*Xi*III/*Xi*III*Plus* & R-140 MAINTENANCE MANUAL

Top: 90*Xi*III*Plus*™ and 96*Xi*III*Plus*™

Bottom: 140*Xi*III*Plus*™, 170*Xi*III*Plus*™, and 220*Xi*III*Plus*™

Zebra

Proprietary Statement

This manual contains proprietary information of Zebra Technologies. It is intended solely for the information and use of parties operating and maintaining the equipment described herein. Such proprietary information may not be used, reproduced, or disclosed to any other parties for any other purpose without the expressed written permission of Zebra Technologies.

Product Improvements

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

FCC Compliance Statement

Note: This equipment has been tested and found to comply with the limits for a Class A Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the product manuals, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

In order to ensure compliance, this printer must be used with a Shielded Power Cord and Shielded Communication Cables.

“The user is cautioned that any changes or modifications not expressly approved by Zebra Technologies could void the user’s authority to operate the equipment.”

Canadian DOC Compliance Statement

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Liability Disclaimer

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

No Liability for Consequential Damage

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

Copyrights

TABLE OF CONTENTS

SECTION 1 SYSTEM DESCRIPTION

TABLE OF CONTENTS

SECTION 2 OPERATIONS OVERVIEW

TABLE OF CONTENTS

TABLE OF CONTENTS

SECTION 3 TROUBLESHOOTING

TABLE OF CONTENTS

SECTION 4 MAINTENANCE

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF CONTENTS

SECTION 1
SYSTEM DESCRIPTION

DESCRIPTION

The Zebra *Xi*III™ and *Xi*III*Plus*™-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 *Xi*III-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 *Xi*III-Series printers to be integrated easily with most systems and host mainframes.

The Zebra *Xi*III-Series consists of the 90*Xi*III™, 96*Xi*III™, 140*Xi*III™, 170*Xi*III™, 220*Xi*III™, and R-140™ printers.

The Zebra *Xi*III*Plus*™-Series consists of the 90*Xi*III*Plus*™, 96*Xi*III*Plus*™, 140*Xi*III*Plus*™, 170*Xi*III*Plus*™, and 220*Xi*III*Plus*™ 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*Xi*III, with the exception of the addition of the encoder, mounted within the extrusion, and the upper media guide.

The *Xi*III and *Xi*III*Plus* are mechanically identical. The difference is in the electronics and cabling.

In this manual *Xi*III-family refers to *Xi*III, *Xi*III*Plus,* and R-140-Series printers.

SCOPE

This manual contains the information necessary for the proper maintenance of the Zebra *Xi*III-family of printers. Information presented applies to all *Xi*III and *Xi*III*Plus*-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 *Xi*III-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 *Xi*III-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 *Xi*III-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 *Xi*III-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 *Xi*III-Series–11992L, *Xi*III*Plus*–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 *Xi*III only*	Wireless Card
Advanced counter*	

* Standard in the *Xi*III*Plus*.
** Available for *Xi*III **Only,** 16 MB SDRAM standard on *Xi*III*Plus*, 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
Codabar (supports ratios of 2:1 up to 3:1)
CODABLOCK
Code 11
Code 39 (supports ratios of 2:1 up to 3:1)
Code 49 (2-dimensional bar code)
Code 93
Code 128 (with subsets A, B, and C and UCC case C codes)
Data Matrix (except rectangular)
EAN-8, EAN-13, EAN extensions
Industrial 2 of 5
Interleaved 2 of 5 (supports ratios of 2:1 up to 3:1, Modulus 10 Check Digit)
ISBT-128
LOGMARS
TLC 39
Planet Code
MaxiCode
Micro PDF
MSI
PDF-417 (2-dimensional bar code)
Plessey
POSTNET
QR-Code
Standard 2 of 5
UPC-A, UPC-E, UPC extensions
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 × W) (Defaults)	Type*	Minimum Character Size (H × W)	Maximum Character/ Inches
A	9 × 5	U-L-D	0.044 inch × 0.029 inch	33.9
B	11 × 7	U	0.054 inch × 0.044 inch	22.6
C, D	18 × 10	U-L-D	0.088 inch × 0.059 inch	16.9
E	28 × 15	OCR-B	0.138 inch × 0.098 inch	10.1
F	26 × 13	U-L-D	0.128 inch × 0.079 inch	12.7
G	60 × 40	U-L-D	0.295 inch × 0.236 inch	4.2
H	21 × 13	OCR-A	0.103 inch × 0.093 inch	10.7
GS	24 × 24	SYMBOL	0.118 inch × 0.118 inch	8.4
Ø	15 × 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 × W) (Defaults)	Type*	Minimum Character Size (H × W)	Maximum Character/ Inches
A	9 × 5	U-L-D	0.030 inch × 0.020 inch	50.0
B	11 × 7	U	0.037 inch × 0.030 inch	33.3
C, D	18 × 10	U-L-D	0.060 inch × 0.040 inch	25.0
E	41 × 20	OCR-B	0.137 inch × 0.087 inch	11.5
F	26 × 13	U-L-D	0.087 inch × 0.053 inch	18.8
G	60 × 40	U-L-D	0.200 inch × 0.160 inch	6.3
H	30 × 19	OCR-A	0.100 inch × 0.093 inch	10.7
GS	24 × 24	SYMBOL	0.080 inch × 0.080 inch	12.5
Ø	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 × W) (Defaults)	Type*	Minimum Character Size (H × W)	Maximum Character/ Inches
A	9 × 5	U-L-D	0.015 inch × 0.010 inch	100.0
B	11 × 7	U	0.018 inch × 0.015 inch	66.7
C, D	18 × 10	U-L-D	0.030 inch × 0.020 inch	50.0
E	41 × 20	OCR-B	0.137 inch × 0.087 inch	11.54
F	26 × 13	U-L-D	0.043 inch × 0.027 inch	37.5
G	60 × 40	U-L-D	0.100 inch × 0.080 inch	12.5
H	30 × 19	OCR-A	0.100 inch × 0.093 inch	10.7
GS	24 × 24	SYMBOL	0.040 inch × 0.040 inch	25.0
Ø	Variable	SCALEABLE (SMOOTH) FONT		
* Type: U – Upper Case, L – Lower Case, D – Descenders				

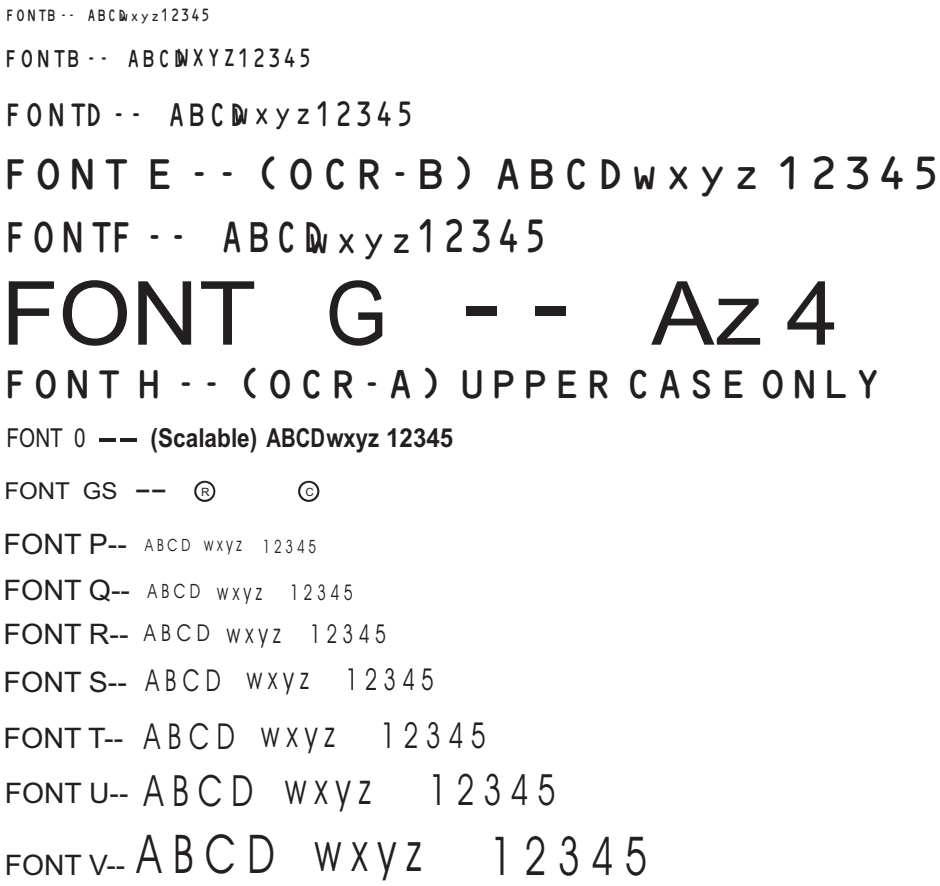


Figure 1-1. Default Font Examples

MEDIA CONSIDERATIONS

Media Specifications			90/96*Xi*IIII-family In inches (mm)	140*Xi*IIII-family In inches (mm)	170*Xi*IIII-family In inches (mm)	220*Xi*IIII-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)	009 (0.23)	0.007 (0.18)	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 × W × H			8.0 × 3.54 × 4.5 (203 × 140 × 114)	8.0 × 5.51 × 4.5 (203 × 140 × 114)	8.0 × 7.1 × 4.5 (203 × 140 × 114)	8.0 × 8.8 × 4.5 (203 × 224 × 114)
Ticket/tag sensing notch L × W			0.12 × 0.25 (3 × 6)	0.12 × 0.25 (3 × 6)	0.12 × 0.25 (3 × 6)	0.12 × 0.25 (3 × 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)	0.12 (3)
		Maximum	0.43 (11)	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)	0.43 (11)
		Maximum	Full media width	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			90/96*Xi*III-family		140*Xi*III-family		170*Xi*III-family		220*Xi*III-family	
Ribbon width *(To protect the printhead from wear, Zebra recommends using ribbon at least as wide as the media you are using.)*		Maximum	Inches ′=feet	mm m=meter	Inches ′=feet	mm m=meter	Inches ′=feet	mm m=meter	Inches ′=feet	mm m=meter
			3.54	90	5.10	130	6.7	170	8.60	220
		Minimum	0.79	20	1.57	40	2.0	51	4.25	1–8
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			90*Xi*III-family In inches (mm)	96*Xi*III-family In inches (mm)	140*Xi*III-family In inches (mm)	170*Xi*III-family In inches (mm)	220*Xi*III-family 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)
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)		**Memory**					
	Non-continuous printing	8 MB (standard on *Xi*III)	39 (991)	20 (508)	39 (991)	39 (991)	39 (991)
		12 MB (optional on *Xi*III) 16 MB (standard on *Xi*III*Plus*)	39 (991)	39 (991)	39 (991)	39 (991)	39 (991)
	Continuous printing	8 MB (standard on *Xi*III)	80 (2032)	20 (508)	121 (3073)	41 (1041)	71 (1803)
		12 MB (optional on *Xi*III) 16 MB (standard on *Xi*III*Plus*)	100 (2540)	52 (1321)	150 (3810)	100 (2540)	150 (3810)
Bar code modulus (“×”) 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	90/96*Xi*III-family		140*Xi*III-family		170*Xi*III-family		220*Xi*III-family	
Height	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**
	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 *Xi*III, 96*Xi*III, 140*Xi*III, 170*Xi*III, 220*Xi*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.

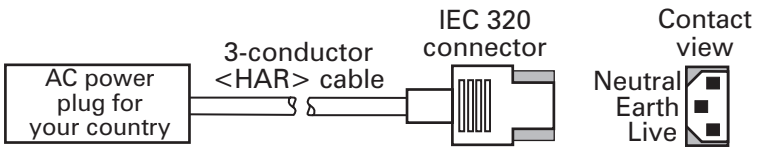


Figure 1-2. AC Power Cord

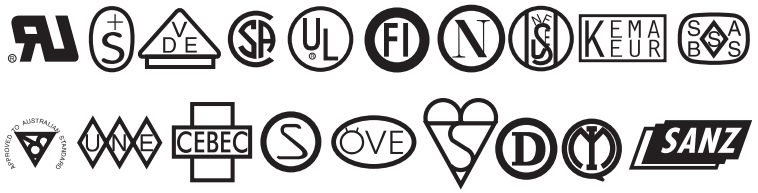


Figure 1-3. International Safety Organizations Symbols

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

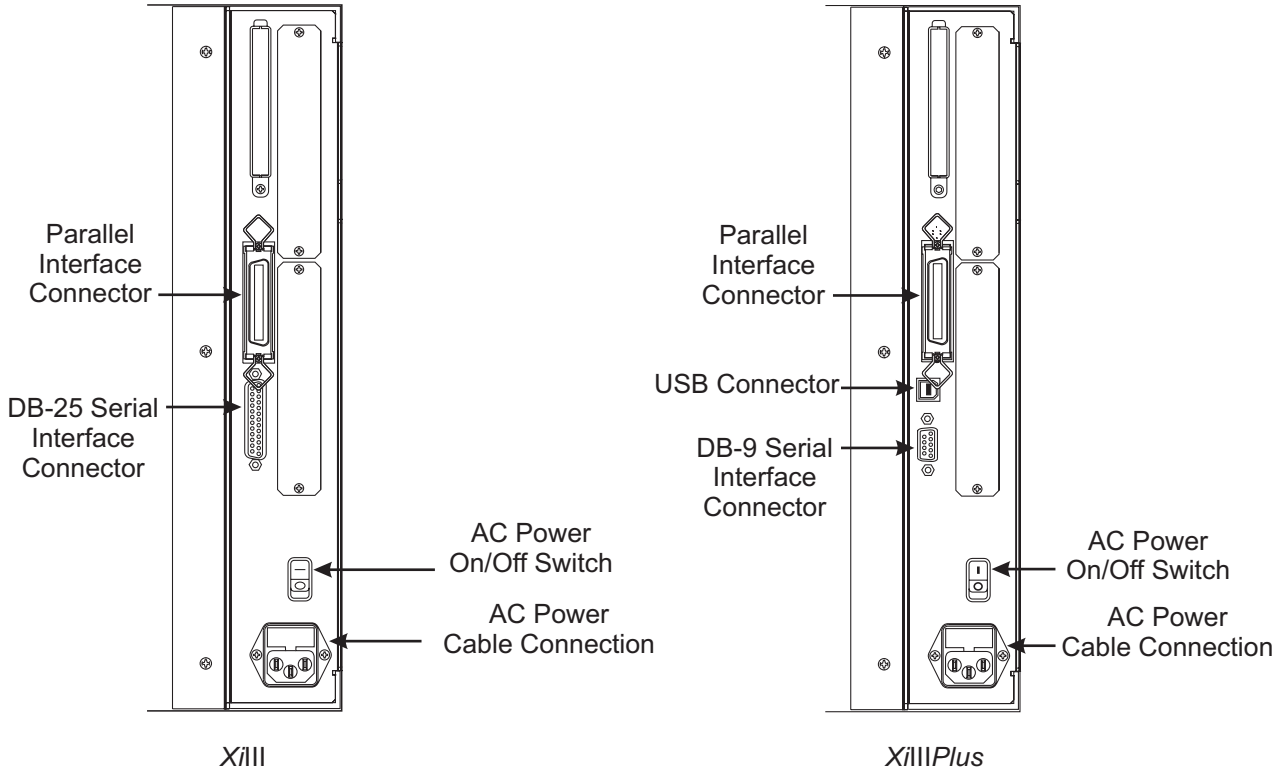


Figure 1-4. Interface Connections

System Considerations

Interfaces

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

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

For the *Xi*III*Plus,* 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′ (2 m) data cables. Use 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.

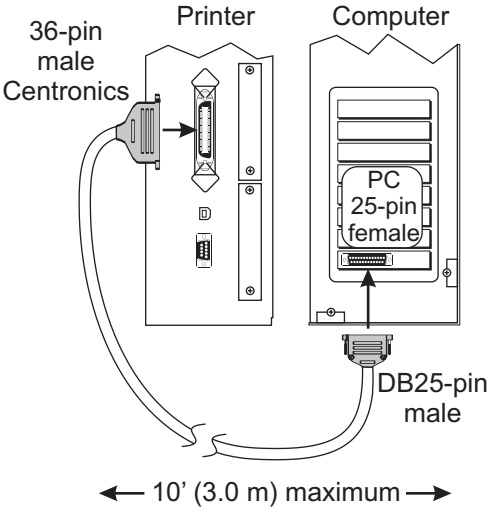


Figure 1-5. Parallel Data Port

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.

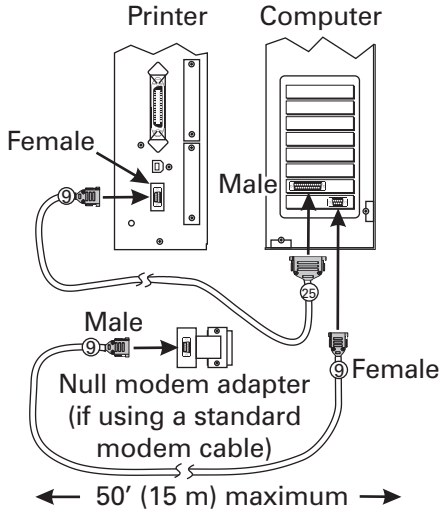


Figure 1-6. Serial Data Port

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).

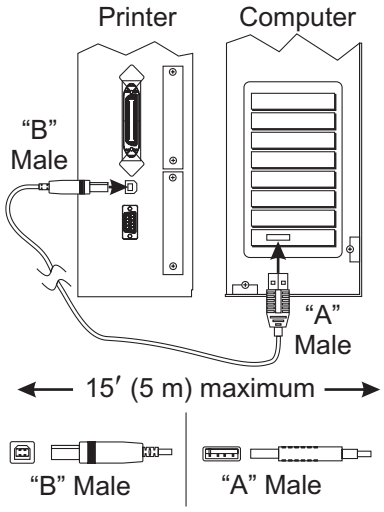


Figure 1-7. USB Port

Communication Buffer

The size of the buffer is 5000 characters. As data is received by the *Xi*III-family printers, the processor monitors the number of characters in the buffer. If the buffer is filled beyond 4744 characters, the *Xi*III 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 *Xi*III 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

*Xi*III Serial Data

For *Xi*III*Plus* Serial Data, see page 1-14.

The Zebra *Xi*III 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 signaling 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 *Xi*III follows both the Electronic Industries Association's (EIA) RS-232 and the Consultative Committee for International Telegraph and Telephone (CCITT) V.24 specifications.

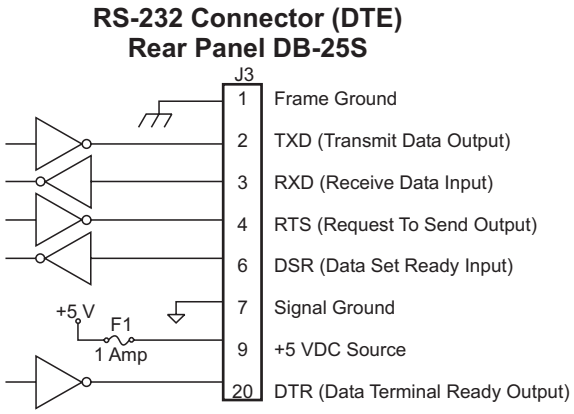


Figure 1-8. *Xi*III DB-25 RS-232 Connector

Table 1-4. *Xi*III 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.

*Xi*IIIPlus 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. *Xi*III 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
NOTE: 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.		

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

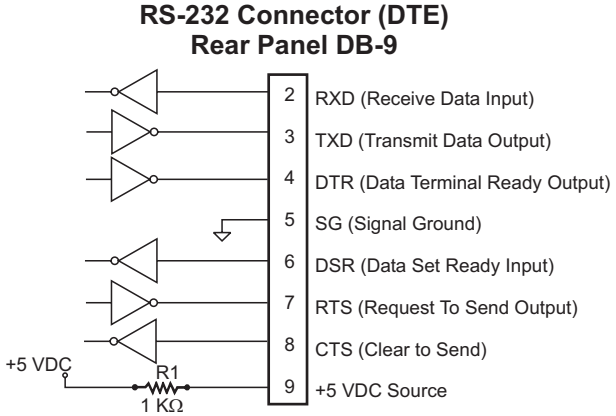


Figure 1-9. *Xi*IIIPlus DB-9 RS-232 Connector

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 *Xi*III-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

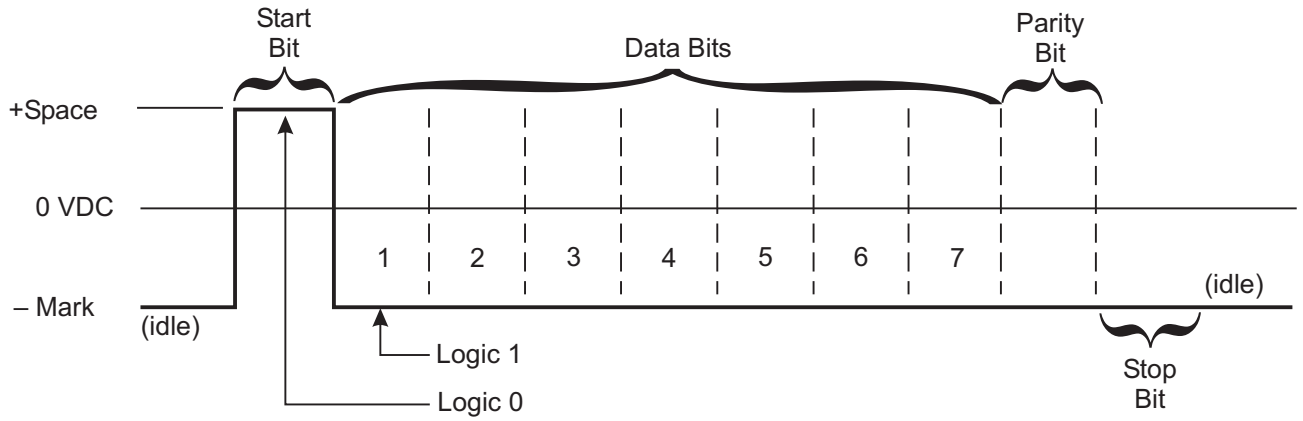


Figure 1-10. RS-232 Signaling

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 *Xi*III-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

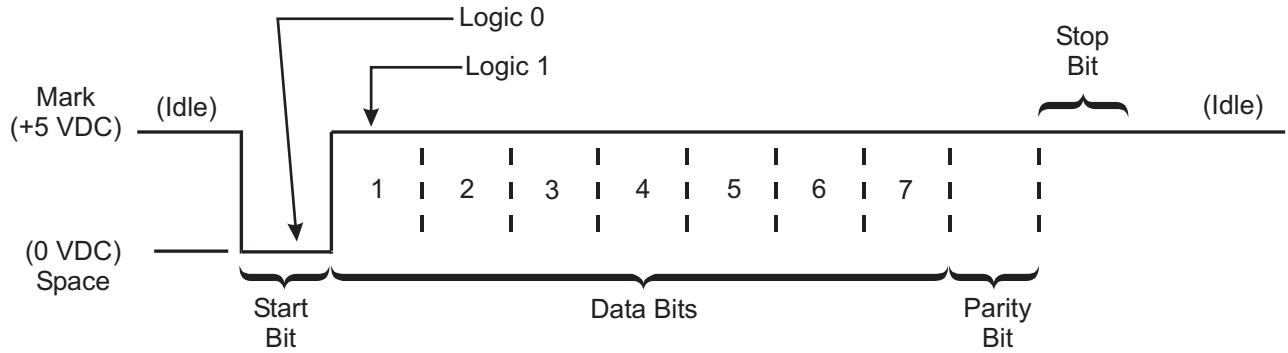


Figure 1-11. RS-422 and RS-485 Signaling

Communication Code

The *Xi*III-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 Xi*III*-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 (*Xi*III*Plus*=750mA)
19–30	Signal Grounds
31	ninit
32	nFault/NDataAvail
33 and 34	Not Used
35	+5 V through a 4.7 KΩ 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 (45537L) when using this communications option.

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 *Xi*III, R-140, or *Xi*III*Plus* 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 *Xi*III*Plus* 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

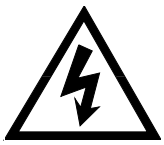
MEDIA AND RIBBON REQUIREMENTS

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



WARNING:

FOR PERSONNEL AND EQUIPMENT SAFETY, ALWAYS USE A THREE-PRONG PLUG WITH AN EARTH-GROUND CONNECTION TO THE AC POWER SOURCE.

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.

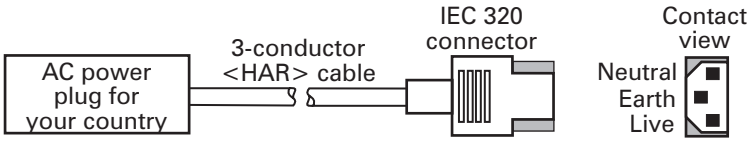


Figure 2-1. AC Power Cord

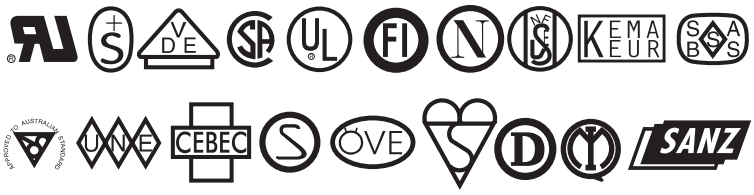


Figure 2-2. International Safety Organizations Symbols

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.

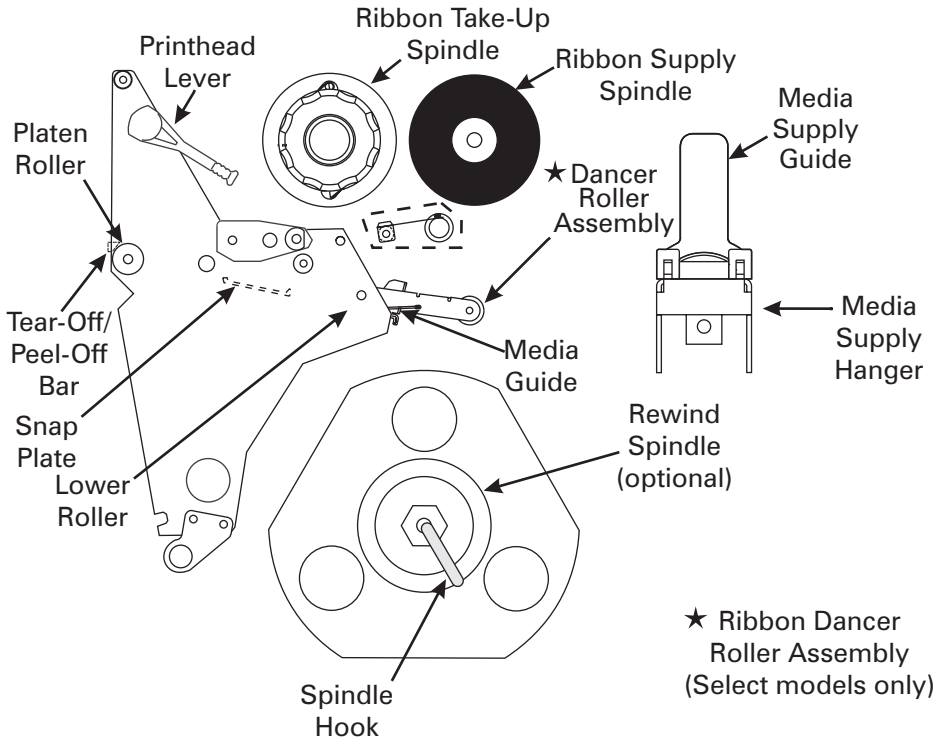


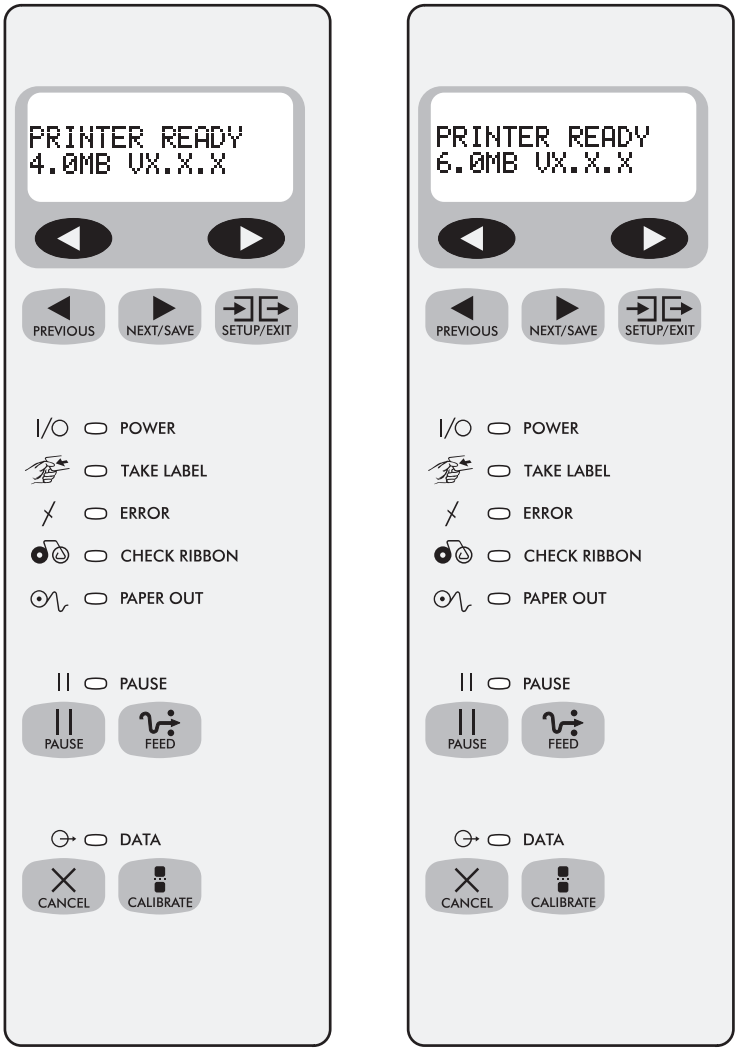
Figure 2-3. *Xi*III, R140, and *Xi*III*Plus* Overview

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.



*Xi*III *Xi*III*Plus*

Figure 2-4. Front Panel

Front Panel Keys

Refer to Figure 2-4.

Key	Function
PAUSE	Starts and stops the printing process. • 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. ***NOTE: Pause Mode can also be activated via ZPL II (~PP, ^PP).***
FEED	Forces the printer to feed one blank label each time the key is pressed. • Printer not printing: one blank label immediately feeds. • Printing: one blank label feeds after the current batch of labels is complete. ***NOTE: Equivalent to the Slew to Home Position (~PH, ^PH) ZPL II instruction.***
CANCEL	When in Pause Mode, this key cancels print jobs. • 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.
CALIBRATE	When in Pause Mode, this key calibrates the printer for: • 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.***
NOTE: The keys below are used only when configuring the printer. Specific uses of these keys are explained in the Configuration section of the User's Guide.	
PREVIOUS	• Scrolls back to previous parameter. • Press and hold to go backward quickly through parameter sets.
NEXT/SAVE	• 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.
SETUP/EXIT	Enters and exits the Configuration mode.
	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.

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.
	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. • 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.
	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.

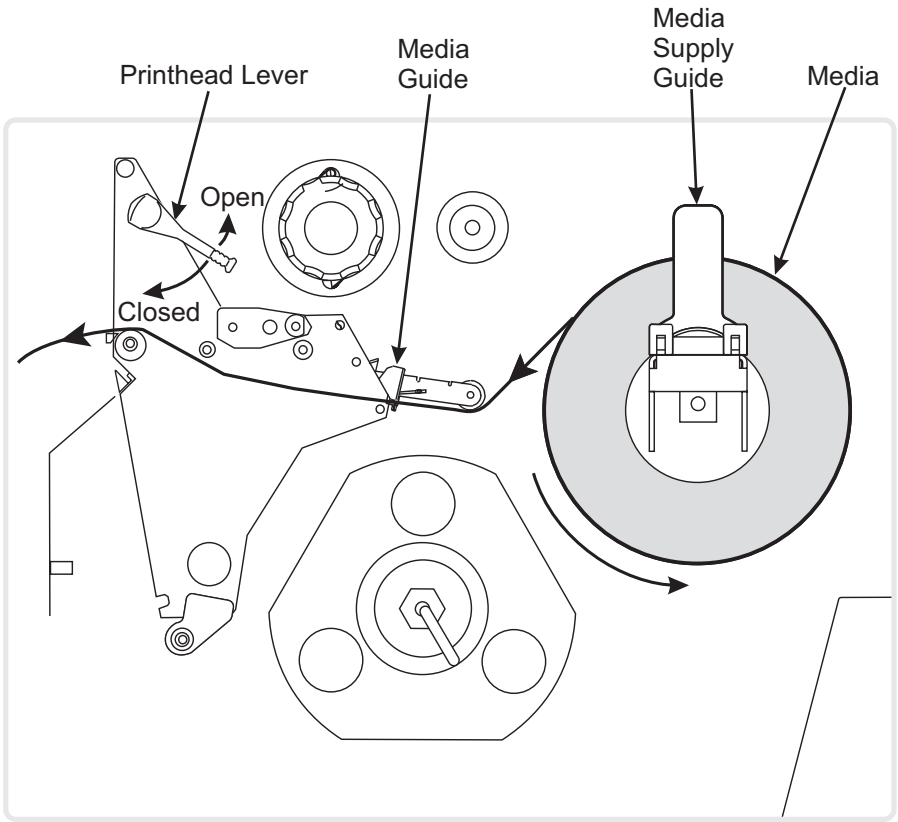


Figure 2-5. Roll Media Loading Tear-Off Mode

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.

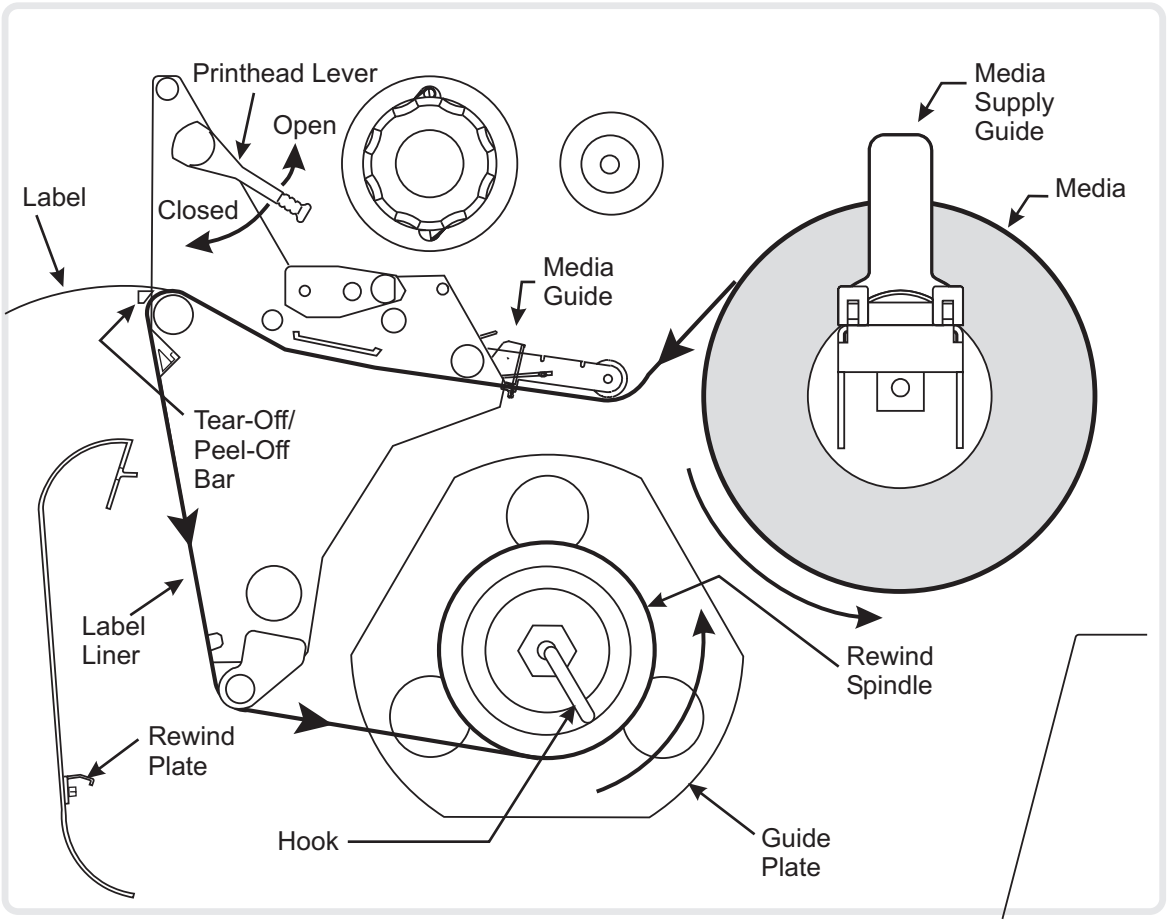


Figure 2-6. Peel-Off Mode Loading

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.

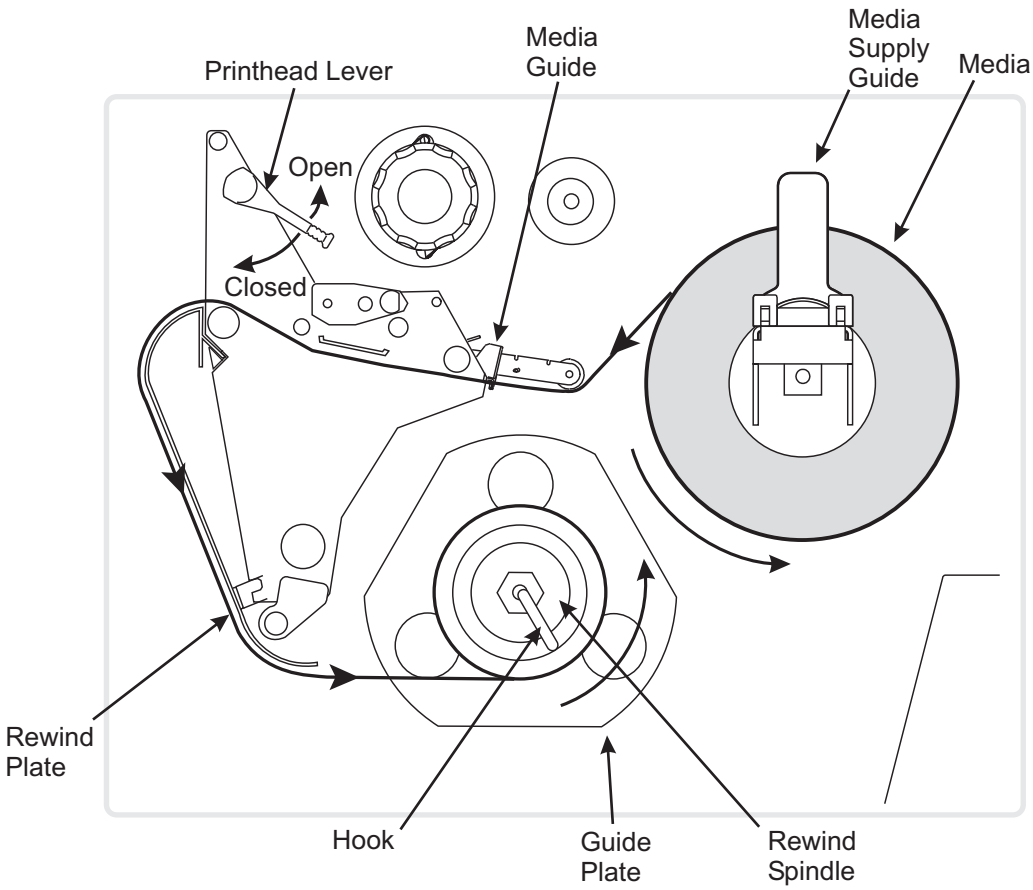


Figure 2-7. Rewind Mode without Cutter Option

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**).

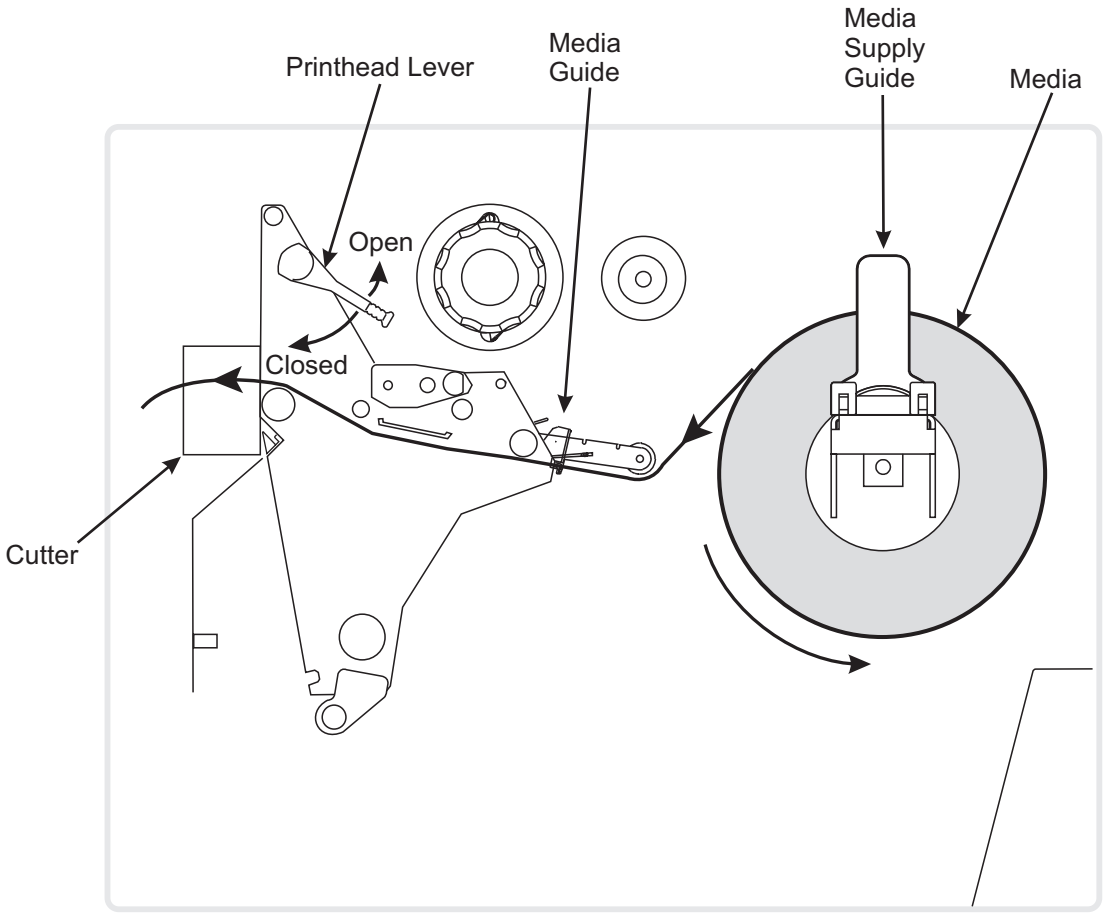


Figure 2-8. Cutter Mode

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.

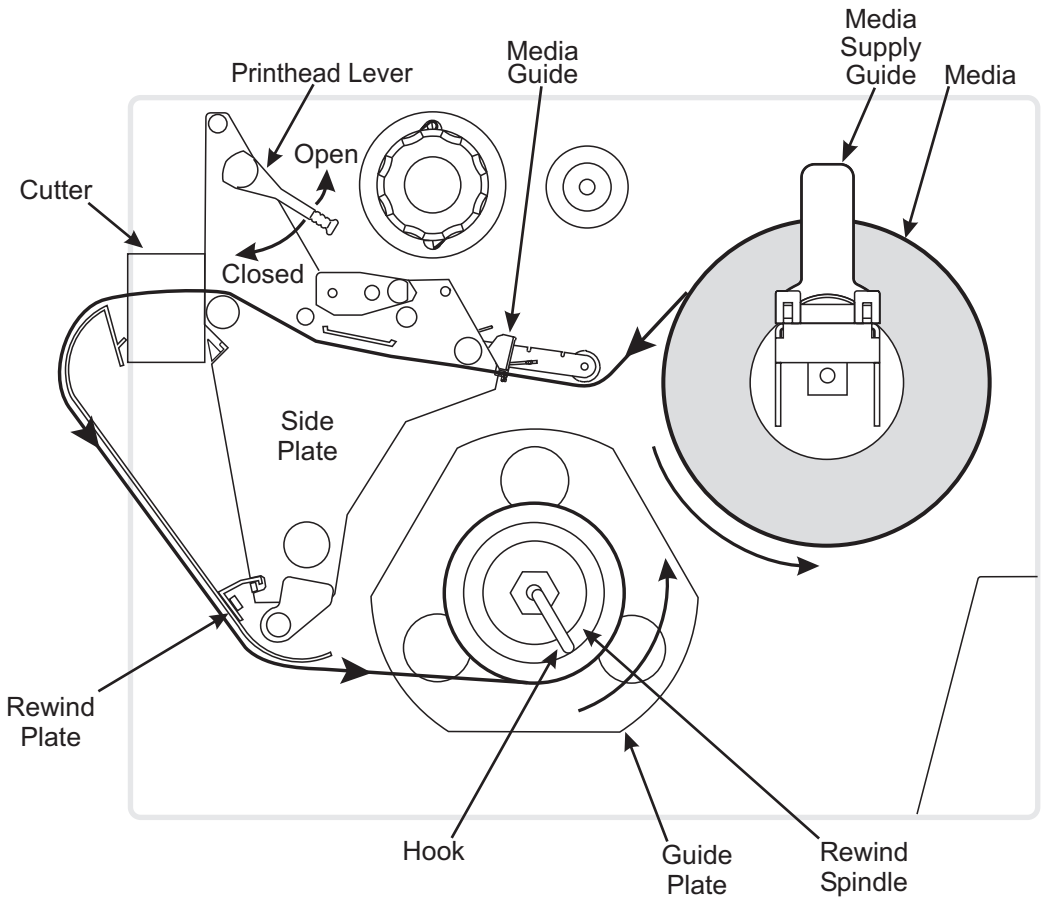


Figure 2-9. Rewind Mode w/Cutter Loading

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).

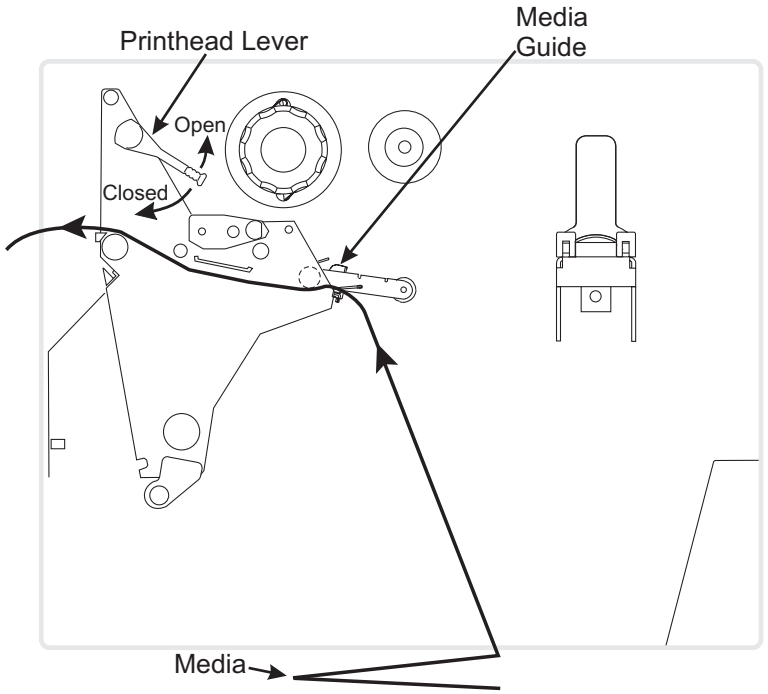
1. Unwind approximately 36 inches (91 cm) of backing from the rewind spindle. Cut it off at the spindle.
2. Pull out the hook. Slide the backing material off the rewind spindle and discard.
3. Wind the media around the rewind spindle once or twice and reinstall the hook. Continue winding to remove any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

Fanfold Media Loading

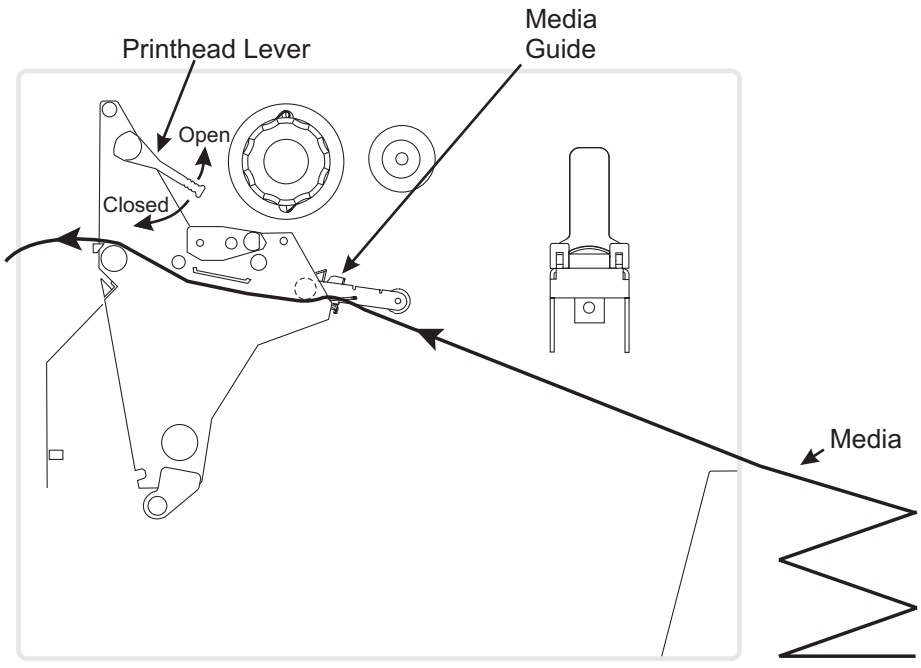
Refer to Figure 2-10.

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.



Bottom Supply



Rear Supply

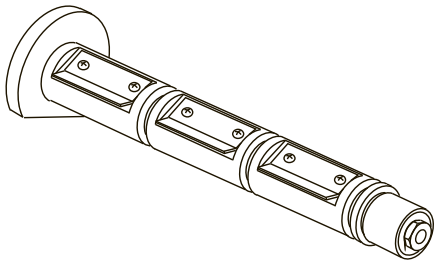
Figure 2-10. Fanfold Media

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.)

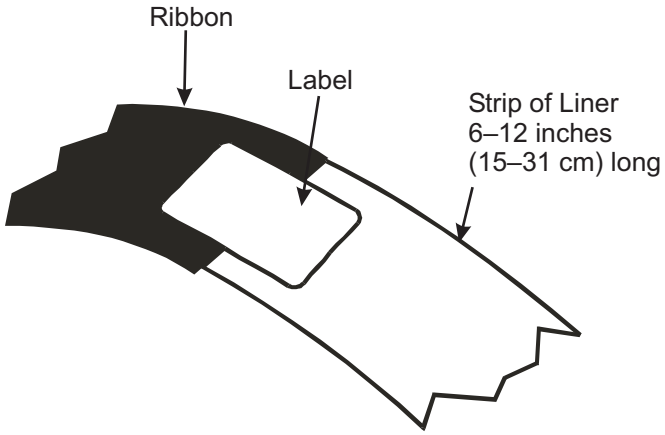
1. Align the segments of the ribbon supply spindle as shown.
2. Place the ribbon roll on the ribbon supply spindle.



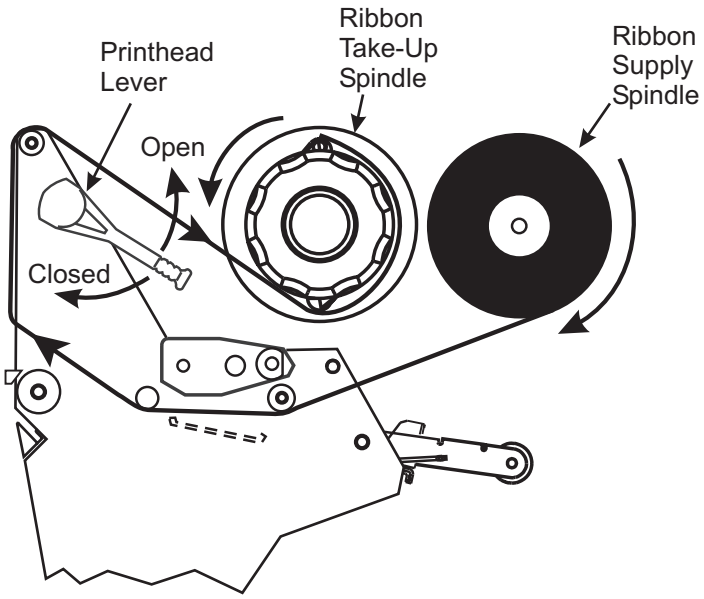
NOTE: Ensure that the core is pushed up against the stop on the ribbon supply spindle and that the ribbon is aligned squarely with its core. If this is not done, the ribbon may not cover the printhead entirely on the inside, exposing print elements to potentially damaging contact with the media.

3. Open the printhead.

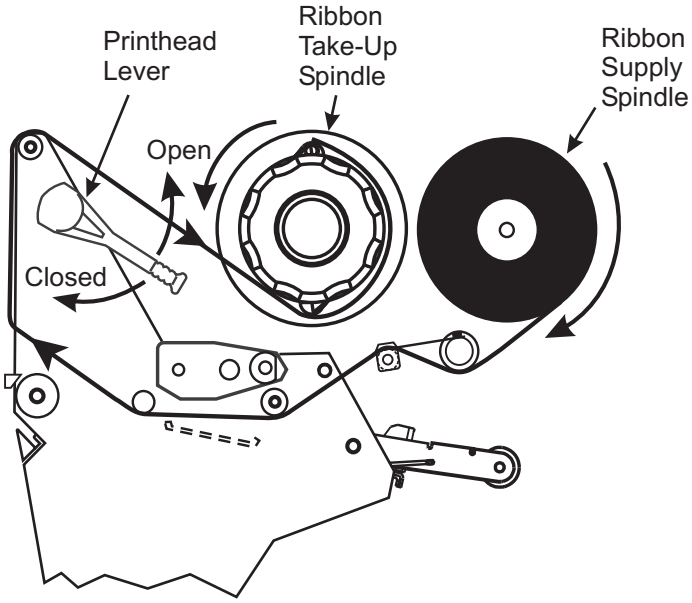
NOTE: (Optional) To make ribbon loading and unloading easier, make a leader for your ribbon roll if it doesn't already have one.



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.



90/96/140*Xi*III, *Xi*III*Plus,* and R-140



170/220*Xi*III, *Xi*III*Plus*, 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.

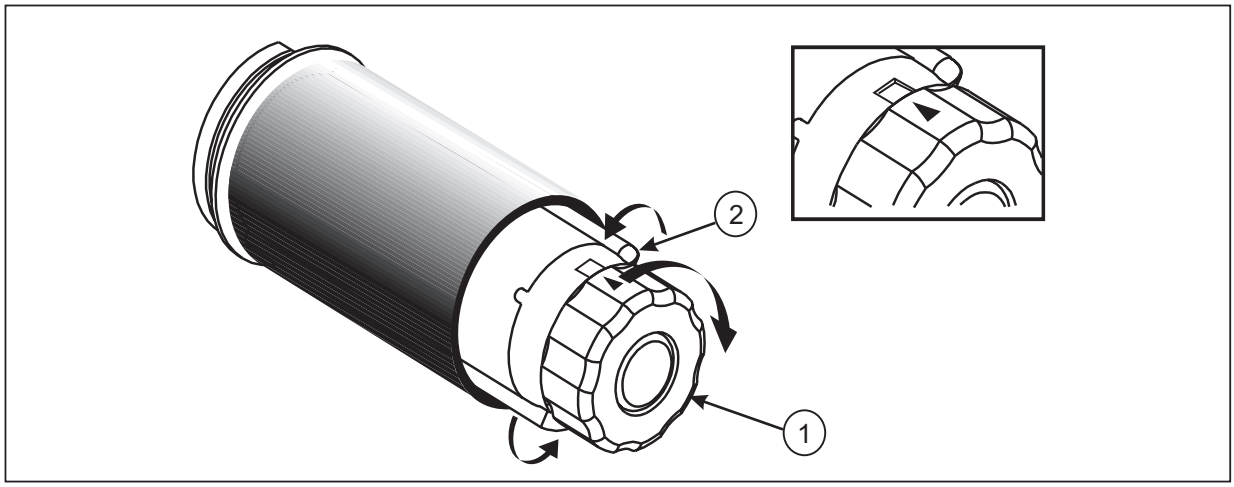


Figure 2-12. Ribbon Removal

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.

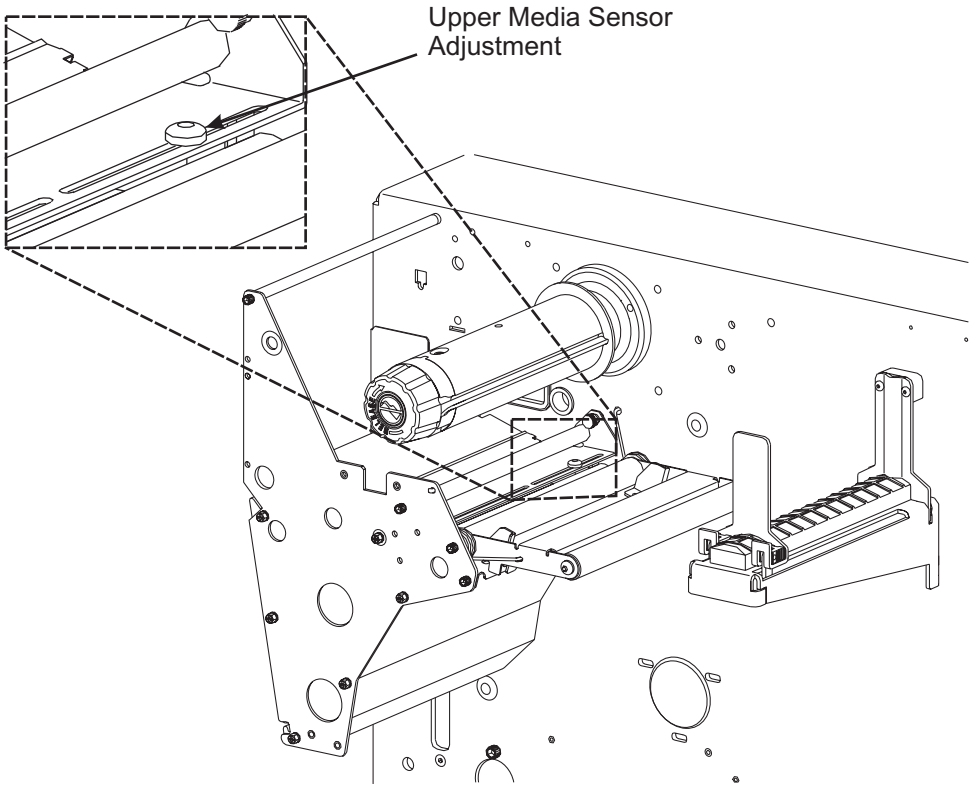


Figure 2-13. Upper Media Sensor Location

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.

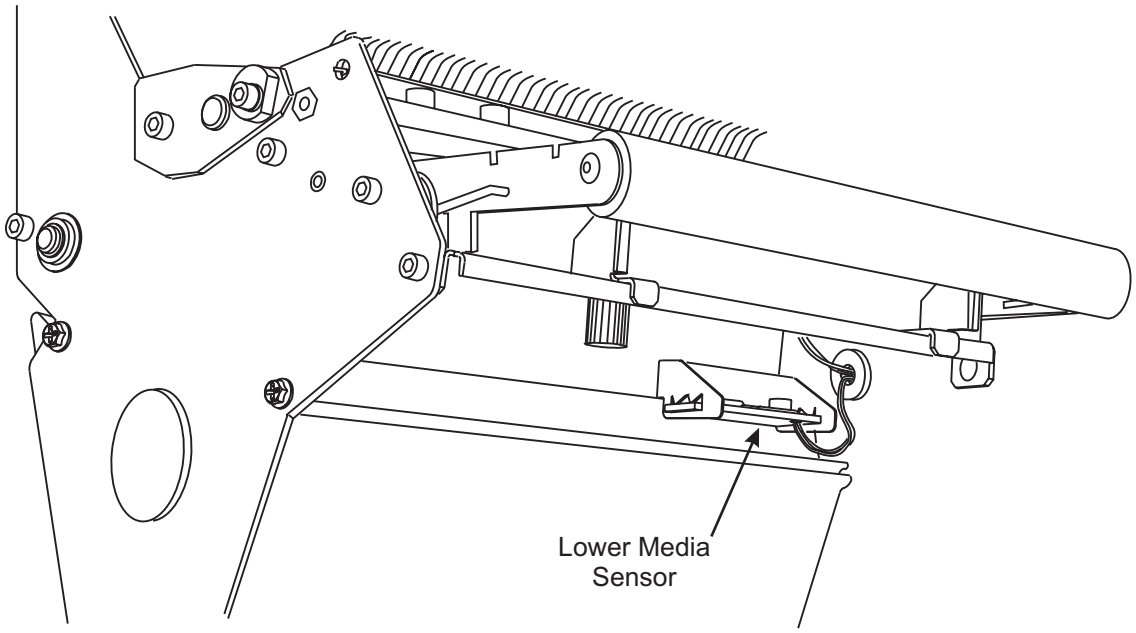


Figure 2-14. Lower Media Sensor Location

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.

*Xi*III 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**.

*Xi*III*Plus* Calibration

Two types of calibrations can be performed by the *Xi*III*Plus* printer:

Type 1 — Auto Calibration: The *Xi*III*Plus*-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.

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

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:

```
REMOVE RIBBON
CANCEL   CONTINUE
```

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:

```
  CALIBRATING
  PLEASE WAIT
```

NOTE: For the (XiIII only), the sensor profile adjustment moves the graph up or down to optimize the readings for your application.

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:

```
RELOAD ALL
         CONTINUE
```

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:

```
MEDIA AND RIBBON
       CALIBRATE
```

    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:

```
SAVE CHANGES
PERMANENT
```

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 Xi*III *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.

CAUTION:

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 key.
You can disable the password-protection feature so it no longer prompts by setting the password to ØØØØ 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:

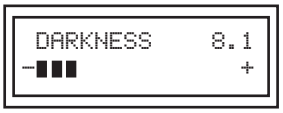
SET DARKNESS TO THE LOWEST SETTING POSSIBLE FOR THE DESIRED PRINT QUALITY. SETTING DARKNESS TOO HIGH FOR A GIVEN RIBBON MAY CAUSE INK SMEARING AND/OR PRINTHEAD BURNING THROUGH THE RIBBON.

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 *Xi*III*Plus*, holding the key rapidly increases or decreases the darkness.



***Xi*III**		***Xi*III*Plus***	
Default:	**+10**	**Default:**	**+4**
Range:	**0 to +30 (In ones)**	**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 Prunt Speed.

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

*Xi*III*Plus* 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.

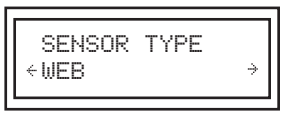
Default: **Non-Continuous**

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.

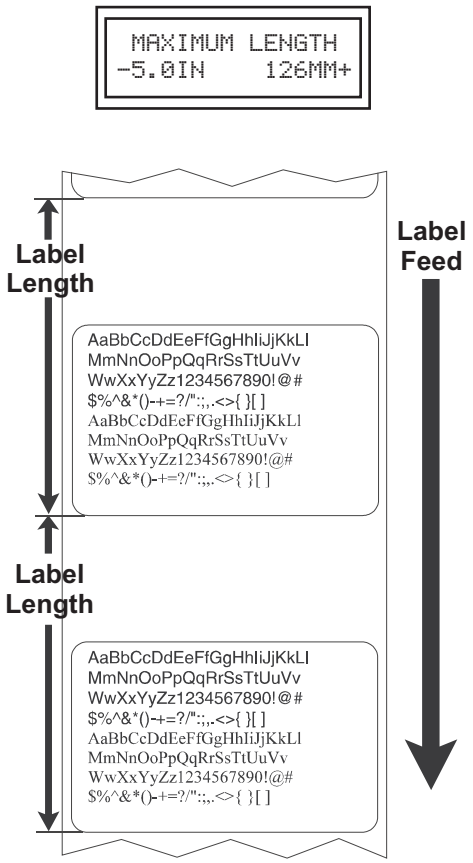


Figure 2-15. Maximum Label Length

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 *Xi*IIII, press the **NEXT/SAVE** key to display **LIST FONTS**. Proceed to List Fonts on page 2-30.

For *Xi*IIII*Plus*, 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 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 additional 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).

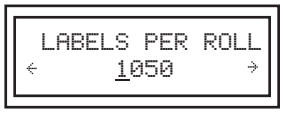
If media is disabled, LABELS PER ROLL and RIBBON LENGTH will not be displayed.

*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**

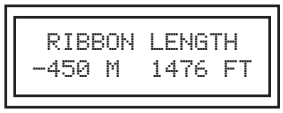
Selections: **100 labels–9999 labels**

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 of Off. If the Early Warning Maintenance is On, the Head Cleaning warning is enabled.

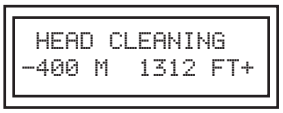
Default: **Maint. Off**

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.**

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

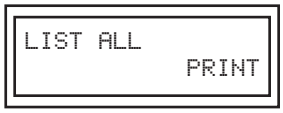
This selection is used to print a label that lists the printer's configuration information (same as the CANCEL key self test).

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.



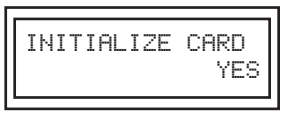
Press the right oval key to print a label listing all available fonts, bar codes, images, formats, and the printer configuration.

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

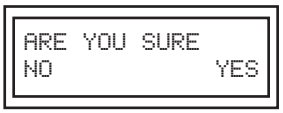
Initialize Card

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.
4. 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.

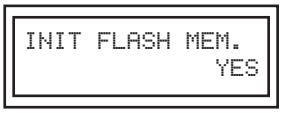
When initialization is complete, the printer automatically exits the Configuration Mode and the display shows PRINTER READY.

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

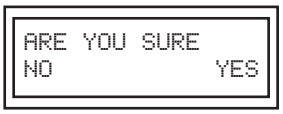
Initialize Flash Memory

This selection initializes the Flash memory.

NOTE: Perform this operation only when it is necessary to erase all previously stored information in the Flash memory. 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. Enter the password using the left oval and right oval keys and then press the **NEXT/SAVE** key.
2. The display shows INITIALIZE FLASH MEM. Press the right oval key to select YES. The display prompts ARE YOU SURE.

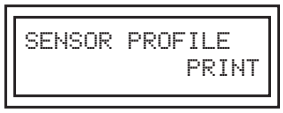


3. Press the right oval key “YES” to begin initialization, or press the left oval key to select “NO” to cancel the request and return to the “INITIALIZE FLASH” prompt.
4. Press the **SETUP/EXIT** key followed by the **NEXT/SAVE** key. If initialization is still in process, the display flashes back and forth between “CHECKING E: MEMORY” and “PRINTER IDLE.”
5. 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.

