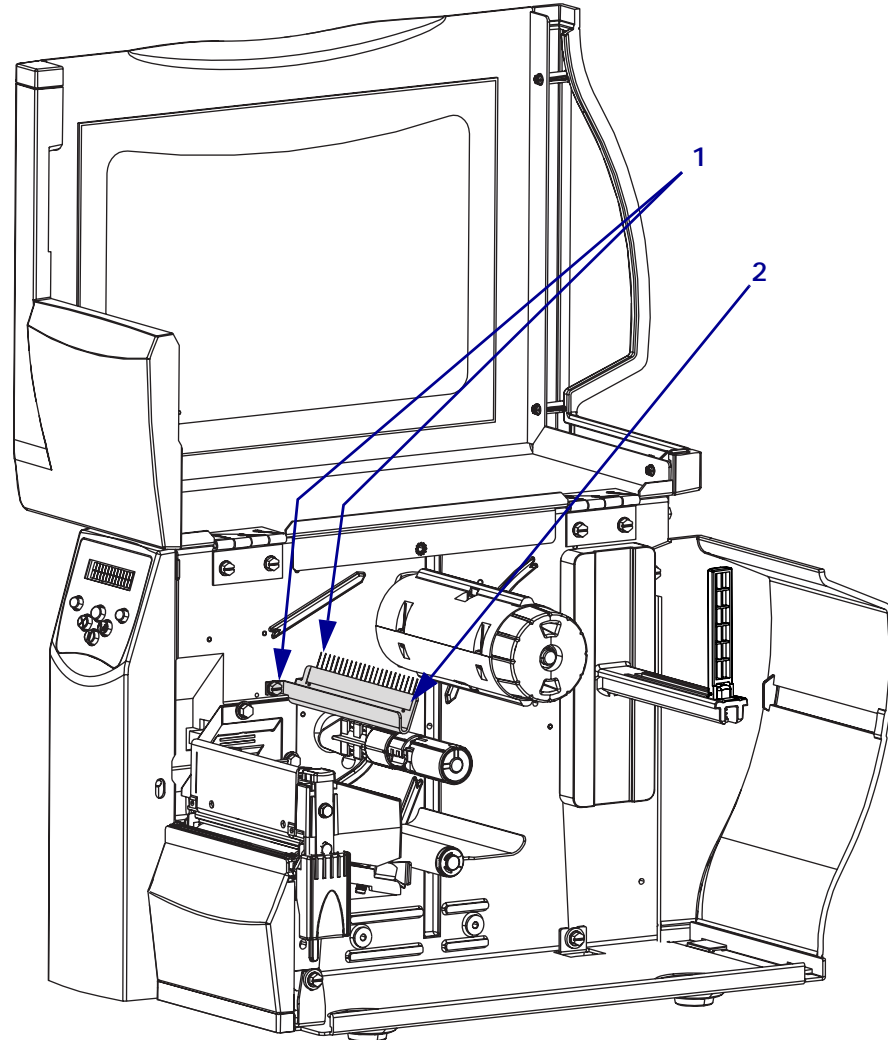
Tools • You need these tools to complete this procedure:

- Metric Nutdriver Set

Remove the Old Static Brush Assembly

1. Turn Off (O) the printer and disconnect the AC power cord.
2. Open the media cover and remove all media and ribbon.
3. See [Figure 129](#). Remove the two mounting screws securing the brush assembly.
4. Remove the brush assembly from the printer.

Figure 129 • Remove and Install the Static Brush Assembly (S4M)



1	Mounting screws (2)
2	Static brush assembly

Install the New Static Brush Assembly

1. See [Figure 129](#). Secure the new static brush assembly to the printer frame with two mounting screws.
2. Reinstall the ribbon and media and close the media cover.
3. Reconnect the AC power cord, data cables and turn On (I) the printer.

Dancer Assembly

This procedure is for installing the dancer assembly in the printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



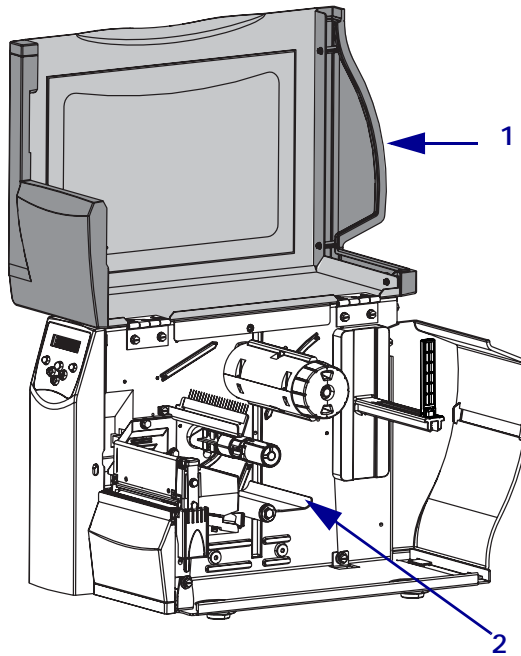
Tools • You need these tools to complete this procedure:

- Long Needle Nose Pliers
- Safety Goggles
- Flat-Blade Screwdriver Set

Remove the Old Dancer Assembly

1. Turn Off (●) the printer and disconnect the power cord and all data cables.
2. See [Figure 130](#). Open the media door and remove the media and ribbon.

Figure 130 • Open the Media Door



1	Media door
2	Dancer assembly

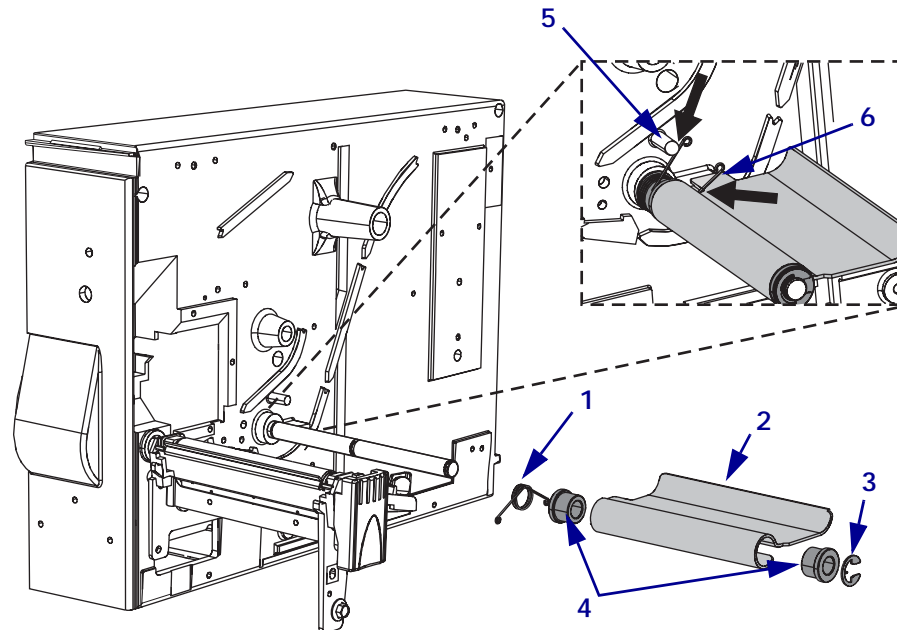
3. See [Figure 131](#). Relieve the spring tension from the dancer assembly by using a long needle nose pliers to move the torsion spring leg off the printer post.



4. **Caution** • 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.

Remove the E-ring, then slide off the bearings, the dancer, and the torsion spring.

Figure 131 • Dancer Assembly



1	Torsion spring
2	Dancer
3	E-ring
4	Flanged bearing (2)
5	Printer post
6	Dancer tab

Install the New Dancer Assembly

1. See [Figure 131](#). Install the new torsion spring, the first bearing, the dancer, the second bearing, and finally the E-ring.
2. Place the dancer assembly torsion spring back to its operating position against the printer post and dancer tab. Ensure there is tension on the dancer assembly.
3. Reinstall media and ribbon, and then close the media door.
4. Reconnect the AC power cord and data cables.
5. Turn On (I) the printer.

Outer Media Guide

This procedure is for installing the outer media guide in the printer. Read these instructions thoroughly before installing this kit.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver, Stubby
- Safety Goggles

Remove the Outer Media Guide

1. Turn Off (O) the printer and disconnect the AC power cord.
2. Open the media side cover and remove all media and ribbon from the printer.

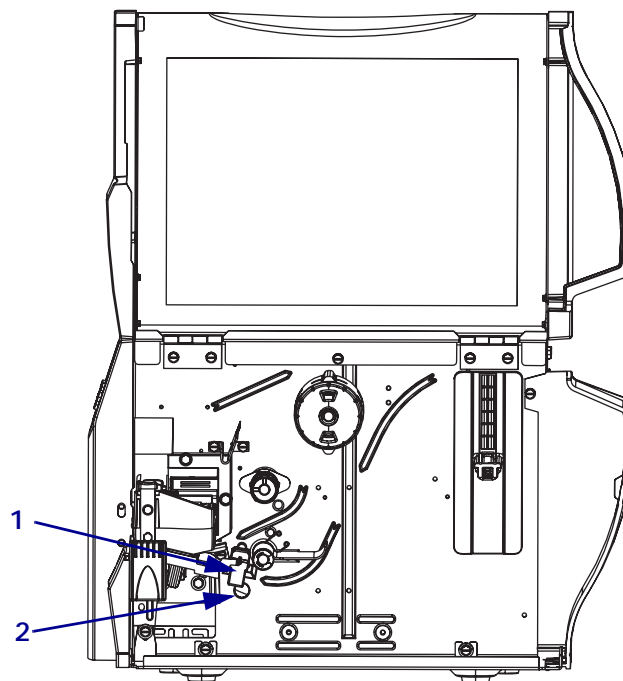


3. **Caution** • Wear protective eye wear when installing or removing E-rings, C-clips, snap rings, springs, and mounting buttons. These are under tension and could fly off.

See [Figure 132](#) and [Figure 133](#). Remove the thumb nut or screw, washer, and spring.

4. Lift the outer media guide out of the platen housing.

Figure 132 • Remove the Old Outer Media Guide

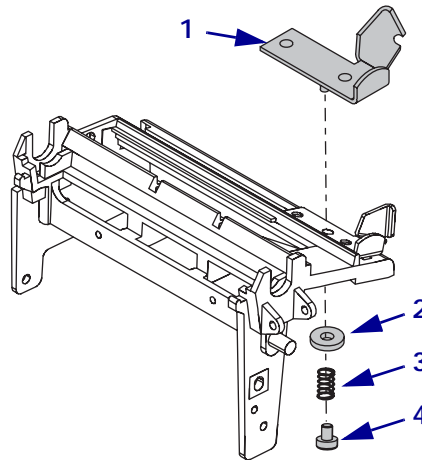


1	Outer media guide
2	Mounting nut or screw

Install the Outer Media Guide

1. See [Figure 133](#). Place the new outer media guide in the platen assembly.
2. Install the spring and washer on the outer media guide screw.

Figure 133 • Install the New Outer Media Guide



1	Outer media guide
2	Washer
3	Compression spring
4	Screw

3. Install the outer media guide thumbnut or screw, spring, and washer to secure the outer media guide.
4. Reinstall the media and ribbon and close the media door.
5. Reconnect the AC power cord.
6. Turn On (I) the printer.



Notes • _____

Roller System



This section provides replacement and installation procedures for the S4M roller system.

Contents

Platen Roller	258
Pinch Roller	269

Platen Roller

This kit includes the parts and documentation necessary to install the Platen Roller Maintenance Kit into the following printers: Z Series[®] (S4M[™]). Read these instructions thoroughly before installing this kit.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- | | |
|--|---|
| <input type="checkbox"/> Phillips Screwdriver Set | <input type="checkbox"/> Needle Nose Pliers |
| <input type="checkbox"/> Flat-blade Screwdriver Set | <input type="checkbox"/> Safety Goggles |
| <input type="checkbox"/> Metric Hex Key (Allen Wrench) Set | |

Remove the Platen Roller Pulley and Belt



Note • Retain all parts removed during disassembly, unless otherwise directed.

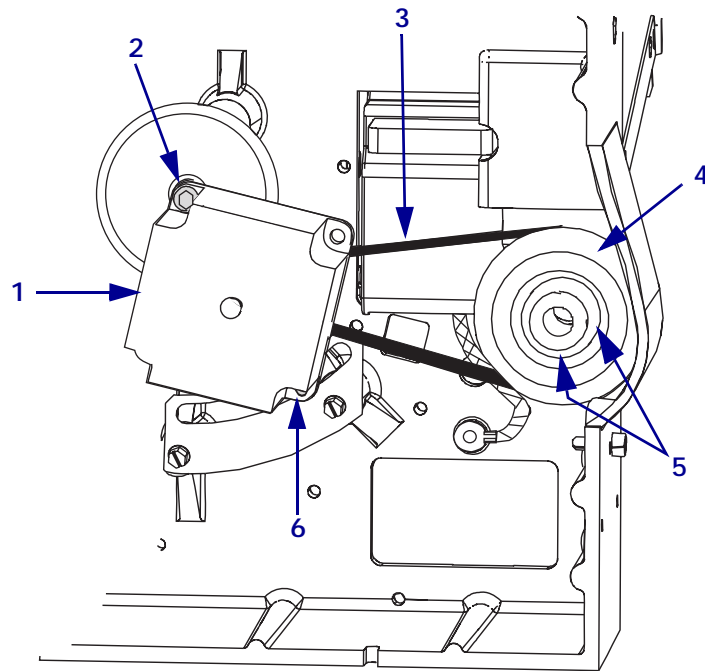


1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 134](#). Loosen the stepper motor locking screw and pivot screw. Remove the drive belt from the stepper motor.

Figure 134 • Stepper Motor Pivot Screw and Locking Screw



1	Stepper motor
2	Pivot screw
3	Belt
4	Platen pulley
5	Platen pulley set screws (2)
6	Locking screw

4. Pivot up the stepper motor and remove the drive belt.



Note • Make a note of the orientation of the platen pulley and around which section of the platen pulley the belt is installed.

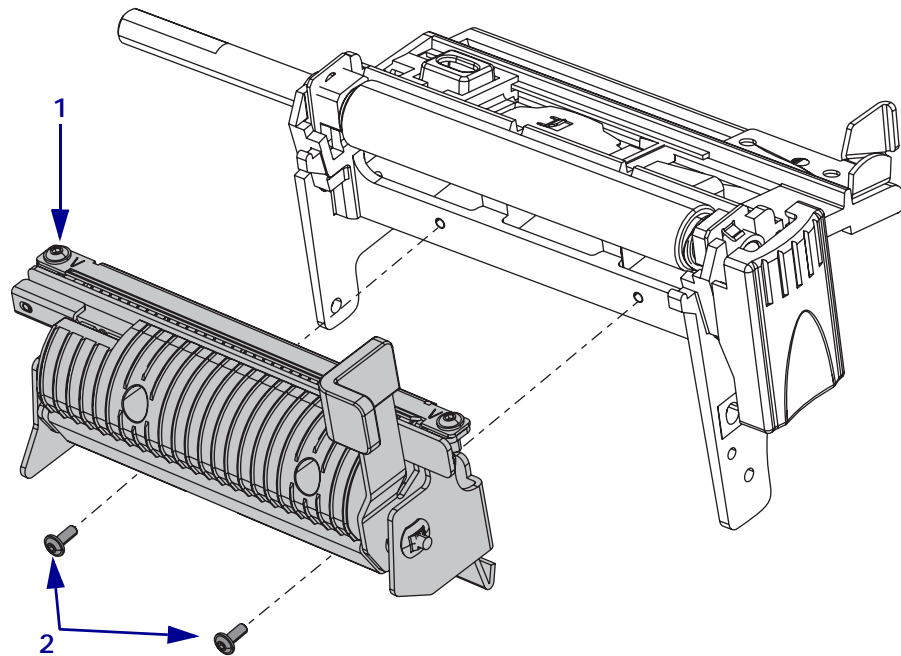
5. Loosen the two set screws on the platen pulley.
6. Remove the pulley and belt from the platen roller shaft.
7. Do you have a peel printer?

If...	Then...
No	Go to <i>Remove the Front Cover</i> on page 261.
Yes	Continue to <i>Remove the Peel Assembly</i> .

Remove the Peel Assembly

1. See [Figure 135](#). Remove the two mounting screws and remove the peel assembly.

Figure 135 • Remove Old Peel Assembly

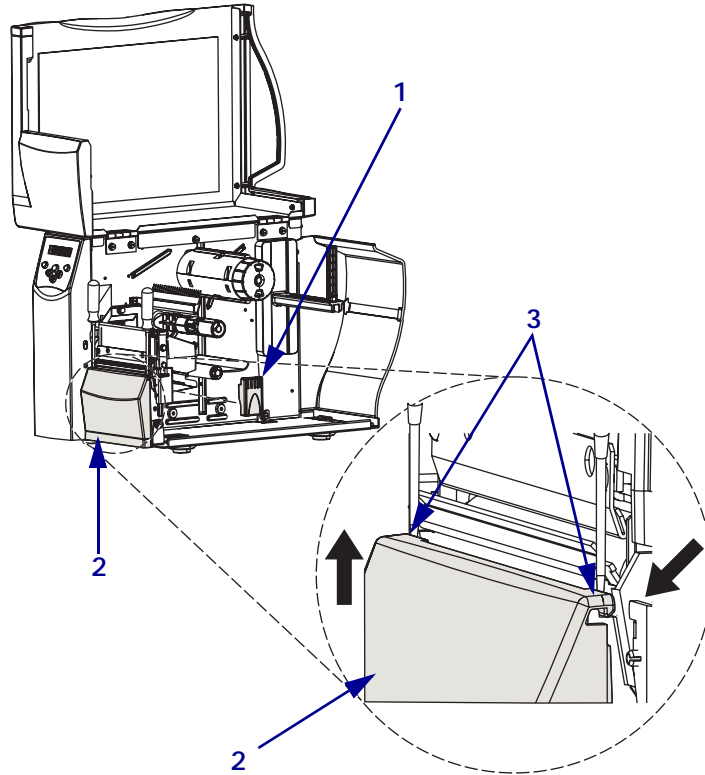


1	Peel assembly
2	Mounting screws (2)

2. Go to [Remove the Platen Roller](#) on page 263.

Remove the Front Cover

Figure 136 • Remove the Lower Front Cover

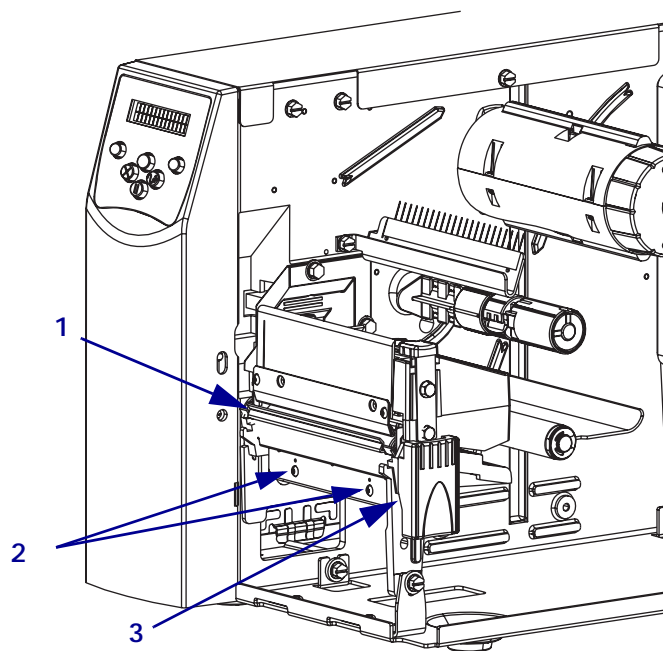


1	Latch cover
2	Lower front cover
3	Tabs (2)

Remove the Tear Bar

1. Remove the two mounting screws securing the tear bar, and then remove it.
2. Note the orientation and location of the tear bar; there are several incorrect ways to reinstall the tear bar. Using a marker, label the appropriate areas with Up and Out.

Figure 137 • Remove the Tear Bar and Latch Cover



1	Tear bar
2	Mounting screws (2)
3	Latch cover

Remove the Platen Roller



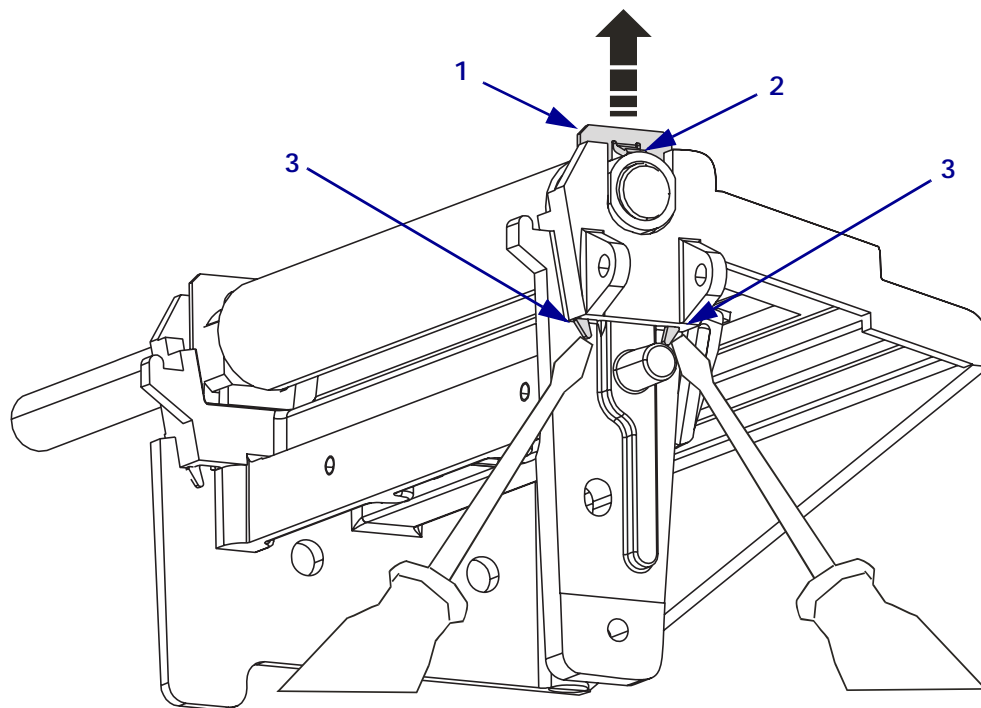
1. **Caution** • Wear protective eye wear when installing or removing E-rings, C-clips, snap rings, springs, and mounting buttons. These are under tension and could fly off.

See [Figure 138](#). Using two flatblade screwdrivers or a pair of needle-nose pliers, squeeze and push up on the barbed legs of the outboard spring clip to disengage it from the platen housing.



Note • The inner spring clip does not have to be removed to remove the platen roller and bearings.

Figure 138 • Spring Clip Removal



1	Clip
2	Cut-out
3	Barbed legs (2)

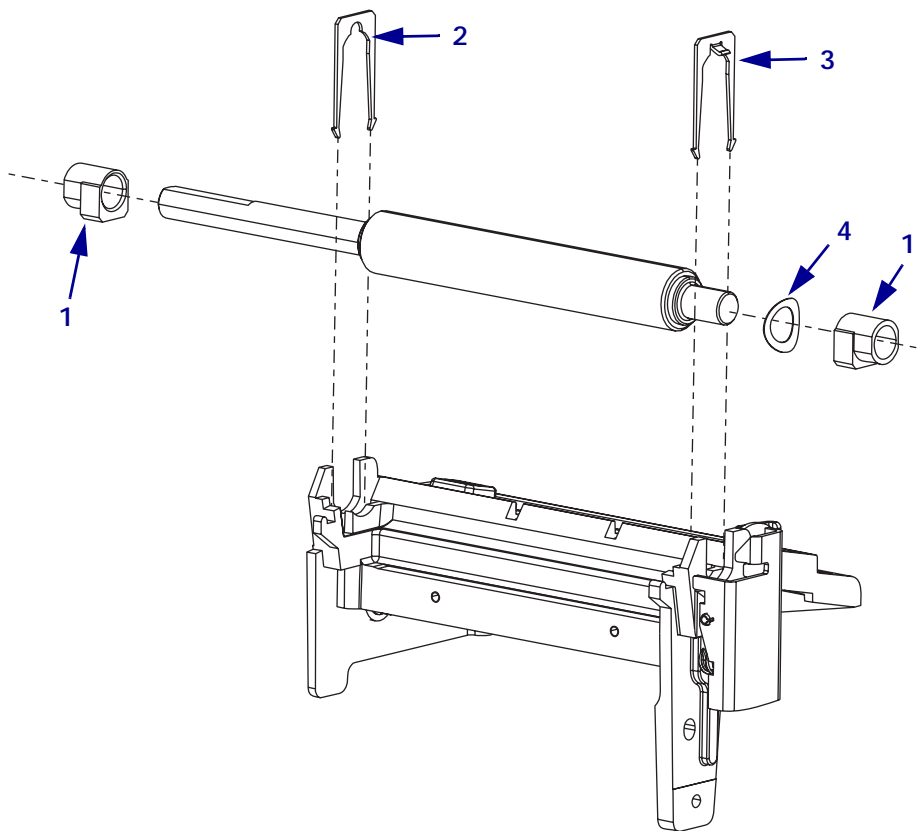
2. Locate the circular cut-out on the top of the outer spring clip, insert a screwdriver, gently pry up and remove the clip.



Note • If needed, loosen the inboard clip using the same procedure.

3. See [Figure 139](#). Remove and discard the platen roller and bearings.

Figure 139 • Remove the Platen Roller and Bearings



1	Bearings (2)
2	Inboard clip
3	Outboard clip
4	Wave washer

Install the Platen Roller



1. **Caution** • Wear protective eye wear when installing or removing E-rings, C-clips, snap rings, springs, and mounting buttons. These are under tension and could fly off.

See [Figure 139 on page 264](#). If removed insert a new spring clip part way in the inboard platen housing.



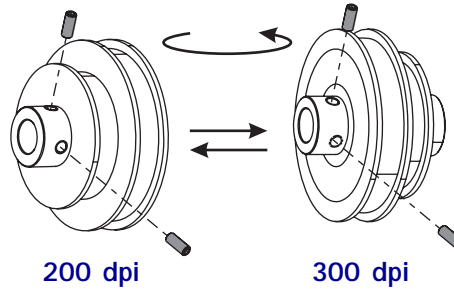
Note • The flat side of the bearing must face up.

2. Install the inboard bearing on the inboard platen shaft.
3. Insert the platen shaft through the inboard clip.
 - a. Start the new inboard bearing into the clip.
 - b. Work the inboard bearing back and forth until the bearing is up against the clip.
 - c. The round side of the bearing goes down into the housing.
4. Once the inboard bearing is fully against the clip, angle up the outboard end of the platen just enough to slide on the wave washer and outboard bearing. Seat the platen roller and bearings in the platen housing.
5. Verify that the bearings are seated in the housing with the flat side up.
6. Position the outer clip straight over the circular part of the outboard bearing.
7. With a pair of pliers or other small tool, lightly tap in a downward motion on the spring clips until they completely seat (snap) into the housing.
8. Does your printer have a tear bar?

If...	Then...
No	Continue to step 9 .
Yes	<ol style="list-style-type: none"> a. See Figure 137 on page 262. Reinstall the tear bar. b. See Figure 136 on page 261 and Figure 137 on page 262. Reinstall the lower front cover and latch cover. c. Continue to step 9.

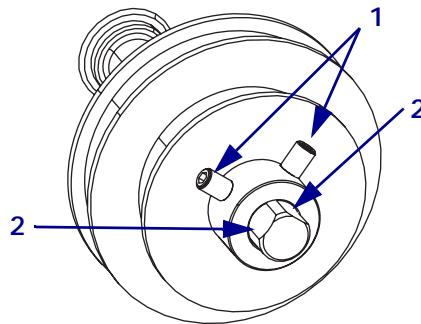
9. Orient the compound pulley belt in the correct pulley position as noted in [step 4 on page 259](#) and then reinstall the belt around the original pulley.

