Intermec

Service Manual

EasyCoder PX4i and EasyCoder PX6i Bar Code Label Printers

Intermec Technologies Corporation

Corporate Headquarters

6001 36th Ave. W.

Everett, WA 98203

U.S.A.

www.intermec.com

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Contents

7 Transfer Ribbon Mechanism

8 Print Unit

9 Liner Takeup Kit

10 Label Taken Sensor

11 Paper Cutter

12 Electronics Compartment

13 Power Supply

14 Driver Board

15 CPU Board

16 Interfaces

17 Troubleshooting

A Program Overviews

B Firmware Upgrading

C Measuring the Break Torque

Before You Begin

This section provides you with safety information, technical support information, and sources for additional product information.

Safety Summary

Your safety is extremely important. Read and follow all warnings and cautions in this document before handling and operating Intermec equipment. You can be seriously injured, and equipment and data can be damaged if you do not follow the safety warnings and cautions.

Do not repair or adjust alone

Do not repair or adjust energized equipment alone under any circumstances. Someone capable of providing first aid must always be present for your safety.

First aid

Always obtain first aid or medical attention immediately after an injury. Never neglect an injury, no matter how slight it seems.

Resuscitation

Begin resuscitation immediately if someone is injured and stops breathing. Any delay could result in death. To work on or near high voltage, you should be familiar with approved industrial first aid methods.

Energized equipment

Never work on energized equipment unless authorized by a responsible authority. Energized electrical equipment is dangerous. Electrical shock from energized equipment can cause death. If you must perform authorized emergency work on energized equipment, be sure that you comply strictly with approved safety regulations.

Safety Icons

This section explains how to identify and understand dangers, warnings, cautions, and notes that are in this document. You may also see icons that tell you when to follow ESD procedures.

A warning alerts you of an operating procedure, practice, condition, or statement that must be strictly observed to avoid death or serious injury to the persons working on the equipment.

A caution alerts you to an operating procedure, practice, condition, or statement that must be strictly observed to prevent equipment damage or destruction, or corruption or loss of data.

This icon appears at the beginning of any procedure in this manual that could cause you to touch components (such as printed circuit boards) that are susceptible to damage from electrostatic discharge (ESD). When you see this icon, you must follow standard ESD guidelines to avoid damaging the equipment you are servicing.

Note: Notes either provide extra information about a topic or contain special instructions for handling a particular condition or set of circumstances.

Global Services and Support

Warranty Information

To understand the warranty for your Intermec product, visit the Intermec web site at http://www.intermec.com and click Service & Support. The Intermec Global Sales & Service page appears. From the Service & Support menu, move your pointer over Support, and then click Warranty.

Web Support

Visit the Intermec web site at http://www.intermec.com to download our current documents in PDF format. To order printed versions of the Intermec manuals, contact your local Intermec representative or distributor.

Visit the Intermec technical knowledge base (Knowledge Central) at http://intermec.custhelp.com to review technical information or to request technical support for your Intermec product.

Telephone Support

Contact your local Intermec representative. To search for your local representative, from the Intermec web site, click **Contact**.

Who Should Read This Document?

This Service Manual provides you with in-depth information about the EasyCoder PX4i and PX6i printers and how to maintain, repair, and troubleshoot them. It is primarily intended for authorized service technicians.

Related Documents

The Intermec web site at http://www.intermec.com contains our current documents that you can download in PDF format. To order printed versions of the Intermec manuals, contact your local Intermec representative or distributor.

We recommend that the service technician keeps the following manuals easily accessible in electronic or printed form:

- *Intermec EasyCoder PX4i, User's Guide (Fingerprint version)*
- *Intermec EasyCoder PX6i, User's Guide (Fingerprint version)*
- *Intermec EasyCoder PX4i, User's Guide (IPL version)*
- *Intermec EasyCoder PX6i, User's Guide (IPL version)*
- *Intermec EasyCoder PX4i and PX6i, Spare Parts Catalog*
- *Installation Instructions* for various options
- *Intermec Direct Protocol v8.30 (or later), Programmer's Reference Manual*
- *Intermec Fingerprint v8.00 (or later), Tutorial*
- *Intermec Fingerprint v8.30 (or later), Programmer's Reference Manual*
- *IPL Programming, Reference Manual (rev. 007 or later)*
- *EasyLAN Interface Kit, Installation Instructions*
- *EasyLAN Wireless Interface Kit, Installation Instructions*
- *EasyLAN, User's Guide*
- *EasyLAN Network Setup, User's Guide*

Introduction

This Service Manual is intended to facilitate installation, troubleshooting and repair of the Intermec EasyCoder PX4i and PX6i printers in the versions delivered at the date of publishing. Thus, all information on the Intermec Fingerprint (FP) firmware is based on version 8.30 and information on the Intermec Programming Language (IPL) is based on version 2.30. The on-going product improvement can be followed in the Printer Technical Bulletins from Intermec.

Note that even if the printers are technical identical (with the exception of the keyboard overlay), Fingerprint and IPL make the printer work quite differently and certain devices and options are not supported by IPL.

Generally, illustrations in this manual show printers with a Fingerprint-compatible keyboard.

Please note that the operations described in this manual only should be carried out by skilled and authorized personnel with proper training and full understanding of written English. The printers contain wires and circuits with up to 380V, which implies the risk of electrical shock. Moving parts may also cause harm, if incorrectly manipulated.

It is assumed that the reader possesses reasonable skills in mechanics and electronics and is familiar with the Intermec programming languages (Fingerprint or IPL) and their related standard application programs. It is also assumed that the reader has access to the standard tools of an electronics workshop.

1 Models and Options

This chapter describes how to identify the various models in the EasyCoder PX4/6i-series of printers, provides comprehensive technical specifications, and gives all important measurements.

1.1 Identification

Main Models

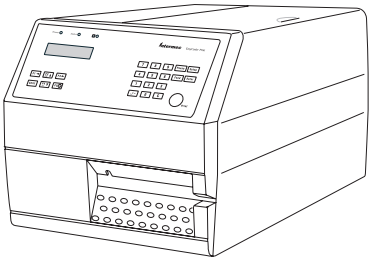
The EasyCoder PX4i and PX6i constitute a series of direct thermal/thermal transfer printers, which can run either Intermec Fingerprint Programming Language (FP) v8.30 (or later) or Intermec Programming Language (IPL) v2.30 or later. Externally, the difference is visible on the keyboard overlay. Fingerprint printers have 23 keys or a full alphanumeric keyboard and IPL printers have 8 keys (see Chapter 2).

EasyCoder PX4i has a maximum print width of 112 mm (4.4 in).

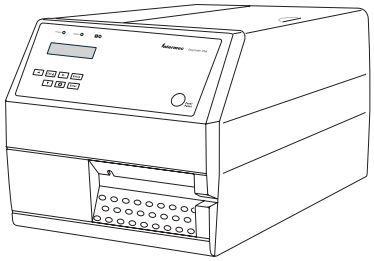
EasyCoder PX6i has a maximum print width of 167.4 mm (6.59 in).

Printers running Fingerprint are available with an 8 dots/mm (203.2 dpi) or 11.81 dots/mm (300 dpi) printhead density, whereas printers running IPL only are available with an 8 dots/mm (203.2 dpi) printhead.

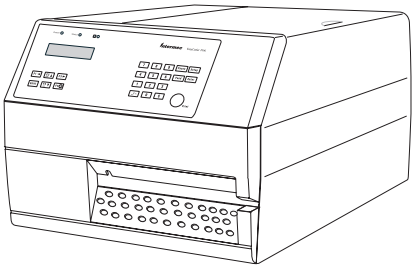
A number of options and accessories, such as cutter, internal liner takeup, label taken sensor, and various types of interface boards, allow the printers to be tailor-made or adapted for specific applications.