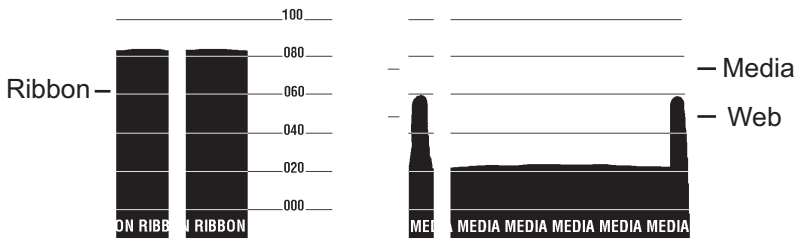


Figure 2-16. Sensor Profile Sample Label

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.

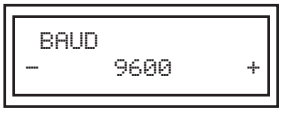
Press the right or left oval key to display other choices.

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 *Xi*III*Plus*.

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.

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.

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

Default: **None**

Selections: **Even, None, Odd**

For the *Xi*III, press the **NEXT/SAVE** key to display **STOP BITS.**

For the *Xi*III*Plus*, 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.

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**

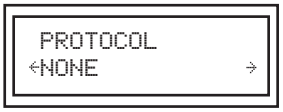
Press the **NEXT/SAVE** key to display **PROTOCOL.**

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.

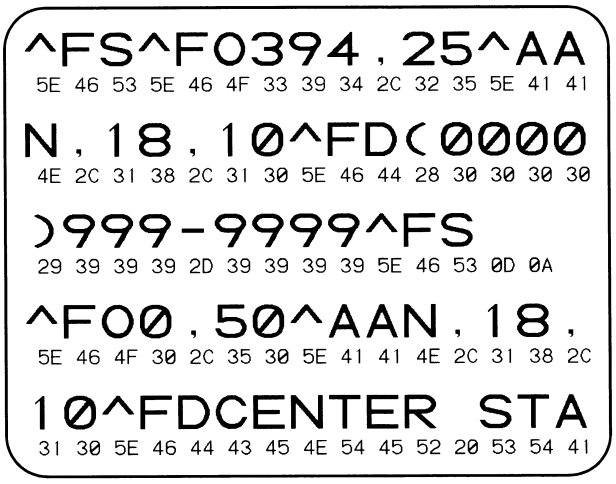


Figure 2-17. Diagnostics Sample Label

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 an overrun 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.**

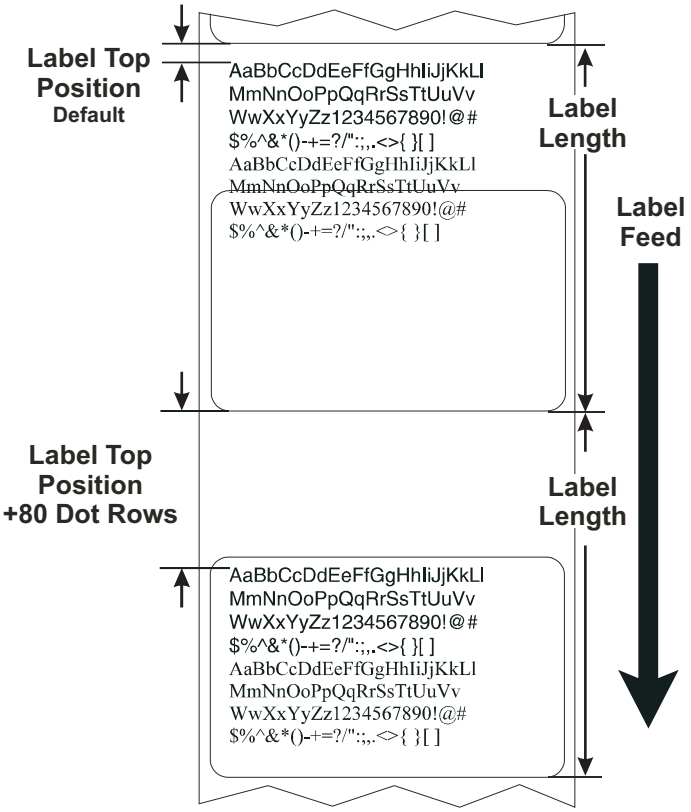


Figure 2-18. Label Top Position

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 –.)**

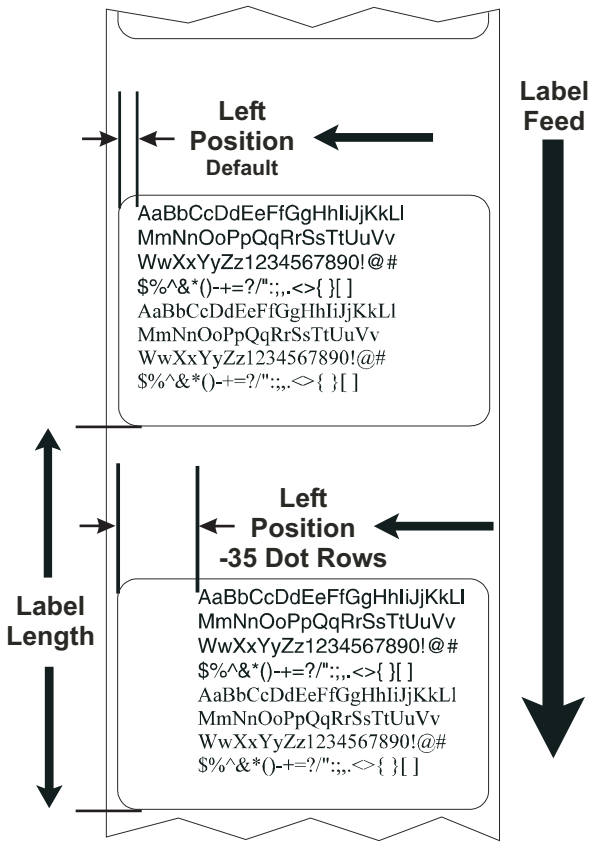


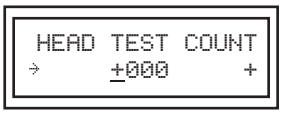
Figure 2-19. Left Position

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.**

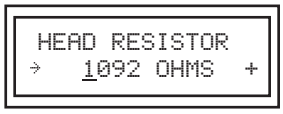
Setting the Head Resistance Value

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 *Xi*III, press the **NEXT/SAVE** key to display **WEB S.**

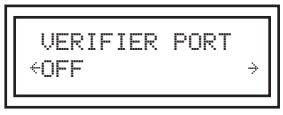
For the *Xi*III*Plus*, press the **NEXT/SAVE** key to display **VERIFIER PORT.**

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 ~END_PRINT signal low while the printer is moving the label forward.

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

Mode 3: Asserts the ~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 ~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 lef 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

CAUTION:

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

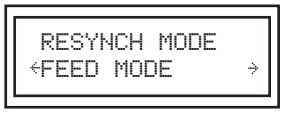
This parameter determines how the printer reacts if the label synchronization is lost and the label top is not where expected.

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.

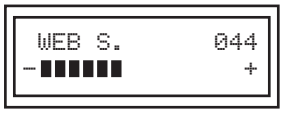


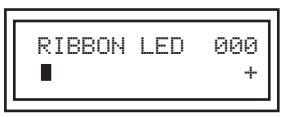
Default: Feed Mode

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.

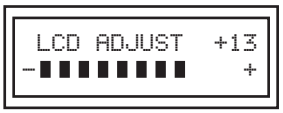




Press the **NEXT/SAVE** key repeatedly to skip these parameters and go to the **LCD ADJUST** display.

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 *Xi*III, press the **NEXT/SAVE** key to display **IP RESOLUTION.** Proceed to IP Resolution on page 2-47.

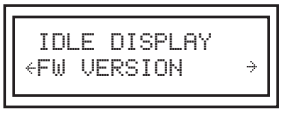
For the *Xi*III*Plus*, press the **NEXT/SAVE** key to display **IDLE DISPLAY.**

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.

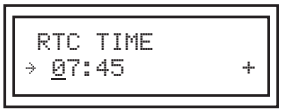
Press the left black oval key to move to the next digit position, press the right black oval key to increase the value of the digit.

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 Xi*III Plus*: Press the **NEXT/SAVE** key to display **LANGUGE**. Proceed to Language on page 2-49.

For the Xi*III*: 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.

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

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*.

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.

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 **LANGUAGE.**

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**

Selections: **English, Spanish, French, German, Italian, Norwegian, 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 *Xi*III-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, *Xi*III 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, *Xi*III and R-140

1.		All lights turn on simultaneously and then turn off in sequence through the following steps.
2.	PROCESSOR TEST	Processor functionality test performed. The word “Failed” is added to the display if the test fails.
3.	E-CUBED TEST	E-cubed functionality test performed. The word “Failed” is added to the display if the test fails.
4.	EEPROM TEST	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	Checking Flash memory.
7.	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 3-3. Self Test Sequence, Firmware 42.11.X, *Xi*III*Plus*

1.		After several seconds, all lights turn on and then off, except for POWER.
2.	PRINTER READY X.XMB V42.11.6	Printer is still testing, then starts to test the memory card.
3.	CHECKING MEMORY CARD	Checking memory card.
	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.

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.

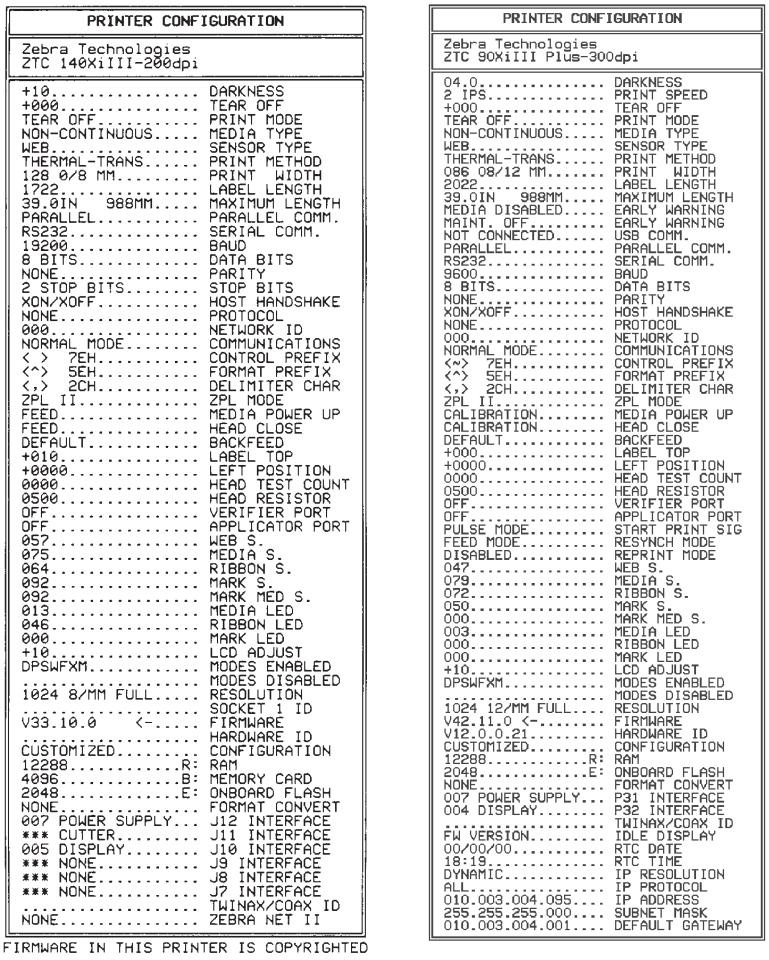
It is recommended that full-width media be used when performing these tests. Labels less than full-width lose printing on the right side. Label length determines the amount of print starting at the top of the label.

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

Zebra Technologies
ZTC 140XiIII-200dpi

+10	DARKNESS
+000	TEAR OFF
TEAR OFF	PRINT MODE
NON-CONTINUOUS	MEDIA TYPE
WEB	SENSOR TYPE
THERMAL-TRANS	PRINT METHOD
128 0/8 MM	PRINT WIDTH
1722	LABEL LENGTH
39.0IN 988MM	MAXIMUM LENGTH
PARALLEL	PARALLEL COMM.
RS232	SERIAL COMM.
19200	BAUD
8 BITS	DATA BITS
NONE	PARITY
2 STOP BITS	STOP BITS
XON/XOFF	HOST HANDSHAKE
NONE	PROTOCOL
000	NETWORK ID
NORMAL MODE	COMMUNICATIONS
< > 7EH	CONTROL PREFIX
<^> 5EH	FORMAT PREFIX
<,> 2CH	DELIMITER CHAR
ZPL II	ZPL MODE
FEED	MEDIA POWER UP
FEED	HEAD CLOSE
DEFAULT	BACKFEED
+010	LABEL TOP
+0000	LEFT POSITION
0000	HEAD TEST COUNT
0500	HEAD RESISTOR
OFF	VERIFIER PORT
OFF	APPLICATOR PORT
057	WEB S.
075	MEDIA S.
064	RIBBON S.
092	MARK S.
092	MARK MED S.
013	MEDIA LED
046	RIBBON LED
000	MARK LED
+10	LCD ADJUST
DPSWFXM	MODES ENABLED
	MODES DISABLED
1024 8/MM FULL	RESOLUTION
	SOCKET 1 ID
V33.10.0 <-	FIRMWARE
	HARDWARE ID
CUSTOMIZED	CONFIGURATION
12288 R:	RAM
4096 B:	MEMORY CARD
2048 E:	ONBOARD FLASH
NONE	FORMAT CONVERT
007 POWER SUPPLY	J12 INTERFACE
*** CUTTER	J11 INTERFACE
005 DISPLAY	J10 INTERFACE
*** NONE	J9 INTERFACE
*** NONE	J8 INTERFACE
*** NONE	J7 INTERFACE
	TWINAX/COAX ID
NONE	ZEBRA NET II

FIRMWARE IN THIS PRINTER IS COPYRIGHTED

PRINTER CONFIGURATION

Zebra Technologies
ZTC 90XiIII Plus-300dpi

04.0	DARKNESS
2 IPS	PRINT SPEED
+000	TEAR OFF
TEAR OFF	PRINT MODE
NON-CONTINUOUS	MEDIA TYPE
WEB	SENSOR TYPE
THERMAL-TRANS	PRINT METHOD
086 08/12 MM	PRINT WIDTH
2022	LABEL LENGTH
39.0IN 988MM	MAXIMUM LENGTH
MEDIA DISABLED	EARLY WARNING
MAINT. OFF	EARLY WARNING
NOT CONNECTED	USB COMM.
PARALLEL	PARALLEL COMM.
RS232	SERIAL COMM.
9600	BAUD
8 BITS	DATA BITS
NONE	PARITY
XON/XOFF	HOST HANDSHAKE
NONE	PROTOCOL
000	NETWORK ID
NORMAL MODE	COMMUNICATIONS
<^> 7EH	CONTROL PREFIX
<^> 5EH	FORMAT PREFIX
<,> 2CH	DELIMITER CHAR
ZPL II	ZPL MODE
CALIBRATION	MEDIA POWER UP
CALIBRATION	HEAD CLOSE
DEFAULT	BACKFEED
+000	LABEL TOP
+0000	LEFT POSITION
0000	HEAD TEST COUNT
0500	HEAD RESISTOR
OFF	VERIFIER PORT
OFF	APPLICATOR PORT
PULSE MODE	START PRINT SIG
FEED MODE	RESYNCH MODE
DISABLED	REPRINT MODE
047	WEB S.
079	MEDIA S.
072	RIBBON S.
050	MARK S.
000	MARK MED S.
003	MEDIA LED
000	RIBBON LED
000	MARK LED
+10	LCD ADJUST
DPSWFXM	MODES ENABLED
	MODES DISABLED
1024 12/MM FULL	RESOLUTION
V42.11.0 <-	FIRMWARE
V12.0.0.21	HARDWARE ID
CUSTOMIZED	CONFIGURATION
12288 R:	RAM
2048 E:	ONBOARD FLASH
NONE	FORMAT CONVERT
007 POWER SUPPLY	P31 INTERFACE
004 DISPLAY	P32 INTERFACE
	TWINAX/COAX ID
FW VERSION	IDLE DISPLAY
00/00/00	RTC DATE
18:19	RTC TIME
DYNAMIC	IP RESOLUTION
ALL	IP PROTOCOL
010.003.004.095	IP ADDRESS
255.255.255.000	SUBNET MASK
010.003.004.001	DEFAULT GATEWAY

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 96*Xi*III/*Xi*III*Plus* 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 96*Xi*III/*Xi*III*Plus*, 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 96*Xi*III/*Xi*III*Plus* 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 96*Xi*III/*Xi*III*Plus*). 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.

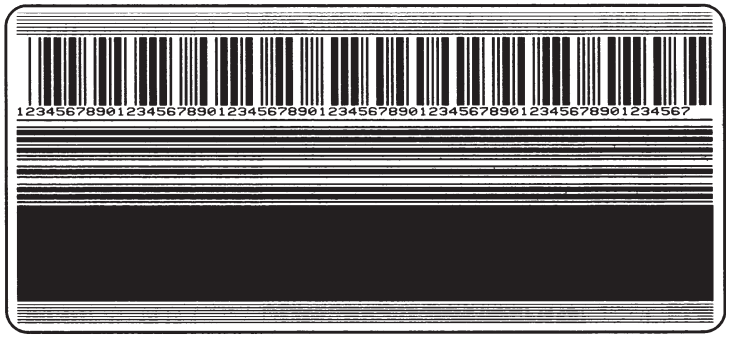


Figure 3-2. PAUSE Key Test Sample Label

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.

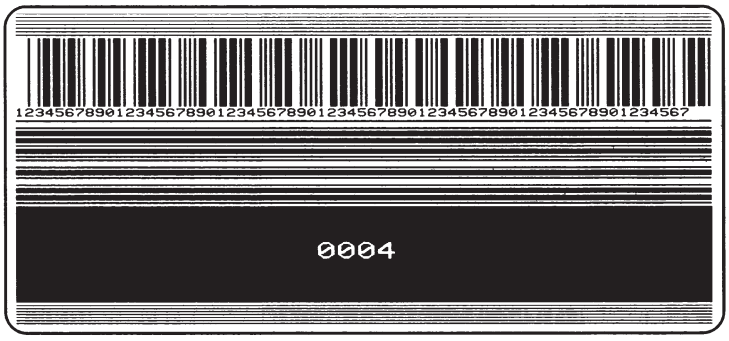


Figure 3-4. PAUSE Key and CANCEL Key Self Test Label

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

* 96*Xi*III prints at 4 ips
** 96*Xi*III 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.

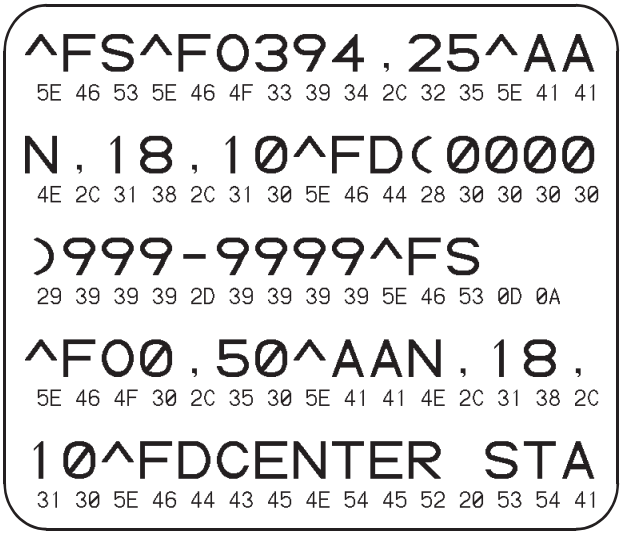


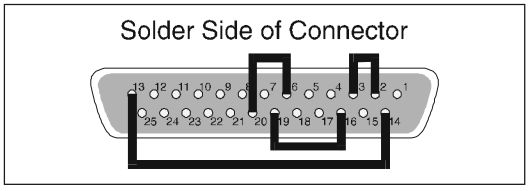
Figure 3-5. Communications Diagnostics Self Test

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.

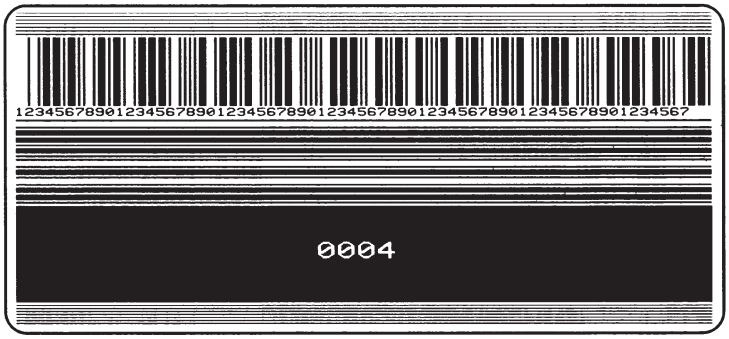


Figure 3-6. PAUSE Key Loopback Test Sample Label

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.

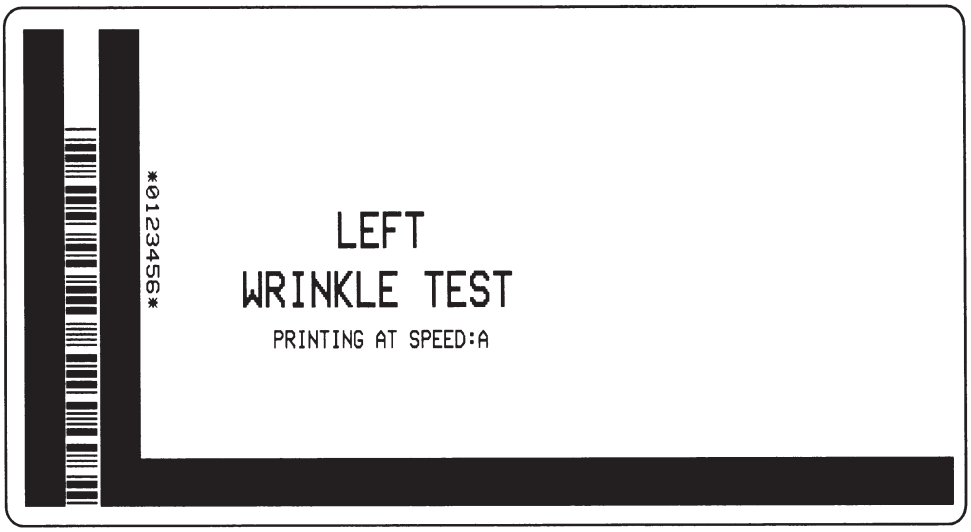


Figure 3-7. Format 1 (4) Test Sample Label

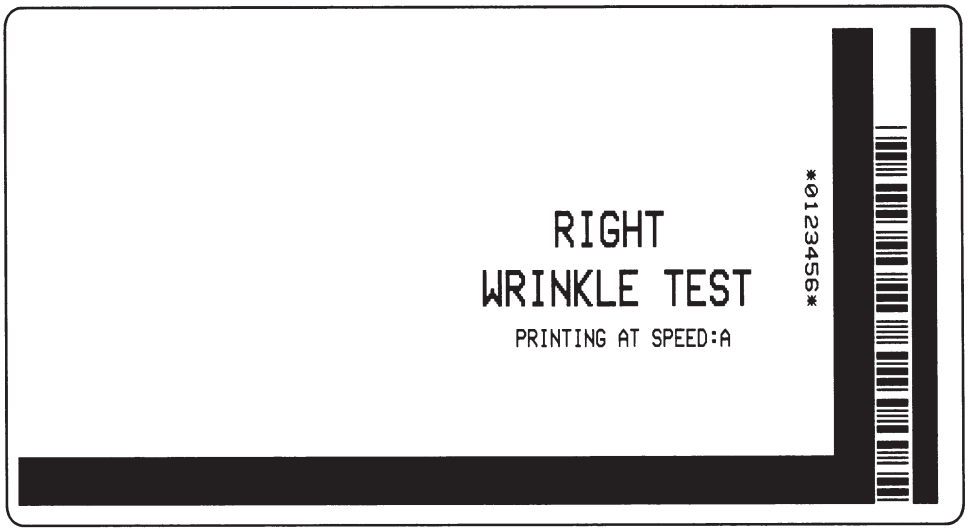


Figure 3-8. Format 2 (5) Test Sample Label

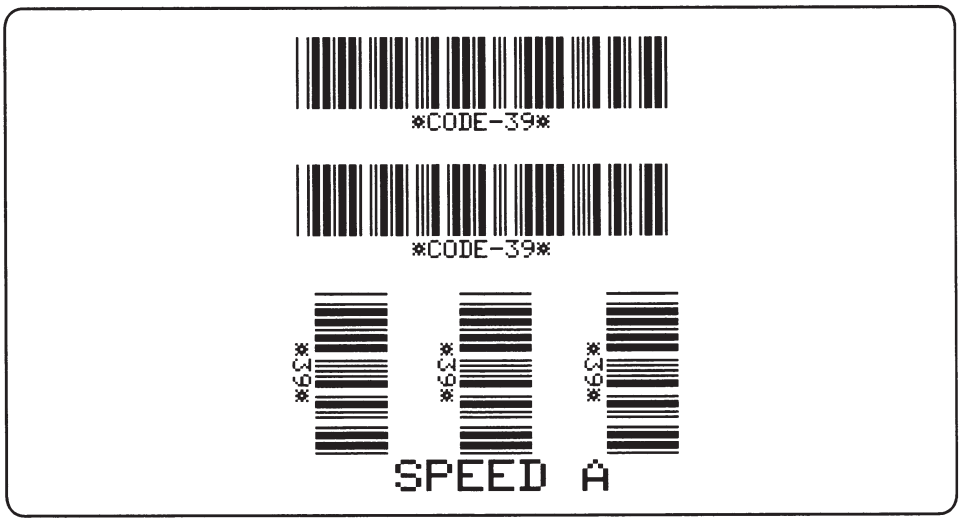


Figure 3-9. Format 3 (6) Test Sample Label

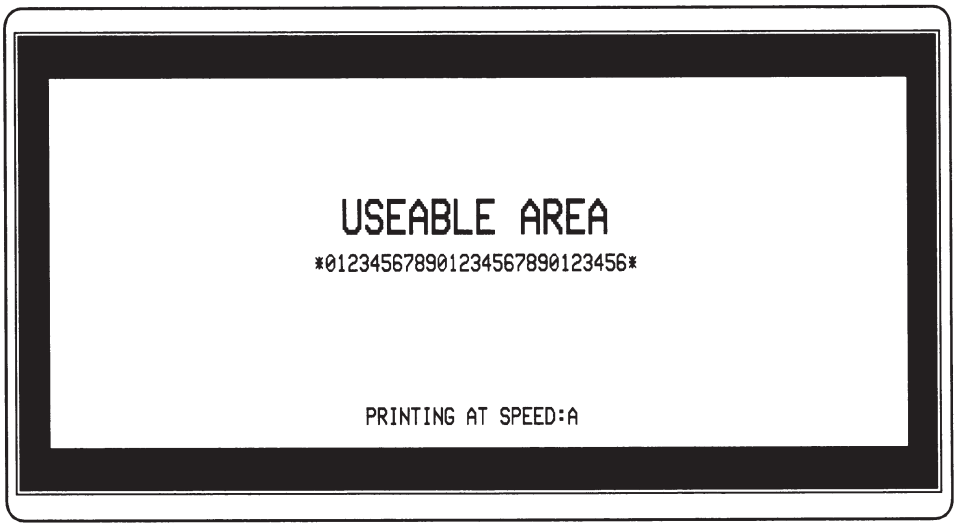


Figure 3-10. Format 7 (11) Test Sample Label

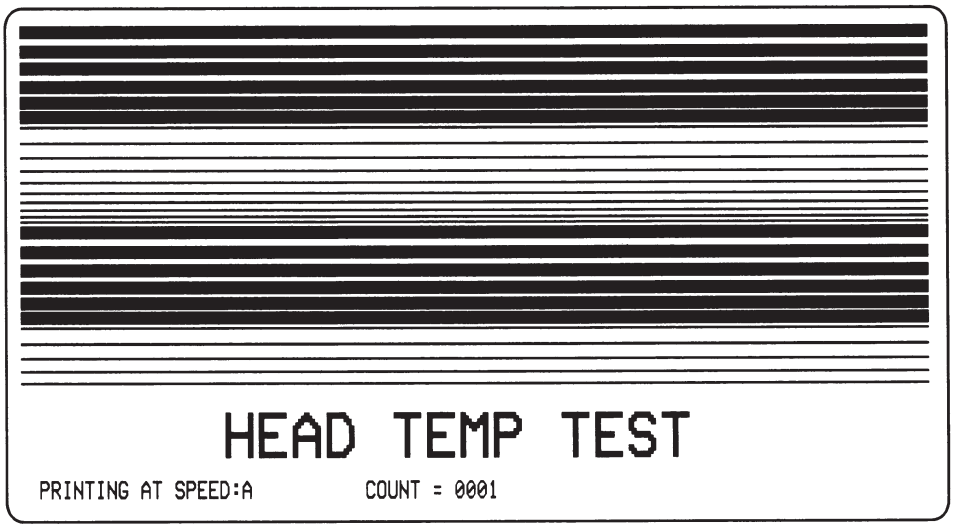


Figure 3-11. Format 8 (12) Test Sample Label

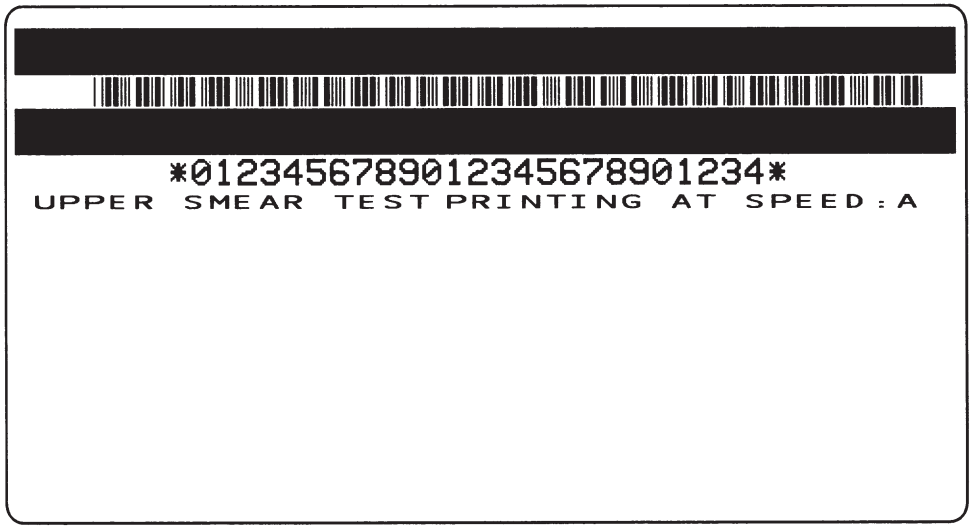


Figure 3-12. Format 9 (13) Test Sample Label

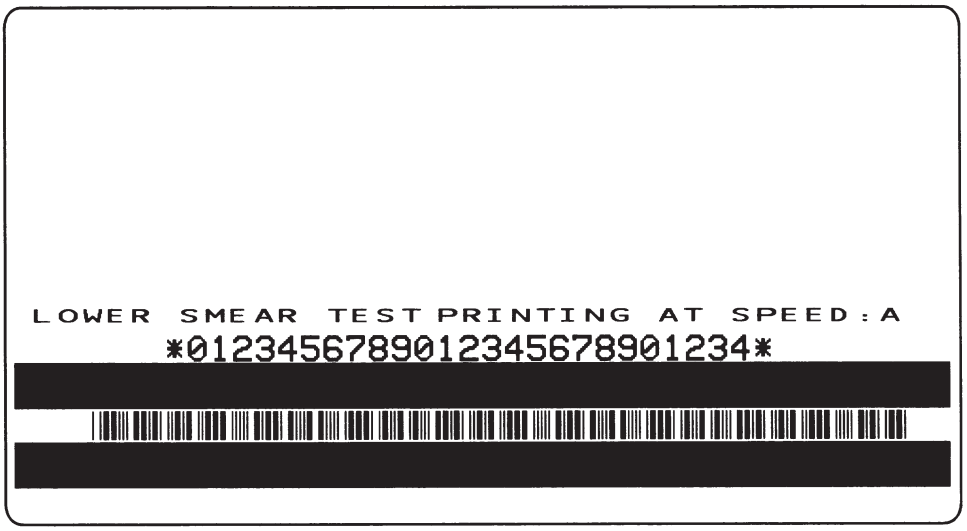


Figure 3-13. Format 10 (14) Test Sample Label

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.
EEPROM CHECKSUM INVALID	EEPROM checksum is incorrect.	Replace the main logic board.
ERR0R CONDITION PAPER OUT 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.
ERR0R CONDITION RIBBON OUT 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.
WARNING RIBBON IN	For Direct Thermal: Ribbon loaded unnecessarily.	Remove ribbon. Verify snap plate is properly installed.
ERR0R CONDITION HEAD OPEN 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
WARNING HEAD OVERTEMP Printer stops and ERROR LED flashes.	Printhead element is overheated.	Printer resumes printing when the printhead element cools to a normal operating temperature.
WARNING HEAD UNDERTEMP Printer stops and ERROR LED flashes.	Printhead element is not hot enough to print properly.	Environment too cold for proper printing. Relocate printer to warmer area.
	Printhead data cable not properly connected.	**WARNING:** THE PRINTHEAD CAN BE VERY "HOT" AND CAUSE BURNS. Allow printhead to cool. Disconnect and reconnect printhead cables. Ensure cables are fully inserted into connectors.
ERR0R CONDITION ELEMENT BAD Experiencing print quality problems.	Printhead element is going bad.	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.
ERR0R CONDITION CUTTER JAMMED	Cutter blade is in the media path.	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.
Printer stops and PAUSE LED lights. LCD displays: ERR0R CONDITION Out of Memory	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.) Functions: 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.	You may do any of the following: 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. or 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 *Xi*III-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.

CAUTION:

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
MAINTENANCE

MAINTENANCE CONCEPTS

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

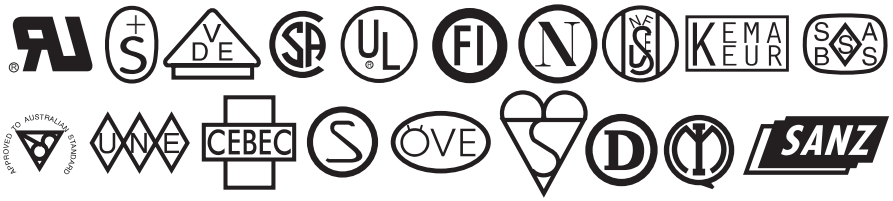
- **Preventive Maintenance** procedures and operator care instructions. These procedures may be performed by the operator as well as the service technician and should be performed on a regular basis. Preventive maintenance consists of a visual inspection and general cleaning of the interior and exterior 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

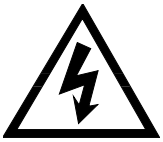
☐ Danger of an explosion exists if the back-up battery is replaced incorrectly.

☐ 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, and springs.



☐ For personnel and equipment safety, use a three-prong plug with a ground (earth) connection.

PREVENTIVE MAINTENANCE

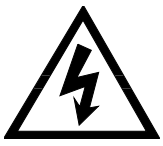
Cleaning the Zebra Printer

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.



WARNING:

UNLESS INDICATED OTHERWISE, TURN PRINTER POWER OFF(O) AND DISCONNECT THE PRINTER FROM THE POWER SOURCE BEFORE PERFORMING THE FOLLOWING MAINTENANCE PROCEDURES.

CAUTION:

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 # 01429) containing six cleaning swabs soaked in solvent (alcohol and distilled water) is available from Zebra Technologies.

CAUTION:

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.

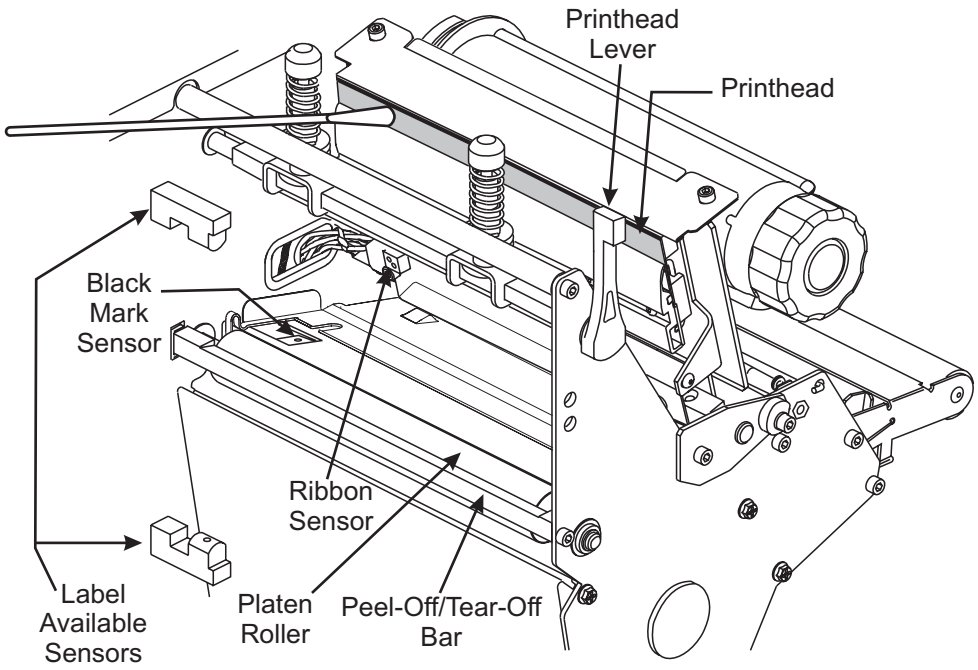


Figure 4-1. Cleaning a Typical Printhead

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 grayish/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 *Xi*IIII, *Xi*IIII*Plus* 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.

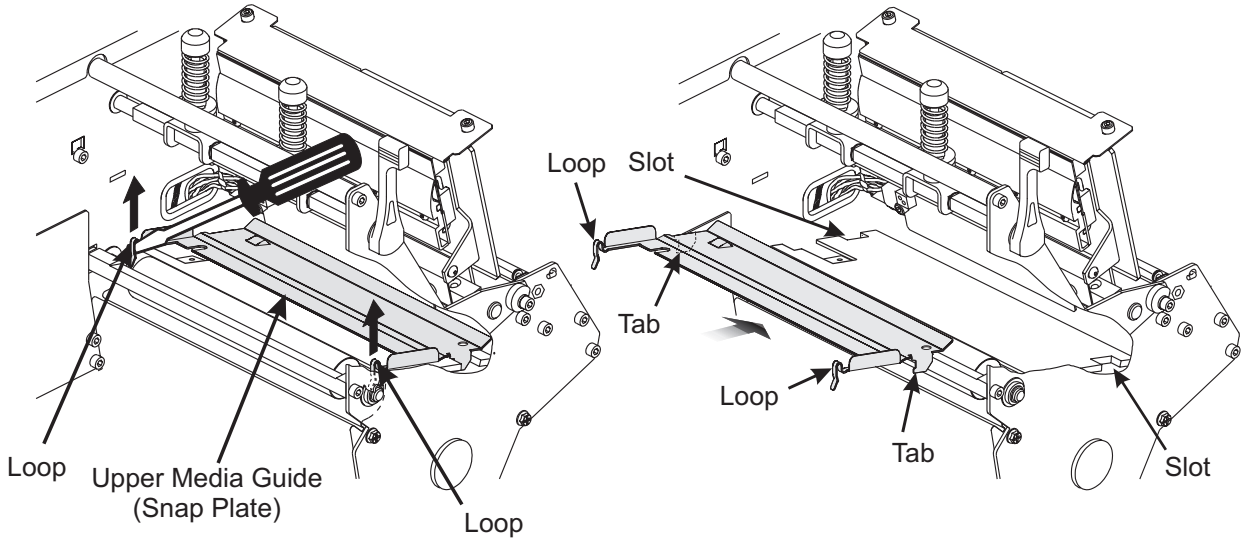


Figure 4-2. Current Snap Plate Removal and Installation

Upper Media Guide (Snap Plate) for the Original 90/96*Xi*III Printers

NOTES: The 90/96XiIII had a change in snap plates in early 2001. Refer to page 4-8 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.

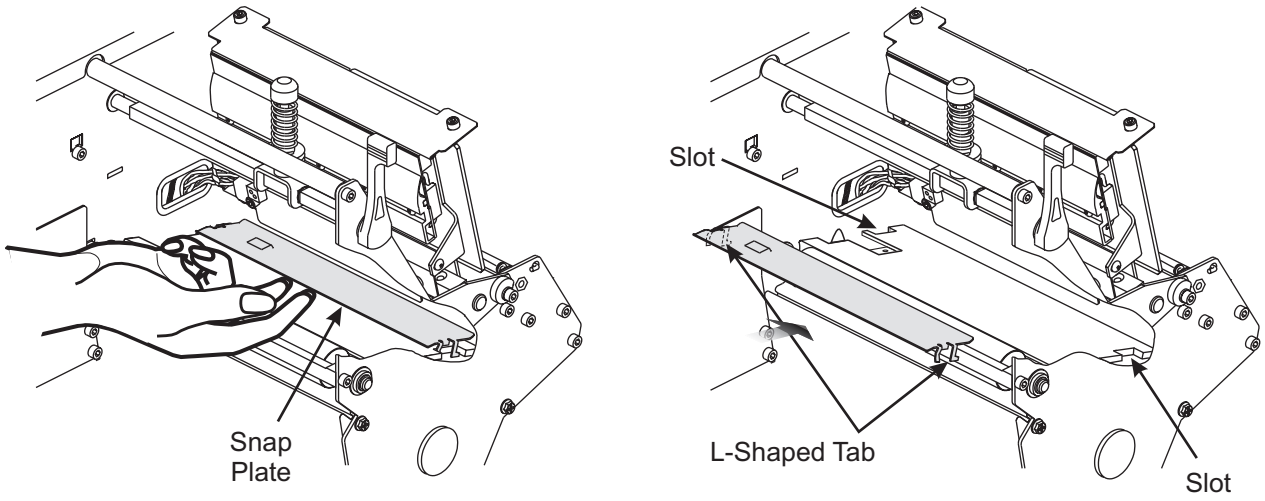


Figure 4-3. Original 90/96*Xi*III Snap Plate Removal and Installation

CORRECTIVE MAINTENANCE

Tools Required for Corrective Maintenance

A complete set of technician's tools, including a flat-blade and Phillips screwdrivers, American standard and metric nut drivers, American standard and metric Allen wrenches, combination wrenches, and wire cutters, two special tools are required:

- Spring scale, 0 – 2250 g (part # HT344)
- Spindle torque adjustment kit (part # 01773)

Test Equipment Required

- Multimeter and test leads
- Antistatic mat and antistatic wrist strap for removing static sensitive components.

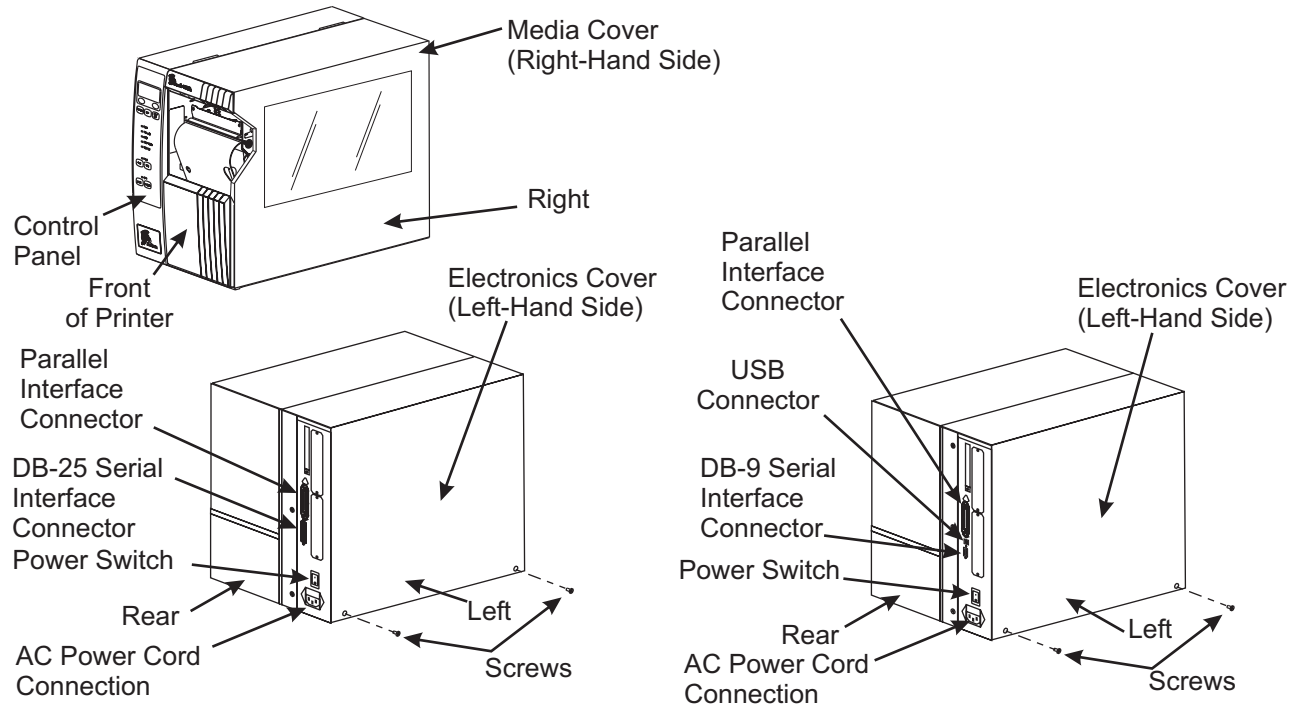
WARNING:

UNLESS INDICATED OTHERWISE, TURN PRINTER POWER OFF(O) AND DISCONNECT THE PRINTER FROM THE POWER SOURCE BEFORE PERFORMING THE FOLLOWING MAINTENANCE PROCEDURES.

Printer Parts and Locations

External Components

Refer to Figure 4-4 to familiarize yourself with the external parts of the printer.



XiIII and R-140 Rear View

***Xi*IIIPlus Rear View**

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.

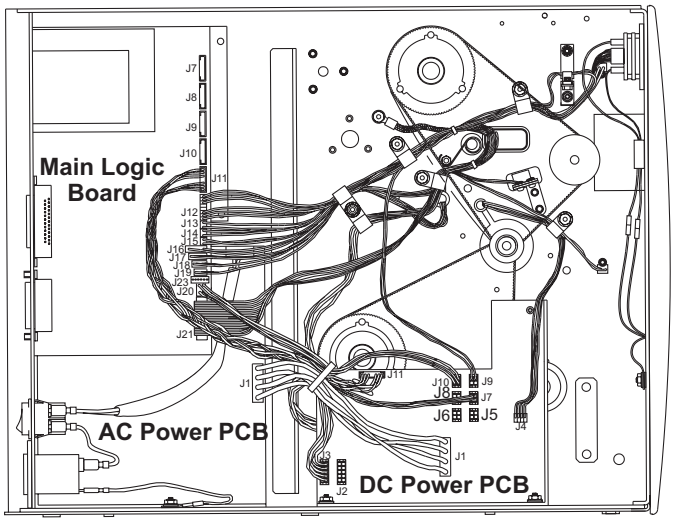


Figure 4-5. Printer Interconnection Diagram

Table 4-2. *Xi*III 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 *Xi*III Printers	J8	N/A
J3	Printhead Power for all *Xi*III Printers	J9	LCD Display Power
J4	Stepper Motor	J10	J20 Main Logic PCB
J5	N/A	J11	J11 Main Logic PCB

*SPI—Serial Peripheral Interface

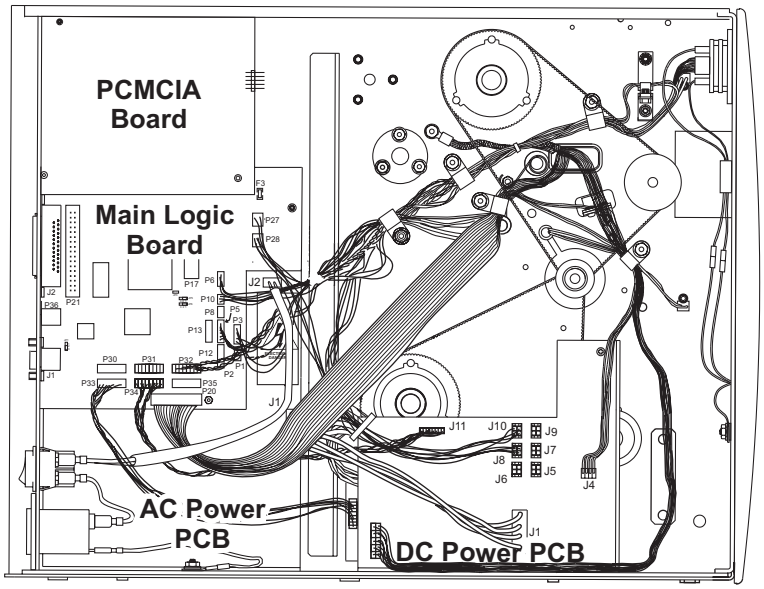


Figure 4-6. *Xi*IIII*Plus* Interconnections

Table 4-3. *Xi*IIII*Plus* 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 220*XiIIIPlus* 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		

*SPI—Serial Peripheral Interface

Routine Referral Procedures (RRP)

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

RRP No. 1: Preparing Printer for Maintenance

Removing Power and Disconnecting the Printer

Refer to Figure 4-7. Power switch position is the On (**I**) position. Place the power switch in the Off (**O**) position.

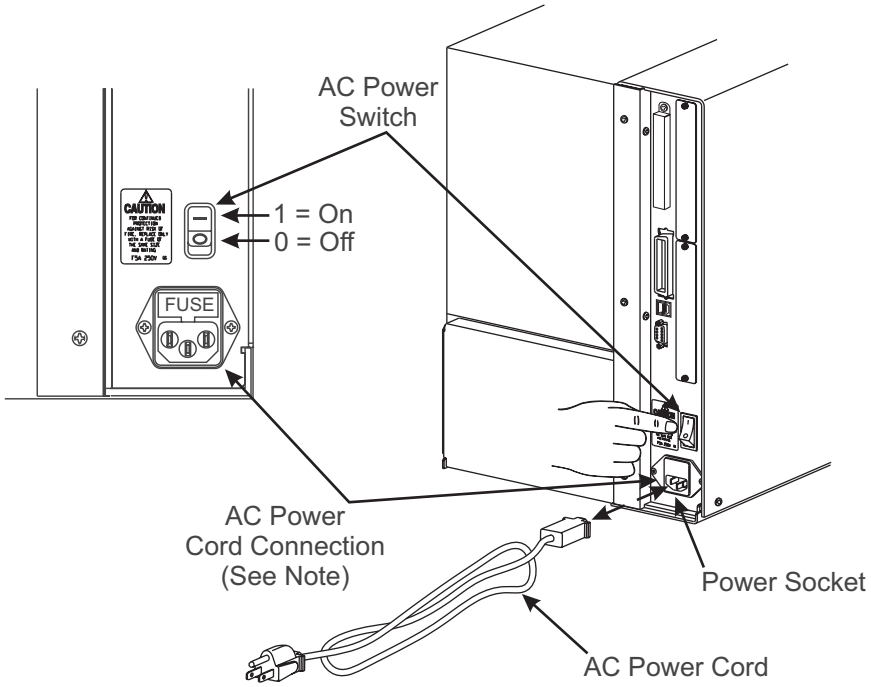
Remove the power cord from the power source. Grasp the plug of the power cord and pull it straight away from the printer.

Refer to Figure 4-8.

Parallel Data Cable: Pry off wire retainers from the parallel data cable connector. Pull the data cable connector away from the parallel data port connector.

Serial Data Cable: Loosen the screws securing serial data cable connector and pull it away from the serial data port connector.

USB Data Cable (*Xi*III*Plus* Only): Pull the USB connector away from the USB connector.



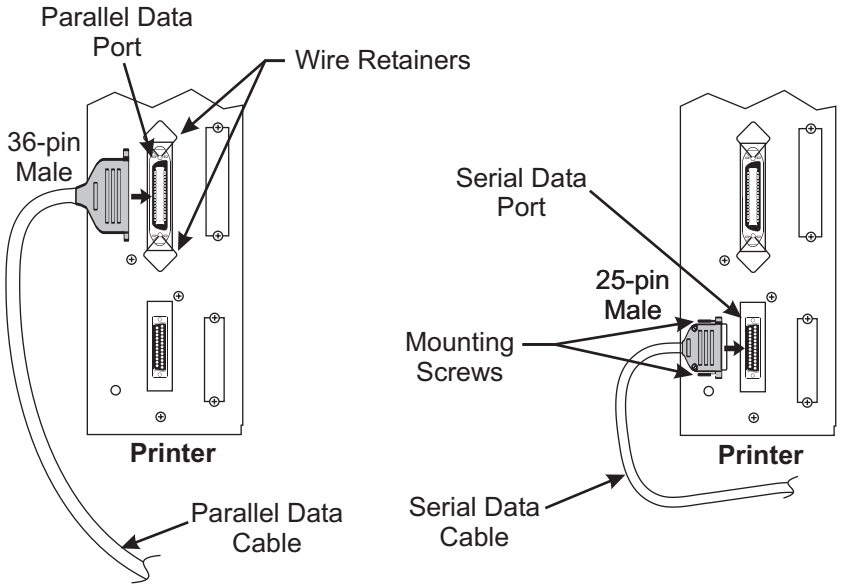
NOTE: Depending on configuration, the power entry module may not have a user-replaceable fuse.

Figure 4-7. Power Cord Removal and Installation

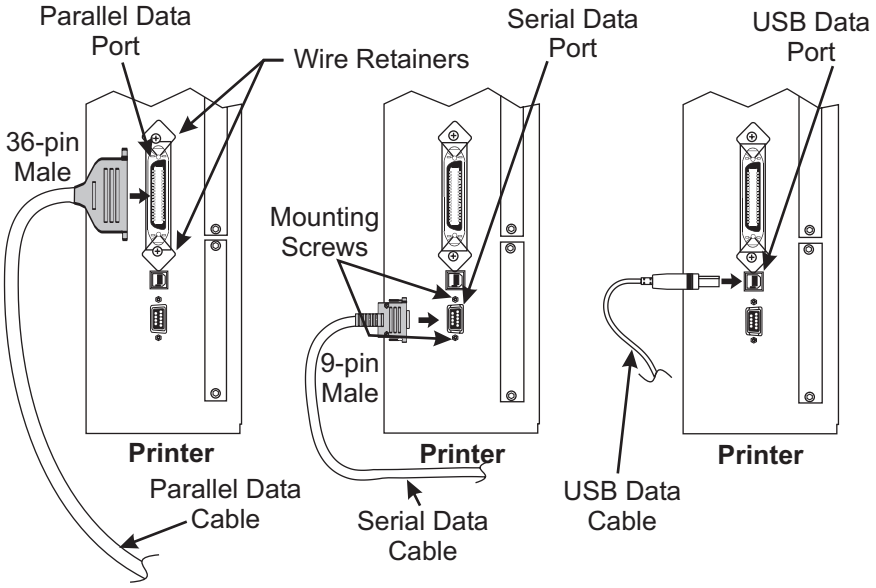
Reconnecting and Powering the Printer

Refer to Figure 4-8.

Parallel Data Cable: Insert the parallel data cable, 36-pin parallel data cable, male connector into the parallel data port connector. Firmly seat the connector. Secure the connector with the two wire retainers.



***Xi*III and R-140**



Xi*III*Plus

Figure 4-8. Removal and Installation of Data Cables

Serial Data Cable: Insert the serial data cable, 9- or 25-pin serial data cable, male connector into the serial data port connector. Firmly seat the connector and secure the connector.

USB Data Cable (*Xi*III*Plus* Only): Insert the USB connector firmly into the USB connector.

To install the AC power cord, line up the female connector with the printer power socket and push the connector fully into the socket. Ensure that the power switch is in the Off (**O**) position and restore power.

Place the power switch in the On (**I**) position.

RRP No. 2: Electronics Cover Removal and Installation

Refer to Figure 4-9. 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.

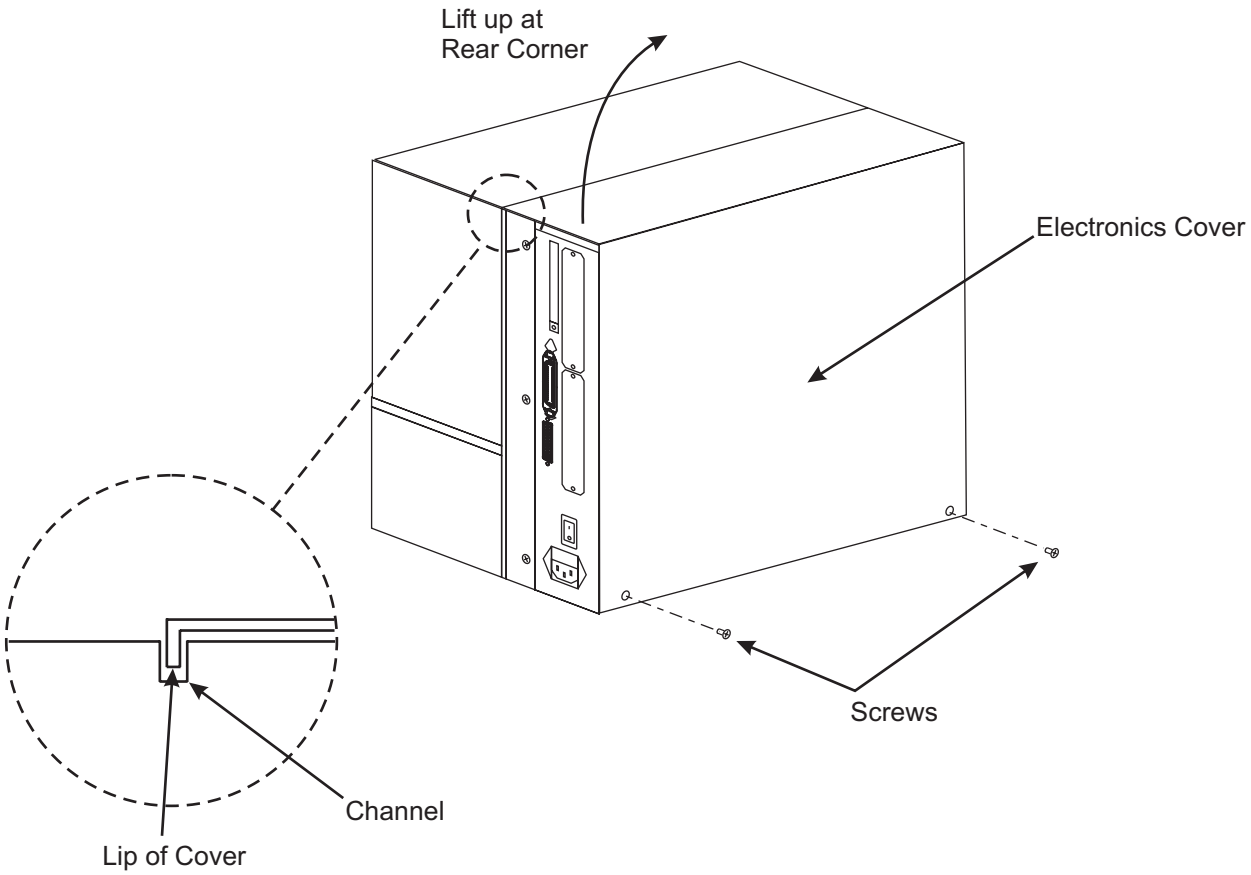


Figure 4-9. Removing and Installing the Electronics Cover

RRP No. 3: Removal and Installation of the DC Power Supply

DC Power Supply Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 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 4-10. Remove the mounting screw and nuts securing the DC power supply assembly.

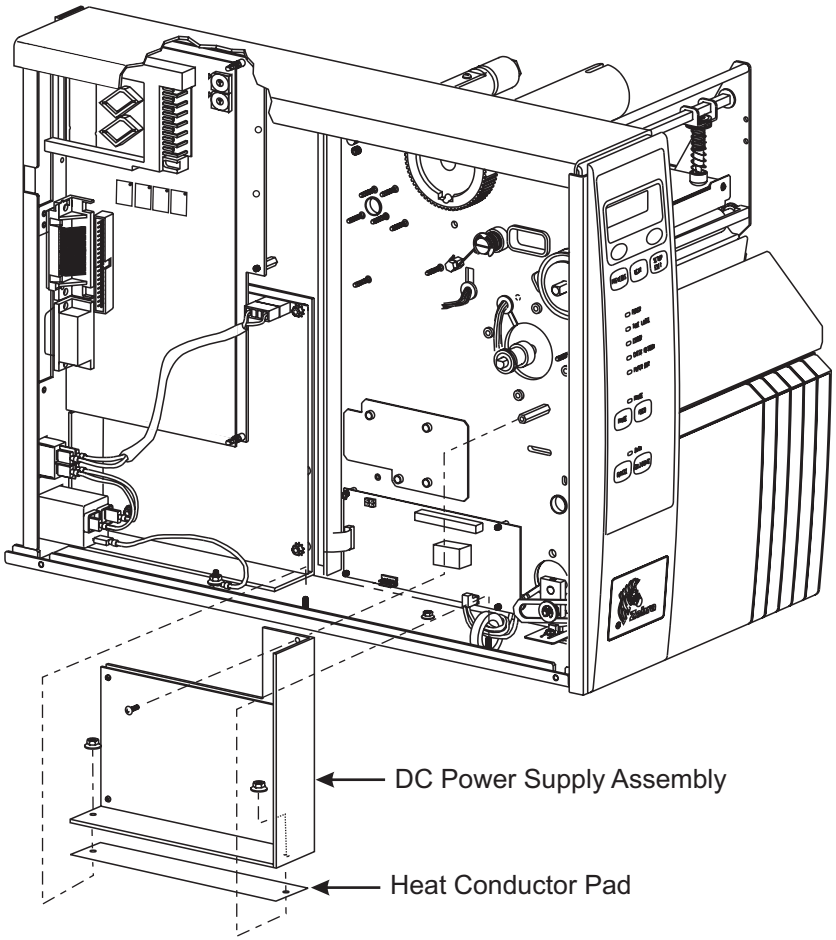


Figure 4-10. DC Power Supply Removal and Installation

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

NOTE: The black heat-conduction pad MUST NOT be removed.

DC Power Supply Installation

1. 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.
2. Refer to Figure 4-10. Install the one mounting screw and two nuts that secure the DC power supply assembly.

3. Reconnect all ribbon cables and small wire connectors to the DC power supply board as shown in Figure 4-5.
4. Reinstall the electronics cover.
5. Reconnect the AC power cord and all data cables.
6. Hold in the **PAUSE** key while placing the power switch in the On (**I**) position. Observe the printer Power-On Self Test and examine the test labels for proper print quality. If necessary, refer to the User's Guide to adjust the darkness setting.

RRP No. 4: *Xi*III and R-140 Main Logic Board Removal and Installation

For *Xi*III*Plus, see* RRP No. 5 on page 4-19.

*Xi*III Main Logic Board Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position, and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.

NOTE: Retain all attaching hardware to use during reassembly.

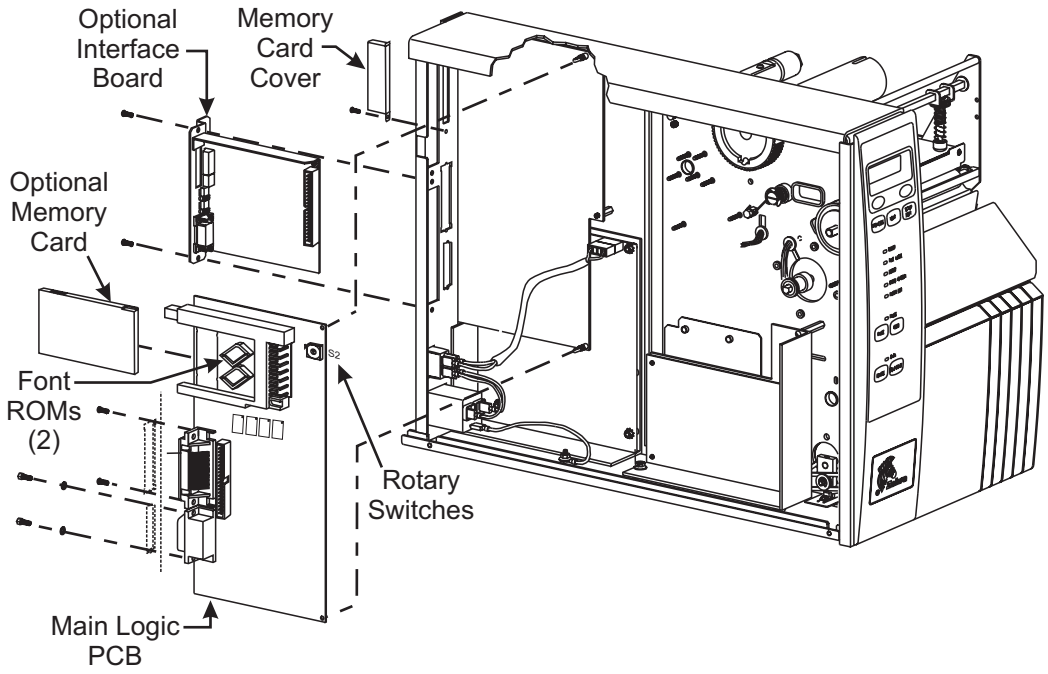


Figure 4-11. Main Logic Board Removal and Installation

3. Refer to Figure 4-11. Remove the memory card cover if installed. Press the card-release button to remove the font card or memory card from the card slot located at the rear of the printer.
4. Remove the optional interface board if installed.
5. See Figure 4-5. Disconnect all ribbon cables and wire connectors from the main logic board.
6. Refer to Figure 4-11. 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.
7. Squeeze the two plastic standoff latches while gently pulling out the main logic board.

8. Slide the main logic board and rear panel assembly out and away from the printer.
9. 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.
10. 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. Refer to Table 4-4 to determine the correct position of S1.

Table 4-4. S1 Switch Position

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

1. Refer to Figure 4-11. 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, that secure the serial and parallel data connectors.
3. Refer to Figure 4-5. Reconnect all ribbon cables and wire connections to the main logic board.
4. Refer to Figure 4-11. 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. Reinstall the electronics cover.
7. Reconnect the data cables and the AC power cord.
8. Ensure that the power switch is in the Off (**O**) position and restore power.
9. Place the power switch in the On (**I**) position and configure the printer parameters. Enter the printhead resistance value indicated on the label attached to the printhead.

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

RRP No. 5: *Xi*III*Plus* Main Logic Board Removal and Installation

For Xi III, see RRP No. 4 on page 4-17.

*Xi*III*Plus* Main Logic Board Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position, and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.

NOTE: Retain all attaching hardware to use during reassembly.