Figure 140 • Select the Orientation of the Compound Pulley



10. See Figure 141. Slide the pulley onto the platen pulley shaft in the proper orientation and align the set screws with the flat spots on the platen roller shaft.

Figure 141 • Align Flat Spots on the Shaft



1	Set screws (2)
2	Platen roller shaft flat spots

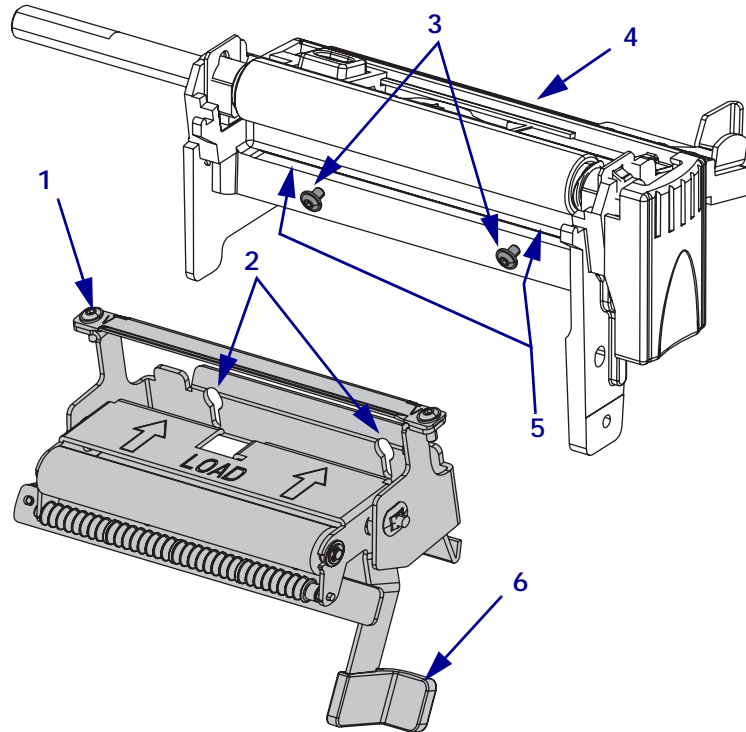
11. Leave approximately 1/32 in. (0.80 mm) from the main frame and tighten the set screws.
-
12. **Caution** • Do not over tighten the drive belt, or damage to the bearings and platen roller will occur. The belt should deflect under finger pressure but no more than ¼ inch (6 mm).
-

Rotate the motor down until the drive belt is just taut. Tighten the locking screw and then the pivot screw.

Reinstall the Peel Assembly

1. See [Figure 142](#). Install the two mounting screws, using a hex key into the tear bar mounting screw holes. Tighten them to within 1/8 in. of the platen housing.

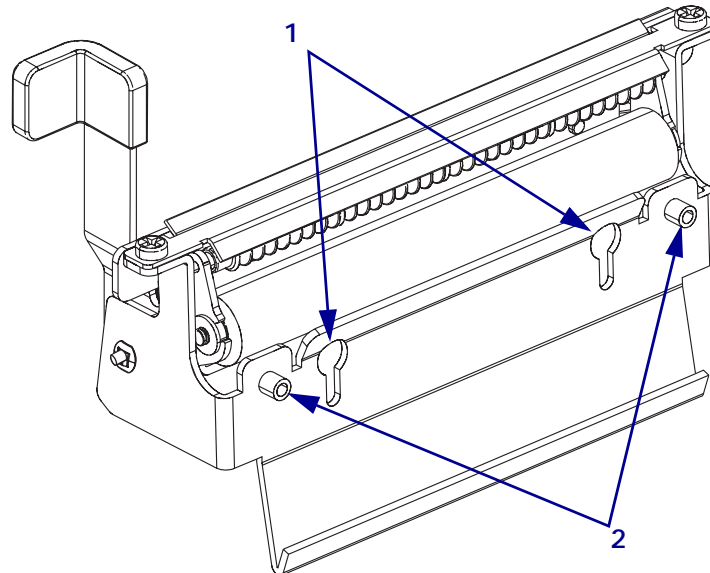
Figure 142 • Install Peel Assembly



1	Peel assembly
2	Mounting slots (2)
3	Mounting screws (2)
4	Platen housing
5	Rest Pems on housing here.
6	Peel lever

2. See [Figure 143](#). Notice the pems and the mounting slots.

Figure 143 • Rear View of Peel Assembly



1	Mounting slots (2)
2	Pems (2)

3. See [Figure 142 on page 267](#). Install the peel assembly with the pems to the rear and the opening in the mounting slot to the top.
 - a. Insert the mounting slot opening over the two screws and lift up on the assembly.
 - b. Now push the assembly back against the vertical surface of the platen housing then down, so that the pems are resting on the horizontal surface of the platen housing.
4. Keep a slight pressure downward on the peel assembly, to keep the pems on the horizontal surface, and tighten the mounting screws.
5. Reinstall the latch cover.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.

Pinch Roller

This kit includes the parts and documentation necessary to install the pinch roller into the printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- | | |
|---|--|
| <input type="checkbox"/> Flat-blade Screwdriver Set | <input type="checkbox"/> Safety Goggles |
| <input type="checkbox"/> Awl | <input type="checkbox"/> Metric Hex Key (Allen Wrench) Set |

Remove the Pinch Roller

1. Turn Off (O) the printer and disconnect the AC power cord and all data cables.
2. Open the media door and remove media and ribbon from the printer.
3. See [Figure 145](#). Lower the pinch roller holder assembly to the open position.



4. **Caution** • 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.

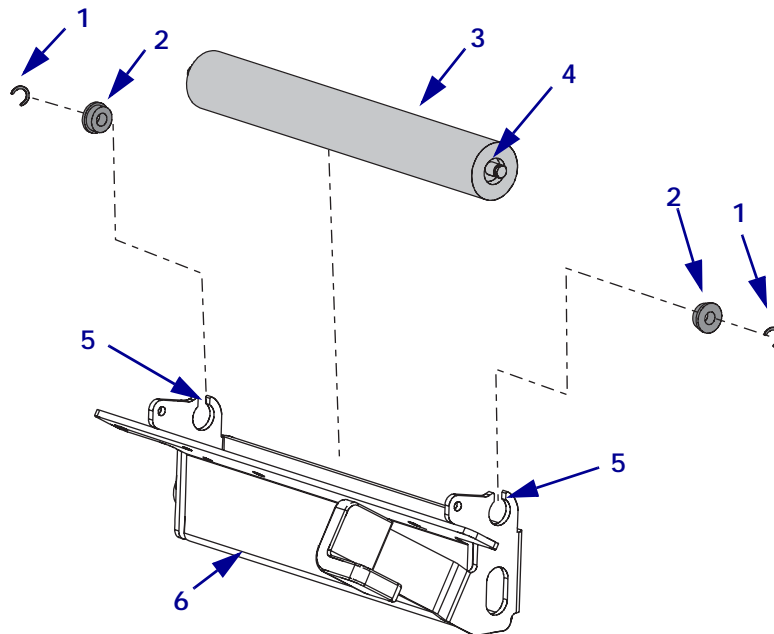
See [Figure 144](#). Using a small flat blade screwdriver or an awl, remove and discard the two E-rings.



Note • If you have trouble reaching the E-rings and have a peel assembly installed, you may have to remove it to access the E-rings. See [Figure 145](#). Loosen the two mounting screws, and then remove the peel assembly from the printer.

5. Remove and discard the bearings and old pinch roller.

Figure 144 • Removing and Installing E-rings and Bearings

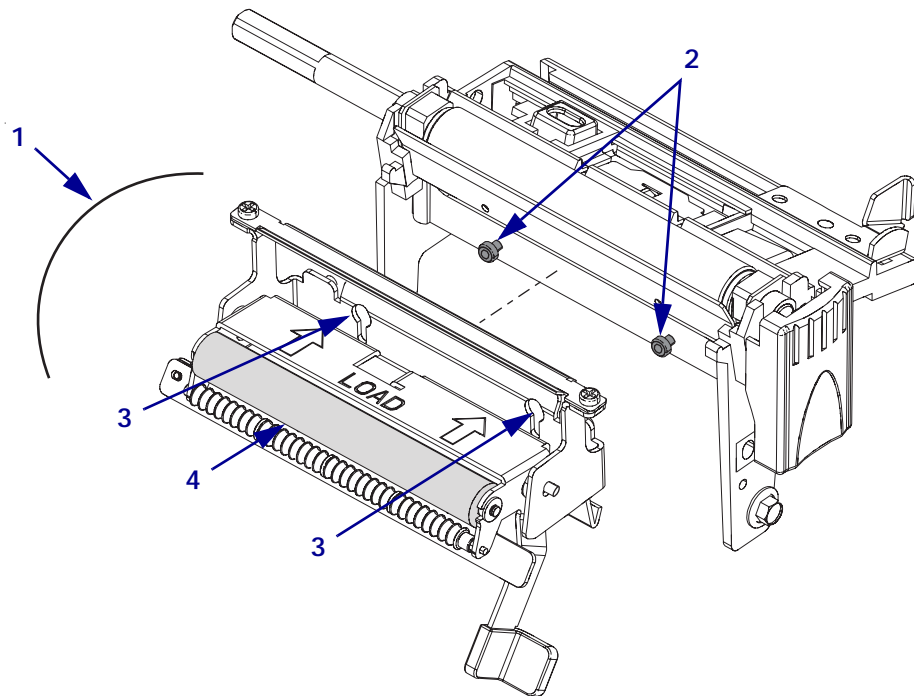


1	E-rings (2)
2	Roller bearings (2)
3	Pinch roller
4	Groove for E-rings (2)
5	Pinch roller mounting holes (2)
6	Pinch roller holder assembly

Install the Pinch Roller

1. See [Figure 144](#). Install the new pinch roller in the notches in the pinch roller holder assembly.
2. Install the two new bearings on the shaft of the pinch roller, flange facing out, as shown.
3. Install two new E-rings in the grooves on the roller shaft.
4. See [Figure 145](#). If you had to remove the peel assembly, reinstall it using the two screws previously removed. Ensure the assembly is firmly seated. Apply downward pressure on the peel assembly as you tighten the two screws.
5. Raise the pinch roller assembly to the closed position. Ensure the pinch roller holder assembly snaps into position and exerts force on the platen roller.

Figure 145 • Installing the Pinch Roller Assembly



1	Peel assembly
2	Mounting screws (2)
3	Mounting holes (2)
4	Pinch roller

6. Reinstall the media and ribbon.
7. Reconnect the AC power cord and data cables.
8. Turn On (I) the printer.



Notes • _____



Printed Circuit Boards

This section provides replacement and installation procedures for the various printed circuit boards and power systems in the S4M printer.

Contents

- Control Panel 274
- Main Logic Board 281
 - Mail Logic Board Fuse 285
- Real Time Clock. 286
- Booster Board 293
- Power Supply 295
- 10/100 Internal ZebraNet PrintServer II, Wireless Print Server, Parallel Port,
and No Comm Option 298

Control Panel

This procedure is for installing the control panel in the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Anti-Static Wriststrap and Mat
- Metric Nutdriver Set

Remove the Old Control Panel

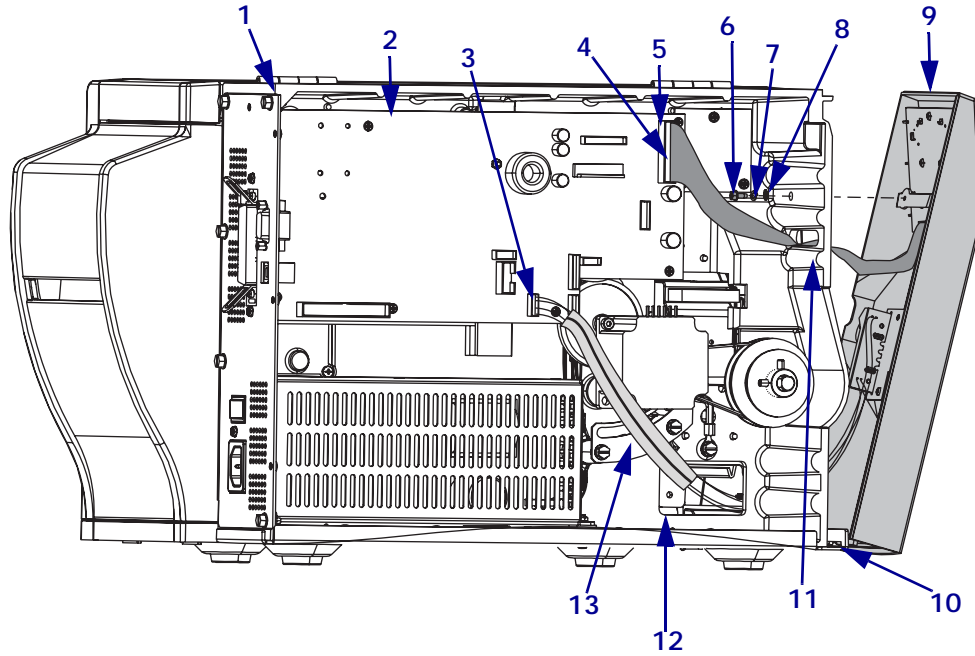


-
1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.
-

Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. Disconnect the control panel ribbon cable from J2 on the main logic board (MLB).
4. If installed, remove the take-label sensor cable from J19 on the MLB and then remove it from the conduit.

Figure 146 • Remove and Install the Control Panel



1	Main frame	8	Star washer
2	Main logic board (MLB)	9	Control panel
3	J19	10	Tab
4	Control panel cable	11	Cable access hole
5	J2	12	Access hole
6	Mounting screw	13	Conduit
7	Split washer		

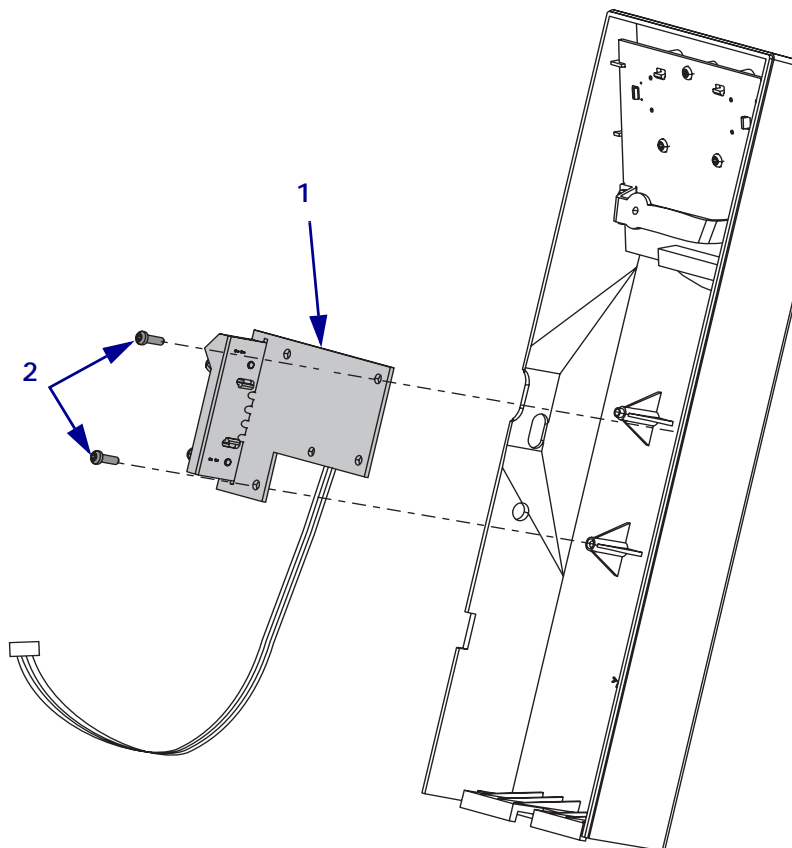
5. Remove the mounting screw and washers securing the control panel.
6. Tip the top of the control panel away from the main frame enough to release the two tabs inserted into the base and then pull it out of the base.
7. Carefully guide the control panel cable and the take-label sensor cable, if installed, through their access holes.
8. Is there a take-label sensor board in the old control panel?

If...	Then...
No	Go to <i>Install the New Control Panel</i> on page 279.
Yes	Continue with <i>Remove the Take-Label Sensor Board</i> on page 276.

Remove the Take-Label Sensor Board

1. See [Figure 147](#). Locate the take-label sensor board on the control panel.
2. Remove the mounting screws and then lift the board out of the control panel.

Figure 147 • Remove and Install the Take-Label Sensor Board

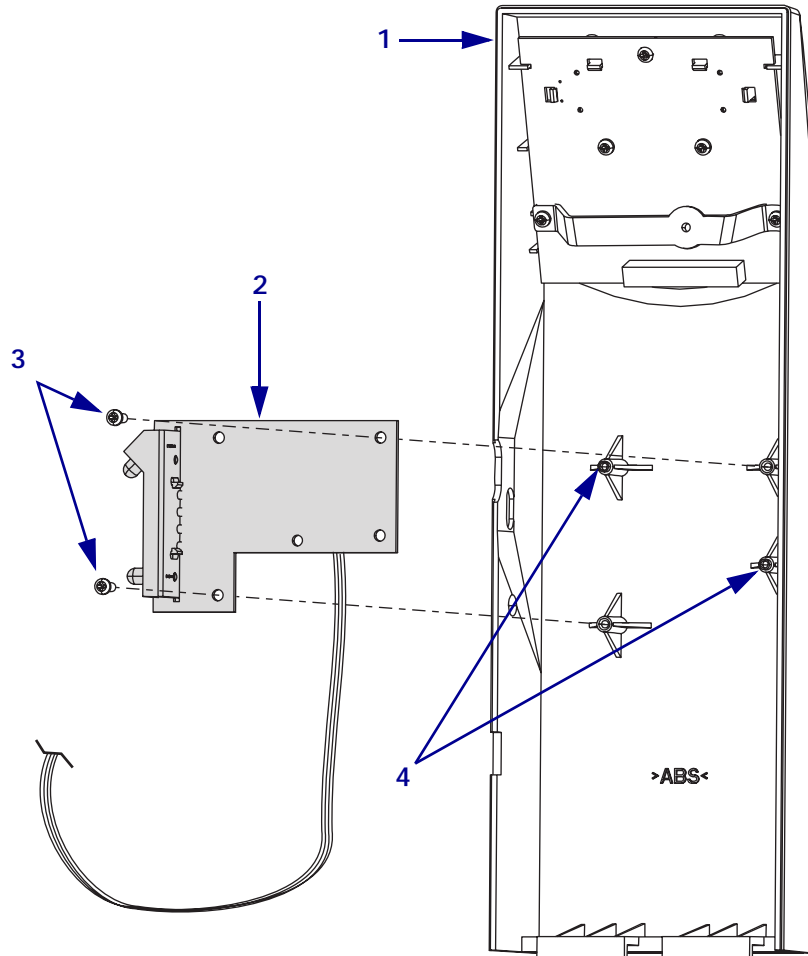


1	Take-label sensor board
2	Mounting screws (2)

Install the Take-Label Sensor Board

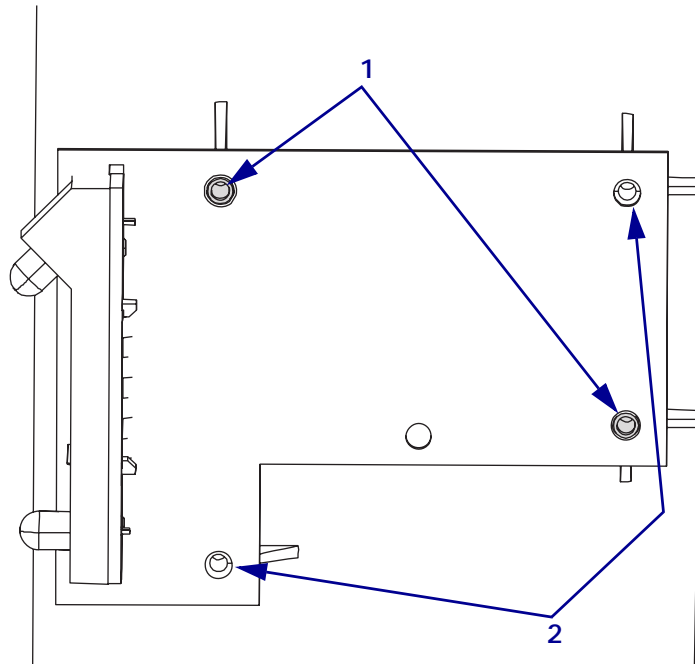
1. See [Figure 148](#). Align the take-label sensor board with the two guide posts and install it on the posts, ensuring the posts are inserted in the board.

Figure 148 • Install the Take-Label Sensor Board



1	Control panel
2	Take-label sensor board
3	Mounting screws (2)
4	Guide posts (2)

Figure 149 • Install the Take-Label Sensor Board on the Mounting Posts



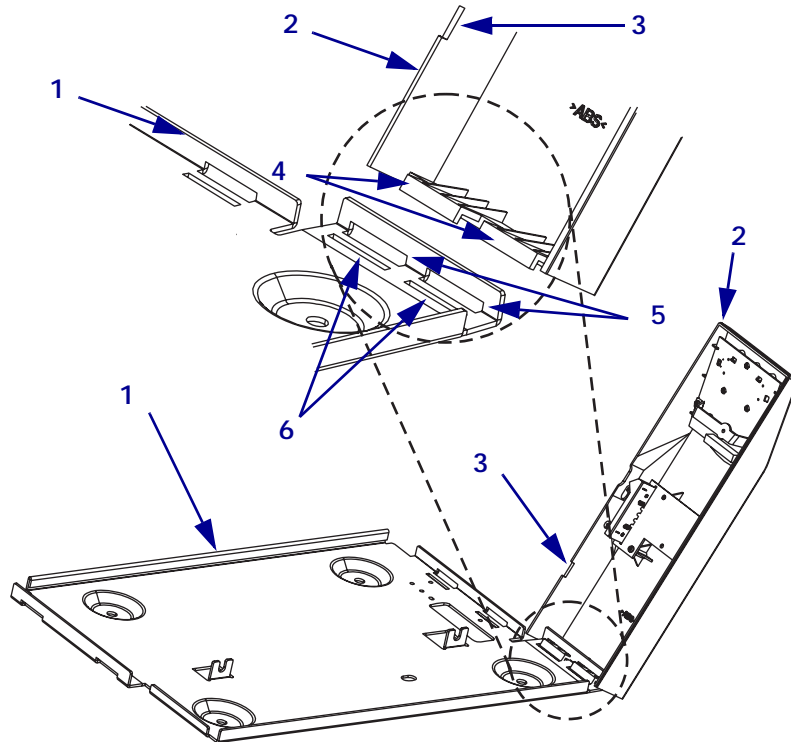
1	Posts (2)
2	Screw holes (2)

2. See [Figure 148 on page 277](#). Reinstall the two mounting screws.

Install the New Control Panel

1. Tip the top of the control panel away from the main frame and insert the two tabs in the mounting holes in the base.

Figure 150 • Install the Control Panel in the Base



1	Base
2	Control panel
3	Notch
4	Tabs (2)
5	Access holes (2)
6	Slots (2)

2. See [Figure 146 on page 275](#). Guide the control panel cable through the access hole in the front of the main frame. Connect it to J2 on the MLB.
3. Do you have a take-label sensor?

If...	Then...
No	Continue to step 4 .
Yes	<ol style="list-style-type: none"> a. Guide the take-label sensor cable around and through the lower access hole in the main frame. b. Route the take-label sensor cable through the conduit and then connect it to J19 on the MLB. Continue to step 4.

4. See [Figure 150](#). Tip the top of the control panel toward the main frame and ensure that the take-label sensor, if installed, cable is in the notch in the control panel and between the main frame and the platen roller housing leg.
5. See [Figure 146 on page 275](#). Reinstall the screw and washers to secure the control panel to the main frame.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.

Main Logic Board

This procedure is for installing the main logic board in the S4M printer. Read these instructions thoroughly before attempting this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Standard Nutdriver Set
- Anti-Static Wriststrap and Mat

Remove the Old Main Logic Board



1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

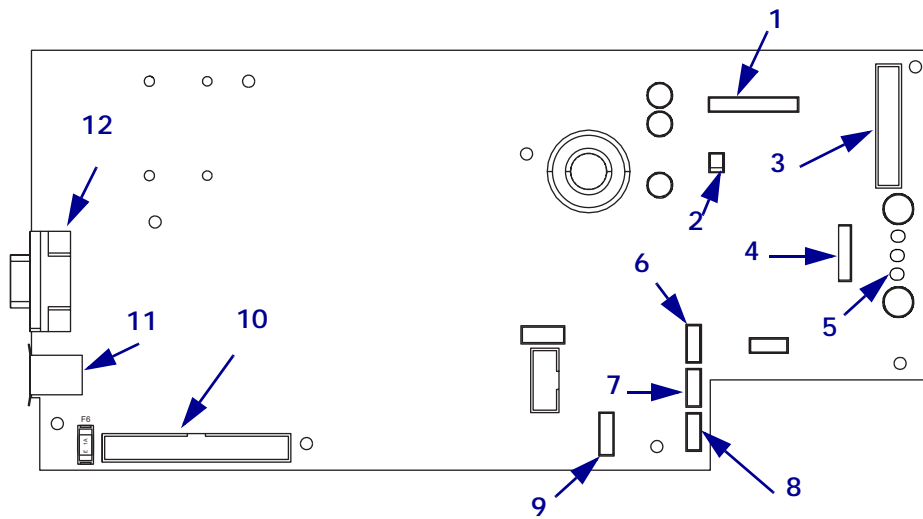
Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 151](#). Remove all cables from the main logic board.



Note • Take note of the location of all connectors on the main logic board.

Figure 151 • Remove the Main Logic Board Connections

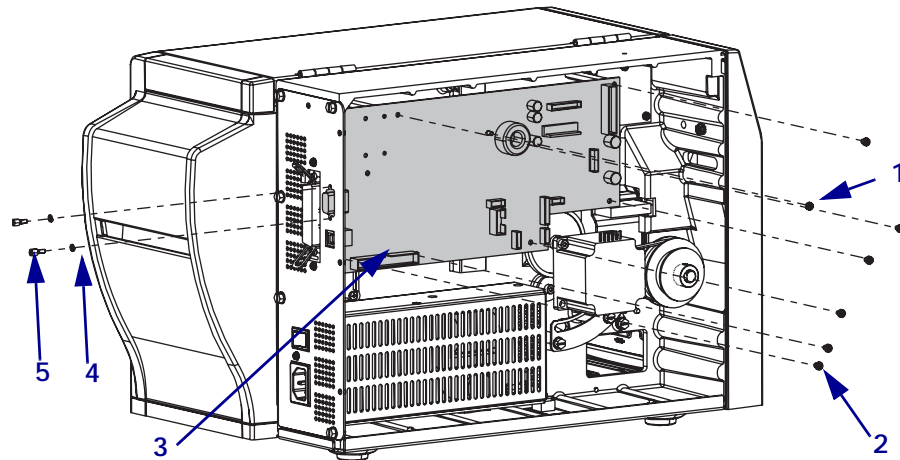


1	Printhead data (J3)
2	Power-in (J8)
3	Front panel (J2)
4	Stepper motor (j9)
5	Booster board (J7)
6	Ribbon sensor, head open sensor (P4)

7	Transmissive sensor (P9)
8	Reflective sensor (P7)
9	Take-label sensor (J19)
10	Communication expansion port (J17)
11	USB port (J14)
12	Serial port (J10)

4. See [Figure 152](#). Remove the six screws and one nut securing the main logic board to the frame of the printer.
5. Remove the two studs and washers securing the serial port connector to the back of the printer.

