

XiIII/XiIIIPlus & R-140 **MAINTENANCE MANUAL**



Top: 90XiIIIPlus™ and 96XiIIIPlus™

Bottom: 140XiIIIPlus™, 170XiIIIPlus™, and 220XiIIIPlus™



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SECTION 1 SYSTEM DESCRIPTION

DESCRIPTION

The Zebra *XiIII*[™] and *XiIIIPlus*[™]-Series thermal transfer demand printers are versatile label and ticket printers designed to print high-quality bar codes, various sizes and styles of alphanumeric characters, and graphics in either the thermal transfer or direct thermal mode. The *XiIII*-Series printers have the flexibility to meet a variety of applications. The Zebra Programming Language II (ZPL II[®]) allows the programmer to format the printed material. ZPL II is transparent to protocol converters and allows the *XiIII*-Series printers to be integrated easily with most systems and host mainframes.

The Zebra *XiIII*-Series consists of the 90*XiIII*[™], 96*XiIII*[™], 140*XiIII*[™], 170*XiIII*[™], 220*XiIII*[™], and R-140[™] printers.

The Zebra *XiIIIPlus*[™]-Series consists of the 90*XiIIIPlus*[™], 96*XiIIIPlus*[™], 140*XiIIIPlus*[™], 170*XiIIIPlus*[™], and 220*XiIIIPlus*[™] printers.

The R-140 is an RFID (Radio Frequency Identification) thermal transfer demand printer that is capable of printing and encoding “smart labels”—printable labels embedded with ultra-thin 13.56 MHz RFID transponders. All mechanical and electrical components are the same as the 140*XiIII*, with the exception of the addition of the encoder, mounted within the extrusion, and the upper media guide.

The *XiIII* and *XiIIIPlus* are mechanically identical. The difference is in the electronics and cabling.

In this manual *XiIII*-family refers to *XiIII*, *XiIIIPlus*, and R-140-Series printers.

SCOPE

This manual contains the information necessary for the proper maintenance of the Zebra *XiIII*-family of printers. Information presented applies to all *XiIII* and *XiIIIPlus*-Series models unless otherwise indicated.

Section 1 System Description provides an overview of the contents of this maintenance manual, as well as overall description and specifications of the *XiIII*-family of printers.

Section 2 Operation Overview details the printer operator controls, power and data cable hookup, loading supplies in all modes, setting up software, calibration, and configuration.

Section 3 Troubleshooting presents the diagnostic tests that are built into the *XiIII*-family of printers. Examples of the labels that print for most of these diagnostic tests are illustrated. Troubleshooting tables showing symptoms, diagnosis, and action assist the repair technician in quickly locating and repairing a printer fault. Example labels illustrate several common misalignment conditions and the best methods of adjustment.

Section 4 Maintenance discusses recommended cleaning procedures for the printer and printhead. Recommended cleaning agents and a preventive maintenance schedule are specified. Disassembly, replacement, and reassembly instructions for the *XiIII*-family of printers are provided. Required tools and test equipment are specified. Adjustment procedures are provided along with the required tensions, torque, and tolerances. Instructions on AC power fuse replacement are also contained in this section.

Section 5 Maintenance and Assembly Drawings provides the assembly drawing and parts lists.

Section 6 Option Kits provides disassembly, installation, and reassembly instructions for the *XiIII*-family option kits. Required tools and test equipment are specified. Adjustment procedures are provided along with the required tensions, torque, and tolerances.

RELATED MANUALS

A further description of the printer models may be found in the *XiIII-Series–11992L*, *XiIIIPlus–11348L*, and *R-140–48040L* User's Guides. More information on ZPL II programming language can be found in the *ZPL II Programming Guide Volume 1: Command Reference (PN 45541L)*, *ZPL II Programming Guide Volume 2: (PN 45542L)* and the *ZebraNet Networking: Print Server II Operations Guide (PN 45537L)*.

This section of the manual is intended to supplement the printer's User's Guide by providing additional information to aid the service technician in troubleshooting and maintaining the printer.

PRINTER SPECIFICATIONS

Options

Cutter	IBM [®] twinax interface
Rewind	IBM coax interface
BAR-ONE Windows™-based WYSIWYG on-screen label design and print application software	ZebraNet [®] PrintServer II™, including Ethernet interface (10Base-T), WebView graphical setup and printer control, and Alert unsolicited error notification
Cutter tray	RS-485 interface
Cutter-rewind	Downloadable fonts
Media supply spindle (1.6 inch/40 mm core)	Font cards
Media supply spindle (3 inch/76 mm core)	DRAM memory expandable to 12 MB**
Double-hinged media door with clear panel	Memory cards
Applicator interface	Printer drivers for Windows operating systems (excluding Windows XP)
Real-time clock for XiIII only*	Wireless Card
Advanced counter*	

* Standard in the *XiIIIPlus*.

** Available for XiIII **Only**, 16 MB SDRAM standard on *XiIIIPlus*, with 12 MB available to user.

ZEBRA PROGRAMMING LANGUAGE II (ZPL II)

Downloadable graphics, scalable and bitmap fonts, and label formats	Controlled via mainframe, mini-computer, PC, portable data terminal
Object copying between memory areas (RAM, memory card, and internal FLASH)	Programmable quantity with print, pause, and cut control
Code Page 850 character set	Communicates in printable ASCII characters
Adjustable print cache	Error-checking protocol
Data compression	Slew command
Automatic virtual input buffer management	Serialized fields
Automatic memory allocation	In-spec OCR-A and OCR-B
Format inversion	UPC/EAN
Mirror image printing	User-programmable password
Four-position field rotation (0°, 90°, 180°, and 270°)	Status message to host upon request

BAR CODES

Bar code ratios—2:1, 7:3, 5:2, and 3:1	LOGMARS
Codabar (supports ratios of 2:1 up to 3:1)	TLC 39
CODABLOCK	Planet Code
Code 11	MaxiCode
Code 39 (supports ratios of 2:1 up to 3:1)	Micro PDF
Code 49 (2-dimensional bar code)	MSI
Code 93	PDF-417 (2-dimensional bar code)
Code 128 (with subsets A, B, and C and UCC case C codes)	Plessey
Data Matrix (except rectangular)	POSTNET
EAN-8, EAN-13, EAN extensions	QR-Code
Industrial 2 of 5	Standard 2 of 5
Interleaved 2 of 5 (supports ratios of 2:1 up to 3:1, Modulus 10 Check Digit)	UPC-A, UPC-E, UPC extensions
ISBT-128	Check digit calculation where applicable

STANDARD PRINTER FONTS

Fonts A, B, C, D, E, F, G, H, and GS are expandable up to 10 times, height and width independently. However, fonts E and H (OCR-A and OCR-B) are not considered “in-spec” when expanded.

The scalable smooth font 0 (CG Triumvirate™ Bold Condensed) is expandable on a dot-by-dot basis, height and width independent, while maintaining smooth edges. Maximum character size depends on available memory.

IBM Code Page 850 international character sets are available in the fonts A, B, C, D, E, F, G, and 0 through software control.

Table 1-1. 200 dpi (8 dots/mm) Printhead

Fonts	Dot Matrix (H x W) (Defaults)	Type*	Minimum Character Size (H x W)	Maximum Character/Inches
A	9 x 5	U-L-D	0.044 inch x 0.029 inch	33.9
B	11 x 7	U	0.054 inch x 0.044 inch	22.6
C, D	18 x 10	U-L-D	0.088 inch x 0.059 inch	16.9
E	28 x 15	OCR-B	0.138 inch x 0.098 inch	10.1
F	26 x 13	U-L-D	0.128 inch x 0.079 inch	12.7
G	60 x 40	U-L-D	0.295 inch x 0.236 inch	4.2
H	21 x 13	OCR-A	0.103 inch x 0.093 inch	10.7
GS	24 x 24	SYMBOL	0.118 inch x 0.118 inch	8.4
Ø	15 x 12	SCALEABLE (SMOOTH) FONT		

* Type: U – Upper Case, L – Lower Case, D – Descenders

Table 1-2. 300 dpi (12 dots/mm) Printhead

Fonts	Dot Matrix (H x W) (Defaults)	Type*	Minimum Character Size (H x W)	Maximum Character/ Inches
A	9 x 5	U-L-D	0.030 inch x 0.020 inch	50.0
B	11 x 7	U	0.037 inch x 0.030 inch	33.3
C, D	18 x 10	U-L-D	0.060 inch x 0.040 inch	25.0
E	41 x 20	OCR-B	0.137 inch x 0.087 inch	11.5
F	26 x 13	U-L-D	0.087 inch x 0.053 inch	18.8
G	60 x 40	U-L-D	0.200 inch x 0.160 inch	6.3
H	30 x 19	OCR-A	0.100 inch x 0.093 inch	10.7
GS	24 x 24	SYMBOL	0.080 inch x 0.080 inch	12.5
∅	Variable	SCALEABLE (SMOOTH) FONT		

* Type: U – Upper Case, L – Lower Case, D – Descenders

Table 1-3. 600 dpi (24 dots/mm) Printhead

Fonts	Dot Matrix (H x W) (Defaults)	Type*	Minimum Character Size (H x W)	Maximum Character/ Inches
A	9 x 5	U-L-D	0.015 inch x 0.010 inch	100.0
B	11 x 7	U	0.018 inch x 0.015 inch	66.7
C, D	18 x 10	U-L-D	0.030 inch x 0.020 inch	50.0
E	41 x 20	OCR-B	0.137 inch x 0.087 inch	11.54
F	26 x 13	U-L-D	0.043 inch x 0.027 inch	37.5
G	60 x 40	U-L-D	0.100 inch x 0.080 inch	12.5
H	30 x 19	OCR-A	0.100 inch x 0.093 inch	10.7
GS	24 x 24	SYMBOL	0.040 inch x 0.040 inch	25.0
∅	Variable	SCALEABLE (SMOOTH) FONT		

* Type: U – Upper Case, L – Lower Case, D – Descenders

FONT A-- ABCDwxyz 12345
FONT B-- ABCDWXYZ 12345
FONT D -- ABCDwxyz 12345
FONT E -- (OCR-B) ABCDwxyz 12345
FONT F -- ABCDwxyz 12345
FONT G -- Az 4
FONT H -- (OCR-A) UPPER CASE ONLY
FONT O -- (Scalable) ABCDwxyz 12345
FONT GS -- ® ©
FONT P-- **ABCDwxyz 12345**
FONT Q-- **ABCDwxyz 12345**
FONT R-- **ABCDwxyz 12345**
FONT S-- **ABCDwxyz 12345**
FONT T-- **ABCDwxyz 12345**
FONT U-- **ABCDwxyz 12345**
FONT V-- **ABCDwxyz 12345**

Figure 1-1. Default Font Examples

MEDIA CONSIDERATIONS

Media Specifications		90/96X/III- family In inches (mm)	140X/III- family In inches (mm)	170X/III- family In inches (mm)	220X/III- family In inches (mm)	
Minimum label length	Tear-off	0.7 (18)	0.7 (18)	0.7 (18)	0.7 (18)	
	Peel-off	0.5 (13)	0.5 (13)	0.5 (13)	0.5 (13)	
	Cutter	1.5 (38)	1.5 (38)	1.5 (38)	1.5 (38)	
	Rewind	0.25 (6)	0.25 (6)	0.25 (6)	0.25 (6)	
Total media width (includes liner, if any)	Minimum	0.79 (20)	1.57 (40)	2.00 (51)	4.25 (108)	
	Maximum	3.54 (90)	5.51 (140)	7.1 (180)	8.80 (224)	
Total thickness (includes liner, if any)	Minimum	0.003 (0.076)	0.003 (0.076)	0.003 (0.076)	0.003 (0.076)	
	Maximum	0.012 (0.305)	0.012 (0.305)	0.012 (0.305)	0.012 (0.305)	
Cutter maximum full-width media thickness		0.014 (0.35)	0.009 (0.23)	0.007 (0.18)	0.005 (0.14)	
Roll media core diameter		3 (76)	3 (76)	3 (76)	3 (76)	
Maximum roll diameter		8 (203)	8 (203)	8 (203)	8 (203)	
Inter-label gap	Minimum	0.079 (2)	0.079 (2)	0.079 (2)	0.079 (2)	
	Preferred	0.118 (3)	0.118 (3)	0.118 (3)	0.118 (3)	
	Maximum	0.157 (4)				
Maximum internal fanfold media pack size (label + liner) L x W x H		8.0 x 3.54 x 4.5 (203 x 140 x 114)	8.0 x 5.51 x 4.5 (203 x 140 x 114)	8.0 x 7.1 x 4.5 (203 x 140 x 114)	8.0 x 8.8 x 4.5 (203 x 224 x 114)	
Ticket/tag sensing notch L x W		0.12 x 0.25 (3 x 6)	0.12 x 0.25 (3 x 6)	0.12 x 0.25 (3 x 6)	0.12 x 0.25 (3 x 6)	
Ticket/tag sensing hole diameter		0.125 (3)	0.125 (3)	0.125 (3)	0.125 (3)	
Effective leading edge registration accuracy*	Vertical	±0.060 (±1.5)	±0.070 (±1.8)	±0.060 (±1.5)	±0.050 (±1.3)	
	Horizontal	±0.060 (±1.5)	±0.070 (±1.8)	±0.060 (±1.5)	±0.060 (±1.5)	
Additional specs. for black mark sensing	Mark length (measuring parallel to label/tag edge)	Minimum	0.12 (3)	0.12 (3)	0.12 (3)	
		Maximum	0.43 (11)	0.43 (11)	0.43 (11)	
	Mark width (measuring perpendicular to label/tag edge)	Minimum	0.43 (11)	0.43 (11)	0.43 (11)	
		Maximum	Full media width	Full media width	Full media width	
	Mark location		Marks must be located within 0.040 (1) of the inside media edge.			
	Mark density		> 1.0 ODU (Optical Density Unit)	> 1.0 ODU (Optical Density Unit)	> 1.0 ODU (Optical Density Unit)	> 1.0 ODU (Optical Density Unit)
	Maximum density of the back of the media on which the black mark is printed		0.5 ODU	0.5 ODU	0.5 ODU	0.5 ODU
* Media registration and minimum label length are affected by media type and width, ribbon type, print speed, and printer mode of operation. Performance improves as these factors are optimized. Zebra recommends always qualifying any application with thorough testing.						

RIBBON CONSIDERATIONS

Ribbon Specifications		90/96X/III-family		140X/III-family		170X/III-family		220X/III-family	
Ribbon width (<i>To protect the printhead from wear, Zebra recommends using ribbon at least as wide as the media you are using.</i>)	Maximum	Inches '=feet	mm m=meter	Inches '=feet	mm m=meter	Inches '=feet	mm m=meter	Inches '=feet	mm m=meter
	Minimum	3.54	90	5.10	130	6.7	170	8.60	220
Standard lengths	2:1 media to ribbon roll ratio	984'	300 m	984'	300 m	984'	300 m	984'	300 m
	3:1 media to ribbon roll ratio	1476'	450 m	1476'	450 m	1476'	450 m	1476'	450 m
Roll size	Inner diameter of core	1.0	25.4	1.0	25.4	1.0	25.4	1.0	25.4
	Outside diameter of full ribbon roll	3.2	81.3	3.2	81.3	3.2	81.3	3.2	81.3

PRINTER CONSIDERATIONS

Printing Specifications		90X/III-family	96X/III-family	140X/III-family	170X/III-family	220X/III-family
		In inches (mm)	In inches (mm)	In inches (mm)	In inches (mm)	In inches (mm)
Resolution		300 dot/inch (12 dots/mm)	600 dots/inch (23.5 dots/mm)	203 dots/inch (8 dots/mm)	300 dots/inch (12 dots/mm) 203 dots/inch (8 dots/mm)	203 dots/inch (8 dots/mm) 300 dots/inch (12 dots/mm)
Dot size (square)		0.0033 × 0.0039 (0.084 × 0.100)	0.0016 × 0.0016 (0.042 × 0.042)	0.0049 × 0.0049 (0.125 × 0.125)	0.0033 × 0.0039 (0.084 × 0.100)	0.0049 × 0.0049 (0.125 × 0.125)
First dot location		0.023 ±0.035 (0.6 ±0.9)	0.023 ±0.035 (0.6 ±0.9)	0.10 ±0.035 (2.5 ±0.89)	0.10 ±0.035 (2.5 ±0.89)	0.10 ±0.035 (2.5 ±0.89)
Max print width		3.4 (86)	3.2 (81)	5.04 (128)	6.6 (168)	8.5 (216)
Print length (max)	Non-continuous printing	Memory				
		8 MB (standard on X/III)	39 (991)	20 (508)	39 (991)	39 (991)
	12 MB (optional on X/III)					
	16 MB (standard on X/III Plus)	39 (991)	39 (991)	39 (991)	39 (991)	39 (991)
Continuous printing	8 MB (standard on X/III)	80 (2032)	20 (508)	121 (3073)	41 (1041)	71 (1803)
	12 MB (optional on X/III)					
	16 MB (standard on X/III Plus)	100 (2540)	52 (1321)	150 (3810)	100 (2540)	150 (3810)
Bar code modulus ("x") dimension	Ladder (rotated orientation)	3.9 mil to 39 mil	1.6 mil to 16 mil	4.9 mil to 49 mil	3.9 mil to 39 mil	4.9 mil to 49 mil
	Picket fence (non-rotated)	3.33 mil to 33 mil	1.6 mil to 16 mil	4.9 mil to 49 mil	3.33 mil to 33 mil	4.9 mil to 49 mil
Thin film printhead with Element Energy Equalizer (E ³) [®]		Yes	Yes	Yes	Yes	Yes

GENERAL SPECIFICATIONS

Physical Characteristics	90/96X/III-family		140X/III-family		170X/III-family		220X/III-family	
	inch	mm	inch	mm	inch	mm	inch	mm
Height	15.5	393.7	15.5	393.7	15.5	393.7	15.5	393.7
Width	9.15	232.4	11.15	283.2	13.15	334.4	15.65	397.5
Depth	19.5	495.3	19.5	495.3	19.5	495.3	19.5	495.3
Weight (without options)	lbs	kg	lbs	kg	lbs	kg	lbs	kg
	50.0	22.7	55.0	25.0	67.0	30.5	72.0	32.7

ELECTRICAL REQUIREMENTS

- Auto-ranging 90–264 VAC; 48–62 Hz
- 5 Amps for entire AC voltage range
- 25 Watts standby power consumption
- 200/200/300/300/300 Watts maximum power consumption for 90 X/III, 96X/III, 140X/III, 170X/III, 220X/III-family, respectively (printing 100% black at 6 ips)
- UL 1950 Listed – Certified to CAN/CSA-C22.2 No. 950-M89 and IEC 950
- Complies with CISPR22B and with FCC and Canadian DOC class “A” rules
- Carries the CE mark of compliance

POWER CORD SPECIFICATIONS

- The overall length must be less than 9.8’ (3.0 m).
- It must be rated for at least 5 A, 250 V.
- Refer to [Figure 1-2](#). The chassis ground (earth) MUST be connected to ensure safety and reduce electromagnetic interference. The ground connection is handled by the third wire (earth) in the power cord.
- The AC power plug and IEC 320 connector must bear the certification mark of at least one of the known international safety organizations shown in [Figure 1-3](#).

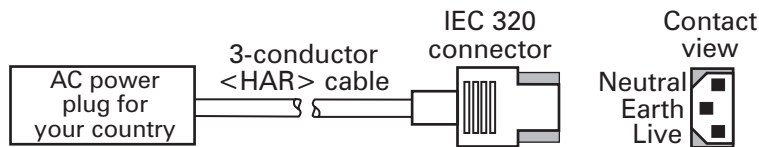


Figure 1-2. AC Power Cord

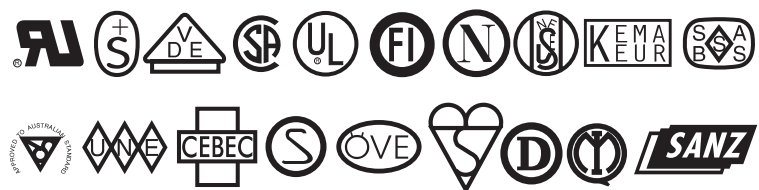


Figure 1-3. International Safety Organizations Symbols

ENVIRONMENTAL OPERATING RANGES

Temperature	Operating	Thermal Transfer: +41°F to +104°F (+5°C to +40°C) Direct Thermal: +32°F to +104°F (0°C to +40°C)
	Storage	-40°F to +140°F (-40°C to +60°C)
Non-condensing relative humidity	Operating	20% to 85%
	Storage	5% to 85%

COMMUNICATION SPECIFICATIONS

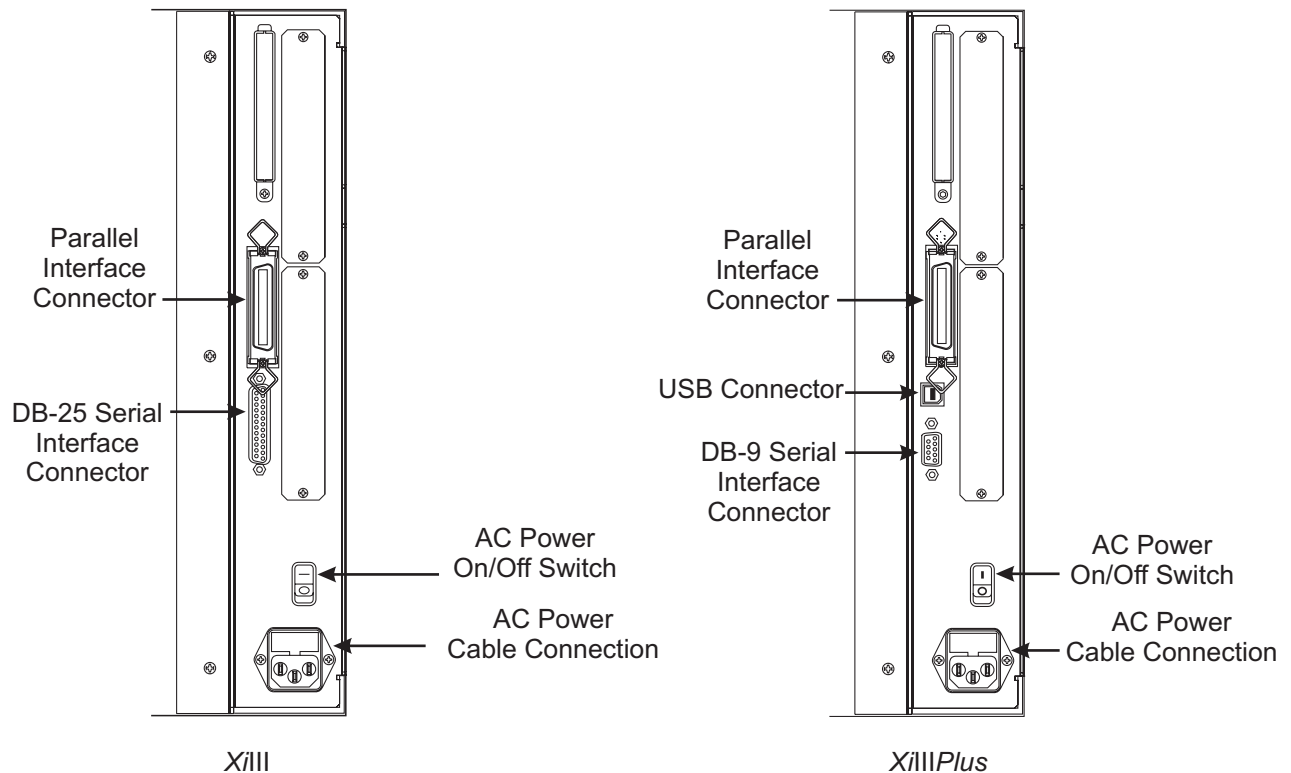


Figure 1-4. Interface Connections

System Considerations

Interfaces

The method of interfacing this printer to a data source depends on the communication options installed in the printer.

For the *XiIII*, standard interfaces are an RS232 serial data port with a DB25S connector and a bi-directional parallel port on the rear panel.

For the *XiIIIPlus*, standard interfaces are an RS-232 serial data port with a BB9 connector, a (IEEE 1284 compliant) bi-directional parallel port, and a USB 2.0 port.

For all RS-232 input and output signals, the printer follows both the Electronics Industries Association's (EIA) RS-232 specifications and the Consultative Committee for International Telegraph and Telephone (CCITT) V.24 standard signal level specifications.

The optional ZebraNet PrintServer II enables the printer to be connected to 10Base-T Ethernet networks, and a Wireless Card Socket option is available as well. In addition, the IBM Twinax or IBM Coax option is available for those applications that require them.

Cabling 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.



Notes • Zebra printers comply with FCC “Rules and Regulations, “ Part 15, Subpart J, for Class A Equipment, using fully shielded 6 in. (2 m) data cables. User of longer cables or unshielded cables may increase radiated emissions above the Class A limits.

RS-422 and RS-485 applications should use twisted shielded pairs as recommended in the TIA/EIA.-485 Specification.

Cable Connections

Parallel Data Port

Refer to [Figure 1-5](#).

When communicating via the parallel port, refer to [page 1-16](#) to configure the communication parameters for the printer.

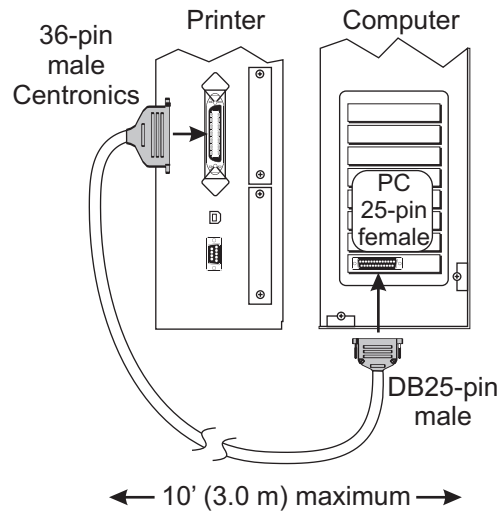


Figure 1-5. Parallel Data Port

Serial Data Port

Refer to [Figure 1-6](#).

When communicating via an asynchronous serial data port, the baud rate, number of data, parity, and handshaking are user-selectable. 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.

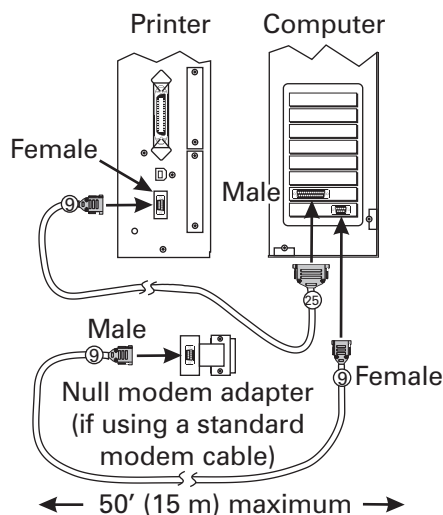


Figure 1-6. Serial Data Port

USB 2.0 Port

In addition to serial and parallel data ports, a USB 2.0 port (which is USB 1.1- and 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 (see [Figure 1-7](#)). Zebra recommends using a USB 2.0-certified compliant cable that is a maximum of 5 m in length (Zebra part # 33011).

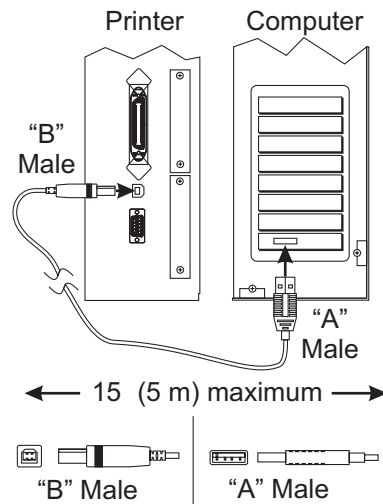


Figure 1-7. USB Port

Communication Buffer

The size of the buffer is 5000 characters. As data is received by the *XiIII*-family printers, the processor monitors the number of characters in the buffer. If the buffer is filled beyond 4744 characters, the *XiIII* turns the Data Terminal Ready (DTR) control lead to the Off (O) condition (negative voltage) or transmits an XOFF (DC-3) control character to the host. When the buffer empties below 4250 characters, the *XiIII* turns DTR to the On (I) condition (positive voltage) or transmits an XON (DC-1) control character to the host.

Serial Data Communication Interface Overview

XiIII Serial Data

For *XiIIIPlus* Serial Data, see [page 1-14](#).

The Zebra *XiIII* has a single Data Terminal Equipment (DTE) port that supports RS-232, RS-422, and RS-485 serial data communications. Baud rate, parity, data length, stop bits, and XON/XOFF or DTR control protocols are front-panel selectable.

Refer to [Figure 1-8](#). A 25-pin DB-25S connector at the rear of the printer provides the data and control leads necessary to communicate through all three signalling methods. The method used is specific to the application of the printer.

For all RS-232 data and control input and output signals, the Zebra *XiIII* follows both the Electronic Industries Association's (EIA) RS-232 and the Consultative Committee for International Telegraph and Telephone (CCITT) V.24 specifications.

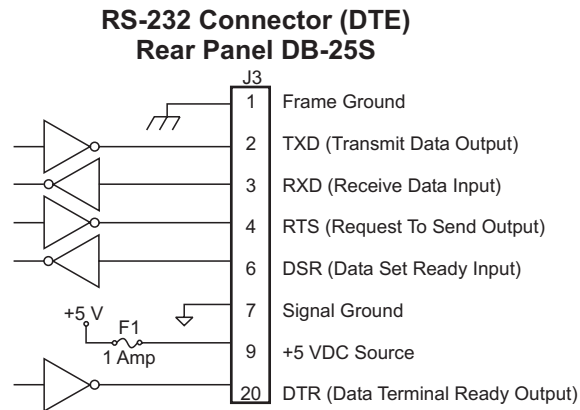


Figure 1-8. X1111 DB-25 RS-232 Connector

Table 1-4. X1111 DB-25 RS-232 Connector

Pin No.	Name	Description
1	FG	Frame ground for cable shield
2	TXD	Transmit Data—Output from printer—RS-232
3	RXD	Receive Data—Input to printer—RS-232
4	RTS	Request to Send—Output from printer—RS-232
6	DSR	Data Set Ready—Input to printer—RS-232
7	SG	Signal ground—RS-232
9	+5 VDC	+5 VDC Output—1 Amp maximum
11	SGR	Signal Ground Reference—RS-422/485
13	B-	Data input—RS-422/485
14	B-	Data output—RS-422/485
16	A+	Data input—RS-422/485
19	A+	Data output—RS-422/485
20	DTR	Data Terminal Ready—Output from printer—RS-232



Note • Pins 5, 8, 10, 12, 15, 17-18, and 21-25 are not used and are not terminated.

***XiiiPlus* Serial Data**

The connection for this standard interface is made through the female DB-9 connector on the rear panel. A DB-9 to DB-25 interface module is available for all RS-232 connections through a DB-25 cable.

For all RS-232 input and output signals, the printer follows both the Electronics Industries Association's (EIA) RS-232 specifications and the Consultative Committee for International Telegraph and Telephone (CCITT) V.24 standard signal level specifications.

Table 1-5 shows the pin configuration and function of the rear panel serial data connector on the printer.

Table 1-5. *Xiii* DB-9 RS-232 Connector

Pin No.	Name	Description
1	—	Not connected
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 signal output



Notes • Pin 9 is also available as a +5 VDC power source at 750 mA. The maximum current draw may be limited by option configuration. To enable this capability, a jumper on the computer's main logic board needs to be installed on JP1, pins 2 and 3.

An interface module is required for RS-422/RS-485 interface support.

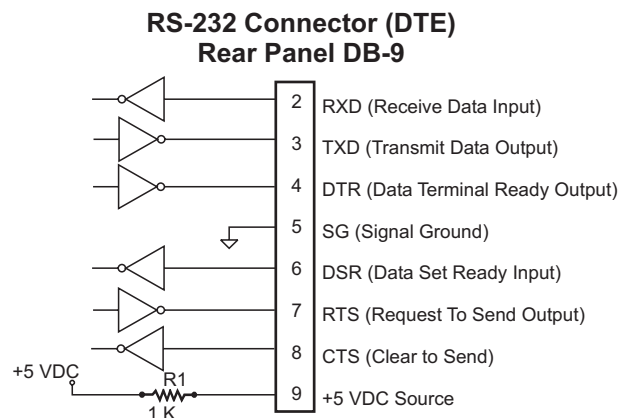


Figure 1-9. *XiiiPlus* DB-9 RS-232 Connector



Notes • Pin 1 is unused and not terminated.

The cable used to connect the printer to a computer must be a null modem (crossover) cable. To connect the printer to any other DTE devices, a null modem cable must also be used.

Serial Communication Signal Levels

Refer to [Figure 1-10](#). RS-232 data signals are defined as either Mark or Space, while control signals are On (I) (Active-Positive Voltage) or Off (O) (Inactive-Negative Voltage). Although the permitted voltage levels can range from ±3 VDC to ±25 VDC, the levels for the *XiIII*-family printers are as follows:

RS-232 Transmit and Receive Data

Mark or Off (O) = -7 to -10 VDC

Space or On (I) = +7 to +10 VDC

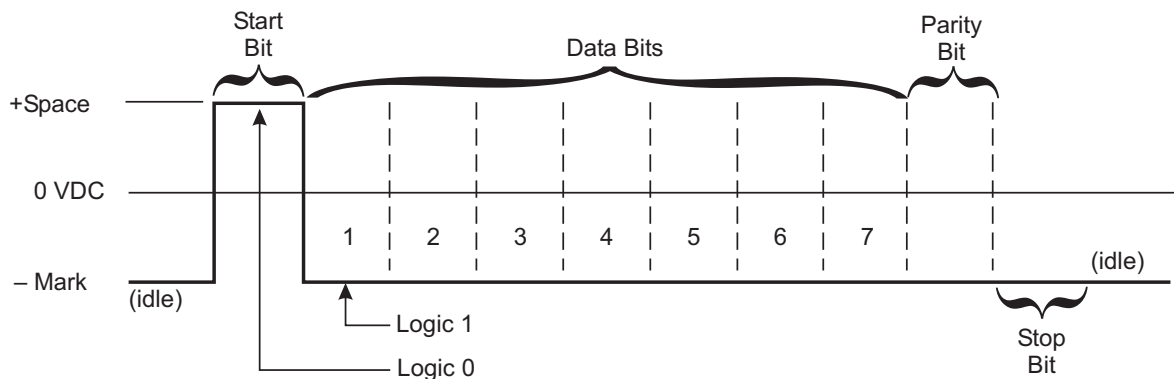


Figure 1-10. RS-232 Signaling

Refer to [Figure 1-11](#). RS-422 and RS-485 data signals are also either Mark or Space. The voltage levels are +5 VDC and 0 VDC when monitored from a specified reference point. The levels for the *XiIII*-family printer, when referenced to signal ground, are:

RS-422 and RS-485 Transmit and Receive Data

Mark Output/Input A = +5 V and Output/Input B = 0 V

Space Output/Input A = 0 V and Output/Input B = +5 V

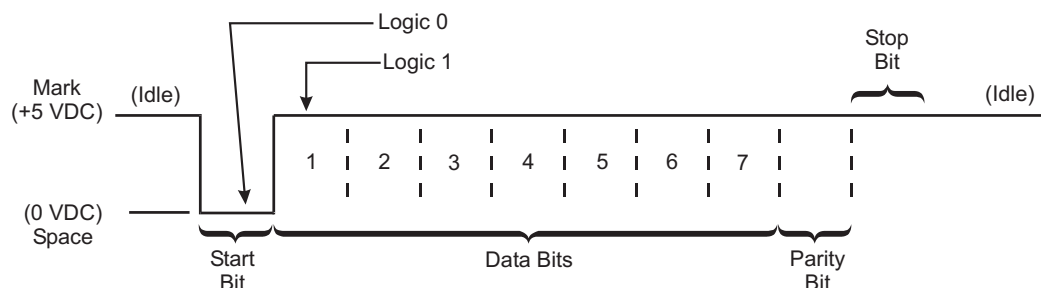


Figure 1-11. RS-422 and RS-485 Signaling

Communication Code

The *XiIII*-family printer sends and receives ASCII (American Standard Code for Information Interchange) characters in one of two formats, Serial Data or Parallel Data.



Note • When using the serial data format, the baud rate, number of data and stop bits per character, and parity are selectable. Parity applies only to data transmitted by the *XiIII*-family printer. For received data, the parity bit is ignored.

Parallel Data Communications Interface Overview

A standard 36-pin parallel connector is available at the rear of the printer for connection to the data source. Under normal circumstances, data sent from the printer to the host in response to a Printer Status Request command is sent through the RS-232 serial port. However, if the host has a properly configured IEEE-1284 parallel port that is recognized by the printer, status information is returned through the parallel port. Port selection for status information is determined each time the printer is turned On (I).

Parallel Port Connector

The following table shows the pin configuration and function of a standard PC-to-printer Centronics parallel cable.

Table 1-6. Parallel Port Connector Pin Configuration

36-Pin Connector	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 and 17	Ground
18	+5 V @ 1A (<i>XiIIIPlus</i> =750mA)
19–30	Signal Grounds
31	ninit
32	nFault/NDataAvail
33 and 34	Not Used
35	+5 V through a 4.7 K Ω Resistor
36	NSelectIn/1284 active



Note • Optional Ethernet networking communications is available with ZebraNet PrintServer II. Refer to the ZebraNet Networking: PrintServer II Operating Guide.

Optional Interface Boards

For information about the IBM plug-compatible Twinax Interface, the IBM plug-compatible Coax Interface, or the RS-485 network interface, refer to the instructions that accompany the interface option.



SECTION 2 OPERATIONS OVERVIEW

INTRODUCTION

Thank you for purchasing this high-quality Zebra *XiIII*, R-140, or *XiIIIPlus* printer, manufactured by the industry leader in quality, service, and value—Zebra Technologies. For over 30 years, Zebra has provided customers with the highest caliber of products and support.

- This manual provides all of the information you need to operate your printer.
- The *ZPL II[®] Programming Guide Volume I and Volume II* (part # 45540L) shows you how to create the perfect label format for your application. These books also explain how, through ZBI™ (Zebra Basic Interpreter), you can extend the power of ZPL II by allowing custom programs to be written that operate within the printer and directly interface with bar code scanners and keyboard display devices. In addition, the books contain information about your printers enhanced operating system features. There are three ways to obtain these books: on the accessory CD-ROM (supplied with the printer), on Zebra's Web site (www.zebra.com), or as printed manuals that can be ordered from your distributor.
- The *ZebraNet Networking: PrintServer II Installation and User's Guide* (part # 45537L) explains how you can quickly set up your printer on an IP network and experience ZebraLink, the revolutionary real-time connectivity and control solution for Zebra printers (optional ZebraNet PrintServer II required).
- The *ZebraNet Wireless Card Socket Installation and User's Guide* (part # 48622L) provides detailed information on Zebra's wireless Ethernet solution for the *XiIIIPlus* printers.
- The *Maintenance Manual* (part # 48152L) contains the information you need to maintain your printer.

UNPACKING AND INSPECTION

Carefully unpack and inspect the printer for possible damage incurred during shipment.

- Check all exterior surfaces.
- Raise the media access door and inspect the media compartment.

In case shipping is required, save the carton and all packing material. Contact your authorized Zebra reseller for instructions.

Reporting Damage

If you discover shipping damage:

- Immediately notify the shipping company and file a damage report with them.
Zebra Technologies is not responsible for any damage incurred during shipment of the equipment and will not repair this damage under warranty.
- Keep the carton and all packing material for inspection.
- Notify your authorized Zebra reseller.

Storage

If you are not placing the printer into operation immediately, repackage it using the original packing materials. The printer may be stored under the following conditions:

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

MEDIA AND RIBBON REQUIREMENTS

Because print quality is affected by media and ribbon, printing speeds, and printer operating modes, it is very important to run tests for your applications.

We **strongly recommend** the use of Zebra Technologies-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.

- Continuous roll media, fanfold media, or card stock with optional perforations and registration holes may be used.
- Printhead life may be reduced by the abrasion of exposed paper fibers when using perforated media.
- In thermal transfer mode, ribbon **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 printing in direct thermal mode, ribbon is not used and should not be loaded in the printer.)

POWER CORD



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.



Note • 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 Power Cord Specifications below.

The power cord connector must be plugged into the mating connector on the rear of the printer before it is connected to a live power source.

Make sure that the POWER switch (located at the back of the printer) is in the Off (O) position before connecting the power cable to an electrical outlet.

Power Cord Specifications

- The overall length must be less than 9.8' (3.0 m).
- It must be rated for at least 5 A, 250 V.
- Refer to [Figure 2-1](#). The chassis ground (earth) **must** be connected to ensure safety and reduce electromagnetic interference. The ground connection is handled by the third wire (earth) in the power cord.

- The AC power plug and IEC 320 connector must bear the certification mark of at least one of the known international safety organizations shown in [Figure 2-2](#).

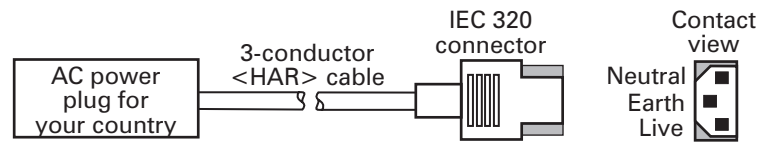


Figure 2-1. AC Power Cord

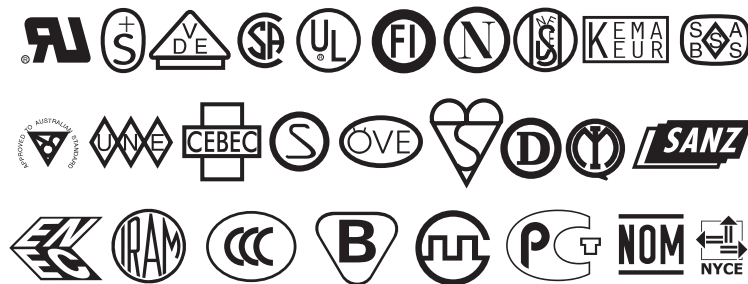


Figure 2-2. International Safety Organizations Symbols

PRINTER MEDIA LOADING OVERVIEW

[Figure 2-3](#) outlines the basic components of your printer. Depending on the options you have selected, your printer may look slightly different.

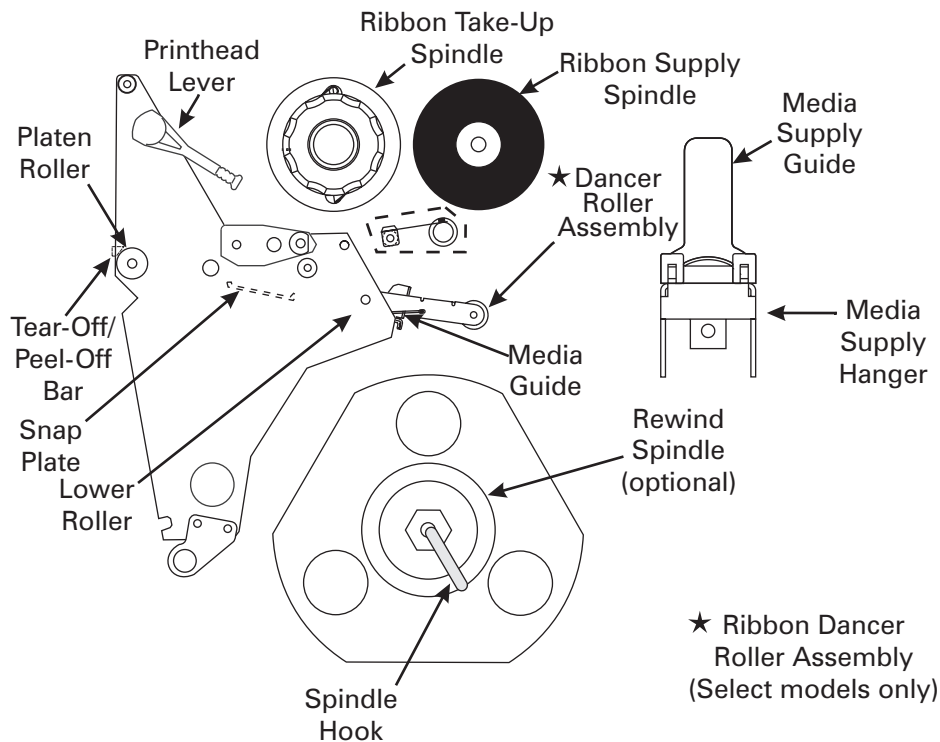


Figure 2-3. Xiii, R140, and XiiiPlus Overview

OPERATOR CONTROLS

This section discusses the functions of the various controls and indicators on the printer. The technician should become familiar with each of these functions.

Front Panel Display

The Front Panel Display communicates operational and programming modes and parameters.

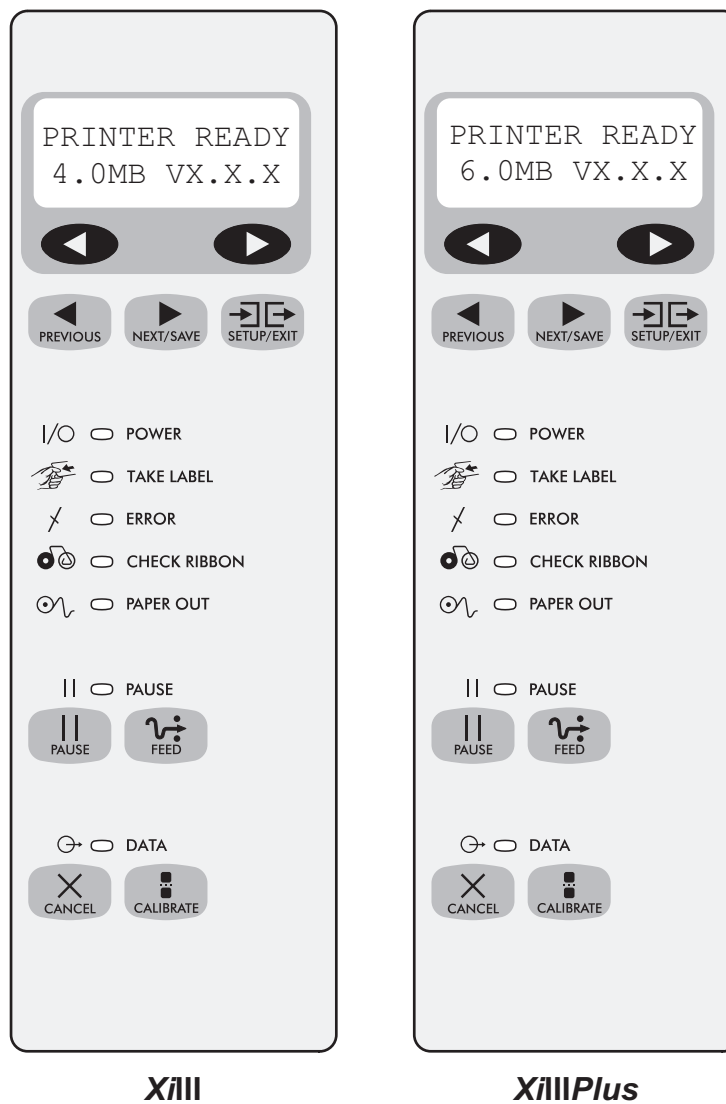






Figure 2-4. Front Panel





Front Panel Keys

Refer to [Figure 2-4](#).

Key	Function
	<p>Starts and stops the printing process.</p> <ul style="list-style-type: none"> • If the printer is not printing: no printing can occur. • If the printer is printing: printing stops once the current label is complete. • Press to remove error messages from the display. <p>NOTE: Pause Mode can also be activated via ZPL II (~PP, ^PP).</p>
	<p>Forces the printer to feed one blank label each time the key is pressed.</p> <ul style="list-style-type: none"> • Printer not printing: one blank label immediately feeds. • Printing: one blank label feeds after the current batch of labels is complete. <p>NOTE: Equivalent to the Slew to Home Position (~PH, ^PH) ZPL II instruction.</p>
	<p>When in Pause Mode, this key cancels print jobs.</p> <ul style="list-style-type: none"> • Print job in queue: press once for each print job to be deleted. • Press and hold for several seconds to cancel all print jobs in the printer's memory. The DATA light turns Off.
	<p>When in Pause Mode, this key calibrates the printer for:</p> <ul style="list-style-type: none"> • Media length. • Media type (continuous or non-continuous). • Print mode (direct thermal or thermal transfer). • Sensor values.



Note • .XiIII, XiIIIPlus, and R-140 auto-calibrate when turned on.






	<ul style="list-style-type: none"> • Scrolls back to previous parameter. • Press and hold to go backward quickly through parameter sets.
	<ul style="list-style-type: none"> • Scrolls forward to the next parameter. Saves any changes made in the configuration and calibration sequence. • Press and hold to advance quickly through parameter sets.
	<p>Enters and exits the Configuration mode.</p>
	<p>These keys change the parameter values. They are used in different ways depending on the parameter displayed. Common uses are to increase/decrease a value, answer “yes” or “no,” indicate “On (I)” or “Off (O),” scroll through several choices, enter the password, or set up the printer for a firmware download.</p>

Front Panel Lights

Refer to [Figure 2-5](#).



Note • If two operating conditions occur simultaneously (for example, one that causes a light to be on constantly and one that causes the same light to flash), the light will flash.

Light	Status	Indication
Power	Off	The printer is Off (O) or power is not applied.
I/O	On	The printer is On (I).
Take Label 	Off	Normal operation.
	Flashing	(Peel-Off Mode only.) The label is available. Printing is paused until the label is removed.
Error	Off	Normal operation — no printer errors.
	Flashing	A printer error exists. Check the display screen for more information.
Check Ribbon	Off	Normal operation — ribbon (if used) is properly loaded.
	On	Printing is paused, the front panel displays a warning message, and the PAUSE light is On. <ul style="list-style-type: none"> • If the printer is in direct thermal mode: Ribbon is loaded. • If the printer is in thermal transfer mode: No ribbon is loaded.
Paper Out	Off	Normal operation — media is properly loaded.
	On	No media is under the media sensor. Printing is paused, the display shows an error message, and the PAUSE light is On.
Pause	Off	Normal operation.
II	On	The printer has stopped all printing operations. The PAUSE key was pressed, a pause command was included in the label format, the online verifier detected an error, or a printer error was detected. Refer to the display screen for more information.
Data	Off	Normal operation. No data being received or processed.
	On	Data processing or printing is taking place. No data is being received.
	Flashing	The printer is receiving data from or sending status information to the host computer. Flashing slows when the printer cannot accept more data, but returns to normal once data is again being received.

LOADING MEDIA



Note • A calibration must be performed when media and ribbon (if used) are first installed in the printer, or when this is a change to a different type of media or ribbon.

Tear-Off Mode

Refer to [Figure 2-5](#).

1. Open the printhead.
2. Slide the media guide and media supply guide as far from the printer frame as possible. Flip down the media supply guide.
3. Load media as shown.
4. Flip up the media supply guide. Slide in the media guide and media supply guide so they just touch, but do not restrict, the edge of the roll.
5. Close the printhead.

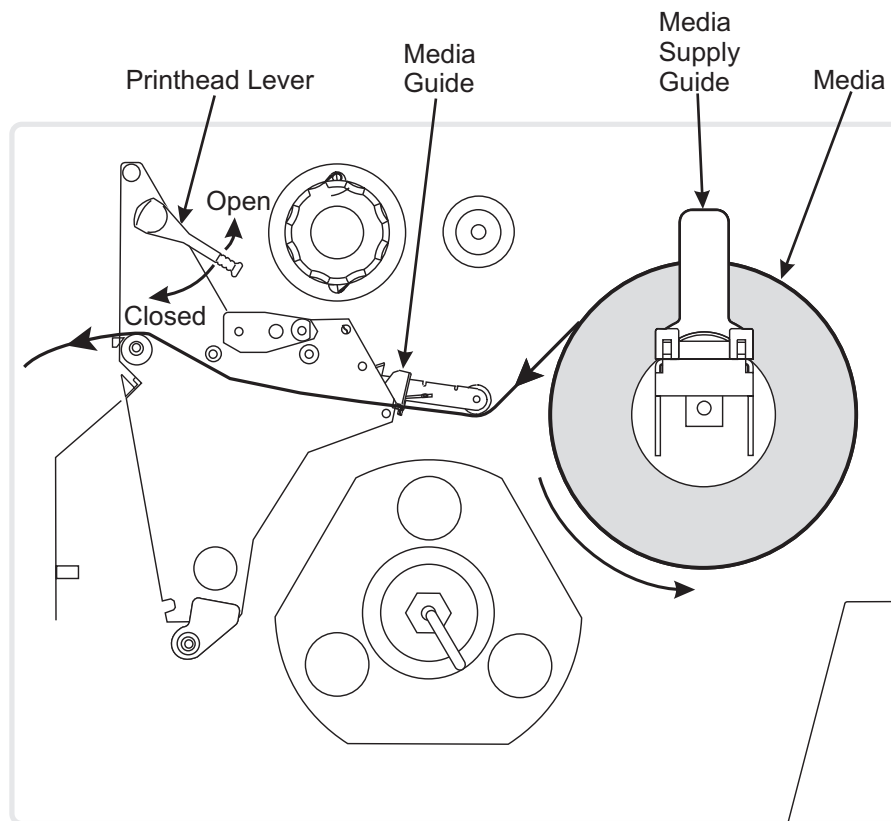


Figure 2-5. Roll Media Loading Tear-Off Mode

Peel-Off Mode



Note • Rewind option required.

Refer to [Figure 2-6](#).

1. Remove the rewind plate from the front of the printer (if installed). Store it on the two mounting screws on the inside of the front panel.
2. Open the printhead.
3. Slide the media guide and media supply guide as far away from the printer frame as possible. Flip down the media supply guide.
4. Load media as shown.

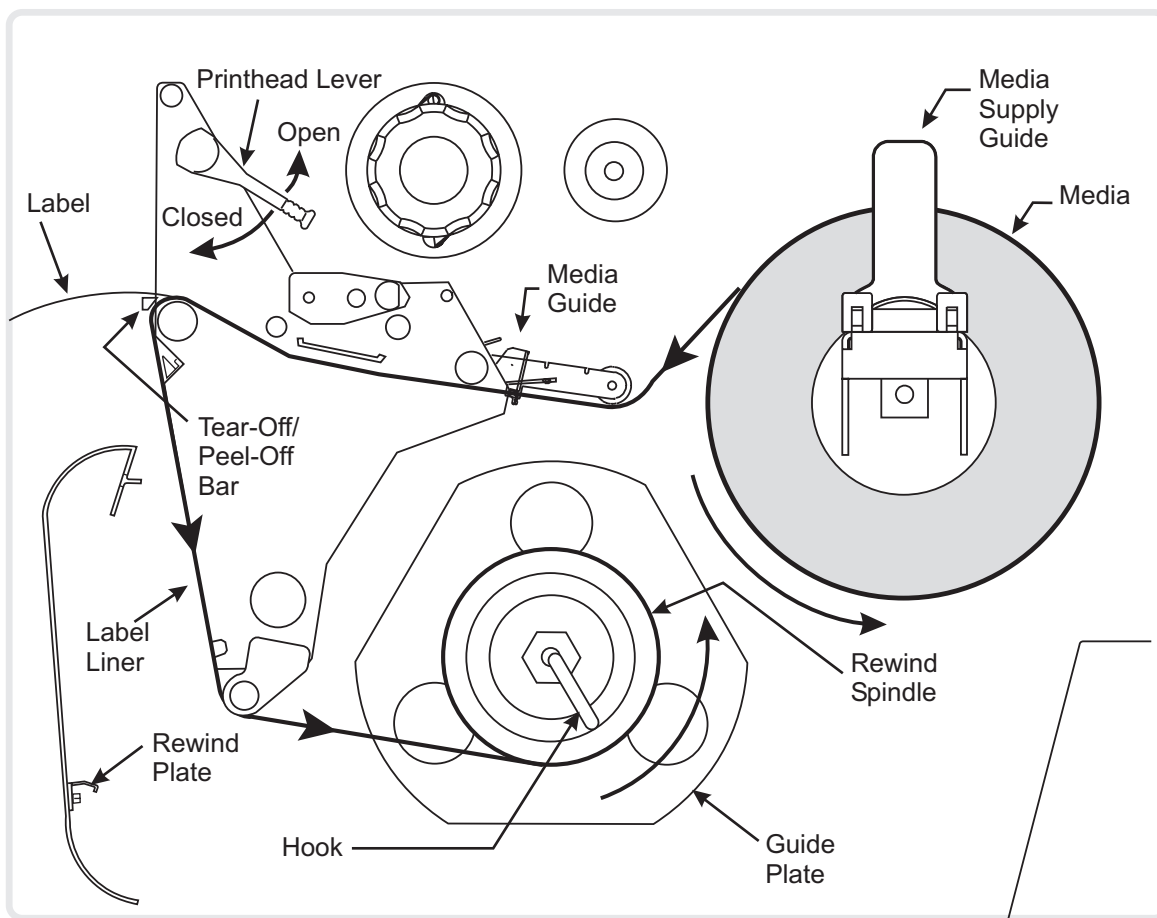


Figure 2-6. Peel-Off Mode Loading

5. When loading media, allow approximately 36 inches (90 cm) of media to extend past the tear-off/peel-off bar. Remove all labels from this portion to create a leader.
6. Remove the hook from the rewind spindle. If you are using a core, slide it onto the rewind spindle until it is flush against the guide plate.
7. Wind the label backing around either the 3-inch (76-mm) core or the rewind spindle, and reinstall the hook.

8. Flip up the media supply guide. Slide in the media guide and media supply guide so they just touch, but do not restrict, the edge of the roll.

Before closing the printhead, ensure that:

- The media is positioned against the inside guides.
- The media is taut and parallel with itself and the pathway when wound onto the rewind spindle/core.

9. Close the printhead.

To discard the label backing from the rewind spindle, refer to [Ribbon Loading on page 2-15](#).

Rewind Mode Loading (for Printers without Cutter Option)



Note • Rewind option required.

Refer to [Figure 2-7](#).

1. Remove the rewind plate from its storage location in front of the print mechanism inside the media compartment.
2. Invert the rewind plate so the lip on the attached hook plate points down.
3. Insert the hook plate lip approximately 1/2 inch (13 mm) into the lower opening in the side plate.
4. Align the upper end of the rewind plate with the corresponding opening in the side plate. Slide in the rewind plate so it stops against the printer's main frame.
5. Open the printhead.
6. Slide the media guide and media supply guide as far away from the printer frame as possible. Flip down the media supply guide.
7. Load media as shown.
8. When loading media, allow approximately 36 inches (91 cm) of media to extend past the printhead.
9. Remove the hook from the rewind spindle. If you are using a core, slide it onto the rewind spindle until it is flush against the guide plate.
10. Wind the labels around either the 3-inch (76-mm) core or the rewind spindle and reinstall the hook.
11. Flip up the media supply guide. Slide in the media guide and media supply guide so they just touch, but do not restrict, the edge of the roll.

Before closing the printhead, ensure that:

- The media is positioned against the inside guides.
- The media is taut and parallel with itself and the pathway when wound onto the rewind spindle/core.

12. Close the printhead.

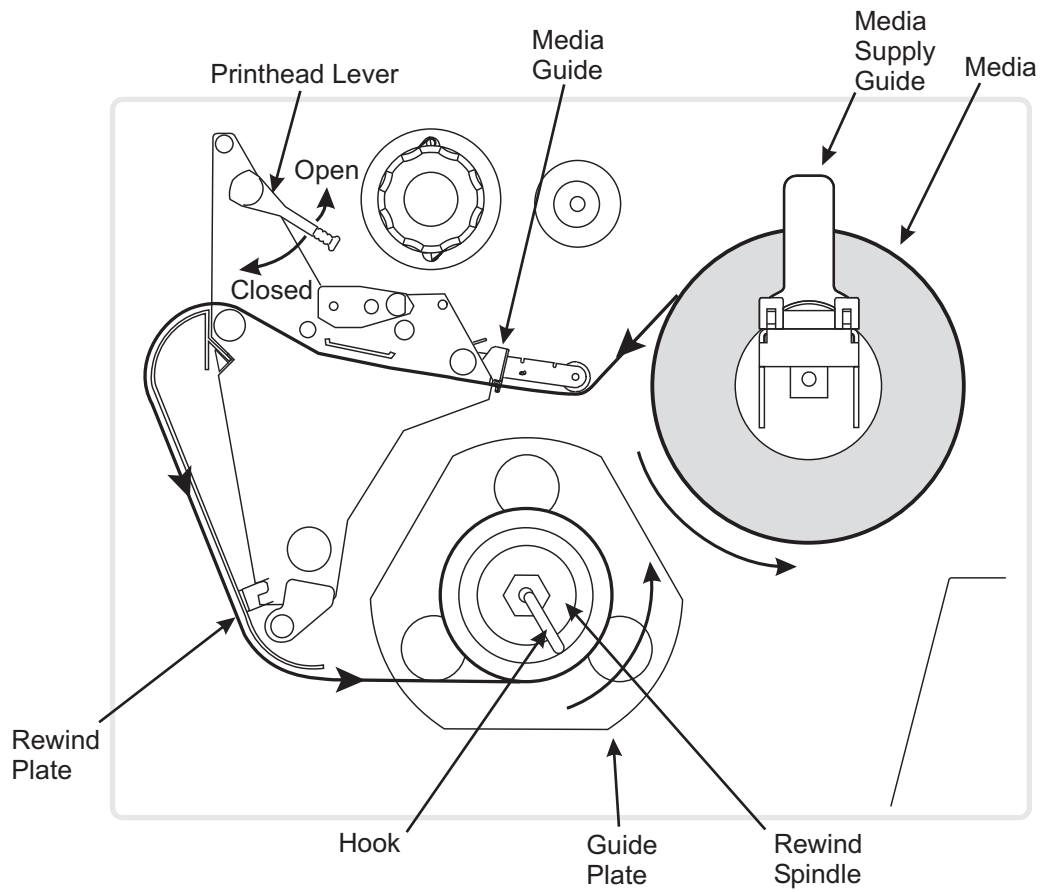


Figure 2-7. Rewind Mode without Cutter Option

Cutter Mode Loading



Note • Cutter option required.

Refer to [Figure 2-8](#).

1. Open the printhead.
2. Slide the media guide and media supply guide as far away from the printer frame as possible. Flip down the media supply guide.
3. Load media as shown.
4. Flip up the media supply guide. Slide in the media guide and media supply guide so they just touch, but do not restrict, the edge of the roll.
5. Close the printhead.
6. The printer automatically feeds out and cuts one label when the printer is turned On (I).

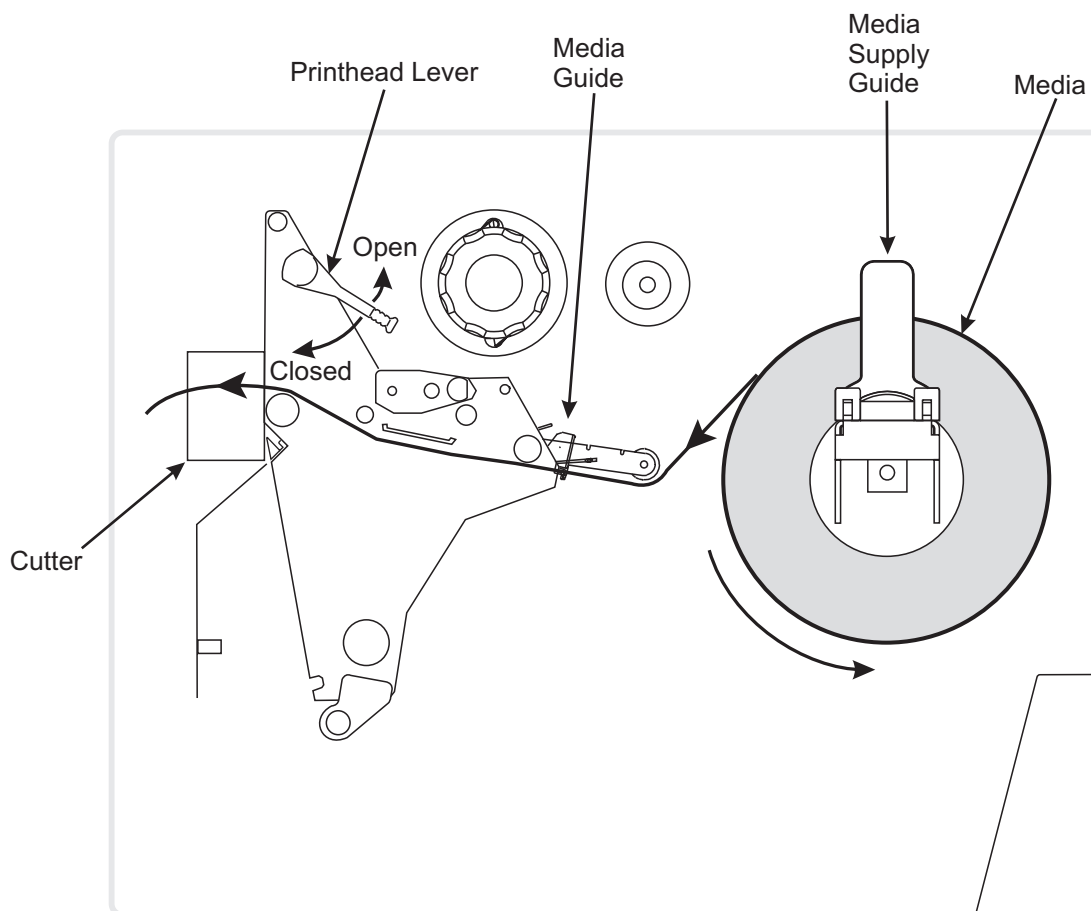


Figure 2-8. Cutter Mode

Rewind Mode (for Printers with Cutter Option)



Note • Cutter and rewind options required.

Refer to [Figure 2-9](#).

1. Remove the rewind plate from its storage location in front of the print mechanism inside the media compartment.
2. Invert the rewind plate so the lip on the attached hook plate points down.
3. Insert the hook plate lip approximately 1/2 inch (13 mm) into the lower opening in the side plate. Slide in the rewind plate so it stops against the printer's main frame.
4. Insert the two small tabs on the rewind plate into the corresponding slots in the cutter support bracket. (The rewind plate should spring into the proper position.)
5. Open the printhead.
6. Slide the media guide and media supply guide as far away from the printer frame as possible. Flip down the media supply guide.
7. Load media as shown.

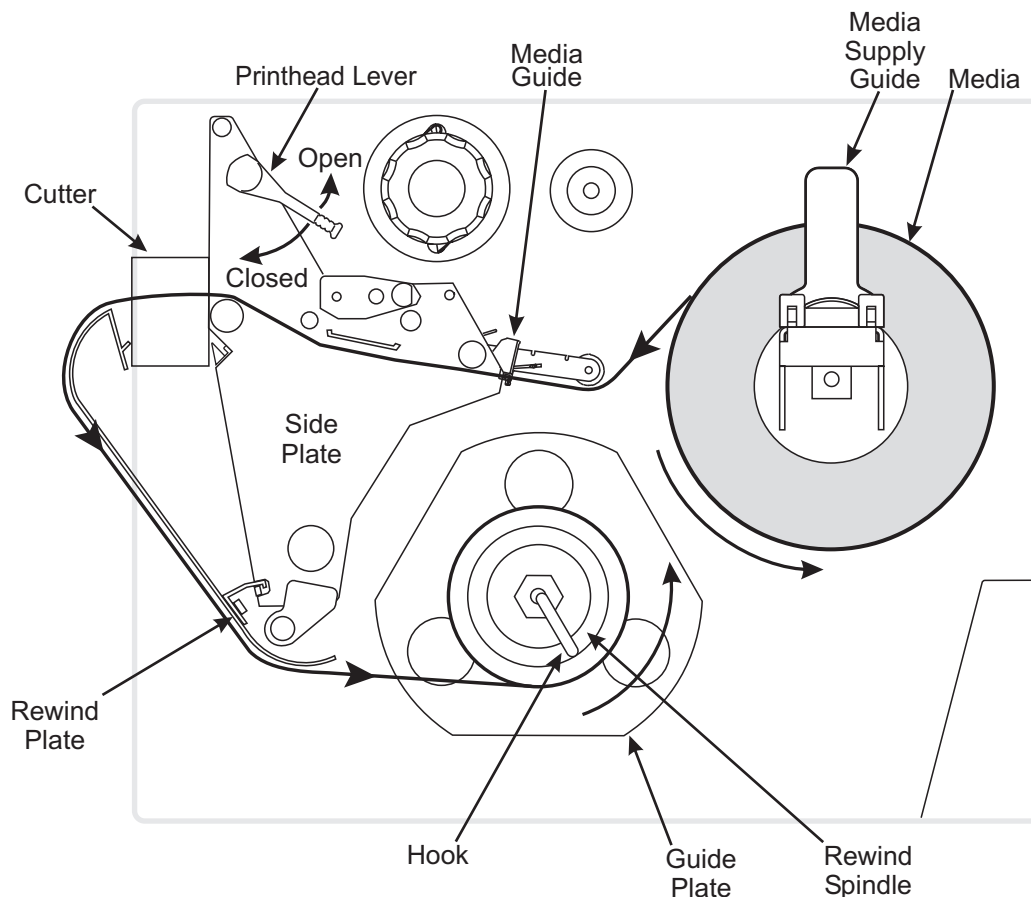


Figure 2-9. Rewind Mode w/Cutter Loading

8. When loading media, allow approximately 36 inches (91 cm) of media to extend past the printhead.

9. Remove the hook from the rewind spindle. If you are using a core, slide it onto the rewind spindle until it is flush against the guide plate.
10. Wind the label backing around either the 3-inch (76-mm) core or the rewind spindle, and reinstall the hook.
11. Flip up the media supply guide. Slide in the media guide and media supply guide so they just touch, but do not restrict, the edge of the roll.

Before closing the printhead, ensure that:

- The media is positioned against the inside guides.
- The media is taut and parallel with itself and the pathway when wound onto the rewind spindle/core.

12. Close the printhead.

Removing the Label Backing Material

Because the capacity of the rewind spindle is a standard-size media roll, Zebra recommends performing this procedure whenever you change the media.

To remove the backing material from the rewind spindle, follow these steps (you do not need to turn the printer Off (O) for this procedure).

1. Unwind approximately 36 inches (91 cm) of backing from the rewind spindle. Cut it off at the spindle.
2. Pull out the hook. Slide the backing material off the rewind spindle and discard.
3. Wind the media around the rewind spindle once or twice and reinstall the hook. Continue winding to remove any slack in the media.

Fanfold Media Loading

Refer to [Figure 2-10](#).

Fanfold media feeds through either the bottom or rear access slot from outside the printer.

1. Open the printhead.
2. Slide the media guide as far away from the printer frame as possible.
3. Load media as shown. If in Cutter mode, route media through the cutter.
4. Slide in the media guide so it just touches, but does not restrict, the edge of the roll.
5. Close the printhead.

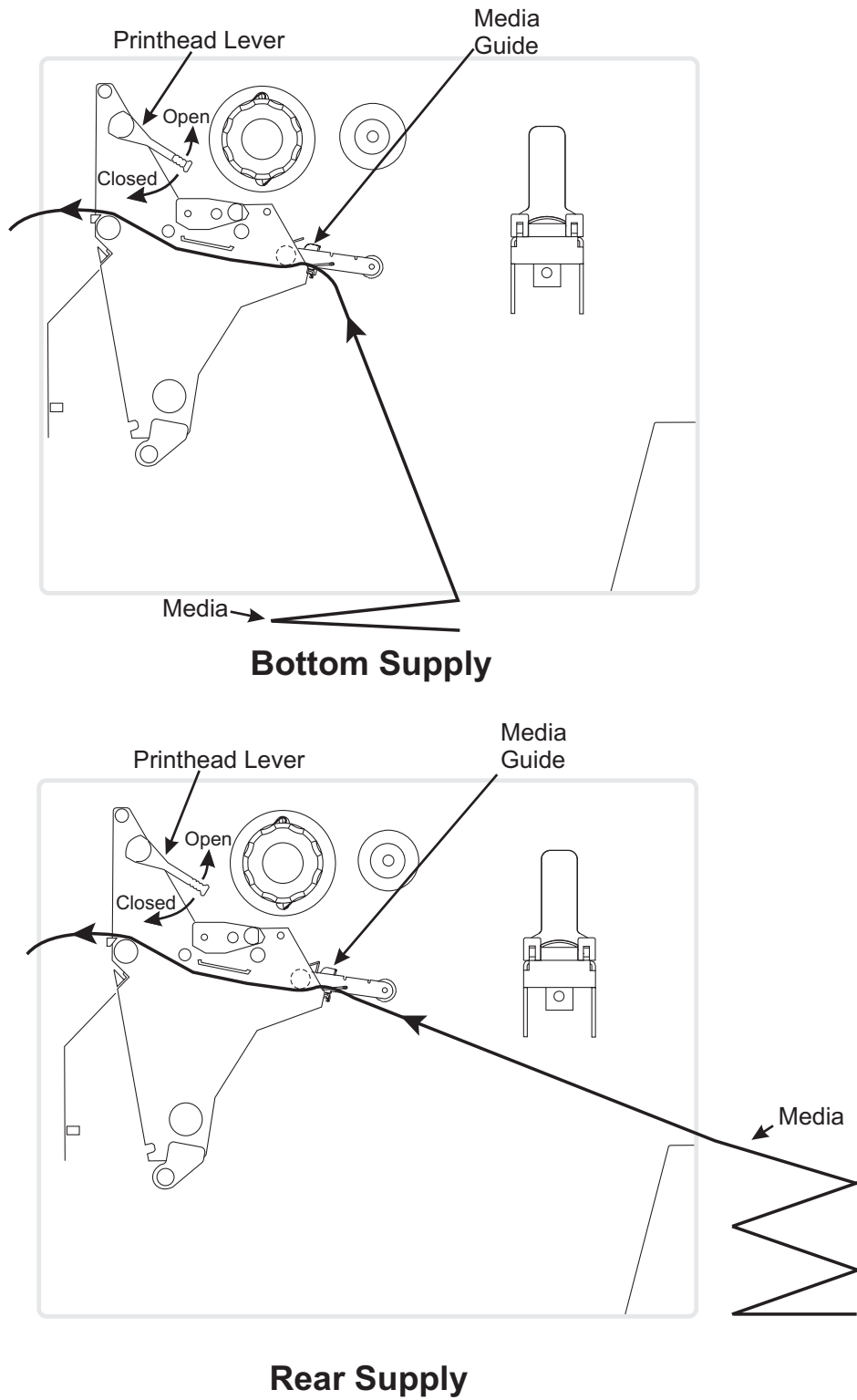


Figure 2-10. Fanfold Media

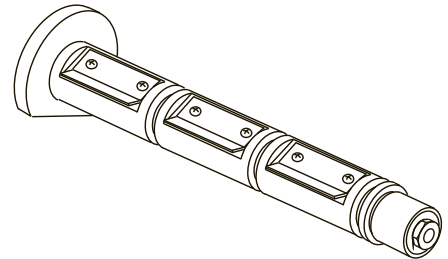
Ribbon Loading

To load ribbon, refer to [Figure 2-11](#) and follow the procedure below.



Note • Use ribbon that is at least as wide as the media. The smooth backing of the ribbon protects the printhead from wear and premature failure due to excessive abrasion. (When printing in direct thermal mode, ribbon is not used and should not be loaded in the printer).

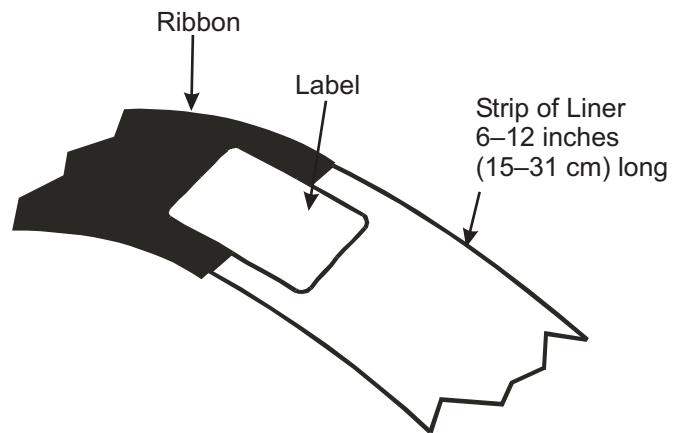
1. Align the segments of the ribbon supply spindle as shown.
2. Place the ribbon roll on the ribbon supply spindle.
3. Open the printhead.

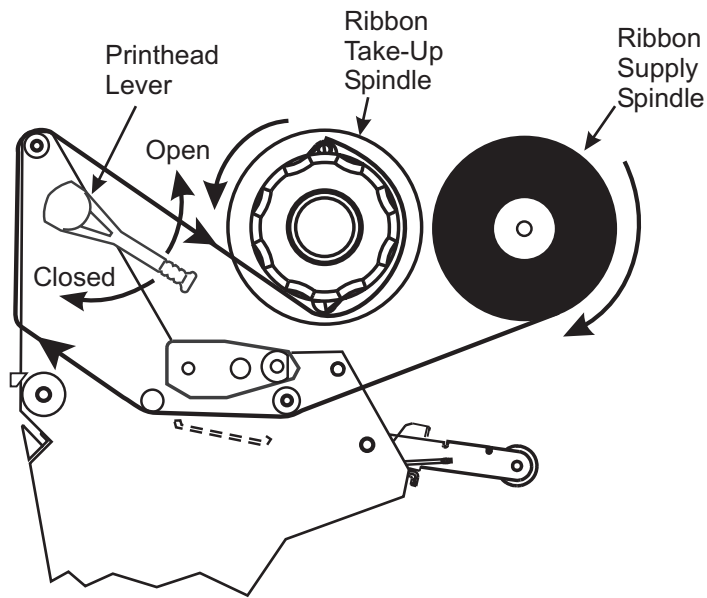


Note • Ensure that the core is pushed up against the stop on the ribbon supply spindle and that the ribbon is aligned squarely with its core. If this is not done, the ribbon may not cover the printhead entirely on the inside, exposing print elements to potentially damaging contact with the media.

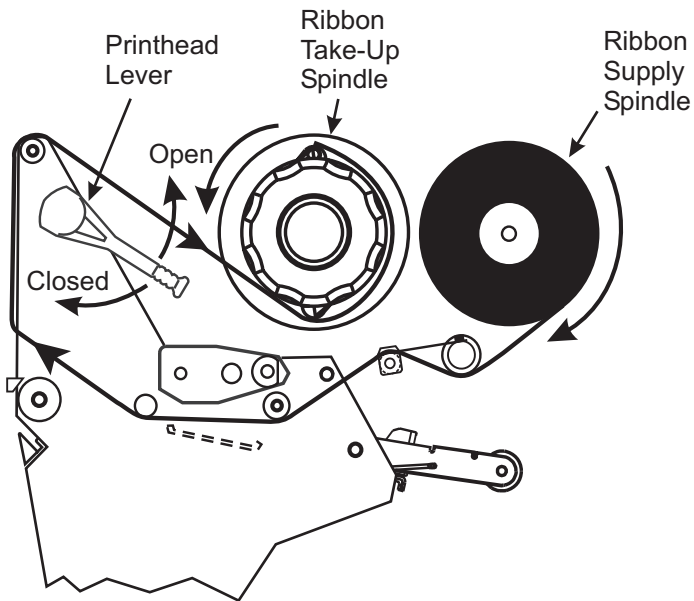
(Optional) To make ribbon loading and unloading easier, make a leader for your ribbon roll if it doesn't already have one.

4. Tear off a strip of media (labels and backing) about 6–12 inches (15–31cm) long from the roll. Peel off a label from this strip. Apply half of this label to the end of the strip and the other half to the end of the ribbon. This half acts as a ribbon leader.
5. Thread the ribbon (with leader, if used) as shown in [Figure 2-11](#) without creasing or wrinkling it.
6. Place the ribbon (with leader, if used) around the ribbon take-up spindle and wind counterclockwise for several turns.
7. Close the printhead.





90/96/140XiIII, XiIIIPlus, and R-140



170/220XiIII, XiIIIPlus, and R-140

Figure 2-11. Ribbon Installation

Ribbon Removal

1. If the ribbon has not run out, break the ribbon as close to the ribbon take-up spindle as possible.
2. Refer to [Figure 2-12](#). While holding the ribbon take-up spindle, turn the knob (1) clockwise until it stops. This causes the ribbon release bars (2) to pivot down, easing the spindle's grip on the wound ribbon.
3. Slide the ribbon off the ribbon take-up spindle. Once the spent ribbon has been removed, ensure that the arrow on the knob aligns with the indented notch in the ribbon take-up spindle.
4. Remove the core from the ribbon supply spindle.
5. Follow the ribbon loading procedure on [page 2-15](#) to load the new ribbon.

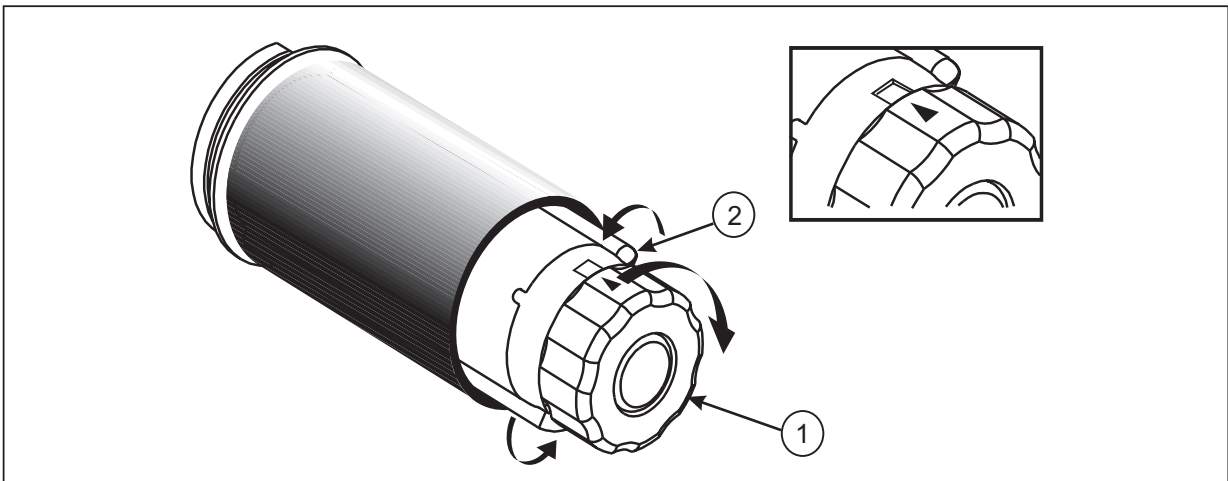


Figure 2-12. Ribbon Removal

POSITIONING THE MEDIA SENSORS

Transmissive Sensor

The web or gap sensor, better known as the “transmissive sensor,” detects the gap or hole/notch between labels.

The transmissive sensor consists of two parts: a light source (the lower media sensor) and a light sensor (the upper media sensor). The media passes between the two.

The upper media sensor must be positioned:

- Directly over the hole or notch, or
- Anywhere along the width of the media if there is a gap between labels.



Note • If you are using continuous media, position the upper media sensor over the media so the printer can detect an out-of-paper condition.

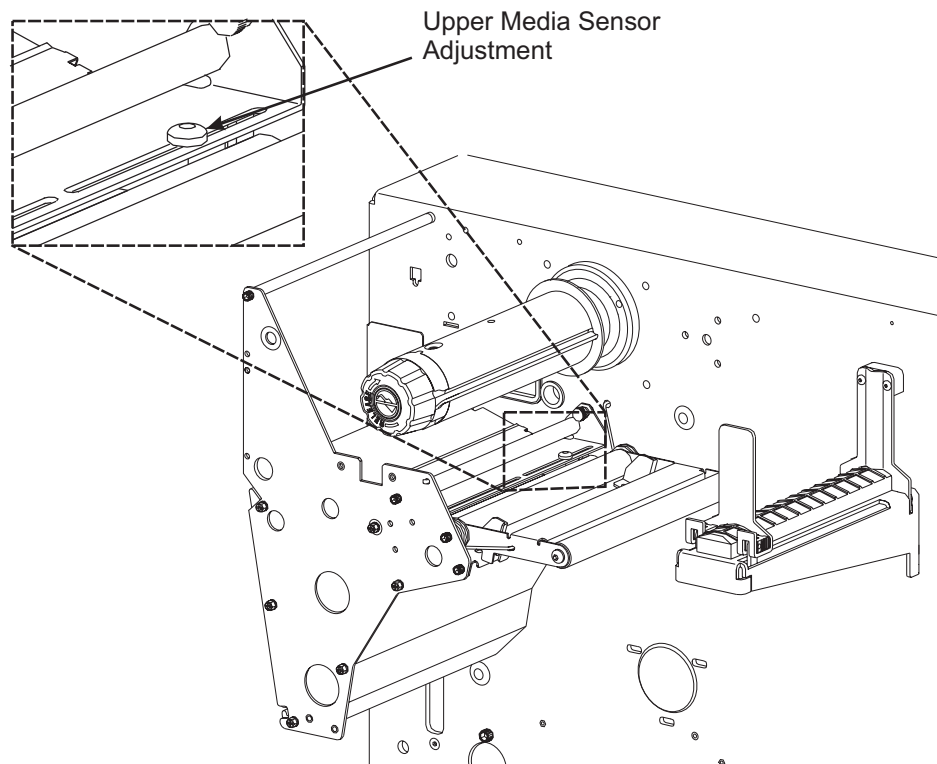


Figure 2-13. Upper Media Sensor Location

Adjusting the Upper Media Sensor

Refer to [Figure 2-13](#). (For clarity, not all printer parts are shown.)

1. Remove the ribbon (if it is installed).
2. Locate the upper media sensor. The upper media sensor “eye” is directly below the adjustment screw head.
3. Slightly loosen the upper media sensor adjustment screw, one half to one full turn maximum.
4. Using the tip of the screwdriver, slide the upper sensor along the slot to the desired position.
5. Secure the upper media sensor by tightening the screw.

Adjusting the Lower Media Sensor

Refer to [Figure 2-14](#) and position the lower media sensor by sliding it in its slot until it is positioned under the upper media sensor.

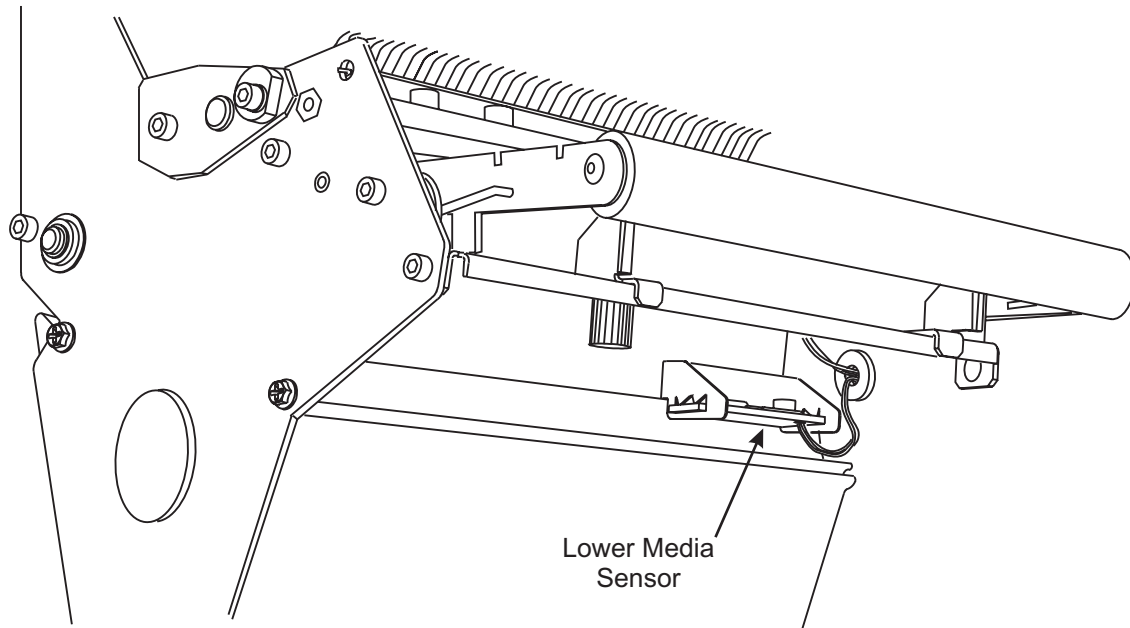


Figure 2-14. Lower Media Sensor Location

Black Mark Sensor

The black mark sensor is in a fixed position and enabled via the front panel (details in *Configuring the Printer in the User's Guide*).

SETTING UP THE SOFTWARE

Downloading Software from the Internet

If you have access to a PC and the Internet, go to www.zebra.com for firmware downloads and instructions.

Zebra Printer Driver Installation

Many printer settings may also be controlled by your printer's driver or label preparation software. Please refer to the driver or software documentation for more information.

Zebra drivers allow developers and end users to use and build Windows applications that operate Zebra printers at their highest level of efficiency. Currently, Zebra has drivers for:

- Windows 98/95/3.1 (Version 2.5)
- Windows NT and Windows 2000 (Version 2.3)

INITIAL POWER UP

After you have correctly installed the media and ribbon, set the power switch to the On (I) position. The printer performs a Power On Self-Test (POST). When this is complete, the display shows "PRINTER READY."

CALIBRATION



Note • This procedure must be performed when the printer is first installed or if it does not properly detect the top of the label.

XiIII Calibration

To calibrate the printer, you must do the following:

- Determine the **type of media** or labels being used.
- Choose the **print method**.
- Position the **media sensors**, if necessary.
- **Configure the printer and software or driver** based on the label being used.
- Perform a **media and ribbon calibration**.
- Print a **test label**.

XiIIIPlus Calibration

Two types of calibrations can be performed by the *XiIIIPlus* printer:

Type 1 — Auto Calibration: The *XiIIIPlus*-Series printers auto-calibrate on power up. Turning the printer On (I) causes the printer to feed media and ribbon and set the values it detects. This includes media, media backing material (the spaces between labels), media out, and ribbon in/out status. This form of calibration also occurs as part of the “Media and Ribbon Calibration” procedures.

Type 2 — Manual Calibration (using non-continuous media): Performing the Media and Ribbon Calibration procedure below first resets the sensitivity of the sensors to detect the media and ribbon you are using. With the sensors at their new sensitivity levels, the printer then performs the standard calibration described above. Changing the type of ribbon and/or media may require this calibration process to reset the sensitivity of the media and ribbon sensors. Indications that the sensitivity may need to be reset include a “CHECK RIBBON” light with the ribbon properly installed or non-continuous media being treated as continuous media.

Media and Ribbon Calibration (Manual) Procedure



Note • The following procedure is used to adjust the sensitivity of the media and ribbon sensors. It must be followed exactly as presented. All steps must be performed even if only one of the sensors requires adjustment.

1. Press the **SETUP/EXIT** key. Press the **NEXT/SAVE** key until the LCD shows.

MEDIA AND RIBBON
CALIBRATE

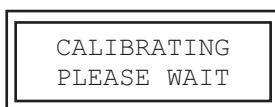
2. Press the right oval key to start the calibration procedure. The front panel LCD shows:

LOAD BACKING
CANCEL CONTINUE

3. Press the left oval key to cancel the operation, or open the printhead and remove as many labels as needed to load a section of blank backing material under the media sensor. If you are unsure of the media sensor location, refer to [Figure 2-13](#) and [Figure 2-14](#).
4. Press the right oval key to continue. The front panel LCD shows:



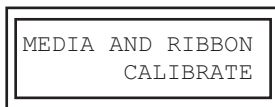
5. Press the left oval key to cancel the operation.
or
Remove the ribbon (sliding it as far to the right as possible has the same effect as removing it), and close the printhead.
6. Press the right oval key to continue. The front panel LCD shows:



7. The printer automatically adjusts the base settings as determined by the media and ribbon sensors according to the specific media and ribbon combination you are using. When this part of the calibration process is completed, the front panel LCD shows:



8. Open the printhead and pull the media forward until a label is positioned under the media sensor.
9. Move the ribbon back to its proper position. To ensure that the ribbon is smooth, rotate the take-up spindle a couple of turns.
10. Close the printhead.
11. Press the right oval key to continue. The printer performs the second part of the calibration process and the front panel LCD shows:



The media sensor determines label length and a new value based on the presence of media and backing. The ribbon sensor determines a new value based on the presence of ribbon. Once media stops feeding, the calibration process is complete.

12. Press the **SETUP/EXIT** key to leave the programming mode. When prompted to **SAVE CHANGES PERMANENT**, press **NEXT/SAVE** to save permanently. The front panel LCD shows:



Configuration

After you have installed the media and ribbon and the POST (Power-On Self Test) is complete, the front panel display shows “PRINTER READY.” You may now set printer parameters for your application using the front panel display and the five keys directly below it.

Refer to the *Zebra XiIII Printer User’s Guide* for further details on configuring the printer for your application.

If it becomes necessary to restore the initial printer defaults, see the “FEED Key and PAUSE Key Self Test” in Section 3, “Troubleshooting,” of this manual.

Entering the Setup Mode

To enter the setup mode, press the **SETUP/EXIT** key. Press either **NEXT/SAVE** or **PREVIOUS** to scroll to the parameter you wish to set. Throughout this process, press the **NEXT/SAVE** key to continue to the next parameter, or press the **PREVIOUS** key to go back to the previous parameter in the sequence.

Changing Password-Protected Parameters

Certain parameters are password-protected by factory default.



Note • Do not change password-protected parameters unless you’re sure you know what you’re doing! If they are set incorrectly, these parameters could cause the printer to function in an unpredictable way.

The first attempt to change one of these parameters (pressing the left oval or right oval keys) requires you to enter a four-digit password. This is done through the “ENTER PASSWORD” display. The left oval key changes the selected digit position. The right oval key increases the selected digit value. After entering the password, press the **NEXT/SAVE** key. The parameter you are trying to change is displayed. If the password was entered correctly, you can now change the value.

The factory default password is 1234. The password can be changed using the ^KP (Define Password) ZPL II instruction.



Note • Once the password has been correctly entered, it need not be entered again unless you leave and re-enter the programming mode using the Setup/Exit. You can disable the password-protection feature so it no longer prompts by setting the password of ØØØØØ through the ^KPØ ZPL/ZPL II command. To re-enable the password-protection feature, send the ZPL/ZPL II command ^KPx, where "x" can be any number, one to four digits in length, except Ø.

Leaving the Setup Mode

You can leave the Setup Mode at any time by pressing the **SETUP/EXIT** key. The **SAVE CHANGES** display appears. There are five choices as described below. Press the right oval or left oval key to display the sequence of choices. When your choice is displayed on the LCD, press the **NEXT/SAVE** key to save the settings.

PERMANENT: Saves current settings. Values are stored in the printer even when power is turned Off (O).

TEMPORARY: Saves current settings until changed again or until power is turned Off (O).

CANCEL: Cancels all setting changes made since entering programming mode except the darkness and tear-off settings, if they were changed.

LOAD DEFAULTS: Loads factory default settings. Refer to the *User's Guide* for default values.



Notes • For the *XiIII*, loading factory default settings may require performing a media and ribbon sensor calibration.

The *XiIIIPlus* performs an auto-calibration.

LOAD LAST SAVE: Reloads settings made during the last permanent save.

SETTING PRINT PARAMETERS

Setting Darkness

Darkness, also known as burn duration, settings are dependent on a variety of factors, including ribbon type, media, and the condition of the printhead. You may adjust the darkness for consistent high-quality printing.



Note • The feed key self-test described in "Troubleshooting" can also be used to determine the best darkness setting. The *XiIIIPlus* determines this in auto-calibration.

Caution • Set darkness to the lowest setting possible for the desired print quality. Setting darkness too high for a given ribbon may cause ink smearing and/or printhead burning through the ribbon.

If printing is too light, increase the darkness. If printing is too dark, or if there is spreading or bleeding on printed areas, decrease the darkness. If there are voids in printed areas, adjust the toggle pressure.



Note • The darkness setting takes effect right away. If labels are being printed, results can be seen immediately.

Press the right oval key to increase darkness, or press the left oval key to decrease darkness. For the *XiIIIPlus*, holding the key rapidly increases or decreases the darkness.



XiIII

Default: +10
Range: 0 to +30
 (In ones)



XiIIIPlus

Default: +4
Range: 0 to +30
 (In tenths)



Notes • The *XiIII* next menu item is Tear-Off. Proceed to setting the Tear-Off position on page 2-24.

The *XiIIIPlus* next menu item is print speed.

Press the **NEXT/SAVE** key to display **TEAR OFF** or **PRINT SPEED** (see [Setting the Tear-Off Position on page 2-24](#)).

XiIIIPlus Setting the Print Speed

Print Speed setting adjusts the speed of printing.

Press the right oval key to increase the speed or the left oval key to decrease the speed.



Each press of the key changes the speed by one inch per second.

Press the **NEXT/SAVE** key to display **TEAR-OFF**.

Setting the Tear-Off Position

The Tear-Off position adjusts the position of the media over the peel bar after printing.

Press the right oval key to increase the value or the left oval key to decrease the value.



Note • No effect in the rewind mode.

Each press of the key moves the tear-off position by four dot rows (positive values move the media farther out over the peel bar).

Default: +0
Range: -120 to +120

Press the **NEXT/SAVE** key to display **PRINT MODE**.

Selecting the Print Mode

Print Mode settings tell the printer the method of media delivery you wish to use. Be sure to select a print mode your hardware configuration supports, because some selections displayed are for optional printer features.



Press the right or left oval key to display other selections.

Default: Tear-Off
Selections: Tear-Off, Peel-Off, Rewind, Cutter

Press the **NEXT/SAVE** key to display **MEDIA TYPE**.

Selecting the Media Type

The Media Type parameter specifies the kind of media used. *Continuous* media requires that a label length instruction (^LLxxxx) be included in your ZPL or ZPL II label format.

With *non-continuous media*, the printer feeds media to calculate label length, the distance between two detections of the inter-label webbing, alignment notch, or hole.



Press the right or left oval key to display other selections.

Default: Non-Continuous
Selections: Non-Continuous, Continuous

Press the **NEXT/SAVE** key to display **SENSOR TYPE**.

Selecting the Sensor Type

This parameter tells the printer whether you are using media with a web (gap/space between labels, notch, or hole) to indicate the separations between labels or a black mark printed on the back. If your media does not have black marks on the back, leave your printer at the default (web).



Press the right or left oval key to display other selections.

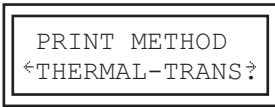
Default: Web
Selections: Web, Mark

Press the **NEXT/SAVE** key to display **PRINT METHOD**.

Selecting the Print Method

The Print Method parameter specifies the method of printing: direct thermal (using direct thermal media without ribbon) or thermal transfer (using thermal-transfer media and ribbon).

Caution • Selecting direct thermal when using thermal transfer media and ribbon results in an error message, but printing continues. If the print method is not changed to thermal transfer or if the media is not changed, damage to the printhead may result.



PRINT METHOD
 ←THERMAL-TRANS→

Press the right or left oval key to display other selections.

Default: Thermal Transfer
Selections: Thermal Transfer, Direct Thermal

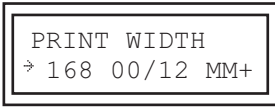
Press the **NEXT/SAVE** key to display **PRINT WIDTH**.

Setting the Print Width

Print width selects the media width. Setting the width too narrow may result in portions of your label not being printed on the label material. In addition, the setting can affect the horizontal position of the label format if you invert the image via the ^POI ZPL II command. Setting the width too wide wastes formatting memory and can cause printing to occur on the platen to the side of the label.

The units of measure can be changed from millimeters to inches to dots. Inches and millimeters are shown as fractions of the dots per inch (for example, 4 101/203 is the value for 4-1/2 inches).

Press the right oval key to increase the value or change the unit of measure, and press the left oval key to change the selected character position. Select a print width that is at least as wide as your media.



PRINT WIDTH
 → 168 00/12 MM+

Default Range: Print width determines the printable area across the width of the label.

Press the **NEXT/SAVE** key to display **MAXIMUM LENGTH**.

Setting the Maximum Label Length

Maximum Label Length specifies the distance from the leading edge of one label to the leading edge of the next label. Refer to [Figure 2-15](#). A considerable part of the inter-label gap is part of the label length. Setting this parameter serves two functions:

- The value of this setting determines the maximum label length value to be used during the media portion of the calibration process.
- Only a few labels are required to set the media sensors.

Always set the length to a value one step above the actual length of the label you are using. For example, if the label length is 5 inches (126 mm), set the parameter for 6 inches (152 mm). If the label length is 7.5 inches (190 mm), set the parameter for 8.0 inches (202 mm).



Note • Before you begin the media and ribbon calibration procedure, ensure the maximum length is set to a value one step greater than the actual media. If the maximum length is set to a lower value, the printer assumes continuous media is loaded, which results in the printer not calibrating.

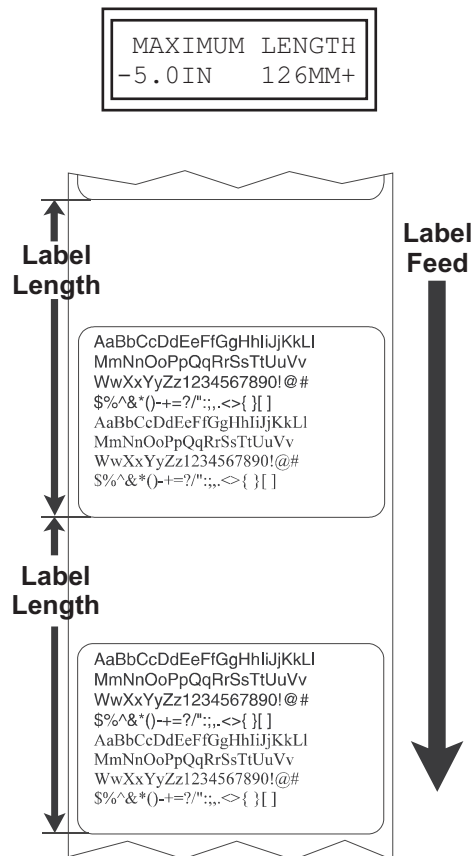


Figure 2-15. Maximum Label Length

Press the left oval key to decrease the value, or press the right oval key to increase the value.

Default: 39.0 inches (988 mm)

Range: 2.0 inches (50 mm) to 39.0 inches (988 mm) in 1.0 inch (25.4 mm) increments.

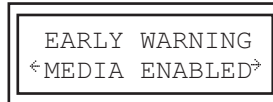
For *XIII*, press the **NEXT/SAVE** key to display **LIST FONTS**. Proceed to [List Fonts on page 2-30](#).

For *XIIIPlus*, press the **NEXT/SAVE** key to display **EARLY WARNING MEDIA ENABLE/DISABLE**. Refer to [page 2-28](#).

Early Warning Media Enable/Disable

Setting Early Warning: Press the right or left black oval key to display other choices.

This parameter enables the printer to provide early warnings when labels or ribbons are running low or when the printhead needs to be cleaned.



Default: Disabled

Selections: Disabled, Enabled

To enable the Early Warning System, press **SETUP/EXIT**, then press **NEXT/SAVE**. To select the Early Warning setting, scroll back until Media Enabled is listed on the LCD and press **NEXT/SAVE** to access the media settings. Use the right or left black oval key to select the setting, then press **SETUP/EXIT** and **NEXT/SAVE** to save the setting. Repeat this process to set the early warning for ribbon or maintenance (printhead cleaning).



Note • When setting the early warning for maintenance, an addition setting appears after the media setting that prompts the LCD to ask Head Clean. Use the right black oval key to select Yes and then press Setup/Exit and Next/Save to reset the label counter.

When the printer detects it is running low with less than 15% of the remaining labels or ribbons, the following message appears on the LCD: WARNING MEDIA LOW or WARNING RIBBON LOW. If the alert function has been enabled, an alert is also sent. When the printhead is opened and then closed after a media or ribbon warning has been received, the LCD asks MEDIA REPLACED or RIBBON REPLACED. Press the right black oval key **YES** to clear the warning and rest the label counter.



Notes • Labels per roll and ribbon length need to be updated when beginning use of the early warning system. The printer does not make any adjustments when power is turned Off (**O**) and On (**I**).

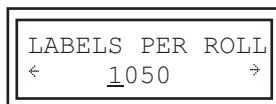
If media is disabled, labels per roll and ribbon length will not be displayed.

Press the **NEXT/SAVE** key to display **LABELS PER ROLL**.

Selecting Labels Per Roll

Press the right or left black oval key to display other choices.

This parameter needs to be updated when setting the Early Warning System so the printer can provide early warnings when labels are running low.



Default: 900 labels

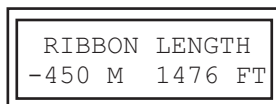
Selections: 100 labels–9999 labels

Press the **NEXT/SAVE** key to display **RIBBON LENGTH**.