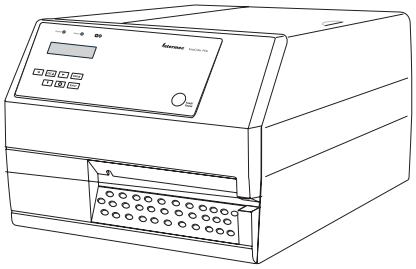
EasyCoder PX4i
Fingerprint model



EasyCoder PX4i
IPL model



EasyCoder PX6i
Fingerprint model

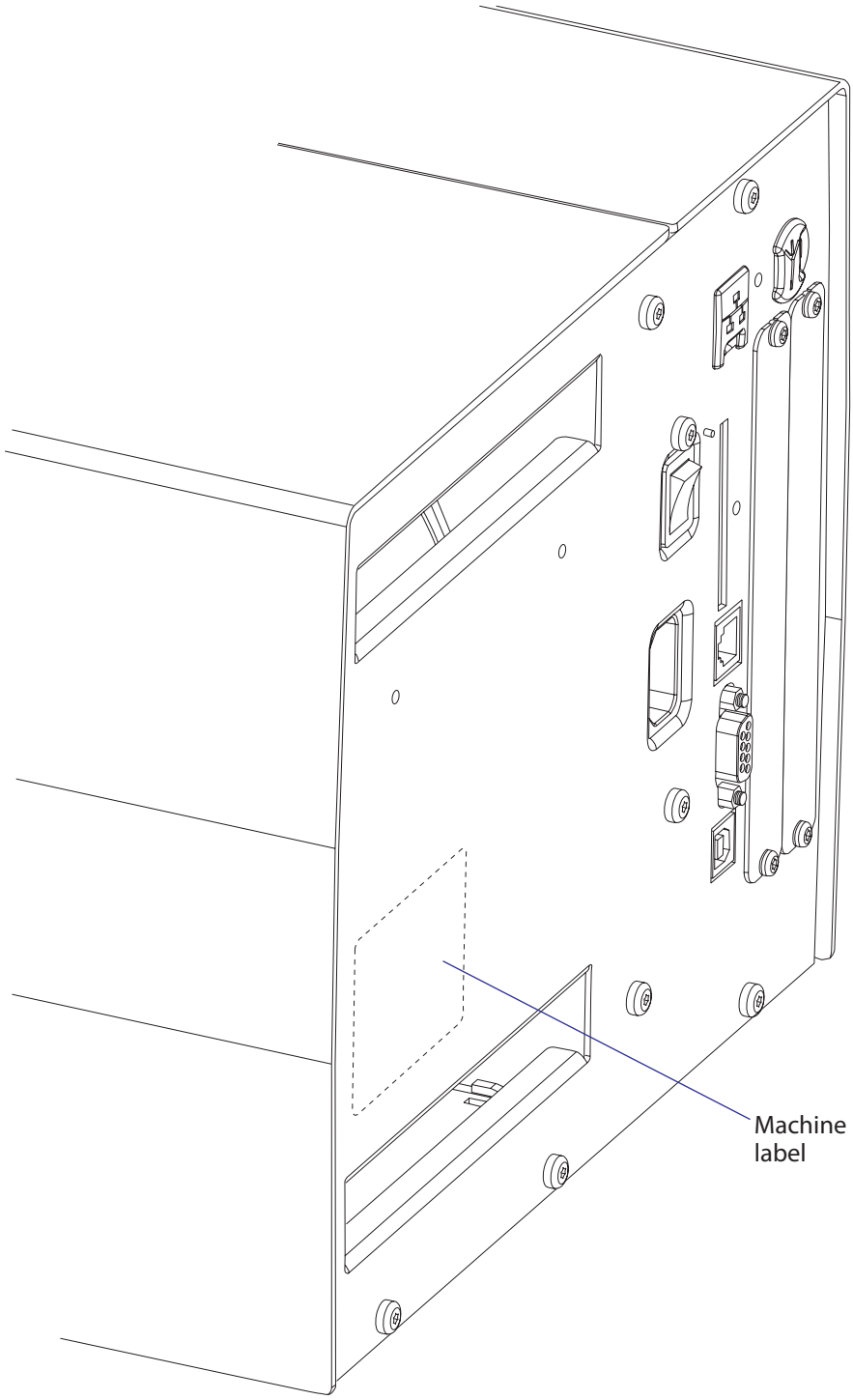


EasyCoder PX6i
IPL model

Note: Unless otherwise stated, illustrations in this manual show an EasyCoder PX4i running Intermec Fingerprint.

To identify the printer, start by reading the machine label attached to the rear of the printer. The machine label contains type, part number, serial number, and signs of approval.

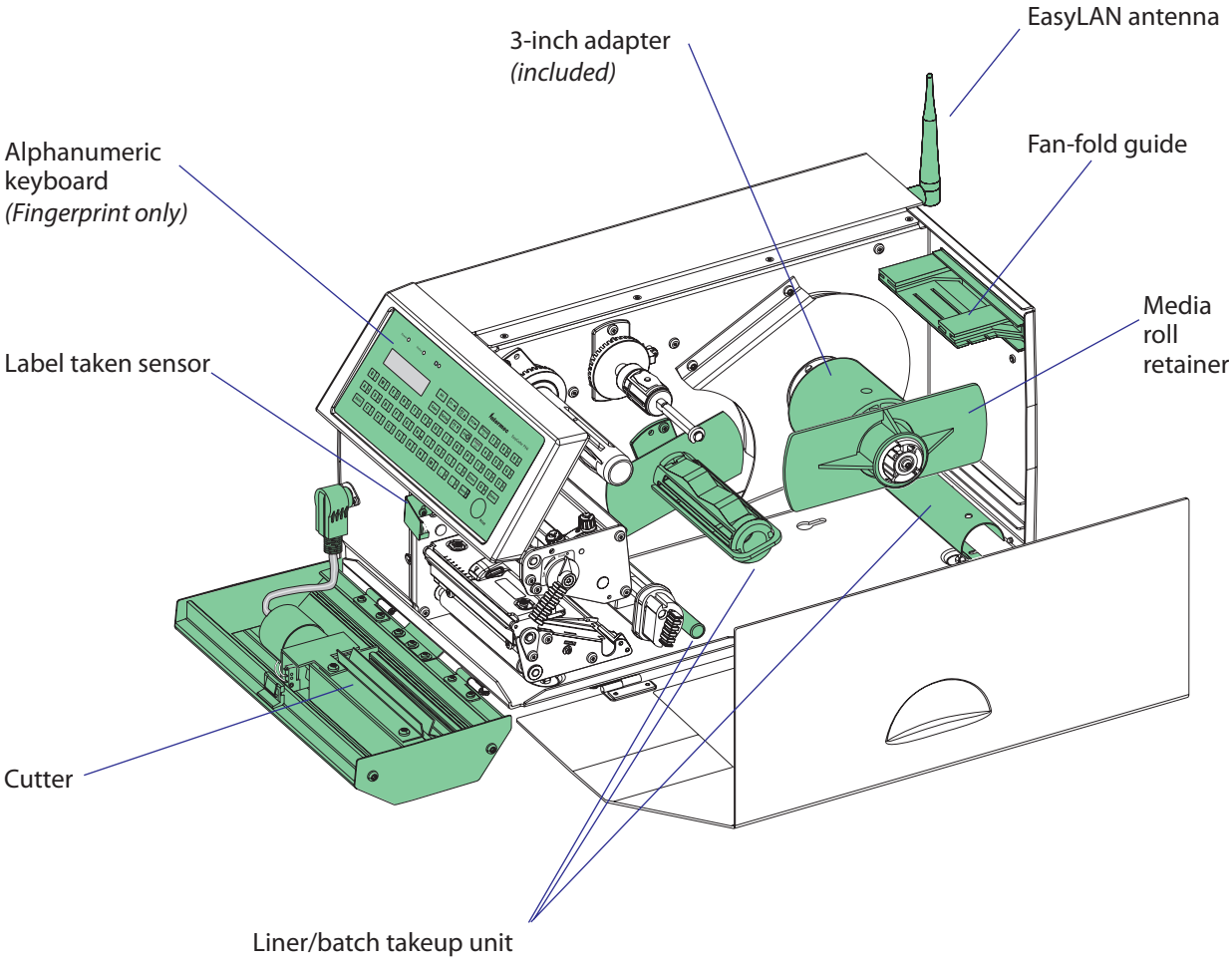
The printer can use any 90 to 265 VAC, 45 to 65Hz voltage. The switched power supply eliminates the need for any manual voltage selector.



Options for EasyCoder PX4i

The EasyCoder PX4i can be fitted with a number of options:

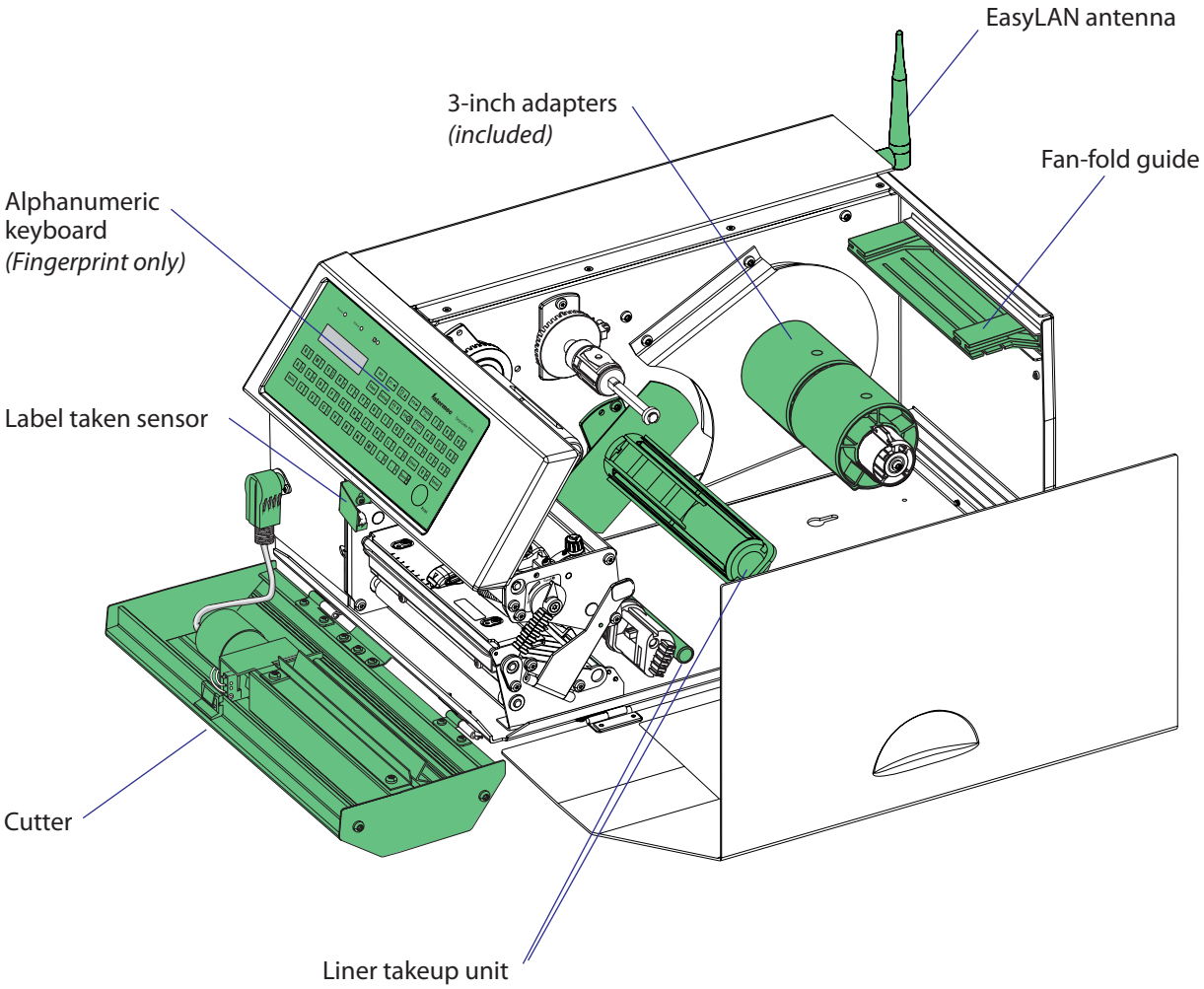
- Label Taken Sensor (see Chapter 10)
- Integral Liner/Batch Takeup Unit (see Chapter 9)
- 3-inch Adapter (for media supply hub) (see Chapter 5)
- Media Roll Retainer (for media supply hub) (see Chapter 5)
- Fan-Fold Guides (see Chapter 5)
- Cutter (see Chapter 11)
- Real Time Clock Circuit (not IPL) (see Chapter 15)
- Alphanumeric keyboard (not IPL) (see Chapter 2)
- One or two interface boards of various types (only one parallel board with IPL) (see Chapter 16)
- EasyLAN interface (Ethernet or Wireless) (see Chapter 16)