Figure 152 • Remove the Main Logic Board



1	Main Logic Board Nut (1)
2	Main logic board mounting screws (6)
3	Main logic board (MLB)
4	Lock washers (2)
5	Serial port mounting studs (2)

6. Remove the main logic board from the printer.

Install the New Main Logic Board

1. Remove the new main logic board assembly from its packaging.
2. See [Figure 152](#). Install the new main logic board in the printer using the screws, nut, and studs and washers previously removed.
3. See [Figure 151](#). Reconnect all the cables previously removed from the main logic board. Visually inspect and ensure the cables are in their proper location and seated in the connectors.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Press the up arrow (▲) while turning On (I) the printer.
5. After the Power-On Self Test (POST) is completed, press MENU.
6. Press the right arrow (▶) until **DI RECT THERMAL** is displayed.
7. What type of S4M printer do you have?

If you have...	Then...
Direct Thermal	Press the up or down arrows (▲ or ▼) until NO is displayed.
Thermal Transfer	Press up or down arrows (▲ or ▼) until YES is displayed.

8. Press MENU to exit.
9. Turn off the printer.
10. Press and hold CANCEL while turning On (I) the printer. A configuration label will print after the Power-On Self Test (POST) is completed.

Mail Logic Board Fuse

This procedure is for installing a replacement main logic board (MLB) fuse in the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

1. Disconnect the AC power cord and data cables.

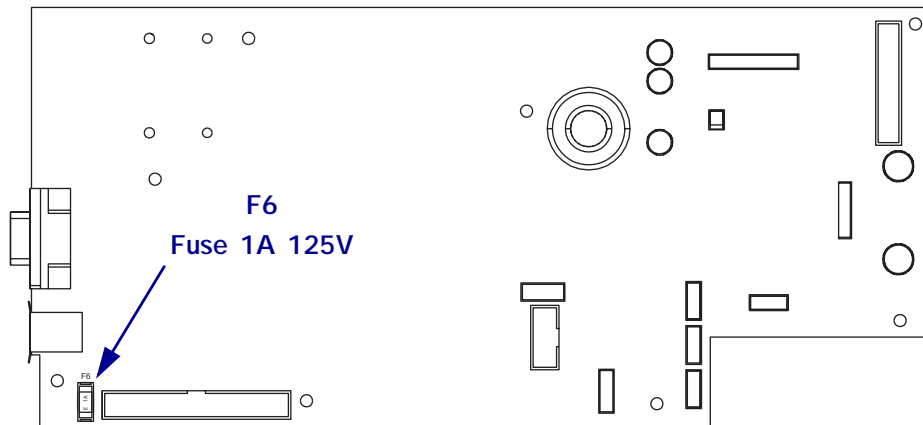


2. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device.

3. See [RRP No. 1 on page 122](#). Remove the electronics cover.
4. See [Figure 153](#). Using a needle nose pliers, locate and carefully remove the fuse (F6) from the MLB.

Figure 153 • Locate and Remove the MLB Fuse



5. Install the new fuse.
6. See [RRP No. 2 on page 124](#). Reinstall the electronic cover.
7. Reconnect the AC power cord and data cables.
8. Turn On (I) the printer.

Real Time Clock

This procedure is for installing the Real Time Clock (RTC) option board in the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Material

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Needle Nose Pliers
- Wire Cutters
- Anti-Static Wriststrap and Mat
- Safety Goggles

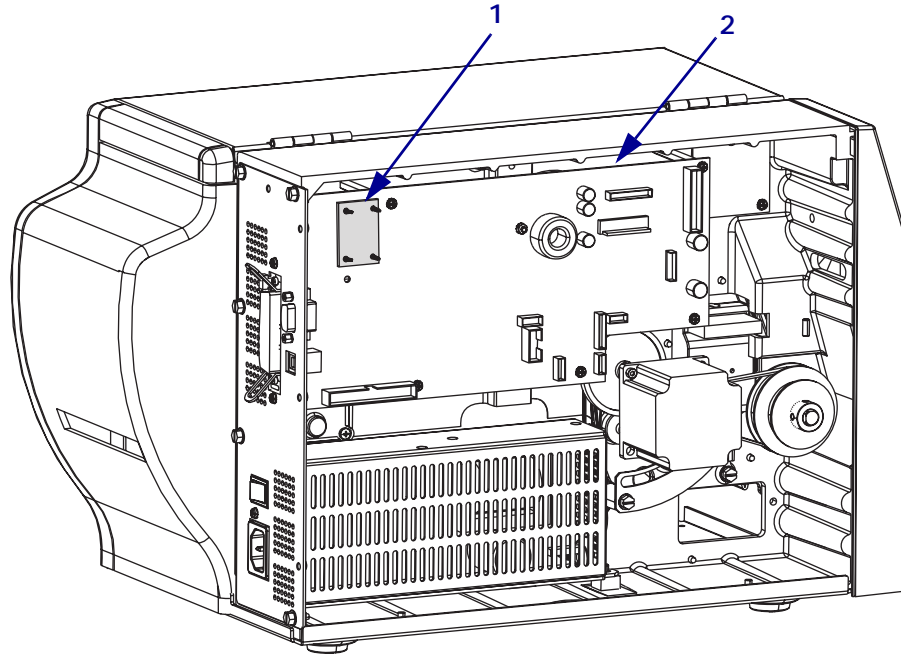
1. Are you replacing a defective RTC option board?

If...	Then...
Yes	Go to <i>Remove the RTC Option Board</i> on page 287.
No	Go to <i>Install the RTC Option Board</i> on page 289.

Remove the RTC Option Board

1. See [Figure 154](#). Locate the RTC option board.

Figure 154 • Locate the RTC Option Board



1	RTC option board
2	Main logic board (MLB)

2. Are you installing the RTC option board for the first time?

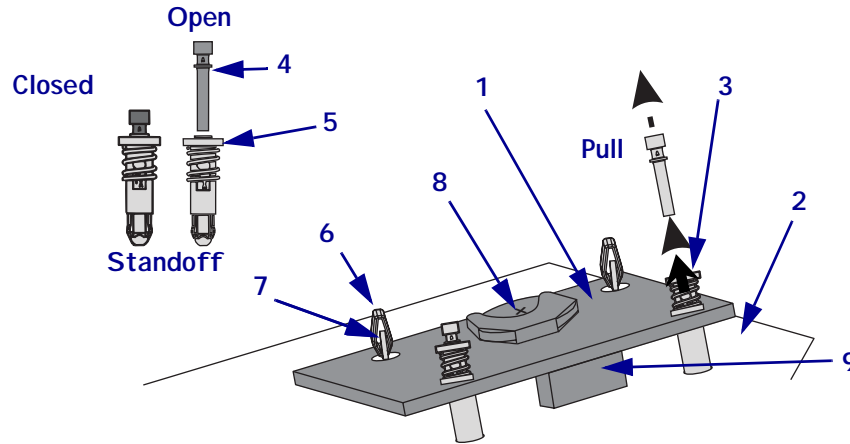
If...	Then...
Yes	Go to <i>Install the RTC Option Board</i> on page 289.
No	Continue to step 3 .



3. **Caution** • Wear protective eye wear when installing or removing E-rings, C-clips, snap rings, springs, and mounting buttons. These are under tension and could fly off.

See [Figure 155](#). To remove the standoffs, use a needle nose pliers to pull out the pins in each of the standoffs and then pull the body of each to remove them from the MLB and the RTC board.

Figure 155 • Remove and Install the Spacers and Standoffs



1	RTC option board
2	Main logic board (MLB)
3	Standoffs (2)
4	Pins (2)
5	Standoff body (2)
6	Spacers (2)
7	Locking tabs (2)
8	Battery
9	J1 on RTC board

4. Squeeze the spacer locking tab with the needle nose pliers while lifting the board slightly, and then do the same to the other spacer to remove the RTC option board.
5. Continue to [step 3](#) of *Install the RTC Option Board* on page 289.

Install the RTC Option Board

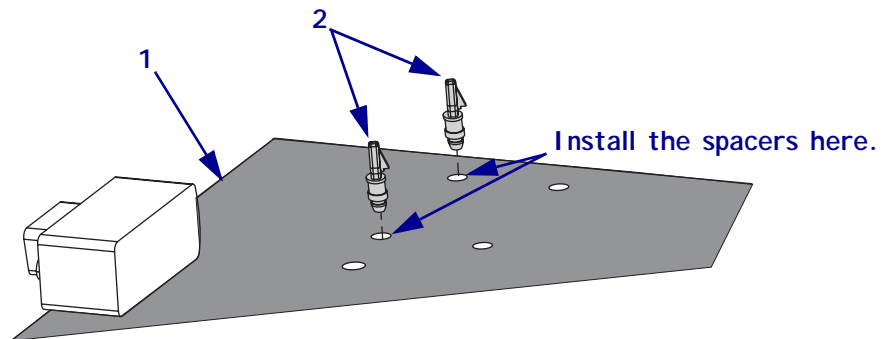


1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

Connect yourself to an antistatic device.

2. See [Figure 156](#). **First time installation only:** Install the plastic spacers into the left two holes in the MLB.

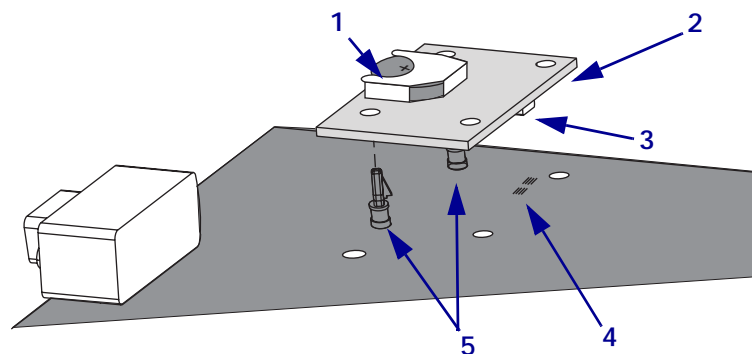
Figure 156 • Install the Spacers



1	Main logic board (MLB)
2	Spacers (2)

3. See [Figure 155](#) and [Figure 157](#). Install the RTC option board on to the spacers, J1 of the RTC board facing J5 on the MLB; push down until they lock.

Figure 157 • Install the RTC Option Board



1	Battery
2	RTC option board
3	J1 RTC board
4	J5 MLB
5	Spacers (2)

4. See [Figure 155 on page 288](#). Ensure the pin is pulled out of the standoff and then insert the standoff, spring up, through one of the holes on the right side of the RTC board and into the MLB until it snaps in place.
5. Push the pin in as far as possible to lock the standoff.
6. Repeat [step 4](#) and [step 5](#) for the other standoff.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Press and hold CANCEL while turning On (I) the printer.

A configuration label prints. (See [Figure 158](#).)

- See Figure 158. Check the configuration label to verify the RTC board was recognized. If it is not recognized, the circled display will not be visible.

Figure 158 • Configuration Label

```

PRINTER CONFIGURATION
Zebra Technologies
ZTC S4M-200dpi ZPL
10.0..... DARKNESS
2 IPS..... PRINT SPEED
+000..... TEAR OFF
TEAR OFF..... REMOVAL
WEB..... SENSOR TYPE
THERMAL-TRANS..... RIBBON
0832 DOTS..... WIDTH
1228..... LABEL LENGTH
AUTO..... MAXIMUM LENGTH
GAP/NOTCH..... MEDIA TYPE
NOT CONNECTED..... USB COMM.
BIDIRECTIONAL..... PARALLEL COMM.
RS232..... SERIAL COMM.
9600..... BAUD
8 BITS..... DATA BITS
NONE..... PARITY
XDN/XOFF..... HOST HANDSHAKE
NONE..... PROTOCOL
000..... NETWORK ID
NORMAL MODE..... HEXDUMP
<~> 7EH..... CONTROL PREFIX
<^> SEH..... FORMAT PREFIX
<.> 2CH..... DELIMITER CHAR
ZPL II..... ZPL MODE
CALIBRATION..... MEDIA POWER UP
CALIBRATION..... HEAD CLOSE
DEFAULT..... BACKFEED
+000..... LABEL TOP
+0000..... LEFT POSITION
DISABLED..... REPRINT MODE
029..... LABEL LEVEL
079..... PAPER OUT
087..... RIBBON OUT
036..... PAPER GAIN
026..... RIBBON GAIN
+10..... LCD ADJUST
DPSWFXM..... MODES ENABLED
..... MODES DISABLED
832 8/MM FULL..... RESOLUTION
V50.13.12 <-..... FIRMWARE
V22 --- 1..... HARDWARE ID
CUSTOMIZED..... CONFIGURATION
3264k.....R: RAM
2048k.....E: ONBOARD FLASH
NONE.....FORMAT CONVERT
FW VERSION.....IDLE DISPLAY
08/17/05..... RTC DATE
15:07..... RTC TIME
NONE..... ZEBRA NET II
NO..... RFID READY
3642 IN..... NONRESET CNTR
3642 IN..... RESET CNTR1
3642 IN..... RESET CNTR2
9251 CM..... NONRESET CNTR
9251 CM..... RESET CNTR1
9251 CM..... RESET CNTR2
.....
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
    
```

RTC date and time visible.

Set the RTC

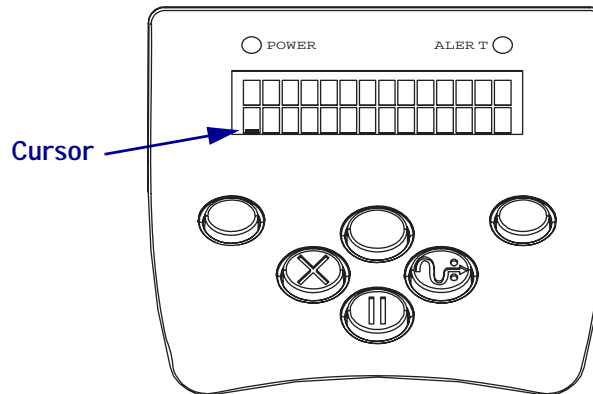
1. See [Figure 159](#). Press MENU, then ►.



Note • To enter the password, press ▲ to increase the value, ▼ to decrease the value, ◀ to move the cursor to the left, and ▶ to move the cursor to the right. The factory default password is **1234**.

2. Press ENTER; **PASSWORD** is displayed. The cursor is under the first number.
3. Press ▲ or ▼ to change the number to the first one of your password and then press ▶ to move the cursor under the next number and change it. Continue until all numbers are changed to the correct password and then press ENTER.

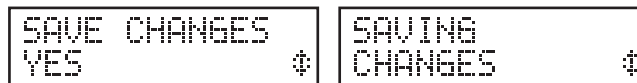
Figure 159 • Control Panel



4. Press ▶ until **RTC DATE** is displayed, and then enter the correct date using the same procedure as you did to enter the password.



5. After the date is correct, press ▶ one more time to display the **RTC TIME**.
6. Change it to the correct time, and then press ENTER.
7. Save the changes.
 - a. Press MENU. **SAVE CHANGES** will be displayed.
 - b. Press ENTER. **SAVING CHANGES** appears until **PRINTER READY** is displayed.



Booster Board

This procedure is for installing the booster board into the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.



Caution • A qualified service technician must perform this installation.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Anti-Static Wriststrap and Mat
- Metric Nutdriver Set

Remove the Booster Board



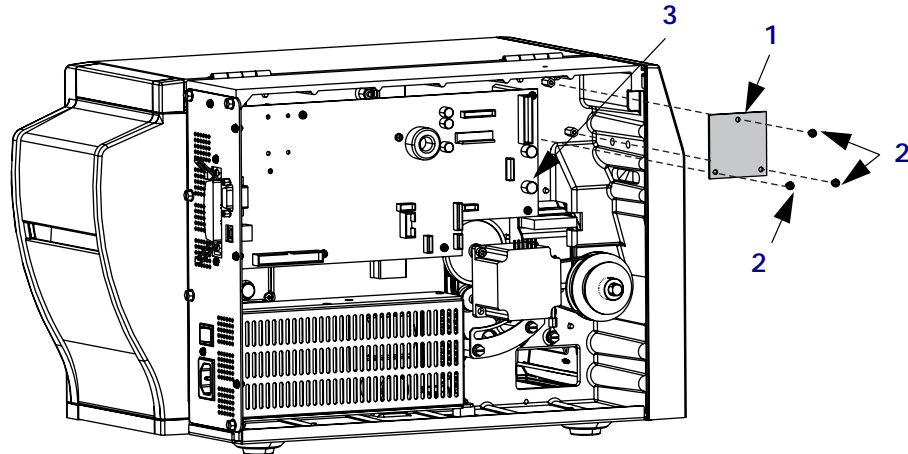
1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.
-

Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 160](#). Remove the booster board cable (J7) from the main logic board.

4. Remove the three booster board mounting screws. Remove the booster board from the printer.

Figure 160 • Remove the Booster Board



1	Booster board
2	Booster board mounting screws (3)
3	Connector J7

Install the New Booster Board

1. See [Figure 160](#). Install the new booster board using the three mounting screws provided in the kit.
2. Connect the booster board cable (J7) to the main logic board.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.

Power Supply

This procedure is for installing the power supply into the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following maintenance.



Caution • A qualified service technician must perform this installation.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Anti-static Wriststrap and Mat
- Metric Nutdriver Set

Remove the Power Supply



1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

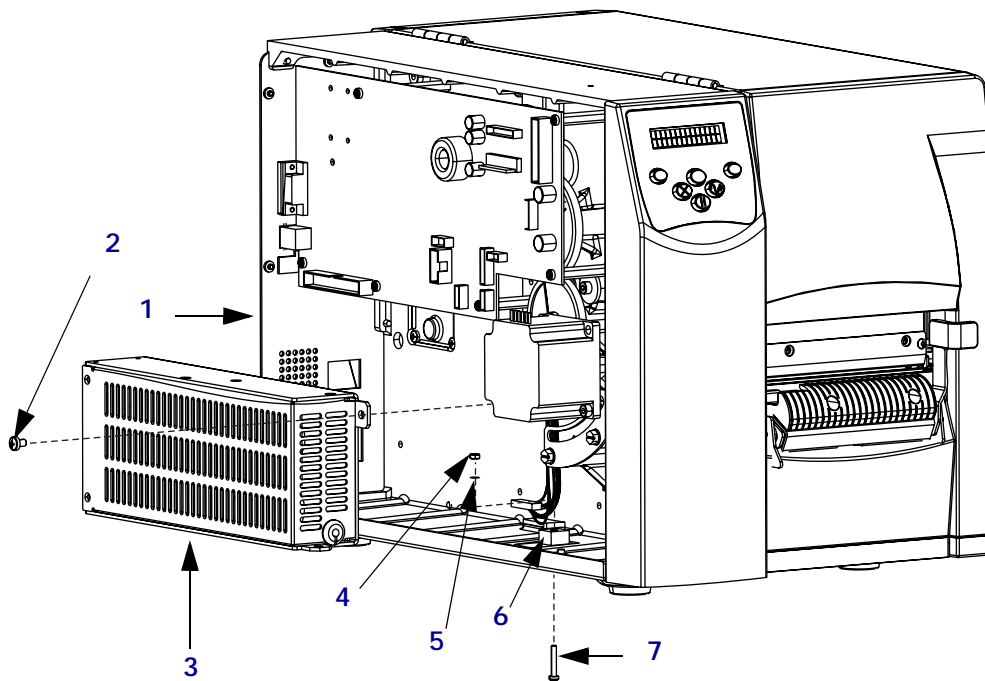
Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 161](#). Remove the three power supply mounting screws.



Note • Once the lower power supply mounting screw is loose, the power supply spacer needs to be reinstalled.

Figure 161 • Remove/Install the Power Supply



1	Power supply mounting screw M3 x 0.5 x 6
2	Power supply mounting screw M4 x 0.7 x 6
3	Power supply
4	Power supply mounting nut
5	Power supply mounting washer
6	Power supply spacer
7	Power supply mounting screw M3 x 0.5 x 18

4. Disconnect the two power supply cables and move the wire harness out from the wire clip.
5. Remove the power supply from the printer

Install the New Power Supply

1. See [Figure 161 on page 296](#). Place the new power supply into the printer. Reinstall the three power supply mounting screws, nut, washer, and the power supply spacer.
2. Reconnect the two power supply cables and place the wire harness into the wire clip.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.

10/100 Internal ZebraNet PrintServer II, Wireless Print Server, Parallel Port, and No Comm Option

This procedure is for installing the 10/100 internal ZebraNet® PrintServer II, wireless print server, or parallel port kits into the S4M printer. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Reference Materials

- S4M User CD
- S4M User Guide
- S4M Quick Reference Guide
- S4M Maintenance Manual (contact your authorized Zebra reseller for purchasing information).

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Metric Nutdriver Set
- Anti-Static Wriststrap and Mat

Remove the Main Logic Board



Note • Retain all parts removed during disassembly, unless otherwise directed.



1. **Caution** • Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

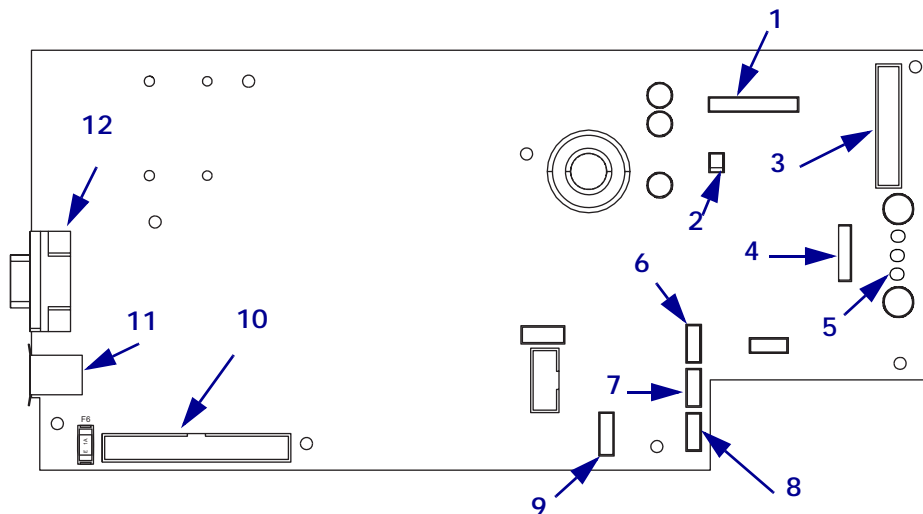
Connect yourself to an antistatic device.

2. See [RRP No. 1 on page 122](#) and remove the electronics cover.
3. See [Figure 162](#). Remove all cables from the main logic board.



Note • Take note of the location of all connectors on the main logic board.

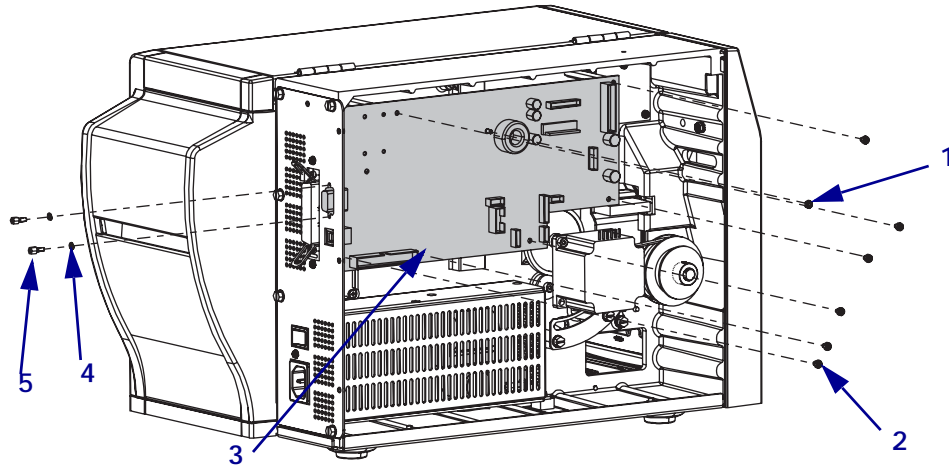
Figure 162 • Remove the Main Logic Board Connections



1	Printhead data (J3)	7	Transmissive sensor (P9)
2	Power-in (J8)	8	Reflective sensor (P7)
3	Front panel (J2)	9	Take-label sensor (J19)
4	Stepper motor (J9)	10	Communication expansion port (J17)
5	Booster board (J7)	11	USB (J14)
6	Ribbon sensor, head Open (P4)	12	Serial port (J10)

4. See [Figure 163](#). Remove the six screws and one nut securing the main logic board to the frame of the printer.
5. Remove the two studs and washers securing the serial port connector to the back of the printer.

Figure 163 • Remove the Main Logic Board



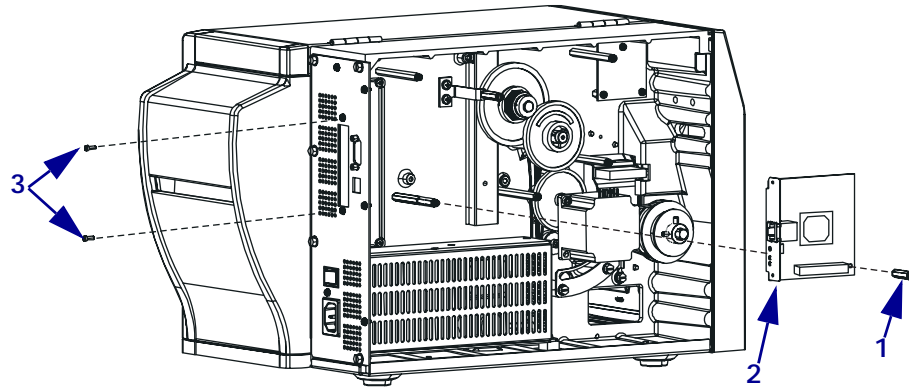
1	Main logic board nut (1)
2	Main logic board mounting screws (6)
3	Main logic board
4	Serial port mounting studs (2)
5	Parallel port mounting screws (2)

6. Remove the main logic board from the printer.
7. Is there a 10/100 internal ZebraNet PrintServer, wireless print server, or parallel port kit already installed on the printer?

If...	Then...
No	Go to <i>Install the Parallel Port Board, 10/100 Internal ZebraNet PrintServer, No Communication, or the Wireless Print Server</i> on page 303.
Yes	Proceed to step 8 .

8. See [Figure 164](#) or [Figure 165](#). Remove the two screws securing the parallel port connector, the internal ZebraNet PrintServer, or the wireless print server to the back of the printer.
9. See [Figure 164](#). **For the Internal ZebraNet PrintServer board and the parallel port;** Remove the standoff and then the internal ZebraNet PrintServer or parallel option board from the printer.

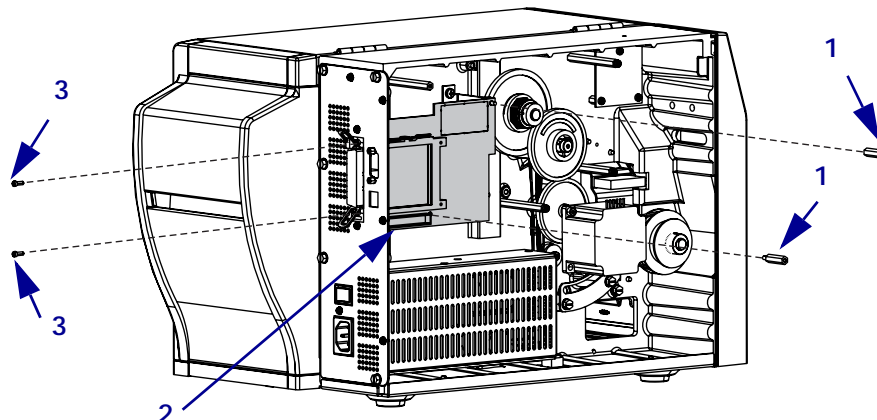
Figure 164 • Install/Remove the Internal ZebraNet PrintServer Board or the Parallel Port



1	Standoff
2	Internal ZebraNet PrintServer board or parallel port
3	Mounting screws (2)

10. See [Figure 165](#). **For the wireless print server board**; Remove the two standoffs and mounting screws from the wireless print server board.
11. Remove the wireless print server board from the printer.