Selecting Ribbon Length

Press the **RIGHT** or **LEFT BLACK OVAL** key to display other choices.

This parameter needs to be updated when setting the Early Warning System so the printer can provide early warnings when ribbon is running low.



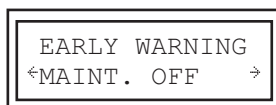
Default: -450 m (1476 ft.)

Selections: 100 m–450 m (328 ft.–1476 ft.)

Press the **NEXT/SAVE** key to display **EARLY WARNING MAINTENANCE**.

Selecting Early Warning Maintenance On/Off

This parameter tells the printer whether the Early Warning Maintenance is On or Off. If the Early Warning Maintenance is On, the Head Cleaning warning is enabled.



Default: Maint. Off

Selections: Maintenance On, Maint. Off



Note • Head Cleaning be displayed only when maintenance On is displayed.

Press the **NEXT/SAVE** key to display the **HEAD CLEANING**.

Head Cleaning

This parameter tells the printer when to display Clean Head warning.



Default: Off

Selections: 100 m 328 ft.; 150 m 492 ft.; 200 m 656 ft.; 250 m 820 ft.; 300 m 984 ft.;
350 m 1148 ft.; 400 m 1312 ft.; 450 m 1476 ft.

Press the **NEXT/SAVE** key to display **LIST FONTS**.

LISTING PRINTER INFORMATION

List Fonts

Use this selection to print a label that lists all fonts available in the memory of the printer. Fonts may be stored in optional font EPROMs and as part of firmware EPROMs, on an optional PCMCIA memory card, Flash memory, or downloaded and stored in formatting memory (RAM).



Press the right oval key to print a label listing all fonts.

Press the **NEXT/SAVE** key to display **LIST BAR CODES**.

List Bar Codes

Use this selection to print a label that lists all bar codes available in the memory of the printer.



Press the right oval key to print a label listing all bar codes.

Press the **NEXT/SAVE** key to display **LIST IMAGES**.

List Images

This selection is used to print a label that lists all graphic images stored in the memory of the printer's RAM, optional EPROM, or on an optional memory card.



Press the right oval key to print a label listing all of the images.

Press the **NEXT/SAVE** key to display **LIST FORMATS**.

List Formats

This selection is used to print a label that lists all formats stored in the memory of the printer's RAM, optional EPROM, or on an optional memory card.



Press the right oval key to print a label listing all formats.

Press the **NEXT/SAVE** key to display **LIST SETUP**.

List Setup

This selection is used to print a label that lists the printer's configuration information (same as the CANCEL key self test).



Press the right oval key to print a label listing the printer configuration.

Press the **NEXT/SAVE** key to display **LIST ALL**.

List All

Use this selection to print a label that lists the five previous selections, as described.



Press the right oval key to print a label listing all available fonts, bar codes, images, formats, and the printer configuration.

Press the **NEXT/SAVE** key to display **INITIALIZE CARD**.

Initialize Card

This selection initializes the optional memory card.

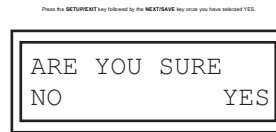


Note • Perform this operation only when it is necessary to erase all previously stored information in the memory card. If you do not want to erase all stored information, press the Next/Save key to bypass the operation.



1. Press the right oval key to select YES. If your printer is set to require a password, you are prompted to enter it.
2. Enter the password, then press the **NEXT/SAVE** key.
3. The display shows INITIALIZE CARD. Press the right oval key to select YES. The display prompts ARE YOU SURE.

- Press the right oval key to select YES to begin the initialization, or press the left oval key to select NO to cancel the request and return to the INITIALIZE CARD prompt.



If initialization is still in process, the display flashes back and forth between CHECKING B: MEMORY and PRINTER IDLE.

When initialization is complete, the printer automatically exits the Configuration Mode and the display shows PRINTER READY.



Note • Depending on the amount of memory in the memory card, initialization may take up to five minutes to complete.

Initialize Flash Memory

This selection initializes the Flash memory.



Note • Perform this operation only when it is necessary to erase all previously stored information in the memory card. If you do not want to erase all stored information, press the Next/Save key to bypass the operation.



- Press the right oval key to select YES. If your printer is set to require a password, you are prompted to enter it. Enter the password using the left oval and right oval keys and then press the **NEXT/SAVE** key.
- The display shows INITIALIZE FLASH MEM. Press the right oval key to select YES. The display prompts ARE YOU SURE.



- Press the right oval key “YES” to begin initialization, or press the left oval key to select “NO” to cancel the request and return to the “INITIALIZE FLASH” prompt.
- Press the **SETUP/EXIT** key followed by the **NEXT/SAVE** key. If initialization is still in process, the display flashes back and forth between “CHECKING E: MEMORY” and “PRINTER IDLE.”
- When initialization is complete, the printer automatically exits the Configuration Mode and the display shows “PRINTER READY.”



Note • Depending on the amount of free flash memory, initialization may take up to one minute to complete.

Sensor Profile

Press the right oval key to print a graphic representation (Media Sensor Profile) of the changes in density between the media and the web (backing). Use the sensor profile to help troubleshoot media registration problems.



Refer to [Figure 2-16](#). The media sensor profile shows three conditions. The black area along the bottom of the profile illustrates media passing by the media sensor. When the level rises above the point labeled Web (black spikes), only the backing material is passing by the sensor. When a notch or hole in the media passes by the sensor, the level rises above the point labeled MEDIA. If the level remains above the Media point for longer than 0.5 seconds, this signifies a media out condition. The ribbon profile indicates ribbon in if the black level is above the point labeled RIBBON.

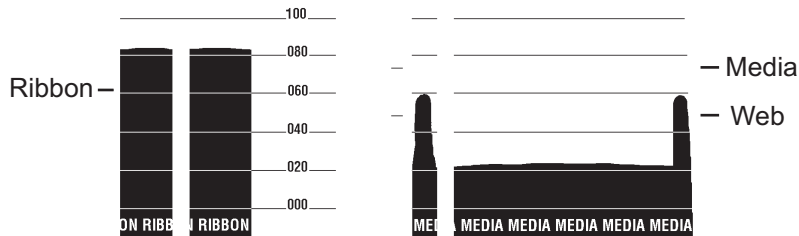


Figure 2-16. Sensor Profile Sample Label

Press the **NEXT/SAVE** key to display **MEDIA AND RIBBON**.

Media and Ribbon Sensor Calibration



Notes• Before you begin this procedure, ensure the maximum length is set to a value greater than the length of the labels you are using. If the maximum length is set to a lower value, the calibration process assumes that continuous media is in the printer.

Ensure that the "media type" and "maximum length" values have been configured prior to performing this calibration process.



Press the right oval key to perform calibration.

Refer to [CALIBRATION on page 2-20](#) for further details.

Setting Communication Parameters

Communication parameters must be set correctly for the printer to receive data from the host. These parameters ensure that the printer and host are “speaking the same language.”

All communications parameters are password-protected.

Setting Parallel Communications

Select the communications port that matches the one used by the host computer.



Press the right or left oval key to display other selections.

Default: Parallel
Selections: Parallel, Twinax/Coax

Setting Serial Communications

Select the communications port that matches the one used by the host computer



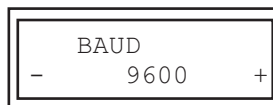
Press the right or left oval key to display other choices.

Default: RS232
Selections: RS232, RS422/485, RS485 Multidrop

Press the **NEXT/SAVE** key to display **BAUD** rate.

Setting the Baud Rate

The baud rate of the printer must match the baud rate of the host for communications to take place. Select the baud rate that matches the one used by the host.



Press the right oval key to increase the value, or press the left oval key to decrease the value.

Default: 9600
Selections: 110, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200*

* 115200 Baud available only on *XiIIIPlus*.

Press the **NEXT/SAVE** key to display **DATA BITS**.

Setting the Data Bits

The data bits of the printer must match the data bits of the host for communications to take place. Select the data bits that match the ones used by the host.



Note • This parameter must be set to 8 data bits to use the full code page 850 character set. See the ZPL II Programming Guide for further information.

```

DATA BITS
- 8 BITS +
    
```

Press the right or left oval key to display other selections.

Default: 8 Bits

Selections: 7 Bits, 8 Bits

Press the **NEXT/SAVE** key to display **PARITY**.

Setting the Parity

The parity of the printer must match the parity of the host for communications to take place. Select the parity that matches the one used by the host.

```

PARITY
< NONE >
    
```

Press the right or left oval key to display other selections.

Default: None

Selections: Even, None, Odd

For the XiIII, press the NEXT/SAVE key to display STOP BITS.

For the XiIIIPlus, press the NEXT/SAVE key to display HOST HANDSHAKE. Proceed to [Setting the Host Handshake on page 2-36](#).

Setting the Stop Bits

The stop bits of the printer must match the stop bits of the host for communications to take place. Select the number of stop bits that match the quantity being used by the host.



Note • The stop bit value is fixed at 1 for XiIIIPlus printers.

```

STOP BITS
1 STOP BIT +
    
```

Press the right or left oval key to display other selections.

Default: 1 Stop Bit

Selections: 1 Stop Bit, 2 Stop Bits

Press the **NEXT/SAVE** key to display **HOST HANDSHAKE**.

Setting the Host Handshake

The handshake protocol of the printer must match the handshake protocol of the host for communications to take place. Select the handshake protocol that matches the one being used by the host.



Press the right or left oval key to display other selections.

Default: XON/XOF

Selections: XON/XOFF, DSR/DTR

Press the **NEXT/SAVE** key to display **PROTOCOL**.

Setting the Protocol

Protocol is a type of error-checking system. Depending on the selection, an indicator is sent from the printer to the host signifying received data. Select the requested protocol by the host. Further details on protocol can be found in the *ZPL II Programming Reference Volumes I and II*.



Notes • Zebra is the same as ACK/NACK, except that the Zebra response messages are sequenced.

If Zebra is selected, the printer must use the DTR/DSR" host handshake protocol.



Press the right or left oval key to display other selections.

Default: None (Always select "None" if you are not using error-checking software.)

Selections: None, Zebra, ACK/NACK

Press the **NEXT/SAVE** key to display **NETWORK ID**.

Setting the Network ID

Use Network ID to assign a unique number to a printer used in an RS-422/RS-485 network. This gives the host the means to address a specific printer. This does not affect TCP/IP or IPX networks.



Press the left oval key to move to the next digit position, and press the right oval key to increase the value of the selected digit.

Default: 000

Selections: 000–999

Press the **NEXT/SAVE** key to display **COMMUNICATIONS**.

Setting the Communications Mode

The Communication Diagnostics Mode is a tool to check the interconnection between the printer and the host. When DIAGNOSTICS is selected, all data sent from the host to the printer is printed as an ASCII hex printout. The printer prints all ASCII characters received, including ASCII control codes (for example, CR Carriage Return). [Figure 2-17](#) shows a sample printout.

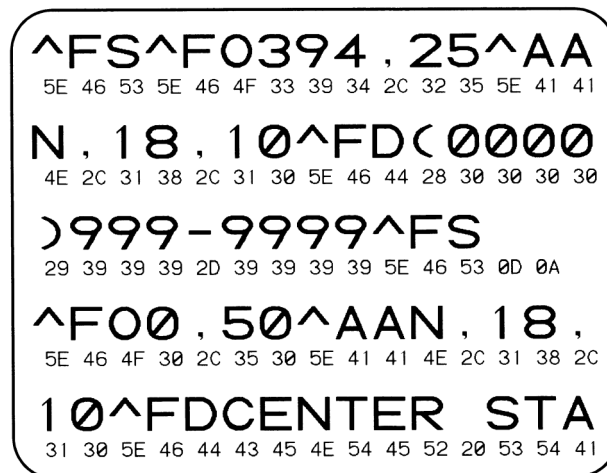


Figure 2-17. Diagnostics Sample Label

Press the right or left oval key to display other selections.

Default: Normal Mode

Selections: Normal Mode, Diagnostics



Note • On Diagnostic printouts:

FE indicates a framing error.

OE indicates a framing error.

PE indicates parity error.

NE indicates noise.

For any errors, check that your communication parameters are correct. Set the print width equal to or less than the label width used for the test.

Press the **NEXT/SAVE** key to display **CONTROL PREFIX**.

The Control Prefix Character

The control prefix character is a two-digit hex value. Once configured, this character signifies the start of a ZPL/ZPL II control instruction.



Press the left oval key to move to the next digit position, and press the right oval key to increase the value of the digit. (The “H” is displayed but not entered as part of the value.)

Default: 7E (tilde)

Range: 00–FF (Exclude the values indicated on the ASCII Code Chart in the *ZPL II Guide Volume II Appendix B.*)

Press the **NEXT/SAVE** key to display **FORMAT PREFIX**.

The Format Prefix Character

The format prefix character is a two-digit hex value. Once configured, this character signifies the start of a ZPL or ZPL II format instruction.



Press the left oval key to move to the next digit position, and press the right oval key to increase the value of the digit. (The “H” is displayed but not entered as part of the value.)

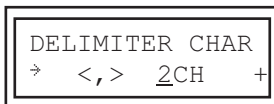
Default: 5E (caret)

Range: 00–FF (Exclude the values indicated on the ASCII Code Chart in the *ZPL II Guide Volume II, Appendix B.*)

Press the **NEXT/SAVE** key to display **DELIMITER CHAR.**

The Delimiter Character

The delimiter character is a two-digit hex value. Once configured, this character acts as a parameter place marker in ZPL/ZPL II. Refer to the *ZPL II Programming Guide* for more information.



Press the left oval key to move to the next digit position, and press the right oval key to increase the value of the digit. (The displayed “H” is not entered as part of the value.)

Default: 2C (comma)

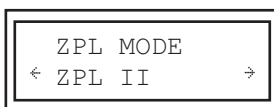
Range: 00–FF (Exclude the values indicated on the ASCII Code Chart.)

Press the **NEXT/SAVE** key to display **MODE**.

Selecting ZPL Mode

The printer accepts label formats written in either ZPL or ZPL II. Refer to the *ZPL II Programming Guide* for more information on the differences between ZPL and ZPL II.

The printer remains in the selected mode until changed by this front panel instruction or by sending the ^SZ ZPL/ZPL II command to the printer.



Press the right or left oval key to display other selections.

Default: ZPL II

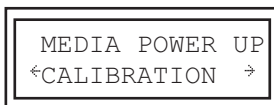
Selections: ZPL II, ZPL

Press the **NEXT/SAVE** key to display **MEDIA POWER UP**.

POWER UP AND HEAD CLOSE PARAMETERS

Media Power Up

Turning the printer On (I) determines the action of the media. CALIBRATION recalibrates the media and ribbon sensors, FEED feeds the label to the first web, LENGTH calculates the length of the label, and NO MOTION means the media does not move.



Press the right or left oval key to display other selections.

Default: Calibration

Selections: Feed, Calibration, Length, No Motion

Press the **NEXT/SAVE** key to display **HEAD CLOSE**.

Head Close

This setting determines the action of the media after the opened printhead is closed. CALIBRATION recalibrates the media and ribbon sensors, FEED feeds the label to the first web, LENGTH calculates the length of the label, and NO MOTION means the media does not move.



Press the right or left oval key to display other selections.

Default: Calibration

Selections: Feed, Calibration, Length, No Motion

Press the **NEXT/SAVE** key to display **BACKFEED**.

LABEL POSITIONING PARAMETERS

Backfeed Sequence

This parameter establishes when backfeed occurs after a label is removed in the Peel Off or Cutter modes. It has no effect in Rewind or Tear Off modes.

This parameter setting can be superseded by the ~JS instruction when received as part of a label format. Refer to the *ZPL II Programming Guide*.



Press the right oval key for the next choice, or press the left oval key for the previous choice.

Default: Default

Selections: Default, After, Before, Off, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%

Press the **NEXT/SAVE** key to display **LABEL TOP**.

Setting the Label Top Position

The label top position controls the initial vertical print position on the label (viewed as the label exits the printer). The reference default position is to 2 mm below the leading edge of the label that follows the one to be printed. Refer to [Figure 2-18](#). If there is a lengthy web between labels, the label format may begin printing on the backing material. To set the position where the format begins printing, change the label top position value.



Press the right oval key to increase the value, or press the left oval key to decrease the value. Each positive number moves the label top position down by one dot row; each negative number moves the position up by one dot row.

Default: +0

Range: -120 to +120

Press the **NEXT/SAVE** key to display **LEFT POSITION**.

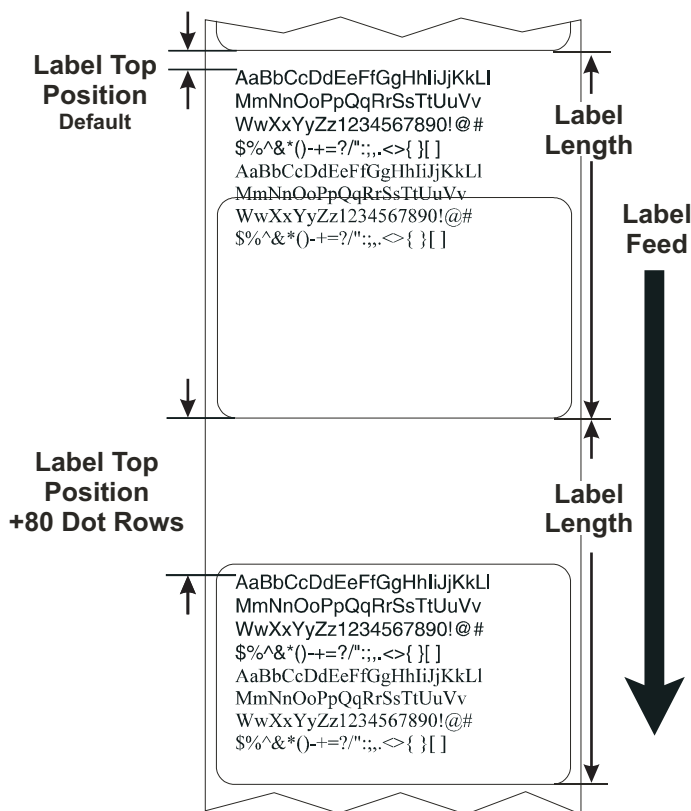
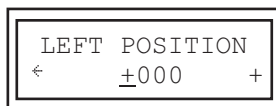


Figure 2-18. Label Top Position

Setting the Left Position

The left position controls the initial print position from the left edge of a label (view as the label exits the printer). The reference default position is to the left edge of the media. Refer to [Figure 2-19](#). Depending on the width of the media, the label format may begin printing on the backing material or on the platen. To set the position where the format begins printing, change the left position value.



Press the left oval to move the cursor to the next digit, and press the right oval to change the ±value and increase the value of the digit (right oval key shifts to the left, left oval key shifts to the right). The displayed value represents the number of dot positions the format shifts right or left.

Default: 000

Range: -9999 to +9999 (If a negative value is required, enter the numeric value first, then change the + to a -.)

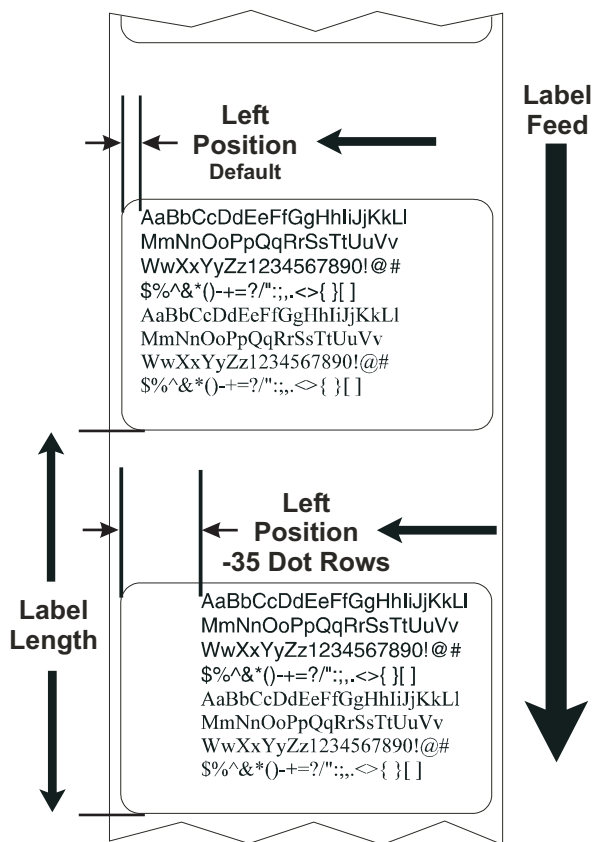


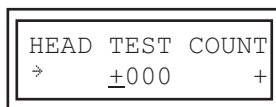
Figure 2-19. Left Position

Press the **NEXT/SAVE** key to display **HEAD RESISTOR**.

Setting Head Test Count

The printer periodically performs a test of the printhead functionality, called a printhead test or head test. This parameter establishes how many labels are printed between these internal tests.

Press the left black oval key to move the cursor; press the right black oval key to change the value of the digit.



Default: 0000 (disables the test)

Range: 0000–9999

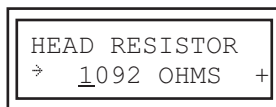
Press the **NEXT/SAVE** key to display **HEAD RESISTOR**.

Setting the Head Resistance Value

This value has been preset at the factory to match the resistance value of the printhead. It must not be changed unless the printhead is replaced.

Before replacing a printhead, look on the bottom of the new printhead for the label that shows the resistance (ohm = Ω) value.

Caution • Do not set the value higher than that shown on the printhead. Setting the value to a higher number can damage the printhead.



Press the left oval key to move to the next digit position, and press the right oval key to increase the value of the digit.

Initial Value: Factory set

Range: 0488–2415

For the *XiIII*, press the **NEXT/SAVE** key to display **WEB S**.

For the *XiIIIPlus*, press the **NEXT/SAVE** key to display **VERIFIER PORT**.

Setting the Verifier Port

The auxiliary port is used to determine how the printer reacts to the online verifier. There are three operating conditions for this port:

1. Off: The verifier port is off.
2. VER-RPRNT ERR: Label reprinted if verifier detects an error. If a bar code is near the upper edge of the label, the label is fed out far enough to be verified and then Backfeed to allow the next label to be printed and verified.

3. VER-THRUPUT: Allows greatest throughput but may not indicate a verification error immediately upon detection. May print from one to three labels before an error is recognized and printing stops.

For more information on the operation of the optional verifier, refer to the documentation provided with that option.



Default: Off

Range: Off, 1 VER-RPRNT, 2 VER-THRUPUT

Press the **NEXT/SAVE** key to display **APPLICATOR PORT**.

Setting the Applicator Port

Determines the action of the verifier port.



Note • Set as suggested by the applicator manufacturer.



Default: Off

Range: Off, mode 1, mode 2, mode 3, mode 4

Off: The applicator port is off.

Mode 1: Asserts the \sim END_PRINT signal low while the printer is moving the label forward.

Mode 2: Asserts the \sim END_PRINT signal high while the printer is moving the label forward.

Mode 3: Asserts the \sim END_PRINT signal low for 20 milliseconds when a label has been completed and positioned. Not asserted during continuous printing modes.

Mode 4: Asserts the \sim END_PRINT signal high for 20 milliseconds when a label has been completed and positioned. Not asserted during continuous printing modes.

Press the **NEXT/SAVE** key to display **START PRINT SIG**.

Setting the Start Print Signal

This parameter determines how the printer reacts to the Start Print Signal input on pin 3 of the applicator interface connector at the rear of the printer.

Press the right or left black oval key to display other choices.



- In Pulse Mode, labels print when the signal transitions from HIGH to LOW.
- In Level Mode, labels print as long as the signal is asserted LOW.

Default: Pulse Mode
Range: Pulse Mode, Level Mode



Note • Start print signal is set by the applicator manufacturer and should not be changed unless the factory defaults have been reloaded. Please make a note of it! While other choices are valid, the printer must be returned to its designated setting to work properly.

Press the **NEXT/SAVE** key to display **RESYNCH MODE**.

Setting the Resynch Mode

This parameter determines how the printer reacts if the label synchronization is lost and the label top is not where expected.

FEED MODE—If the label top is not where expected, the printer feeds a blank label to find the label top position.

ERROR MODE—If the label top is not where expected, the printer stops, enters the Pause mode, displays the message “Error Condition Feed Label,” flashes the ERROR LED, and asserts the “Service Required” signal (pin 10 on the Applicator Interface Connector).

To resynch the media to the top of the label in Error mode, press the PAUSE key to exit the Pause state. The ERROR LED stops flashing and the “Service Required” signal is deactivated. The action of the printer is determined by the “Head Close” configuration selection:

- Calibration—determines the length of the label.
- Feed—feeds the labels to the first registration point.
- Length—used in continuous mode to feed the last stored label length.
- No Motion—the media does not move. The user must press the FEED key to cause the printer to resynch to the start of the next label.



Default: Feed Mode
Range: Feed Mode, Error Mode

PRINTING CONTROLS

The parameters Web Sensor, Media Sensor, Ribbon Sensor, Mark Sensor, Mark Media Sensor, Media LED, Ribbon LED, and Mark LED are automatically calculated during the calibration procedure and typically do not require adjustment. Refer to the *ZPL II Programming Guide* for further information on these parameters.



Press the **NEXT/SAVE** key repeatedly to skip these parameters and go to the **LCD ADJUST** display.

Setting the LCD Adjust

This parameter adjusts the brightness of your display.



Press the right oval key to increase the value (increases the brightness). Press the left oval key to decrease the brightness.

Default: 10

Range: 00 to 19

Press the **NEXT/SAVE** key to display **FORMAT CONVERT**.

Setting the Format Convert

This parameter selects the bitmap scaling factor. The first number is the original dots per inch (dpi) value for which the ZPL format was written; the second number is the dpi to which you wish to scale (usually the dpi of the printer being used).

Press the right or left oval key to display other choices.



Default: None

Selections: None, 150 → 300, 150 → 600, 200 → 600, 300 → 600

For the *XiIII*, press the **NEXT/SAVE** key to display **IP RESOLUTION**. Proceed to [IP Resolution on page 2-48](#).

For the *XiIIIPlus*, press the **NEXT/SAVE** key to display **IDLE DISPLAY**.

Idle Display

This parameter selects the LCD options for the real-time clock.



Note • If the default value is not selected, pressing either black oval key briefly displays the firmware version of the printer.

Press the right or left black oval key to display other choices.



Default: Firmware version

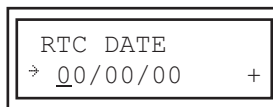
Selections: mm/dd/yy (24 hour), mm/dd/yy (12 hour), dd/mm/yy (24 hour), dd/mm/yy (12 hour)

Press the **NEXT/SAVE** key to display **RTC DATE**.

Setting the RTC Date

This parameter sets the date following the convention selected in IDLE DISPLAY.

Press the left black oval key to move to the next digit position, press the right black oval key to increase the value of the digit.

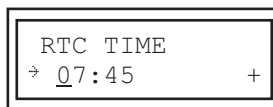


Press the **NEXT/SAVE** key to display **RTC TIME**.

Setting the RTC Time

This parameter sets the time following the convention selected in IDLE DISPLAY.

Press the left black oval key to move to the next digit position, press the right black oval key to increase the value of the digit.



For the *XiIIIPlus*: Press the **NEXT/SAVE** key to display **LANGUGE**. Proceed to page 2-49.

For the *XiIII*: Press the **NEXT/SAVE** key to display **IP RESOLUTION**.

IP Resolution



Note • This display does not appear unless a ZebraNet II Print Server is installed.

Depending on the selection, this parameter allows either the user (PERMANENT) or the server (DYNAMIC) to select the IP address. For more information, refer to *ZebraNet Networking: PrintServer II Installation* and the *User's Guide* for this printer.

IP RESOLUTION ←DYNAMIC →

Press the right or left oval key to display other choices.

Default: Dynamic

Selections: Dynamic, Permanent

Press the **NEXT/SAVE** key to display **IP ADDRESS**.

IP Address

IP PROTOCOL ALL



Note • This display does not appear unless a ZebraNet II Print Server is installed.

This parameter selects the IP address if PERMANENT was chosen in IP RESOLUTION. (If DYNAMIC was chosen, the user cannot select the address.) For more information, refer to *ZebraNet Networking: PrintServer II Installation* and *User's Guide*.

IP ADDRESS 000.000.000.000

Press the left oval key to move to the next digit position; press the right oval key to increase the value of the digit.

Press the **NEXT/SAVE** key to display **SUBNET MASK**.

Subnet Mask



Note • This display does not appear unless a ZebraNet II Print Server is installed.

This parameter selects the part of the IP address that is considered to be part of the local network. It can be reached without going through the default gateway.



Press the left oval key to move to the next digit position; press the right oval key to increase the value of the digit.

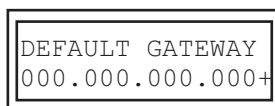
Press the **NEXT/SAVE** key to display **DEFAULT GATEWAY.\$**

Default Gateway



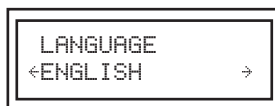
Note • This display does not appear unless a ZebraNet II Print Server is installed.

This parameter allows you to select the IP address through which the network traffic is routed if the destination address is not part of the local network.



Language

This parameter allows you to change the language used on the front panel display.



Press the right or left oval key to display other choices..

Default: English
English, Spanish, French, German, Italian, Norwegian,
Selections: Portuguese, Swedish, Danish, Spanish 2, Dutch, Finnish,
Japanese

You have now completed the entire configuration and calibration sequence. Press either the **NEXT/SAVE** key to save all settings, or the **SETUP/EXIT** key to go through the selections again.



SECTION 3 TROUBLESHOOTING

Test routines are built into the Zebra *XiIII*-family printers to aid the technician in diagnosing faults. Some of these tests are enabled by holding a front panel key while turning the printer power switch On (I).

POWER-ON SELF TEST

A Power-On Self Test (POST) is performed each time the printer is turned On (I). This test checks for proper initialization of various electronic circuits and establishes starting parameters as those stored in the printer's memory. During this test sequence, the front panel LEDs turn On and Off to ensure proper operation.

At the end of this self test, only the POWER LED remains lit. If other LEDs are also lit, refer to Basic Troubleshooting, [page 3-14](#).

If the printer is set up for non-continuous media, one or more labels feed out, up to a maximum length of one label plus three additional inches (7.6 cm) of media.

To initiate the Power-On Self Test, turn the printer On (I) using the power switch located at the rear of the printer. The front panel power-on indicator lights. The other front panel LEDs and the Liquid Crystal Display (LCD) monitor the progress and indicate the results of the self test. The normal self test sequence is shown on [page 3-2](#).

The normal self test sequence is as follows:

Table 3-1. Self Test Sequence, Firmware 33.10.X, XIII and R-140

1.		All lights turn on simultaneously and then turn off in sequence through the following steps.
2.	SRAM TEST	SRAM functionality test performed.
3.	OPTION ROM TEST	Option ROM functionality test performed. The words "Not Installed" are added to the display if optional ROM is not used.
4.	PRINthead TEST	Printhead is checked for proper operation.
5.	PROCESSOR TEST	Processor functionality test performed. The word "Failed" is added to the display if the test fails.
6.	E-CUBED TEST	E-cubed functionality test performed. The word "Failed" is added to the display if the test fails.
7.	EEPROM TEST	EEPROM/PROM functionality test performed. The word "Failed" is added to the display if the test fails.
8.	MEMORY CARD TEST	Optional PCMCIA Memory Card functionality test performed. The word "Failed" is added to the display if the test fails.
9.		Depending on how the ^MF (Media Feed) instruction is set, the printer feeds to the first web or label length, calibrates ribbon and media sensors, or sets label length and feeds one or more labels.
10.	CHECKING ONBOARD FLASH	Checking Flash memory.
11.	PRINTER READY X.XMB V42.11.6	Printer is ready for operation. Refer to "Configuration" to set specific parameters. Designate prompt language with the ^KL command or from the menu.

Table 3-2. Self Test Sequence, Firmware 33.11.X, XiIII and R-140



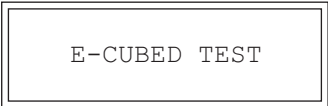








1.		All lights turn on simultaneously and then turn off in sequence through the following steps.
2.		Processor functionality test performed. The word "Failed" is added to the display if the test fails.
3.		E-cubed functionality test performed. The word "Failed" is added to the display if the test fails.
4.		EEPROM/PROM functionality test performed. The word "Failed" will be added to the display if the test fails.
5.		Depending on how the ^MF (Media Feed) instruction is set, the printer feeds to the first web or label length, calibrates ribbon and media sensors, or sets label length and feed one or more labels.
6.		Checking Flash memory.
7.		Printer is ready for operation. Refer to "Configuration" to set specific parameters. Designate prompt language with the ^KL command or from the menu.

Table 3-3. Self Test Sequence, Firmware 42.11.X, XiiiPlus

1.		After several seconds, all lights turn on and then off, except for POWER.
2.		Printer is still testing, then starts to test the memory card.
3.		Checking memory card.
		Printer is ready for operation. Refer to “Configuration” to set specific parameters. Designate prompt language with the ^KL command or from the menu.

PRINTER SELF TESTS

Introduction

These self tests produce sample labels and provide specific information that help determine the operating conditions for the printer.

Each self test is enabled by pressing a specific front panel key or keys while turning the power switch On (I). Keep the key pressed until all the front panel LEDs turn on and stay on.

When the Power-On Self Test is completed, the selected printer self test automatically starts.



Note • When performing self tests, ensure that all data interface cables are disconnected from the printer.

It is recommended that full-width media be used when performing these tests. Labels less than full-width lose printing on the right side. Label length determines the amount of print starting at the top of the label.

When canceling a self test prior to its actual completion, always turn the printer power Off (O) and then back On (I) to reset the printer.

CANCEL Key Self Test

Refer to [Figure 3-1](#). This self test prints a single label that contains a listing of the current configuration parameters stored in configuration (EEPROM) memory. To perform this self test, press the **CANCEL** key while turning the power switch On (I).

The configuration may be changed either temporarily (for specific label formats or ribbon and label stock) or permanently (by saving the new parameters in EEPROM memory). Refer to the *User's Guide* for further details on the printer configuration procedure.

PRINTER CONFIGURATION		PRINTER CONFIGURATION	
Zebra Technologies ZTC 140XiIII-200dpi		Zebra Technologies ZTC 90XiIII Plus-300dpi	
+10.....	DARKNESS	04.0.....	DARKNESS
+000.....	TEAR OFF	2 IPS.....	PRINT SPEED
TEAR OFF.....	PRINT MODE	+000.....	TEAR OFF
NON-CONTINUOUS.....	MEDIA TYPE	TEAR OFF.....	PRINT MODE
WEB.....	SENSOR TYPE	NON-CONTINUOUS.....	MEDIA TYPE
THERMAL-TRANS.....	PRINT METHOD	WEB.....	SENSOR TYPE
129 9/8 MM.....	PRINT WIDTH	THERMAL-TRANS.....	PRINT METHOD
1722.....	LABEL LENGTH	086 08/12 MM.....	PRINT WIDTH
39.0IN 988MM.....	MAXIMUM LENGTH	2022.....	LABEL LENGTH
PARALLEL.....	PARALLEL COMM.	39.0IN 988MM.....	MAXIMUM LENGTH
RS232.....	SERIAL COMM.	MEDIA DISABLED.....	EARLY WARNING
19200.....	BAUD	MAINT. OFF.....	EARLY WARNING
8 BITS.....	DATA BITS	NOT CONNECTED.....	USB COMM.
NONE.....	PARITY	PARALLEL.....	PARALLEL COMM.
2 STOP BITS.....	STOP BITS	RS232.....	SERIAL COMM.
XON/XOFF.....	HOST HANDSHAKE	9600.....	BAUD
NONE.....	PROTOCOL	8 BITS.....	DATA BITS
000.....	NETWORK ID	NONE.....	PARITY
NORMAL MODE.....	COMMUNICATIONS	XON/XOFF.....	HOST HANDSHAKE
< > 7EH.....	CONTROL PREFIX	NONE.....	PROTOCOL
<^> 5EH.....	FORMAT PREFIX	000.....	NETWORK ID
<,> 2CH.....	DELIMITER CHAR	NORMAL MODE.....	COMMUNICATIONS
ZPL II.....	ZPL MODE	<^> 7EH.....	CONTROL PREFIX
FEED.....	MEDIA POWER UP	<^> 5EH.....	FORMAT PREFIX
FEED.....	HEAD CLOSE	<,> 2CH.....	DELIMITER CHAR
DEFAULT.....	BACKFEED	ZPL II.....	ZPL MODE
+010.....	LABEL TOP	CALIBRATION.....	MEDIA POWER UP
+0000.....	LEFT POSITION	CALIBRATION.....	HEAD CLOSE
0000.....	HEAD TEST COUNT	DEFAULT.....	BACKFEED
0500.....	HEAD RESISTOR	+000.....	LABEL TOP
OFF.....	VERIFIER PORT	+0000.....	LEFT POSITION
OFF.....	APPLICATOR PORT	0000.....	HEAD TEST COUNT
057.....	WEB S.	0500.....	HEAD RESISTOR
075.....	MEDIA S.	OFF.....	VERIFIER PORT
064.....	RIBBON S.	OFF.....	APPLICATOR PORT
092.....	MARK S.	PULSE MODE.....	START PRINT SIG
092.....	MARK MED S.	FEED MODE.....	REPRINT MODE
013.....	MEDIA LED	DISABLED.....	REPRINT MODE
046.....	RIBBON LED	047.....	WEB S.
000.....	MARK LED	079.....	MEDIA S.
+10.....	LCD ADJUST	072.....	RIBBON S.
DPSWFXM.....	MODES ENABLED	050.....	MARK S.
1024 8/MM FULL.....	MODES DISABLED	000.....	MARK MED S.
V33.10.0 <-.....	RESOLUTION	003.....	MEDIA LED
V33.10.0 <-.....	SOCKET 1 ID	000.....	RIBBON LED
CUSTOMIZED.....	FIRMWARE	000.....	MARK LED
12288.....:R:	HARDWARE ID	+10.....	LCD ADJUST
4096.....:B:	CONFIGURATION	DPSWFXM.....	MODES ENABLED
2048.....:E:	RAM	1024 12/MM FULL.....	MODES DISABLED
NONE.....	MEMORY CARD	V42.11.0 <-.....	RESOLUTION
007 POWER SUPPLY.....	ONBOARD FLASH	V12.0.0.21.....	FIRMWARE
*** CUTTER.....	FORMAT CONVERT	CUSTOMIZED.....	HARDWARE ID
005 DISPLAY.....	J12 INTERFACE	12288.....:R:	CONFIGURATION
*** NONE.....	J11 INTERFACE	2048.....:E:	RAM
*** NONE.....	J10 INTERFACE	NONE.....	ONBOARD FLASH
*** NONE.....	J9 INTERFACE	007 POWER SUPPLY.....	FORMAT CONVERT
*** NONE.....	J8 INTERFACE	004 DISPLAY.....	P31 INTERFACE
*** NONE.....	J7 INTERFACE	004 DISPLAY.....	P32 INTERFACE
NONE.....	TWINAX/COAX ID	FW VERSION.....	TWINAX/COAX ID
NONE.....	ZEBRA NET II	00/00/00.....	IDLE DISPLAY
		18:19.....	RTC DATE
		DYNAMIC.....	RTC TIME
		ALL.....	IP RESOLUTION
		010.003.004.095.....	IP PROTOCOL
		255.255.255.000.....	IP ADDRESS
		010.003.004.001.....	SUBNET MASK
			DEFAULT GATEWAY

FIRMWARE IN THIS PRINTER IS COPYRIGHTED

Figure 3-1. CANCEL Key Test Sample Label

PAUSE Key Self Test

1. See [Figure 3-2](#). The initial self test prints 15 labels at a speed of 1 ips (inch per second) for the 96XiIII/XiIIIPlus and 2.4 ips for all others; then it automatically pauses the printer. Each time **PAUSE** is pressed, an additional 15 labels print.
2. While the printer is paused, press **CANCEL** once to alter the self test. Now each time **PAUSE** is pressed, the printer prints the self test labels at 4 ips for the 96XiIII/XiIIIPlus, 6 ips for all others. Fifteen additional labels are printed each time **PAUSE** is pressed.
3. While the printer is paused, press the **CANCEL** key a second time to change the self test print speed back to 1 ips for the 96XiIII/XiIIIPlus and 2.4 ips for all others. Each time **PAUSE** is pressed, the printer prints 50 labels.
4. While the printer is paused, press the **CANCEL** key a third time to change the self test print speed to 6 ips (4 ips for 96XiIII/XiIIIPlus). Each time the **PAUSE** key is pressed, the printer prints 50 labels.
5. While the printer is paused, press the **CANCEL** key a fourth time to change the self test print speed to the printer's fastest speed. Each time **PAUSE** is pressed, the printer prints 15 labels.



Figure 3-2. PAUSE Key Test Sample Label

FEED Key Self Test



Note • The Cancel key self test should be performed prior to this self test.

Information on the printed configuration label (CANCEL Key Self Test) will be used with the results of this self test to determine the best darkness setting for a specific media/ribbon combination.

The FEED key self test label (shown in [Figure 3-3](#)) prints out at various positive and negative darkness settings relative to the darkness value shown on the configuration label. Inspect these labels and determine which one has the best darkness setting for the application. This value can be entered into the printer by configuring the “Setting Darkness” parameter.

The value printed on the selected test label is added to or subtracted from the “Darkness” value specified on the configuration label.

The resulting numeric value (0 to 30) that is best for that specific media/ribbon combination should be entered as the “Darkness” parameter.



Figure 3-3. FEED Key Self Test Sample Label

FEED Key and PAUSE Key Self Test

To reset the printer configuration temporarily to the factory default values, press these two keys at the same time while turning the power On (I). The factory default values are active until power is turned Off (O). **If factory default values are “saved” during configuration, a media calibration procedure *must be performed* and some parameters must be reconfigured.** Refer to the *User’s Guide* for more details.

PAUSE Key and CANCEL Key Self Test

See [Figure 3-4](#). This self test can be used to verify proper printer operation after parts have been replaced or adjusted. When activated, the printer prints a maximum of 500 head test labels. A serialized number prints on each label. Press **PAUSE** or turn the printer power Off (O) to stop printing.

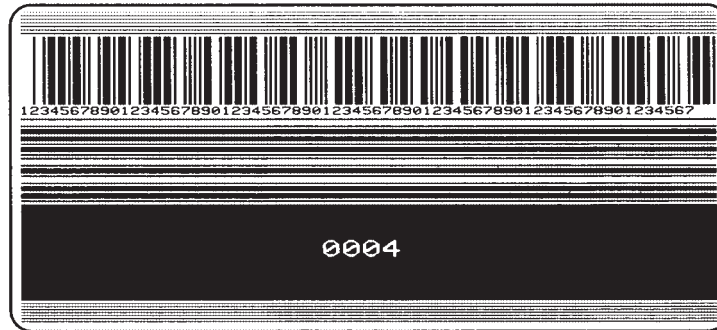


Figure 3-4. PAUSE Key and CANCEL Key Self Test Label

FEED Key and CANCEL Key Self Test

This self test is normally performed during the manufacturing process or after a major overhaul of the mechanical assemblies. This test prints seven pre-programmed label formats at speeds of 6 ips and 2 ips. The printer pauses after each format. The sequence of label formats is shown in [Table 3-4](#). Refer to Figures [3-7](#) through [3-13](#) for sample labels.



Note • Disregard the speed for the sample labels.

Table 3-4. Format Sequence

FORMAT	PRINTING	TEST FUNCTION
1	20 at 6 ips*	Left Ribbon Wrinkle Test
2	20 at 6 ips*	Right Ribbon Wrinkle Test
3	20 at 6 ips*	Bar Code Wrinkle Test (Code-39)
4	20 at 2 ips**	Left Ribbon Wrinkle Test
5	20 at 2 ips**	Right Ribbon Wrinkle Test
6	20 at 2 ips**	Bar Code Wrinkle Test (Code-39)
7	20 at 6 ips*	Usable Area Test
8	20 at 6 ips*	Head Temperature Test
9	20 at 6 ips*	Upper Smear Test
10	20 at 6 ips*	Lower Smear Test
11	20 at 2 ips**	Usable Area Test
12	20 at 2 ips**	Head Temperature Test
13	20 at 2 ips**	Upper Smear Test
14	20 at 2 ips**	Lower Smear Test

* 96XIII prints at 4 ips

** 96XIII prints at 1 ips

Communications Diagnostics Test

Refer to [Figure 3-5](#). This test is controlled by configuring the Setting Communications Mode parameter. Set to diagnostic.



Note • This label is inverted when printed.

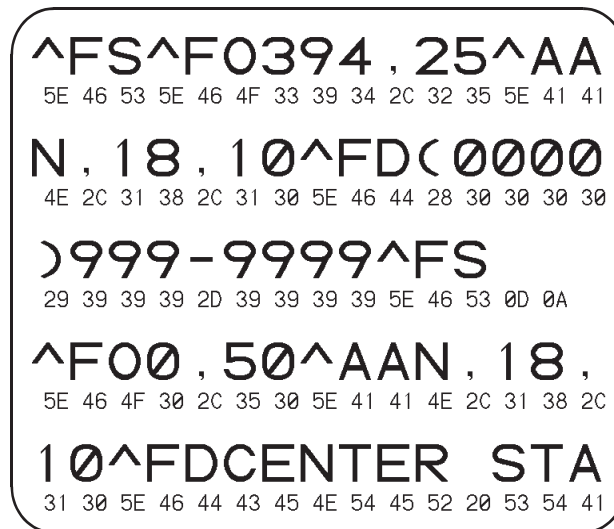


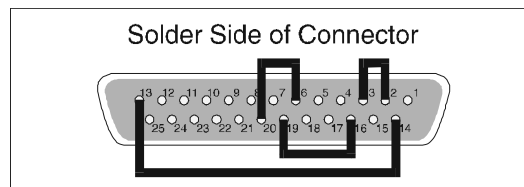
Figure 3-5. Communications Diagnostics Self Test

EXTENDED PRINTER DIAGNOSTICS

Additional diagnostic tests are available for printhead assembly adjustments. These diagnostic tests are accessible only when the data interface cable is disconnected from the printer and a loop back connector is attached in its place.

The serial rollback connector is a 25-pin “D” Type (DB25P – Male) with the following pins tied together:

- Pins 2 and 3
- Pins 6 and 20
- Pins 13 and 14
- Pins 16 and 19



The parallel loopback connector is a standard 36-pin parallel connector mounted to a small printed circuit board. This connector is available from Zebra Technologies as part # 44680M.

For each of these diagnostic tests, the printer “transmits” the test label format out of the data interface connector to the rollback connector. The rollback connector passes the test label format to the printer as received data, and the test label is printed.

PAUSE Key Loopback Test

This test demonstrates the media movement capabilities of the printer and provides a test label to inspect while making print quality adjustments.

With the rollback connector in place, press **PAUSE** while turning the power switch On (I).

After the Power-On Self Test, the printer prints 500 head test labels.

A serialized number prints on each label for label comparison purposes if required. See label example in [Figure 3-6](#). The **PAUSE** key can be used to stop and restart the printing operation.

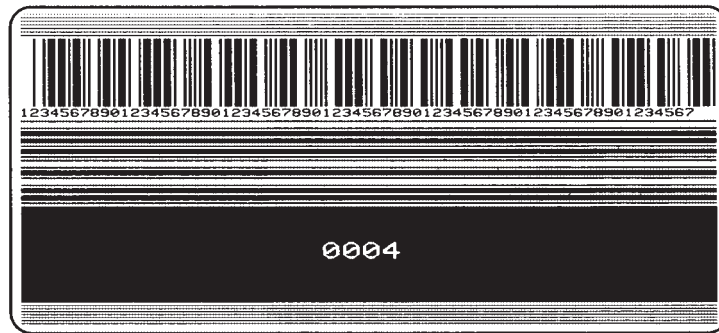


Figure 3-6. PAUSE Key Loopback Test Sample Label

FEED Key Loopback Test

With the rollback connector in place, press the **FEED** key while turning the power switch On (I).

After the Power-On Self Test, the printer begins printing the same series of label formats as shown in [Table 3-4](#) for the FEED key/CANCEL key test. The printer pauses at the end of each printed format. Press the **PAUSE** key to begin printing the next format. Sample labels are shown in [Figures 3-7](#) through [3-13](#).

The **PAUSE** key can be used to stop and restart the printing operation. When the printer is paused, the **CANCEL** key can be used to move to the next label format.

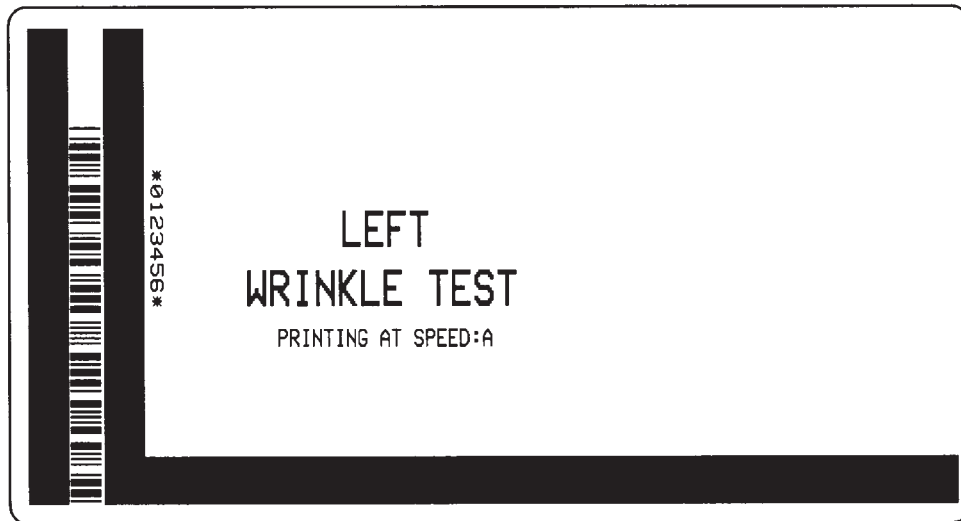


Figure 3-7. Format 1 (4) Test Sample Label

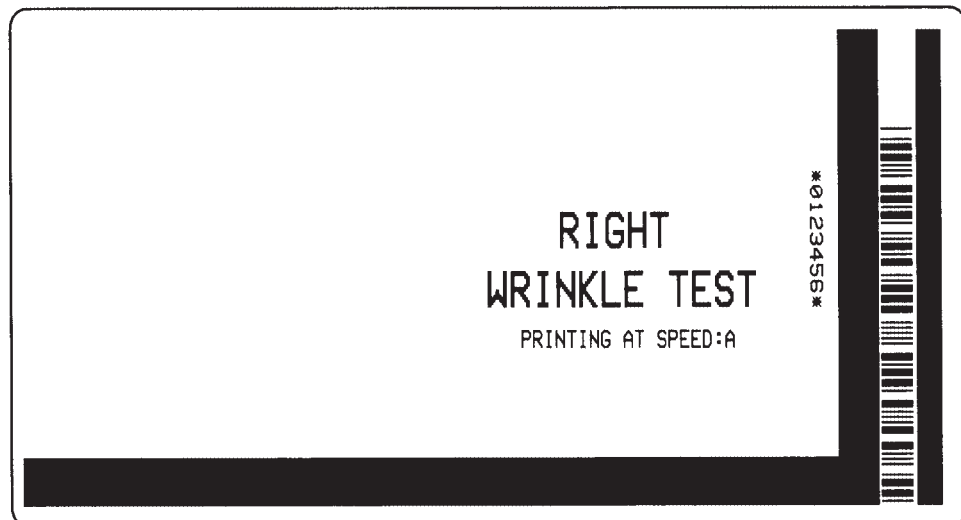


Figure 3-8. Format 2 (5) Test Sample Label

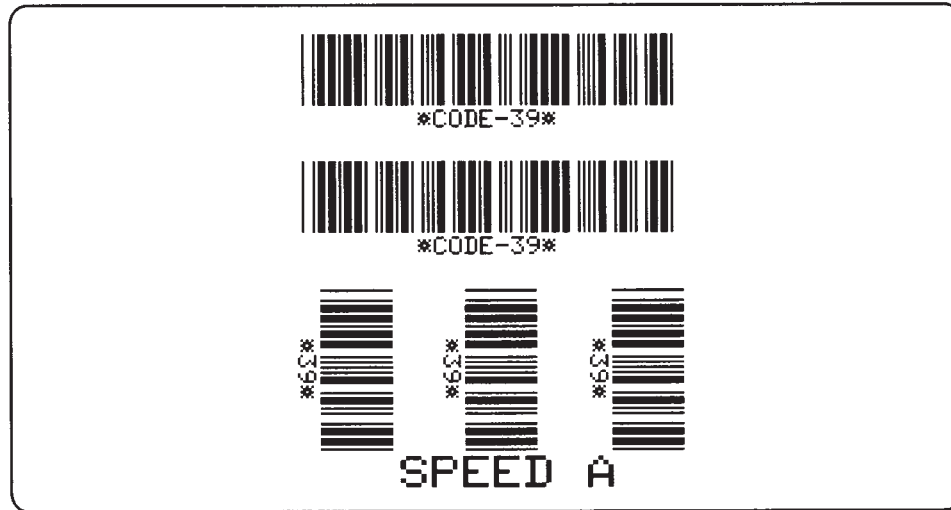


Figure 3-9. Format 3 (6) Test Sample Label

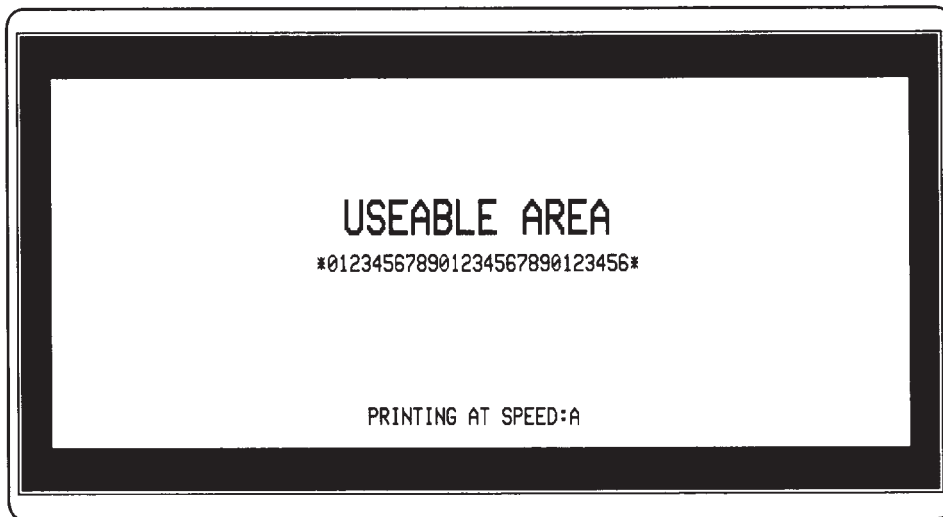


Figure 3-10. Format 7 (11) Test Sample Label

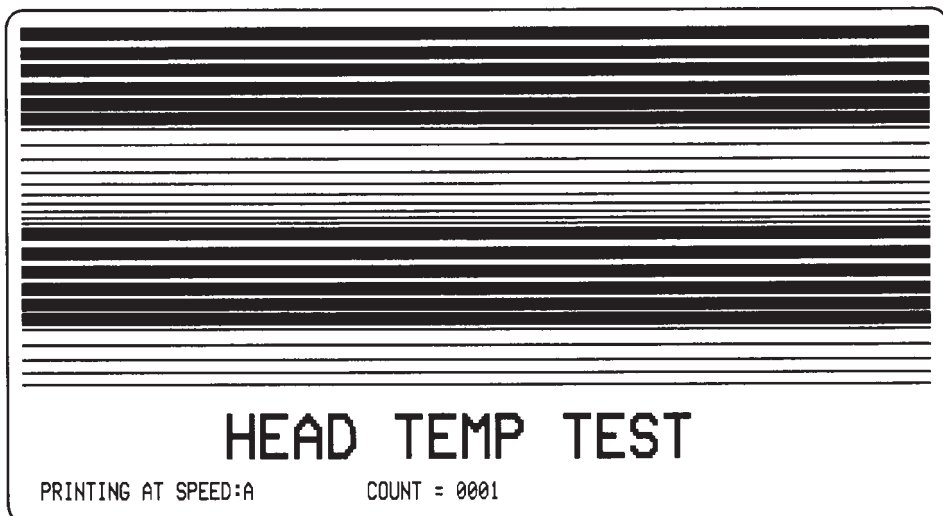


Figure 3-11. Format 8 (12) Test Sample Label

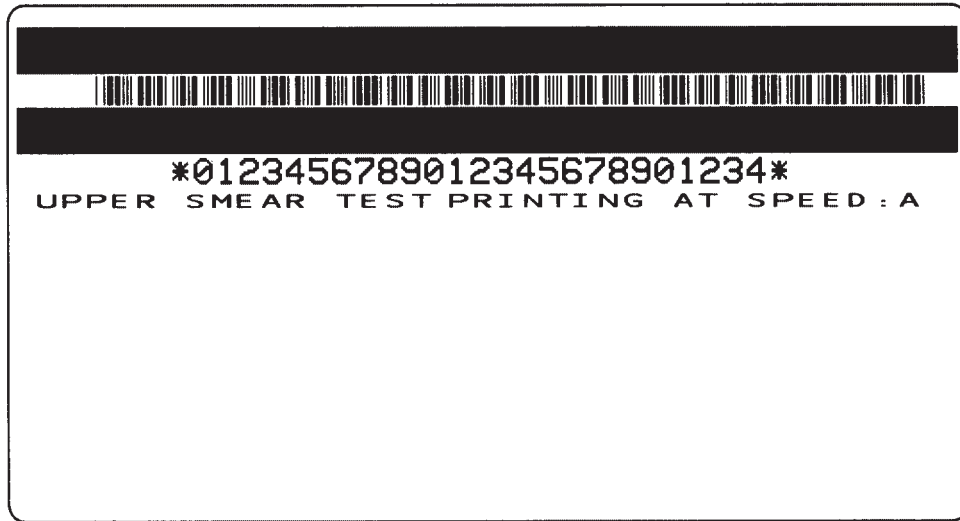


Figure 3-12. Format 9 (13) Test Sample Label

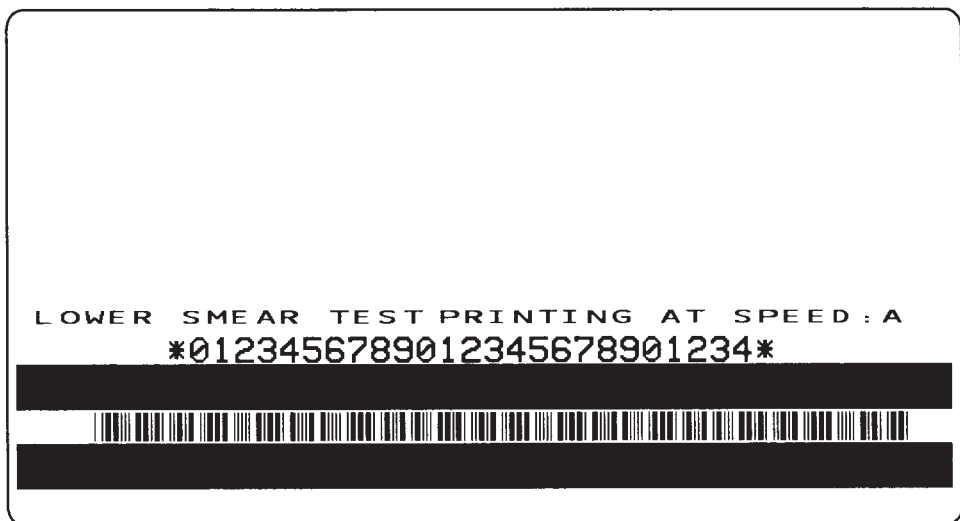


Figure 3-13. Format 10 (14) Test Sample Label

BASIC TROUBLESHOOTING

Consult the Troubleshooting Table that follows and compare the printer output with the sample labels to improve the quality of your labels.

Table 3-5. Basic Troubleshooting

SYMPTOM	DIAGNOSIS	ACTION
All LEDs light, but nothing displays on LCD and printer does not operate.	Main logic board or Flash faulty.	Download new Flash or replace the main logic board.
All LEDs flash on and off.	No significant amount of DRAM tested good.	Replace the main logic board.
Take Label LED flashing.	Printer misconfigured for Peel-Off Mode.	If peel-off is desired, check Take Label sensor.
Printer locks up while running Power-On Self Test.	Main logic board failure.	Replace main logic board.
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> EEPROM CHECKSUM INVALID </div>	EEPROM checksum is incorrect.	Replace the main logic board.
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> ERROR CONDITION PAPER OUT </div> Printer stops and ERROR LED flashes.	No media loaded or incorrectly loaded.	Load media correctly.
	Misadjusted media sensor.	Check media sensor position and sensitivity.
	Maximum label length set shorter than label length.	Verify maximum label length setting is correct.
	Printer set for non-continuous media, but continuous media is loaded.	Install proper media or reset printer for current media type.
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> ERROR CONDITION RIBBON OUT </div> Printer stops and ERROR LED flashes.	For Thermal Transfer: Ribbon not loaded or incorrectly loaded. or Ribbon sensor not sensing ribbon that is correctly loaded.	Load ribbon correctly. Ensure snap plate is properly installed. Perform media and ribbon sensor calibration.
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> WARNING RIBBON IN </div>	For Direct Thermal: Ribbon loaded unnecessarily.	Remove ribbon. Verify snap plate is properly installed.
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> ERROR CONDITION HEAD OPEN </div> Printer stops and ERROR LED flashes.	Printhead is not fully closed.	Close printhead completely.
	Head open sensor not detecting position flag, or flag not in the proper position.	Check head open sensor and flag for proper operation.

Table 3-5. Basic Troubleshooting


SYMPTOM	DIAGNOSIS	ACTION
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> WARNING HEAD OVERTEMP </div> <p>Printer stops and ERROR LED flashes.</p>	<p>Printhead element is overheated.</p>	<p>Printer resumes printing when the printhead element cools to a normal operating temperature.</p>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> WARNING HEAD UNDERTEMP </div> <p>Printer stops and ERROR LED flashes.</p>	<p>Printhead element is not hot enough to print properly.</p>	<p>Environment too cold for proper printing. Relocate printer to warmer area.</p>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> ERROR CONDITION ELEMENT BAD </div> <p>Experiencing print quality problems.</p>	<p>Printhead data cable not properly connected.</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">WARNING:</p> <p style="text-align: center;"> THE PRINTHEAD CAN BE VERY "HOT" AND CAUSE BURNS.</p> </div> <p>Allow printhead to cool. Disconnect and reconnect printhead cables. Ensure cables are fully inserted into connectors.</p>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> ERROR CONDITION CUTTER JAMMED </div> <p>Printer stops and ERROR LED flashes.</p>	<p>Printhead element is going bad.</p>	<p>To override this message, place ^JT in your format and then ~JO to turn off the HEAD TEST. Clean printhead and test for proper printing. Replace printhead if necessary.</p>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> ERROR CONDITION CUTTER JAMMED </div> <p>Printer stops and PAUSE LED lights. LCD displays:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> ERROR CONDITION Out of Memory </div>	<p>Turn power Off (O). Remove media, reload media, and turn power On (I). If the error condition still exists, check cutter sensors and control board. Replace if necessary.</p>	<p>Not enough memory to perform the function indicated in the second line of the display. (Printer may not be configured for continuous label stock with the maximum label length set too long.)</p> <p>Functions:</p> <ol style="list-style-type: none"> 1. Creating a bitmap size is larger than label length/width specified. 2. Storing a bitmap: Not enough memory available to store bitmap created. 3. Building a format: Label is too complex. 4. Storing a format size too large to fit in available memory. 5. Storing a graphic image is too large to fit in available memory. 6. Storing a font: Not enough memory to store font.
		<p>You may do any of the following:</p> <ol style="list-style-type: none"> 1. STORING ERRORS: With PAUSE on, use the ~HM ZPL II command to display the amount of memory available. Redesign graphic/format to fit in the available memory or remove items from memory to create more space. <p style="text-align: center;">or</p> <ol style="list-style-type: none"> 1. Press PAUSE to skip that step in the process and continue to the next step. 2. With PAUSE on, press CANCEL—printer skips that label formatting process and continues to the next label format. 3. Turn power Off (O) to clear printer memory and start over.

Table 3-5. Basic Troubleshooting

SYMPTOM	DIAGNOSIS	ACTION
Poor print quality.	Darkness set too low.	Reconfigure darkness setting.
	Incorrect media and ribbon.	Replace media and ribbon.
	Printhead just replaced.	Ensure printhead is installed properly with no wires or debris caught underneath.
	Incorrect printhead adjustments.	Perform required adjustments.
	Printhead resistance not configured to proper value.	Reconfigure printhead resistance.
Truncated print, no print, or feed button operates incorrectly while using non-continuous media.	Maximum label length parameter set less than actual label length.	Set correct label length.
	Printer in Rewind or Peel-Off Mode turned on without media or backing around rewind spindle.	Load media correctly for Rewind or Peel-Off Mode.
Long vertical tracks of missing print on several labels.	Wrinkled ribbon.	See Wrinkled Ribbon in this table.
	Print element damaged.	Replace printhead.
Fine gray lines on blank labels at angles.	Wrinkled ribbon.	See Wrinkled Ribbon in this table.
Wrinkled ribbon.	Ribbon fed through machine incorrectly.	Load ribbon correctly.
	Ribbon supply spindle tension needs adjusting.	Perform adjustments.
	Incorrect burn temperature.	Set burn temperature to lowest setting possible for good print quality.
	Incorrect printhead pressure or balance.	Set pressure to minimum needed. Refer to printhead balance adjustment and printhead pressure adjustment procedures.
	Media not feeding properly; walking from side to side.	Make sure media is snug by adjusting media guide.
	Strip plate needs adjusting.	Perform adjustments.
	Printhead needs realigning with platen roller.	Perform adjustments.
	Ribbon take-up spindle tension needs adjusting.	Perform adjustments.
	Three-point mount for ribbon supply spindle needs adjusting.	Perform adjustments.
Ribbon supply core slipping; spindle blades need adjusting.	Perform adjustments.	
Light printing or no printing on left or right side of label.	Printhead needs balancing.	Adjust balance. See printhead balance adjustment procedures.

Table 3-5. Basic Troubleshooting

SYMPTOM	DIAGNOSIS	ACTION
Misregistration/skipped labels.	Improper sensor type selected.	Perform media sensor adjustments.
	Misadjusted media sensors.	Calibrate printer.
	Improper spindle tensions.	Perform spindle adjustments.
	Improper ZPL format.	Correct ZPL format.
Misregistration and misprint of one to three labels. Vertical drift in top-of-form registration.	Media was pulled when motor was not moving.	Open and close printhead so it calibrates to find label length.
	Printer in Rewind or Peel-Off Mode turned on without media or backing around rewind spindle.	Load media correctly for rewind or peel-off mode.
	Misadjusted media sensor.	Place media sensor in proper position.
	A ± 1 mm vertical drift allowable due to tolerances of the mechanical parts and printer modes.	Use top position setting to reposition top of form. Calibrate if excessive.
Label jam in rear area of the printhead.	Upper media plate (snap plate) needs cleaning.	Clean upper media plate (snap plate).
Print label feeds out and then backfeeds, immediately resting under the printhead.	Printer set for cutter mode with no cutter installed.	Set correct print mode.
Changes in parameter settings did not take effect.	Parameters set incorrectly.	Cycle power. Reload factory defaults. Then, set parameters and save permanently.
	If problem continues, there may be a problem on the main logic board.	Replace main logic board.
Missing LCD characters or parts of characters.	LCD may need replacing.	Run Power-On Self Test and check that LCD displays all characters.
ZPL sent to printer but not recognized. Buffer light remains on or flashes.	Communications parameters are incorrect.	Print a communications diagnostic label. Check for format or overrun errors. Reset communication parameters.
	Prefix and delimiter characters set in printer do not match those used in ZPL.	Set characters in the printer to match ZPL format. If problem continues, check ZPL format for changed ^CC, ^CT, and ^CD.
	Zebra protocol is on.	Set protocol to none.

FACTORY ASSISTANCE

Should you encounter any problem that cannot be corrected with the aid of this manual, immediately contact your distributor or the Zebra Technical Support department to minimize downtime and/or assist in returning the equipment.

Returning Equipment

Should it become necessary to ship your *XiIII*-family printer, carefully pack it in a suitable container to avoid damage during transit. A note describing the failure must be enclosed with the unit. Whenever possible, the original shipping container should be used. If the original shipping container is not available, a replacement can be ordered from the Technical Support department. If other containers are used, a procedure similar to the original factory packaging should be followed.

Remove all media and ribbon from the printer. Enclose the unit in a protective, dust proof bag and ensure that the unit floats in an outer carton of shock-absorbing material.

Zebra Technical Support	
Phone:	1-847-913-2259
Fax:	1-847-913-2578
Hardware e-mail:	hwtsamerica@zebra.com
Software e-mail:	swsamerica@zebra.com

A Return Materials Authorization (RMA) number is required for all equipment being returned. Contact Zebra Technologies Technical Support department to obtain an RMA number. Equipment returned for service without prior authorization may be refused.



Note • Before packing the printer, remove any ribbon and paper rolls from the media compartment. Do not package the printer in a rigid container without shock mounts or shock-absorbing packing material. A rigid container allows shock on the outside to be transmitted to the unit and may cause damage.

Section 4

PREVENTIVE AND CORRECTIVE MAINTENANCE

MAINTENANCE CONCEPTS

Maintenance for the Zebra *XiIII*, *XiIIIPlus*, and R-140-*Series* (RFID) thermal transfer demand printers can be divided into two basic categories:

- **Preventive Maintenance** procedures and operator care instructions. These procedures may be performed by the operator as well as the service technician and should be performed on a regular basis. Preventive maintenance consists of a visual inspection and general cleaning of the interior and exterior of the printer. Preventive maintenance also includes cleaning the printhead and the associated media and ribbon paths.
- **Corrective Maintenance** provides the service technician detailed steps for resolving faults by adjusting or replacing components or modules.

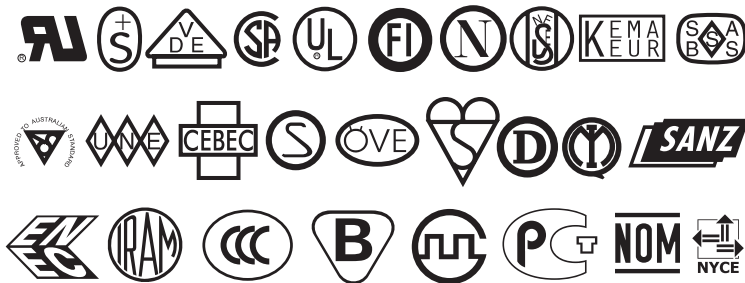
SAFETY INFORMATION

EQUIPMENT SAFETY TIPS



After reviewing each procedure, place a check in the box.

- 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.



- Unless indicated otherwise, turn the power Off (O) before performing any maintenance procedures on the printer. Disconnect the AC power cord from the power source.
- 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.



- Permanent damage to the Flash Memory will result if you turn on the printer with flash memory chips installed in the wrong direction.

EQUIPMENT SAFETY TIPS (CONTINUED)



- To ensure that static-sensitive devices such as printhead and printed circuit boards are not damaged during disassembly and reassembly, observe proper electrostatic safety precautions when handling these components.
- Zebra recommends using solvent containing 90% isopropyl alcohol and 10% distilled water for cleaning:
 - Printheads
 - Platen Rollers
 - Peel-Off Roller
 - Media Path
 - Peel/Tear Bar
 - 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 Zebra printers 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 this Maintenance Manual or the User's Guide. Electrical power must be available and in close proximity to the printer.

PERSONAL SAFETY TIPS

- Danger of an explosion exists if the back-up battery is replaced incorrectly.
- Do not wear any jewelry (rings, watches, bracelets, etc.) or loose clothing when servicing the printers.



- Beware of “Pinch Points” on the printers. Be especially careful of:
 - Opening and closing covers
 - Opening and closing the printhead
 - Rewind Spindle
 - Platen Roller



- Wear protective eyewear when removing E-rings, C-clips, snap rings, and springs.



- For personnel and equipment safety, use a 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.

PREVENTIVE MAINTENANCE

Cleaning the Zebra Printer

Refer to [Table 4-1](#) and perform the preventive maintenance procedures at the prescribed interval.

Table 4-1. Recommended Cleaning Schedule

AREA	METHOD	INTERVAL
Printhead	Solvent*	After every roll of media (or 500 feet [150 m] of fanfold media) when printing in direct thermal mode and after every roll of ribbon when printing in thermal transfer mode.
Platen Roller	Solvent*	
Transmissive Media Sensor	Air blow	
Reflective (Black Mark) Sensor	Air blow	
Media Path	Solvent*	
Tear-Off/Peel-off Bar	Solvent*	As needed.
Snap Plate	Solvent*	As needed.
Take-Label (Label Available) Sensors	Air blow	Monthly.
Ribbon Sensor	Air blow	After every roll.
Ribbon Feeding	Visual inspection	After every roll.
Belts	Visual inspection: Look for belt wear.	Every 6 months or after every 500 rolls.
Media Supply Spindle Media Take-Up Spindle Ribbon Supply Spindle Ribbon Take-Up Spindle	The spindle torque should be tested every year, or 500 rolls of media for the media take-up spindle; and every 200 rolls of ribbon for the ribbon supply and ribbon take-up spindles. The spindle torque need not be readjusted unless the printer is malfunctioning.	
Cutter	Clean stationary cutter blade with solvent* when it becomes gummed up with adhesive and cut debris. After cleaning, apply a small amount of grease to the moving cutter parts.	

*Zebra recommends a solution containing 90% isopropyl alcohol.



Caution • Unless indicated otherwise, turn the printer power Off (O) and disconnect the printer from the power source before performing the following maintenance.



Notes • Use only the cleaning agents described in the following procedures. Zebra Technologies will not be responsible if any other fluids are used on this printer.

EXTERIOR: The exterior surfaces of the printer may be cleaned as required by using a lint-free cloth. **DO NOT** use solvents or harsh cleaning agents. If the unit is excessively dirty, a mild detergent solution or desktop cleaner may be used sparingly.

INTERIOR: As required, use a soft-bristle brush and/or vacuum cleaner to remove any dirt/lint accumulated in the interior of the printer. It is a good practice to inspect these areas after every four rolls of media.

CLEANING SUPPLIES: A preventive maintenance kit (part # 47362) containing six cleaning swabs soaked in solvent (alcohol and distilled water) is available from Zebra.



Notes • The use of certain lubricants such as penetrating oil and silicone oil will damage the printer’s spindles and inhibit proper operation. Do not lubricate any parts in this printer unless called for in the installation and adjustment procedures.

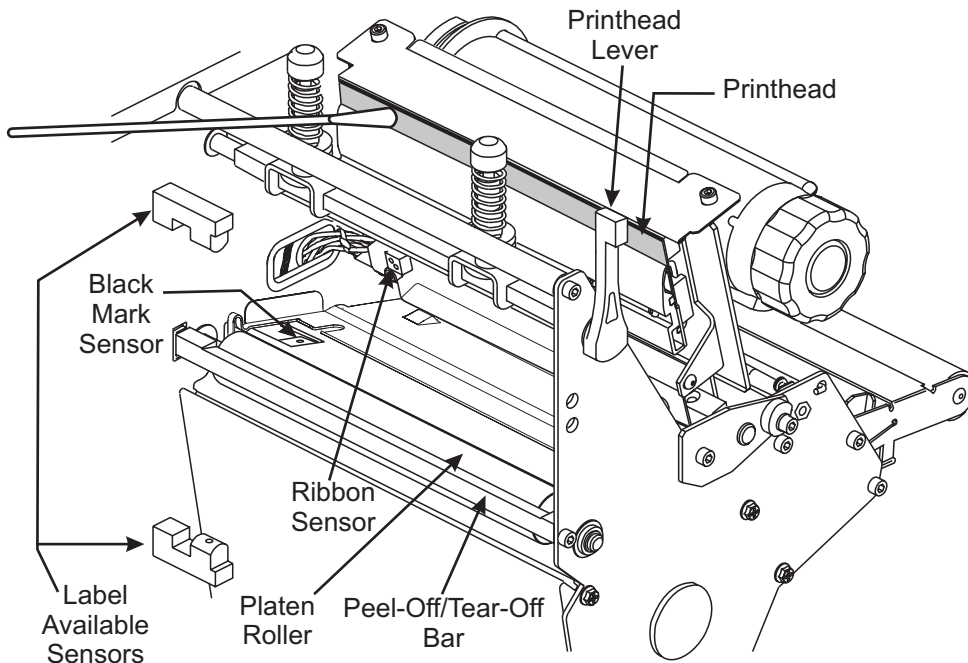


Figure 4-1. Cleaning a Typical Printhead

Cleaning the Printhead

Inconsistent print quality such as voids in the bar codes or graphics may indicate a dirty printhead. For optimum performance, the printhead should be cleaned regularly. Zebra Technologies recommends performing the cleaning procedure when installing a new roll of ribbon, when installing a new roll of direct thermal media, or after printing 500 feet (150 m) of continuous or fanfold media.

It is not necessary to turn the printer power Off (O) prior to cleaning. If power is turned Off (O), all label formats, images, and parameter settings stored in the printer's formatting RAM memory will be lost. Permanent parameter settings stored in EEPROM or FLASH are retained. When power is turned back On (I), it may be necessary to reload some items into the printer's memory.

Use the following procedure to clean the printhead:

1. Open the printhead by moving the printhead lever to the open position.
2. Remove the media and ribbon (if present).
3. Refer to [Figure 4-1](#). Moisten a cleaning swab with solvent and wipe the print elements from end to end. (The print elements are the greyish/black strip just behind the chrome strip on the underside of the printhead.) Allow a few seconds for the solvent to evaporate.
4. Rotate the platen roller and clean thoroughly with a solvent and an applicator.
5. Brush or vacuum any accumulated paper lint and dust away from the rollers and the media and ribbon sensors.
6. Reload ribbon and/or media, close and latch the printhead, restore power, and run the PAUSE Key Self Test to check print quality.

Cleaning the Upper Media Guide (Snap Plate)



Notes • The 90/96XiIII had a change in snap plates in early 2001. Refer to page 4-9 for cleaning instructions on the original snap plate.

The current snap plate is a direct replacement for the original 90/96XiIII.

Upper Media Guide (Snap Plate) for all Current XiIII, XiIIIPlus and R-140 Printers

Clean to remove a label or label adhesive that has adhered to the underside of the snap plate.

1. Refer to [Figure 4-2](#). Insert a small-blade screwdriver or similar tool into the loop on the left side of the snap plate. Lift the snap plate up a short distance.



Note • Use care not to bend, twist, or otherwise deform the loops!

2. Lift up the loop on the right side of the snap plate.
3. Remove the snap plate from the printer.
4. Clean the snap plate with cleaning solvent and a soft cloth.
5. To reinstall the snap plate, insert the two tabs on the bottom of the snap plate into the two slots of the media pathway.
6. Slide the snap plate toward you.
7. Press down on the loops to lock the snap plate into place.

Upper Media Guide (Snap Plate) for the Original 90/96XiIII Printers

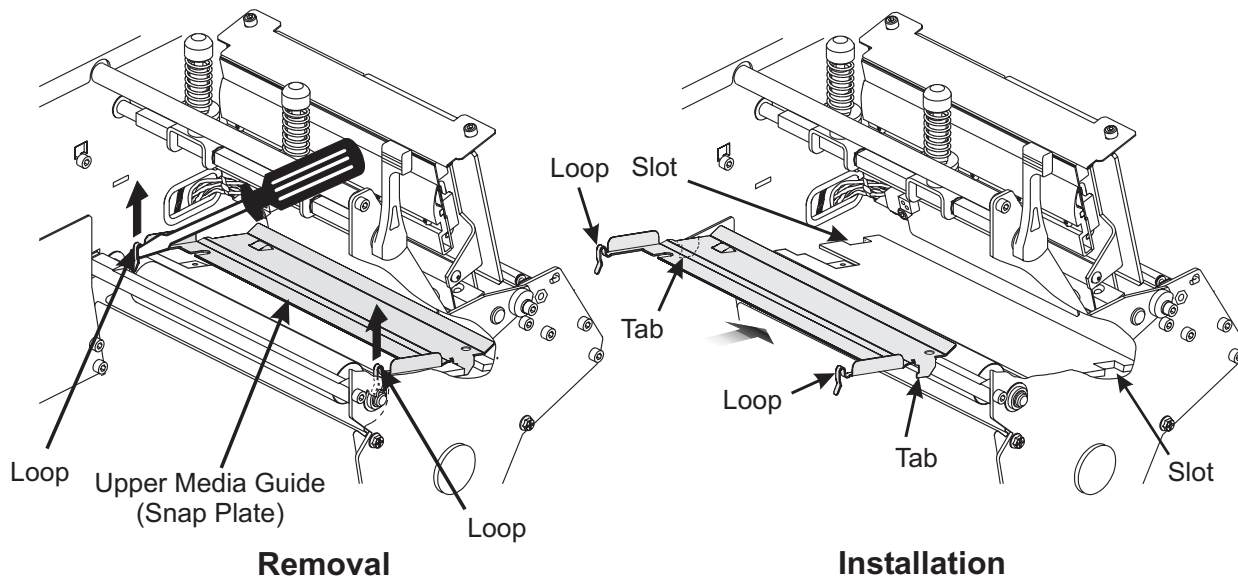


Figure 4-2. Current Snap Plate Removal and Installation



Notes • The 90/96XiIII had a change in snap plates in early 2001. Refer to page 4-9 for cleaning instructions on the current snap plate.

The current snap plate is a direct replacement for the original 90/96XiIII.

Clean to remove a label or label adhesive that has adhered to the underside of the snap plate.

1. Lift the front edge of the snap plate.



Note • Use care not to bend or twist the snap plate.

2. Refer to [Figure 4-3](#). Remove the snap plate from the printer.
3. Clean the snap plate with cleaning solvent and a soft cloth.
4. To reinstall the snap plate, insert the two L-shaped tabs on the bottom of the snap plate into slots of the media pathway.
5. Slide the snap plate to the rear of the slots.
6. Press down on the snap plate to lock it into position.

CORRECTIVE MAINTENANCE

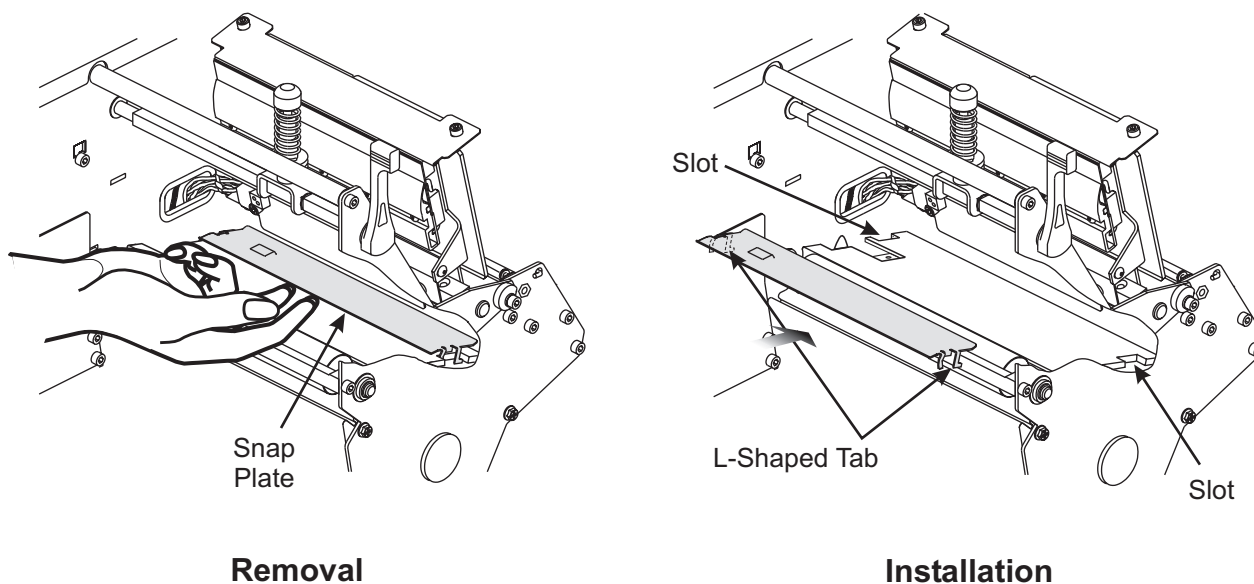


Figure 4-3. Original 90/96XiIII Snap Plate Removal and Installation

Tools Required for Corrective Maintenance

A complete set of technician’s tools is required for performing all the maintenance procedures in the manual. These include:

- Flat-blade and Phillips screwdrivers
- American standard and metric nut drivers
- American standard and metric Hex Key (Allen) wrenches
- Combination wrenches
- Wire cutters
- Spring scale, 0 – 2.25 Kg (part # 11303)
- Spindle torque adjustment kit (part # 01773)

Test Equipment Required

- Multimeter and test leads
- Anti-static mat and anti-static wrist strap for handling and removing static sensitive components.



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

Printer Parts and Locations

External Components

Refer to [Figure 4-4](#) to familiarize yourself with the external parts of the printer.

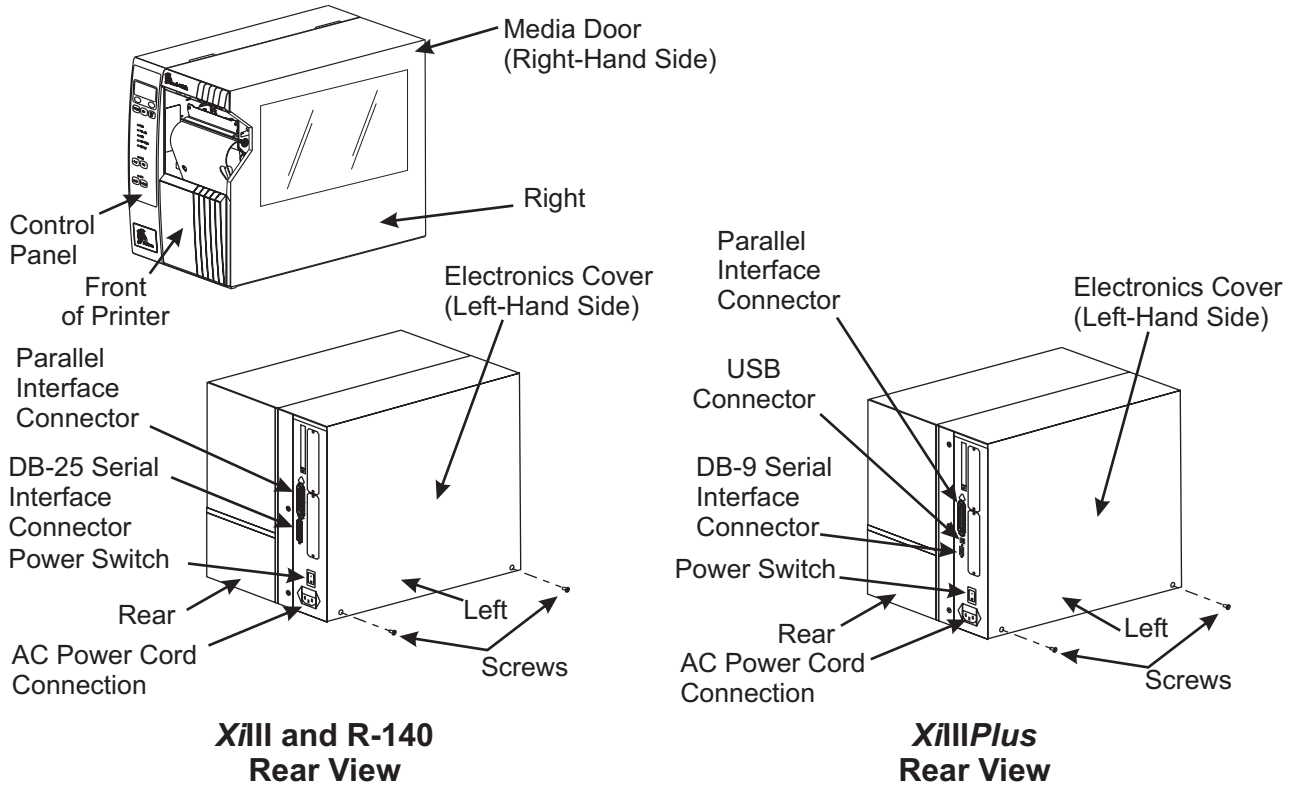


Figure 4-4. External Printer Components Orientation

Electrical Interconnections

Refer to [Figure 4-5](#) when you remove and replace circuit boards or disconnect and reconnect any electrical components.

RRP No. 1: Electronics Cover Removal and Installation



Caution • This installation must be performed by a qualified service technician.

Refer to [Figure 4-4](#). Remove the two screws located near the bottom. Lift electronics cover at the rear top corner as shown and pull the corner forward and up. Lift the cover up and away from the printer.

To install the cover, lower the cover so the lip goes into the channel on the top of the printer and reinstall the screws.

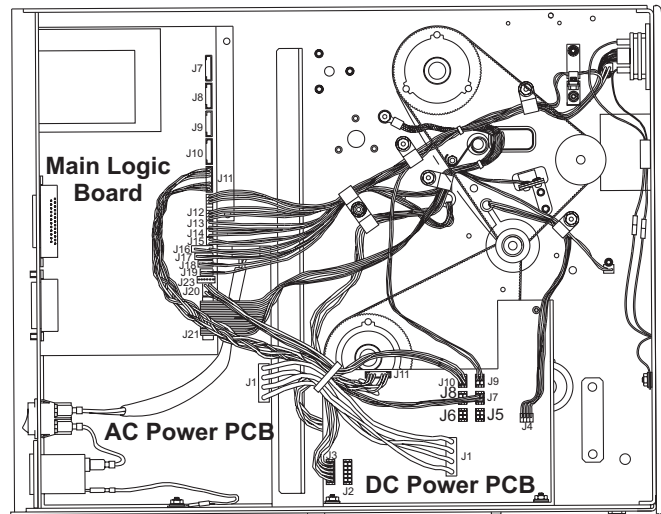


Figure 4-5. Printer Interconnection Diagram

Table 4-2. X1111 and R-140 Interconnections Main Logic Board and DC Power Supply

Connector	Description	Connector	Description
J1	Memory Board Connection	J13	Lower Media Sensor
J2	25-Pin External Serial Port	J14	Upper Media Sensor
J3	External Parallel Port	J15	Lower Take-Label Sensor
J4	N/A	J16	Upper Take-Label Sensor
J5	N/A	J17	Ribbon Sensor
J6	N/A	J18	Head-Open Sensor
J7	SPI* Connector	J19	Black-Mark Sensor
J8	SPI Connector	J20	DC Power Supply J10
J9	SPI Connector	J21	Printhead Data
J10	SPI Connector, Cutter Board J1	J22	N/A
J11	DC Power Supply J11	J23	RFID Connector
J12	LCD Display Board		
NOTE: J5–J10 have the same output on the DC power supply.			
J1	J1 AC Power PCB	J7	Cutter Option
J2	Printhead Power for 220 X1111 Printers	J8	N/A
J3	Printhead Power for all X1111 Printers	J9	LCD Display Power
J4	Stepper Motor	J10	J20 Main Logic PCB
J5	N/A	J11	J11 Main Logic PCB

*—Serial Peripheral Interface

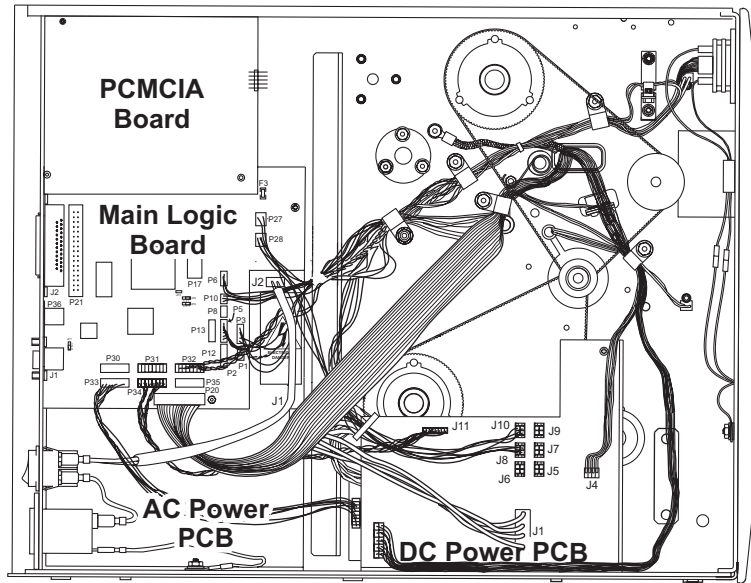


Figure 4-6. XillPlus Interconnections

Table 4-3. XillPlus Interconnections Main Logic Board and DC Power Supply

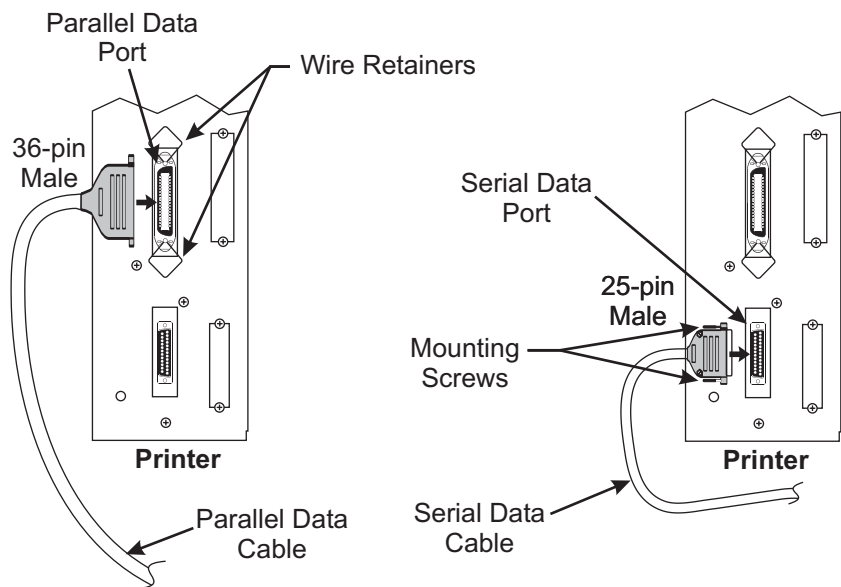
Connector	Description	Connector	Description
J1	9-Pin External Serial Port	P16	N/A
J2	40-Pin External Parallel Port	P17	N/A
JP1	Jumper Pin 2 to Pin 3	P18	N/A
JP2	N/A	P19	N/A
JP3	Open	P20	Printhead Data
JP4	Jumper Pin 1 to Pin 2	P21	Internal Parallel Connector
JP5	Jumper Pin 1 to Pin 2	P22	N/A
P1	Lower Take-Label Sensor	P23	PCMCIA Board Connector
P2	Upper Take-Label Sensor	P24	PCMCIA Board Connector
P3	Head-Open Sensor	P25	N/A
P4	N/A	P26	N/A
P5	Ribbon Sensor	P27	LCD Display Control Board Power
P6	Reflective Media Sensor	P28	DC Power Supply J10
P7	N/A	P29	N/A
P8	Transmissive Media Sensor	P30	SPI* Connector
P9	N/A	P31	SPI Connector
P10	Transmissive Media Sensor	P32	SPI Connector LCD Display Board
P11	N/A	P33	SPI Connector Cutter Board
P12	N/A	P34	SPI Connector DC Power Supply J11
P13	N/A	P35	SPI Connector
P14	N/A	P36	USB Port
P15	N/A		
NOTE: J5–PJ10 have the same output on the DC power supply.			
J1	J1 AC Power PCB	J7	Cutter Option
J2	Printhead Power for 220XillPlus Printers	J8	N/A
J3	Printhead Power	J9	LCD Display Power
J4	Stepper Motor	J10	J20 Main Logic PCB
J5	N/A	J11	J11 Main Logic PCB
J6	N/A		

*—Serial Peripheral Interface

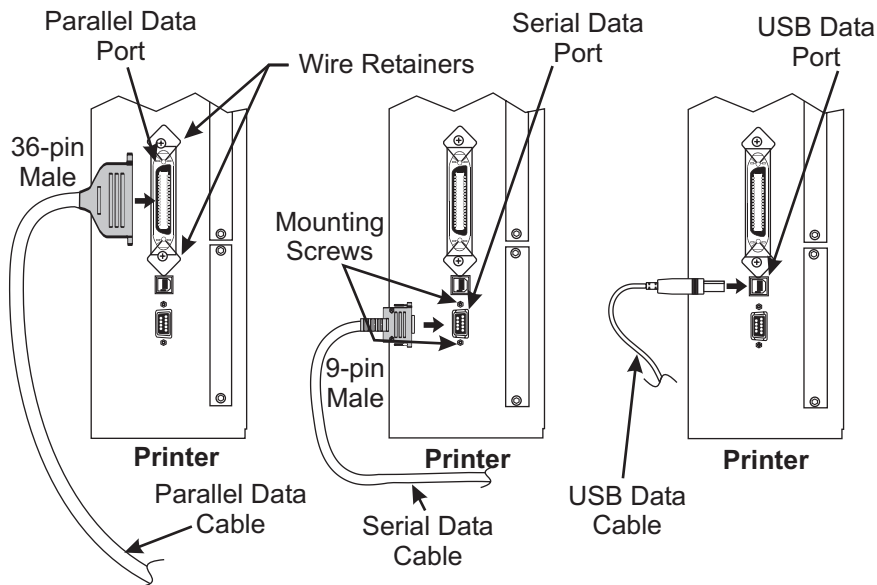
SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE



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



XiIII and R-140



XiIIIPlus

Figure 4-7. Removal and Installation of Data Cables

RRP No. 2: Removal and Installation of the DC Power Supply

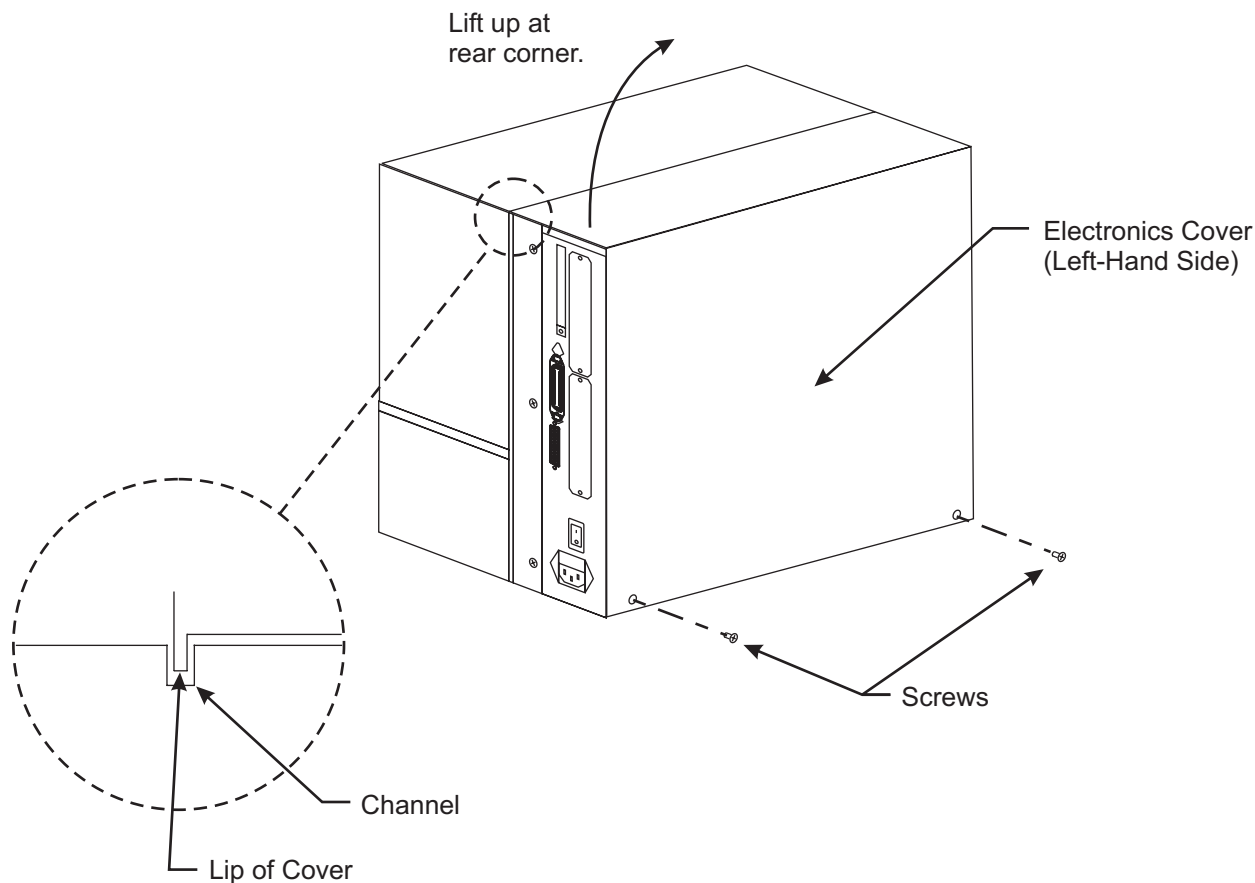


Figure 4-8. Removing and Installing the Electronics Cover

DC Power Supply Removal



Caution • This installation must be performed by a qualified service technician.



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

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to Figures 4-5 or 4-6. Unplug all ribbon cables and small wire connectors from the DC power supply board.
4. Refer to [Figure 4-9](#). Remove the mounting screw and nuts securing the DC power supply assembly.

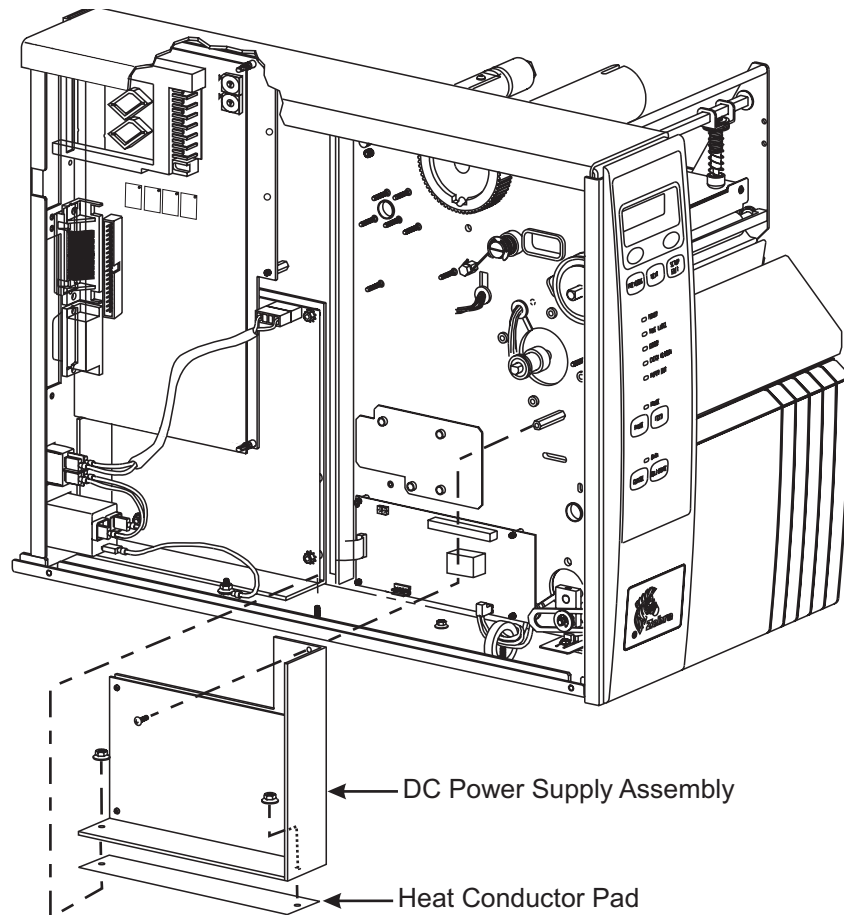


Figure 4-9. DC Power Supply Removal and Installation

5. Remove the DC power supply assembly from the printer.



Note • The black heat-conduction pad **MUST NOT** be removed.

6. Position the cables out of the way while placing the DC power supply assembly into the printer. Ensure the heat-conduction pad is in position.
7. Refer to [Figure 4-9](#). Install the one mounting screw and two nuts that secure the DC power supply assembly.
8. Reconnect all ribbon cables and small wire connectors to the DC power supply board as shown in [Figure 4-5](#).
9. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
10. Reconnect the AC power cord and all data cables.
11. Hold in the **PAUSE** key while turning the printer power On (I). Observe the printer Power-On Self Test and examine the test labels for proper print quality. If necessary, refer to the Users Guide to adjust the darkness setting.