3. Refer to Figure 4-12. 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.

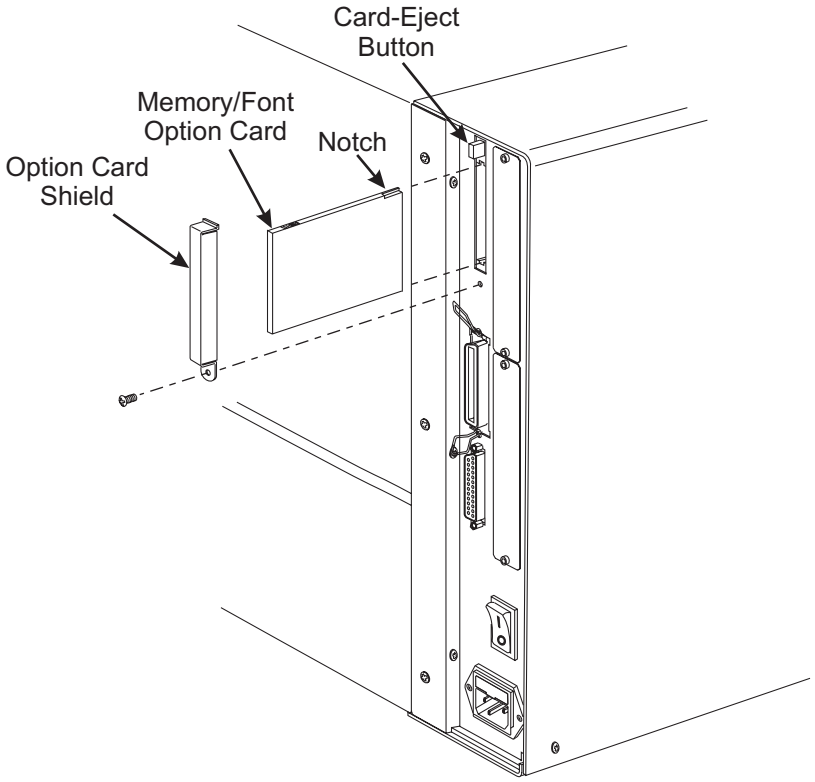


Figure 4-12. Memory/Font Optional Board

4. If an optional interface board is installed in the printer, refer to the removal instructions in this Maintenance Manual before continuing with this procedure.
5. Refer to Figure 4-13. Disconnect all connectors from the main logic board.

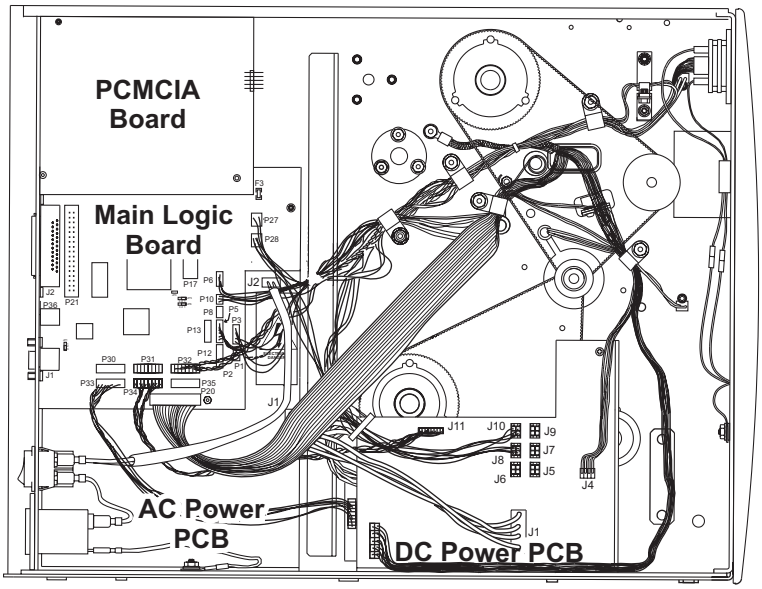


Figure 4-13. *Xi*III*Plus* Main Logic Board

6. Refer to Figure 4-14. At the rear of the printer, remove the screws securing the serial and parallel port connectors.

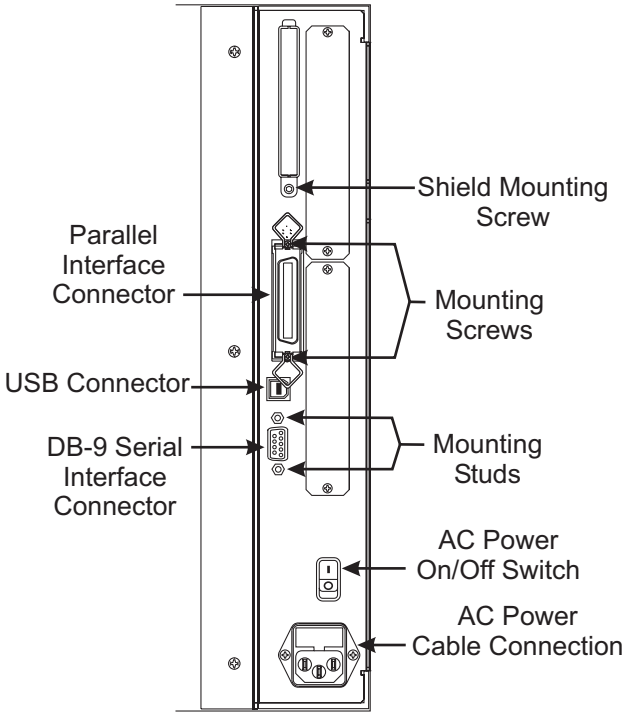


Figure 4-14. Rear View

7. Refer to Figure 4-15. Remove the PCMCIA board by first removing the mounting screw in the upper left of the board, then squeezing the tips of two plastic standoffs at the lower left and right, remove the board.

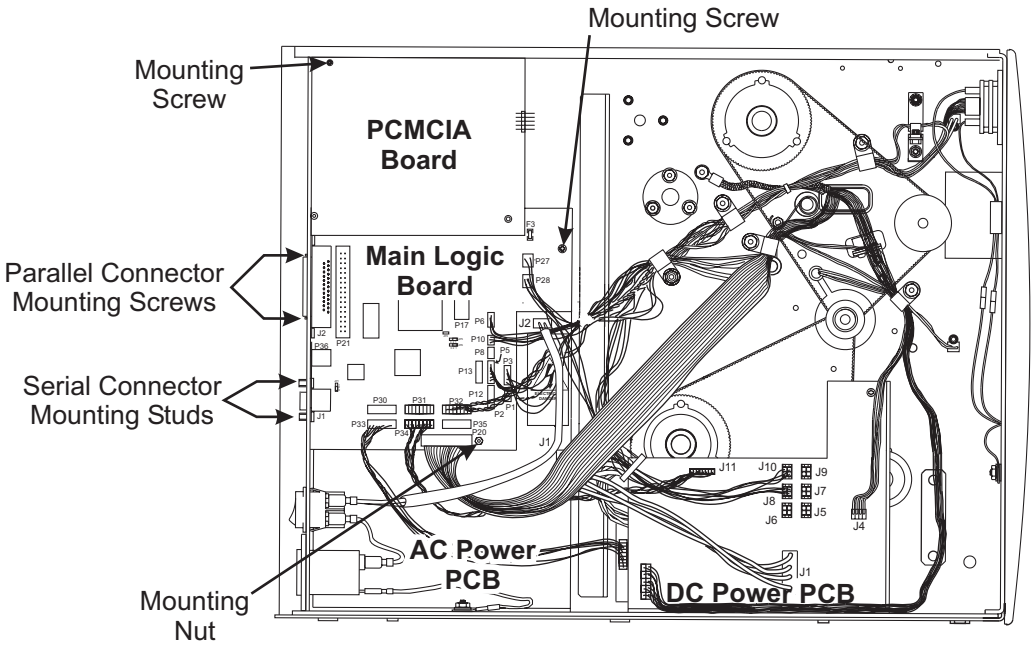


Figure 4-15. PCMCIA and Main Logic Board Removal and Installation

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

*Xi*IIII*Plus* Main Logic Board Installation

1. Refer to Figure 4-15. 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 4-14. Reinstall the screws and studs for the serial and parallel interface connectors.
4. Reinstall the PCMCIA board by pushing it onto the two standoffs and into connectors P23 and P24, securing it with the previously removed screw.
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. Reinstall the electronics cover.
9. Reinstall the AC power cord and restore power.
10. Turn the printer On (**I**) and verify operation.

RRP No. 6: AC Power Supply Removal and Installation

AC Power Supply Removal

CAUTION:

OBSERVE PROPER ELECTROSTATIC SAFETY PRECAUTIONS WHEN HANDLING ANY STATIC-SENSITIVE COMPONENTS SUCH AS PRINTED CIRCUIT BOARDS AND PRINTHEADS.

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.

NOTE: Retain all attaching hardware to use during reassembly.

3. Refer to Figure 4-16. Remove the nut holding the ground lead from the power entry module to the printer chassis.

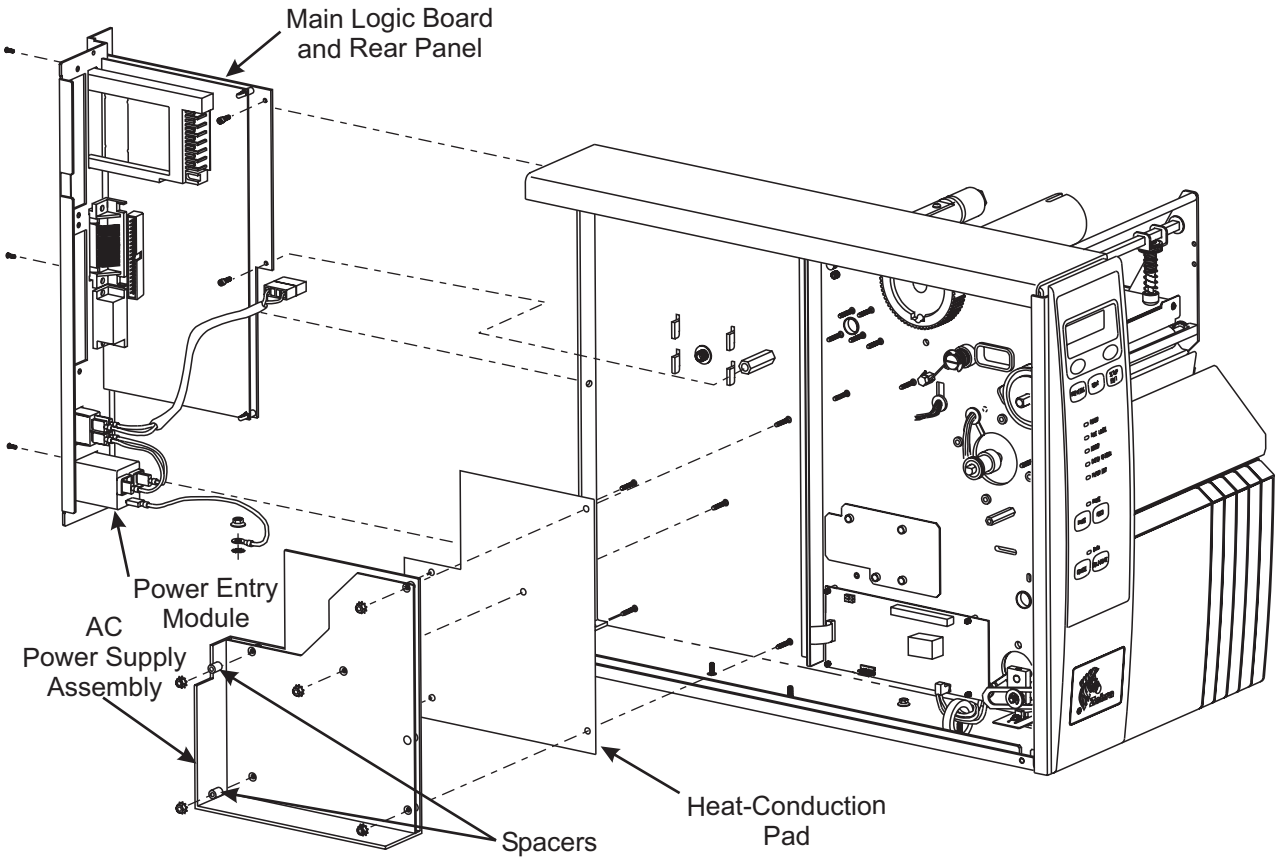


Figure 4-16. AC Power Supply and Main Logic Board Removal/Installation

4. Remove the connector from the AC power supply at J1.
5. **For the *Xi*III, and R-140.** Remove the two screws securing the main logic board mounting plate to main frame.
6. **For the *Xi*III*Plus,*** 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. 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.
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 *Xi*II, *Xi*III, R-140.** Reinstall the two screws at the top and center right-hand corners of the main logic board mounting plate.
7. **For the *Xi*III*Plus*, 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.
10. Refer to Figures 4-5 or 4-6, if you removed the connectors from the main logic board, and reconnect.
11. Reinstall the electronics cover.
12. Reconnect all data cables and AC power cord, and restore power.
13. Hold in the **PAUSE** key while placing the power switch in the On (**I**) position. 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. 7: Adjust the Main Drive Belt Tension

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position, and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Remove all ribbon and media.

Refer to Figure 4-17 for the 90/96/140/170*Xi*III and *Xi*III*Plus* and also for R-140.

Refer to Figure 4-18 for the 220*Xi*III and *Xi*III*Plus*.

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 ±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).
9. 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. Restore power and turn the power switch On (**I**).

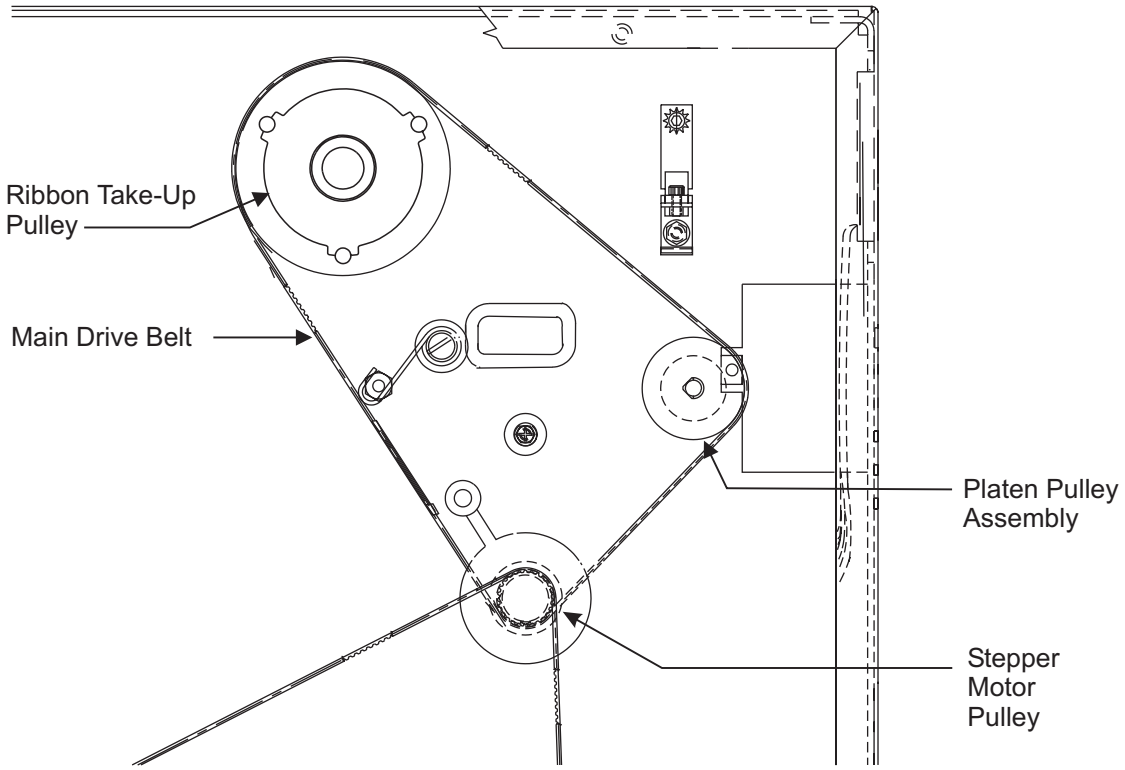


Figure 4-17. 90/96/140/170*Xi*III and *Xi*III*Plus* and also R-140 Main Drive Belt

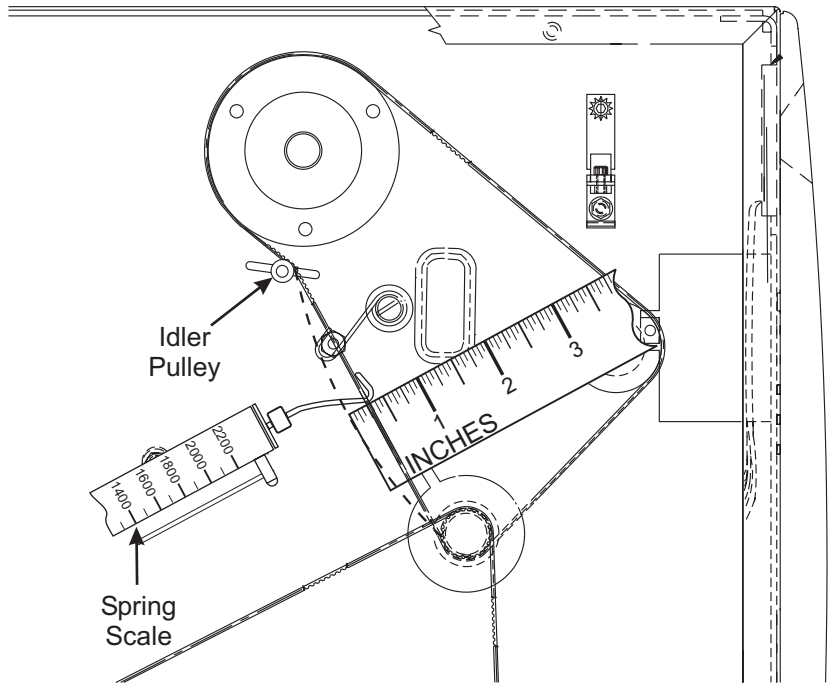


Figure 4-18. 220*Xi*III and *Xi*III*Plus* Main Belt

RRP No. 8: Removal and Installation of the Main Drive Belt

Main Drive Belt Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position, 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. 2 on page 4-15 and remove the electronics cover.
5. Refer to Figure 4-17. 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 4-11. 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 4-17 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. 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. Place the power switch in the On (**I**) position.

RRP No. 9: Adjust the Rewind Drive Belt Tension

Rewind Drive Belt Tension

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position, 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. 2 on page 4-15 and remove the electronics cover.
5. Refer to RRP No. 3 on page 4-16 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.

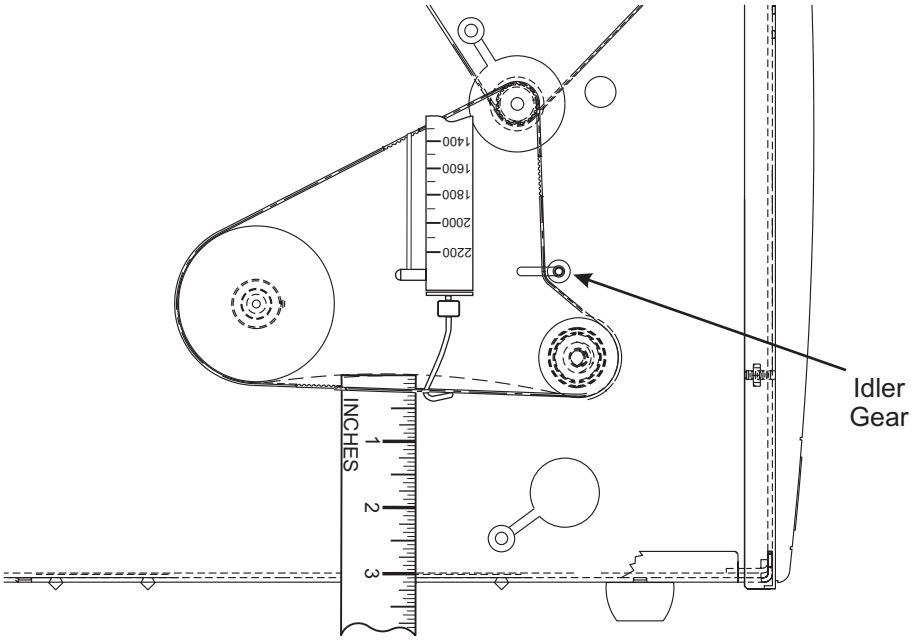


Figure 4-19. Rewind Drive Belt Tension Adjustment

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.
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 ±250 grams (4.5 lbs. ±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. Reinstall the DC power supply.
13. Reinstall electronics cover.
14. Reinstall the media and ribbon. Close the media cover.
15. Restore the AC power cord an the power switch in the On (**I**) position.

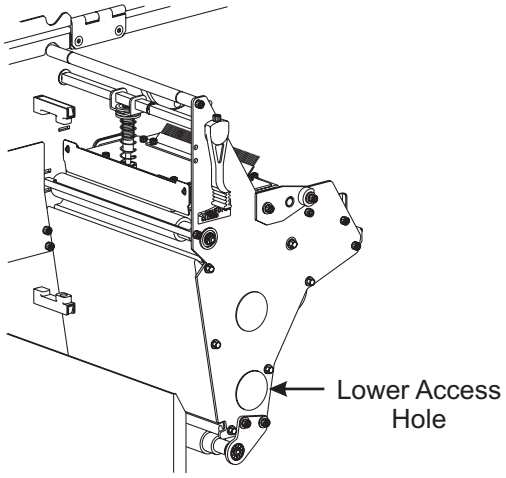


Figure 4-20. Access to Idler Pulley

RRP No. 10: Rewind Drive Belt Removal and Installation

Rewind Drive Belt Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position 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. 2 on page 4-15 and remove the electronics cover.
5. Refer to RRP No. 8 on page 4-26 and remove the main drive belt.
6. Refer to RRP No. 3 on page 4-16 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.

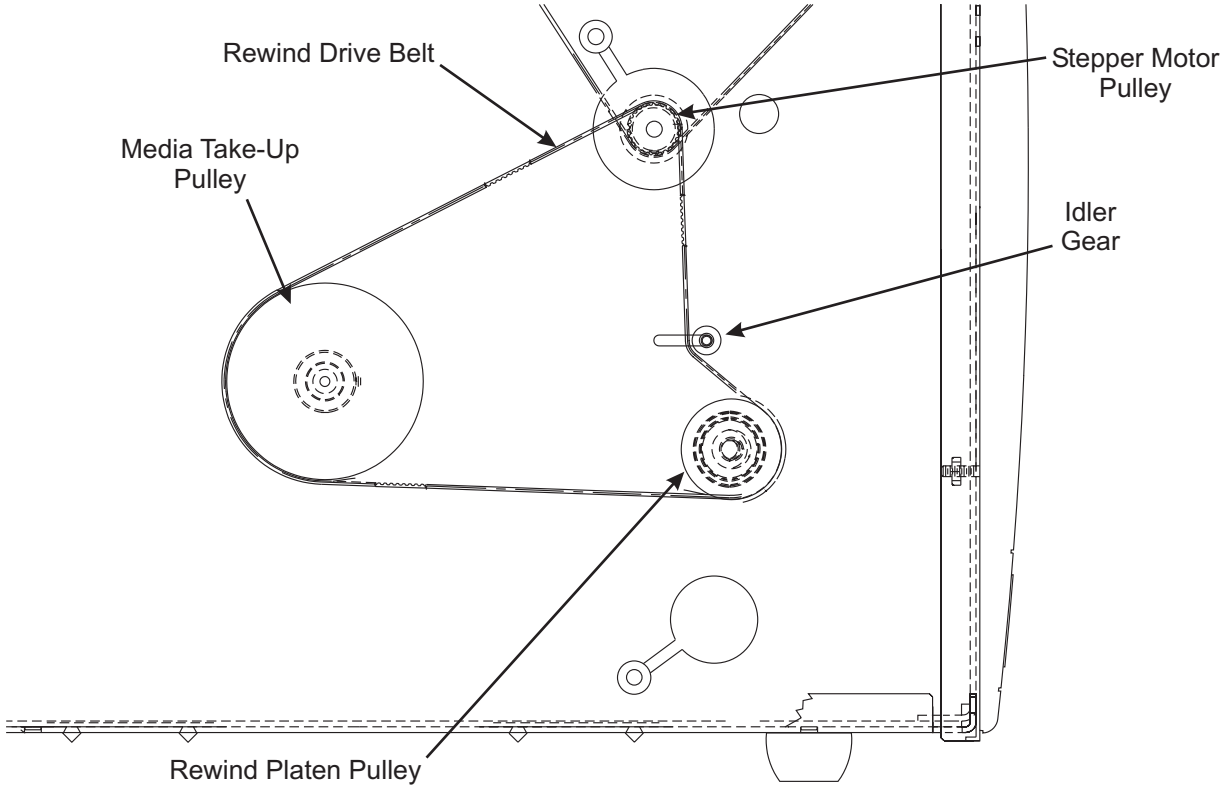


Figure 4-21. Rewind Drive Belt Removal and Installation

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. 9 on page 4-26 and adjust the tension on the rewind drive belt.
3. Reinstall the DC power supply.
4. Refer to RRP No. 8 on page 4-26 and reinstall the main drive belt.
5. Refer to RRP No. 7 on page 4-24. Adjust the tension on the main drive belt and place the printer back into service.
6. Reinstall the electronics cover.
7. Reinstall the media and ribbon.
8. Reinstall the AC power cord and data cables.
9. Restore AC power and turn the printer On (**I**).

Printhead Removal and Installation

Printhead Removal

Refer to Figure 4-22 while performing the following procedure.

CAUTION:

OBSERVE PROPER ELECTROSTATIC SAFETY PRECAUTIONS WHEN HANDLING ANY STATIC-SENSITIVE COMPONENTS SUCH AS PRINTED CIRCUIT BOARDS AND PRINTHEADS.

1. From the rear, turn the printer 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.

WARNING:

PRINTHEAD MAY BE HOT AND CAN CAUSE BURNS IF TOUCHED. EXERCISE CARE WHEN HANDLING.

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.

NOTE: The 220Xi has two power cables.

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

NOTES: 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.

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

WARNING:

IF THE PRINTHEAD CABLES ARE NOT CONNECTED SECURELY TO THE PRINTHEAD, A HEAD COLD WARNING MESSAGE MAY APPEAR ON THE DISPLAY EVEN THOUGH THE PRINTHEAD MAY BE VERY HOT. ACCIDENTLY TOUCHING A HOT PRINTHEAD CAN CAUSE SEVERE BURNS.

Printhead Installation

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).
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, then permanently save the configuration.
9. Turn the printer 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.

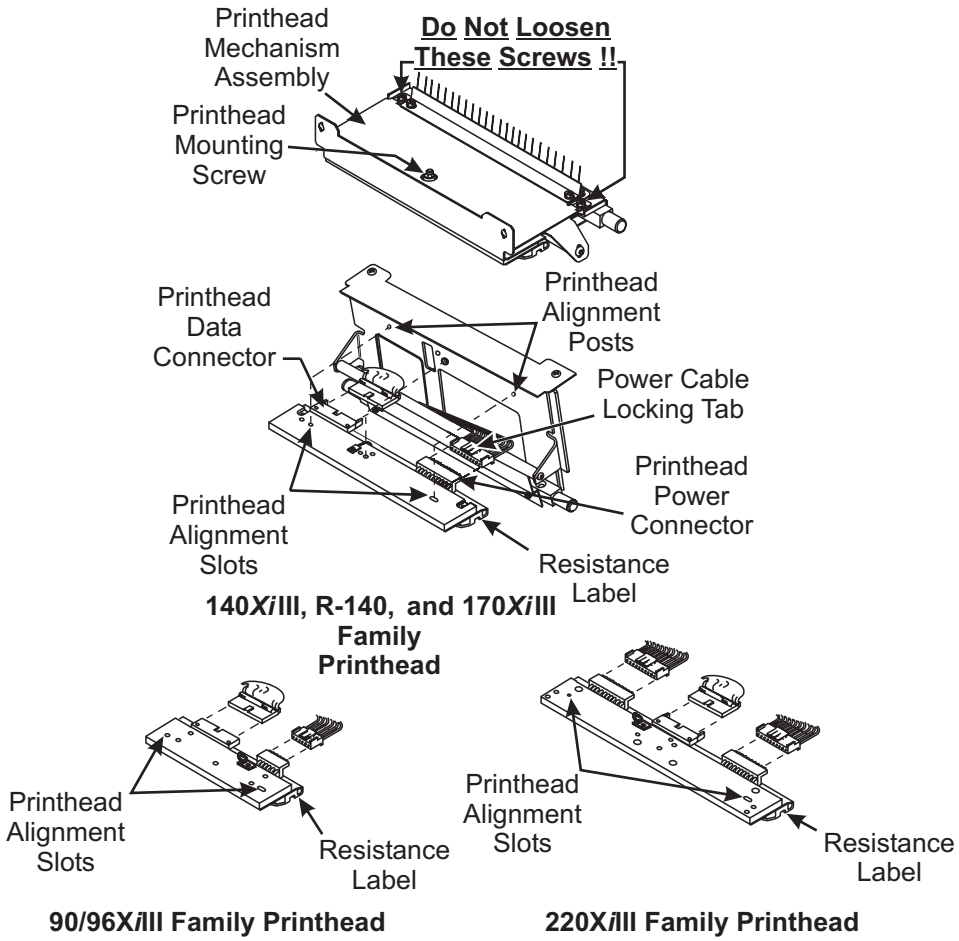


Figure 4-22. Printhead Replacement

Printhead Adjustments

CAUTION:

OTHER THAN PRINTHEAD PRESSURE, PRINTHEAD ADJUSTMENTS RARELY NEED TO BE PERFORMED, EVEN AFTER REPLACING THE PRINTHEAD. THESE ADJUSTMENTS SHOULD BE PERFORMED ONLY BY QUALIFIED TECHNICIANS WHO HAVE BEEN SPECIFICALLY TRAINED. DO NOT PERFORM THESE ADJUSTMENTS UNLESS YOU HAVE BEEN TRAINED TO DO SO.

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. Ensure that the power switch is in the Off (**O**) position.
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″ (30 mm), loosen the upper knurled nut and adjust the lower knurled nut until the distance is correct.

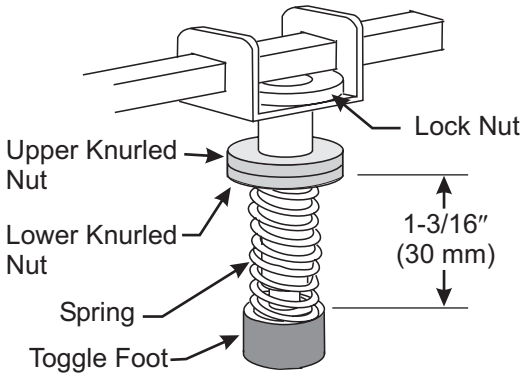


Figure 4-23. Initial Toggle Setting

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 placing the power switch to the On (**I**) position.

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

CAUTION:

OTHER THAN PRINTHEAD PRESSURE, PRINTHEAD ADJUSTMENTS RARELY NEED TO BE PERFORMED, EVEN AFTER REPLACING THE PRINTHEAD. THESE ADJUSTMENTS SHOULD BE PERFORMED ONLY BY QUALIFIED TECHNICIANS WHO HAVE BEEN SPECIFICALLY TRAINED. DO NOT PERFORM THESE ADJUSTMENTS UNLESS YOU HAVE BEEN TRAINED TO DO SO.

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.

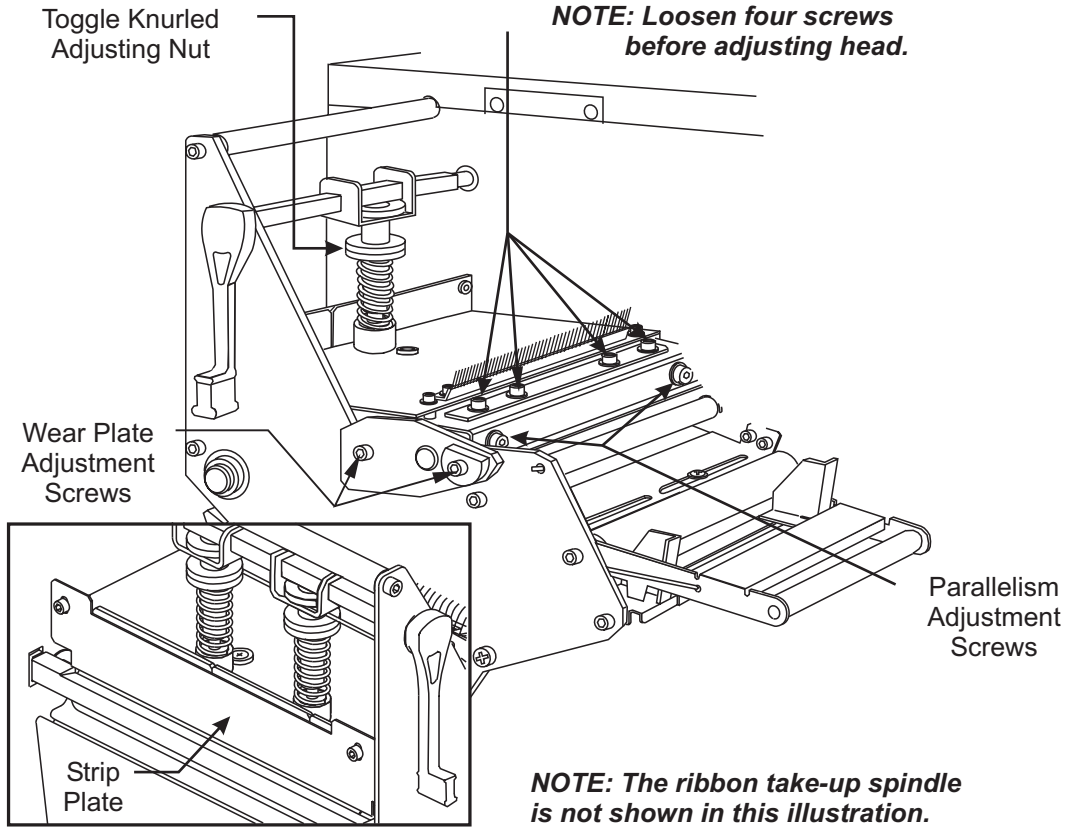


Figure 4-24. Printhead Adjustment

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

CAUTION:

WEAR PLATE POSITION ADJUSTMENT RARELY NEEDS TO BE PERFORMED. DO NOT PERFORM THIS ADJUSTMENT UNLESS YOU HAVE BEEN TRAINED TO DO SO. IF THE PROCEDURE IS NOT DONE CORRECTLY, PRINT QUALITY WILL BE ADVERSELY AFFECTED.

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 is properly positioned and printhead pressure is set correctly, the wear plate may need adjustment.

NOTE: 140/170/220XiIII and XiIIIPlus have two toggles and should be positioned at 1/4 and 3/4 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.

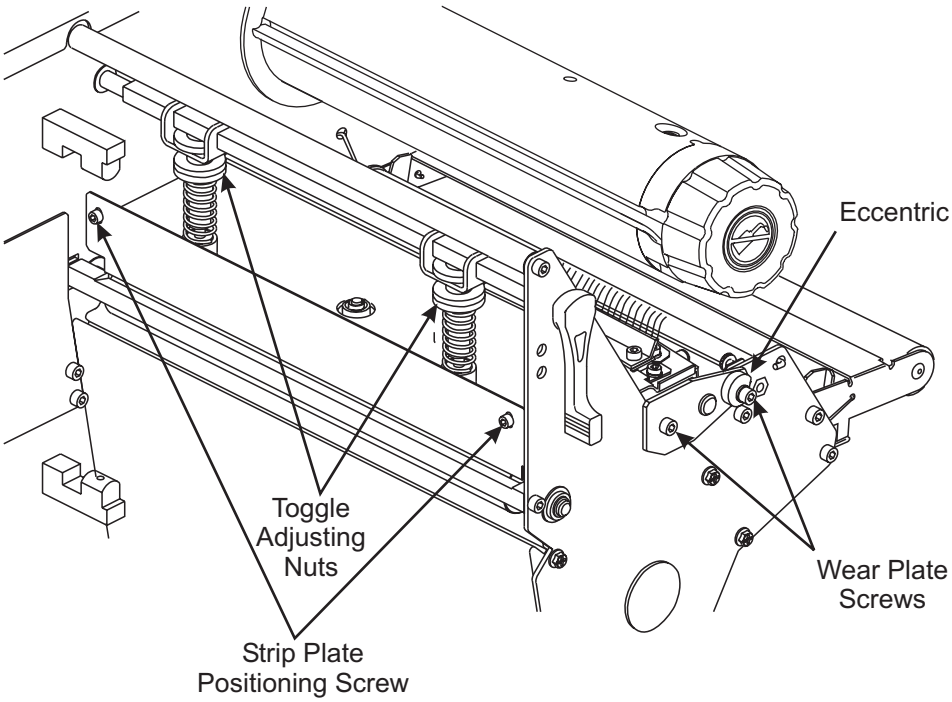


Figure 4-25. Wear Plate Adjustment

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

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″ (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

CAUTION:

PRINTHEAD PARALLELISM ADJUSTMENT RARELY NEEDS TO BE PERFORMED. DO NOT PERFORM THIS ADJUSTMENT UNLESS YOU HAVE BEEN TRAINED TO DO SO. IF THE PROCEDURE IS NOT DONE CORRECTLY, PRINT QUALITY WILL BE ADVERSELY AFFECTED.

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.

NOTES: 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 the **PAUSE** key. 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 Tension Adjustment on page 4-41.

Darkness Adjustment

Differences in types of media/ribbon and wear on thermal printhead elements may make it necessary to adjust the darkness setting (burn temperature) 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:

CAUTION:

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 *Xi*III 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 *Xi*III*Plus,*** 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 User's Guide and do a manual calibration of the media and ribbon.

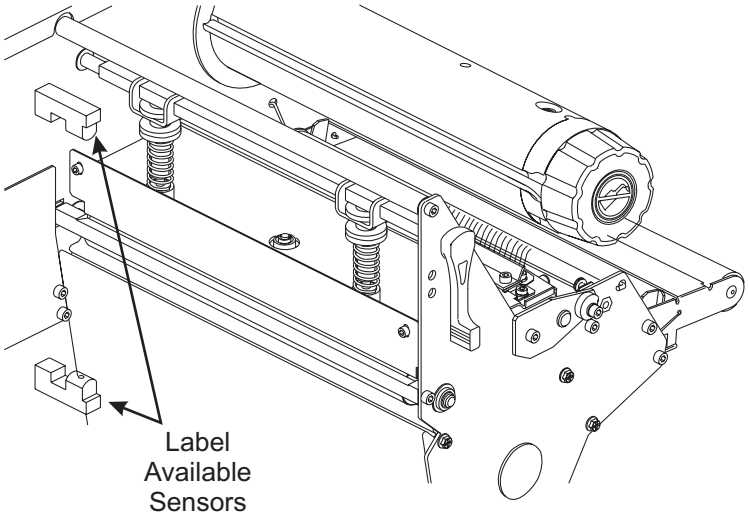


Figure 4-26. Take Label Sensor Location

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.

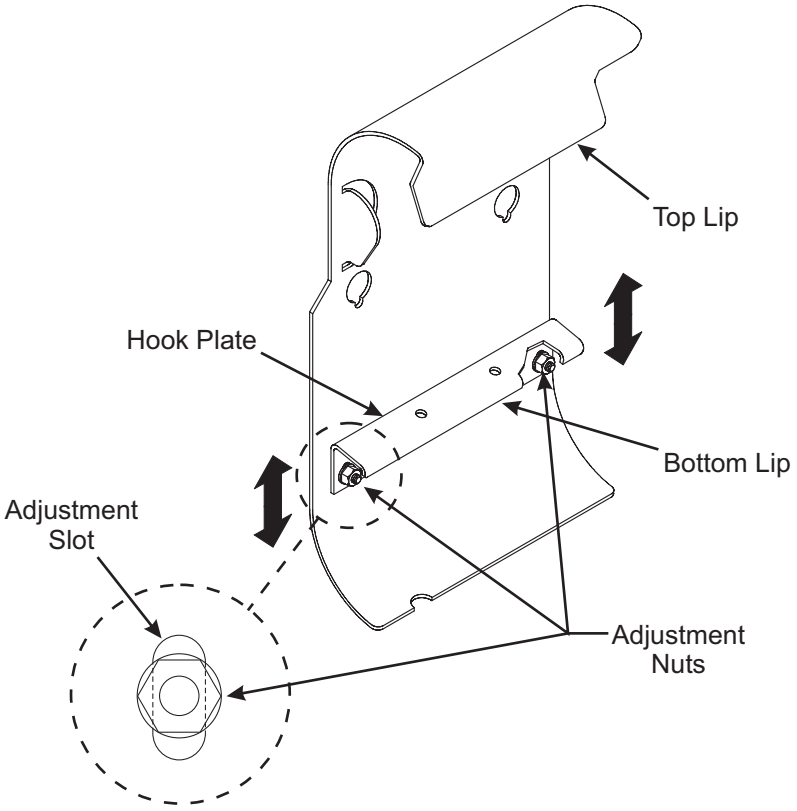


Figure 4-27. Rewind Plate Assembly

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.

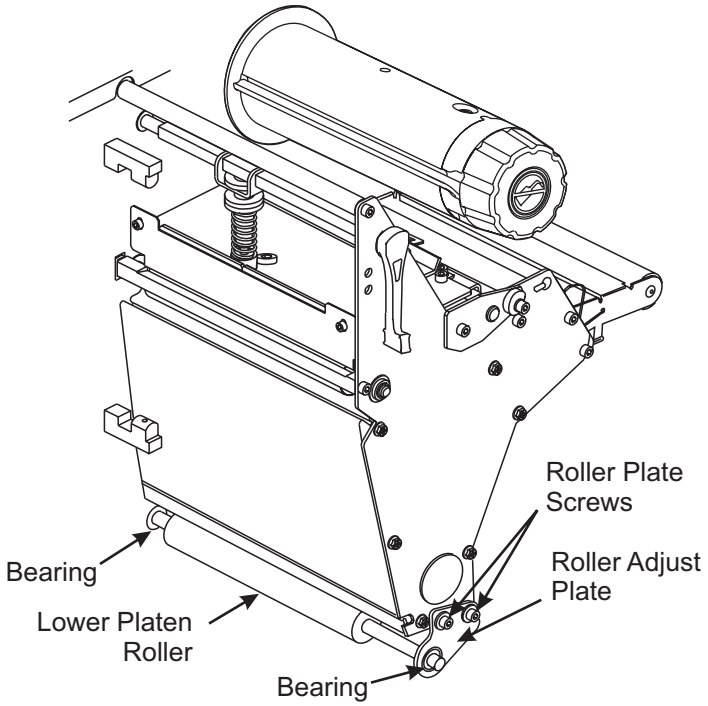


Figure 4-28. Peel-Off Lower Roller Alignment

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

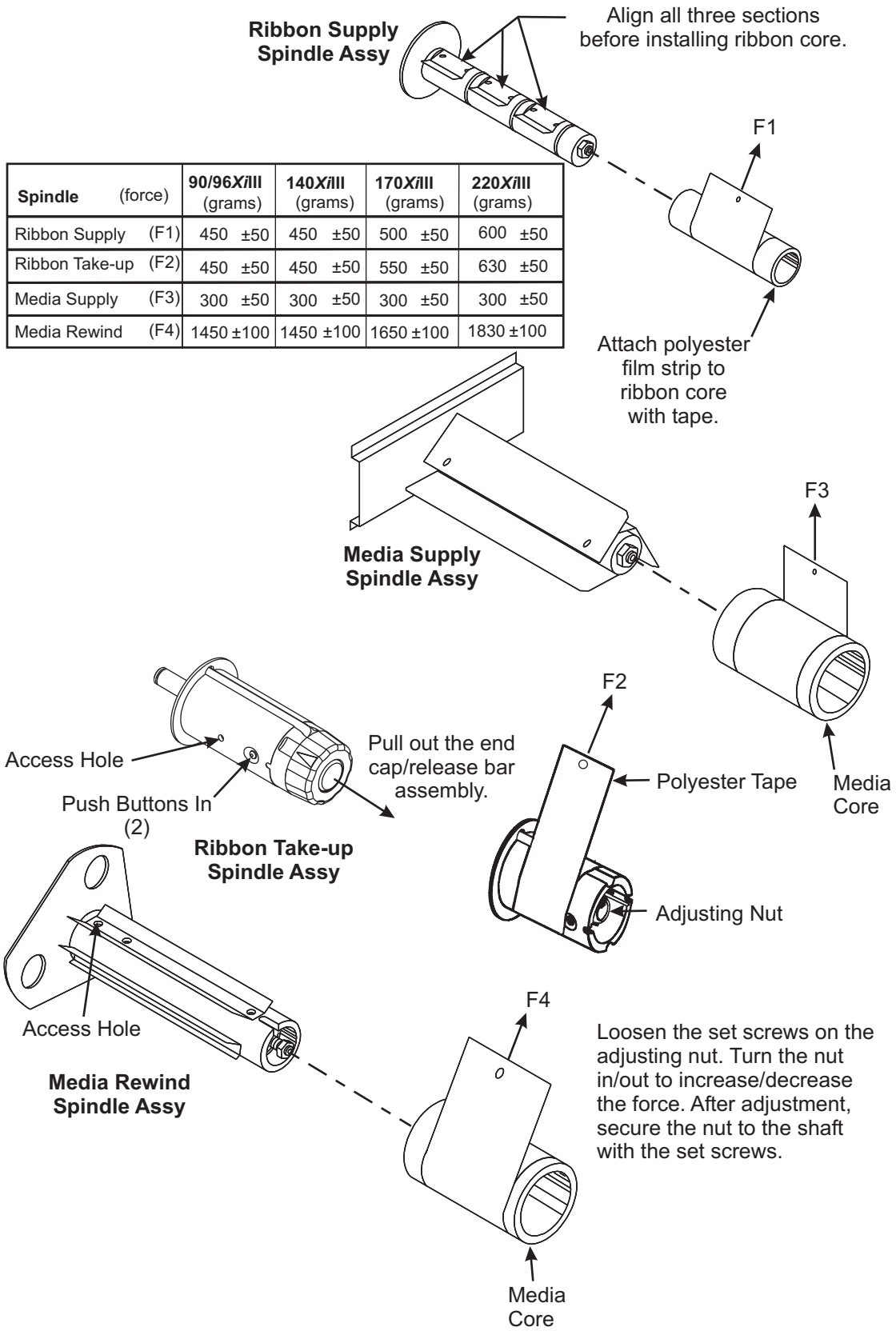
There are four spindles that require periodic tension measurement and adjustment. Measuring spindle tension should be done at least once each year unless required more often because of high printer use. Tension should be adjusted whenever it is not within the tolerance range associated with that spindle.

WARNING:
DO NOT DISASSEMBLE SPINDLE!!!

Tension Measurement Procedure

Refer to Figure 4-29.

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



Spindle (force)	90/96*Xi*III (grams)	140*Xi*III (grams)	170*Xi*III (grams)	220*Xi*III (grams)
Ribbon Supply (F1)	450 ±50	450 ±50	500 ±50	600 ±50
Ribbon Take-up (F2)	450 ±50	450 ±50	550 ±50	630 ±50
Media Supply (F3)	300 ±50	300 ±50	300 ±50	300 ±50
Media Rewind (F4)	1450 ±100	1450 ±100	1650 ±100	1830 ±100

Figure 4-29. Spindle Tension Adjustments

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.

CAUTION:

<u>DO NOT</u> APPLY LUBRICATION TO ANY OF THE SPINDLES IN THE *Xi*III-FAMILY PRINTERS.

AC Power Fuse Replacement

The *Xi*III-Family printer uses a metric-style fuse (5 × 20 mm IEC) rated at 5A, 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.

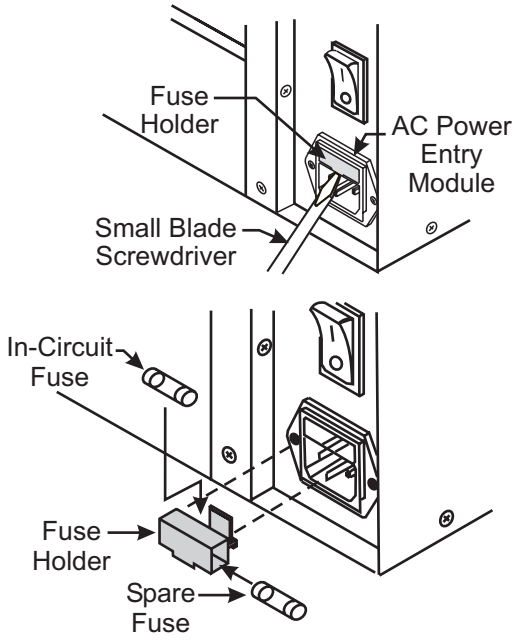


Figure 4-30. AC Power Fuse Replacement

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

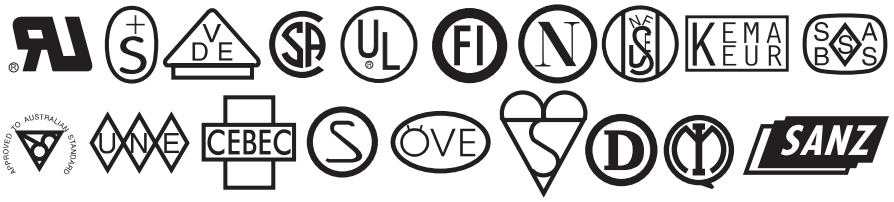
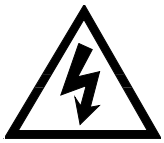


Figure 4-31. International Safety Organizations

Replacing a Faulty Fuse



WARNING:

TURN THE PRINTER'S AC POWER SWITCH OFF (O) AND DISCONNECT THE PRINTER'S AC POWER CABLE BEFORE REPLACING ANY FUSES.

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 On (**I**).

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

Platen Roller Replacement

Upper Platen Roller Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position 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. 2 on page 4-15 and remove the electronics cover.
5. Refer to RRP No. 8 on page 4-26 and remove the main drive belt.
6. Refer to Figure 4-32 and loosen but do not remove the set screws in the platen roller pulley.

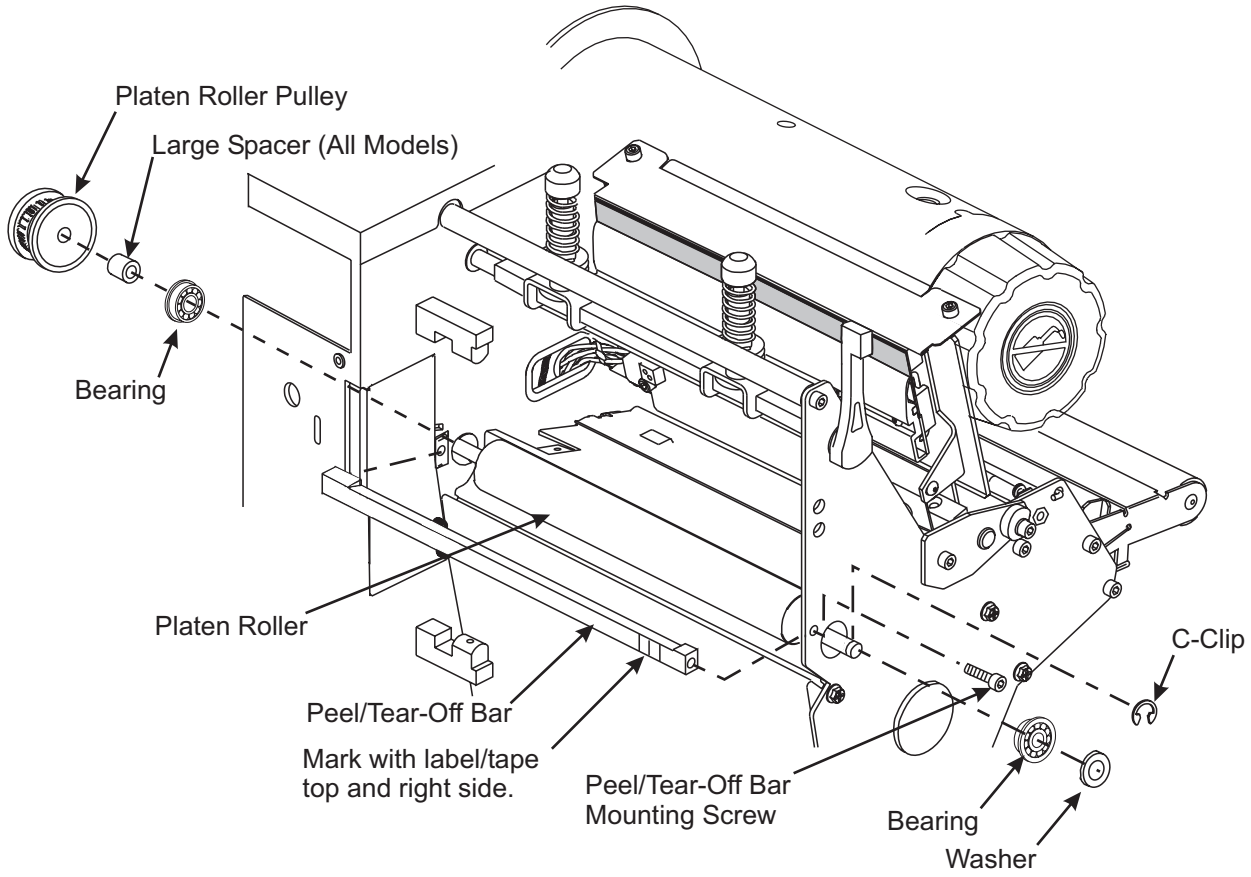


Figure 4-32. Platen Roller Removal

7. Pull the platen roller pulley and spacer off the platen roller shaft.
8. 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.

9. Slide the platen roller as far to the left as possible to free the right end from the side plate. Remove the platen roller.

CAUTION:

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. 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. Restore power and place the power switch in the On (**I**) position.

Rewind (Lower) Platen Roller Removal and Installation

Rewind Platen Roller Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Open the media cover.
3. Open the printhead. Remove the media and ribbon. Close the printhead.
4. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
5. Refer to RRP No. 8 on page 4-26 and remove the main drive belt.
6. Refer to RRP No. 3 on page 4-16 and remove the DC power supply.
7. Refer to RRP No. 10 on page 4-28 and remove the rewind drive belt.

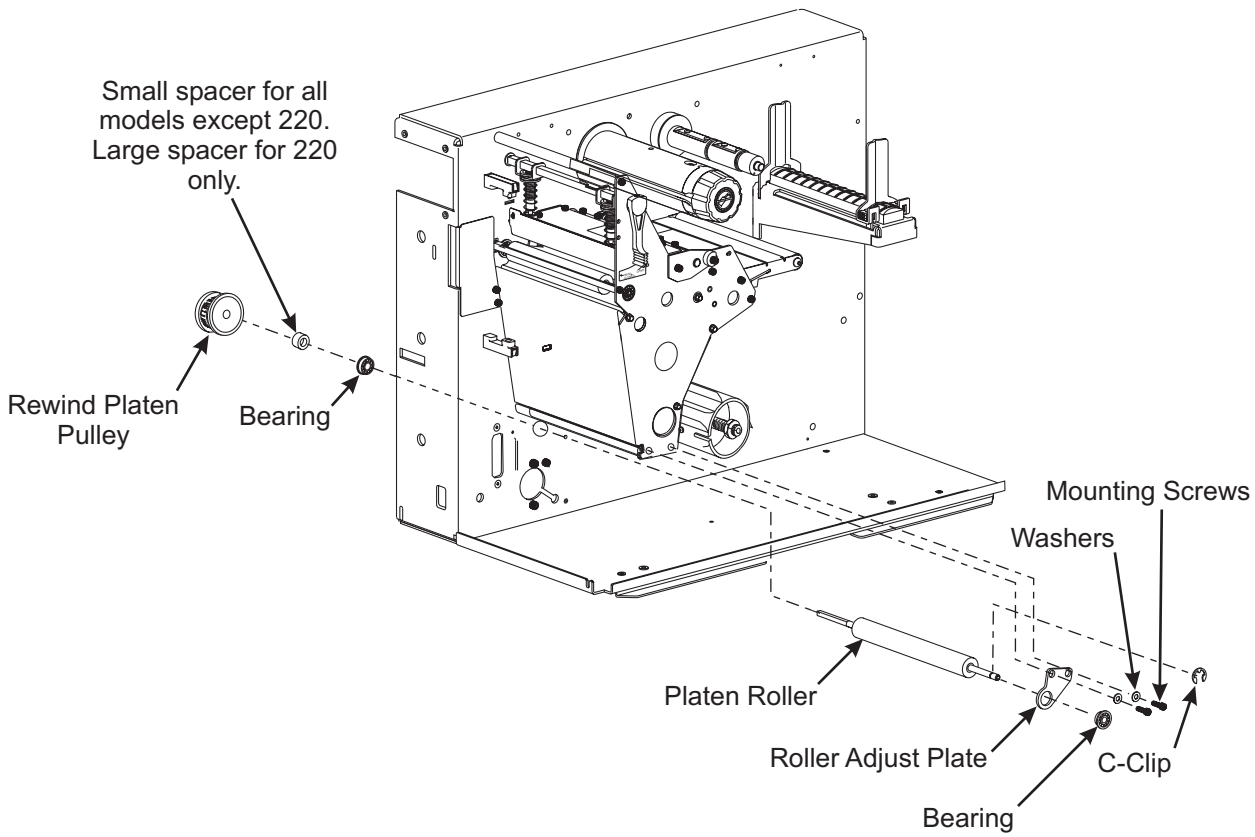


Figure 4-33. Print Mechanism View with Lower Platen Roller

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 and an adjustment procedure needs to be performed.

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.

CAUTION:

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. Reinstall and adjust the rewind drive belt.
9. Reinstall and adjust the main drive belt.
10. Reinstall the electronics cover.
11. Reinstall the media and ribbon. Close the printhead and media cover.
12. Reconnect the data cables and the AC power cord.
13. Restore power and place the power switch in the On (**I**) position.
14. 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.

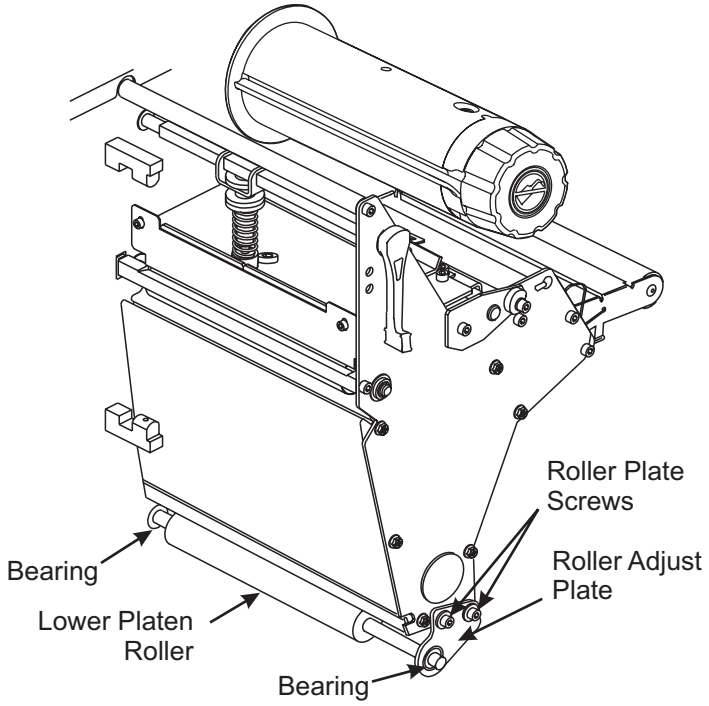


Figure 4-34. Peel-Off Lower Roller Alignment

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

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Refer to RRP No. 8 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.

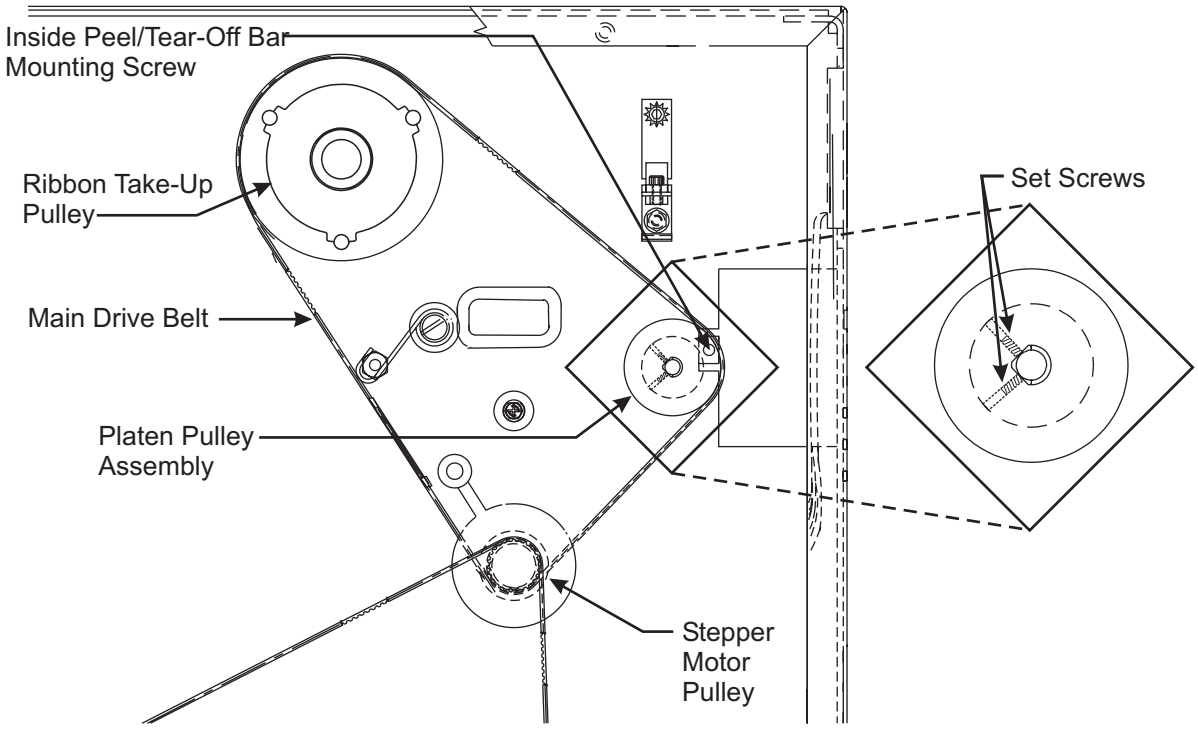


Figure 4-35. Platen Pulley Replacement

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. Reinstall and adjust the tension of main drive belt.
5. Reinstall electronics cover.
6. Reconnect data cables and AC power cord.
7. Restore power and place the power switch in the On (**I**) position.

Lower Platen Pulley Removal and Installation

1. Perform Platen Pulley Replacement on page 4-47.

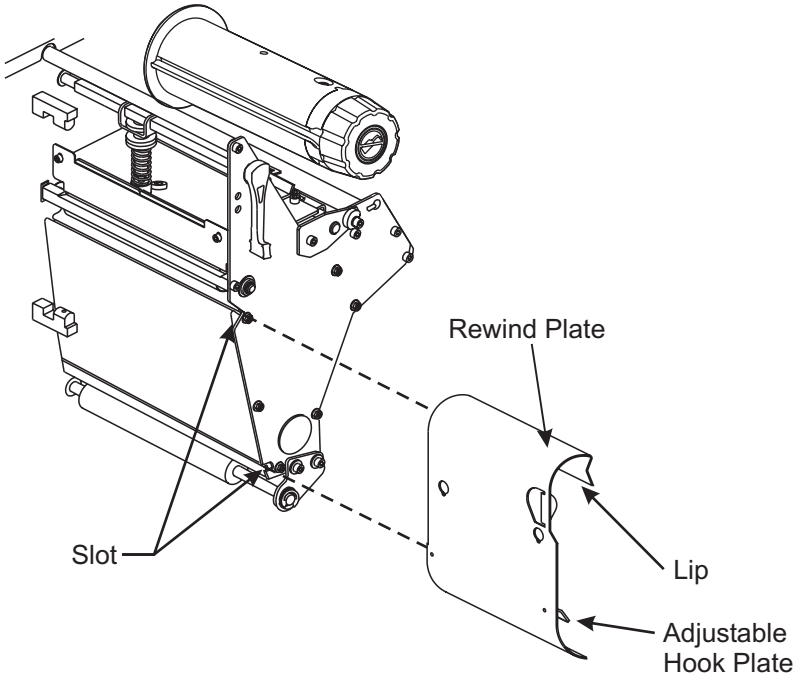


Figure 4-36. Rewind Plate Removal and Installation

2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Refer to RRP No. 3 on page 4-16 and remove the DC power supply.
4. Refer to RRP No. 10 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.
10. Remove the old bearing from the printer main frame.
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.

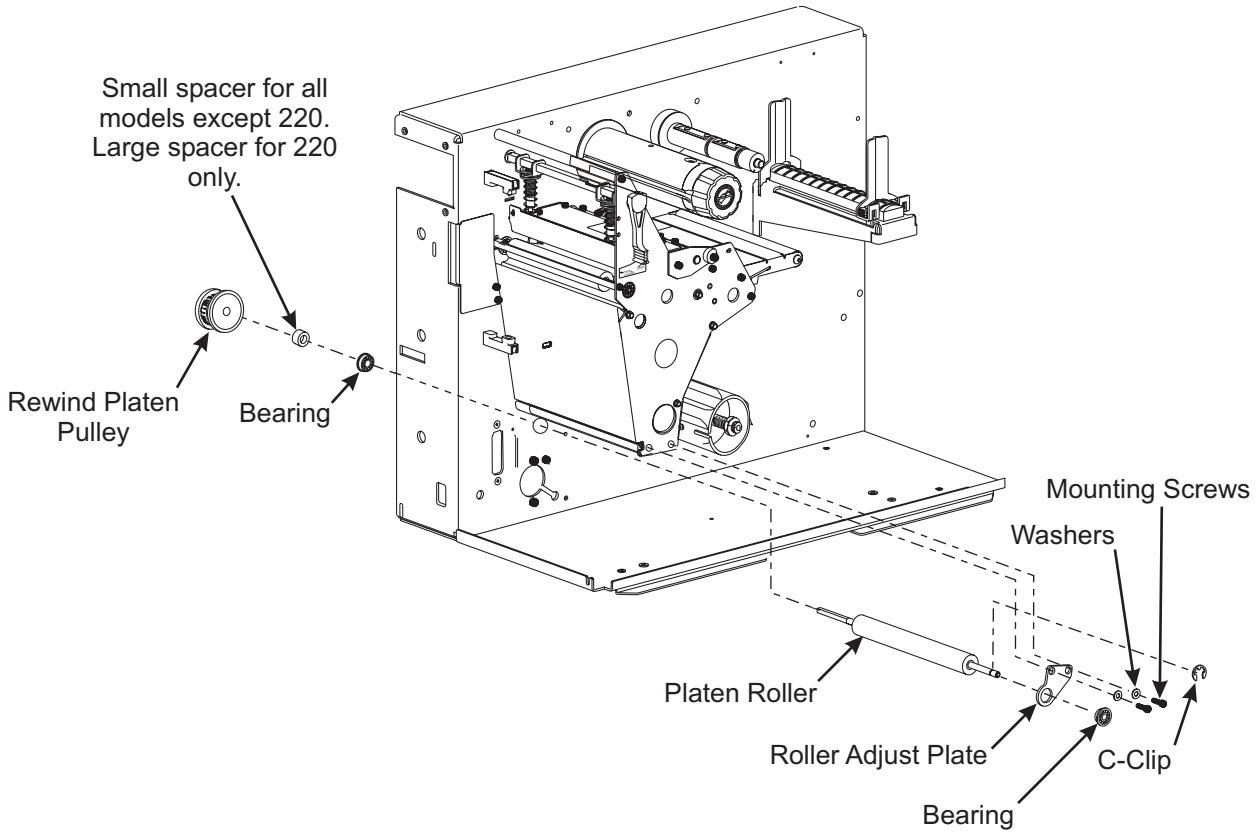


Figure 4-37. Lower Platen Roller Removal and Installation

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 220*Xi*III and *Xi*III*Plus*) 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. Reinstall the rewind drive belt.
23. Refer to Figure 4-36. Reinstall the rewind plate by sliding it onto the print mechanism.
24. Refer to the User's Guide and reload the media and ribbon in the Peel Mode.
25. Connect the AC power cord and restore power.