Figure 165 • Install/Remove the Wireless Print Server Board



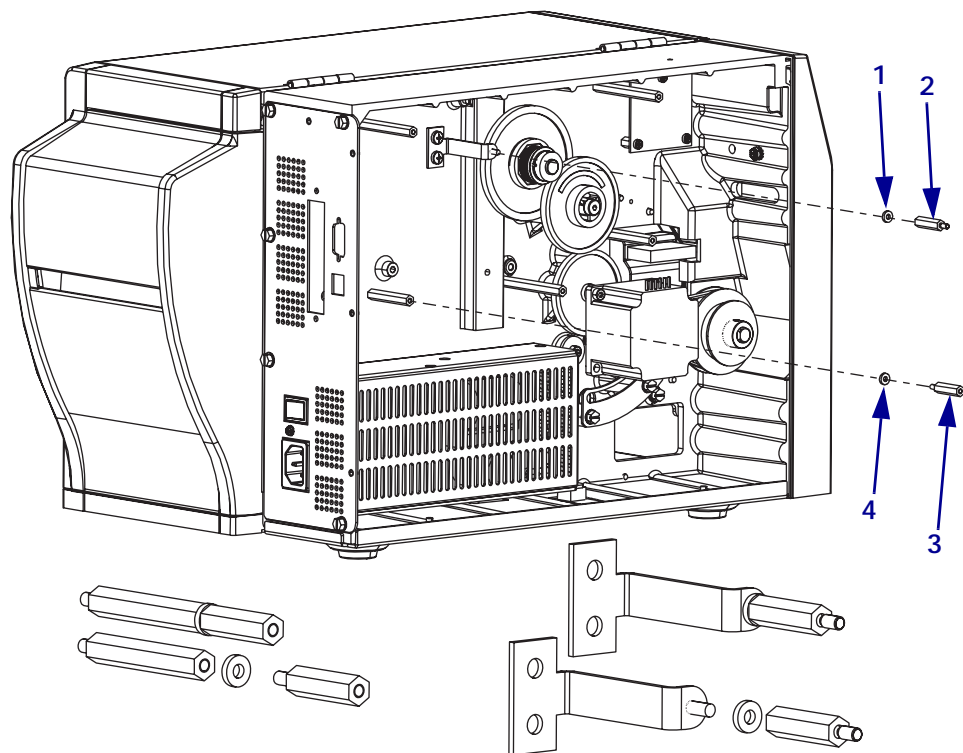
1	Standoff
2	Wireless print server board
3	Mounting screws (2)

Install the Parallel Port Board, 10/100 Internal ZebraNet PrintServer, No Communication, or the Wireless Print Server

Are you installing the 10/100 PrintServer for the first time?

If...	Then...
No	Continue to step 1 .
Yes	a. See Figure 166 . Remove the two short standoffs shown. b. Remove the two washers, they are used as spacers when there is no option board installed. c. Continue to step 1 .

Figure 166 • Remove the Short Standoffs

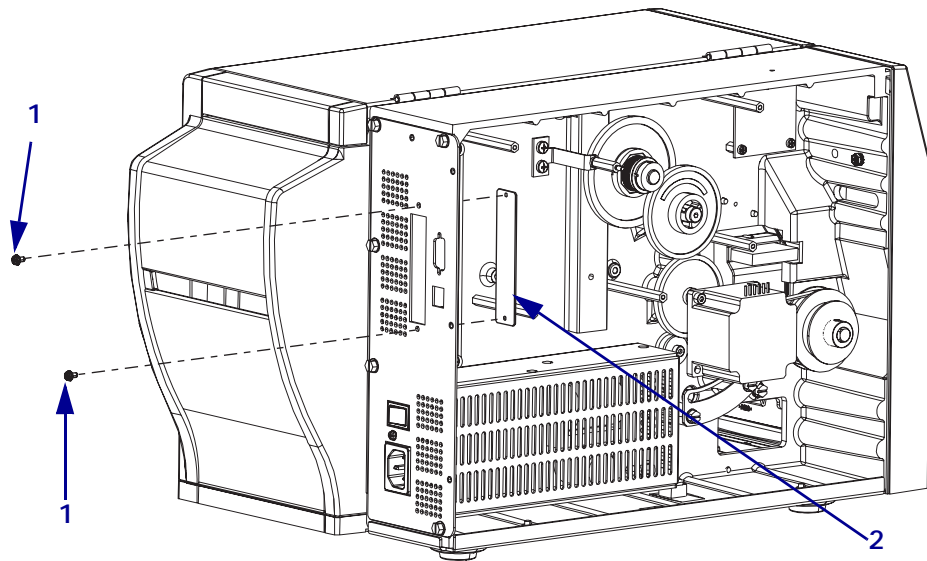


1	Washer (must be used when there is no wireless option installed)
2	Standoff
3	Standoff
4	Washer (must be used when there is no option board installed)

- See [Figure 164 on page 301](#). For the 10/100 Internal ZebraNet PrintServer board and the parallel port; install the board using the standoff. Install the 40 pin cable that will go to the main logic board.

2. See [Figure 165 on page 302](#). **For the wireless print server board**; install the board using the two standoffs and mounting screws. Install the 40 pin cable that will go to the main logic board.
3. See [Figure 166 on page 303](#). **For the no communication option**. Both washers must be installed.
4. See [Figure 167](#). Using the two screws supplied to install the bracket on the back of the printer.

Figure 167 • Install the Bracket for the No Communications Option



1	Mounting screws (2)
2	Bracket

Reinstall the Main Logic Board

1. See [Figure 163 on page 300](#). Install the main logic board in the printer using the six screws and one nut removed previously.
2. Reinstall the two screws and washers securing the option board and the two studs and washers securing the serial port to the back panel.
3. See [Figure 162 on page 299](#). Reinstall all the cables previously removed from the main logic board. Visually inspect and ensure the cables are in their proper location and seated in the connectors.

Install the Electronics Cover

1. See [RRP No. 2 on page 124](#) and install the electronics cover.
2. Reinstall the media and ribbon.
3. Reconnect AC power cord and data cables.
4. Turn On (I) the printer.



Notes • _____



Exterior Components

This section provides replacement and installation procedures for the S4M printer's exterior components.

Contents

Electronics Cover	308
Media Door	311

Electronics Cover

This procedure is for installing the S4M electronics cover. Read these instructions thoroughly before performing this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Metric Nutdriver Set

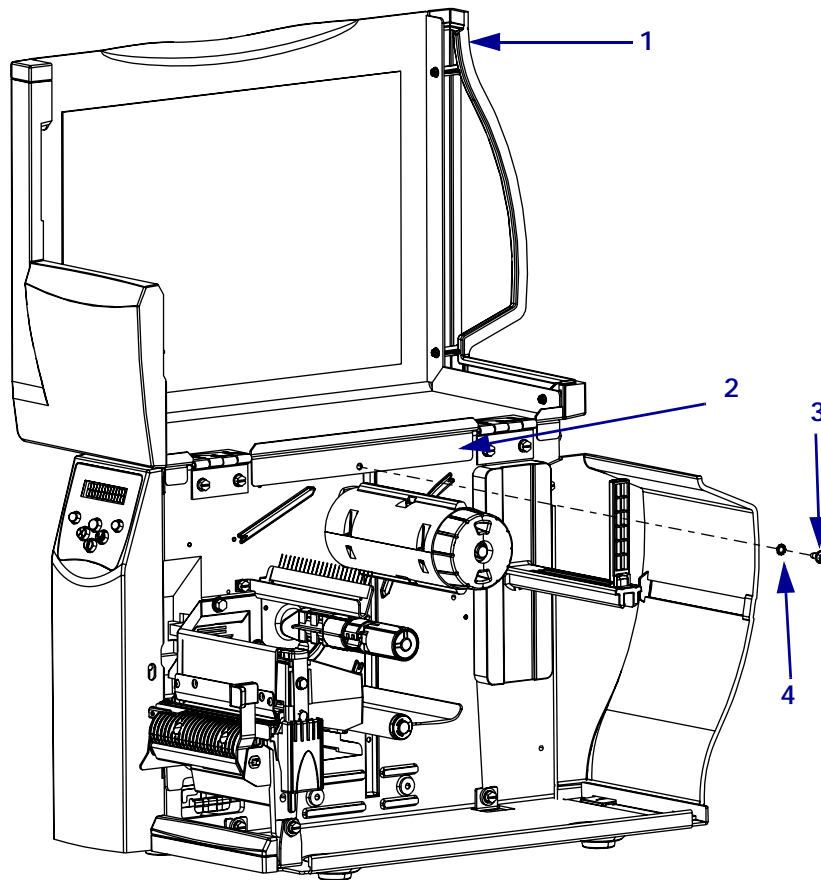
Remove the Old Electronics Cover



Note • Retain all parts removed during disassembly, unless otherwise directed.

1. Turn Off (O) the printer and disconnect the AC power cord and all data cables.
2. See [Figure 168](#). Remove the electronics cover mounting screw and washer and then close the media door.

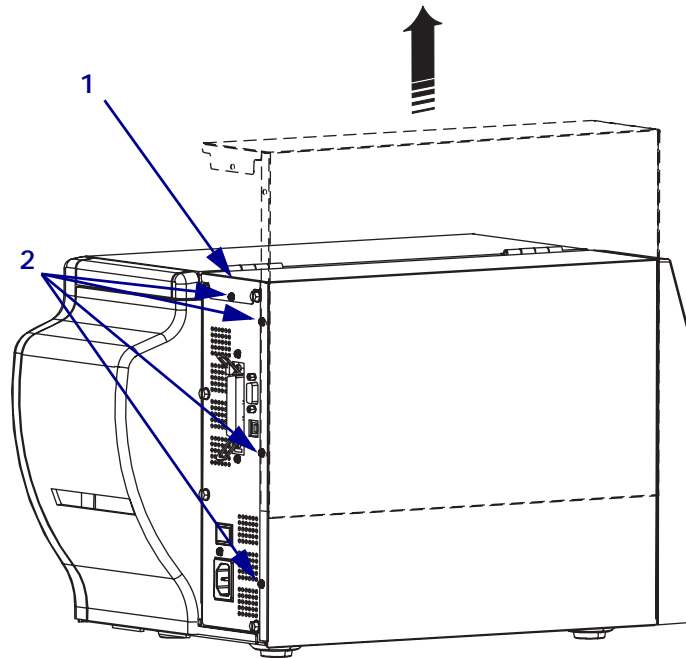
Figure 168 • Remove the Mounting Screw



1	Media door
2	Electronics cover upper flange
3	Electronics cover mounting screw
4	Washer

3. See [Figure 169](#). Remove the four remaining mounting screws securing the electronics cover.
4. Remove the electronics cover by lifting straight up on the bottom lip of the electronics cover.

Figure 169 • Electronics Cover Removal



1	Electronics cover
2	Mounting screws (4)

Install the New Electronics Cover

1. See [Figure 169 on page 310](#). Install the new cover by aligning it and sliding down, ensuring the lower tabs are inside the base and the upper flanges are between the main frame and the media door.
2. Install the four mounting screws on the back of the printer.
3. See [Figure 168 on page 309](#). Open the media door and install the mounting screw and washer.
4. Reconnect the AC power cord and data cables.
5. Turn On (I) the printer.

Media Door

This procedure is for installing the media door assembly on the S4M printer. Read these instructions thoroughly before starting this procedure.



Caution • Turn Off (O) the printer and disconnect it from the power source before performing the following procedure.

Prepare for Installation

Reference Materials

The following manuals and CDs may be helpful references while performing this procedure.

- S4M User Guide
- S4M User Guide CD
- S4M Maintenance Manual CD

Tools Required



Tools • You need these tools to complete this procedure:

- Metric Nutdriver Set

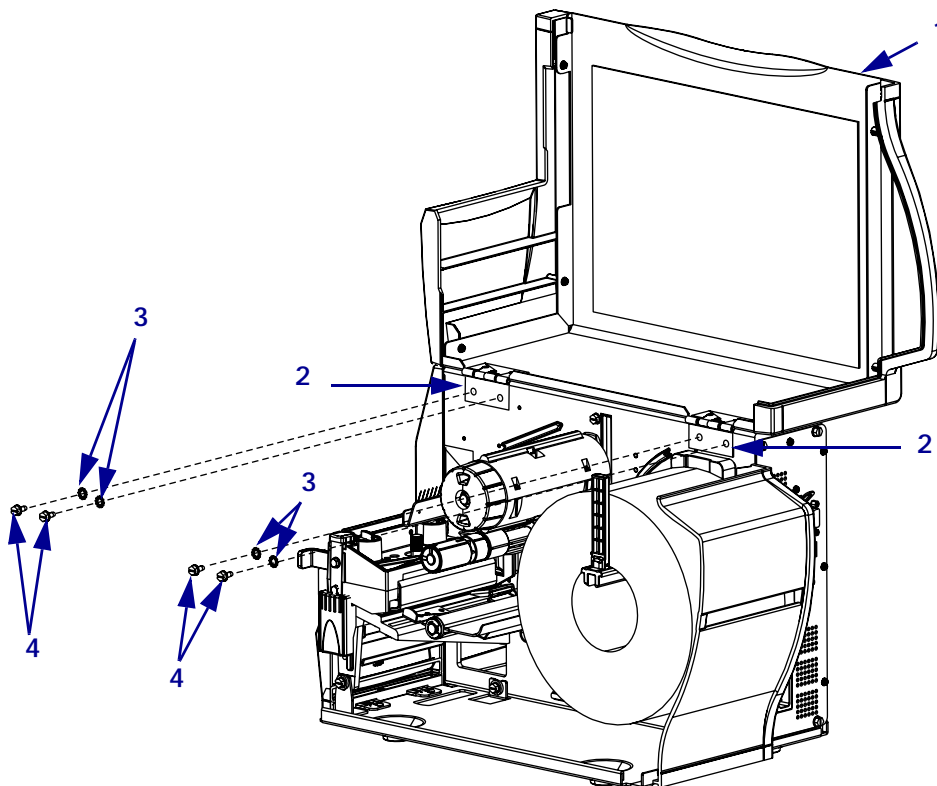
Remove the Old Media Door



Note • Retain all parts removed during disassembly, unless otherwise directed.

1. Turn Off (O) the printer and disconnect the AC power cord and all data cables.
2. See [Figure 170](#). Open the media door and remove the four hinge mounting screws and washers.
3. Remove the media door.

Figure 170 • Remove/Install Media Door



1	Media door
2	Hinges (2)
3	Washers (4)
4	Hinge mounting screws (4)

Install the New Media Door

1. Install the new door by aligning the front hinge with the two most forward holes. The front hole is a locating hole; install this first and then install the other three hinge mounting screws and washers.
2. Reconnect AC power cord and data cables.
3. Turn On (I) the printer.



Maintenance and Drawings

This section illustrates parts and assemblies common to the S4M and gives their maintenance part numbers.

Use the mechanical assembly drawings in this section when troubleshooting or replacing components and use the associated parts list when ordering replacement parts. Item parts that do not have associated part numbers are not available and need to be ordered using the next highest assembly number.

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Notes • _____

Table A • Media Side Main Printer Assemblies

Item	Part Number	Description	Qty
1	20070M	Media Door Assembly, Maintenance Kit (see Table Q on page 337)	1
2	20053	Lower Rear Cover	1
3	20069M	Media Hanger Assembly, Maintenance Kit (see Table P on page 336)	1
4	77085M	Ribbon Supply Spindle Maintenance Kit (see Table M on page 333)	1
5	78302M	Static Brush Assembly, Maintenance Kit (see Table N on page 334)	1
6	20004M	Ribbon Take-up Spindle Maintenance Kit (see Table O on page 335)	1
7	20067-104M	203 dpi Print Mechanism Maintenance Kit (see Table C on page 320)	1
	20067-106M	300 dpi Print Mechanism Maintenance Kit (see Table C on page 320)	1
8	<i>79030</i>	Platen Housing	1
9	77238M	Dancer Assembly (see Table L on page 332)	1
10	777675M	Ribbon/Head Open Assembly Maintenance Kit (see Table J on page 330)	1
11	77752M	Transmissive Sensor Maintenance Kit (see Table F on page 324)	1
12	20038	Lower Front Cover, Tear	1
	20039	Lower Front Cover, Peel	1
13	20060M	Control Panel Assembly Maintenance Kit (see Table V on page 342)	1

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure A • Media Side Main Printer Assemblies

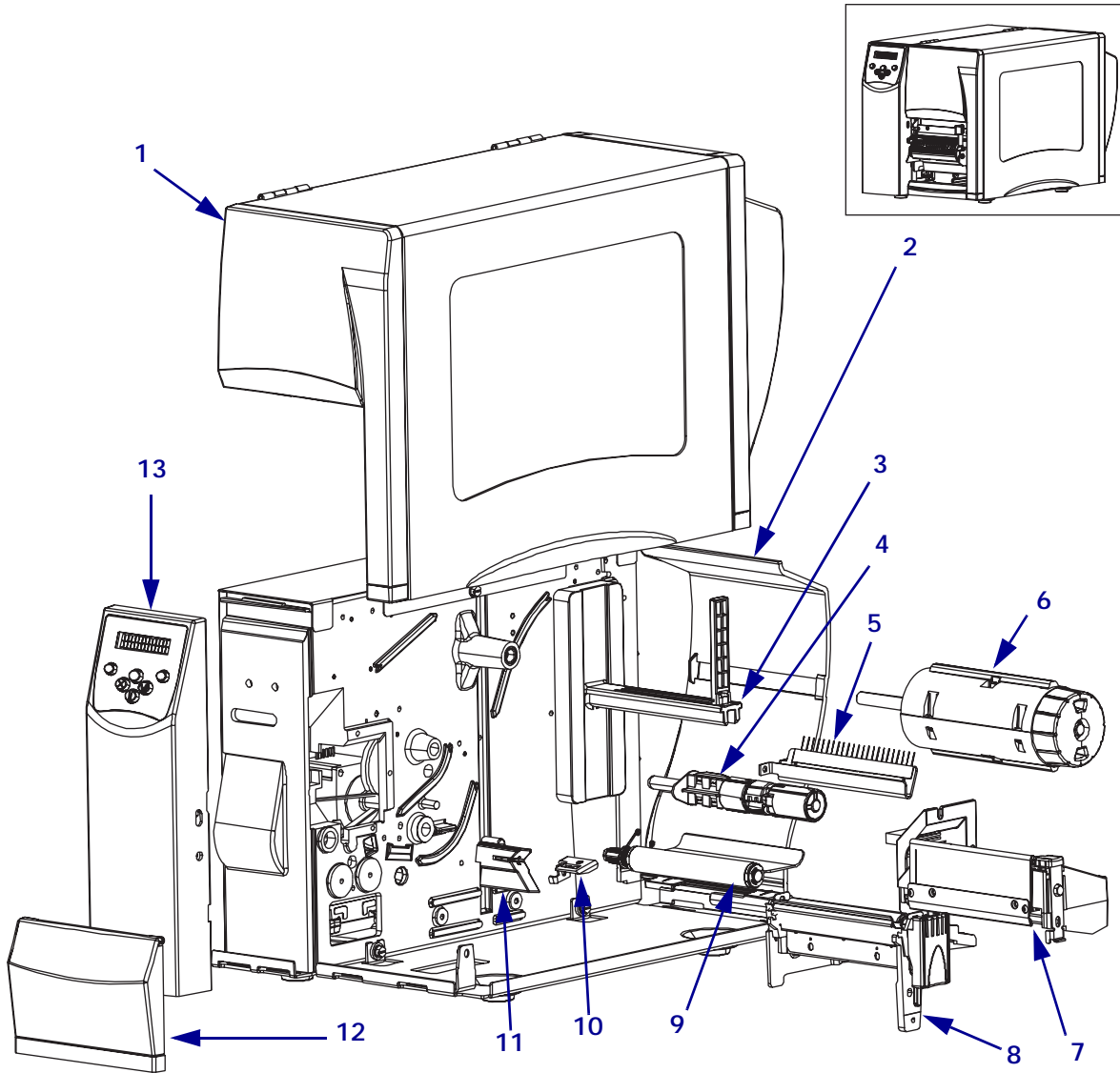


Table B • Electronics Side Main Printer Assemblies

Item	Part Number	Description	Qty
1	20071M	Electronics Cover (see Table U on page 341)	1
2	HW77123	Washer, 0.379 × 0.53 × 0.056 (sold in quantities of 25)	1
3	20001M	Ribbon Take-up Spindle Clutch Maintenance Kit (see Table AB on page 348)	1
4	<i>20002</i>	Compound Gear	1
5	<i>77181</i>	Intermediate Gear	1
6	<i>77227</i>	Compound Pulley	1
7	20006	Belt, 0.080P 139T, 203 dpi	1
	20005	Belt, 0.080P 128T, 300 dpi	1
8	20008M	Stepper Motor and Gear/Pulley (see Table W on page 343)	1
9	20100M	Main Logic Board Maintenance Kit (4 MB) (see Table X on page 344)	1
	20101M	Main Logic Board Maintenance Kit (64 MB) (see Table X on page 344)	1
10	28420-001M	Booster Board Maintenance Kit (see Table Z on page 346)	1
Bold = Part available for purchase			
<i>Light italic = Part not available for purchase, listed and shown for reference only</i>			

Figure B • Electronics Side Main Printer Assemblies

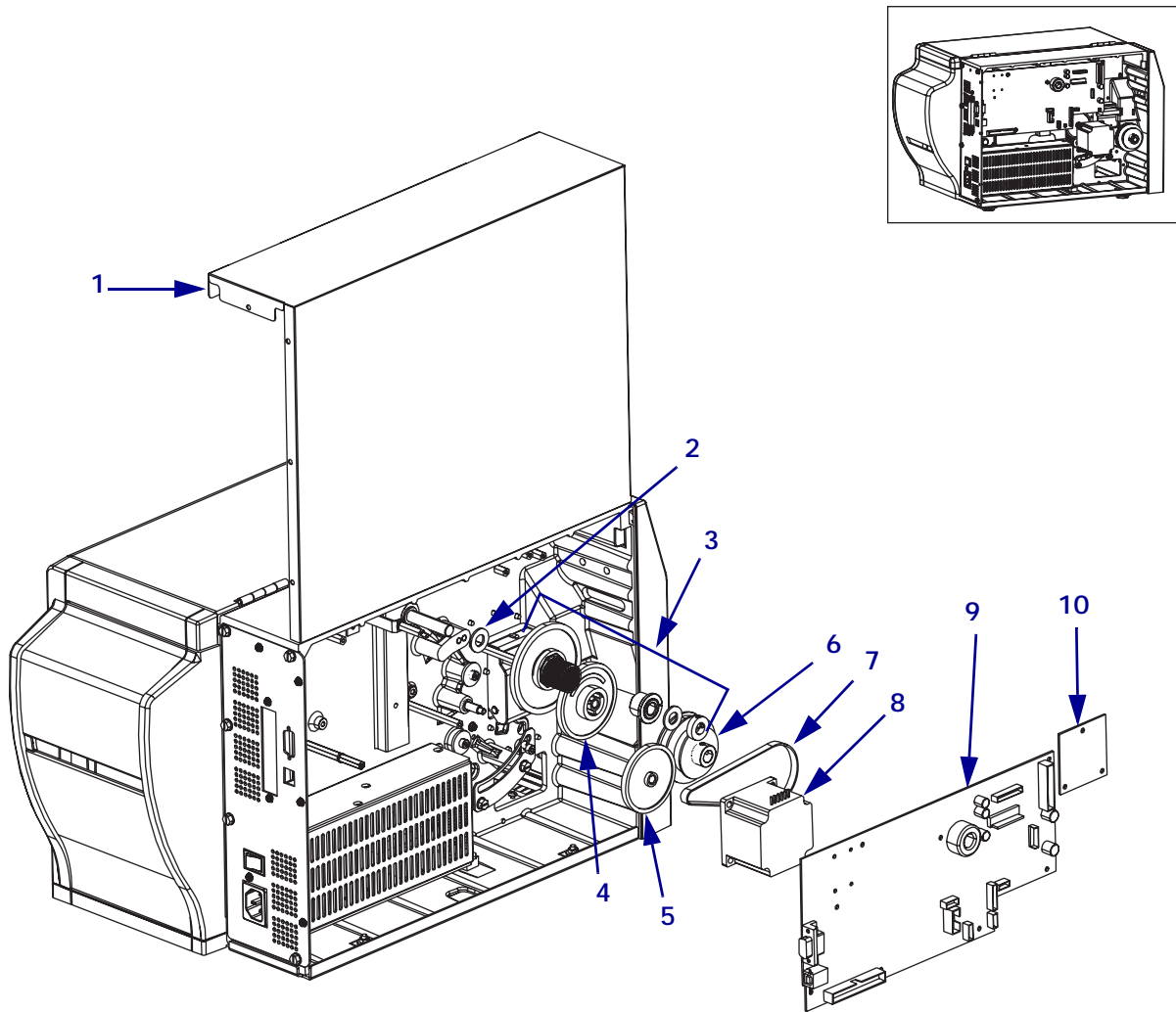


Table C • Print Mechanism/Printhead Assembly

Item	Part Number	Description	Qty
1	HW77047	Thumbscrew, M3 × 0.5 (sold in quantities of 5)	1
2	77172M	Pressure Dial Maintenance Kit	2
3	<i>77134</i>	Compression Spring, 0.17 × 0.24 × 0.62	2
4	77660	Magnetic Latch	1
5	77276	Strike Plate Cap	1
6	<i>77048 (78810)</i>	Adjustment Screw, M4 × 0.7 (part of 77112M)	1
7	<i>77659</i>	Latch Strike Plate (part of 77112M)	1
8	HW10473	Flat Washer, M4 (part of 77112M) (sold in quantities of 25)	2
9	HWQ10011	Screw, M4 × 0.7 × 10 (part of 77112M) (sold in quantities of 100)	2
10	41400M	Printhead Kit 203 dpi Maintenance Kit (see Table D on page 322)	1
	41401M	Printhead Kit 300 dpi Maintenance Kit (see Table D on page 322)	1
11	77173	Lower Printhead Guide	1
12	HW77043	Screw, M3 × 0.5 × 6 (sold in quantities of 25)	2
13	77049-104	Ribbon Strip Plate	1
14	HW79041	Washer, 0.250 × 0.125 × 0.023 (sold in quantities of 25)	2
N/S	20106M	Printhead Cable Maintenance Kit (see Table E on page 323)	1
N/S = Not Shown			
Bold = Part available for purchase			
<i>Light italic = Part not available for purchase, listed and shown for reference only</i>			