RRP No. 3: XiIII and R-140 Main Logic Board Removal and Installation

For *XiIIIPlus*, see [RRP No. 4 on page 4-18](#).

XiIII Main Logic Board Removal



Caution • This installation must be performed by a qualified service technician.



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



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

1. Turn Off (O) the printer.
2. Disconnect the AC power cord and communication cables.
3. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.

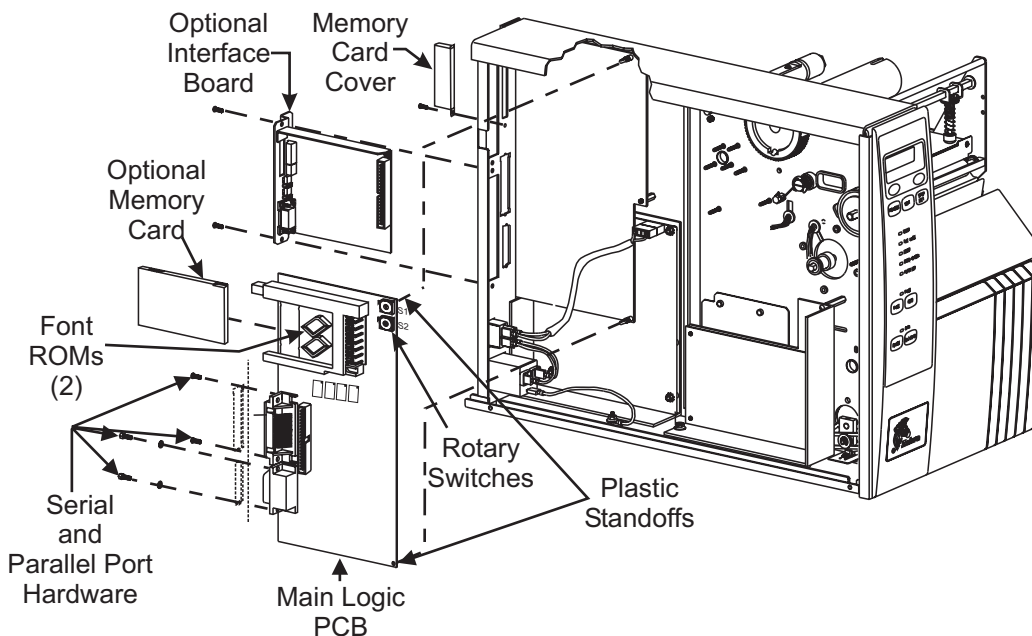


Figure 4-10. Main Logic Board Removal and Installation

4. Refer to [Figure 4-10](#). Remove the memory/font card from the card slot located at the rear of the printer by removing the shield and pressing the card-eject button.
5. Remove the optional interface board if installed.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

6. Refer to Figures 4-5 or 4-6. Disconnect all ribbon cables and wire connectors from the main logic board.
7. Refer to Figure 4-10. At the rear of the printer, remove the two screws and the two studs with their washers that secure the serial and parallel interface connectors to the back of the printer.
8. Squeeze the two plastic standoff latches at the top and bottom right-hand corners while gently pulling out the main logic board.
9. Slide the main logic board and rear panel assembly out and away from the printer.
10. Remove the main logic board from the metal plate by squeezing the tips of two plastic standoffs at the top and bottom right-hand corners of the board.
11. Flash memory is installed on the main logic board. The latest software can be downloaded from Zebra Technologies' Web site: www.zebra.com.

Main Logic Board Installation



Note • If a replacement main logic board is being installed, switch S1 must be set to the proper position for your printer (see Figure 4-10 for S1 location). Refer to Table 4-4 to determine the correct position of S1.

1. Refer to Figure 4-10. Position the cables out of the way. Place the main logic board onto the plastic stand-off attached to the aluminum mounting plate at the top and bottom right-hand corners of the board.
2. At the rear of the printer, install the screws and studs with their washers, to secure the serial and parallel data connectors.

Switch Position	Function	Switch Position	Function
0	Diagnostics	9	140X/III KST (8 dots/mm 8 inch/sec max)
1–4	N/A	A	140X/III KMT (8 dots/mm 12-inch/sec max)
5	96X/III Printhead Toshiba	B	140X/III KST (8 dots/mm 12-inch/sec max)
6	90X/III Printhead (12 dots/mm)	C–D	Undefined
7	Undefined	E	220X/III Printhead (8 dots/mm)
8	140X/III KMT (8 dots/mm 8 inch/sec max)	F	170X/III Printhead (12 dots/mm)

3. Refer to Figure 4-5. Reconnect all ribbon cables and wire connections to the main logic board.
4. Refer to Figure 4-10. Reinstall the font card or memory card into the card slot located at the rear of the printer. Reinstall memory card cover and secure.
5. Reinstall the optional interface board.
6. Refer to RRP No. 1 on page 4-10 and reinstall the electronics cover.
7. Ensure that the power switch is in the Off (O) position and restore power.
8. Reconnect the data cables and the AC power cord.
9. Turn the printer power On (I) and configure the printer parameters. Enter the printhead resistance value indicated on the label attached to the printhead.

RRP No. 4: XiIIIPlus Main Logic Board Removal and Installation

Note • During the programming process, you must perform a complete printer calibration. Refer to Section 2 of this manual



Caution • This installation must be performed by a qualified service technician.

For XiIII, see [RRP No. 3 on page 4-16](#).

XiIIIPlus Main Logic Board Removal**Preparing the Printer for Installation**

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

1. Check the bottom right corner of the front panel LCD for the firmware version. You need firmware version V60.13.X or higher to operate the Wireless Print Server. If the firmware version number on your printer is less than this download the latest firmware from <http://www.zebra.com>.
2. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
3. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

4. Refer to [Figure 4-11](#). Remove the memory/font card from the card slot located at the rear of the printer by removing the shield and pressing the card-reject button.
5. If an optional interface board is installed in the printer, refer to the removal instructions on [page 4-107](#).

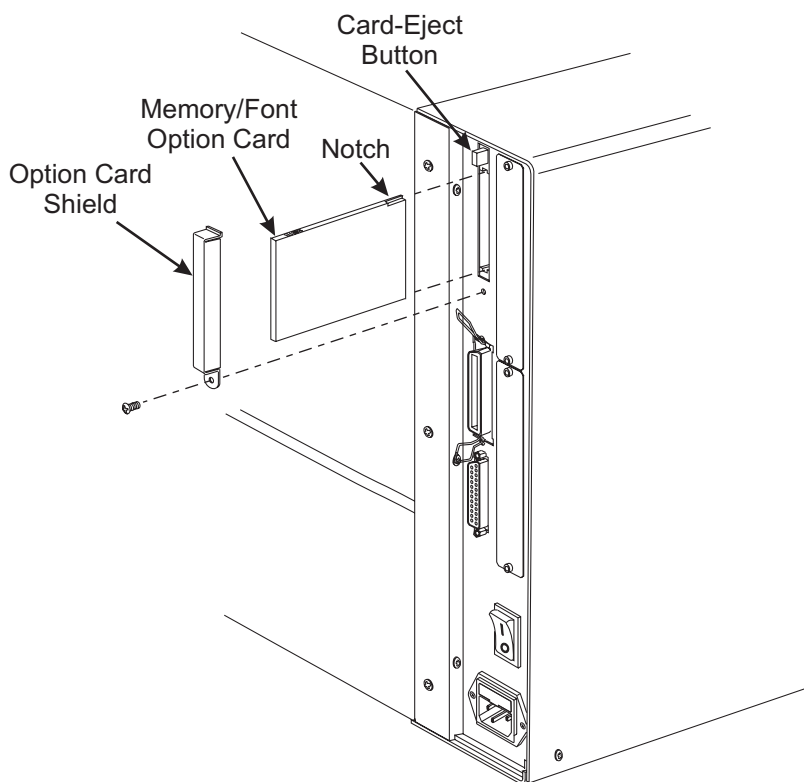


Figure 4-11. Memory/Font Optional Board

6. If an optional PCMCIA Optional Board Assembly or PCMCIA Wireless Option Board is installed on the printer, refer to the removal instructions on [page 6-49](#).
7. Refer to [Figure 4-12](#). Disconnect all connectors from the main logic board.

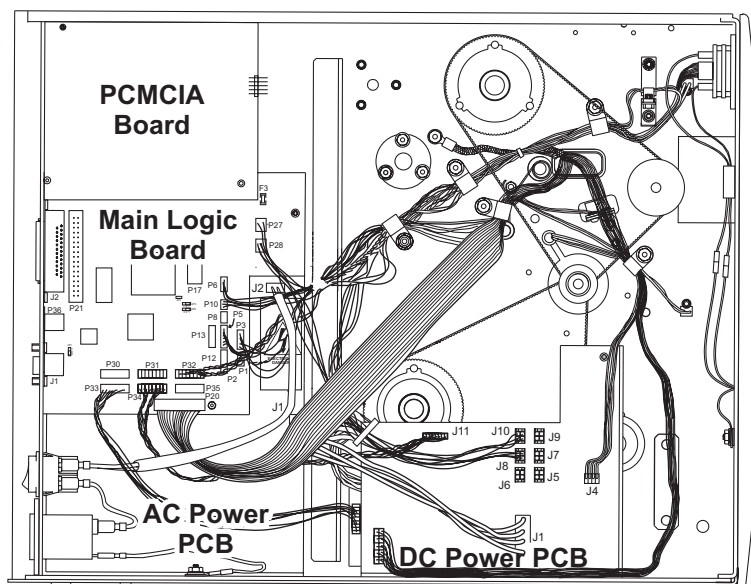


Figure 4-12. XiiiPlus Main Logic Board

8. Refer to [Figure 4-13](#). At the rear of the printer, remove the screws securing the serial and parallel port connectors.

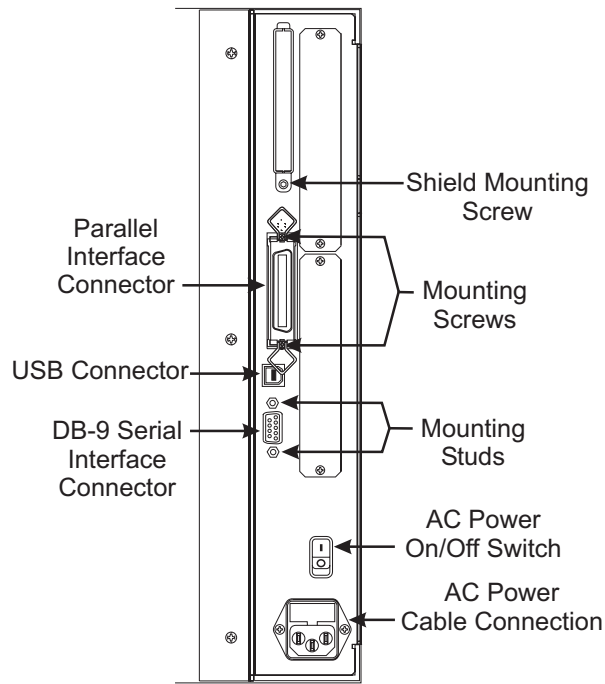


Figure 4-13. Rear View

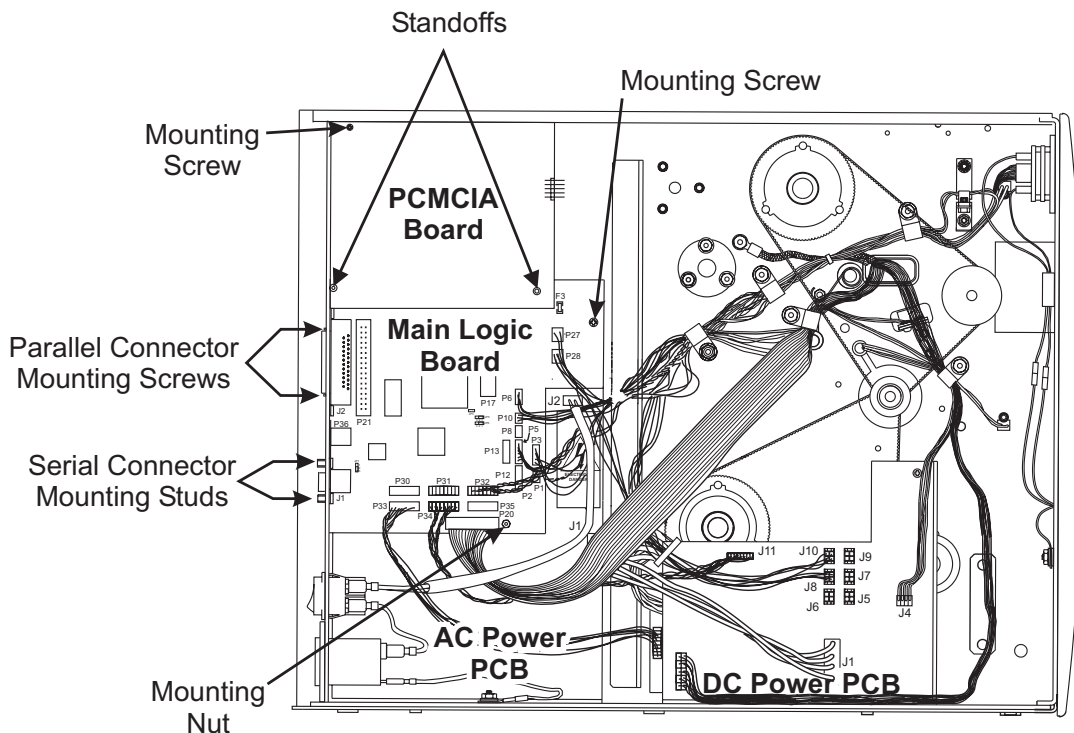


Figure 4-14. PCMCIA and Main Logic Board Removal and Installation

9. Remove the main logic board by removing the mounting screw in the upper right and the mounting nut at the bottom right.
10. Remove the two standoffs from the main logic board.

***XiIIIPlus* Main Logic Board Installation**

1. Refer to [Figure 4-14](#). Reinstall the two standoffs into the main logic board.
2. Install the main logic board using the screw and nut previously removed.
3. Refer to [Figure 4-13](#). Reinstall the screws and studs for the serial and parallel interface connectors.
4. If an optional PCMCIA Optional Board Assembly or PCMCIA Wireless Option Board was installed on the printer, refer to the install instructions on [page 6-50](#).



Note • Ensure that P23 and P24 are fully seated inside the connector.

5. Refer to Figures 4-5 or 4-6 and Tables 4-2 or 4-3. Reconnect all ribbon and small wire connections to the main logic board.
6. Reinstall the memory/font card into the PCMCIA board and reinstall the shield.
7. Reinstall any other option boards previously removed.
8. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
9. Reinstall the AC power cord and restore power.
10. Turn the printer power On (I) and verify operation.

RRP No. 5: AC Power Supply Removal and Installation

AC Power Supply Removal



Caution • This installation must be performed by a qualified service technician.



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

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [Figure 4-15](#). Remove the nut holding the ground lead from the power entry module to the printer chassis.
4. Remove the connector from the AC power supply at J1.

5. **For the Xiii, and R-140:** Remove the two screws securing the main logic board mounting plate to main frame.

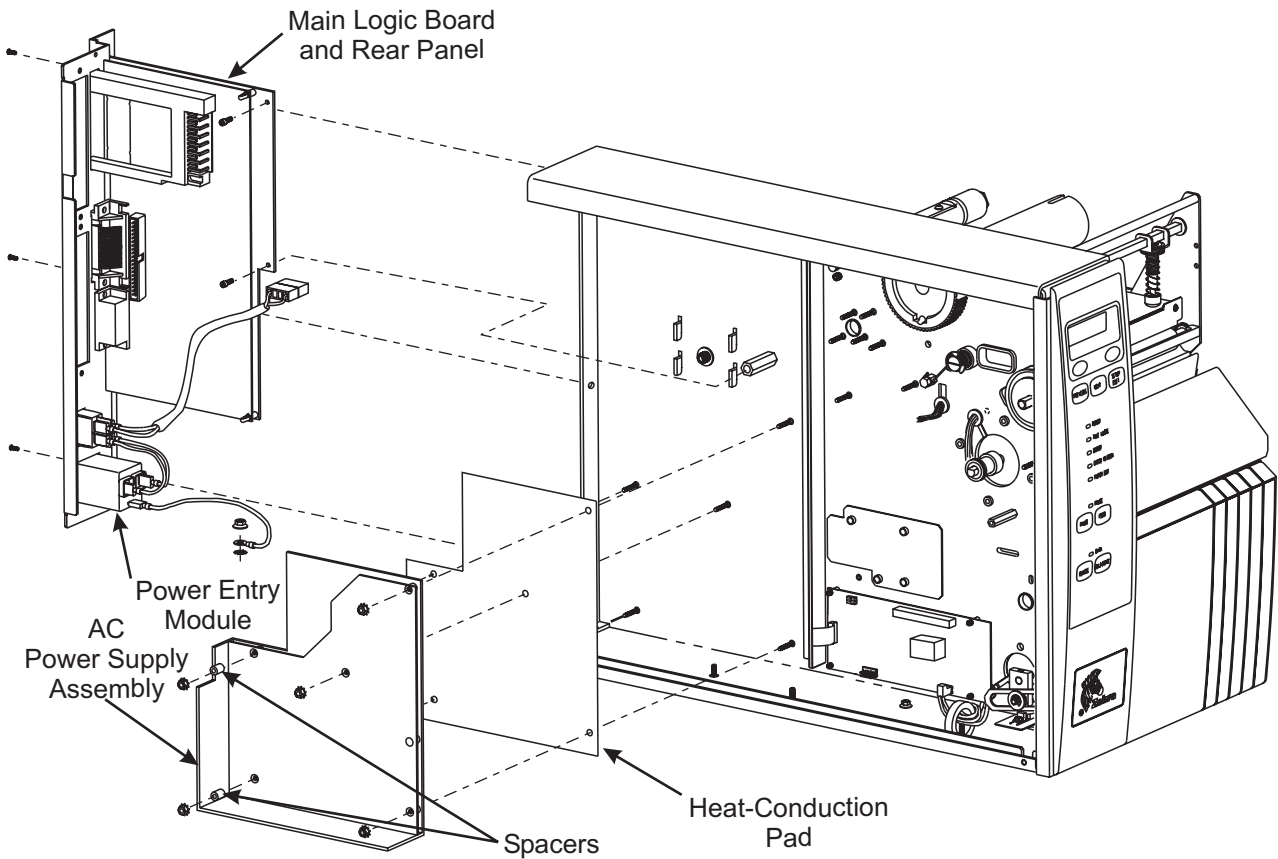


Figure 4-15. AC Power Supply and Main Logic Board Removal/Installation

6. **For the XiiiPlus:** refer to [Figure 4-6](#). Remove the mounting screws for PCMCIA and main logic boards. Remove the main logic board mounting nut.
7. Remove the three screws securing the rear panel to the main frame.



Note • It is possible to remove the main logic board with all the connectors still attached. If you prefer to remove all cables and wires, refer to Figures 4-5 or 4-6.

8. Slide the main logic board and rear panel assembly out and away from the printer.
9. Remove the connector from the AC power supply at J2.
10. Remove the nuts and plastic spacers that secure the assembly and remove the AC power supply.



Note • The black heat-conduction pad **MUST NOT** be discarded. You may have to remove a fastener in front of the board on the bottom.

AC Power Supply Assembly Installation

1. Refer to [Figure 4-15](#). Ensure the heat-conduction pad is in position. Position the cables out of the way while placing the new AC power supply assembly onto the threaded mounting posts.
2. Reinstall the nuts and spacers. Ensure the spacers are installed on the two rear posts.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

3. Reconnect the cable from the power switch to connector J2 on the AC power supply.
4. Slide the main logic board and rear panel assembly into the printer.
5. Reinstall the three screws securing the rear panel.
6. **For the Xiii, XiiiI, and R-140:** Reinstall the two screws at the top and center right-hand corners of the main logic board mounting plate.
7. **For the XiiiPlus:** refer to [Figure 4-6](#). Reinstall the mounting screws and nut that secure the PCMCIA and main logic boards.
8. Reconnect the cable from the DC power supply to connector J1 on the AC power supply.
9. Reattach the ground lead from the power entry module to the printer chassis and secure with the nut previously removed.



Caution • Verify this ground connection is secure to avoid electrical shock.

10. If you removed the connectors from the main logic board, refer to [Figure 4-5](#) or [Figure 4-6](#) and reconnect.
11. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
12. Reconnect all data cables and AC power cord, and restore power.
13. Hold in the **PAUSE** key while turning the printer power On (I). Observe the printer Power-On Self Test and examine the test labels for proper print quality.
14. If the printer does not make it through the Power-On Self Test, ensure that the interconnections were made properly and that all cables and wires were reconnected.

RRP No. 6: Adjust the Main Drive Belt Tension



Caution • This adjustment must be performed by a qualified service technician.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Remove all ribbon and media.

Refer to [Figure 4-16](#) for the 90/96/140/170XiiiI, XiiiIPlus, and for the R-140.

Refer to [Figure 4-17](#) for the 220XiiiI and XiiiIPlus.

4. Rotate the ribbon take-up pulley until the three holes in the pulley align with the three mounting screws that hold the ribbon take-up spindle assembly to the printer frame.
5. Through the holes in the ribbon take-up pulley, loosen the three spindle assembly mounting screws.
6. Slide the ribbon take-up spindle assembly to the right to relieve the tension on the main drive belt.
7. Hook a 2200-gram spring scale to the belt as shown in [Figure 4-17](#), and carefully slide the ribbon take-up spindle assembly to the left to increase belt tension.

8. When a scale reading of 2000 grams \pm 250 grams (4.5 lbs. \pm 0.5 lbs.) creates a deflection of 1/4 inch (6 mm), tighten the three mounting screws to a torque of 20 inch-pounds (2.3 N•m).
9. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
10. Reinstall the media and ribbon. Close the printhead.
11. Close the media cover.
12. Reconnect data cables and AC power cord.
13. Turn the printer power On (I).

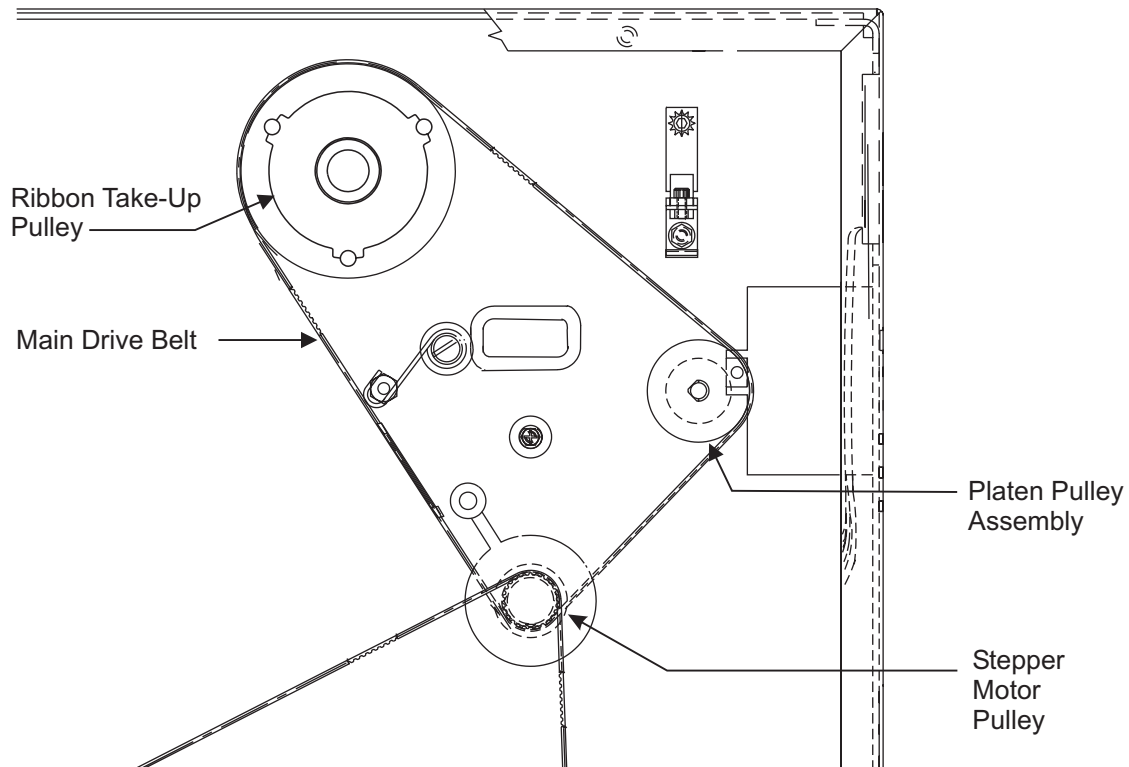


Figure 4-16. 90/96/140/170XIII and XIIIPlus and R-140 Main Drive Belt

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

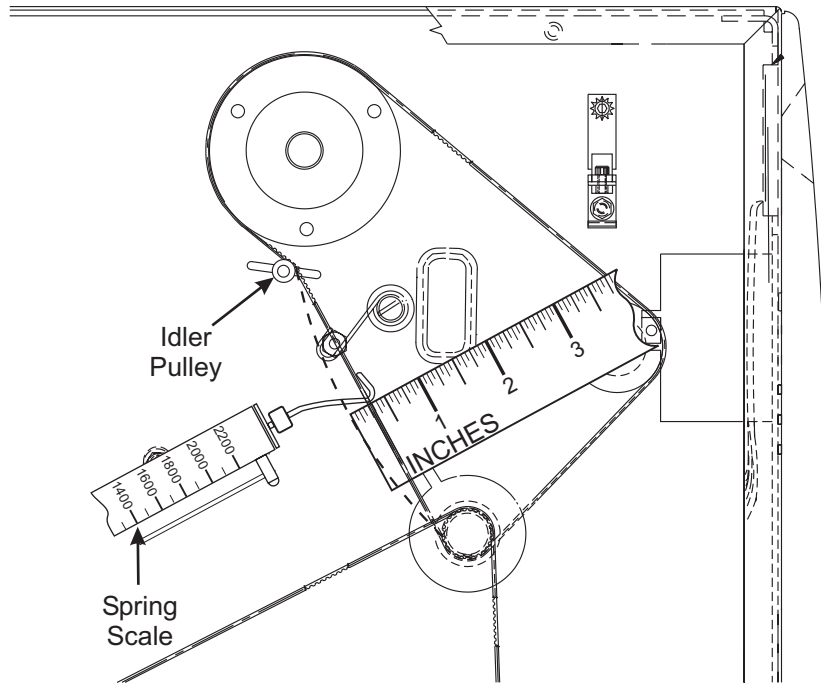


Figure 4-17. 220XiIII and XiIIIPlus Main Belt

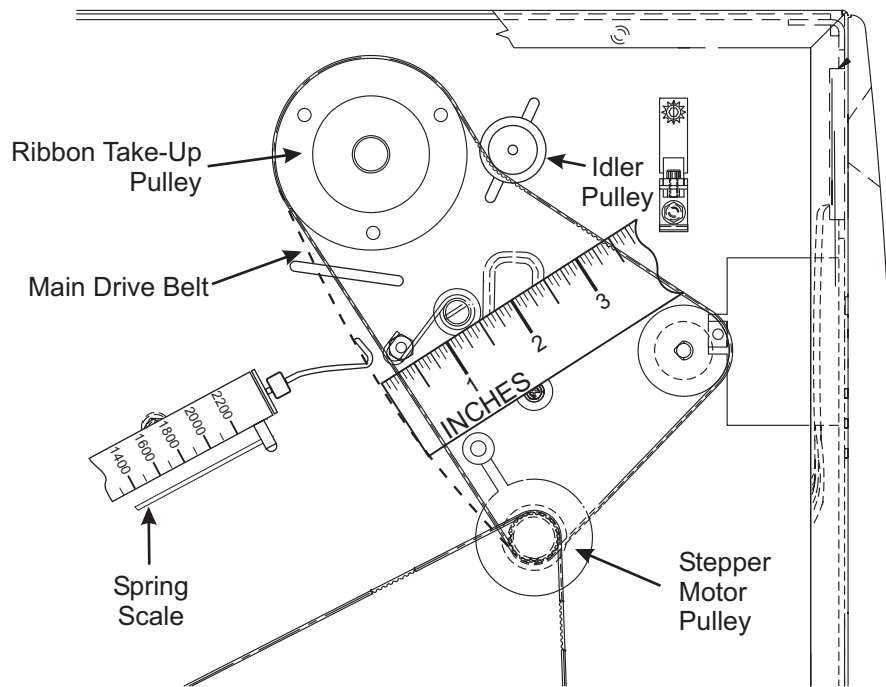


Figure 4-18. 220XiIII (300 dpi) and 170XiIII (203 dpi)

RRP No. 7: Removal and Installation of the Main Drive Belt

Caution • This installation must be performed by a qualified service technician.

Main Drive Belt Removal

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect all data cables.
2. Open the media cover.
3. Open the printhead and remove all media and ribbon. Close the printhead.
4. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
5. Refer to [Figure 4-16](#). Rotate the ribbon take-up pulley until the three holes in the pulley align with the three mounting screws that secure the ribbon take-up spindle assembly.
6. Through the holes in the ribbon take-up pulley, loosen the three spindle assembly mounting screws.
7. Slide the ribbon take-up spindle assembly to the right to relieve the tension on the main drive belt.
8. Refer to [Figure 4-16](#). Remove the main drive belt by sliding it off the ribbon take-up pulley.

Main Drive Belt Installation

1. Install the replacement main drive belt around the outer gear of the stepper motor pulley, the platen pulley, and the ribbon take-up pulley.
2. Hook a 2200-gram spring scale to the belt as shown in [Figure 4-16](#) and carefully slide the ribbon take-up spindle assembly to the left to increase belt tension.
3. When a scale reading of 2000 grams ± 250 grams (4.5 lbs. ± 0.5 lbs.) creates a deflection of 1/4 inch (6 mm), tighten the three mounting screws to a torque of 20 inch-pounds (2.3 N•m).
4. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
5. Reinstall media and ribbon then close the printhead.
6. Close media cover.
7. Reconnect data cables and AC power cord.
8. Reconnect AC power cord to a power source. Turn the printer power On (I).

RRP No. 8: Adjust the Rewind Drive Belt Tension

Caution • This installation must be performed by a qualified service technician.

Rewind Drive Belt Tension

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect all data cables.
2. Open the media cover.
3. Open the printhead and remove all media and ribbon. Close the printhead.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

4. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

5. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.
6. Refer to [Figure 4-19](#) and locate the idler pulley used to adjust the tension of the rewind drive belt.
7. Refer to [Figure 4-20](#). On the media side of the printer, locate the lower access hole in the side plate. Remove the plug and extend the special tool (part # 11301) through the hole and loosen the idler pulley mounting screw.

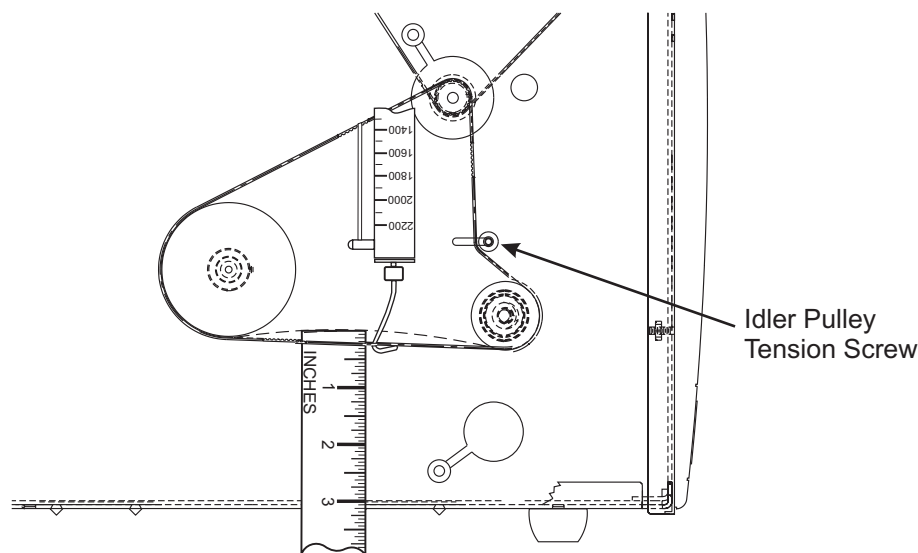


Figure 4-19. Rewind Drive Belt Tension Adjustment

8. Slide the idler pulley assembly toward the front of the printer to relieve the tension on the rewind drive belt.
9. Refer to [Figure 4-19](#). Hook a 2200-gram spring scale to the belt and slowly slide the idler gear assembly to the left to increase belt tension.
10. When a scale reading of 2000 grams \pm 250 grams (4.5 lbs. \pm 0.5 lbs.) creates a deflection of 1/4 inch (6 mm), tighten the idler pulley mounting screw to a torque of 20 inch-pounds (2.3 N•m).
11. Reinstall the plug into the lower access hole.
12. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply.
13. Refer to [RRP No. 1 on page 4-10](#) and reinstall electronics cover.
14. Reinstall the media and ribbon. Close the media cover.
15. Restore the AC power cord. Turn the printer power On (I).

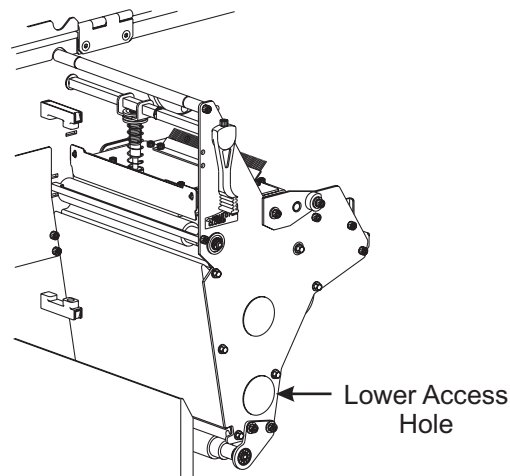


Figure 4-20. Access to Idler Pulley

RRP No. 9: Rewind Drive Belt Removal and Installation



Caution • This installation must be performed by a qualified service technician.

Rewind Drive Belt Removal

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Open the media cover.
3. Open the printhead and remove the media and ribbon. Close the printhead.
4. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
5. Refer to [RRP No. 7 on page 4-26](#) and remove the main drive belt.



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

6. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.
7. Refer to [Figure 4-21](#) and locate the idler pulley. On the media side of the printer, remove the plug from the lower access hole in the side plate. Loosen the idler pulley mounting screw.
8. Slide the idler pulley assembly toward the front of the printer to relieve tension on the rewind drive belt.
9. Remove the rewind drive belt.

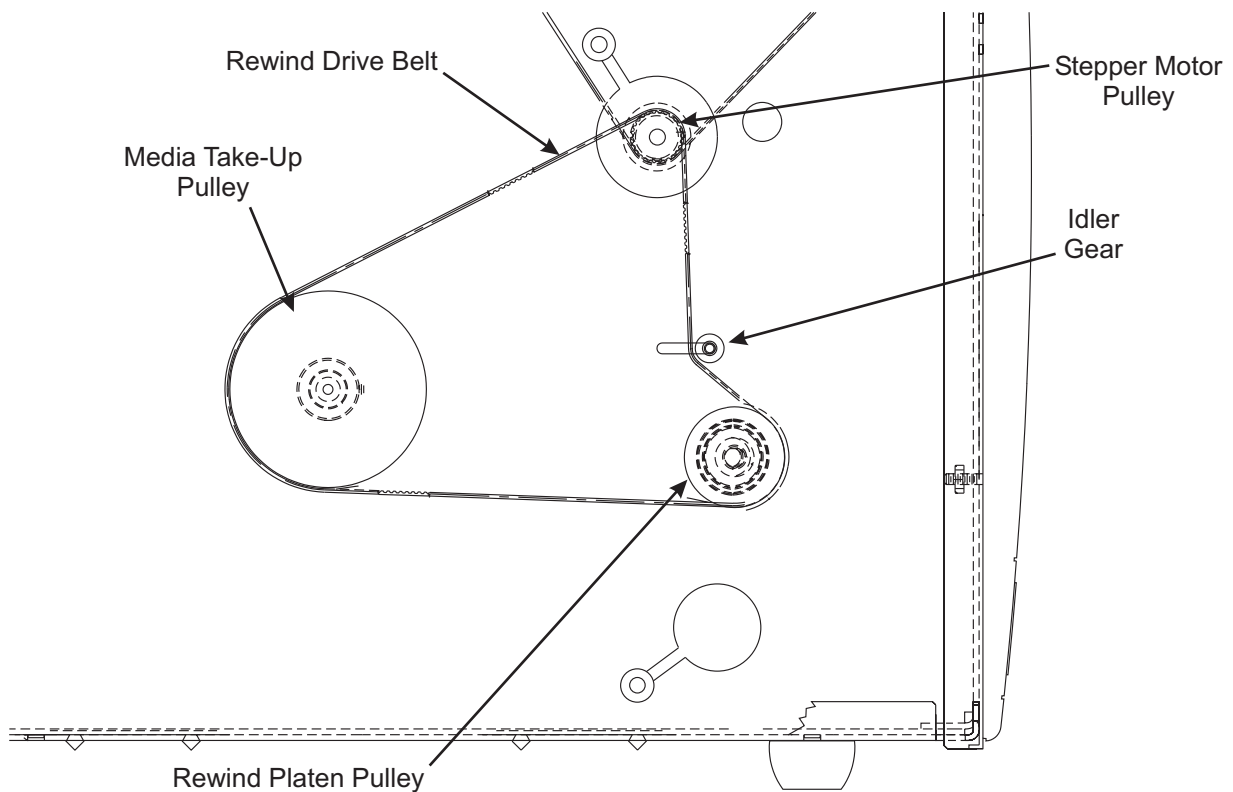


Figure 4-21. Rewind Drive Belt Removal and Installation

Rewind Drive Belt Installation

1. Install the replacement rewind drive belt onto the inner stepper motor pulley, inside the idler pulley, around the lower peel roller pulley, and slide it onto the rewind spindle pulley.
2. Refer to [RRP No. 8 on page 4-26](#) and adjust the tension on the rewind drive belt.
3. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply.
4. Refer to [RRP No. 7 on page 4-26](#) and reinstall the main drive belt.
5. Refer to [RRP No. 6 on page 4-23](#). Adjust the tension on the main drive belt and place the printer back into service.
6. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
7. Reinstall the media and ribbon.
8. Reinstall the AC power cord and data cables.
9. Turn the printer power On (I).

Printhead Removal and Installation

Printhead Removal

Refer to [Figure 4-22](#) while performing the following procedure.

1. Turn the printer power Off (O) and remove the AC power cord. Remove any data cables.
2. Open the printhead assembly and remove the media and ribbon; then close the printhead assembly.
3. Loosen the spring-loaded mounting screw until it disengages from the printhead.
4. Slowly open the printhead assembly. The printhead remains on the platen while the rest of the assembly pivots back out of the way.
5. Spread apart the holding tabs on the sides of the printhead data connector to release the data cable.
6. Grasp the outside edges of the printhead power cable connector and press down on the locking tab. Maintain pressure on the locking tab and disconnect the printhead power cables.



Note • The 220Xi has two power cables.

7. Remove the printhead through the front of the printer.



Caution • The printhead is hot and can cause severe burns. Allow the printhead to cool.

8. Refer to [Figure 4-22](#) and locate the sticker with the printhead resistance. Write the resistance value here: _____.



Note • Printhead resistance must be set in printer configuration after the replacement printhead is installed. Make note of the resistance value before installing the replacement printhead.

Printhead Installation



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.

1. Connect the printhead power cable(s) to the appropriate connector. Ensure that the connector is fully seated.
2. Spread apart the holding tabs of the data connector and press the printhead data cable into the connector. The holding tabs must “snap” into place around the cable connector.
3. Carefully position the alignment slots in the new printhead over the alignment posts on the underside of the mounting bracket.
4. Once the printhead is seated properly, carefully tighten the mounting screw to a value of 5–6 inch-pounds (0.5–0.7 N•m).

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5. Refer to [Figure 4-1](#). Use a cleaning swab to clean thoroughly the print element (gray area) of the new printhead.
6. Reinstall media and ribbon.
7. Reconnect the data cable. Reconnect the AC power cord and turn the printer power On (I).
8. After the POST, enter the configuration mode, enter the new printhead resistance value and then permanently save the configuration.
9. Turn the printer power Off (O), then perform the PAUSE Key Self Test and check print quality.
10. The printer is ready for operation. If problems arise, refer to “Troubleshooting” section.

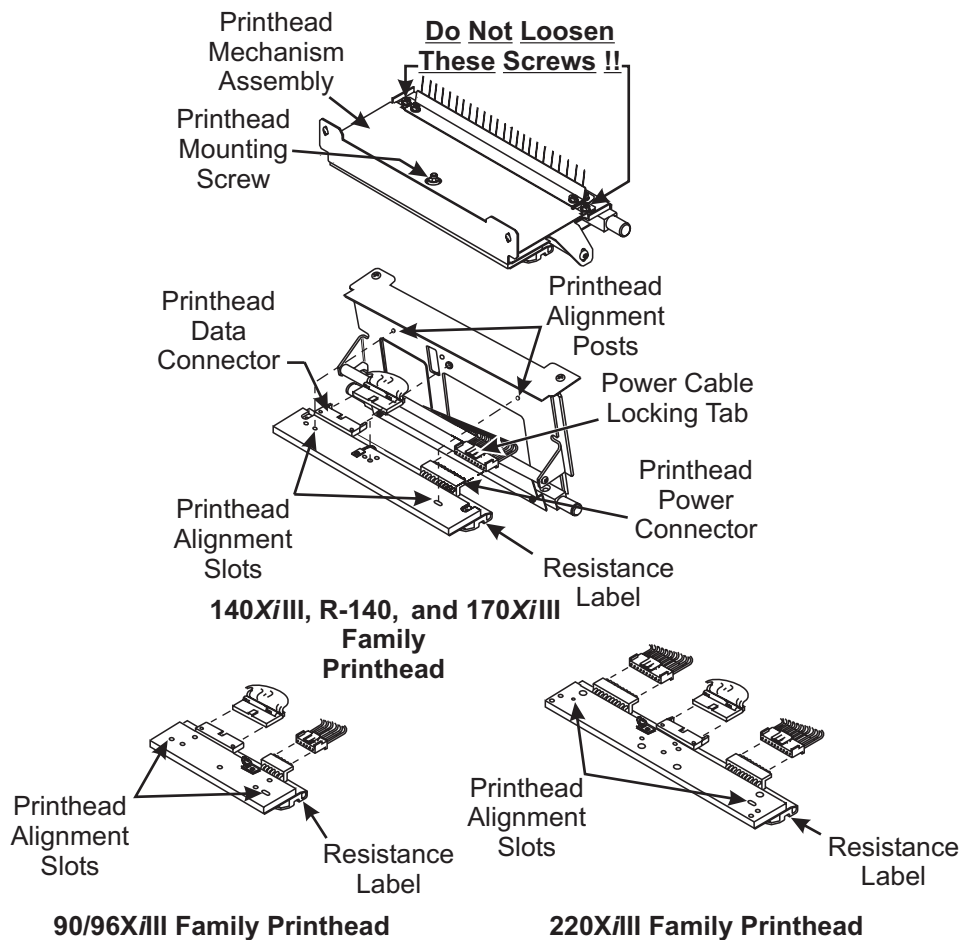


Figure 4-22. Printhead Replacement

Printhead Adjustments



Note • Other than printhead pressure, printhead adjustments rarely need to be performed, even after replacing the printhead.



Caution • This installation must be performed by a qualified service technician.

There are four printhead adjustments that affect print quality. The adjustments should be performed in the following order:



Note • The following adjustments are interrelated and may have to be performed more than once to achieve desired results.

- Printhead Pressure
- Printhead Position
- Wear Plate (Balance) Position
- Printhead Parallelism



Note • To achieve optimum results with print quality adjustments, install full width media and ribbon. Verify that media and ribbon are properly matched and darkness/print speed configurations are correct for the application before performing any mechanical adjustments.

Printhead Pressure

1. Turn the printer power Off (O).
2. Refer to [Figure 4-23](#) and measure the distance from the top of the toggle foot to the bottom of the lower knurled nut. If the measurement is not 1-3/16 inch (30 mm), loosen the upper knurled nut and adjust the lower knurled nut until the distance is correct.

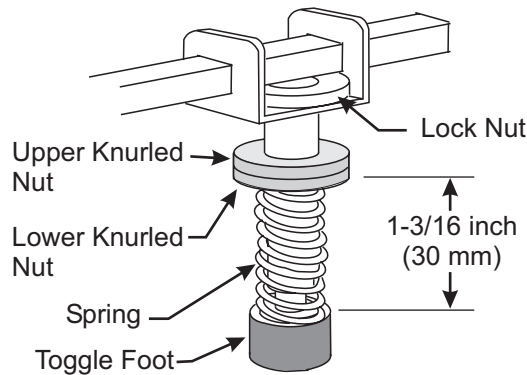


Figure 4-23. Initial Toggle Setting

3. Tighten the upper knurled nut against the lower knurled nut to lock that position.
4. For those printers with two toggles, repeat steps 2 and 3 on the other toggle.
5. Install media and ribbon, and position the toggle in the center of the print mechanism.
6. Perform the PAUSE Key Self Test by holding the **PAUSE** key while turning the printer power On (I).



Note • To increase printhead pressure, loosen the upper knurled nut on the toggle and adjust the lower toggle knurled nut downward. To decrease printhead pressure, loosen the upper knurled nut and adjust the lower knurled nut upward.

7. Adjust printhead pressure for the lowest pressure that produces acceptable print quality. Lock the toggle pressure by tightening the upper knurled nut against the lower knurled nut.

Printhead Position Adjustment



Note • Other than printhead pressure, printhead adjustments rarely need to be performed, even after replacing the printhead.



Caution • These adjustments must be performed by a qualified service technician.

Adjusting the printhead position moves the printhead with respect to the platen for optimum print quality. If satisfactory print quality cannot be achieved or can only be achieved with higher than normal darkness settings and/or higher than normal printhead pressure, the printhead may not be in the proper position.

Refer to [Figure 4-24](#) for location of adjustment screws.

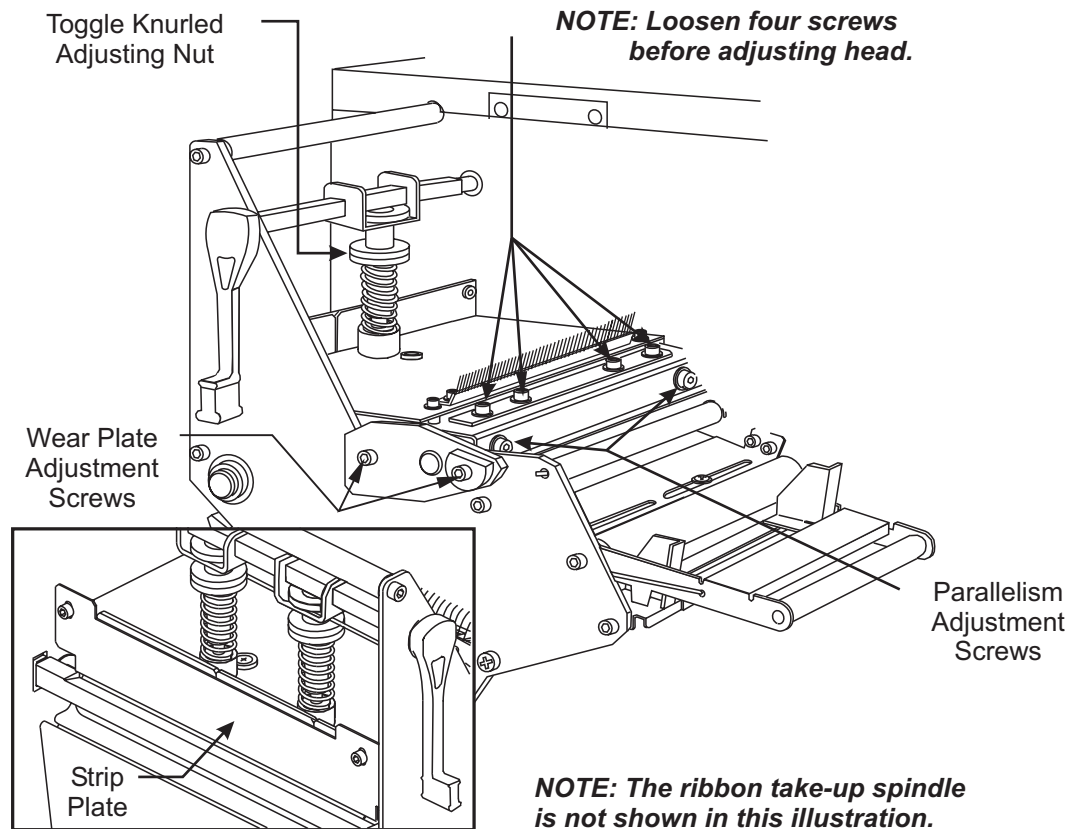


Figure 4-24. Printhead Adjustment



Note • The thermal elements of the printhead should be aligned just behind top dead center of the platen roller.

1. Print test labels using the PAUSE Key Self Test.
2. Enter the Configuration mode and set the darkness to achieve as close to optimum print quality as possible.

3. Refer to [Figure 4-24](#). Loosen the four screws at the top rear of the print mechanism.



Notes • Make very small adjustments and check the results. Turn the screws clockwise to move the printhead toward the front of the printer. Turn the screws counterclockwise to move the printhead toward the back of the printer.

Special tool (part # 11301) allows adjustment of the printhead location screws while the printer is running.

4. Adjust the printhead position by turning equally the two screws located at the back of the print mechanism. Turn both screws one-eighth turn clockwise and observe the changes in print quality. Turn both screws one-sixteenth turn counterclockwise and observe the changes in print quality. Due to spring pressure, there may be a dead spot in the actual printhead movement when changing adjustment direction.
5. Continue to make the small adjustments in both directions until the best quality is achieved.
6. Enter the Configuration mode and decrease the darkness setting until the PAUSE Key Self Test labels are a charcoal-gray color.
7. Inspect the test labels for streaks, flowering, and other print quality problems.
8. If required, adjust the printhead position until print quality problems are corrected.
9. Enter the Configuration mode and increase the darkness until the PAUSE Key Self Test labels are printed at optimum resolution and contrast.
10. When acceptable print quality is achieved, tighten the four screws at the top of the printhead.
11. Run additional PAUSE Key Self Test labels to verify proper positioning.

Wear Plate (Balance) Position Adjustment



Note • Wear plate position adjustment rarely needs to be performed.



Caution • These adjustments must be performed by a qualified service technician.

Adjusting the wear plate position changes the pressure across the width of the printhead and platen roller. If uneven printing occurs when the toggle or toggles are properly positioned and printhead pressure is set correctly, the wear plate may need adjustment.



Note • 140/170/220*XiIII* and *XiIIIPlus* have two toggles and should be positioned at 1/4 inch and 3/4 inch of the distance from the main frame.

Refer to [Figure 4-25](#) for the location of the adjustment screws used in the following procedure.

1. Enter configuration mode and decrease the darkness setting until the PAUSE Key Self Test labels are a charcoal-gray color.
2. Slightly loosen the two screws on the wear plate.

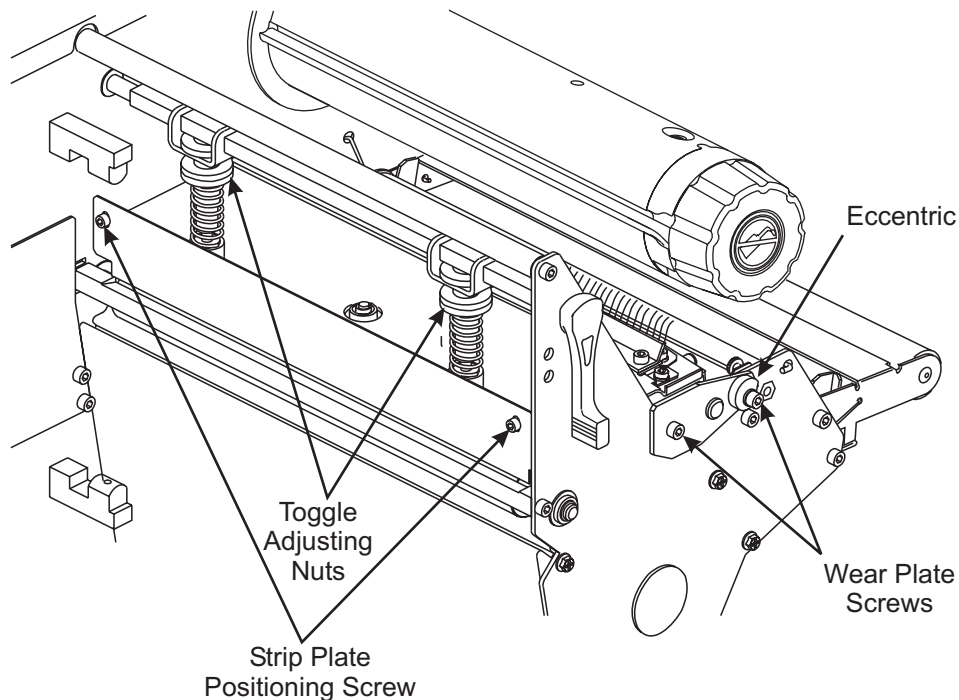


Figure 4-25. Wear Plate Adjustment



Notes • Print Pause key test labels while adjusting the wear plate eccentric and check for even printing.

Adjust the wear plate eccentric by turning it by hand or with an open-end wrench or pliers. Make very small adjustments and check the results.

Wear plate adjustments can adversely affect all adjustments. Additional adjustments may be necessary

3. Adjust the wear plate eccentric clockwise to increase pressure on the main frame side of the label, or adjust it counterclockwise to increase pressure on the outboard side of the printer.
4. When even print quality is achieved, hold the wear plate eccentric in position and tighten the two wear plate screws.
5. Enter Configuration mode and increase the darkness setting until the PAUSE Key Self Test labels are at optimum resolution and contrast.
6. Continue to print PAUSE Key Self Test labels and verify even printing and parallelism.
7. If parallelism is out of tolerance, perform the [“Printhead Parallelism Adjustment”](#) on page 4-36.
8. If no other adjustment is required, tighten the two screws to lock the adjustment.

Printhead Parallelism Test



Note • Printhead parallelism adjustments rarely needs to be performed.



Caution • These adjustments must be performed by a qualified service technician.

Adjusting the printhead parallelism squares the printhead with respect to the media path.

1. Prior to starting this test, ensure the installed media is “squared” to the tear-off bar. Open the printhead and move media until it is square with the tear-off bar. Close printhead.
2. Print the PAUSE Key Self Test labels.
3. The uppermost line on the test label should be parallel to the top edge of the label, within a tolerance of 0.020 inch (0.5 mm).
4. If the print lines are not parallel with the top of the label, proceed to the printhead parallelism adjustment. If parallelism is within tolerance, **do not** perform the procedure.

Printhead Parallelism Adjustment

The printhead parallelism adjustment corrects for printing skew. If the lines at the top of the PAUSE Key Self Test labels are not parallel to the media, this adjustment should be performed.

1. Refer to [Figure 4-24](#). Loosen the four screws at the top rear of the print mechanism.



Note • Make very small adjustments and check the results. Adjust one screw at a time. Turn the screw clockwise to move the printhead toward the front of the printer. Turn the screw counterclockwise to move the printhead toward the back of the printer. Special tool (part # 11301) allows adjustment of the printhead location screws while the printer is running.

2. Adjust the parallel location of the uppermost lines by turning one of the screws located at the back of the print mechanism.
3. Adjust one side as necessary to align the uppermost line of the test label parallel with the top edge of the label.
4. To check the results of your adjustments, run additional PAUSE Key Self Test labels and check for proper parallelism.
5. When parallelism is achieved, tighten the four screws at the top of the printhead.
6. Run additional PAUSE Key Self Test labels to verify proper positioning.

Strip Plate Adjustment

The strip plate can be adjusted to achieve proper tracking and separation of the ribbon from the media after printing.

1. Print PAUSE Key Self Test labels.
2. Press Pause. After the printer pauses, observe the ribbon for problems such as wrinkling.
3. Refer to [Figure 4-25](#) and loosen, but do not remove, the two screws securing the strip plate to the front of the printhead assembly.

4. While running the PAUSE Key Self Test, lower the strip plate so that the ribbon tracks flat and smoothly when fed to the ribbon take-up spindle.
5. Tighten the strip plate screws. Print a minimum of 25 labels and check for ribbon wrinkle, tracking, and media/ribbon separation problems. If ribbon problems persist, refer to “[Spindle Maintenance](#)” on page 4-42.

Darkness Adjustment

Differences in types of media/ribbon and wear on thermal printhead elements may make it necessary to adjust the darkness setting of the printhead.



Note • It is not required to turn Off (O) the printer for the new setting to take effect.

Use the following procedure to adjust the darkness:



Note • Set the darkness to the lowest setting possible for the desired print quality. Darkness set too high for a given ribbon may cause ink smearing, ribbon wrinkle, and/or burning through of the ribbon. High darkness settings will reduce printhead life.

1. Begin printing a batch of labels using the PAUSE Key CANCEL Key Self Test label, or a saved format.
2. Enter the Configuration mode and adjust the darkness setting until the desired print quality is achieved.

Take Label (Label Available) Sensor Alignment

The take label sensor activates only when the printer is set to peel-off mode. This mode requires the Rewind or Peel option. The media take-label sensor pair is **NOT** installed on printers without this option.

Refer to [Figure 4-26](#) for the location of the take label sensor components. When the beam is broken, the printer is inhibited from printing or feeding in peel-off mode only. It may, however, accept additional label formats if the buffer is not full. **In the Xiii and R-140**, there is no sensitivity adjustment for the take label sensor. If you encounter problems, make certain the printer is set to peel-off mode and the sensors are aligned. Sensors are aligned at the factory or when the media rewind spindle option is installed. No adjustments are required after installation. **In the XiiiPlus**, if you encounter problems, make certain the printer is set to peel-off mode and the sensors are aligned. Sensors are aligned at the factory or when the media rewind spindle option is installed. Refer to your Users Guide and do a manual calibration of the media and ribbon.

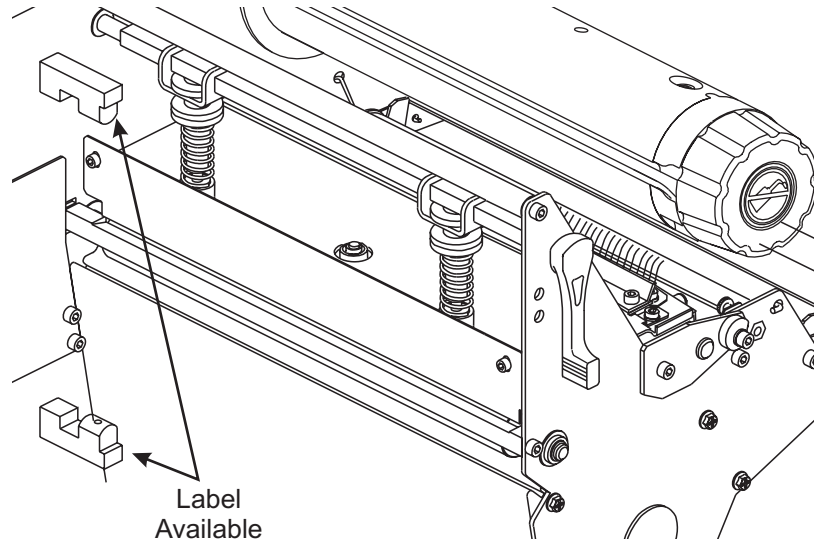


Figure 4-26. Take Label Sensor Location

Media Tracking Adjustment

Rewind Mode

If the media walks from side to side, tears, or wrinkles against the media rewind tracking plate, it is necessary to adjust the rewind plate assembly.

Refer to [Figure 4-27](#).

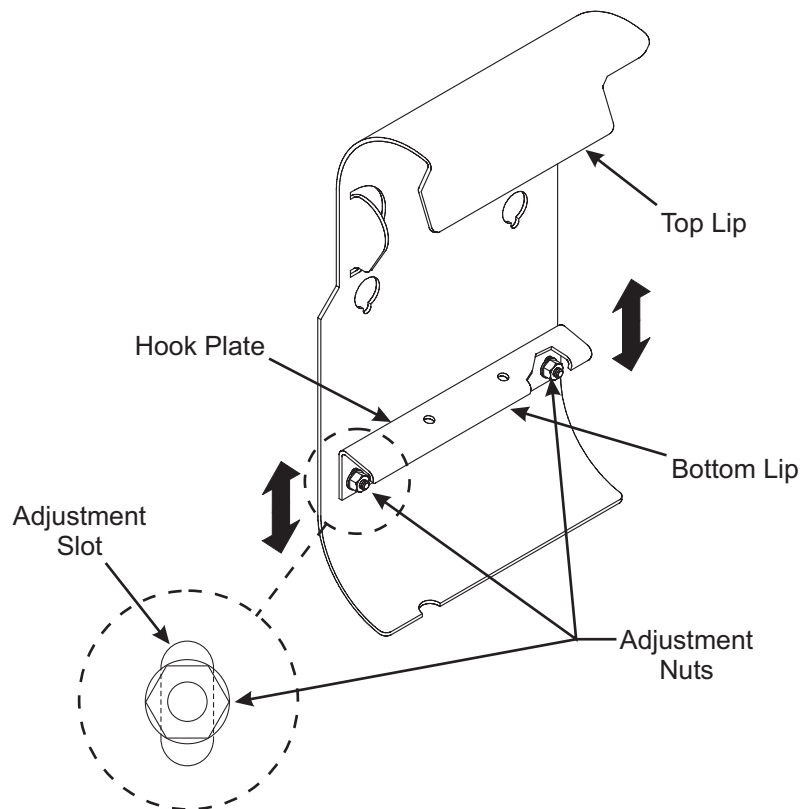


Figure 4-27. Rewind Plate Assembly



Note • Moving the outer end of the hook plate up forces the media toward the rewind tracking plate; moving this end down moves the media away from the tracking plate. The opposite effect occurs if the same adjustments are made on the inner end of the hook plate.

1. Remove the rewind plate assembly and loosen the two adjustment nuts attaching the hook plate to the rewind plate.
2. Move the outer end of the hook plate up to force the media toward the rewind tracking plate (see [Figure 4-27](#)), or move the outer end of the hook plate down to force the media away from the rewind tracking plate.
3. Tighten the adjustment nuts, and reinstall the rewind plate assembly and print a number of test labels. If problems persist, readjust the hook plate.

Peel-Off Mode

In peel-off mode, the lower roller alignment has the same effect on media tracking as the rewind plate alignment does in rewind mode. Refer to [Figure 4-28](#) and perform the following procedure.

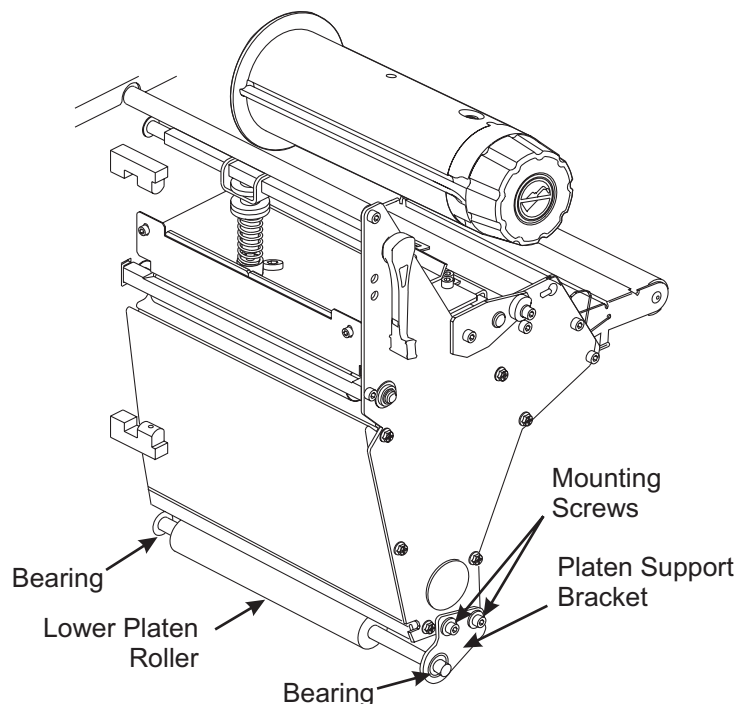


Figure 4-28. Peel-Off Lower Roller Alignment

1. Loosen the two screws that secure the platen support bracket to the side plate.



Note • Moving the bracket toward the front of the machine moves the label backing material away from the rewind tracking plate. Moving the bracket toward the rear of the machine moves the label backing toward the tracking plate.

2. Adjust the bracket position as required and tighten the screws.
3. Run test labels and repeat the adjustment until the required results are achieved.

Spindle Adjustment and Maintenance

There are four spindles that require periodic tension measurement and adjustment. Measuring spindle tension should be done at least once each year unless required more often because of high printer use. Tension should be adjusted whenever it is not within the tolerance range associated with that spindle.



Note • Do not disassemble spindles.

Tension Measurement Procedure

Refer to [Figure 4-29](#).

The procedure for measuring spindle tension is similar for all four spindles.

1. Use adhesive tape to attach a 2 inch (5 cm) wide strip of polyester film (part # 01776) to the spindle shaft (or core where required) as illustrated. Wind the polyester film around the spindle (or core) about five times in the direction indicated.
2. Measure tension by slowly pulling the film with a spring scale. Pull **ONLY** in the direction shown. The pull rate should typically be 2 inch (5 cm) per second.
3. Compare the spring scale reading with the force values provided in [Figure 4-29](#). Perform the spindle adjustment only if the reading is out of spec.
4. If adjustment is made, recheck the tension after running a full roll of labels.

Spindle Tension Adjustment

Refer to [Figure 4-29](#) for the spindle tension adjustment diagram and adjust the spindle tension as follows:

1. Loosen the set screw(s), if present, in the adjustment nut at the end of the spindle.
2. Turn the adjustment nut clockwise to increase the tension or counterclockwise to decrease the tension. Tighten the set screws if present.



Note • Refer to [Figure 4-29](#). Locate the access hole nearest the main frame and insert an allen wrench through the hole and into the set screw in the shaft collar. Do not turn the allen wrench. Simply hold the shaft in place with the allen wrench while turning the adjustment nut.

3. Measure the spindle tension as performed above. Compare the tension reading on the spring scale with the appropriate force value provided in [Figure 4-29](#). Repeat the adjustment procedure until the correct tension is obtained.

Spindle Maintenance

- Tension should be checked periodically.
- Spindles should be kept clean of dust, dirt, etc.



Note • Do not apply lubrication to any of the spindles in the XiIII-Series printers.

AC Power Fuse Replacement

The XiIII-Series printers use a metric-style fuse (5 × 20 mm IEC) rated at 5FA, 250V.

Refer to [Figure 4-30](#). The AC power entry module comes with two approved fuses in the fuse holder: one is In-Circuit, and the second is provided as a spare.

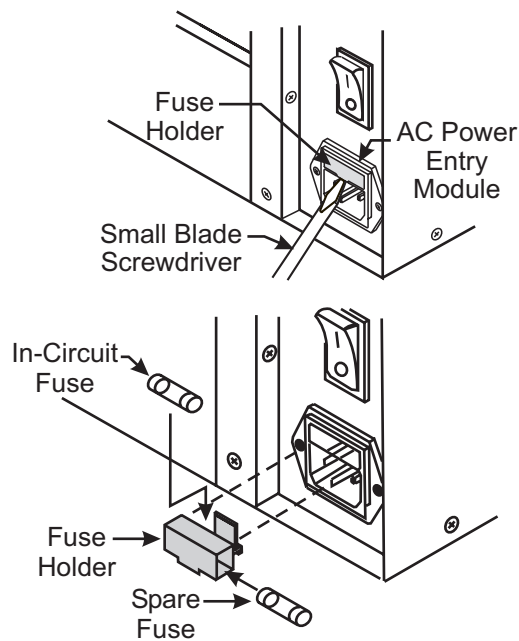


Figure 4-30. AC Power Fuse Replacement

Refer to [Figure 4-31](#). The end caps of the fuse must bear the certification mark of a known international safety organization.

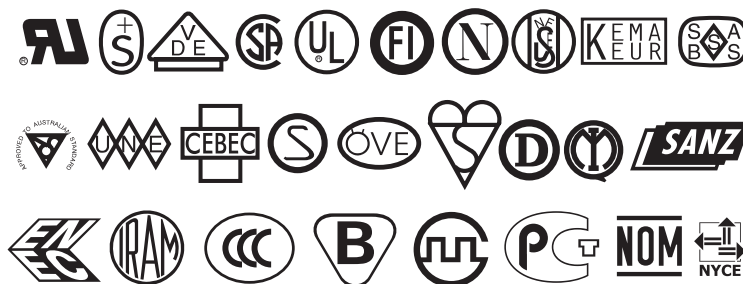


Figure 4-31. International Safety Organizations

Replacing a Faulty Fuse



Caution • This installation must be performed by a qualified service technician.



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

1. Refer to [Figure 4-30](#). Using a small-blade screwdriver or similar tool, remove the fuse holder that is part of the AC power entry module at the rear of the printer.
2. Remove the faulty fuse and install a new fuse in the in-circuit position. If you use the spare fuse, be sure to order a new replacement fuse. Fuses can be ordered from your Zebra distributor.
3. Snap the fuse holder back into the AC power entry module.
4. Reconnect the power cable and turn the printer power On (I).



Note • If AC power is not restored, an internal component failure may have occurred. The printer requires servicing.

Platen Roller Replacement



Caution • This installation must be performed by a qualified service technician.

Upper Platen Roller Removal

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Open the media door.
3. Open the printhead and remove the media and ribbon. Close the printhead. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
4. Refer to [RRP No. 7 on page 4-26](#) and remove the main drive belt. Refer to [Figure 4-32](#) and loosen, but do not remove, the set screws in the platen roller pulley.

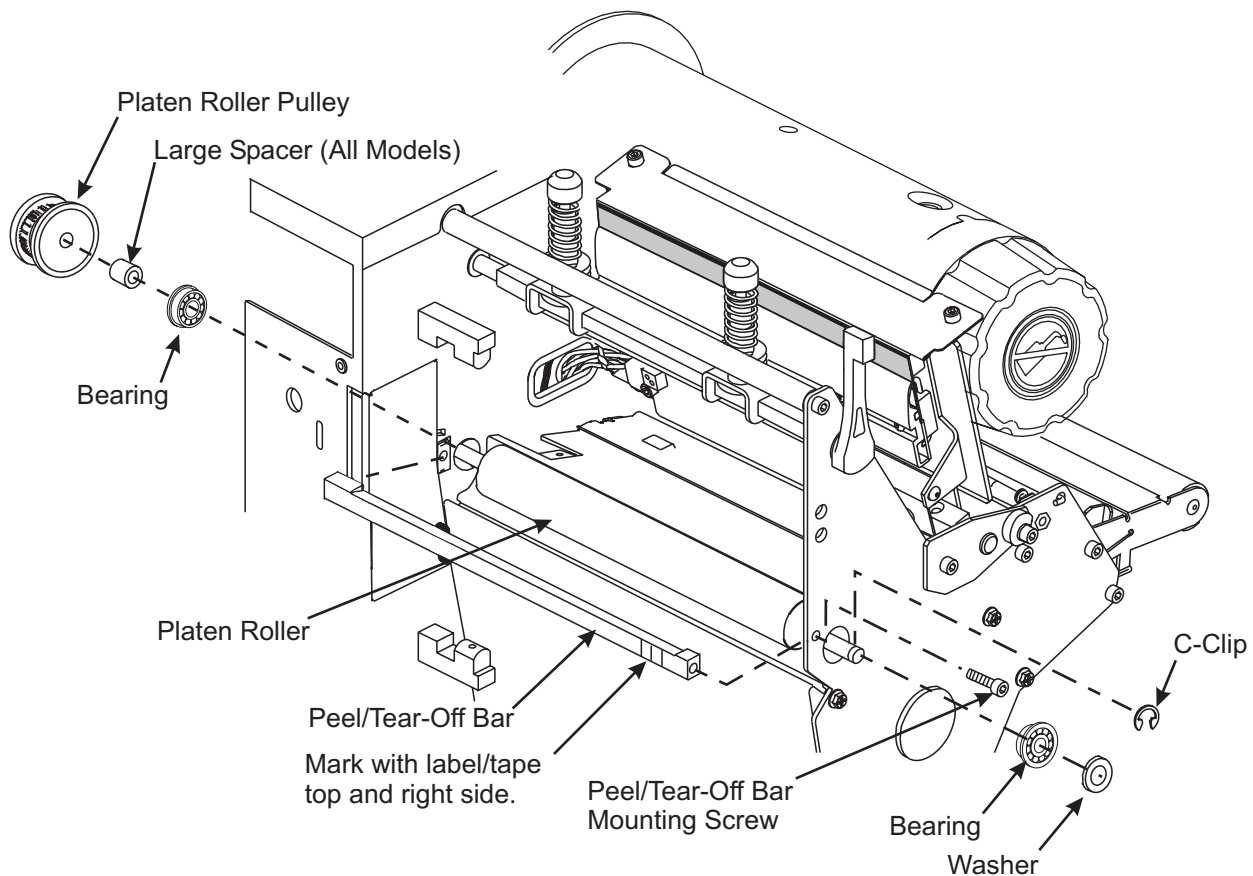


Figure 4-32. Platen Roller Removal

5. Pull the platen roller pulley and spacer off the platen roller shaft.



Caution • Wear protective eyewear when installing or removing E-rings, C-clips, snap rings, and springs. These are under tension and could fly off.

6. When facing the front of the printer, slide the platen roller to the right. Remove the C-clips, washer, and right bearing from the platen roller.
7. Slide the platen roller as far to the left as possible to free the right end from the side plate. Remove the platen roller.



Note • Never reuse the old bearings. Use only the new bearings that were provided with the replacement platen roller.

Upper Platen Roller Installation

1. Orient the replacement platen roller so the end of the roller with the flats for the pulley is on the left side when facing the front of the printer.
2. Insert the left end of the shaft into the hole in the main frame. Then, place the right end of the roller through the side plate.
3. Note the correct orientation of the new bearings. Install the new bearing and the washer on the right of the platen roller. Secure the bearing and washer with the C-clip.

4. Install a new bearing, the spacer, and the pulley on the end of the platen roller with the two flats.
5. Ensure that both set screws in the platen roller pulley align with the flats on the platen roller shaft.
6. Adjust the platen roller pulley on the left side of the platen roller shaft. Leave approximately a 0.020 inch (0.5 mm) gap between the spacer and the platen roller pulley.
7. Tighten the two set screws to secure the pulley to the shaft.
8. Reinstall and adjust the main drive belt.
9. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
10. Reinstall the media and ribbon. Close the printhead.
11. Close the media cover.
12. Reconnect data cables and power cord.
13. Turn the printer power On (I).

Rewind (Lower) Platen Roller Removal and Installation



Caution • This installation must be performed by a qualified service technician.

Rewind Platen Roller Removal

1. Place the power switch in the Off (O) position and disconnect the AC power cord. Disconnect the data cables.
2. Open the media door.
3. Open the printhead. Remove the media and ribbon. Close the printhead.
4. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
5. Refer to [RRP No. 7 on page 4-26](#) and remove the main drive belt.
6. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.
7. Refer to [RRP No. 9 on page 4-28](#) and remove the rewind drive belt.

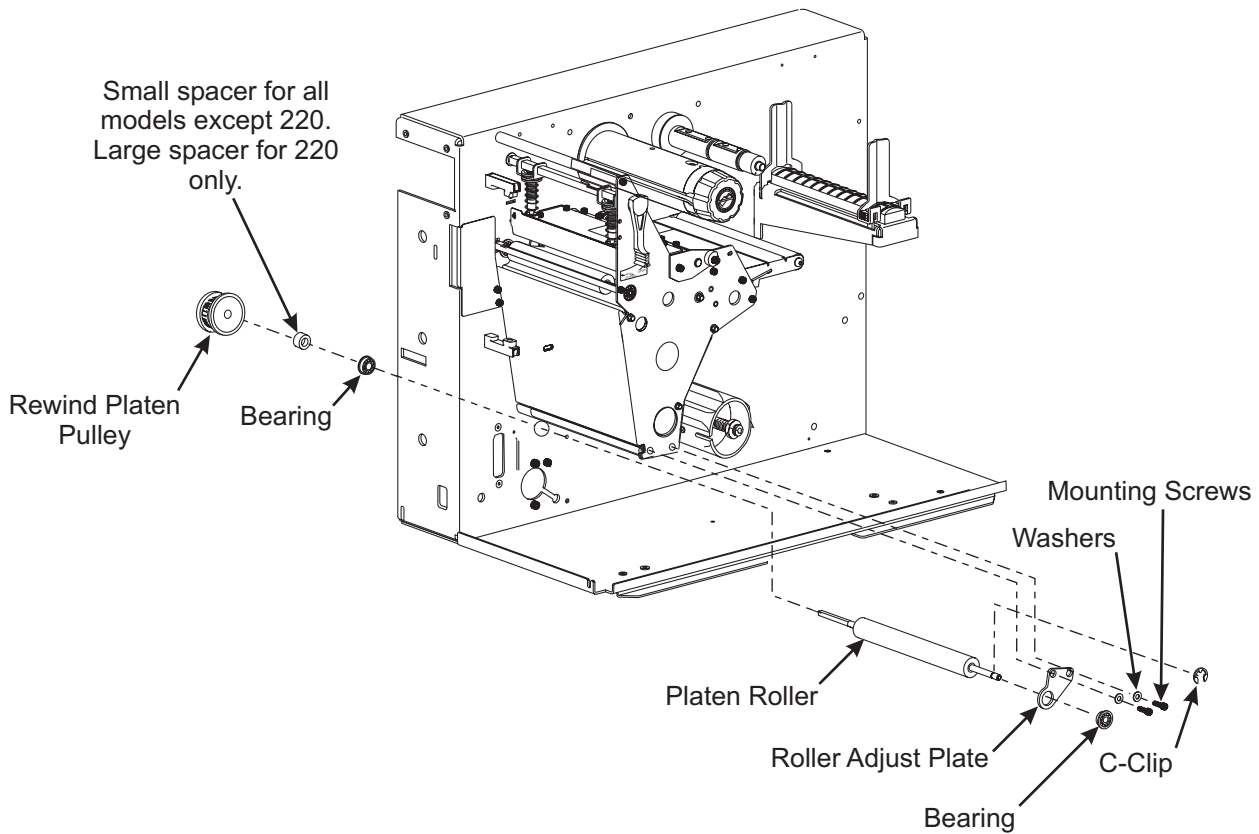


Figure 4-33. Print Mechanism View with Lower Platen Roller

8. Refer to [Figure 4-33](#) and loosen, but do not remove, the two set screws in the rewind platen roller pulley assembly.
9. Slide the lower platen roller pulley off the peel roller shaft.
10. Remove the small spacer and bearing.
11. Push the lower platen roller to the right.



Note • Do not remove the roller adjust plate unless it is damaged, twisted, or bent. If the adjust plate is removed, the alignment is lost an adjustment procedure needs to be performed.



Caution • Wear protective eyewear when installing or removing E-rings, C-clips, snap rings, and springs. These are under tension and could fly off.

12. Remove the C-clip and bearing from the end of the platen roller.
13. Slide the platen roller as far to the left as possible to free the right end from the adjust plate. Remove the roller.



Note • Never reuse the old bearings. Use only the new bearings that were provided with the replacement platen roller.

Rewind Platen Roller Installation

Refer to [Figure 4-33](#).

1. Insert the long end of the shaft through the hole in the main frame as far as possible.
2. Insert the short end through the roller adjust plate.



Note • Ensure both flanged bearings are installed with the flanged side facing out.

3. Install a new bearing on the roller adjust plate with the flange of the bearing on the outside of the adjust plate. Install C-clip in the groove on the end of the roller shaft. Slide the roller to the left to seat the bearing into the adjust plate.
4. Install a new bearing, spacer, and pulley on the long end of the platen roller.
5. Ensure that both set-screws in the platen roller pulley align with the flats on the platen roller shaft.
6. Adjust the peel roller pulley on the left side of the peel roller shaft. Leave approximately a 0.020 inch (0.5 mm) gap between the spacer and the peel roller pulley.
7. Tighten the two set screws to secure the pulley to the shaft.
8. Refer to [RRP No. 9 on page 4-28](#) and reinstall and adjust the rewind drive belt.
9. Refer to [RRP No. 7 on page 4-26](#) and reinstall and adjust the main drive belt.
10. Refer to [RRP No. 2 on page 4-14](#) and reinstall DC power supply.
11. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
12. Reinstall the media and ribbon. Close the printhead and media cover.
13. Reconnect the data cables and the AC power cord.
14. Turn the printer power On (I).
15. Perform a PAUSE Key Self Test and observe the tracking of the rewind drive belt and the tracking of the label backing material. If you didn't move the roller adjust plate, and the label backing material was tracking correctly before, no further adjustment is necessary. If you moved the roller adjust plate, you have to readjust it.

Adjusting the Roller Adjust Plate

The lower roller alignment has the same effect on media tracking as the rewind plate alignment does in rewind mode. Refer to [Figure 4-28](#) and perform the following procedure.

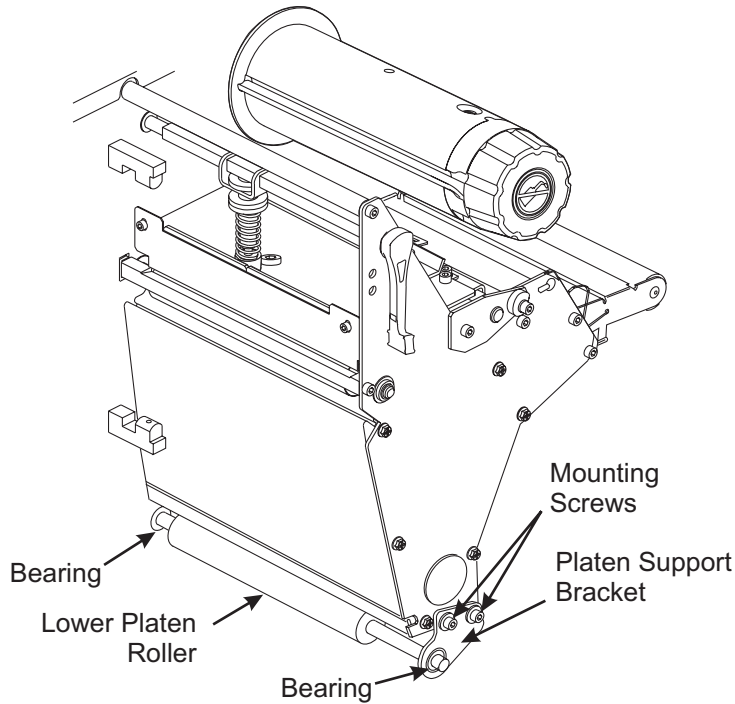


Figure 4-34. Peel-Off Lower Roller Alignment

1. Loosen the two screws that attach the platen support bracket to the side plate.



Note • Moving the bracket toward the front of the machine moves the label backing material away from the rewind tracking plate. Moving the bracket toward the rear of the machine moves the label backing toward the tracking plate.

2. Adjust the bracket position as required and tighten the screws.
3. Run test labels and repeat the adjustment until the required results are achieved.

Platen Pulley Replacement



Caution • This installation must be performed by a qualified service technician.

1. Turn the printer power switch Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to [RRP No. 7 on page 4-26](#) and remove the main drive belt.

Upper Platen Pulley Removal and Installation

1. Refer to [Figure 4-35](#). Loosen the two set screws. Remove the old platen pulley assembly.

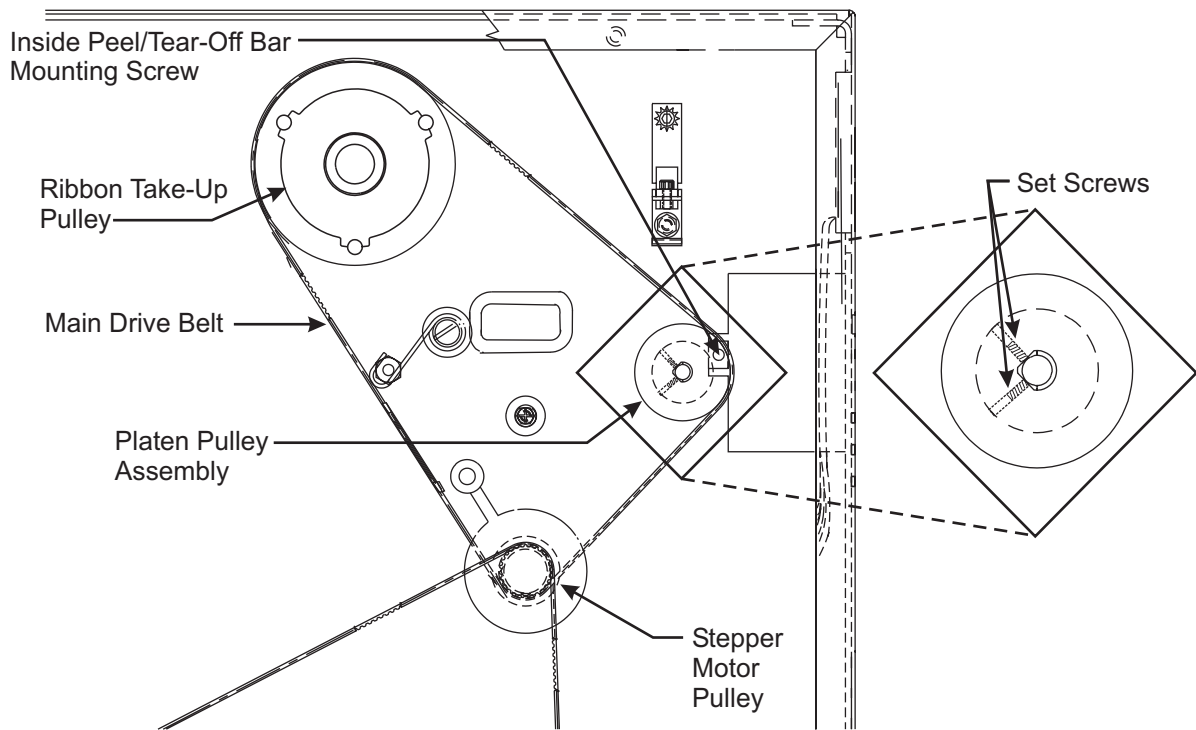


Figure 4-35. Platen Pulley Replacement

2. Install a new platen pulley on the end of platen shaft so the set screws align with the flats of the platen shaft.
3. Tighten the set screws in the platen pulley assembly.
4. Refer to [RRP No. 7 on page 4-26](#). Reinstall and adjust the tension of main drive belt.
5. Refer to [RRP No. 1 on page 4-10](#) and reinstall electronics cover.
6. Reconnect data cables and AC power cord.
7. Turn the printer power On (I).

Lower Platen Pulley Removal and Installation



Caution • This installation must be performed by a qualified service technician.

1. Perform “Platen Pulley Replacement” on page 4-48.

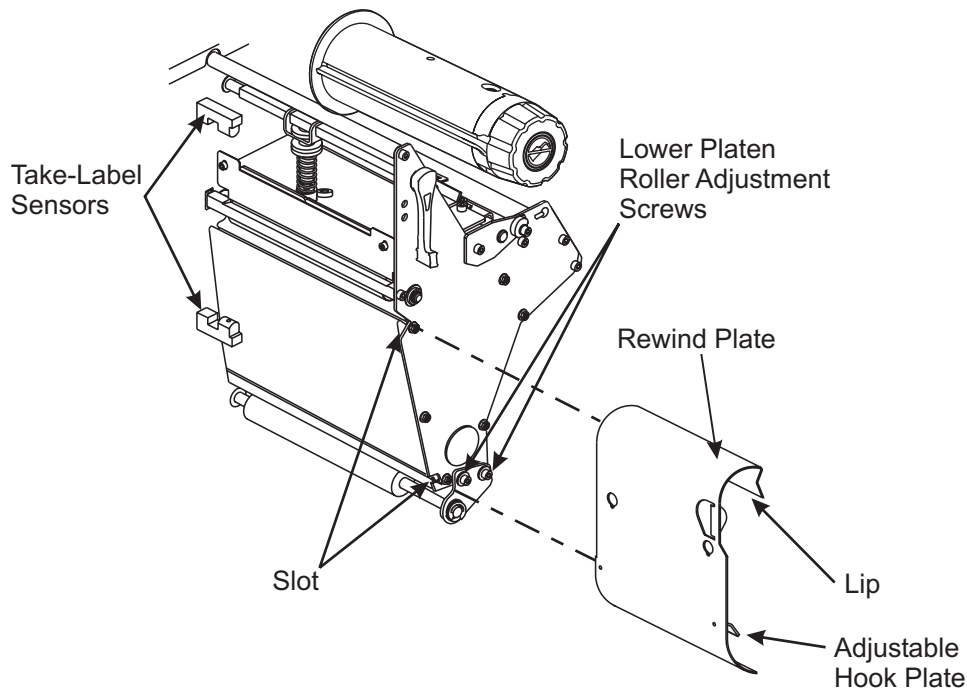


Figure 4-36. Rewind Plate Removal and Installation

2. Refer to RRP No. 1 on page 4-10 and remove the electronics cover.



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

3. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.
4. Refer to [RRP No. 9 on page 4-28](#) and remove the rewind drive belt.
5. Refer to [Figure 4-36](#). Remove the rewind plate by sliding it off of the print mechanism.
6. Loosen, but do not remove, the screws in the rewind platen pulley.
7. Pull the rewind platen pulley off of the lower platen roller shaft.
8. Refer to [Figure 4-37](#). Remove the screws securing the roller adjust plate to the print mechanism.
9. Remove the roller adjust plate and lower platen roller.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

10. Remove the old bearing from the printer main frame.



Caution • Wear protective eyewear when installing or removing E-rings, C-clips, snap rings, and springs. These are under tension and could fly off.

11. Remove the C-clip from the end of the old platen roller.
12. Slide the roller adjust plate off of the old platen roller shaft and remove the bearing.



Note • Do not reuse the old bearings.

13. Install a new bearing on the roller adjust plate with the flange facing out.
14. Orient the replacement platen roller so the short end of the shaft with the groove is on the right side (when facing the front of the printer).
15. Slide the bearing and roller adjust plate onto the right end of the platen roller shaft.



Note • For lower platen roller replacement (Peel/Rewind Option only), the washer is not used and should be discarded.

16. Install the C-Clip in the groove on the right end of the platen roller shaft.
17. Install a flanged bearing onto the left side of the shaft, flange facing out, and press bearing into main frame.

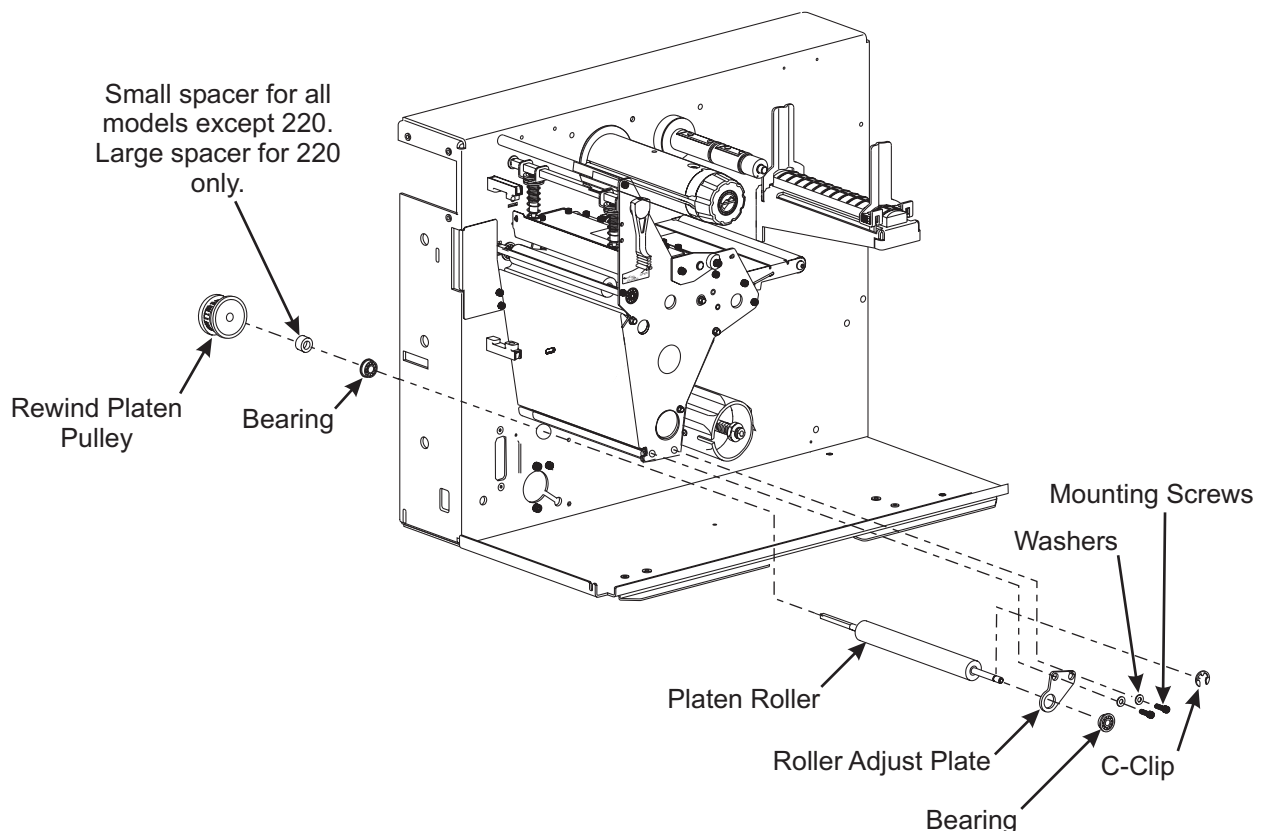


Figure 4-37. Lower Platen Roller Removal and Installation



Note • For lower platen roller replacement, the small spacer is used for all models except the 220XiIII and 220XiIIIPlus.

18. Slide the small spacer (large spacer for the 220XiIII and XiIIIPlus) onto the shaft.
19. Slide the rewind platen pulley onto the platen roller and align the two set screws with the flat surfaces of the platen roller.
20. Leave approximately 0.020 inch (0.5 mm) gap between the C-clip and roller adjust plate on the right-hand side of the platen roller shaft.
21. Tighten the screws on the rewind platen pulley. Both screws must be on flat portions of the shaft.
22. Refer to [RRP No. 9 on page 4-28](#) and reinstall the rewind drive belt.
23. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply.
24. Refer to [Figure 4-36](#). Reinstall the rewind plate by sliding it onto the print mechanism.
25. Refer to the User's Guide and reload the media and ribbon in the Peel Mode.
26. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
27. Connect the AC power cord and turn the printer power On (I).
28. Perform a PAUSE Key Self Test to check the tracking of the rewind drive belt and the liner material and to examine the print quality.

If the liner material is tracking off to one side, perform steps [29](#) and [30](#).

29. Refer to [Figure 4-37](#). Loosen the two screws securing the roller adjust plate to the print mechanism.
30. Move the roller adjust plate in the appropriate direction to compensate for the tracking and tighten the screws.



Note • Moving the roller adjust plate toward the front of the printer moves the liner material away from the roller adjust plate. Moving the roller adjust plate toward the rear of the printer moves the liner material toward the roller adjust plate.

31. Repeat steps [29](#) and [30](#) until the required results are achieved.
32. Reinstall the communications cable.

Cutter Components

Cutter Main Link Replacement



Caution • This installation must be performed by a qualified service technician.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



Note • The cables to the DC power supply do not need to be removed.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE



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

3. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.



Caution • Wear protective eyewear when installing or removing E-rings, C-clips, snap rings, and springs. These are under tension and could fly off.

4. Refer to [Figure 4-38](#). Remove the E-ring that secures the cutter main link to the short arm side of the cutter slotted link.

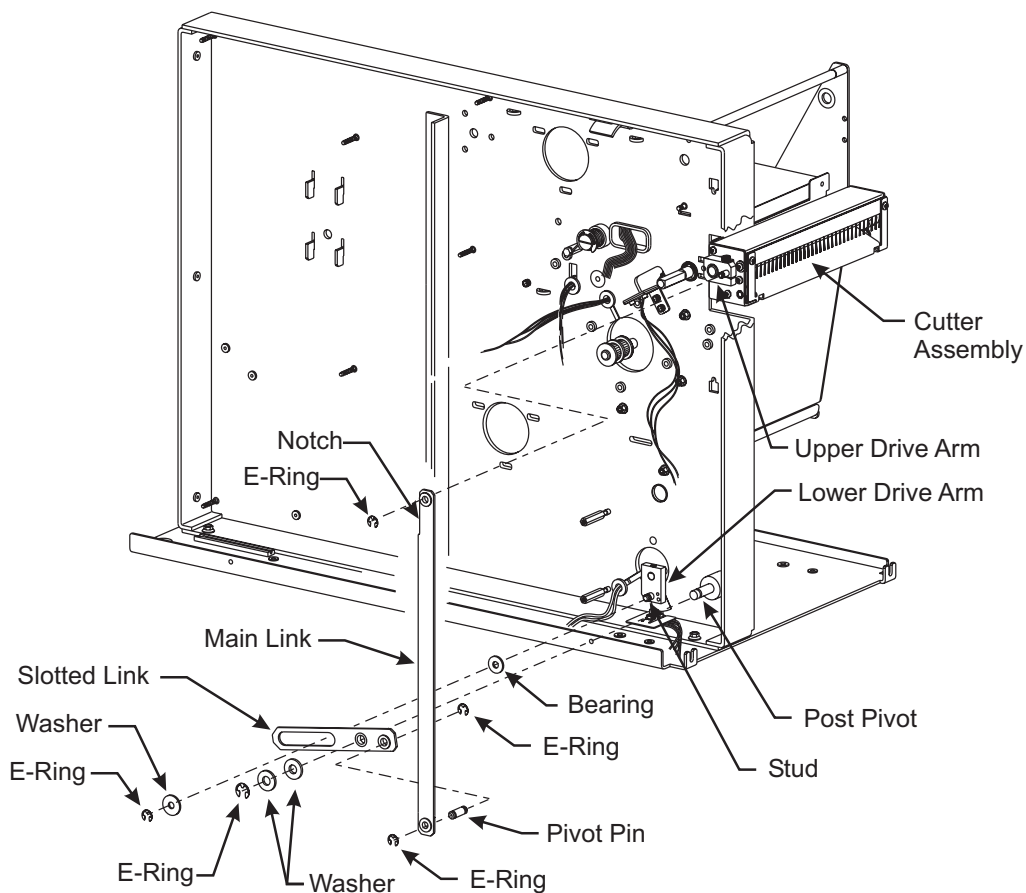


Figure 4-38. Cutter Main and Slotted Link Removal and Installation

5. Remove the E-ring that secures the cutter main link to the upper drive arm on the cutter assembly.
6. Ensure that the pivot pin remains in the slotted link, and remove the cutter main link.



Note • The notch in the main link must be at the top and facing the rear.

7. Install the new cutter main link onto the cutter assembly and the pivot pin in the slotted link.
8. Secure both ends with E-rings.

9. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply.
10. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
11. Reconnect data cables and AC power cord.
12. Turn the printer power On (I).

Cutter Slotted Link Replacement



Caution • This installation must be performed by a qualified service technician.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.



Caution • Wear protective eyewear when installing or removing E-rings, C-clips, snap rings, and springs. These are under tension and could fly off.

4. Refer to [Figure 4-38](#). Remove the E-ring securing the cutter main link to the pivot pin in the cutter slotted link.
5. Remove the E-ring, flat washer, and bearing securing the cutter slotted link to the pin on the lower drive arm.
6. Remove the E-ring and two flat washers securing the cutter slotted link to the pivot post.
7. Remove the slotted link.
8. Install the new slotted link as shown in [Figure 4-38](#).
9. Secure the slotted link to the pivot post with two flat washers and the E-ring.
10. Install the bearing onto the lower drive arm. Place the slot in the slotted link over the bearing. Secure the link with a washer and E-ring.
11. Secure the main link to the pivot pin of the new slotted link with the E-ring.
12. Apply a small amount of white lithium grease to the slot in the slotted link where the bearing will ride. Remove any excess grease to prevent it from contaminating the cutter optical sensor.
13. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply.
14. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
15. Reconnect the data cables and the power cord.
16. Reconnect the power cable to the power source. Place the power switch in the On (I) position.

Cutter PCB Replacement



Caution • This installation must be performed by a qualified service technician.

1. Place the power switch in the Off (O) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



Note • The cables to the DC power supply do not need to be removed.



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

3. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.
4. Refer to [Figure 4-40](#) and disconnect all cables from the cutter PCB.
5. Refer to [Figure 4-39](#). Remove the screws securing the cutter PCB.
6. Remove and discard the old cutter PCB.

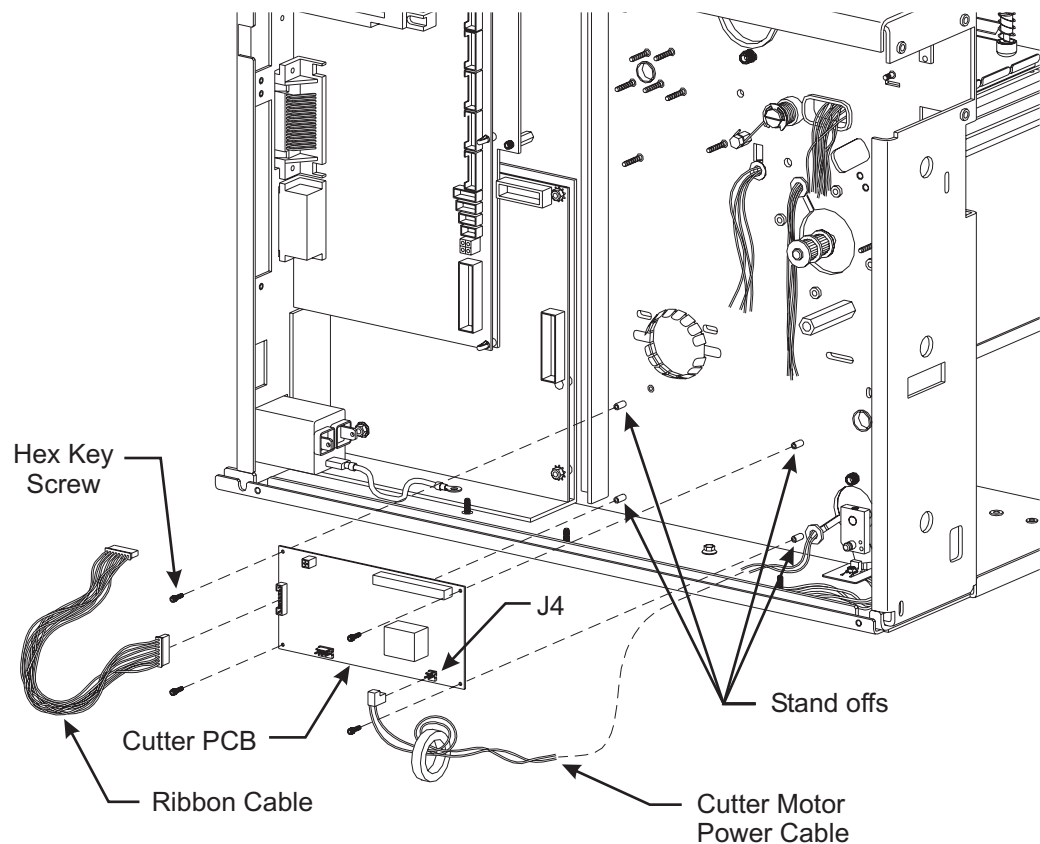


Figure 4-39. Cutter PCB Removal and Installation (X/III and R-140 shown)

7. Remove the new cutter PCB from the antistatic bag and position it onto the standoffs.
8. Refer to [Figure 4-40](#). Connect the cutter power cable to connector J2 on the new cutter board.
9. Connect the cutter data cable to connector J1 on the new cutter PCB.



Note • The cutter motor leads have a polarized connector.

10. Route the cutter stepper motor wires between the two right-hand standoffs and under the bottom of the new cutter PCB. Attach the motor wires to connector J4 on the new cutter PCB. Ensure the black lead is to the left.
11. Refer to [Figure 4-39](#). Secure the new cutter PCB to the standoffs with the screws previously removed.
12. Refer to [Figure 4-40](#). Connect the cutter optical sensor to the cutter optical connector J3 on the new cutter PCB.
13. Dress all the wires to ensure that during cutting no wiring touches any moving parts.