26. 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 27 and 28.

27. Refer to Figure 4-37. Loosen the two screws securing the roller adjust plate to the print mechanism.
28. 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.

29. Repeat steps 27 and 28 until the required results are achieved.
30. Reinstall the electronics cover.
31. Reinstall the communications cable.

Cutter Components

Cutter Main Link Replacement

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.

NOTE: The cables to the DC power supply do not need to be removed.

3. Refer to RRP No. 3 on page 4-16 and remove the DC power supply.

WARNING:

WEAR PROTECTIVE EYEWEAR WHEN REMOVING E-RINGS, C-CLIPS, SNAP RINGS, AND SPRINGS. ALL OF THESE ARE UNDER TENSION AND COULD FLY OFF WHILE BEING REMOVED.

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.

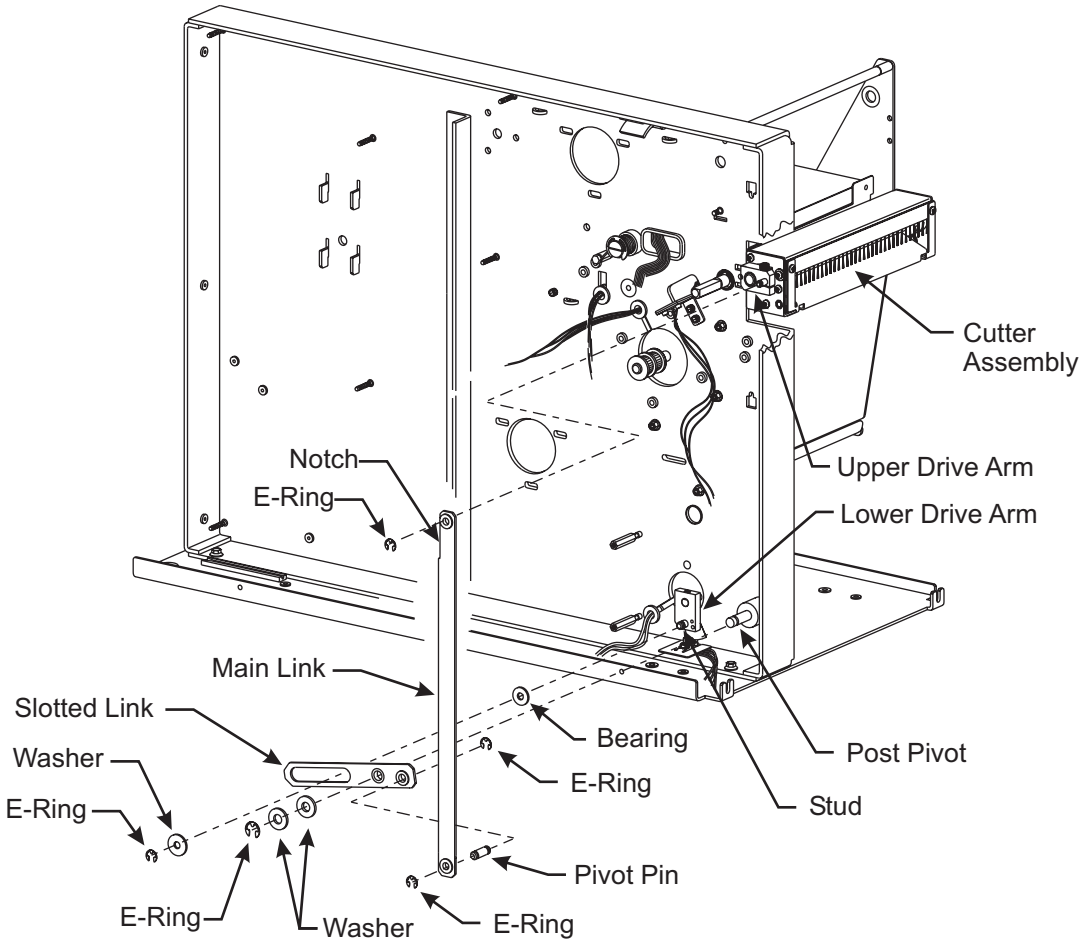


Figure 4-38. Cutter Main and Slotted Link Removal and Installation

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. Reinstall the DC power supply.
10. Reinstall the electronics cover.
11. Reconnect data cables and AC power cord.
12. Restore power and place the power switch in the On (**I**) position.

Cutter Slotted Link Replacement

1. Refer to RRP No. 1 on page 4-13, place the power switch in the Off (**O**) position, and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Refer to RRP No. 3 on page 4-16 and remove the DC power supply.

WARNING:

WEAR PROTECTIVE EYEWEAR WHEN REMOVING E-RINGS, C-CLIPS, SNAP RINGS, AND SPRINGS. ALL OF THESE ARE UNDER TENSION AND COULD FLY OFF WHILE BEING REMOVED.

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. Reinstall the DC power supply.
14. 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

1. Refer to RRP No. 1 on page 4-13 and place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.

NOTE: The cables to the DC power supply do not need to be removed.

3. Refer to RRP No. 3 on page 4-16 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.

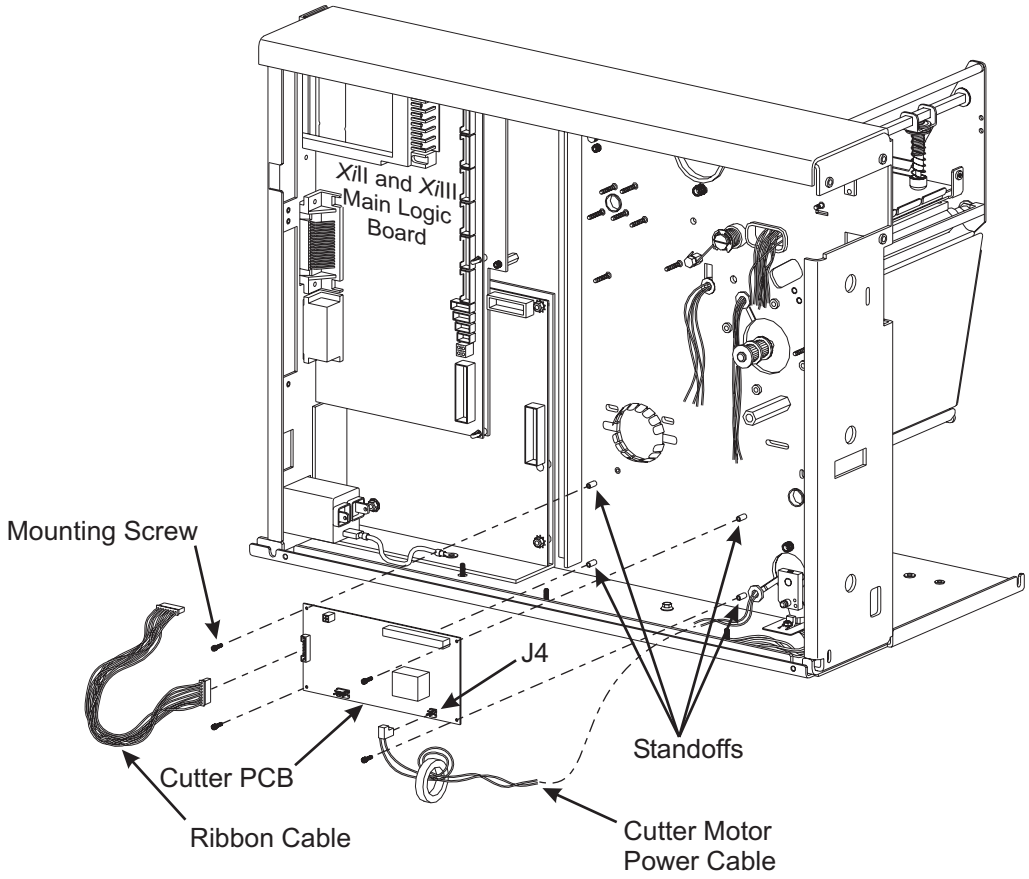


Figure 4-39. Cutter PCB Removal and Installation (*Xi*III and R-140 shown)

CAUTION:

OBSERVE PROPER ELECTROSTATIC SAFETY PRECAUTIONS WHEN HANDLING ANY STATIC-SENSITIVE COMPONENTS SUCH AS PRINTED CIRCUIT BOARDS AND PRINTHEADS.

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. Proceed to the “Lower Drive Arm Alignment” procedure.

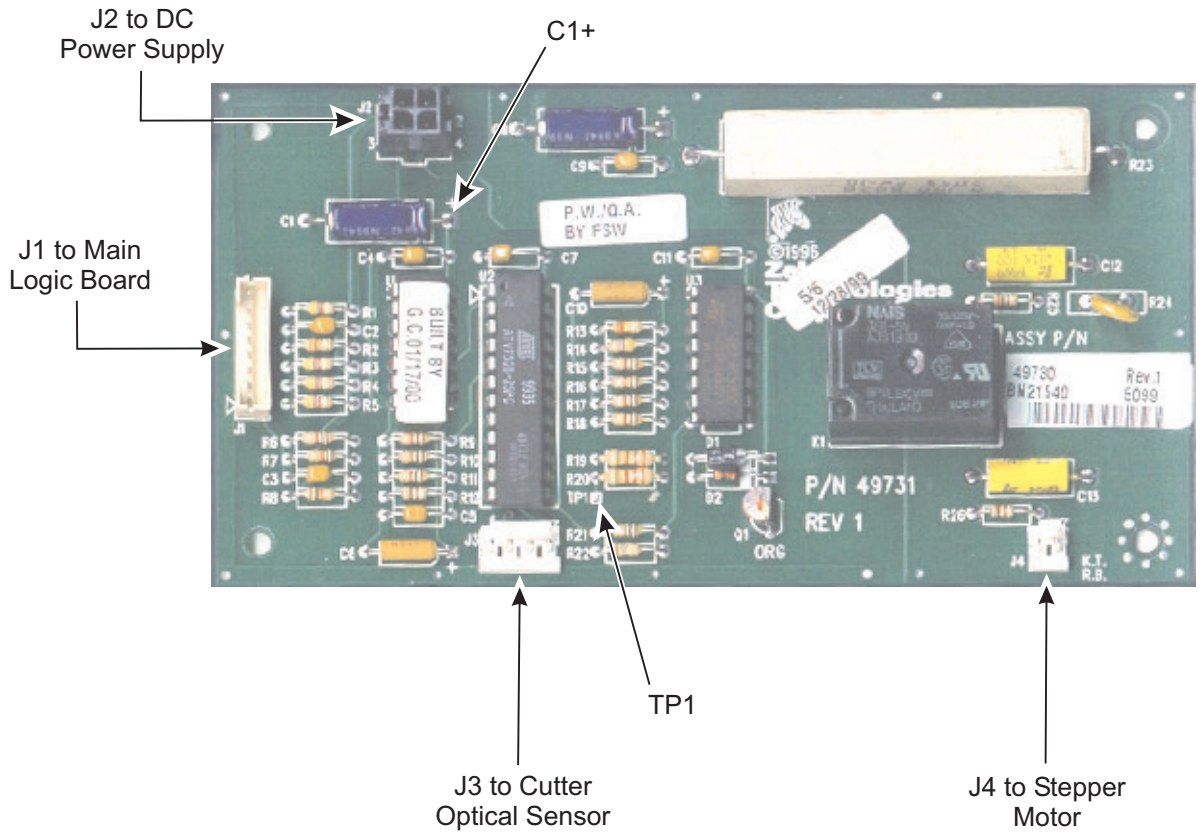


Figure 4-40. Cutter PCB Connections

Lower Drive Arm Alignment

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

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Refer to RRP No. 3 on page 4-16 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:
   a. The power cable from J1 on the AC power supply to J1 on the DC power supply.
   b. The power cable from J2 on the cutter PCB to J7 on the DC power supply.
   c. The data ribbon cable from J1 on the cutter PCB to J10 or P33 on the main logic board.

WARNING:

USE CARE WHEN WORKING NEAR LIVE POWER. SOURCE VOLTAGE CAN CAUSE SERIOUS INJURY OR DEATH.

5. Refer to Figure 4-38. Loosen the screws securing the lower drive arm to the motor shaft.
6. Reconnect the AC power cord and restore power. Turn the AC power switch On (**I**).

NOTE: The cutter motor must be rotated until the two flat surfaces on 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).

7. Refer to Figure 4-40. 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.
8. 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.
9. 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 to 20 inch-pounds (2.3 N•m).
10. Activate the cutter motor, and make certain the sensor flag travels through the slot in the optical sensor without touching it.
11. Turn the printer power Off (**O**).
12. Reinstall the DC power supply.
13. Carefully connect the remaining cables/connectors to the DC power supply and verify proper placement and orientation.
14. Reconnect the AC power cord and restore power.
15. Place the power switch in the On (**I**) position. Enter configuration mode and set the printer for cutter mode. Save as PERMANENT and place the power switch in the Off (**O**) position.
16. Load media and ribbon, hold in the **PAUSE** key while turning the AC power On (**I**), and run labels through the printer. Test the cutter for proper operation.

NOTE: If the media hits either cutter blade or the cutter does not cut through the label material completely, proceed to "Upper Drive Arm Alignment" before completing the installation.

17. Complete this installation procedure by reinstalling the electronics cover.
18. Reconnect data cables. Place the power switch in the On (**I**) position.

Upper Drive Arm Alignment

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 checked.

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. The printer must be programmed to operate in the cutter mode prior to performing the following procedure.

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Refer to RRP No. 3 on page 4-16 and remove the DC power supply.
4. 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.

WARNING:

USE CARE WHEN WORKING NEAR LIVE POWER. SOURCE VOLTAGE CAN CAUSE SERIOUS INJURY OR DEATH.

5. 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.

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.

6. After the drive link assembly stops, hold the upper drive arm in position and adjust the rotary cutter blade so 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), as shown in Figure 4-41.

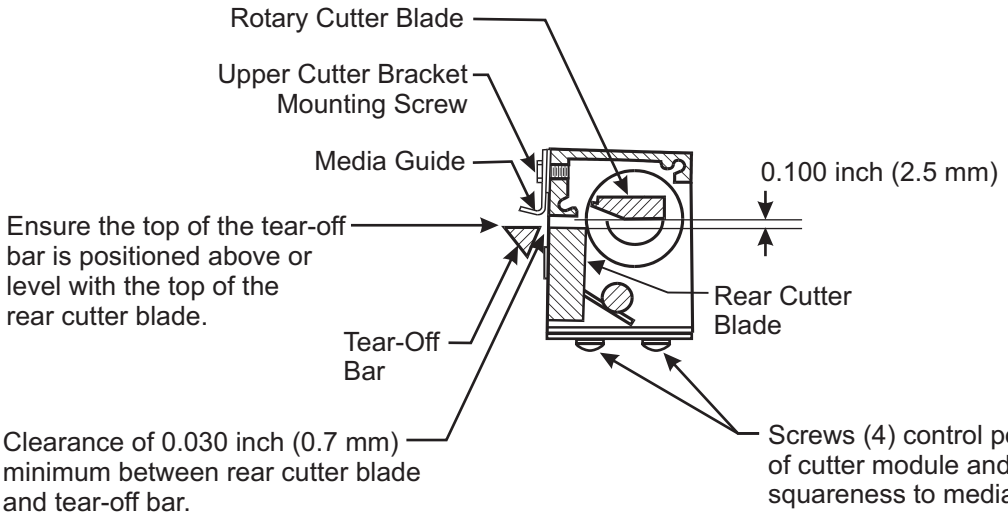


Figure 4-41. Mechanical Assembly Positioning

7. 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 strip the threads.

8. 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.

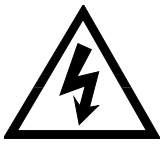
9. Test the cutter alignment by feeding maximum width label stock through the printer and ensuring that complete cutting of the label occurs. If necessary, repeat the procedure to achieve complete cutting of the labels.

10. 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.

Cutter Motor Replacement

Removing the Cutter Motor

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Open the media cover.
4. Refer to RRP No. 3 on page 4-16 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 lead.



WARNING:

WEAR PROTECTIVE EYEWEAR WHEN REMOVING E-RINGS, C-CLIPS, SNAP RINGS, AND SPRINGS. ALL OF THESE ARE UNDER TENSION AND COULD FLY OFF WHILE BEING REMOVED.

6. Refer to Figure 4-38. On the electronics side of the printer, remove the E-ring, washer, and bearing from the lower drive arm.
7. Remove the E-ring and two flat washers securing the slotted link to the post pivot.
8. Remove the E-ring securing the slotted link to the main link.

NOTE: You may have to rotate the lower drive arm to gain access to both screws.

9. Loosen the screws that secure the lower drive arm to the cutter motor shaft.
10. Pivot the lower drive arm clockwise, as seen from the left side of the printer, until the lower drive arm flag is free of the optical sensor.
11. Remove the lower drive arm from the cutter motor shaft.
12. Remove the screws that secure the cutter motor to the main frame of the printer.
13. 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.

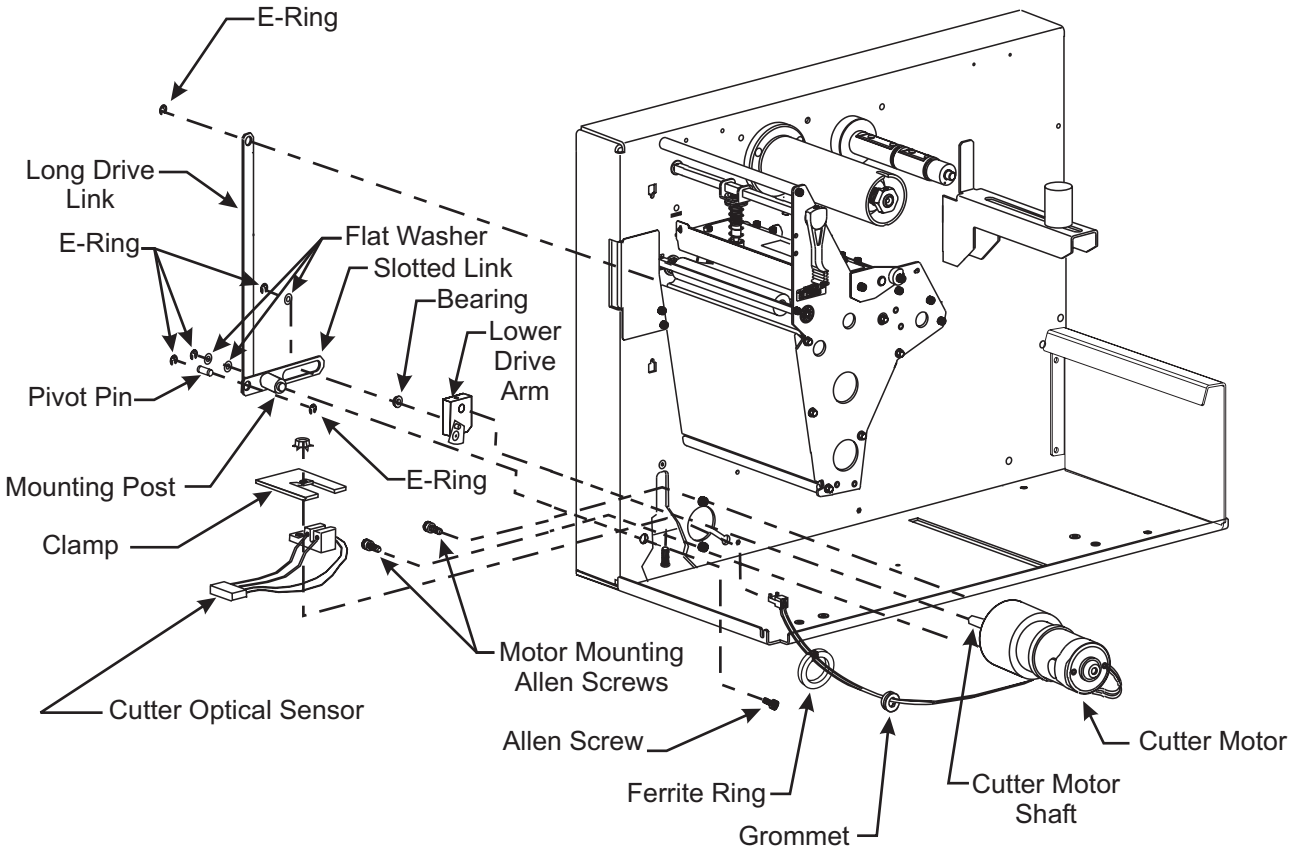


Figure 4-42. Cutter Motor Replacement

Installing 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 lead and into the hole in the main frame.
3. Secure the motor to the main frame with the motor mounting screws.
4. Refer to Figure 4-39. Thread the power lead behind the lower right corner of the cutter PCB. Install the screw in the lower right corner. Tighten all four screws.
5. Refer to Figure 4-42. Position the lower drive arm to the shaft of the cutter motor.
6. Tighten the two screws securing the lower drive arm to the shaft of the new cutter motor.

NOTE: Position the lower drive arm so that the screws align with the flats of the shaft.

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 screws to 20 inch-pounds (2.3 N•m).

WARNING:

WEAR PROTECTIVE EYEWEAR WHEN REMOVING E-RINGS, C-CLIPS, SNAP RINGS, AND SPRINGS. ALL OF THESE ARE UNDER TENSION AND COULD FLY OFF WHILE BEING REMOVED.

8. Secure the main link to the slotted link with the pivot pin and two E-rings.
9. Reinstall the slotted link on the lower drive arm and secure it with the E-ring and two washers.

10. Connect the cutter motor power lead to cutter PCB connector J4.
11. Refer to Lower Drive Arm Alignment on page 4-55 and ensure that the alignment is correct.
12. Reinstall the DC power supply. Ensure all wires are positioned away from any moving parts.
13. Refer to Figure 4-5. Reconnect the remaining cables/connectors to the DC power supply and ensure proper placement and orientation.
14. Reconnect the AC power cord and restore power.
15. Place the power switch in the On (**I**) position. Enter configuration mode and set the printer for cutter mode. Save as PERMANENT and place the power switch in the Off (**O**) position.
16. Load media and ribbon, hold in the **PAUSE** key while turning the AC power On (**I**), and run labels through the printer.

NOTE: If the media hits either cutter blade or the cutter does not cut through the label material completely, perform "Upper Drive Arm Alignment," before completing the installation.

17. Reinstalling the electronics cover.
18. Reconnect the data cables.

Transmissive Media Sensor Replacement

Sensor Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Open the media cover.
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.

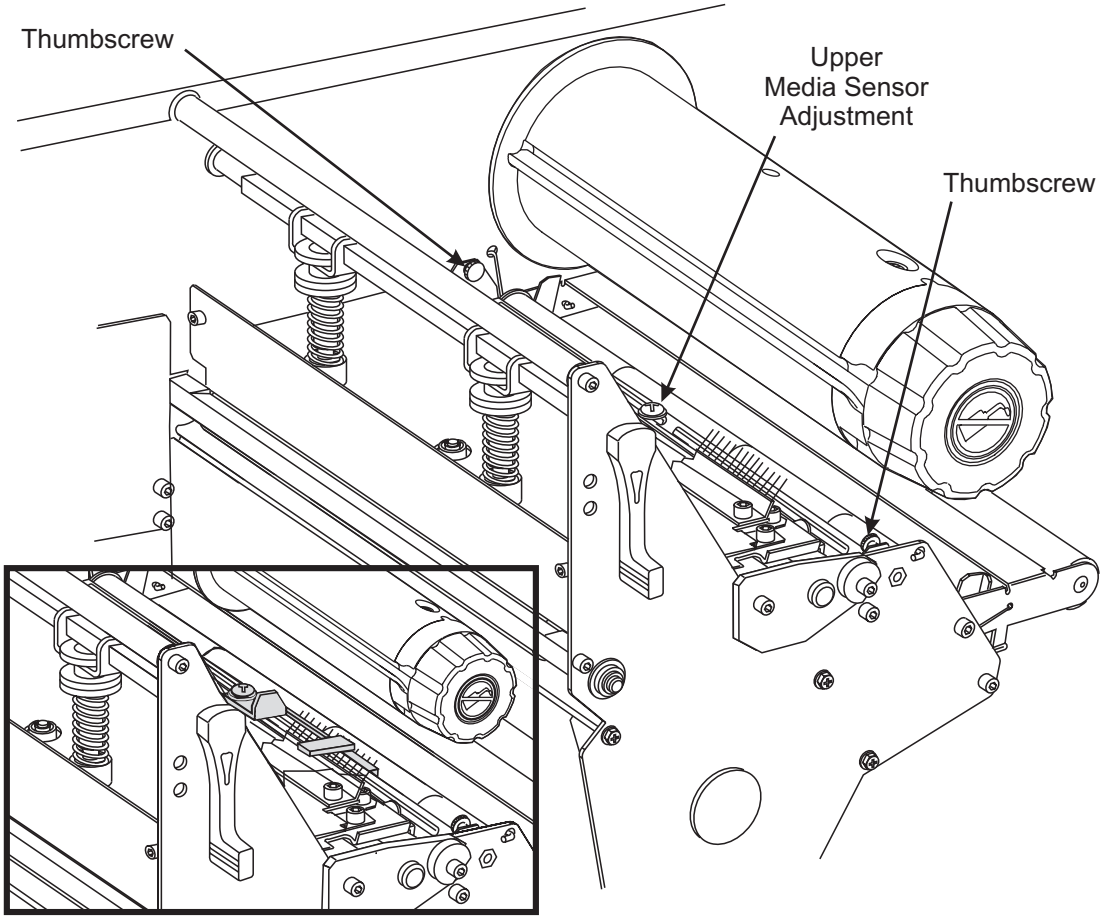
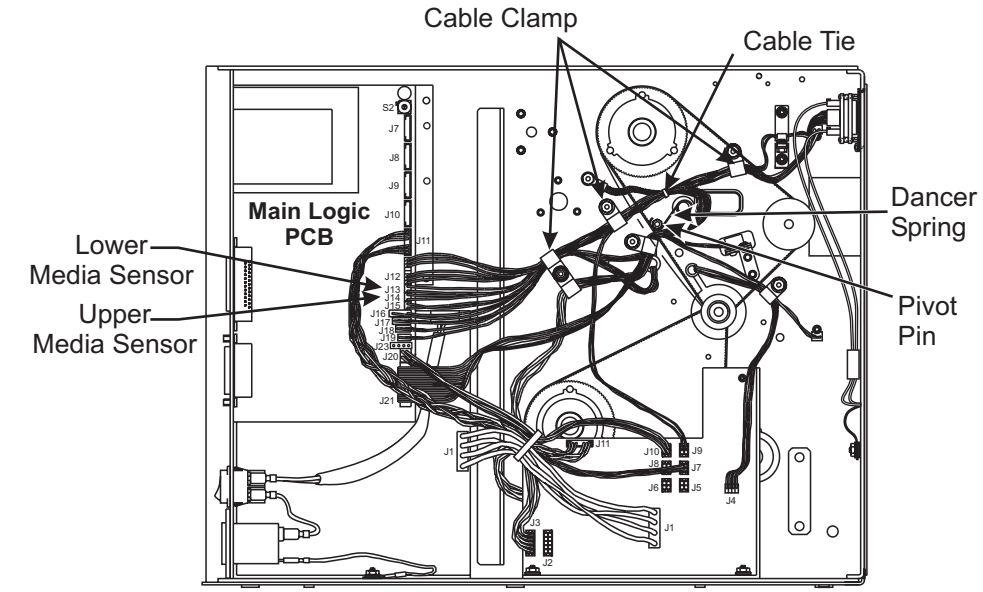
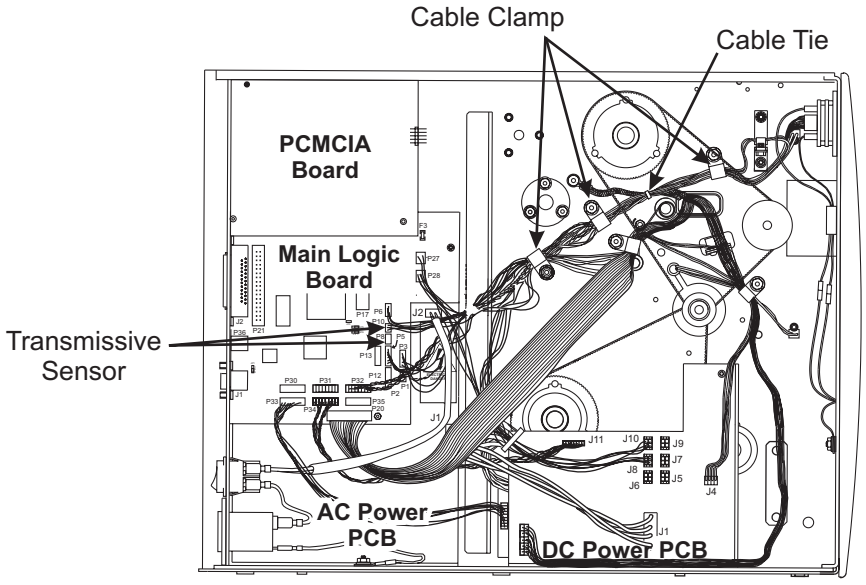


Figure 4-43. Upper Media Sensor Replacement



*Xi*III



*Xi*III*Plus*

Figure 4-44. *Xi*III Media Sensor Connection Diagram

6. Refer to Figure 4-45. Slide the lower media sensor away from the printer main frame so you can get at it. Carefully pry apart the sides of the bracket holding the sensor PCB. The sensor PCB should fall free and dangle from its electrical leads.

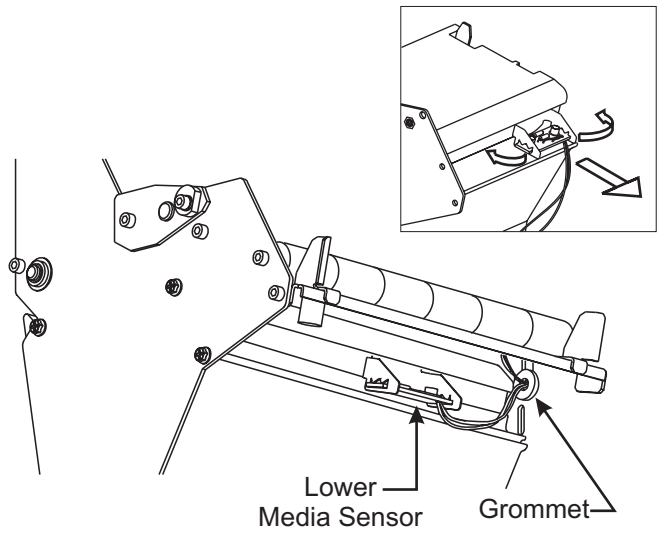


Figure 4-45. Lower Media Sensor and Bracket

7. Refer to Figure 4-44. Locate the electrical leads from the two sensors. Open the cable clamps and follow 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 *Xi*III and R-140 or P-8 and P-10 for the *Xi*III*Plus*.
3. Install the upper sensor bracket and secure it with thumbscrews.
4. See 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. Reinstall the electronics cover.
9. Refer to Positioning the Media Sensors 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. Restore power and place the power switch in the On (**I**) position.

Ribbon Take-Up Pulley Replacement

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Refer to RRP No. 8 on page 4-26 and remove the main drive belt.

WARNING:

WEAR PROTECTIVE EYEWEAR WHEN REMOVING E-RINGS, C-CLIPS, SNAP RINGS, AND SPRINGS. ALL OF THESE ARE UNDER TENSION AND COULD FLY OFF WHILE BEING REMOVED.

4. Refer to Figure 4-46. Remove the E-ring securing the pulley.

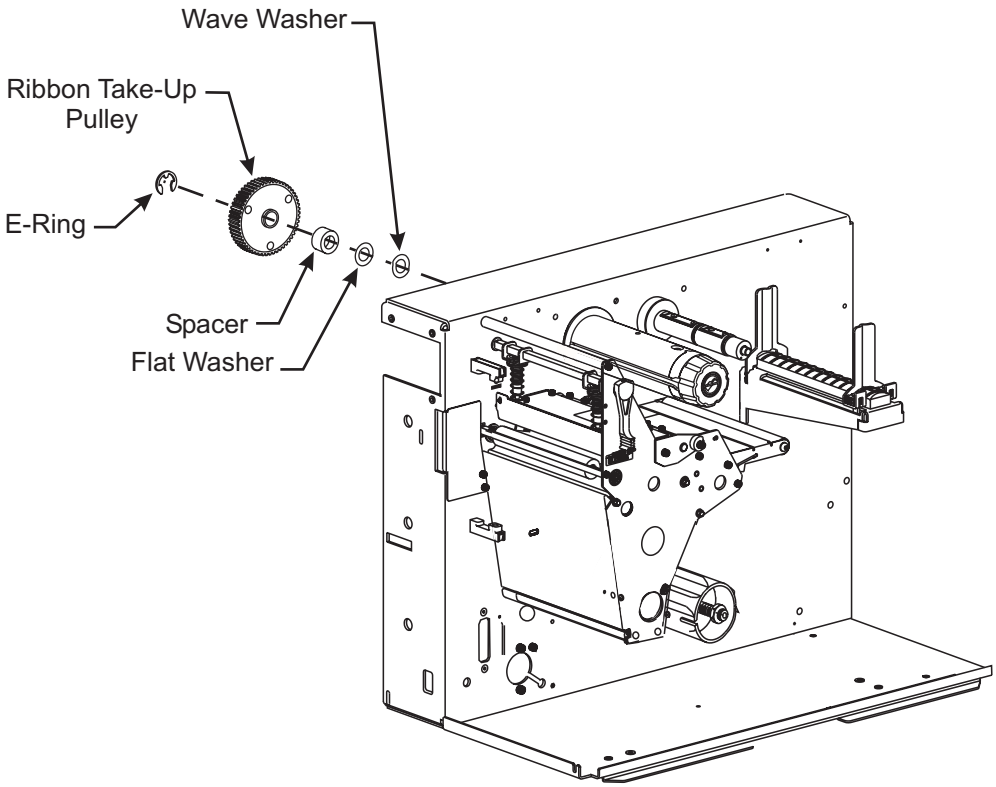


Figure 4-46. Ribbon Take-up Pulley Replacement

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. Install the main drive belt.
9. Refer to RRP No. 7 on page 4-24 and adjust the tension on the main drive belt.
10. Reinstall the electronics cover.
11. Reconnect the data cables and the AC power cord.
12. Restore power and place the power switch in the On (**I**) position.

Media Take-Up Pulley Replacement

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Refer to RRP No. 3 on page 4-16 and remove the DC power supply.
4. Refer to RRP No. 8 on page 4-26 and remove the main drive belt.
5. Refer to RRP No. 10 on page 4-28 and remove the rewind drive belt.

WARNING:

WEAR PROTECTIVE EYEWEAR WHEN REMOVING E-RINGS, C-CLIPS, SNAP RINGS, AND SPRINGS. ALL OF THESE ARE UNDER TENSION AND COULD FLY OFF WHILE BEING REMOVED.

6. Refer to Figure 4-47. Remove the E-ring securing the pulley.

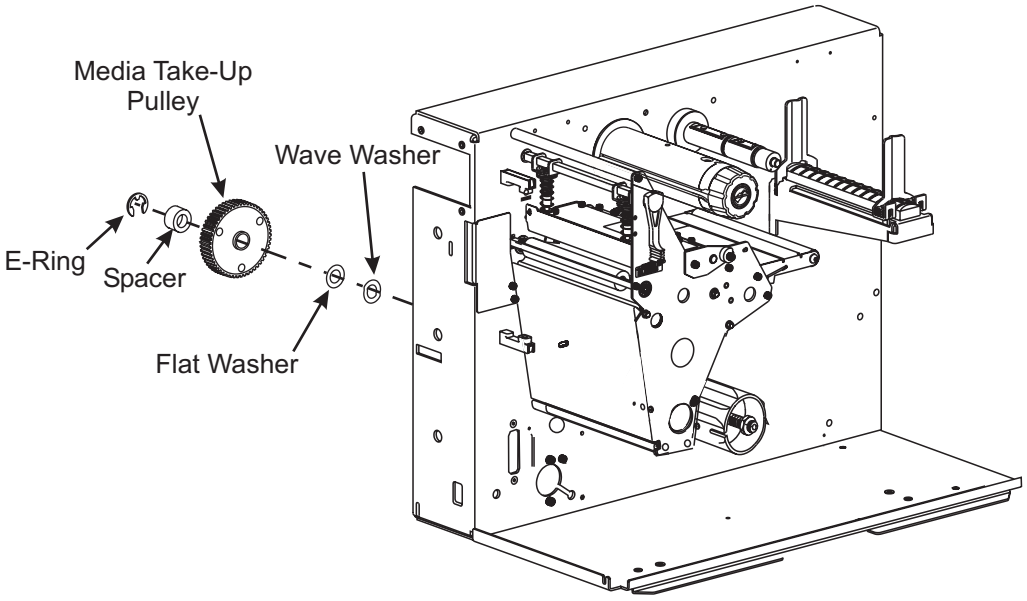


Figure 4-47. Media Take-Up Pulley Replacement

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. Reinstall the rewind drive belt.
12. Refer to RRP No. 9 on page 4-26 to adjust the tension on the rewind drive belt.
13. Reinstall the main drive belt.
14. Refer to RRP No. 7 on page 4-24 to adjust the tension on the main drive belt.

15. Reinstall the DC power supply.
16. Reinstall the electronics cover.
17. Reconnect the data cables and the AC power cord.
18. Restore power and place the power switch in the On (**I**) position.

Rewind Plate Replacement

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position 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 Figure 4-48 and carefully slide the rewind plate out of the slots in the printhead mechanism and away from the printer.

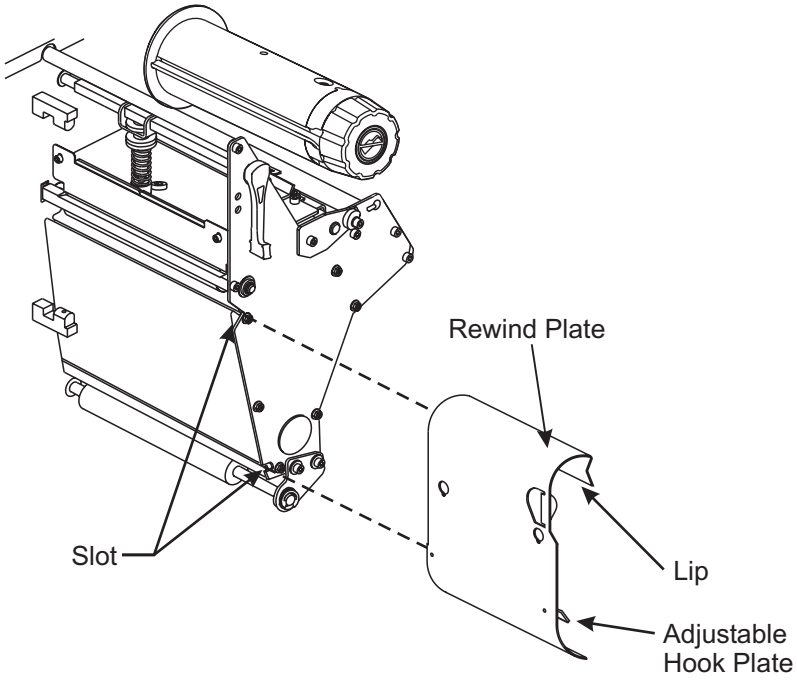


Figure 4-48. Rewind Plate Replacement

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. Restore power and place the power switch in the On (**I**) position.
10. Run test labels 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

Ribbon Sensor Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position 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.

CAUTION:

OBSERVE PROPER ELECTROSTATIC SAFETY PRECAUTIONS WHEN HANDLING ANY STATIC-SENSITIVE COMPONENTS SUCH AS PRINTED CIRCUIT BOARDS AND PRINTHEADS.

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.

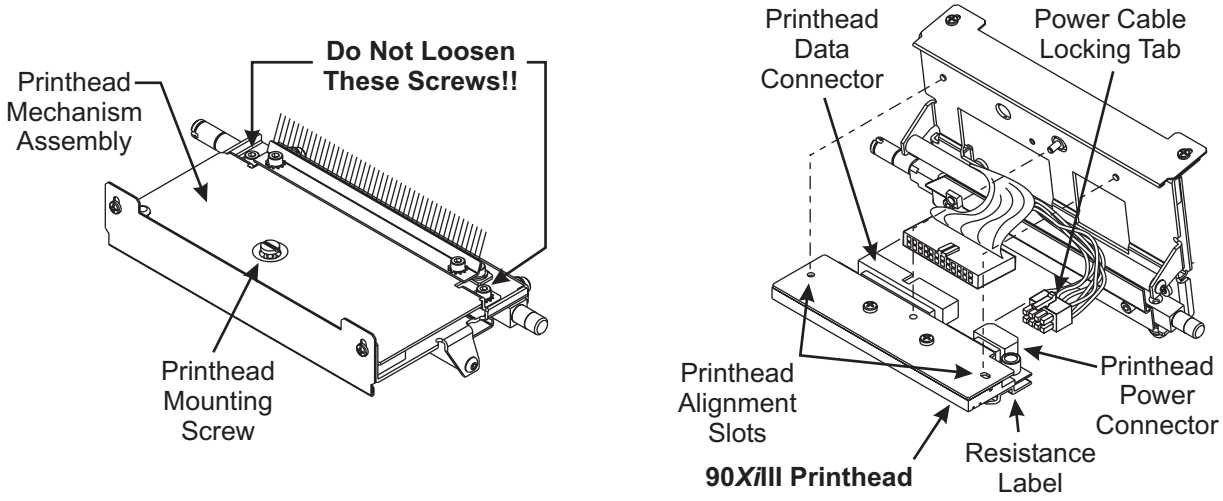


Figure 4-49. Printhead Removal and Installation

5. Slowly open the printhead assembly. The printhead remains on the platen while the rest of the assembly pivots out of the way.

CAUTION:

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.

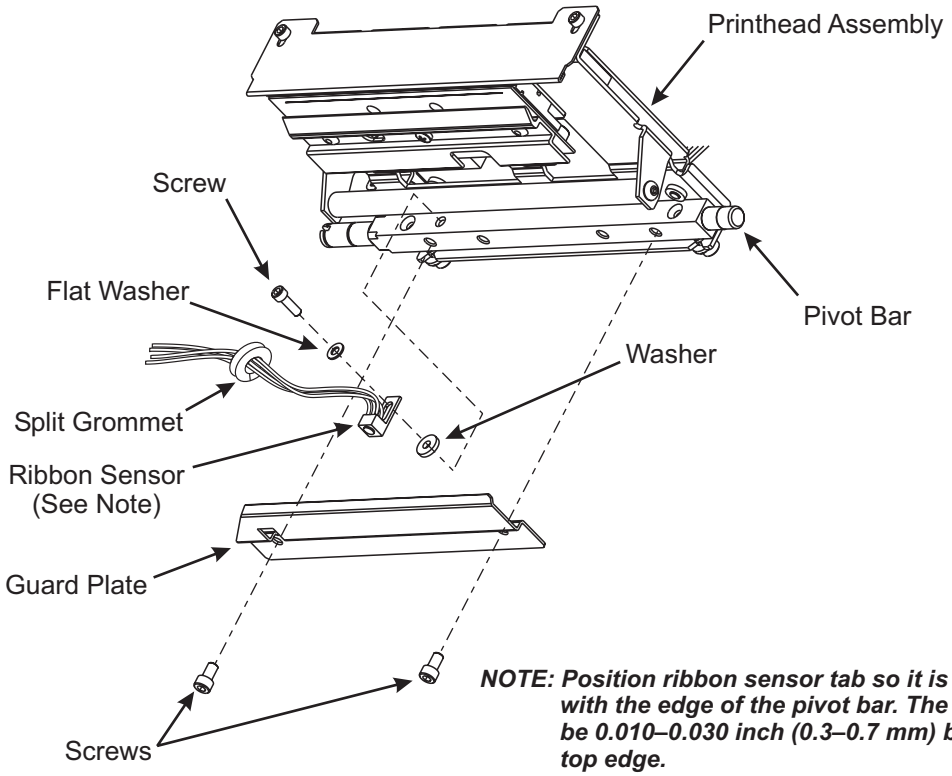


Figure 4-50. Guard Plate and Sensor

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.

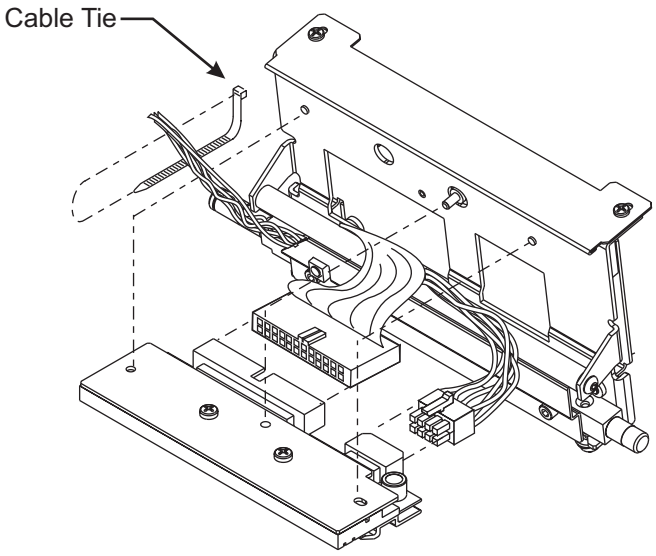
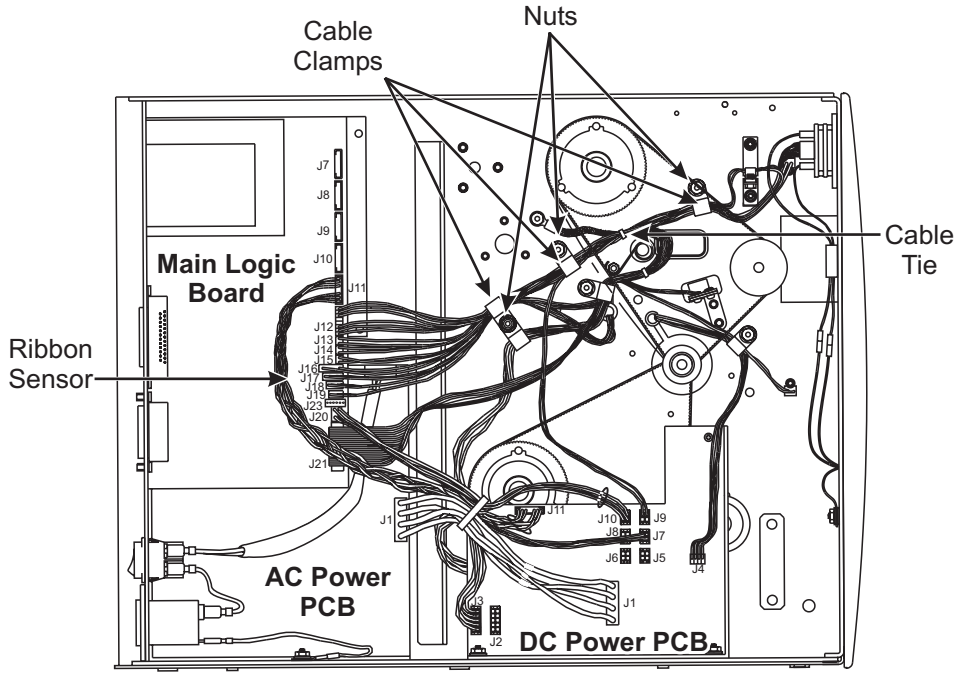


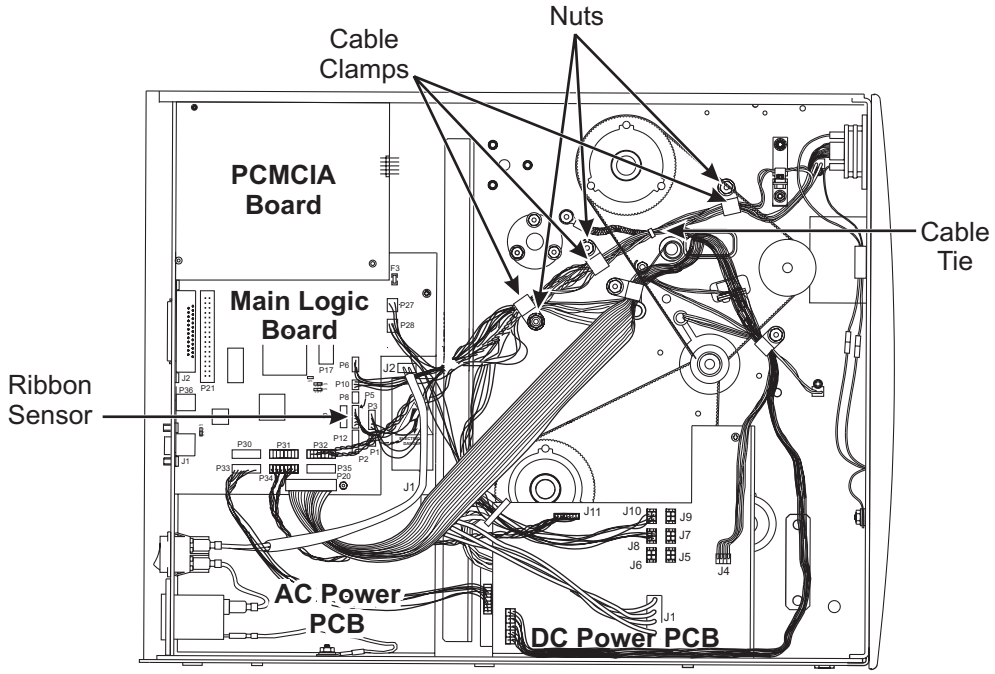
Figure 4-51. Cable Tie Removal and Installation

12. Refer to RRP No. 2 on page 4-15 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 (*Xi*III and R-140) or P5 (*Xi*III*Plus*) on the main logic board.



***Xi*III**



Xi*III*Plus

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 inch (0.5–0.7 mm) for the 140,170 and 220 or 0.???–0.??? inch (0.?–0.? mm) for the 90/96 below top edge.

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 with two screws.
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 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 # 01429) and thoroughly clean the gray area of the new printhead.

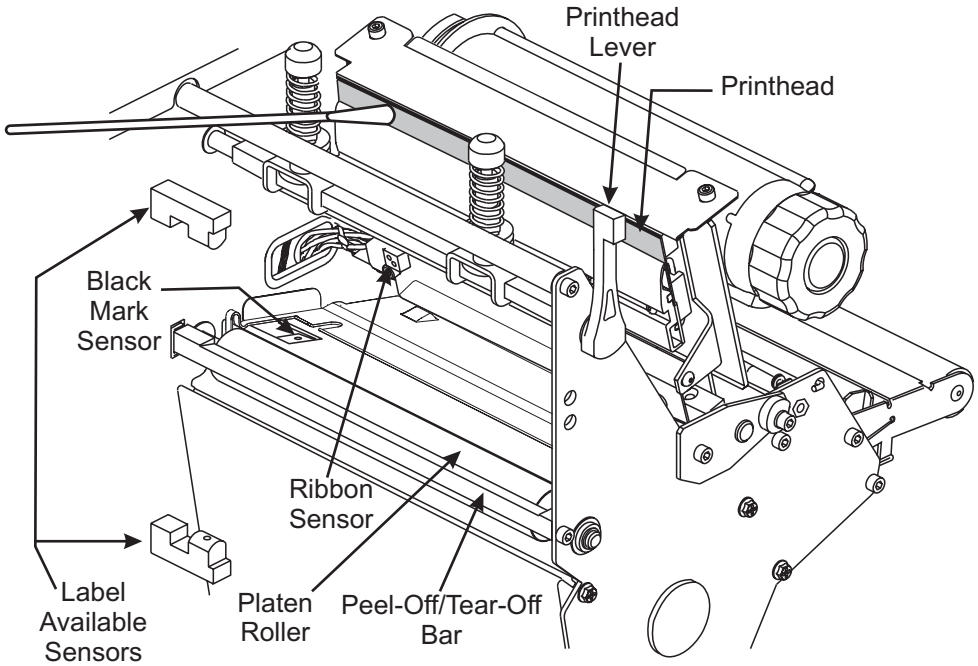


Figure 4-53. Printhead Cleaning

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 in the same place as the one removed previously.
12. Reconnect the ribbon sensor wire connector into the main logic board connector J17 (*Xi*III and R-140) or P5 (*Xi*III*Plus*).
13. Reinstall the media and ribbon. Close the printhead.
14. Close the media cover.
15. Reinstall the electronics cover.
16. Reconnect the data cables and the AC power cord.
17. Restore power and place the power switch in the On (**I**) position.
18. Refer to the User's 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 (*Xi*III and R-140) or P5 (*Xi*III*Plus*) on the main logic board.

Take-Label Sensor Replacement

Sensor Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Open the media cover.
3. Refer to RRP No. 2 on page 4-15 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 (*Xi*III and R-140) or P1 and P2 (*Xi*III*Plus*).
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.

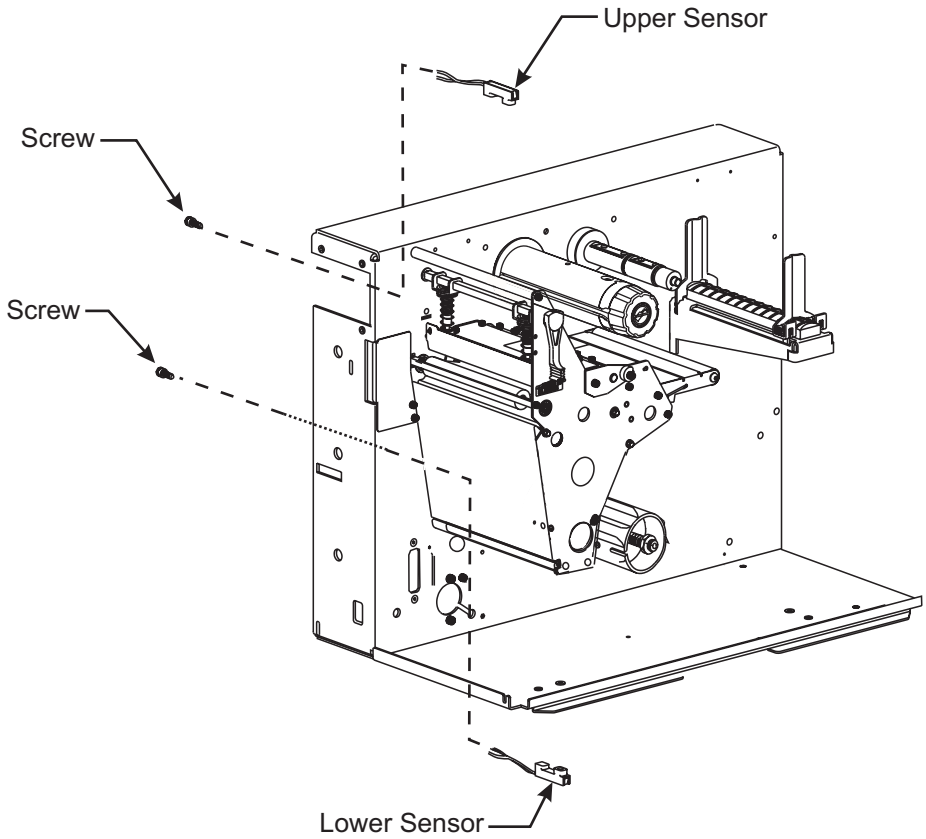


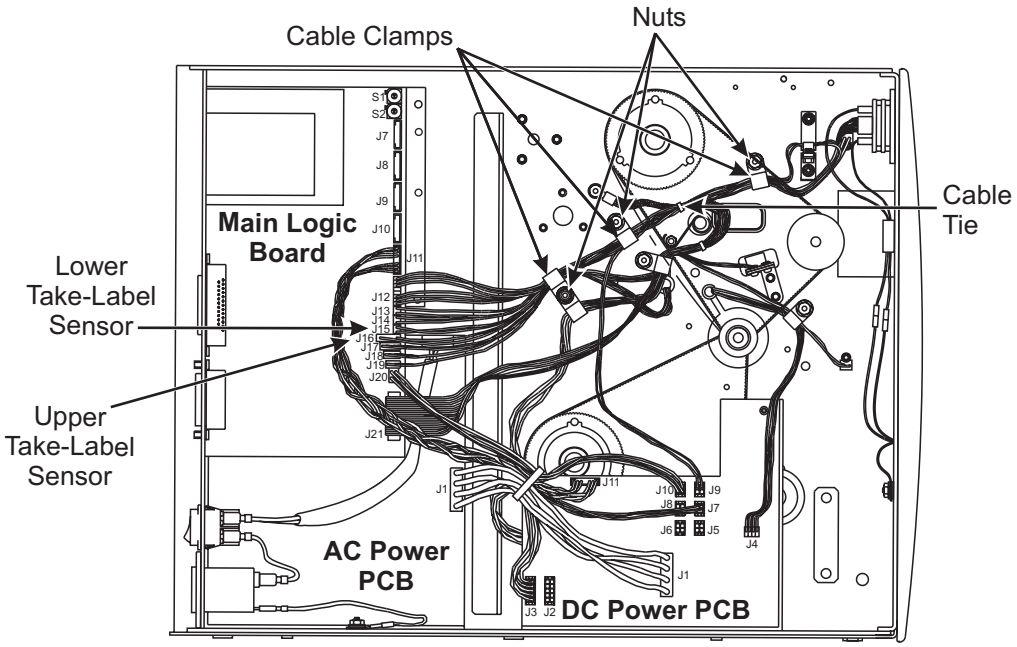
Figure 4-54. Take-Label Sensors

2. Install the sensor with the window facing down. Secure the sensor to the main frame with screw.

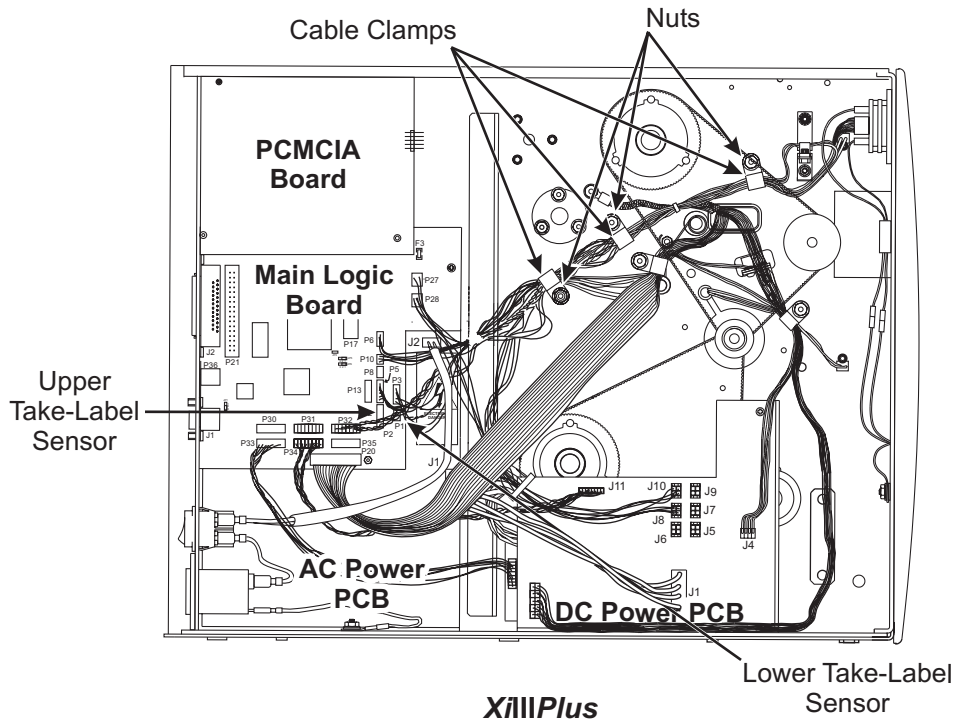
NOTE: The lower take-label sensor has black/red wires.

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 screw.
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.
6. Connect the upper take-label sensor connector to J16 (*Xi*III and R-140) or P2 (*Xi*III*Plus*) on the main logic board and the lower label available sensor connector to J15 (*Xi*III and R-140) or P1 (*Xi*III*Plus*).

NOTE: In the Peel-Off mode, if the two sensors are not aligned with each other, the Take-Label LED illuminates, and the printer does not operate.



***Xi*III and R-140**



Xi*III*Plus

Figure 4-55. *Xi*III, *Xi*III*Plus* and R-140 Sensor Connector Location

DC Stepper Motor Maintenance

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 this 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. Refer to RRP No. 1 on page 4-13. 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. 2 on page 4-15 and remove the electronics cover.
4. Refer to RRP No. 3 on page 4-16 and remove the DC power supply.
5. Refer to RRP No. 8 on page 4-26 and remove the main drive belt.
6. Refer to RRP No. 10 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.

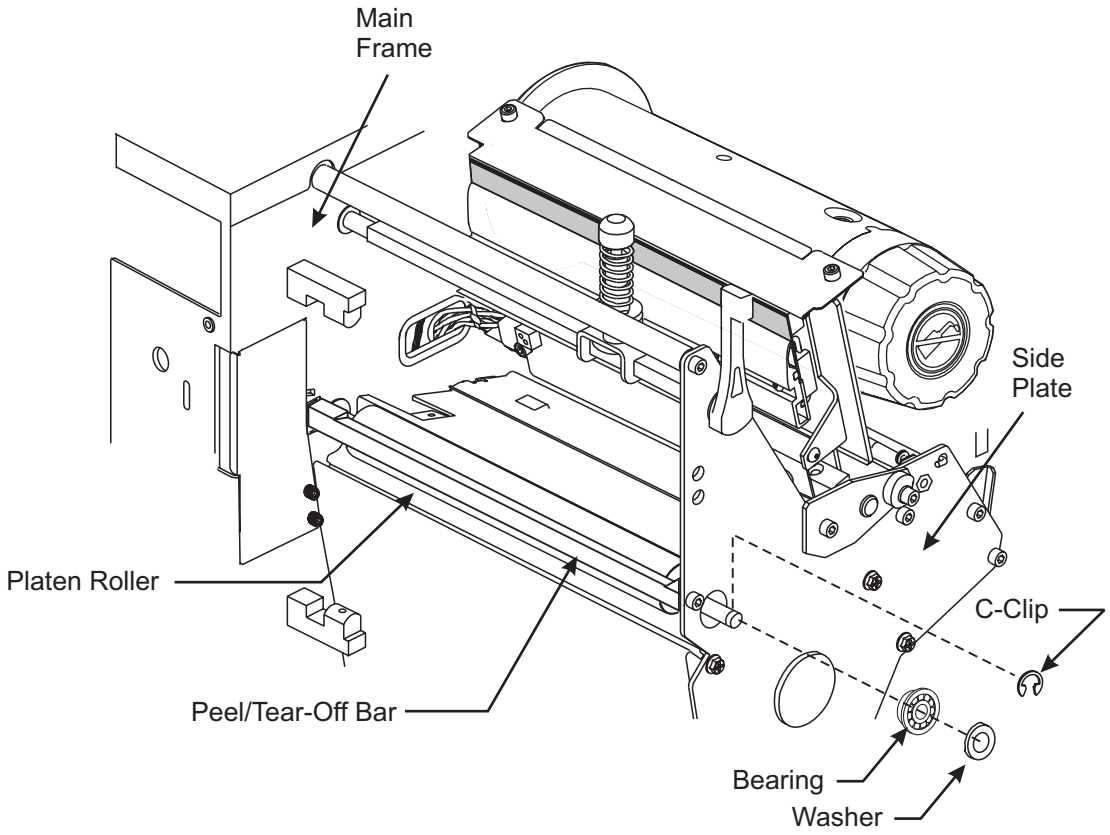


Figure 4-56. Freeing Side Plate for Removal

8. Refer to Figure 4-57. Remove and retain screw 12. Remove the printhead lever and the wave washer as shown in Detail A.

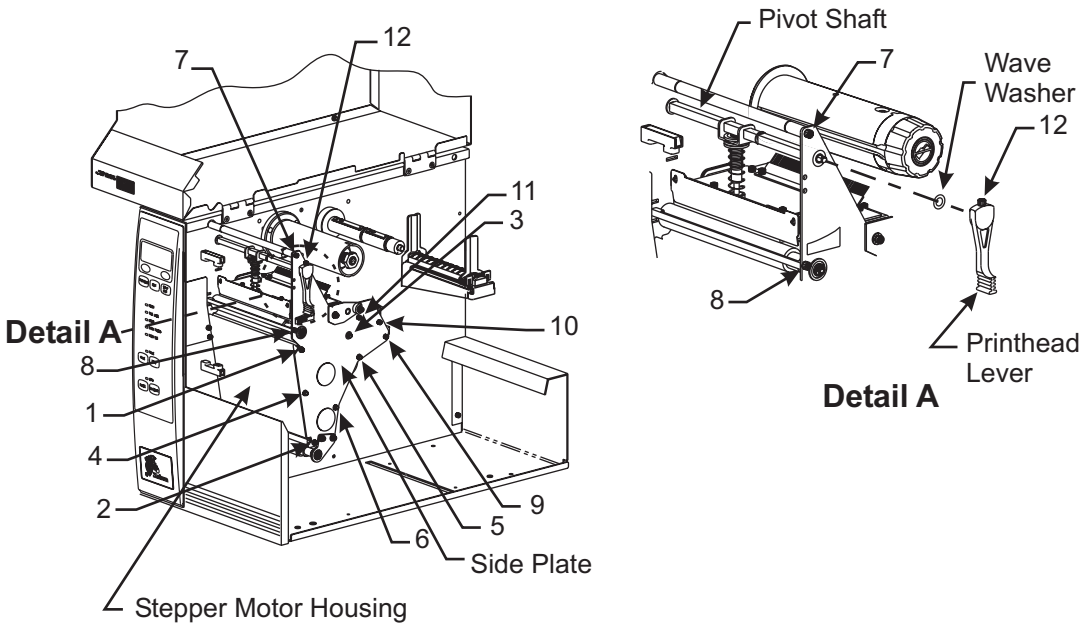


Figure 4-57. Side Plate Removal and Installation

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.