Figure C • Print Mechanism/Printhead Assembly

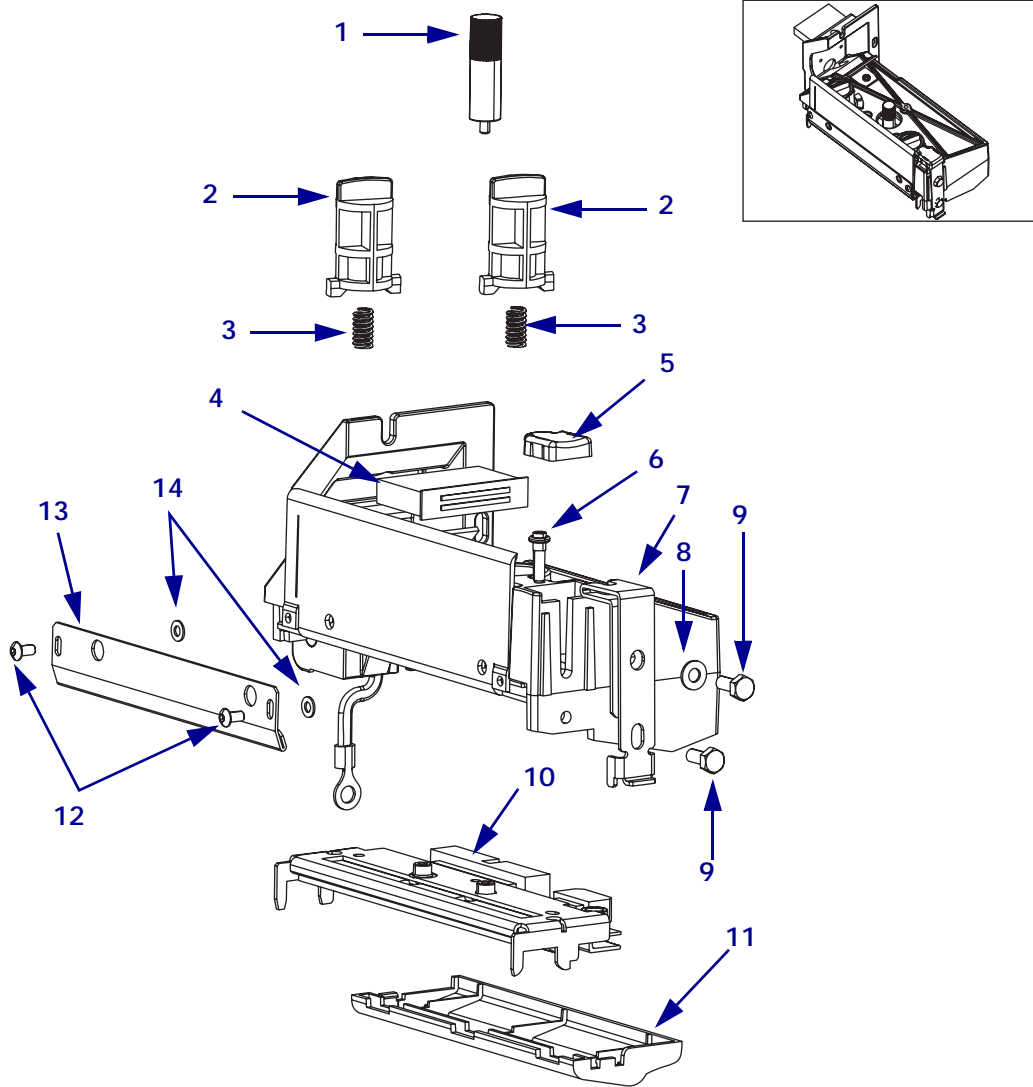


Table D • Printhead Maintenance Kit

Item	Part Number	Description	Qty
1	41400M	Printhead Kit 203 dpi Maintenance Kit	1
1	41401M	Printhead Kit 300 dpi Maintenance Kit	1

Bold=Part available for purchase
 Light italic=Part not available for purchase, listed and shown for reference only

Figure D • Printhead Maintenance Kit

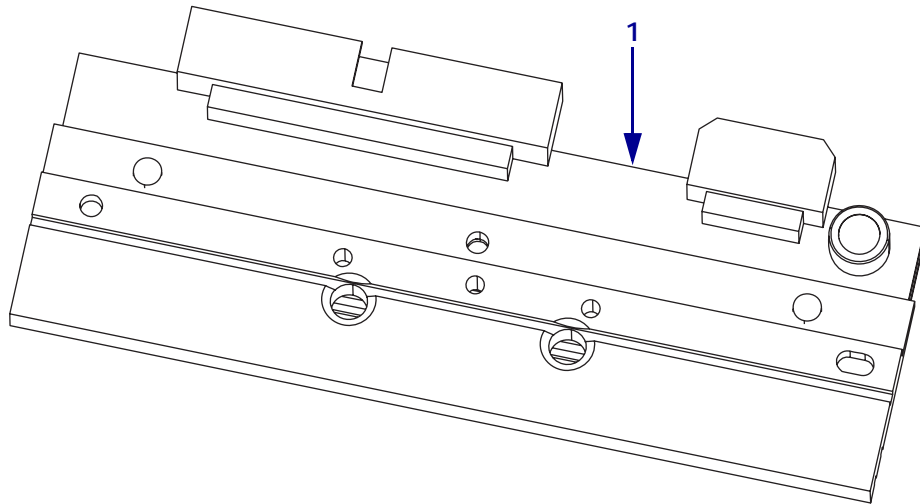
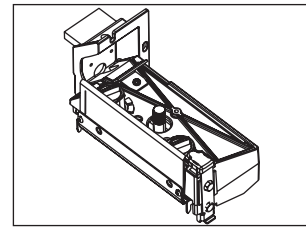


Table E • Printhead Cable Maintenance Kit

Item	Part Number	Description	Qty
Ref	20106M	Printhead Cable Maintenance Kit	1
1	<i>20082</i>	Printhead Power Cable	1
2	<i>20080</i>	Printhead Data Cable	1
3	Q06020	Cable Tie, 0.09 × 3.62	1
4	HWQ10011	Screw, M4 × 0.7 × 10 (sold in quantities of 100)	1
5	<i>77921</i>	Print Mechanism Adjustment Cam	1
6	<i>77919</i>	Print Mechanism Gap Pin Gauge	2

Bold=Part available for purchase
 Light italic=Part not available for purchase, listed and shown for reference only

Figure E • Printhead Cable Maintenance Kit

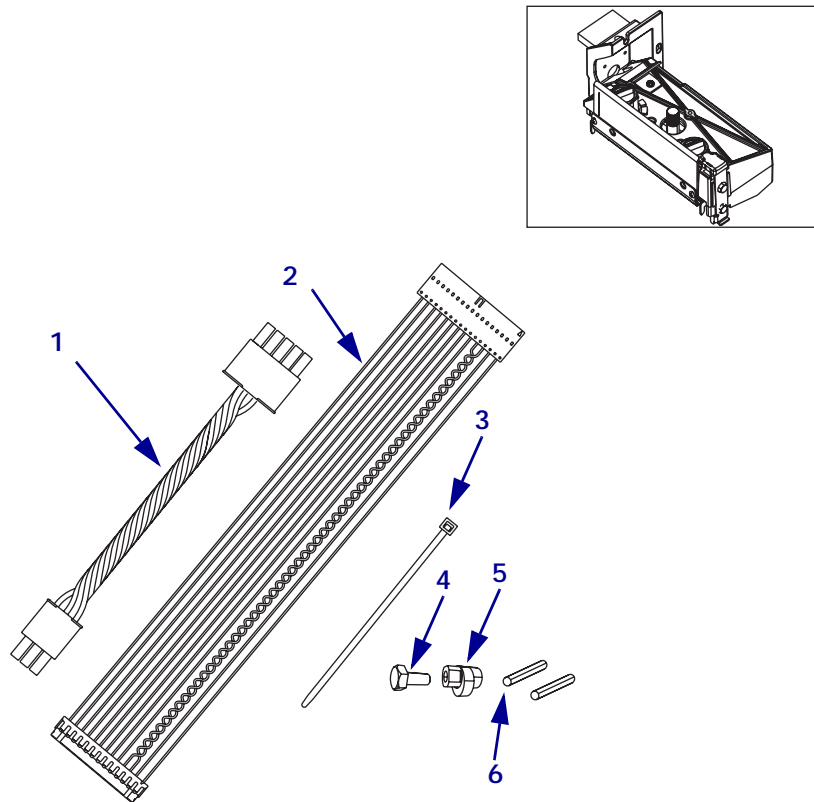


Table F • Platen Drive System

Item	Part Number	Description	Qty
1	77752M	Transmissive Sensor Maintenance Kit (see Table K on page 331)	1
2	<i>45939</i>	Screw, M4 × 1.4 × 13	1
3	20043M	Outer Media Guide Maintenance Kit	1
4	HW46128	Washer, Flat Nylon 0.37 × 0.19 × 0.05 (sold in quantities of 25)	1
5	<i>78123</i>	Compression Spring, 0.19 × 0.24 × 0.35	1
6	<i>10401</i>	Screw, M3 × 0.5 × 4	1
7	77807M	Media Sensor Assembly Maintenance Kit (see Table I on page 329)	1
8	77023M	Platen Roller Maintenance Kit (see Table H on page 328)	1
9	77767M	Ribbon/Open sensor Maintenance Kit (see Table J on page 330)	1
10	HW77237	Screw, M4 × 0.700 × 10 mm (sold in quantities of 5)	1
11	HW77078	Flat Washer, 0.500 × 0.195 × 0.090 (sold in quantities of 25)	3
12	HW77283	Screw, M4 × 0.700 × 16 mm (sold in quantities of 25)	2
13	<i>77258</i>	Peel Tear Bar (part of 77625M)	1
14	HW77231	Screw, M3 × 8 mm (sold in quantities of 25)	2
15	77112M	Print Mechanism Latch Maintenance Kit (see Table G on page 326)	1
Bold=Part available for purchase Light italic=Part not available for purchase, listed and shown for reference only			

Figure F • Platen Drive System

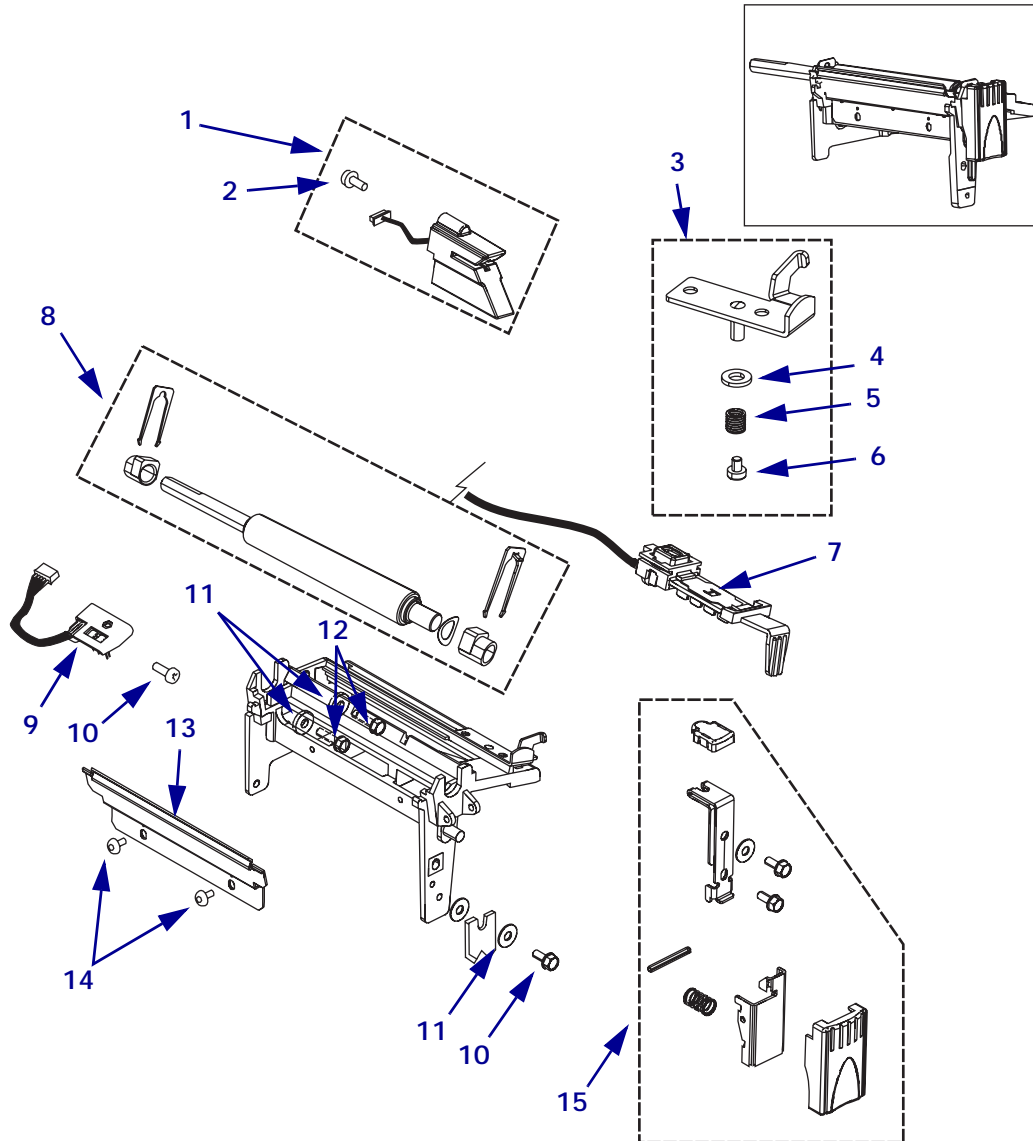


Table G • Latch Assembly Maintenance Kit

Item	Part Number	Description	Qty
1	77112M	Latch Maintenance Kit	1
2	<i>77048 (77810)</i>	Adjustment Screw	1
3	77276	Strike Plate Cap	1
4	<i>77659</i>	Latch Strike Plate	1
5	HW10473	Flat Washer, M4 (sold in quantities of 25)	1
6	HWQ10011	Screw, M4 × 0.7 × 10 (sold in quantities of 100)	1
7	77236	Latch Plate Cover	2
8	<i>77226</i>	Latch	1
9	<i>77195</i>	Compression Spring, 0.875 × 0.360 × 0.029	1
10	<i>77194</i>	Slot Spring Pin	1
11	HW77043	Screw, M3 × 0.5 × 6 mm (sold in quantities of 25)	1
12	<i>77921</i>	Cam	1
13	<i>77919</i>	Print Mechanism Gap Pin Gauge, 0.094 in. (2.388 mm)	2
Bold = Part available for purchase			
<i>Light italic = Part not available for purchase, listed and shown for reference only</i>			

Figure G • Latch Assembly Maintenance Kit

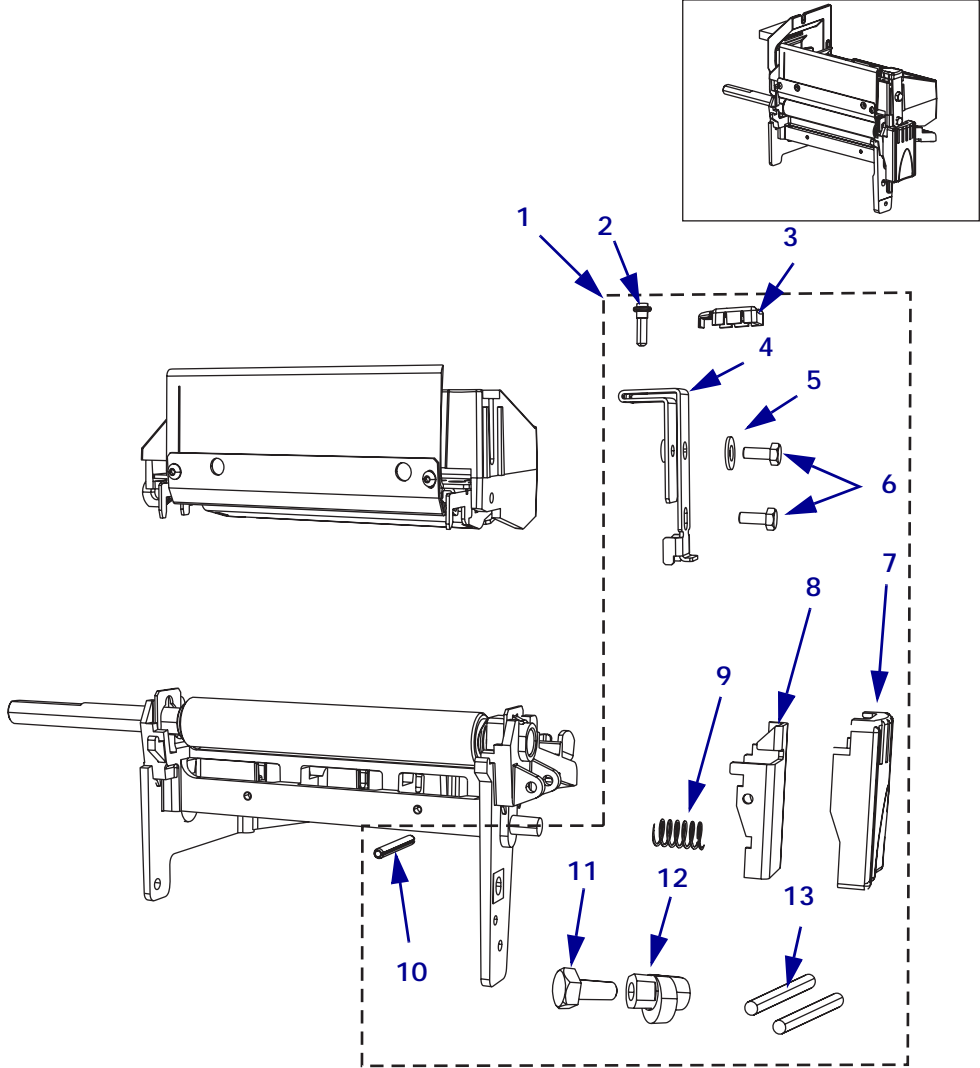


Table H • Platen Roller Maintenance Kit

Item	Part Number	Description	Qty
Ref	77023M	Platen Roller Maintenance Kit	1
1	<i>77023</i>	Platen Roller	1
2	<i>77423</i>	Inner Spring Clip	1
3	<i>77298</i>	Spring Washer, 0.612 × 0.40 × 0.009	1
4	<i>77426</i>	Platen Bearing	2
5	<i>78184</i>	Outer Spring Clip	1

Bold = Part available for purchase

Light italic = Part not available for purchase, listed and shown for reference only

Figure H • Platen Roller Maintenance Kit

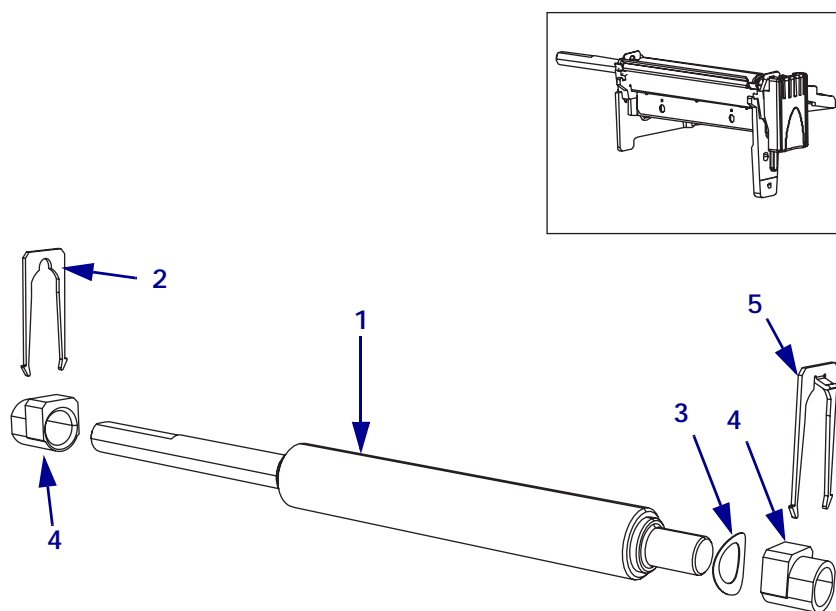


Table I • (Reflective) Media Sensor Assembly Maintenance Kit

Item	Part Number	Description	Qty
REF	77807M	Reflective Media Sensor Assembly Maintenance Kit	1
1	<i>77807</i>	Media Sensor Assembly	1
2	HWQ06020	Cable Tie, 0.090 × 3.630 (sold in quantities of 25)	3

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure I • (Reflective) Media Sensor Assembly Maintenance Kit

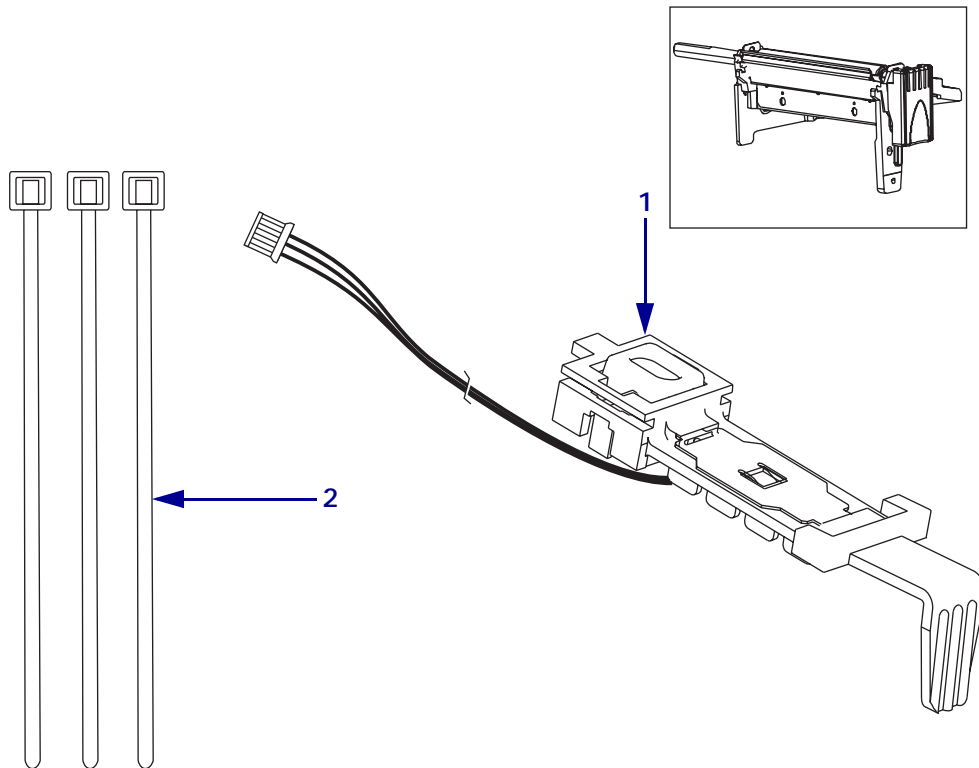


Table J • Ribbon/Printhead Open Sensor Assembly Maintenance Kit

Item	Part Number	Description	Qty
REF	77767M	Ribbon/Printhead Open Sensor Assembly Maintenance Kit	1
1	<i>77765</i>	Ribbon/Printhead Open Sensor Assembly	1
2	HW77237	Screw, M3 × 0.70 × 10 mm (sold in quantities of 5)	1

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure J • Ribbon/Printhead Open Sensor Assembly Maintenance Kit

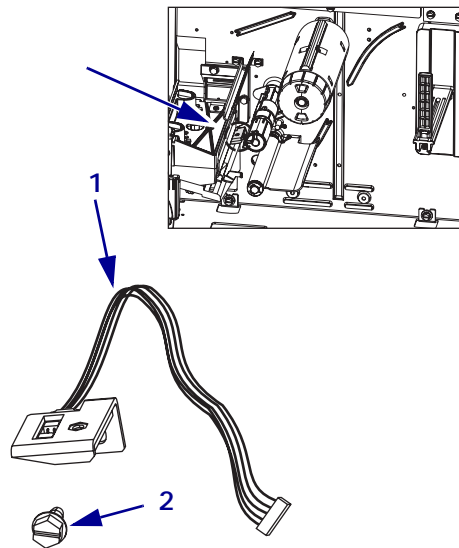


Table K • Transmissive Sensor Assembly Maintenance Kit

Item	Part Number	Description	Qty
REF	77752M	Transmissive Sensor Assembly Maintenance Kit	1
1	<i>77752</i>	Transmissive Sensor Assembly	1
2	HW44216	Screw, M4.2 x 1.14 x 13 (sold in quantities of 25)	1
3	HWQ06020	Cable Tie, 0.09 x 3.62 (sold in quantities of 25)	2

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure K • Transmissive Sensor Assembly Maintenance Kit

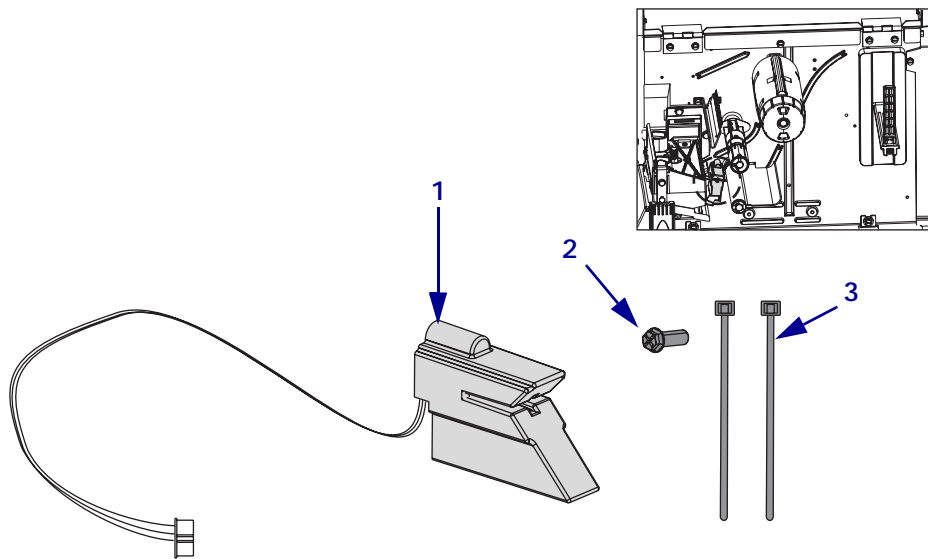


Table L • Dancer Assembly Maintenance Kit

Item	Part Number	Description	Qty
Ref	77238M	Dancer Assembly Maintenance Kit	1
1	<i>77256</i>	Torsion Spring	1
2	<i>77909</i>	Bearing, 0.38 × 0.63 × 0.50	2
3	<i>77928</i>	4 inch Dancer	1
4	HW06313	E-ring External 0.375 (sold in quantities of 25)	1

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure L • Media Handling System

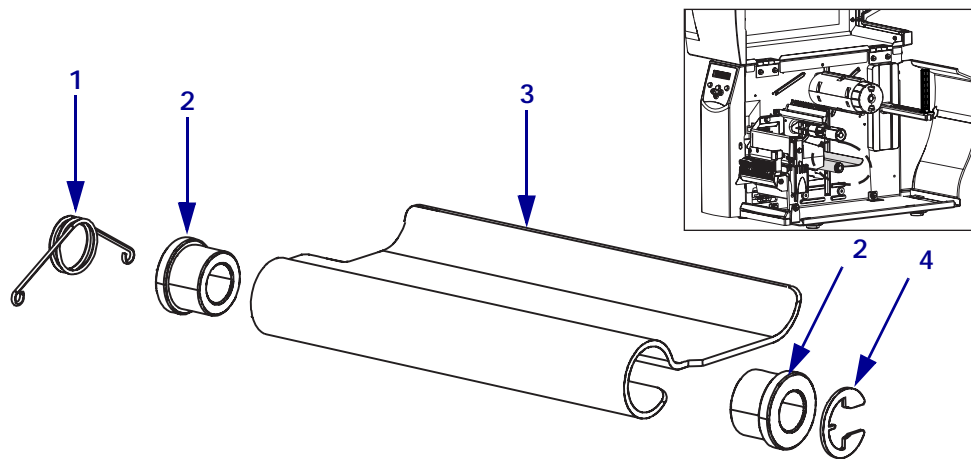


Table M • Ribbon Supply Spindle Maintenance Kit

Item	Part Number	Description	Qty
Ref	77085M	Ribbon Supply Spindle Maintenance Kit	1
1	HW10432	Screw, M4 x 0.7 12 Cap (sold in quantities of 25)	1
2	HW44356	Washer, 0.198 x 0.75 x 0.085 (sold in quantities of 25)	1
3	HW44390	Washer, 0.500 x 0.377 x 0.020 (sold in quantities of 25)	1
4	<i>77085</i>	Ribbon Supply Spindle Assembly	1
5	77594	Screw, M4 x 60 mm	1
6	77598	Nut, Ribbon Supply Spindle Kit	1
7	<i>01660</i>	Grease	1
8	77620	Washer, Ribbon Supply Spindle Kit	2
9	77621	Driver, 7 mm Nut Ribbon Supply Spindle Kit	1
10	77593	Tool, Ribbon Supply Spindle Remove Kit	1