Options for EasyCoder PX6i

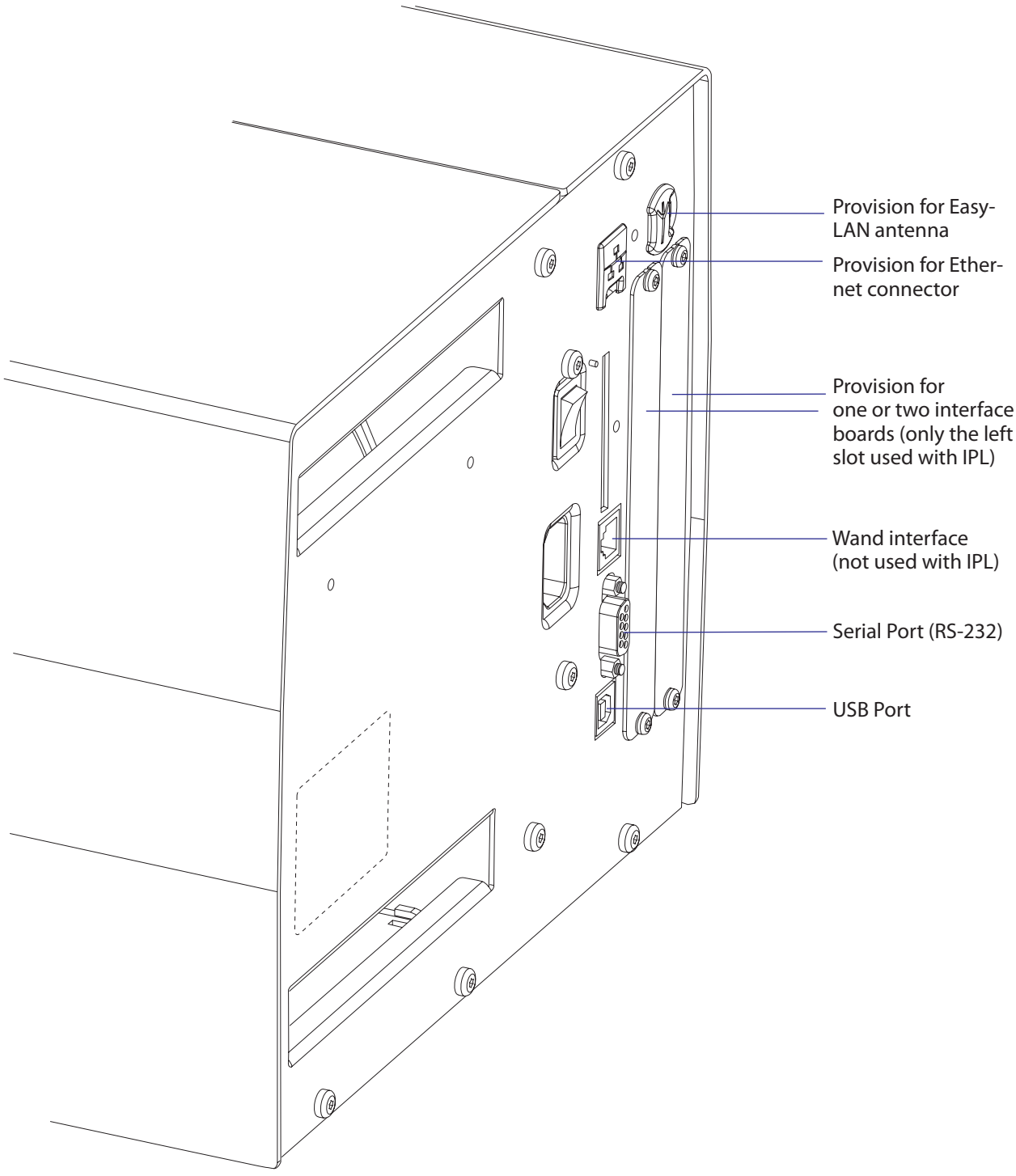
The EasyCoder PX6i can be fitted with a number of options:

- Label Taken Sensor (see Chapter 10)
- Integral Liner Takeup Unit (see Chapter 9)
- 3-inch Adapter (for media supply hub) (see Chapter 5)
- Fan-Fold Guides (see Chapter 5)
- Cutter (see Chapter 11)
- Real Time Clock Circuit (not IPL) (see Chapter 15)
- Alphanumeric keyboard (not IPL) (see Chapter 2)
- One or two interface boards of various types (only one parallel board with IPL) (see Chapter 16)
- EasyLAN interface (Ethernet or Wireless) (see Chapter 16)



Interfaces

The printers are as standard provided with one serial RS-232 port, one serial USB port, and one wand interface. The wand interface is not supported by IPL. In addition, one EasyLAN interface and one or two extra interface boards can be fitted, see Chapter 14. IPL does only support one EasyLAN interface and one parallel interface board.



Checking Hardware and Firmware

Finally, you may want to inspect the electronics compartment. To do so, carefully follow the instructions in Chapter 12.

Always switch off the power and remove the power cord before removing the cover over the electronics compartment! Dangerous voltage!

In the electronics compartment, check:

- Type of CPU board?
  - Check number and size of Flash SIMMs.
  - Check size of SDRAM SIMM.
- Any optional interface board fitted?
  - Check type, straps, and optional circuits.

Refer to Chapters 15 and 16 for more information.

Being delivered with either Intermec Fingerprint v8.30 programming language or IPL v2.30 (or later versions), the printer can easily be converted from Fingerprint to IPL or vice versa using a firmware card or special software. The keyboard overlay will also need to be replaced. The type of firmware is indicated by the messages in the display window at startup.

Fingerprint only

If the printer is working and possible startup program can be interrupted, the type of program in the printer can be identified. Connect printer and computer, open a suitable communication program, and start up the printer in Fingerprint's immediate mode. The instruction FILES allows you to check what files the various parts of the printer's memory contain. The statements FONTS and IMAGES can be used for the same purpose regarding fonts and images. Use the VERSION$ function to check version of the Intermec Fingerprint firmware.

You can read the setup in the Setup Mode or using Intermec Shell, which also allows you to print test labels containing the present setup values. To enter Shell if a custom-made autoexec-file prevents access, lift the printhead and press any key on the printer's keyboard (except the <**Shift**> key), then turn on the power while continuing to press the key. When the Shell countdown begins, release the key and press <**Enter**> to start Shell. Do not forget to lower the printhead if you want to print anything, for example test labels. Refer to the User's Guide and to Appendix A in this Service Manual for more information on the Setup Mode and the Intermec Shell startup program.

If the printer still does not work, you may need to interview the user.

IPL only

The Test/Service part of the Setup Mode allows several types of test labels to be printed (see the *User's Guide* and Appendix A). IPL also has a number of commands that return valuable information on the printer's status (see *IPL Programming, Reference Manual*).