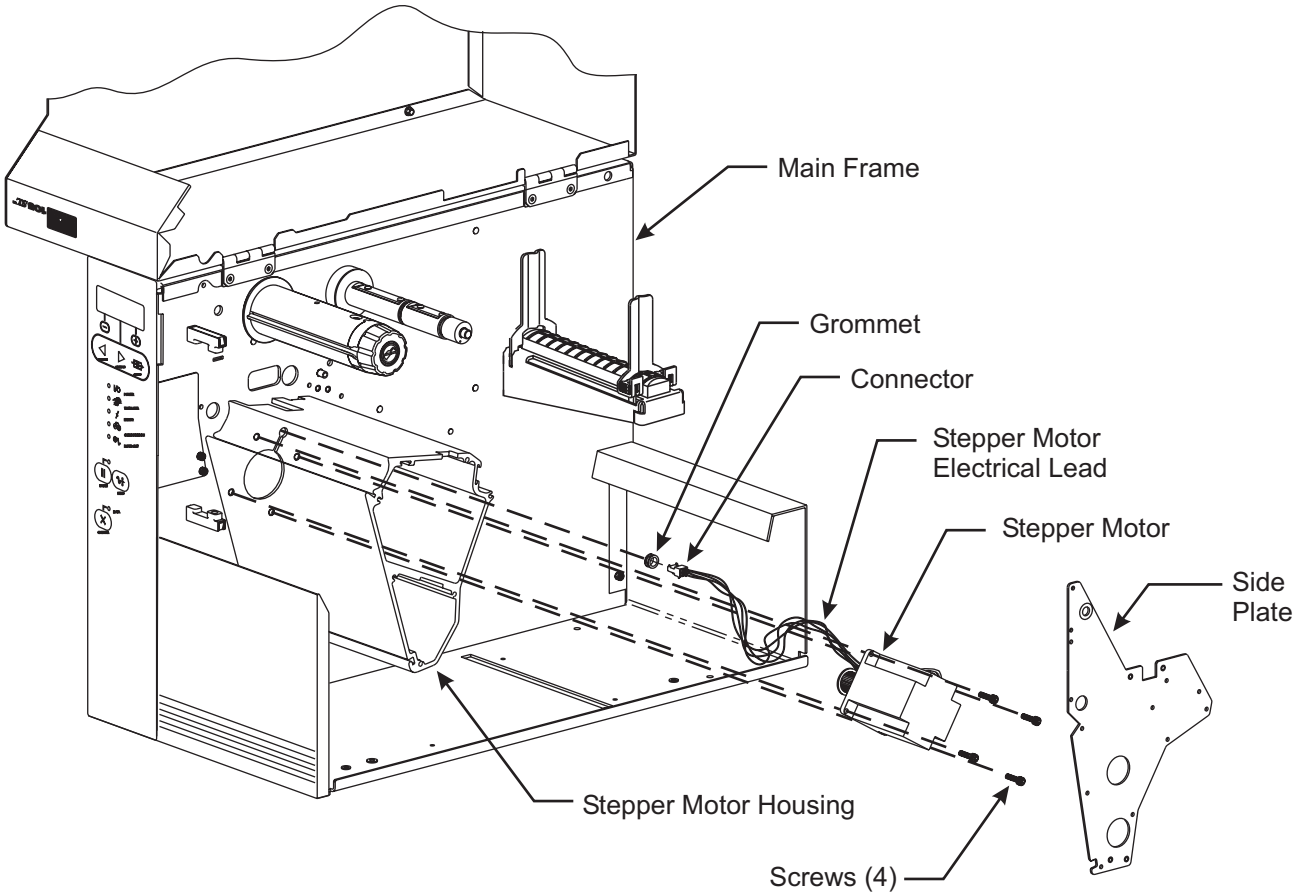
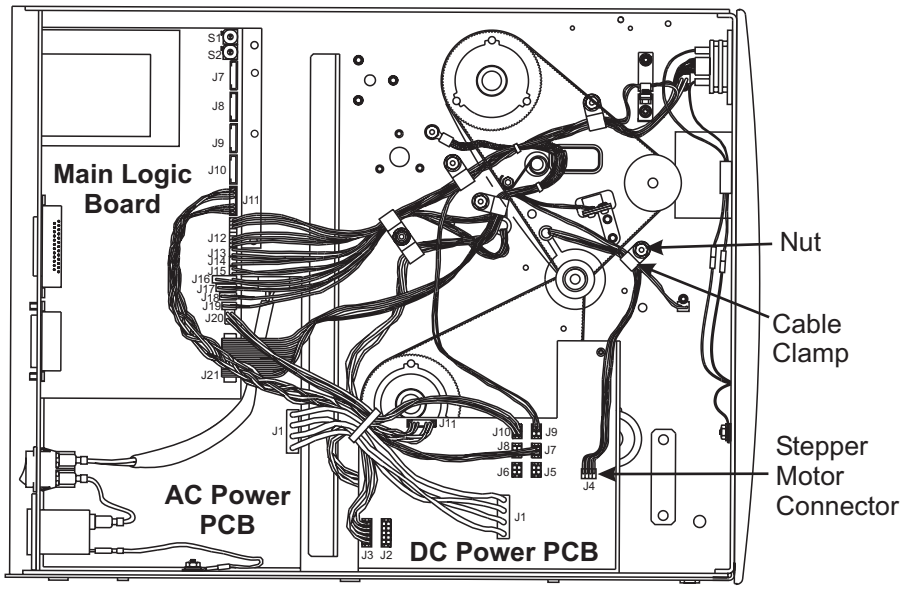


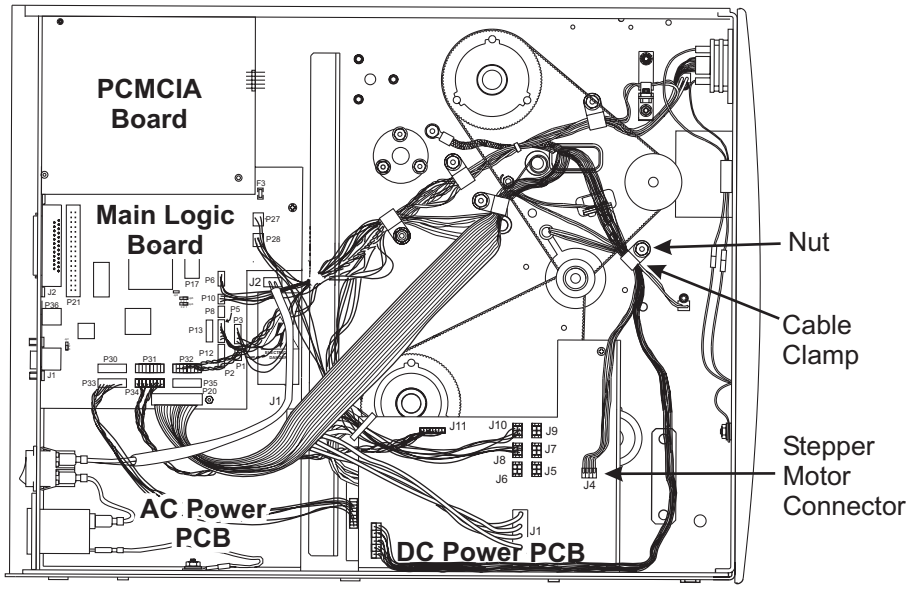
Figure 4-58. DC Stepper Motor Removal and Installation

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.



*Xi*III



*Xi*III*Plus*

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.

DC Stepper Motor Installation

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 many 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. 10 on page 4-28 and reinstall the rewind drive belt.
12. Refer to RRP No. 8 on page 4-26 and reinstall the main drive belt.
13. Refer to RRP No. 9 on page 4-26 and adjust the tension on the rewind drive belt.
14. Refer to RRP No. 7 on page 4-24 and adjust the tension on the main drive belt.
15. Refer to RRP No. 3 on page 4-16 and reinstall the DC power supply.
16. 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. Restore power and place the power switch in the On (**I**) position.
20. Refer to Printhead Adjustments on page 4-32 and perform all the procedures to achieve acceptable print quality.

Black Mark Sensor Replacement

Sensor Removal

1. Refer to RRP No. 1 on page 4-13. Place the power switch in the Off (**O**) position and disconnect the AC power cord. Disconnect the data cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Refer to Figure 4-60. Remove screws securing the black mark sensor, and remove the sensor.

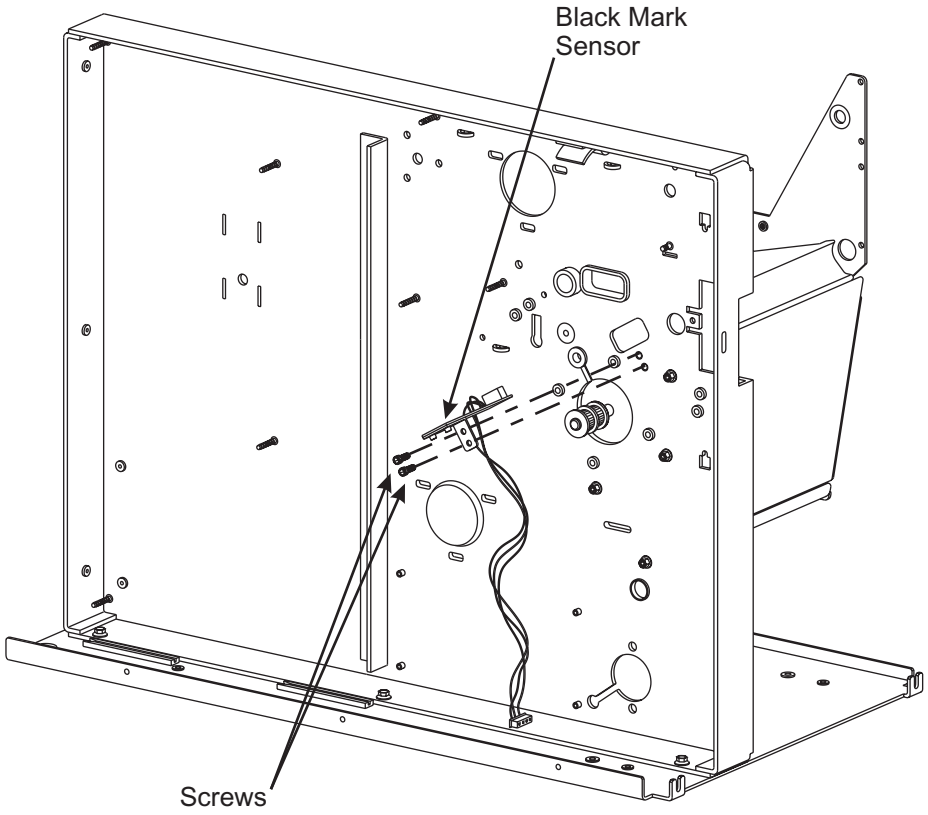
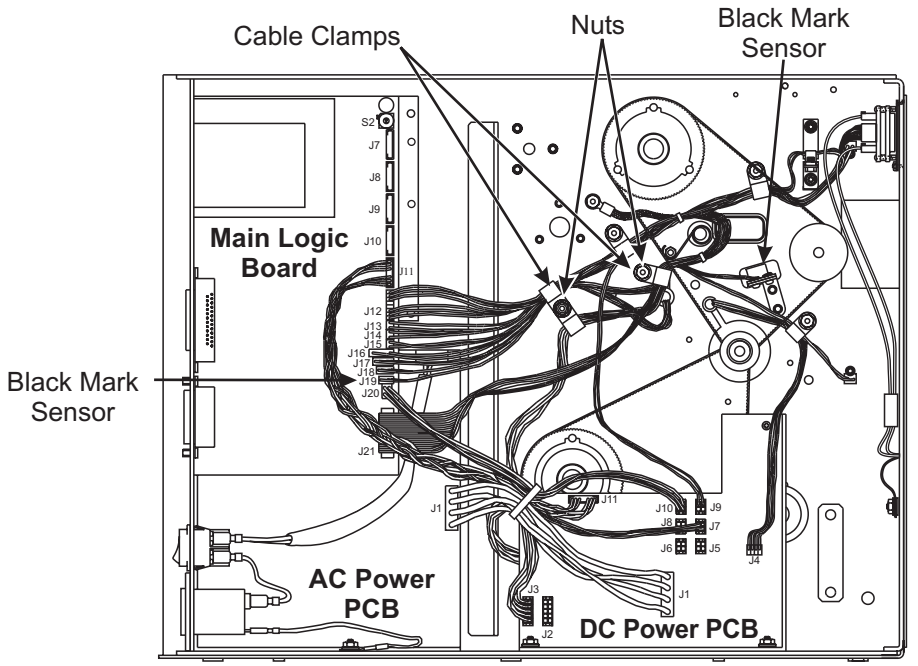


Figure 4-60. Black Mark Sensor Installation

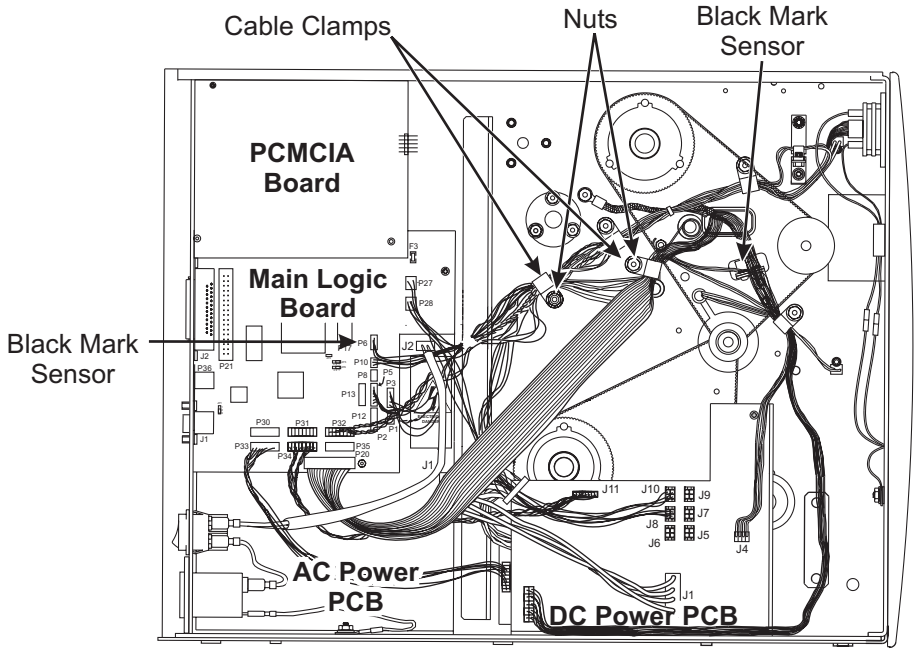
4. Refer to Figure 4-61. Follow the sensor leads back to connector J19 or P6 on the main logic board and disconnect it. Cut wire ties as necessary.
5. Remove the nuts securing the cable clamps.

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 wire ties as necessary.



***Xi*III**



Xi*III*Plus

Figure 4-61. Sensor Lead Routing and Connection

3. Reconnect sensor wires to connector J19 or P6 on the main logic board.
4. Reinstall the electronics cover.

5. Reinstall the media and ribbon.
6. Reconnect the data cables and the AC power cord.
7. Restore power and place the power switch in the On (**I**) position.
8. Enter Printer Configuration and select MARK for sensor type.

RFID Encoder Replacement (R-140 Only)

This kit includes the parts and documentation necessary to install the RFID Base Assembly into the Zebra RFID printer. Installation of this assembly should be performed by a qualified service technician. Read these instructions thoroughly before attempting to install this option.

Encoder Removal

The printer must be partially disassembled in order to install the parts in this kit.

1. Refer to RRP No. 1 on page 4-13. Remove the power cord and the printer communications cable.
2. Refer to RRP No. 2 on page 4-15 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 access door and remove the RFID cover plate.

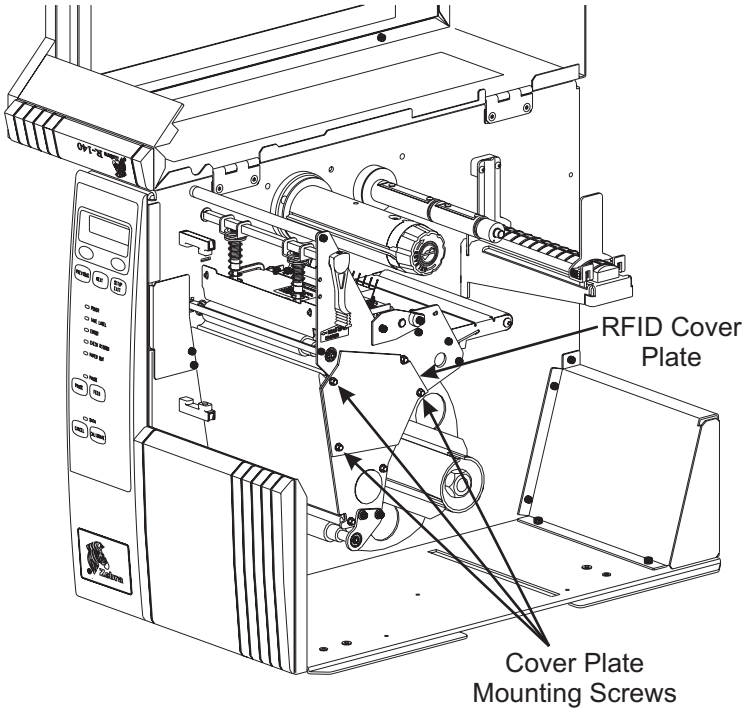


Figure 4-62. Cover Plate Location

5. See Figure 4-63. Remove the base assembly mounting screws.
6. Remove the RFID base assembly by lowering it and pulling it out.

NOTE: Caution must be exercised when removing the data cable.

7. Carefully remove the data cable.

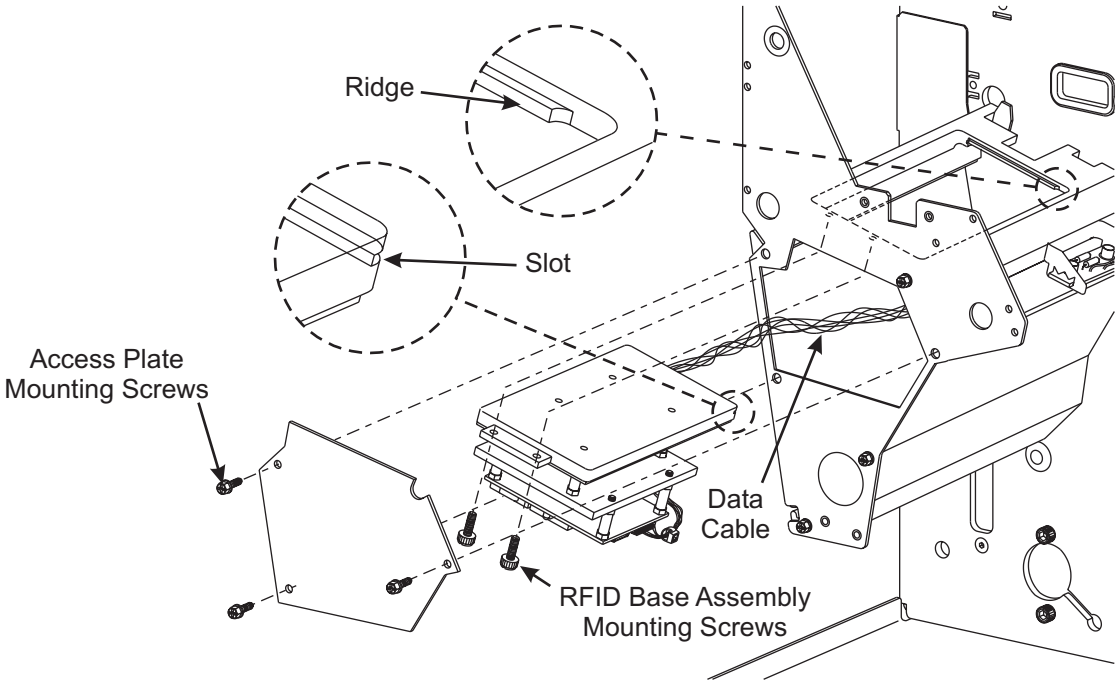


Figure 4-63. Removal and Installation

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. Reinstall the electronics cover.
8. Reinstall the AC power cord and communications cable.
9. Restore power and place the power switch to the On (**I**) position.

NOTE: Nothing further needs to be done. The main logic board recognizes the new RFID assembly.

Wireless Ethernet

WCSO Board Removal and Replacement

This document provides the instructions necessary to replace a ZebraNet Wireless Card Socket Option (WCSO) board.

The instructions that follow provide you with the steps to remove a WCSO board, install a new WCSO board, and configure it.

1. Refer to RRP No. 1 on page 4-13. Remove the AC Power cord and communication cable.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.

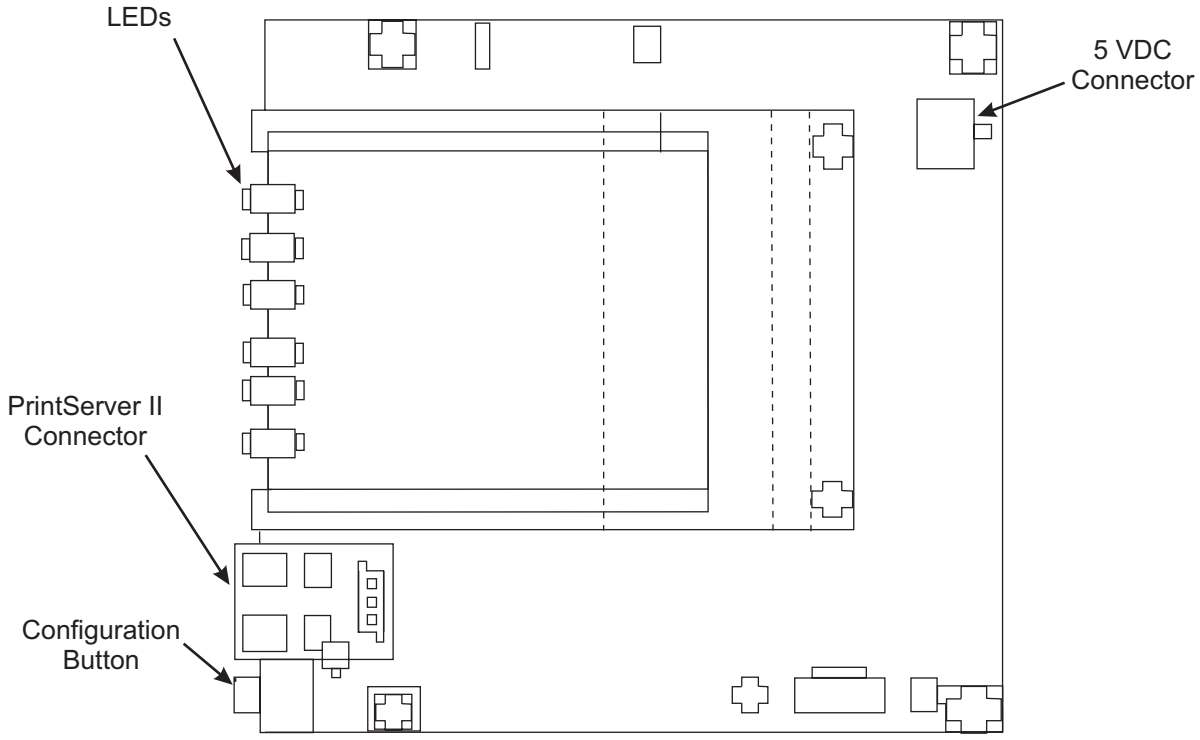


Figure 4-64. WCSO Board

3. Refer to Figure 4-64. Unplug the power cable (multi-colored) connected to the 5-VDC connector on the WCSO board.

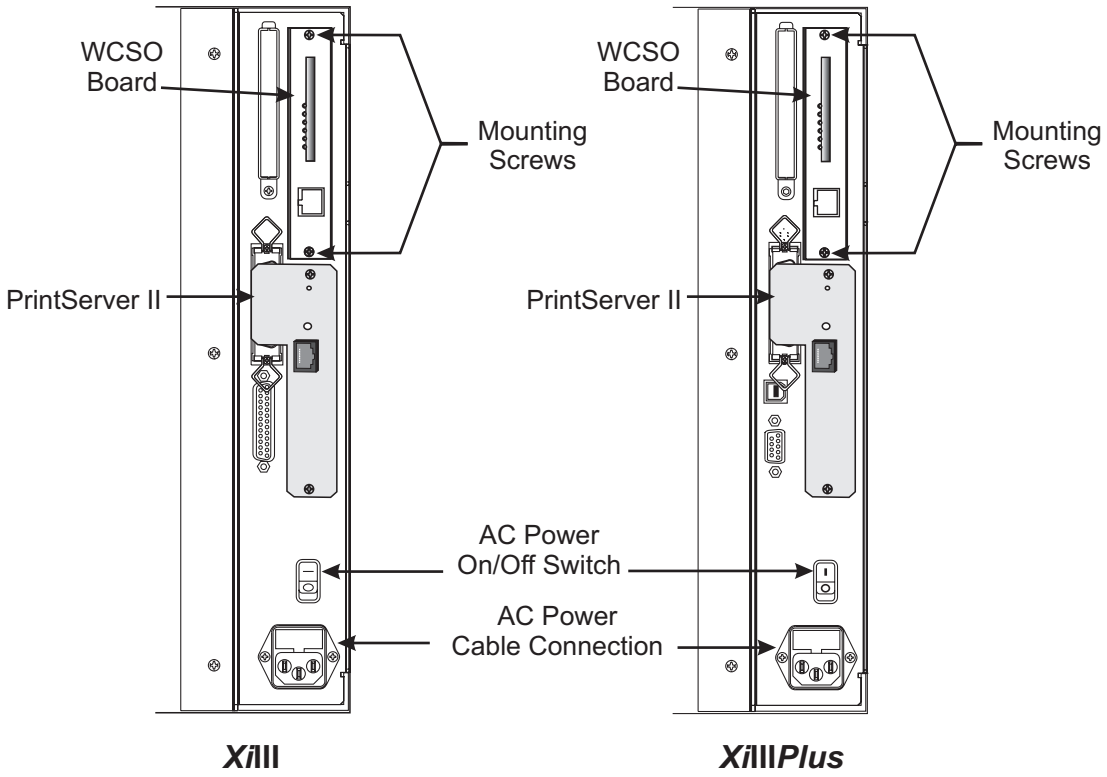


Figure 4-65. WCSO Board Removal

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.
7. Plug the printer in and turn it On (**I**). Make sure there is power to the WCSO board (Some LEDs should be lit).

NOTE: If the WCSO board does not have power (no LEDs are lit), ensure that the power (multicolored) cable is securely inserted into one of the available 5-VDC connectors.

8. Turn the printer Off (**O**) and put the printer's side panel back on.

ZebraNet Wireless View

1. From the status bar, click Start>Programs>ZebraNet Wireless>ZebraNet Wireless View.

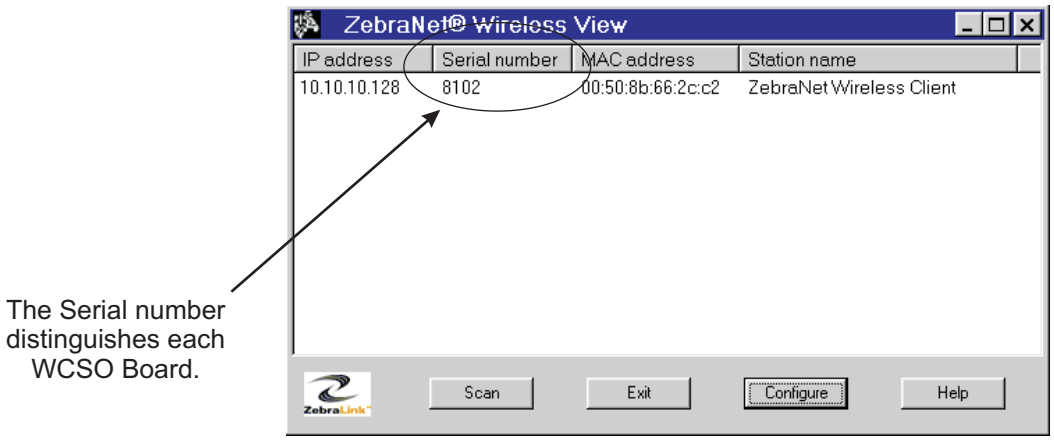


Figure 4-66. The *ZebraNet Wireless View* Dialog Opens:

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 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 (lights 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 prepare 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 crossover cable **red**, 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

NOTE: The 7 foot (2 m) cable does** not go **in the print server.

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, complete the callout illustration step in Figure 4-67 below.
   - If you are connecting your printer to a hub or network connection, complete the callout illustration step in 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, 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.

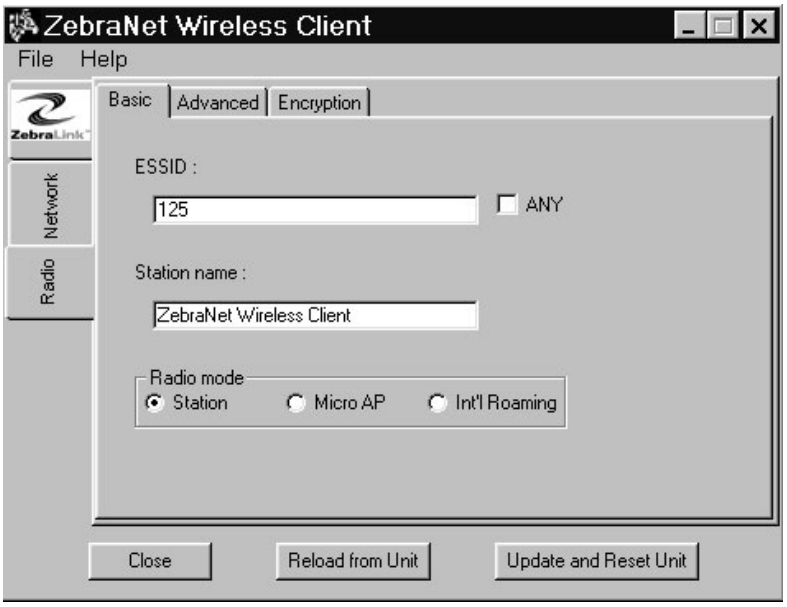


Figure 4-69. The *ZebraNet Wireless Client* dialog with the *Radio>Basic* tab opens

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, 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. Power 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, click Start>Programs>ZebraNet Wireless>ZebraNet Wireless View.
2. Confirm that your wireless device is listed in the *ZebraNet Wireless View* dialog. The serial number is each WCSO's unique identifier.
3. From the *ZebraNet Wireless View* dialog, click Scan. Your wireless device is 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

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: 90*Xi*III™ and 96*Xi*III™

Bottom: 140*Xi*III™, 170*Xi*III™, and 220*Xi*III™

LIST OF FIGURES

LIST OF TABLES

Table 5-1. Final Assembly 90/96/140/170*Xi*III, *Xi*III*Plus,* 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	*30392-004**	Screw, 6-32 × 0.25, Phillips head	12
3	**01861**	Supplies Label	1
4	**48252**	Media Load Label	1
5	**46396-006**	Screw, 6-32 × 0.37, Phillips head	1
6	**30407-008**	Screw, 6-32 × 0.5, 3/64 Allen	4
7	*44114***	Screw, M4.2 × 8 Hilo	12
8	*44356†*	Washer, 0.198, 0.75 0.085	3
9	*32038*	Electronics Cover	1
10	**47721M**	Cover Media Maintenance Kit (90/96*Xi*III/*Xi*III*Plus*)	1
10	**48721M**	Media Maintenance Kit (140*Xi*III/*Xi*III*Plus* and R-140)	1
10	**46721M**	Cover Media Maintenance Kit (170*Xi*III/*Xi*III*Plus*)	1
11	**46142**	Name Plate, (170*Xi*III)	1
11	**47142**	Name Plate, (90*Xi*III)	1
11	**48142**	Name Plate, (140*Xi*III)	1
11	**47146**	Name Plate, (96*Xi*III)	1
11	*48146*	Name Plate, (R-140)	1
11	**33150-3**	Name Plate, (170*Xi*III*Plus*)	1
11	**33150-1**	Name Plate, (90*Xi*III*Plus*)	1
11	**33150-2**	Name Plate, (140*Xi*III*Plus*)	1
11	**33150-6**	Name Plate, (96*Xi*III*Plus*)	1
12	**22021**	Switch, Panel Membrane	1
13	**22492M**	Maintenance Kit, Switch Panel (Complete)	1
14	**33036-1**	New Style Front Cover, (170*Xi*III/*Xi*III*Plus*)	1
14	**33036-3**	New Style Front Cover, (90/96*Xi*III/*Xi*III*Plus*)	1
14	**33036-2**	New Style Front Cover, (140*Xi*III/*Xi*III*Plus* and R-140)	1
15	**46755M**	Old Style LCD, Back Light *Xi*III/R-140 (Can be used in new style front cover)	1
15	**32043M**	New Style LCD, Back Light *Xi*III*Plus* (Can not be used in old style front cover)	1
16	*30392-003††*	Screw, 6-32 × 0.19	3
17	**01130**	Nut, 6-32	3
18	*07257‡*	Washer	3
19	**46491-1**	Lower Media Trim Panel, (170*Xi*III/*Xi*III*Plus*)	1
19	**46491-2**	Lower Media Trim Panel, (140*Xi*III/*Xi*III*Plus* and R-140)	1
19	**46491-3**	Lower Media Trim Panel, (90/96*Xi*III/*Xi*III*Plus*)	1
20	**46836**	Spacer	2
21	*30256-B‡‡*	Thumb Nut, 6-32 × 0.50 Brass	2
22	**38342**	Bracket, Front Cover, (170*Xi*III/*Xi*III*Plus*)	1
22	**47342**	Bracket, Front Cover, (90/96*Xi*III/*Xi*III*Plus*)	1
22	**48342**	Bracket, Front Cover, (140*Xi*III/*Xi*III*Plus*)	1
23	*46049-1*	Support Bracket, (170*Xi*III/*Xi*III*Plus*)	1
23	*47049-1*	Support Bracket, (90/96*Xi*III/*Xi*III*Plus*)	1
23	*48049-1*	Support Bracket (140*Xi*III/*Xi*III*Plus*)	1

*Available only as HW30392-004 in quantities of 50

**Available only as HW44114 in quantities of 50

†Available only as HW44356 in quantities of 25

††Available only as HW30392-003 in quantities of 25

‡Available only as HW07257 in quantities of 25

‡‡Available only as HW30256-B in quantities of 25

Bold=Part available for purchase

Light italic=Part not available for purchase, listed and shown for reference only

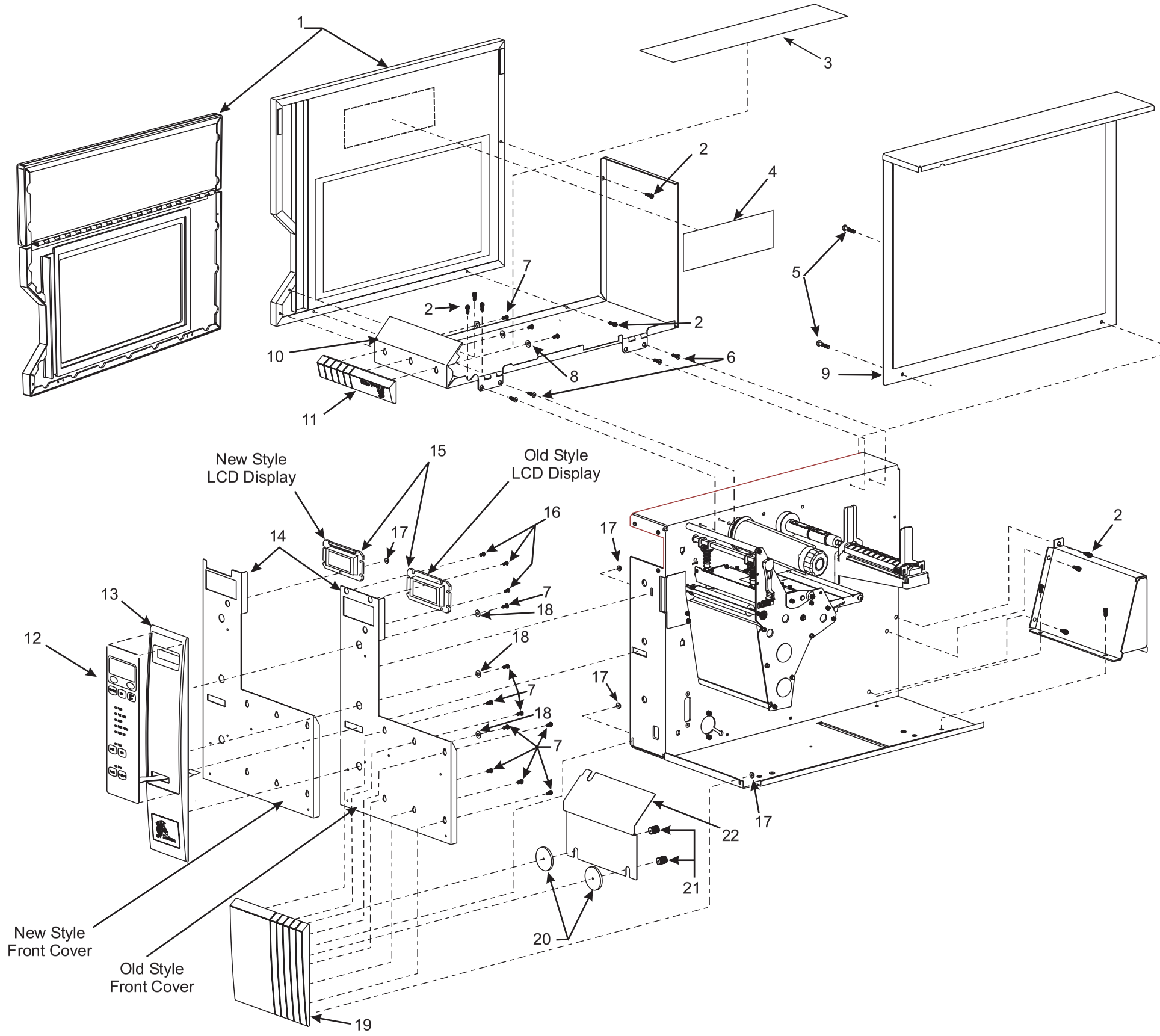


Figure 5-1. Final Assembly 90/96/140/170*Xi*III/*Xi*III*Plus* and R-140 Mechanical

Table 5-2. Final Assembly Electrical (*Xi*III and R-140)

Item	Part Number	Description	Qty
1	**47004M**	Main Logic Board Maintenance Kit (*Xi*III 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 (90/140/170/220*Xi*III/*Xi*III*Plus*)	1
5	**47358M**	RTU/MTU Pulley Maintenance Kit, 600dpi (96*Xi*III)	1
6	**45189-5**	Conductive Belt, 0.080P 235T (90/140/170/220*Xi*III/*Xi*III*Plus*)	1
6	**45189-12**	Conductive Belt, 0.080P 245T (96*Xi*III) (600dpi)	1
7	**Q06020**	Cable-Tie, 0.09W × 3.62L	1
8	**40355M**	Platen Pulley Maintenance Assembly (90/140/170/220*Xi*III/*Xi*III*Plus*)	1
8	**47356M**	Platen Pulley Maintenance Kit 600 dpi (96*Xi*III)	1
9	**38226M**	Reflect Media Sensor Maintenance Kit	1
10	**46199M**	Stepper Motor w/Pulley Kit (90/170*Xi*III/*Xi*III*Plus*) (300 dpi)	1
10	**46198M**	Stepper Motor w/Pulley Kit (140/220*Xi*III/*Xi*III*Plus*) (203 dpi)	1
10	**46196M**	Stepper Motor w/Pulley Kit (96*Xi*III)	1
11	**45189-2**	Conductive Belt, 0.080P 255T (90/140/170/220*Xi*III/*Xi*III*Plus*)	1
11	**45189-13**	Conductive Belt, 0.080P 265T (96*Xi*III)	1
12	**31336M**	Pulley Ribbon Take-up/Media Take-up Maintenance Kit (90/140/170*Xi*III/*Xi*III*Plus*)	1
12	**47358M**	Pulley Ribbon Take-up/Media Take-up Maintenance Kit (96*Xi*III)	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 (90/140/170/220*Xi*III/*Xi*III*Plus*)	1
16	**47915M**	Peel-Off Pulley Maintenance Kit (96*Xi*III)	1
17	**49790M**	DC Power Supply Maintenance Kit	1
17	**49990M**	DC Power Supply Maintenance Kit (220*Xi*III*Plus*)	1
18	**46777**	AC Power Cable	1
19	**04393**	Beaded Cable-Tie	1
20	**49780M**	AC Power Supply Maintenance Kit	1
21	*30208**	Flat Washer, 0.500 × 0.191 × 0.030	2

*Only available as HW30208 in quantities of 25
**Only available as HW01152 in quantities of 100

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

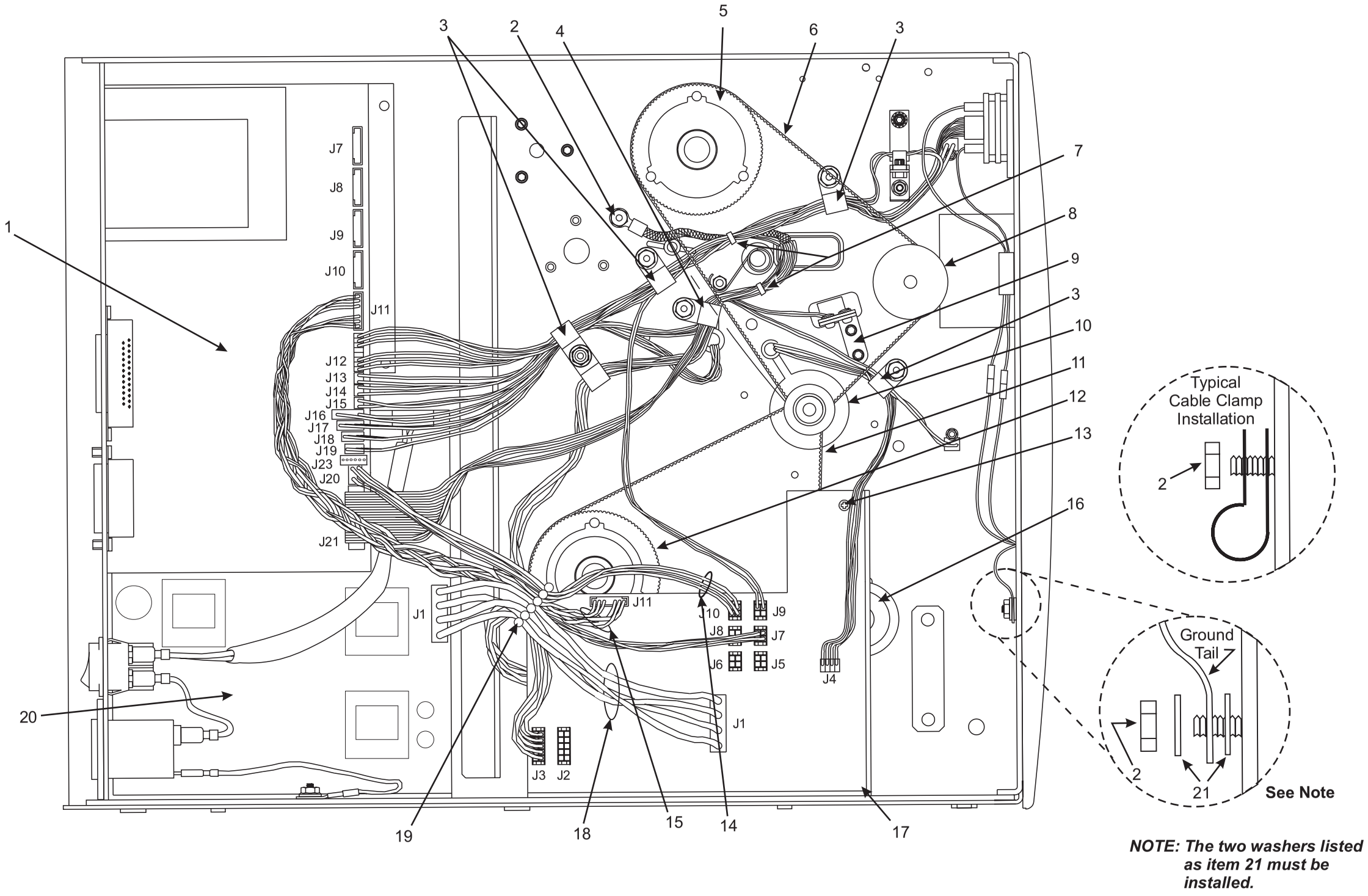


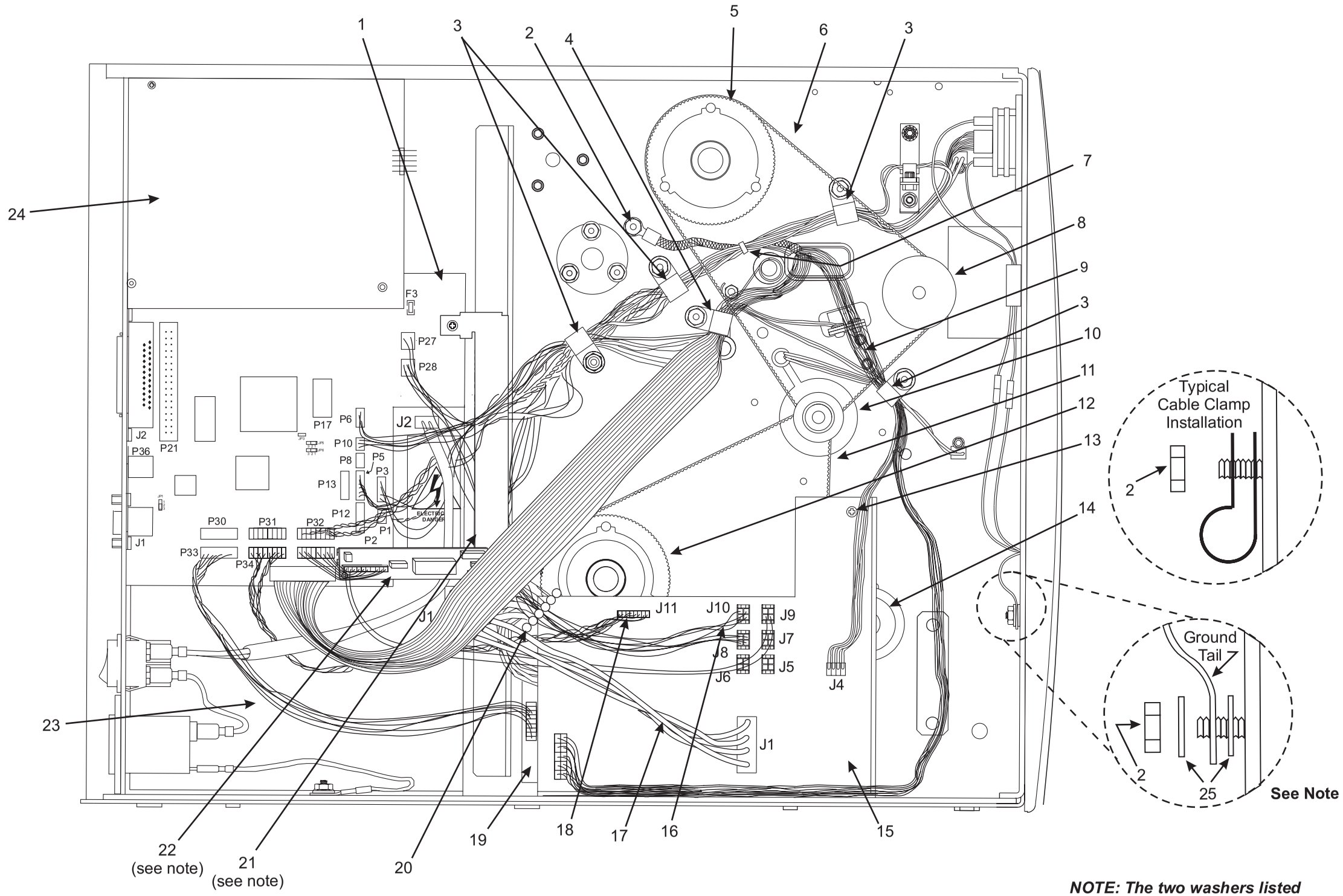
Figure 5-2. Final Assembly Electrical (*Xi*III and R-140)

Table 5-3. Final Assembly Electrical (*Xi*IIIPlus)

Item	Part Number	Description	Qty
1	**33008M**	Main Logic Board *Xi*IIIPlus 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 (90/140/170/220*Xi*IIIPlus)	1
5	**33094-6M**	RTU/MTU Pulley Maintenance Kit 600dpi (96*Xi*IIIPlus)	1
6	**45189-5**	Conductive Belt, 0.080P 235T (90/140/170/220*Xi*IIIPlus)	1
6	**45189-12**	Conductive Belt, 0.080P 245T (96*Xi*IIIPlus) (600dpi)	1
7	**Q06020**	Cable-Tie, 0.09W × 3.62L	1
8	**40355M**	Platen Pulley Assembly Maintenance (90/140/170/220*Xi*IIIPlus)	1
8	**33079-6M**	Platen Pulley Maintenance Kit 600 dpi (96*Xi*IIIPlus)	1
9	**38226M**	Reflect Media Sensor Maintenance Kit,	1
10	**46199M**	Stepper Motor w/Pulley Kit (90/170*Xi*IIIPlus) (300 dpi)	1
10	**46198M**	Stepper Motor w/Pulley Kit (140/220*Xi*IIIPlus) (203 dpi)	1
10	**43420M**	Stepper Motor (96*Xi*IIIPlus) (600 dpi)	1
	33084M	Stepper Motor Pulley (96*Xi*IIIPlus) (600 dpi)	1
11	**45189-2**	Conductive Belt, 0.080P 255T (90/140/170/220*Xi*IIIPlus)	1
11	**45189-13**	Conductive Belt, 0.080P 265T (96*Xi*IIIPlus)	1
12	**31336M**	Maintenance Kit Pulley Ribbon Take-up/Media Take-up (90/140/170*Xi*IIIPlus)	1
12	**33094-6M**	Maintenance Pulley Kit RTU/MTU (96*Xi*IIIPlus)	1
13	**46392-006**	Screw, 6–32 × 0.37 Truss-Head Phillips	1
14	**30914M**	Peel-Off Pulley Maintenance Kit (90/140/170/220*Xi*IIIPlus)	1
14	**47915M**	Peel-Off Pulley Maintenance Kit (96*Xi*III/*Xi*IIIPlus)	1
15	**49790M**	DC Power Supply Maintenance Kit	1
15	**49990M**	DC Power Supply Maintenance Kit (220*Xi*IIIPlus)	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 (90/96/140/170*Xi*IIIPlus)	1
24	**33037M**	PCMCIA PCB Assembly	1

*Only available as HW30208 in quantities of 25
**Only available as HW01152 in quantities of 100

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only



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.**

NOTE: The two washers listed as item 25 must be installed.

Figure 5-3. Final Assembly *Xi*III*Plus*

Table 5-4. Final Assembly Mechanical 220*Xi*III (View 1)

Item	Part Number	Description	Qty
1	**46937**	Media Door with Window	1
1	**47077M**	Media Door Bi-fold with Window	1
2	*30392-004**	Screw, 6–32 × 0.25	18
3	**01861**	Supplies Label w/Logo	1
4	*22254*	Tip-Over Label	1
5	**47097**	Media Load Label	1
6	*32038*	Electronics Cover	1
7	**46396-006**	Screw, 6–32 × 0.37, Tr Ph S Bz	2
8	**30407-008**	Screw, 6–32 × 0.5, 3/64 Allen	4
9	*07257*†	Washer, 0.438 × 0.188 × 0.036	9
10	*44114***	Hex Screw HiLo, M4, 2 × 8	3
11	**22721M**	Media Cover Maintenance Kit	1
12	**22142**	Name Plate 220*Xi*III	1
12	**33150-4**	Name Plate 220*Xi*III*Plus*	1
13	**22021**	Panel Membrane Switch	1
14	**22492M**	Switch Panel Maintenance Kit,	1
15	**22342**	Old Style Front Cover, 220*Xi*III	1
15	**33036-4**	New Style Front Cover, 220*Xi*III*Plus*	1
16	**46755M**	Old Style LCD, Back Light 220*Xi*III*Plus* (Can be used in new style front cover)	1
16	**32043M**	New Style LCD, Back Light 220*Xi*III*Plus* (Can not be used in old style front cover)	1
17	**01130**	Hex Head Washer Nut, 6-32	4

Table 5-4. Final Assembly Mechanical 220*Xi*III (View 1)

Item	Part Number	Description	Qty
18	**22491**	Lower Media Trim Panel	1
19	**46837**	Spacer	2
20	*30256-B*††	Thumb Nut, 6–32 × 0.50 Brass	2
21	**22342**	Front Cover Bracket	1
22	*22049-1*	Support Bracket	1
23	**22304M**	Cover Damper Assembly Maintenance Kit	1
24	*44931*	E-Ring, 0.218 (5.5 mm)	2
25	**44288**	Washer, 0.50 × 0.25 × 0.031 (13 mm × 6.5 mm × .79 mm)	4
26	*22249*	Pivot Pin	2
27	*22202*	Connecting Link	1
28	*06319*†††	Screw 10–32 × 0.37	4
29	*30402-006*‡	Screw 6–32 × 0.37	3
30	*10474*‡‡	Split Washer M4	3
31	**22203**	Damper Mounting Bracket	1

*Only available as HW30392-004 in quantities of 50
**Only available as HW44114 in quantities of 50
†Only available as HW07257 in quantities of 25
††Only available as HW30256-B in quantities of 25
†††Only available as HW06319 in quantities of 25
‡Only available as HW30403-006 in quantities of 25
‡‡Only available as HW10474 in quantities of 25

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

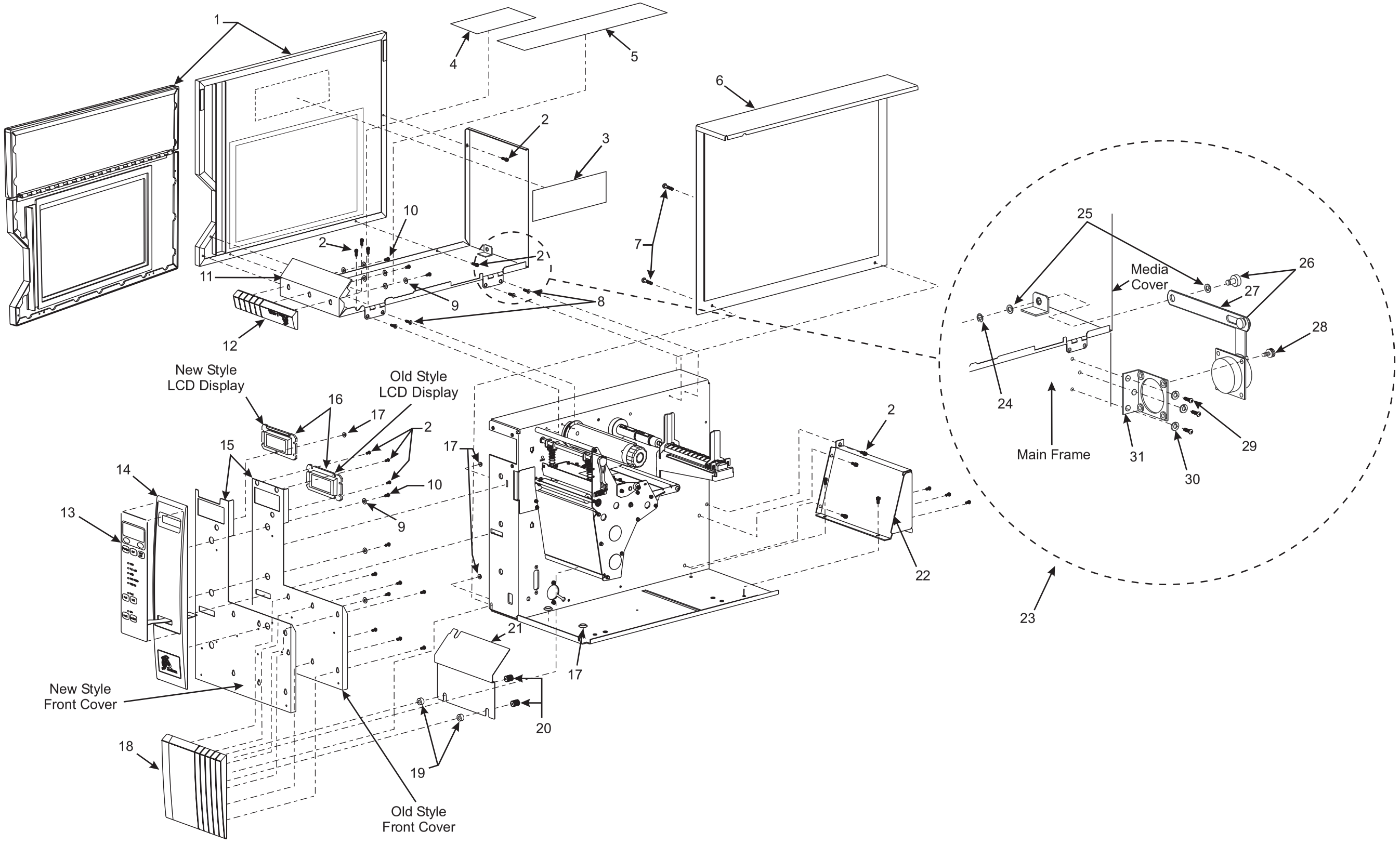


Figure 5-4. Final Assembly 220*Xi*III Mechanical

Table 5-5. Print Mechanism Assembly 90/96/140/170*Xi*III/*Xi*III*Plus* and R140 (View 1)

Item	Part Number	Description	Qty
1	*30392-004**	Screw, 6–32 × 0.25	13
2	REF	Tri Mount Shoulder	1
3	**46352M**	Flag Maintenance Kit	1
4	**01130**	Nut, 6–32 Hex Washer Head	1
5	**22613M**	Head Open Switch Assembly	1
6	**30266**	Head Lift Spring Stop	1
7	**40462**	Media Take-up Sensor Cover	2
8	*06268***	Lock Washer #6	3
9	*30392-006*†	Screw, 6–32 × 0.37	2
10	*48023*††	Bearing, 0.313 × 0.190 × 0.375	1
11	**47009-1**	Roller, 0.37 0.312 × 4.437 (90/96*Xi*III/*Xi*III*Plus*)	1
11	**47009-3**	Roller, 0.37 0.312 × 6.437 (140*Xi*III/*Xi*III*Plus* and R-140)	1
11	**47009-8**	Roller, 0.37 0.312 × 8.437 (170 *Xi*III/*Xi*III*Plus*)	1
12	**30007-1**	Roller, Shaft 0.187 × 4.5 (90/96*Xi*III/*Xi*III*Plus*)	1
12	**30007-3**	Roller, Shaft 0.187 × 5.60 (140*Xi*III/*Xi*III*Plus* and R-140)	1
12	**30007-8**	Roller, Shaft (170*Xi*III/*Xi*III*Plus*)	1
13	*44001*‡	Self-Tap Screw, M3.5 × 11mm w/5mm Hex Head	11
14	**40355M**	Platen Pulley Maintenance Assembly 90/170/220*Xi*III	1
14	**47356M**	Platen Pulley Maintenance Assembly 96*Xi*III	1
14	**33079-6M**	Platen Pulley Maintenance Assembly 96*Xi*III *Plus*	1
15	**38226**	Reflective Media Sensor Maintenance Kit	1
16	*30256-B*‡‡	Thumb Nut	1
17	**30305RM**	Media Guide Assembly (90/96*Xi*III/*Xi*III*Plus*)	1
17	**40305RM**	Media Guide Assembly (140*Xi*III/*Xi*III*Plus* and R-140)	1
17	**46305M**	Media Guide Assembly (170*Xi*III/*Xi*III*Plus*)	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*Xi*III/*Xi*III*Plus* I) (300 dpi)	1
23	**46198M**	Stepper Motor and Pulley Maintenance Kit (140/220*Xi*III/*Xi*III*Plus* and R-140) (203 dpi)	1
23	**43420M**	Stepper Motor Maintenance Kit (96*Xi*III) (600 dpi)	1
	47357M	Pulley Maintenance Kit (96*Xi*III) (600 dpi)	1
23	**43420M**	Stepper Motor Maintenance Kit (96*Xi*III*Plus*) (600 dpi)	1
	33084-6M	Pulley Maintenance Kit (96*Xi*III*Plus*) (600 dpi)	1
24	*30393-006*§	Screw, 8–32 × 0.37	4
25	**49688**	Flanged Ball Bearing, 0.5 × 0.250 × 0.125	2
26	*30105*§§	Nylon Bearing, 0.312 × 0.251 × 0.078	1
27	*46105*¶	Nylon Bearing, 0.312 × 0.251 × 0.140	1
28	**46808**	Peel/Tear-Off Bar (170 *Xi*III)/*Xi*III*Plus*	1
28	**47808**	Peel/Tear-Off Bar (90/96*Xi*III/*Xi*III*Plus*)	1
28	**48808**	Peel/Tear-Off Bar (140*Xi*III/*Xi*III*Plus* and R-140)	1

Table 5-5. Print Mechanism Assembly 90/96/140/170*Xi*III/*Xi*III*Plus* and R140 (View 1)

Item	Part Number	Description	Qty
29	**46278M**	Platen Roller Maintenance Kit, 0.780 × 6.73 (170*Xi*III/*Xi*III*Plus*)	1
29	**47601M**	Platen Roller Maintenance Kit, 0.788 × 3.588 (90/96*Xi*III/*Xi*III*Plus*)	1
29	**40038M**	Platen Roller Maintenance Kit, 0.78 × 5.213 (140*Xi*III/*Xi*III*Plus* and R-140)	1
30	**02252**	Crescent Ring, 0.250 Yel	2
31	**48076**	Upper Media Guide (Snap Plate) (90/96*Xi*III/*Xi*III*Plus*)	1
31	**48043-1**	Upper Media Guide (Snap Plate) (170*Xi*III/*Xi*III*Plus*)	1
31	**48043-2**	Upper Media Guide (Snap Plate) (140*Xi*III/*Xi*III*Plus*)	1
31	**48090M**	Upper Media Guide (Snap Plate) R-140	1
32	**Q10019**	E-Ring, Ext, 0.250	1
33	**38202M**	Pivot Bar Kit (170*Xi*III/*Xi*III*Plus*)	1
33	**47202M**	Pivot Bar Kit (90*Xi*III 96*Xi*III/*Xi*III*Plus*)	1
33	**48202M**	Pivot Bar Kit (140*Xi*III/*Xi*III*Plus* and R-140)	1
34	**35099M**	Toggle Assembly Maintenance	1 or 2
35	**46302-4M**	Media Sensor Maintenance Kit (170*Xi*III/*Xi*III*Plus*), (Includes Upper and Lower Sensor)	1
35	**47302-4M**	Media Sensor Maintenance Kit (90/96*Xi*III/*Xi*III*Plus*), (Includes Upper and Lower Sensor)	1
35	**48302-4M**	Media Sensor Maintenance Kit (140*Xi*III/*Xi*III*Plus* and R-140), (Includes Upper and Lower Sensor)	1
36	*48411*¶¶	Thumb Screw	2
37	**46691-1M**	Dancer Arm Assembly Maintenance Kit, w/Springs (90/96*Xi*III/*Xi*III*Plus*)	1
37	**46691-2M**	Dancer Arm Assembly Maintenance Kit, w/Springs (140*Xi*III/*Xi*III*Plus* and R-140)	1
37	**46691-3M**	Dancer Arm Assembly Maintenance Kit, w/Springs (170*Xi*III/*Xi*III*Plus*)	1
38	***33189***	Washer,	1
39	*07229*«	Wave Washer, 0.49 × 0.33 × 0.0075	1
40	*30423-003*««	Set Screw, 8-32 × 0.187	1
41	**40248**	Shaft Wear Plate	1
42	**40154**	Eccentric Pin	1
43	**30956**	Flat Washer 0.207 × 0.146 × 0.030	2
44	*30392-008*»	Screw, 6-32 × 0.50	1
45	**30826**	Hole Plug	2
46	*30255*	Hole Plug	1
47	**48888M**	RFID Maintenance Kit	1
48	*48062*	Screw, M3 × .5 6 Nylon	1

*Only available as HW30392-004 in quantities of 50
**Only available as HW06268 in quantities of 25
†Only available as HW30392-006 in quantities of 25
††Only available as HW48023 in quantities of 25
‡Only available as HW44001 in quantities of 25
‡‡Only available as HW30256-B in quantities of 25
§Only available as HW30393-006 in quantities of 25
§§Only available as HW30105 in quantities of 25
¶Only available as HW46105 in quantities of 25
¶¶Only available as HW48411 in quantities of 10
«Only available as HW07229 in quantities of 50
«Only available as HW30423-003 in quantities of 25
»Only available as HW30392-008 in quantities of 25

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

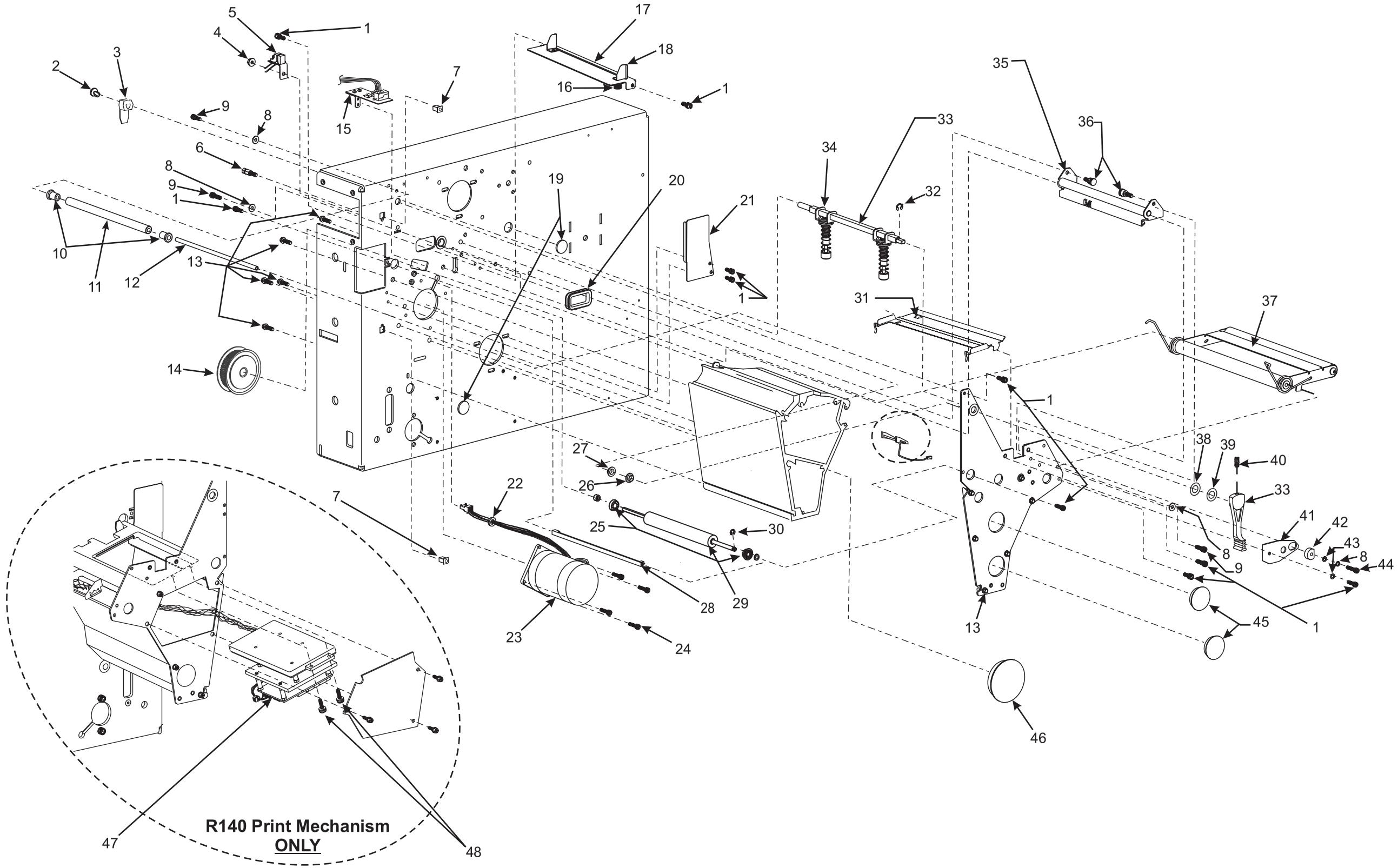


Figure 5-5. Print Mechanism for 90/96/140/170/*Xi*IIIPlus and R140 (View 1)