Note • When the cutter PCB is changed, the lower drive arm alignment must be checked.

14. Refer to [RRP No. 1 on page 4-10](#) and replace the electronics cover.
15. Reconnect the AC power cord. Turn the printer On (I). Enter Configuration Mode and set the printer to Cutter mode. Save as PERMANENT and turn the printer Off (O).
16. Load media and ribbon, press and hold PAUSE while turning the printer On (I), and run labels through the printer. Test the cutter for proper operation.

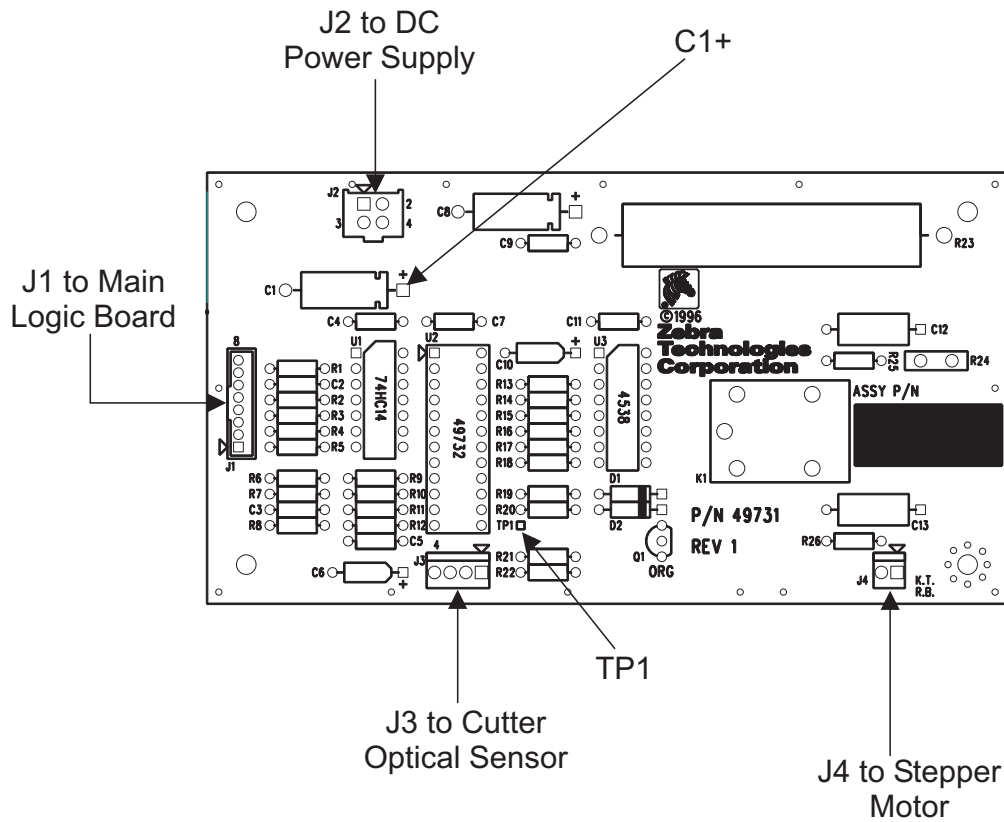


Figure 4-40. Cutter PCB Connections

Lower Drive Arm Alignment



Caution • This installation must be performed by a qualified service technician.

The alignment of the lower drive arm must be checked any time the cutter PCB is replaced.

1. Place the power switch in the Off (O) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.



Note • To perform the lower drive arm mechanical alignment, some but not all cables must be connected between the AC power supply, the DC power supply, and the cutter PCB. In order to still have access to the cutter PCB, the DC power supply must not be installed. Position the DC power supply so the cables are connected but access to the cutter board is still possible.

4. Refer to [Figure 4-40](#) and disconnect all cables except for the ones listed below:

The power cable from J1 on the AC power supply to J1 on the DC power supply.

The power cable from J2 on the cutter PCB to J7 on the DC power supply.

The data ribbon cable from J1 on the cutter PCB to J10 or P33 on the main logic board.

5. Refer to [Figure 4-38](#). Loosen the screws securing the lower drive arm to the motor shaft.
6. Rotate the cutter motor shaft with a pair of pliers such that the two flats on the cutter motor shaft are aligned with the two set screws in the lower drive arm when the arm is in the vertical position. Reposition the lower drive arm axially on the cutter motor shaft such that the sensor flag is approximately centered between the optical sensor walls.
7. Secure the lower drive arm on the cutter motor shaft with the two set screws.
8. Hold the lower drive arm with a thumb and an index finger and rotate it clockwise and counterclockwise for a few degrees to ensure that the sensor flag does not touch the optical sensor walls on either side. During this operation, take care not to touch the sensor flag with fingers.
9. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply.
10. Refer to [Figure 4-40](#). Reconnect all cables and connectors that were previously disconnected.
11. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
12. Reconnect the AC power cord and restore power. Turn the AC power switch On (I). Enter Configuration Mode and set the printer to Cutter Mode. Save as PERMANENT and turn the printer off (O).
13. Load media and ribbon, press and hold the **PAUSE** while turning the printer power On (I), and run labels through the printer. Test the cutter for proper operation.

Upper Drive Arm Alignment



Caution • This installation must be performed by a qualified service technician.

If the media hits either cutter blade or if the cutter does not cut through the label material completely, the upper drive arm alignment must be re-timed.



Note • The upper drive arm is part of the cutter mechanical assembly and has been aligned at the factory. If for some reason the position is altered, the following procedure may be used to realign the upper drive arm.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

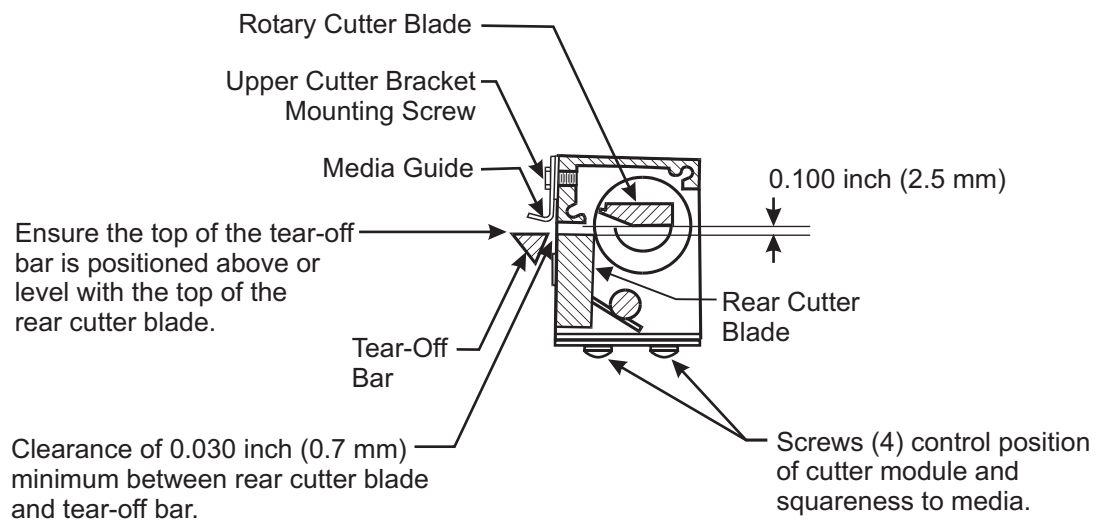
3. Refer to [Figure 4-38](#). Loosen the screw that clamps the upper drive arm to the rotary cutter blade shaft. The drive arm may be snug on the shaft.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

4. Hold the upper drive arm in a stationary position and adjust the rotary cutter blade to a gap of approximately 0.100 inches (2.5 mm) between the cutting edge on the left end and the cutting edge of the rear cutter blade, as shown in [Figure 4-41](#).



Note • If the gap between the cutting edges is too large, the cutter may not cut properly across the entire media width. If the gap is too small, the media may catch on the cutter blade edge and cause a jam.



Relative position of the rotary cutter blade when the drive link assembly is stopped by the optical sensor, when power is on in the cutter mode.

Figure 4-41. Mechanical Assembly Positioning

5. Position the upper drive arm out from the cutter frame so its flat surface is flush with the end of the rotary cutter blade shaft.



Note • Over tightening the screw can damage the drive arm and strip the threads.

6. Use an Allen wrench socket on a torque wrench and tighten the screw until the slot closes or until a torque of 100 inch-pounds (11.3 N•m) is achieved.
7. With a felt-tip pen, draw a line across the outer face of the upper drive arm and the end of the cutter blade shaft. If cutter operation problems occur, this mark shows if the alignment of the clamp and the cutter blade shaft has changed.
8. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
9. Reconnect the AC power cord and restore power. Turn the AC power switch On (I). Enter configuration mode and set the printer to cutter mode. Save as PERMANENT and turn the printer off (O).
10. Load media and ribbon, press and hold the **PAUSE** while turning the printer power On (I), and run labels through the printer. Test the cutter for proper operation.
11. Test the cutter timing by feeding maximum-width label stock through the printer and ensuring that complete cutting of the label occurs. If necessary, repeat the procedure to achieve complete cutting of the labels.

Install Cutter Motor



Caution • This installation must be performed by a qualified service technician.

Remove the Cutter Motor

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
 2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
 3. Open the media door.
-



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

4. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.
5. Refer to [Figure 4-38](#). On the electronics side of the printer, disconnect the cutter motor power cable from the cutter PCB connector J4. Loosen the screws that attach the cutter PCB. Remove the one screw in the lower right corner of the cutter PCB so you can remove the cutter motor power cable.
6. Pivot the lower drive arm clockwise, as seen from the left side of the printer, until the lower drive arm sensor flag is free of the optical sensor.



Note • You may have to rotate the lower drive arm to gain access to both screws.

7. Loosen the two set screws that secure the lower drive arm to the cutter motor shaft.
8. Rotate the slotted link until it is horizontal and two screws securing the cutter motor are accessible for removing with a 5/32 (3.96 mm) allen wrench.
9. Remove the lower drive arm from the cutter motor shaft.
10. Remove the screws that secure the cutter motor to the main frame of the printer.
11. Refer to [Figure 4-42](#). Pull the cutter motor away from the main frame. Remove the motor cable and grommet from the slot in the main frame.

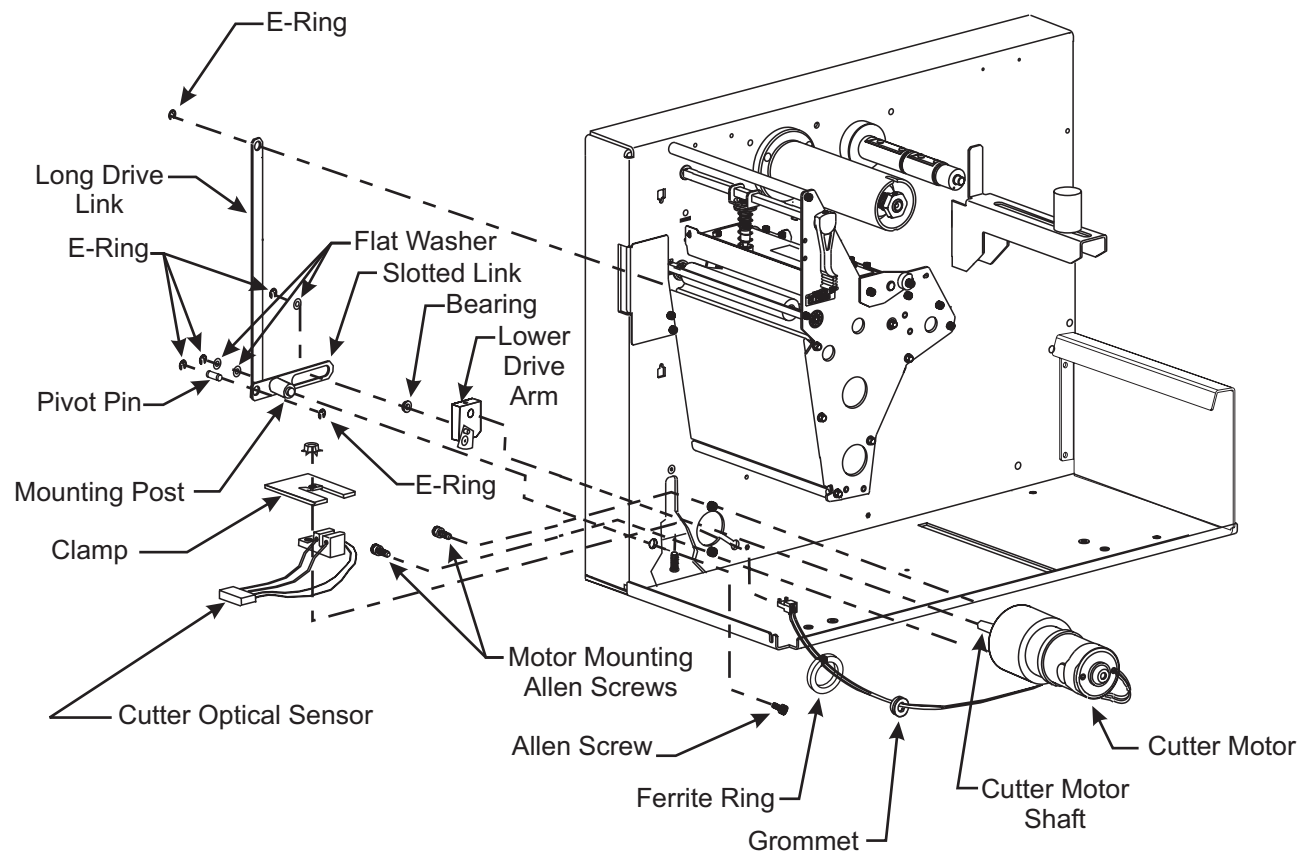


Figure 4-42. Cutter Motor Replacement

Install the Cutter Motor

1. Refer to [Figure 4-42](#). Thread the motor power lead through the slot in the main frame.
2. Install the split grommet on the new motor power cable and into the hole in the main frame.
3. Hold the lower drive arm to allow the cutter motor shaft to slide through the hole in the drive arm as the cutter motor is being piloted into its mounting bore.
4. Refer to [Figure 4-42](#). Secure the cutter motor to the main frame with two motor mounting screws that were previously removed.
5. Carefully rotate the slotted link counterclockwise, which simultaneously rotates the lower drive arm and watch the sensor flag enter the optical sensor. Rotate the link until the lower drive arm is positioned vertically and the sensor flag is between the sensor walls.
6. Hold the lower drive arm in its vertical position and rotate the cutter motor shaft with a pair of pliers until the two set screws are aligned with the two flats on the shaft.
7. Reposition the lower drive arm axially on the shaft so the sensor flag is approximately centered between the front and back wall of the optical sensor. Tighten the two set screws to 20 inch-pounds (2.3 N•m) securing the lower drive arm to the shaft.
8. Connect the cutter motor power lead to cutter PCB connector J4.
9. Reinstall the DC power supply. Ensure all wires are positioned away from any moving parts.
10. Refer to [Figure 4-5](#) and [Table 4-2](#) page 4-11. Reconnect the remaining cables/connectors to the DC power supply and ensure proper placement and orientation.

11. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
12. Reconnect the AC power cord and restore power.
13. Turn the printer power On (I). Enter configuration mode and set the printer for cutter mode. Save as PERMANENT and turn the printer power Off (O).
14. Load media and ribbon. Hold in the **PAUSE** key while turning the printer power On (I) and run labels through the printer.



Note • If the media hits wither cutter blade or the cutter does not cut through the label material completely, perform “Upper Drive Arm Alignment,” before completing the installation.

15. Reconnect the data cables.

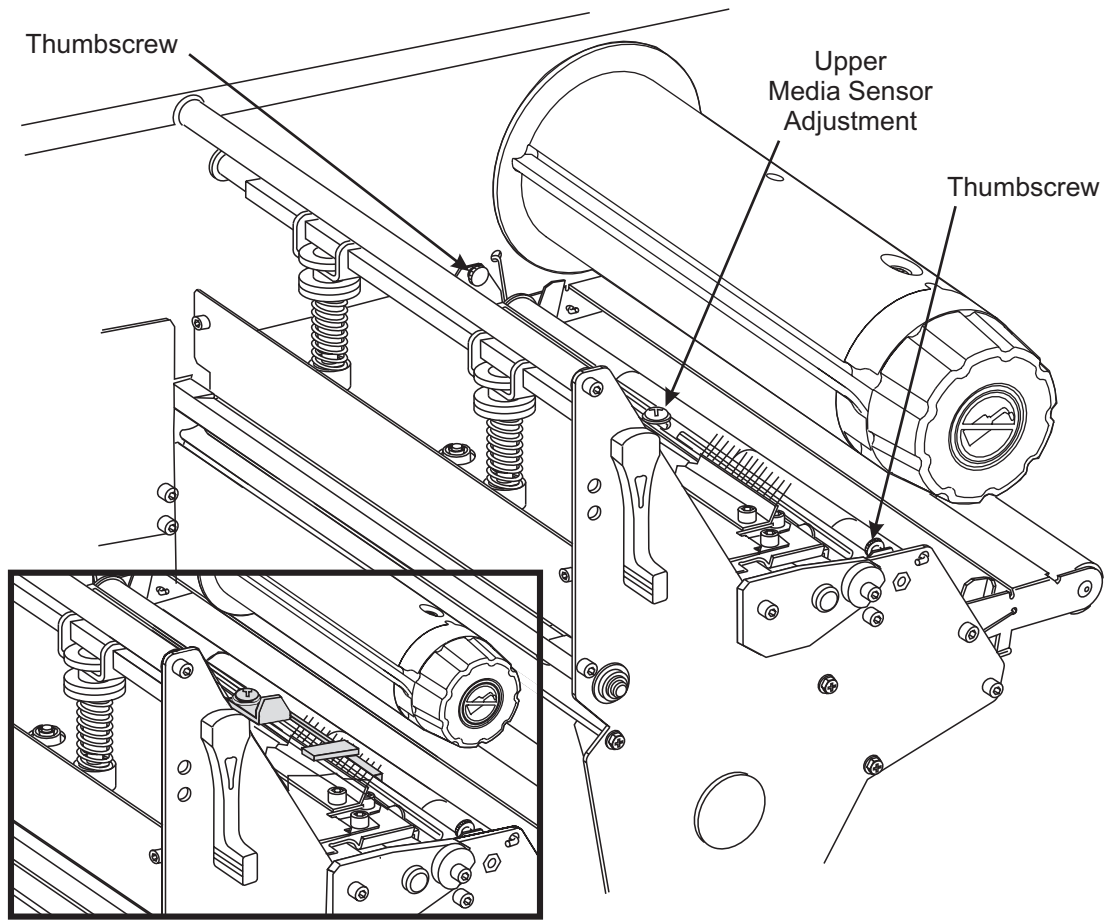
Transmissive Media Sensor Replacement



Caution • This installation must be performed by a qualified service technician.

Sensor Removal

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Open the media door.
4. Open the printhead and remove all media and ribbon. Close the printhead.
5. Refer to [Figure 4-43](#). Remove thumbscrews securing the upper media sensor bracket assembly.



220Xiii/XiiiPlusPrinter Only

Figure 4-43. Upper Media Sensor Replacement

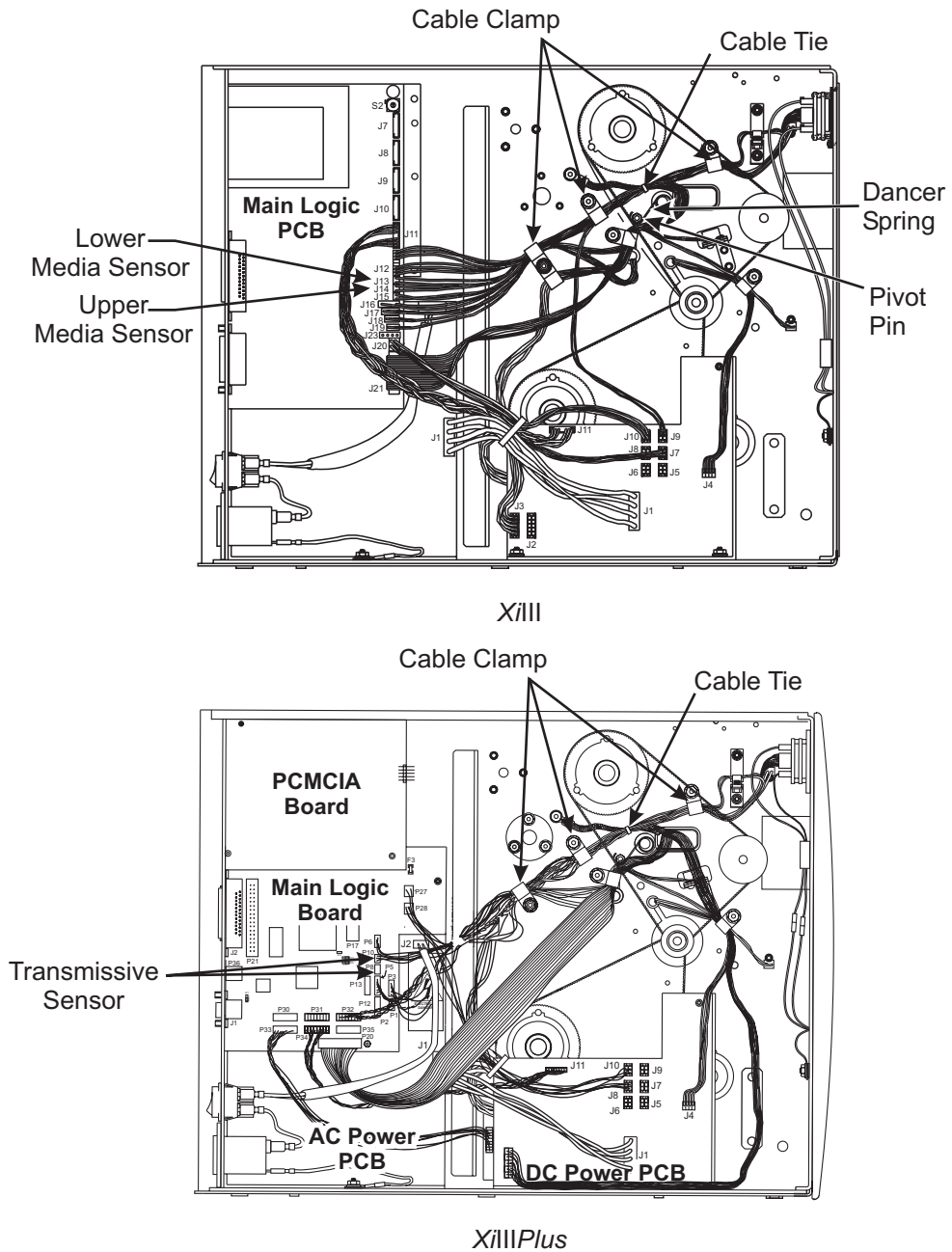


Figure 4-44. X1111 Media Sensor Connection Diagram

6. Refer to [Figure 4-45](#). Slide the lower media sensor away from the printer main frame to allow access. Carefully pry apart the sides of the bracket holding the sensor PCB. The sensor PCB should fall free and dangle from its electrical leads.

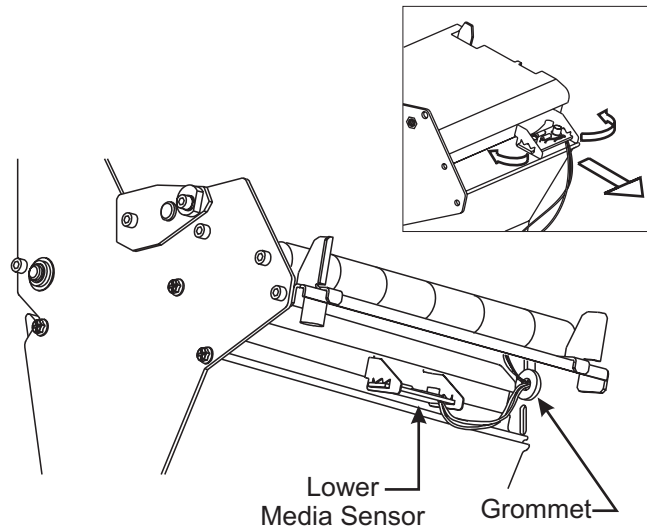


Figure 4-45. Lower Media Sensor and Bracket

7. Refer to [Figure 4-44](#). Locate the electrical leads from the two sensors. Open the cable clamps and follow the sensor electrical leads to main logic board connectors.
8. Remove these connectors.
9. From the media side of the printer, remove the grommet from the slot in the printer main frame. Gently pull on the sensors while guiding the wires through the hole in the main frame.
10. Remove the upper and lower sensors.

Sensor Installation

1. Refer to [Figure 4-43](#). Guide the wires of the new upper and lower media sensors through the main frame and install the split grommet into the main frame.
2. Attach the electrical leads of the new sensors to the main logic board, J13 and J14 for the *XiIII* and R-140, or P-8 and P-10 for the *XiIIIPlus*.
3. Install the upper sensor bracket and secure it with thumbscrews.
4. Refer to [Figure 4-44](#). Reinstall the pivot pin and the dancer spring.
5. Refer to [Figure 4-45](#). Slightly spread the lower media bracket open and install the lower media sensor.
6. On the electronics side of the printer, route the electrical leads through the cable clamps and install the cable tie.
7. Resecure cable clamps with the nuts.
8. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
9. Refer to Positioning the Media Sensors on [page 2-18](#) and adjust the position of the sensors.
10. Reinstall the media and ribbon and close the media cover.
11. Reconnect the data cables and the AC power cord.
12. Turn the printer power On (I).

Ribbon Take-Up Pulley Replacement



Caution • This installation must be performed by a qualified service technician.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to [RRP No. 7 on page 4-26](#) and remove the main drive belt.



Caution • Wear protective eyewear when installing or removing E-rings, C-clips, snap rings, and springs. These are under tension and could fly off.

4. Refer to [Figure 4-46](#). Remove the E-ring securing the pulley.

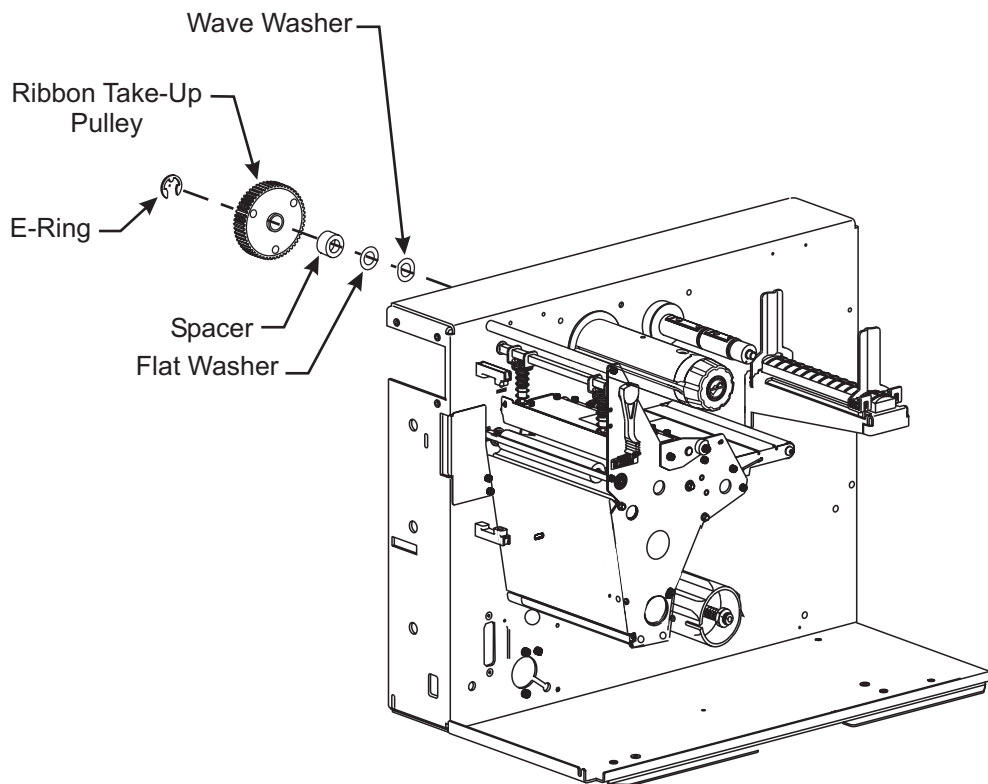


Figure 4-46. Ribbon Take-up Pulley Replacement

5. Slide the ribbon take-up pulley off the shaft.



Note • Do not remove the spacer, flat washer, and wave washer.

6. With the recessed side facing away from the main frame, slide the replacement pulley onto the media take-up shaft.
7. Reinstall the E-ring to secure the pulley.
8. Refer to [RRP No. 7 on page 4-26](#) and reinstall the main drive belt.
9. Refer to [RRP No. 6 on page 4-23](#) and adjust the tension on the main drive belt.
10. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.

11. Reconnect the data cables and the AC power cord.
12. Turn the printer power On (I).

Media Take-Up Pulley Replacement



Caution • This installation must be performed by a qualified service technician.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.
4. Refer to [RRP No. 7 on page 4-26](#) and remove the main drive belt.
5. Refer to [RRP No. 9 on page 4-28](#) and remove the rewind drive belt.



Caution • Wear protective eyewear when installing or removing E-rings, C-clips, snap rings, and springs. These are under tension and could fly off.

6. Refer to [Figure 4-47](#). Remove the E-ring securing the pulley.

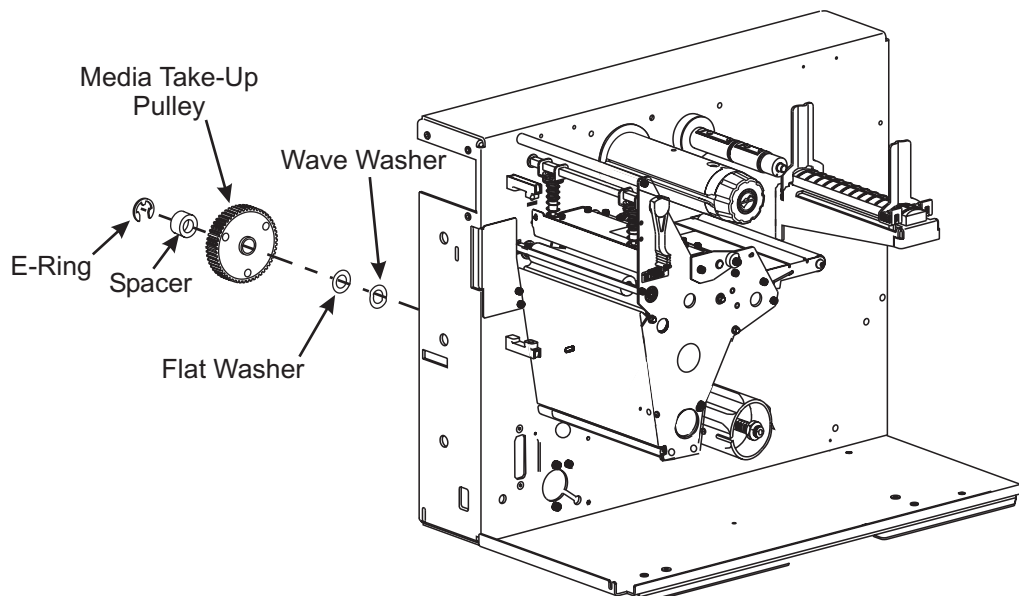


Figure 4-47. Media Take-Up Pulley Replacement

7. Slide the spacer and the pulley off the shaft.



Note • Do not remove the flat washer and wave washer.

8. With the recessed side facing away from the main frame, slide the replacement pulley onto the media take-up shaft.

9. Slide the spacer back onto the shaft.
10. Reinstall the E-ring to retain the assembly.
11. Refer to [RRP No. 9 on page 4-28](#) and reinstall the rewind drive belt.
12. Refer to [RRP No. 8 on page 4-26](#) to adjust the tension on the rewind drive belt.
13. Refer to [RRP No. 7 on page 4-26](#) and reinstall the main drive belt.
14. Refer to [RRP No. 6 on page 4-23](#) to adjust the tension on the main drive belt.
15. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply.
16. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
17. Reconnect the data cables and the AC power cord.
18. Turn the printer power On (I).

Rewind Plate Replacement

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Open the media door.
3. Open the printhead and remove the media and ribbon. Close the printhead.
4. Refer to [Figure 4-48](#) and carefully slide the rewind plate out of the slots in the printhead mechanism and away from the printer.

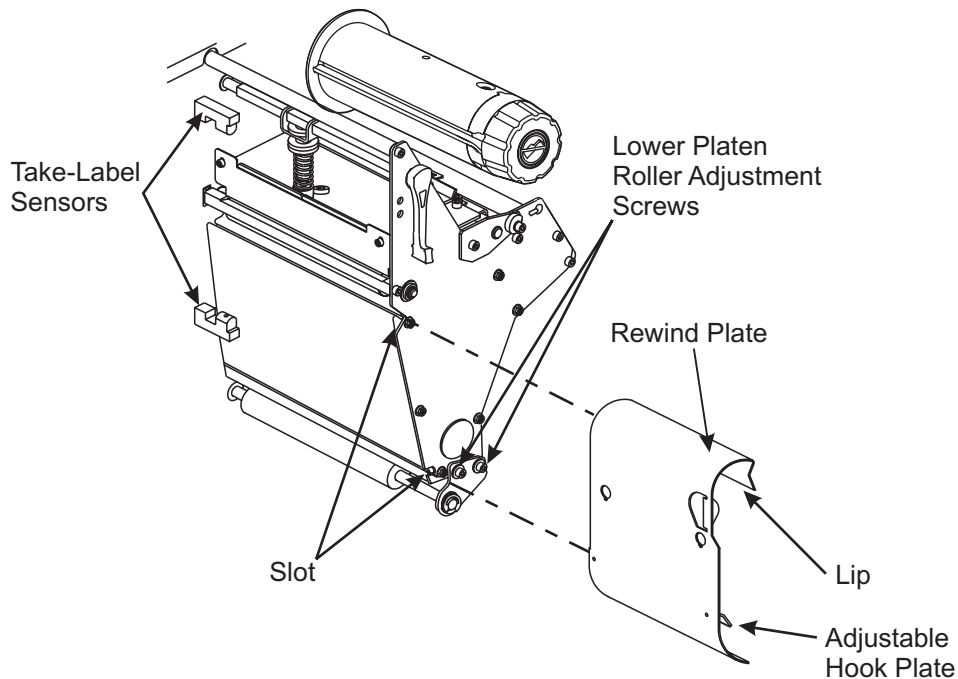


Figure 4-48. Rewind Plate Replacement

5. Engage the top lip and hook plate of the replacement rewind plate into the two mounting slots.
6. Slide the plate in as far as it can go.
7. Open the printhead and reinstall media and ribbon. Close the printhead. Close the media cover.
8. Reconnect the data cables and the power cord.

9. Turn the printer power On (I).
10. Run Pause key test and check to see if the media is tracking properly. If not, refer to “[Media Tracking Adjustment](#)” on page 4-38 and adjust the hook plate on the rewind plate.

Ribbon Sensor Replacement



Caution • This installation must be performed by a qualified service technician.

Ribbon Sensor Removal



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



Caution • The printhead is hot and can cause severe burns. Allow the printhead to cool.

1. Place the power switch in the Off (O) position and disconnect the AC power cord. Disconnect the data cables.
2. Open the media door.
3. Open the printhead and remove the media and ribbon. Close the printhead.
4. Refer to [Figure 4-49](#). Locate the spring-loaded printhead mounting screw on top of the printhead assembly. Loosen the mounting screw until it disengages from the printhead.

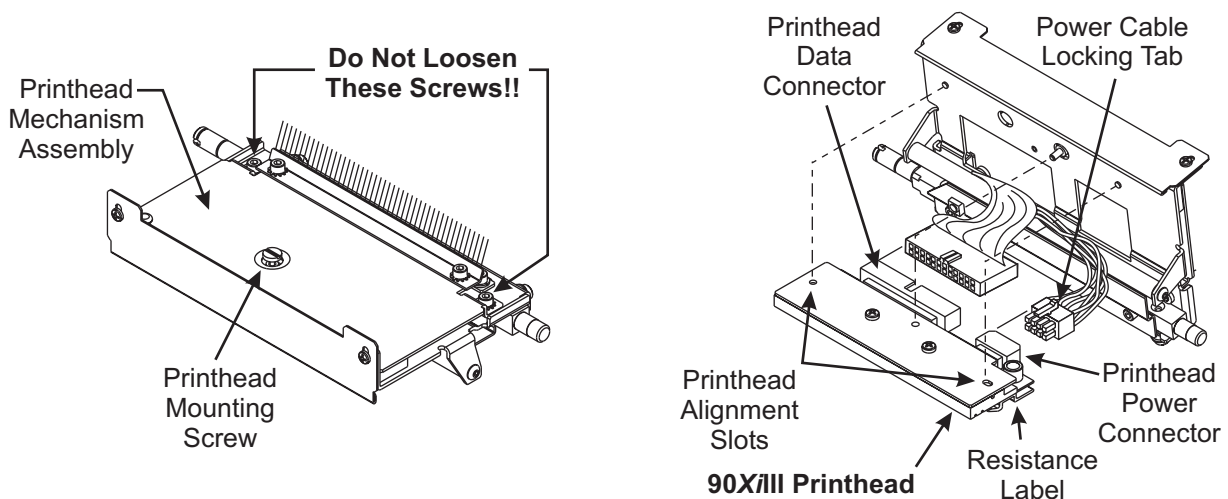


Figure 4-49. Printhead Removal and Installation

5. Slowly open the printhead assembly. The printhead remains on the platen while the rest of the assembly pivots out of the way.



Note • The printhead is very delicate and susceptible to damage if not handled carefully. Use particular care to ensure that the printhead is not damaged when handling it.

6. Carefully disconnect the printhead data and power connectors from the printhead.
7. Remove the printhead through the front of the printer.
8. Refer to [Figure 4-50](#) and remove the screws securing the guard plate.

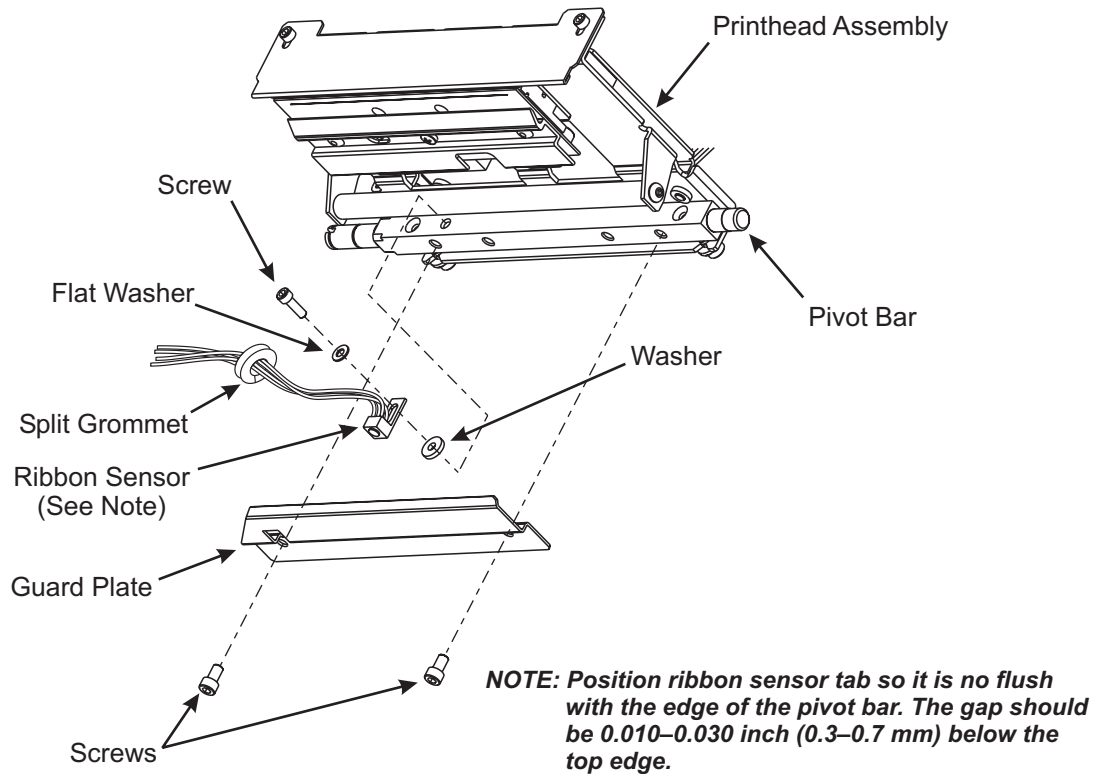


Figure 4-50. Guard Plate and Sensor

9. Pull the data and power cables away from the ribbon sensor.
10. Remove the screw and washer securing the ribbon sensor.
11. Refer to [Figure 4-51](#) and cut the cable tie around the power, data, and ribbon sensor leads.

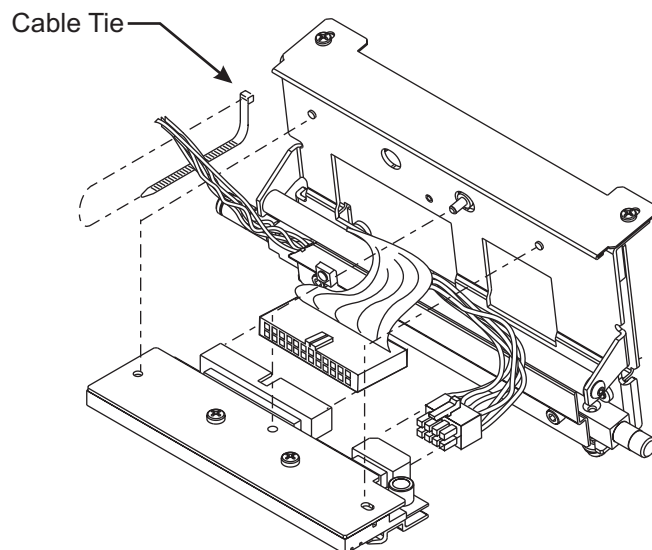
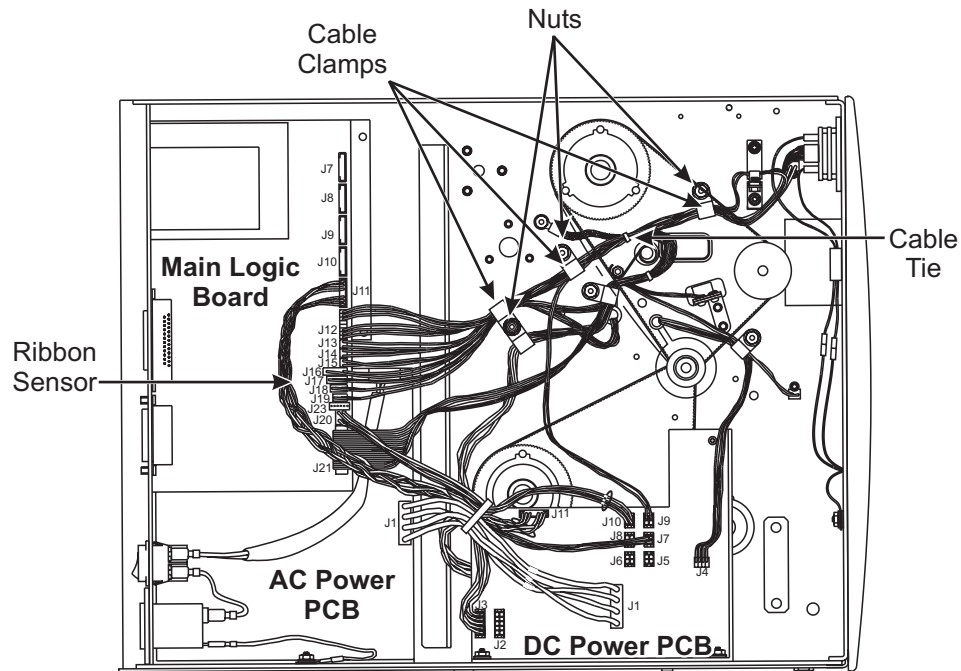


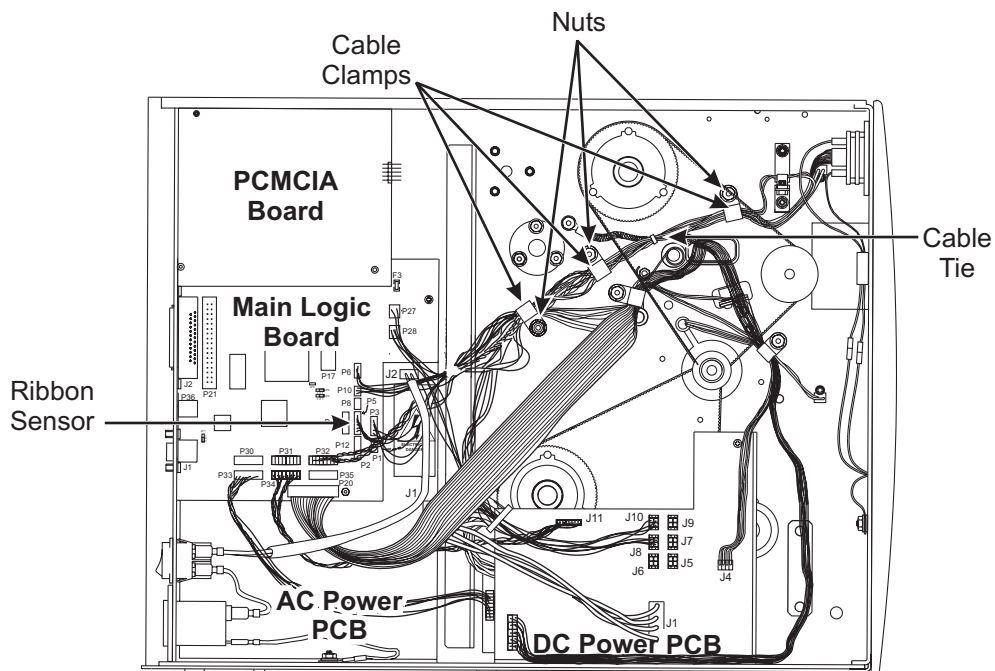
Figure 4-51. Cable Tie Removal and Installation

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

12. Refer to [RRP No. 1](#) on page 4-10 and remove the electronics cover.
13. See [Figure 4-52](#). Locate the electrical wires for the ribbon sensor coming out through a hole in the main frame. There are two twisted wire pairs: black and orange, and black and red. Clip the cable tie and open cable clamps as necessary to remove ribbon sensor power wires going to connector J17 (*Xiii* and R-140) or P5 (*XiiiPlus*) on the main logic board.



Xiii



XiiiPlus

Figure 4-52. MLB Ribbon Sensor Connector

14. Disconnect the ribbon sensor connector at the main logic board. Pull the sensor connector through the grommet at the main frame.
15. Remove the old ribbon sensor.

Ribbon Sensor Installation

1. Feed the power lead from the new ribbon sensor through the grommet in the main frame.



Note • Position ribbon sensor tab so it is not flush with the top edge of the pivot bar. The gap should be 0.020–0.030 (0.5–0.7 mm).

2. Refer to [Figure 4-50](#) and mount the ribbon sensor to the printhead pivot bar.
3. Orient the guard plate so the cutout aligns with the ribbon sensor. Install the plate using the two screws previously removed.
4. Move the printhead back into position so you can carefully connect the data and the power cables.
5. Refer to [Figure 4-51](#). Bunch the printhead power and data cables along with the ribbon sensor cable. Install a cable tie (included in the kit) around all three cables and the printhead pivot shaft. Snug it up and cut off the excess.
6. Carefully position the alignment slots in the printhead over the alignment posts on the underside of the mounting bracket.
7. Seat the printhead completely and hold it in place. Carefully tighten the mounting screw to secure it to the mounting plate.
8. Refer to [Figure 4-53](#). Use a cleaning swab from the printhead cleaning kit (part # 47362) and thoroughly clean the gray area of the new printhead.

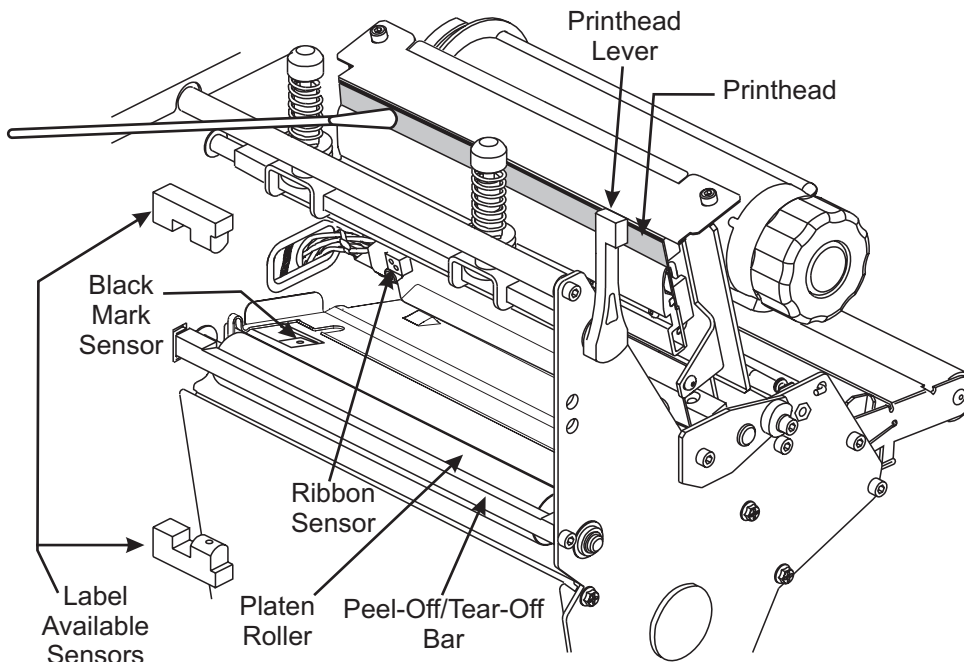


Figure 4-53. Printhead Cleaning

9. Carefully close and open the printhead to ensure that there are no obstructions.

10. Route the ribbon sensor cable through the cable clamps. Close and secure the clamps with nuts removed previously.
11. Install the cable tie (included in the kit) in the same place as the one removed previously.
12. Reconnect the ribbon sensor wire connector into the main logic board connector J17 (*XiIII* and R-140) or P5 (*XiIIIPlus*).
13. Reinstall the media and ribbon. Close the printhead.
14. Close the media door.
15. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
16. Reconnect the data cables and the AC power cord.
17. Turn the printer power On (I).
18. Refer to the Users Guide and perform the “Media and Ribbon Calibration” procedure.
19. If you receive a “Ribbon Error,” check all the steps of the installation procedure. Ensure that the sensor power connector is fully seated in connector J17 (*XiIII* and R-140) or P5 (*XiIIIPlus*) on the main logic board.

Take-Label Sensor Replacement



Caution • This installation must be performed by a qualified service technician.

Sensor Removal



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

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Open the media door.
3. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
4. Cut all cable ties around the sensor cables and remove the sensor cables from the cable clamps.
5. Refer to [Figure 4-54](#) and remove the screws that secure the upper and lower take-label sensors.
6. Remove the take-label sensor connectors from the main logic board, J15 and J16 (*XiIII* and R-140) or P1 and P2 (*XiIIIPlus*).
7. Remove the take-label sensors and cables, carefully pulling the connectors through the main frame.

Sensor Installation



Note • The upper take-label sensor has green/yellow wires.

1. Insert the upper take-label sensor connector and cable through the upper hole in the main frame.

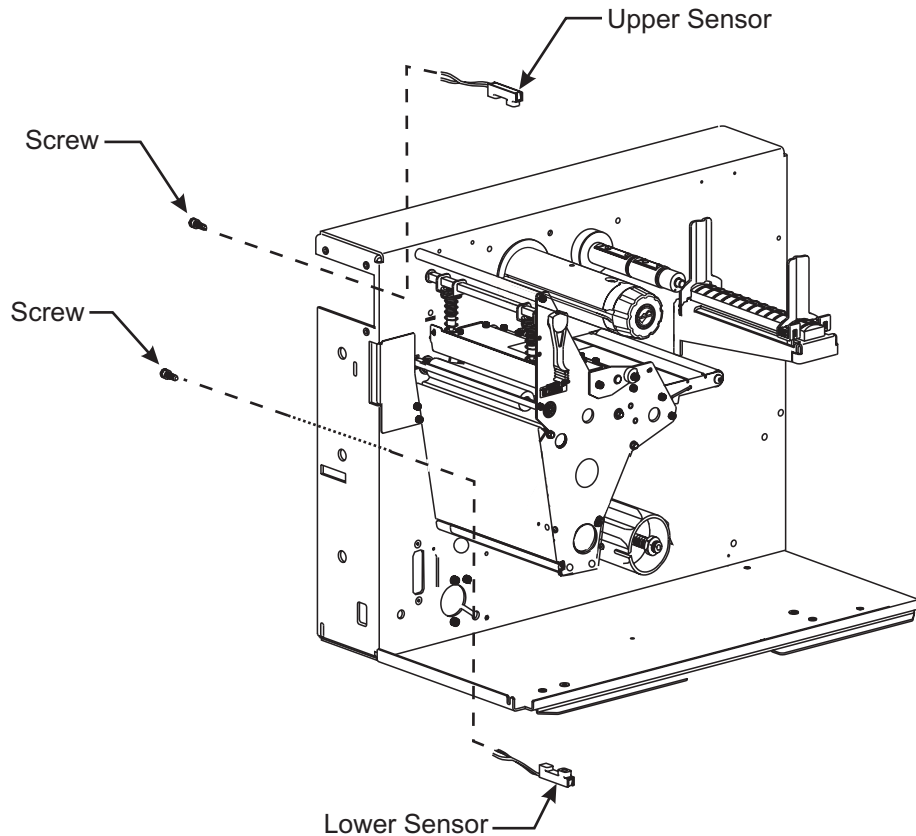


Figure 4-54. Take-Label Sensors

2. Install the sensor with the window facing down. Secure the sensor to the main frame with one of the screws previously removed.



Note • The lower take-label sensor has black/red wires.

3. Insert the lower take-label sensor connector and cable through the lower hole in the main frame.
4. Install the sensor with the window facing up. Secure the sensor to the main frame with one of the screws previously removed.
5. Refer to [Figure 4-55](#). Route the wires through the cable clamps to the main logic board. Ensure that the wires do not come in contact with any moving parts.

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- Connect the upper take-label sensor connector to J16 (*XiIII* and R-140) or P2 (*XiIIIPlus*) on the main logic board and the lower label available sensor connector to J15 (*XiIII* and R-140) or P1 (*XiIIIPlus*).



Note • In the Peel-Off mode, if the two sensor are not aligned with each other, the Take-Label LED illuminates, and the printer does not operate.

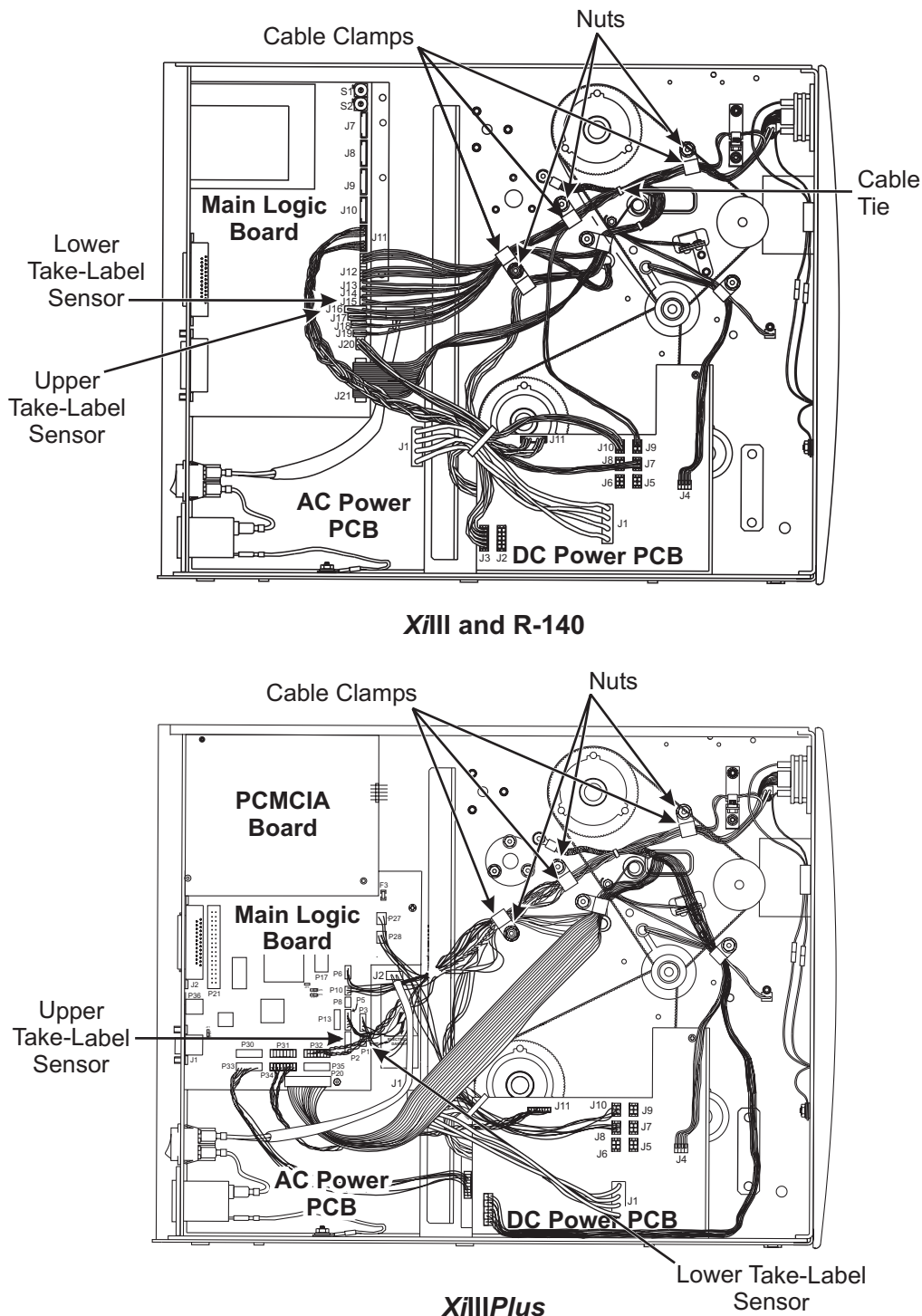


Figure 4-55. XiIII, XiIIIPlus and R-140 Sensor Connector Location

7. Install the cable ties (included in the kit) in the same places as the ones removed previously.
8. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
9. Reinstall the media and ribbon. Close the printhead.
10. Reconnect the dat cables and the AC power cord.
11. Turn the printer power On (I).
12. Refer to the Users Guide and perform the “Media and Ribbon Calibration” procedure.
13. If you receive a “Ribbon Error” check all the steps of the installation procedure. Ensure that the take-label sensors connectors is fully seated in connector J15 and J16 (XIII and R-140) or P1 and P2 (XIIIPlus).

DC Stepper Motor Maintenance



Caution • This installation must be performed by a qualified service technician.



Notes • The stepper motor assemblies for 203 dpi and 300 dpi printers are not the same. Ensure that you have the correct replacement part before beginning the procedure.

Make certain that the DC stepper motor is isolated and identified as the cause of printer non-conformance before beginning this procedure.

These instructions are very extensive. Read the entire procedure first, to get an understanding of all the steps involved. You may want to take notes and label parts as you go to facilitate reassembly.

DC Stepper Motor Removal

1. Place the power switch in the Off (O) position, and disconnect the AC power cord. Disconnect the data cables.
2. Open the media cover and remove the media and ribbon.
3. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

4. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.
5. Refer to [RRP No. 7 on page 4-26](#) and remove the main drive belt.
6. Refer to [RRP No. 9 on page 4-28](#) and remove the rewind drive belt.
7. Refer to [Platen Roller Replacement on page 4-43](#), and remove the upper and lower platen rollers.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

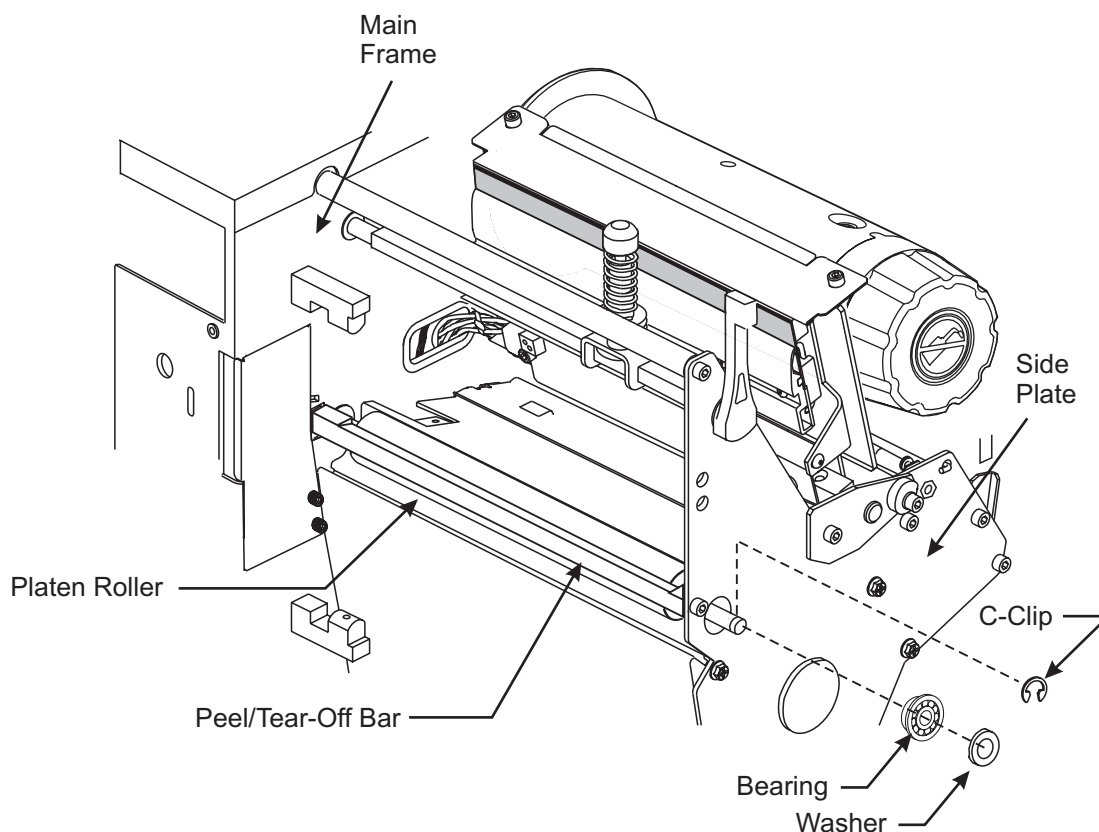


Figure 4-56. Freeing Side Plate for Removal

8. Refer to [Figure 4-57](#). Remove and retain screw 12. Remove the printhead lever and the wave washer as shown in [Detail A](#).

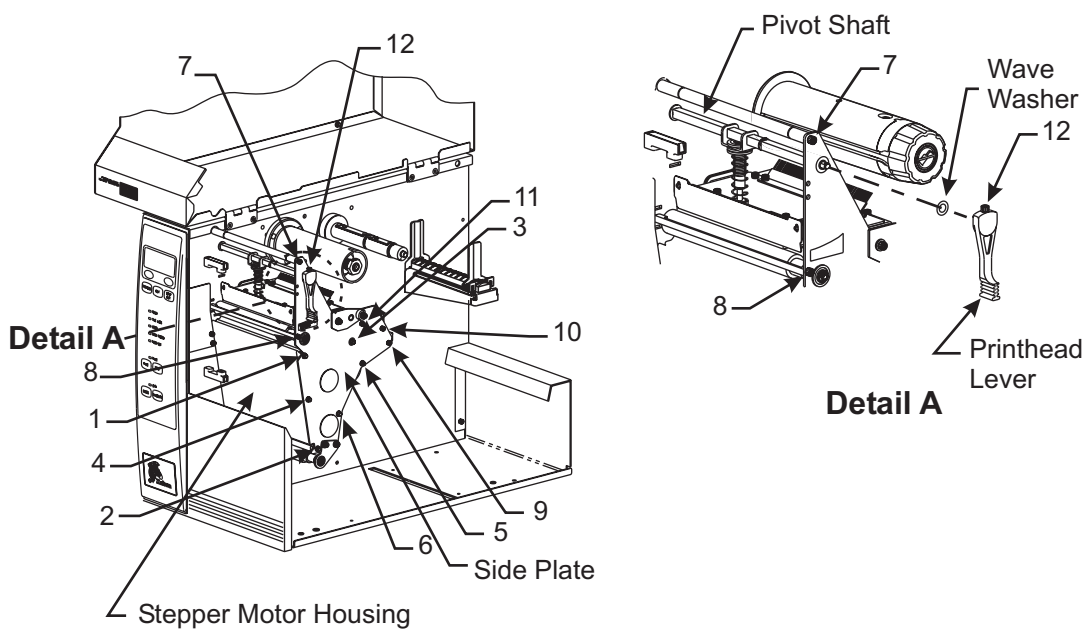


Figure 4-57. Side Plate Removal and Installation



Note • To ensure that the side plate is reinstalled in the exact position, mark two thin lines from the side plate to the stepper motor housing.

9. On the media side of the printer, remove and retain screws 1 through 11 to free the side plate from the motor housing.

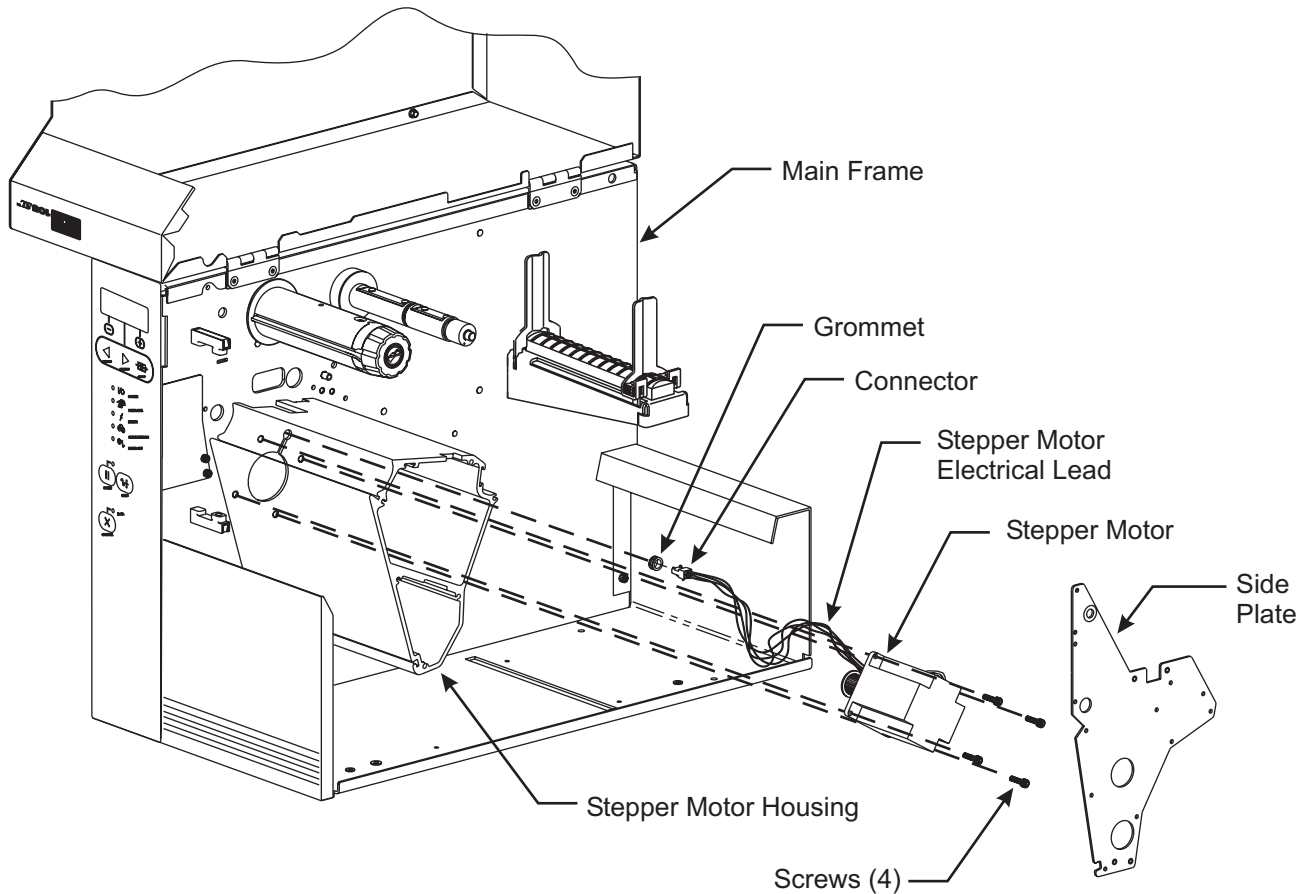


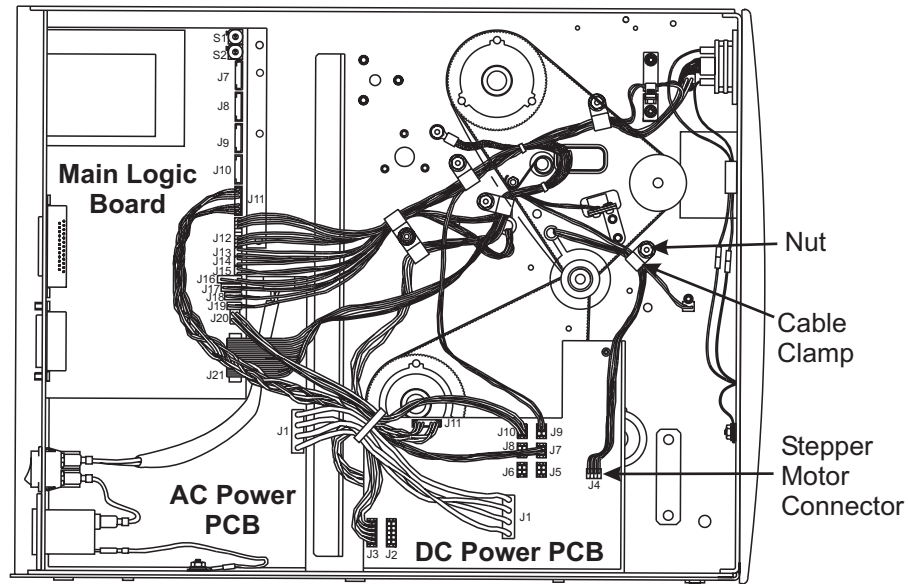
Figure 4-58. DC Stepper Motor Removal and Installation



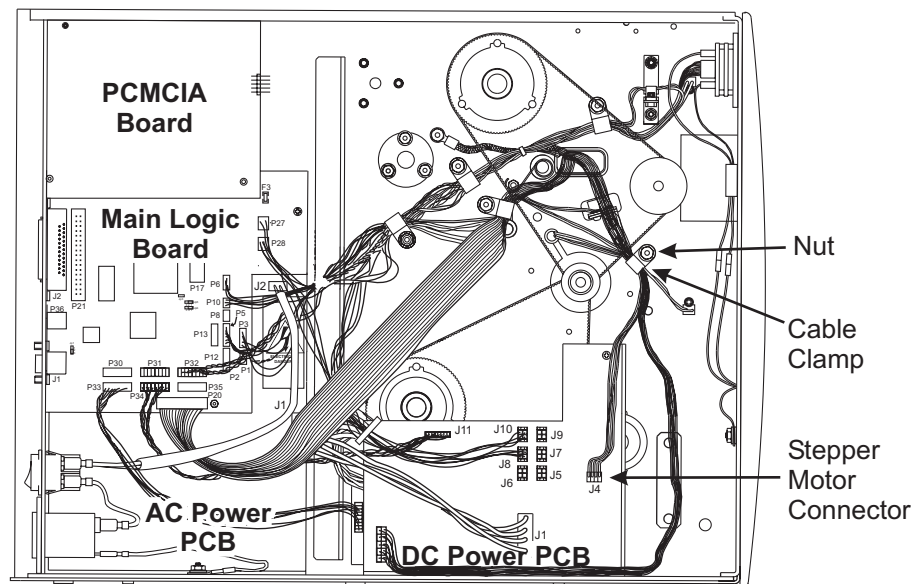
Note • When removing the side plate, the dancer assembly, upper media sensor bracket, and media guide plate will still be attached to the main frame.

10. Remove the side plate.

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X/III



X/IIIPlus

Figure 4-59. Stepper Motor Connection

11. Refer to [Figure 4-59](#). Remove the nut and open the cable clamp securing the stepper motor wires. Disconnect the stepper motor connector from the DC power supply, J4.
12. See [Figure 4-58](#). Remove and retain the screws securing the motor and remove the motor.
13. Continue with DC stepper motor install.

Install DC Stepper Motor

1. Remove the old grommet and install the new one. Feed the motor power cable through the grommet. Turn the split in the grommet away from the large opening.
2. Secure the motor to the main frame with the screws previously removed. Torque the mounting screws to 15–16 inch-pounds (1.7–1.8 N•m).
3. Insert the bearings for the platen roller and peel roller into the side plate.



Notes • As the side plate is attached, ensure that the print mechanism pivot bar is through the wear plate and that the platen roller, peel roller, dancer assembly roller, and pivot shaft extend through the correct holes in the side plate.

After the side plate is reinstalled, there are several parts that need to be reinstalled and a series of adjustments that need to be made. Do not tighten any screws until all of the screws are installed.

4. Refer to [Figure 4-57](#). Reinstall the side plate to the stepper motor housing by installing screw 1 loosely.
5. Loosely reinstall screws 2 through 6.
6. Align the side plate to its original position and tighten screws 1 through 6 to 16.5–17.0 inch-pounds (1.8–2.0 N•m).
7. Align the remaining rollers, media guide plate, and tear/peel bar with their holes in the side plate. Install screws 7 through 11 and tighten.
8. Reinstall the wave washer and printhead lever onto the pivot shaft and press and hold the toward the side plate. Reinstall screw 12 and tighten.
9. Refer to [Figure 4-59](#). Route the stepper motor electrical lead and connector through the cable clamp and reinstall the nut.
10. Refer to [“Platen Roller Replacement” on page 4-43](#) and reinstall the platen rollers and pulleys.
11. Refer to [RRP No. 9 on page 4-28](#) and reinstall the rewind drive belt.
12. Refer to [RRP No. 7 on page 4-26](#) and reinstall the main drive belt.
13. Refer to [RRP No. 8 on page 4-26](#) and adjust the tension on the rewind drive belt.
14. Refer to [RRP No. 6 on page 4-23](#) and adjust the tension on the main drive belt.
15. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply.
16. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
17. Open the printhead and reinstall media and ribbon. Close the printhead.
18. Reconnect the data cables and AC power cord.
19. Turn the printer power On (I).
20. Refer to [“Printhead Adjustments” on page 4-31](#) and perform all the procedures to achieve acceptable print quality.

Black Mark Sensor Replacement

Caution • This installation must be performed by a qualified service technician.

Sensor Removal

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

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to [Figure 4-60](#). Remove screws securing the black mark sensor, and remove the sensor.

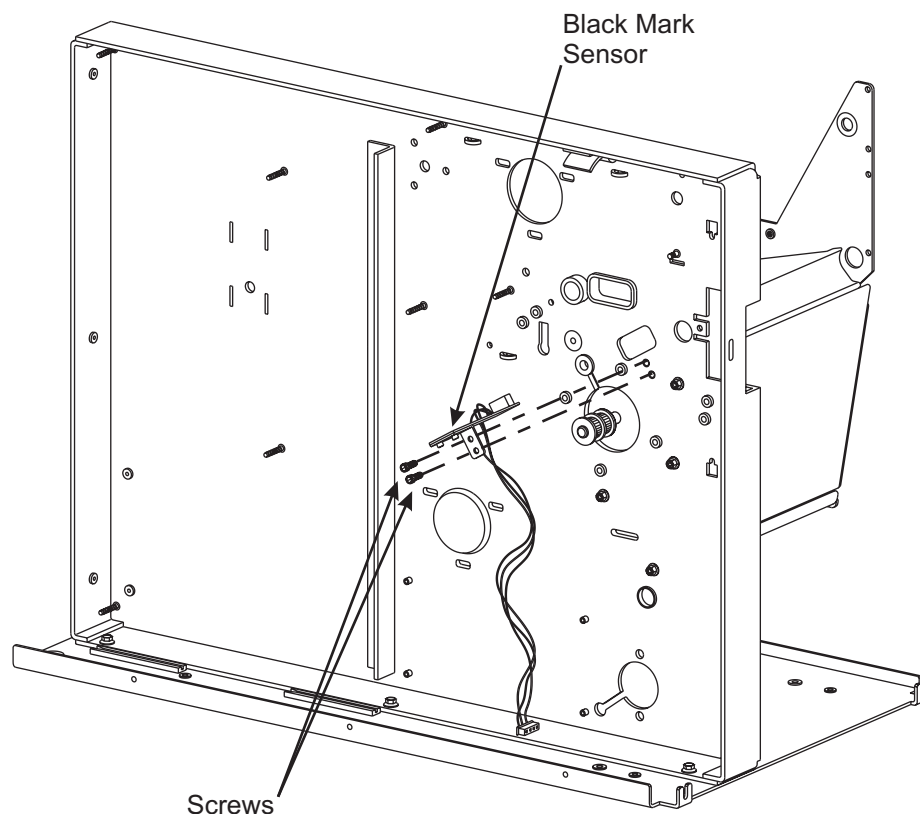


Figure 4-60. Black Mark Sensor Installation

4. Refer to [Figure 4-61](#). Follow the sensor leads back to connector J19 or P6 on the main logic board and disconnect it. Cut wire ties as necessary.
5. Remove the nuts securing the cable clamps.

Sensor Installation

1. Fasten the sensor in position with two screws.
2. Refer to [Figure 4-61](#). Route the sensor wires through the cable clamp to the main logic board. Reinstall nuts securing the cable clamps. Replace cable ties (included in the kit) as necessary.

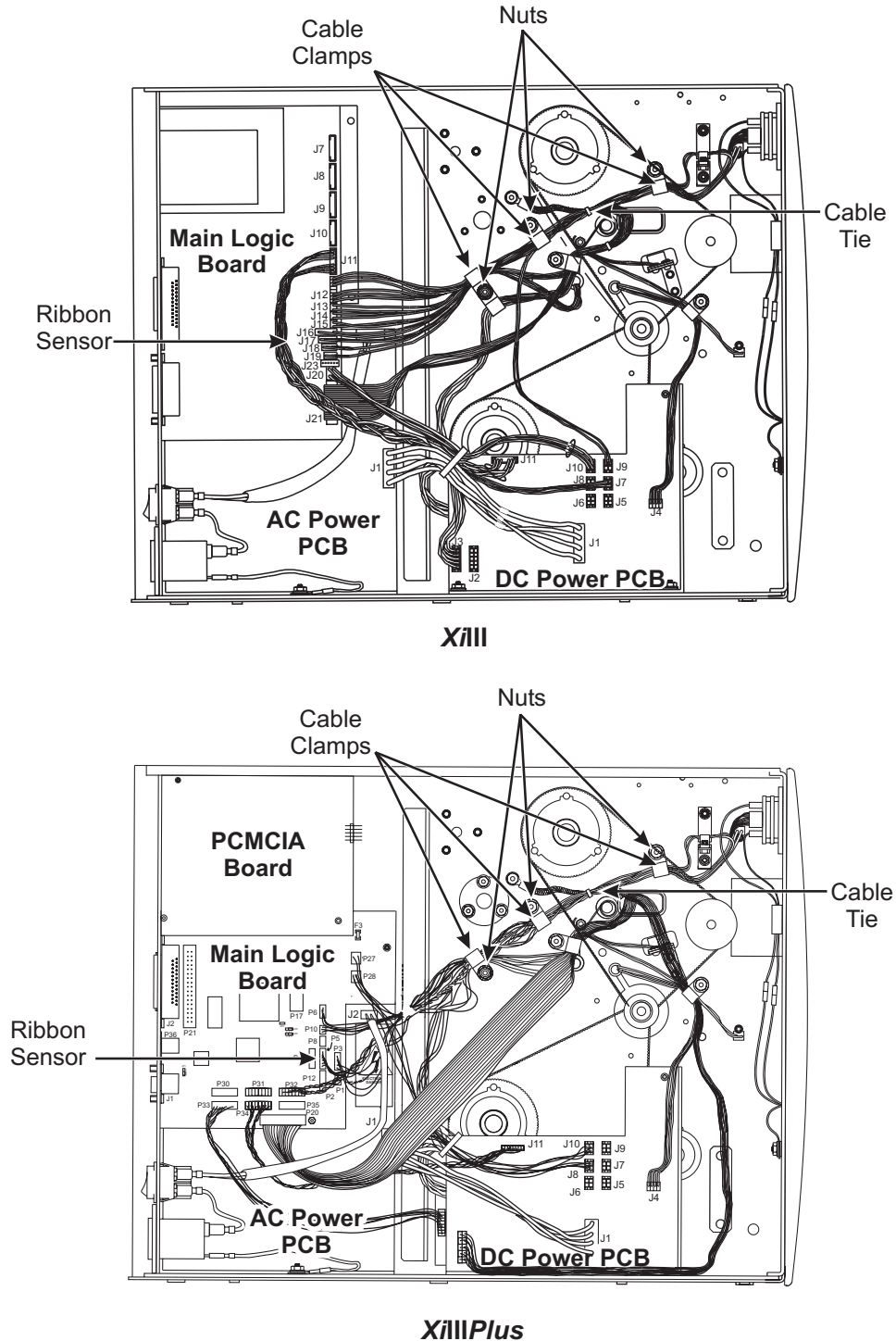


Figure 4-61. Sensor Lead Routing and Connection

3. Reconnect sensor wires to connector J19 or P6 on the main logic board.
4. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.

5. Reinstall the media and ribbon.
6. Reconnect the data cables and the AC power cord.
7. Turn the printer power On (I).
8. Enter Printer Configuration and select MARK for sensor type.

RFID Encoder Replacement (R-140 Only)



Caution • This installation must be performed by a qualified service technician.

Read these instructions thoroughly before attempting to install the RFID base assembly into the Zebra RFID printer.

Encoder Removal



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

The printer must be partially disassembled in order to install the parts in this kit.

1. Turn the printer power Off (O). Remove the power cord and the printer communications cable.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Remove the small wire connector J23 on the main logic board (RFID Data Cable). Loosen the cable ties holding the wires and remove the cable.
4. See [Figure 4-62](#). Open the media door and remove the RFID cover plate.

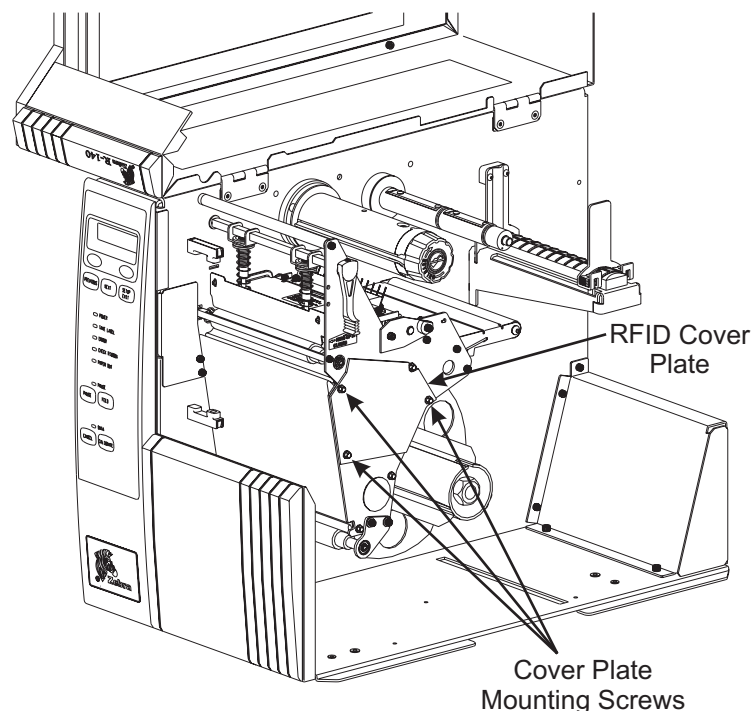


Figure 4-62. Cover Plate Location

5. See [Figure 4-63](#). Remove the base assembly mounting screws.
6. Remove the RFID base assembly by lowering it and pulling it out.
7. Carefully remove the data cable.
8. Continue with encoder



Note • Use caution when removing the data cable.

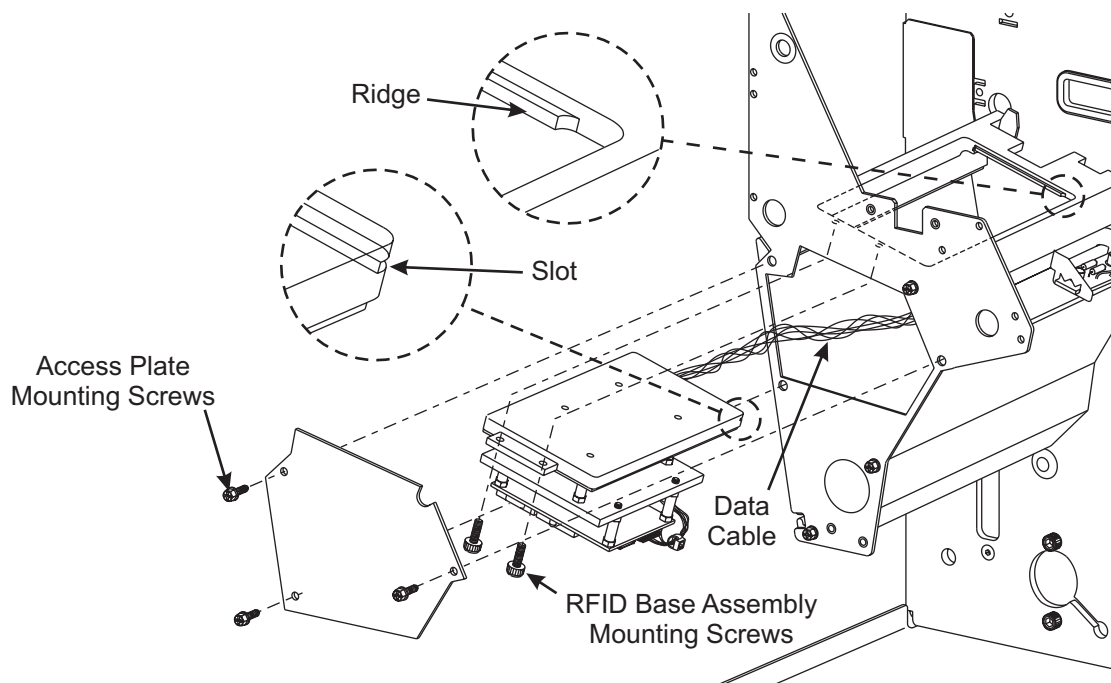


Figure 4-63. Removal and Installation

Encoder Installation

1. Refer to [Figure 4-63](#). Thread the RFID data cable through the extrusion and main frame.
2. Insert the antenna and reader assembly into the extrusion with the slot on the top and facing the main frame.
3. Align the slot with the ridge on the extrusion and install the two mounting screws.
4. Reinstall the access plate.
5. Route the RFID data cable through the cable clamps and reinstall nuts.
6. Reconnect the RFID data cable connector to J23 of the main logic board.
7. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
8. Reinstall the AC power cord and communications cable.

9. Turn the printer power On (I).



Note • Nothing further needs to be done. The main logic board recognizes the new RFID assembly.

Wireless Ethernet



Caution • This installation must be performed by a qualified service technician.

WCSO Board Removal and Replacement



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

This procedure provides the instructions necessary to remove a ZebraNet Wireless Card Socket Option (WCSO) board, install a new WCSO board, and configure it.

1. Turn the printer power Off (O), disconnect the AC power cord and communication cable.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.

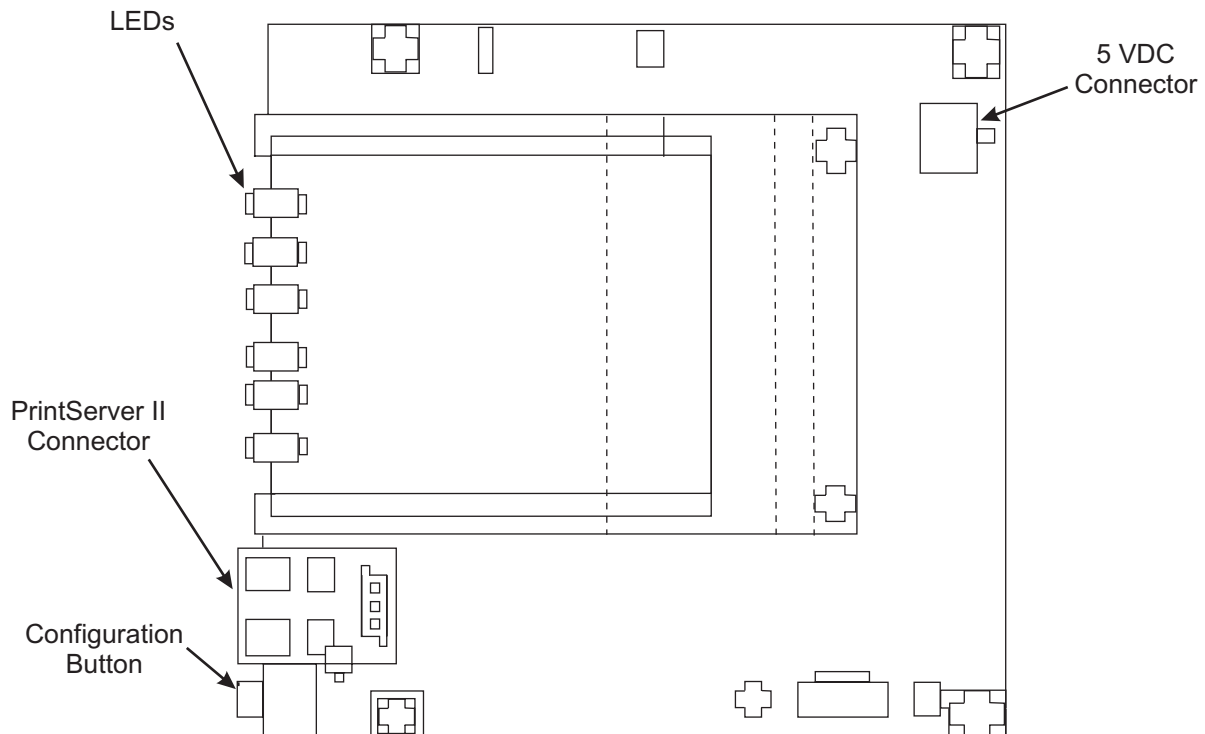


Figure 4-64. WCSO Board

3. Refer to [Figure 4-64](#). Unplug the power cable (multi-colored) connected to the 5 VDC connector on the WCSO board.

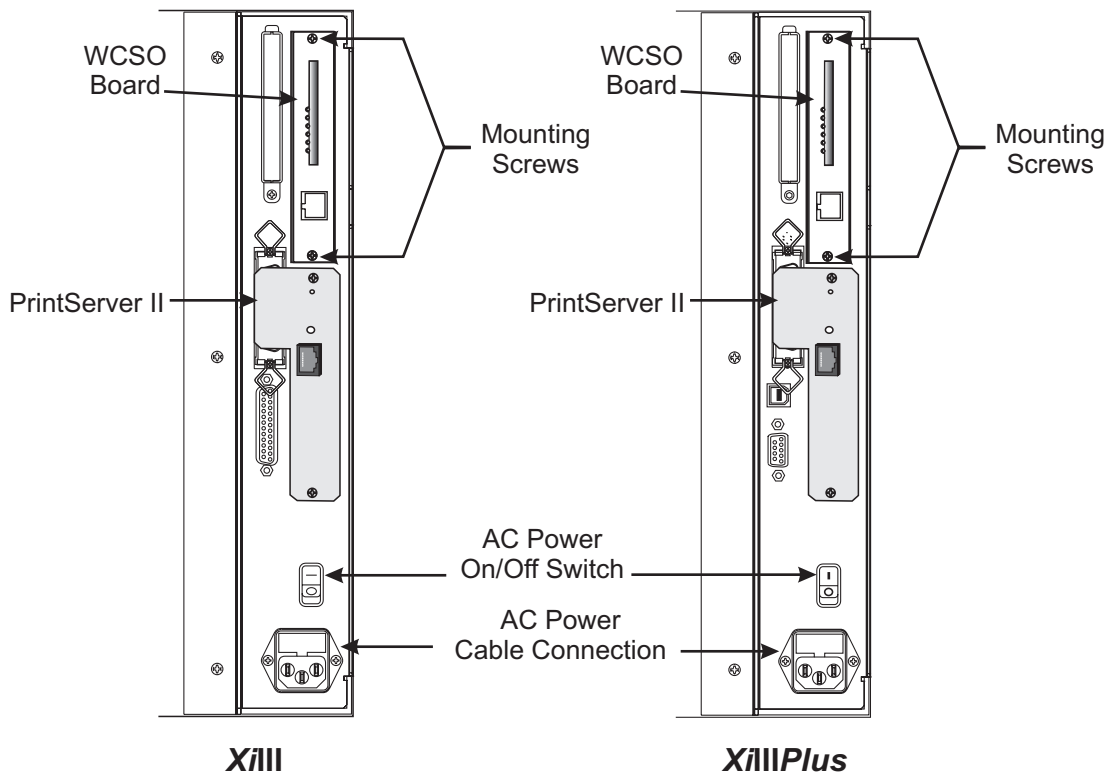


Figure 4-65. WCSO Board Removal

4. On the back of the printer in the upper right-hand corner, remove the screws and the WCSO board.
5. Install the new WCSO board using the two screws previously removed.



Note • There are multiple stickers on the WCSO board that identify the board’s unique serial number.

6. Reconnect the power (multi-colored) cable to the WCSO board’s 5 VDC connector.



Note • Ensure that the power (multicolored) cable is securely inserted into one of the available 5–VDC connectors.

7. Verify the printer power’s Off (O). Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
8. Reinstall the AC power cord and turn the printer power On (I). Make sure there is power to the WCSO board (one or more LEDs should be lit).
9. To verify that the WCSO board is working properly, continue with ZebraNet Wireless View on the next page.

ZebraNet Wireless View

1. From the status bar, click Start>Programs>ZebraNet Wireless>ZebraNet Wireless View.

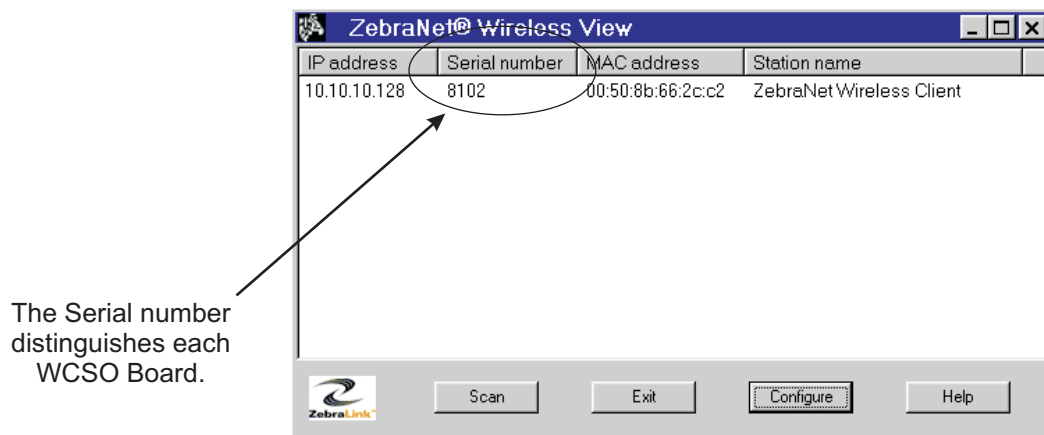


Figure 4-66. The ZebraNet Wireless View Dialog Opens:



Note • The RF card should not be inserted into the WCSO board at this point.

2. With the printer power Off (O), insert the RF card into the WCSO board.
3. Turn the printer power On (I).



Note • Most RF cards have status indicators. At least one of the indicators should be lit when the RF card is inserted correctly and the printer is On (I).

4. Look on the back of the printer to confirm that the WCSO board and RF card have power (LEDs are lit on both).

Cable Overview (7 foot [2 m])

This section describes the use of one of the 7 foot (2m) cables from the installation kit. This cable is used strictly for setup and configuration purposes to make your printer wireless.

If you are configuring WCSO through a network connection (using the **red** crossover cable),

READ THIS:

The default ESSID for WCSO is 125. If the AP is using the same ESSID as the WCSO's ESSID, all wired traffic on that subnet could be passed through the WCSO to the AP and back onto the wired subnet. If this is the situation, a decrease is evident in the available bandwidth, which means you will notice a significant decrease in network throughput to other wireless devices of all other wireless devices associated with the given AP. However, once you break the network loop by disconnecting the **red** crossover cable, all devices resume normal operation.

Here are some solutions if the ESSID's match:

- To isolate network traffic, use the 7 foot (2 m) green straight-through cable and hook it up to the printer and to a laptop.
- Use the 7 foot (2 m) red crossover cable and temporarily change the AP's ESSID.

Cable Usage

1. Use the 7 foot (2 m) cable that applies to your environment. These are your choices:
 - If you are connecting your printer to a computer or laptop, refer to [Figure 4-67](#) below.
 - If you are connecting your printer to a hub or network connection, refer to [Figure 4-68](#) below.

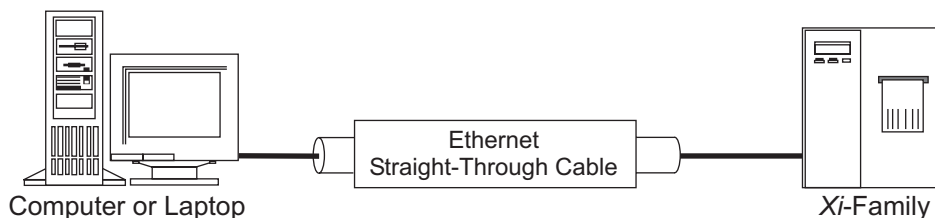


Figure 4-67. Straight-Through Cable Environment

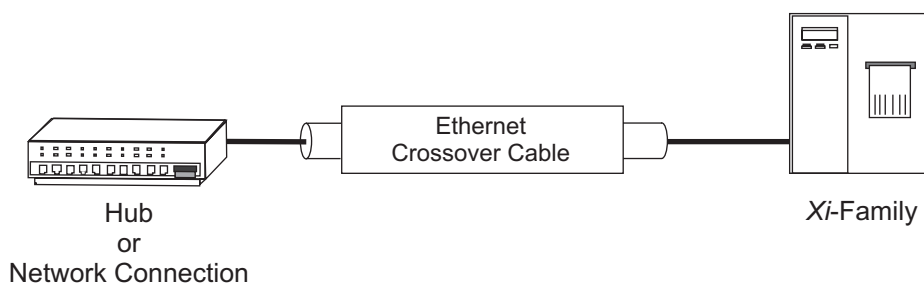


Figure 4-68. Crossover Cable Environment



Note • Do not release the configuration button until the second (yellow) and third LED (green) on the WCSO board begin to flash.

2. On the ZebraNet WCSO board, push and hold in the Configuration button (little white button on the WCSO board) and turn the power On (I).

ZebraNet WCSO Configuration

1. From the status bar on a PC that can access the printer's network, click Start>Programs>ZebraNet Wireless>ZebraNet Wireless View.
2. From the ZebraNet Wireless View dialog, click Scan. This can take up to six seconds.



Note • The default WCSO IP address is: 10.10.10.128 and the default station name is ZebraNet wireless client.

3. Select the WCSO you want to configure, then click Configure.



Note • If you choose to use the bulleted optional steps below, you must use a static address. You cannot use DHCP addressing.

If you elect to do these optional steps, you can telnet in or ping your device(s). If you elect **not** to do these bulleted optional steps, proceed to [step 4](#).

- Click the *Network* tab and set the IP address to an available IP address on the current network.
 - From the *Network* tab, set the *Netmask* to the current *SubNetMask* of your network.
4. Select the *Radio* tab.

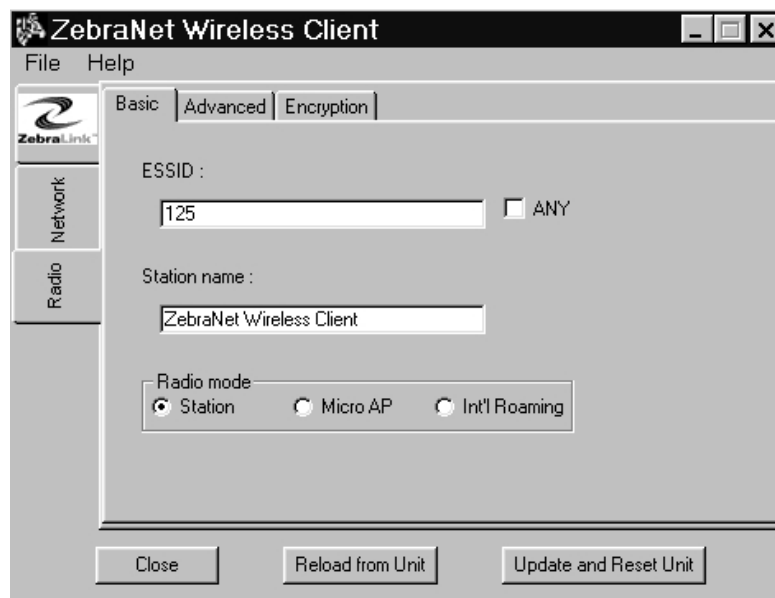


Figure 4-69. The *ZebraNet Wireless Client* dialog with the *Radio>Basic* tab opens



Note • The ESSID can be alpha or numeric.

5. From the *Radio>Basic* tab, set the ESSID to match the ESSID of your wireless network (access point).
6. In the “Station Name” text-box, type the name of the device you want to make wireless, and then click “Update and Reset Unit”.

- If successful, a message log shows this message: “Update and Reset Unit”.
 - If not successful, a message log shows this message: “Upload timed out”. This message is followed by instructions explaining what to do next. Follow the prompts accordingly.
7. When you see the “Update and Reset Successful” message, click Close.

Wireless Setup

1. Turn the printer power Off (O).
2. Unplug the 7 foot (2 m) cable from the WCSO board (in the printer) and your other device (hub or computer).
3. From the installation kit, plug the 1 foot (30 cm) **green** cable (straight-through) into the ZebraNet WCSO board (in back of printer).
4. From the installation kit, get the RF card cover. Pull the **green** cable through the cover opening, then secure the cover with the provided screws.
5. Connect the other side of the **green** cable into the print server.
6. Turn the printer power On (I).



Note • It could take up to 90 seconds for the data light to flash.

Watch for the data light on the front of the printer to flash; this means that ZebraNet WCSO and the print server are recognized.

Testing Installation

1. From the status bar of a PC that can access the printer’s network, click Start>Programs>ZebraNet Wireless>ZebraNet Wireless View.
2. Confirm that your wireless device is listed in the *ZebraNet Wireless View* dialog.
3. From the *ZebraNet Wireless View* dialog, click Scan. Your wireless device should be listed in the *ZebraNet Wireless Client* dialog. If it is **not** in the *ZebraNet Wireless View* dialog:
 - confirm that the printer is turned On (I).
 - confirm that you are using the correct cable for your setup.

OPTIONS INSTALLATION

Caution • This installation must be performed by a qualified service technician.

Font ROM Installation (X/III and R-140 only)

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

Font ROM installation-optional scalable and bit-mapped fonts are available in ROMs.

1. From the rear, turn the printer power Off (O) and remove the AC power cord. Remove any communication cables.
2. Refer to [RRP No. 1 on page 4-10](#). Remove the electronics cover.
3. Refer to [Figure 4-70](#). Remove the option card shield. Push the card-eject button to remove the font/memory board.