1.2 EasyCoder PX4i Specifications

Printing		
Print Technique	Direct Thermal and Thermal Transfer	
Printhead Resolution	8 dots/mm (203.2 dpi) or 11.81 dots/mm (300 dpi)	Not supported by IPL
Print Speed (variable)	100 to 300 mm/sec. (≈ 4 to 12 in./sec.)	
Print Width (max)	112 mm (4.4 in.)	
Print Length (max)	32767 dots = 409.5 cm (161.25 in.) at 203.2 dpi[1] = 277.5 cm (109.23 in.) at 300 dpi[1]	
Media Width (min/max)	25 to 120 mm (1 to 4.72 in.)	
Media Roll Diameter (max)	213 mm (8.38 in.) 205 mm (8.07 in.)	Tear-off & Cut-off Peel-off & batch takeup
Media Roll Core Diameter	38 to 40 mm (1.5 in.) or 76 mm (3 in.) with adapter fitted	
Ribbon Width (min/max)	55 to 120 mm (2.16 to 4.72 in.)	
Ribbon Roll Diameter (outer), max.	80 mm (3.15 in.)	≈ 450 m (1476 ft) length
Ribbon Roll Core Diameter (inner)	25 mm (1.00 in.)	
Print Directions	4	
Modes of Operation		
Tear-Off (Straight-through)	Yes	
Cut-Off	Option	With cutter
Peel-Off (Self-strip)	Option	With rewinder
Internal Batch Takeup	Option	With rewinder
Fingerprint Firmware		
Operating System	Intermec Fingerprint v8.30	Incl. Direct Protocol
Smooth Fonts	TrueDoc and TrueType fonts	
Resident Scaleable Fonts	15	Unicode fonts[2]
Resident Bar Codes	59	
Startup Program (std)	Intermec Shell v8.2	
IPL Firmware		
Operating System	IPL v2.30	
Smooth Fonts	13 scaleable + 21 simulated bitmap	
Resident Bar Codes	44	
Physical Measures		
Dimensions (W × L × H)	275 × 482 × 238 mm (10.8 × 19.0 × 9.4 in)	
Weight (excluding media)	12.85 kg (28.4 pounds)	
Ambient Operating Temperature	+5°C to +40°C (+41°F to +104°F)	
Storage Temperature	-20°C to +70°C (-4°F to +152°F)	
Humidity	10 to 90% non-condensing	
Electronics		
Microprocessor	32 bit RISC	
On-board Flash SIMMs	2 sockets for 4MB or 8MB each	Std. 1 x 4MB
On-board SDRAM SIMM	1 socket for 16MB	(Std. 16MB)

Power Supply		
AC Voltage	90 to 265 VAC, 45 to 65 Hz	
PFC Regulation	IEC 61000-3-2	
Power Consumption	Standby 20W; Continuous, average 175W; Peak 400W	
Sensors		
Label Gap/Black Mark/Out of Media	Yes	Variable position
Printhead Lifted	Yes	
Ribbon End/Ribbon Low	Yes	
Paper Sensor	Yes	
Controls		
Indicator Lamps	3	
Display	2 x 16 character LCD	Background light
Keyboard (Fingerprint)	22 keys membrane-switch type	
Keyboard (IPL)	7 keys membrane-switch type	
Print (FP) or Feed/Pause (IPL) button	1	
Beeper	Yes	
Data Interfaces		
Serial	1 x RS-232 + 1 x USB	
Bar Code Wand	Yes	Not supported by IPL
Connection for Optional Interface Boards	1 EasyLAN + 2 other (Fingerprint/DP)	IPL: 1 other + 1 EasyLAN
Cutter Interface	1	
Memory Card Adapter	1, for CompactFlash cards	IPL: Not as memory
Accessories and Options		
Integral Self-strip Unit with Liner Takeup	Option[3,4]	For peel-off and batch takeup
Media Roll Retainer	Option[5]	
Fan-fold Guide	Option[5]	
Cutter	Option[5]	
Label Taken Sensor	Option[3,4]	
Real Time Clock	Option[3,4]	Not supported by IPL
RS-232 Cable	Option	
Parallel Interface Cable	Option	
Parallel Interface Board	Option	
Double Serial Interface Board	Option[3,4]	Not supported by IPL
Serial/Industrial Interface Board	Option[3,4]	Not supported by IPL
EasyLAN Ethernet Interface	Option[3,4]	
EasyLAN Wireless Interface	Option[3,4]	
Built-in Alphanumeric Keyboard	Option[3,4]	Not supported by IPL
External Keyboard Converter	Option[5]	
CompactFlash Cards	Option[5]	8MB-1GB
CompactFlash Protection Plate	Option[5]	

[1]/. The max. print length is also restricted by the amount of free SDRAM memory.

[2]/. Latin, Greek, and Cyrillic fonts according to Unicode standard are included.

[3]/. Factory installed option

[4]/. Field-installable kit. Installation should be performed by a service technician.

[5]/. Operator-installable option.

1.3 EasyCoder PX6i Specifications

Printing		
Print Technique	Direct Thermal and Thermal Transfer	
Printhead Resolution	8 dots/mm (203.2 dpi) or 11.81 dots/mm (300 dpi)	Not supported by IPL
Print Speed (variable)	100 to 225 mm/sec. (≈ 4 to 8.85 in./sec.)	
Print Width (max)	167.4 mm (6.59 in.)	
Print Length (max)	32767 dots = 409.5 cm (161.25 in.) at 203.2 dpi[1] = 277.5 cm (109.23 in.) at 300 dpi[1]	
Media Width (min/max)	76 to 170 mm (3 to 6.69 in.)	
Media Roll Diameter (max)	213 mm (8.38 in.) 205 mm (8.07 in.)	Tear-off & Cut-off Peel-off & batch takeup
Media Roll Core Diameter	38 to 40 mm (1.5 in.) or 76 mm (3 in.) with adapter fitted	
Ribbon Width (min/max)	76.2 to 170 mm (3 to 6.69 in.)	
Ribbon Roll Diameter (outer), max.	80 mm (3.15 in.)	≈ 450 m (1476 ft) length
Ribbon Roll Core Diameter (inner)	25 mm (1.00 in.)	
Print Directions	4	
Modes of Operation		
Tear-Off (Straight-through)	Yes	
Cut-Off	Option	With cutter
Peel-Off (Self-strip)	Option	With rewinder
Fingerprint Firmware		
Operating System	Intermec Fingerprint v8.30	Incl. Direct Protocol
Smooth Fonts	TrueDoc and TrueType fonts	
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Startup Program (std)	Intermec Shell v8.2	
IPL Firmware		
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Smooth Fonts	13 scaleable + 21 simulated bitmap	
Resident Bar Codes	44	
Physical Measures		
Dimensions (W × L × H)	335 × 482 × 238 mm (13.2 × 19.0 × 9.4 in)	
Weight (excluding media)	14.8 kg (32.6 pounds)	
Ambient Operating Temperature	+5°C to +40°C (+41°F to +104°F)	
Storage Temperature	-20°C to +70°C (-4°F to +152°F)	
Humidity	10 to 90% non-condensing	
Electronics		
Microprocessor	32 bit RISC	
On-board Flash SIMMs	2 sockets for 4MB or 8MB each	Std. 1 x 4MB
On-board SDRAM SIMM	1 socket for 16MB	(Std. 16MB)

Power Supply		
AC Voltage	90 to 265 VAC, 45 to 65 Hz	
PFC Regulation	IEC 61000-3-2	
Power Consumption	Standby 20W; Continuous, average 175W; Peak 400W	
Sensors		
Label Gap/Black Mark/Out of Media	Yes	Variable position
Printhead Lifted	Yes	
Ribbon End/Ribbon Low	Yes	
Paper Sensor	Yes	
Controls		
Indicator Lamps	3	
Display	2 x 16 character LCD	Background light
Keyboard (Fingerprint)	22 keys membrane-switch type	
Keyboard (IPL)	7 keys membrane-switch type	
Print (FP) or Feed/Pause (IPL) button	1	
Beeper	Yes	
Data Interfaces		
Serial	1 x RS-232 + 1 x USB	
Bar Code Wand	Yes	Not supported by IPL
Connection for Optional Interface Boards	1 EasyLAN + 2 other (Fingerprint/DP)	IPL: 1 other + 1 EasyLAN
Cutter Interface	1	
Memory Card Adapter	1, for CompactFlash cards	IPL: Not as memory
Accessories and Options		
Integral Self-strip Unit with Liner Takeup	Option[3,4]	For peel-off operation
Fan-fold Guide	Option[5]	
Cutter	Option[5]	
Label Taken Sensor	Option[3,4]	
Real Time Clock	Option[3,4]	Not supported by IPL
RS-232 Cable	Option	
Parallel Interface Cable	Option	
Parallel Interface Board	Option	
Double Serial Interface Board	Option[3,4]	Not supported by IPL
Serial/Industrial Interface Board	Option[3,4]	Not supported by IPL
EasyLAN Ethernet Interface	Option[3,4]	
EasyLAN Wireless Interface	Option[3,4]	
Built-in Alphanumeric Keyboard	Option[3,4]	Not supported by IPL
External Keyboard Converter	Option[5]	
CompactFlash Cards	Option[5]	8MB-1GB
CompactFlash Protection Plate	Option[5]	

[1]/. The max. print length is also restricted by the amount of free SDRAM memory.

[2]/. Latin, Greek, and Cyrillic fonts according to Unicode standard are included.