Table 5-6. Print Mechanism for 90/96/140/170*Xi*III/*Xi*III*Plus* and R140 (View 2)

Item	Part Number	Description	Qty
1	*30118**	E-Ring Ext, 0.500 × 0.042	1
2	**31336M**	RTU/MTU Pulley Maintenance Kit (90*Xi*III, 140*Xi*III, and 170*Xi*III)	1
2	**47358M**	RTU/MTU Pulley Maintenance Kit (96*Xi*III)	1
2	**33094-6M**	RTU/MTU Pulley Maintenance Kit (96*Xi*III*Plus*)	1
3	*30114***	Flat Washer, 0.76 × 0.51 × 0.03	1
4	*30115†*	Wave Washer, 0.740 × 0.520 × 0.080	1
5	*06250††*	E-Ring EXT, 0.312 Yel	1
6	*40027‡*	Torsion Spring	1
7	*30106‡‡*	Crescent Ring, External, 0.312	1
8	*30393-006*§*	Screw, 8–-32 × 0.37	6
9	*40193*§§*	Flat Washer, 0.406 × 0.172 × 0.048	3
10	*30405-006*	Cap Screw, 1/4–20 × 0.75	1
11	*30466*¶*	Washer, 0.26 × 0.63 × 0.06	1
12	*46386*	Media Supply Support	1
13	**46253M**	Media Supply Spindle Kit, 3–Inch (170*Xi*III/*Xi*III*Plus*) (Optional)	1
13	**46044M**	Media Supply Spindle Kit, 40mm (170*Xi*III/*Xi*III*Plus*) (Optional)	1
13	**47253M**	Media Supply Spindle Kit, 3–Inch (90/96*Xi*III/*Xi*III*Plus*) (Optional)	1
13	**47044M**	Media Supply Spindle Kit, 40mm (90/96*Xi*III/*Xi*III*Plus*) (Optional)	1
13	**48253M**	Media Supply Spindle Kit, 3–Inch (140*Xi*III/*Xi*III*Plus*) (Optional)	1
13	**48044M**	Media Supply Spindle Kit, 40mm (140*Xi*III/*Xi*III*Plus*) (Optional)	1
14	*30239*¶¶*	Washer, Crescent, 0.415 × 323 × 0.062	1
15	**46151M**	Spindle Ribbon Supply Maintenance Kit (170*Xi*III/*Xi*III*Plus*)	1
15	**47151M**	Spindle Ribbon Supply Maintenance Kit ((90/96*Xi*III/*Xi*III*Plus*)	1
15	**48151M**	Spindle Ribbon Supply Maintenance Kit ((140*Xi*III/*Xi*III*Plus*)	1
16	**46350**	Enhanced Ribbon Take-Up Upgrade Kit (170*Xi*III/*Xi*III*Plus*)	1
16	**47250**	Enhanced Ribbon Take-Up Upgrade Kit (90/96*Xi*III/*Xi*III*Plus*)	1
16	**48250**	Enhanced Ribbon Take-Up Upgrade Kit (140*Xi*III/*Xi*III*Plus*)	1
17	**46813-7M**	Compliant Roller Maintenance Kit (170*Xi*III/*Xi*III*Plus* Only)	1
18	*30392-004*¶¶¶*		2
19	**01130**	Hex Head Washer Nut, 6–32	3

*Only available as HW30118 in quantities of 25
**Only available as HW30114 in quantities of 25
†Only available as HW30115 in quantities of 25
††Only available as HW06250 in quantities of 25
‡Only available as HW40027 in quantities of 25
‡‡Only available as HW30106 in quantities of 25
§Only available as HW30393-006 in quantities of 25
§§Only available as HW40193 in quantities of 25
¶Only available as HW30466 in quantities of 25
¶¶Only available as HW30239 in quantities of 25
¶¶¶Only available as HW30392-004 in quantities of 50

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

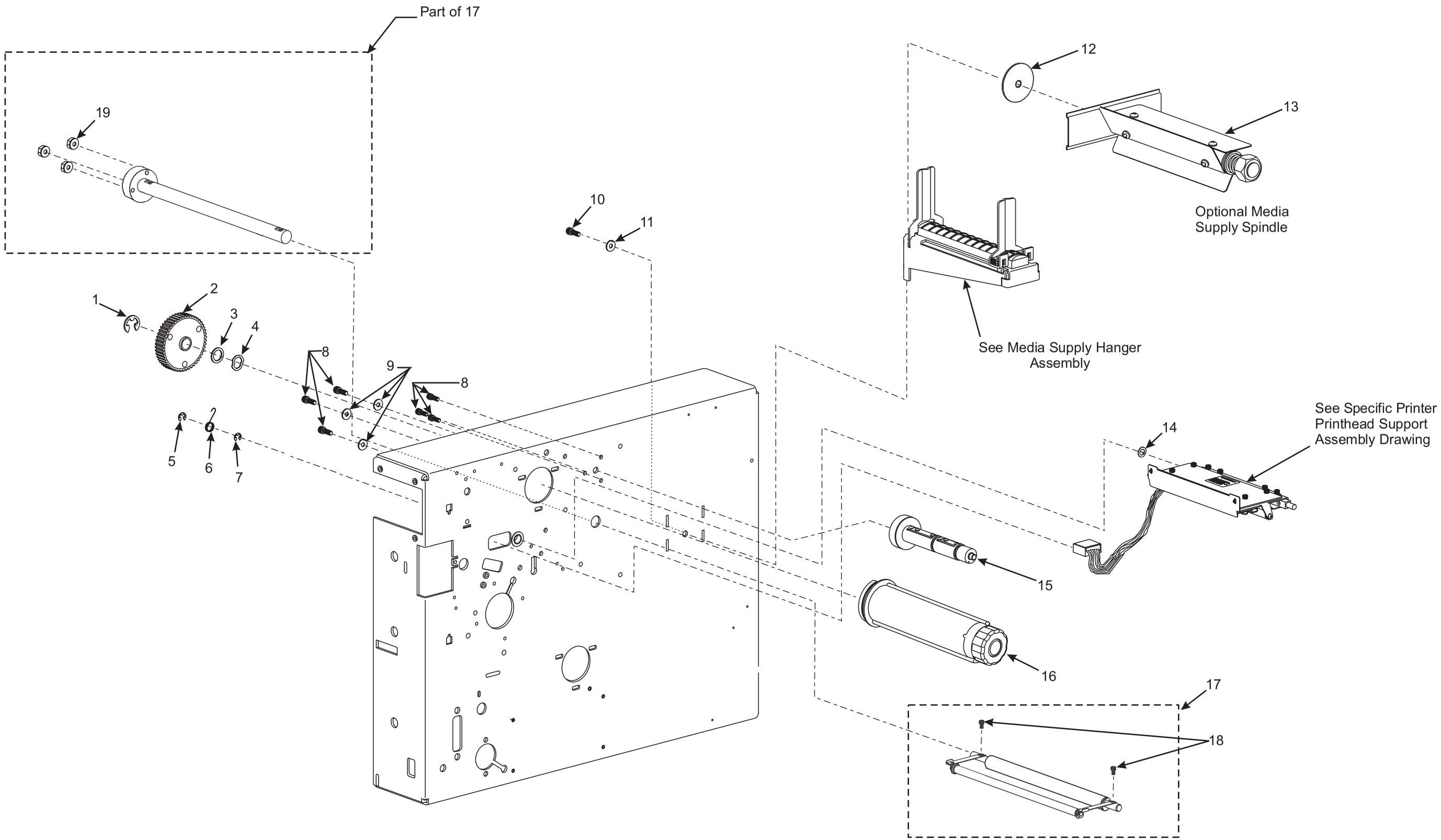


Figure 5-6. Print Mechanism for 90/96/140/170*Xi*III/*Xi*III*Plus* and R140 (View 2)

Table 5-7. Print Mechanism *Xi*III (View 3)

Item	Part Number	Description	Qty
1	**47004M**	Main Logic Board Maintenance Kit	1
2	*30391-003**	Screw, 4–40 × 0.19	4
3	**49036-1**	Option Board Cover	1
4	**49605-009**	Power Switch Cable	1
5	**49669**	Power Switch	1
6	**30406-006**	Screw, 4–40 × 0.375	2
7	**49673**	Power Entry w/Fuse and Ground Wire	1
8	**49699-01**	Cable (Brown)	1
9	**49699-06**	Cable (Blue)	1
10	**46392-006**	Truss Head Phillips Screw, 6–32 × 0.37	7
11	*01159***	Lock Washer, #6	1
12	**01130**	Hex Washer Head Nut, 6–32	3
13	*22416†*	Hex Standoff, 4–40	2
14	*01155††*	Lock Washer, #6	2
15	**07696**	Screw, 4-40 × 0.31	2
16	**30236**	Screw, 4-40 × 0.25	1
17	**49013**	Memory Card Cover, (PCMCIA)	1
18	*46148*	Rear Panel	1
19	**47020M**	Counter Board Maintenance Kit	1
20	**49313**	Top Spacer (AC Power Supply)	2
21	**01822**	Nut, 4–40	5
22	**49780M**	AC Power Supply Maintenance Kit	1

Table 5-7. Print Mechanism *Xi*III (View 3)

Item	Part Number	Description	Qty
23	*49285*	Insulation Pad (AC Power Supply)	1
24	**30253**	Options Cover Plate	1
25	**30023**	Cutter Cover Plate	1
26	**30405-006**	Screw, 1/4–20 × 0.38	1
27	*30466‡*	Washer, 0.26 × 0.63 × 0.06	1
28	*30393-006‡‡*	Screw, 8–32 × 0.37	5
28	*30393-010*	Screw, 8–32 × 0.62 (220*Xi*III)	3
29	**30407-004**	Screw, 6–32 × 0.25	2
30	**49990**	DC Power Supply Maintenance Kit (90/96/140/170*Xi*III)	1
30	**49790M**	DC Power Supply Maintenance Kit (220*Xi*III)	1
31	*46015§*	Bumper	4
32	*08754§§*	Eye, 0.183 × 0.157 × 0.187	4
33	*07435¶*	Hex Lock Screw, 6–32 × 0.37	4
34	**49286**	Insulation Pad (DC Power Supply)	1

*Only available as HW30391-003 in quantities of 25
**Only available as HW01159 in quantities of 100
†Only available as HW22416 in quantities of 25
††Only available as HW01155 in quantities of 100
‡Only available as HW30466 in quantities of 25
‡‡Only available as HW30393-006 in quantities of 25
§Only available as HW46015 in quantities of 25
§§Only available as HW08754 in quantities of 100
¶Only available as HW07435 in quantities of 100

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

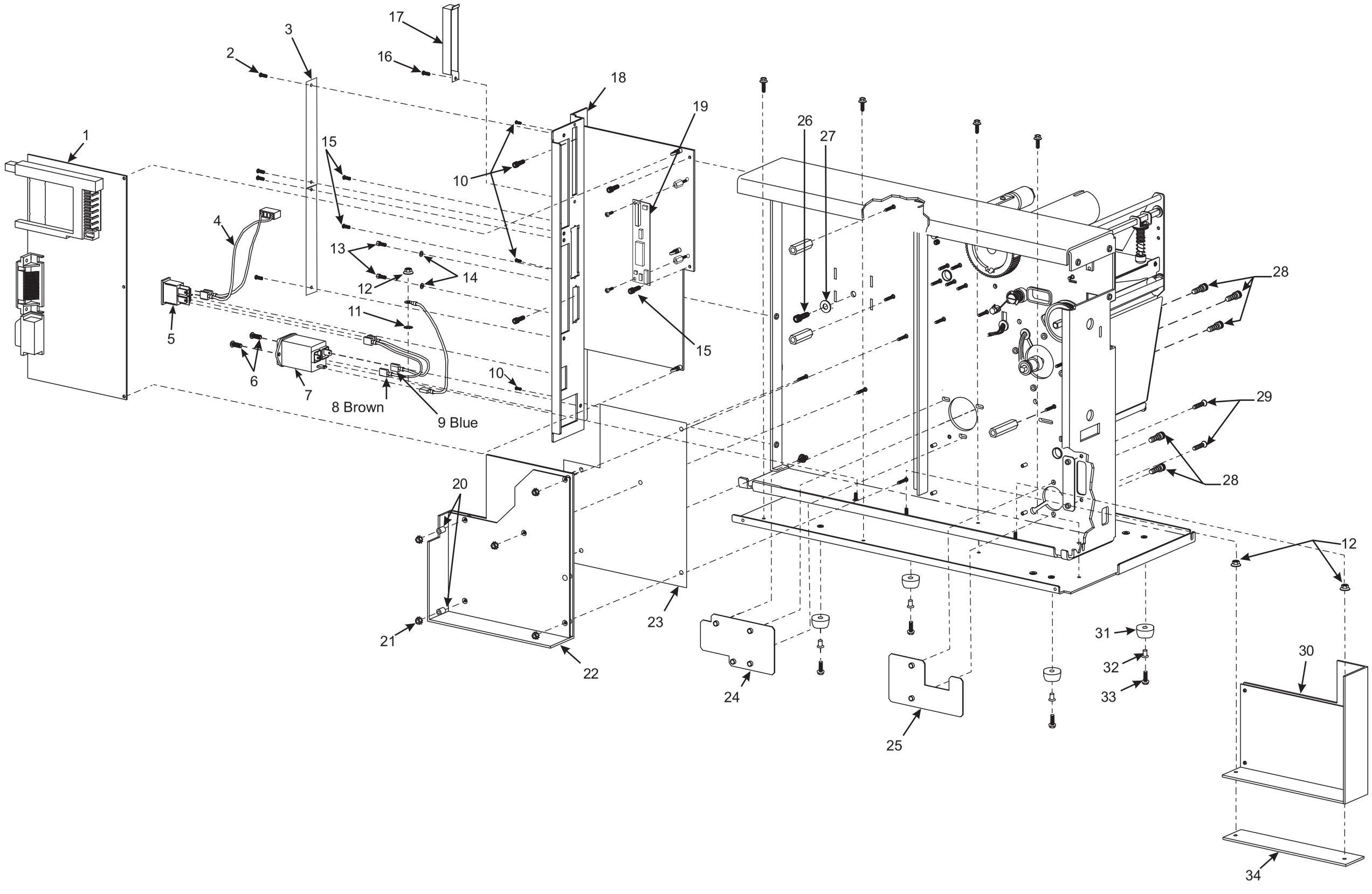


Figure 5-7. Print Mechanism *Xi*III Printers (View 3)

Table 5-8. Print Mechanism *Xi*III*Plus* (View 3)

Item	Part Number	Description	Qty
1	**38000M**	Main Logic Board Maintenance Kit	1
2	*30391-003**	Screw, 4-40 × 0.19	4
3	**49036-1**	Option Board Cover	1
4	*33127-012*	Power Switch Cable	1
5	*33123*	Power Switch	1
6	**30406-006**	Screw, 4-40 × 0.375	2
7	**49673**	Power Entry w/Fuse and Ground Wire	1
8	*33147-01*	Cable (Brown)	1
9	*33147-06*	Cable (Blue)	1
10	**46392-006**	Truss Head Phillips Screw 6-32 × 0.37	7
11	*01159***	Hex Washer Head Lock Washer #6	1
12	**01130**	Nut, 6-32	3
13	*22416†*	Hex Standoff, 4-40	2
14	*01155††*	Lock Washer, #6	2
15	**07696**	Screw, 4-40 × 0.31	2
16	**33112**	Memory Card Cover (PCMCIA)	1
17	*33104*	Rear Panel	1
18	*06319†††*	Screw, 10-32 × 0.37 Hex	4
19	**49313**	Top Spacer (AC Power Supply)	2
20	**01822**	Nut, 4-40	5
21	**49780M**	AC Power Supply Maintenance Kit	1
22	**49285**	Insulation Pad (AC Power Supply)	1
23	**30253**	Options Cover Plate	1

Table 5-8. Print Mechanism *Xi*III*Plus* (View 3)

Item	Part Number	Description	Qty
24	**46254**	Cutter Cover Plate	1
25	*33325-1*	Spacer 4-40 × 1.37	1
26	**30405-006**	Screw, 1/4-20 × 0.38	1
27	*30466‡*	Washer, 0.26 × 0.63 × 0.06	1
28	*46325-5*	Spacer, 6-32 × 1.56 × 0.357	1
29	*30393-006‡‡*	Screw, 8-32 × 0.37	5
30	*30393-010*	Screw, 8-32 × 0.62 (220*Xi*III*Plus*)	3
30	*30407-004*	Screw, 6-32 × 0.25	2
31	*46015§*	Bumper	4
32	*07435¶*	Hex Lock Screw, 6-32 × 0.37	4
33	**49990M**	DC Power Supply Maintenance Kit (90/96/140/170*Xi*III*Plus*)	1
33	**49790M**	DC Power Supply Maintenance Kit (220*Xi*III*Plus*)	1
34	**49286**	Insulation Pad (DC Power Supply)	1
35	**30236**	Screw, 4-40 × 0.25	2
36	*46646*	Spacer	2
37	**33037**	PCMCIA Board	1

*Only available as HW30391-003 in quantities of 25
**Only available as HW01159 in quantities of 100
†Only available as HW22416 in quantities of 25
††Only available as HW01155 in quantities of 100
†††Only available as HW06319 in quantities of 25
‡Only available as HW30466 in quantities of 25
‡‡Only available as HW30393-006 in quantities of 25
§Only available as HW46015 in quantities of 25
§§Only available as HW08754 in quantities of 100
¶Only available as HW07435 in quantities of 100

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

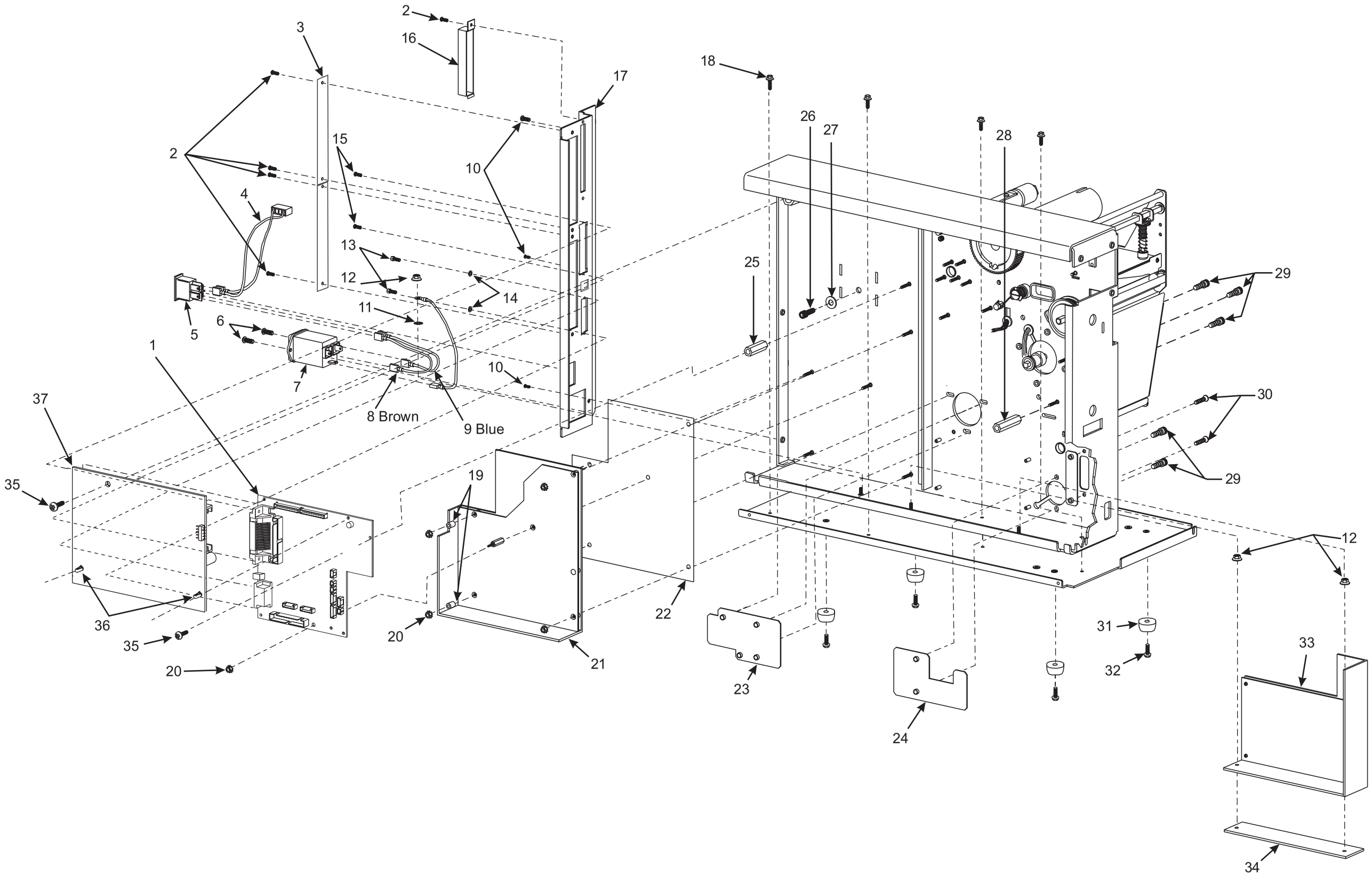


Figure 5-8. Print Mechanism *Xi*IIII*Plus* (View 3)

Table 5-9. Print Mechanism 220*Xi*III (View 1)

Item	Part Number	Description	Qty
1	**46091**	Grommet (for 1.25 × 0.625 cutout)	2
2	*30392-004**	Screw, 6-32 × 0.25	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	*46128***	Flat Washer, Nylon, 0.505 × 0.192 × 0.015	2
9	*48023*†	Bearing, 0.313 × 0.190 × 0.375	2
10	**30009-10**	Roller 0.37 × 0.312	1
11	**30007-9**	Roller Shaft	1
12	*30392-008*††	Screw, 6-32 × 0.50	2
13	*30392-006*‡	Screw, 6-32 × 0.25	2
14	*06268*‡‡	Lock Washer, #6	3
15	**40462**	Take-Label Sensor Cover	2
16	**22266**	Spring Stop	1
17	*44001*§	Self-Tap Screw, 3.5 × 11 mm with 5 mm Hex Head	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	*30256-B*§§	Thumb Nut, Brass, 6-32 × 0.50	2
23	**22305M**	Media Guide Maintenance Kit	1
24	**30033**	Adjustable Media Guide	1
25	**22304M**	Damper Cover Maintenance Kit	1
26	*30402-006*¶	Screw, 6-32 × 0.37	1
27	**46267**	Hole Plug, 0.5 Diameter × 0.125 Thick	3
28	**46224**	Rubber Grommet, 0.312 × 0.34 × 0.109	2
29	**31493M**	DC Stepper Motor Maintenance Kit	1
30	*30393-006*¶¶	Screw, 8-32 × 0.37	1
31	**22808**	Peel/Tear-Off Bar	1
32	**49688**	Flange Ball Bearing, 0.5 × 0.250 × 0.125	2
33	*30105*«	Nylon Bearing, 0.312 × 0.251 × 0.078	1
34	*46105*««	Nylon Bearing, 0.312 × 0.251 × 0.140	1
35	*30247*¤	Flat Washer, 0.42 × 0.260 × 0.0747	1
36	**02252**	Crescent Ring, 0.250	1

Table 5-9. Print Mechanism 220*Xi*III (View 1)

Item	Part Number	Description	Qty
37	**22101M**	Platen Roller Maintenance Kit, 0.780 × 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	*48411*»	Thumb Screw	2
44	**22391M**	Dancer Arm Assembly, w/Springs	1
45	*33189*	*Washer*	1
46	*07229*»»	Curved Washer, 0.49 × 0.33 × 0.0075	1
47	*30423-003*¤	Set Screw 8-32 × 0.187	1
48	*30909*	Handle	1
49	**40248**	Wear Shaft Plate	1
50	**40154**	Eccentric Pin	1
51	**30956**	Flat Washer, 0.207 × 0.146 × 0.030	2
52	**30826**	Hole Plug	2
53	**30236**	Screw, 40/40	1
54	**30494**	Washer, 0.32 × 0.119 × 0.062	1
55	**40031**	Sensor Wire Cover	1
56	*46663*	Upper Media Sensor Assembly	1
57	**22302M**	Media Sensors Maintenance Kit	1
58	*46664*	Lower Media Sensor Assembly	1
59	*44931*	E-ring, 0.218	2
60	**44288**	Washer, 0.50 × 0.25 × 0.031	4
61	*22249*	Pivot Pin	2

*Only available as HW30392-004 in quantities of 50
**Only available as HW46128 in quantities of 25
†Only available as HW48023 in quantities of 25
††Only available as HW30392-008 in quantities of 25
‡Only available as HW30392-006 in quantities of 25
‡‡Only available as HW06268 in quantities of 25
§Only available as HW44001 in quantities of 25
§§Only available as HW30256-B in quantities of 25
¶Only available as HW30402-006 in quantities of 25
¶¶Only available as HW30393-006 in quantities of 25
«Only available as HW30105 in quantities of 25
««Only available as HW46105 in quantities of 25
»Only available as HW48411 in quantities of 10
»»Only available as HW07229 in quantities of 50
¤Only available as HW30247 in quantities of 25

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

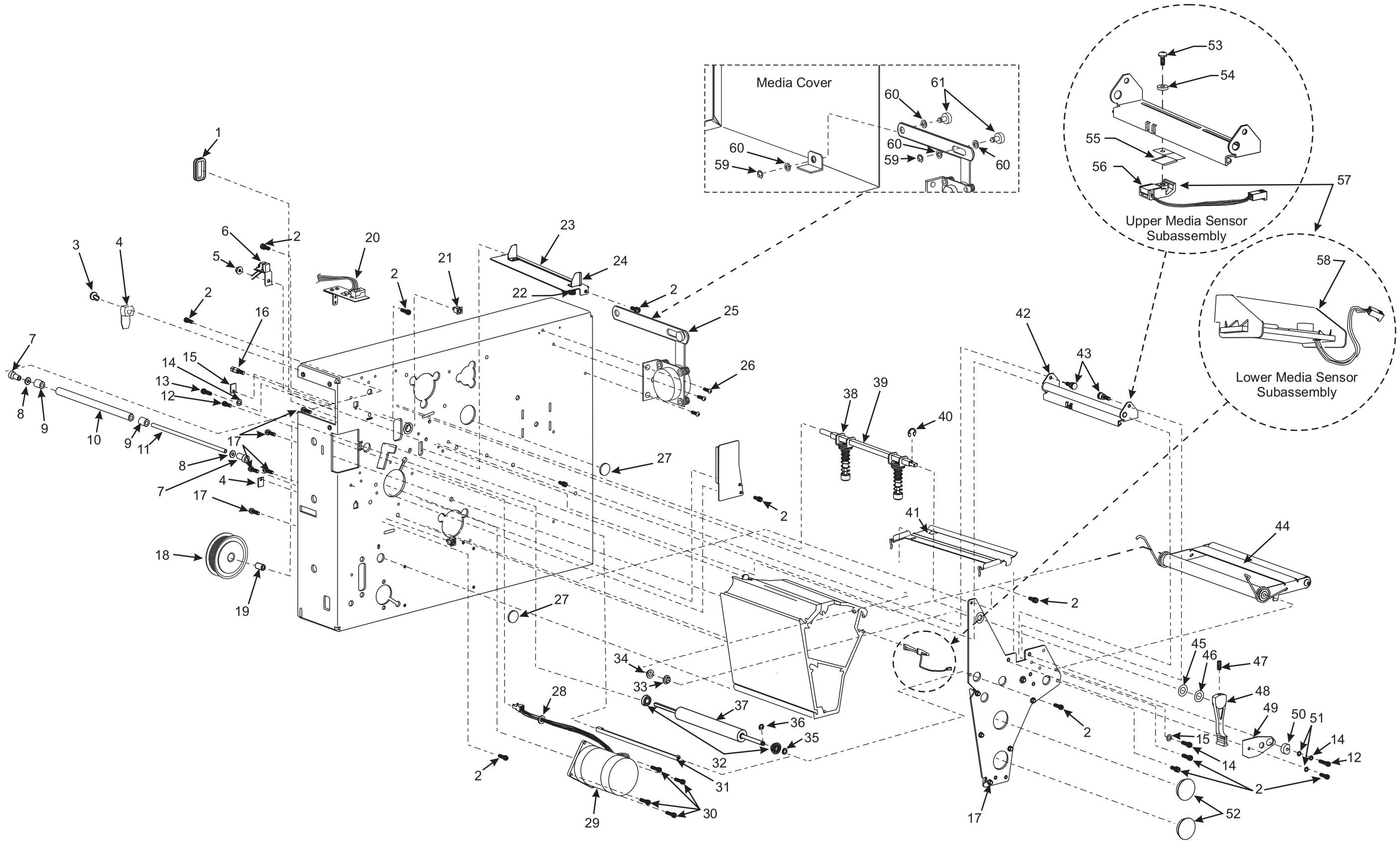


Figure 5-9. Print Mechanism 220*Xi*III (View 1)

Table 5-10. Print Mechanism 220*Xi*III/*Xi*III*Plus* View 2

Item	Part Number	Description	Qty
1	*30118**	E-ring 0.500 × 0.042	1
2	**31336M**	RTU/MTU Pulley Maintenance Kit	1
3	*30114***	Flat Washer 0.76 × 0.51 × 0.03	1
4	*30115†*	Wave Washer 0.740 × 0.520 × 0.080	1
5	*06250††*	E-ring 0.312 Yel	1
6	*40027‡*	Torsion Spring	1
7	*30106‡‡*	Crescent Ring, External 0.312	1
8	**30265**	Idler Pulley	1
9	**22207**	Idler Pulley Shaft	1
10	*30393-006*§*	Screw, 8-32 × 0.37	5
11	*40193*§§*	Flat Washer 0.406 × 0.172 × 0.048	4
12	**30405-006**	Srew, 1/4-20 × 0.38	1
13	*30466*¶*	Washer, 0.26 × 0.63 × 0.06	1
14	*30392-004*¶¶*	Screw, 6-32 × 0.25	1
15	*22334*	Media Supply Support	1
16	**22253M**	Media Supply Spindle Maintenance Kit	1
17	*30239«*	Crescent Washer 0.415 × 0.323 × 0.062	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	*30392-014*	Screw, 6-32 × 0.87	3

*Only available as HW30118 in quantities of 25
**Only available as HW30114 in quantities of 25
†Only available as HW30115 in quantities of 25
††Only available as HW06250 in quantities of 25
‡Only available as HW40027 in quantities of 25
‡‡Only available as HW30106 in quantities of 25
§Only available as HW30393-006 in quantities of 25
§§Only available as HW40193 in quantities of 25
¶Only available as HW30466 in quantities of 25
¶¶Only available as HW30392-004 in quantities of 50
«Only available as HW30239 in quantities of 25

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

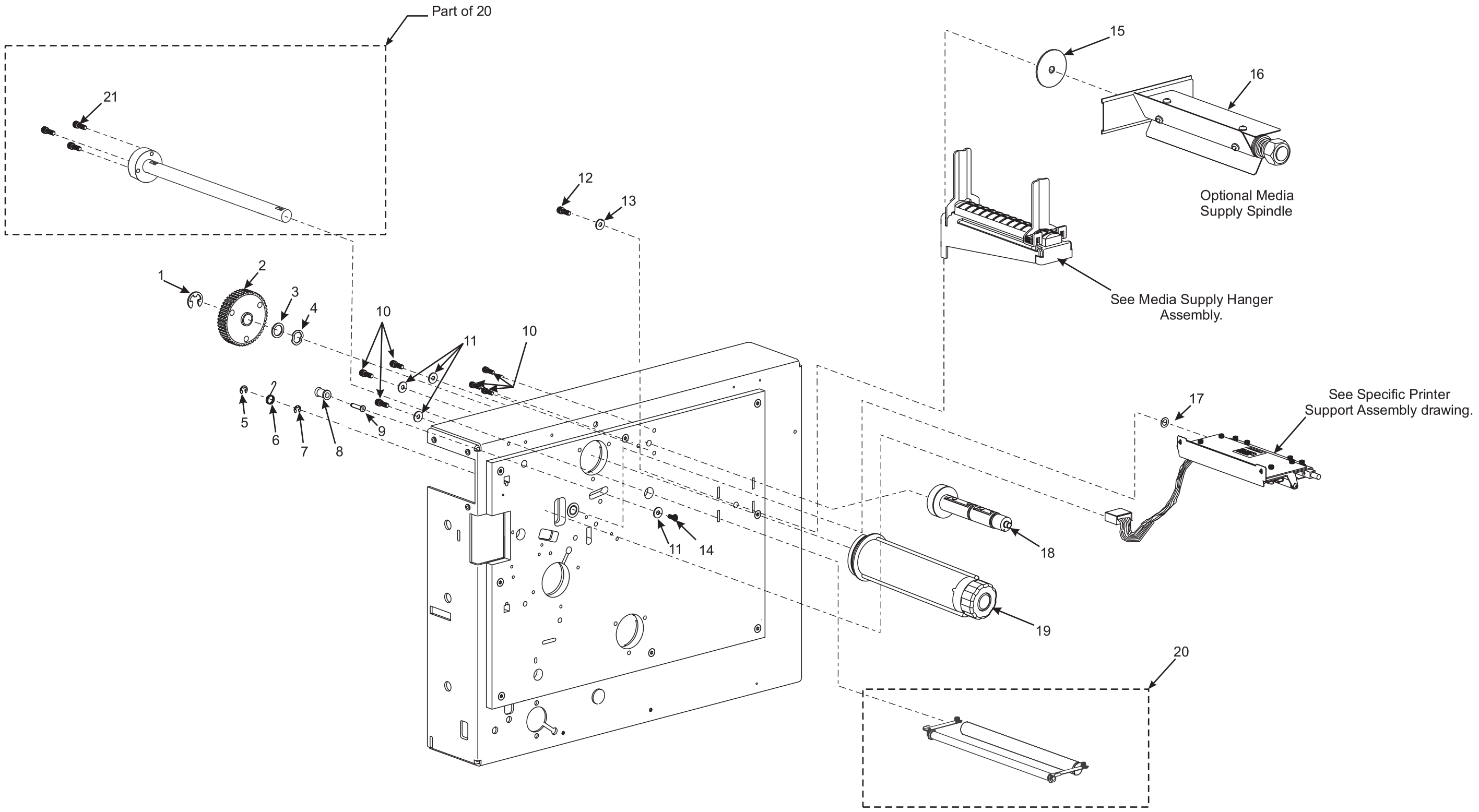


Figure 5-10. Print Mechanism 220*Xi*III/*Xi*III*Plus* View 2

Table 5-11. Printhead Support Assembly 90/96/140/170*Xi*III/*Xi*III*Plus* and R-140

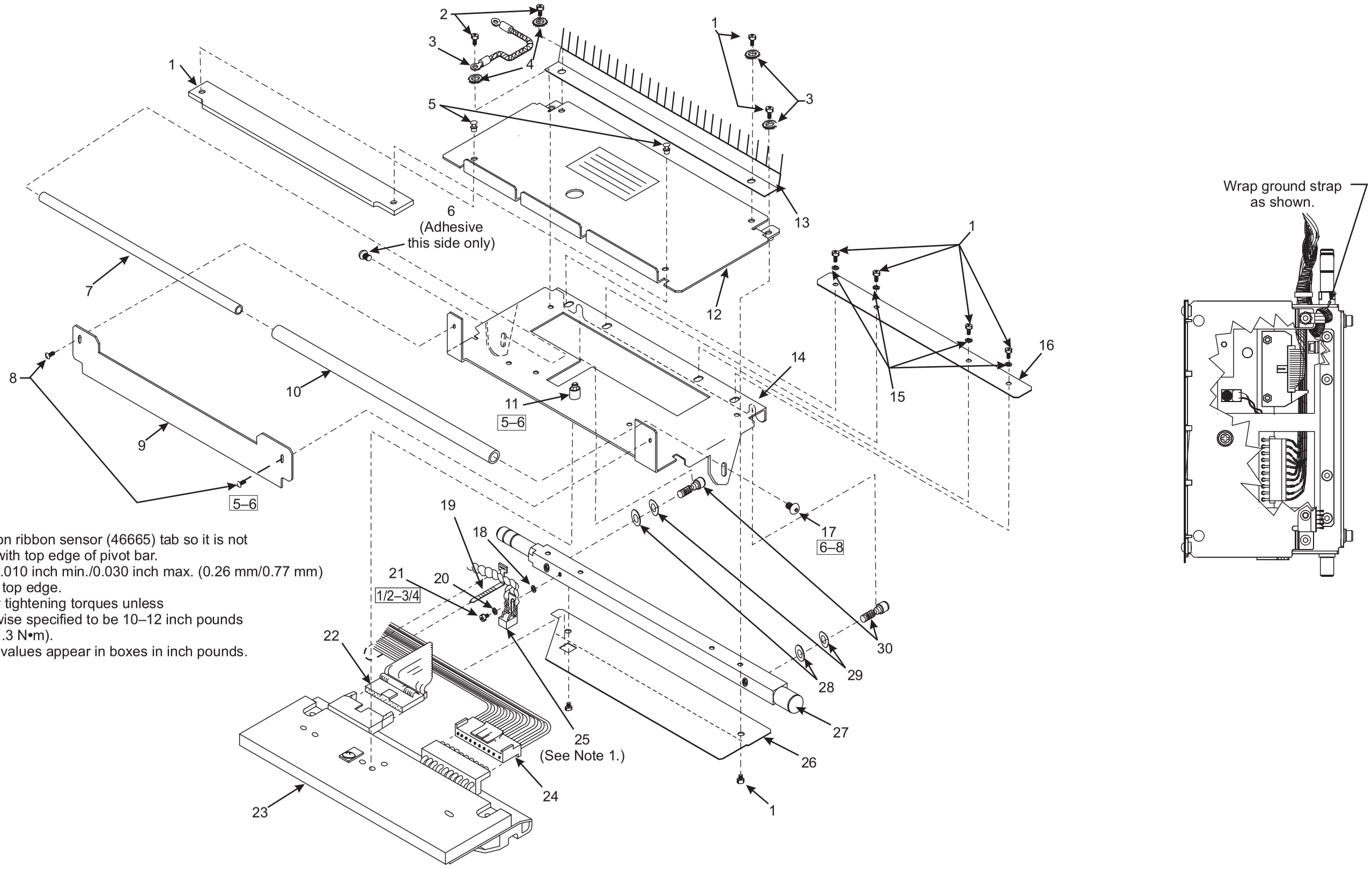
Item	Part Number	Description	Qty
1	**47181**	Pressure Pad (90/96*Xi*III/*Xi*III*Plus*)	1
1	**48181**	Pressure Pad (140*Xi*III/*Xi*III*Plus* and R-140)	1
1	**46181**	Pressure Pad (170*Xi*III/*Xi*III*Plus*)	1
2	*30392-004**	Screw, 6-32 × 0.25	10
3	**30781**	Printhead Ground Cable	1
4	*01159***	Flat Washer, 0.250 × 0.125 × 0.028	4
5	*48182†*	Snap Rivet, 0.138 × 0.08 Plastic	2
6	**30314R**	Adhesive	1
6	**30007-5**	Roller Shaft, 0.187 × 4.105 (90/96*Xi*III/*Xi*III*Plus*)	1
6	**30007-4**	Roller Shaft, 0.187 × 5.875 (140*Xi*III/*Xi*III*Plus* and R-140)	1
7	**30007-7**	Roller Shaft (170*Xi*III/*Xi*III*Plus*)	1
8	**46882-003**	Screw, 4-40 × 3/16	2
8	**47017**	Ribbon Strip Plate (90/96*Xi*III/*Xi*III*Plus*)	1
8	**48017**	Ribbon Strip Plate (140*Xi*III/*Xi*III*Plus* and R-140)	1
9	**46017**	Ribbon Strip Plate (170*Xi*III/*Xi*III*Plus*)	1
9	**48099-2**	Roller, 0.332 × 0.212 × 4.050 (90/96*Xi*III/*Xi*III*Plus*)	1
9	**48099-5**	Roller, 0.332 × 0.212 × 5.820 (140*Xi*III/*Xi*III*Plus* and R-140)	1
10	**48099-7**	Roller, 0.332 × 0.212 × 7.796 (170*Xi*III/*Xi*III*Plus*)	1
11	**22016**	Captive Fastener M3 Press–In	1
11	**47212**	Pressure Plate (90/96*Xi*III/*Xi*III*Plus*)	1
11	**48215**	Pressure Plate (140*Xi*III/*Xi*III*Plus* and R-140)	1
12	**46170**	Pressure Plate (170*Xi*III/*Xi*III*Plus*)	1
12	**47099**	Static Brush (90/96*Xi*III/*Xi*III*Plus*)	1
12	**31899**	Static Brush (140*Xi*III/*Xi*III*Plus* and R-140)	1
13	**46173**	Static Brush (170*Xi*III/*Xi*III*Plus*)	1
13	**47102**	Head Mounting Bracket (90*Xi*III/*Xi*III*Plus*)	1
13	**47105**	Head Mounting Bracket (96*Xi*III/*Xi*III*Plus*)	1
13	**48003**	Head Mounting Bracket (140*Xi*III/*Xi*III*Plus*)	1
14	**46169**	Head Mounting Bracket (170*Xi*III/*Xi*III*Plus*)	1
15	*06268††*	Washer, #6 Lock	4
15	**30013**	Washer Plate (90/96*Xi*III/*Xi*III*Plus*)	1
15	*40013*	Washer Plate (140*Xi*III/*Xi*III*Plus* and R-140)	1
16	**46013**	Washer Plate (170*Xi*III/*Xi*III*Plus*)	1
17	*30402-006‡*	Screw, 6-32 × 0.37	1

Table 5-11. Printhead Support Assembly 90/96/140/170*Xi*III/*Xi*III*Plus* and R-140

Item	Part Number	Description	Qty
18	**30494**	Washer, 0.320 × 0.119 × 0.062	1
19	**Q06020**	Cable-Tie, 0.09 W × 3.62 L	1
20	*01153‡‡*	Flat Washer, 0.250 × 0.125 × 0.028	1
21	*30391-003§*	Screw, 4-40 × 0.19	1
21	**47641**	Printhead Data Cable (90/96*Xi*III)	1
21	**46803M**	Printhead Data Cable Kit (96*Xi*III)	1
21	**33027**	Printhead Data Cable Kit (90*Xi*III*Plus*)	1
21	**46682**	Printhead Data Cable (140/170*Xi*III/and R-140)	1
22	**33028**	Printhead Data Cable (96/140/170*Xi*III*Plus*)	1
22	**47000M**	Printhead Maintenance Kit (90*Xi*III/*Xi*III*Plus*)	1
22	**47500M**	Printhead Maintenance Kit (96*Xi*III/*Xi*III*Plus*)	1
22	**48000M**	Printhead Maintenance Kit (140*Xi*III/*Xi*III*Plus* and R-140)	1
23	**46500M**	Printhead Maintenance Kit (170*Xi*III/*Xi*III*Plus*)	1
23	**47640**	Printhead Power Cable (90/96*Xi*III/*Xi*III*Plus*)	1
23	**49640-021**	Printhead Power Cable (140*Xi*III/*Xi*III*Plus* and R-140)	1
24	**49640-023**	Printhead Power Cable (170*Xi*III/*Xi*III*Plus*)	1
25	**46665M**	Ribbon Sensor Maintenance Kit	1
25	**47014**	Guard Plate (90/96*Xi*III/*Xi*III*Plus*)	1
25	**48014**	Guard Plate (140*Xi*III/*Xi*III*Plus* and R-140)	1
26	**46174**	Guard Plate (70*Xi*III/*Xi*III*Plus*)	1
26	*47162*	Head Pivot Bar (90/96*Xi*III/*Xi*III*Plus*)	1
26	**48162**	Head Pivot Bar (140*Xi*III/*Xi*III*Plus* and R-140)	1
27	**46002-1**	Head Pivot Bar (170*Xi*III/*Xi*III*Plus*)	1
28	*40193§§*	Flat Washer 0.406 × 0.172 × 0.048	2
29	*40194¶*	Curved Washer, 0.344 × 0.172 × 0.006	2
30	*46481-1¶¶*	Adjustment Screw M3.5	2

*Only available as HW30392-004 in quantities of 50
**Only available as HW01159 in quantities of 100
†Only available as HW48182 in quantities of 10
††Only available as HW06268 in quantities of 25
‡Only available as HW30402-006 in quantities of 25
‡‡Only available as HW01153 in quantities of 100
§Only available as HW30391-003 in quantities of 25
§§Only available as HW40193 in quantities of 25
¶Only available as HW40194 in quantities of 25
¶¶Only available as HW46481-1 in quantities of 5

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only



Notes:
1. Position ribbon sensor (46665) tab so it is not flush with top edge of pivot bar. Gap 0.010 inch min./0.030 inch max. (0.26 mm/0.77 mm) below top edge.
2. Screw tightening torques unless otherwise specified to be 10–12 inch pounds (1.1–1.3 N•m). Other values appear in boxes in inch pounds.

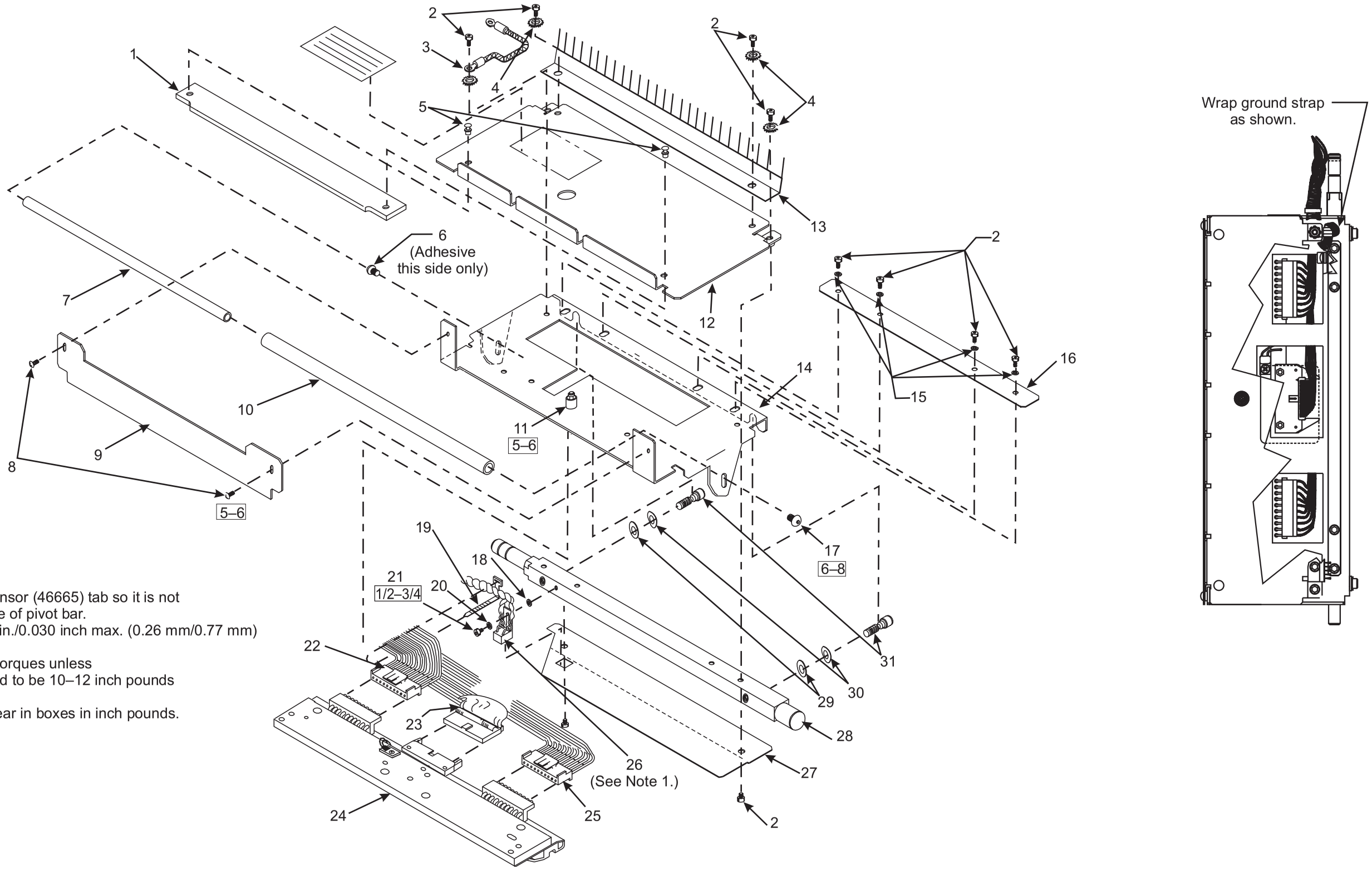
Figure 5-11. Printhead Support Assembly 90/96*Xi*III, 140*Xi*III, and 170*Xi*III

Table 5-12. Printhead Support Assembly 220*Xi*III/*Xi*III*Plus*

Item	Part Number	Description	Qty
1	**22181**	Pressure Pad	1
2	*30392-004**	Screw, 6-32 × 0.25	10
3	**30781**	Printhead Ground Cable	1
4	*01159***	Flat Washer 0.250 × 0.125 × 0.028	4
5	*48182†*	Rivet Snap 0.138 × 0.08 Plastic	2
6	**30314R**	Adhesive	1
7	**30007-8**	Roller Shaft	1
8	**46882-003**	Screw, 4-40 × 0.19	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	*06268††*	Lock Washer, #6	7
16	**22013**	Washer Plate	1
17	*30402-006‡*	Screw, 6-32 × 0.37	1
18	**30494**	Washer, 0.320 × 0.119 × 0.062	1
19	**Q06020**	Cable-Tie 0.09 W × 3.63 L	1
20	*01153‡‡*	Washer, Flat 0.250 × 0.125 × 0.028	1
21	*30391-003§*	Screw, 4-40 × 0.19	1
22	**22640-020**	Printhead Data Cable	1
23	**22602**	Printhead Data Cable	1
24	**22000M**	Maintenance Kit Printhead	1
25	**22640-025**	Printhead Power Cable	1
26	**46665M**	Ribbon Sensor Maintenance Kit	1
27	**22174**	Guard Plate	1
28	**22002**	Head Pivot Bar	1
29	*40193§§*	Flat Washer, 0.406 × 0.172 × 0.048	2
30	*40194¶*	Curved Washer 0.312 × 0.144 × 0.016	2
31	*46481-1¶¶*	Adjustment Screw 6-32	2

*Only available as HW30392-004 in quantities of 50
**Only available as HW01159 in quantities of 100
†Only available as HW48182 in quantities of 10
††Only available as HW06268 in quantities of 25
‡Only available as HW30402-006 in quantities of 25
‡‡Only available as HW01153 in quantities of 100
§Only available as HW30391-003 in quantities of 25
§§Only available as HW40193 in quantities of 25
¶Only available as HW40194 in quantities of 25
¶¶Only available as HW46481-1 in quantities of 5

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only



Notes:
1. Position ribbon sensor (46665) tab so it is not flush with top edge of pivot bar.
   Gap 0.010 inch min./0.030 inch max. (0.26 mm/0.77 mm) below top edge.
2. Screw tightening torques unless otherwise specified to be 10–12 inch pounds (1.1–1.3 N•m).
   Other values appear in boxes in inch pounds.

Figure 5-12. Printhead Support Assembly 220*Xi*III/*Xi*III*Plus*

Table 5-13. Media Supply Hanger

Item	Part Number	Description	Qty
1	**47153M**	Media Hanger Maintenance Kit (90/96*Xi*III/*Xi*III*Plus)*	1
1	**48153-4M**	Media Hanger (Maintenance Kit (140*Xi*III/*Xi*III*Plus* and R-140)	1
1	**46153M**	Media Hanger Maintenance Kit (170*Xi*III/*Xi*III*Plus)*	1
1	**22153M**	Media Hanger Maintenance Kit (220*Xi*III/*Xi*III*Plus*)	1
2	*48417*	Bearing Block	2
3	*22395*	Outer Edge Guide	1
4	**22152M**	Link and Pad Maintenance Kit	1

Bold **Part available for purchase**
Light italic = *Part not available for purchase, listed and shown for reference only*

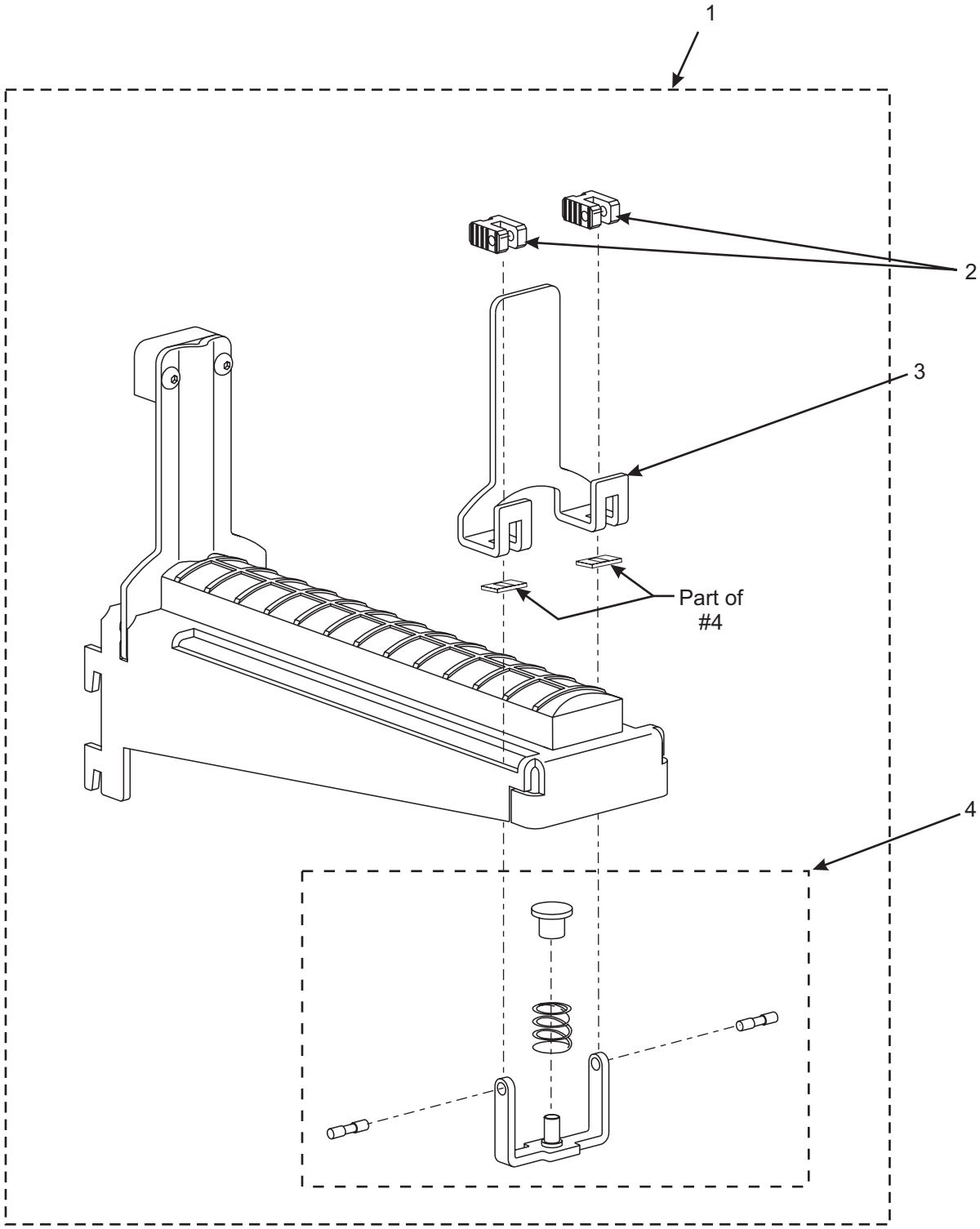


Figure 5-13. Media Supply Hanger

Table 5-14. Optional Media Supply Spindle

***NOTE: Optional 40 mm media supply spindle not available for 220Xi*III.**

Item	Part Number	Description	Qty
1	*30140**	Screw, 6–32 × 0.125	6
2	**46068**	Compression Spring	1
3	**46397-625**	Locking Nut, 5/8 × 18	1
4	*30466***	Washer, 0.26 × 0.63 × 0.06	1
5	*30395-012*	Screw, 1/4–20 × 0.75	1
6	**47253M**	Media Supply Spindle 3–inch Spindle Kit Complete (90/96*X*III/*Xi*III*Plus*)	1
6	**47044M**	40 mm Spindle Complete Kit, (90/96*Xi*III/*Xi*III*Plus*)	1
6	**48253M**	Media Supply Spindle 3–inch Spindle Complete Kit (140*Xi*III/*Xi*III*Plus* and R-140)	1
6	**48044M**	40 mm Spindle Complete Kit (140*Xi*III/*Xi*III*Plus* and R-140)	1
6	**46253M**	Media Supply Spindle 3–inch Spindle Complete Kit (170*Xi*III/*Xi*III*Plus*)	1
6	**46044M**	40 mm Spindle Complete Kit (170*Xi*III/*Xi*III*Plus*)	1
6	**22253M**	Media Supply Spindle 3–inch Spindle Complete Kit (220*Xi*III/*Xi*III*Plus*)	1

**Only available as HW30140 in quantities of 25
**Only available as HW30006 in quantities of 10

Bold = Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

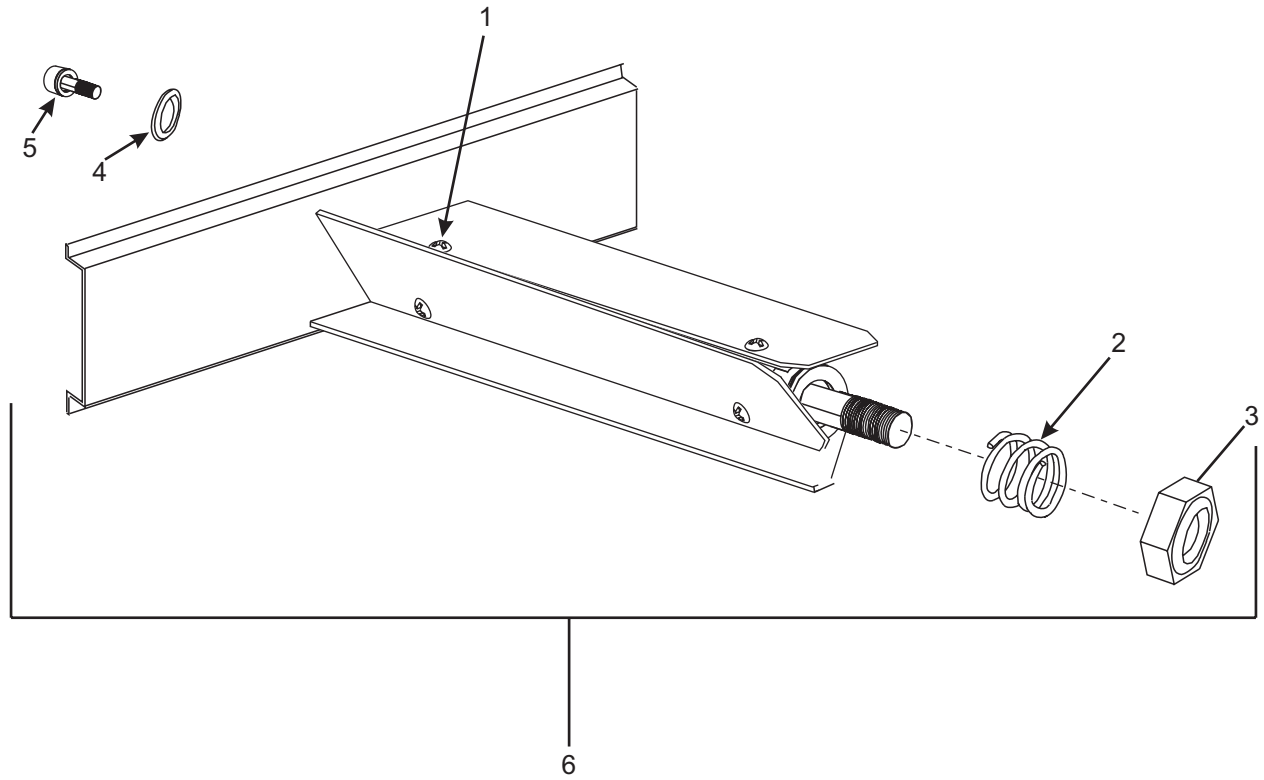


Figure 5-14. Optional Media Supply Spindle

Table 5-15. Compliant Roller Assembly

Item	Part Number	Description	Qty
1	**01130**	Hex Head Washer Nut, 6–32 (170*Xi*III/*Xi*III*Plus*)	3
2	**30392-014**	Screw, 6–32 × 0.87 (220*Xi*III/*Xi*III*Plus*)	3
3	*30392-004**	Screw, 6–32 × 0.25	2
4	**46127**	Washer, 0.312 × 0.153 × 0.030	2
5	**22213-7M**	Compliant Roller Assembly Maintenance Kit (220*Xi*III/*Xi*III*Plus*)	1
5	**46813-7M**	Compliant Roller Assembly Maintenance Kit (170*Xi*III/*Xi*III*Plus*)	1
6	*46424-1*	Shaft, 7.98 (170*Xi*III/*Xi*III*Plus*)	1
6	*30007-11*	Roller Shaft, 0.185 (220*Xi*III/*Xi*III*Plus*)	1

*Only available as HW30392-004 in quantities of 50

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

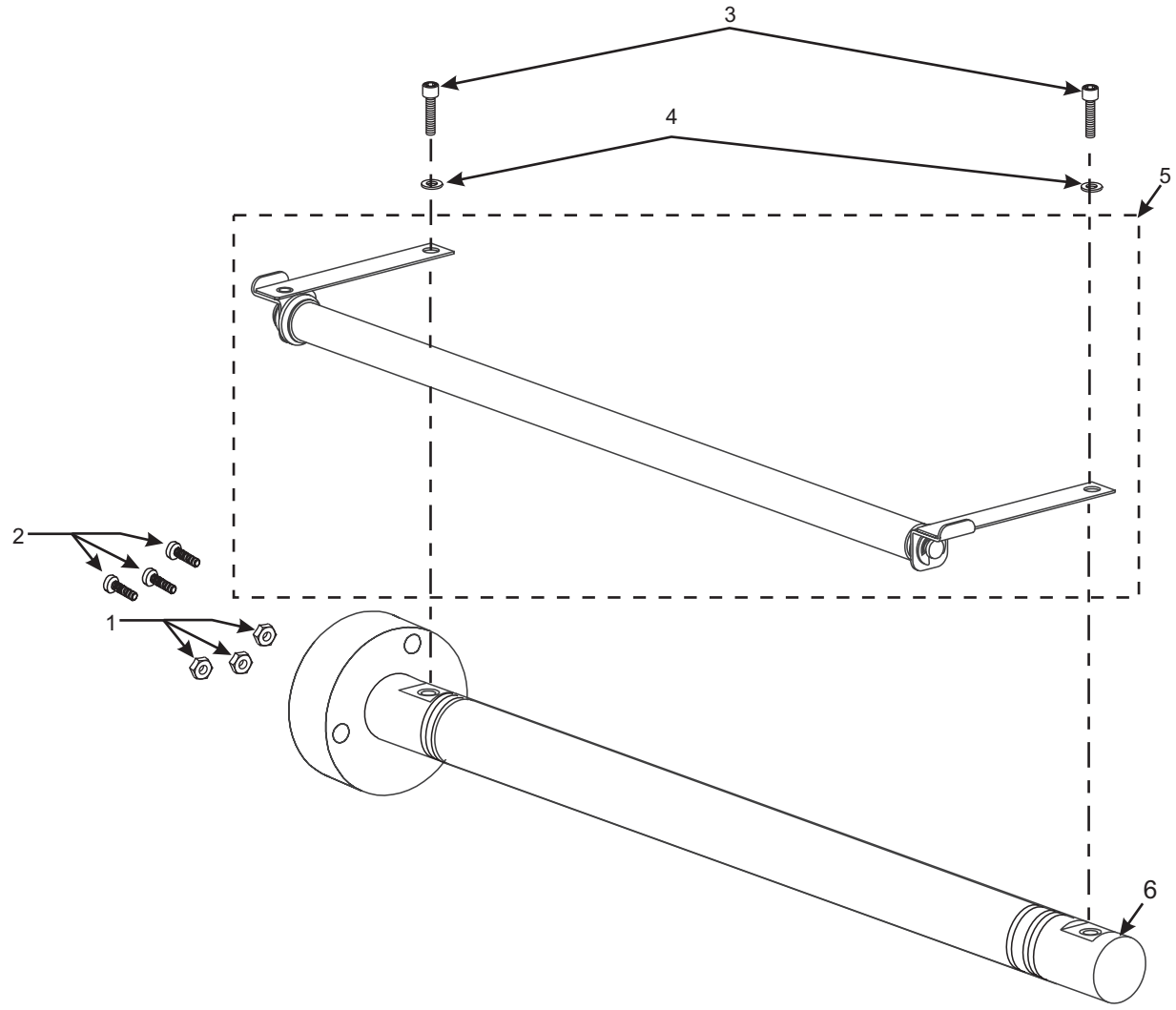


Figure 5-15. Compliant Roller Assembly

Table 5-16. Ribbon Take-Up Spindle

Item	Part Number	Description	Qty
1	**47250**	Enhanced RTU Upgrade Kit (90/96*Xi*III/*Xi*III*Plus*)	1
1	**48250**	Enhanced RTU Upgrade Kit (140*Xi*III/*Xi*III*Plus*)	1
1	**46350**	Enhanced RTU Upgrade Kit (170*Xi*III/*Xi*III*Plus*)	1
1	**22250**	Enhanced RTU Upgrade Kit (220*Xi*III/*Xi*III*Plus*)	1
2	**47251M**	Spindle/Clutch Assembly Kit (90/96*Xi*III/*Xi*III*Plus*)	1
2	**48251M**	Spindle/Clutch Assembly Kit (140*Xi*III/*Xi*III*Plus*)	1
2	**46351M**	Spindle/Clutch Assembly Kit (170*Xi*III/*Xi*III*Plus*)	1
2	**22251M**	Spindle/Clutch Assembly Kit (220*Xi*III/*Xi*III*Plus*)	1
3	**47276**	Compression Spring	1
4	**46397-500**	Thin Hex Nut Locking	1
5	**47251-2M**	End Cap/Release Bar Maintenance Kit (90/96*Xi*III/*Xi*III*Plus*)	1
5	**48251-2M**	End Cap/Release Bar Maintenance Kit (140*Xi*III/*Xi*III*Plus*)	1
5	**46351-2M**	End Cap/Release Bar Maintenance Kit (170*Xi*III/*Xi*III*Plus*)	1
5	**22251-2M**	End Cap/Release Bar Maintenance Kit (220*Xi*III/*Xi*III*Plus*)	1