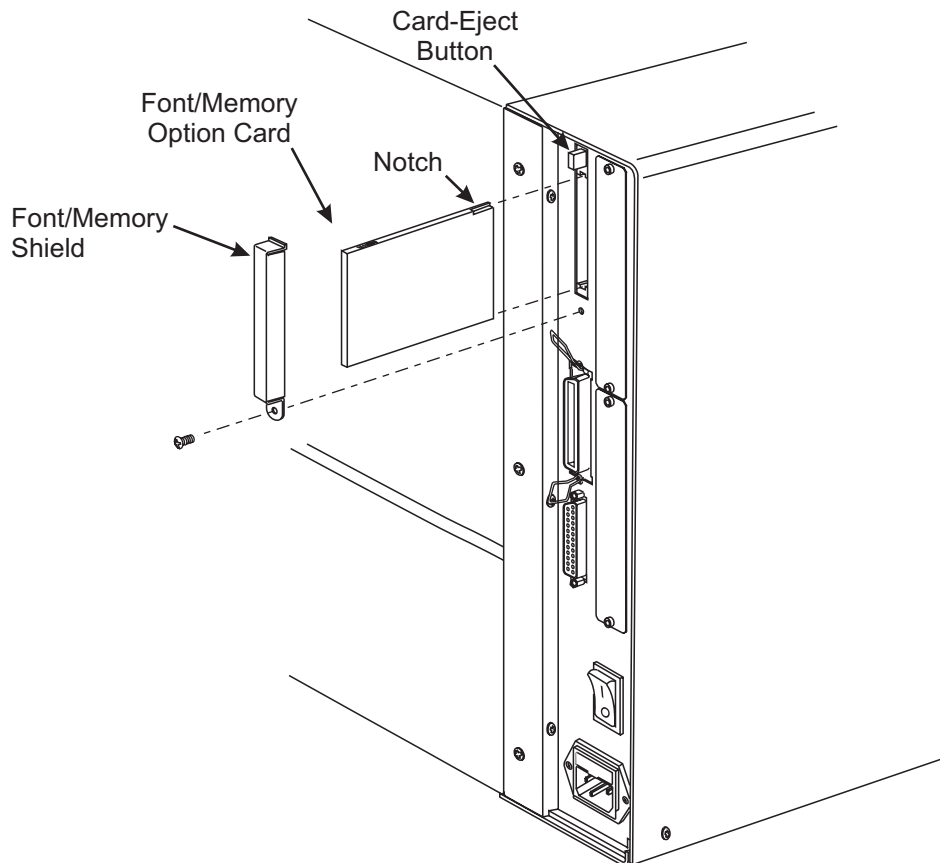


Figure 4-70. Memory and Font Card Installation

4. Refer to [Figure 4-71](#). Remove any existing ROM from sockets.
5. Insert the tines of the extraction tool firmly into the slots in the chip socket. Be sure the tines catch under the ROM chip as you gently squeeze. The chip will rise out of the socket.

6. Insert the new ROM with the notched corner positioned to the top as shown. Slowly seat the chip in place, ensuring that it is straight in the socket.
7. Refer to [Figure 4-70](#). Reinstall the font/memory card with the notch **UP**. Insert it enough to cause the card-eject button to pop out.
8. Reinstall the font/memory card shield.
9. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
10. Reinstall the AC power cord and data cable.
11. Print a configuration label by pressing and holding the **FEED** key while turning the printer power On (**I**).
12. Verify the presence of additional memory or optional fonts on the configuration label.

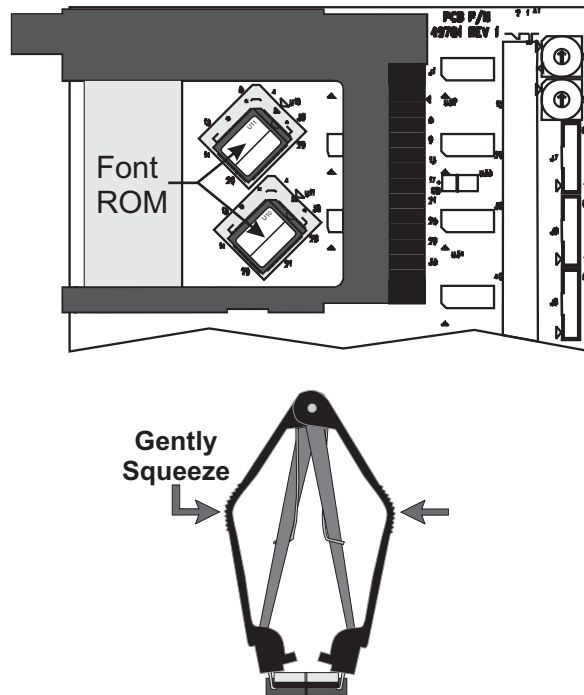


Figure 4-71. Font ROM

SIMM Installation (X/III and R-140 only)



Caution • This installation must be performed by a qualified service technician.



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

1. Turn the printer power Off (**O**) and remove the AC power cord. Remove any communication cables.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to Figure 4-72. Locate the SIMM socket on the main logic board.
4. Install the SIMM into the socket as illustrated. Ensure the SIMM is locked securely into position.
5. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
6. Reconnect the AC power cord and data cable.
7. Print a configuration label by pressing and holding the **FEED** key while turning the printer power On (I).
8. Verify the presence of additional memory on the configuration label.

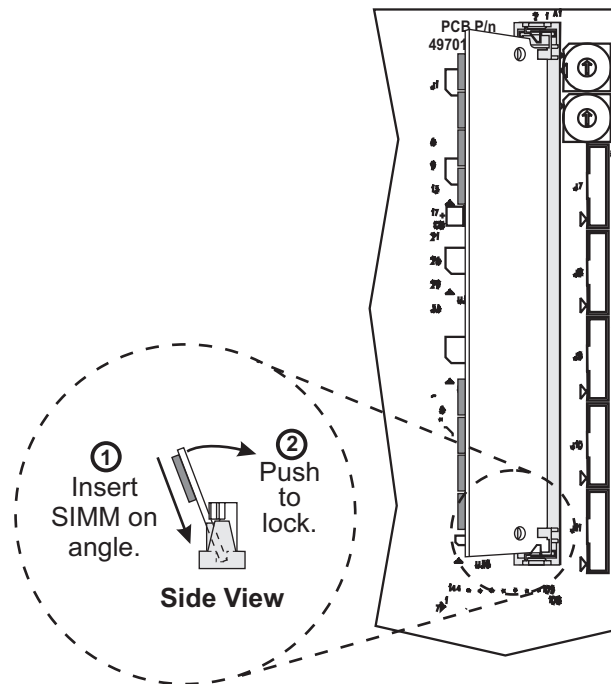


Figure 4-72. SIMM Installation

Optional Supply Spindle Installation



Caution • This installation must be performed by a qualified service technician.

1. Turn the printer power Off (O) and remove the AC power cord. Remove any communication cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [Figure 4-70](#). Remove the front card or memory card from the card slot located at the rear of the printer by removing the option card shield and pressing the card-release button.

4. Refer to “Optional Interface Boards” on page 4-107. Remove any optional interface board installed.
5. Refer to RRP No. 3 on page 4-16 or RRP No. 4 on page 4-18. Unplug all ribbon cable connectors and small wire connectors from the main logic board, and remove it.
6. Refer to Figure 4-73. Remove the four screws securing the main logic board to the standoffs.

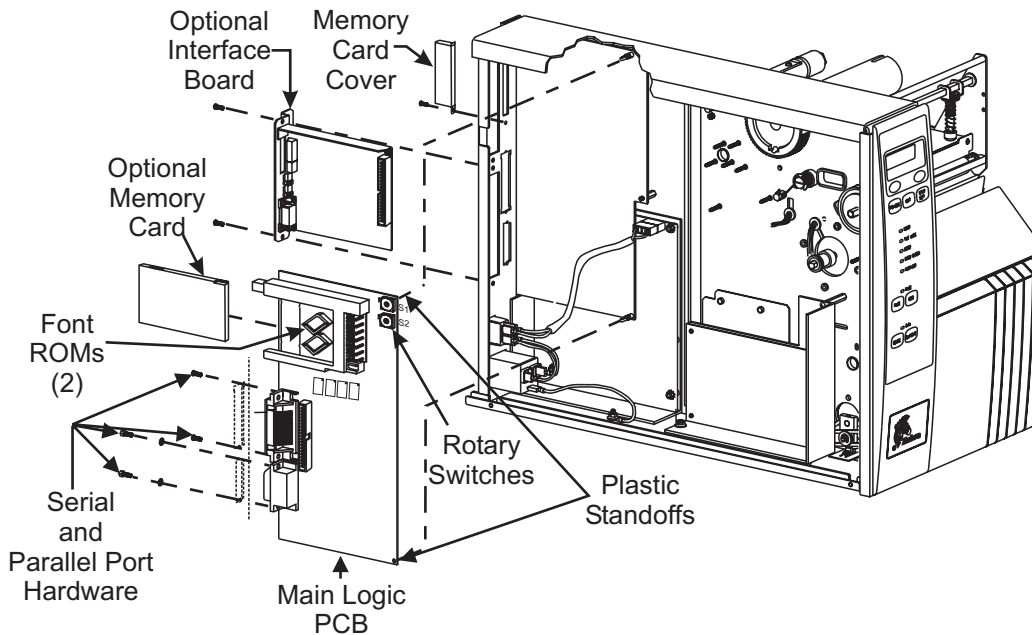


Figure 4-73. Main Logic Board Removal (XIII and R-140)

7. Refer to Figure 4-74. Remove the media hanger mounting screw and washer.
8. Remove the mounting screw and washer securing the media hanger, and then lift it straight up then out from the printer frame.

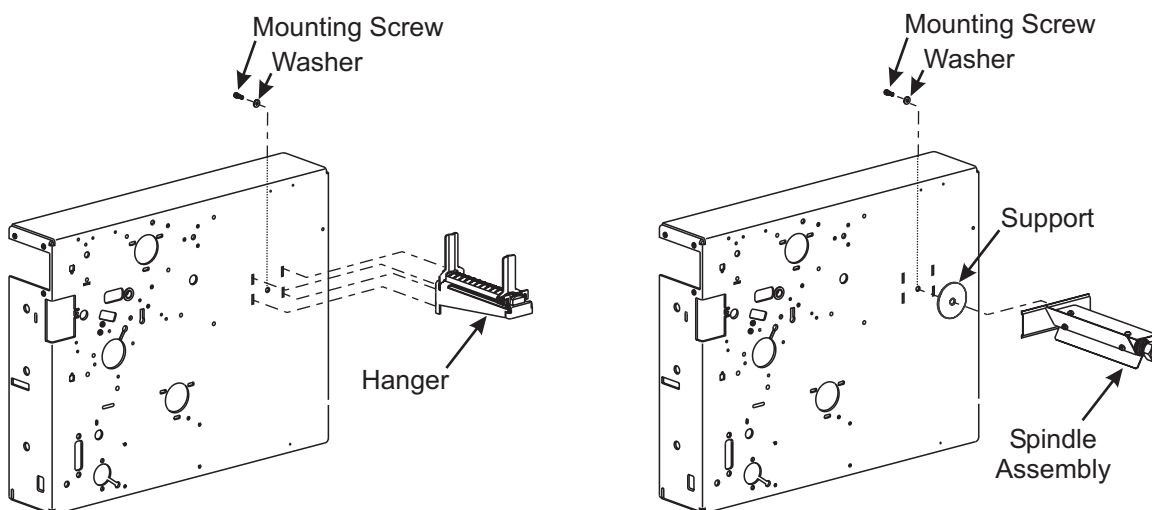


Figure 4-74. Hanger Removal and Spindle Installation

9. install the media supply spindle with support between the shaft and the printer frame.
10. Install the screw and washer previously removed onto the end of the spindle shaft and tighten.

11. Reinstall the main logic board.
12. Reconnect all cables and small wire connectors previously removed.
13. Reinstall any optional memory/font boards and the option card shield.
14. Reinstall optional interface boards.
15. Reconnect cabling to interface boards.
16. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.

Spindle Tension Adjustment



Caution • This adjustment must be performed by a qualified service technician.

1. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
2. Open the media door and remove all media and ribbon.
3. Use adhesive tape to attach a 2-inch (5-cm) wide strip of polyester film (part # 01776) to an empty core as illustrated. Wind the polyester film around the core about five times in the direction indicated.
4. Measure tension by slowly pulling the film with a spring scale. Pull **only** in the direction shown. The pull rate should typically be 2 inches (5 cm) per second.
5. The spring tension reading should be 300 grams ± 50 (0.66 inch pounds ± 0.11). Make adjustments using the tension adjustment nut:
 - Clockwise increases tension.
 - Counterclockwise decreases tension.

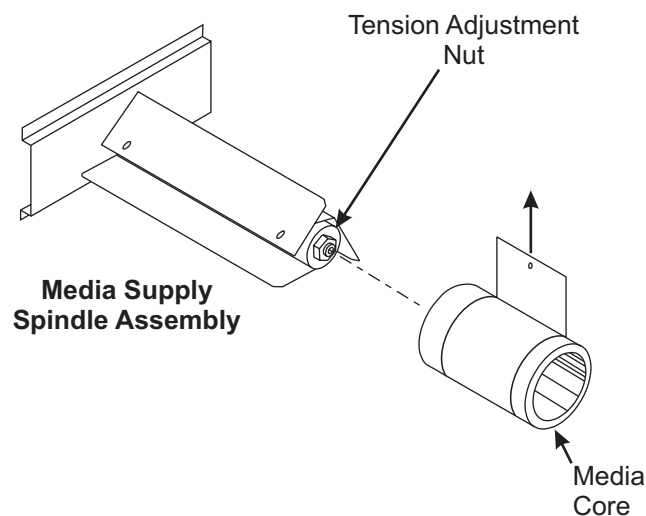


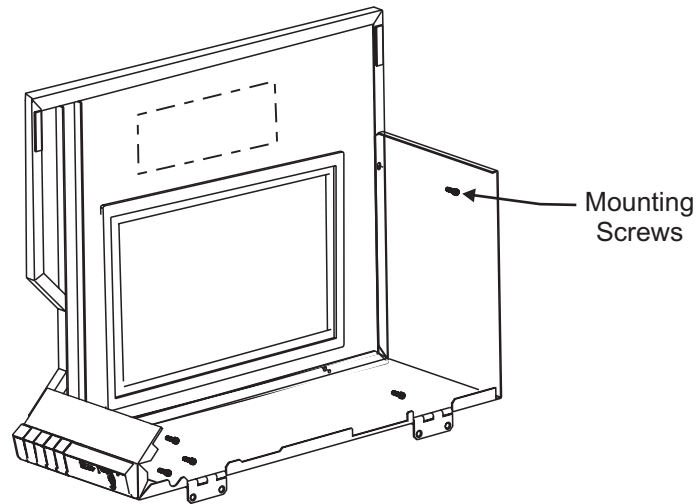
Figure 4-75. Spindle Tension Adjustment

6. Recheck the tension after running a full roll of labels.
7. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
8. Reinstall the media and ribbon.

Optional Bifold Door Installation

Refer to [Figure 4-76](#).

1. Raise the existing media door.
2. Remove and retain the mounting screws. (Ensure a good hold on the door when removing the last screws.)
3. Remove the old door.



4. Install new door using the screws removed in step 2.
5. Installation is complete.

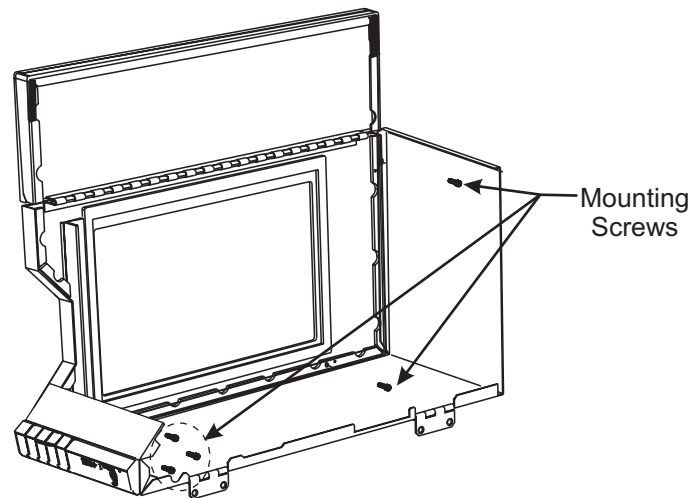


Figure 4-76. Bifold Door Installation

Optional Counter Board Installation (X/III and R-140 only)



Caution • This installation must be performed by a qualified service technician.

1. Turn the printer power Off (O) and remove the AC power cord. Remove any communication cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Locate the two mounting holes in the main logic board mounting plate.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

4. Install the two plastic standoffs included with the counter board in these holes.
5. Install the counter board, with the cable connector on top, on the standoffs. Attach the counter board to the standoffs using the supplied screws.

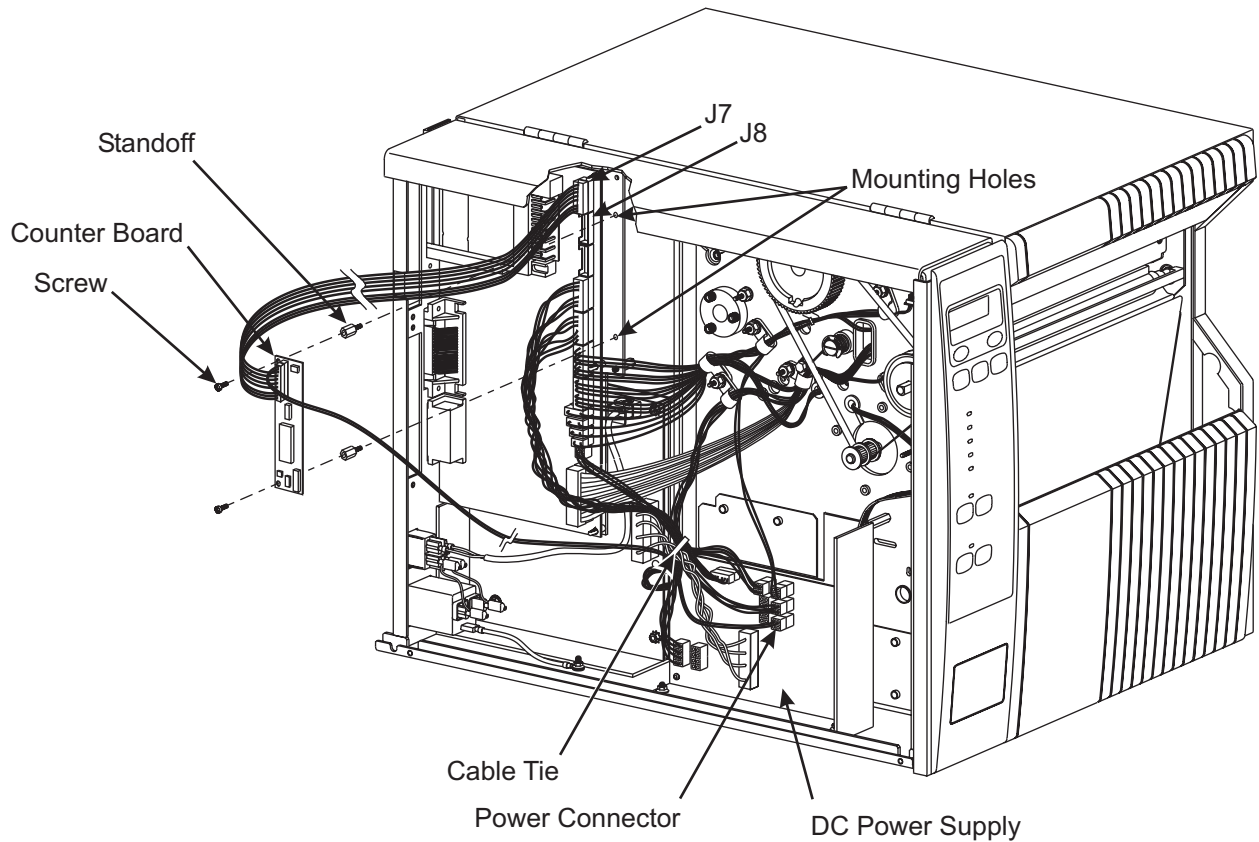


Figure 4-77. Installing the Counter Board (XIII and R-140 only)

6. Refer to [Figure 4-77](#) and attach the data cable to the counter board.
7. Connect the other end of the data cable to either J7 or J8 on the main logic board.
8. Route the power connector and wires through the cable tie. Connect the open end of the power connector to either of open plugs J5 through J10 on the DC power supply.
9. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
10. Reconnect the AC power cord and data cable.
11. Turn the printer power On (I).

Rewind Option



Caution • This installation must be performed by a qualified service technician.

The printer must be partially disassembled to install the various parts provided in this kit. Follow the procedures listed below.



Caution • Wear protective eyewear when installing or removing E-rings, C-clips, snap rings, and springs. These are under tension and could fly off.

1. Turn printer power Off (O) and disconnect the AC power cord. Remove any communication cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [RRP No. 2 on page 4-14](#). Disconnect all wires and cables attached to the DC power supply board and remove the DC power supply.
4. Open the media access door, and remove all media and ribbon.

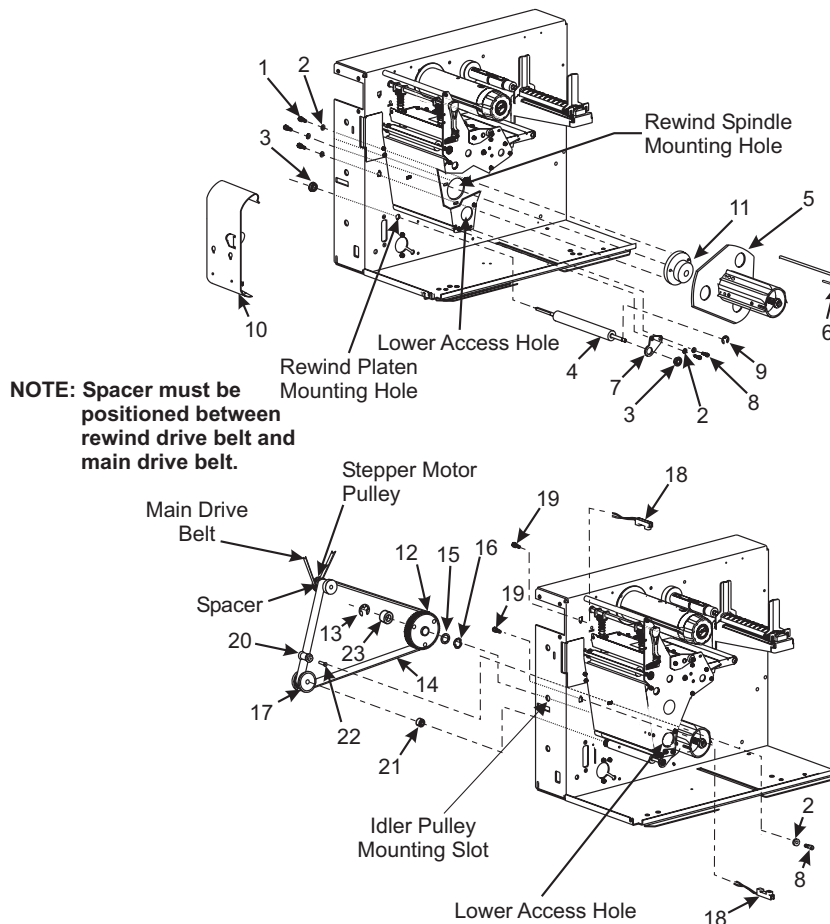


Figure 4-78. Rewind Assembly Installation

Parts List

Table 4-4 lists the parts found in the Media Rewind Option Kits. The last four columns indicate which parts are used in the particular kit for the different printers. Use Table 4-4 and Figure 4-78 to conduct an inventory of the parts before installing the kit. The parts received are dependent on the kit ordered for a particular printer. Labels on the parts packaged in the kits may not show the “M” reorder designation shown on some of the part numbers.

Table 4-4. Rewind Option Kit Parts List

✓	ITEM	QTY	PART NUMBER	DESCRIPTION	22455 220X/III and XIIIPlus	46355 170X/III and XIIIPlus	47355 90X/III and XIIIPlus	47355-6 96X/III	47655-6 96 XIIIPlus	48355 140X/III, R-140, and XIIIPlus
	1	3	30393-006*	Screw, 8-32	X	X	X	X	X	X
	2	6	40193**	Washer, Flat	X	X	X	X	X	X
	3	2	48688	Flange Bearing (Part of Platen Roller Kits)	X	X	X	X	X	X
	4	1	22101	Platen Roller (Part of 22101M)	X					
	4		46378	Platen Roller (Part of 46278M)		X				
	4		47601	Platen Roller (Part of 47601M)			X	X	X	
	4		40038	Platen Roller (Part of 40038M)						X
	5	1	22155M	Rewind Spindle Assembly	X					
	5		46249M	Rewind Spindle Assembly		X				
	5		47155M	Rewind Spindle Assembly			X	X	X	
	5		48155M	Rewind Spindle Assembly						X
	6	1	47062-4	J-Hook	X					
	6		47062-3	J-Hook			X	X	X	
	6		47062-2	J-Hook						X
	6		47062-1†	J-Hook		X				
	7	1	40019	Platen Support Bracket	X	X	X	X	X	X
	8	3	30392-004††	Screw, 6-32	X	X	X	X	X	X
	9	1	02252	E-Ring	X	X	X	X	X	X
	10	1	22383M	Rewind Plate	X					
	10		46383M	Rewind Plate		X				
	10		47383M	Rewind Plate			X	X	X	
	10		48383M	Rewind Plate						X
	11	1	22334M	Bearing Housing Assembly	X					
	11		30334M	Bearing Housing Assembly (all but 220X/III)		X	X	X	X	X
	12	1	31336M	RTU/MTU Pulley Assembly	X	X	X			X
	12	1	47358M	RTU/MTU Pulley Assembly				X		
	12	1	33094-6M	RTU/MTU Pulley Assembly					X	
	13	1	30118‡	E-Ring	X	X	X	X	X	X
	14	1	45189-2	Rewind Drive Belt	X	X	X			X
	14	1	45189-13	Rewind Drive Belt				X	X	
	15	1	30114‡‡	Washer, Flat	X	X	X	X	X	X
	16	1	30115§	Washer, Wave	X	X	X	X	X	X
	17	1	30914M	Rewind Platen Pulley	X	X	X			X
	17		47915M	Rewind Platen Pulley				X	X	
	18	1	46609-4M	Take-Label Sensors Assembly	X	X	X	X	X	X
	19	2	07435§§	Screw 6-32	X	X	X	X	X	X
	20	1	22265	Idler Pulley	X					
	20		30265	Idler Pulley (all but 220X/III)		X	X	X	X	X
	21	1	N/A	Spacer (Part of Platen Roller Kits)	X	X	X	X	X	X
	22	1	22207	Idler Shaft	X					
	22		30207	Idler Shaft (all but 220X/III)		X	X	X	X	X
	23	1	N/A	Spacer (Part of 31336M)	X	X	X	X	X	X
	N/S	1	11301	Allen Wrench, Long 7/64 inch	X	X	X	X	X	X

N/A – Not available as separate service item
 N/S – Not shown

*Available only as HW30393-006 in quantities of 25

‡Available only as HW30118 in quantities of 25

**Available only as HW40193 in quantities of 25

‡‡Available only as HW30114 in quantities of 25

†Available only as HW47062-1 in quantities of 5

§Available only as HW30115 in quantities of 25

††Available only as HW30392-004 in quantities of 50

§§Available only as HW07435 in quantities of 100

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

Installation

1. Refer to [Figure 4-78](#). Place a flat washer (#2) onto one of the screws (#8). Use the Allen wrench provided in the kit to place this mounting screw through the lower access hole in the side plate and through the idler pulley mounting slot in the printer main frame. On the electronics side of the printer main frame, attach the idler shaft (#22) to the mounting screw.
2. Position the idler shaft in the middle of the mounting slot and tighten the mounting screw. Apply a very small amount of grease (provided in kit) to the idler shaft with a toothpick or small screwdriver. Keep excess grease away from other components.
3. Slide the idler pulley (#20), flat side out, onto the idler shaft.
4. In the lower center portion of the main frame, remove the cover plate from the rewind spindle mounting hole.
5. Slide the bearing housing assembly (#11) out of the media rewind spindle assembly (#5).
6. Install the bearing housing assembly on the printer main frame using three screws (#1) and three flat washers (#2). Do not tighten the screws at this time.
7. Insert the shaft of the rewind spindle (#5) through the bearing housing assembly.
8. Place the wave washer (#16), flat washer (#15), and pulley, recessed side facing away from the main frame, (#12) onto the rewind spindle shaft.
9. Slide the spacer (#23) on the rewind spindle shaft. Press the E-ring (#13) into the groove in the rewind spindle shaft.
10. Attach the platen support bracket (#7) to the side plate with two flat washers (#2) and two screws (#8). Do not tighten the screws at this time.
11. Remove the plastic plug from the rewind platen mounting hole near the bottom of the main frame.
12. Insert the long end of the rewind platen shaft (#4) through the rewind platen mounting hole.
13. Place the flange bearing (#3) over the left end of the rewind platen shaft. Press the bearing into the mounting hole with the flange on the outside (left side) of the main frame.
14. Place the opposite end of the rewind platen shaft through the platen support bracket (#7).
15. Place the remaining flange bearing (#3) over the right end of the rewind platen shaft with the flange of the bearing on the outside (right side) of the platen support bracket. Press it into the mounting hole in the platen support bracket and secure with the E-ring (#9).
16. Use the Allen wrench to tighten the mounting screws that secure the platen support bracket to the side plate. The bracket may need adjustment later.
17. Slide the spacer (#21) onto the rewind platen shaft.
18. Slide the rewind platen pulley (#17) onto the rewind platen shaft and align the two pulley set screws with the flat surfaces of the rewind platen shaft.
19. Leave approximately a 0.020 inch (0.5 mm) gap between the E-ring (#9) and platen support bracket (#7), and tighten the set screws.
20. Position the rewind plate as shown in [Figure 4-79](#) with the attached hook plate pointing down.

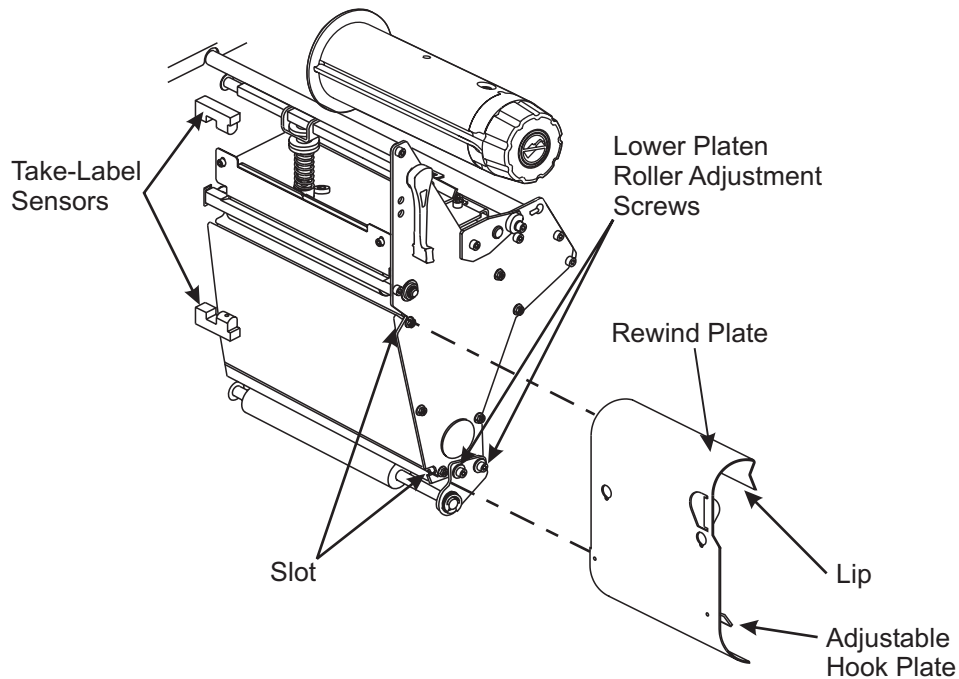


Figure 4-79. Take-Label Sensor Location

21. Insert the hook plate 1/2 inch (13 mm) into the lower opening in the side plate.
22. Align the upper end of the media rewind plate with the corresponding opening in the side plate, then slide the rewind plate in until it stops against the main frame.
23. Refer to [RRP No. 9 on page 4-28](#) and install the rewind drive belt.
24. Refer to [RRP No. 8 on page 4-26](#) and adjust the rewind drive belt tension.
25. Refer to [RRP No. 6 on page 4-23](#) and readjust the main drive belt tension.

Take-Label Sensor Installation



Caution • This installation must be performed by a qualified service technician.

(Do not install on cutter units.)

The Take-Label Sensors are required only in the Peel-Off Mode of operation.

Refer to [Figure 4-78](#) and [Figure 4-79](#).

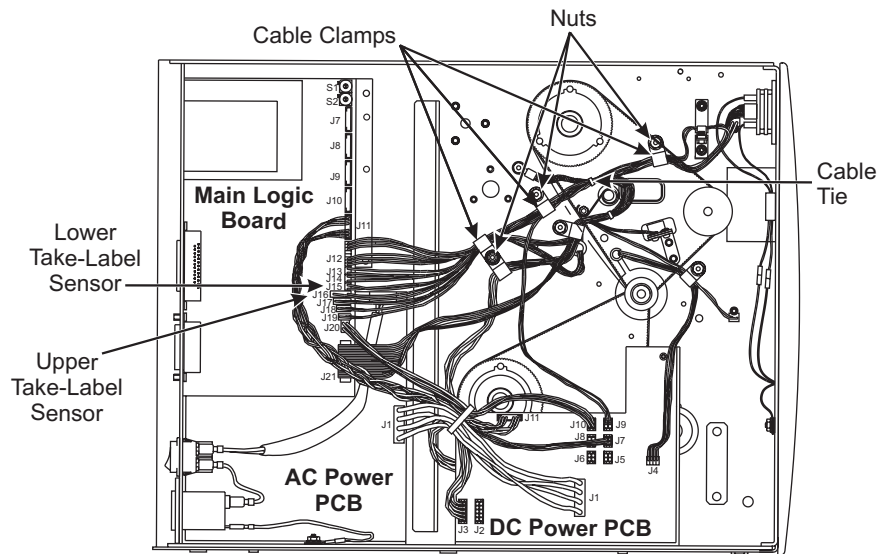


Electrostatic Discharge Caution • Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.

1. Remove the upper and lower take-label sensor cover plates by removing the two socket head cap screws with the Allen wrench.
2. Insert the upper take-label sensor assembly (#18) (green/yellow wires), connector, and cable through the upper take-label sensor hole in the main frame.
3. Position the sensor with the window facing directly down and use one (#19) screw to fasten the sensor in place.

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4. Insert the lower take-label sensor assembly (#18) (red/black wires), connector, and cable through the lower take-label sensor hole in the main frame.
5. Position the sensor with the window facing directly up and use one (#19) screw to fasten the sensor in place.
6. Route the wires through the cable clamps and toward the main logic board, ensuring the wires do not come in contact with any moving parts.
7. Refer to [Figure 4-80](#). Connect the upper take-label sensor connector to J16 (X/III) or P2 (X/IIIPlus) on the main logic board, and the lower take-label sensor connector to J15 (X/III) or P1 (X/IIIPlus).



X/III and R-140

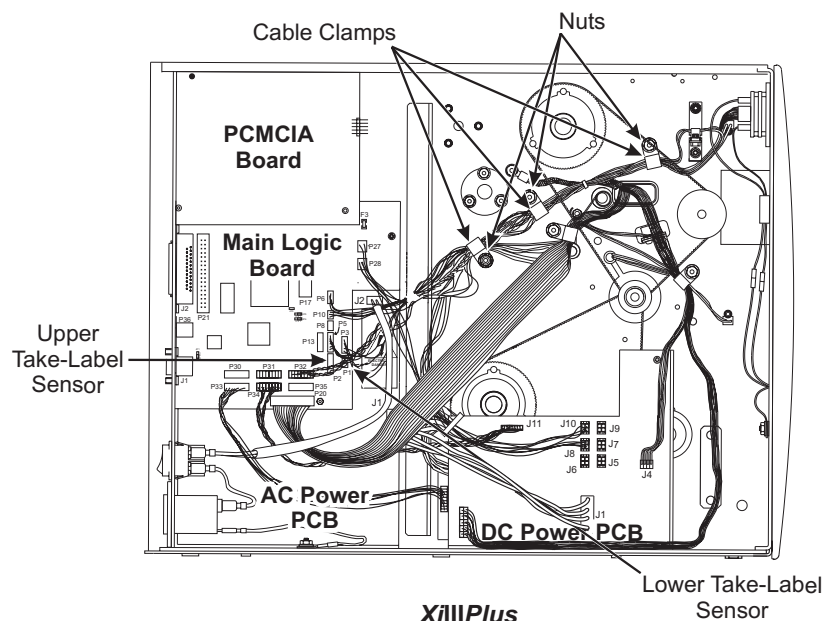


Figure 4-80. Take-Label Sensor Connections



Note • When in Peel-Off mode, if the two sensor are not aligned with each other, the Take-Label LED lights up and the printer will not operate.

8. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply assembly.
9. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
10. Reconnect the AC power cord and data cable.
11. Turn the printer power On (I).

Adjustments

The Rewind Option Kit usually requires some adjustments to prevent printing problems such as ribbon wrinkle, non-centered labels, and tearing of the media. Print a number of test labels and use the following procedures to correct any problems.

Rewind Mode Adjustments

Tracking Adjustment

Refer to [Figure 4-81](#) and [Figure 4-82](#).

1. If the media walks from side to side or tears or wrinkles against the backing plate on the media rewind spindle, it may be necessary to adjust the position of the rewind plate assembly mounted on the front of the printer or the rewind spindle assembly.
2. Remove the rewind plate assembly from the front of the printer and loosen the nuts securing the hook plate to the rewind plate.
3. Move the outer end of the hook plate up to force the media to wind closer to the large backing plate on the rewind spindle.
4. Move the outer end down to force the media away from the backing plate.
5. Reinstall the rewind plate on the front of the printer and print a number of test labels. If problems persist, adjust the hook plate position again.
6. If the media cannot be made to track correctly after making this adjustment, check the distance from the backing plate to the main frame. This dimension is set at the factory and should be 0.550 inch (14 mm) \pm 0.020 inch (0.5 mm). If the distance needs to be reset, perform step [7](#) and [8](#).
7. Refer to [Figure 4-81](#). Loosen the set screws in the collar located inside the rewind spindle assembly near the backing plate. The set screws are accessible through a single hole in the rewind spindle assembly. Reposition the backing plate as required and retighten the set screws in the collar.
8. Perform the rewind plate assembly adjustment in steps 1 and 2 until the desired results are achieved.

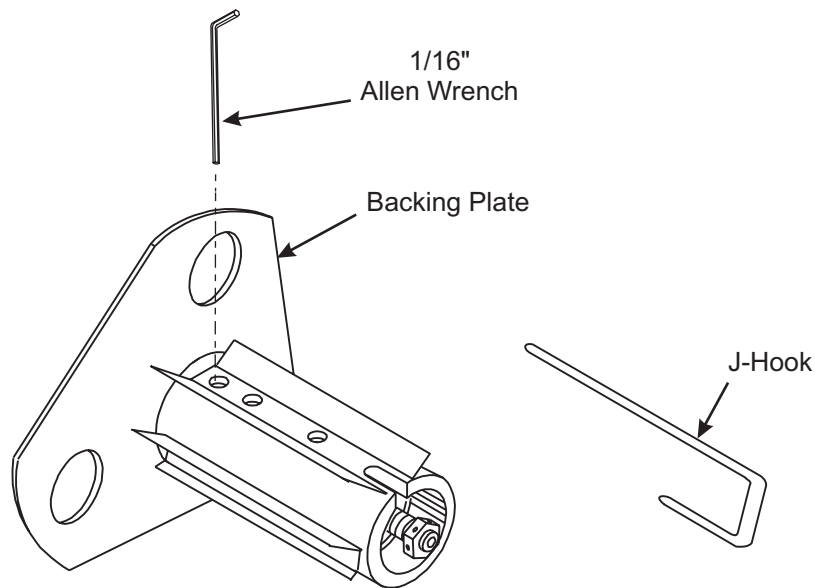


Figure 4-81. Position Adjustment of Rewind Spindle Assembly

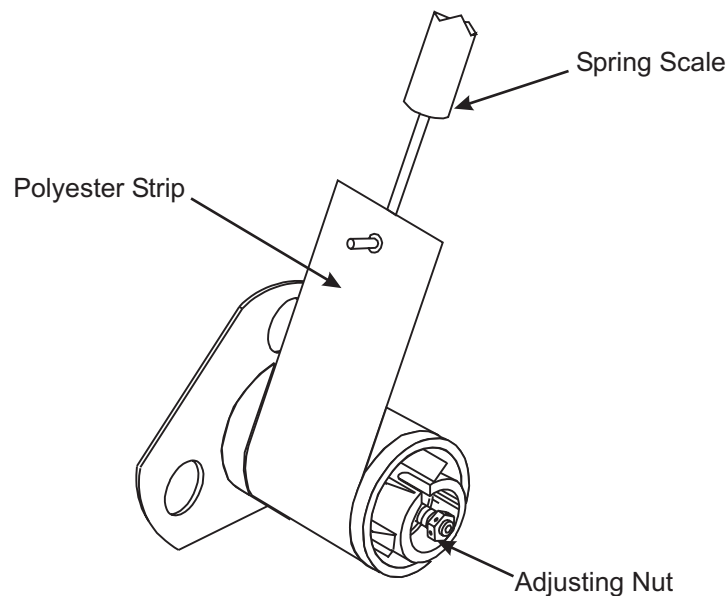


Figure 4-82. Tension Adjustment of Rewind Spindle Assembly

Tension Adjustment

If the backing material is wound too tightly on the spindle, it can cause misregistration of labels, tearing, or poor print quality due to smudging. Backing material rewound too loosely could jam up the printer before completing a roll, or make it impossible to separate the labels from the liner in Peel Mode.

1. Refer to [Figure 4-82](#). Use a spring scale gauge to set the spindle tension. Use adhesive tape to attach a 2-inch wide by 30-inch long (5 cm wide by 17 cm long) strip of polyester film (part # 01776) to the spindle in the direction shown.

Table 4-5. Rewind Spindle Tension Specifications

Printer	Tension
90/96	1450 ±100 grams
140/R-140	1450 ±100 grams
170	1650 ±100 grams
220	1850 ±100 grams

2. Refer to [Table 4-5](#). Insert the spring scale tip through the reinforced hole in the end of the strip and pull slowly and evenly (2 inch [5 cm] per second) in the direction shown. Make this measurement several times to insure an accurate reading.
3. If required, readjust the tension as described below and recheck the tension setting.
4. To keep the spindle from rotating while turning the adjusting nut, insert the Allen wrench through the access hole at the rear of the rewind spindle to lock the spindle in position.
5. Turn the adjusting nut with fingers or pliers clockwise for more tension, or counterclockwise for less tension.



Note • Do not operate printer without at least one set screw tightened.

6. Tighten one of the adjusting nut set screws and retest (step 2).
7. If proper tension is not achieved, loosen the set screw and readjust as needed.
8. When proper tension is obtained, tighten both set screws.
9. Recheck the tension after running a full roll of labels.



Note • Depending on the width of the media and the thickness of the backing material, it may be necessary to deviate slightly from the recommended tension setting shown above.

Peel-Off Mode Adjustments

Lower Roller Adjustment

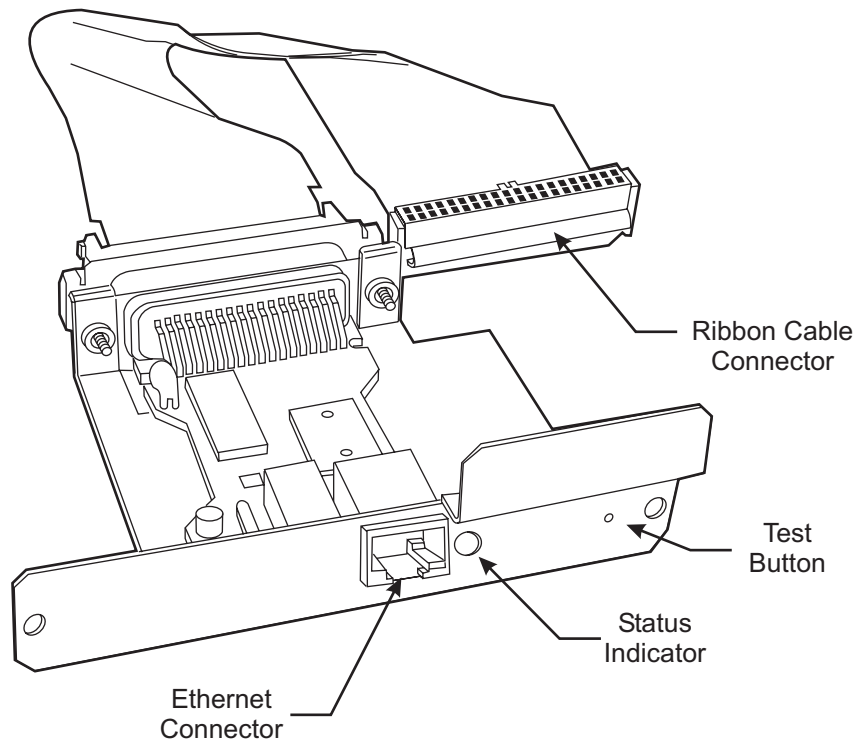
If the media walks from side to side, it may be necessary to adjust the position of the lower roller.

Refer to [Figure 4-78](#) on page 4-96.

1. Loosen the two screws (#8) securing the platen support bracket (#7) to the side plate.
2. Moving the bracket toward the rear of the printer forces the media to wind closer to the main frame. Moving the bracket toward the front moves the media away from the main frame. Adjust as required and tighten screws.
3. Perform this adjustment until required results are achieved.

Tension Adjustment

For backing/label combinations that are particularly difficult, it may be necessary to increase rewind tension in the Peel-Off Mode. Follow the same tension adjustment procedures on the previous page used for the Rewind Mode Adjustments.

Optional Interface Boards**Internal PrintServer II™****Hardware Description****Figure 4-83. Internal PrintServer II**

Test Button: Generates a detailed PrintServer II configuration label.

Status Indicator: A bi-colored indicator displays the state of the PrintServer II.

Ethernet Connection: Connection for a 10 Base-T cable. Connecting the PrintServer II does not interrupt network operation.

Ribbon Connector: The internal PrintServer II is powered by the printer; no additional power source is required.



Note • To print a PrintServer II configuration label from your Zebra printer, a 4 inch wide by 6 inch long (10 cm wide by 15 cm long) label is recommended. If the label is smaller, some information may print outside the label edges. If you are printing on a 90XiII or 90XiIII-Series printer, some of the heading information on the right side of the label will not print. Refer to Figure 6-15 for any missing data.

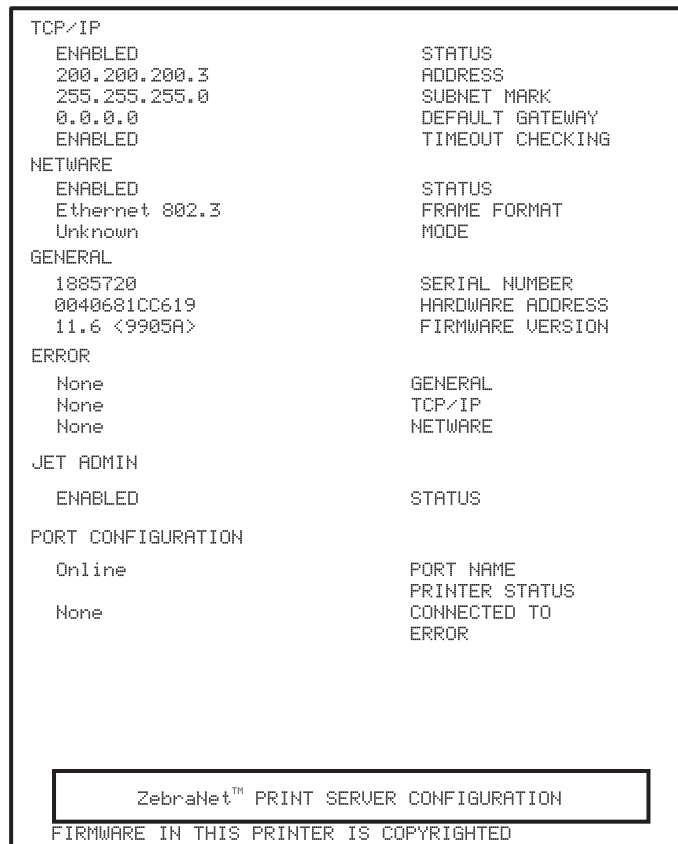


Figure 4-84. Configuration Label PrintServer II

Installation

This section provides the information necessary to install the internal PrintServer II in the Zebra XiIII-Series printers. Read this section completely before performing the installation procedure.



Note • The parallel port on the back of the printer is not operational when the internal PrintServer II is installed. The hardware of the PrintServer II mounting bracket covers the parallel port.



Caution • This installation must be performed by a qualified service technician.



Electrostatic Discharge Caution • This installation must be performed by a qualified service technician.

This installation should be performed by a qualified service technician, who must follow the step-by-step procedure provided in these instructions.

After you have finished installing the PrintServer II hardware, refer to the appropriate section of this guide for information on establishing a connection for your network type.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect any data cables.

- Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.

Refer to [Figure 4-85](#). At the rear of the printer, remove the two screws and the blank cover plate or an existing optional interface board positioned next to the main RS-232 and parallel interface connectors.

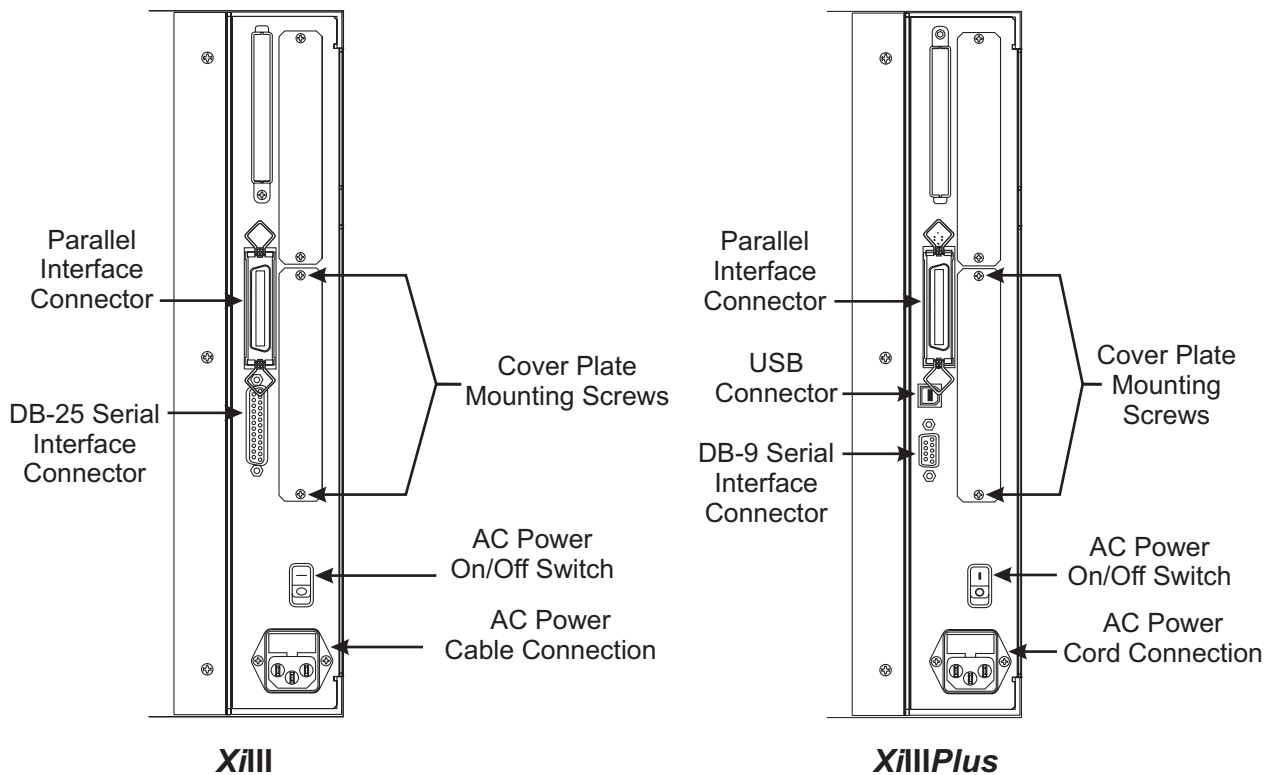


Figure 4-85. Cover Plate Rear View

- Insert the ribbon cable and PrintServer II device through the mounting slot.
- Refer to [Figures 4-86](#) or [4-87](#). Fold the cable and the ferrite bead back over the mounting bracket, and connect the ribbon cable connector into the keyed interface data cable connector (J4–X1111 or P21–X1111Plus) on the main logic board. Ensure that the connector is properly seated and that pin 1 of the interface data cable connector is connected to pin 1 of J4 or P21.

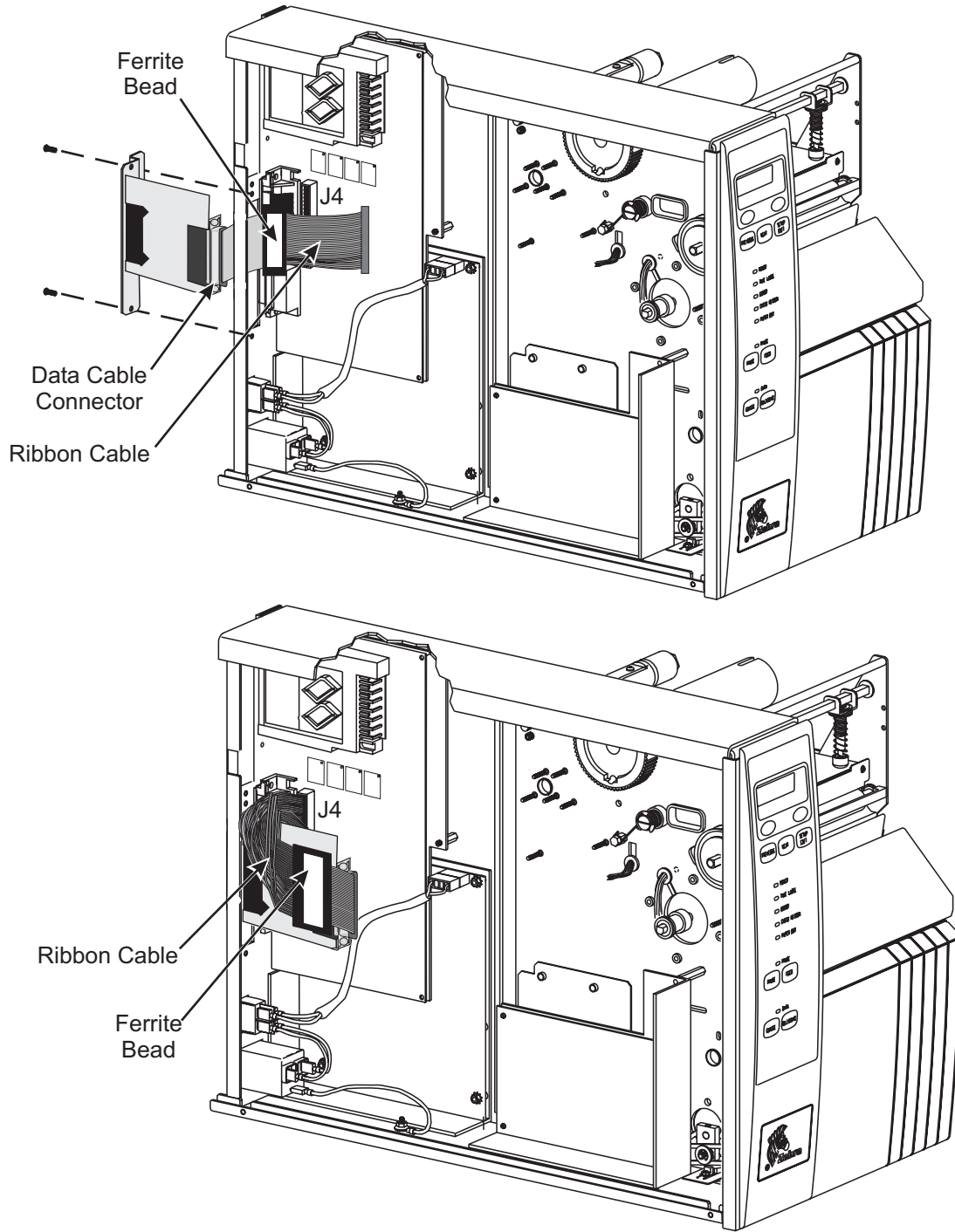


Figure 4-86. XIII and R-140 Internal PrintServer II Board Installation

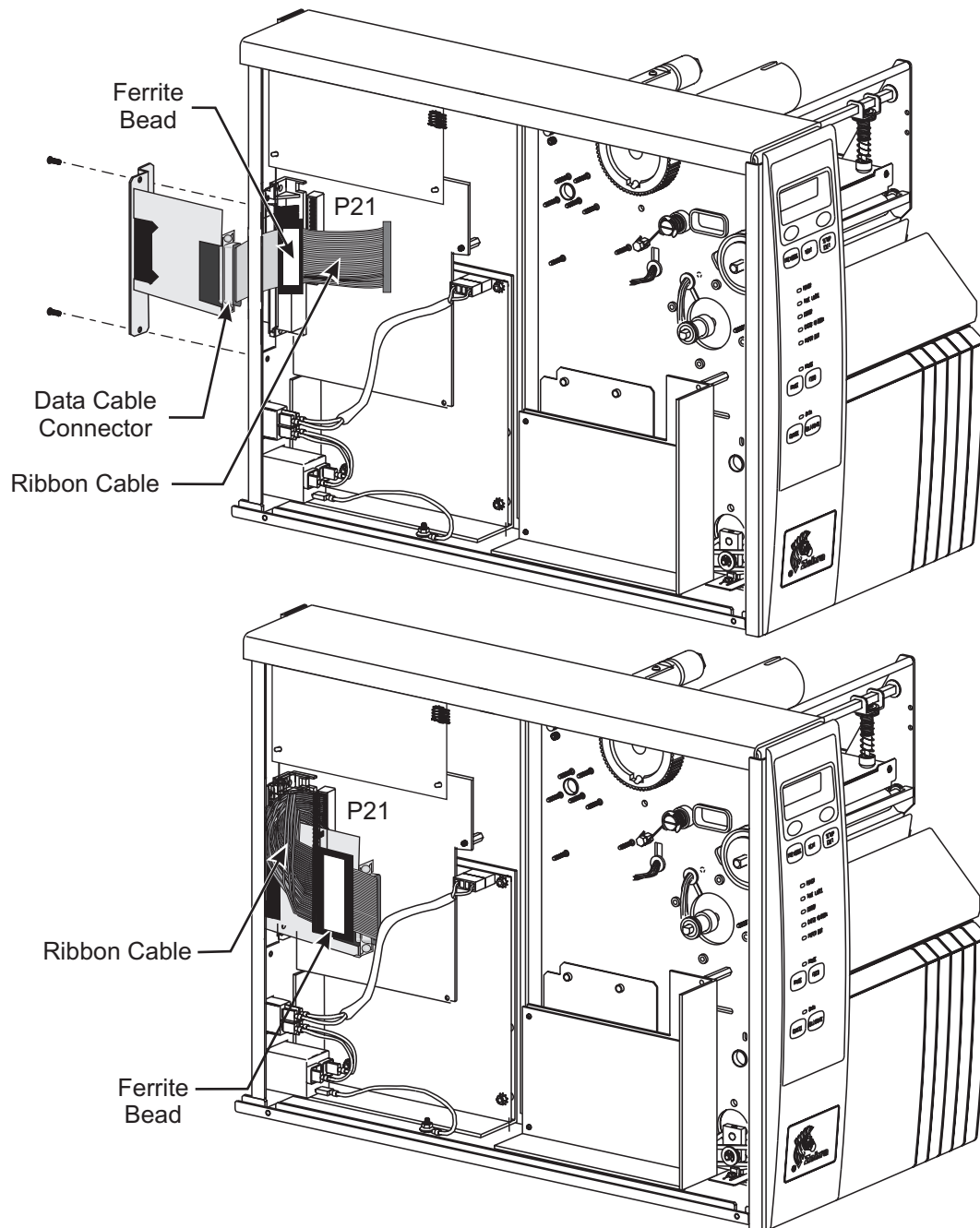


Figure 4-87. XiiiPlus Internal PrintServer II Board Installation

5. Secure the PrintServer II interface board in place with the cover plate screws removed in step 2.
6. Check all connectors for firm connections. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
7. This kit includes a label printed with the Ethernet MAC hardware address for the PrintServer II. Remove the backing from the label and affix it to the back of the printer.

8. Reconnect the AC power cord and turn the printer power On (I).



Note • Consult your system administrator before configuring the PrintServer II for your network.

External PrintServer II Installation

Hardware Description



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

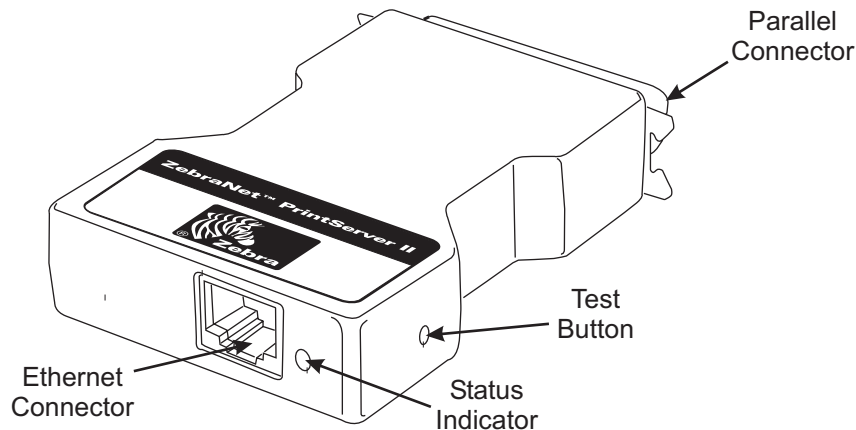


Figure 4-88. External PrintServer II

Test Button: This generates a detailed PrintServer II configuration label.

Status Indicator: A bi-colored indicator displays the state of the PrintServer II.

Ethernet Connection: Connection for a 10 Base-T cable. Connecting the PrintServer II does not interrupt network operation.

Parallel Connector: The external PrintServer II is powered by the printer; no additional power source is required.

Installation

The external ZebraNet PrintServer II is installed using the following steps:

1. Turn the printer power Off (O). Install the PrintServer II device directly into the parallel port on the printer and secure with the wire locks.
2. Insert an active 10 Base-T cable into the Ethernet connector on the back of the PrintServer II device.
3. Turn the printer power On (I). The status indicator blinks orange during the POST (Power-On Self Test) phase and changes to green when stabilized.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

4. Press the test button located on the back of the PrintServer II to print out a PrintServer II configuration label.



Note • To print a PrintServer II configuration label from your Zebra printer, a 4 inch wide by 6 inch long (10 cm wide by 15 cm long) label is recommended. If the label is smaller, some information may print outside the label edges. If you are printing on a 90XiIII or 90XiIII-Series printer, some of the heading information on the right side of the label will not print. Refer to Figure 6-15 on page 6-17 for any missing data.

Twinax Communications Interface Board



Caution • This installation must be performed by a qualified service technician.

Installation Instructions

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect any data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [Figure 4-89](#). At the rear of the printer, remove and retain the two screws and the blank cover plate or existing interface board positioned next to the main RS-232 and parallel interface connectors.

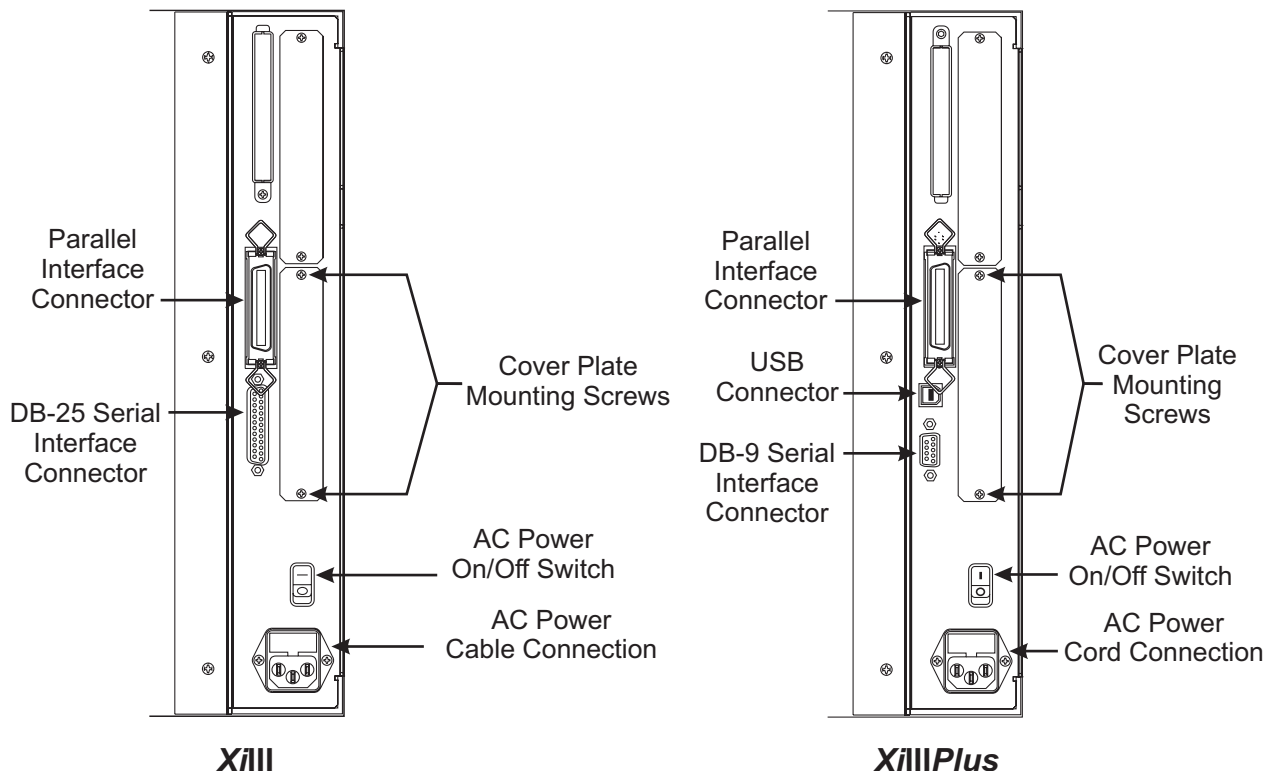


Figure 4-89. Rear View

4. Plug the 40-pin interface data cable into the keyed interface data cable connector (J4–XIII or P21–XIIIPlus) on the main logic board.
5. Insert the twinax interface board partially into the mounting slot, then attach the other end of the interface data cable into the data cable connector at the rear of the twinax interface board.
6. Dress the ribbon cable behind the twinax interface board as you slide the board completely into the printer.
7. Fasten the twinax interface board in place with the screws previously removed.
8. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
9. Connect the 9-pin twinax adapter cable connector to the mating connector on the interface board.

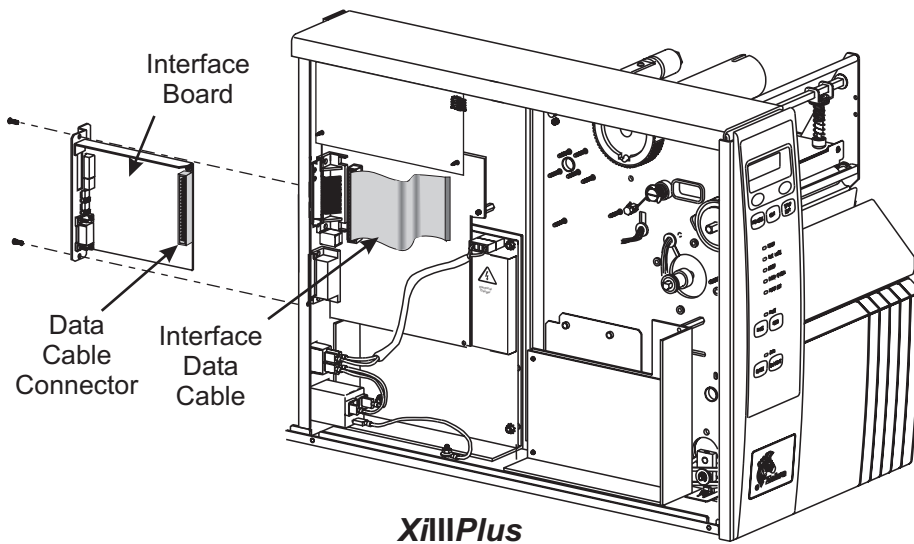
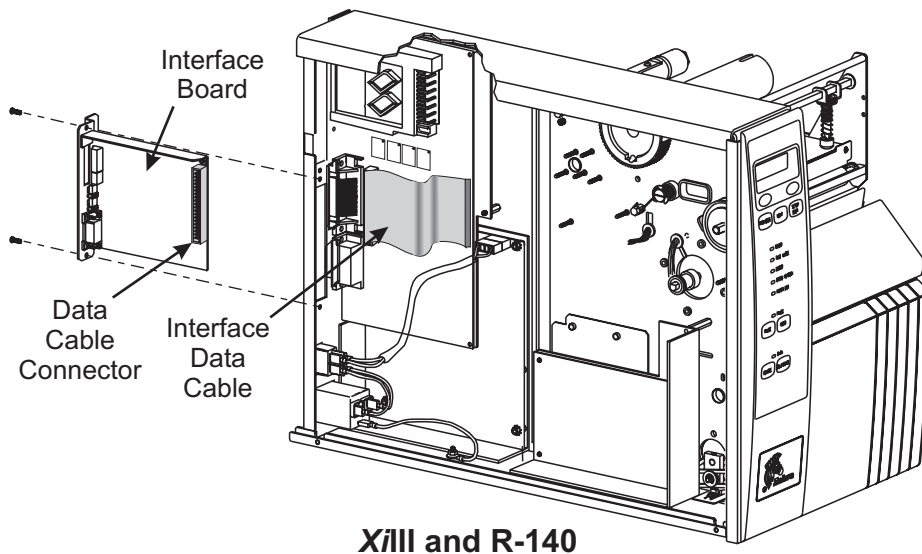


Figure 4-90. Twinax Interface Board Installation

10. Connect the twinax cable from the host computer to the mating connector on the adapter cable.
11. Refer to [Table 4-6](#). Set the DIP switches in the proper positions for the application, then reconnect the AC power cord and turn the printer power On (I).

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

12. Ensure that the printer configuration is set to:

Parameter	Setting
Host Port	Twinax/Coax

Table 4-6. Twinax Interface Board DIP Switch Settings

Print Complete		
Switch #1	Description	
Left	An Operation Complete status message is sent to the host after a label format is completely printed. The host can then send the next label format to be printed.	
Right	Enables the Early Print Complete function. The host can send additional print jobs to the Zebra printer without waiting for the actual completion of the current print job. The printing status sent to the host reflects the label formats received, not the ones completed.	
EBCDIC Buffer Print		
Switch #2	Description	
Left	Normal operation (received EBCDIC data is translated to ASCII Data).	
Right	Received EBCDIC data prints as large characters that are readable hex equivalents. Use only for troubleshooting with the printer in the Diagnostics mode.	
Printer Emulation Selections		
Switch #3	Switch #4	IBM Printer Configured
Left	Left	5256 Model 3
Left	Right	5225 Model 4
Right	Left	5224 Model 2
Right	Right	4212 Model 2

Table 4-6. Twinax Interface Board DIP Switch Settings

Default Language Selections				
Switch #5	Switch #6	Switch #7	Switch #8	Language Selected
Left	Left	Left	Left	0 — Multinational
Left	Left	Left	Right	1 — USA/Canada (Factory setting)
Left	Left	Right	Left	2 — Austria/Germany
Left	Left	Right	Right	3 — Belgium
Left	Right	Left	Left	4 — Brazil
Left	Right	Left	Right	5 — Canada (French)
Left	Right	Right	Left	6 — Denmark/Norway
Left	Right	Right	Right	7 — Finland/Sweden
Right	Left	Left	Left	8 — France
Right	Left	Left	Right	9 — Italy
Right	Left	Right	Left	A — Japan
Right	Left	Right	Right	B — Japan (English)
Right	Right	Left	Left	C — Portugal
Right	Right	Left	Right	D — Spain
Right	Right	Right	Left	E — Spanish-Speaking
Right	Right	Right	Right	F — United Kingdom
<i>NOTE: The language character sets 1 — US/Canada and B — Japan (English) are the same. The character sets for D — Spain and E — Spanish-Speaking are the same.</i>				
Cable Address Switch Settings				
Switch #9	Switch #10	Switch #11	Address Selected	
Left	Left	Left	0 — (Factory Setting)	
Left	Left	Right	1	
Left	Right	Left	2	
Left	Right	Right	3	
Right	Left	Left	4	
Right	Left	Right	5	
Right	Right	Left	6	
Right	Right	Right	7 — (Use in Diagnostic Mode Only)	
Star Panel Overdrive				
Switch #12	Description			
Left	Normal Operation			

13. Send a sample label format from the host computer to the printer to test for proper operation.
14. After setting the DIP switches, turn the printer power Off (O) and back On (I). With the exception of DIP switch #2, the printer monitors the positions of the DIP Switches only during the Power-On Self Test. The EBCDIC Buffer Print function is enabled whenever DIP Switch #2 is placed in the "Right" position.

Coax Communications Interface Boards



Caution • This installation must be performed by a qualified service technician.



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

Installation Instructions

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cable.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to [Figure 4-89](#). At the rear of the printer, remove and retain the two screws and the blank cover plate or existing interface board positioned next to the main RS-232 and parallel interface connectors.
4. Plug the 40-pin interface data cable into the keyed interface data cable connector (J4–XIII or P21–XIIIPlus) on the main logic board.
5. Insert the coax interface board partially into the mounting slot, then attach the other end of the interface data cable into the data cable connector at the rear of the coax interface board.
6. Dress the ribbon cable behind the coax interface board as you slide the board completely into the printer.
7. Fasten the coax interface board in place with the screws removed in step 2, then reinstall the side cover.
8. Connect the 9-pin coax adapter cable connector to the mating connector on the interface board.
9. Connect the coax cable from the host computer to the mating connector on the adapter cable.
10. Set the DIP switches in the proper positions for the application refer to [Table 4-7](#).
11. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.

12. Reconnect the power cord and turn the printer power On (I).

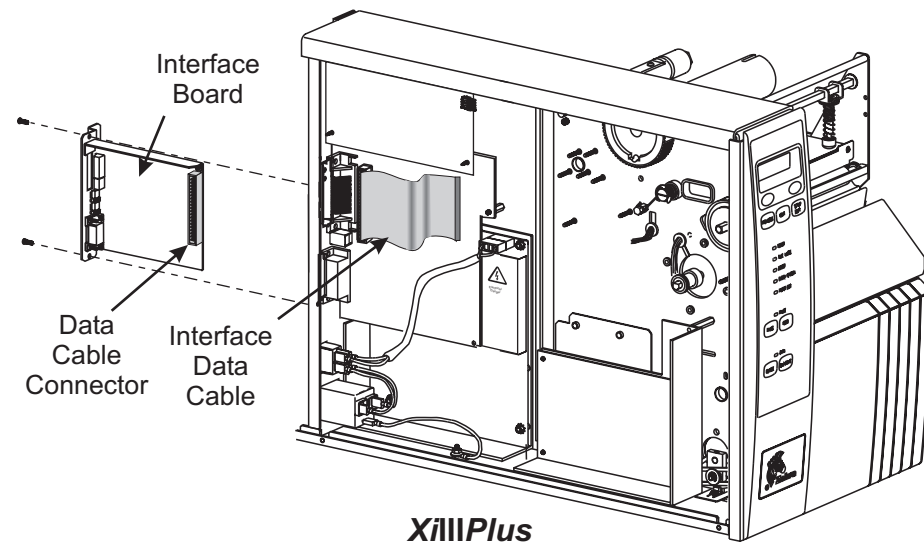
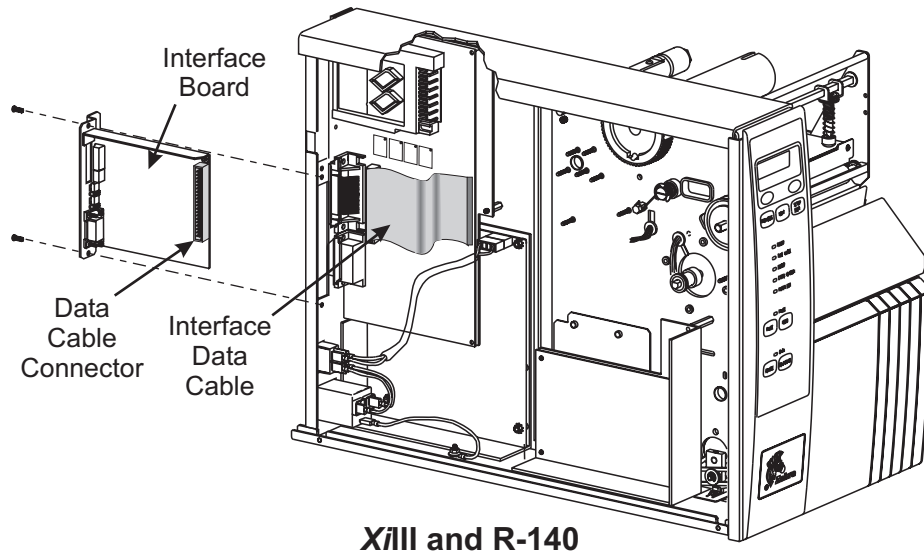


Figure 4-91. Coax Communications Interface Board Installation

13. Ensure that the printer configuration is set to:

Parameter	Setting
Host Port	Twinax/Coax

14. Send a sample label format from the host computer to the printer to test for proper operation.

Table 4-7. Coax Interface Board DIP Switch Settings

Test Mode				
Switch #1	Description			
Left	Normal label printing operation.			
Right	When printer power is applied, the coax interface performs a self test. A self test label printout lists the coax interface software revision, the selected language, results of the RAM/ROM tests, and a sample code 39 bar code.			
EBCDIC Buffer Print				
Switch #2	Description			
Left	Normal operation (received EBCDIC data is translated to ASCII Data).			
Right	Received EBCDIC data prints as large characters that are readable hex equivalents. Use only for troubleshooting with the printer in the Diagnostics mode			
Default Language Selections				
Switch #3	Switch #4	Switch #5	Switch #6	Language Selected
Left	Left	Left	Left	0 — Multinational
Left	Left	Left	Right	1 — USA/Canada (Factory setting)
Left	Left	Right	Left	2 — Austria/Germany
Left	Left	Right	Right	3 — Belgium
Left	Right	Left	Left	4 — Brazil
Left	Right	Left	Right	5 — Canada (French)
Left	Right	Right	Left	6 — Denmark/Norway
Left	Right	Right	Right	7 — Finland/Sweden
Right	Left	Left	Left	8 — France
Right	Left	Left	Right	9 — Italy
Right	Left	Right	Left	A — Japan
Right	Left	Right	Right	B — Japan (English)
Right	Right	Left	Left	C — Portugal
Right	Right	Left	Right	D — Spain
Right	Right	Right	Left	E — Spanish-Speaking
Right	Right	Right	Right	F — United Kingdom
NOTE: The language character sets 1 — US/Canada and B — Japan (English) are the same. The character sets for D — Spain and E — Spanish-Speaking are the same.				
Intervention Required Message				
Switch #7	Description			
Left	Inhibits the sending of the "Intervention Required" (IR) status message.			
Right	When a printer error condition is monitored by the coax interface for a period of at least 10 minutes, an "Intervention Required" (IR) status message is sent to the host.			
Switch #8	Description			
Left	An "Operation Complete" status message is sent to the host after a label format is completely printed. The host can then send the next label format to be printed.			
Right	Enables the "Early Print Complete" function. The host can send additional print jobs to the printer without waiting for the completion of the current print job. The printing status sent to the host reflects the label formats received, not the ones completed.			

Table 4-7. Coax Interface Board DIP Switch Settings

Test Mode		
Buffer Size Selection		
Switch #9	Switch #10	Description
Left	Left	3564 Byte buffer
Left	Left	3440 Byte buffer
Left	Right	1920 Byte buffer
Left	Right	960 Byte buffer
Switch #11	Not Active	
Switch #12	Not Active	

- After setting the DIP switches, turn the printer power Off (O) and back On (I). With the exception of DIP switch #2, the printer monitors the positions of the DIP Switches only during the Power-On Self Test. The EBCDIC Buffer Print function is enabled whenever DIP Switch #2 is placed in the "Right" position.

Applicator Interface Port (XiIII, XiIIIPlus and R-140)



Caution • This installation must be performed by a qualified service technician.

- Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cable.
- Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
- Refer to [Figure 4-89](#) and remove and retain the screws and the blank cover plate (or the interface board and cables) installed next to the PCMCIA memory card slot.



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

- Attach the DC power cable to J5 on the applicator circuit board, then connect interface data cable to J4 as needed.
- Refer to [Figure 4-92](#). Insert the applicator circuit board and cable partially into the mounting slot. Connect the other end of the interface data cables to one of the open serial data connectors on the main logic board (J7–J10 or P30–P36) and the DC power cable to one of the open connectors (J5–J10) on the DC power supply board. Route the cables to ensure that none get cut or damaged by moving parts.
- Slide the applicator circuit board completely into the mounting slot, and secure it with the screws previously removed.
- Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
- Reinstall the AC power cord and restore power. Turn the printer power On (I).

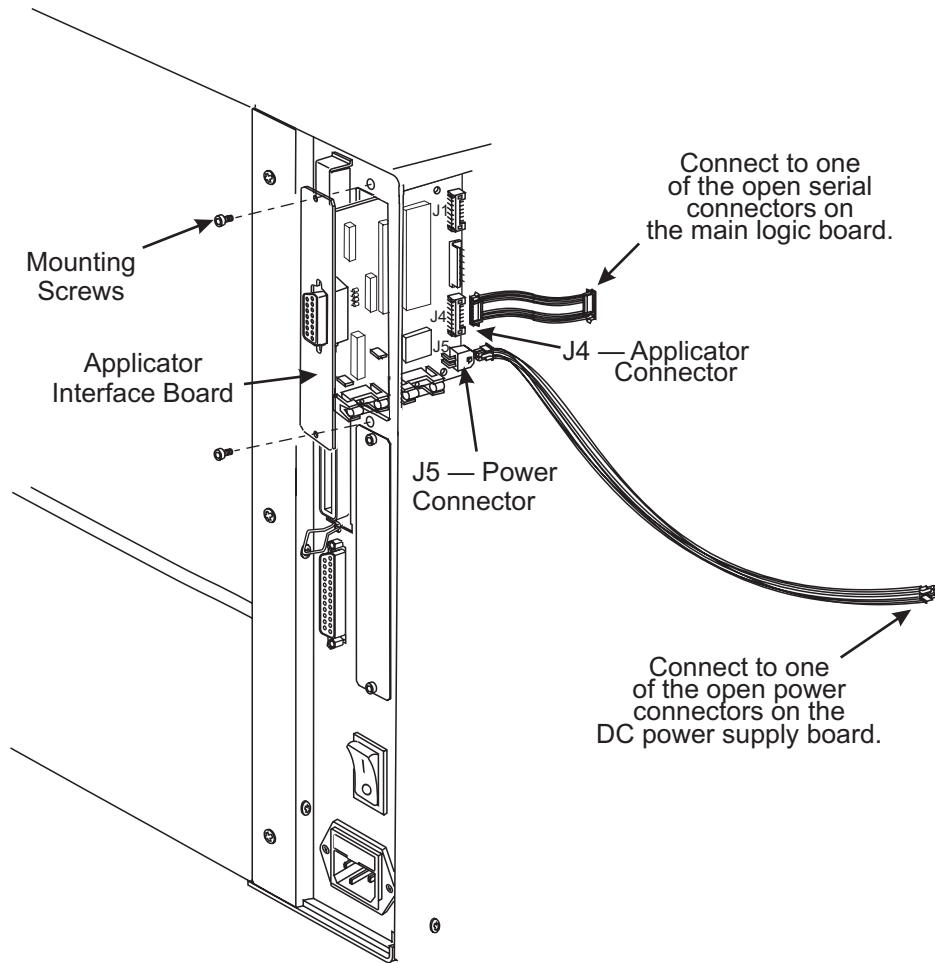


Figure 4-92. Applicator Installation

Applicator Interface Port with Real-Time Clock (XiIII and R-140)



Caution • This installation must be performed by a qualified service technician.



Note • The real-time clock (RTC) is on the main logic board and is standard on the *XiIIIPlus*.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cable.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [Figure 4-89](#) and remove and retain the screws and the blank cover plate (or the interface board and cables) installed next to the PCMCIA memory card slot.



Note • There are two interface data cables that need to be attached from the RTC/applicator circuit board to the main logic board if the applicator interface and the RTC are to work at the same time. J1 on the RTC board connects the RTC, and J4 connects the applicator interface.

4. Attach the DC power cable to J5 on the RTC/applicator circuit board, then connect one or both interface data cables to J1 and J4 as needed.
5. Refer to [Figure 4-93](#). Insert the RTC/applicator circuit board and cables partially into the mounting slot. Connect the other end of the interface data cables to one of the open serial data connectors on the main logic board (J7–J10 or P30–P36) and the DC power cable to one of the open connectors (J5–J10) on the DC power supply board. Route the cables to ensure that none get cut or damaged by moving parts.
6. Slide the RTC/applicator circuit board completely into the mounting slot, and secure it with the screws previously removed.
7. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
8. Reinstall the AC power cord and restore power. Turn the printer power On (I).

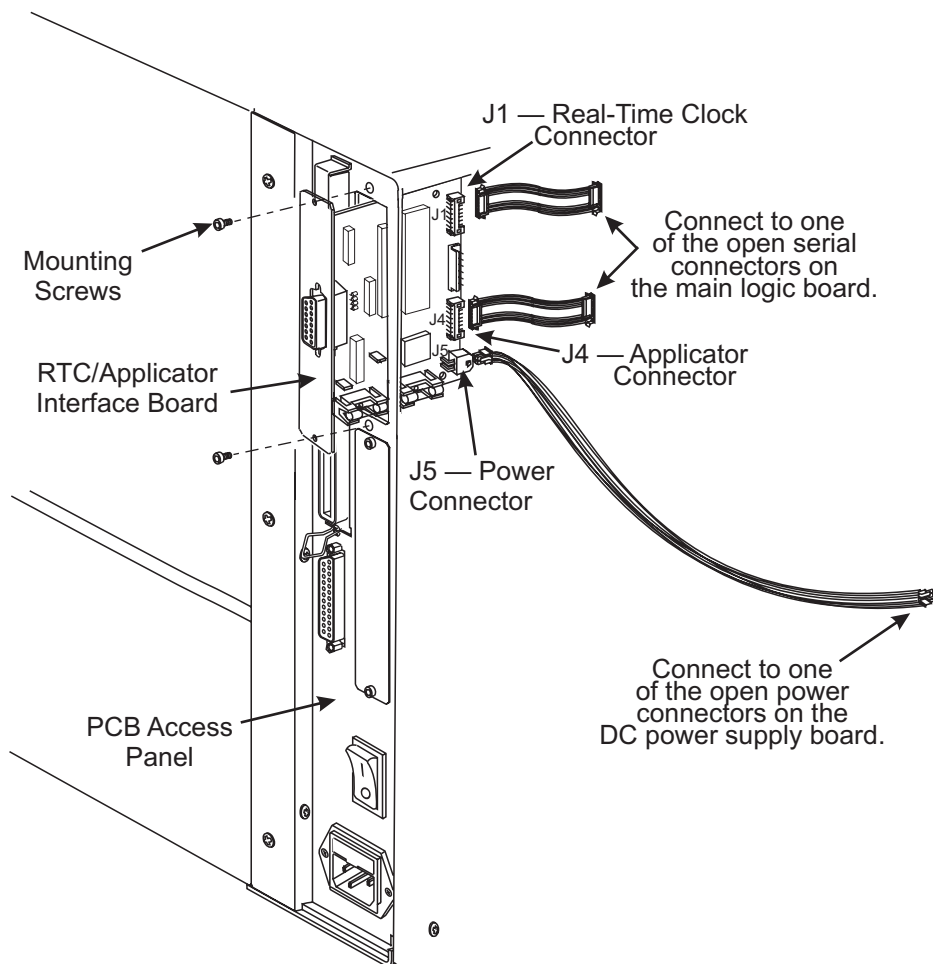


Figure 4-93. Applicator/Real-Time Clock Installation

9. Configure the real-time clock parameters according to the following instructions. Then send a sample label format from the host computer to the printer to test for proper operation.

Real-Time Clock Parameters

The following parameters are added to the front panel configuration prompts only when the real-time clock hardware is installed in the X111-Series printer.

Idle Display

This parameter selects the printer's idle display format and the method of displaying the time/date information. It also affects the configuration label printout and the **SET DATE** and **SET TIME** formats.

Selections:

- FW VERSION
- DD/MM/YY 24HR
- MM/DD/YY 24HR
- MM/DD/YY 12HR
- DD/MM/YY 12HR

If FW VERSION is selected, the format is on the configuration label and on the **SET DATE**.

Set Time

This parameter allows entry of the RTC time in the format selected by the **IDLE DISPLAY** parameter.

Use the left oval key to select the position to be adjusted. Then use the right oval key to select the correct value for that position.

Set Date

This parameter allows entry of the RTC date in the format selected by the **IDLE DISPLAY** parameter.

Use the left oval key to select the position to be adjusted. Then use the right oval key to select the correct value for that position.

Real-Time Clock Commands (ZPL II Commands)

General Information on the Use of Real-Time Clock



Note • The ZPL II commands for the RTC are applicable only if the option is installed in the printer.

The field clock (**^FC**) command specifies the clock-indicator character for the primary, secondary, and tertiary clocks. This command must be included within each label field command string whenever the date or time clock values are required within the field. No date or time clock information can be printed in a label field unless this command is included.

A clock indicator can be any printable character except the ZPL II format prefix, control prefix, or delimiter characters. The default value for the primary clock-indicator is the percent sign (%). The secondary and tertiary clock indicators have no defaults and must be specified in order for that clock to be used.

The ZPL II field data (**^FD**) command has been expanded to recognize the clock indicators and associated command characters, and to replace them during the printing process with the corresponding time or date parameter. For example, if the primary clock indicator is the percent sign (%), during printing the character sequence **%H** in the **^FD** statement is replaced by the two-digit current hour.



Note • If real-time clock hardware is not installed, or the **^FC** command has not preceded the **^FD** statement, no replacement occurs. In this case, the characters “%H” print as text on the label.

The name of the day of the week, the name of the month, and the AM or PM designation can also be inserted in place of a specific clock indicator/command character sequence. See Table 4-8 for the list of command characters and their functions.

The set offset (**^SO**) command permits the printing of specific times and dates relative to the primary clock. The secondary (or tertiary) clock is enabled when secondary (or tertiary) offsets are entered using this command. The secondary (or tertiary) clock time and date are determined by adding the offsets to the current clock reading.

One **^SO** command is required to set the secondary offset and an additional **^SO** command is required for a tertiary offset. The offsets remain until changed or until the printer is either turned Off (**O**) or reset.



Note • Only dates from January 1, 1998 to December 31, 2097 are supported. Setting the offsets to values outside this range is not encouraged or guaranteed.

The set mode/language (**^SL**) command is used to select the language in which to print the names of the days of the week and the names of the months. This command also sets the printing mode, which can be 'S' for Start Time or 'T' for Time Now. In Start Time mode, the time printed on the label is the time that is read from the real-time clock when the label formatting begins (when the **^XA** command is received by the printer). In Time Now mode, the time printed on the label is the time that is read from the real-time clock when the label is placed in the queue to be printed.

Table 4-8. Command Characters

Command Character	Replaced By
%a	Abbreviated weekday name
%A	Weekday name
%b	Abbreviated month name
%B	Month name
%d	Day of the month number, 01 to 31
%H	Hour of the day (Military), 00 to 23
%I	Hour of the day (Civilian), 01 to 12
%j	Day of the year, 001 to 366
%m	Month number, 01 to 12
%M	Minute, 00 to 59
%p	AM or PM designation
%S	Seconds, 00 to 59
%U	Week number of the year, 00 to 53, Sunday is 1st Day
%W	Week number of the year, 00 to 53, Monday is 1st Day
%w	Day # of the week, 00 (Sunday) to 06 (Saturday)
%y	Last 2 digits of the year, 00 to 99
%Y	Full 4-digit year number

NOTE: % is the specified clock indicator character.

Time and Date Precision (in Time Now Mode)

The time and date placed in a label field is determined at the time the label bitmap is created by the printer. If a batch of labels is formatted, the date and time will be the same for all labels in the batch. If the printer is PAUSED during the printing process and remains in that state for a period of time, when printing resumes the time and date will still be the same as when the batch was first started.

If more precise time and date stamps are required on the labels, the **^CO** (cache on) ZPL II command can be used to limit the memory available for label bitmaps and thus reduce the number of labels containing the same time and date stamp. To determine the value for the “b” parameter of the **^CO** command, perform the steps that follow:



Note • Cycle the printer power Off (**O**) and On (**I**) to clear the memory before performing the steps below.

1. Print a Memory Usage Label (**^XA^WD*:*.*^XZ**) and note the following value:
Available RAM (in bytes) (A) _____
2. Print a Configuration Label and note these values:
Printer “Print Width” (in dots) (**not** the label width) (B) _____
Label Length (in dots) (**not** max. label length) (C) _____
3. Determine the desired maximum number of queued labels with the same Time and Date value. (D) _____



Note • Increasing the number of queued labels improves throughput performance, but real-time clock values are less accurate. Two is usually an appropriate compromise.

4. Substitute the values for B through D from the previous page into the following formula:
 $(B \times C \times D) / 8 =$ (E) _____
5. Substitute the values for A and E into the following formula:
The “**^CO** command” memory required (in kbytes)
 $[(A - E) / 1024] - 5 =$ (F) _____



Note • If the value of (F) is less than zero, then no **^CO** command is needed. If the value of (F) is greater than zero, use the integer portion in the **^CO** command.

EXAMPLE

Available RAM	(A) = <u>714748</u> bytes
Print Width	(B) = <u>832</u> dots
Label Length	(C) = <u>1000</u> dots
Max Labels Queued	(D) = <u>2</u>
The “label queue” memory required ($B \times C \times D$) / 8	(E) = <u>208000</u> bytes
The “ ^CO command” memory required ($(714748 - 208000) / 1024$) - 5	(F) = <u>489.87</u> kbytes

Therefore, the correct **^CO** command string to add to the label format would be:

^XA^COY,489^XZ

This command string causes 489 kbytes to be set aside as font memory and makes it unavailable as label format memory. The memory remaining allows only two labels to be formatted at one time, and the time and date are more precise for those two labels.

^KD Date/Time Format

The **^KD** (date/time format) instruction is used to select the format in which the real-time clock’s date and time information is printed on a configuration label.

The format for the **^KD** instruction is:

^KDa

Where

^KD = Date/Time Format

- a = Value indicating desired date/time format
 - 0 = Normal version number string (Default)
 - 1 = MM/DD/YY w/24-hour clock
 - 2 = MM/DD/YY w/12-hour clock
 - 3 = DD/MM/YY w/24-hour clock
 - 4 = DD/MM/YY w/12-hour clock



Notes • If the real-time clock hardware is not present, the display mode will be set to “Version Number.”

If the display mode is set to “Version Number” and the real-time clock hardware is present, the date/time format shown on the configuration label when setting the date/time will be in the format MM/DD/YY with a 24-hour clock.

^FC Field Clock

The **^FC** (field clock) instruction is used to set the clock-indicators (delimiters) and the clock mode for use with the real-time clock hardware. This command must be included within each label field command string each time the real-time clock values are required within the field.

The format for the **^FC** instruction is:

^FCa,b,c

Where

^FC = Field Clock

- Primary clock indicator character
 - a = Default = %
- Secondary clock indicator character
 - b = No Default – cannot be the same as “a” above
- Tertiary clock indicator character
 - c = No Default – cannot be the same as “a” or “b” above



Note • If no real-time clock hardware is present, this command is ignored.

^SL Set Mode/Language

The **^SL** (set mode/language) instruction is used to specify the language in which real-time clock information is printed and to specify the mode of operation for the real-time clock.



Note • The **^SL** command must be placed in front of the first time field **^FO** command.

The format for the **^SL** instruction is:

^SLa,b

Where

^SL = Set Mode/Language

Mode

S = START TIME mode (Default)

a = T = TIME NOW mode

Language Number

b = (Default = The language selected via the **^KL** instruction)

1 = English

4 = German

7 = Portuguese

10 = Spanish 2

2 = Spanish

5 = Italian

8 = Swedish

11 = Dutch

3 = French

6 = Norwegian

9 = Danish

12 = Finnish

^SO Set Offset

The **^SO** (set offset) instruction is used to set the secondary offset and the tertiary offset from the primary real-time clock.

The format for the **^SO** instruction is:

^SOa,b,c,d,e,f,g

Where

^SO = Set Offset

Clock (No Default)

2 = Secondary Clock

a = 3 = Tertiary Clock

b = Months Offset (Default = 0) (Range -32,000 to +32,000)

c = Days Offset (Default = 0) (Range -32,000 to +32,000)

d = Years Offset (Default = 0) (Range -32,000 to +32,000)

e = Hours Offset (Default = 0) (Range -32,000 to +32,000)

f = Minutes Offset (Default = 0) (Range -32,000 to +32,000)

g = Seconds Offset (Default = 0) (Range -32,000 to +32,000)

^ST Set Date/Time

The ^ST (set date/time) instruction is used to set the date and time of the real-time clock.

The format for the ^ST instruction is:

^STa,b,c,d,e,f,g

Where

^ST = Set Date/Time

- | | |
|--|----------------------------|
| a = Month (Default = Current Month) | Valid Range = 01 to 12 |
| b = Day (Default = Current Day) | Valid Range = 01 to 31 |
| c = Year (Default = Current Year) | Valid Range = 1998 to 2097 |
| d = Hour (Default = Current Hour) | Valid Range = 00 to 23 |
| e = Minute (Default = Current Minute) | Valid Range = 00 to 59 |
| f = Second (Default = Current Second) | Valid Range = 00 to 59 |
| g = Format | |
| A = AM | |
| P = PM | |
| M= 24 Hour (Military) (Default) | |

Sample ZPL

The ZPL II scripts shown below establish the initial settings for the date and time clock and must be sent to a printer to provide proper date and time parameters for the ZPL II script on page [4-129](#).

Setting the date and time for the real-time clock needs to be done only once. An on-board battery maintains the date and time when the printer is reset and when the printer power is turned Off (O).

To set the date and time to April 23, 1999 at 2:30 PM, the following command string should be sent to the printer:

```
^XA
^ST04,23,1999,02,30,0,P^FS
^XZ
```

To initialize the real-time clock and set up two offset values (offset #2 set to 3 months and 1 hour in the future, offset #3 set to 1 year in the past), the following command sequence should be sent to the printer:

```
^XA
^SL
^SO2,3,0,0,1,0,0^FS
^SO3,0,0,-1,0,0,0^FS
^XZ
```

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

The following script references the initial settings to provide the output shown in Figure 4-54. It also illustrates the various methods of printing the date and time initialized on the previous page within separate fields on continuous media. For the below example, the **^FC** command delimiters are:

% Primary clock indicator

{ Secondary clock indicator

Tertiary clock indicator

^XA

^LL175

^FO10,025^AD^FC%,{,#^FD1: Mil: %H:%M:%S Civ: %l:%M:%S %p^FS

^FO10,050^AD^FC%,{,#^FD2: Mil: {H:{M:{S Civ: {l:{M:{S {p^FS

^FO10,075^AD^FC%,{,#^FD3: Mil: #H:#M:#S Civ: #l:#M:#S #p^FS

^FO10,100^AD^FC%,{,#^FD1: On %A, %B %d, %Y (%a, %m/%d/%y, %d %b %Y).^FS

^FO10,125^AD^FC%,{,#^FD2: On {A, {B {d, {Y ({a, {m/{d/{y, {d {b {Y).^FS

^FO10,150^AD^FC%,{,#^FD3: On #A, #B #d, #Y (#a, #m/#d/#y, #d #b #Y).^FS

^XZ

```
1: Mil: 14:30:00 Civ: 02:30:00 PM
2: Mil: 15:30:00 Civ: 03:30:00 PM
3: Mil: 14:30:00 Civ: 02:30:00 PM
1: On Friday, April 23, 1999 (Fri, 04/23/99, 23 Apr 1999).
2: On Friday, July 23, 1999 (Fri, 07/23/99, 23 Jul 1999).
3: On Thursday, April 23, 1998 (Thur, 04/23/98, 23 Apr 1998).
```

Optional Cutter Kit



Caution • This installation must be performed by a qualified service technician.



Note • Cutter Option not available on 96XiIII.

Table 4-9. Kit Parts List

✓	Item #	Qty	Part Number	Description	90 XiII, XiIII, and XiIIIPlus	96 XiIIIPlus	140 XiII, XiIII, and XiIIIPlus	170 XiII, XiIII, and XiIIIPlus	220 XiII, XiIII, and XiIIIPlus
	1	4	<i>30391-003*</i>	Screw 4-40	X	X	X	X	X
	2	1	49730M	Cutter Option Circuit Board	X	X	X	X	X
	3	1	49604-010	Cutter Power Cable	X	X	X	X	X
	4	1	49600-012	Cutter Data Cable	X	X	X	X	X
	5	1	31313	Sensor Clamp	X	X	X	X	X
	6	1	01822	Nut	X	X	X	X	X
	7	1	46618M	Cutter Optical Sensor Assembly	X	X	X	X	X
	8	1	<i>47200-4</i>	Cutter Module Assembly	X	X			
	8	1	<i>48200-4</i>	Cutter Module Assembly			X		
	8	1	<i>46200-4</i>	Cutter Module Assembly				X	
	8	1	<i>22864</i>	Cutter Module Assembly					X
	9	4	<i>30392-004**</i>	Screw 6-32	X	X	X	X	X
	10	1	46224	Grommet	X	X	X	X	X
	11	1	30374M	Cutter Motor Assembly	X	X	X	X	X
	12	2	30394-005	Screws (Motor Mounting)	X	X	X	X	X
	13	1	22385	Cutter Catch Tray Kit 220 XiII/XiIII					X
	13	1	46385	Cutter Catch Tray Kit 170 XiII/XiIII				X	
	13	1	47385	Cutter Catch Tray Kit 90 XiII/XiIII	X	X			
	13	1	48385	Cutter Catch Tray Kit 140 XiII/XiIII			X		
	14	1	30405-006	Screw, 1/4-20 x 0.38	X	X	X	X	X
	15	1	<i>02133†</i>	E-Ring	X	X	X	X	X
	16	1	<i>N/A††</i>	Drive Link Assembly	X	X	X	X	X
	17	1	30449	Allen Wrench, 5/64"	X	X	X	X	X
	18	1	<i>44632‡</i>	Ferrite Core	X	X	X	X	X

N/A = Not available as a separate part (listed for identification purposes only).