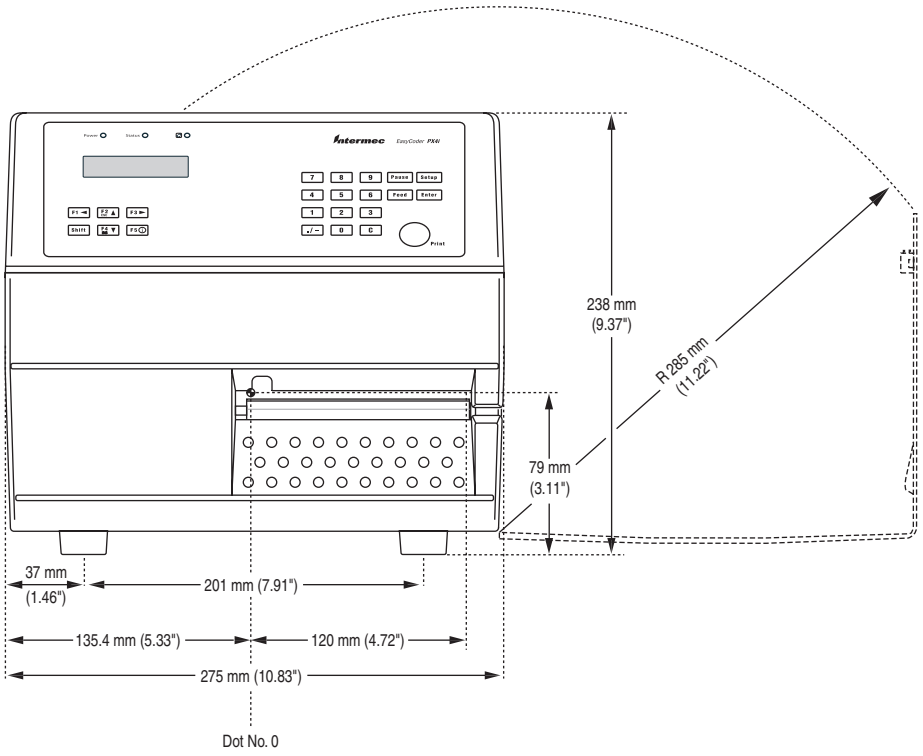
[3]/. Factory installed option

[4]/. Field-installable kit. Installation should be performed by a service technician.

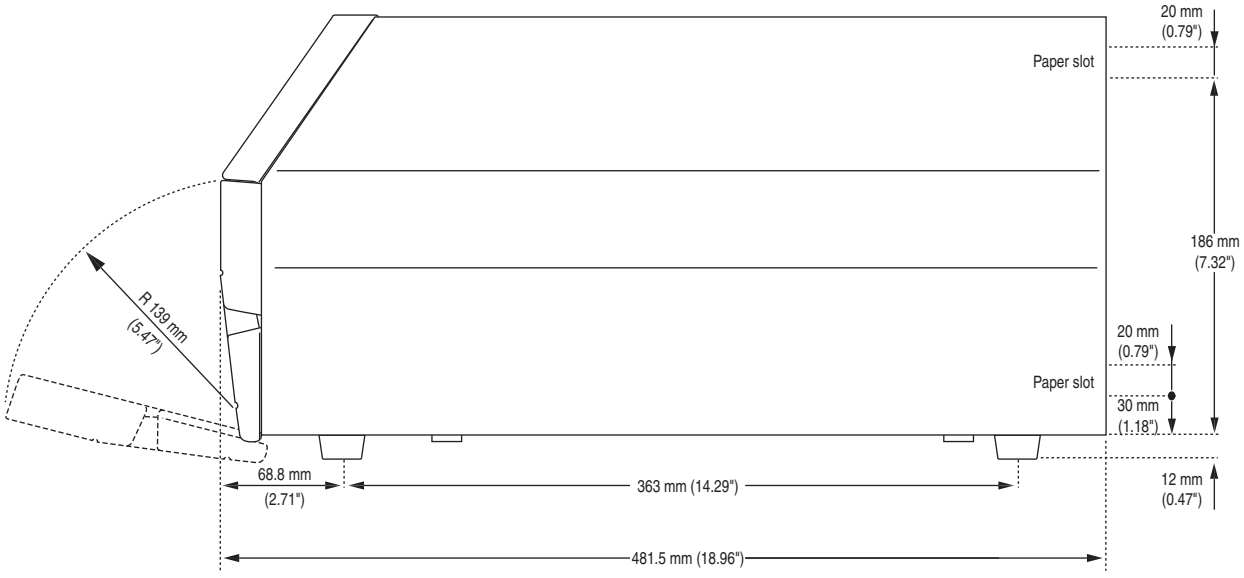
[5]/. Operator-installable option.

1.4 Measures EasyCoder PX4i

Front View



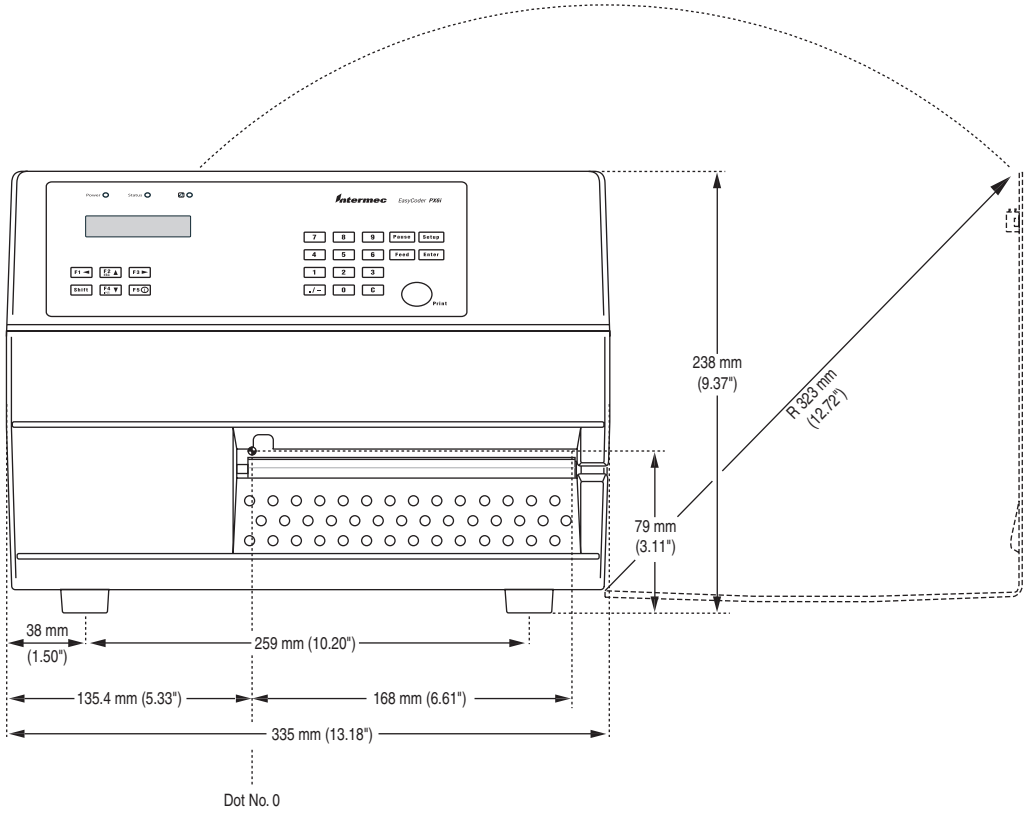
Side View



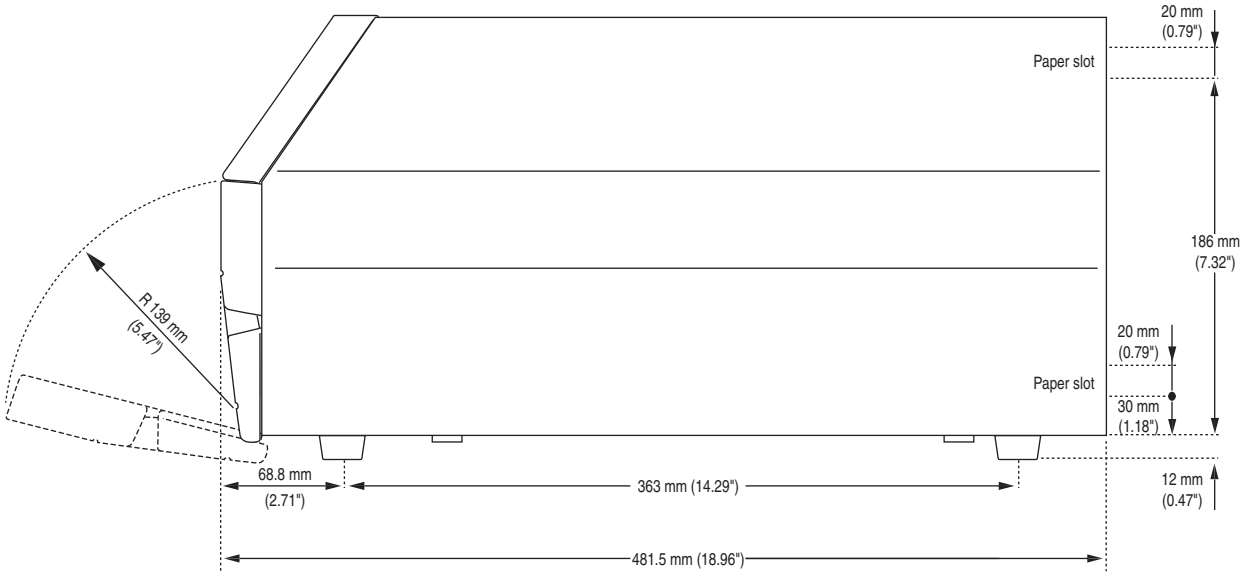
An optional paper cutter increases the printer's total length by 28 mm (1.1 inches). At least 90 mm (3.5 inches) of free space behind the printer is required for the connectors, and for inserting and removing a memory card.