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure M • Ribbon Supply Spindle Maintenance Kit

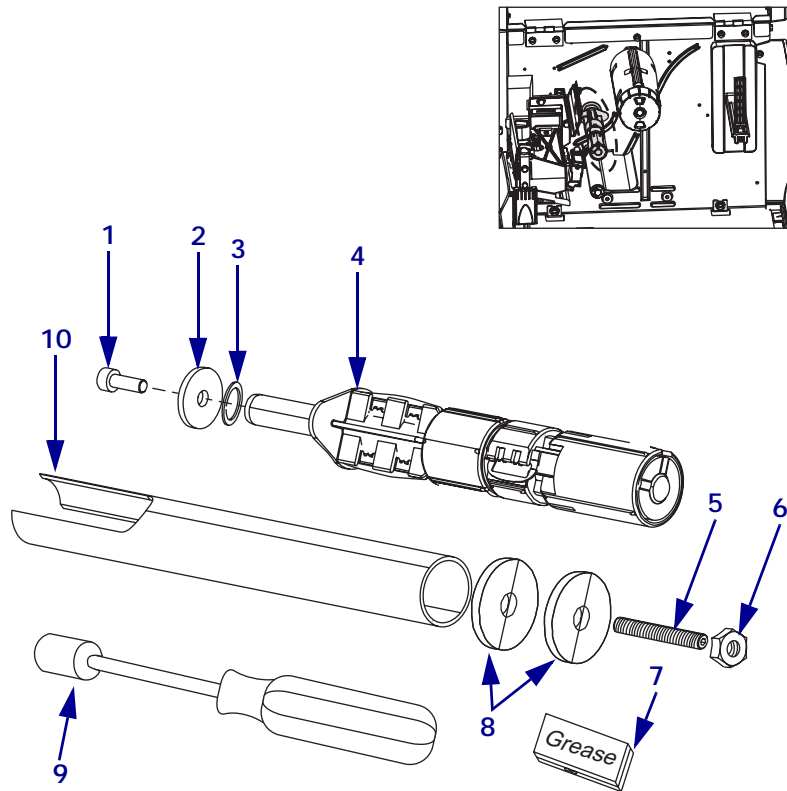


Table N • Static Brush Maintenance Kit

Item	Part Number	Description	Qty
Ref	77302M	Static Brush Maintenance Kit	1
1	<i>77302</i>	Static Brush Assembly	1
2	HW77237	Screw, M3 × 0.70 × 10 mm (sold in quantities of 5)	2

Bold =Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure N • Static Brush Maintenance Kit

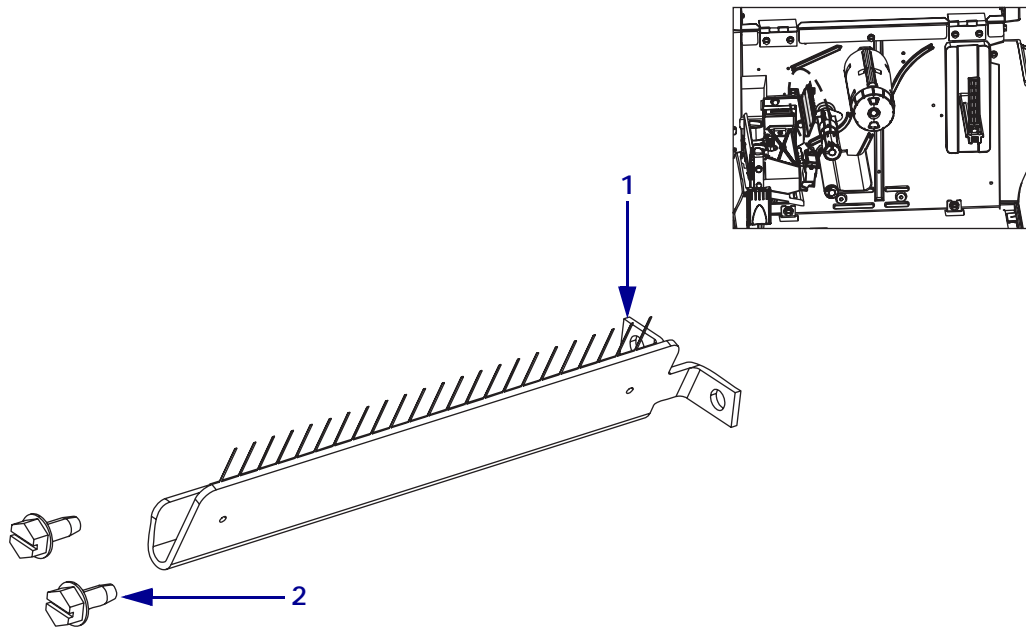


Table O • Ribbon Take-up Spindle Maintenance Kit

Item	Part Number	Description	Qty
Ref	20004M	Ribbon Take-up Assembly Maintenance Kit	1
1	<i>20004</i>	Ribbon Take-up Assembly	1

Bold =Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure O • Ribbon Take-up Spindle Maintenance Kit

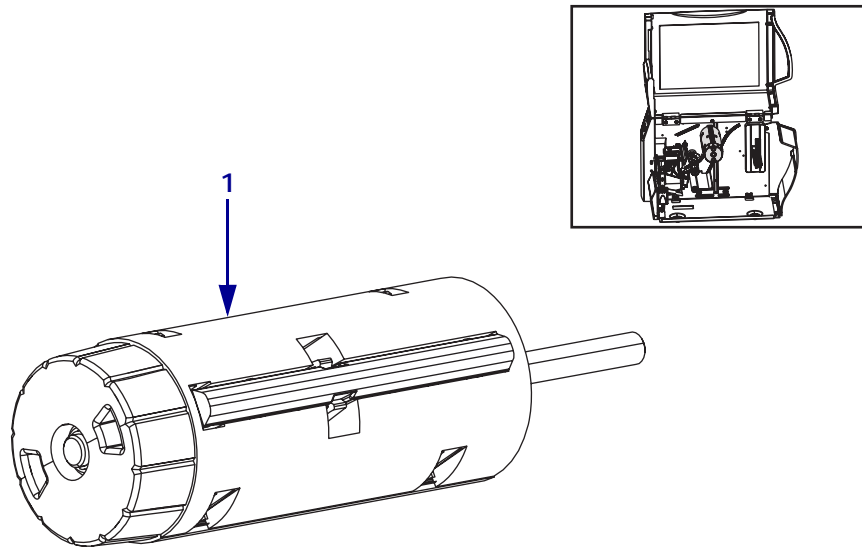


Table P • Media Hanger Maintenance Kit

Item	Part Number	Description	Qty
Ref	20069M	Media Hanger Maintenance Kit	1
1	<i>20069</i>	Media Hanger	1
2	<i>806136-608</i>	Screw, Triplask 6-19 × 1/2	4

Bold =Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure P • Media Hanger Maintenance Kit

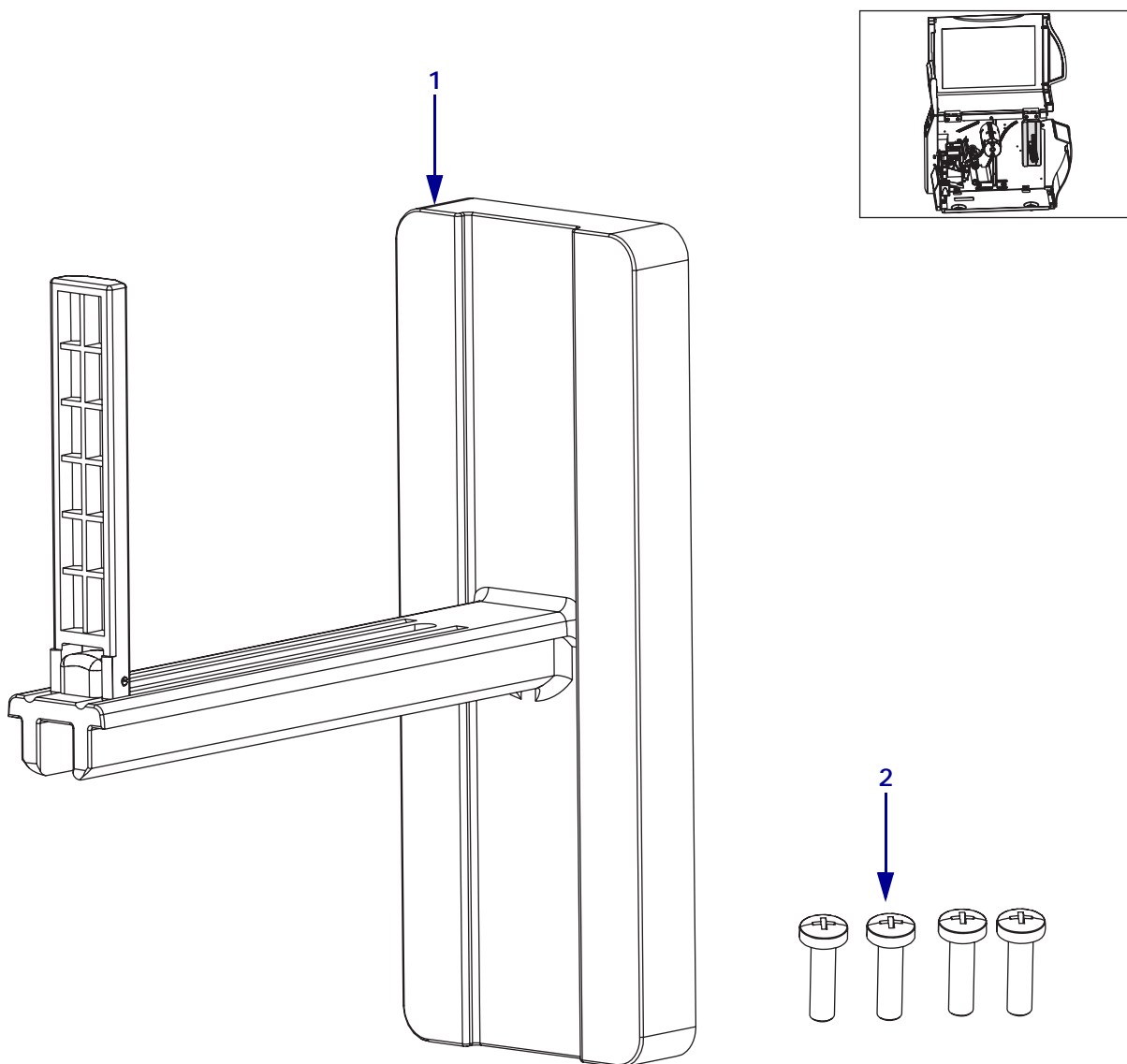


Table Q • Media Door Maintenance Kit

Item	Part Number	Description	Qty
Ref	20070M	Media Door Maintenance Kit	1
1	<i>20070</i>	Media Door Assembly	1
2	HW77237	Screw, M4 × 0.7 × 10 (sold in quantities of 5)	4
3	HW43482	External Lock Washer, 4 mm	4

Bold =Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure Q • Media Door Maintenance Kit

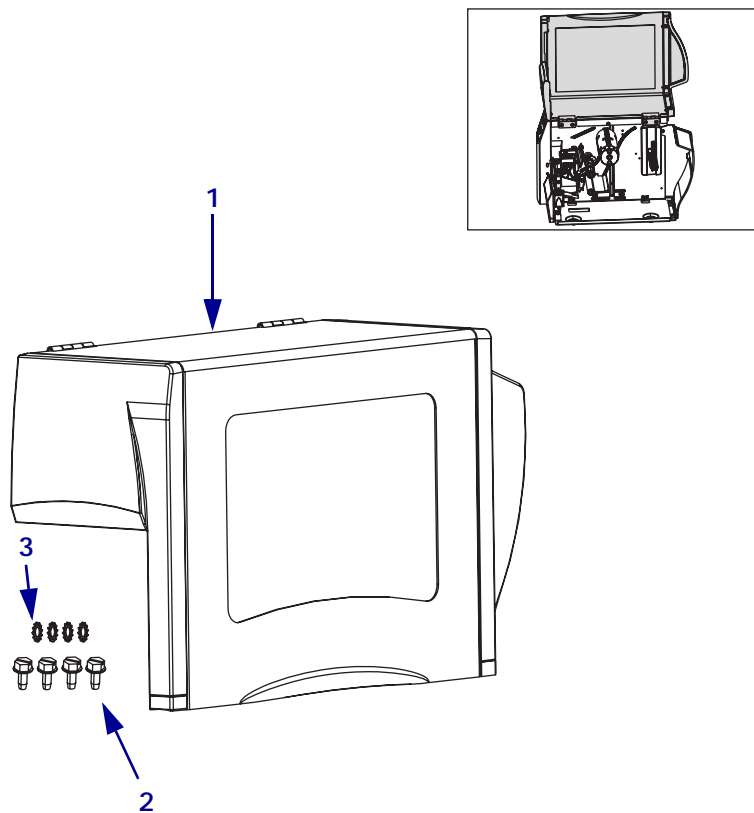


Table R • Peel Option Kit

Item	Part Number	Description	Qty
Ref	20046	Peel Option Kit	1
1	<i>78002</i>	Peel Assembly	1
2	HW77231	Screw, M3 × 8 mm Flanged (sold in quantities of 25)	2
3	<i>30449</i>	2 mm Hex Key (Allen wrench)	1
4	<i>29300</i>	Mounting Button	1
5	<i>20065</i>	Take-Label Sensor Board	1
6	<i>20060-12</i>	Screw	2
7	<i>20039</i>	Lower Front Peel Panel	1

Bold = Part available for purchase

Light italic = Part not available for purchase, listed and shown for reference only

Figure R • Peel Option Kit

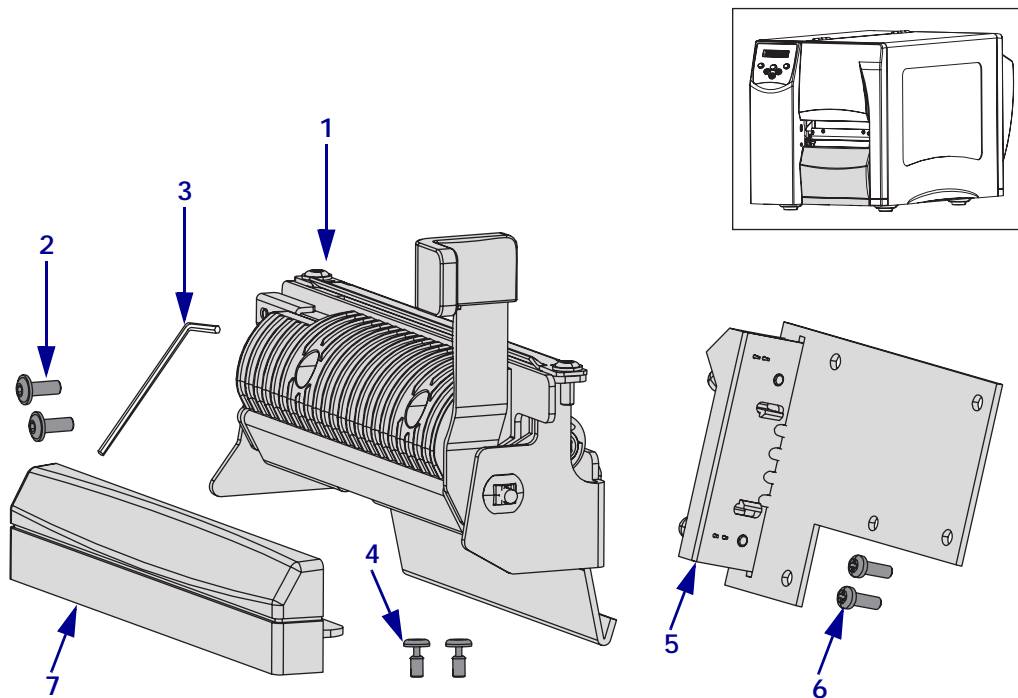


Table S • Peel Assembly Maintenance Kit

Item	Part Number	Description	Qty
Ref	78002M	Peel Assembly Maintenance Kit	1
1	<i>78002</i>	Peel Assembly	1
2	<i>30449</i>	2 mm Hex Key (Allen wrench)	1
3	HW77231	Screw, M3 × 8 mm Flanged (sold in quantities of 25)	2

Bold =Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure S • Peel Assembly Maintenance Kit

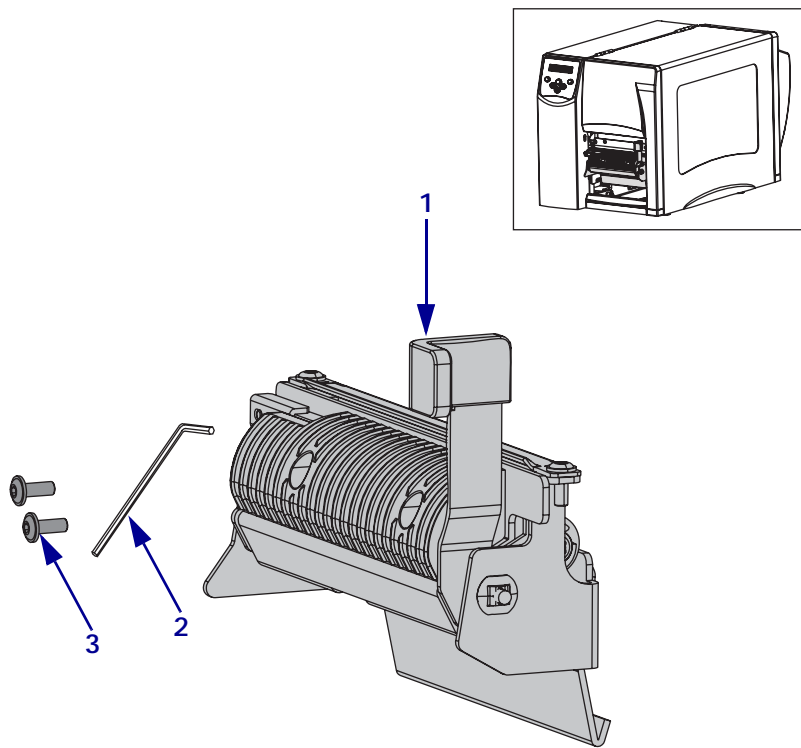


Table T • Pinch Roller Maintenance Kit

Item	Part Number	Description	Qty
Ref	77197M	Pinch Roller Maintenance Kit	1
1	<i>77197</i>	Pinch Roller	1
2	HW10094	E-ring 3 mm (two extra supplied) (sold in quantities of 25)	4
3	<i>49203</i>	Ball Bearing	2

Bold =Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure T • Pinch Roller Maintenance Kit

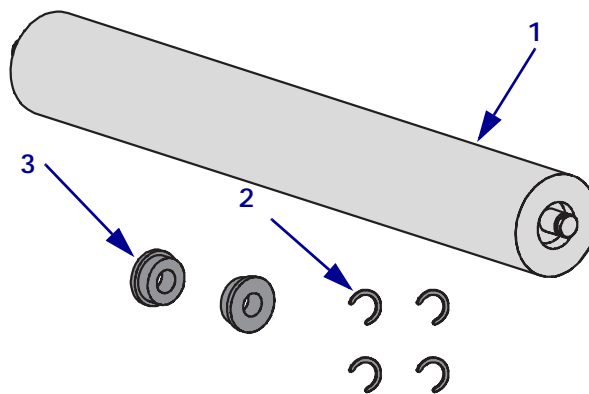


Table U • Electronics Cover Maintenance Kit

Item	Part Number	Description	Qty
Ref	20071M	S4M Electronics Cover Maintenance Kit	1
1	<i>20071</i>	Electronics Cover	1
2	HW43495	Screw, M3 × 0.5 × 6, w/External Lock Washer (sold in quantities of 25)	1
3	HW43482	Lock Washer, External, 4 mm (sold in quantities of 25)	1
4	HW77237	Screw, M4 × 0.7 × 10 (sold in quantities of 5)	4

Bold =Part available for purchase

Light italic = Part not available for purchase, listed and shown for reference only

Figure U • Electronics Cover Maintenance Kit

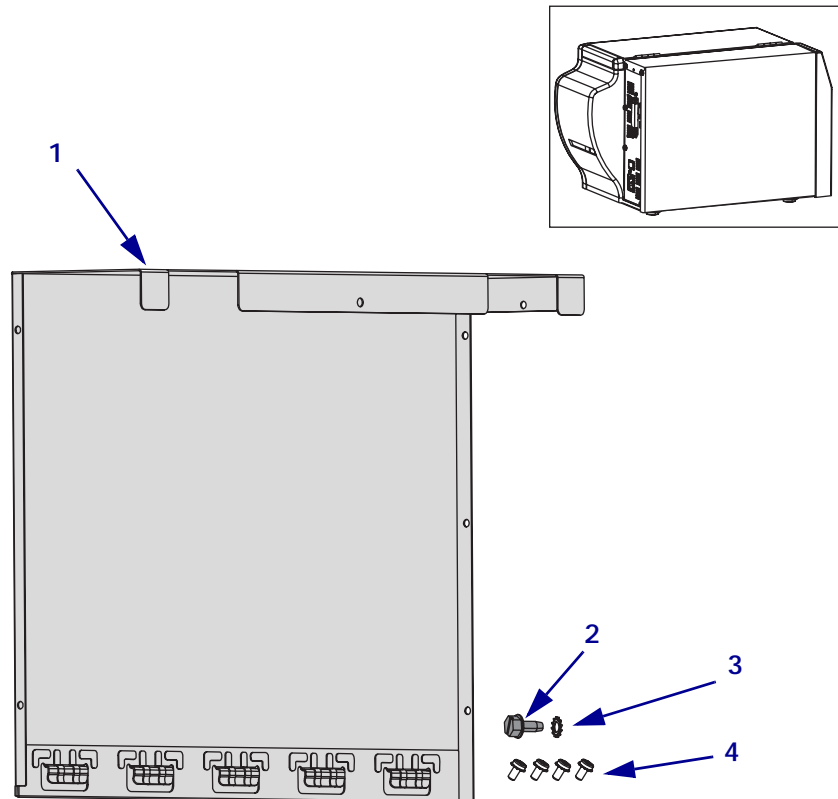


Table V • Control Panel and Take-Label Maintenance Kits

Item	Part Number	Description	Qty
Ref	20060M	Control Panel Maintenance Kit	1
1	<i>20060</i>	Control Panel	1
2	<i>20060-21</i>	External Lock Washer	1
3	<i>20060-9</i>	Split Lock Washer	1
4	<i>20060-14</i>	Screw	1
Ref	20065M	Take-Label Maintenance/Option Kit	1
5	<i>20065</i>	Take-Label Board	1
6	<i>20060-12</i>	Screw	2

Bold = Part available for purchase

Light italic = Part not available for purchase, listed and shown for reference only

Figure V • Control Panel and Take-Label Maintenance Kits

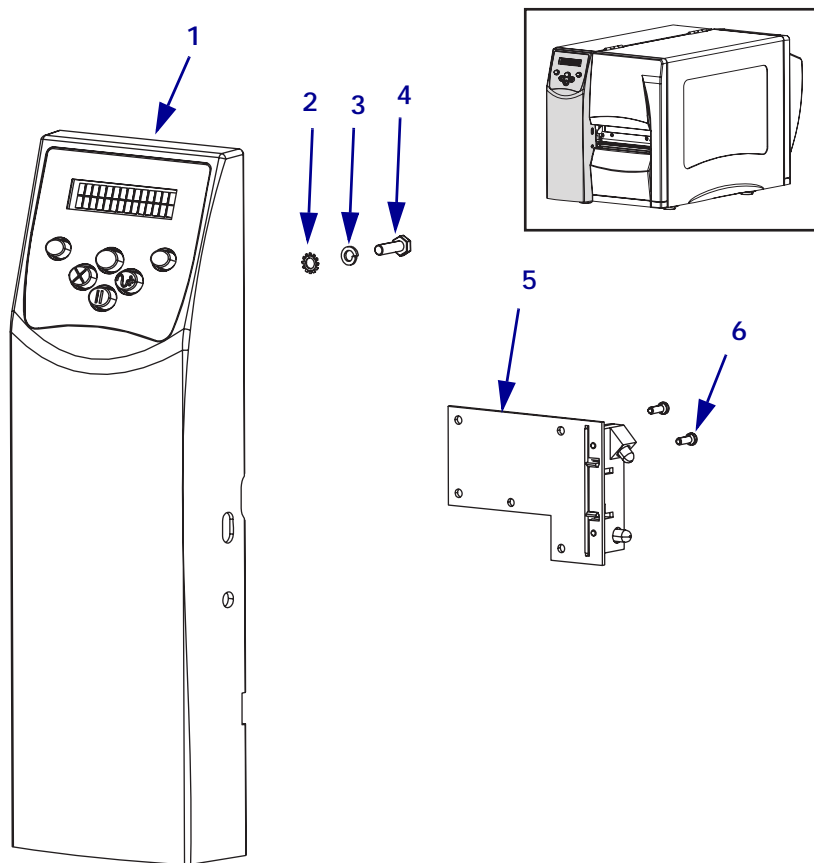


Table W • Stepper Motor Maintenance Kit

Item	Part Number	Description	Qty
Ref	20008M	Stepper Motor and Gear/Pulley Maintenance Kit	1
1	<i>20008</i>	Stepper Motor Assembly	1
2	HW77239	Adjustment Nut (sold in quantities of 25)	1
3	HW10432	Screw, M4 × 0.7 × 12 (sold in quantities of 25)	1
4	HW44924	Screw, M3 × 0.5 × 8 (sold in quantities of 25)	1

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure W • Stepper Motor Maintenance Kit

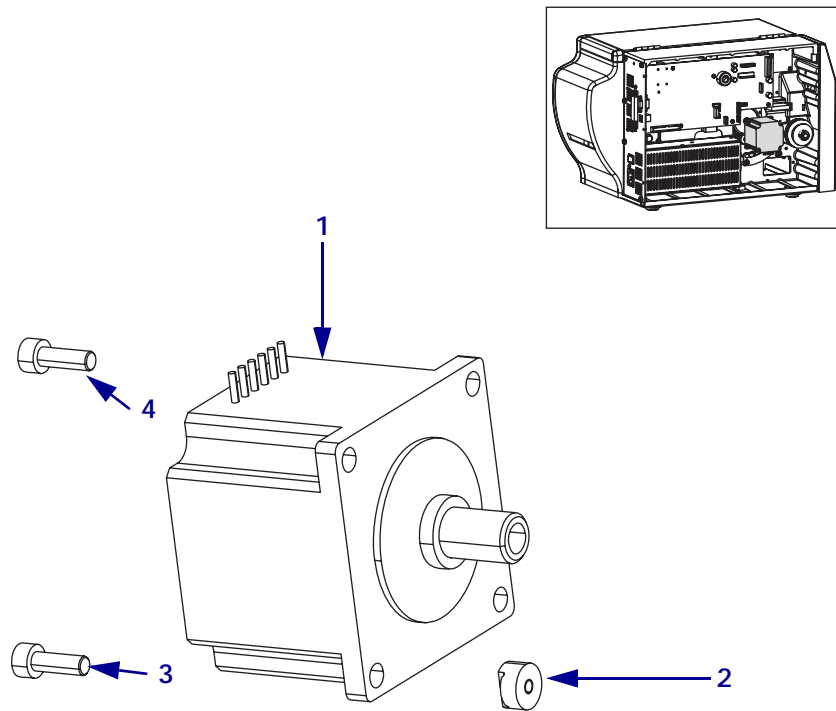


Table X • Main Logic Board Maintenance Kit

Item	Part Number	Description	Qty
Ref	20100M	Main Logic Board Maintenance Kit (4 Meg)	1
1	<i>29301-001</i>	Main Logic Board Assembly (4 Meg)	1
Ref	20101M	Main Logic Board Assembly Kit (64 Meg)	1
1	<i>29301-002</i>	Main Logic Board Assembly (64 Meg)	1