- *Available only as HW44632 in quantities of 10
- **Available only as HW30392-004 in quantities of 50
- †Available only as HW30391-003 in quantities of 25
- ††Available only as HW02133 in quantities of 50
- ‡Available only as HW01155 in quantities of 100

Bold=Part available for purchase
Light italic= Part not available for purchase, listed and shown for reference only

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

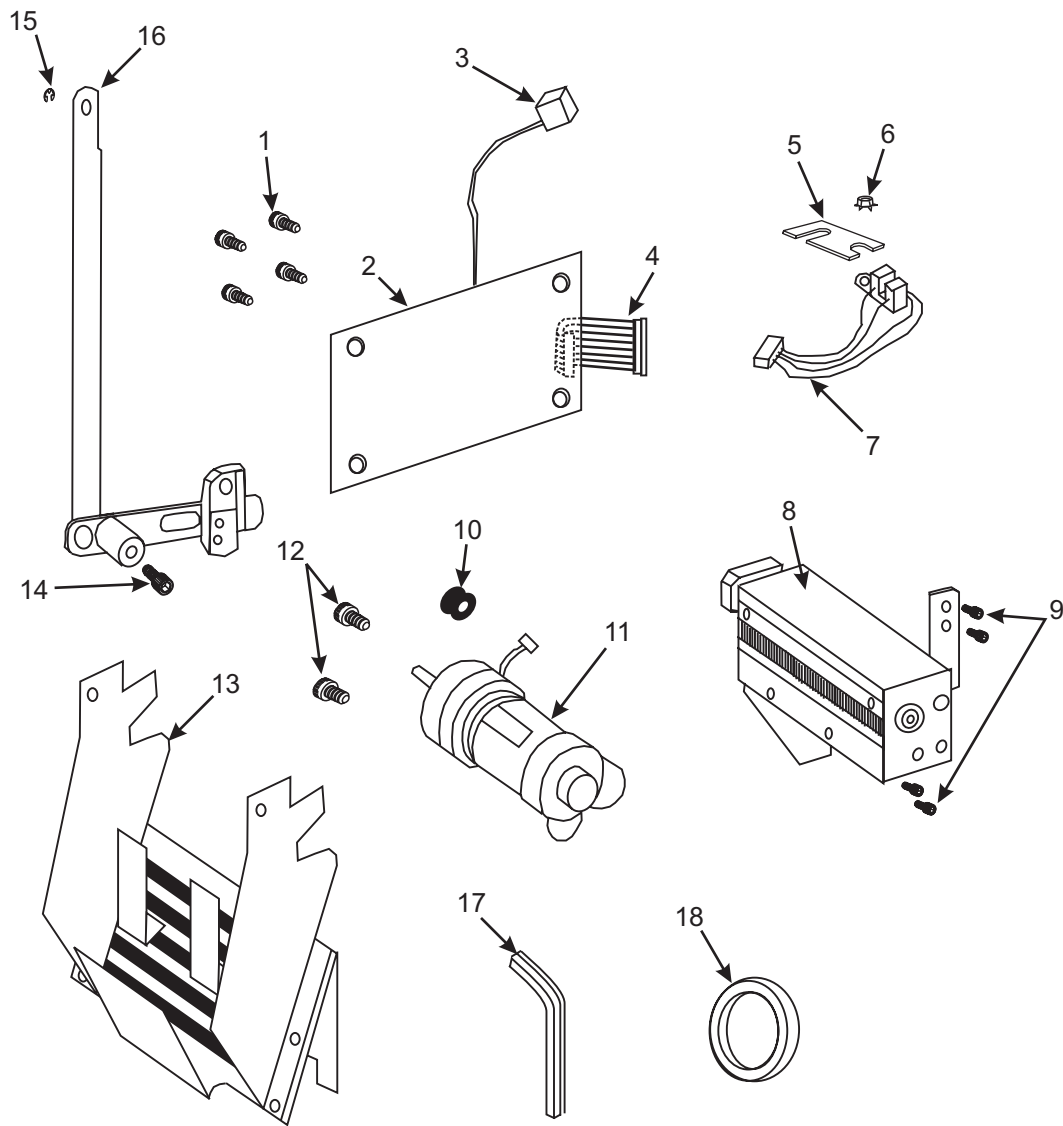


Figure 4-94. Part Identification Cutter Option



Note • The nut, E-ring, and screws are not shown here. See [Table 4-9](#).

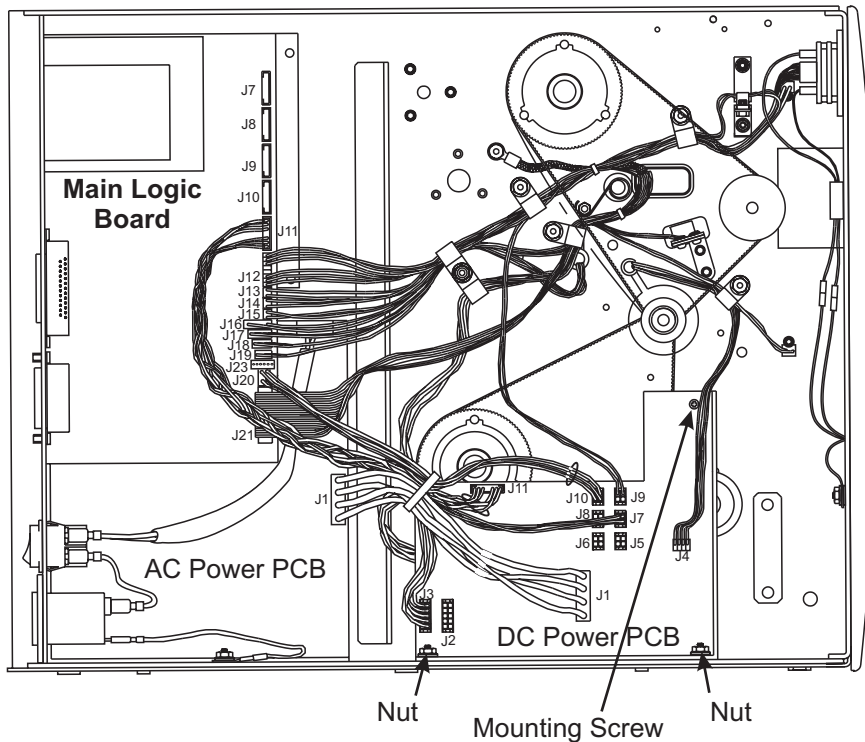


Figure 4-95. DC Power PCB Location and Interconnections

NOTE: J5–J10 have the same outputs.

J1	J1 AC Power PCB	J7	Cutter Option
J2	Additional Printhead Power for 220X/III Printers	J8	N/A
J3	Printhead Power for all X/III Printers	J9	LCD Display
J4	Stepper Motor	J10	J20 Main Logic PCB
J5	N/A	J11	J11 Main Logic PCB Data
J6	N/A		

Printer Disassembly

The printer must be partially disassembled in order to install the parts in this kit.

1. Turn the printer power Off (O) and remove the power cord. Disconnect the printer communications cable.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.
4. Remove the DC power supply assembly.



Note • For part identification, see [Table 4-9](#).

Cutter Motor Installation



Note • The cover plates and cover plate mounting screws are not reused.

1. Refer to [Figure 4-96](#). Open the media door. Remove the cutter assembly cover plate.
2. Remove the cutter motor cover plate.

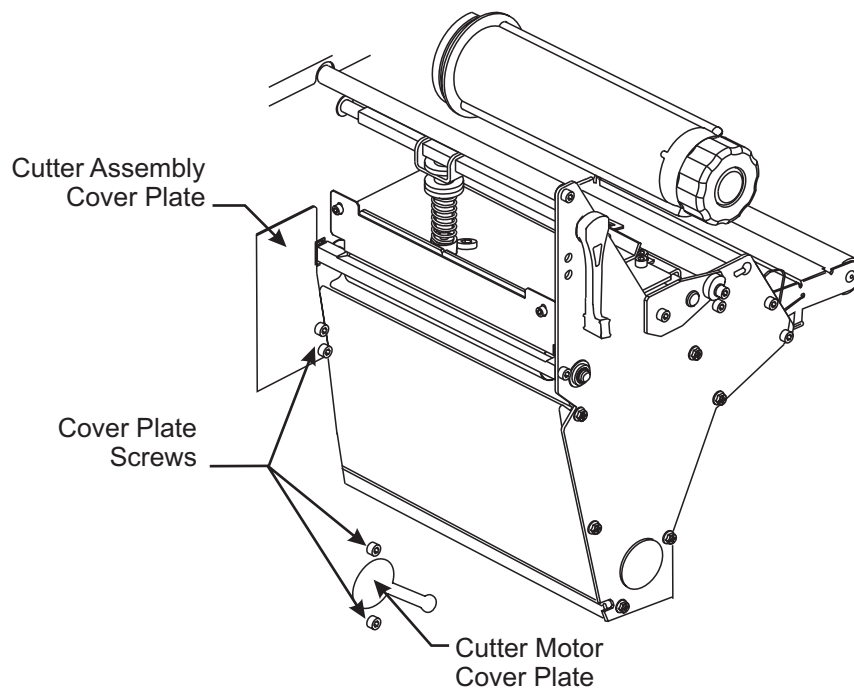


Figure 4-96. Cover Plate Locations

3. See [Figure 4-97](#). Position the cutter motor near the mounting hole on the mechanical side of the printer.
4. Pass the cutter motor leads through the slit in the rubber grommet (#10). Insert the grommet into the slot located in the lower right area of the motor mounting hole and slide it into the small hole. The electrical connector must be positioned on the electronics side of the printer. To prevent the leads from coming out, rotate the grommet so the cut is facing away from the motor.
5. Position the cutter motor against the printer frame so that the screw holes in the motor line up with the holes in the frame, with the motor shaft toward the front of the printer.
6. Secure the motor to the main frame using the two motor mounting screws (#12).

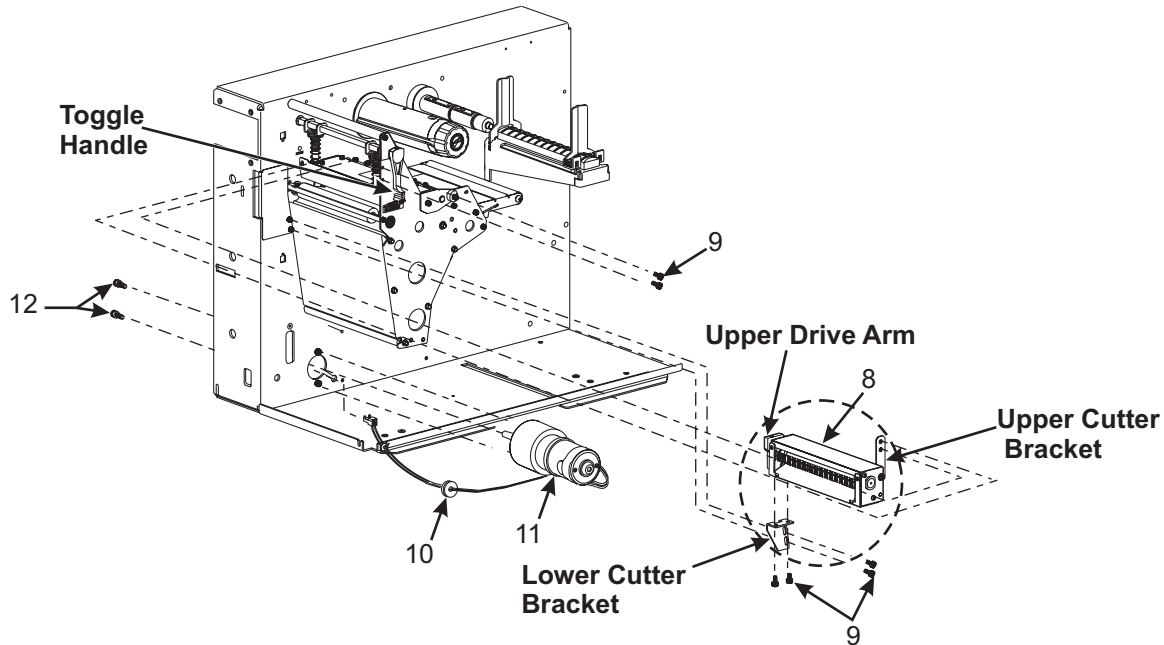


Figure 4-97. Mechanical Side Assembly

Cutter Mechanical Assembly Installation

1. Refer to [Figure 4-97](#). Locate the pre-assembled cutter mechanism. The upper cutter bracket at the right rear corner of the cutter is placed in a horizontal position for shipping. Loosen the mounting screw and rotate the bracket to a vertical position and snug up the screw. Do not tighten.
2. Under the left end of the cutter, loosen the two screws that secure the lower cutter bracket to the cutter support bracket.
3. Locate and orient the cutter mechanism as shown in [Figure 4-98](#). Carefully work the mechanism into position partially in the main frame opening in front of the printhead. Position the upper cutter bracket so the threaded holes are inside the side plate and aligned with the two holes in the side plate near the toggle handle.

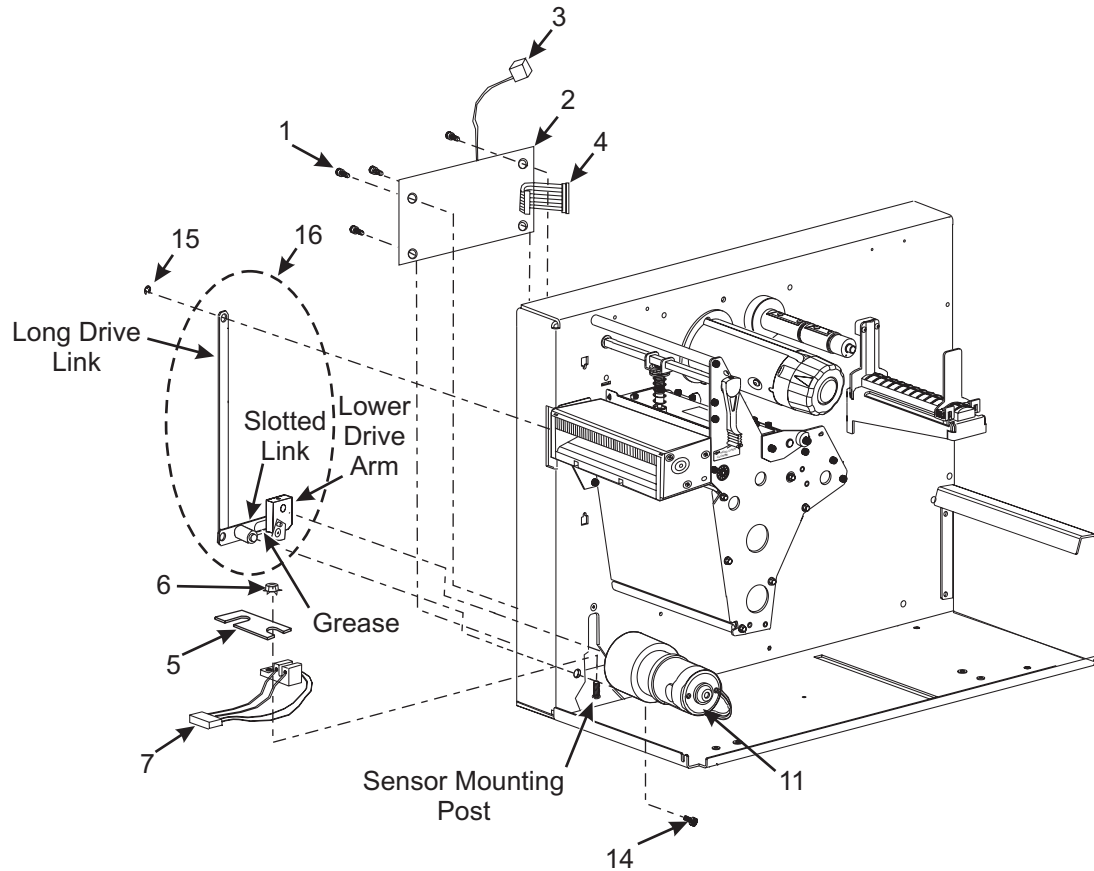
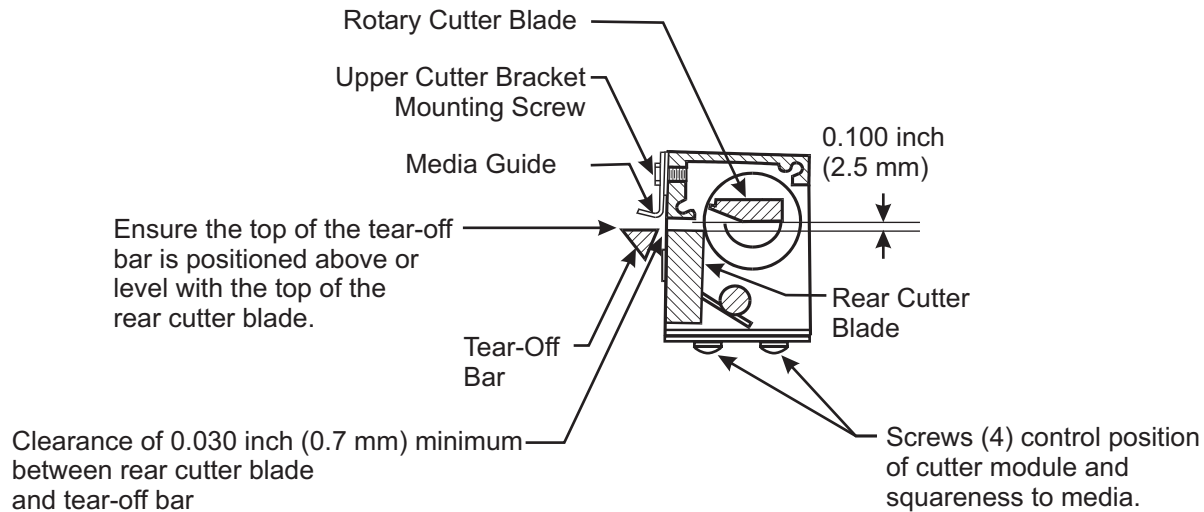


Figure 4-98. Linkage and Circuit Board Installation

4. Loosely attach the upper bracket to the side plate with two of the 6-32 screws (#9).
5. Align the slots in the lower cutter bracket with the threaded holes in the main frame and loosely attach the bracket with two more of the 6-32 screws (#9).
6. Refer to [Figure 4-99](#). Open the printhead and observe the position of the tear-off bar (in front of the platen roller) and the rear cutter blade. Position the cutter mechanism so that the rear cutter blade is parallel with the outer edge of the tear-off bar across the entire width of the media path. The cutter mechanism should be positioned as far forward as possible while maintaining parallelism with the tear-off bar. This should prevent interference of the rear cutter blade with the tear-off bar. Tighten all mounting screws.



Relative position of the rotary cutter blade when the drive link assembly is stopped by the optical sensor, when the power is On (I) in the Cutter mode.

Figure 4-99. Cutter Mechanical Assembly Positioning



Note • While tightening the upper cutter bracket mounting screw, be careful not to change the position of the media guide. If the media guide moves out of position, set its height so the lower edge is flush with the rear opening in the cutter mechanism. The lower cutter blade is held in position by two springs. If these springs touch the tear bar or other printer parts, the lower cutter blade will not float properly and will cause excessive wear and premature failure of the cutter blades.

7. Check the clearance between the back of the cutter mechanism and the tear bar by inserting a screwdriver from the front of the cutter mechanism and press the top of the lower cutter blade toward the printer. The blade should move a minimum of 0.030 inch (0.7 mm). If necessary, loosen the four screws on the bottom of the cutter module and reposition the cutter mechanism away from the tear-off bar.



Note • For part identification, see [Table 4-9](#).

Drive Link Assembly Installation

Refer to [Figure 4-98](#).

1. Remove the screw from the mounting post on the drive link assembly (#14). Attach the mounting post to the main frame using the screw just removed (#14).
2. The upper drive arm is pre-assembled to the cutter module. Place the long drive link of the drive link assembly (#16) over the connecting post on the upper drive arm and secure it with the E-ring (#15).
3. Attach the lower drive arm of the drive link assembly (#16) to the cutter motor shaft. Loosen the screws to ensure the lower drive arm rotates freely on the motor shaft.
4. Apply a small amount of grease to the slot in the drive link assembly (#16) where the bearing will ride. Remove any excess grease to avoid damaging the optical sensor.

Cutter Circuit Board and Optical Sensor Installation

1. Refer to [Figure 4-100](#). Attach the power cable (#3) to J2 on the cutter circuit board.
2. Attach the data cable (#4) to J1 on the cutter circuit board.
3. Locate the four standoffs on the printer frame where the cutter board will be mounted.

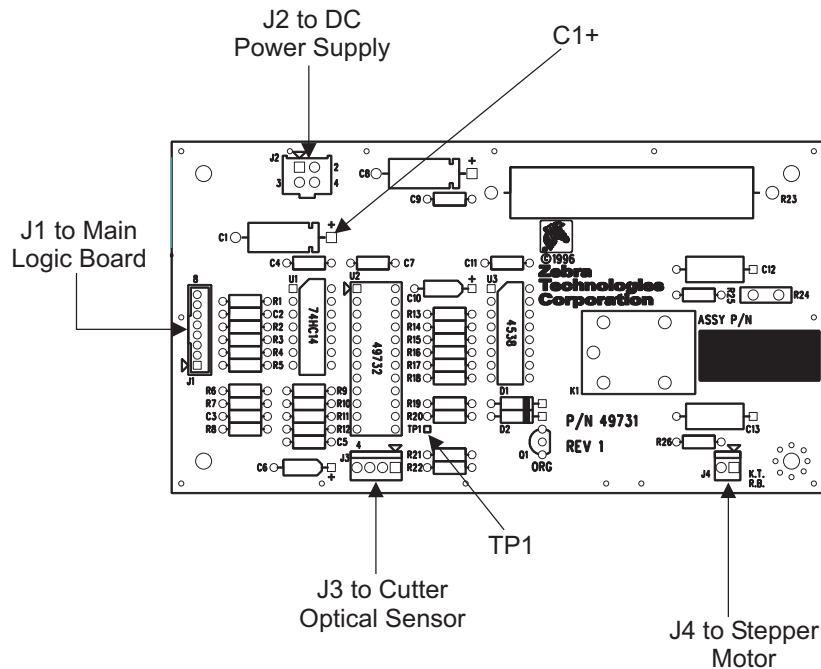


Figure 4-100. Cutter Option Circuit Board

4. Route the cutter motor leads between the two right-hand standoffs and out under the bottom of the circuit board.
5. Position the cutter circuit board over all four standoffs.
6. Install screw (#1) through the lower right-hand circuit board mounting hole. Do not tighten at this time.
7. Install the three remaining mounting screws (#1) and tighten all four screws.
8. Refer to [Figure 4-101](#). Wind the motor leads around the ferrite core. Motor leads must be wrapped around the ferrite core at least 2 times.

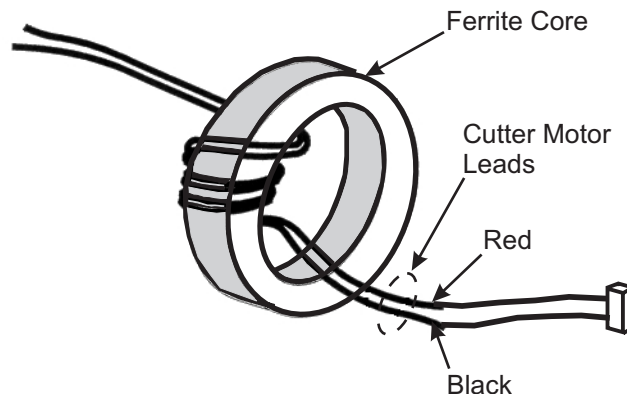


Figure 4-101. Cutter Motor Leads

9. Pass the cutter board power cable along the bottom of the printer frame toward the main logic board.
10. Plug the motor leads into the cutter motor connector J4 on the cutter circuit board with the black lead to the left. To minimize interference between components, wedge the top of the ferrite core under the cutter board relay.
11. See [Figure 4-94](#). Install the cutter optical sensor assembly (#7) on the sensor mounting post. The sensor part of the assembly should be mounted toward the printer frame.
12. Place the sensor clamp (#5) over the sensor and start the nut (#4) on the post. **Do not tighten the nut at this time.**
13. Route the sensor leads under the clamp and toward the rear of the printer, and lightly tighten the nut to hold the wires in position. Be careful not to pinch the wires.
14. Refer to [Figure 4-100](#). Plug the cutter sensor leads into the cutter Opto connector J3 on the cutter circuit board.
15. Check the installation and ensure that no wiring will touch any moving parts.

Lower Drive Arm Alignment



Caution • This installation must be performed by a qualified service technician.

The alignment of the lower drive arm must be checked any time the cutter PCB is replaced.

1. Place the power switch in the Off (O) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.



Note • To perform the lower drive arm mechanical alignment, some but not all cables must be connected between the AC power supply, the DC power supply, and the cutter PCB. In order to still have access to the cutter PCB, the DC power supply must not be installed. Position the DC power supply so the cables are connected but access to the cutter board is still possible.

4. Refer to [Figure 4-40](#) and disconnect all cables except for the ones listed below:
The power cable from J1 on the AC power supply to J1 on the DC power supply.
The power cable from J2 on the cutter PCB to J7 on the DC power supply.
The data ribbon cable from J1 on the cutter PCB to J10 or P33 on the main logic board.
5. Refer to [Figure 4-38](#). Loosen the screws securing the lower drive arm to the motor shaft.
6. Rotate the cutter motor shaft with a pair of pliers such that the two flats on the cutter motor shaft are aligned with the two set screws in the lower drive arm when the arm is in the vertical position. Reposition the lower drive arm axially on the cutter motor shaft such that the sensor flag is approximately centered between the optical sensor walls.

SECTION 4 PREVENTIVE AND CORRECTIVE MAINTENANCE

7. Secure the lower drive arm on the cutter motor shaft with the two set screws.
8. Hold the lower drive arm with a thumb and an index finger and rotate it clockwise and counterclockwise for a few degrees to ensure that the sensor flag does not touch the optical sensor walls on either side. During this operation, take care not to touch the sensor flag with fingers.
9. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply.
10. Refer to [Figure 4-40](#). Reconnect all cables and connectors that were previously disconnected.
11. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
12. Reconnect the AC power cord and restore power. Turn the AC power switch On (I). Enter Configuration Mode and set the printer to Cutter Mode. Save as PERMANENT and turn the printer off (O).
13. Load media and ribbon, press and hold the **PAUSE** while turning the printer power On (I), and run labels through the printer. Test the cutter for proper operation.

Upper Drive Arm Alignment



Caution • This installation must be performed by a qualified service technician.

If the media hits either cutter blade or if the cutter does not cut through the label material completely, the upper drive arm alignment must be re-timed.



Note • The upper drive arm is part of the cutter mechanical assembly and has been aligned at the factory. If for some reason the position is altered, the following procedure may be used to realign the upper drive arm.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

3. Refer to [Figure 4-38](#). Loosen the screw that clamps the upper drive arm to the rotary cutter blade shaft. The drive arm may be snug on the shaft.
4. Hold the upper drive arm in a stationary position and adjust the rotary cutter blade to a gap of approximately 0.100 inches (2.5 mm) between the cutting edge on the left end and the cutting edge of the rear cutter blade, as shown in [Figure 4-41](#).



Notes • If the gap between the cutting edges is too large, the cutter may not cut properly across the entire media width. If the gap is too small, the media may catch on the cutter blade edge and cause a jam.

5. Position the upper drive arm out from the cutter frame so its flat surface is flush with the end of the rotary cutter blade shaft.



Note • Over tightening the screw can damage the drive arm and strip the threads.

6. Use an Allen wrench socket on a torque wrench and tighten the screw until the slot closes or until a torque of 100 inch-pounds (11.3 N•m) is achieved.
7. With a felt-tip pen, draw a line across the outer face of the upper drive arm and the end of the cutter blade shaft. If cutter operation problems occur, this mark shows if the alignment of the clamp and the cutter blade shaft has changed.
8. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
9. Reconnect the AC power cord and restore power. Turn the AC power switch On (I). Enter configuration mode and set the printer to cutter mode. Save as PERMANENT and turn the printer off (O).
10. Load media and ribbon, press and hold the **PAUSE** while turning the printer power On (I), and run labels through the printer. Test the cutter for proper operation.
11. Test the cutter timing by feeding maximum-width label stock through the printer and ensuring that complete cutting of the label occurs. If necessary, repeat the procedure to achieve complete cutting of the labels.

DC Power Supply Board Reinstallation

1. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply. Tighten the mounting screw and nuts and ensure all wires are positioned away from any moving mechanical parts and are not pinched or cut.
2. See [Figure 4-95](#). Carefully connect the remaining cables/connectors to the DC power supply board and verify proper placement and orientation.
3. Reconnect the AC power cord.
4. Turn the printer power On (I) and use the front panel LCD and control keys to configure the unit for Cutter mode. Save as "PERMANENT" and then turn the printer power Off (O). Refer to the Users Guide for this procedure.
5. To test the cutter for proper operation, load media and ribbon, hold in the **PAUSE** key while turning the printer power On (I), and run labels through the printer. If either of the following two conditions are not met, proceed to the upper drive arm alignment:
 - Media fed through the printer without hitting either of the cutter blades.
 - The cutter cut through the label material completely.
6. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

DESCRIPTION

Use the mechanical assembly drawings 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.

All parts shown in bold face are purchasable. All parts shown in light face italic are not purchasable, but may be available as part of a maintenance kit. Hardware shown in light face are not available as an individual part, but may be purchased as part of a hardware kit.



Top: 90X/III™ and 96X/III™

Bottom: 140X/III™, 170X/III™, and 220X/III™

LIST OF FIGURES

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Table 5-1. Final Assembly 90/96/140/170XIII, XIIIPlus, and R-140 Mechanical

Item	Part Number	Description	Qty
1	46937	Media Door with Window	1
1	47077M	Media Door Kit, Bi-fold with Window	1
2	HW30392-004	Screw, 6-32 x 0.25, Phillips head (Sold in quantities of 50)	12
3	01861	Supplies Label	1
4	48252	Media Load Label	1
5	46396-006	Screw, 6-32 x 0.37, Phillips head	1
6	30407-008	Screw, 6-32 x 0.5, 3/64 Allen	4
7	HW44114	Screw, M4.2 x 8 Hilo (Sold in quantities of 50)	12
8	HW44356	Washer, 0.198, 0.75 0.085 (Sold in quantities of 25)	3
9	<i>32038</i>	Electronics Cover	1
10	47721M	Cover Media Maintenance Kit (90/96XIII/XIIIPlus)	1
10	48721M	Media Maintenance Kit (140XIII/XIIIPlus and R-140)	1
10	46721M	Cover Media Maintenance Kit (170XIII/XIIIPlus)	1
11	46142	Name Plate, (170XIII)	1
11	47142	Name Plate, (90XIII)	1
11	48142	Name Plate, (140XIII)	1
11	47146	Name Plate, (96XIII)	1
11	<i>48146</i>	Name Plate, (R-140)	1
11	33150-3	Name Plate, (170XIIIPlus)	1
11	33150-1	Name Plate, (90XIIIPlus)	1
11	33150-2	Name Plate, (140XIIIPlus)	1
11	33150-6	Name Plate, (96XIIIPlus)	1
12	22021	Switch, Panel Membrane	1
13	22492M	Maintenance Kit, Switch Panel (Complete)	1
14	33036-1	New Style Front Cover, (170XIII/XIIIPlus)	1
14	33036-3	New Style Front Cover, (90/96XIII/XIIIPlus)	1
14	33036-2	New Style Front Cover, (140XIII/XIIIPlus and R-140)	1
15	46755M	Old Style LCD, Back Light XIII/R-140 (Can be used in new style front cover)	1
15	32043M	New Style LCD, Back Light XIIIPlus (Can not be used in old style front cover)	1
16	HW30392-003	Screw, 6-32 x 0.19 (Sold in quantities of 25)	3
17	01130	Nut, 6-32	3
18	HW07257	Washer (Sold in quantities of 25)	3
19	46491-1	Lower Media Trim Panel, (170XIII/XIIIPlus)	1
19	46491-2	Lower Media Trim Panel, (140XIII/XIIIPlus and R-140)	1
19	46491-3	Lower Media Trim Panel, (90/96XIII/XIIIPlus)	1
20	46836	Spacer	2
21	HW30256-B	Thumb Nut, 6-32 x 0.50 Brass (Sold in quantities of 25)	2
22	38342	Bracket, Front Cover, (170XIII/XIIIPlus)	1
22	47342	Bracket, Front Cover, (90/96XIII/XIIIPlus)	1
22	48342	Bracket, Front Cover, (140XIII/XIIIPlus)	1
23	<i>46049-1</i>	Support Bracket, (170XIII/XIIIPlus)	1
23	<i>47049-1</i>	Support Bracket, (90/96XIII/XIIIPlus)	1
23	<i>48049-1</i>	Support Bracket (140XIII/XIIIPlus)	1
Bold=Part available for purchase			
<i>Italic=Part not available for purchase, listed and shown for reference only</i>			

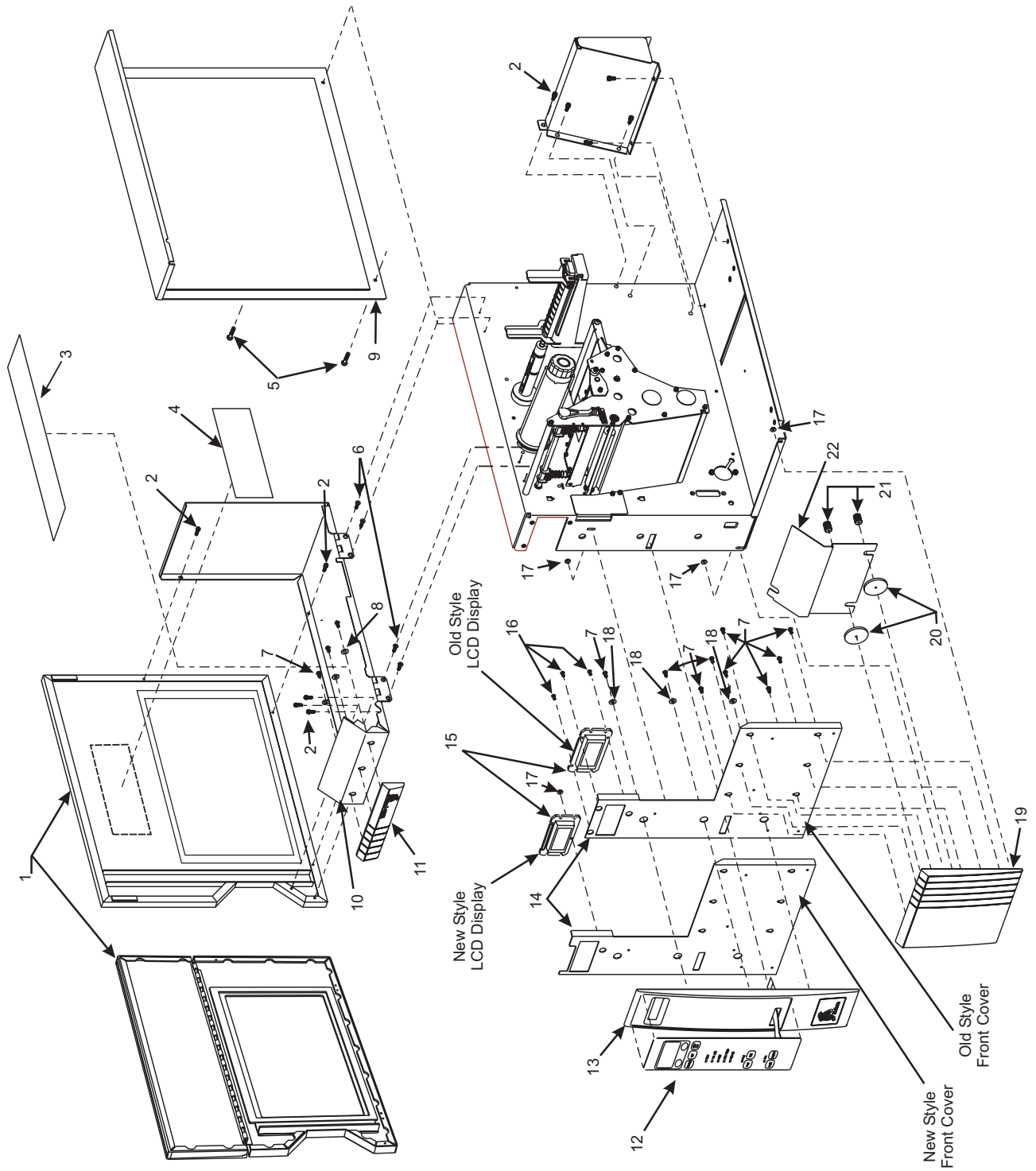


Figure 5-1. Final Assembly 90/96/140/170XIII/XIIIPlus and R-140 Mechanical

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-2. Final Assembly Electrical (XIII and R-140)

Item	Part Number	Description	Qty
1	47004M	Main Logic Board Maintenance Kit (XIII and R-140)	1
2	01130	Hex Head Washer Nut, 6–32	2
3	01117	Cable Clamp, 0.312	5
4	06222	Cable Clamp, 0.50	1
5	31336M	RTU/MTU Pulley Maintenance Kit (90/140/170/220XIII/XIIIPlus)	1
5	47358M	RTU/MTU Pulley Maintenance Kit, 600dpi (96XIII)	1
6	45189-5	Conductive Belt, 0.080P 235T (90/140/170/220XIII/XIIIPlus)	1
6	45189-12	Conductive Belt, 0.080P 245T (96XIII) (600dpi)	1
7	Q06020	Cable-Tie, 0.09W × 3.62L	1
8	40355M	Platen Pulley Maintenance Assembly (90/140/170/220XIII/XIIIPlus)	1
8	47356M	Platen Pulley Maintenance Kit 600 dpi (96XIII)	1
9	38226M	Reflect Media Sensor Maintenance Kit	1
10	46199M	Stepper Motor w/Pulley Kit (90/170XIII/XIIIPlus) (300 dpi)	1
10	46198M	Stepper Motor w/Pulley Kit (140/220XIII/XIIIPlus) (203 dpi)	1
10	46196M	Stepper Motor w/Pulley Kit (96XIII)	1
	31199M	Stepper Motor (170XIIIPlus, 203 dpi, 220XIIIPlus, 300 dpi)	1
11	45189-2	Conductive Belt, 0.080P 255T (90/140/170/220XIII/XIIIPlus)	1
11	45189-13	Conductive Belt, 0.080P 265T (96XIII)	1
12	31336M	Pulley Ribbon Take-up/Media Take-up Maintenance Kit (90/140/170XIII/XIIIPlus)	1
12	47358M	Pulley Ribbon Take-up/Media Take-up Maintenance Kit (96XIII)	1
13	46392-006	Truss-Head Phillips Screw, 6–32 × 0.37	1
14	49604-010	Power Distribution Cable	1
15	49600-010	SP Comm Cable	1
16	30914M	Peel-Off Pulley Maintenance Kit (90/140/170/220XIII/XIIIPlus)	1
16	47915M	Peel-Off Pulley Maintenance Kit (96XIII)	1
17	49790M	DC Power Supply Maintenance Kit	1
17	49990M	DC Power Supply Maintenance Kit (220XIIIPlus)	1
18	46777	AC Power Cable	1
19	04393	Beaded Cable-Tie	1
20	49780M	AC Power Supply Maintenance Kit	1
21	HW30208	Flat Washer, 0.500 × 0.191 × 0.030 (Sold in quantities of 25)	2

Bold=Part available for purchase

Italic=Part not available for purchase, listed and shown for reference only

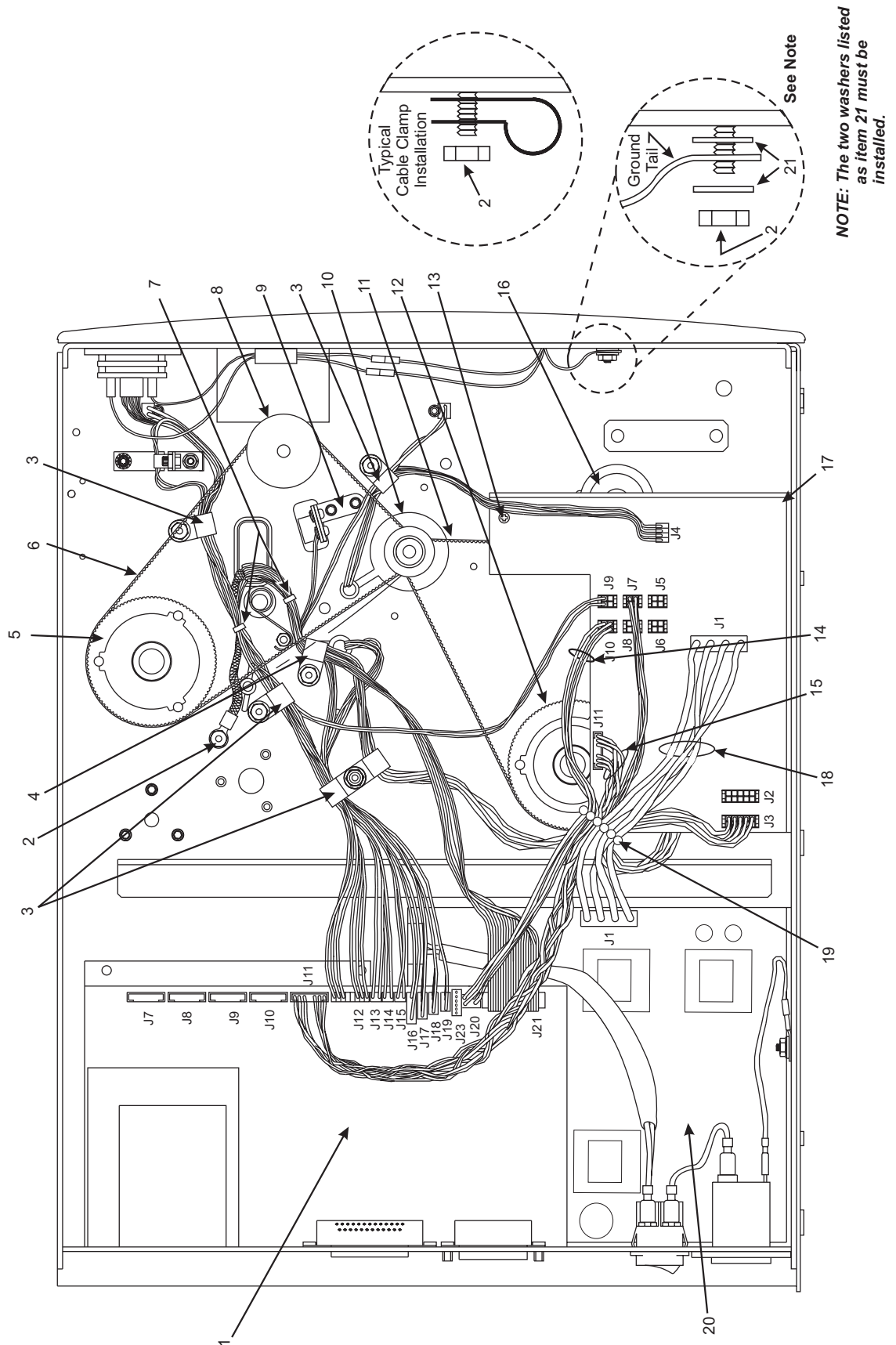


Figure 5-2. Final Assembly Electrical (XIII and R-140)

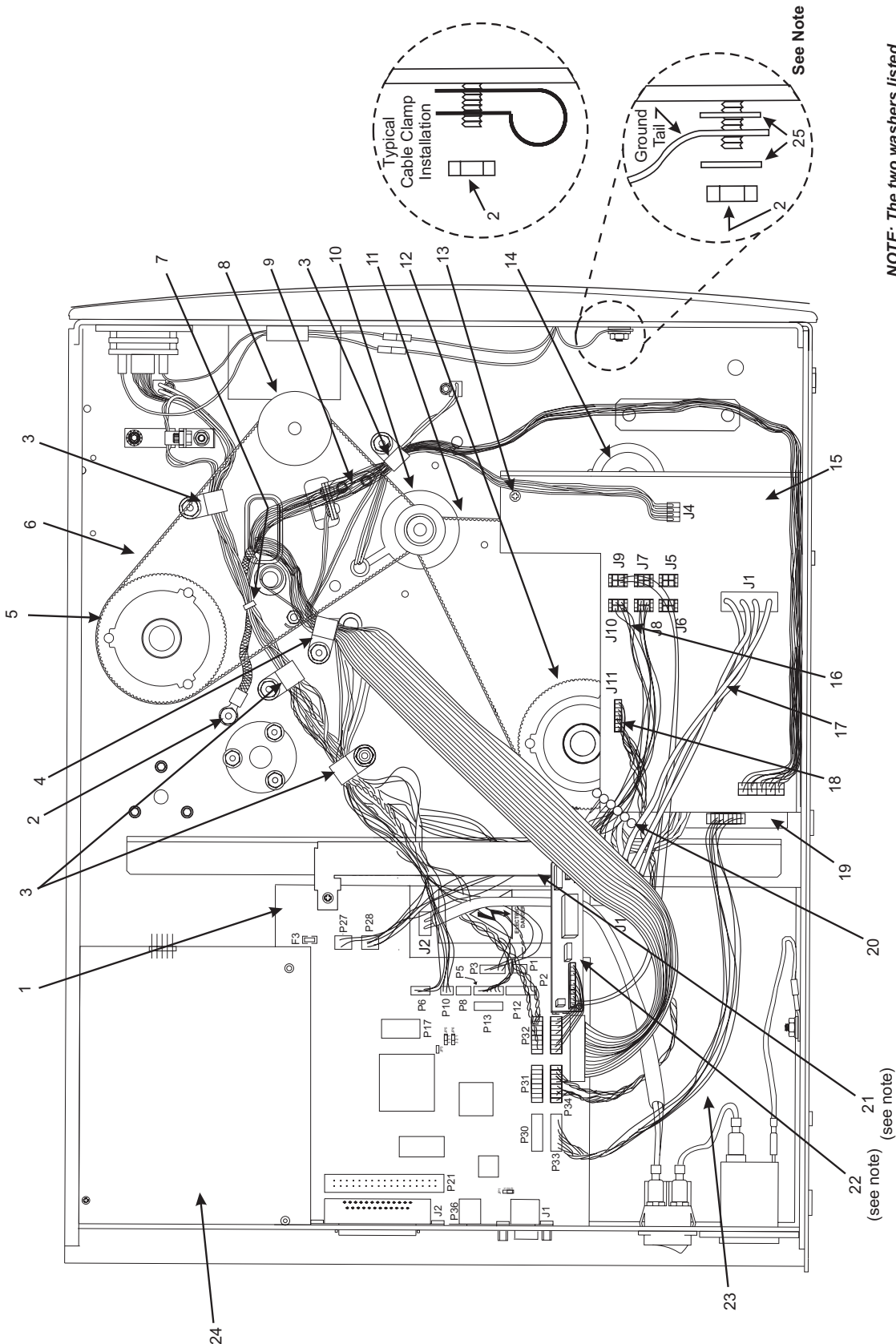
SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-3. Final Assembly Electrical (XIIIPlus)

Item	Part Number	Description	Qty
1	33008M	Main Logic Board XIIIPlus Maintenance Kit	1
2	01130	Hex Washer Head Nut, 6-32	2
3	01117	Cable-Clamp, 0.312	5
4	06222	Cable-Clamp, 0.50	1
5	31336M	RTU/MTU Pulley Maintenance Kit (90/140/170/220XIIIPlus)	1
5	33094-6M	RTU/MTU Pulley Maintenance Kit 600dpi (96XIIIPlus)	1
6	45189-5	Conductive Belt, 0.080P 235T (90/140/170/220XIIIPlus)	1
6	45189-12	Conductive Belt, 0.080P 245T (96XIIIPlus) (600dpi)	1
7	Q06020	Cable-Tie, 0.09W x 3.62L	1
8	40355M	Platen Pulley Assembly Maintenance (90/140/170/220XIIIPlus)	1
8	33079-6M	Platen Pulley Maintenance Kit 600 dpi (96XIIIPlus)	1
9	38226M	Reflect Media Sensor Maintenance Kit,	1
10	46199M	Stepper Motor w/Pulley Kit (90/170XIIIPlus) (300 dpi)	1
10	46198M	Stepper Motor w/Pulley Kit (140/220XIIIPlus) (203 dpi)	1
10	43420M	Stepper Motor (96XIIIPlus) (600 dpi)	1
10	33084M	Stepper Motor Pulley (96XIIIPlus) (600 dpi)	1
11	45189-2	Conductive Belt, 0.080P 255T (90/140/170/220XIIIPlus)	1
11	45189-13	Conductive Belt, 0.080P 265T (96XIIIPlus)	1
12	31336M	Maintenance Kit Pulley Ribbon Take-up/Media Take-up (90/140/170XIIIPlus)	1
12	33094-6M	Maintenance Pulley Kit RTU/MTU (96XIIIPlus)	1
13	46392-006	Screw, 6-32 x 0.37 Truss-Head Phillips	1
14	30914M	Peel-Off Pulley Maintenance Kit (90/140/170/220XIIIPlus)	1
14	47915M	Peel-Off Pulley Maintenance Kit (96XIII/XIIIPlus)	1
15	49790M	DC Power Supply Maintenance Kit	1
15	49990M	DC Power Supply Maintenance Kit (220XIIIPlus)	1
16	49604-010	PA Cable Power Distribution	1
17	46777	AC Power Cable	1
18	49600-010	PA Cable SP Comm	1
19	49730M	PCB Cutter Control Maintenance Kit	1
20	04393	Beaded Cable-Tie	1
21	33122	Advanced Counter Mounting Bracket (Temporary)	1
22	47020M	Advanced Counter Kit	1
23	49780M	AC Power Supply Maintenance Kit (90/96/140/170XIIIPlus)	1
24	33037M	PCMCIA PCB Assembly	1

Bold=Part available for purchase

Italic=Part not available for purchase, listed and shown for reference only



NOTE: The two washers listed as item 25 must be installed.

NOTE: The advanced counter board and mounting bracket are in some early models. If Firmware version 42.11.9 or higher is downloaded the advanced counter board is ignored and calculations are done on the main logic board.

Figure 5-3. Final Assembly XIII Plus

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-4. Final Assembly Mechanical 220XIII (View 1)

Item	Part Number	Description	Qty
1	46937	Media Door with Window	1
1	47077M	Media Door Bi-fold with Window	1
2	HW30392-004	Screw, 6–32 × 0.25 (Sold in quantities of 50)	18
3	01861	Supplies Label w/Logo	1
4	<i>22254</i>	Tip-Over Label	1
5	47097	Media Load Label	1
6	<i>32038</i>	Electronics Cover	1
7	46396-006	Screw, 6–32 × 0.37, Tr Ph S Bz	2
8	HW30407-008	Screw, 6–32 × 0.5, 3/64 Allen (Sold in quantities of 25)	4
9	HW07257	Washer, 0.438 × 0.188 × 0.036 (Sold in quantities of 25)	9
10	HW44114	Hex Screw HiLo, M4, 2 × 8 (Sold in quantities of 50)	3
11	22721M	Media Cover Maintenance Kit	1
12	22142	Name Plate 220XIII	1
12	33150-4	Name Plate 220XIIIPlus	1
13	22021	Panel Membrane Switch	1
14	22492M	Switch Panel Maintenance Kit,	1
15	22342	Old Style Front Cover, 220XIII	1
15	33036-4	New Style Front Cover, 220XIIIPlus	1
16	46755M	Old Style LCD, Back Light 220XIIIPlus (Can be used in new style front cover)	1
16	32043M	New Style LCD, Back Light 220XIIIPlus (Can not be used in old style front cover)	1
17	01130	Hex Head Washer Nut, 6-32	4
18	22491	Lower Media Trim Panel	1
19	46837	Spacer	2
20	HW30256-B	Thumb Nut, 6–32 × 0.50 Brass (Sold in quantities of 25)	2
21	22342	Front Cover Bracket	1
22	<i>22049-1</i>	Support Bracket	1
23	22304M	Cover Damper Assembly Maintenance Kit	1
24	<i>44931</i>	E-Ring, 0.218 (5.5 mm)	2
25	44288	Washer, 0.50 × 0.25 × 0.031 (13 mm × 6.5 mm × 0.79 mm)	4
26	<i>22249</i>	Pivot Pin	2
27	<i>22202</i>	Connecting Link	1
28	HW06319	Screw 10–32 × 0.37 (Sold in quantities of 25)	4
29	HW30402-006	Screw 6–32 × 0.37 (Sold in quantities of 25)	3
30	HW10474	Split Washer M4 (Sold in quantities of 25)	3
31	22203	Damper Mounting Bracket	1

Bold=Part available for purchase

Italic=Part not available for purchase, listed and shown for reference only

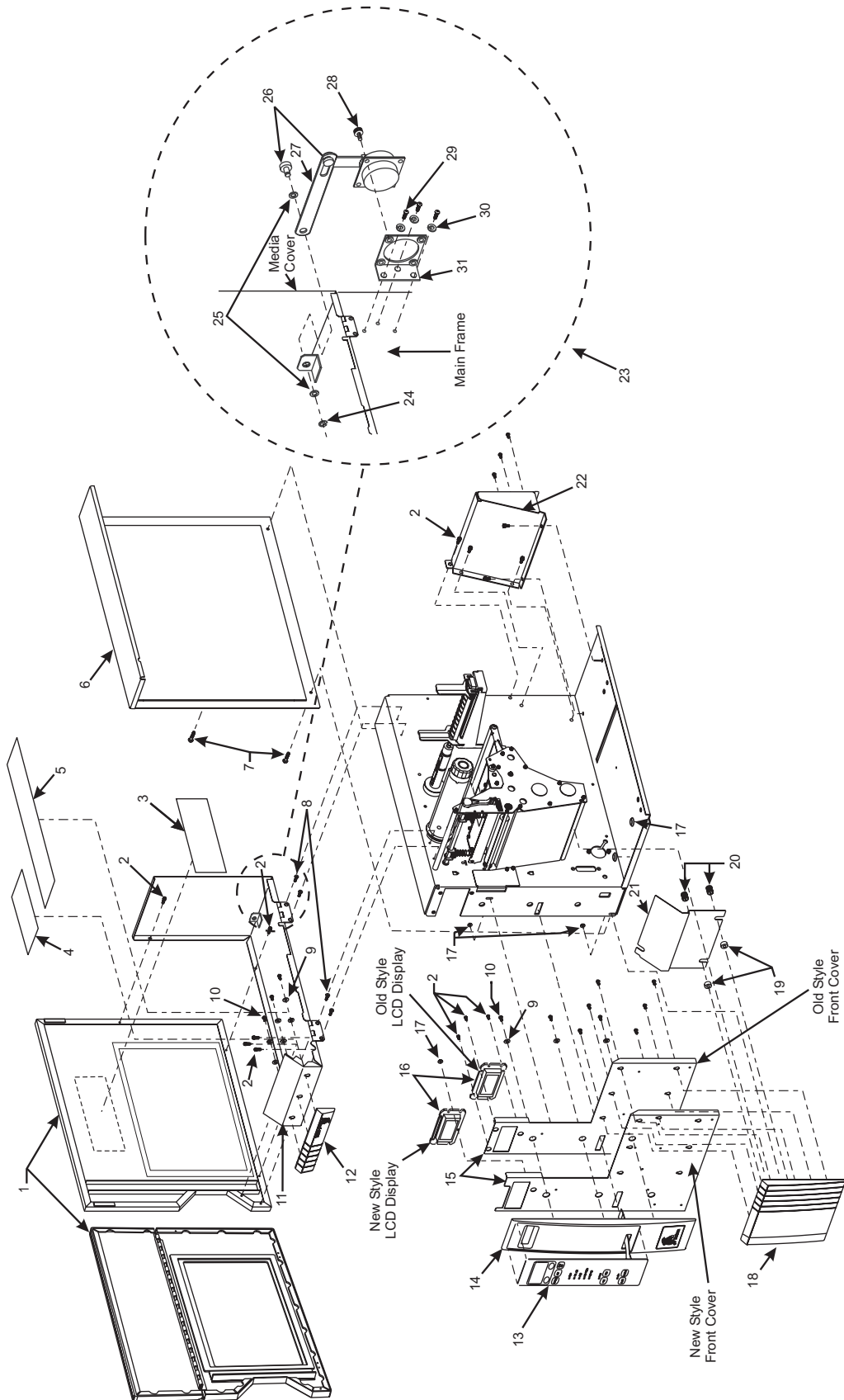


Figure 5-4. Final Assembly 220XIII Mechanical

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-5. Print Mechanism Assembly 90/96/140/170*XiIII/XiIIIPlus* and R140 (View 1)

Item	Part Number	Description	Qty
1	HW30392-004	Screw, 6–32 × 0.25 (Sold in quantities of 50)	13
2	REF	Tri Mount Shoulder	1
3	46352M	Flag Maintenance Kit	1
4	HW01130	Nut, 6–32 Hex Washer Head (Sold in quantities of 25)	1
5	22613M	Head Open Switch Assembly	1
6	30266	Head Lift Spring Stop	1
7	40462	Media Take-up Sensor Cover	2
8	HW06268	Lock Washer #6 (Sold in quantities of 25)	3
9	HW30392-006	Screw, 6–32 × 0.37 (Sold in quantities of 25)	2
10	HW48023	Bearing, 0.313 × 0.190 × 0.375 (Sold in quantities of 25)	1
11	47009-1	Roller, 0.37 0.312 × 4.437 (90/96 <i>XiIII/XiIIIPlus</i>)	1
11	47009-3	Roller, 0.37 0.312 × 6.437 (140 <i>XiIII/XiIIIPlus</i> and R-140)	1
11	47009-8	Roller, 0.37 0.312 × 8.437 (170 <i>XiIII/XiIIIPlus</i>)	1
12	30007-1	Roller, Shaft 0.187 × 4.5 (90/96 <i>XiIII/XiIIIPlus</i>)	1
12	30007-3	Roller, Shaft 0.187 × 5.60 (140 <i>XiIII/XiIIIPlus</i> and R-140)	1
12	30007-8	Roller, Shaft (170 <i>XiIII/XiIIIPlus</i>)	1
13	HW44001	Self-Tap Screw, M3.5 × 11mm w/5mm Hex Head (Sold in quantities of 25)	11
14	40355M	Platen Pulley Maintenance Assembly 90/170/220 <i>XiIII</i>	1
14	47356M	Platen Pulley Maintenance Assembly 96 <i>XiIII</i>	1
14	33079-6M	Platen Pulley Maintenance Assembly 96 <i>XiIII Plus</i>	1
15	38226	Reflective Media Sensor Maintenance Kit	1
16	HW30256-B	Thumb Nut (Sold in quantities of 25)	1
17	30305RM	Media Guide Assembly (90/96 <i>XiIII/XiIIIPlus</i>)	1
17	40305RM	Media Guide Assembly (140 <i>XiIII/XiIIIPlus</i> and R-140)	1
17	46305M	Media Guide Assembly (170 <i>XiIII/XiIIIPlus</i>)	1
18	30033	Adjustable Media Guide	1
19	46267	Hole Plug, 0.5 Diameter × 0.125 thick	12
20	46091	Grommet, for a 1.25 × 0.625 cutout	1
21	30023	Cutter Cover Plate	1
22	46224	Rubber Grommet, 0.312 × 0.34 × 0.109	1
23	46199M	Stepper Motor and Pulley Maintenance Kit (90/170 <i>XiIII/XiIIIPlus I</i>) (300 dpi)	1
23	46198M	Stepper Motor and Pulley Maintenance Kit (140/220 <i>XiIII/XiIIIPlus</i> and R-140) (203 dpi)	1
23	43420M	Stepper Motor Maintenance Kit (96 <i>XiIII</i>) (600 dpi)	1
	47357M	Pulley Maintenance Kit (96 <i>XiIII</i>) (600 dpi)	1
23	43420M	Stepper Motor Maintenance Kit (96 <i>XiIIIPlus</i>) (600 dpi)	1
	33084-6M	Pulley Maintenance Kit (96 <i>XiIIIPlus</i>) (600 dpi)	1
24	HW30393-006	Screw, 8–32 × 0.37 (Sold in quantities of 25)	4
25	49688	Flanged Ball Bearing, 0.5 × 0.250 × 0.125	2
26	HW30105	Nylon Bearing, 0.312 × 0.251 × 0.078 (Sold in quantities of 25)	1
27	HW46105	Nylon Bearing, 0.312 × 0.251 × 0.140 (Sold in quantities of 25)	1
28	46808	Peel/Tear-Off Bar (170 <i>XiIII</i>)/ <i>XiIIIPlus</i>	1
28	47808	Peel/Tear-Off Bar (90/96 <i>XiIII/XiIIIPlus</i>)	1
28	48808	Peel/Tear-Off Bar (140 <i>XiIII/XiIIIPlus</i> and R-140)	1
29	46278M	Platen Roller Maintenance Kit, 0.780 × 6.73 (170 <i>XiIII/XiIIIPlus</i>)	1
29	47601M	Platen Roller Maintenance Kit, 0.788 × 3.588 (90/96 <i>XiIII/XiIIIPlus</i>)	1
29	40038M	Platen Roller Maintenance Kit, 0.78 × 5.213 (140 <i>XiIII/XiIIIPlus</i> and R-140)	1

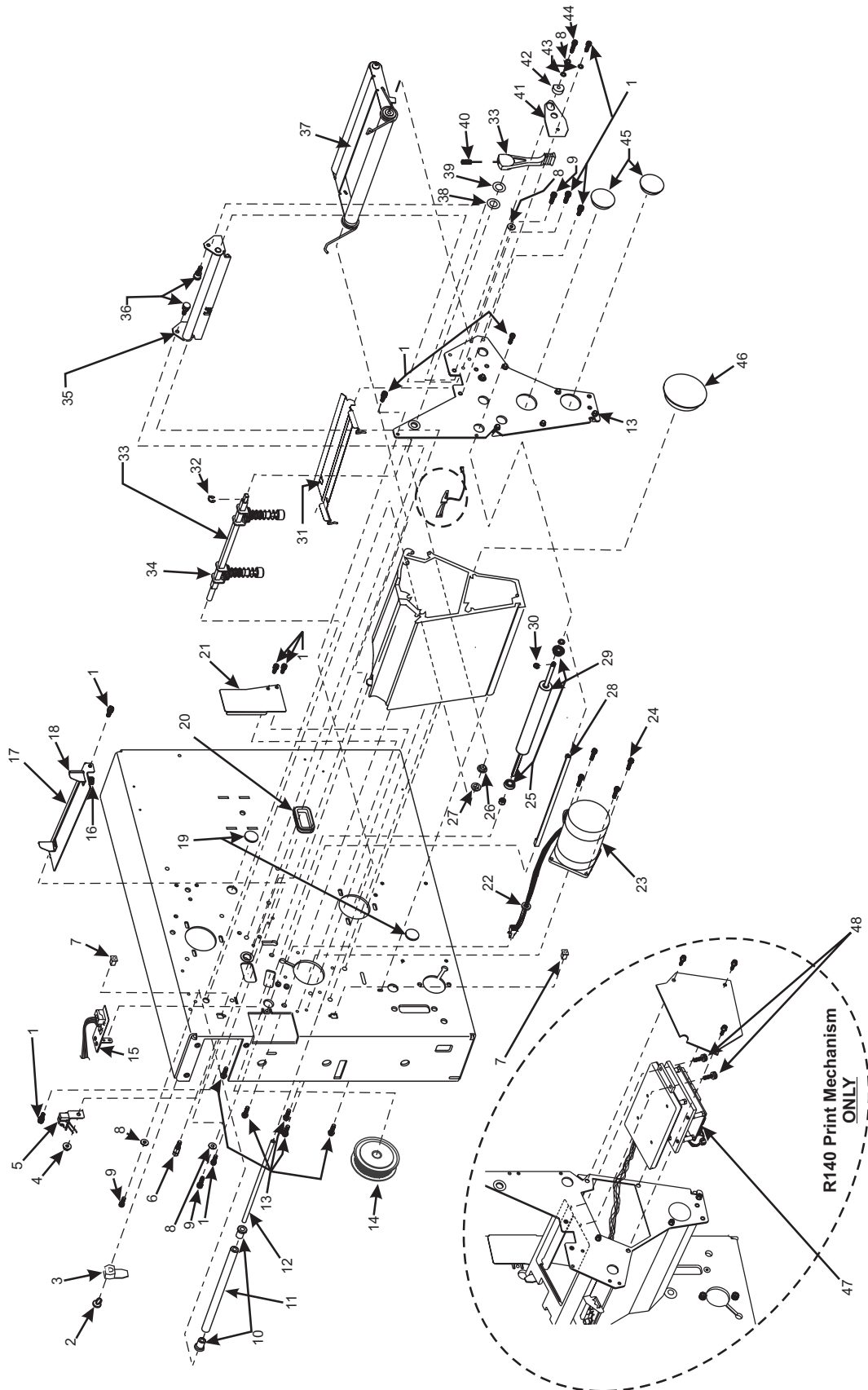


Figure 5-5. Print Mechanism for 90/96/140/170XiIIIPlus and R-140 (View 1)

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-5. Print Mechanism Assembly 90/96/140/170*XiIII/XiIIIPlus* and R140 (View 1)
(Continued)

Item	Part Number	Description	Qty
30	HW02252	Crescent Ring, 0.250 Yel (Sold in quantities of 100)	2
31	48076	Upper Media Guide (Snap Plate) (90/96 <i>XiIII/XiIIIPlus</i>)	1
31	48043-1	Upper Media Guide (Snap Plate) (170 <i>XiIII/XiIIIPlus</i>)	1
31	48043-2	Upper Media Guide (Snap Plate) (140 <i>XiIII/XiIIIPlus</i>)	1
31	48090M	Upper Media Guide (Snap Plate) R-140	1
32	HWQ10019	E-Ring, Ext, 0.250 (Sold in quantities of 100)	1
33	38202M	Pivot Bar Kit (170 <i>XiIII/XiIIIPlus</i>)	1
33	47202M	Pivot Bar Kit (90 <i>XiIII</i> 96 <i>XiIII/XiIIIPlus</i>)	1
33	48202M	Pivot Bar Kit (140 <i>XiIII/XiIIIPlus</i> and R-140)	1
34	35099M	Toggle Assembly Maintenance	1 or 2
35	46302-4M	Media Sensor Maintenance Kit (170 <i>XiIII/XiIIIPlus</i>), (Includes Upper and Lower Sensor)	1
35	47302-4M	Media Sensor Maintenance Kit (90/96 <i>XiIII/XiIIIPlus</i>), (Includes Upper and Lower Sensor)	1
35	48302-4M	Media Sensor Maintenance Kit (140 <i>XiIII/XiIIIPlus</i> and R-140), (Includes Upper and Lower Sensor)	1
36	HW48411	Thumb Screw (Sold in quantities of 10)	2
37	46691-1M	Dancer Arm Assembly Maintenance Kit, w/Springs (90/96 <i>XiIII/XiIIIPlus</i>)	1
37	46691-2M	Dancer Arm Assembly Maintenance Kit, w/Springs (140 <i>XiIII/XiIIIPlus</i> and R-140)	1
37	46691-3M	Dancer Arm Assembly Maintenance Kit, w/Springs (170 <i>XiIII/XiIIIPlus</i>)	1
38	33189	Washer,	1
39	HW07229	Wave Washer, 0.49 × 0.33 × 0.0075 (Sold in quantities of 50)	1
40	HW30423-003	Set Screw, 8-32 × 0.187 (Sold in quantities of 25)	1
41	40248	Shaft Wear Plate	1
42	40154	Eccentric Pin	1
43	HW30956	Flat Washer 0.207 × 0.146 × 0.030 (Sold in quantities of 10)	2
44	HW30392-008	Screw, 6-32 × 0.50 (Sold in quantities of 25)	1
45	30826	Hole Plug	2
46	<i>30255</i>	Hole Plug	1
47	48888M	RFID Maintenance Kit	1
48	<i>48062</i>	Screw, M3 × 0.5 Nylon	1

Bold=Part available for purchase

Italic=Part not available for purchase, listed and shown for reference only



SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-6. Print Mechanism for 90/96/140/170*XiIII*/*XiIIIPlus* and R140 (View 2)

Item	Part Number	Description	Qty
1	HW30118	E-Ring Ext, 0.500 × 0.042 (Sold in quantities of 25)	1
2	31336M	RTU/MTU Pulley Maintenance Kit (90 <i>XiIII</i> , 140 <i>XiIII</i> , and 170 <i>XiIII</i>)	1
2	47358M	RTU/MTU Pulley Maintenance Kit (96 <i>XiIII</i>)	1
2	330946M	RTU/MTU Pulley Maintenance Kit (96 <i>XiIIIPlus</i>)	1
3	HW30114	Flat Washer, 0.76 × 0.51 × 0.03 (Sold in quantities of 25)	1
4	HW30115	Wave Washer, 0.740 × 0.520 × 0.080 (Sold in quantities of 25)	1
5	HW06250	E-Ring EXT, 0.312 Yel (Sold in quantities of 25)	1
6	HW40027	Torsion Spring (Sold in quantities of 25)	1
7	HW30106	Crescent Ring, External, 0.312 (Sold in quantities of 25)	1
8	HW30393-006	Screw, 8--32 × 0.37 (Sold in quantities of 25)	6
9	HW40193	Flat Washer, 0.406 × 0.172 × 0.048 (Sold in quantities of 25)	3
10	HW30405-006	Cap Screw, 1/4--20 × 0.75 (Sold in quantities of 25)	1
11	HW30466	Washer, 0.26 × 0.63 × 0.06 (Sold in quantities of 25)	1
12	<i>46386</i>	Media Supply Support	1
13	46253M	Media Supply Spindle Kit, 3-Inch (170 <i>XiIII</i> / <i>XiIIIPlus</i>) (Optional)	1
13	46044M	Media Supply Spindle Kit, 40mm (170 <i>XiIII</i> / <i>XiIIIPlus</i>) (Optional)	1
13	47253M	Media Supply Spindle Kit, 3-Inch (90/96 <i>XiIII</i> / <i>XiIIIPlus</i>) (Optional)	1
13	47044M	Media Supply Spindle Kit, 40mm (90/96 <i>XiIII</i> / <i>XiIIIPlus</i>) (Optional)	1
13	48253M	Media Supply Spindle Kit, 3-Inch (140 <i>XiIII</i> / <i>XiIIIPlus</i>) (Optional)	1
13	48044M	Media Supply Spindle Kit, 40mm (140 <i>XiIII</i> / <i>XiIIIPlus</i>) (Optional)	1
14	HW30239	Washer, Crescent, 0.415 × 323 × 0.062 (Sold in quantities of 25)	1
15	46151M	Spindle Ribbon Supply Maintenance Kit (170 <i>XiIII</i> / <i>XiIIIPlus</i>)	1
15	47151M	Spindle Ribbon Supply Maintenance Kit ((90/96 <i>XiIII</i> / <i>XiIIIPlus</i>)	1
15	48151M	Spindle Ribbon Supply Maintenance Kit ((140 <i>XiIII</i> / <i>XiIIIPlus</i>)	1
16	46350	Enhanced Ribbon Take-Up Upgrade Kit (170 <i>XiIII</i> / <i>XiIIIPlus</i>)	1
16	47250	Enhanced Ribbon Take-Up Upgrade Kit (90/96 <i>XiIII</i> / <i>XiIIIPlus</i>)	1
16	48250	Enhanced Ribbon Take-Up Upgrade Kit (140 <i>XiIII</i> / <i>XiIIIPlus</i>)	1
17	46813-7M	Compliant Roller Maintenance Kit (170 <i>XiIII</i> / <i>XiIIIPlus</i> Only)	1
18	HW30392-004	Screw, 6-32, 0.25 (Sold in quantities of 50)	2
19	01130	Hex Head Washer Nut, 6--32	3

Bold=Part available for purchase

Italic=Part not available for purchase, listed and shown for reference only

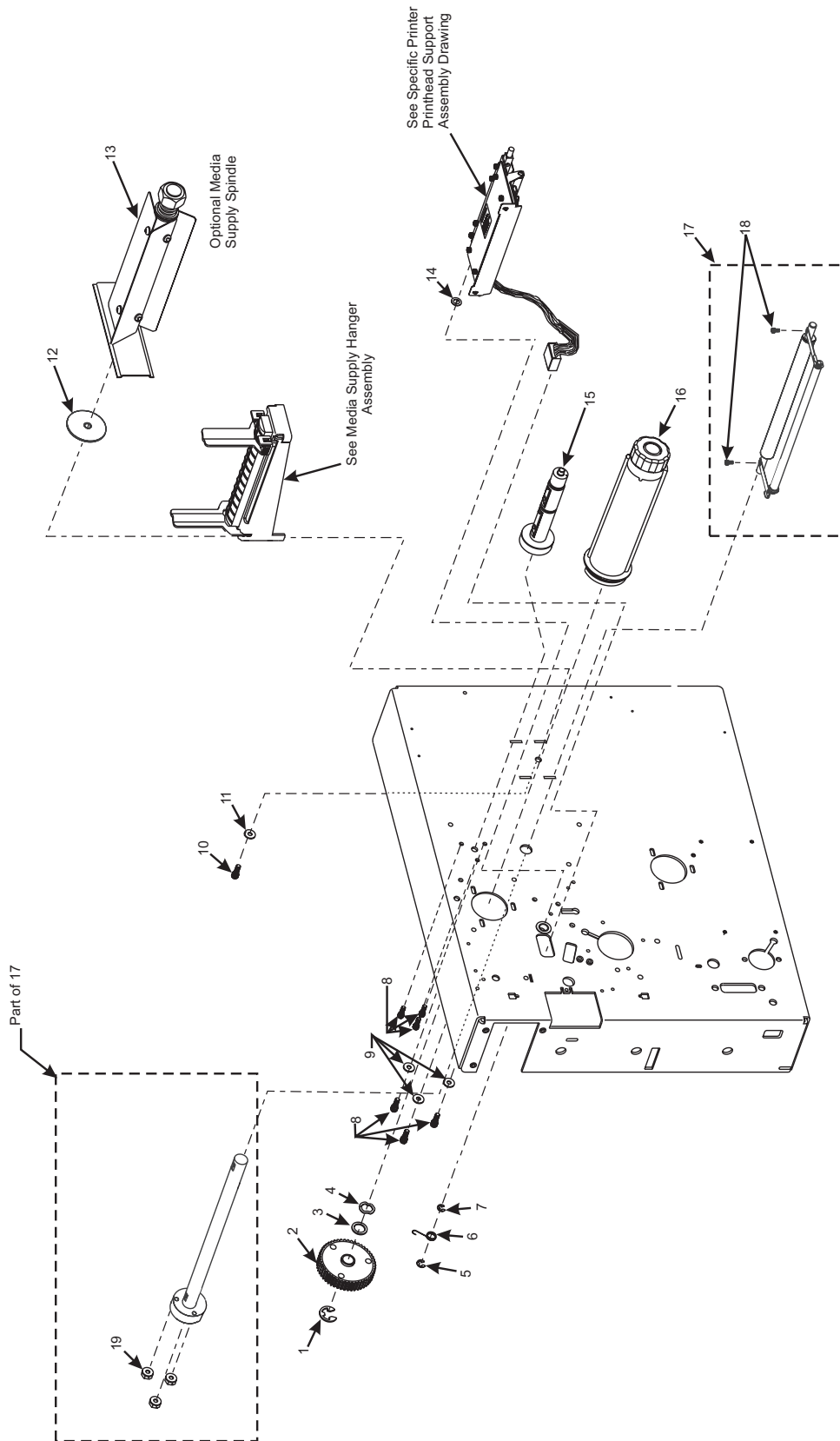


Figure 5-6. Print Mechanism for 90/96/140/170XIII/XIIIPlus and R-140 (View 2)

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-7. Print Mechanism X/III (View 3)

Item	Part Number	Description	Qty
1	47004M	Main Logic Board Maintenance Kit	1
2	HW30391-003	Screw, 4-40 x 0.19 (Sold in quantities of 25)	4
3	49036-1	Option Board Cover	1
4	49605-009	Power Switch Cable	1
5	49669	Power Switch	1
6	HW30406-006	Screw, 4-40 x 0.375 (Sold in quantities of 25)	2
7	49673	Power Entry w/Fuse and Ground Wire	1
8	49699-01	Cable (Brown)	1
9	49699-06	Cable (Blue)	1
10	HW46392-006	Truss Head Phillips Screw, 6-32 x 0.37 (Sold in quantities of 25)	7
11	HW01159	Lock Washer, #6 (Sold in quantities of 100)	1
12	HW01130	Hex Washer Head Nut, 6-32 (Sold in quantities of 25)	3
13	HW22416	Hex Standoff, 4-40 (Sold in quantities of 25)	2
14	HW01155	Lock Washer, #6 (Sold in quantities of 100)	2
15	HW07696	Screw, 4-40 x 0.31 (Sold in quantities of 25)	2
16	HW30236	Screw, 4-40 x 0.25 (Sold in quantities of 25)	1
17	49013	Memory Card Cover, (PCMCIA)	1
18	<i>46148</i>	Rear Panel	1
19	47020M	Counter Board Maintenance Kit	1
20	49313	Top Spacer (AC Power Supply)	2
21	HW01822	Nut, 4-40 (Sold in quantities of 25)	5
22	49780M	AC Power Supply Maintenance Kit	1
23	<i>49285</i>	Insulation Pad (AC Power Supply)	1
24	30253	Options Cover Plate	1
25	30023	Cutter Cover Plate	1
26	HW30405-006	Screw, 1/4-20 x 0.38 (Sold in quantities of 25)	1
27	HW30466	Washer, 0.26 x 0.63 x 0.06 (Sold in quantities of 25)	1
28	HW30393-006	Screw, 8-32 x 0.37 (Sold in quantities of 25)	5
28	<i>30393-010</i>	Screw, 8-32 x 0.62 (220X/III)	3
29	30407-004	Screw, 6-32 x 0.25	2
30	49990	DC Power Supply Maintenance Kit (90/96/140/170X/III)	1
30	49790M	DC Power Supply Maintenance Kit (220X/III)	1
31	HW46015	Bumper (Sold in quantities of 25)	4
32	HW08754	Eye, 0.183 x 0.157 x 0.187 (Sold in quantities of 100)	4
33	HW07435	Hex Lock Screw, 6-32 x 0.37 (Sold in quantities of 100)	4
34	49286	Insulation Pad (DC Power Supply)	1

Bold=Part available for purchase

Italic=Part not available for purchase, listed and shown for reference only

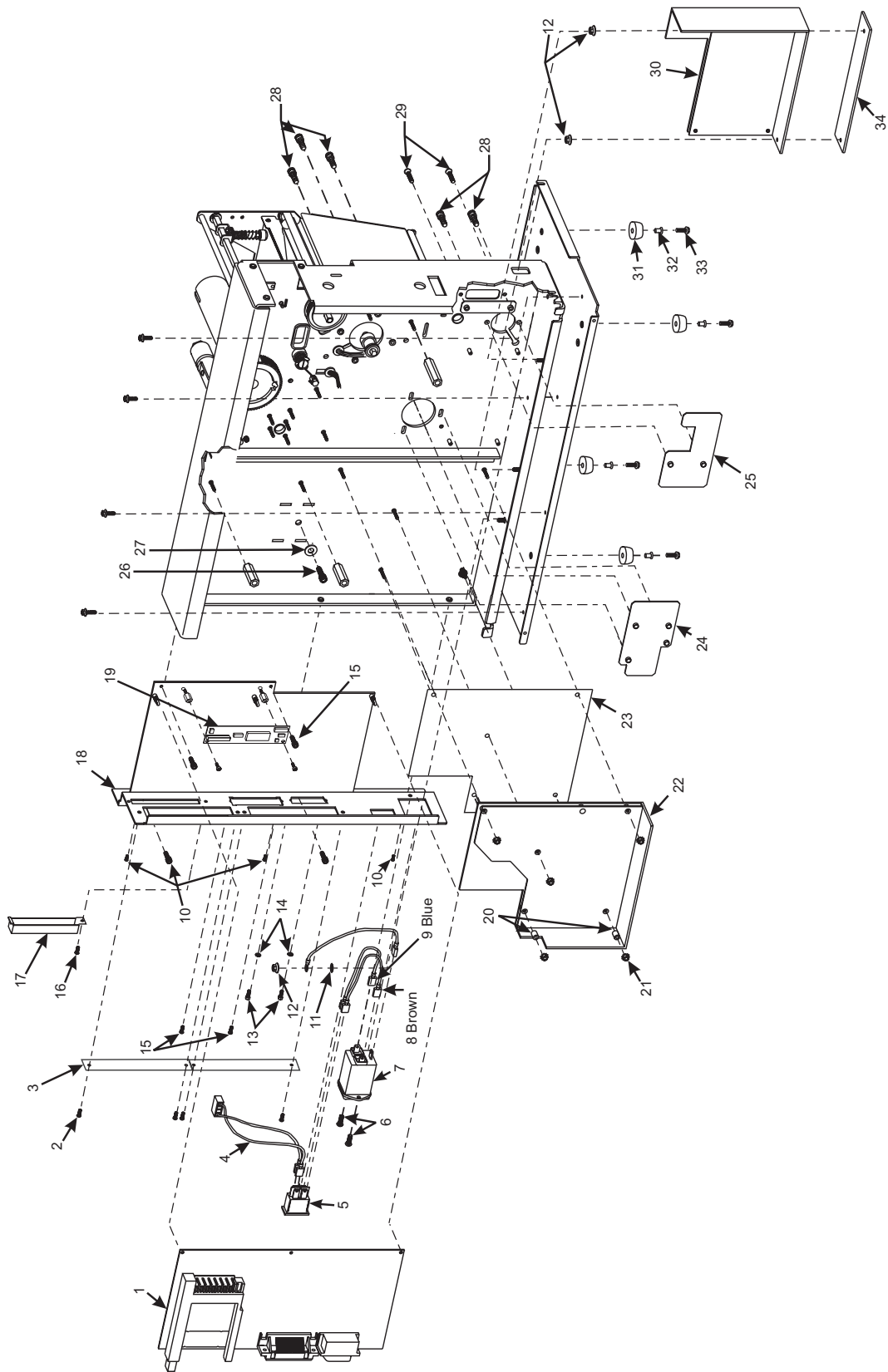


Figure 5-7. Print Mechanism X1111 Printers (View 3)

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-8. Print Mechanism *XiIIIPlus* (View 3)

Item	Part Number	Description	Qty
1	38000M	Main Logic Board Maintenance Kit	1
2	HW30391-003	Screw, 4-40 x 0.19 (Sold in quantities of 25)	4
3	<i>49036-1</i>	Option Board Cover	1
4	<i>33127-012</i>	Power Switch Cable	1
5	<i>33123</i>	Power Switch	1
6	HW30406-006	Screw, 4-40 x 0.375	2
7	49673	Power Entry w/Fuse and Ground Wire	1
8	<i>33147-01</i>	Cable (Brown)	1
9	<i>33147-06</i>	Cable (Blue)	1
10	HW46392-006	Truss Head Phillips Screw 6-32 x 0.37 (Sold in quantities of 25)	7
11	HW01159	Hex Washer Head Lock Washer #6 (Sold in quantities of 100)	1
12	HW01130	Nut, 6-32 (Sold in quantities of 25)	3
13	HW22416	Hex Standoff, 4-40 (Sold in quantities of 25)	2
14	HW01155	Lock Washer, #6 (Sold in quantities of 100)	2
15	HW07696	Screw, 4-40 x 0.31 (Sold in quantities of 25)	2
16	33112	Memory Card Cover (PCMCIA)	1
17	<i>33104</i>	Rear Panel	1
18	HW06319	Screw, 10-32 x 0.37 Hex (Sold in quantities of 25)	4
19	HW49313	Top Spacer (AC Power Supply) (Sold in quantities of 25)	2
20	HW01822	Nut, 4-40 (Sold in quantities of 25)	5
21	49780M	AC Power Supply Maintenance Kit	1
22	49285	Insulation Pad (AC Power Supply)	1
23	30253	Options Cover Plate	1
24	46254	Cutter Cover Plate	1
25	<i>33325-1</i>	Spacer 4-40 x 1.37	1
26	HW30405-006	Screw, 1/4-20 x 0.38 (Sold in quantities of 25)	1
27	HW30466	Washer, 0.26 x 0.63 x 0.06 (Sold in quantities of 25)	1
28	<i>46325-5</i>	Spacer, 6-32 x 1.56 x 0.357	1
29	HW30393-006	Screw, 8-32 x 0.37 (Sold in quantities of 25)	5
30	<i>30393-010</i>	Screw, 8-32 x 0.62 (<i>220XiIIIPlus</i>)	3
30	<i>30407-004</i>	Screw, 6-32 x 0.25	2
31	HW46015	Bumper (Sold in quantities of 25)	4
32	HW07435	Hex Lock Screw, 6-32 x 0.37 (Sold in quantities of 100)	4
33	49990M	DC Power Supply Maintenance Kit (90/96/140/170 <i>XiIIIPlus</i>)	1
33	49790M	DC Power Supply Maintenance Kit (<i>220XiIIIPlus</i>)	1
34	49286	Insulation Pad (DC Power Supply)	1
35	30236	Screw, 4-40 x 0.25	2
36	<i>33291</i>	Spacer, 0.250 x 0.140 x 0.313	2
37	33037M	PCMCIA Board	1
37	79094	Wireless PCMCIA Board	1
38	<i>45798-010</i>	Screw, 4-40 x 10	2
39	78114	Nut, 4-40 x 0.25 x 0.25	2

Bold=Part available for purchase
Italic=Part not available for purchase, listed and shown for reference only

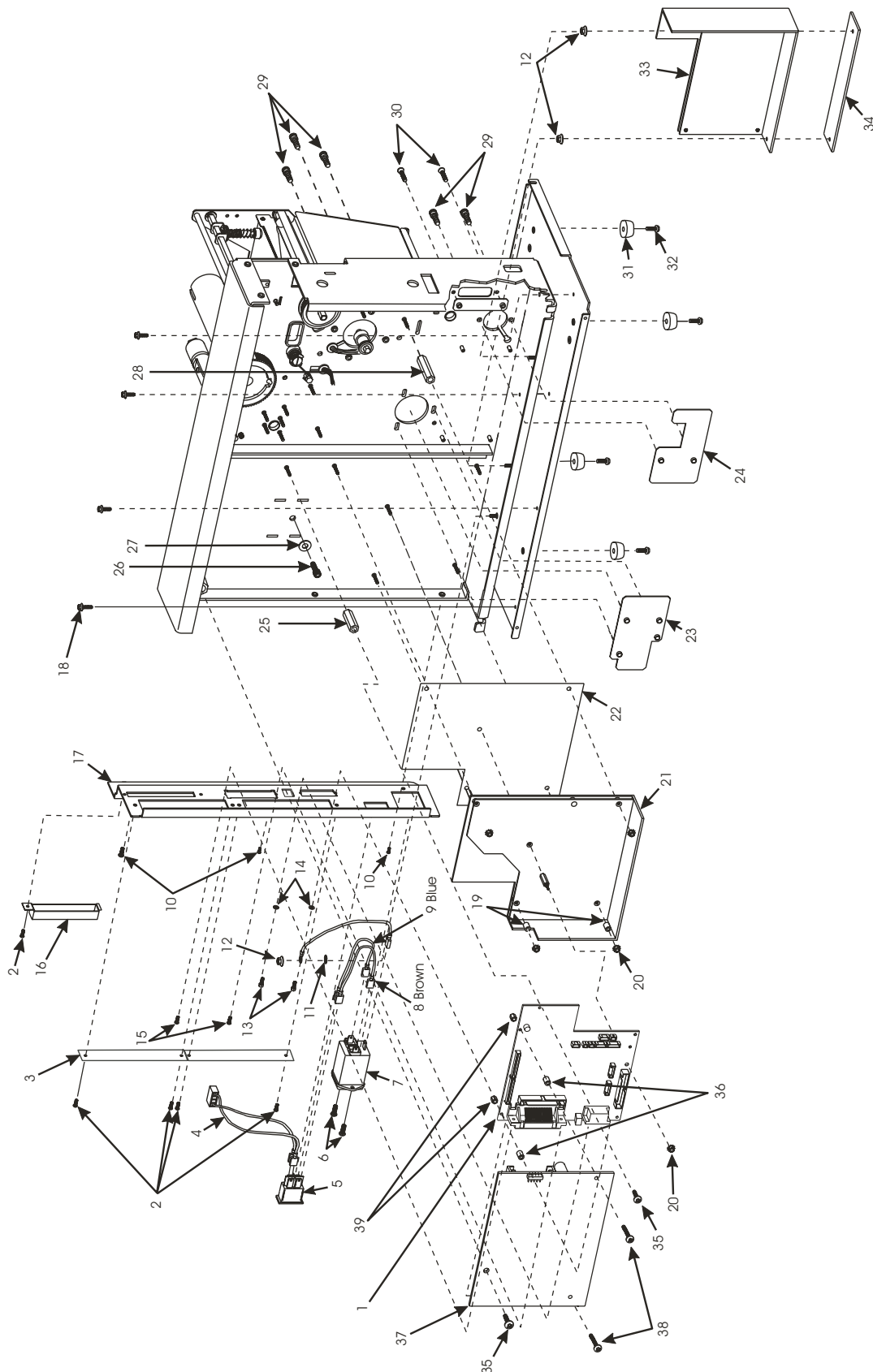


Figure 5-8. Print Mechanism *X111Plus* (View 3)

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-9. Print Mechanism 220XIII (View 1)

Item	Part Number	Description	Qty
1	46091	Grommet (for 1.25 x 0.625 cutout)	2
2	HW30392-004	Screw, 6-32 x 0.25 (Sold in quantities of 50)	13
3	REF	Tri Mount Shoulder	1
4	46352M	Maintenance Kit Flag	1
5	01130	Hex-Head Washer Nut, 6-32	1
6	30353M	Head Open Switch Assembly, Maintenance	1
7	46896	Bushing	2
8	HW46128	Flat Washer, Nylon, 0.505 x 0.192 x 0.015 (Sold in quantities of 25)	2
9	HW48023	Bearing, 0.313 x 0.190 x 0.375 (Sold in quantities of 25)	2
10	30009-10	Roller 0.37 x 0.312	1
11	30007-9	Roller Shaft	1
12	HW30392-008	Screw, 6-32 x 0.50 (Sold in quantities of 25)	2
13	HW30392-006	Screw, 6-32 x 0.25 (Sold in quantities of 25)	2
14	HW06268	Lock Washer, #6 (Sold in quantities of 25)	3
15	40462	Take-Label Sensor Cover	2
16	22266	Spring Stop	1
17	HW44001	Self-Tap Screw, 3.5 x 11 mm with 5 mm Hex Head (Sold in quantities of 25)	11
18	40355M	Platen Pulley Assembly, Maintenance	1
19	22004-2	Spacer	1
20	38226M	Reflective Media Sensor Maintenance Kit	1
21	40462	Expansion Nut, 8/10	1
22	HW30256-B	Thumb Nut, Brass, 6-32 x 0.50 (Sold in quantities of 25)	2
23	22305M	Media Guide Maintenance Kit	1
24	30033	Adjustable Media Guide	1
25	22304M	Damper Cover Maintenance Kit	1
26	HW30402-006	Screw, 6-32 x 0.37 (Sold in quantities of 25)	1
27	46267	Hole Plug, 0.5 Diameter x 0.125 Thick	3
28	46224	Rubber Grommet, 0.312 x 0.34 x 0.109	2
29	31493M	DC Stepper Motor Maintenance Kit	1
30	HW30393-006	Screw, 8-32 x 0.37 (Sold in quantities of 25)	1
31	22808	Peel/Tear-Off Bar	1
32	49688	Flange Ball Bearing, 0.5 x 0.250 x 0.125	2
33	HW30105	Nylon Bearing, 0.312 x 0.251 x 0.078 (Sold in quantities of 25)	1
34	HW46105	Nylon Bearing, 0.312 x 0.251 x 0.140 (Sold in quantities of 25)	1
35	HW30247	Flat Washer, 0.42 x 0.260 x 0.0747 (Sold in quantities of 25)	1
36	HW02252	Crescent Ring, 0.250 (Sold in quantities of 100)	1

Bold=Part available for purchase

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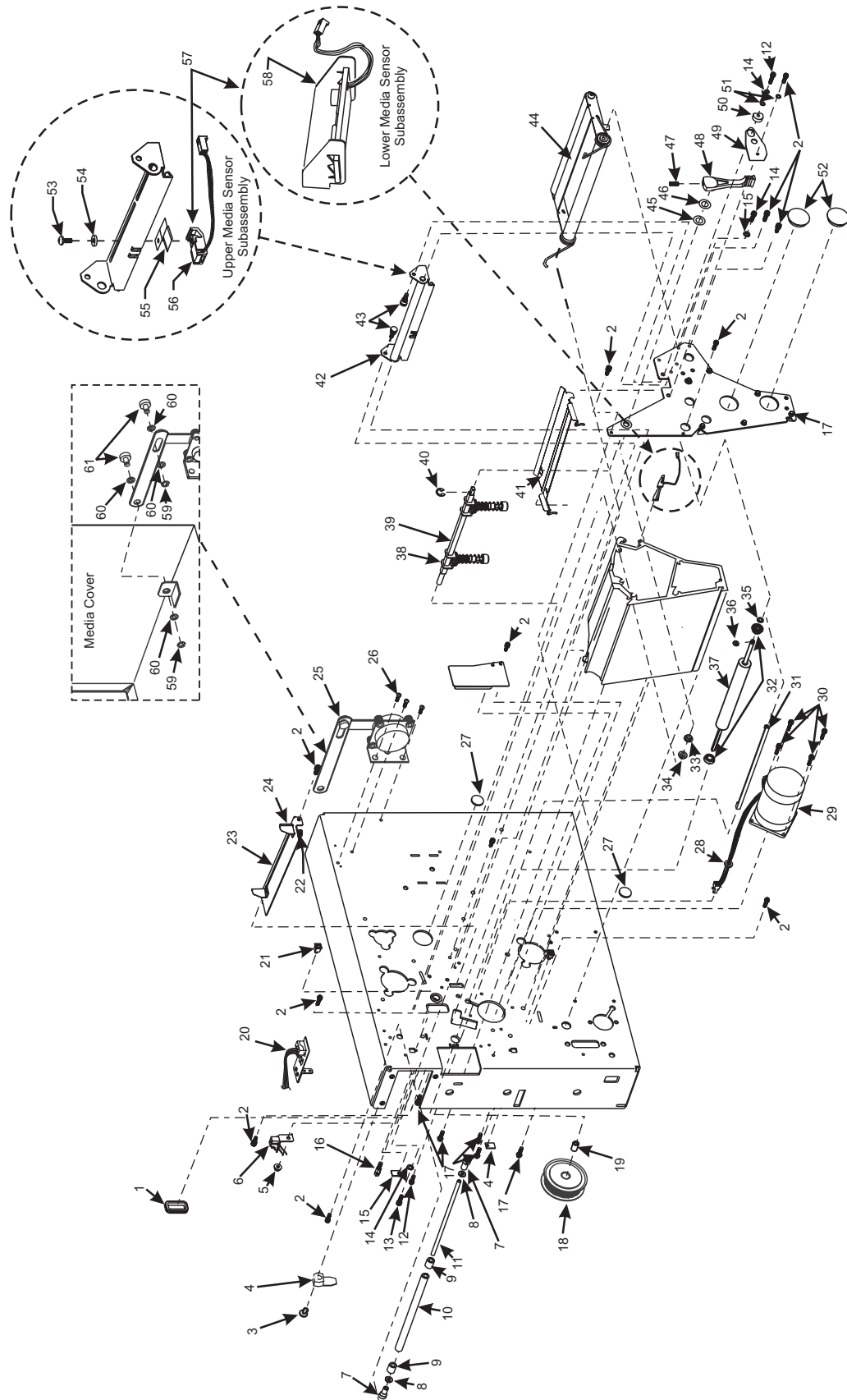


Figure 5-9. Print Mechanism 220XIII (View 1)

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-9. Print Mechanism 220XIII (View 1) (Continued)

Item	Part Number	Description	Qty
37	22101M	Platen Roller Maintenance Kit, 0.780 x 8.73	1
38	30599M	Toggle Assembly, Maintenance	2
39	22222M	Bar Pivot Maintenance Kit	1
40	Q10019	E-ring, Ext 0.250	1
41	48043-4	Upper Media Guide Plate (Snap Plate)	1
42	22302M	Media Sensor Maintenance Kit	1
43	HW48411	Thumb Screw (Sold in quantities of 10)	2
44	22391M	Dancer Arm Assembly, w/Springs	1
45	<i>33189</i>	Washer	1
46	HW07229	Curved Washer, 0.49 x 0.33 x 0.0075 (Sold in quantities of 50)	1
47	HW30423-003	Set Screw 8-32 x 0.187 (Sold in quantities of 25)	1
48	<i>30909</i>	Handle	1
49	40248	Wear Shaft Plate	1
50	40154	Eccentric Pin	1
51	30956	Flat Washer, 0.207 x 0.146 x 0.030	2
52	30826	Hole Plug	2
53	30236	Screw, 40/40	1
54	30494	Washer, 0.32 x 0.119 x 0.062	1
55	40031	Sensor Wire Cover	1
56	<i>46663</i>	Upper Media Sensor Assembly	1
57	22302M	Media Sensors Maintenance Kit	1
58	<i>46664</i>	Lower Media Sensor Assembly	1
59	<i>44931</i>	E-ring, 0.218	2
60	HW44288	Washer, 0.50 x 0.25 x 0.031 (Sold in quantities of 25)	4
61	<i>22249</i>	Pivot Pin	2

Bold=Part available for purchase

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SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-10. Print Mechanism 220XIII/XIIIPlus (View 2)

Item	Part Number	Description	Qty
1	HW30118	E-ring 0.500 × 0.042 (Sold in quantities of 25)	1
2	31336M	RTU/MTU Pulley Maintenance Kit	1
3	HW30114	Flat Washer 0.76 × 0.51 × 0.03 (Sold in quantities of 25)	1
4	HW30115	Wave Washer 0.740 × 0.520 × 0.080 (Sold in quantities of 25)	1
5	HW06250	E-ring 0.312 Yel (Sold in quantities of 25)	1
6	HW40027	Torsion Spring (Sold in quantities of 25)	1
7	HW30106	Crescent Ring, External 0.312 (Sold in quantities of 25)	1
8	30265	Idler Pulley	1
9	22207	Idler Pulley Shaft	1
10	HW30393-006	Screw, 8-32 × 0.37 (Sold in quantities of 25)	5
11	HW40193	Flat Washer 0.406 × 0.172 × 0.048 (Sold in quantities of 25)	4
12	30405-006	Srew, 1/4-20 × 0.38	1
13	HW30466	Washer, 0.26 × 0.63 × 0.06 (Sold in quantities of 25)	1
14	HW30392-004	Screw, 6-32 × 0.25 (Sold in quantities of 50)	1
15	<i>22334</i>	Media Supply Support	1
16	22253M	Media Supply Spindle Maintenance Kit	1
17	HW30239	Crescent Washer 0.415 × 0.323 × 0.062 (Sold in quantities of 25)	1
18	22151M	Ribbon Supply Spindle Maintenance Kit	1
19	22250	Enhanced Ribbon Take-up Kit	1
20	22213-7M	Compliant Roller Maintenance Kit	1
21	<i>30392-014</i>	Screw, 6-32 × 0.87	3

Bold=Part available for purchase

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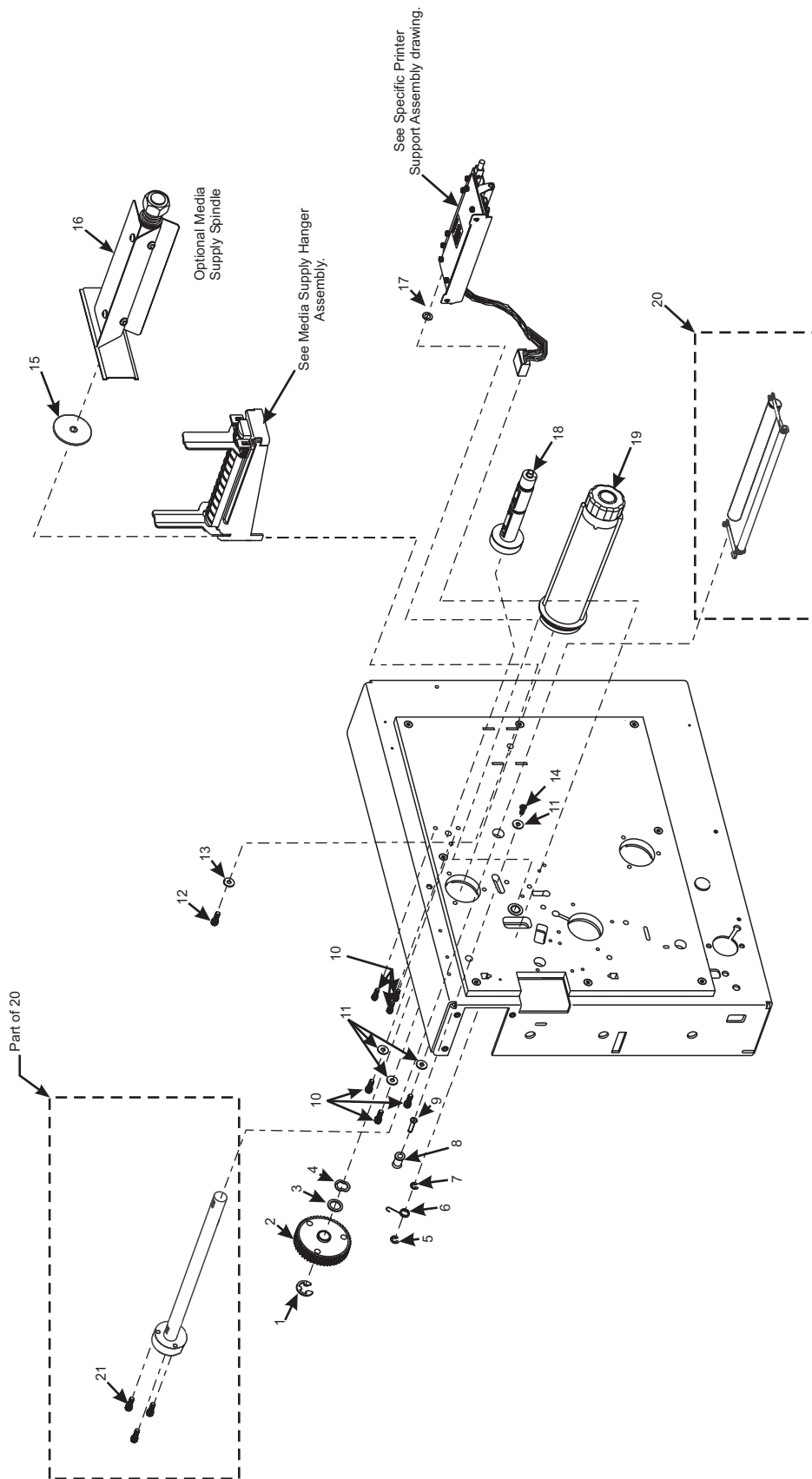


Figure 5-10. Print Mechanism 220XiIII/XiIIIPlus (View 2)

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-11. Printhead Support Assembly 90/96/140/170XiIII/XiIIIPlus and R-140

Item	Part Number	Description	Qty
1	47181	Pressure Pad (90/96XiIII/XiIIIPlus)	1
1	48181	Pressure Pad (140XiIII/XiIIIPlus and R-140)	1
1	46181	Pressure Pad (170XiIII/XiIIIPlus)	1
2	HW30392-004	Screw, 6-32 x 0.25 (Sold in quantities of 50)	10
3	30781	Printhead Ground Cable	1
4	HW01159	Flat Washer, 0.250 x 0.125 x 0.028 (Sold in quantities of 100)	4
5	HW48182	Snap Rivet, 0.138 x 0.08 Plastic (Sold in quantities of 10)	2
6	30314R	Adhesive	1
6	30007-5	Roller Shaft, 0.187 x 4.105 (90/96XiIII/XiIIIPlus)	1
6	30007-4	Roller Shaft, 0.187 x 5.875 (140XiIII/XiIIIPlus and R-140)	1
7	30007-7	Roller Shaft (170XiIII/XiIIIPlus)	1
8	HW46882-003	Screw, 4-40 x 3/16 (Sold in quantities of 100)	2
8	47017	Ribbon Strip Plate (90/96XiIII/XiIIIPlus)	1
8	48017	Ribbon Strip Plate (140XiIII/XiIIIPlus and R-140)	1
9	46017	Ribbon Strip Plate (170XiIII/XiIIIPlus)	1
9	48099-2	Roller, 0.332 x 0.212 x 4.050 (90/96XiIII/XiIIIPlus)	1
9	48099-5	Roller, 0.332 x 0.212 x 5.820 (140XiIII/XiIIIPlus and R-140)	1
10	48099-7	Roller, 0.332 x 0.212 x 7.796 (170XiIII/XiIIIPlus)	1
11	22016	Captive Fastener M3 Press-In	1
11	47212	Pressure Plate (90/96XiIII/XiIIIPlus)	1
11	48215	Pressure Plate (140XiIII/XiIIIPlus and R-140)	1
12	46170	Pressure Plate (170XiIII/XiIIIPlus)	1
12	47099	Static Brush (90/96XiIII/XiIIIPlus)	1
12	31899	Static Brush (140XiIII/XiIIIPlus and R-140)	1
13	46173	Static Brush (170XiIII/XiIIIPlus)	1
13	47102	Head Mounting Bracket (90XiIII/XiIIIPlus)	1
13	47105	Head Mounting Bracket (96XiIII/XiIIIPlus)	1
13	48003	Head Mounting Bracket (140XiIII/XiIIIPlus)	1
14	46169	Head Mounting Bracket (170XiIII/XiIIIPlus)	1
15	HW06268	Washer, #6 Lock (Sold in quantities of 25)	4
15	30013	Washer Plate (90/96XiIII/XiIIIPlus)	1
15	HW40013	Washer Plate (140XiIII/XiIIIPlus and R-140) (Sold in quantities of 10)	1
16	46013	Washer Plate (170XiIII/XiIIIPlus)	1
17	HW30402-006	Screw, 6-32 x 0.37 (Sold in quantities of 25)	1
18	HW30494	Washer, 0.320 x 0.119 x 0.062 (Sold in quantities of 25)	1
19	Q06020	Cable-Tie, 0.09 W x 3.62 L	1
20	HW30236	Screw, 4-40 x 0.25 (Sold in quantities of 25)	1
21	47641	Printhead Data Cable (90/96XiIII)	1
21	46803M	Printhead Data Cable Kit (96XiIII)	1
21	33027	Printhead Data Cable Kit (90XiIIIPlus)	1
21	46682	Printhead Data Cable (140/170XiIII/and R-140)	1
21	33028	Printhead Data Cable (96/140/170XiIIIPlus)	1
22	47000M	Printhead Maintenance Kit (90XiIII/XiIIIPlus)	1
22	47500M	Printhead Maintenance Kit (96XiIII/XiIIIPlus)	1
22	48000M	Printhead Maintenance Kit (140XiIII/XiIIIPlus and R-140)	1
22	46500M	Printhead Maintenance Kit (170XiIII/XiIIIPlus)	1