1.5 Measures EasyCoder PX6i

Front View



Side View



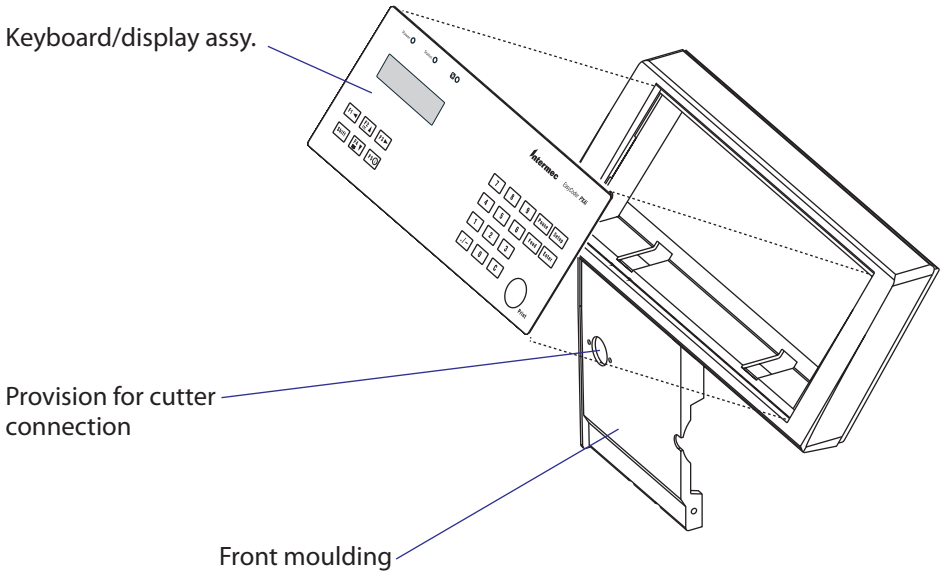
An optional paper cutter increases the printer's total length by 28 mm (1.1 inches). At least 90 mm (3.5 inches) of free space behind the printer is required for the connectors, and for inserting and removing a memory card.

2 Front and Keyboard

This chapter describes the keyboard and display fitted at the front of the EasyCoder PX4i and PX6i printers in both Fingerprint and IPL versions, the only differences being the designation on the overlay and the width of the front moulding. Illustrations in this chapter shows an EasyCoder PX4i running Fingerprint.

2.1 Front

The moulded front part is attached to the center section using four #T20 screws and to the bottom plate using two #T20 screws. The front moulding is provided with holes for mounting a cutter connector (4-pin female DIN-type).



At the top part of the front moulding, there is a cavity for the keyboard/display assy. This assembly is affixed using two 2 mm hexagon grub screws underneath the keyboard part of the front moulding.

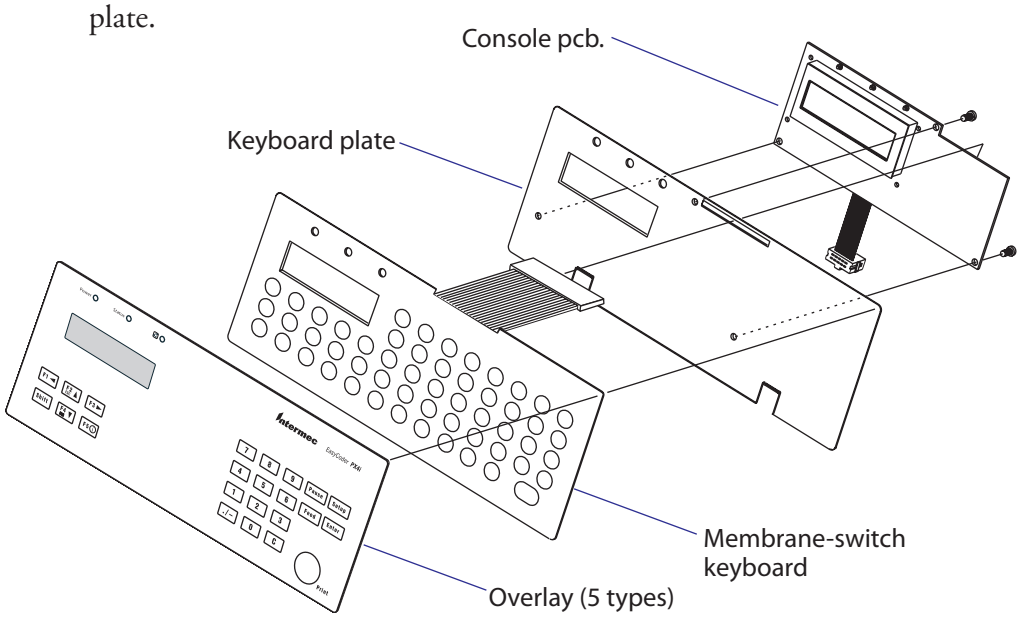
2.2 Keyboard/Display

The keyboard/display assy. is connected to J50 at the front of the CPU board via a 10-p flat cable. This cable must be disconnected before the keyboard/display can be removed.

The keyboard/display must be manipulated carefully when it is lifted out of its cavity. Do not use any force! If the assembly seems to be stuck, open the right-hand door and remove the left-hand cover to check that the grub screws do not interfere with the brackets.

We also recommend you to remove the left-hand cover before you start to fit the keyboard/display assy. back into the front moulding, because it makes it easier to align the brackets with the grub screws.

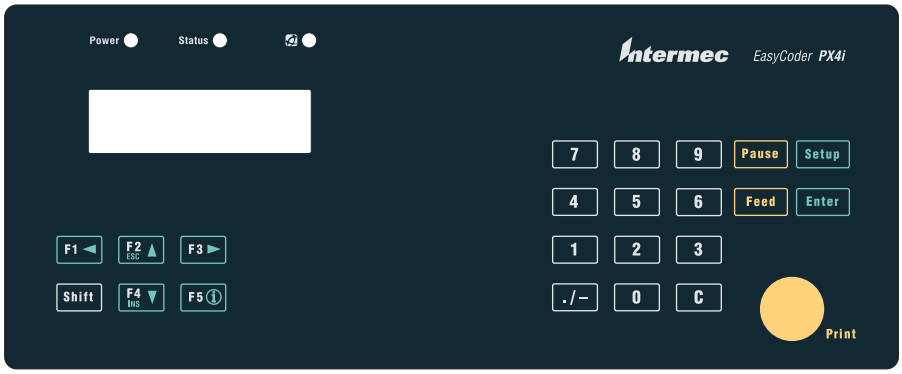
The keyboard/display assy. consists of a plate with two brackets, a self-adhesive membrane switch keyboard, an self-adhesive overlay, and a console pcb. The membrane switch keyboard is connected to P2 on the console pcb. via a semi-transparent cable running through a slot in the plate.



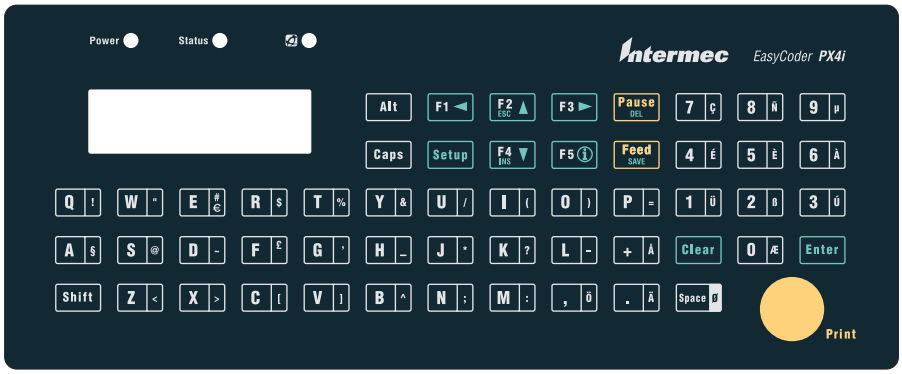
Keyboard Overlays

The keyboard overlays are self-adhesive with a non-permanent adhesive to allow easy replacement. Custom-made overlays could also be printed and used to replace the standard overlays for customized applications or in areas, where the English text is not acceptable. Pulling away an overlay and replacing it with another is a simple operation that the customer easily can perform himself. Use isopropyl alcohol to remove any adhesive residue.

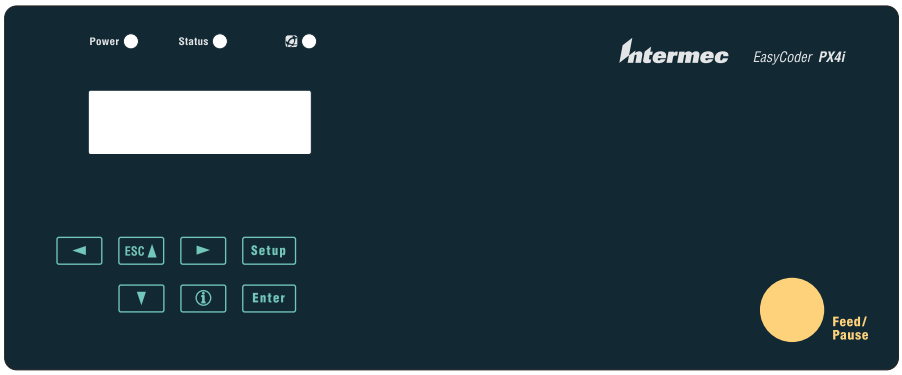
There are three types of overlay for each printer model:



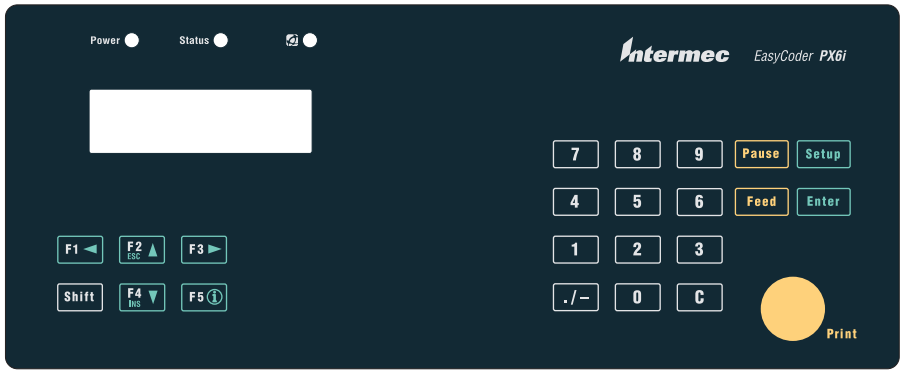
EasyCoder PX4i Fingerprint version



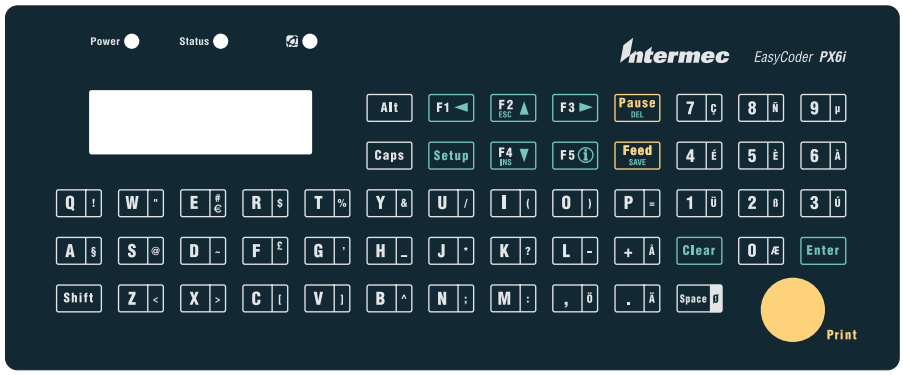
EasyCoder PX4i Fingerprint version, Alphanumeric keyboard (option)



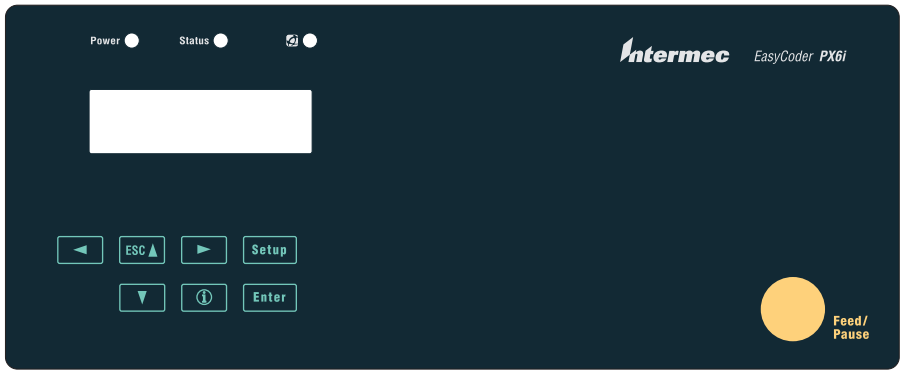
EasyCoder PX4i IPL version



EasyCoder PX6i Fingerprint version



EasyCoder PX6i Fingerprint version, Alphanumeric keyboard (option)



EasyCoder PX6i IPL version

Keyboard

The keyboard is of membrane switch type and is glued to the keyboard plate. There are 54 switches, but only 23 of these are used unless the printer has an alphanumeric overlay (Fingerprint only). One switch is a Shift key, that provides a dual functionality to each of the other keys. The keys have fixed functions in the immediate and setup modes, but can also be assigned various functions in Intermec Fingerprint programs. In IPL, the keys are not user-programmable.

A flat cable connects the membrane-switch keyboard to P2 on the console pcb.

Keyboard Plate

The keyboard plate keeps the assembly together and to affix it in the cavity of the front moulding. There are one slot for the display and another for the cable running from the membrane-switch keyboard to the console pcb. Two brackets at the lower edge are used to connect the plate to the front moulding using two 2 mm hexagon grub screws.

2.3 Console pcb.

The console pcb manages the keyboard, the display and two of the three LED indicators using a slave processor. The communication to and from the CPU board goes via an I^2C bus on a 10-p flat cable. This cable is permanently affixed to the console pcb and connected to J50 a the front end of the CPU board.

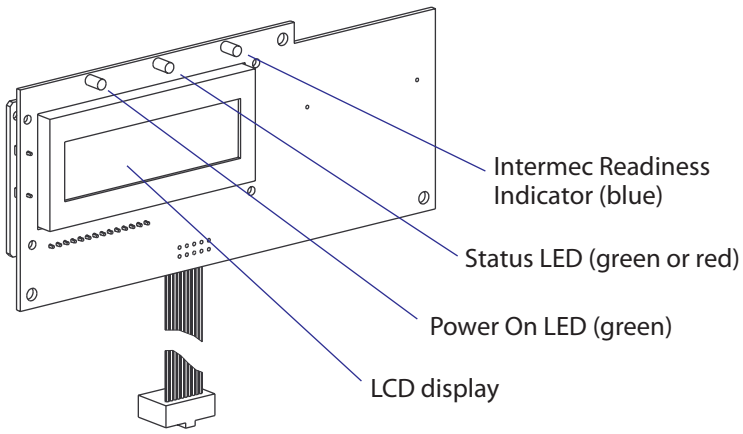
The display is a LCD display with background light. It has 2 × 16 character with a 5 × 7 dots matrix. There is no display contrast adjustment.

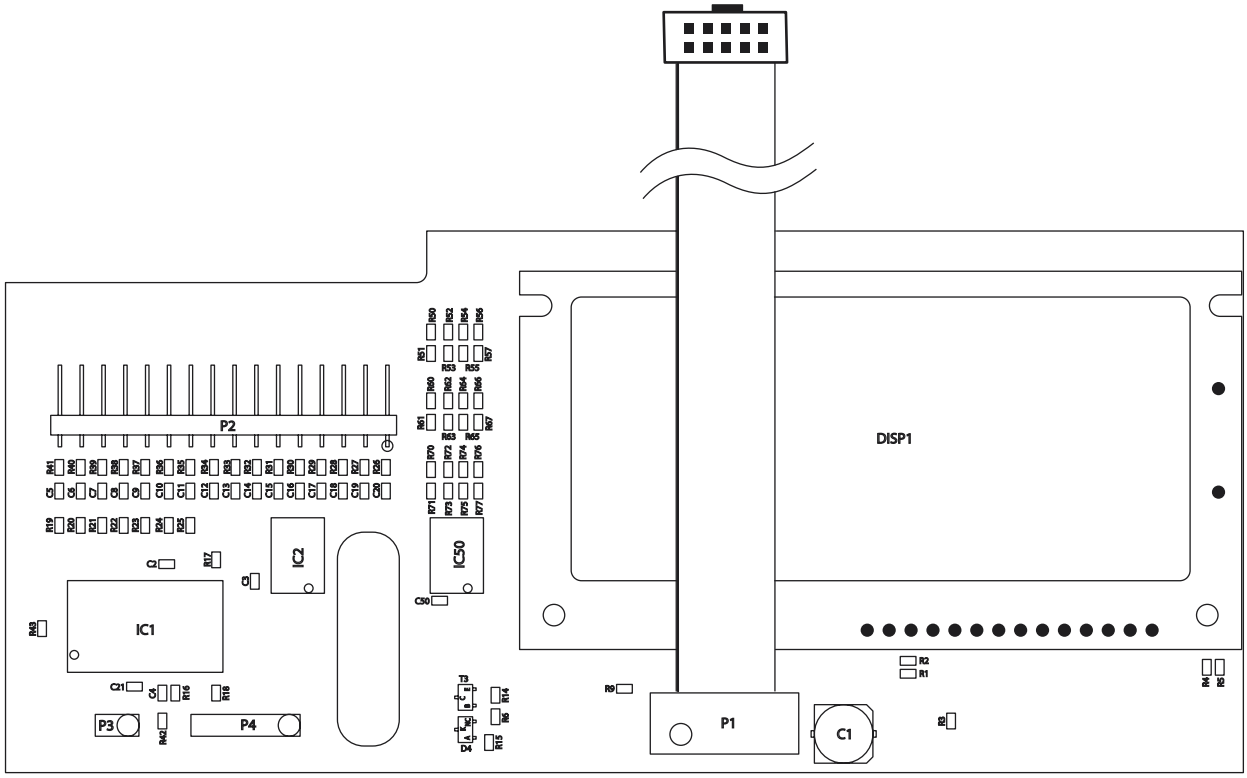
The left-hand LED indicator (marked "Power") shines green when the power is on. Power on is also indicated by the display's background light.

The center LED (marked "Status") is solid green (OK), flashing green (communicating) or solid red (error).