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure X • Main Logic Board Maintenance Kit

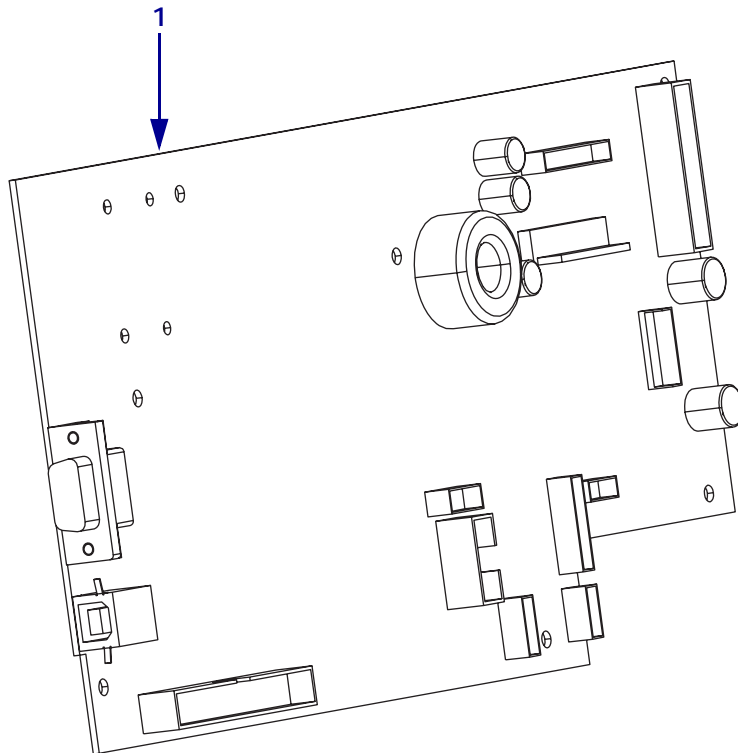
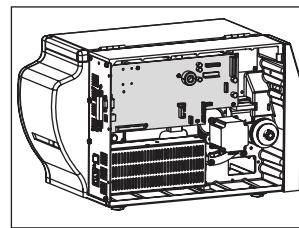


Table Y • Real Time Clock (RTC) Maintenance/Option Kit

Item	Part Number	Description	Qty
Ref	20009M	RTC Option/Maintenance Kit	1
1	<i>20009</i>	RTC Option Board	1
2	<i>29647</i>	Heat Sink Standoff w/Spring	2
3	<i>29648</i>	Plastic Spacer	2

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure Y • Real Time Clock (RTC) Option/Maintenance Kit

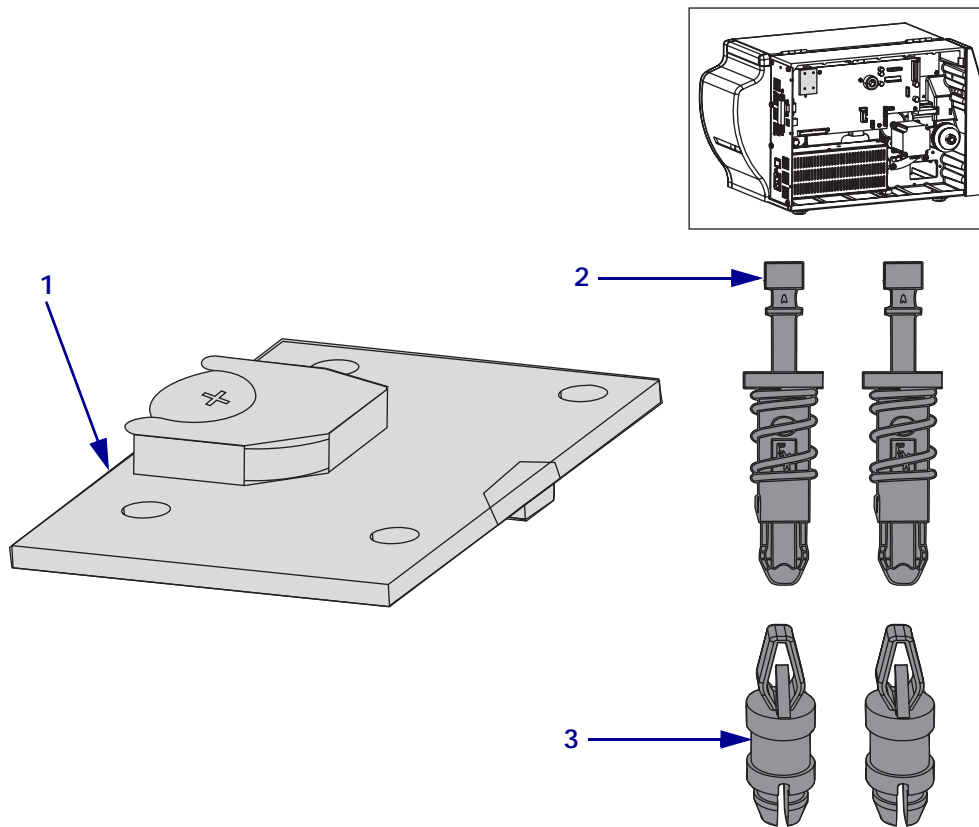


Table Z • Booster Board Maintenance Kit

Item	Part Number	Description	Qty
Ref	28420-001M	Booster Board Maintenance Kit	1
1	<i>28420-099</i>	Booster Board	1
2	HW10401	Screw, M3 ×0.5 × 0.4 (sold in quantities of 50)	3

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure Z • Booster Board Maintenance Kit

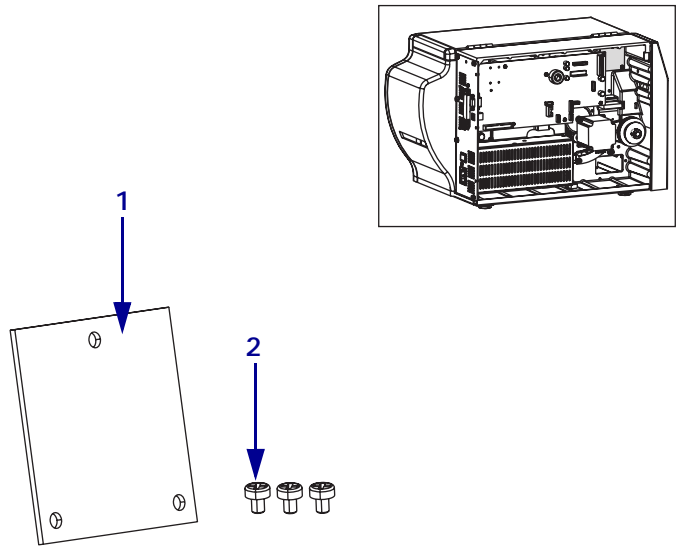


Table AA • Power Supply Maintenance Kit

Item	Part Number	Description	Qty
Ref	29600M	Power Supply Maintenance kit	1
1	<i>29600</i>	Power Supply	1

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure AA • Power Supply Maintenance Kit

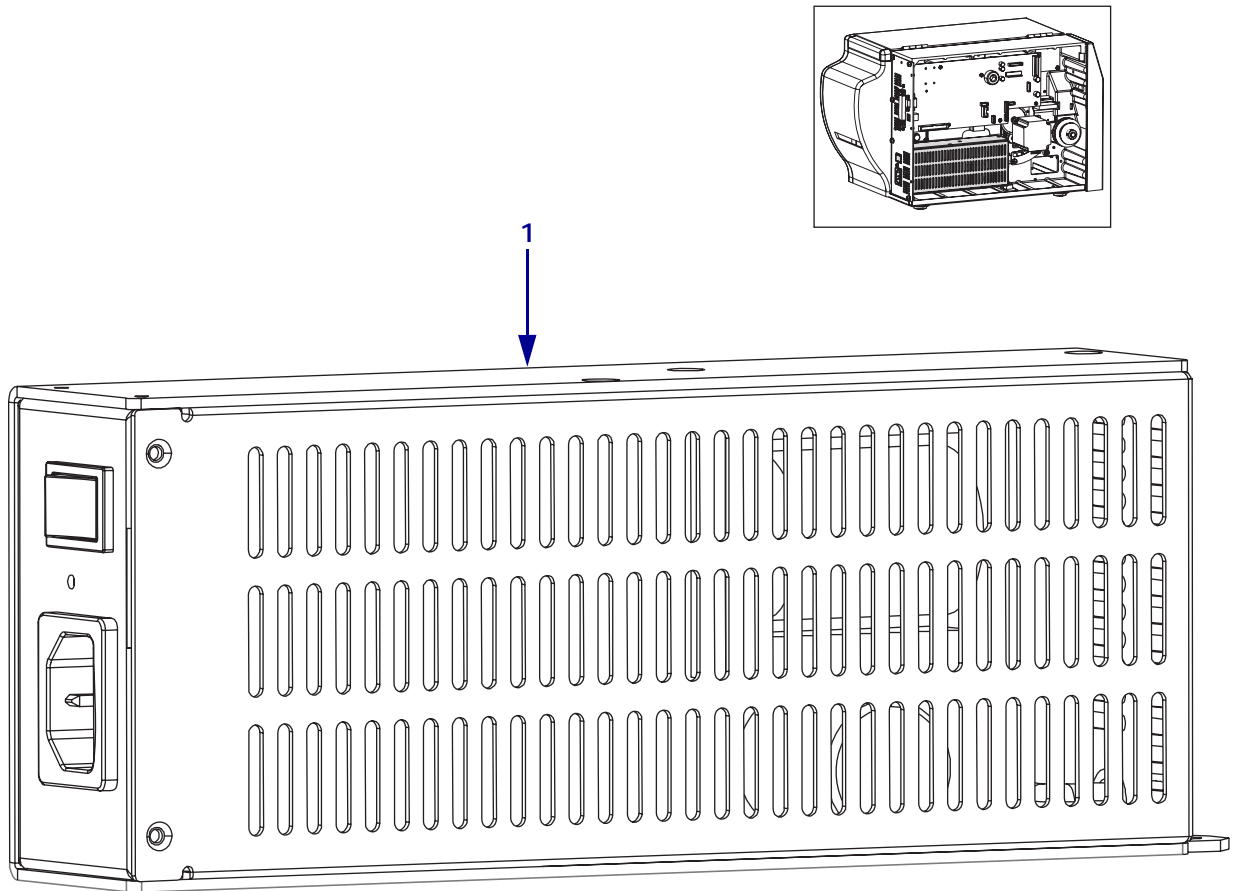


Table AB • Ribbon Take-up Spindle Clutch Maintenance Kit

Item	Part Number	Description	Qty
Ref	20001M	Ribbon Take-up Spindle Clutch Maintenance Kit	1
1	<i>78118</i>	Collar, 0.379 × 0.750 × 0.200	1
2	<i>77126</i>	Washer, 0.375 × 0.750 × 0.062	1
3	<i>N/A</i>	Clutch Hub	1
4	<i>77115</i>	Clutch Spring	1
5	<i>20001</i>	Clutch Gear	1

Bold = Part available for purchase

Light italic = Part not available for purchase, listed and shown for reference only

Figure AB • Ribbon Take-up Clutch Maintenance Kit

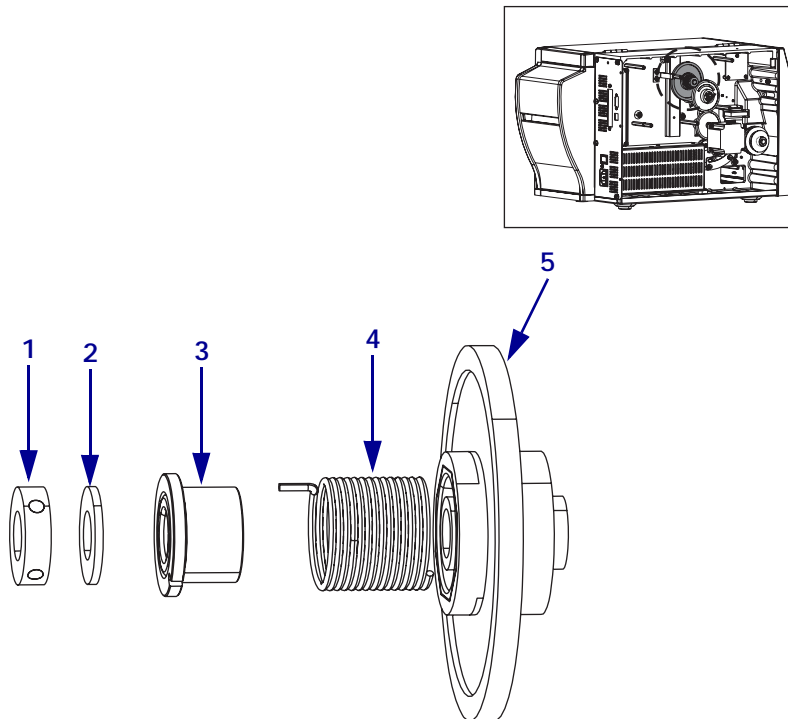


Table AC • Gears and Pulley Maintenance Kit

Item	Part Number	Description	Qty
Ref	20002M	Gears and Pulley Maintenance Kit	1
1	<i>20002</i>	Compound Gear	1
2	<i>77181</i>	Intermediate Gear	1
3	<i>77227</i>	Compound Pulley	1
4	<i>10856</i>	Set Screw, M4 × 0.7	1
5	<i>77225</i>	Screw, M5 × 20	1

Bold = Part available for purchase

Light italic = Part not available for purchase, listed and shown for reference only

Figure AC • Gears and Pulley Maintenance Kit

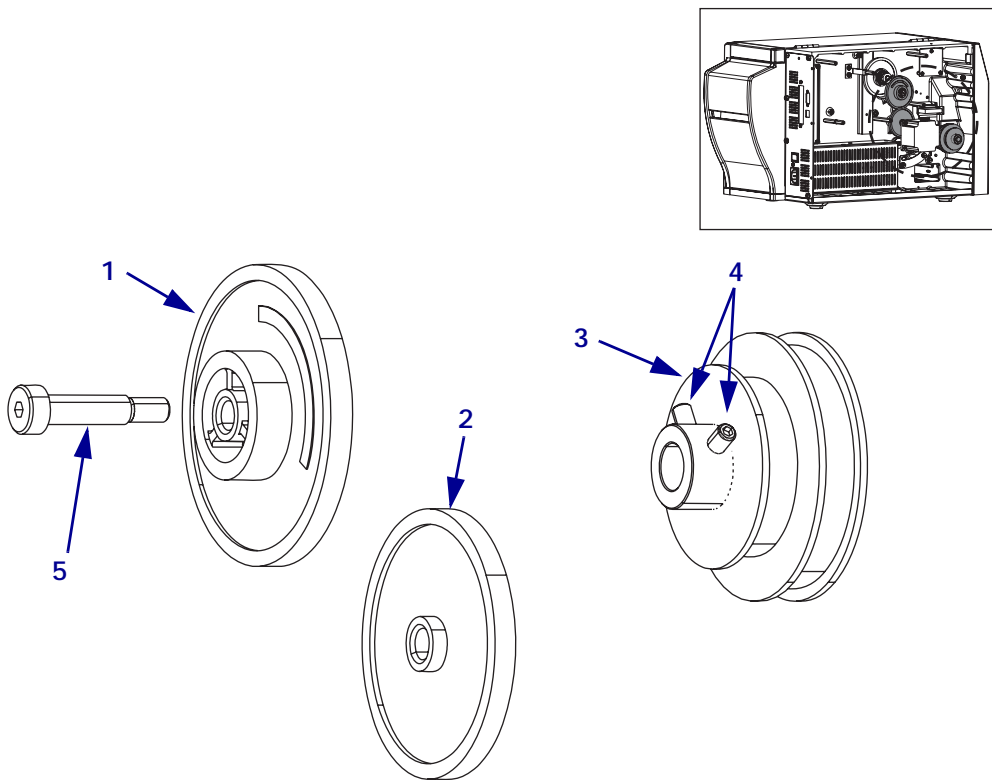


Table AD • Wireless PCMCIA Board Maintenance/Option Kit

Item	Part Number	Description	Qty
Ref	20064M	Wireless PrintServer Maintenance Kit	1
1	<i>29881-099</i>	Wireless PC Board	1

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure AD • Wireless PCMCIA Board Maintenance/Option Kit

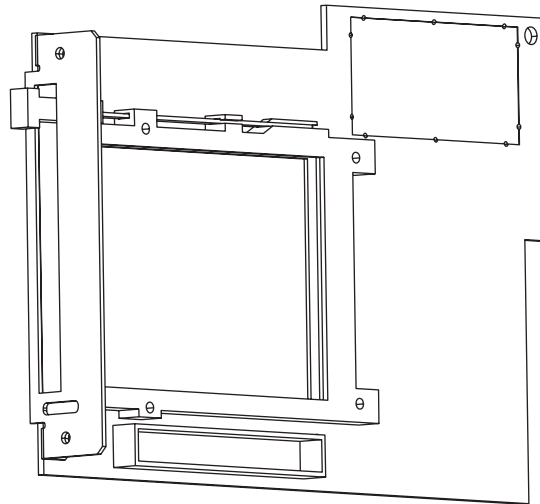
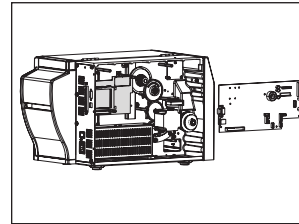


Table AE • 10/100 and Parallel Port Maintenance/Option Kits

Item	Part Number	Description	Qty
Ref	20063M	10/100 Printserver Option Maintenance Kit	1
1	<i>29691-099</i>	10/100 Printserver PC Board	1
Ref	20037M	Parallel Port Option Maintenance Kit	1
2	<i>29831-099</i>	Parallel Port PC Board	1

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure AE • 10/100 and Parallel Port Maintenance/Option Kits

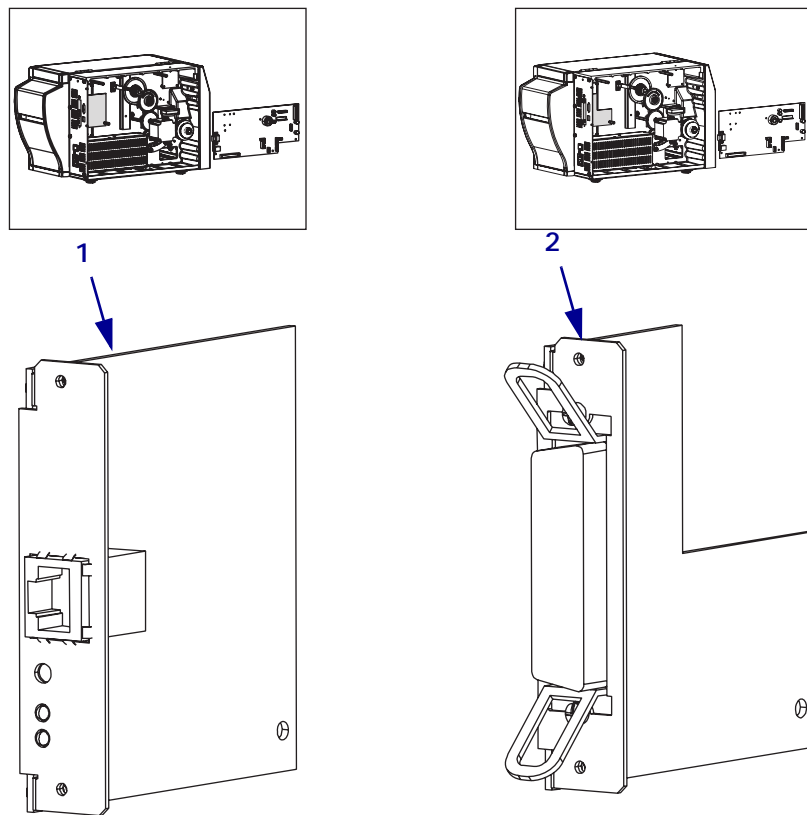


Table AF • Hardware View 1 (Media Compartment)

Item	Part Number	Description	Qty
1	HW44114	Screw, M4.2 × 8 (sold in quantities of 50)	6
2	HW77237	Screw, M4 × 0.7 × 10 (sold in quantities of 5)	20
3	HW43482	External Lock Washer, 4 mm (sold in quantities of 25)	5
4	HW07257	Flat Washer, 0.438 × 0.188 × 0.049 (sold in quantities of 25)	4
5	HW77283	Screw, M4 × 0.7 × 16 (sold in quantities of 25)	4
6	<i>77371</i>	Screw, M4 × 12	1
7	HW10473	Flat Washer M4 (sold in quantities of 25)	2
8	HW77078	Flat Washer, 0.500 × 0.195 × 0.090 (sold in quantities of 25)	5
9	<i>20049</i>	Rubber Foot	4
Bold = Part available for purchase			
<i>Light italic = Part not available for purchase, listed and shown for reference only</i>			

Figure AF • Hardware View 1 (Media Compartment)

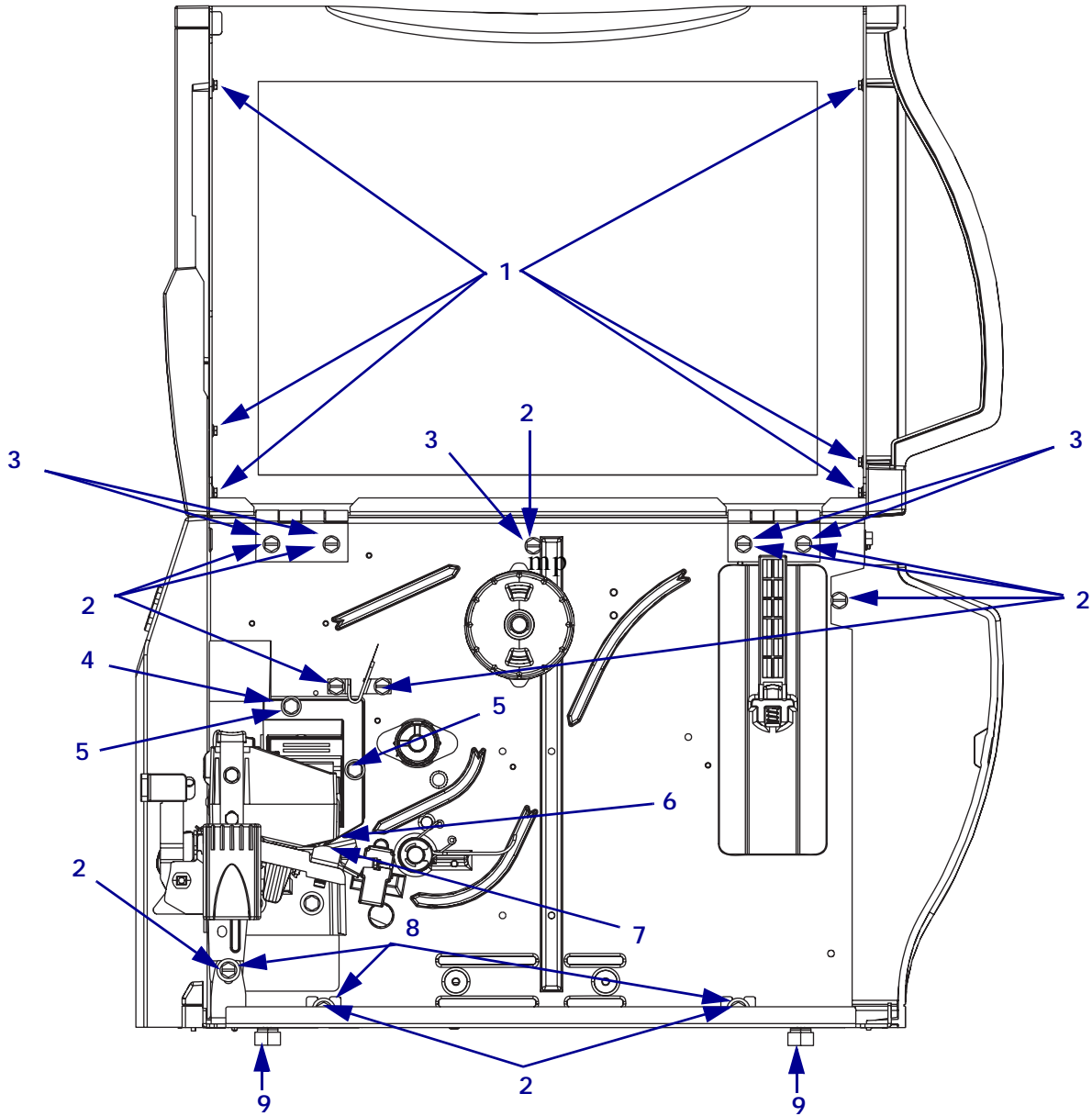


Table AG • Hardware View 2 (Printer Rear)

Item	Part Number	Description	Qty
1	HW77237	Screw, M4 × 0.7 × 10 (sold in quantities of 5)	5
2	HW43495	Screw w/external lock washer, M3 × 0.5 × 6 (sold in quantities of 25)	7
3	HW01155	Lock Washer (sold in quantities of 100)	2
4	HW22416	Standoff, 4-40 (sold in quantities of 25)	2

Bold = Part available for purchase

Light italic = Part not available for purchase, listed and shown for reference only

Figure AG • Hardware View 2 (Printer Rear)

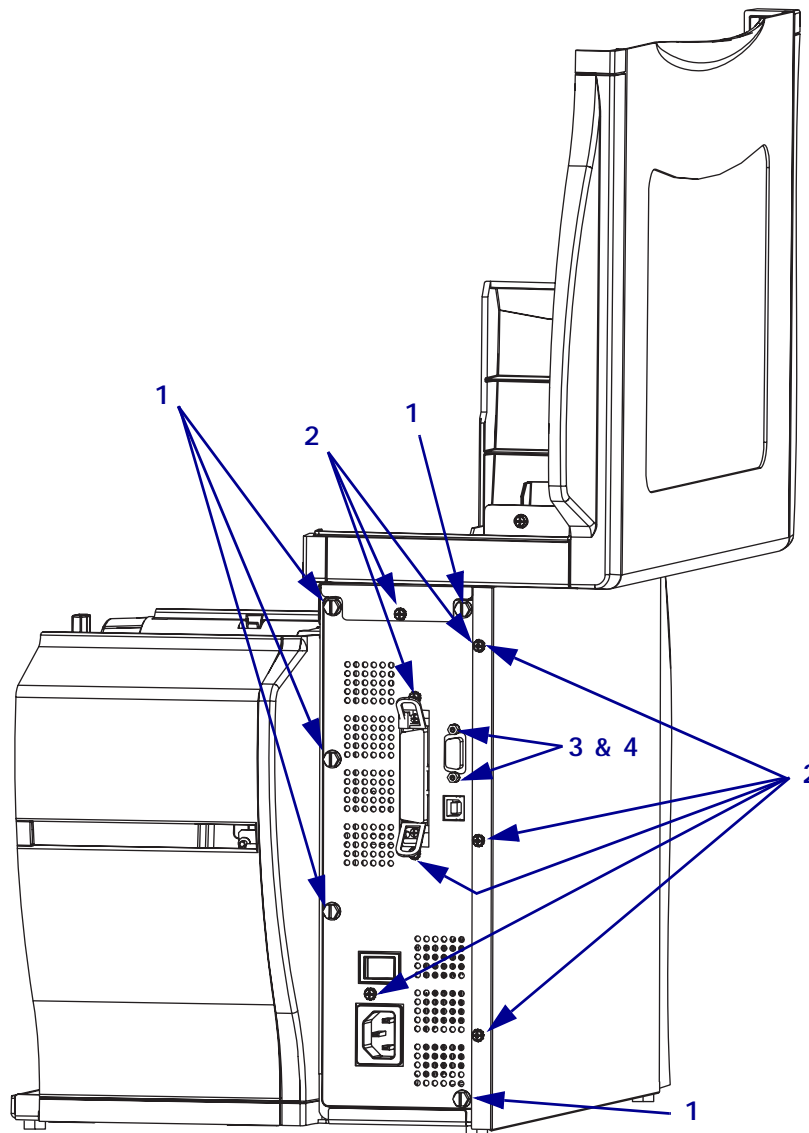


Table AH • Hardware View 3 (Printer Front)