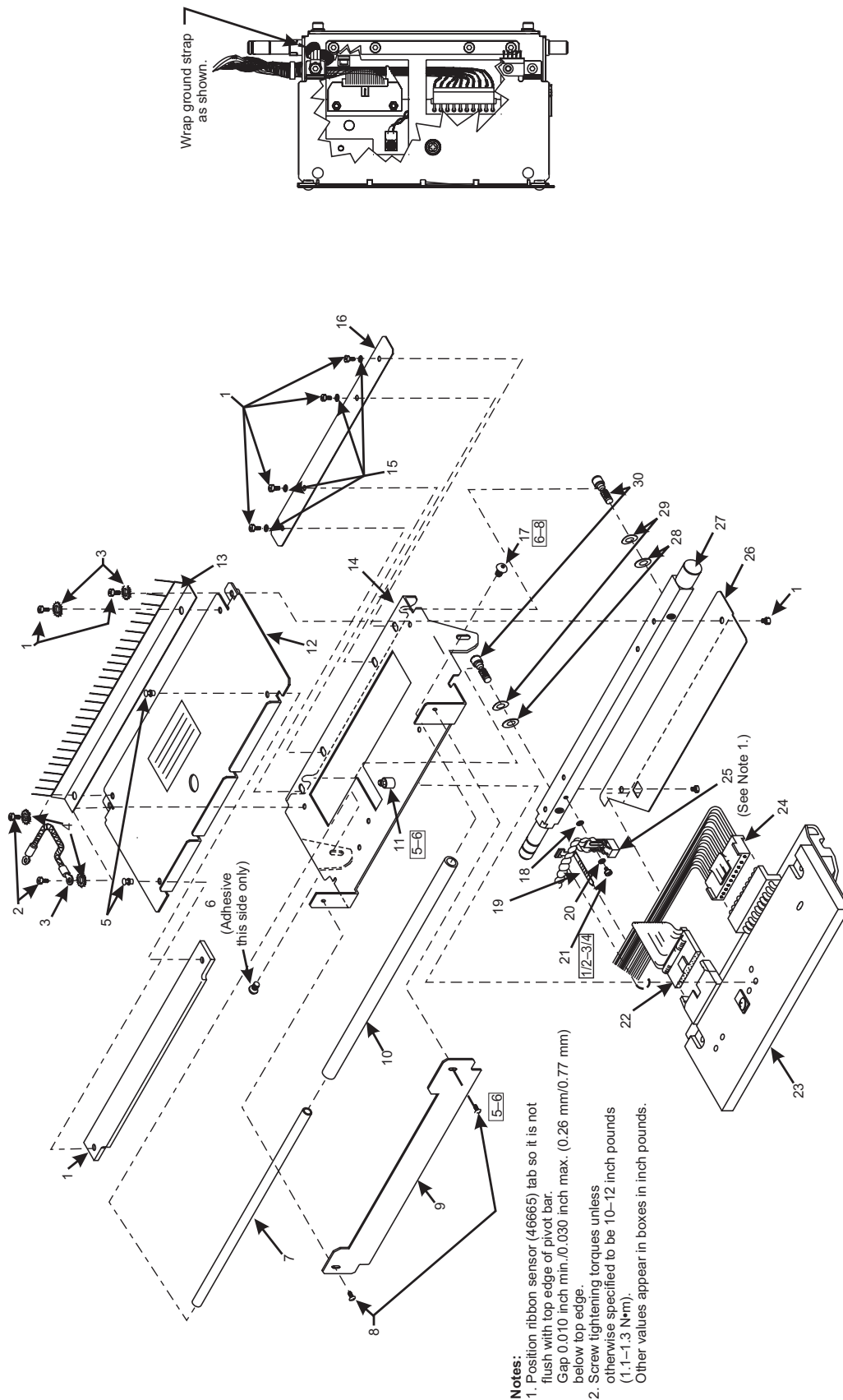


Figure 5-11. Printhead Support Assembly 90/96XIII, 140XIII, and 170XIII

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-11. Printhead Support Assembly 90/96/140/170*XiIII/XiIIIPlus* and R-140

Item	Part Number	Description	Qty
22	22000M	Printhead Maintenance Kit (220 <i>XiI</i> , 220 <i>XiIII</i> , 220 <i>XiIIIPlus</i>) (200 dpi)	1
22	47426M	Printhead Maintenance Kit (220 <i>XiIIIPlus</i>) (300 dpi)	1
23	47640	Printhead Power Cable (90/96 <i>XiIII/XiIIIPlus</i>)	1
23	49640-021	Printhead Power Cable (140 <i>XiIII/XiIIIPlus</i> and R-140)	1
23	49640-023	Printhead Power Cable (170 <i>XiIII/XiIIIPlus</i>)	1
24	46665M	Ribbon Sensor Maintenance Kit	1
25	47014	Guard Plate (90/96 <i>XiIII/XiIIIPlus</i>)	1
25	48014	Guard Plate (140 <i>XiIII/XiIIIPlus</i> and R-140)	1
26	46174	Guard Plate (70 <i>XiIII/XiIIIPlus</i>)	1
26	<i>47162</i>	Head Pivot Bar (90/96 <i>XiIII/XiIIIPlus</i>)	1
26	48162	Head Pivot Bar (140 <i>XiIII/XiIIIPlus</i> and R-140)	1
26	46002-1	Head Pivot Bar (170 <i>XiIII/XiIIIPlus</i>)	1
27	HW40193	Flat Washer 0.406 × 0.172 × 0.048 (Sold in quantities of 25)	2
28	HW40194	Curved Washer, 0.344 × 0.172 × 0.006 (Sold in quantities of 25)	2
29	HW46481-1	Adjustment Screw M3.5 (Sold in quantities of 5)	2
<p>Bold=Part available for purchase <i>Italic=Part not available for purchase, listed and shown for reference only</i></p>			



SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-12. Printhead Support Assembly 220XIII/XIIIPlus

Item	Part Number	Description	Qty
1	22181	Pressure Pad	1
2	HW30392-004	Screw, 6-32 x 0.25 (Sold in quantities of 50)	10
3	30781	Printhead Ground Cable	1
4	HW01159	Flat Washer 0.250 x 0.125 x 0.028 (Sold in quantities of 100)	4
5	HW48182	Rivet Snap 0.138 x 0.08 Plastic (Sold in quantities of 10)	2
6	30314R	Adhesive	1
7	30007-8	Roller Shaft	1
8	HW46882-003	Screw, 4-40 x 0.19 (Sold in quantities of 100)	2
9	22017	Ribbon Strip Plate	1
10	30009-9	Roller	1
11	22016	Printhead Mounting Screw	1
12	22180	Pressure Plate	1
13	22191	Static Brush	1
14	22003	Head Mounting Bracket	1
15	HW06268	Lock Washer, #6 (Sold in quantities of 25)	7
16	22013	Washer Plate	1
17	HW30402-006	Screw, 6-32 x 0.37 (Sold in quantities of 25)	1
18	HW30494	Washer, 0.320 x 0.119 x 0.062 (Sold in quantities of 25)	1
19	Q06020	Cable-Tie 0.09 W x 3.63 L	1
20	HW30236	Screw, 4-40 x 0.25 (Sold in quantities of 25)	1
21	22640-020	Printhead Data Cable	1
22	22602	Printhead Data Cable	1
23	22000M	Maintenance Kit Printhead	1
23	47426M	Maintenance Kit Printhead (300 dpi)	1
24	22640-025	Printhead Power Cable	1
25	46665M	Ribbon Sensor Maintenance Kit	1
26	22174	Guard Plate	1
27	22002	Head Pivot Bar	1
28	HW40193	Flat Washer, 0.406 x 0.172 x 0.048 (Sold in quantities of 25)	2
29	HW40194	Curved Washer 0.312 x 0.144 x 0.016 (Sold in quantities of 25)	2
30	HW46481-1	Adjustment Screw 6-32 (Sold in quantities of 5)	2

Bold=Part available for purchase

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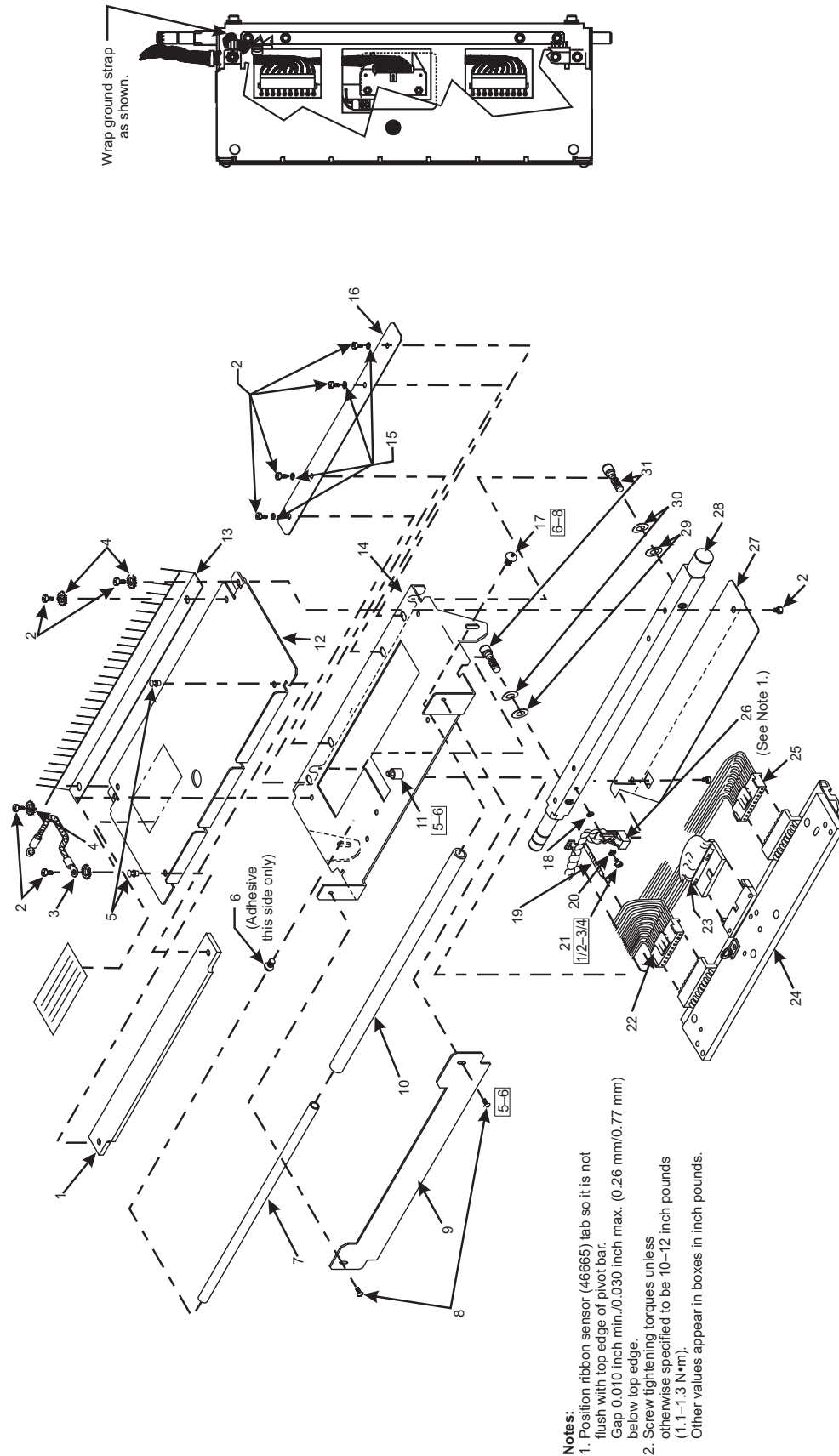


Figure 5-12. Printhead Support Assembly 220XIII/XIIIPlus

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS**Table 5-13. Media Supply Hanger**

Item	Part Number	Description	Qty
1	47153M	Media Hanger Maintenance Kit (90/96 <i>XiIII/XiIIIPlus</i>)	1
1	48153-4M	Media Hanger (Maintenance Kit (140 <i>XiIII/XiIIIPlus</i> and R-140)	1
1	46153M	Media Hanger Maintenance Kit (170 <i>XiIII/XiIIIPlus</i>)	1
1	22153M	Media Hanger Maintenance Kit (220 <i>XiIII/XiIIIPlus</i>)	1
2	<i>48417</i>	Bearing Block	2
3	<i>22395</i>	Outer Edge Guide	1
4	22152M	Link and Pad Maintenance Kit	1

Bold=Part available for purchase*Italic=Part not available for purchase, listed and shown for reference only*

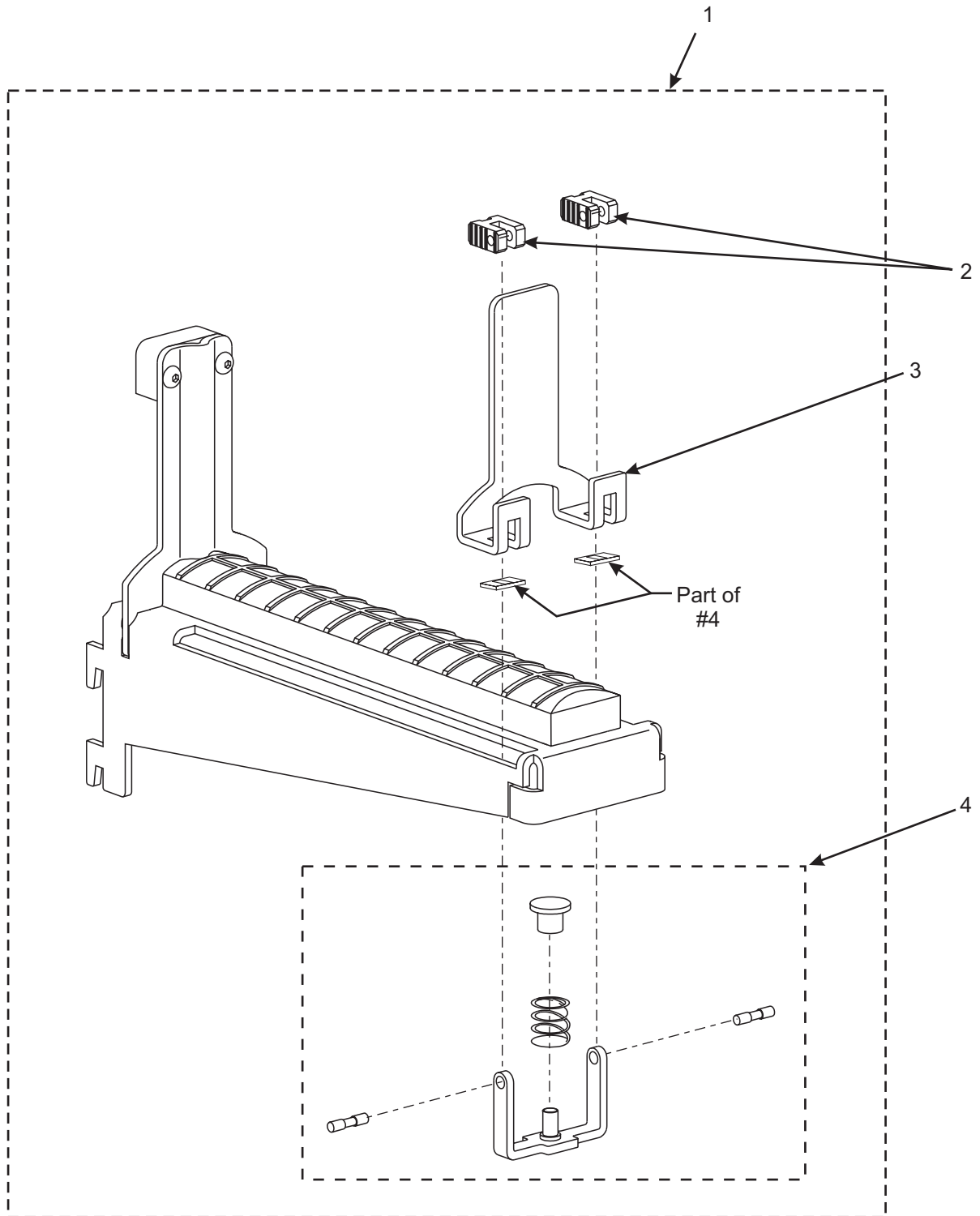


Figure 5-13. Media Supply Hanger

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-14. Optional Media Supply Spindle

Note: Optional 40 mm media supply spindle not available for 220XIII.

Item	Part Number	Description	Qty
1	HW30140	Screw, 6–32 × 0.125 (Sold in quantities of 25)	6
2	46068	Compression Spring	1
3	46397-625	Locking Nut, 5/8 × 18	1
4	HW30466	Washer, 0.26 × 0.63 × 0.06 (Sold in quantities of 25)	1
5	<i>30395-012</i>	Screw, 1/4–20 × 0.75	1
6	47253M	Media Supply Spindle 3–inch Spindle Kit Complete (90/96XIII/XIIIPlus)	1
6	47044M	40 mm Spindle Complete Kit, (90/96XIII/XIIIPlus)	1
6	48253M	Media Supply Spindle 3–inch Spindle Complete Kit (140XIII/XIIIPlus and R-140)	1
6	48044M	40 mm Spindle Complete Kit (140XIII/XIIIPlus and R-140)	1
6	46253M	Media Supply Spindle 3–inch Spindle Complete Kit (170XIII/XIIIPlus)	1
6	46044M	40 mm Spindle Complete Kit (170XIII/XIIIPlus)	1
6	22253M	Media Supply Spindle 3–inch Spindle Complete Kit (220XIII/XIIIPlus)	1

Bold=Part available for purchase
Italic=Part not available for purchase, listed and shown for reference only

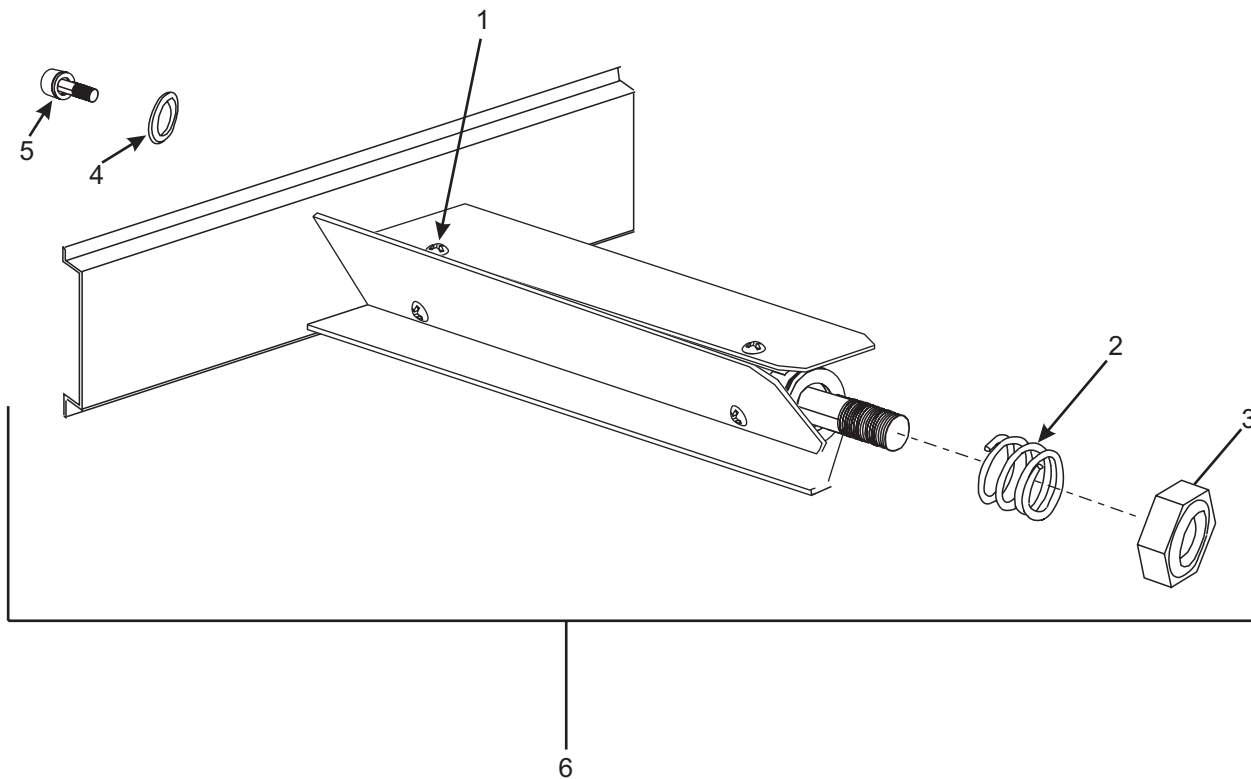


Figure 5-14. Optional Media Supply Spindle

Table 5-15. Compliant Roller Assembly

Item	Part Number	Description	Qty
1	01130	Hex Head Washer Nut, 6-32 (170 <i>XiIII</i> / <i>XiIIIPlus</i>)	3
2	30392-014	Screw, 6-32 x 0.87 (220 <i>XiIII</i> / <i>XiIIIPlus</i>)	3
3	HW30392-004	Screw, 6-32 x 0.25 (Sold in quantities of 50)	2
4	HW46127	Washer, 0.312 x 0.153 x 0.030 (Sold in quantities of 25)	2
5	22213-7M	Compliant Roller Assembly Maintenance Kit (220 <i>XiIII</i> / <i>XiIIIPlus</i>)	1
5	46813-7M	Compliant Roller Assembly Maintenance Kit (170 <i>XiIII</i> / <i>XiIIIPlus</i>)	1
6	<i>46424-1</i>	Shaft, 7.98 (170 <i>XiIII</i> / <i>XiIIIPlus</i>)	1
6	<i>30007-11</i>	Roller Shaft, 0.185 (220 <i>XiIII</i> / <i>XiIIIPlus</i>)	1

Bold=Part available for purchase

Italic=Part not available for purchase, listed and shown for reference only

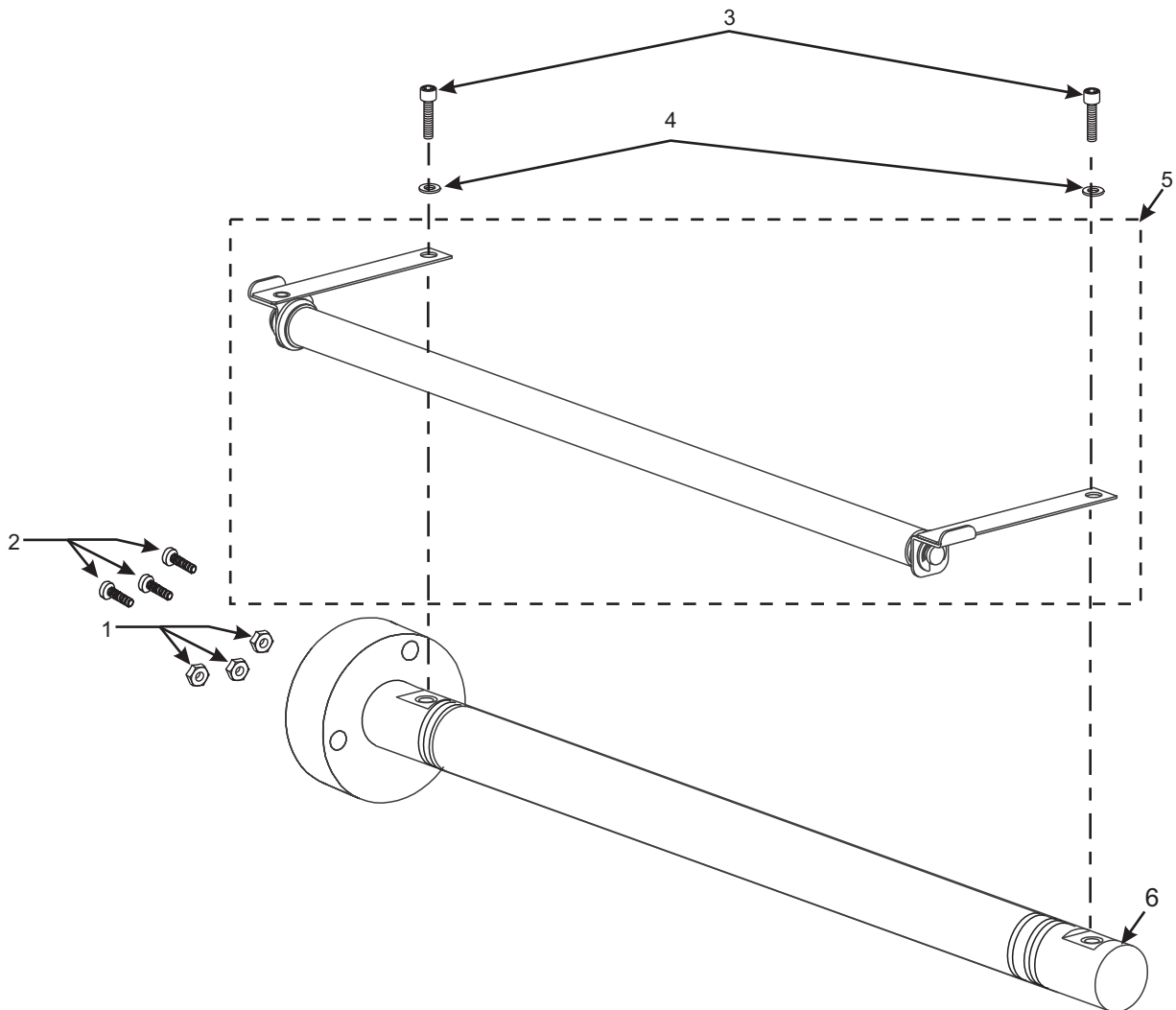


Figure 5-15. Compliant Roller Assembly

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-16. Ribbon Take-Up Spindle Assembly

Item	Part Number	Description	Qty
1	47250	Enhanced RTU Upgrade Kit (90/96 <i>XiIII/XiIIIPlus</i>)	1
1	48250	Enhanced RTU Upgrade Kit (140 <i>XiIII/XiIIIPlus</i>)	1
1	46350	Enhanced RTU Upgrade Kit (170 <i>XiIII/XiIIIPlus</i>)	1
1	22250	Enhanced RTU Upgrade Kit (220 <i>XiIII/XiIIIPlus</i>)	1
2	47251M	Spindle/Clutch Assembly Kit (90/96 <i>XiIII/XiIIIPlus</i>)	1
2	48251M	Spindle/Clutch Assembly Kit (140 <i>XiIII/XiIIIPlus</i>)	1
2	46351M	Spindle/Clutch Assembly Kit (170 <i>XiIII/XiIIIPlus</i>)	1
2	22251M	Spindle/Clutch Assembly Kit (220 <i>XiIII/XiIIIPlus</i>)	1
3	HW47276	Compression Spring (Sold in quantities of 25)	1
4	46397-500	Thin Hex Nut Locking	1
5	47251-2M	End Cap/Release Bar Maintenance Kit (90/96 <i>XiIII/XiIIIPlus</i>)	1
5	48251-2M	End Cap/Release Bar Maintenance Kit (140 <i>XiIII/XiIIIPlus</i>)	1
5	46351-2M	End Cap/Release Bar Maintenance Kit (170 <i>XiIII/XiIIIPlus</i>)	1
5	22251-2M	End Cap/Release Bar Maintenance Kit (220 <i>XiIII/XiIIIPlus</i>)	1

Bold=Part available for purchase
Italic=Part not available for purchase, listed and shown for reference only

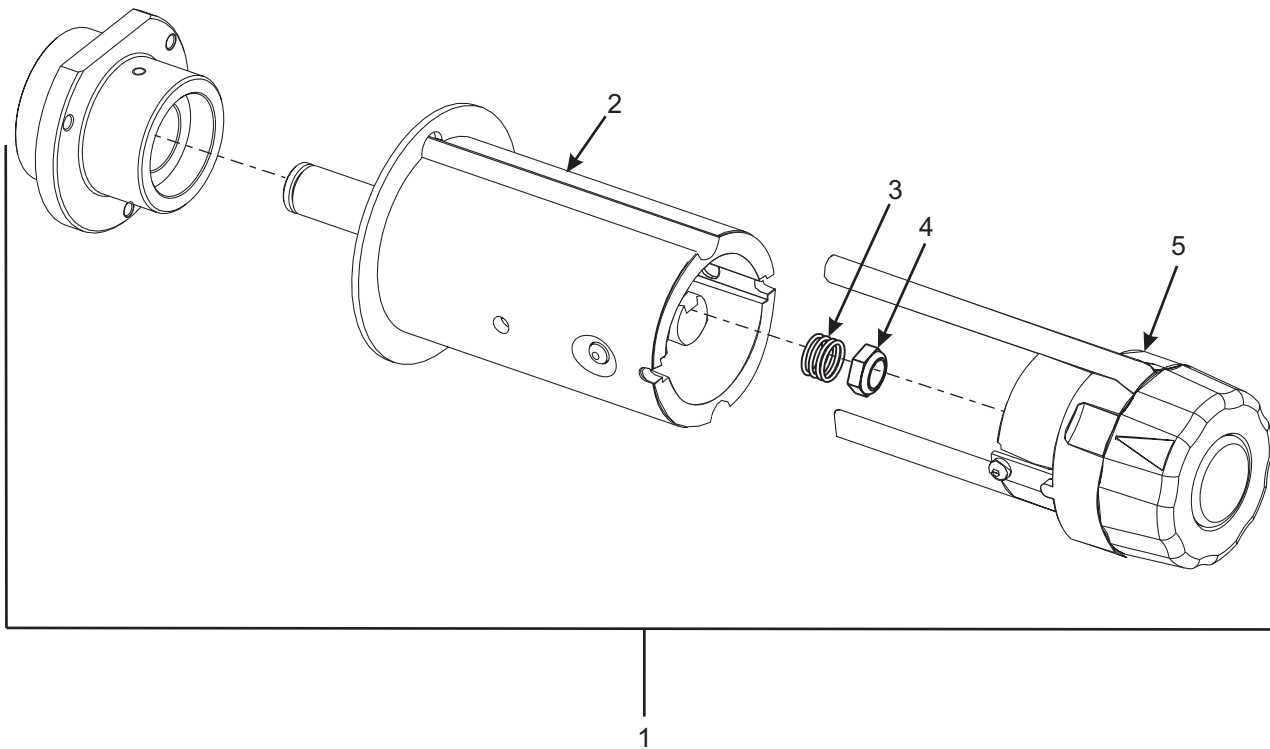


Figure 5-16. Ribbon Take-Up Spindle Assembly



SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS**Table 5-17. Communication Options**

Item	Part Number	Description	Qty
1	48924	Field Upgrade IBM Twinax Kit	1
2	48752	PCB IBM Twinax Assembly	1
3	30757	Ribbon 40 Option Signal Cable	1
4	30753	Cable IBM Twinax Assembly	1
5	48925	Field Upgrade IBM Coax Kit	1
6	48761	PCB IBM Coax Assembly	1
7	30757	Ribbon 40 Option Signal Cable	1
8	48753	Coax Ext. IBM Cable	1
9	48631	ZebraNet Wireless Card Socket/without ZebraNet PrintServer II	1
9	48632	ZebraNet Wireless Card Socket/with ZebraNet PrintServer II internal	1
9	48633	ZebraNet Wireless Card Socket/with ZebraNet PrintServer II external	1
10	<i>46610</i>	PCB RF Option	1
11	<i>48636</i>	ZebraNet Wireless Setup Disk	1
12	<i>48626</i>	Straight Through Ethernet Cable, 7 feet	1
13	<i>48627</i>	Crossover Ethernet Cable, 7 feet	1
14	49604-016	Power Distribution Cable	1
15	48602	RJ45 1 to 1 10 Base T Cable, 12 inches	1
16	46692	ZebraNet II External Kit Upgrade	1
17	46689	ZebraNet II Internal Kit Upgrade	1
18	46709	Cable Tape ZebraNet II	1
19	47210	Strip Grommet, 2-1/8	1
20	46686	10 Base T Web Internal	1

Bold=Part available for purchase*Italic=Part not available for purchase, listed and shown for reference only*

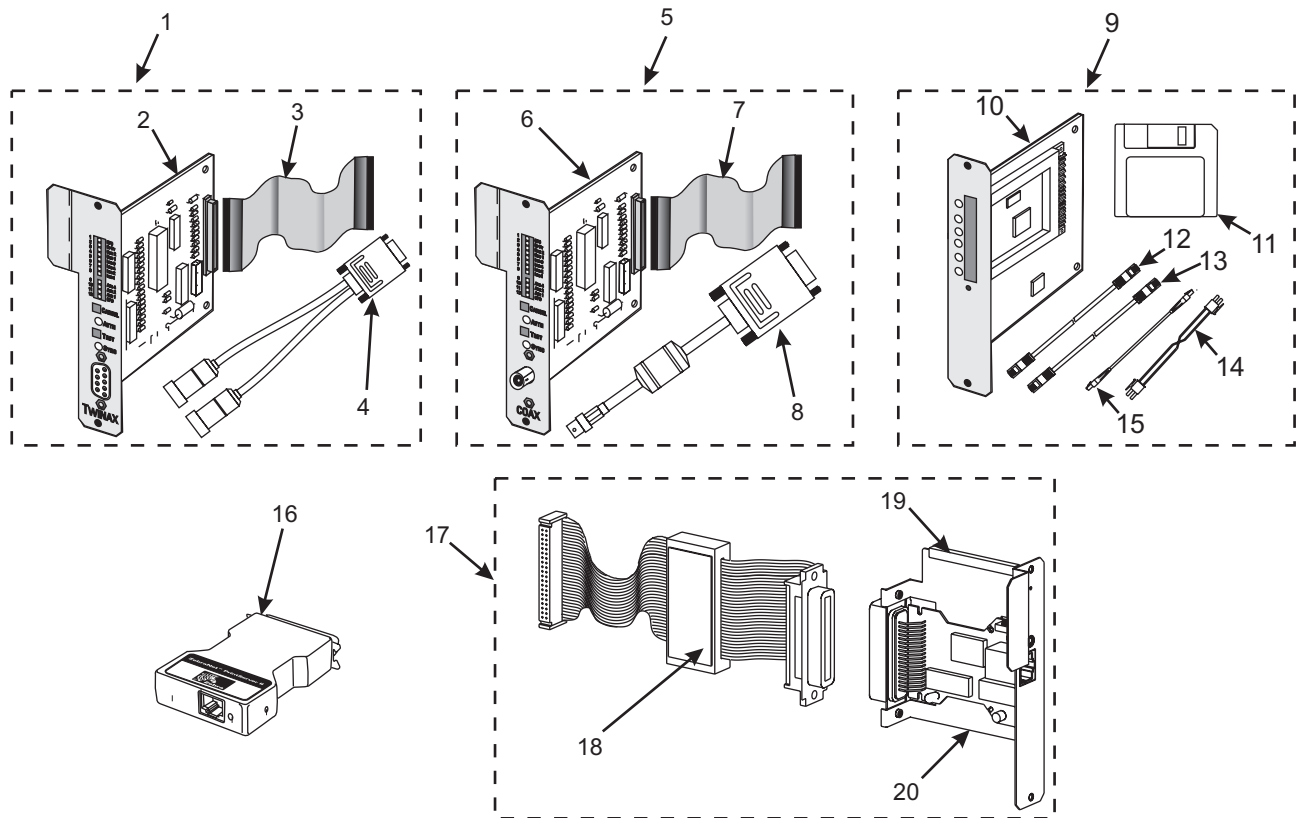


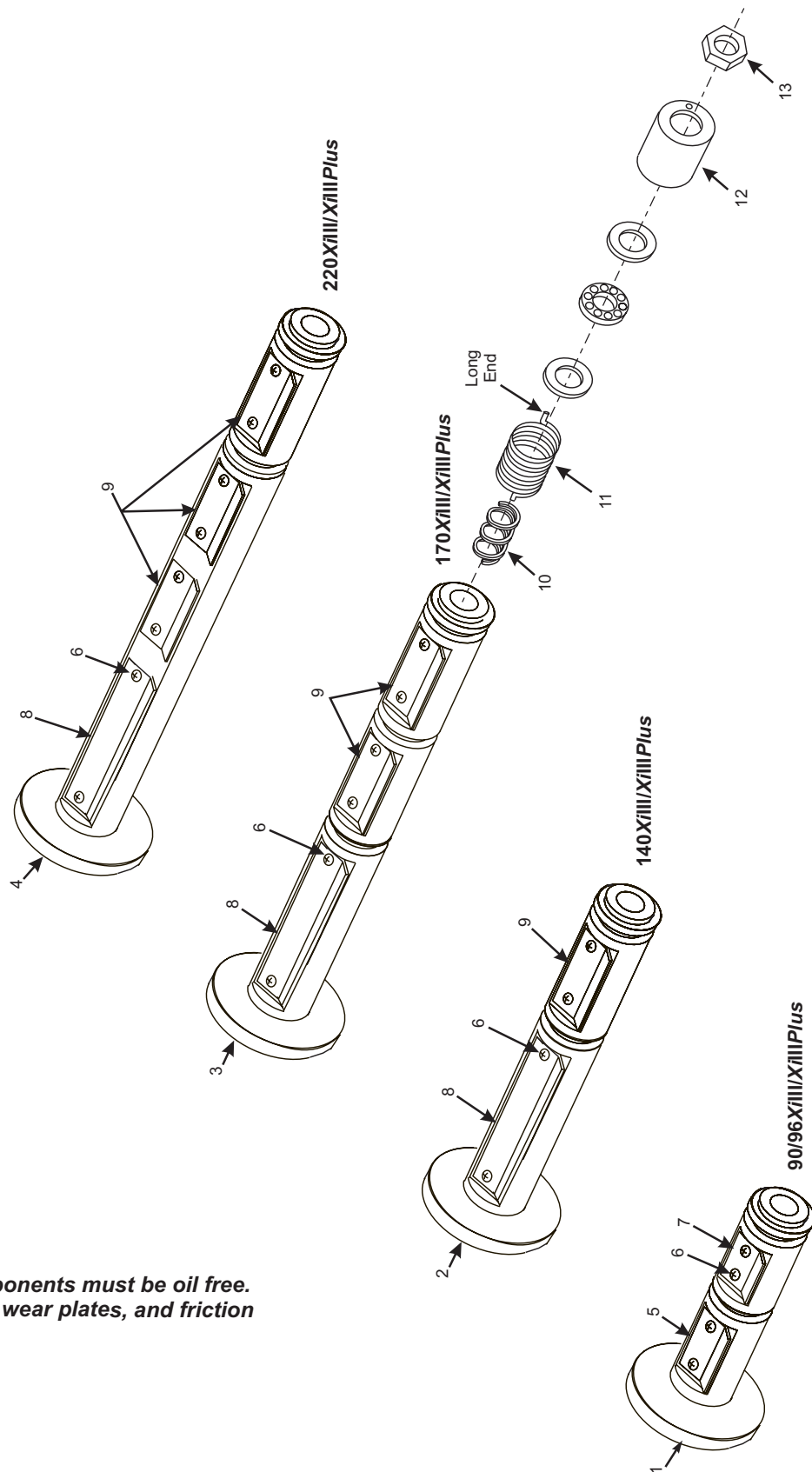
Figure 5-17. Communications Options

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-18. Ribbon Supply Spindle Assembly

Item	Part Number	Description	Qty
1	47151M	Ribbon Supply Spindle Maintenance Kit (90/96 <i>XiIII/XiIIIPlus</i>)	1
2	48151M	Ribbon Supply Spindle Maintenance Kit (140 <i>XiIII/XiIIIPlus</i>)	1
3	46151M	Ribbon Supply Spindle Maintenance Kit (170 <i>XiIII/XiIIIPlus</i>)	1
4	22151M	Ribbon Supply Spindle Maintenance Kit (220 <i>XiIII/XiIIIPlus</i>)	1
5	30070-2	Inner Ribbon Supply Blade (90/96 <i>XiIII/XiIIIPlus</i>)	1
6	HW30401-002	Screw, 4–40 x 0.12 (Sold in quantities of 25)	8 Max
7	30070-1	Outer Ribbon Supply Blade (90/96 <i>XiIII/XiIIIPlus</i>)	1
8	40070-2	Inner Ribbon Supply Blade (140/170/220 <i>XiIII/XiIIIPlus</i>)	1
9	40070-1	Outer Ribbon Supply Blade (140/170/220 <i>XiIII/XiIIIPlus</i>)	3 Max
10	HW46211	Compression Spring, 0.53 x 0.660 x 0.62 (Sold in quantities of 10)	1
11	38042	Torsion Spring, 0.739 x 0.805	1
12	47171	Ribbon Spindle Spring Housing	1
13	HW46397-375	Locking Thin Hex Nut (Sold in quantities of 25)	1

Bold=Part available for purchase
Italic=Part not available for purchase, listed and shown for reference only



NOTES: 1. All components must be oil free.
 2. O-rings, wear plates, and friction

Figure 5-18. Ribbon Supply Spindle Assembly

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-19. Media Rewind Assembly

Item	Part Number	Description	Qty
1	47383M	Rewind Plate Assembly Maintenance (90/96 <i>XiIII/XiIIIPlus</i>)	1
1	48383M	Rewind Plate Assembly Maintenance (140 <i>XiIII/XiIIIPlus</i>)	1
1	46383M	Rewind Plate Assembly Maintenance (170 <i>XiIII/XiIIIPlus</i>)	1
1	22383M	Rewind Plate Assembly Maintenance (220 <i>XiIII/XiIIIPlus</i>)	1
2	30914M	Lower Platen Pulley Assembly (90/140/170/220 <i>XiIII/XiIIIPlus</i>)	1
2	47915M	Lower Platen Pulley Maintenance Kit (96 <i>XiIII/XiIIIPlus</i>)	1
3	30265	Idler Pulley (90/96,140,170 <i>XiIII/XiIIIPlus</i>)	1
3	22265	Idler Pulley (220 <i>XiIII/XiIIIPlus</i>)	1
4	30207	Idler Pulley Shaft (90/96,140,170 <i>XiIII/XiIIIPlus</i>)	1
4	22207	Idler Pulley Shaft (220 <i>XiIII/XiIIIPlus</i>)	1
5	45189-5	Rewind Drive Belt, 0.080P 235T (90/140/170/220 <i>XiIII/XiIIIPlus</i>)	1
5	45189-12	Rewind Drive Belt, 0.080P 245T (96 <i>XiIII/XiIIIPlus</i>)	1
6	HW30118	E-Ring, External 0.500 × 0.042 (Sold in quantities of 25)	1
7	31336M	MTU/RTU Pulley Maintenance Kit (90/140/170/220 <i>XiIII/XiIIIPlus</i>)	1
7	47358M	Pulley MTU Maintenance Kit (96 <i>XiIII</i>)	1
7	33094-6M	Pulley MTU Maintenance Kit (96 <i>XiIIIPlus</i>)	1
8	HW30114	Flat Washer, 0.76 × 0.51 × 0.03 (Sold in quantities of 25)	1
9	HW30115	Wave Washer, 0.740 × 0.520 × 0.080 (Sold in quantities of 25)	1
10	HW30393-006	Screw, 8–32 × 0.31 (Sold in quantities of 25)	3
11	HW07435	Screw, 6–32 × 0.37 (Sold in quantities of 100)	2
12	HW40193	Flat Washer, 0.406 × 0.172 × 0.048 (Sold in quantities of 25)	1
13	46609-4M	Take-Label Sensor Maintenance Kit (Includes Lower Sensor)	1
14	47155M	Spindle Media Rewind Maintenance Kit (90/96 <i>XiIII/XiIIIPlus</i>)	1
14	48155M	Spindle Media Rewind Maintenance Kit (140 <i>XiIII/XiIIIPlus</i>)	1
14	46249M	Spindle Media Rewind Maintenance Kit (170 <i>XiIII/XiIIIPlus</i>)	1
14	22155M	Spindle Media Rewind Maintenance Kit (220 <i>XiIII/XiIIIPlus</i>)	1
15	HW40193	Flat Washer, 0.406 × 0.172 × 0.048 (Sold in quantities of 50)	3
16	HW30392-004	Screw, 6-32 × 0.25 (Sold in quantities of 50)	2
17	HW02252	Crescent Ring, 0.25 (Sold in quantities of 100)	2
18	40019	Plate, Roller Adjustment	1
19	HW30247	Flat Washer, 0.42 × 0.262 × 0.0740 (Sold in quantities of 25)	1
20	HW30261	Flat Washer, 0.442 × 0.255 × 0.020 (Sold in quantities of 25)	2
21	47601M	Lower Platen Roller Maintenance Kit, 0.78 × 3.588 (90/96 <i>XiIII/XiIIIPlus</i>)	1
21	40038M	Lower Platen Roller Maintenance Kit, 0.78 × 5.213 (140 <i>XiIII/XiIIIPlus</i>)	1
21	46278M	Lower Platen Roller Maintenance Kit, 0.78 × 6.73 (170 <i>XiIII/XiIIIPlus</i>)	1
21	22101M	Lower Platen Roller Maintenance Kit, 0.78 × 8.73 (220 <i>XiIII/XiIIIPlus</i>)	1
22	49688	Ball Bearing, 0.50 × 0.25 × 0.125	2

Bold=Part available for purchase
Italic=Part not available for purchase, listed and shown for reference only

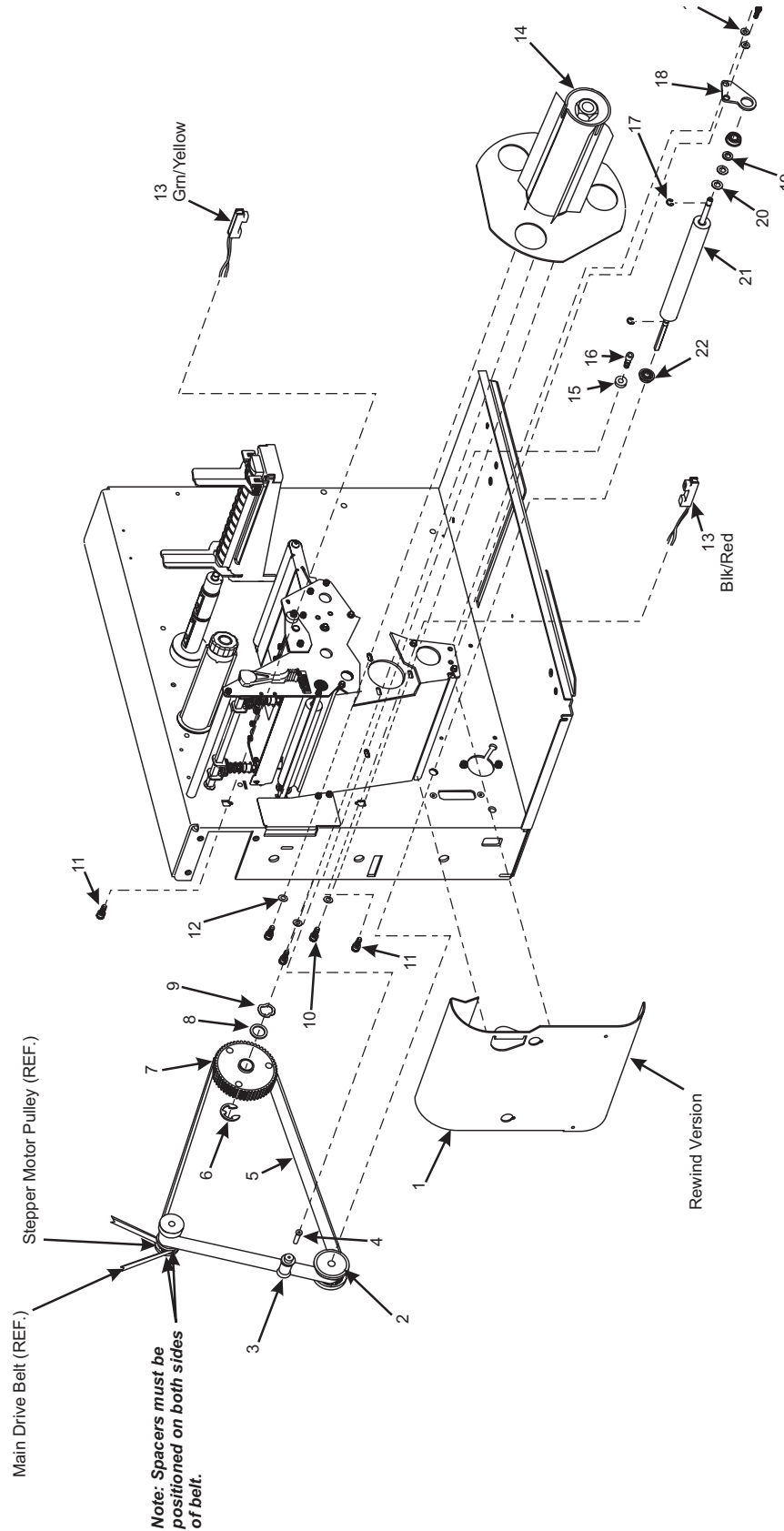
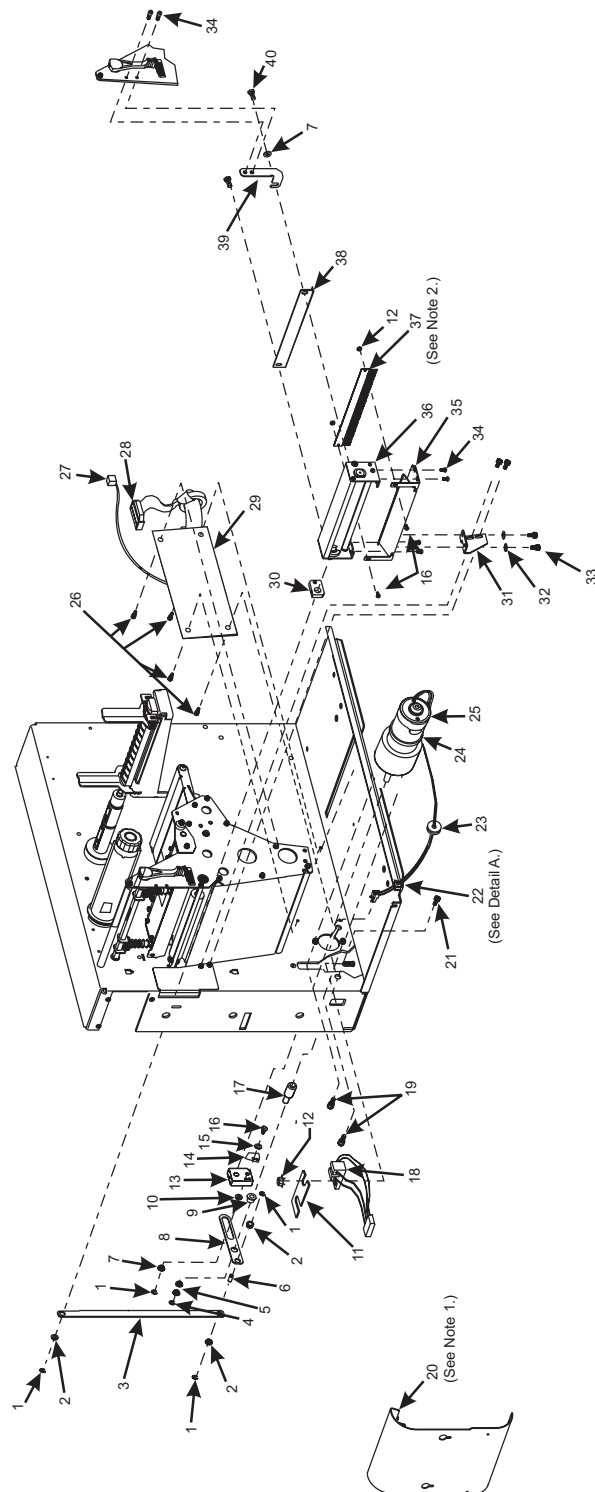


Figure 5-19. Media Rewind Assembly

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-20. Cutter Option Assembly (View 1)

Item	Part Number	Description	Qty
1	HW02133	E-Ring, 0.188 Black (Sold in quantities of 50)	4
2	HW30199	Bearing, 0.375 × 0.189 × 0.125 (Sold in quantities of 25)	3
3	30214	MainLink	1
4	HWQ10019	E-ring, 0.250 Black (Sold in quantities of 100)	1
5	HW30210	Flat Washer, 0.564 × 0.384 × 0.060 (Sold in quantities of 10)	2
6	30217-1	Link Pin, 0.187 Dia.	1
7	HW30208	Flat Washer, 0.500 × 0.191 × 0.030	2
8	30215	Slotted Link	1
9	HW30198	Bearing 0.500 × 0.252 × 0.250 (Sold in quantities of 10)	1
10	30133	Ball Bearing 0.375 × 0.187 × 0.125	1
11	30313	Cutter Opto Wire Clamp	1
12	HW01822	Nut, 4–40 (Sold in quantities of 25)	5
13	30380M	Lower Drive Arm Maintenance Kit	1
14	30219	Flag, Sensor	1
15	HW01155	Washer, Lock #4 (Sold in quantities of 100)	1
16	HW30236	Screw 4-40 × 0.25 (Sold in quantities of 25)	3
17	30216	Post, Pivot	1
18	46618	Cutter Sensor	1
19	HW30394-005	Screw, 10-32 × 0.312 (Sold in quantities of 25)	2
20	30382RM	Cutter/Rewind Plate Maintenance Assembly (90/96 <i>XiIII/XiIIIPlus</i>)	1
20	40382RM	Cutter/Rewind Plate Maintenance Assembly (140 <i>XiIII/XiIIIPlus</i>)	1
20	46382M	Cutter/Rewind Plate Maintenance Assembly (170 <i>XiIII/XiIIIPlus</i>)	1
20	22382M	Cutter/Rewind Plate Maintenance Assembly (220 <i>XiIII/XiIIIPlus</i>)	1
21	HW30405-006	Screw, ¼–20 × 0.38 (90/96 <i>XiIII</i> , 140 <i>XiIII</i> , 170 <i>XiIII/XiIIIPlus</i>) (Sold in quantities of 25)	1
21	HW30405-008	Screw, ¼–20 × 0.50 (220 <i>XiIII/XiIIIPlus</i>) (Sold in quantities of 25)	1
22	HW44632	Ferrite Ring 1.1 × 0.75 (Sold in quantities of 10)	1
23	HW46224	Rubber Grommet (Sold in quantities of 10)	1
24	08449	Cable-Tie, 0.187 W × 11.5 L	1
25	30374M	Cutter Motor Maintenance Assembly	1
26	HW30391-003	Screw, 4–40 × 0.19 (Sold in quantities of 25)	4
27	49604-010	Power Distribution Cable	1
28	49600-012	Comm Cable	1
29	49730M	PCB Cutter Control Maintenance Kit	1
30	46280M	Arm Drive Upper Maintenance Kit	1
31	30816	Lower Cutter Bracket	1
32	HW40193	Flat Washer, 0.406 × 0.172 × 0.048 (Sold in quantities of 25)	2
33	HW30392-004	Screw, 6–32 × 0.25 (Sold in quantities of 50)	4
34	HW10421	Screw, M4 × 0.7 × 5 (Sold in quantities of 25)	4
35	30819	Cutter Support Bracket (90/96 <i>XiIII</i>)	1
35	40819	Cutter Support Bracket (140 <i>XiIII</i>)	1



- Notes: 1. If rewind option is installed on cutter machine, be sure to order cutter/rewind plate.
 2. Position brush so that approximately 1/8 inch (3 mm) of brush's bristles rub against each moving label and brush's bristles are parallel to label edge.

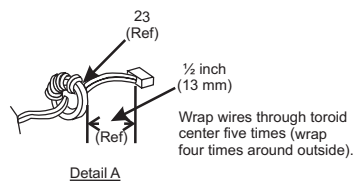


Figure 5-20. Cutter Option Assembly (View 1)

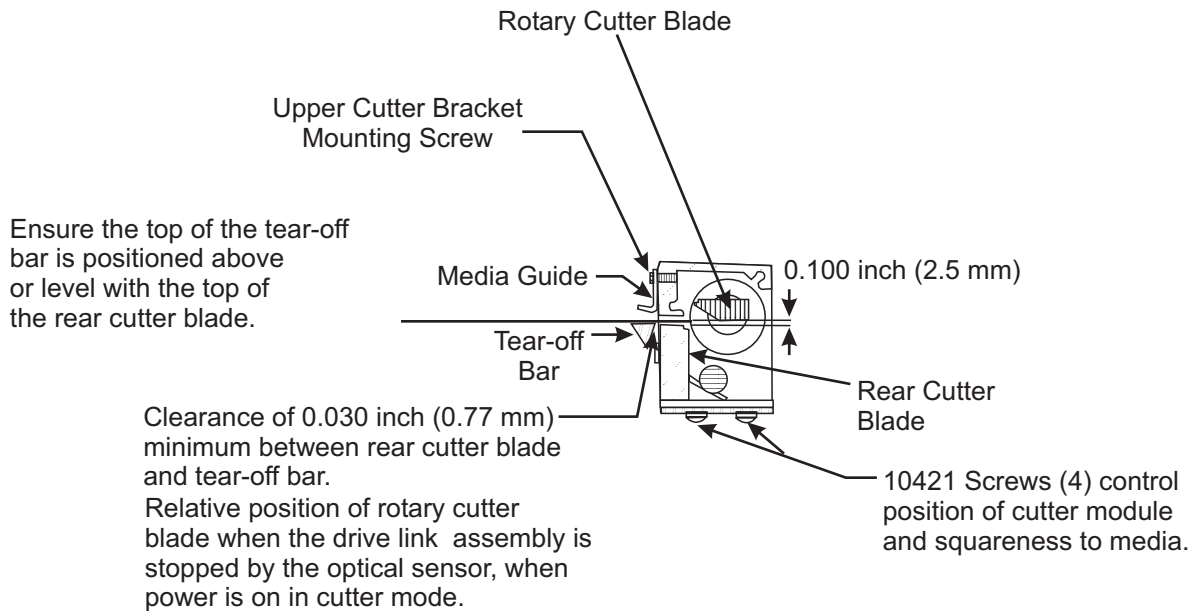
SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Table 5-20. Cutter Option Assembly (View 1) (Continued)

Item	Part Number	Description	Qty
35	46819	Cutter Support Bracket (170X <i>l</i> III)	1
35	22819	Cutter Support Bracket (220X <i>l</i> III)	1
36	30196-100	Cutter Module (90/96X <i>l</i> III)	1
36	30196-150	Cutter Module (140X <i>l</i> III)	1
36	30196-200	Cutter Module (170X <i>l</i> III)	1
36	30196-251	Cutter Module (220X <i>l</i> III)	1
37	30320	Carbon Brush, 4.50 × 0.50 (90/96X <i>l</i> III)	1
37	40320	Carbon Brush, 6.50 × 0.50 (140X <i>l</i> III)	1
37	46320	Carbon Brush, 8.50 × 0.50 (170X <i>l</i> III)	1
37	22320	Carbon Brush, 10.47 × 0.50 (220X <i>l</i> III)	1
38	30181	Upper Cutter Guide (90/96X <i>l</i> III)	1
38	40181	Upper Cutter Guide (140X <i>l</i> III)	1
38	46181	Upper Cutter Guide (170X <i>l</i> III)	1
38	22193	Upper Cutter Guide (220X <i>l</i> III)	1
39	46807	Upper Cutter Bracket	1
40	HWQ10011	Screw, M4 × 0.7 (Sold in quantities of 100)	2

Bold=Part available for purchase

Italic=Part not available for purchase, listed and shown for reference only



Set screws to engage flats on motor shaft when lower arm is in vertical position.

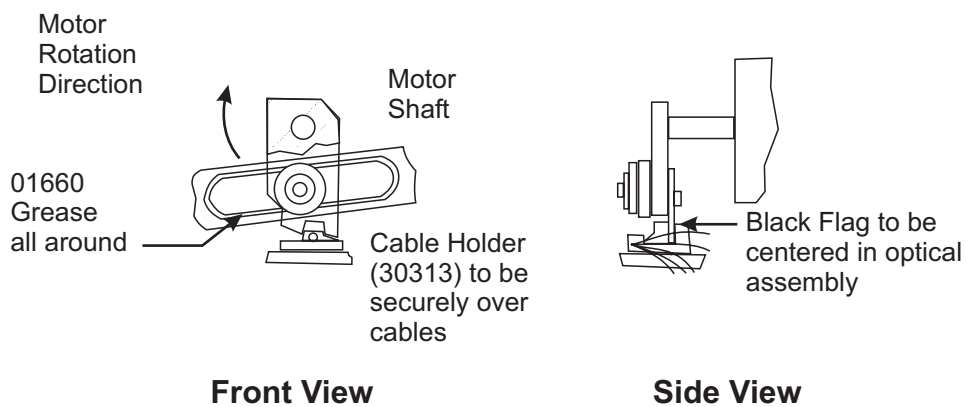


Figure 5-21. Cutter Option Assembly (View 2)



SECTION 6 OPTIONS KITS

OPTIONS INSTALLATION

Font ROM Installation (X/III and R-140 only)



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

Font ROM installation-optional scalable and bit-mapped fonts are available in ROMs.

1. From the rear, turn the printer power Off (O) and remove the AC power cord. Remove any communication cables.
2. Refer to [RRP No. 1 on page 4-10](#). Remove the electronics cover.
3. Refer to [Figure 6-1](#). Remove the option card shield. Push the card-eject button to remove the font/memory board.

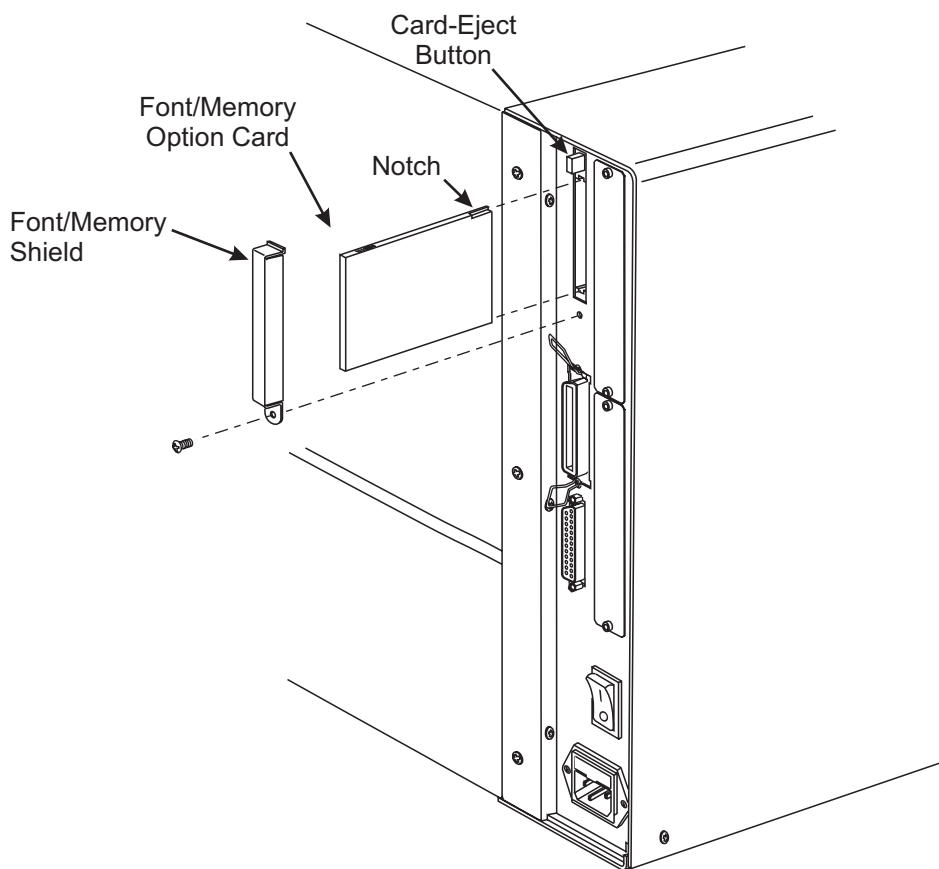


Figure 6-1. Memory and Font Card Installation

4. Refer to [Figure 6-2](#). Remove any existing ROM from sockets.
5. Insert the tines of the extraction tool firmly into the slots in the chip socket. Be sure the tines catch under the ROM chip as you gently squeeze. The chip will rise out of the socket.

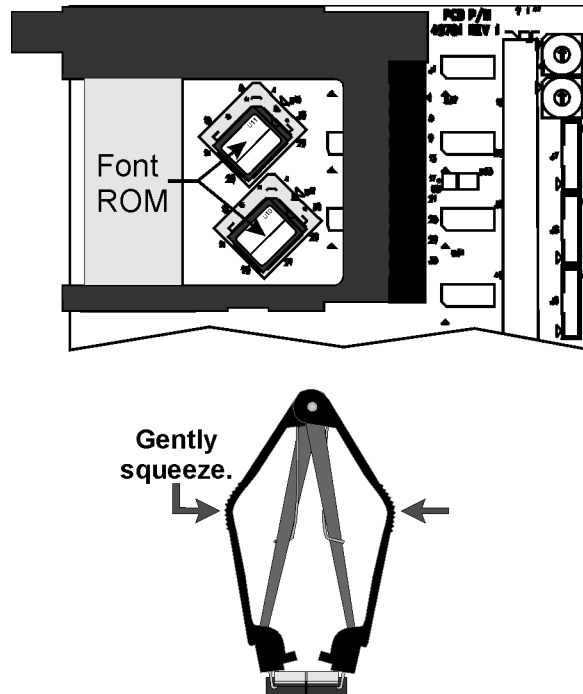


Figure 6-2. Font ROM

6. Insert the new ROM with the notched corner positioned to the top as shown. Slowly seat the chip in place, ensuring that it is straight in the socket.
7. Refer to [Figure 6-1](#). Reinstall the font/memory card with the notch **UP**. Insert it enough to cause the card-eject button to pop out.
8. Reinstall the font/memory card shield.
9. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
10. Reinstall the AC power cord and data cable.
11. Print a configuration label by pressing and holding the **FEED** key while turning the printer power On (**I**).
12. Verify the presence of additional memory or optional fonts on the configuration label.

SIMM Installation (X/III and R-140 only)

1. Turn the printer power Off (O) and remove the AC power cord. Remove any communication cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to [Figure 6-3](#). Locate the SIMM socket on the main logic board.
4. Install the SIMM into the socket as illustrated. Ensure the SIMM is locked securely into position.
5. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
6. Reconnect the AC power cord and data cable.
7. Print a configuration label by pressing and holding the **FEED** key while turning the printer power On (I).
8. Verify the presence of additional memory on the configuration label.

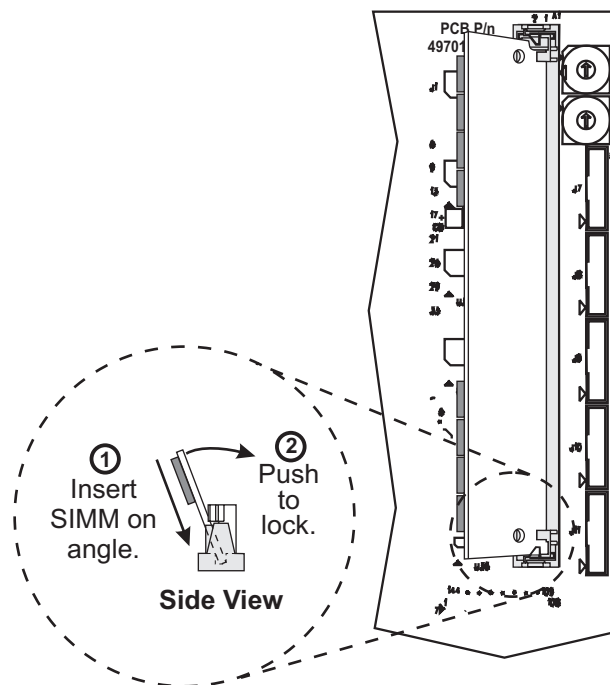


Figure 6-3. SIMM Installation

Optional Supply Spindle Installation

1. Turn the printer power Off (O) and remove the AC power cord. Remove any communication cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to [Figure 6-1](#). Remove the font card or memory card from the card slot located at the rear of the printer by removing the option card shield and pressing the card-release button.
4. Refer to [“Optional Interface Boards” on page 6-16](#). Remove any optional interface board installed.
5. Refer to [RRP No. 3 on page 4-16](#) or [RRP No. 4 on page 4-18](#). Unplug all ribbon cable connectors and small wire connectors from the main logic board, and remove it.

- Refer to [Figure 6-4](#). Remove the four screws securing the main logic board to the mounting plate.

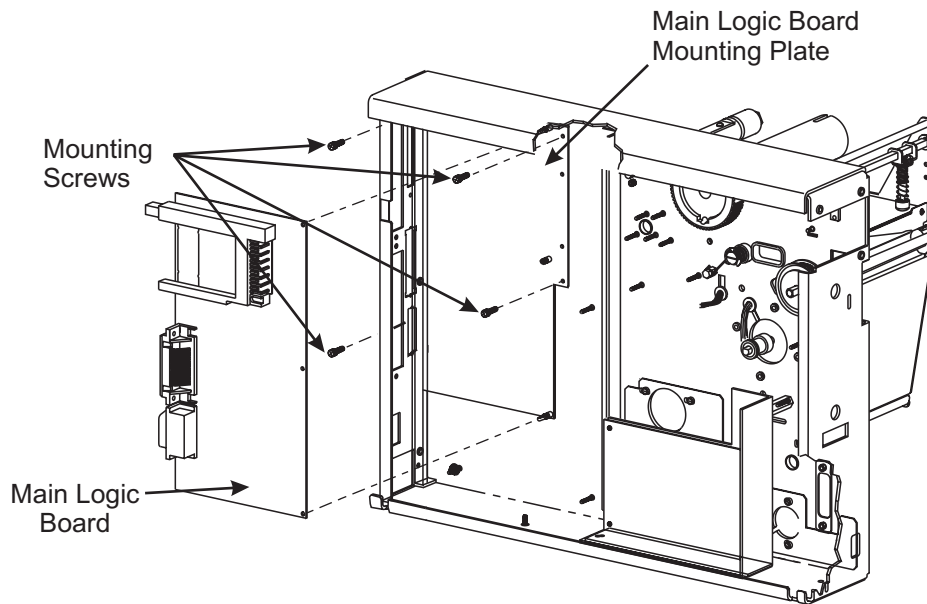


Figure 6-4. Mounting Bracket Removal (XIII and R-140)

- Refer to [Figure 6-5](#). Remove the media hanger mounting screw and washer.
- Remove the mounting screw and washer securing the media hanger, and then lift it straight up then out from the printer frame.

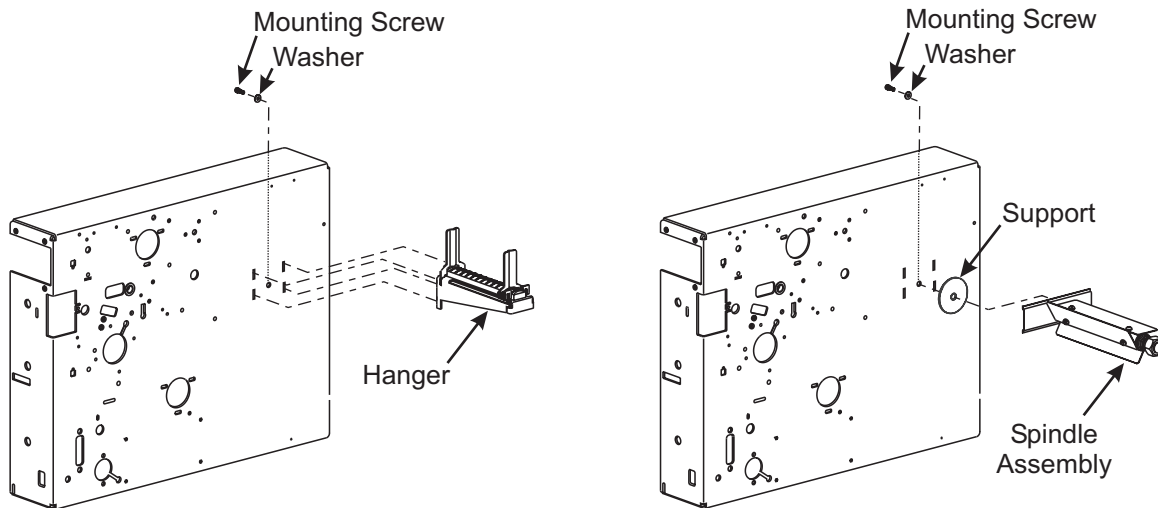


Figure 6-5. Hanger Removal and Spindle Installation

- Install the media supply spindle with support between the shaft and the printer frame.
- Install the screw and washer previously removed onto the end of the spindle shaft and tighten.
- Reinstall the main logic board mounting plate.
- Reinstall the main logic board.
- Reconnect all cables and small wire connectors previously removed.

14. Refer to [Figure 6-1](#). Reinstall any optional memory/font boards and the option card shield.
15. Reinstall optional interface boards.
16. Reconnect cabling to interface boards.
17. Refer to and reinstall the electronics cover.

Spindle Tension Adjustment

1. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
2. Open the media door and remove all media and ribbon.
3. Use adhesive tape to attach a 2-inch (5-cm) wide strip of polyester film (part # 01776) to an empty core as illustrated. Wind the polyester film around the core about five times in the direction indicated.
4. Measure tension by slowly pulling the film with a spring scale. Pull **only** in the direction shown. The pull rate should typically be 2 inches (5 cm) per second.
5. The spring tension reading should be 300 grams ± 50 (0.66 inch pounds ± 0.11). Make adjustments using the tension adjustment nut:
 - Clockwise increases tension.
 - Counterclockwise decreases tension.

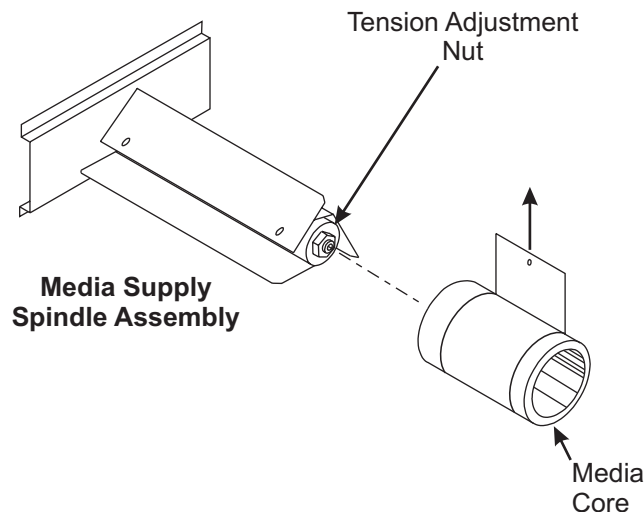


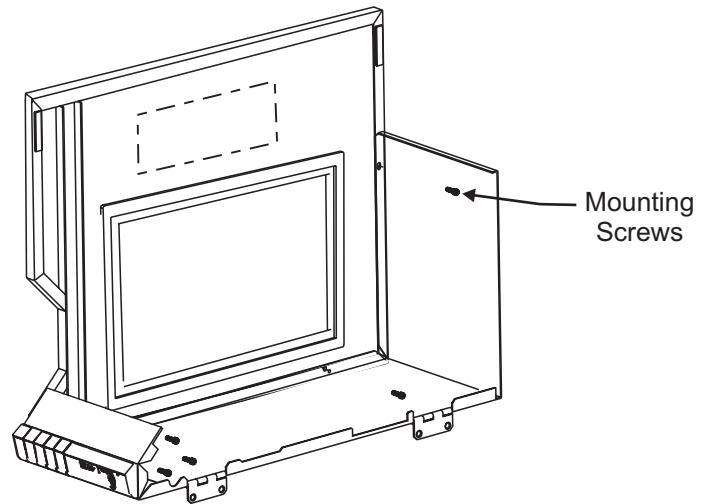
Figure 6-6. Spindle Tension Adjustment

6. Recheck the tension after running a full roll of labels.
7. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
8. Reinstall the media and ribbon.

Optional Bifold Door Installation

Refer to [Figure 6-7](#).

1. Raise the existing media door.
2. Remove and retain the mounting screws. (Ensure a good hold on the door when removing the last screws.)
3. Remove the old door.



4. Install new door using the screws removed in step 2.
5. Installation is complete.

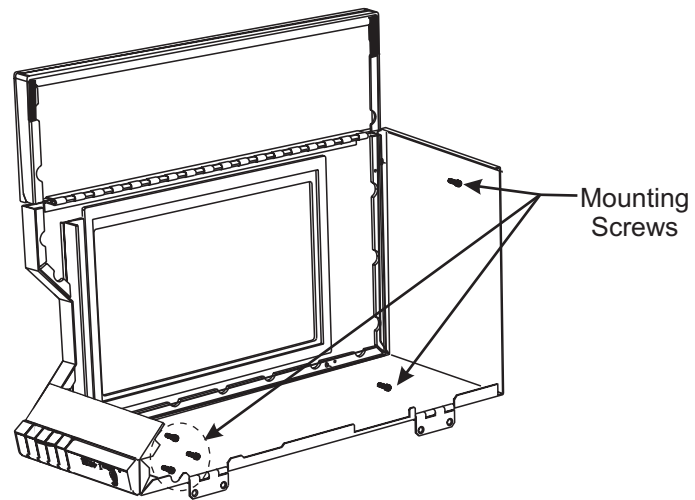


Figure 6-7. Bifold Door Installation

Optional Counter Board Installation (XIII and R-140 only)

1. Turn the printer power Off (O) and remove the AC power cord. Remove any communication cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.

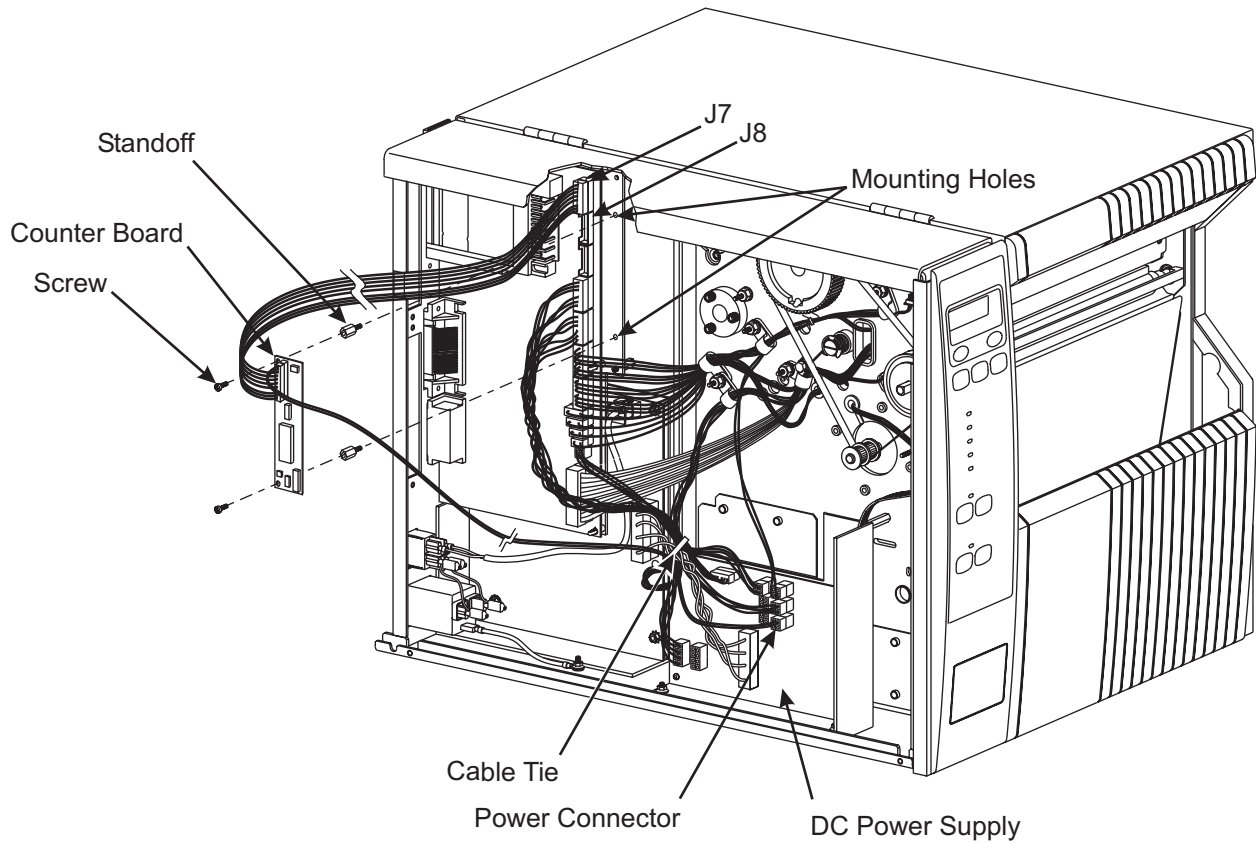


Figure 6-8. Installing the Counter Board (Xiii and R-140 only)

3. Locate the two mounting holes in the main logic board mounting plate.
4. Install the two plastic standoffs included with the counter board in these holes.
5. Install the counter board, with the cable connector on top, on the standoffs. Attach the counter board to the standoffs using the supplied screws.
6. Refer to [Figure 6-8](#) and attach the data cable to the counter board.
7. Connect the other end of the data cable to either J7 or J8 on the main logic board.
8. Refer to [Figure 6-8](#) and route the power connector and wires through the cable tie. Connect the open end of the power connector to either of open plugs J5 through J10 on the DC power supply.
9. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
10. Reconnect the AC power cord and data cable.
11. Turn the printer power On (I).

Rewind Option

The printer must be partially disassembled to install the various parts provided in this kit. Follow the procedures listed below.

1. Turn printer power Off (O) and disconnect the AC power cord. Remove any communication cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.

3. Refer to [RRP No. 2 on page 4-14](#). Disconnect all wires and cables attached to the DC power supply board and remove the DC power supply.
4. Open the media access door, and remove all media and ribbon.

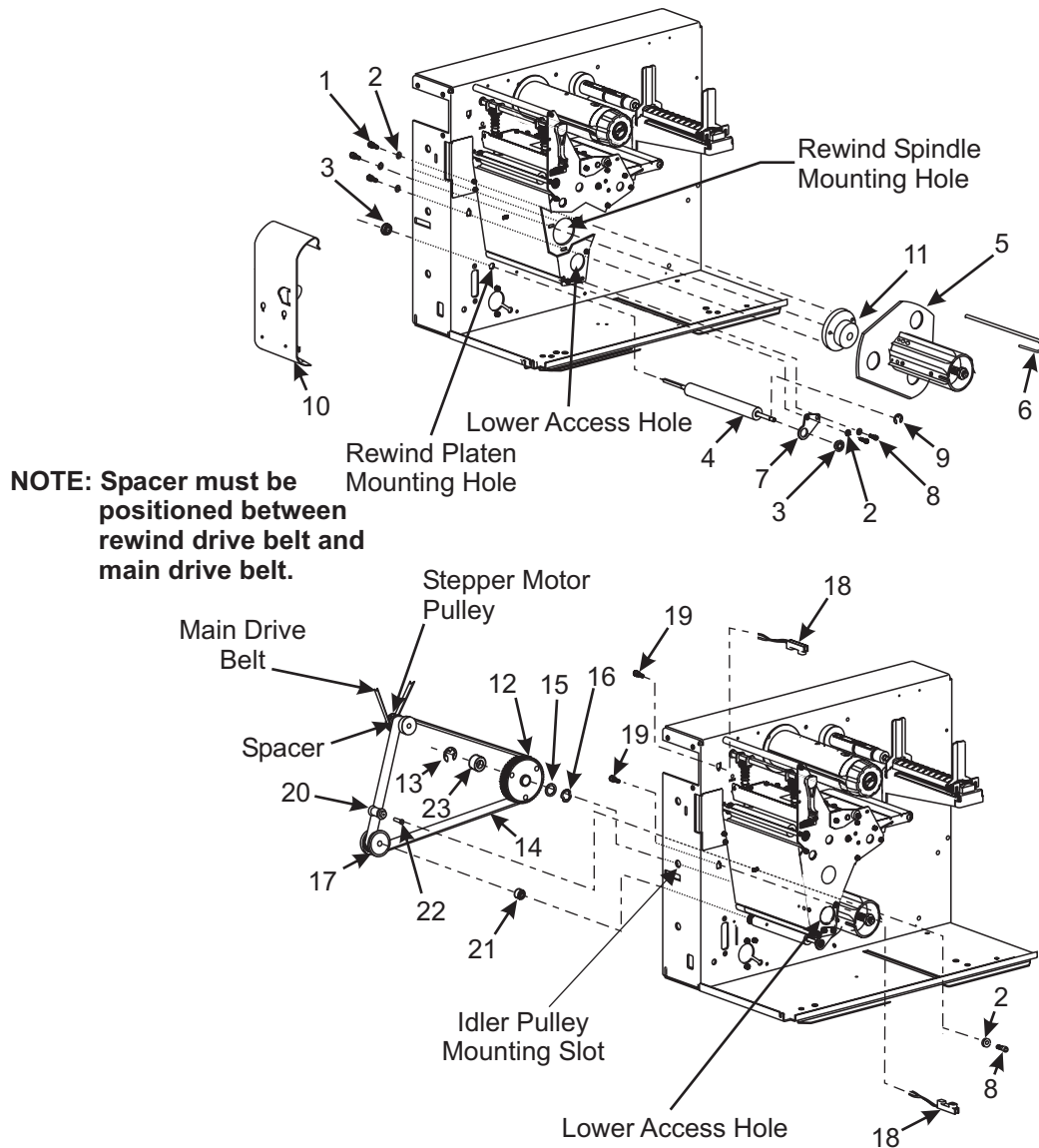


Figure 6-9. Rewind Assembly Installation

Parts List

[Table 6-1](#) lists the parts found in the Media Rewind Option Kits. The last four columns indicate which parts are used in the particular kit for the different printers. Use [Table 6-1](#) and [Figure 6-9](#) to conduct an inventory of the parts before installing the kit. The parts received are dependent on the kit ordered for a particular printer. Labels on the parts packaged in the kits may not show the “M” reorder designation shown on some of the part numbers.

Table 6-1. Rewind Option Kit Parts List

✓	ITEM	QTY	PART NUMBER	DESCRIPTION	22455 220X/III and XIIIPlus	46355 170X/III and XIIIPlus	47355 90X/III and XIIIPlus	47355-6 96X/III	47655-6 96 XIIIPlus	48355 140X/III, R-140, and XIIIPlus
	1	3	<i>30393-006*</i>	Screw, 8-32	X	X	X	X	X	X
	2	6	<i>40193**</i>	Washer, Flat	X	X	X	X	X	X
	3	2	48688	Flange Bearing (Part of Platen Roller Kits)	X	X	X	X	X	X
	4	1	<i>22101</i>	Platen Roller (Part of 22101M)	X					
	4		<i>46378</i>	Platen Roller (Part of 46278M)		X				
	4		<i>47601</i>	Platen Roller (Part of 47601M)			X	X	X	
	4		<i>40038</i>	Platen Roller (Part of 40038M)						X
	5	1	22155M	Rewind Spindle Assembly	X					
	5		46249M	Rewind Spindle Assembly		X				
	5		47155M	Rewind Spindle Assembly			X	X	X	
	5		48155M	Rewind Spindle Assembly						X
	6	1	47062-4	J-Hook	X					
	6		47062-3	J-Hook			X	X	X	
	6		47062-2	J-Hook						X
	6		<i>47062-1†</i>	J-Hook		X				
	7	1	40019	Platen Support Bracket	X	X	X	X	X	X
	8	3	<i>30392-004††</i>	Screw, 6-32	X	X	X	X	X	X
	9	1	02252	E-Ring	X	X	X	X	X	X
	10	1	22383M	Rewind Plate	X					
	10		46383M	Rewind Plate		X				
	10		47383M	Rewind Plate			X	X	X	
	10		48383M	Rewind Plate						X
	11	1	22334M	Bearing Housing Assembly	X					
	11		30334M	Bearing Housing Assembly (all but 220X/III)		X	X	X	X	X
	12	1	31336M	RTU/MTU Pulley Assembly	X	X	X			X
	12	1	47358M	RTU/MTU Pulley Assembly				X		
	12	1	33094-6M	RTU/MTU Pulley Assembly					X	
	13	1	<i>30118‡</i>	E-Ring	X	X	X	X	X	X
	14	1	45189-2	Rewind Drive Belt	X	X	X			X
	14	1	45189-13	Rewind Drive Belt				X	X	
	15	1	<i>30114‡‡</i>	Washer, Flat	X	X	X	X	X	X
	16	1	<i>30115§</i>	Washer, Wave	X	X	X	X	X	X
	17	1	30914M	Rewind Platen Pulley	X	X	X			X
	17		47915M	Rewind Platen Pulley				X	X	
	18	1	46609-4M	Take-Label Sensors Assembly	X	X	X	X	X	X
	19	2	<i>07435§§</i>	Screw 6-32	X	X	X	X	X	X
	20	1	22265	Idler Pulley	X					
	20		30265	Idler Pulley (all but 220X/III)		X	X	X	X	X
	21	1	N/A	Spacer (Part of Platen Roller Kits)	X	X	X	X	X	X
	22	1	22207	Idler Shaft	X					
	22		30207	Idler Shaft (all but 220X/III)		X	X	X	X	X
	23	1	N/A	Spacer (Part of 31336M)	X	X	X	X	X	X
	N/S	1	11301	Allen Wrench, Long 7/64 inch	X	X	X	X	X	X

N/A – Not available as separate service item
N/S – Not shown

*Available only as HW30393-006 in quantities of 25

‡Available only as HW30118 in quantities of 25

**Available only as HW40193 in quantities of 25

‡‡Available only as HW30114 in quantities of 25

†Available only as HW47062-1 in quantities of 5

§Available only as HW30115 in quantities of 25

††Available only as HW30392-004 in quantities of 50

§§Available only as HW07435 in quantities of 100

Bold = Part available for purchase

Light italic = Part not available for purchase, listed and shown for reference only

Installation

1. Refer to [Figure 6-9](#). Place a flat washer (#2) onto one of the screws (#8). Use the Allen wrench provided in the kit to place this mounting screw through the lower access hole in the side plate and through the idler pulley mounting slot in the printer main frame. On the electronics side of the printer main frame, attach the idler shaft (#22) to the mounting screw.
2. Position the idler shaft in the middle of the mounting slot and tighten the mounting screw. Apply a very small amount of grease (provided in kit) to the idler shaft with a toothpick or small screwdriver. Keep excess grease away from other components.
3. Slide the idler pulley (#20), flat side out, onto the idler shaft.
4. In the lower center portion of the main frame, remove the cover plate from the rewind spindle mounting hole.
5. Slide the bearing housing assembly (#11) out of the media rewind spindle assembly (#5).
6. Install the bearing housing assembly on the printer main frame using three screws (#1) and three flat washers (#2). Do not tighten the screws at this time.
7. Insert the shaft of the rewind spindle (#5) through the bearing housing assembly.
8. Place the wave washer (#16), flat washer (#15), and pulley, recessed side facing away from the main frame, (#12) onto the rewind spindle shaft.
9. Slide the spacer (#23) on the rewind spindle shaft. Press the E-ring (#13) into the groove in the rewind spindle shaft.
10. Attach the platen support bracket (#7) to the side plate with two flat washers (#2) and two screws (#8). Do not tighten the screws at this time.
11. Remove the plastic plug from the rewind platen mounting hole near the bottom of the main frame.
12. Insert the long end of the rewind platen shaft (#4) through the rewind platen mounting hole.
13. Place the flange bearing (#3) over the left end of the rewind platen shaft. Press the bearing into the mounting hole with the flange on the outside (left side) of the main frame.
14. Place the opposite end of the rewind platen shaft through the platen support bracket (#7).
15. Place the remaining flange bearing (#3) over the right end of the rewind platen shaft with the flange of the bearing on the outside (right side) of the platen support bracket. Press it into the mounting hole in the platen support bracket and secure with the E-ring (#9).
16. Use the Allen wrench to tighten the mounting screws that secure the platen support bracket to the side plate. The bracket may need adjustment later.
17. Slide the spacer (#21) onto the rewind platen shaft.
18. Slide the rewind platen pulley (#17) onto the rewind platen shaft and align the two pulley set screws with the flat surfaces of the rewind platen shaft.
19. Leave approximately a 0.020 inch (0.5 mm) gap between the E-ring (#9) and platen support bracket (#7), and tighten the set screws.
20. Position the rewind plate as shown in [Figure 6-10](#) with the attached hook plate pointing down.

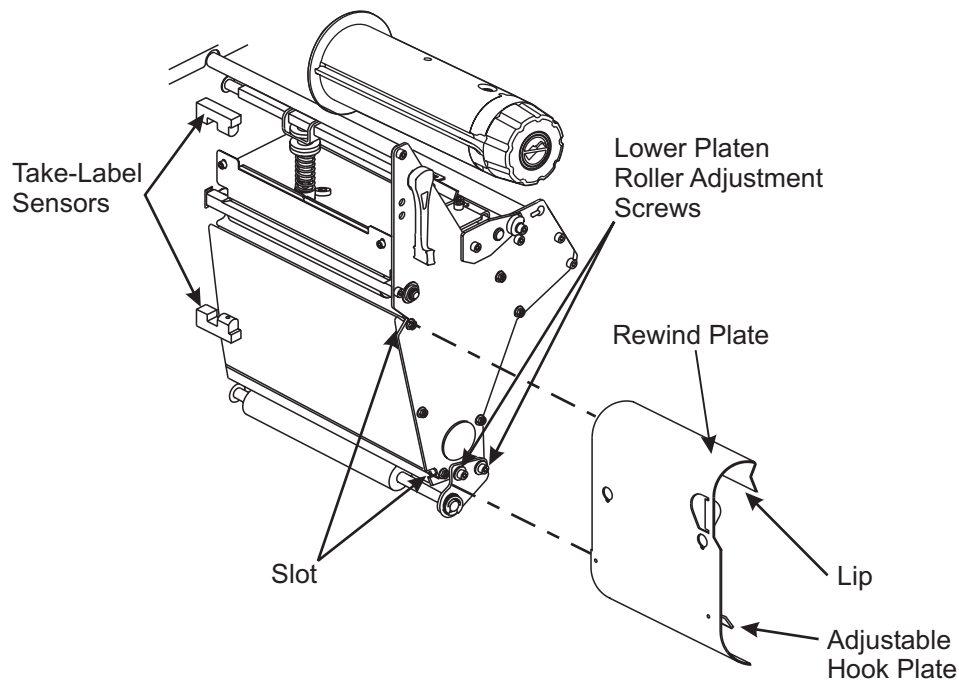


Figure 6-10. Take-Label Sensor Location

21. Insert the hook plate 1/2 inch (13 mm) into the lower opening in the side plate.
22. Align the upper end of the media rewind plate with the corresponding opening in the side plate, then slide the rewind plate in until it stops against the main frame.
23. Refer to [RRP No. 9 on page 4-28](#) and install the rewind drive belt.
24. Refer to [RRP No. 8 on page 4-26](#) and adjust the rewind drive belt tension.
25. Refer to [RRP No. 6 on page 4-23](#) and readjust the main drive belt tension.

Take-Label Sensor Installation

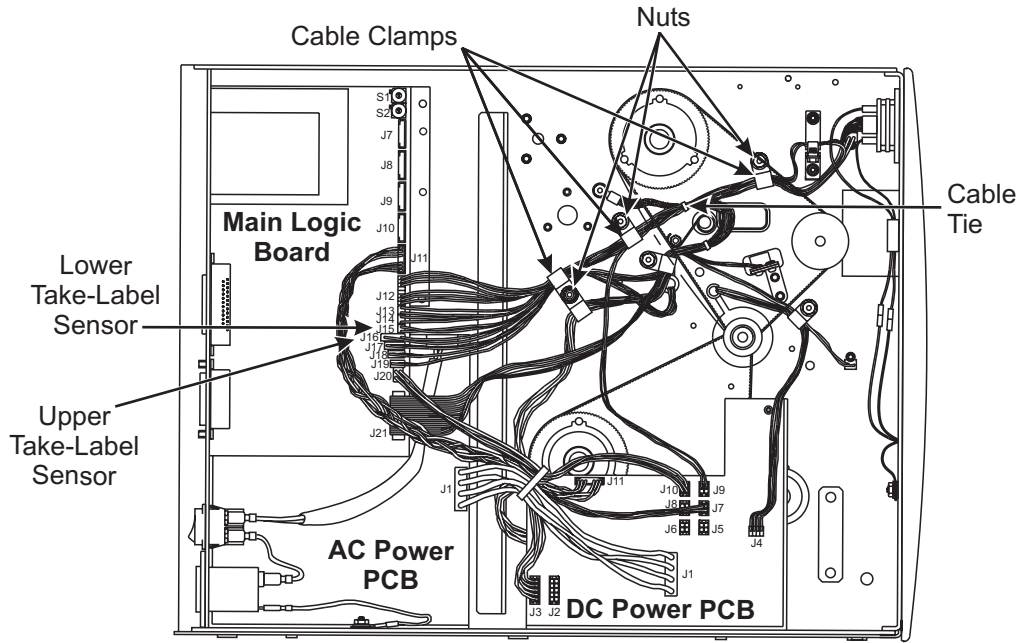
(Do not install on cutter units.)

The Take-Label Sensors are required only in the Peel-Off Mode of operation.

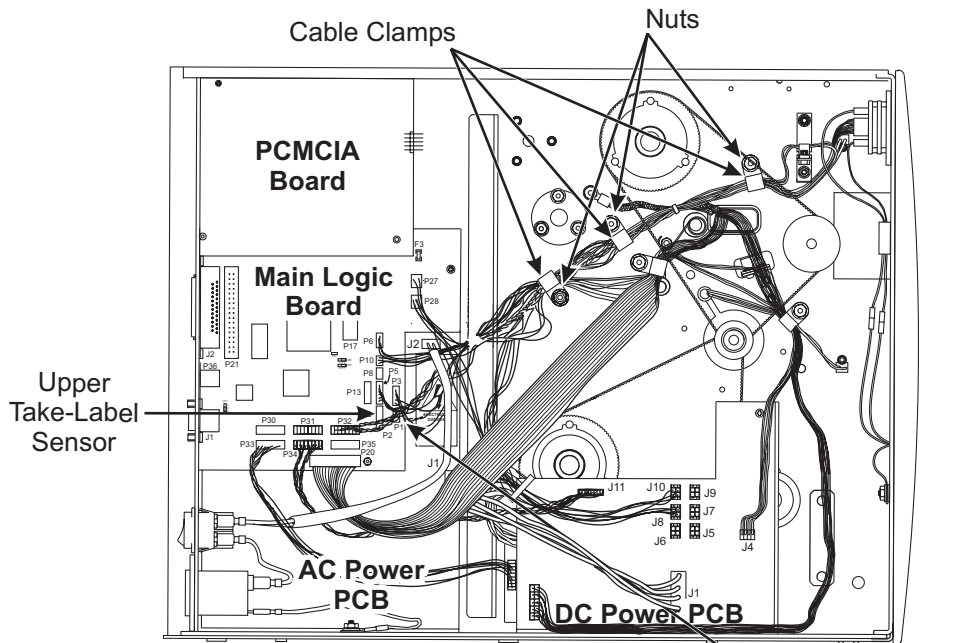
Refer to [Figure 6-9](#) and [Figure 6-10](#).

1. Remove the upper and lower take-label sensor cover plates by removing the two socket head cap screws with the Allen wrench.
2. Insert the upper take-label sensor assembly (#18) (green/yellow wires), connector, and cable through the upper take-label sensor hole in the main frame.
3. Position the sensor with the window facing directly down and use one (#19) screw to fasten the sensor in place.
4. Insert the lower take-label sensor assembly (#18) (red/black wires), connector, and cable through the lower take-label sensor hole in the main frame.
5. Position the sensor with the window facing directly up and use one (#19) screw to fasten the sensor in place.
6. Route the wires through the cable clamps and toward the main logic board, ensuring the wires do not come in contact with any moving parts.

- Refer to [Figure 6-11](#). Connect the upper take-label sensor connector to J16 (XIII) or P2 (XIIIPlus) on the main logic board, and the lower take-label sensor connector to J15 (XIII) or P1 (XIIIPlus).



X/III and R-140



XIIIPlus

Figure 6-11. Take-Label Sensor Connections



Note • When in Peel-Off mode, if the two sensor are not aligned with each other, the Take-Label LED lights up and the printer will not operate.

8. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply assembly.
9. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
10. Reconnect the AC power cord and data cable.
11. Turn the printer power On (I).

Adjustments

The Rewind Option Kit usually requires some adjustments to prevent printing problems such as ribbon wrinkle, non-centered labels, and tearing of the media. Print a number of test labels and use the following procedures to correct any problems.

Rewind Mode Adjustments

Tracking Adjustment

Refer to [Figure 6-12](#) and [Figure 6-13](#).

1. If the media walks from side to side or tears or wrinkles against the backing plate on the media rewind spindle, it may be necessary to adjust the position of the rewind plate assembly mounted on the front of the printer or the rewind spindle assembly.
2. Remove the rewind plate assembly from the front of the printer and loosen the nuts securing the hook plate to the rewind plate.
3. Move the outer end of the hook plate up to force the media to wind closer to the large backing plate on the rewind spindle.
or
Move the outer end down to force the media away from the backing plate.
4. Reinstall the rewind plate on the front of the printer and print a number of test labels. If problems persist, adjust the hook plate position again.
5. If the media cannot be made to track correctly after making this adjustment, check the distance from the backing plate to the main frame. This dimension is set at the factory and should be 0.550 inch (14 mm) \pm 0.020 inch (0.5 mm). If the distance needs to be reset, perform [step 6](#) and 7.
6. Refer to [Figure 6-12](#). Loosen the set screws in the collar located inside the rewind spindle assembly near the backing plate. The set screws are accessible through a single hole in the rewind spindle assembly. Reposition the backing plate as required and retighten the set screws in the collar.
7. Perform the rewind plate assembly adjustment in steps 1 and 2 until the desired results are achieved.

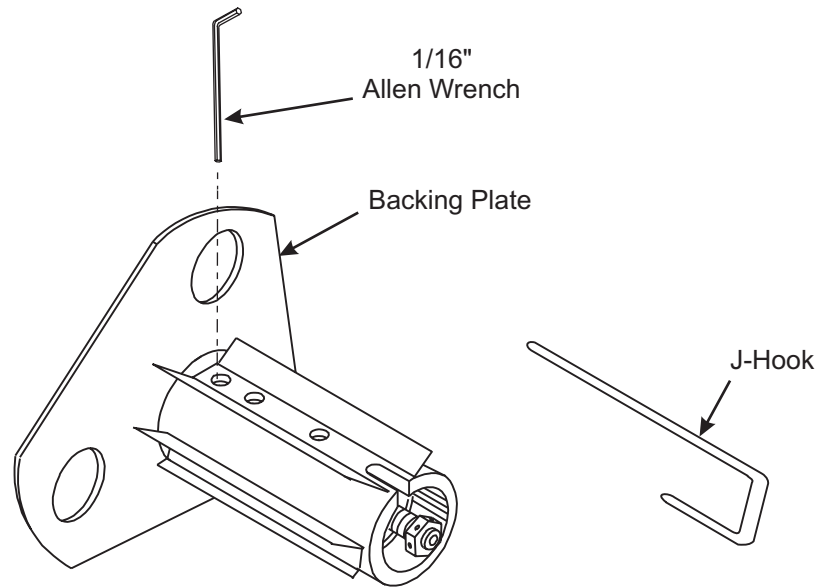


Figure 6-12. Position Adjustment of Rewind Spindle Assembly

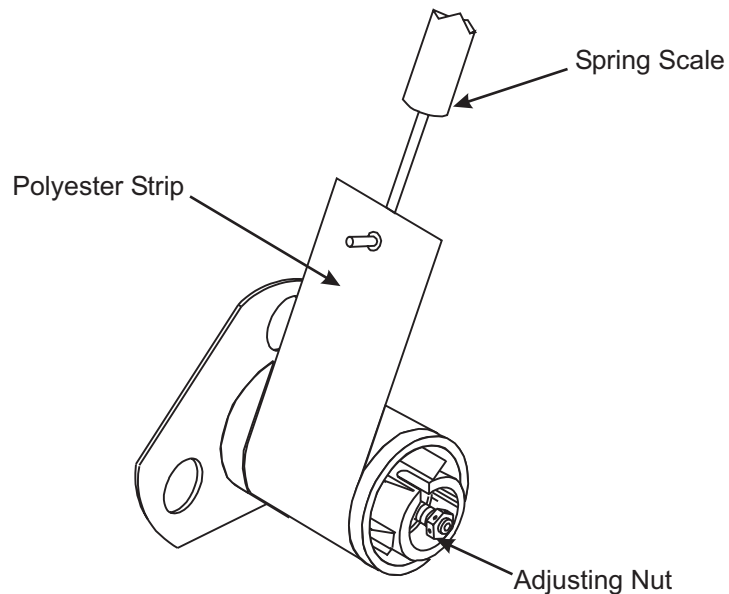


Figure 6-13. Tension Adjustment of Rewind Spindle Assembly

Tension Adjustment

If the backing material is wound too tightly on the spindle, it can cause misregistration of labels, tearing, or poor print quality due to smudging. Backing material rewound too loosely could jam up the printer before completing a roll, or make it impossible to separate the labels from the liner in Peel Mode.