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only

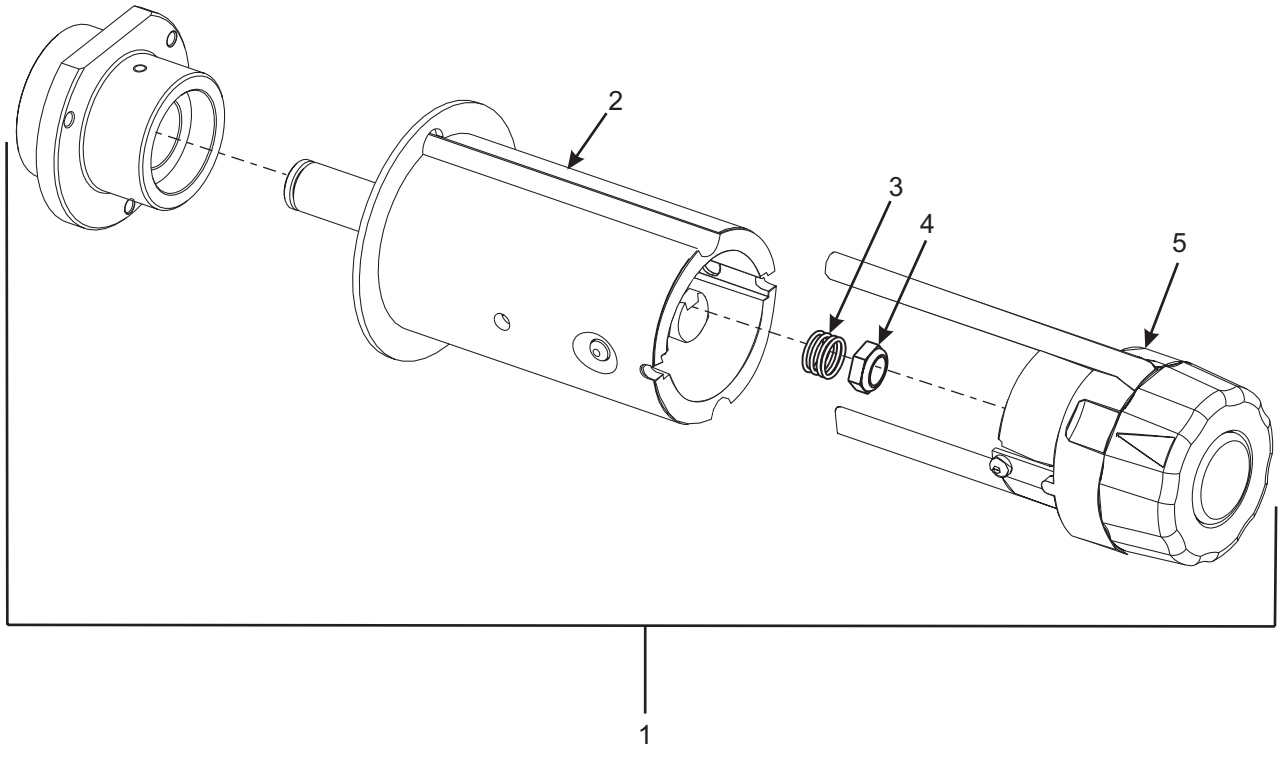


Figure 5-16. Ribbon Take-Up Spindle Assembly

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	*46610*	PCB RF Option	1
11	*48636*	ZebraNet Wireless Setup Disk	1
12	*48626*	Straight Through Ethernet Cable, 7 feet	1
13	*48627*	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
Light italic=Part not available for purchase, listed and shown for reference only

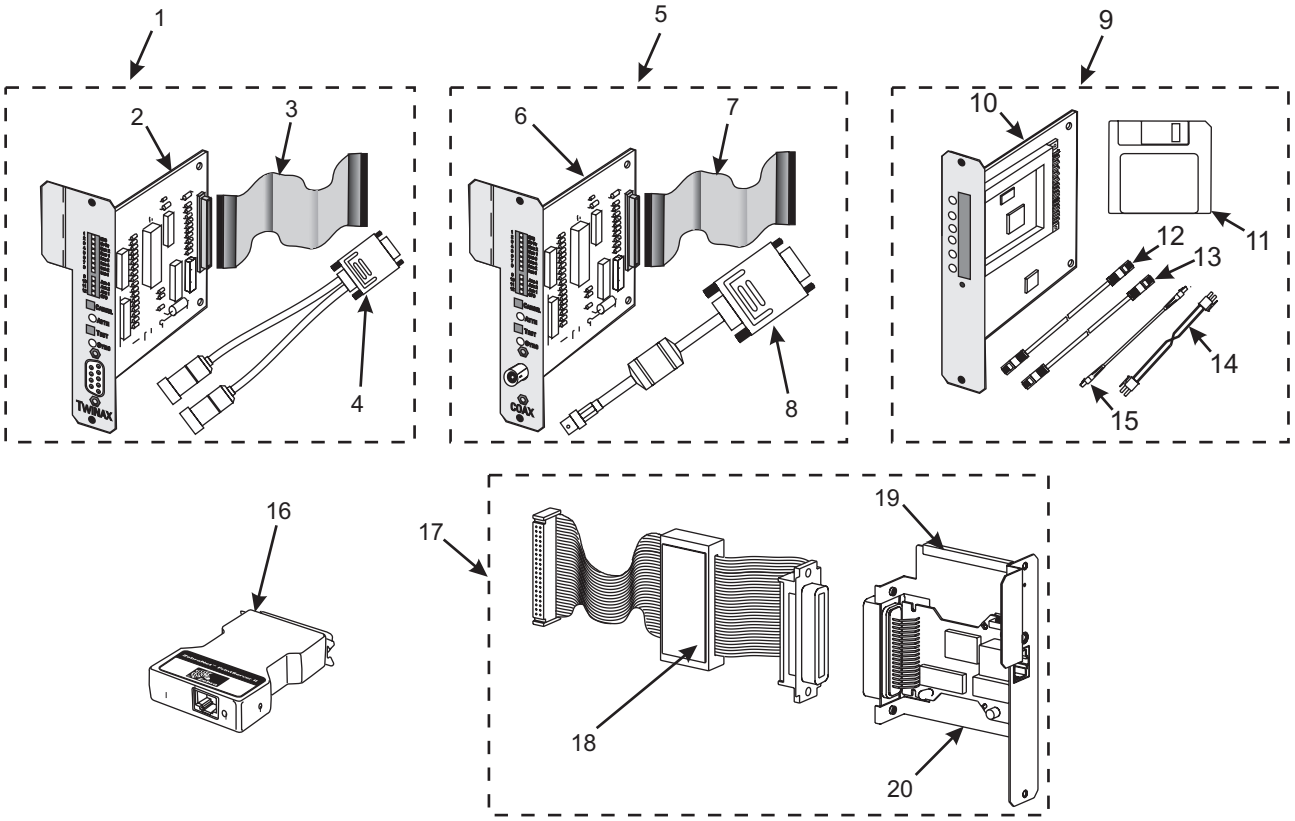


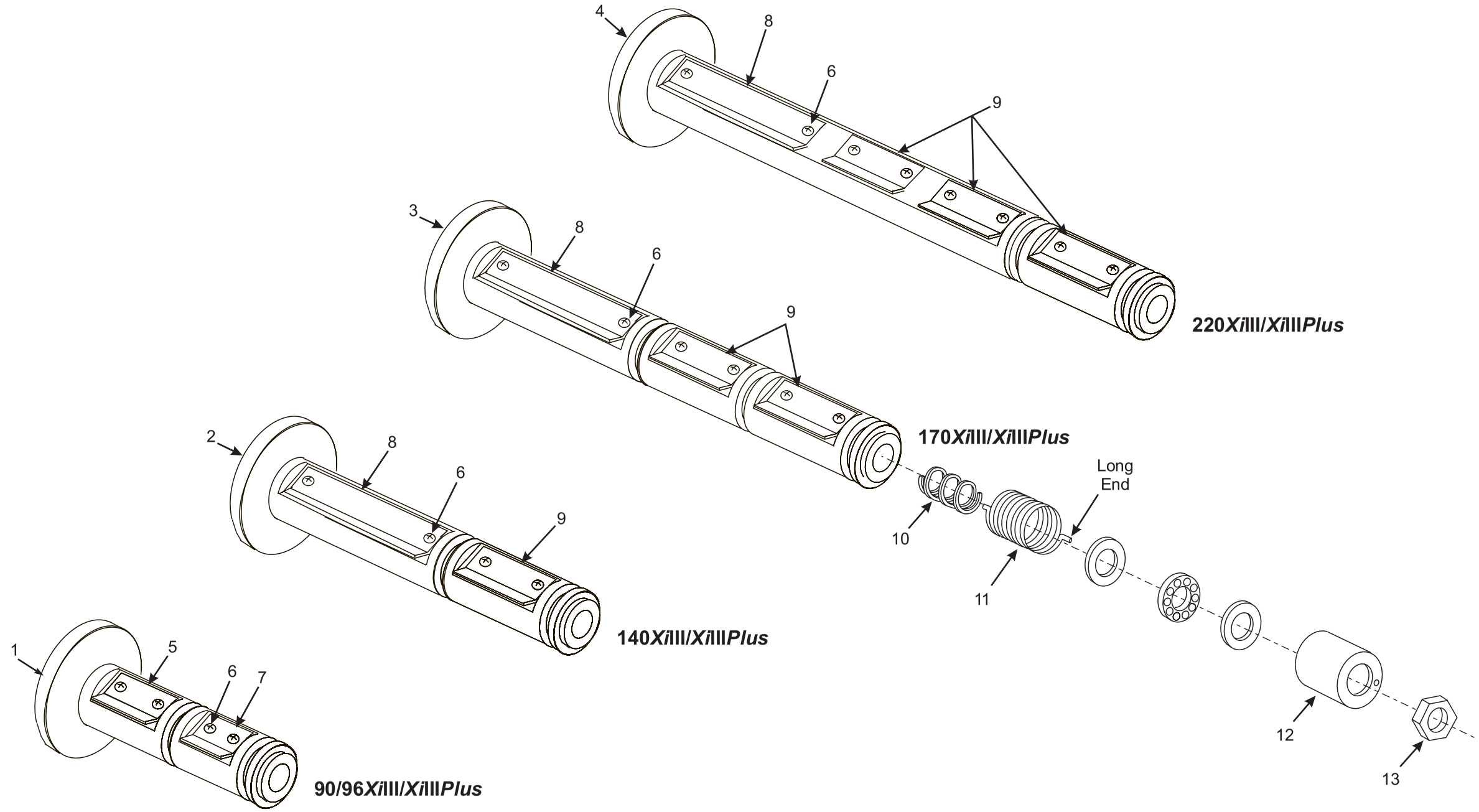
Figure 5-17. Communication Options

Table 5-18. Ribbon Supply Spindle Assembly

Item	Part Number	Description	Qty
1	**47151M**	Ribbon Supply Spindle Maintenance Kit (90/96*Xi*III/*Xi*III*Plus*)	1
2	**48151M**	Ribbon Supply Spindle Maintenance Kit (140*Xi*III/*Xi*III*Plus*)	1
3	**46151M**	Ribbon Supply Spindle Maintenance Kit (170*Xi*III/*Xi*III*Plus*)	1
4	**22151M**	Ribbon Supply Spindle Maintenance Kit (220*Xi*III/*Xi*III*Plus*)	1
5	**30070-2**	Inner Ribbon Supply Blade (90/96*Xi*III/*Xi*III*Plus*)	1
6	**30401-002**	Screw, 4–40 × 0.12	8 Max
7	**30070-1**	Outer Ribbon Supply Blade (90/96*Xi*III/*Xi*III*Plus*)	1
8	**40070-2**	Inner Ribbon Supply Blade (140/170/220*Xi*III/*Xi*III*Plus*)	1
9	**40070-1**	Outer Ribbon Supply Blade (140/170/220*Xi*III/*Xi*III*Plus*)	3 Max
10	*46211**	Compression Spring, 0.53 × 0.660 × 0.62	1
11	**38042**	Torsion Spring, 0.739 × 0.805	1
12	**47171**	Ribbon Spindle Spring Housing	1
13	**46397-375**	Locking Thin Hex Nut	1

*Only available as HW46211 in quantities of 10

Bold=Part available for purchase
Light 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 clutches must be handled with care to prevent oil or grease

Figure 5-18. Ribbon Supply Spindle Assembly

Table 5-19. Media Rewind Assembly

Item	Part Number	Description	Qty
1	**47383M**	Rewind Plate Assembly Maintenance (90/96*Xi*III/*Xi*III*Plus*)	1
1	**48383M**	Rewind Plate Assembly Maintenance (140*Xi*III/*Xi*III*Plus*)	1
1	**46383M**	Rewind Plate Assembly Maintenance (170*Xi*III/*Xi*III*Plus*)	1
1	**22383M**	Rewind Plate Assembly Maintenance (220*Xi*III/*Xi*III*Plus*)	1
2	**30914M**	Lower Platen Pulley Assembly (90/140/170/220*Xi*III/*Xi*III*Plus*)	1
2	**47915M**	Lower Platen Pulley Maintenance Kit (96*Xi*III/*Xi*III*Plus*)	1
3	**30265**	Idler Pulley (90/96,140,170*Xi*III/*Xi*III*Plus*)	1
3	**22265**	Idler Pulley (220*Xi*III/*Xi*III*Plus*)	1
4	**30207**	Idler Pulley Shaft (90/96,140,170*Xi*III/*Xi*III*Plus*)	1
4	**22207**	Idler Pulley Shaft (220*Xi*III/*Xi*III*Plus*)	1
5	**45189-5**	Rewind Drive Belt, 0.080P 235T (90/140/170/220*Xi*III/*Xi*III*Plus*)	1
5	**45189-12**	Rewind Drive Belt, 0.080P 245T (96*Xi*III/*Xi*III*Plus*)	1
6	*30118**	E-Ring, External 0.500 × 0.042	1
7	**31336M**	MTU/RTU Pulley Maintenance Kit (90/140/170/220*Xi*III/*Xi*III*Plus*)	1
7	**47358M**	Pulley MTU Maintenance Kit (96*Xi*III)	1
7	**33094-6M**	Pulley MTU Maintenance Kit (96*Xi*III*Plus*)	1
8	*30114***	Flat Washer, 0.76 × 0.51 × 0.03	1
9	*30115*†	Wave Washer, 0.740 × 0.520 × 0.080	1
10	*30393-006*††	Screw, 8–32 × 0.31	3
11	*07435*‡	Screw, 6–32 × 0.37	2
12	*40193*‡‡	Flat Washer, 0.406 × 0.172 × 0.048	1
13	**46609-4M**	Take-Label Sensor Maintenance Kit (Includes Lower Sensor)	1
14	**47155M**	Spindle Media Rewind Maintenance Kit (90/96*Xi*III/*Xi*III*Plus*)	1
14	**48155M**	Spindle Media Rewind Maintenance Kit (140*Xi*III/*Xi*III*Plus*)	1
14	**46249M**	Spindle Media Rewind Maintenance Kit (170*Xi*III/*Xi*III*Plus*)	1
14	**22155M**	Spindle Media Rewind Maintenance Kit (220*Xi*III/*Xi*III*Plus*)	1
15	*40193*‡‡	Flat Washer, 0.406 × 0.172 × 0.048	3
16	*30392-004*§	Screw, 6-32 × 0.25	2
17	**02252**	Crescent Ring, 0.25	2
18	**40019**	Plate, Roller Adjustment	1
19	*30247*§§	Flat Washer, 0.42 × 0.262 × 0.0740	1
20	*30261*¶	Flat Washer, 0.442 × 0.255 × 0.020	2
21	**47601M**	Lower Platen Roller Maintenance Kit, 0.78 × 3.588 (90/96*Xi*III/*Xi*III*Plus*)	1
21	**40038M**	Lower Platen Roller Maintenance Kit, 0.78 × 5.213 (140*Xi*III/*Xi*III*Plus*)	1
21	**46278M**	Lower Platen Roller Maintenance Kit, 0.78 × 6.73 (170*Xi*III/*Xi*III*Plus*)	1
21	**22101M**	Lower Platen Roller Maintenance Kit, 0.78 × 8.73 (220*Xi*III/*Xi*III*Plus*)	1
22	**49688**	Ball Bearing, 0.50 × 0.25 × 0.125	2

*Only available as HW30118 in quantities of 25

**Only available as HW30114 in quantities of 25

†Only available as HW30115 in quantities of 25

††Only available as HW30393-006 in quantities of 25

‡Only available as HW07435 in quantities of 100

‡‡Only available as HW40193 in quantities of 25

§Only available as HW30392-004 in quantities of 50

§§Only available as HW30247 in quantities of 25

¶Only available as HW30261 in quantities of 25

Bold=Part available for purchase
Light italic=Part not available for purchase, listed and shown for reference only

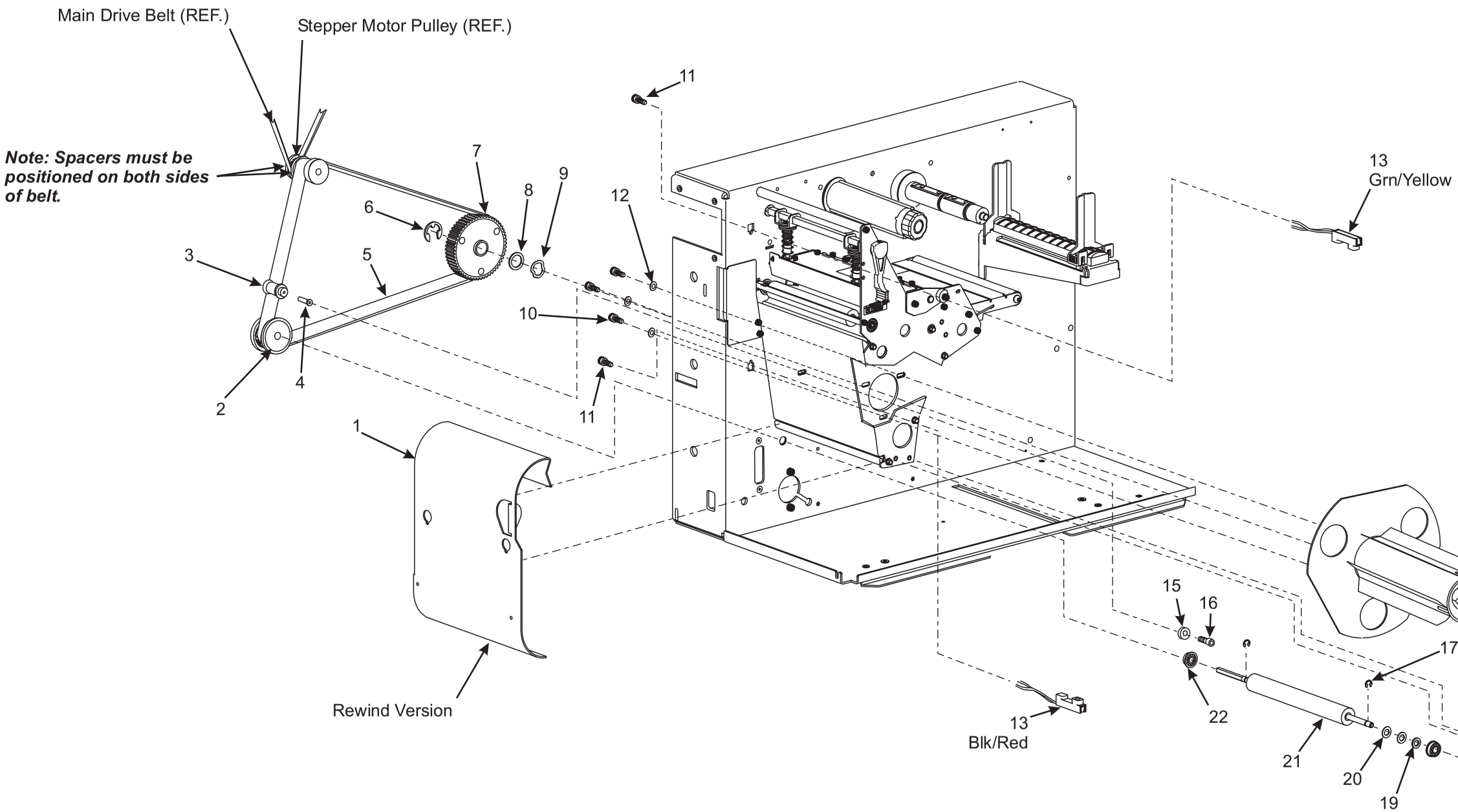


Figure 5-19. Media Rewind Assembly

Table 5-20. Cutter Option Assembly (View 1)

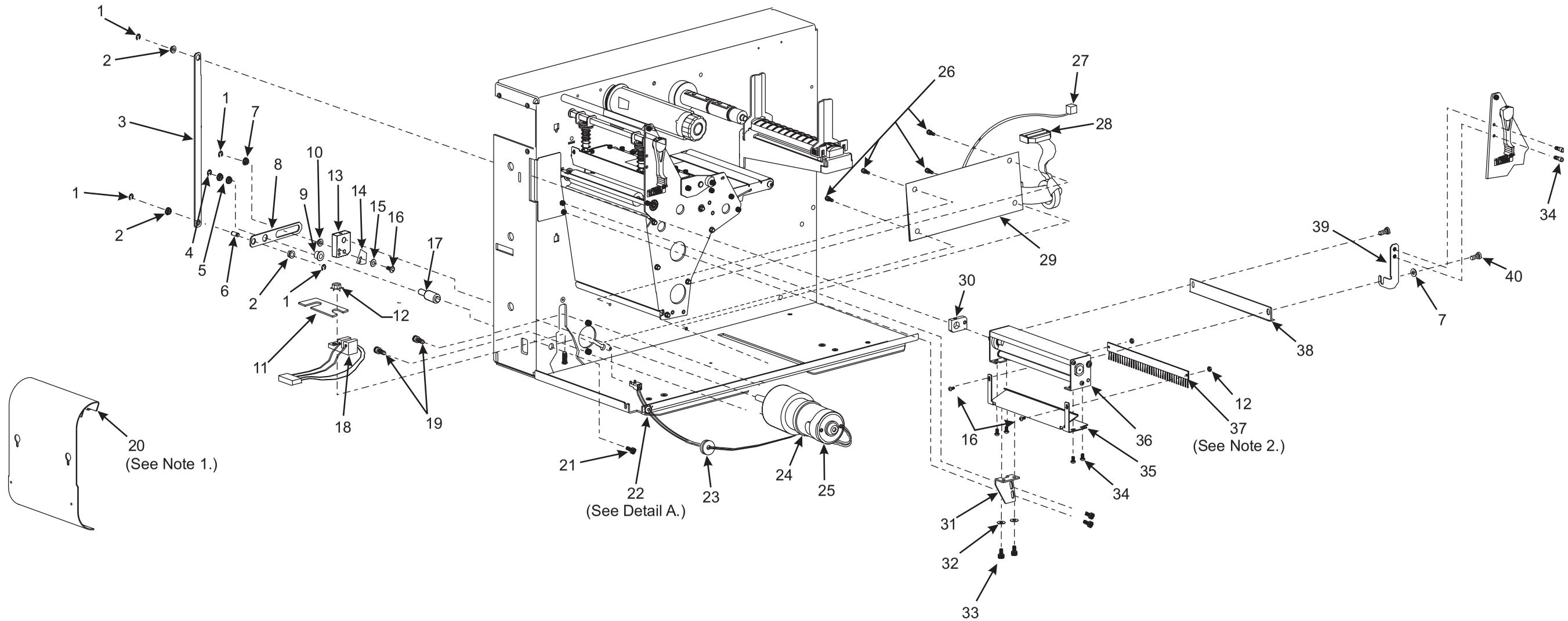
Item	Part Number	Description	Qty
1	*02133**	E-Ring, 0.188 Black	4
2	**30199**	Bearing, 0.375 × 0.189 × 0.125	3
3	**30214**	MainLink	1
4	**Q10019**	E-ring, 0.250 Black	1
5	**30210**	Flat Washer, 0.564 × 0.384 × 0.060	2
6	**30217-1**	Link Pin, 0.187 Dia.	1
7	*30208***	Flat Washer, 0.500 × 0.191 × 0.030	2
8	**30215**	Slotted Link	1
9	**30198**	Bearing 0.500 × 0.252 × 0.250	1
10	**30133**	Ball Bearing 0.375 × 0.187 × 0.125	1
11	**30313**	Cutter Opto Wire Clamp	1
12	**01822**	Nut, 4–40	5
13	**30380M**	Lower Drive Arm Maintenance Kit	1
14	**30219**	Flag, Sensor	1
15	*01155*†	Washer, Lock #4	1
16	**30236**	Screw 4-40 × 0.25	3
17	**30216**	Post, Pivot	1
18	**46618**	Cutter Sensor	1
19	**30394-005**	Screw, 10-32 × 0.312	2
20	**30382RM**	Cutter/Rewind Plate Maintenance Assembly (90/96*Xi*III/*Xi*III*Plus*)	1
20	**40382RM**	Cutter/Rewind Plate Maintenance Assembly (140*Xi*III/*Xi*III*Plus*)	1
20	**46382M**	Cutter/Rewind Plate Maintenance Assembly (170*Xi*III/*Xi*III*Plus*)	1
20	**22382M**	Cutter/Rewind Plate Maintenance Assembly (220*Xi*III/*Xi*III*Plus*)	1
21	**30405-006**	Screw, ¼–20 × 0.38 (90/96*Xi*III, 140*Xi*III, 170*Xi*III/*Xi*III*Plus*)	1
21	**30405-008**	Screw, ¼–20 × 0.50 (220*Xi*III/*Xi*III*Plus*)	1
22	*44632*††	Ferrite Ring 1.1 × 0.75	1
23	**46224**	Rubber Grommet	1
24	**08449**	Cable-Tie, 0.187 W × 11.5 L	1
25	**30374M**	Cutter Motor Maintenance Assembly	1
26	*30391-003*‡	Screw, 4–40 × 0.19	4
27	**49604-010**	Power Distribution Cable	1

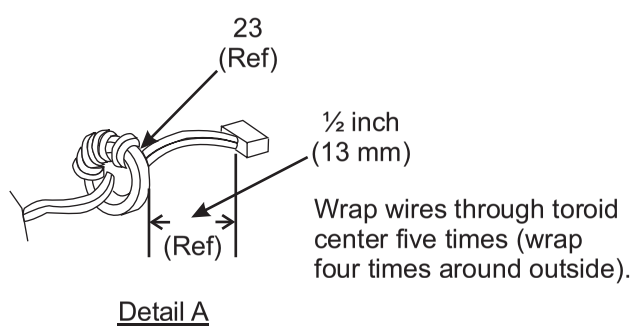
Table 5-20. Cutter Option Assembly (View 1)

Item	Part Number	Description	Qty
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	*40193*‡‡	Flat Washer, 0.406 × 0.172 × 0.048	2
33	*30392-004*§	Screw, 6–32 × 0.25	4
34	**10421**	Screw, M4 × 0.7 × 5	4
35	**30819**	Cutter Support Bracket (90/96*Xi*III)	1
35	**40819**	Cutter Support Bracket (140*Xi*III)	1
35	**46819**	Cutter Support Bracket (170*Xi*III)	1
35	**22819**	Cutter Support Bracket (220*Xi*III)	1
36	**30196-100**	Cutter Module (90/96*Xi*III)	1
36	**30196-150**	Cutter Module (140*Xi*III)	1
36	**30196-200**	Cutter Module (170*Xi*III)	1
36	**30196-251**	Cutter Module (220*Xi*III)	1
37	**30320**	Carbon Brush, 4.50 × 0.50 (90/96*Xi*III)	1
37	**40320**	Carbon Brush, 6.50 × 0.50 (140*Xi*III)	1
37	**46320**	Carbon Brush, 8.50 × 0.50 (170*Xi*III)	1
37	**22320**	Carbon Brush, 10.47 × 0.50 (220*Xi*III)	1
38	**30181**	Upper Cutter Guide (90/96*Xi*III)	1
38	**40181**	Upper Cutter Guide (140*Xi*III)	1
38	**46181**	Upper Cutter Guide (170*Xi*III)	1
38	**22193**	Upper Cutter Guide (220*Xi*III)	1
39	**46807**	Upper Cutter Bracket	1
40	**Q10011**	Screw, M4 × 0.7	2

*Only available as HW02133 in quantities of 50
**Only available as HW30208 in quantities of 25
†Only available as HW01155 in quantities of 100
††Only available as HW44632 in quantities of 10
‡Only available as HW30391-003 in quantities of 25
‡‡Only available as HW40193 in quantities of 25
§Only available as HW30392-004 in quantities of 50

Bold=Part available for purchase
Light italic = Part not available for purchase, listed and shown for reference only





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)

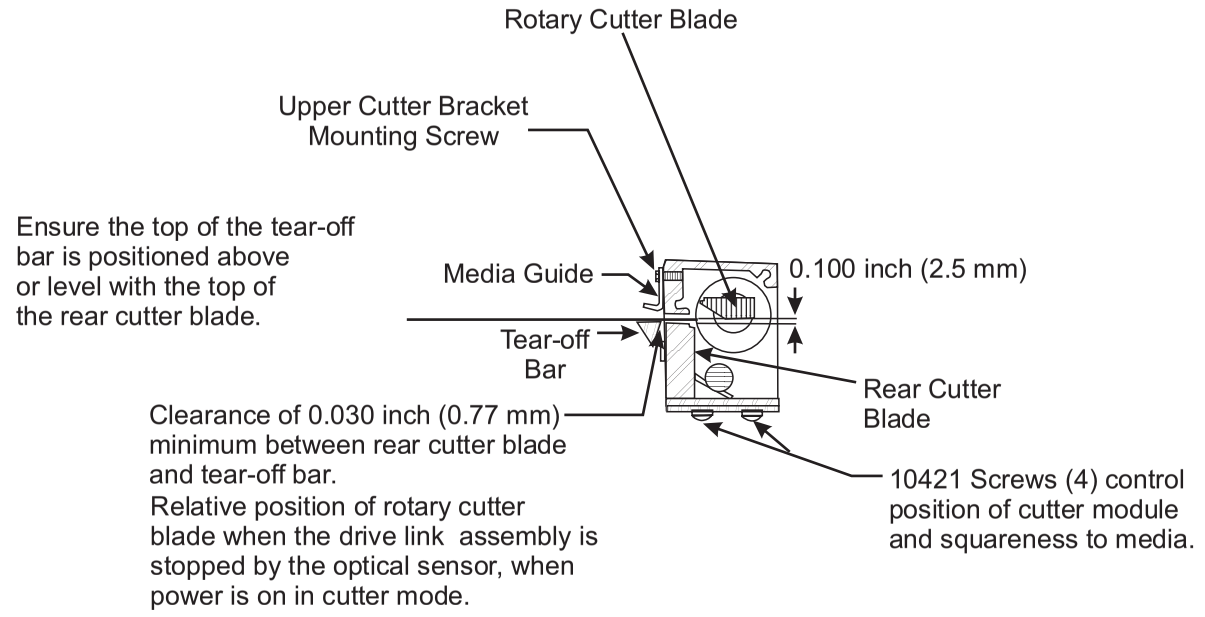


Figure 5-21. Cutter Option Assembly (View 2)

SECTION 6
OPTIONS KITS

OPTIONS INSTALLATION

Font ROM Installation (*Xi*III and R-140 only)

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS HIGHLY RECOMMENDED THE TECHNICIAN WEAR AN ANTISTATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

Font ROM installation-optional scalable and bit-mapped fonts are available in ROMs.

1. Refer to RRP No. 1 on page 4-13. From the rear, turn the printer Off (**O**) and remove the AC power cord. Remove any communication cables.
2. Refer to RRP No. 2 on page 4-15. Remove the electronics cover.
3. Refer to Figure 6-2. Remove the option card shield. Push the card-eject button to remove the font/memory board.

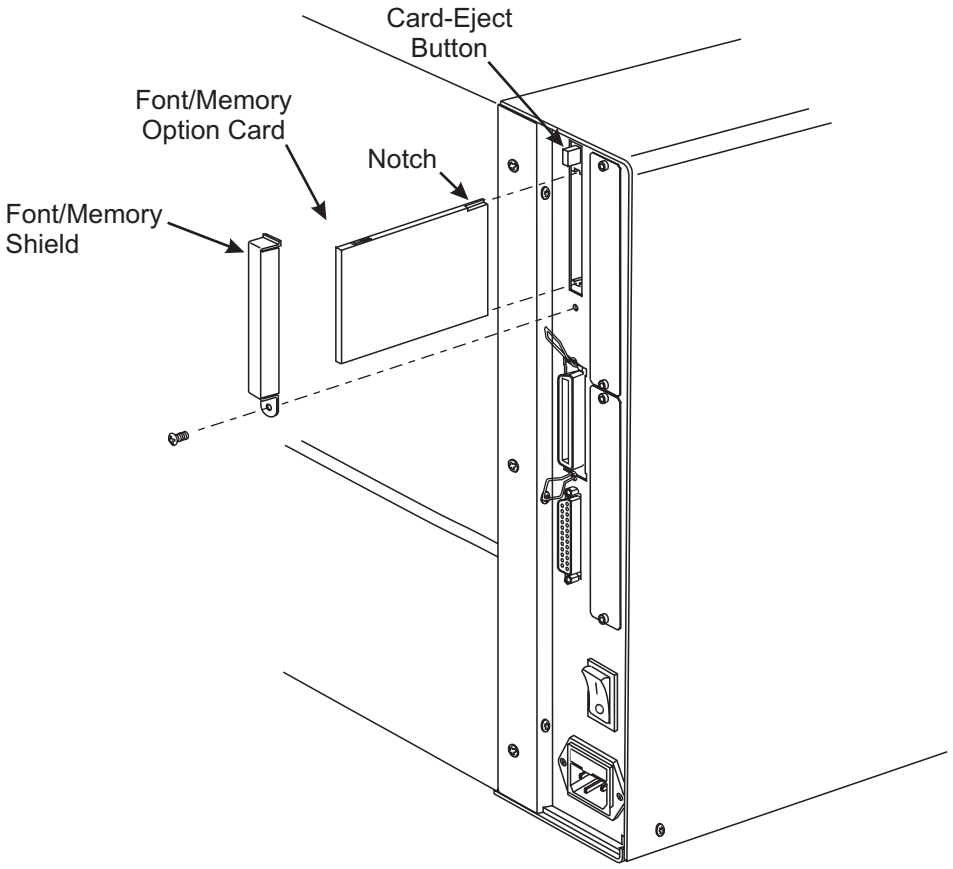


Figure 6-1. Memory and Font Card Installation

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.

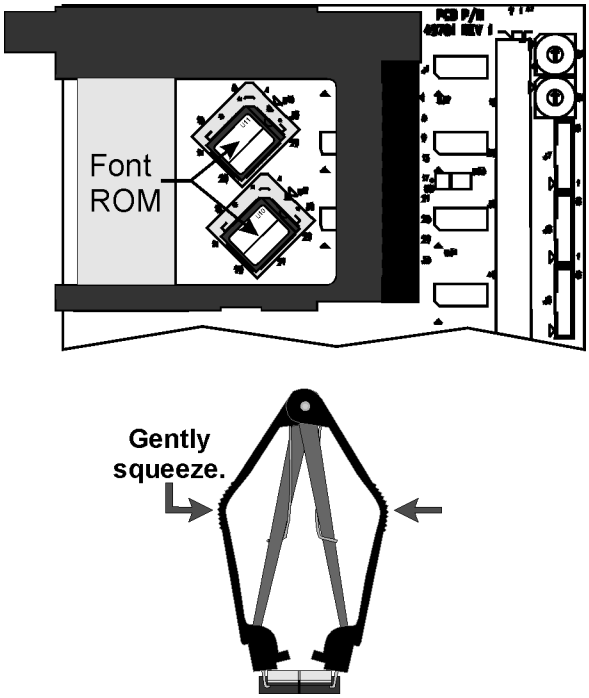


Figure 6-2. Font ROM

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. Reinstall the electronics cover.
10. Reinstall the AC power cord and data cable. Restore power.
11. Print a configuration label by pressing and holding the **FEED** key while turning the AC power switch On (**I**).
12. Verify the presence of additional memory or optional fonts on the configuration label.

SIMM Installation (*Xi*III and R-140 only)

1. Refer to RRP No. 1 on page 4-13. Turn the printer Off (**O**) and remove the AC power cord. Remove any communication cables.
2. Refer to RRP No. 2 on page 4-15. 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. Reinstall the electronics cover.
6. Reconnect the AC power cord and data cable. Restore power.
7. Print a configuration label by pressing and holding the **FEED** key while turning the AC power switch On (**I**).
8. Verify the presence of additional memory on the configuration label.

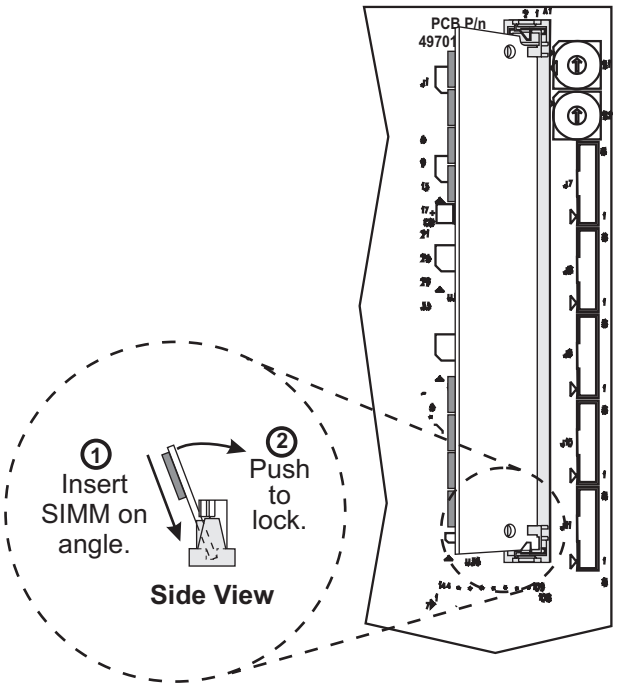


Figure 6-3. SIMM Installation

Optional Supply Spindle Installation

1. Refer to RRP No. 1 on page 4-13. Turn the printer Off (**O**) and remove the AC power cord. Remove any communication cables.
2. Refer to RRP No. 2 on page 4-15 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 16. Remove any optional interface board installed.
5. Refer to RRP No. 4 on page 4-17 or RRP No. 5 on page 4-19. Unplug all ribbon cable connectors and small wire connectors from the main logic board, and remove it.

6. Refer to Figure 6-4. Remove the main logic board mounting plate.

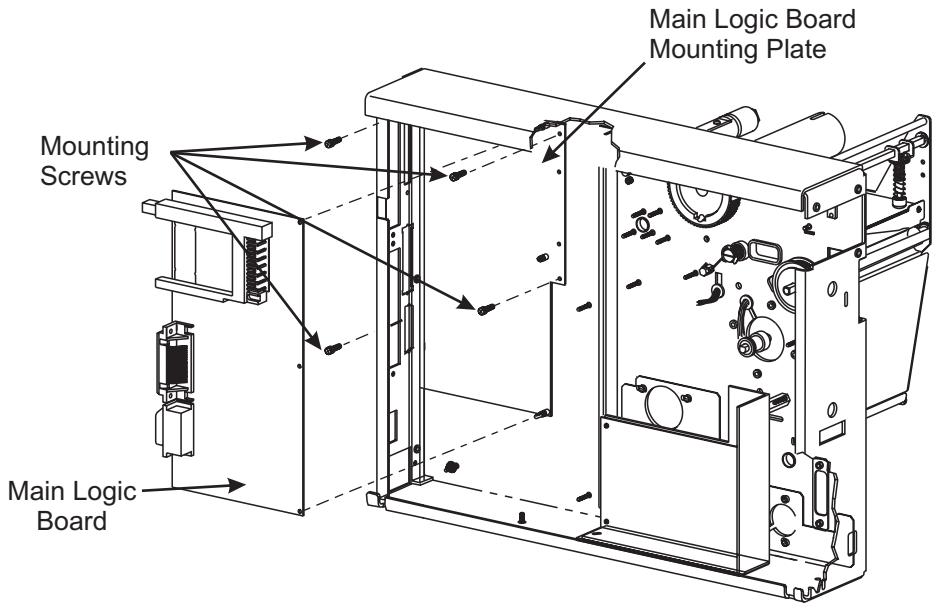


Figure 6-4. Mounting Bracket Removal (*Xi*III and R-140)

7. Refer to Figure 6-5. Remove the media hanger mounting screw and washer.
8. Remove the media hanger by lifting it straight up then out from the printer frame.

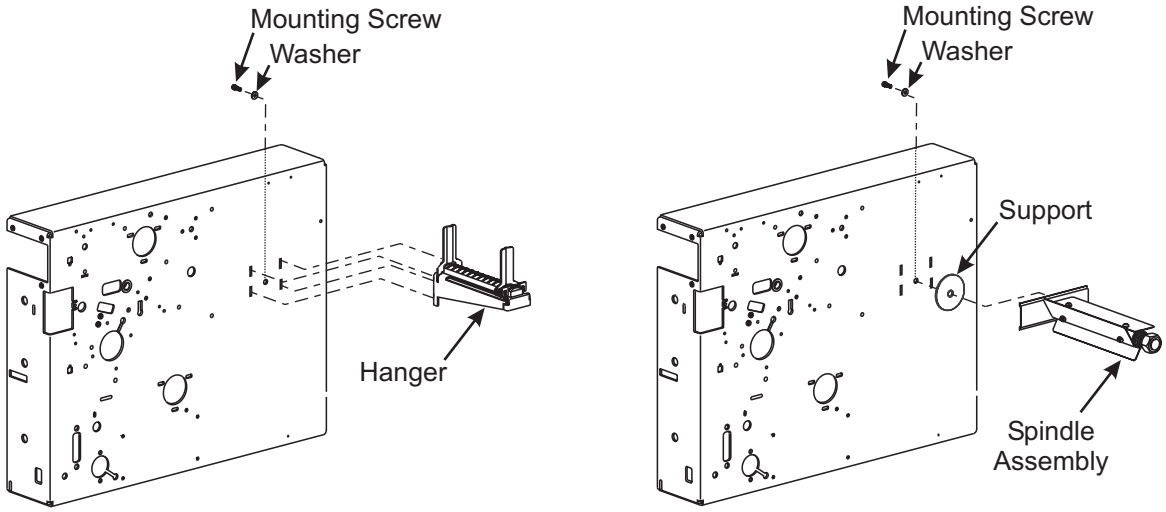


Figure 6-5. Hanger Removal and Spindle Installation

9. Install the media supply spindle with support between the shaft and the printer frame.
10. Install the screw and washer onto the end of the spindle shaft and tighten.
11. Reinstall the main logic board mounting plate.
12. Reinstall the main logic board.
13. 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. Reinstall the electronics cover.

Spindle Tension Adjustment

1. 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.
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 inches (5 cm) per second.
3. 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.

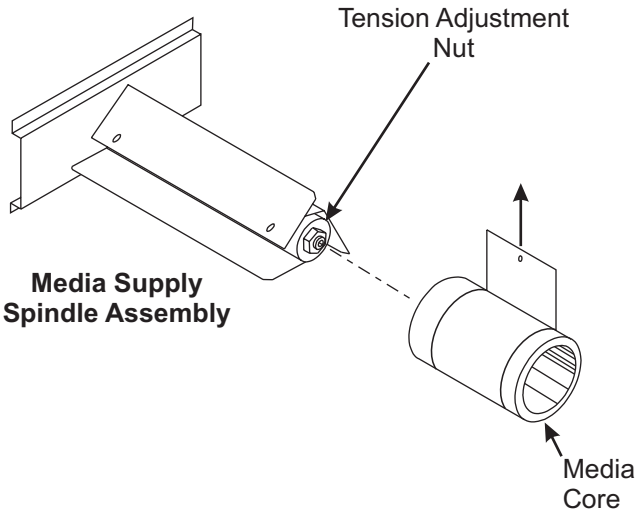


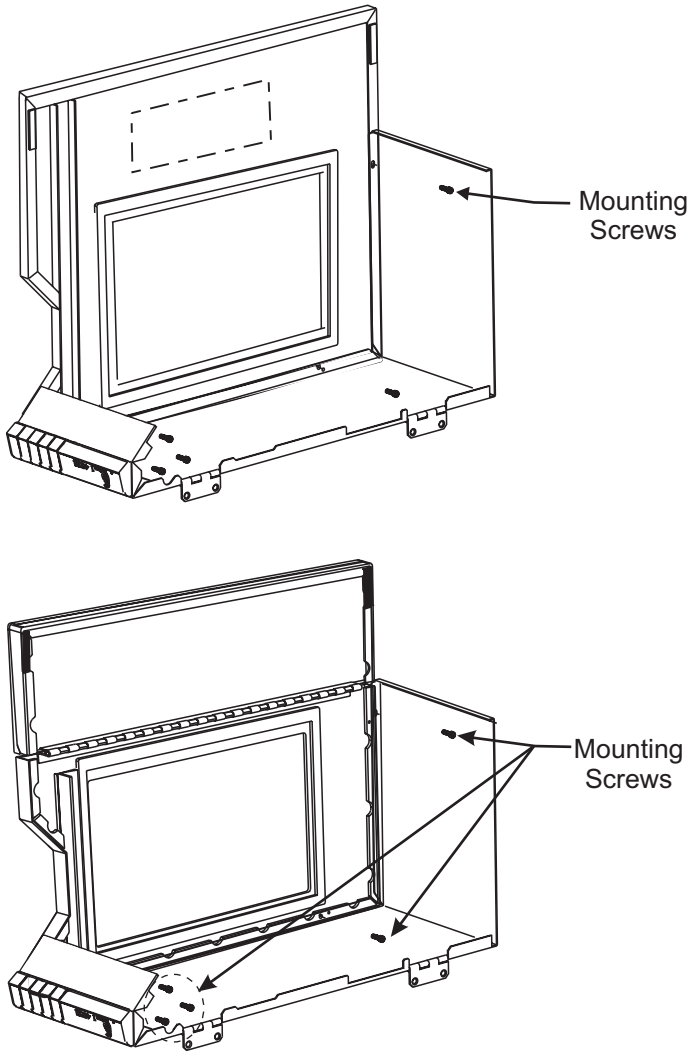
Figure 6-6. Spindle Tension Adjustment

4. Recheck the tension after running a full roll of labels.
5. Reinstall the electronics cover.
6. Reinstall the media and ribbon.

Optional Bifold Door Installation

Refer to Figure. 6-7.

1. Raise the existing media access door.
2. Remove and retain the mounting screws. (Ensure a good hold on the door when removing the last screws.)
3. Remove 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 (*Xi*III and R-140 only)

1. RRP No. 1 on page 4-13. Turn the printer Off (**O**) and remove the AC power cord. Remove any communication cables.
2. RRP No. 2 on page 4-15. Remove the electronics cover.

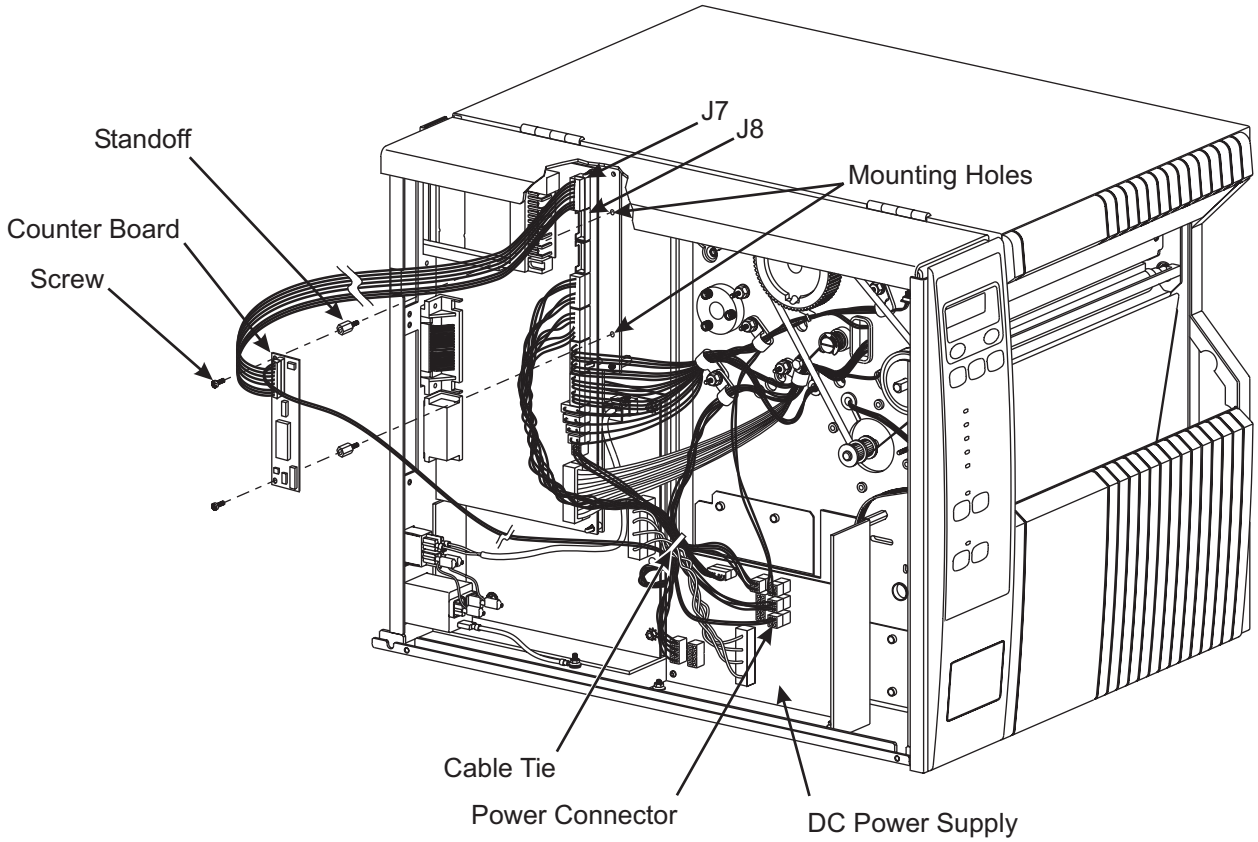


Figure 6-8. Installing the Counter Board (*Xi*III and R-140 only)

3. Locate the two mounting holes in the main logic board mounting plate.
4. Install the two plastic standoffs in these holes.
5. Install the counter board, with the cable connector on top, with the standoffs. Attach the counter board to the standoffs using the supplied screws.
6. Attach the data cable as seen in Figure 6-8 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 shown in Figure 6-8. Connect the open end of the power connector to either of open plugs J5 through J10 on the DC power supply.
9. Reinstall the electronics cover.
10. Reconnect the AC power cord and data cable.
11. Restore power and turn the printer 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. RRP No. 1 on page 4-13. Turn printer power Off (**O**) and disconnect the AC power cord. Remove any communication cables.
2. RRP No. 2 on page 4-15 and remove the electronics cover.

3. RRP No. 3 on page 4-16. 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.
5. Refer to Figure. 6-9. Remove and retain the plastic plug in the lower access hole near the bottom of the print mechanism side plate.

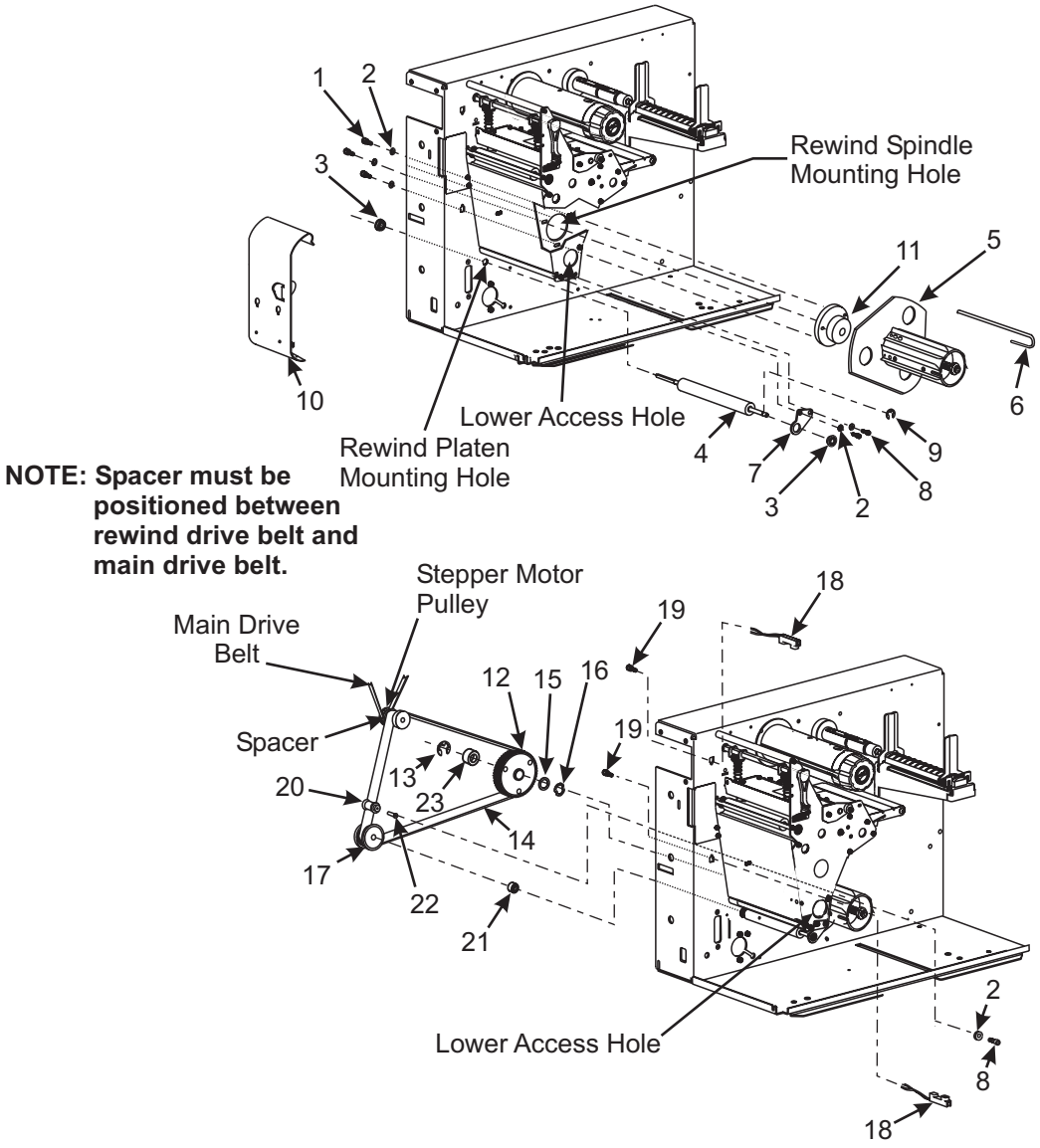


Figure 6-9. Rewind Assembly Installation

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 220*Xi*III, and *Xi*III*Plus*	46355 170*Xi*III and *Xi*III*Plus*	47355 90*Xi*III and *Xi*III*Plus*	47355-6 96*Xi*III	47655-6 96 *Xi*III*Plus*	48355 140*Xi*III, R-140, and *Xi*III*Plus*
	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 220*Xi*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 220*Xi*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 220*Xi*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 HW40193 in quantities of 25

†Available only as HW47062-1 in quantities of 5

††Available only as HW30392-004 in quantities of 50

‡Available only as HW30118 in quantities of 25

‡‡Available only as HW30114 in quantities of 25

§Available only as HW30115 in quantities of 25

§§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.

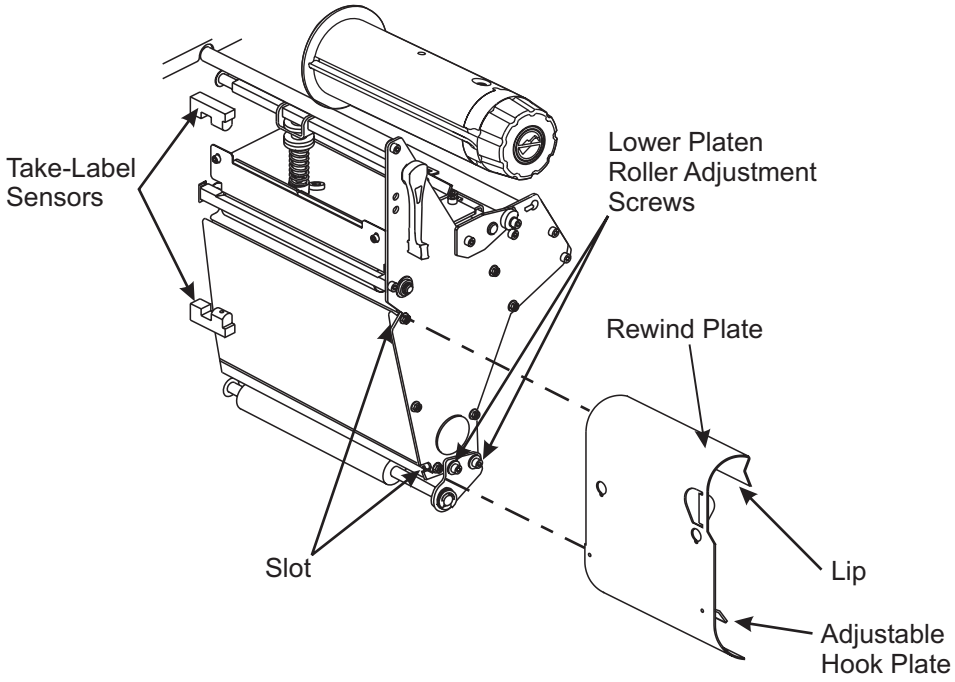


Figure 6-10. Take-Label Sensor Location

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.

Drive Belt Installation and Tension Adjustment

Refer to RRP No. 10 on page 4-28 and install the rewind drive belt.

Refer to RRP No. 9 on page 4-26 and adjust the rewind drive belt tension.

Refer to RRP No. 7 on page 4-24 and readjust the main drive belt tension.

Take-Label Sensor Installation

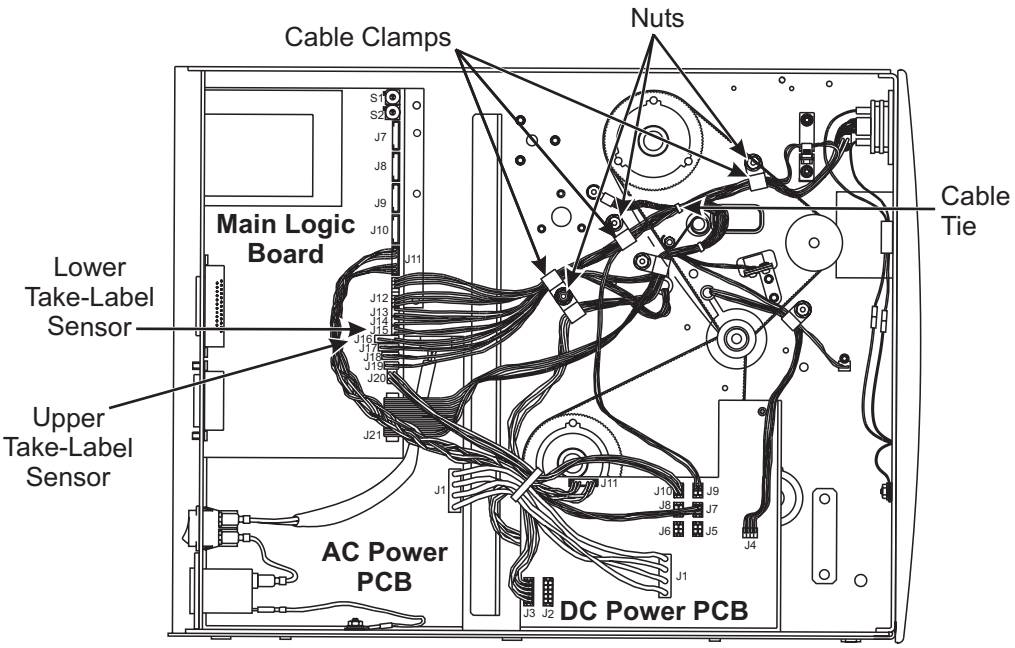
(Do not install on cutter units.)

The Take-Label Sensors are required only in the Peel-Off Mode of operation.

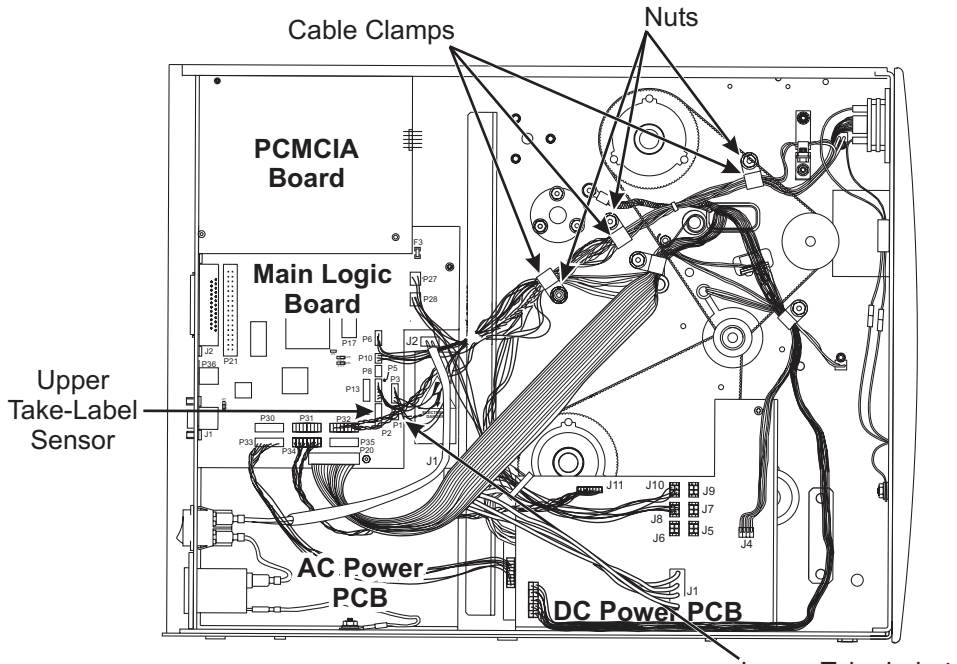
Refer to Figure. 6-9 and Figure. 6-10.

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.
7. Refer to Figure. 6-11. Connect the upper take-label sensor connector to J16 (*Xi*III) or P2 (*Xi*III*Plus*) on the main logic board and the lower take-label sensor connector to J15 (*Xi*III) or P1 (*Xi*III*Plus*).



***Xi*III and R-140**



Xi*III*Plus

Figure 6-11. Take-Label Sensor Connections

NOTE: When in Peel-Off mode, if the two sensors are not aligned with each other, the Take-Label LED lights up and the printer will not operate.

8. Reinstall the DC power supply assembly.
9. Reinstall the electronics cover.
10. Reconnect the AC power cord and data cable.
11. Restore power and turn the printer 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) ± 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.

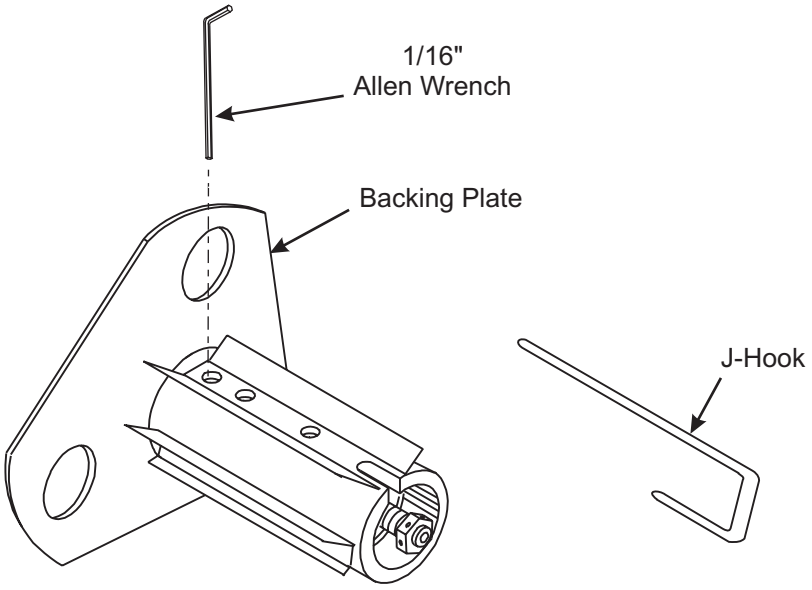


Figure 6-12. Position Adjustment of Rewind Spindle Assembly

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 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.

WARNING:

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.

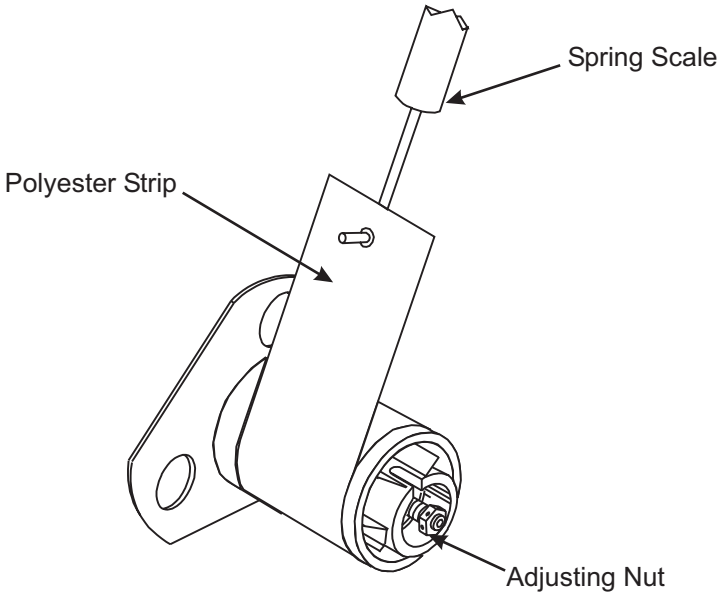


Figure 6-13. Tension Adjustment of Rewind Spindle Assembly

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.

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

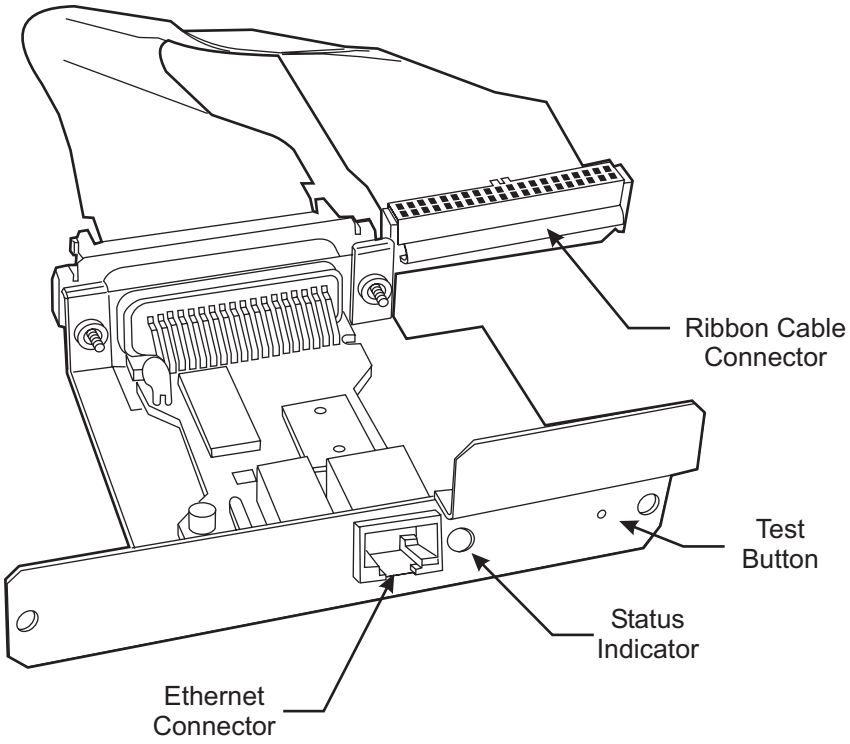


Figure 6-14. Internal PrintServer II

Test Button: 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.