Item	Part Number	Description	Qty
1	HW77043	Screw, M3 × 0.5 × 6 (sold in quantities of 25)	2
2	HW77231	Screw, M3 × 8	4
3	<i>29300</i>	Push Rivet	2

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Figure AH • Hardware View 3 (Printer Front)

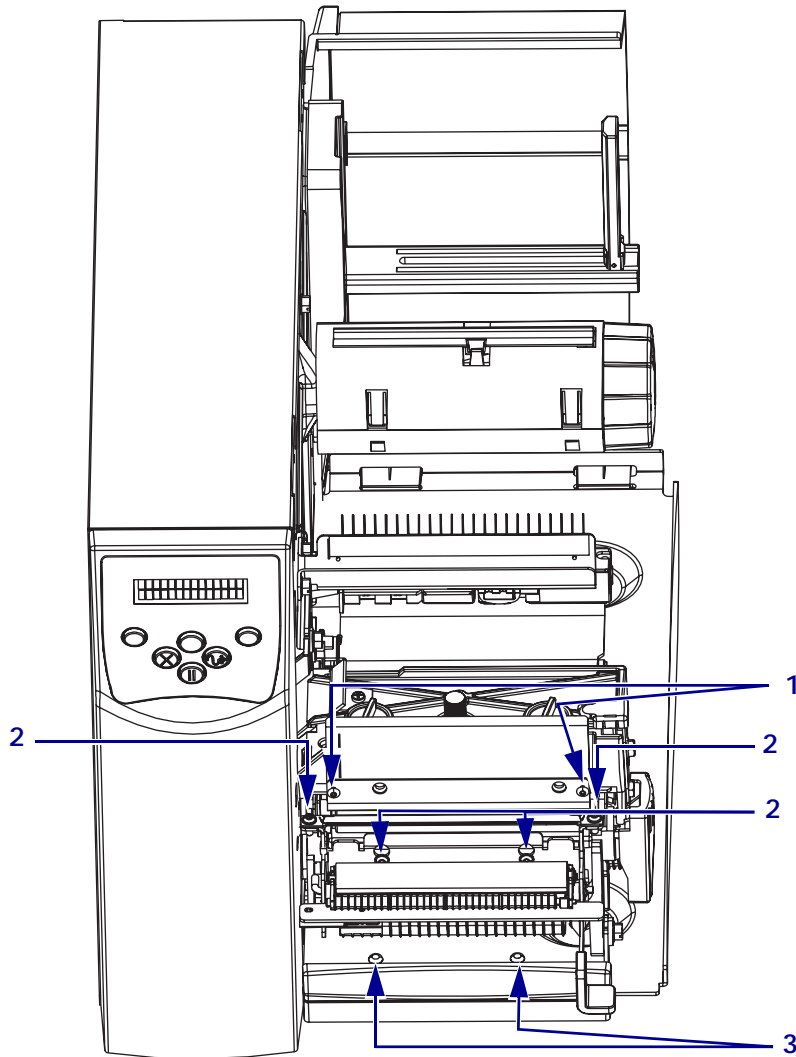
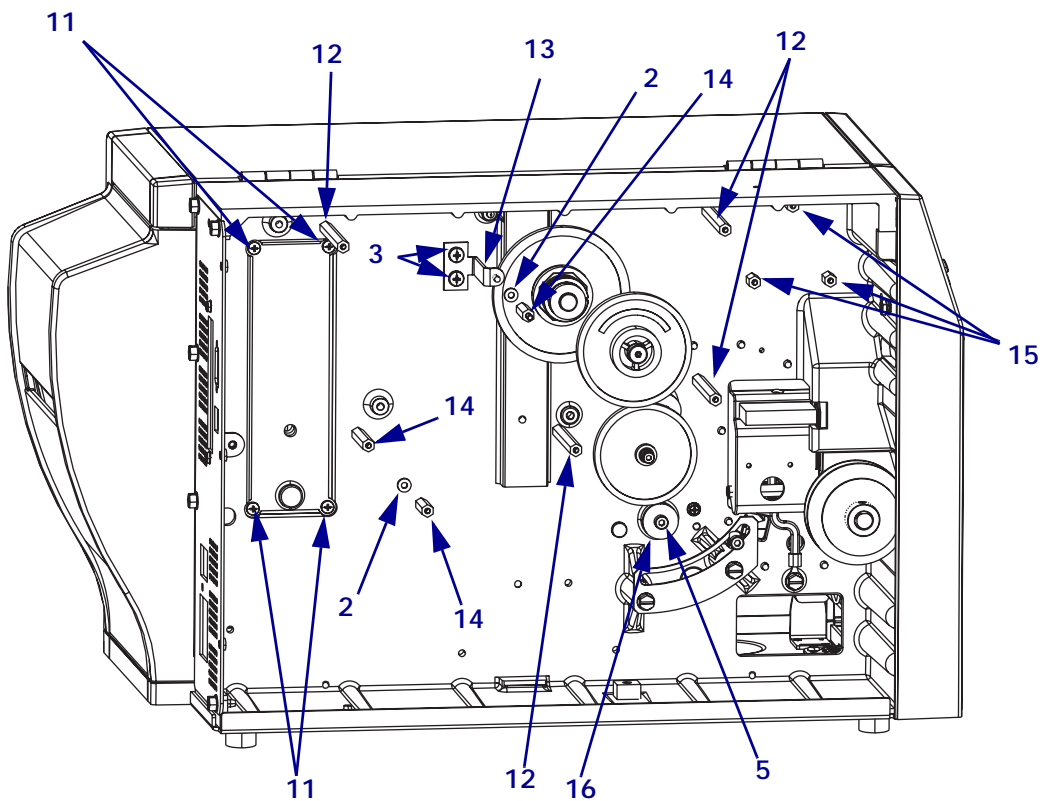
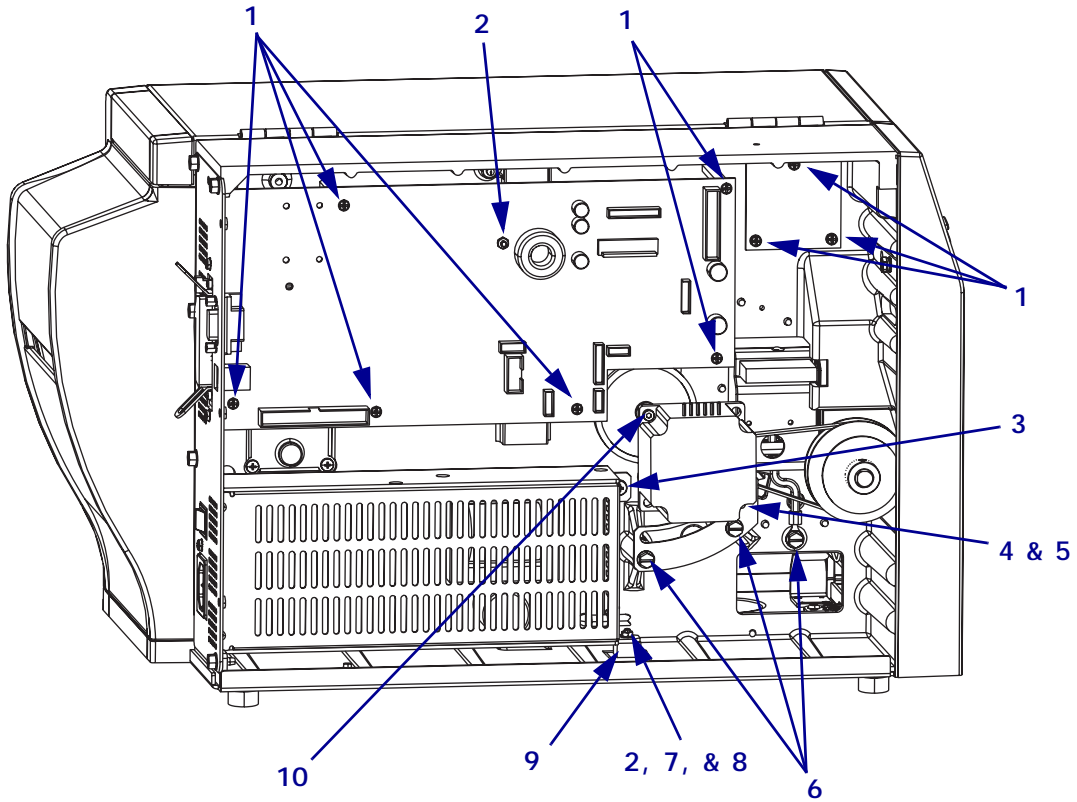


Table AI • Hardware View 4 (Electronics Side)

Item	Part Number	Description	Qty
1	HW10401	Screw, M3 × 0.5 × 4 (sold in quantities of 50)	6
2	HW10460	Nut, M3 × 2.4 × 5.5 (sold in quantities of 25)	1
3	<i>10423</i>	Screw, M4 × 0.7 × 6	1
4	HW77239	Adjustment Nut (sold in quantities of 25)	1
5	HW10432	Screw, M4 × 0.7 × 12 (sold in quantities of 25)	1
6	HW77237	Screw, M4 × 0.7 × 10 (sold in quantities of 5)	3
7	<i>10407</i>	External Lock Washer, M3 × 0.5 × 10	1
8	10412	Screw, M3 × 0.5 × 18	1
9	<i>20098</i>	Spacer	1
10	HW44924	Screw, M3 × 0.5 × 8 (sold in quantities of 25)	
11	<i>806136-608</i>	Screw, 2-28 × 3/16	4
12	<i>20077</i>	Standoff, M3 × 0.5 × 60	4
13	<i>20097</i>	MLB Bracket	1
14	<i>20079</i>	Standoff, M3 × 0.5 M/F × 21.4	2
15	<i>20091</i>	Standoff, M3 × 0.5 M/F × 10	3
16	HW44356	Washer, 0.198 × 0.75 × 0.085	1
Bold = Part available for purchase			
<i>Light italic = Part not available for purchase, listed and shown for reference only</i>			

Figure A1 • Hardware View 4 (Electronics Side)





Notes • _____



Data Ports

This section describes the standard communication ports available to connect the printer to your computer or network.

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Serial Data Port

See *RS-232 Serial* on page 15 for basic cabling information.

To communicate using the serial data port of the printer, you must choose the number of data bits, parity, and handshaking. Parity applies only to data transmitted by the printer because the parity of received data is ignored.

The values selected must be the same as those used by the host equipment connected to the printer. Default printer settings are 9600 baud, 8 data bits, no parity, and XON/XOFF. The printer will accept any host setting for stop bits.

Hardware Control Signal Descriptions

For all RS-232 input and output signals, the printer follows both the Electronics Industries Association (EIA) RS-232 and the Consultative Committee for International Telegraph and Telephone (CCITT) V.24 standard signal level specifications.

When DTR/DSR handshaking is selected, the Data Terminal Ready (DTR) control signal output from the printer controls when the host computer may send data. DTR ACTIVE (positive voltage) permits the host to send data. When the printer places DTR in the INACTIVE (negative voltage) state, the host must not send data.



Note • When XON/XOFF handshaking is selected, data flow is controlled by the ASCII Control Codes DC1 (XON) and DC3 (XOFF). The DTR Control lead has no effect.

Request To Send (RTS) is a control signal from the printer that is connected to the Clear To Send (CTS) input at the host computer.

Pin Configuration

Connect the serial data cable to the female DB-9 connector on the back of the printer. For all RS-232 connections through a DB-25 cable, use a DB-9 to DB-25 interface module (see [DB-9 to DB-25 Connections](#) on page 363).

Table A-1 shows the pin configuration of the serial data connector.

Table A-1 • Serial Connector Pin Configuration

Pin No.	Name	Description
1	+5 VDC	Connected to Pin 9
2	RXD	Receive data—data input to printer
3	TXD	Transmit data—data output from printer
4	DTR	Data terminal ready—output from printer
5	SG	Signal ground
6	DSR	Data set ready—input to printer
7	RTS	Request to send—output from printer
8	CTS	Clear to send—input to printer
9	+5 VDC	+5 VDC at 750 mA (connected to Pin 1) The maximum current draw may be limited by option configuration.

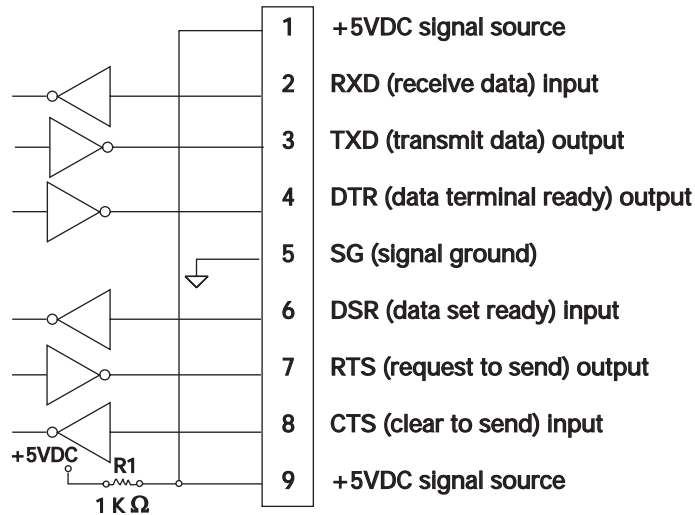
RS-232 Interface Connections

The printer is configured as Data Terminal Equipment (DTE). [Figure A-1](#) shows the internal connections of the printer's RS-232 connector.



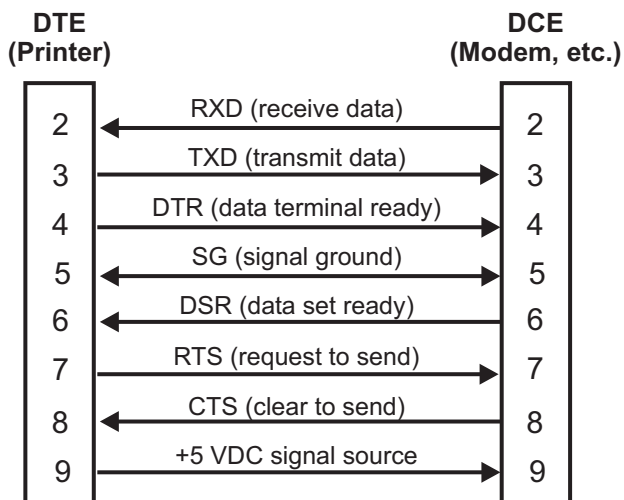
Note • Use a null modem (crossover) cable to connect the printer to a computer or any other DTE device.

Figure A-1 • RS-232 DB9 MLB Connections



When the printer is connected via its RS-232 interface to Data Communication Equipment (DCE) such as a modem, use a standard RS-232 (straight-through) interface cable. [Figure A-2](#) illustrates the connections required for this cable.

Figure A-2 • RS-232 to DCE Cable Connectors

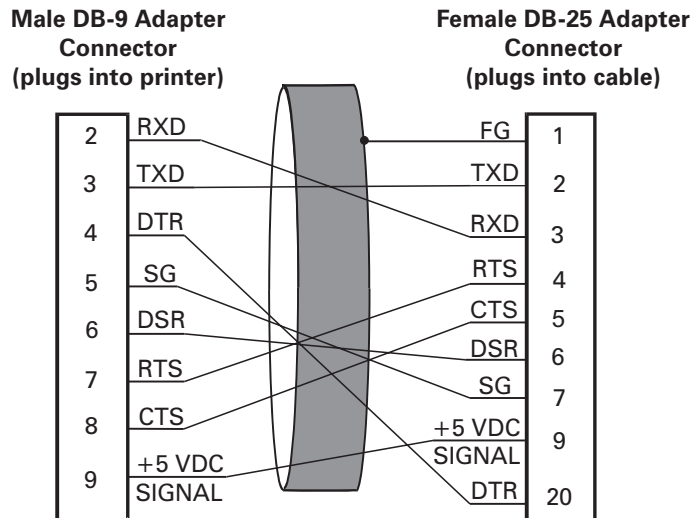


NOTE • Pin 1 is unused and unterminated at the printer.

DB-9 to DB-25 Connections

To connect the printer's RS-232 DB-9 interface to a DB-25 connector, an interface adapter is required. A generic DB-25 adapter can be used, although the +5 VDC signal source would not be passed through the adapter. [Figure A-3](#) shows the connections required for the DB-9 to DB-25 interface.

Figure A-3 • DB-9 to DB-25 Cable Connections

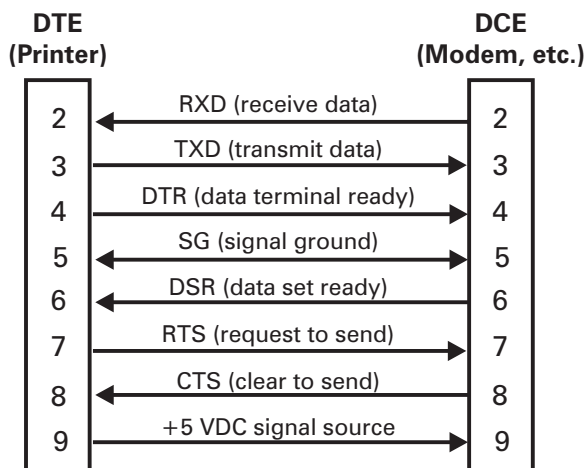


NOTE: Pin 1 of DB-9 connector is unused and unterminated.

Modem Connection

When the printer is connected via its RS-232 interface to Data Communication Equipment (DCE) such as a modem, use a standard RS-232 (straight-through) interface cable. [Figure A-4](#) shows the connections required for this cable.

Figure A-4 • RS-232 Cable Connections



NOTE: Pin 1 is unused and unterminated at the printer.

Parallel Data Port

The parallel data interface supports IEEE 1284 bidirectional parallel communications in nibble mode. The parallel interface provides a means of communication that typically is faster than the serial interface methods. In this method, the bits of data that make up a character are sent all at one time over several wires in the cable, one bit per wire.

When communicating via the parallel port, the values selected on the printer must be the same as those used by the host equipment connected to the printer. Port selection for status information is determined by the channel sending the request. The parallel port can be set for bidirectional or unidirectional communication. The default setting is bidirectional.

Parallel Cabling Requirements

See [IEEE 1284 Bidirectional Parallel on page 16](#) for basic cabling information.

A standard 36-pin parallel connector is available on the back of the printer for connection to the data source. An IEEE-1284 compatible bidirectional parallel data cable is required when this communication method is used. The required cable must have a standard 36-pin parallel connector on one end that is plugged into the mating connector located at the rear of the printer. The other end of the cable connects to the printer connector at the host computer. Port selection for status information is determined each time the printer is turned on.

Parallel Port Interconnections

[Table A-2](#) shows the pin configuration and function of a standard computer-to-printer parallel cable.

Table A-2 • Parallel Cable Pin Configuration

36-Pin Connectors	Description
1	nStrobe/HostClk
2–9	Data Bits 1–8
10	nACK/PtrClk
11	Busy/PtrBusy
12	PError/ACKDataReq
13	Select/Xflag
14	nAutoFd/HostBusy
15	Not used
16, 17	Ground
18	+5 V at 750 mA The maximum current draw may be limited by option configuration.
19–30	Ground

Table A-2 • Parallel Cable Pin Configuration (Continued)

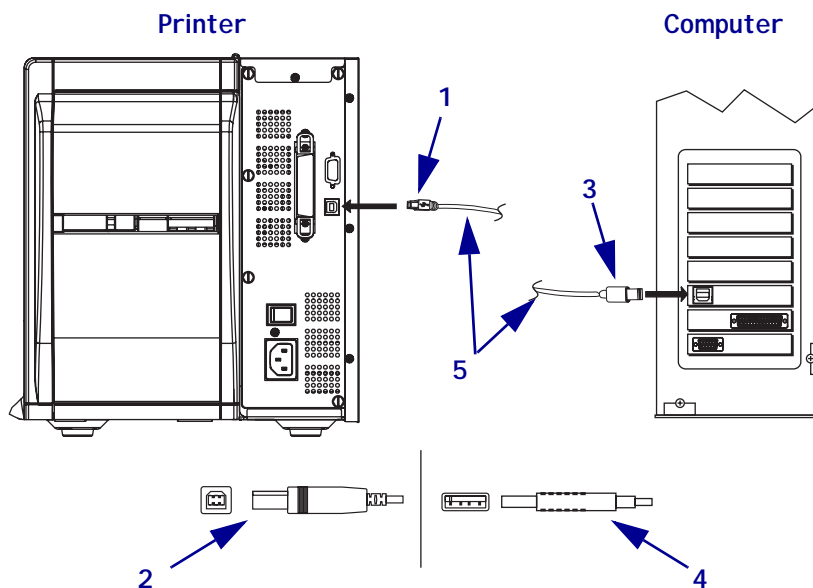
36-Pin Connectors	Description
31	ninit
32	nFault/NDataAvail
33, 34	Not used
35	+5 V through a 1.8 K Ω Resistor
36	NSelectin/1284 active

USB 1.1 Port

See [USB 1.1 Port on page 39](#) for basic cabling information.

A USB 1.1 port (which is USB 1.0 compatible) is available to connect your printer to the host equipment. The industry-standard USB cable has an A-male connector on one end and a B-male connector on the other end as shown in [Figure A-5](#).

Figure A-5 • USB Connectors



1	“B” male connector, attaching to printer
2	“B” male connector, detail
3	“A” male connector, attaching to computer
4	“A” male connector, detail
5	Maximum cable length = 16.4 ft. (5 m)



Note • Use a USB 1.1-certified compliant cable no longer than 16.4 ft (5 m) long.

A

Glossary



alphanumeric Indicating letters, numerals, and characters such as punctuation marks.

backfeed When the printer pulls the media and ribbon (if used) backward into the printer so that the beginning of the label to be printed is properly positioned behind the printhead. Backfeed occurs when operating the printer in Tear-Off and Applicator modes.

bar code A code by which alphanumeric characters can be represented by a series of adjacent stripes of different widths. Many different code schemes exist, such as the universal product code (UPC) or Code 39.

black mark A registration mark found on the underside of the print media that acts as a start-of-label indication for the printer. (See [continuous media](#).)

calibration (of a printer) A process in which the printer determines some basic information needed to print accurately with a particular media and ribbon combination. To do this, the printer feeds some media and ribbon (if used) through the printer and senses whether to use the direct thermal or thermal transfer print method, and (if using non-continuous media) the length of individual labels or tags.

character set The set of all letters, numerals, punctuation marks, and other characters that can be expressed by a particular font or bar code.

check digit A character added to a bar code symbol that indicates to the scanner that it has read the symbol correctly.

configuration The printer configuration is a group of operating parameters specific to the printer application. Some parameters are user selectable, while others are dependent on the installed options and mode of operation. Parameters may be switch selectable, control panel programmable, or downloaded as ZPL II commands. A configuration label listing all the current printer parameters may be printed for reference.

continuous media Label or tag-stock media that has no notch, gap, or web (media liner only) to separate the labels or tags. The media is one long piece of material.

core diameter The inside diameter of the cardboard core at the center of a roll of media or ribbon.

diagnostics Information about which printer functions are not working that is used for troubleshooting printer problems.

die-cut media A type of label stock that has individual labels stuck to a media liner. The labels may be either lined up against each other or separated by a small distance. Typically the material surrounding the labels has been removed. (See *non-continuous media*.)

direct thermal A printing method in which the printhead presses directly against the media. Heating the printhead elements causes a discoloration of the heat-sensitive coating on the media. By selectively heating the printhead elements as the media moves past, an image is printed onto the media. No ribbon is used with this printing method. Contrast this with *thermal transfer*.

direct thermal media Media that is coated with a substance that reacts to the application of direct heat from the printhead to produce an image.

dynamic RAM The memory devices used to store the label formats in electronic form while they are being printed. The amount of DRAM memory available in the printer determines the maximum size and number of label formats that can be printed. This is volatile memory that loses the stored information when power is turned off.

fanfold media Media that comes folded in a rectangular stack. Contrast this with *roll media*.

firmware This is the term used to specify the printer's operating program. This program is downloaded to the printer from a host computer and stored in FLASH memory. Each time the printer power is turned on, this operating program starts. This program controls when to feed the media forward or backward and when to print a dot on the label stock.

FLASH memory FLASH memory is non-volatile and maintains the stored information intact when power is off. This memory area is used to store the printer's operating program. In addition, this memory can be used to store optional printer fonts, graphic formats, and complete label formats.

Font A complete set of alphanumeric characters in one style of type. Examples include CG Times™, CG Triumvirate Bold Condensed™.

ips (inches-per-second) The speed at which the label or tag is printed. Zebra printers can print from 1 ips to 12 ips.

label An adhesive-backed piece of paper, plastic, or other material on which information is printed.

label backing (liner) The material on which labels are affixed during manufacture and which is discarded or recycled by the end-users.

liquid crystal display (LCD) The LCD is a back-lit display that provides the user with either operating status during normal operation or option menus when configuring the printer to a specific application.

light emitting diode (LED) Indicators of specific printer status conditions. Each LED is either off, on, or blinking depending on the feature being monitored.

lock-up This is the term generally used to describe a fault condition that, for no apparent reason, causes the printer to stop working.

media Material onto which data is printed by the printer. Types of media include: tag stock, die-cut labels, continuous labels (with and without media liner), non-continuous media, fanfold media, and roll media.

media sensor This sensor is located behind the printhead to detect the presence of media and, for non-continuous media, the position of the web, hole, or notch used to indicate the start of each label.

non-continuous media Media that contains an indication of where one label/printed format ends and the next one begins. Examples are die-cut labels, notched tag-stock, and stock with black mark registration marks.

non-volatile memory Electronic memory that retains data even when the power to the printer is turned off.

notched media A type of tag stock containing a cutout area that can be sensed as a start-of-label indicator by the printer. This is typically a heavier, cardboard-like material that is either cut or torn away from the next tag. (See *non-continuous media*.)

print speed The speed at which printing occurs. For thermal transfer printers, this speed is expressed in terms of ips (inches per second). Zebra offers printers that can print from 1 ips to 12 ips.

printhead wear The degradation of the surface of the printhead and/or the print elements over time. Heat and abrasion can cause printhead wear. Therefore, to maximize the life of the printhead, use the lowest print darkness setting (sometimes called burn temperature or head temperature) and the lowest printhead pressure necessary to produce good print quality. In the thermal transfer printing method, use ribbon that is as wide or wider than the media to protect the printhead from the rough media surface.

registration Alignment of printing with respect to the top of a label or tag.

ribbon A band of material consisting of a base film coated with wax or resin “ink.” The inked side of the material is pressed by the printhead against the media. The ribbon transfers ink onto the media when heated by the small elements within the printhead. Zebra ribbons have a coating on the back that protects the printhead from wear.

ribbon wrinkle A wrinkling of the ribbon caused by improper alignment or improper printhead pressure. This wrinkle can cause voids in the print and/or the used ribbon to rewind unevenly. This condition should be corrected by performing adjustment procedures.

roll media Media that comes supplied rolled onto a core (usually cardboard). Contrast this with *fanfold media*.

supplies A general term for media and ribbon.

symbology The term generally used when referring to a bar code.

tag A type of media having no adhesive backing but featuring a hole or notch by which the tag can be hung on something. Tags are usually made of cardboard or other durable material.

tear-off A mode of operation in which the user tears the label or tag stock away from the remaining media by hand.

thermal transfer A printing method in which the printhead presses an ink or resin coated ribbon against the media. Heating the printhead elements causes the ink or resin to transfer onto the media. By selectively heating the printhead elements as the media and ribbon move past, an image is printed onto the media. Contrast this with *direct thermal*.

void A space on which printing should have occurred, but did not due to an error condition such as wrinkled ribbon or faulty print elements. A void can cause a printed bar code symbol to be read incorrectly or not at all.

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