1. Refer to [Figure 6-13](#). Use a spring scale gauge to set the spindle tension. Use adhesive tape to attach a 2-inch wide by 30-inch long (5 cm wide by 17 cm long) strip of polyester film (part # 01776) to the spindle in the direction shown.

Table 6-2. Rewind Spindle Tension Specifications

Printer	Tension
90/96	1450 ±100 grams
140/R-140	1450 ±100 grams
170	1650 ±100 grams
220	1850 ±100 grams

2. Refer to [Table 6-2](#). Insert the spring scale tip through the reinforced hole in the end of the strip and pull slowly and evenly (2 inch [5 cm] per second) in the direction shown. Make this measurement several times to insure an accurate reading.
3. If required, readjust the tension as described below and recheck the tension setting.
4. To keep the spindle from rotating while turning the adjusting nut, insert the Allen wrench through the access hole at the rear of the rewind spindle to lock the spindle in position.
5. Turn the adjusting nut with fingers or pliers clockwise for more tension, or counterclockwise for less tension.



Note • Do not operate printer without at least one set screw tightened.

6. Tighten one of the adjusting nut set screws and retest (step 2).
7. If proper tension is not achieved, loosen the set screw and readjust as needed.
8. When proper tension is obtained, tighten both set screws.
9. Recheck the tension after running a full roll of labels.



Note • Depending on the width of the media and the thickness of the backing material, it may be necessary to deviate slightly from the recommended tension setting shown above.

Peel-Off Mode Adjustments

Lower Roller Adjustment

If the media walks from side to side, it may be necessary to adjust the position of the lower roller.

Refer to [Figure 6-9](#) on page 6-8.

1. Loosen the two screws (#8) securing the platen support bracket (#7) to the side plate.
2. Moving the bracket toward the rear of the printer forces the media to wind closer to the main frame. Moving the bracket toward the front moves the media away from the main frame. Adjust as required and tighten screws.
3. Perform this adjustment until required results are achieved.

Tension Adjustment

For backing/label combinations that are particularly difficult, it may be necessary to increase rewind tension in the Peel-Off Mode. Follow the same tension adjustment procedures on the previous page used for the Rewind Mode Adjustments.

Optional Interface Boards

Internal PrintServer II™

Hardware Description

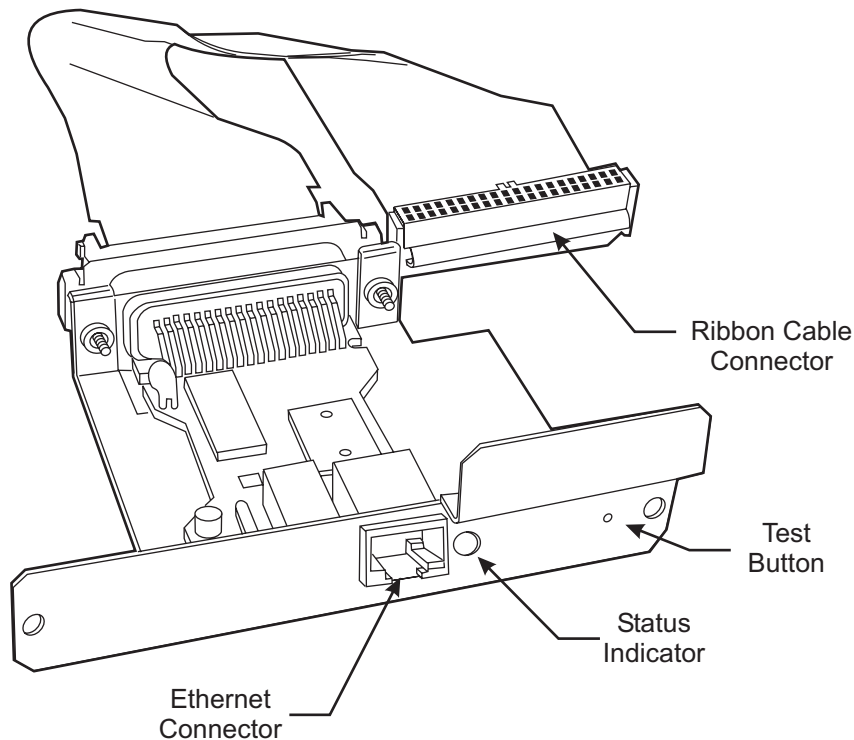


Figure 6-14. Internal PrintServer II

Test Button: Generates a detailed PrintServer II configuration label.

Status Indicator: A bi-colored indicator displays the state of the PrintServer II.

Ethernet Connection: Connection for a 10 Base-T cable. Connecting the PrintServer II does not interrupt network operation.

Ribbon Connector: The internal PrintServer II is powered by the printer; no additional power source is required.



Note • To print a PrintServer II configuration label from your Zebra printer, a 4 inch wide by 6 inch long (10 cm wide by 15 cm long) label is recommended. If the label is smaller, some information may print outside the label edges. If you are printing on a 90XiII or 90XiIII-Series printer, some of the heading information on the right side of the label will not print. Refer to Figure 6-15 for any missing data.

```

TCP/IP
  ENABLED                               STATUS
  200.200.200.3                          ADDRESS
  255.255.255.0                          SUBNET MARK
  0.0.0.0                                DEFAULT GATEWAY
  ENABLED                                TIMEOUT CHECKING

NETWARE
  ENABLED                               STATUS
  Ethernet 802.3                          FRAME FORMAT
  Unknown                                  MODE

GENERAL
  1885720                                SERIAL NUMBER
  0040681CC619                           HARDWARE ADDRESS
  11.6 <9905A>                            FIRMWARE VERSION

ERROR
  None                                    GENERAL
  None                                    TCP/IP
  None                                    NETWARE

JET ADMIN
  ENABLED                               STATUS

PORT CONFIGURATION
  Online                                 PORT NAME
  None                                  PRINTER STATUS
                                           CONNECTED TO
                                           ERROR

ZebraNet™ PRINT SERVER CONFIGURATION
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
    
```

Figure 6-15. Configuration Label PrintServer II

Installation

This section provides the information necessary to install the internal PrintServer II in the Zebra XiIII-Series printers. Read this section completely before performing the installation procedure.



Note • The parallel port on the back of the printer is not operational when the internal PrintServer II is installed. The hardware of the PrintServer II mounting bracket covers the parallel port.



Caution • This installation must be performed by a qualified service technician.

This installation should be performed by a qualified service technician, who must follow the step-by-step procedure provided in these instructions.

After you have finished installing the PrintServer II hardware, refer to the appropriate section of this guide for information on establishing a connection for your network type.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect any data cables.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to [Figure 6-16](#). At the rear of the printer, remove the two screws and the blank cover plate or an existing optional interface board positioned next to the main RS-232 and parallel interface connectors.

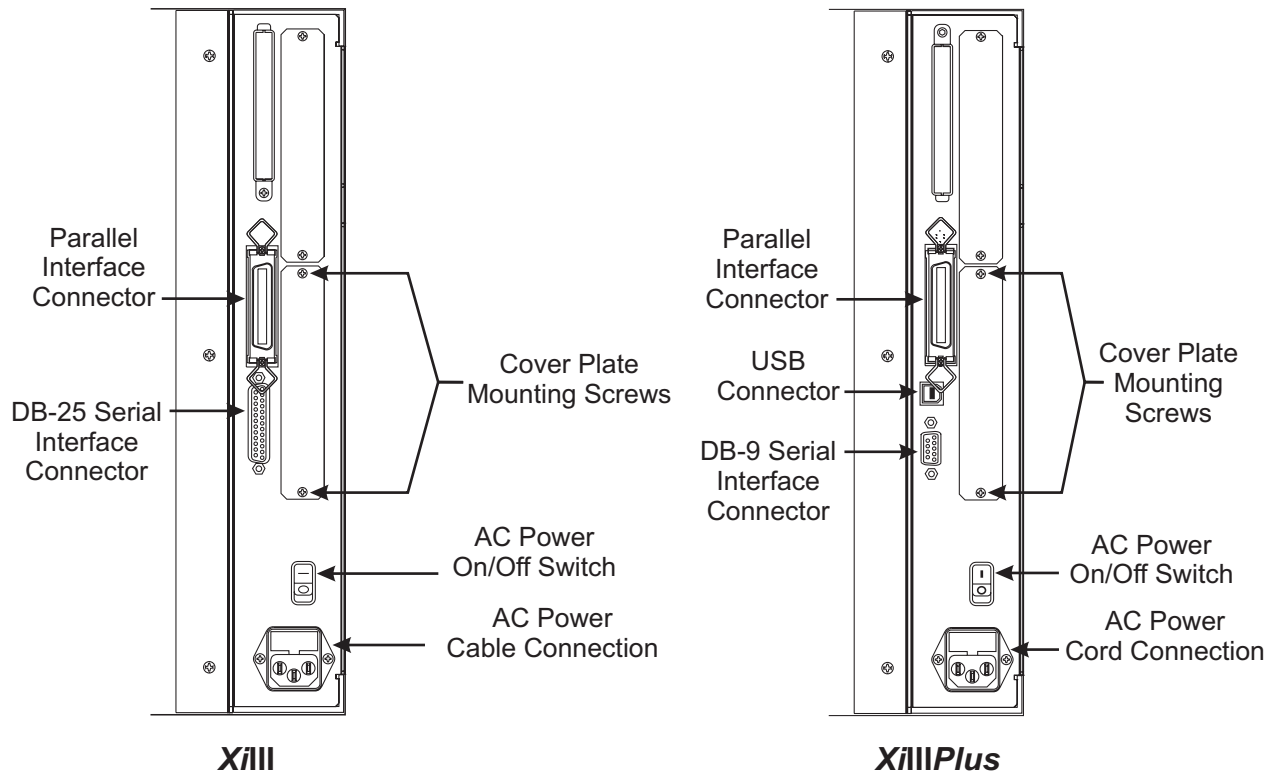


Figure 6-16. Cover Plate Rear View

4. Insert the ribbon cable and PrintServer II device through the mounting slot.
5. Refer to Figures 6-17 or 6-18. Fold the cable and the ferrite bead back over the mounting bracket, and connect the ribbon cable connector into the keyed interface data cable connector (J4–Xiii or P21–XiiiPlus) on the main logic board. Ensure that the connector is properly seated and that pin 1 of the interface data cable connector is connected to pin 1 of J4 or P21.

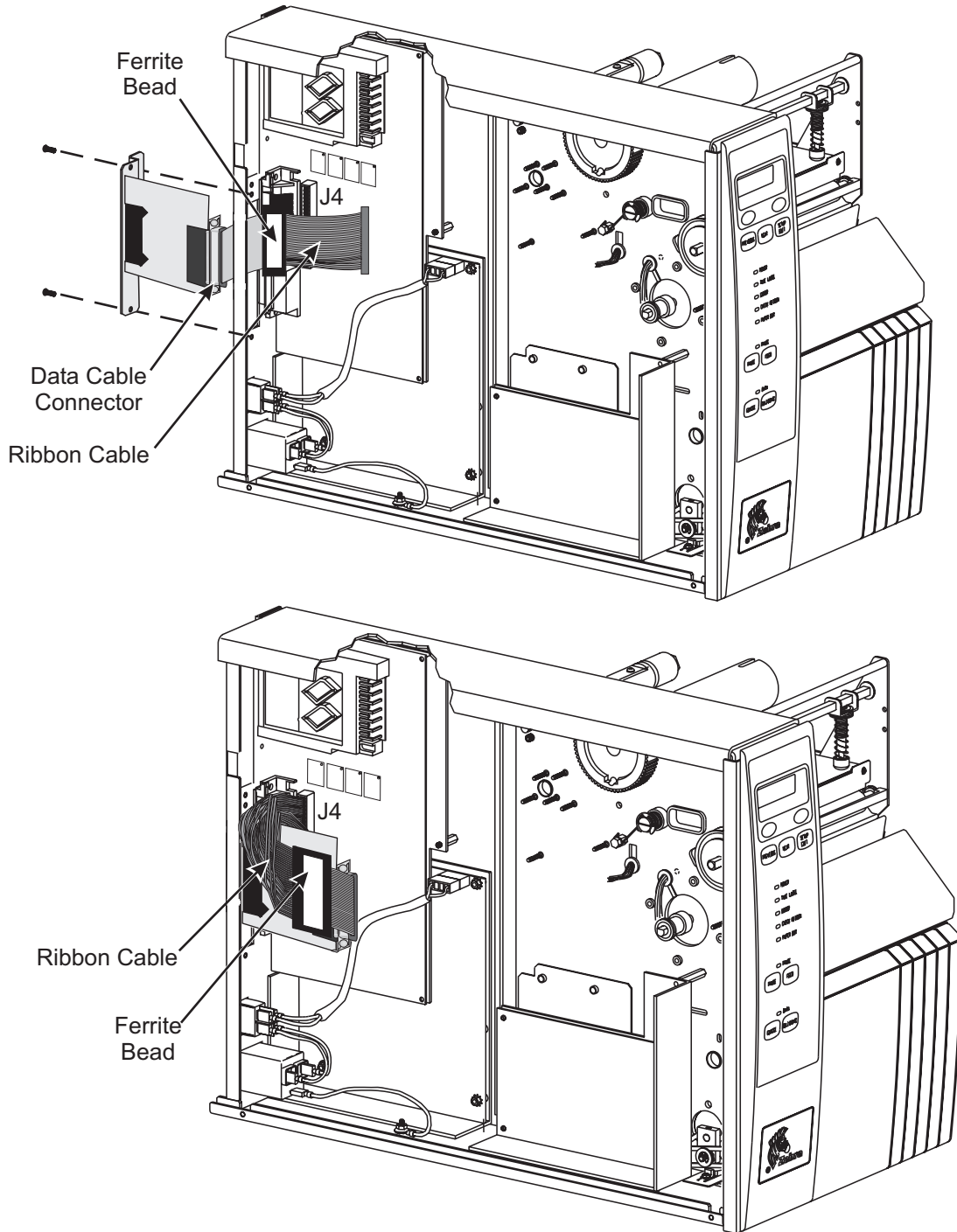


Figure 6-17. Xiii and R-140 Internal PrintServer II Board Installation

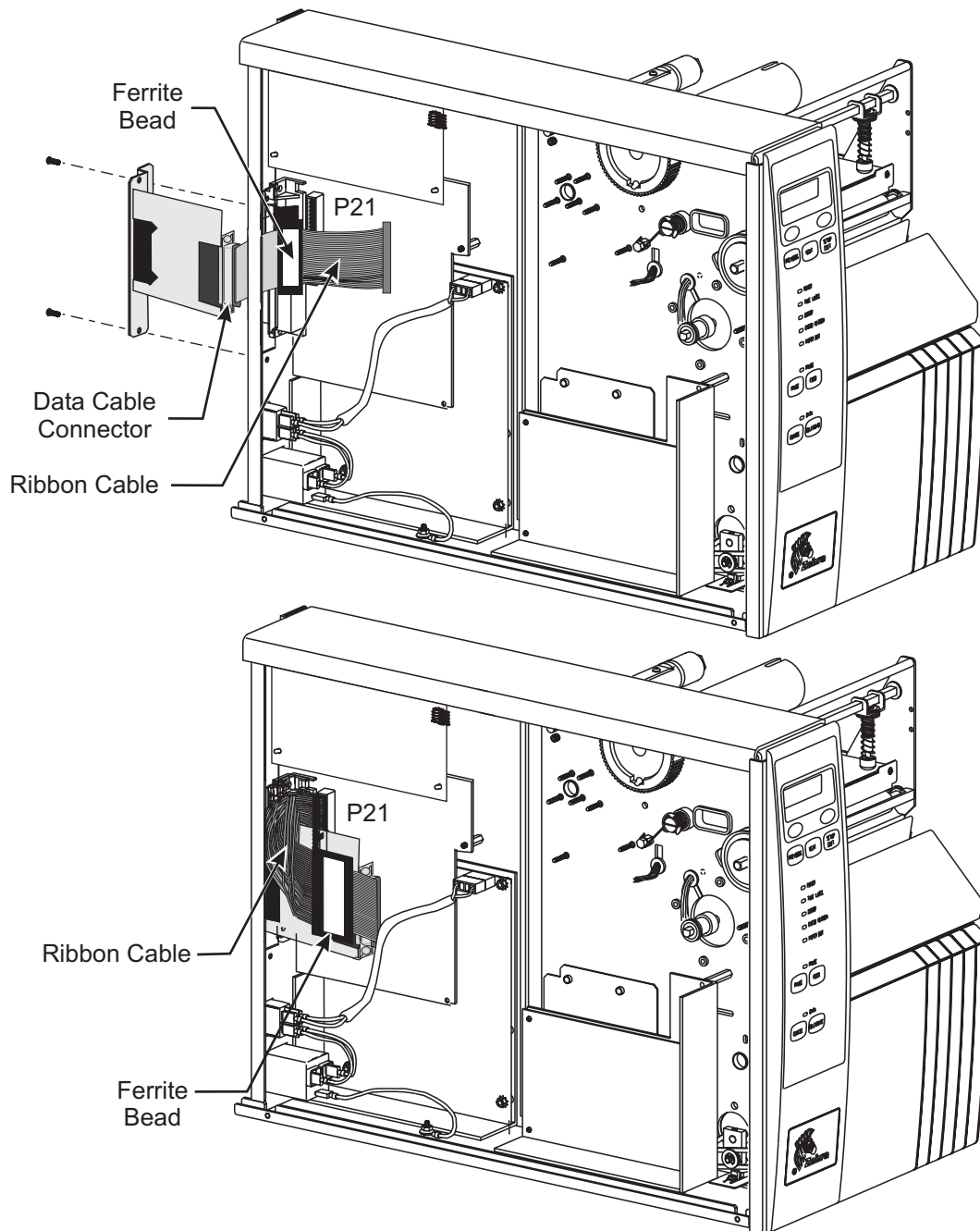


Figure 6-18. XiiiPlus Internal PrintServer II Board Installation

6. Secure the PrintServer II interface board in place with the cover plate screws removed in step 2.
7. Check all connectors for firm connections. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
8. This kit includes a label printed with the Ethernet MAC hardware address for the PrintServer II. Remove the backing from the label and affix it to the back of the printer.

9. Reconnect the AC power cord and turn the printer power On (I).



Note • Consult your system administrator before configuring the PrintServer II for your network.

External PrintServer II Installation

Hardware Description



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

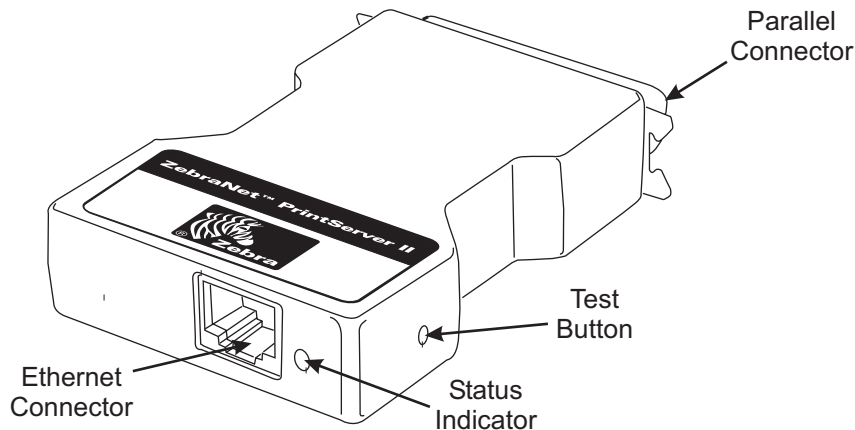


Figure 6-19. External PrintServer II

Test Button: This generates a detailed PrintServer II configuration label.

Status Indicator: A bi-colored indicator displays the state of the PrintServer II.

Ethernet Connection: Connection for a 10 Base-T cable. Connecting the PrintServer II does not interrupt network operation.

Parallel Connector: The external PrintServer II is powered by the printer; no additional power source is required.

Installation

The external ZebraNet PrintServer II is installed using the following steps:

1. Turn the printer power Off (O). Install the PrintServer II device directly into the parallel port on the printer and secure with the wire locks.
2. Insert an active 10 Base-T cable into the Ethernet connector on the back of the PrintServer II device.
3. Turn the printer power On (I). The status indicator blinks orange during the POST (Power-On Self Test) phase and changes to green when stabilized.

- Press the test button located on the back of the PrintServer II to print out a PrintServer II configuration label.



Note • To print a PrintServer II configuration label from your Zebra printer, a 4 inch wide by 6 inch long (10 cm wide by 15 cm long) label is recommended. If the label is smaller, some information may print outside the label edges. If you are printing on a 90XiIII or 90XiIII-Series printer, some of the heading information on the right side of the label will not print. Refer to Figure 6-15 on page 6-17 for any missing data.

Twinax Communications Interface Board

Installation Instructions

- Turn the printer power Off (O) and disconnect the AC power cord. Disconnect any data cables.
- Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
- Refer to [Figure 6-20](#). At the rear of the printer, remove and retain the two screws and the blank cover plate or existing interface board positioned next to the main RS-232 and parallel interface connectors.

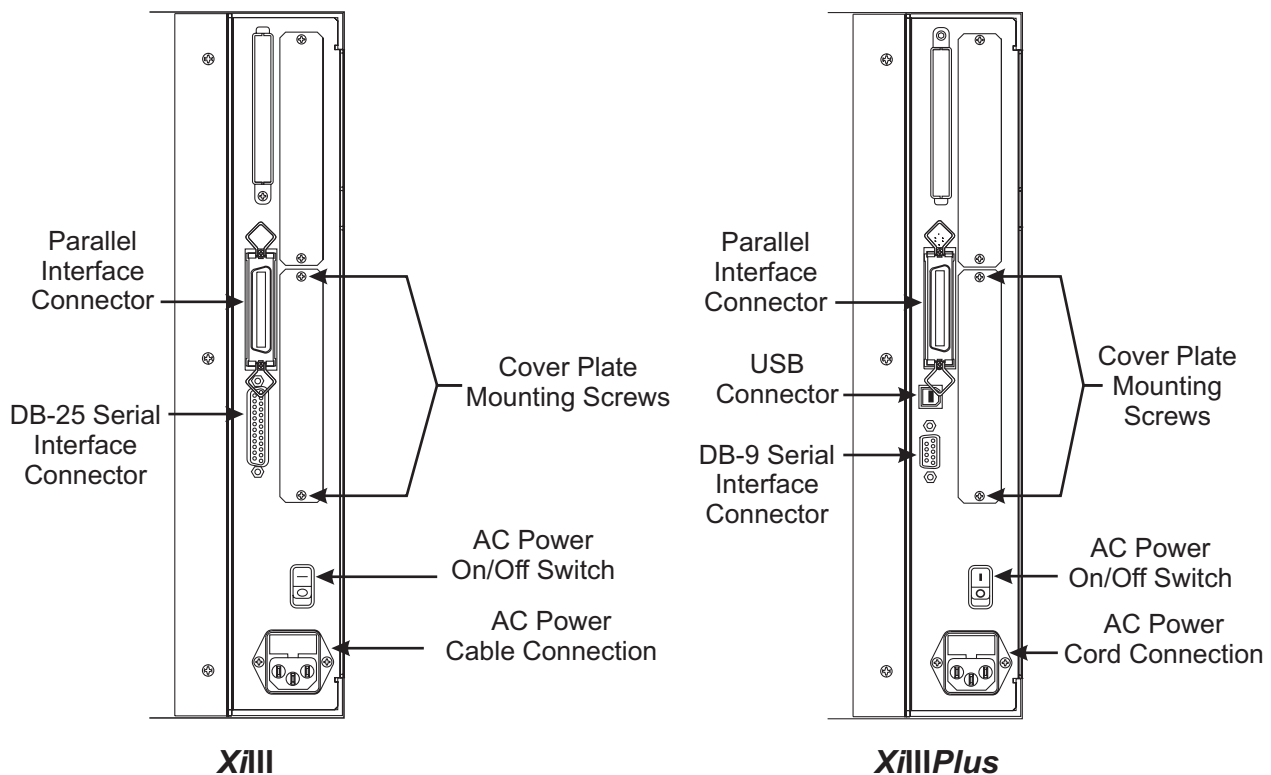


Figure 6-20. Rear View

- Plug the 40-pin interface data cable into the keyed interface data cable connector (J4–Xiii or P21–XiIIIPlus) on the main logic board.
- Insert the twinax interface board partially into the mounting slot, then attach the other end of the interface data cable into the data cable connector at the rear of the twinax interface board.
- Dress the ribbon cable behind the twinax interface board as you slide the board completely into the printer.

7. Fasten the twinax interface board in place with the screws previously removed.
8. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
9. Connect the 9-pin twinax adapter cable connector to the mating connector on the interface board.

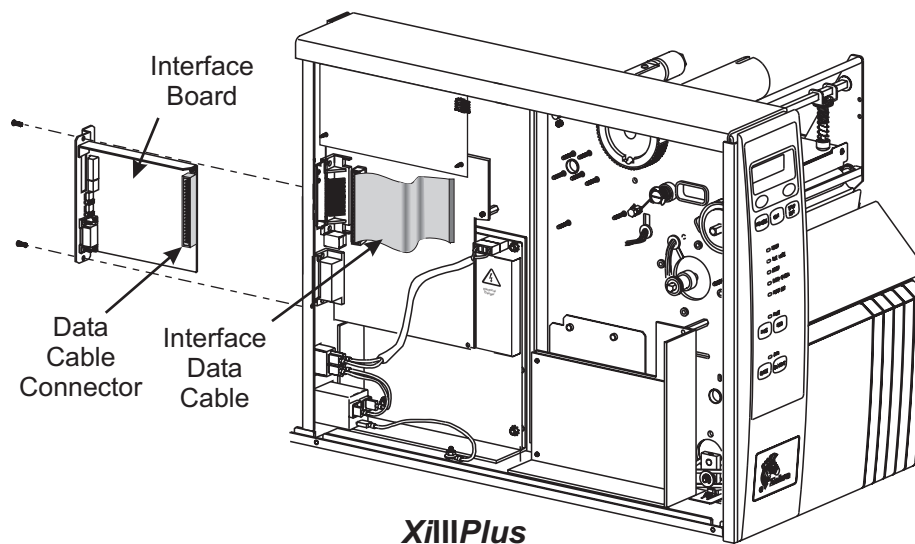
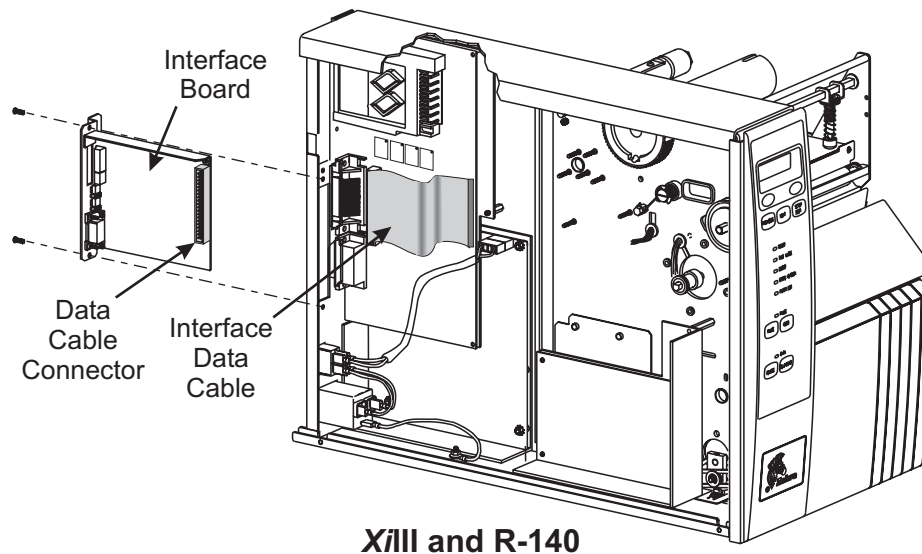


Figure 6-21. Twinax Interface Board Installation

10. Connect the twinax cable from the host computer to the mating connector on the adapter cable.
11. Refer to [Table 6-3](#). Set the DIP switches in the proper positions for the application, then reconnect the AC power cord and turn the printer power On (I).

12. Ensure that the printer configuration is set to:

Parameter	Setting
Host Port	Twinax/Coax

Table 6-3. Twinax Interface Board DIP Switch Settings

Print Complete		
Switch #1	Description	
Left	An Operation Complete status message is sent to the host after a label format is completely printed. The host can then send the next label format to be printed.	
Right	Enables the Early Print Complete function. The host can send additional print jobs to the Zebra printer without waiting for the actual completion of the current print job. The printing status sent to the host reflects the label formats received, not the ones completed.	
EBCDIC Buffer Print		
Switch #2	Description	
Left	Normal operation (received EBCDIC data is translated to ASCII Data).	
Right	Received EBCDIC data prints as large characters that are readable hex equivalents. Use only for troubleshooting with the printer in the Diagnostics mode.	
Printer Emulation Selections		
Switch #3	Switch #4	IBM Printer Configured
Left	Left	5256 Model 3
Left	Right	5225 Model 4
Right	Left	5224 Model 2
Right	Right	4212 Model 2

Default Language Selections

Table 6-3. Twinax Interface Board DIP Switch Settings

Switch #5	Switch #6	Switch #7	Switch #8	Language Selected
Left	Left	Left	Left	0 — Multinational
Left	Left	Left	Right	1 — USA/Canada (Factory setting)
Left	Left	Right	Left	2 — Austria/Germany
Left	Left	Right	Right	3 — Belgium
Left	Right	Left	Left	4 — Brazil
Left	Right	Left	Right	5 — Canada (French)
Left	Right	Right	Left	6 — Denmark/Norway
Left	Right	Right	Right	7 — Finland/Sweden
Right	Left	Left	Left	8 — France
Right	Left	Left	Right	9 — Italy
Right	Left	Right	Left	A — Japan
Right	Left	Right	Right	B — Japan (English)
Right	Right	Left	Left	C — Portugal
Right	Right	Left	Right	D — Spain
Right	Right	Right	Left	E — Spanish-Speaking
Right	Right	Right	Right	F — United Kingdom

NOTE: The language character sets 1 — US/Canada and B — Japan (English) are the same. The character sets for D — Spain and E — Spanish-Speaking are the same.

Cable Address Switch Settings

Switch #9	Switch #10	Switch #11	Address Selected
Left	Left	Left	0 — (Factory Setting)
Left	Left	Right	1
Left	Right	Left	2
Left	Right	Right	3
Right	Left	Left	4
Right	Left	Right	5
Right	Right	Left	6
Right	Right	Right	7 — (Use in Diagnostic Mode Only)

Star Panel Overdrive

Switch #12	Description
Left	Normal Operation

13. Send a sample label format from the host computer to the printer to test for proper operation.
14. After setting the DIP switches, turn the printer power Off (O) and back On (I). With the exception of DIP switch #2, the printer monitors the positions of the DIP Switches only during the Power-On Self Test. The EBCDIC Buffer Print function is enabled whenever DIP Switch #2 is placed in the “Right” position.

Coax Communications Interface Boards



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

Installation Instructions

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cable.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to [Figure 6-20](#). At the rear of the printer, remove and retain the two screws and the blank cover plate or existing interface board positioned next to the main RS-232 and parallel interface connectors.

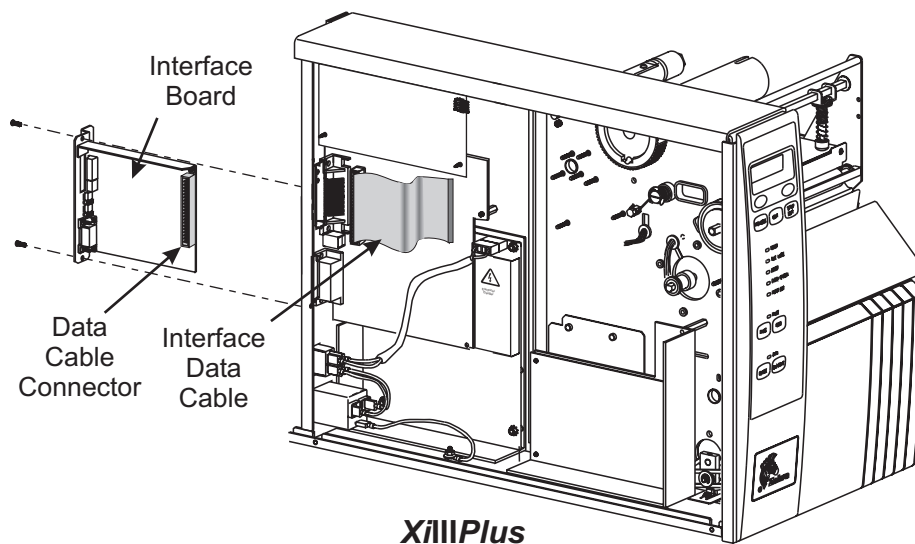
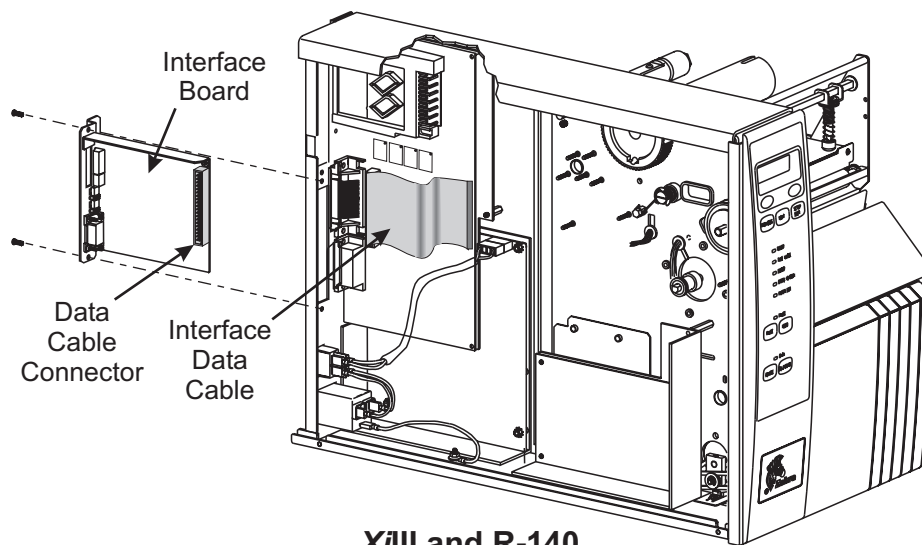


Figure 6-22. Coax Communications Interface Board Installation

4. Plug the 40-pin interface data cable into the keyed interface data cable connector (J4–X111 or P21–X111Plus) on the main logic board.

5. Insert the coax interface board partially into the mounting slot, then attach the other end of the interface data cable into the data cable connector at the rear of the coax interface board.
6. Dress the ribbon cable behind the coax interface board as you slide the board completely into the printer.
7. Fasten the coax interface board in place with the screws removed in step 2, then reinstall the side cover.
8. Connect the 9-pin coax adapter cable connector to the mating connector on the interface board.
9. Connect the coax cable from the host computer to the mating connector on the adapter cable.
10. Set the DIP switches in the proper positions for the application refer to [Table 6-4](#), then reconnect the power cord and turn the printer power On (I).
11. Ensure that the printer configuration is set to:

Parameter	Setting
Host Port	Twinax/Coax

12. Send a sample label format from the host computer to the printer to test for proper operation.

Table 6-4. Coax Interface Board DIP Switch Settings

Test Mode				
Switch #1	Description			
Left	Normal label printing operation.			
Right	When printer power is applied, the coax interface performs a self test. A self test label printout lists the coax interface software revision, the selected language, results of the RAM/ROM tests, and a sample code 39 bar code.			
EBCDIC Buffer Print				
Switch #2	Description			
Left	Normal operation (received EBCDIC data is translated to ASCII Data).			
Right	Received EBCDIC data prints as large characters that are readable hex equivalents. Use only for troubleshooting with the printer in the Diagnostics mode			
Default Language Selections				
Switch #3	Switch #4	Switch #5	Switch #6	Language Selected
Left	Left	Left	Left	0 — Multinational
Left	Left	Left	Right	1 — USA/Canada (Factory setting)
Left	Left	Right	Left	2 — Austria/Germany
Left	Left	Right	Right	3 — Belgium
Left	Right	Left	Left	4 — Brazil
Left	Right	Left	Right	5 — Canada (French)
Left	Right	Right	Left	6 — Denmark/Norway
Left	Right	Right	Right	7 — Finland/Sweden
Right	Left	Left	Left	8 — France
Right	Left	Left	Right	9 — Italy
Right	Left	Right	Left	A — Japan
Right	Left	Right	Right	B — Japan (English)
Right	Right	Left	Left	C — Portugal
Right	Right	Left	Right	D — Spain
Right	Right	Right	Left	E — Spanish-Speaking
Right	Right	Right	Right	F — United Kingdom
NOTE: The language character sets 1 — US/Canada and B — Japan (English) are the same. The character sets for D — Spain and E — Spanish-Speaking are the same.				
Intervention Required Message				
Switch #7	Description			
Left	Inhibits the sending of the "Intervention Required" (IR) status message.			
Right	When a printer error condition is monitored by the coax interface for a period of at least 10 minutes, an "Intervention Required" (IR) status message is sent to the host.			
Switch #8	Description			
Left	An "Operation Complete" status message is sent to the host after a label format is completely printed. The host can then send the next label format to be printed.			
Right	Enables the "Early Print Complete" function. The host can send additional print jobs to the printer without waiting for the completion of the current print job. The printing status sent to the host reflects the label formats received, not the ones completed.			

Table 6-4. Coax Interface Board DIP Switch Settings

Test Mode		
Buffer Size Selection		
Switch #9	Switch #10	Description
Left	Left	3564 Byte buffer
Left	Left	3440 Byte buffer
Left	Right	1920 Byte buffer
Left	Right	960 Byte buffer
Switch #11	Not Active	
Switch #12	Not Active	

- After setting the DIP switches, turn the printer power Off (O) and back On (I). With the exception of DIP switch #2, the printer monitors the positions of the DIP Switches only during the Power-On Self Test. The EBCDIC Buffer Print function is enabled whenever DIP Switch #2 is placed in the “Right” position.

Applicator Interface Port (XiIII, XiIIIPlus and R-140)

- Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cable.
- Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
- Refer to [Figure 6-20](#) and remove and retain the screws and the blank cover plate (or the interface board and cables) installed next to the PCMCIA memory card slot.
- Attach the DC power cable to J5 on the applicator circuit board, then connect interface data cable to J4 as needed.
- Refer to [Figure 6-23](#). Insert the applicator circuit board and cable partially into the mounting slot. Connect the other end of the interface data cables to one of the open serial data connectors on the main logic board (J7–J10 or P30–P36) and the DC power cable to one of the open connectors (J5–J10) on the DC power supply board.
- Slide the applicator circuit board completely into the mounting slot, and secure it with the screws previously removed.
- Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
- Reinstall the AC power cord and restore power. Turn the printer power On (I).

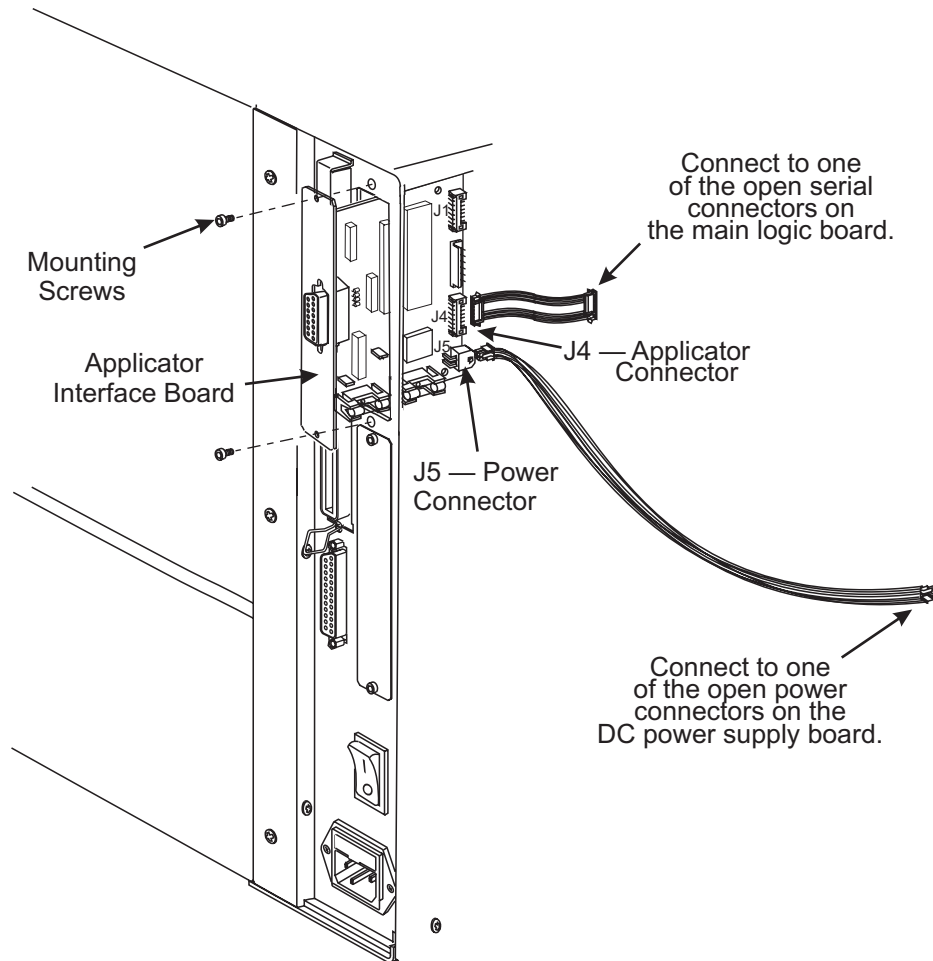


Figure 6-23. Applicator Installation

Applicator Interface Port with Real-Time Clock (X/III and R-140)



Note • The real-time clock (RTC) is on the main logic board and is standard on the *X/IIIPlus*.

1. Turn the printer power Off (O) and disconnect the AC power cord. Disconnect the data cable.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to [Figure 6-20](#) and remove and retain the screws and the blank cover plate (or the interface board and cables) installed next to the PCMCIA memory card slot.



Note • There are two interface data cables that need to be attached from the RTC/applicator circuit board to the main logic board if the applicator interface and the RTC are to work at the same time. J1 on the RTC board connects the RTC, and J4 connects the applicator interface.

4. Attach the DC power cable to J5 on the RTC/applicator circuit board, then connect one or both interface data cables to J1 and J4 as needed.

5. Refer to [Figure 6-24](#). Insert the RTC/applicator circuit board and cables partially into the mounting slot. Connect the other end of the interface data cables to one of the open serial data connectors on the main logic board (J7–J10 or P30–P36) and the DC power cable to one of the open connectors (J5–J10) on the DC power supply board.
6. Slide the RTC/applicator circuit board completely into the mounting slot, and secure it with the screws previously removed.
7. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.
8. Reinstall the AC power cord and restore power. Turn the printer power On (I).

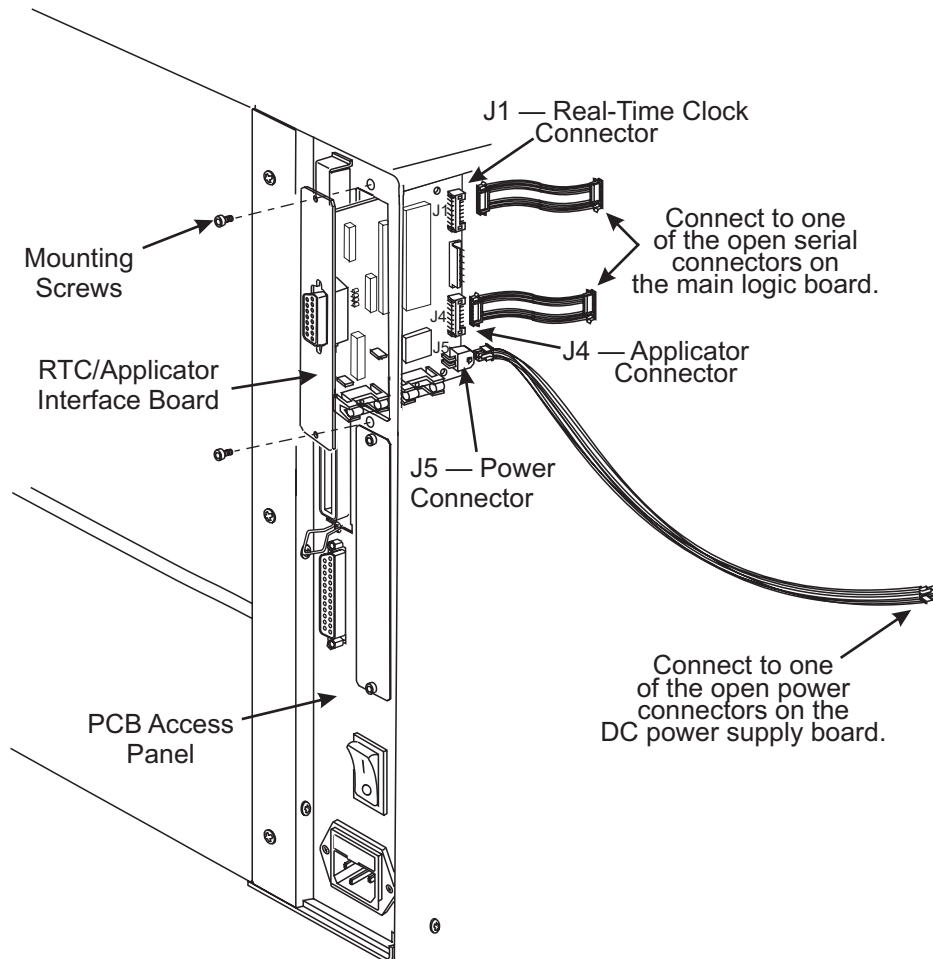


Figure 6-24. Applicator/Real-Time Clock Installation

9. Configure the real-time clock parameters according to the following instructions. Then send a sample label format from the host computer to the printer to test for proper operation.

Real-Time Clock Parameters

The following parameters are added to the front panel configuration prompts only when the real-time clock hardware is installed in the *XIII-Series* printer.

Idle Display

This parameter selects the printer's idle display format and the method of displaying the time/date information. It also affects the configuration label printout and the **SET DATE** and **SET TIME** formats.

Selections:

- FW VERSION
- DD/MM/YY 24HR
- MM/DD/YY 24HR
- MM/DD/YY 12HR
- DD/MM/YY 12HR

If FW VERSION is selected, the format is on the configuration label and on the **SET DATE**.

Set Time

This parameter allows entry of the RTC time in the format selected by the **IDLE DISPLAY** parameter.

Use the left oval key to select the position to be adjusted. Then use the right oval key to select the correct value for that position.

Set Date

This parameter allows entry of the RTC date in the format selected by the **IDLE DISPLAY** parameter.

Use the left oval key to select the position to be adjusted. Then use the right oval key to select the correct value for that position.

Real-Time Clock Commands (ZPL II Commands)

General Information on the Use of Real-Time Clock



Note • The ZPL II commands for the RTC are applicable only if the option is installed in the printer.

The field clock (**^FC**) command specifies the clock-indicator character for the primary, secondary, and tertiary clocks. This command must be included within each label field command string whenever the date or time clock values are required within the field. No date or time clock information can be printed in a label field unless this command is included.

A clock indicator can be any printable character except the ZPL II format prefix, control prefix, or delimiter characters. The default value for the primary clock-indicator is the percent sign (%). The secondary and tertiary clock indicators have no defaults and must be specified in order for that clock to be used.

The ZPL II field data (**^FD**) command has been expanded to recognize the clock indicators and associated command characters, and to replace them during the printing process with the corresponding time or date parameter. For example, if the primary clock indicator is the percent sign (%), during printing the character sequence **%H** in the **^FD** statement is replaced by the two-digit current hour.



Note • If real-time clock hardware is not installed, or the **^FC** command has not preceded the **^FD** statement, no replacement occurs. In this case, the characters “%H” print as text on the label.

The name of the day of the week, the name of the month, and the AM or PM designation can also be inserted in place of a specific clock indicator/command character sequence. See Table 6-5 for the list of command characters and their functions.

The set offset (**^SO**) command permits the printing of specific times and dates relative to the primary clock. The secondary (or tertiary) clock is enabled when secondary (or tertiary) offsets are entered using this command. The secondary (or tertiary) clock time and date are determined by adding the offsets to the current clock reading.

One **^SO** command is required to set the secondary offset and an additional **^SO** command is required for a tertiary offset. The offsets remain until changed or until the printer is either turned Off (**O**) or reset.



Note • Only dates from January 1, 1998 to December 31, 2097 are supported. Setting the offsets to values outside this range is not encouraged or guaranteed.

The set mode/language (**^SL**) command is used to select the language in which to print the names of the days of the week and the names of the months. This command also sets the printing mode, which can be 'S' for Start Time or 'T' for Time Now. In Start Time mode, the time printed on the label is the time that is read from the real-time clock when the label formatting begins (when the **^XA** command is received by the printer). In Time Now mode, the time printed on the label is the time that is read from the real-time clock when the label is placed in the queue to be printed.

Table 6-5. Command Characters

Command Character	Replaced By
%a	Abbreviated weekday name
%A	Weekday name
%b	Abbreviated month name
%B	Month name
%d	Day of the month number, 01 to 31
%H	Hour of the day (Military), 00 to 23
%I	Hour of the day (Civilian), 01 to 12
%j	Day of the year, 001 to 366
%m	Month number, 01 to 12
%M	Minute, 00 to 59
%p	AM or PM designation
%S	Seconds, 00 to 59
%U	Week number of the year, 00 to 53, Sunday is 1st Day
%W	Week number of the year, 00 to 53, Monday is 1st Day
%w	Day # of the week, 00 (Sunday) to 06 (Saturday)
%y	Last 2 digits of the year, 00 to 99
%Y	Full 4-digit year number

NOTE: % is the specified clock indicator character.

Time and Date Precision (in Time Now Mode)

The time and date placed in a label field is determined at the time the label bitmap is created by the printer. If a batch of labels is formatted, the date and time will be the same for all labels in the batch. If the printer is PAUSED during the printing process and remains in that state for a period of time, when printing resumes the time and date will still be the same as when the batch was first started.

If more precise time and date stamps are required on the labels, the **^CO** (cache on) ZPL II command can be used to limit the memory available for label bitmaps and thus reduce the number of labels containing the same time and date stamp. To determine the value for the “b” parameter of the **^CO** command, perform the steps that follow:



Note • Cycle the printer power Off (**O**) and On (**I**) to clear the memory before performing the steps below.

1. Print a Memory Usage Label (**^XA^WD*:*.*^XZ**) and note the following value:
Available RAM (in bytes) (A) _____
2. Print a Configuration Label and note these values:
Printer “Print Width” (in dots) (**not** the label width) (B) _____
Label Length (in dots) (**not** max. label length) (C) _____
3. Determine the desired maximum number of queued labels with the same Time and Date value. (D) _____



Note • Increasing the number of queued labels improves throughput performance, but real-time clock values are less accurate. Two is usually an appropriate compromise.

4. Substitute the values for B through D from the previous page into the following formula:
 $(B \times C \times D) / 8 =$ (E) _____
5. Substitute the values for A and E into the following formula:
The “**^CO** command” memory required (in kbytes)
 $[(A - E) / 1024] - 5 =$ (F) _____



Note • If the value of (F) is less than zero, then no **^CO** command is needed. If the value of (F) is greater than zero, use the integer portion in the **^CO** command.

EXAMPLE

Available RAM	(A) = <u>714748</u> bytes
Print Width	(B) = <u>832</u> dots
Label Length	(C) = <u>1000</u> dots
Max Labels Queued	(D) = <u>2</u>
The “label queue” memory required ($B \times C \times D$) / 8	(E) = <u>208000</u> bytes
The “ ^CO command” memory required ($(714748 - 208000) / 1024$) - 5	(F) = <u>489.87</u> kbytes

Therefore, the correct **^CO** command string to add to the label format would be:

^XA^COY,489^XZ

This command string causes 489 kbytes to be set aside as font memory and makes it unavailable as label format memory. The memory remaining allows only two labels to be formatted at one time, and the time and date are more precise for those two labels.

^KD Date/Time Format

The **^KD** (date/time format) instruction is used to select the format in which the real-time clock’s date and time information is printed on a configuration label.

The format for the **^KD** instruction is:

^KDa

Where

^KD = Date/Time Format

- a = Value indicating desired date/time format
 - 0 = Normal version number string (Default)
 - 1 = MM/DD/YY w/24-hour clock
 - 2 = MM/DD/YY w/12-hour clock
 - 3 = DD/MM/YY w/24-hour clock
 - 4 = DD/MM/YY w/12-hour clock



Notes • If the real-time clock hardware is not present, the display mode will be set to “Version Number.”

If the display mode is set to “Version Number” and the real-time clock hardware is present, the date/time format shown on the configuration label when setting the date/time will be in the format MM/DD/YY with a 24-hour clock.

^FC Field Clock

The **^FC** (field clock) instruction is used to set the clock-indicators (delimiters) and the clock mode for use with the real-time clock hardware. This command must be included within each label field command string each time the real-time clock values are required within the field.

The format for the **^FC** instruction is:

^FCa,b,c

Where

^FC = Field Clock

- Primary clock indicator character
 - a = Default = %
- Secondary clock indicator character
 - b = No Default – cannot be the same as “a” above
- Tertiary clock indicator character
 - c = No Default – cannot be the same as “a” or “b” above



Note • If no real-time clock hardware is present, this command is ignored.

^SL Set Mode/Language

The **^SL** (set mode/language) instruction is used to specify the language in which real-time clock information is printed and to specify the mode of operation for the real-time clock.



Note • The **^SL** command must be placed in front of the first time field **^FO** command.

The format for the **^SL** instruction is:

^SLa,b

Where

^SL = Set Mode/Language

Mode

S = START TIME mode (Default)

a = T = TIME NOW mode

Language Number

b = (Default = The language selected via the **^KL** instruction)

1 = English

4 = German

7 = Portuguese

10 = Spanish 2

2 = Spanish

5 = Italian

8 = Swedish

11 = Dutch

3 = French

6 = Norwegian

9 = Danish

12 = Finnish

^SO Set Offset

The **^SO** (set offset) instruction is used to set the secondary offset and the tertiary offset from the primary real-time clock.

The format for the **^SO** instruction is:

^SOa,b,c,d,e,f,g

Where

^SO = Set Offset

Clock (No Default)

2 = Secondary Clock

a = 3 = Tertiary Clock

b = Months Offset (Default = 0) (Range -32,000 to +32,000)

c = Days Offset (Default = 0) (Range -32,000 to +32,000)

d = Years Offset (Default = 0) (Range -32,000 to +32,000)

e = Hours Offset (Default = 0) (Range -32,000 to +32,000)

f = Minutes Offset (Default = 0) (Range -32,000 to +32,000)

g = Seconds Offset (Default = 0) (Range -32,000 to +32,000)

^ST Set Date/Time

The ^ST (set date/time) instruction is used to set the date and time of the real-time clock.

The format for the ^ST instruction is:

^STa,b,c,d,e,f,g

Where

^ST = Set Date/Time

- | | |
|--|----------------------------|
| a = Month (Default = Current Month) | Valid Range = 01 to 12 |
| b = Day (Default = Current Day) | Valid Range = 01 to 31 |
| c = Year (Default = Current Year) | Valid Range = 1998 to 2097 |
| d = Hour (Default = Current Hour) | Valid Range = 00 to 23 |
| e = Minute (Default = Current Minute) | Valid Range = 00 to 59 |
| f = Second (Default = Current Second) | Valid Range = 00 to 59 |
| g = Format | |
| A = AM | |
| P = PM | |
| M= 24 Hour (Military) (Default) | |

Sample ZPL

The ZPL II scripts shown below establish the initial settings for the date and time clock and must be sent to a printer to provide proper date and time parameters for the ZPL II script on page 6-38.

Setting the date and time for the real-time clock needs to be done only once. An on-board battery maintains the date and time when the printer is reset and when the printer power is turned Off (O).

To set the date and time to April 23, 1999 at 2:30 PM, the following command string should be sent to the printer:

```
^XA
^ST04,23,1999,02,30,0,P^FS
^XZ
```

To initialize the real-time clock and set up two offset values (offset #2 set to 3 months and 1 hour in the future, offset #3 set to 1 year in the past), the following command sequence should be sent to the printer:

```
^XA
^SL
^SO2,3,0,0,1,0,0^FS
^SO3,0,0,-1,0,0,0^FS
^XZ
```

The following script references the initial settings to provide the output shown in Figure 4-54. It also illustrates the various methods of printing the date and time initialized on the previous page within separate fields on continuous media. For the below example, the **^FC** command delimiters are:

```
% Primary clock indicator
{ Secondary clock indicator
# Tertiary clock indicator

^XA
^LL175
^FO10,025^AD^FC%,{,#^FD1: Mil: %H:%M:%S Civ: %I:%M:%S %p^FS
^FO10,050^AD^FC%,{,#^FD2: Mil: {H:{M:{S Civ: {I:{M:{S {p^FS
^FO10,075^AD^FC%,{,#^FD3: Mil: #H:#M:#S Civ: #I:#M:#S #p^FS
^FO10,100^AD^FC%,{,#^FD1: On %A, %B %d, %Y (%a, %m/%d/%y, %d %b %Y).^FS
^FO10,125^AD^FC%,{,#^FD2: On {A, {B {d, {Y ( {a, {m/{d/{y, {d {b {Y).^FS
^FO10,150^AD^FC%,{,#^FD3: On #A, #B #d, #Y (#a, #m/#d/#y, #d #b #Y).^FS
^XZ
```

```
1: Mil: 14:30:00 Civ: 02:30:00 PM
2: Mil: 15:30:00 Civ: 03:30:00 PM
3: Mil: 14:30:00 Civ: 02:30:00 PM
1: On Friday, April 23, 1999 (Fri, 04/23/99, 23 Apr 1999).
2: On Friday, July 23, 1999 (Fri, 07/23/99, 23 Jul 1999).
3: On Thursday, April 23, 1998 (Thur, 04/23/98, 23 Apr 1998).
```

Optional Cutter Kit



Caution • This installation must be performed by a qualified service technician.



Note • Cutter Option not available on 96XiIII.

Table 6-6. Kit Parts List

✓	Item #	Qty	Part Number	Description	90 XiII, XiIII, and XiIIIPlus	96 XiIIIPlus	140 XiII, XiIII, and XiIIIPlus	170 XiII, XiIII, and XiIIIPlus	220 XiII, XiIII, and XiIIIPlus
	1	4	30391-003*	Screw 4-40	X	X	X	X	X
	2	1	49730M	Cutter Option Circuit Board	X	X	X	X	X
	3	1	49604-010	Cutter Power Cable	X	X	X	X	X
	4	1	49600-012	Cutter Data Cable	X	X	X	X	X
	5	1	31313	Sensor Clamp	X	X	X	X	X
	6	1	01822	Nut	X	X	X	X	X
	7	1	46618M	Cutter Optical Sensor Assembly	X	X	X	X	X
	8	1	47200-4	Cutter Module Assembly	X	X			
	8	1	48200-4	Cutter Module Assembly			X		
	8	1	46200-4	Cutter Module Assembly				X	
	8	1	22864	Cutter Module Assembly					X
	9	4	30392-004**	Screw 6-32	X	X	X	X	X
	10	1	46224	Grommet	X	X	X	X	X
	11	1	30374M	Cutter Motor Assembly	X	X	X	X	X
	12	2	30394-005	Screws (Motor Mounting)	X	X	X	X	X
	13	1	22385	Cutter Catch Tray Kit 220 XiII/XiIII					X
	13	1	46385	Cutter Catch Tray Kit 170 XiII/XiIII				X	
	13	1	47385	Cutter Catch Tray Kit 90 XiII/XiIII	X	X			
	13	1	48385	Cutter Catch Tray Kit 140 XiII/XiIII			X		
	14	1	30405-006	Screw, 1/4-20 x 0.38	X	X	X	X	X
	15	1	02133†	E-Ring	X	X	X	X	X
	16	1	N/A††	Drive Link Assembly	X	X	X	X	X
	17	1	30449	Allen Wrench, 5/64"	X	X	X	X	X
	18	1	44632‡	Ferrite Core	X	X	X	X	X

N/A = Not available as a separate part (listed for identification purposes only).

- *Available only as HW44632 in quantities of 10
- **Available only as HW30392-004 in quantities of 50
- †Available only as HW30391-003 in quantities of 25
- ††Available only as HW02133 in quantities of 50
- ‡Available only as HW01155 in quantities of 100

Bold=Part available for purchase
Light italic= Part not available for purchase, listed and shown for reference only

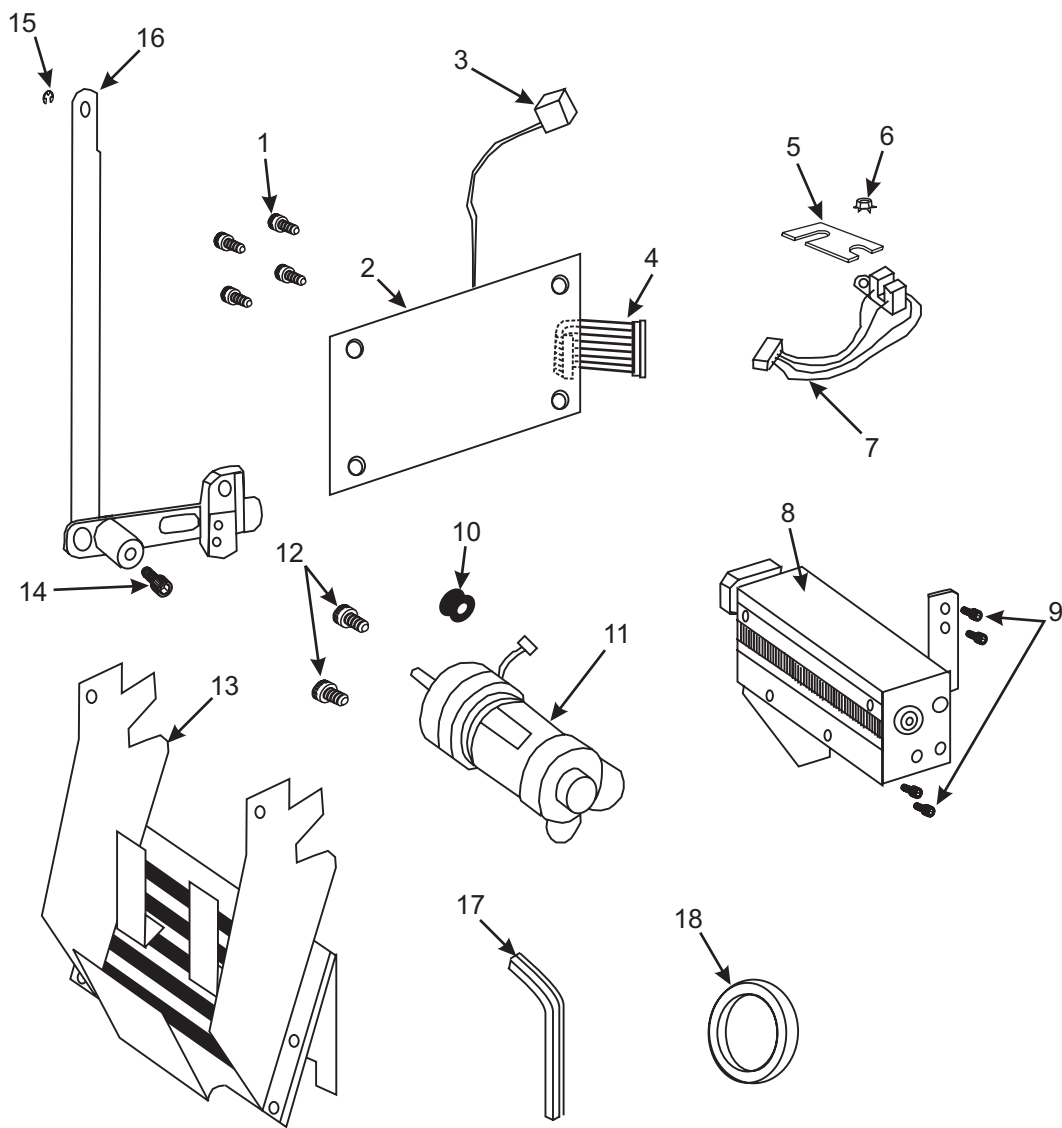


Figure 6-25. Part Identification Cutter Option



Note • The lock washer, nut, E-ring, and screws are not shown here. See Table 6-6.

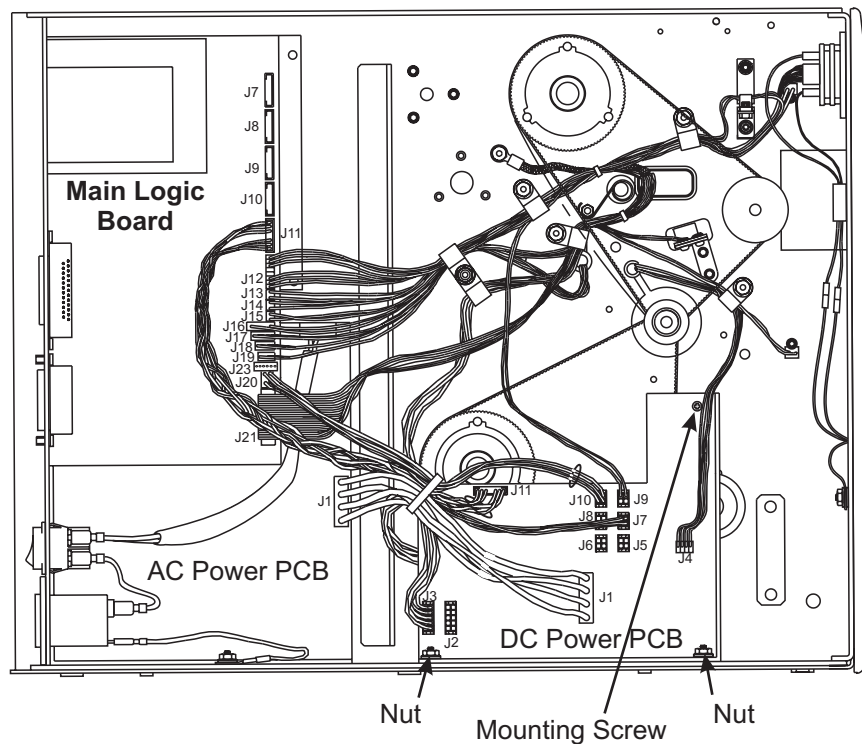


Figure 6-26. DC Power PCB Location and Interconnections

NOTE: J5–J10 have the same outputs.

J1	J1 AC Power PCB	J7	Cutter Option
J2	Additional Printhead Power for 220X/III Printers	J8	N/A
J3	Printhead Power for all X/III Printers	J9	LCD Display
J4	Stepper Motor	J10	J20 Main Logic PCB
J5	N/A	J11	J11 Main Logic PCB Data
J6	N/A		

Printer Disassembly

The printer must be partially disassembled in order to install the parts in this kit.

1. Turn the printer power Off (O) and remove the power cord. Disconnect the printer communications cable.
2. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
3. Refer to [RRP No. 2 on page 4-14](#) and remove the DC power supply.
4. Remove the DC power supply assembly.



Note • For part identification, see [Table 6-6](#).

Cutter Motor Installation



Note • The cover plates and cover plate mounting screws are not reused.

1. Refer to [Figure 6-27](#). Open the media door. Remove the cutter assembly cover plate.
2. Remove the cutter motor cover plate.

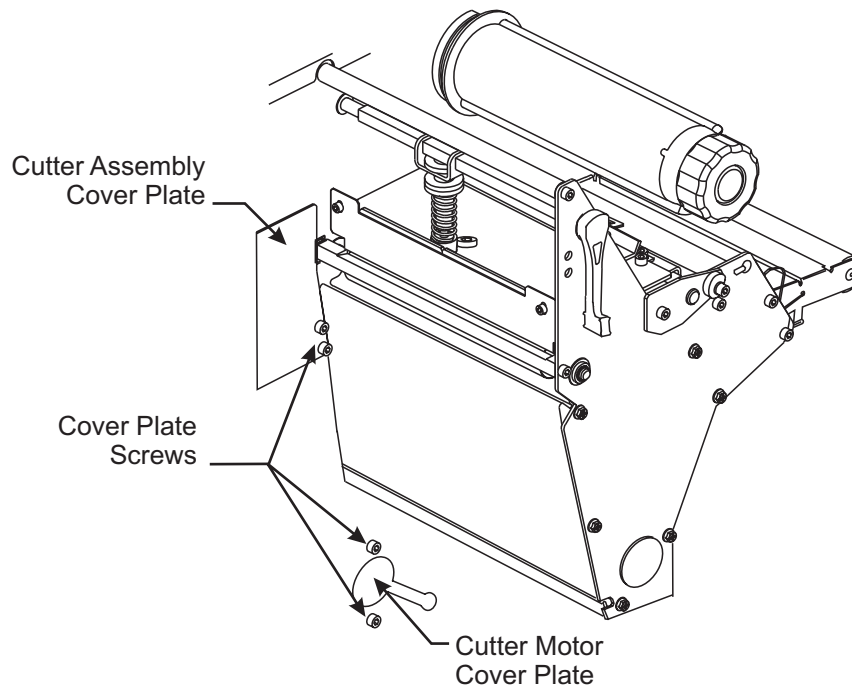


Figure 6-27. Cover Plate Locations

3. See [Figure 6-28](#). Position the cutter motor near the mounting hole on the mechanical side of the printer.
4. Pass the cutter motor leads through the slit in the rubber grommet (#10). Insert the grommet into the slot located in the lower right area of the motor mounting hole and slide it into the small hole. The electrical connector must be positioned on the electronics side of the printer. To prevent the leads from coming out, rotate the grommet so the cut is facing away from the motor.
5. Position the cutter motor against the printer frame so that the screw holes in the motor line up with the holes in the frame, with the motor shaft toward the front of the printer.
6. Secure the motor to the main frame using the two motor mounting screws (#12).

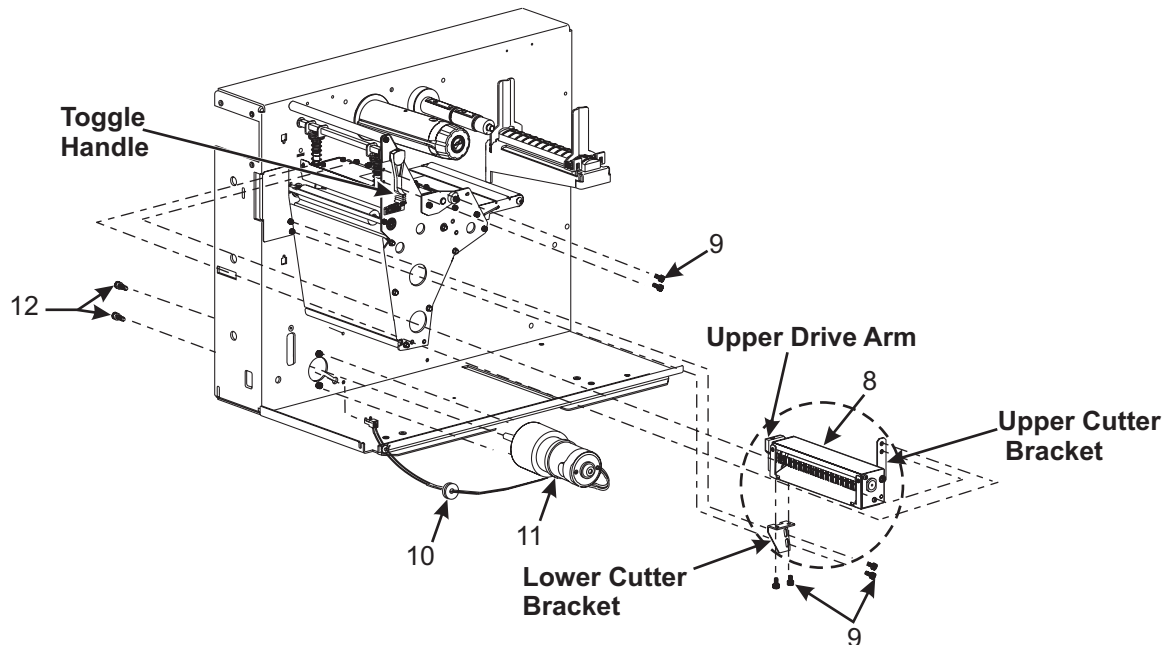


Figure 6-28. Mechanical Side Assembly

Cutter Mechanical Assembly Installation

1. Refer to [Figure 6-28](#). Locate the pre-assembled cutter mechanism. The upper cutter bracket at the right rear corner of the cutter is placed in a horizontal position for shipping. Loosen the mounting screw and rotate the bracket to a vertical position and snug up the screw. Do not tighten.
2. Under the left end of the cutter, loosen the two screws that secure the lower cutter bracket to the cutter support bracket.
3. Locate and orient the cutter mechanism as shown in [Figure 6-29](#). Carefully work the mechanism into position partially in the main frame opening in front of the printhead. Position the upper cutter bracket so the threaded holes are inside the side plate and aligned with the two holes in the side plate near the toggle handle.

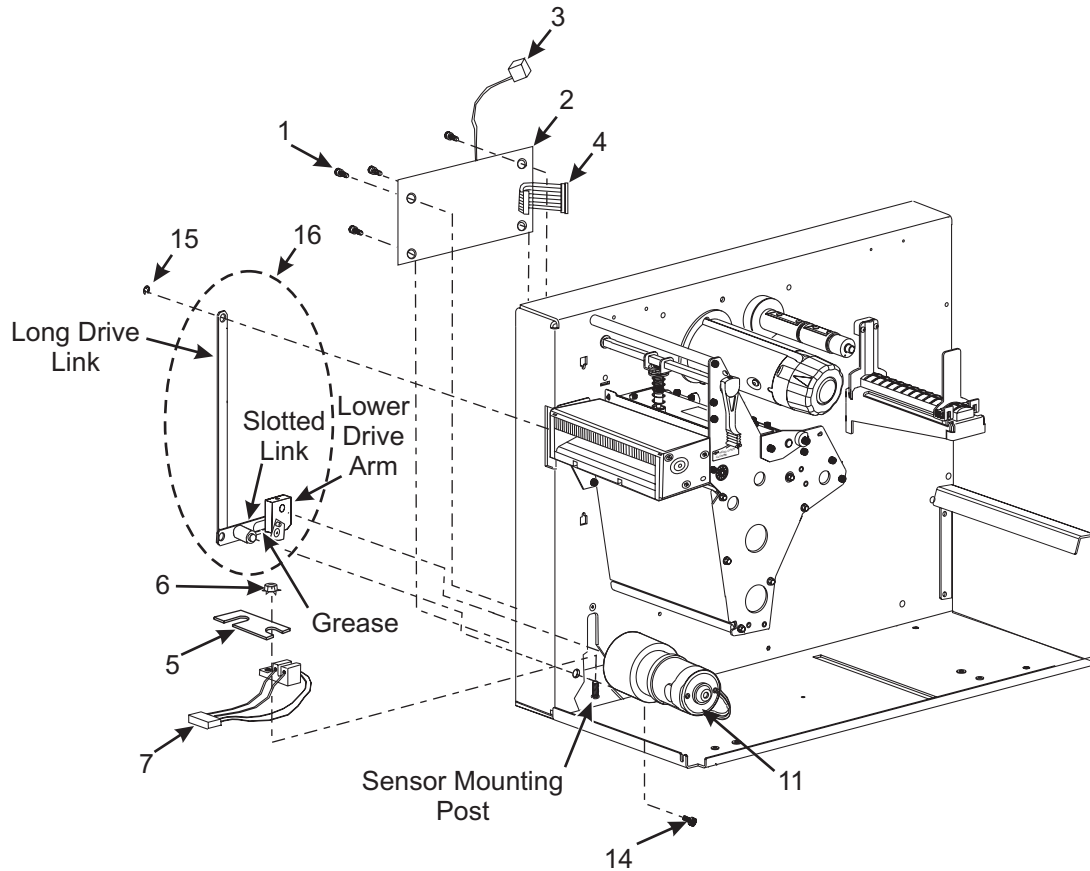
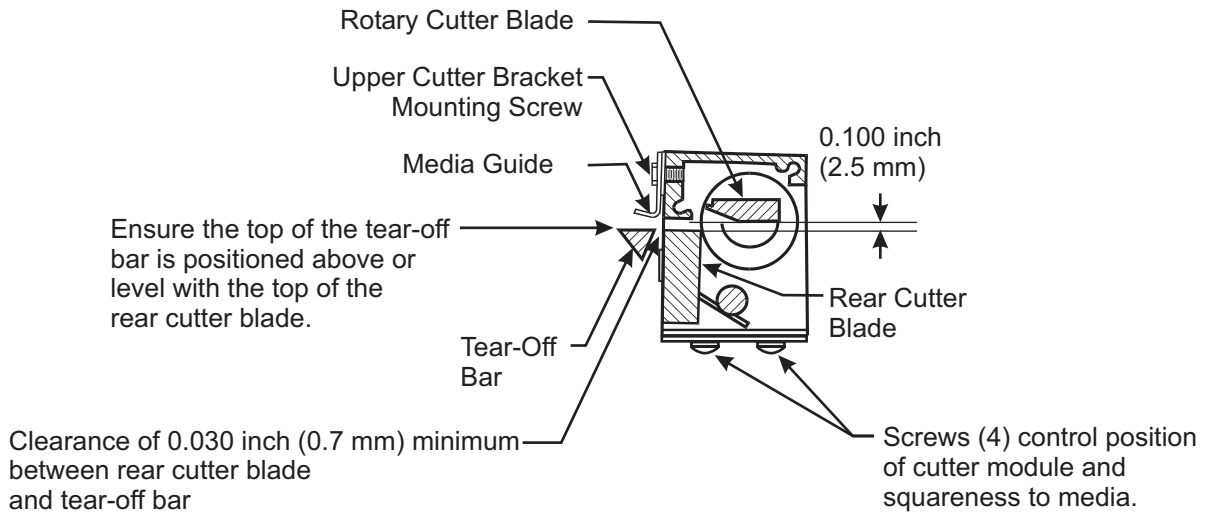


Figure 6-29. Linkage and Circuit Board Installation

4. Loosely attach the upper bracket to the side plate with two of the 6-32 screws (#9).
5. Align the slots in the lower cutter bracket with the threaded holes in the main frame and loosely attach the bracket with two more of the 6-32 screws (#9).
6. Refer to [Figure 6-30](#). Open the printhead and observe the position of the tear-off bar (in front of the platen roller) and the rear cutter blade. Position the cutter mechanism so that the rear cutter blade is parallel with the outer edge of the tear-off bar across the entire width of the media path. The cutter mechanism should be positioned as far forward as possible while maintaining parallelism with the tear-off bar. This should prevent interference of the rear cutter blade with the tear-off bar. Tighten all mounting screws.



Relative position of the rotary cutter blade when the drive link assembly is stopped by the optical sensor, when the power is On (I) in the Cutter mode.

Figure 6-30. Cutter Mechanical Assembly Positioning



Note • While tightening the upper cutter bracket mounting screw, be careful not to change the position of the media guide. If the media guide moves out of position, set its height so the lower edge is flush with the rear opening in the cutter mechanism. The lower cutter blade is held in position by two springs. If these springs touch the tear bar or other printer parts, the lower cutter blade will not float properly and will cause excessive wear and premature failure of the cutter blades.

7. Check the clearance between the back of the cutter mechanism and the tear bar by inserting a screwdriver from the front of the cutter mechanism and press the top of the lower cutter blade toward the printer. The blade should move a minimum of 0.030 inch (0.7 mm). If necessary, loosen the four screws on the bottom of the cutter module and reposition the cutter mechanism away from the tear-off bar.



Note • For part identification, see Table 6-5.

Drive Link Assembly Installation

Refer to [Figure 6-29](#).

1. Remove the screw from the mounting post on the drive link assembly (#14). Attach the mounting post to the main frame using the screw just removed (#14).
2. The upper drive arm is pre-assembled to the cutter module. Place the long drive link of the drive link assembly (#16) over the connecting post on the upper drive arm and secure it with the E-ring (#15).
3. Attach the lower drive arm of the drive link assembly (#16) to the cutter motor shaft. Loosen the screws to ensure the lower drive arm rotates freely on the motor shaft.
4. Apply a small amount of grease to the slot in the drive link assembly (#16) where the bearing will ride. Remove any excess grease to avoid damaging the optical sensor.

Cutter Circuit Board and Optical Sensor Installation

1. Refer to [Figure 6-31](#). Attach the power cable (#3) to J2 on the cutter circuit board.
2. Attach the data cable (#4) to J1 on the cutter circuit board.
3. Locate the four standoffs on the printer frame where the cutter board will be mounted.

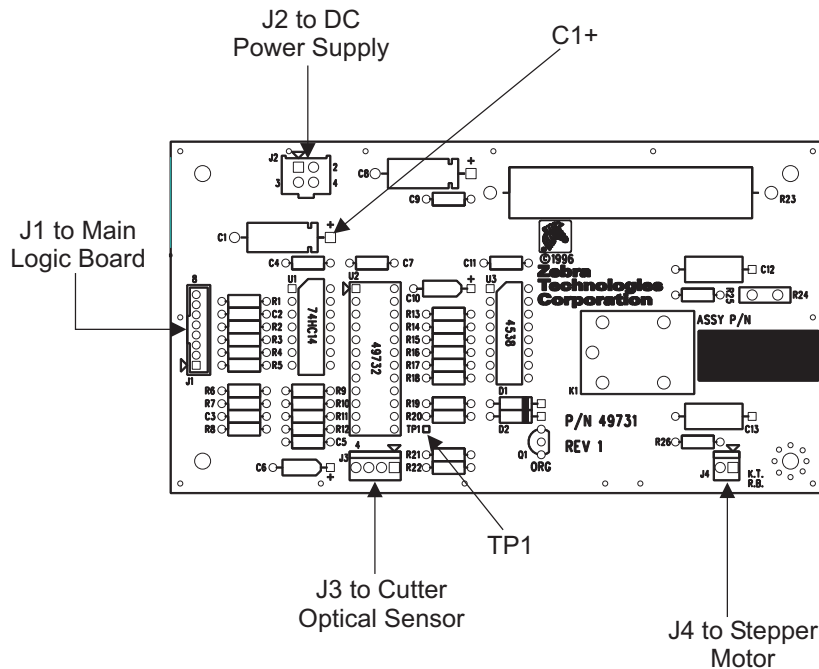


Figure 6-31. Cutter Option Circuit Board

4. Route the cutter motor leads between the two right-hand standoffs and out under the bottom of the circuit board.
5. Position the cutter circuit board over all four standoffs.
6. Install screw (#1) through the lower right-hand circuit board mounting hole. Do not tighten at this time.
7. Install the three remaining mounting screws (#1) and tighten all four screws.
8. Refer to [Figure 6-32](#). Wind the motor leads around the ferrite core.

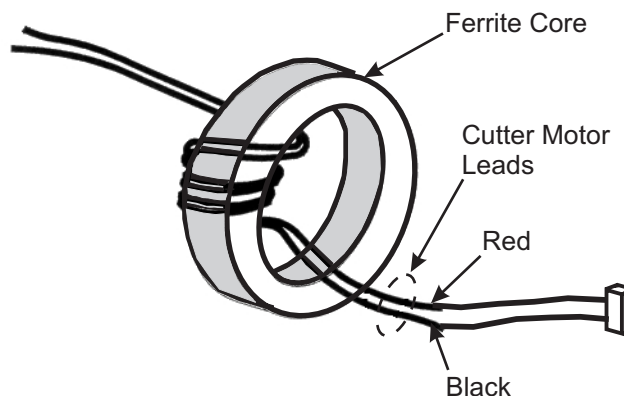


Figure 6-32. Cutter Motor Leads

9. Pass the cutter board power cable along the bottom of the printer frame toward the main logic board.
10. Plug the motor leads into the cutter motor connector J4 on the cutter circuit board with the black lead to the left. To minimize interference between components, wedge the top of the ferrite core under the cutter board relay.
11. See Figure 6-31. Install the cutter optical sensor assembly (#7) on the sensor mounting post. The sensor part of the assembly should be mounted toward the printer frame.
12. Place the sensor clamp (#5) over the sensor and start the nut (#4) on the post. **Do not tighten the nut at this time.**
13. Route the sensor leads under the clamp and toward the rear of the printer, and lightly tighten the nut to hold the wires in position. Be careful not to pinch the wires.
14. Refer to [Figure 6-31](#). Plug the cutter sensor leads into the cutter Opto connector J3 on the cutter circuit board.
15. Check the installation and ensure that no wiring will touch any moving parts.

Lower Drive Arm Mechanical Alignment



Note • To perform the lower drive arm mechanical alignment, some cables must be connected between the AC power supply, the DC power supply, and the cutter board, but access to the cutter board is still required. To obtain access, the DC power supply assembly must not be installed inside the printer. Instead, the DC power supply assembly must be carefully positioned so the cables are connected and still allow access to the cutter board. Connect only the cables listed below.

1. See [Figure 6-26](#). Connect the power cable from J1 on the AC power supply board to J1 on the DC power supply board.
2. Connect the power cable from J2 on the cutter board to any available J5–J10 connector (normally J7) on the DC power supply board.
3. Connect the data ribbon cable from J1 on the cutter board to any available J7–J10 connector (normally J10) on the main logic board.



Note • Do not connect any other cables or connectors at this time.

4. Attach the AC power cord and turn the printer power On (I). If the cutter motor starts, wait for it to stop.



Note • The cutter motor must be rotated until the two flat surfaces of the cutter motor shaft are aligned with the set screws in the lower drive arm while the lower drive arm is in a vertical position (sensor flag down).

5. See [Figure 6-31](#). Attach a test clip at one end of a jumper cable to the lead on the right end of capacitor C1 (+5 VDC SOURCE) on the cutter board.
6. Briefly touch the test clip at the other end of the jumper cable to test point TP1 on the cutter board to “jog” the cutter motor to the desired position.
7. Position the lower drive arm so the sensor flag is centered between the front and back portions of the optical sensor, then tighten the two set screws.

8. See [Figure 6-25](#). The set screws must be extremely tight to ensure proper operation of the cutter mechanism. Tighten the set screws with the Allen wrench included with this kit. As a reference, when the set screws are tight, the Allen wrench should deflect approximately 0.6 inch (1.5 cm) past the point of tightness. The tightness specification is 20 inch-lb. (2.3 N•M).
9. Activate the cutter motor, and make certain the sensor flag travels through the slot in the optical sensor without touching it.
10. Turn the printer power Off (O).

DC Power Supply Board Reinstallation

1. Refer to [RRP No. 2 on page 4-14](#) and reinstall the DC power supply. Tighten the mounting screw and nuts and ensure all wires are positioned away from any moving mechanical parts and are not pinched or cut.
2. See [Figure 6-26](#). Carefully connect the remaining cables/connectors to the DC power supply board and verify proper placement and orientation.
3. Reconnect the AC power cord.
4. Turn the printer power On (I) and use the front panel LCD and control keys to configure the unit for Cutter mode. Save as “PERMANENT” and then turn the printer power Off (O). Refer to the Users Guide for this procedure.
5. To test the cutter for proper operation, load media and ribbon, hold in the **PAUSE** key while turning the printer power On (I), and run labels through the printer. If either of the following two conditions are not met, proceed to the upper drive arm alignment:
 - Media fed through the printer without hitting either of the cutter blades.
 - The cutter cut through the label material completely.
6. Refer to [RRP No. 1 on page 4-10](#) and reinstall the electronics cover.

Upper Drive Arm Alignment



Note • The upper drive arm is part of the cutter mechanical assembly and has been aligned at the factory. If the position is altered, the following procedure may be use to realign the upper drive arm. The printer must be programmed to operate in Cutter Mode prior to performing the following procedure. If it is not already programmed for Cutter mode, refer to the printer Users Guide for assistance.

1. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.
2. Loosen the Allen wrench screw that clamps the upper drive arm to the rotary cutter blade shaft. The drive arm may be snug on the shaft.
3. Apply power to the printer. The lower drive arm of the drive link assembly should rotate once and stop when the sensor flag activates the optical sensor.
4. Refer to [Figure 6-30](#). After the drive link assembly stops, hold the upper drive arm in position and adjust the rotary cutter blade so that the gap between the cutting edge on the left end and the cutting edge of the rear cutter blade is approximately 0.100 inch (2.5 mm).



Note • If the gap between the cutting edges is too large, the cutter may not cut properly across the entire media width. If the gap is too small, the media may catch on the rotary cutter blade edge and cause a jam.

5. Position the upper drive arm out from the cutter frame so its flat surface is flush with the end of the rotary cutter blade shaft.



Note • Overtightening the screw can damage the drive arm and can strip out the threads.

6. Tighten the screw with an Allen wrench bit socket on a torque wrench until the slot closes or until a torque of 100 inch-lbs. (11.3 N•m) is reached.
7. Test the cutter alignment by feeding maximum width label stock through the printer and ensuring that complete cutting of the label occurs. If necessary, repeat steps 4, 5, and 6 to achieve complete cutting of the labels.
8. With a felt-tip pen, draw a line across the outer face of the upper drive arm and the end of the cutter blade shaft. Should cutter operation problems ever occur, this “witness mark” would show at a glance if the alignment of the clamp and the cutter blade shaft has changed.

Wireless PCMCIA Option Board Assembly

Preparing the Printer for Installation



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

1. Check the bottom right corner of the front panel LCD for the firmware version. You need firmware version V60.13.X or higher to operate the Wireless Print Server. If the firmware version number on your printer is less than this, download the latest firmware from http://www.zebra.com/PA/Connectivity/print_servers.htm.
2. Turn Off (O) the printer and disconnect the AC power cord and all data cables.
3. Refer to [RRP No. 1 on page 4-10](#) and remove the electronics cover.



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

Remove the Existing PCMCIA Option Board Assembly or PCMCIA Wireless Option Board.

1. Refer to [Figure 6-1](#). Remove the option card from the card slot located at the rear of the printer.

The *XIIIPlus* has used two different means of securing the PCMCIA board to the main logic board (MLB).

2. Refer to [Figure 6-33](#). **Two plastic locking standoffs:**

Remove the screw securing the PCMCIA option board to a metal standoff on the printer chassis.

- a.) Remove the screw securing the PCMCIA option board to a metal standoff on the printer chassis.
- b.) Disconnect the PCMCIA option board to a metal standoff on the printer chassis.
- c.) Gently pull the PCMCIA option board away from the MLB to disconnect the two connectors, P24 and P23, on the MLB.
- d.) Continue with removing the MLB, [RRP No. 4 on page 4-18](#).

3. Two screws, spacers, and nuts:

- a.) You must remove the MLB and PCMCIA option boards from the printer together, and then separate them.
- b.) Remove the screw securing the PCMCIA option board to a metal standoff on the printer chassis. Continue to remove the MLB, [RRP No. 4 on page 4-18](#).

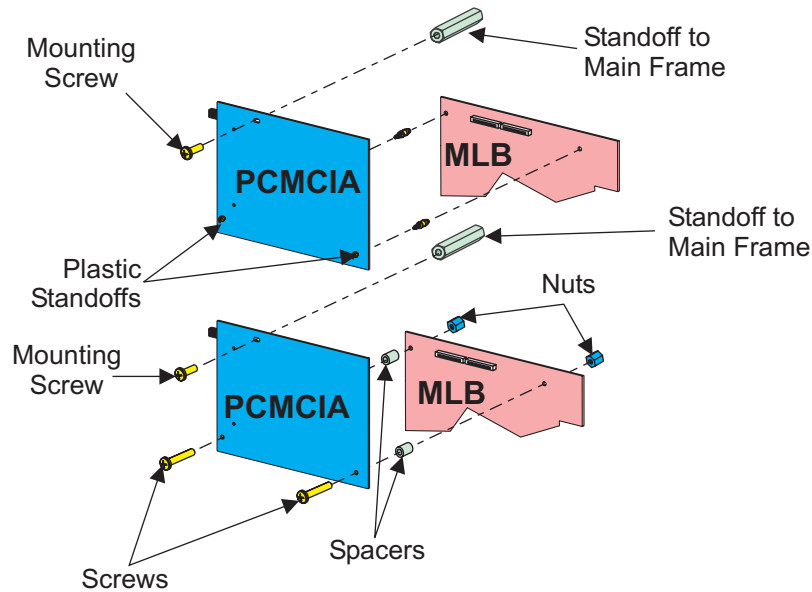


Figure 6-33. Standoffs

Install the New Wireless PCMCIA Option Board

1. Remove the new wireless PCMCIA board, spacers, nuts, and screws from the kit.
2. Set the MLB on the anti-static mat.
3. Refer to [Figure 6-34](#). Align the two connectors on the wireless PCMCIA board with P23 and P24 on the MLB and then push them together.

- Slide one of the new spacers between the wireless PCMCIA board and the MLB at either one of the mounting holes.

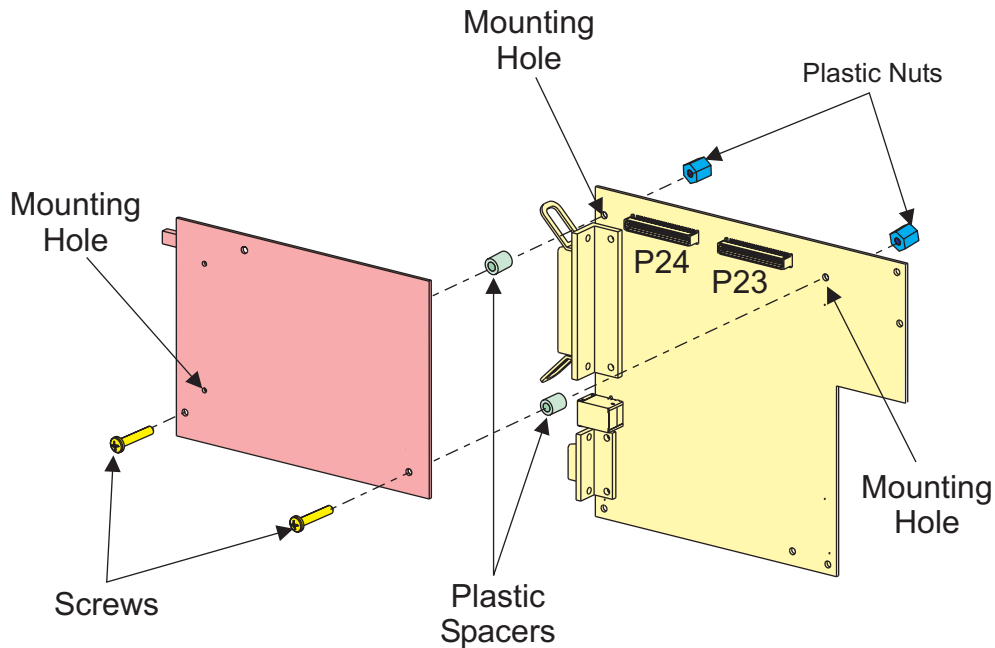


Figure 6-34. Install New Spacers

- Insert one of the screws through the mounting hole in the wireless PCMCIA board, spacer, and MLB.
- Secure the screw with one of the plastic nuts.
- Repeat steps 4, 5, and 6 for the other mounting hole.
- Ensure that the wireless PCMCIA option board is seated into the MLB connectors.
- See. Install the MLB and wireless PCMCIA assembly using the hardware previously removed.

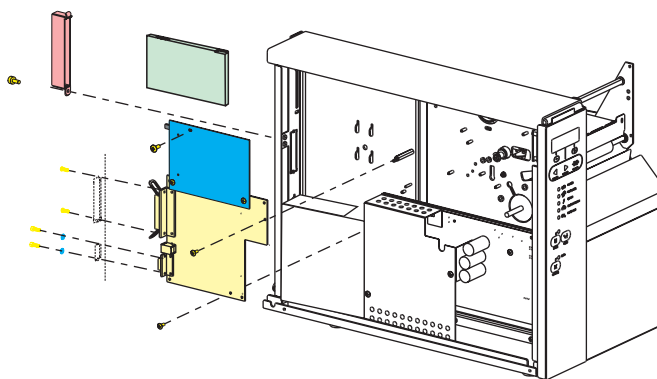


Figure 6-35. Install the PCMCIA and MLB Boards

- See [Figure 4-13](#) on [page 4-20](#). Reinstall the screws and studs for the serial and parallel interface connectors.
- See [Figure 4-5](#) on [page 4-11](#) or [Figure 4-6](#) on [page 4-12](#). Reconnect all ribbon and small wire connections to the MLB.
- Reinstall the RF card into the PCMCIA board and reinstall the shield.
- Reinstall any other option boards previously removed.

14. Reinstall the electronics cover.
15. Reinstall the AC power cord and connect it to a power source.

Remove and Install the Compact Flash Card (for the 33037M kit only)

1. See [Figure 6-36](#). Set the old PCMCIA board on the static mat in front of you, with the component side up and the eject button on your left. At the right is the compact flash socket.

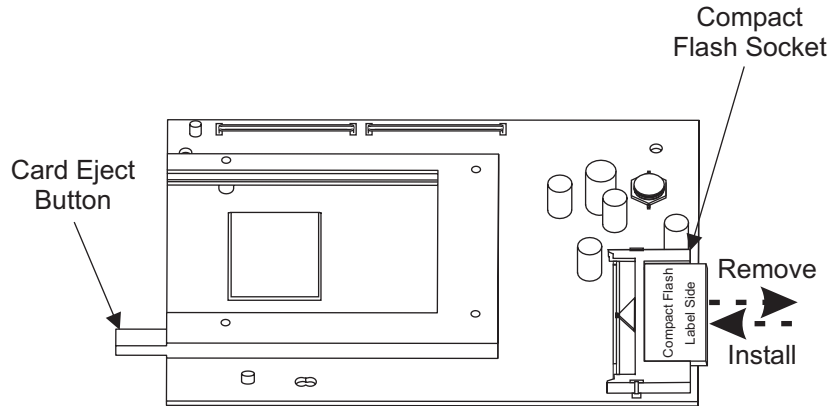


Figure 6-36. Remove the Compact Flash Card

2. See [Figure 6-37](#). Insert the compact flash card into the card slot located on the upper portion of the wireless PCMCIA board.

After the compact flash card is inserted, ensure the option board is still firmly seated to the MLB.

3. The card can only be inserted with the back side facing out, should snap into place.

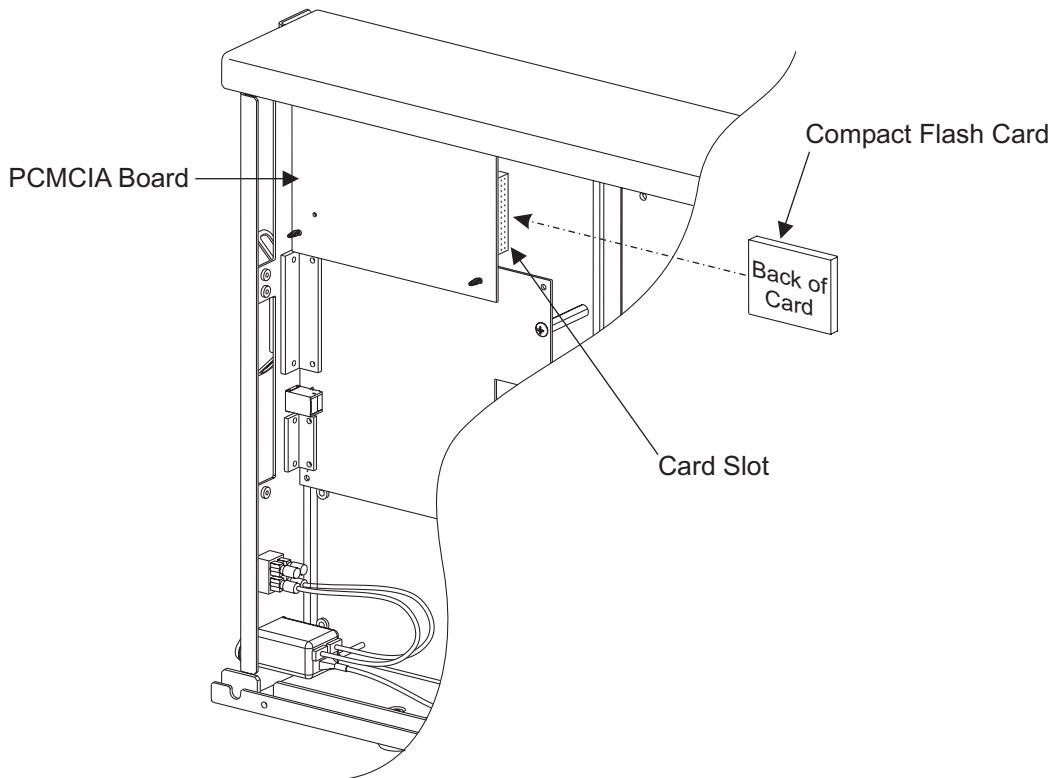


Figure 6-37. Compact Flash Card Installation

4. [RRP No. 1 on page 4-10](#). Reinstall the electronics cover by lowering the cover so the lip goes into the channel on the top of the printer. Secure the cover by reinstalling the two screws on the bottom of the cover.
5. Reconnect the data cables and the AC power cord.
6. Press and hold Cancel while turning On (I) the printer.
7. See [Figure 6-38](#). Verify the presence of the memory card and compact flash by checking the information on the configuration label printed during the power-on sequence.

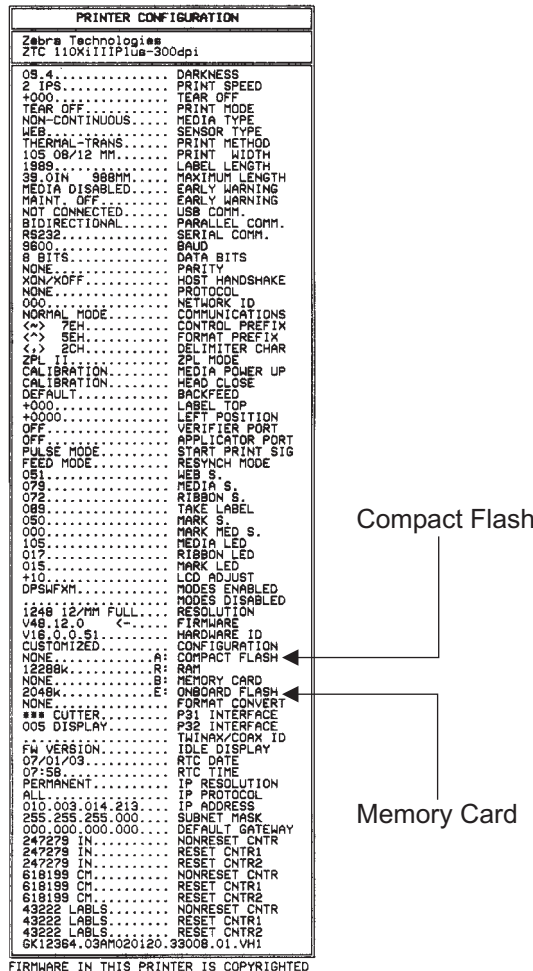


Figure 6-38. Configuration Label

8. Look at the front panel. If the wireless PCMCIA board was installed correctly, the wireless link status indicator displays a underscore “_” on the LCD, providing a real-time display of the printer’s network status.
9. See [Figure 6-1](#). Reinstall the wireless option card back into the card slot located at the rear of the printer. Refer to the *Wireless Print Server User Guide (PN 13422L-001)* to configure the Wireless Print Server for operation.
10. Install the RF card cover provided in this kit.
11. Ensure that the memory card option and the compact flash show on the configuration label. If it does not, remove and reinstall the memory card. Refer to the printer *User Guide* and print another configuration label. If the label does not show that the card is present, the memory card may be defective. Return the defective memory card to place of purchase.