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" wide by 6" 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.

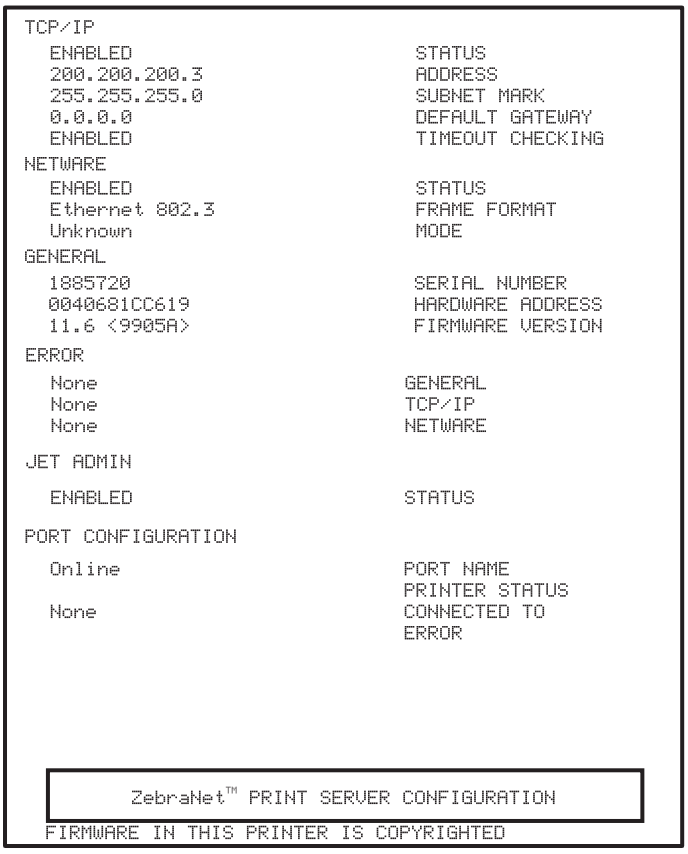


Figure 6-15. Configuration Label PrintServer II

Installation

This section provides the information necessary to install the internal PrintServer II in the Zebra *Xi*III-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.

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. RRP No. 1 on page 4-13. Turn the printer power Off (**O**) and disconnect the AC power cord. Disconnect any data cables.
2. RRP No. 2 on page 4-15 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.

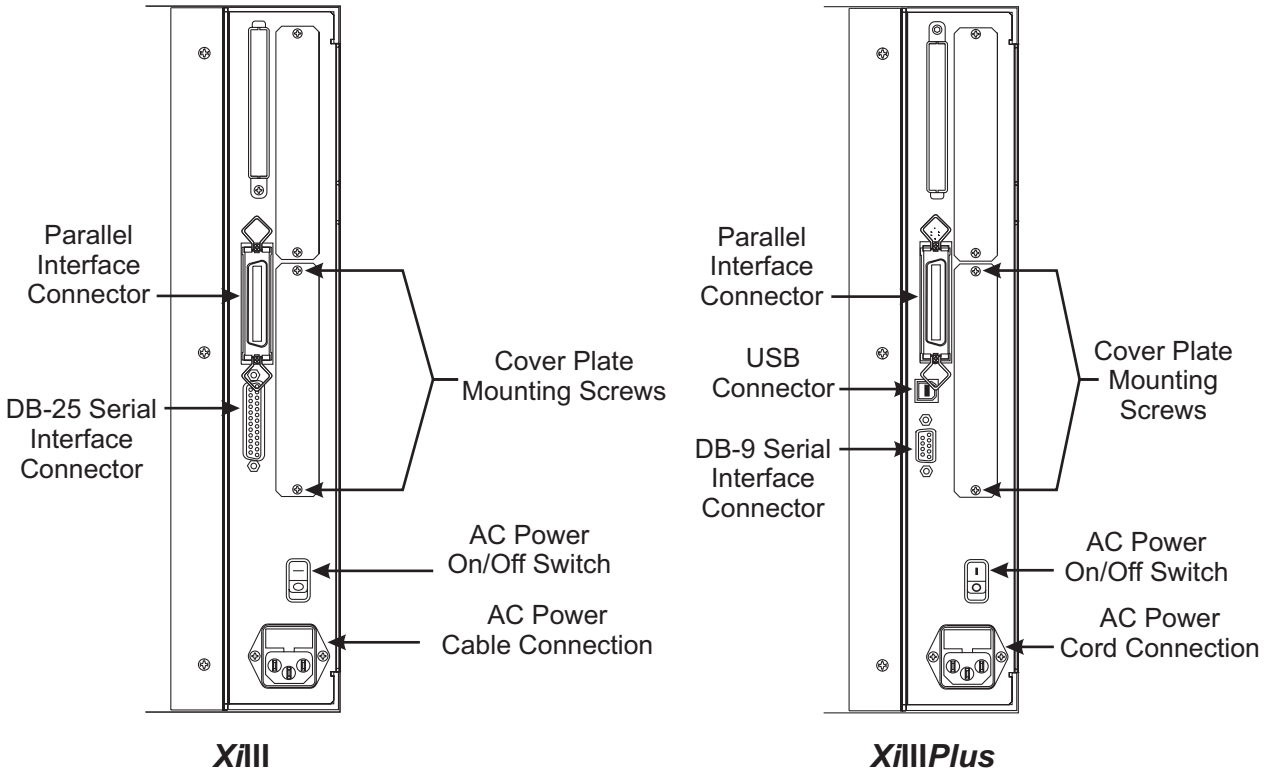


Figure 6-16. Cover Plate Rear View

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–*Xi*III or P21–*Xi*III*Plus*) 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.

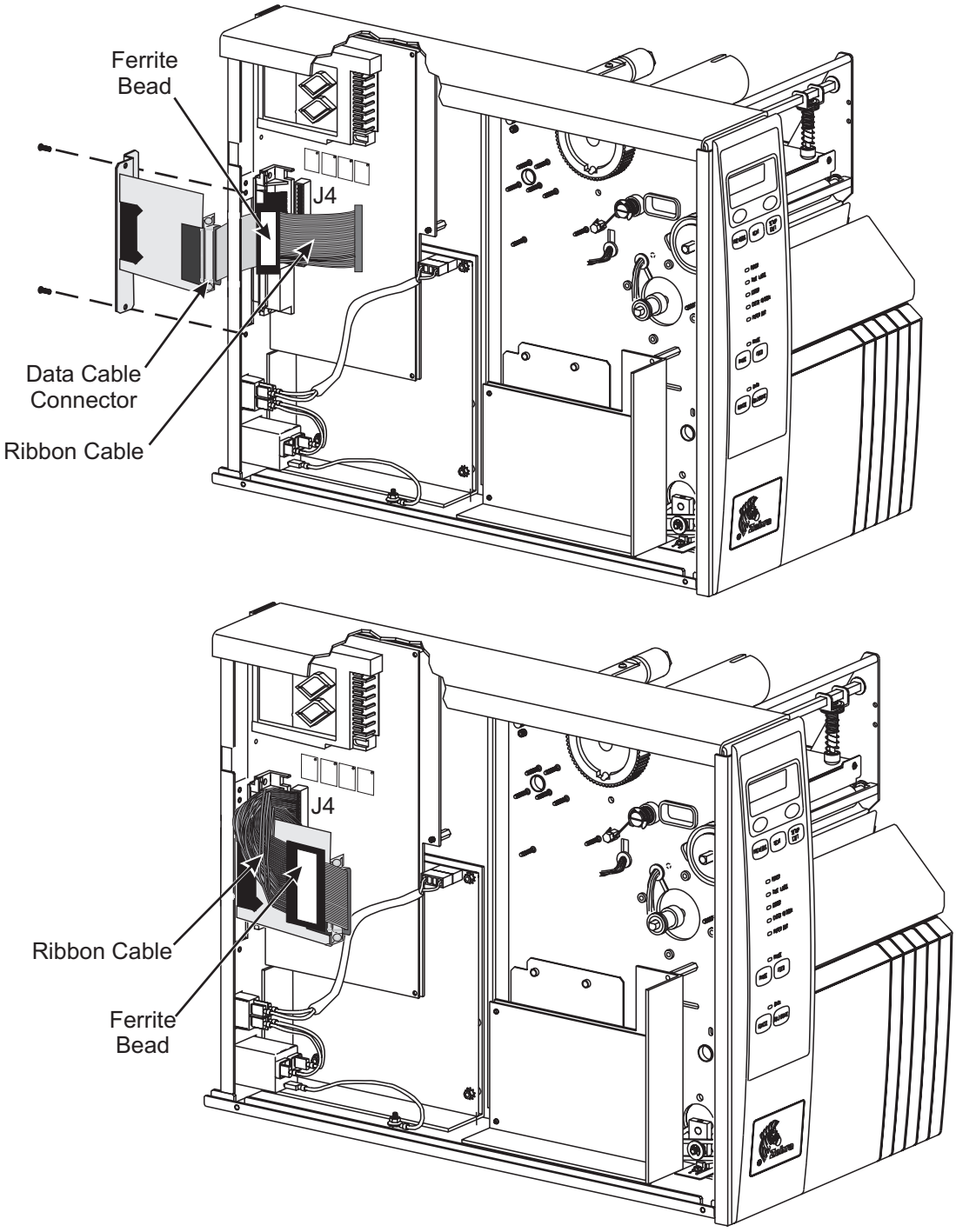


Figure 6-17. *Xi*III and R-140 Internal PrintServer II Board Installation

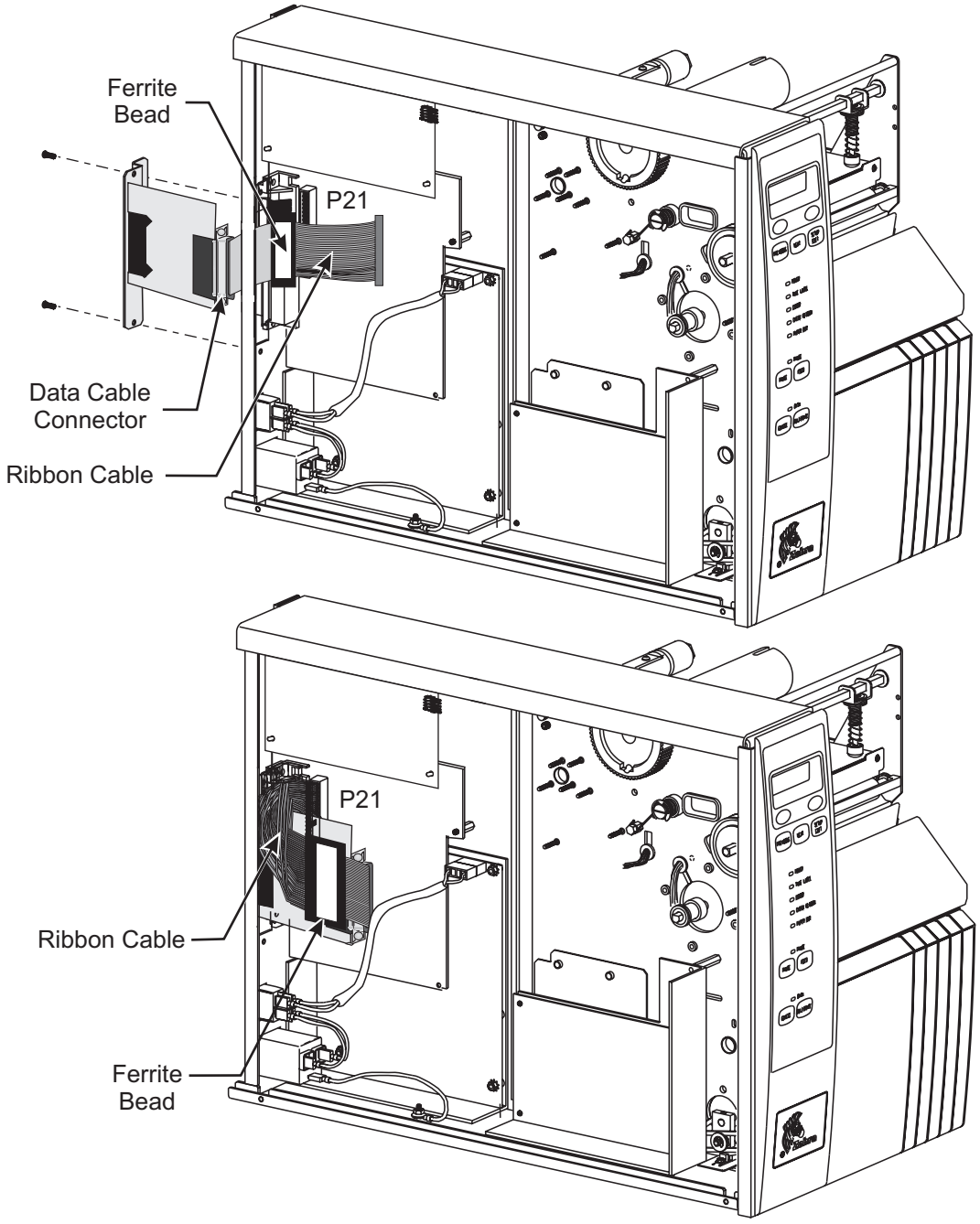


Figure 6-18. *Xi*IIII*Plus* Internal PrintServer II Board Installation

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. 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:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS HIGHLY RECOMMENDED THAT THE TECHNICIAN WEAR AN ANTISTATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

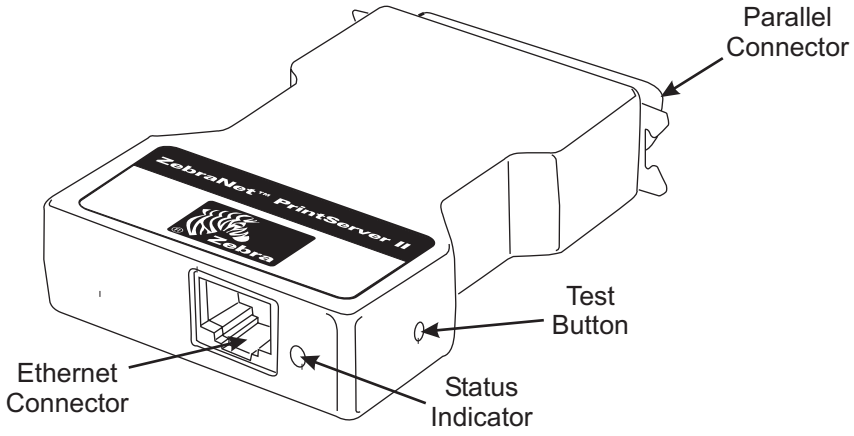


Figure 6-19. External PrintServer II

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 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.
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" wide by 6" 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 90XiIIIPlus-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.

Twinax Communications Interface Board

Installation Instructions

1. Refer to RRP No. 1 on page 4-13. Turn the power Off (**O**) and disconnect the AC power cord. Disconnect any data cables.
2. RRP No. 2 on page 4-15 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.

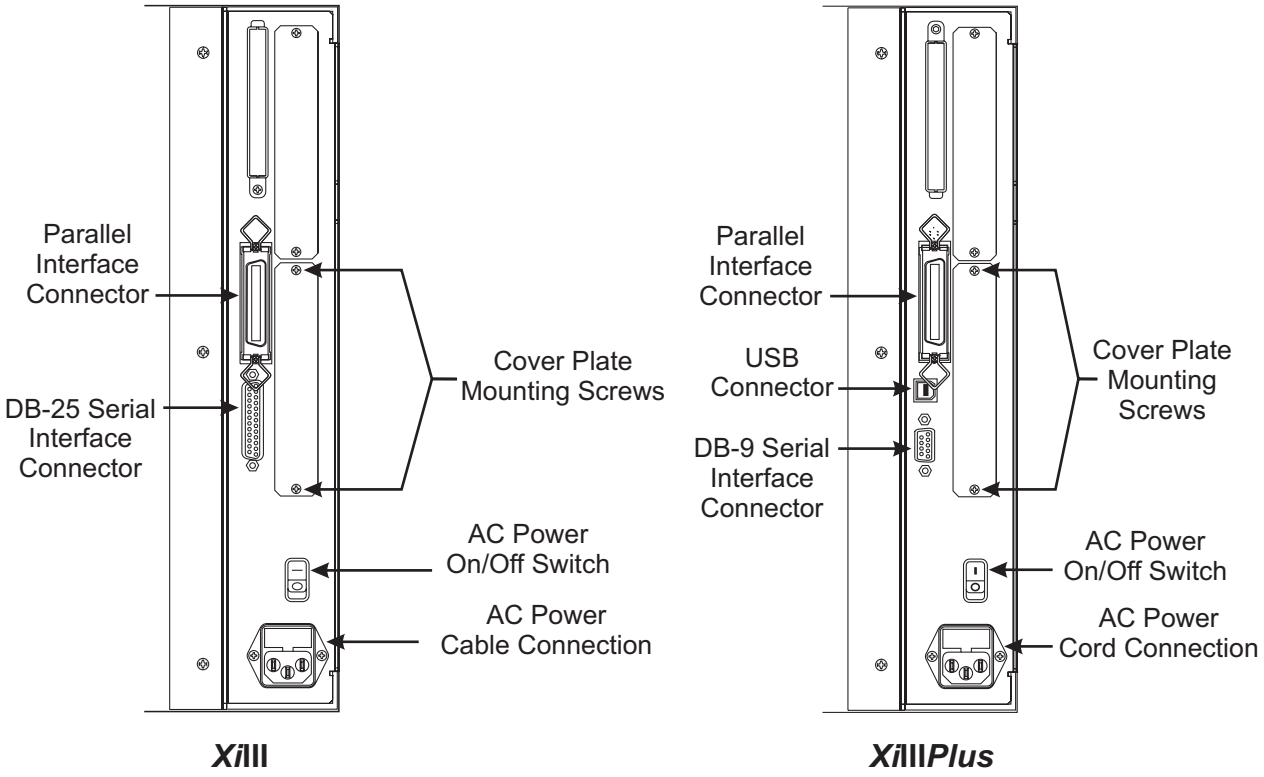


Figure 6-20. Rear View

4. Plug the 40-pin interface data cable into the keyed interface data cable connector (J4–*Xi*III or P21–*Xi*III*Plus*) 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. Reinstall the electronics cover.
9. Connect the 9-pin twinax adapter cable connector to the mating connector on the interface board.

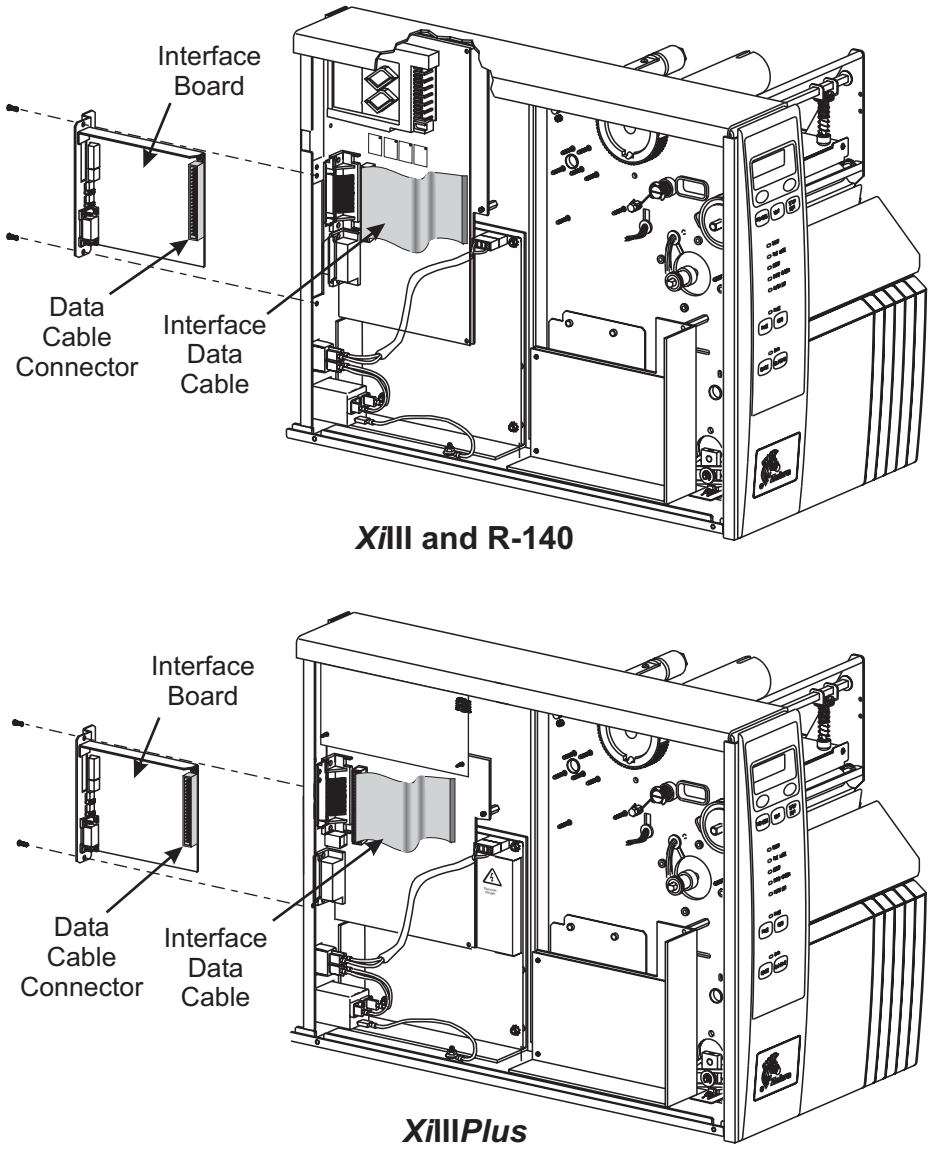


Figure 6-21. Twinax Interface Board Installation

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 AC 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

Table 6-3. 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
NOTE: The language character sets 1 — US/Canada and B — Japan (English) are the same. The charcter 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.

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:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS HIGHLY RECOMMENDED THAT THE TECHNICIAN WEAR AN ANTISTATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

Installation Instructions

1. Refer to RRP No. 1 on page 4-13. Turn the power Off (**O**) and disconnect the AC power cord. Disconnect the data cable.
2. Refer to RRP No. 2 on page 4-15 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.

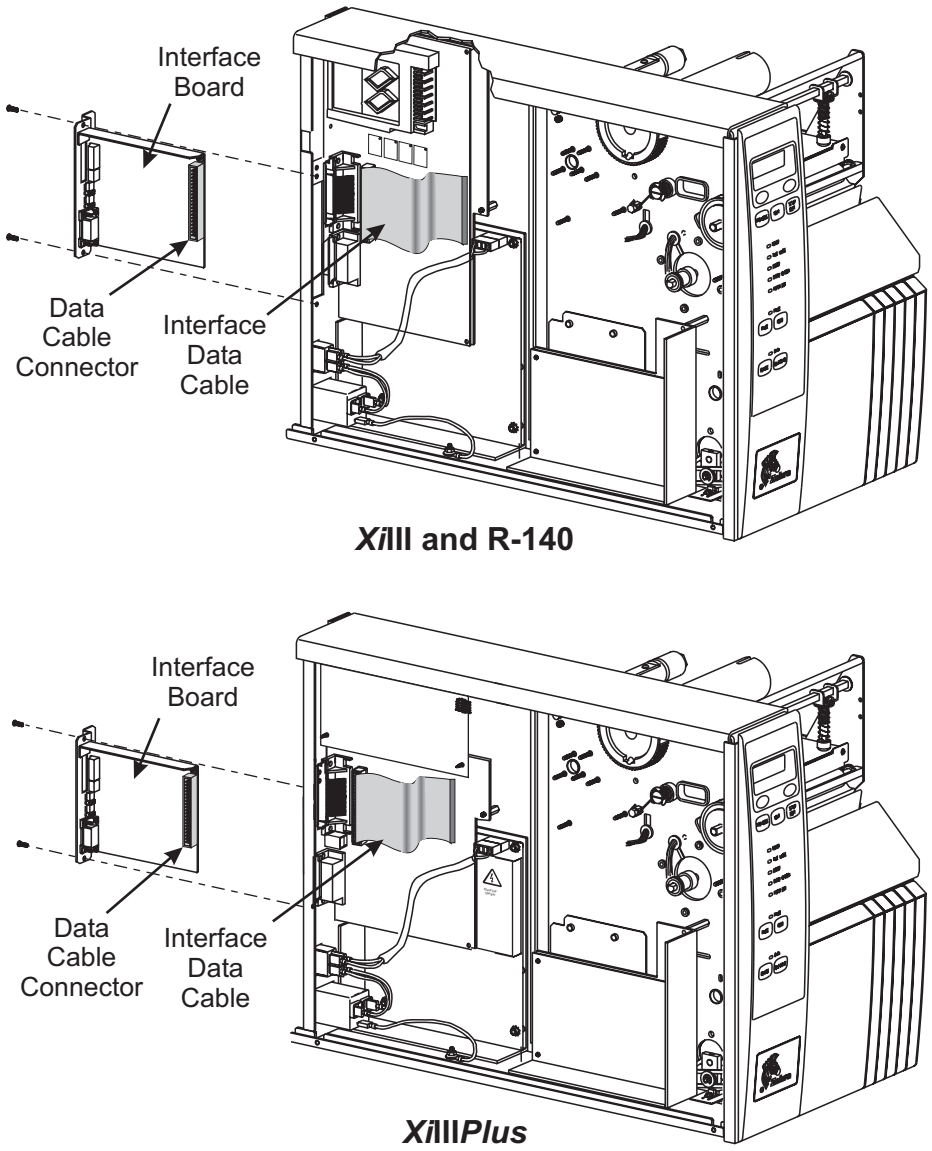


Figure 6-22. Coax Communications Interface Board Installation

4. Plug the 40-pin interface data cable into the keyed interface data cable connector (J4–*Xi*III or P21–*Xi*III*Plus*) 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 AC 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.

Wireless Ethernet

WCSO Board Removal and Replacement

This document provides the instructions necessary to replace a ZebraNet Wireless Card Socket Option (WCSO) board.

The main topics include:

Before you begin

This section tells you what tools you need to perform the necessary steps and defines the icon topics used throughout this document.

Installation

The instructions that follow describe the steps to remove a WCSO board, install a new WCSO board, and configure it.

1. Refer to RRP No. 1 on page 4-13, turn the printer Off (**O**), and disconnect the AC power cord. Remove any communication cables.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.

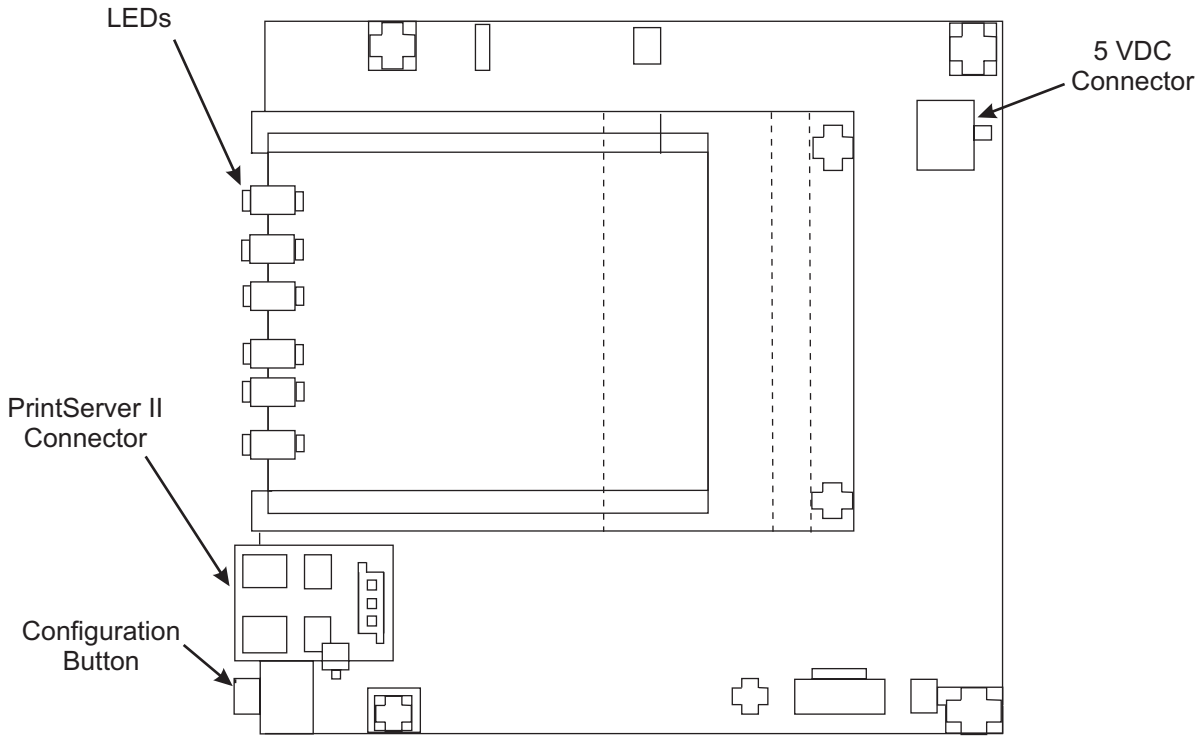
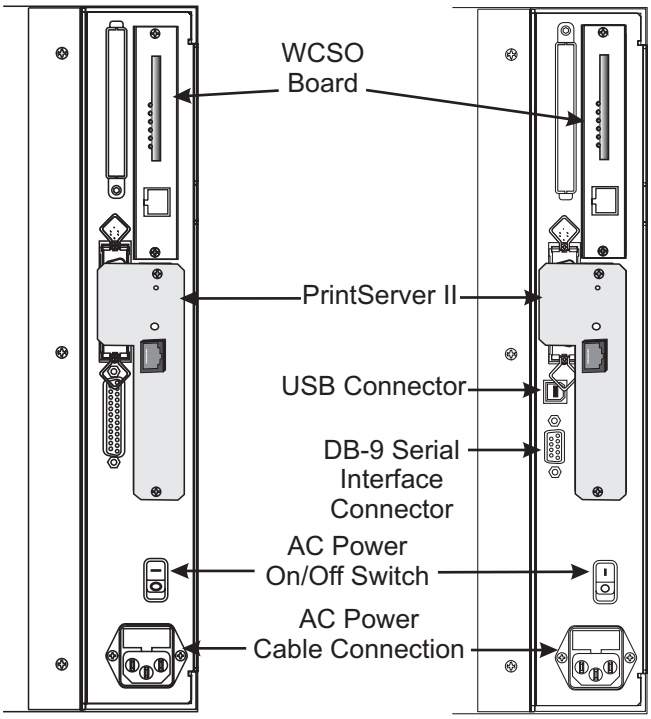


Figure 6-23. WCSO Board

3. Unplug the power cable (multicolored) connected to the 5-VDC connector on the WCSO board.



Xi*III and R-140** ***Xi*III*Plus

Figure 6-24. 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 (multicolored) cable to the WCSO board's 5-VDC connector.
7. Plug the printer in and turn it On (**I**). Make sure there is power to the WCSO board (Some LEDs should be lit).

NOTE: If the WCSO board does not have power (no LEDs are lit), ensure that the power (multicolored) cable is securely inserted into one of the available 5-VDC connectors.

8. Turn the printer Off (**O**) and put the printer's side panel back on.

ZebraNet Wireless View

1. From the status bar, click **Start>Programs>ZebraNet Wireless>ZebraNet Wireless View.**

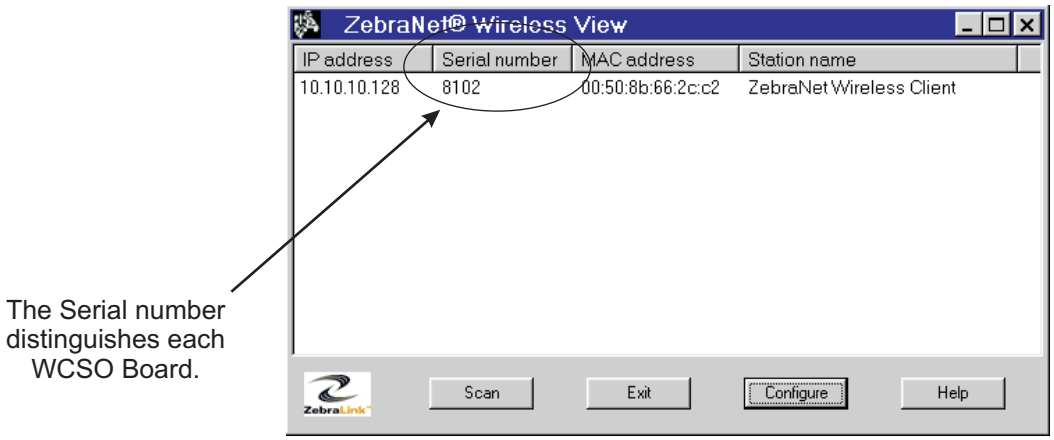


Figure 6-25. The *ZebraNet Wireless View* Dialog Opens

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 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 (lights are lit on both).

Cable Overview (7 foot [2 m])

This section describes the use of one of the 7 foot (2 m) cables from the installation kit. This cable is used strictly for setup and configuration purposes to prepare 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 crossover cable **red**, all devices resume normal operation.

Here are some solutions if the ESSIDs match:

- To isolate network traffic, use the 7 foot (2 m) green straight-through cable and connect it to the printer and to a laptop.
- Use the 7 foot (2 m) red crossover cable to temporarily change the AP's ESSID.

Cable Usage

NOTE: The 7 foot (2 m) cable does* not go *in the print server.

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, complete the callout illustration step in Figure 6-26 below.
   - If you are connecting your printer to a hub or network connection, complete the callout illustration step in Figure 6-27 below.

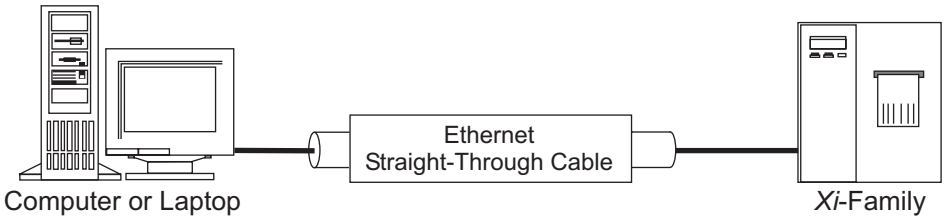


Figure 6-26. Straight-Through Cable Environment

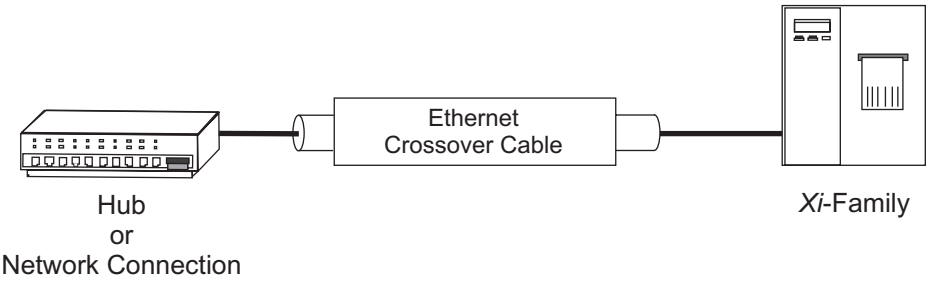


Figure 6-27. Crossover Cable Environment

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, press 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, 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.

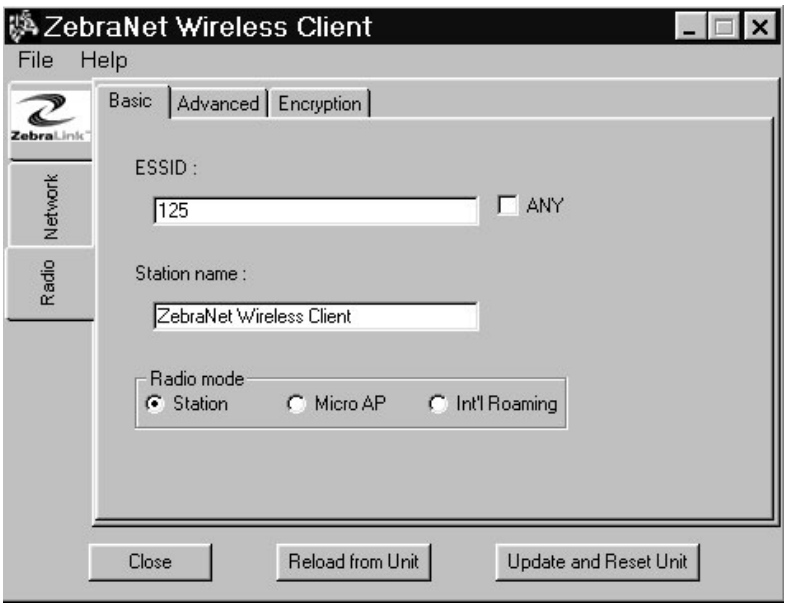


Figure 6-28. The *ZebraNet Wireless Client* dialog with *Radio>Basic* tab open

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, 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, remove 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 to 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 printserver are recognized.

Testing Installation

1. From the status bar, click **Start>Programs>ZebraNet Wireless>ZebraNet Wireless View.**
2. Confirm that your wireless device is listed in the ZebraNet Wireless View dialog. The serial number is each WCSO's unique identifier.
3. From the ZebraNet Wireless View dialog, click Scan. Your wireless device is 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

Applicator Interface Port (*Xi*III, *Xi*III*Plus* and R-140)

1. Refer to RRP No. 1 on page 4-13. Turn the printer power Off (**O**) and disconnect the AC power cord. Disconnect the data cable.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Refer to Figure 6-20 and remove the screws and the blank cover plate (or the interface board and cables) installed next to the PCMCIA memory card slot. (Save the screws.)
4. Attach the DC power cable to J5 on the applicator circuit board, then connect interface data cable to J4 as needed.
5. Refer to Figure 6-29. 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.
6. Slide the applicator circuit board completely into the mounting slot, and secure it with the screws previously removed.
7. Reinstall the electronics cover.
8. Reinstall the AC power cord and restore power. Turn the printer On (**I**).

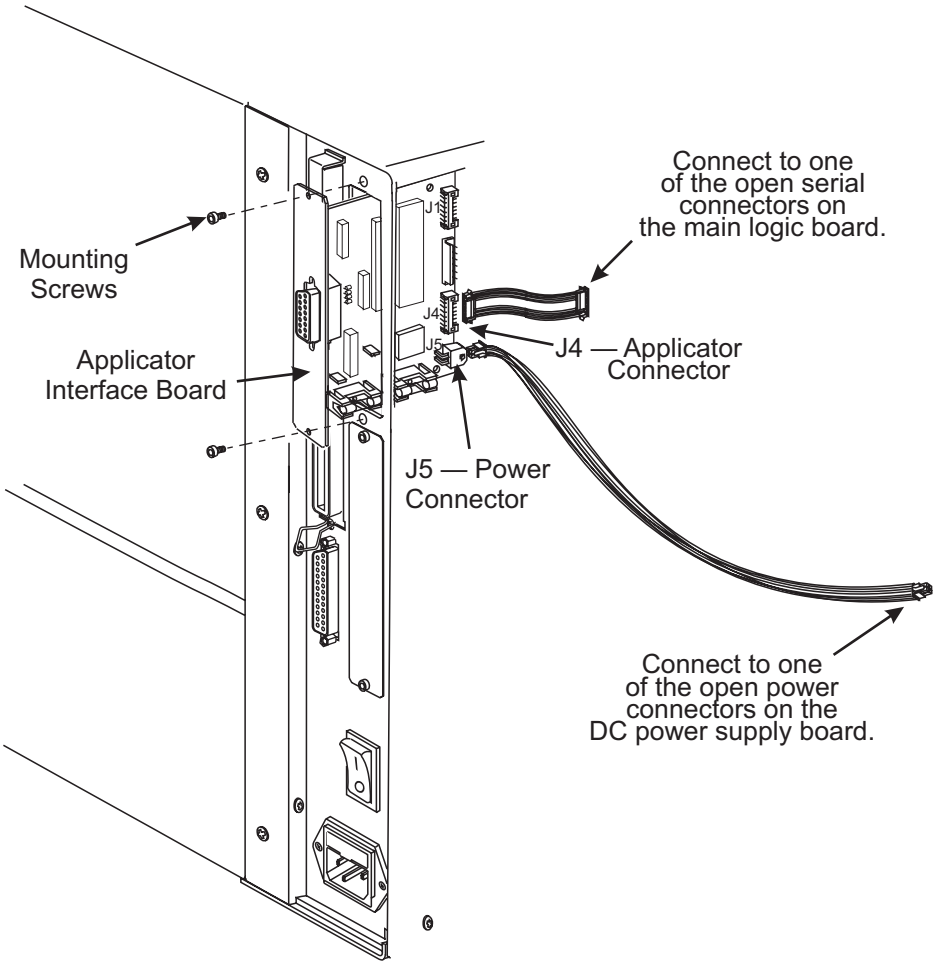


Figure 6-29. Applicator Installation

Applicator Interface Port with Real-Time Clock (*Xi*III and R-140)

***NOTE: The real-time clock (RTC) is on the main logic board and is standard on the Xi*IIIPlus.**

1. Refer to RRP No. 1 on page 4-13. Turn the printer power Off (**O**) and disconnect the AC power cord. Disconnect the data cable.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. Refer to Figure 6-20 and remove the screws and the blank cover plate (or the interface board and cables) installed next to the PCMCIA memory card slot. (Save the screws.)

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 6-30. 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. Reinstall the electronics cover.
8. Reinstall the AC power cord and restore power. Turn the printer On (**I**).

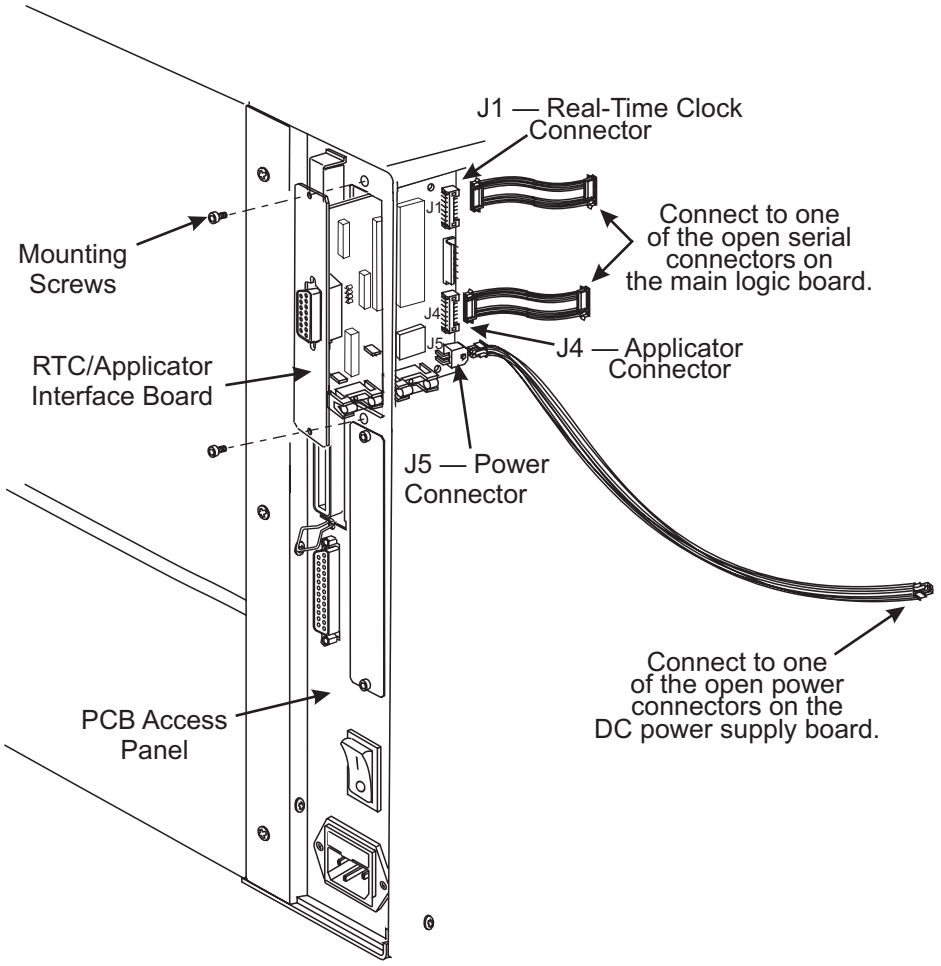


Figure 6-30. Applicator/Real-Time Clock Installation

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 *Xi*III-Series printer.

Idle Display

Selects the printer's idle display format and the method of displaying the time/date information. This parameter also affects the configuration label printout and the **SET DATE** and **SET TIME** formats.

Selections:

FW VERSION	MM/DD/YY 24HR	MM/DD/YY 12HR
DD/MM/YY 24HR	DD/MM/YY 12HR	

If FW VERSION is selected, the format is on the configuration label and on the **SET DATE.**

Set Time

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

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 4-9 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.

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 × C × 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) = 714748 bytes
Print Width	(B) = 832 dots
Label Length	(C) = 1000 dots
Max Labels Queued	(D) = 2
The "label queue" memory required (B × C × D) / 8	(E) = 208000 bytes
The "**^CO** command" memory required ((714748 – 208000) / 1024) – 5	(F) = 489.87 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

a = Mode
S = START TIME mode (Default)
T = TIME NOW mode

b = Language Number
(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

a = Clock (No Default)
2 = Secondary Clock
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 6-45.

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

Adding the Cutter Option to this printer requires the installation of several parts and assemblies and should be performed only by a qualified Service Technician.

The service technician must follow all of the step-by-step procedures provided in these instructions.

NOTE: Cutter Option not available on 96XiIII.

Table 6-5. Kit Parts List

✓	Item #	Qty	Part Number	Description	90 *Xi*II, *Xi*III, and *Xi*IIII*Plus*	96 *Xi*IIII*Plus*	140 *Xi*II, *Xi*IIII, and *Xi*IIII*Plus*	170 *Xi*II, *Xi*IIII, and *Xi*IIII*Plus*	220 *Xi*II, *Xi*IIII, and *Xi*IIII*Plus*
	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 *Xi*II/*Xi*III					X
	13	1	**46385**	Cutter Catch Tray Kit 170 *Xi*II/*Xi*III				X	
	13	1	**47385**	Cutter Catch Tray Kit 90 *Xi*II/*Xi*III	X	X			
	13	1	**48385**	Cutter Catch Tray Kit 140 *Xi*II/*Xi*III			X		
	14	1	**30405-006**	Screw, 1/4-20 × 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

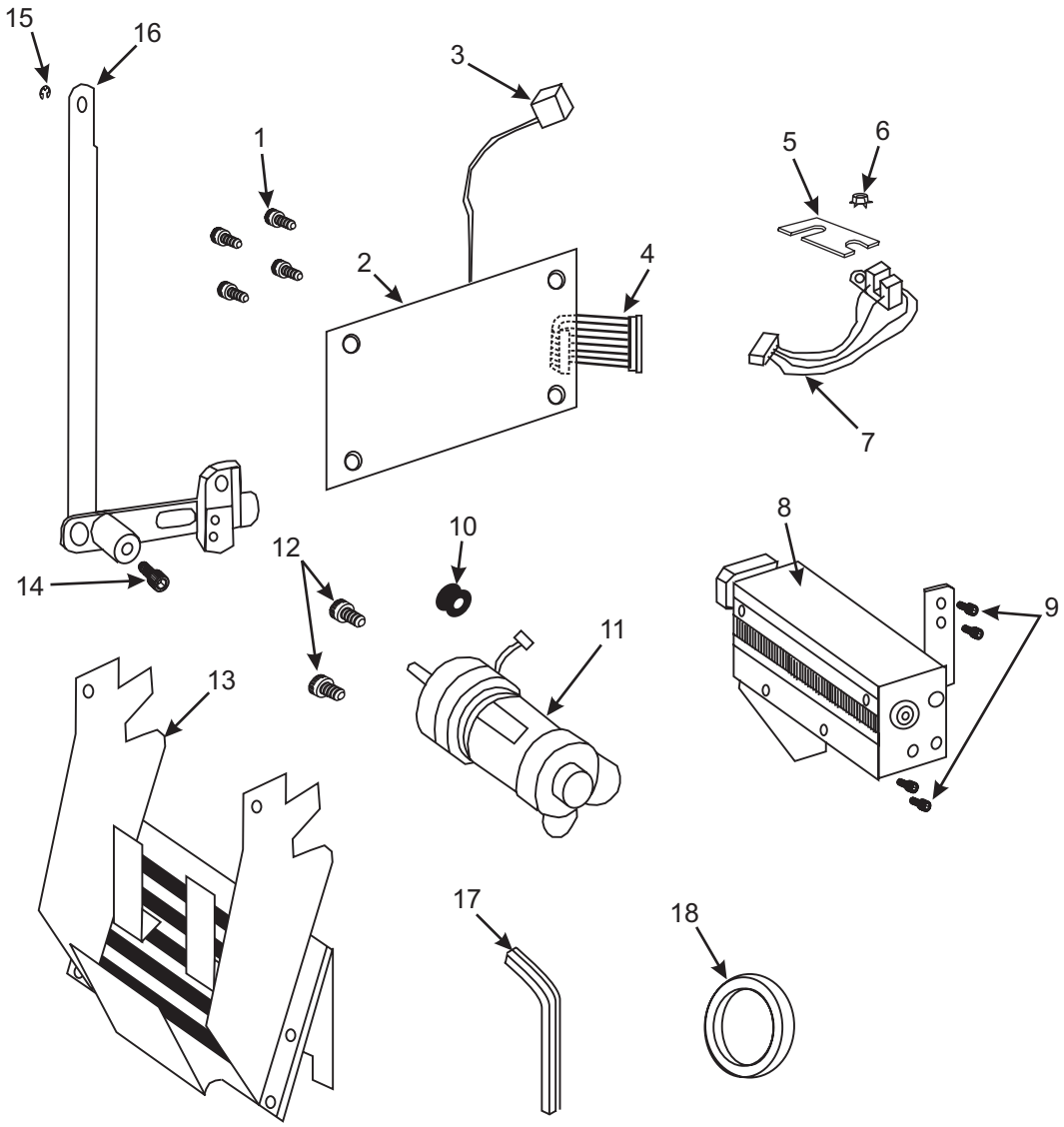


Figure 6-31. Part Identification Cutter Option

NOTE: The lock washer, nut, E-ring, and screws are not shown here. See Table 6-5.

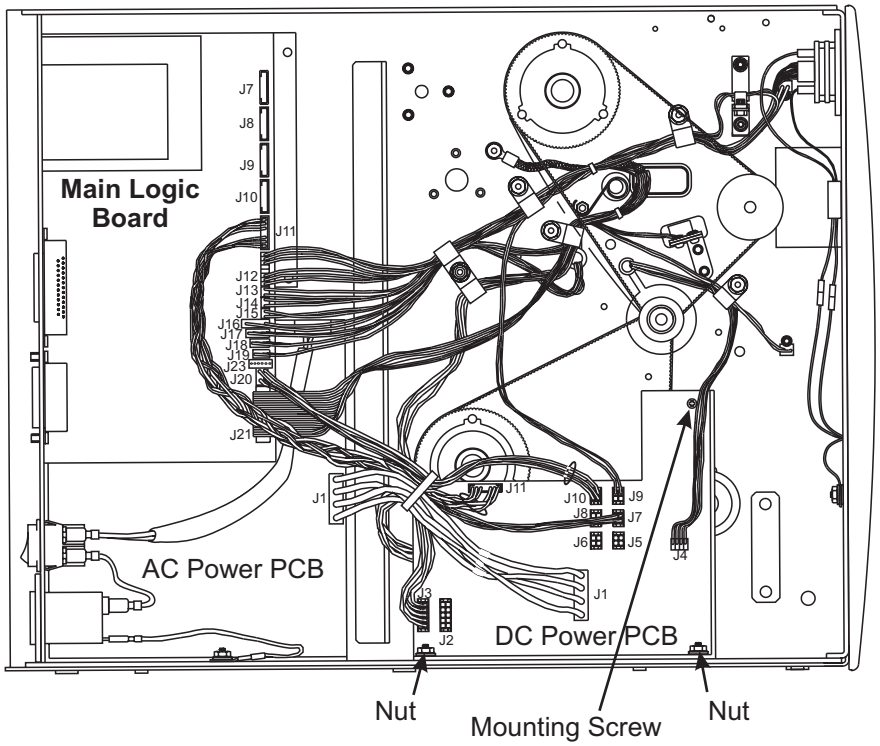


Figure 6-32. DC Power PCB Location and Interconnections

NOTE: J5–J10 have the same outputs.			
J1	J1 AC Power PCB	J7	Cutter Option
J2	Additional Printhead Power for 220*Xi*III Printers	J8	N/A
J3	Printhead Power for all *Xi*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. Refer to RRP No. 1 on page 4-13. Turn the printer Off (**O**) and remove the power cord. Disconnect the printer communications cable.
2. Refer to RRP No. 2 on page 4-15 and remove the electronics cover.
3. See Figure 4-6-32. Note and remove all connectors from the DC power supply assembly.
4. Remove the mounting screw and two nuts securing the DC power supply.
5. Remove the DC power supply assembly.

NOTE: For part identification, see Table 6-5.

Cutter Motor Installation

NOTE: The cover plates and cover plate mounting screws are not reused.

1. Refer to Figure. 6-33. Open the media access door. Remove the cutter assembly cover plate.
2. Remove the cutter motor cover plate.

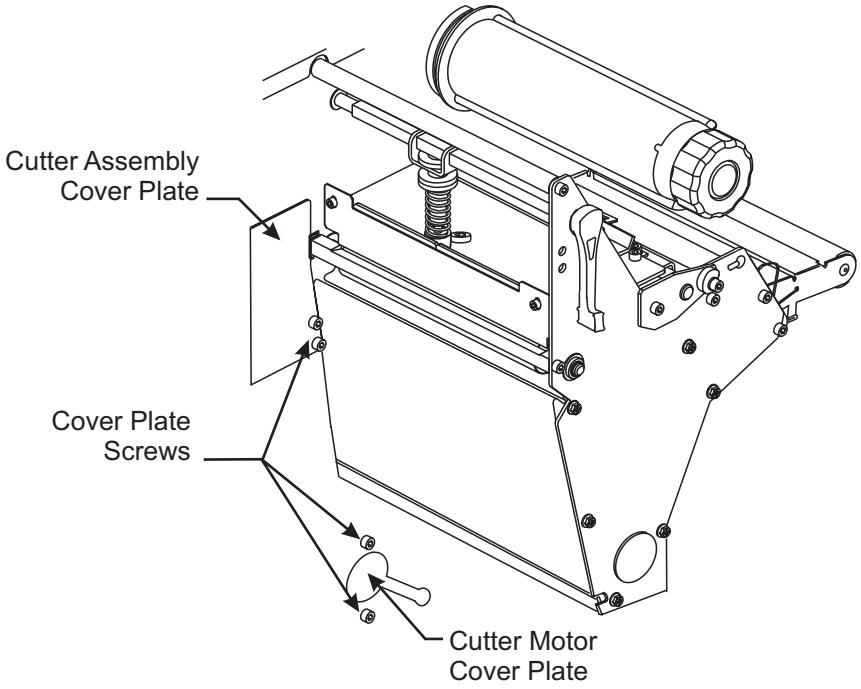


Figure 6-33. Cover Plate Locations

3. See Figure 4-6-34. 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).

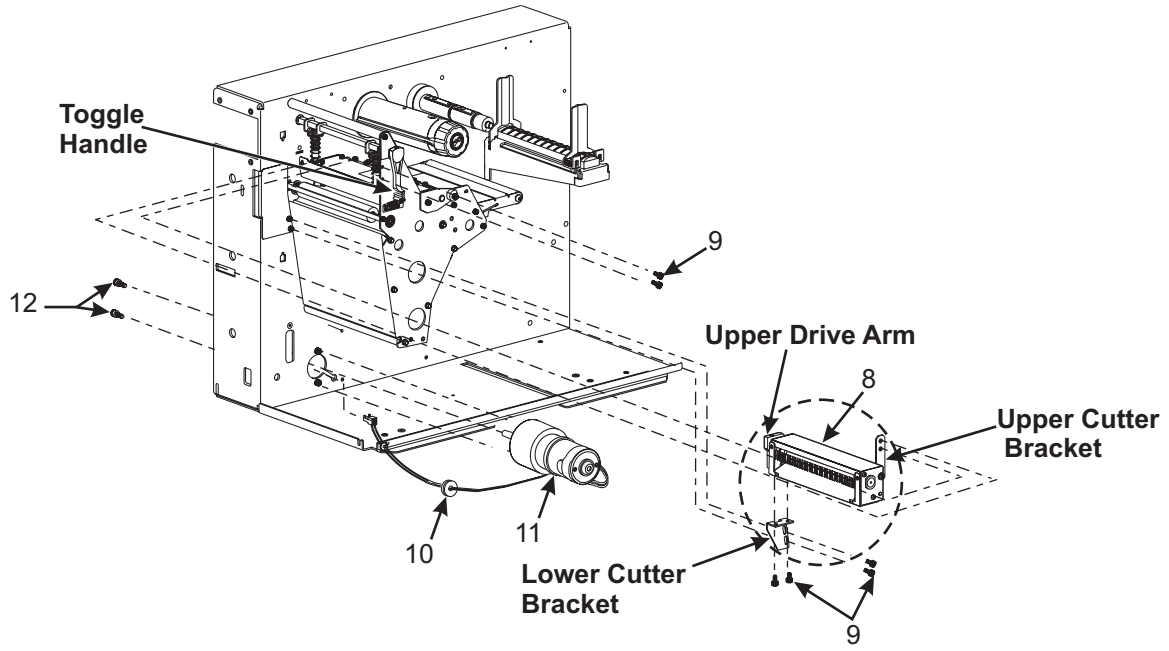


Figure 6-34. Mechanical Side Assembly

Cutter Mechanical Assembly Installation

1. Refer to Figure. 6-34. 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 6-35. 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.

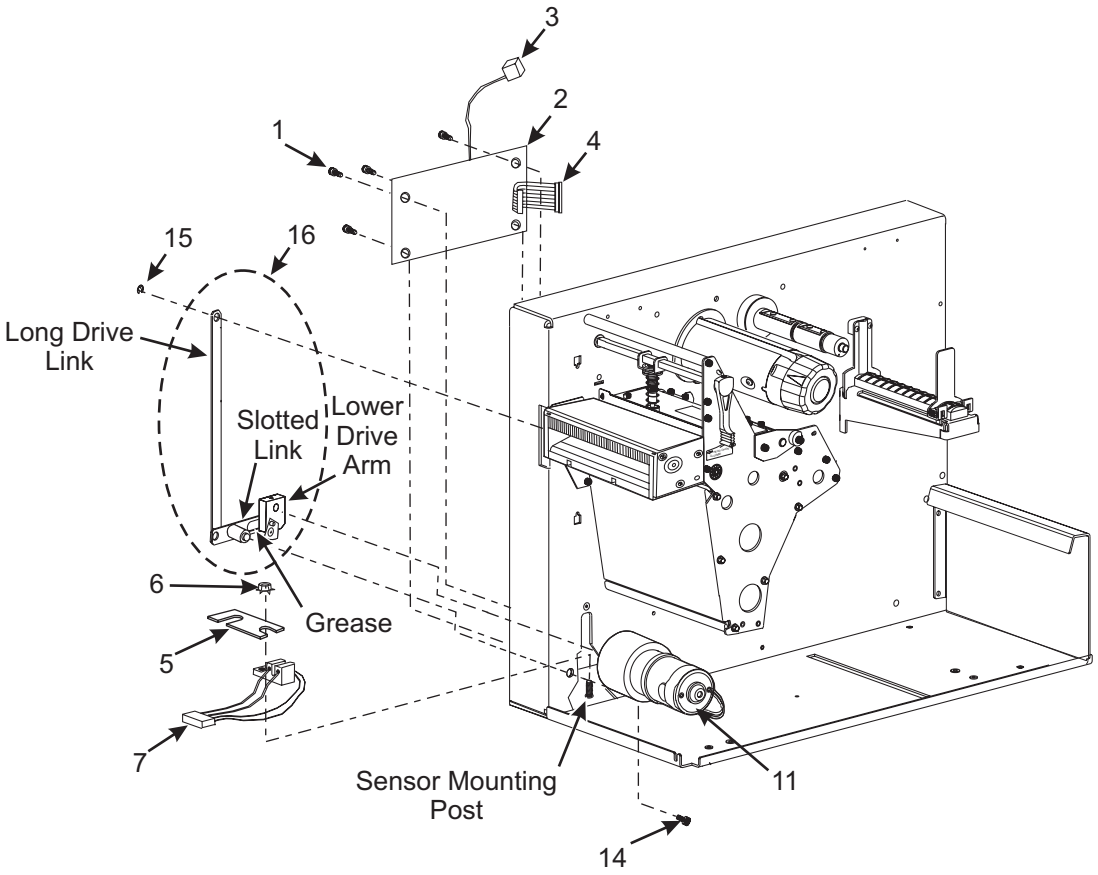
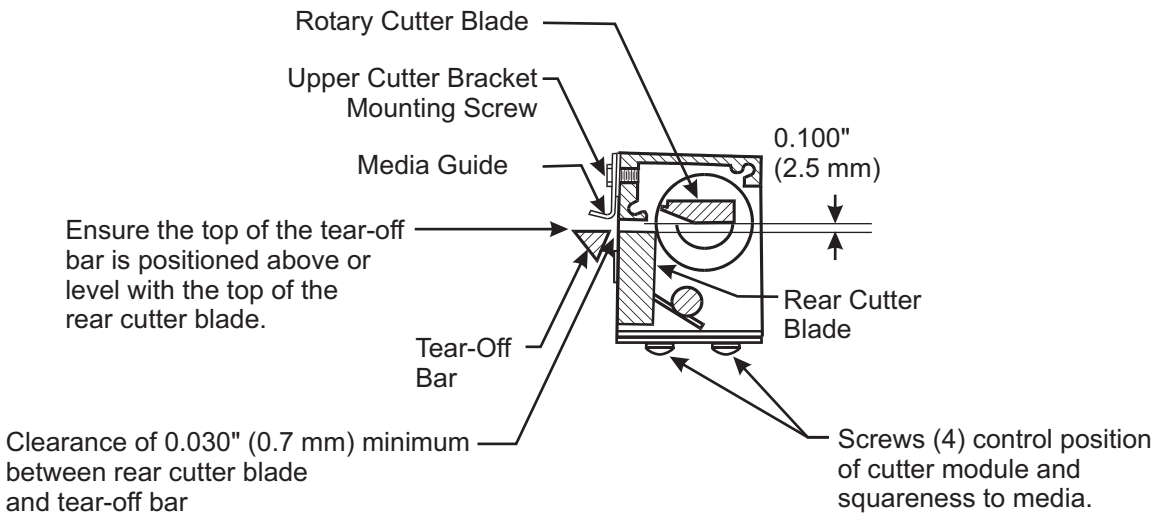


Figure 6-35. Linkage and Circuit Board Installation

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 6-36. 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 6-36. 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. 6-35.

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. 6-37. 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.

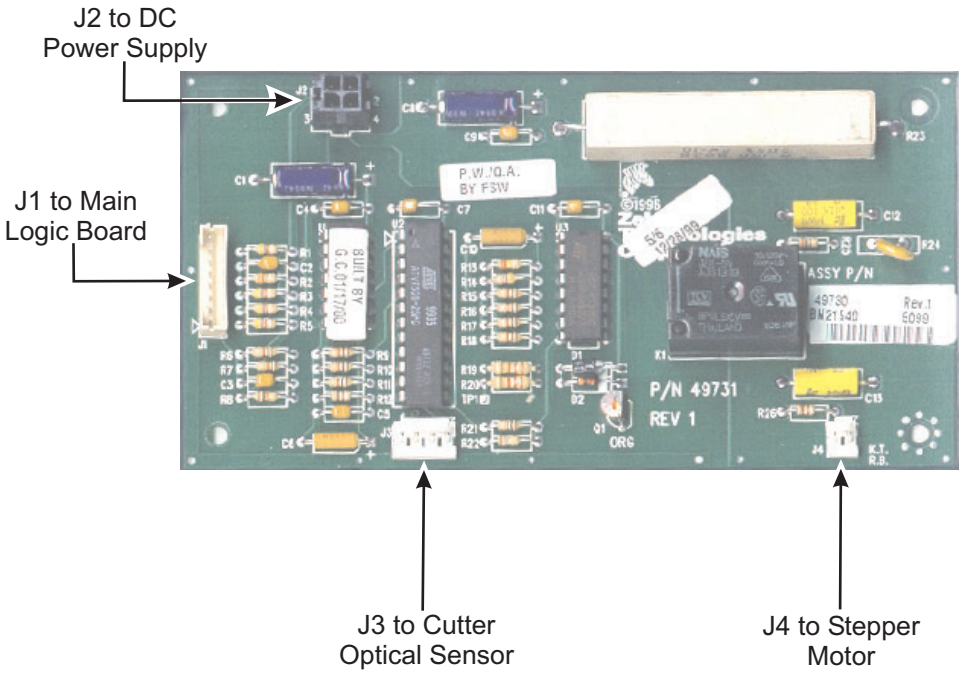


Figure 6-37. Cutter Option Circuit Board

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. 6-38. Wind the motor leads around the ferrite core.

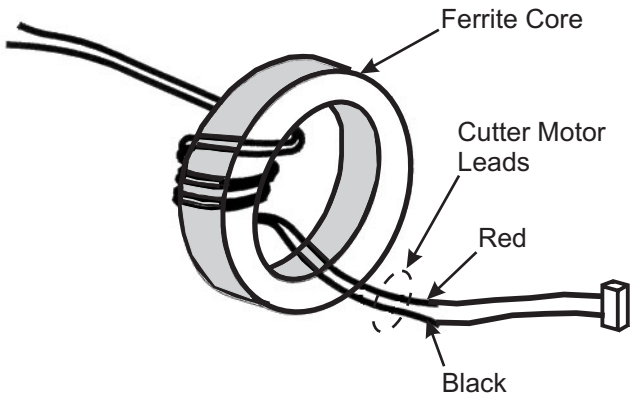


Figure 6-38. Cutter Motor Leads

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 4-6-31. 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. 6-37. 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 4-6-32. 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 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 4-6-37. 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 4-6-31. 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 switch Off (**O**).

DC Power Supply Board Reinstallation

1. Reinstall the DC power supply and tighten the mounting screw and nuts. Ensure all wires are positioned away from any moving mechanical parts and are not pinched or cut.
2. See Figure 4-6-32. 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 switch 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 switch Off (**O**). Refer to the printer User's Guide for this procedure.
5. To test the cutter for proper operation, load media and ribbon, hold in the **PAUSE** key while turning the AC 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. Complete this installation procedure by reinstalling 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 used 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 User's Guide for assistance.

1. Remove the printer's electronics cover, if attached.
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 6-36. 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.