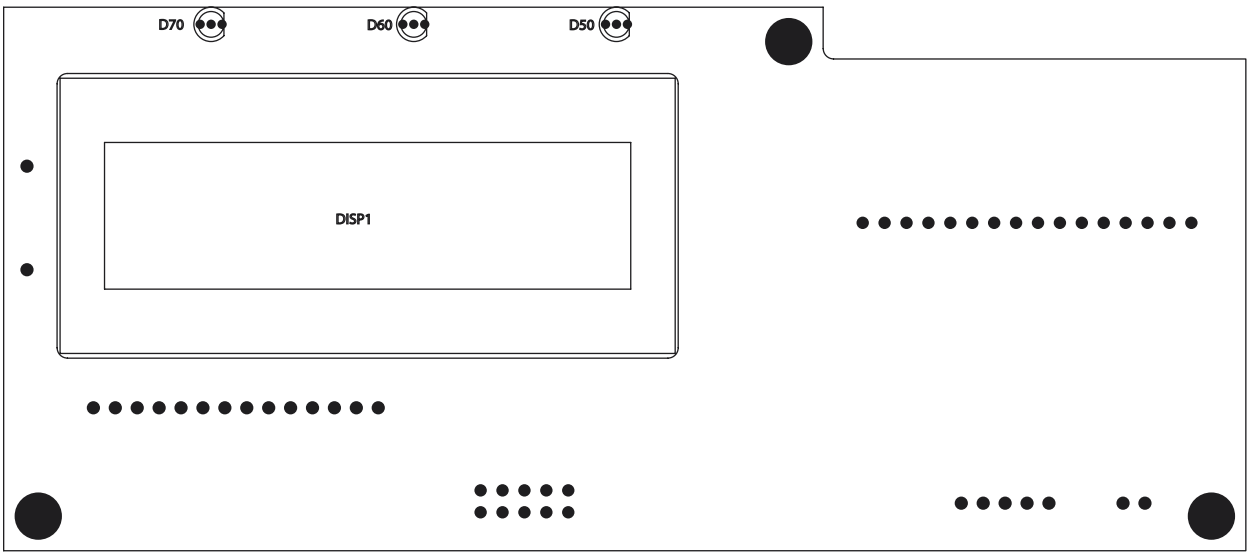
The right-hand LED (Intermec Readiness Indicator) is solid blue, flashing blue, or off which indicates the readiness of the printer to work as a part of a network solution (see the *User's Guide*).

In Fingerprint, the Status LED is programmable using the instructions LED ON and LED OFF. There is no such functionality in IPL.

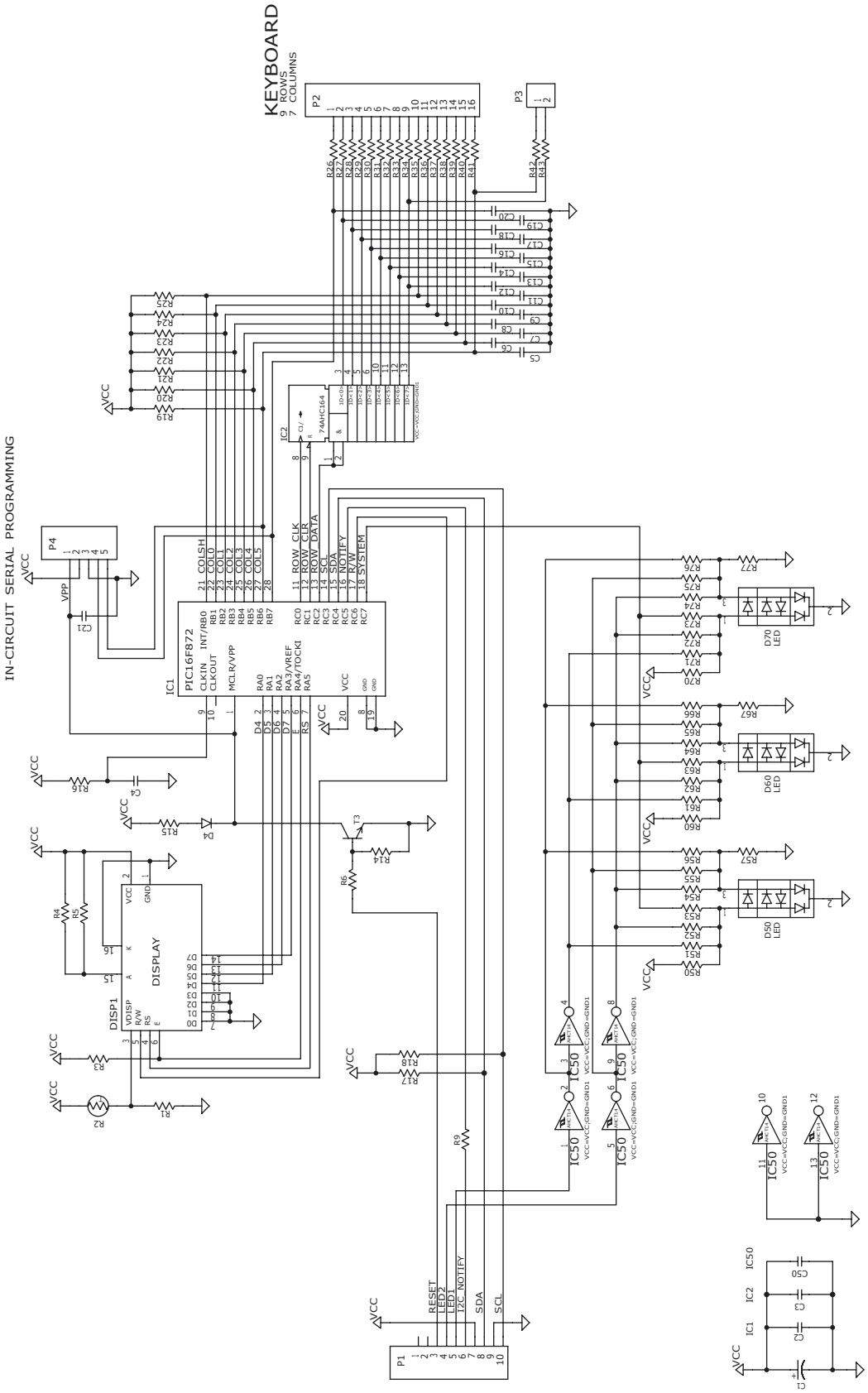




1-971653-30 Console pcb, Component Side



1-971653-30 Console pcb, Soldering Side



1-971653-30 Console pcb, Schematics

3 Covers and Doors

This chapter describes the covers and doors on the EasyCoder PX4i and PX6i printers. It covers the following topics:

- The right-hand door, that is, the doors that cover the print mechanism and media compartment.
- The front door, that protects the front of the print mechanism.
- The left-hand cover that protects the electronics compartment.

3.1 Right-Hand Door

Description

The right-hand door gives access to:

- The media supply
- The ribbon supply
- The print mechanism

The right-hand door is fitted to the bottom plate using two hinges that allow the door to be swung 180° downwards to a vertical attitude. The door is kept shut using a magnetic lock. The door can easily be removed from the hinges by pushing it forward until the snap-lock at the rear hinge becomes disengaged.

At the inside of the door, there is a label showing how to load the media and transfer ribbon.

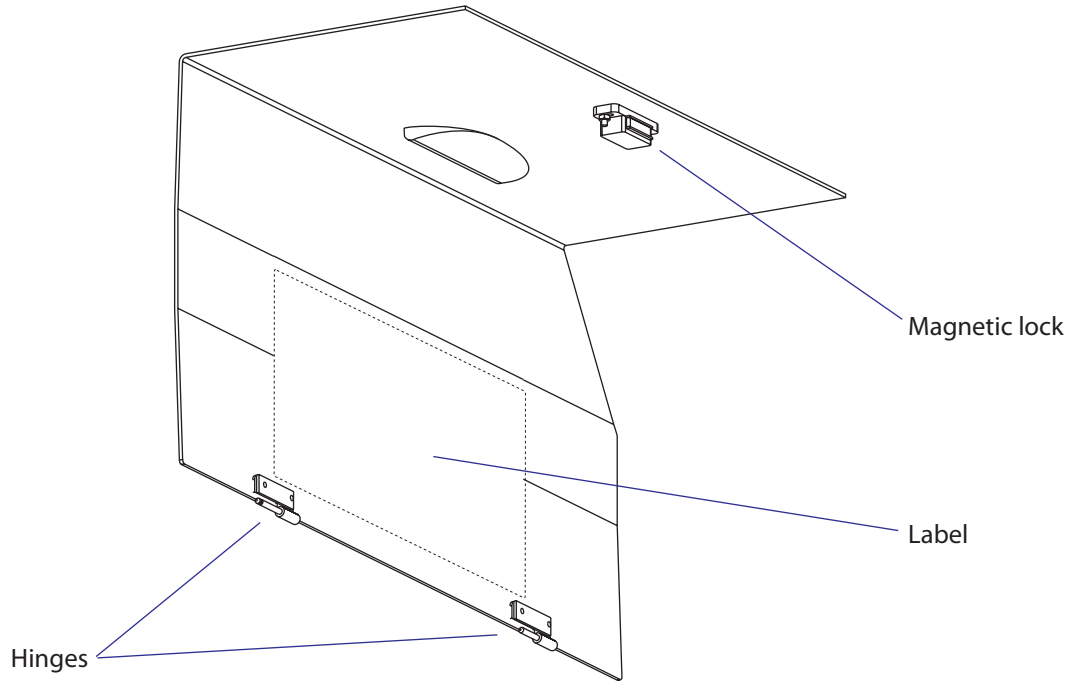


Illustration shows the right-hand door of an EasyCoder PX4i. The door of the EasyCoder PX6i has a wider top part.

Adjustment

The hinges can be adjusted using two pairs of #T10 Torx screws visible on the outside. Possibly, the other parts of the hinges, which are fitted to the bottom plate, may require adjustment too. Shut the door, loosen the screws slightly and align the door with the front moulding. Tighten the screws and check that the door runs freely and is kept shut by the magnetic lock.

3.2 Front Door

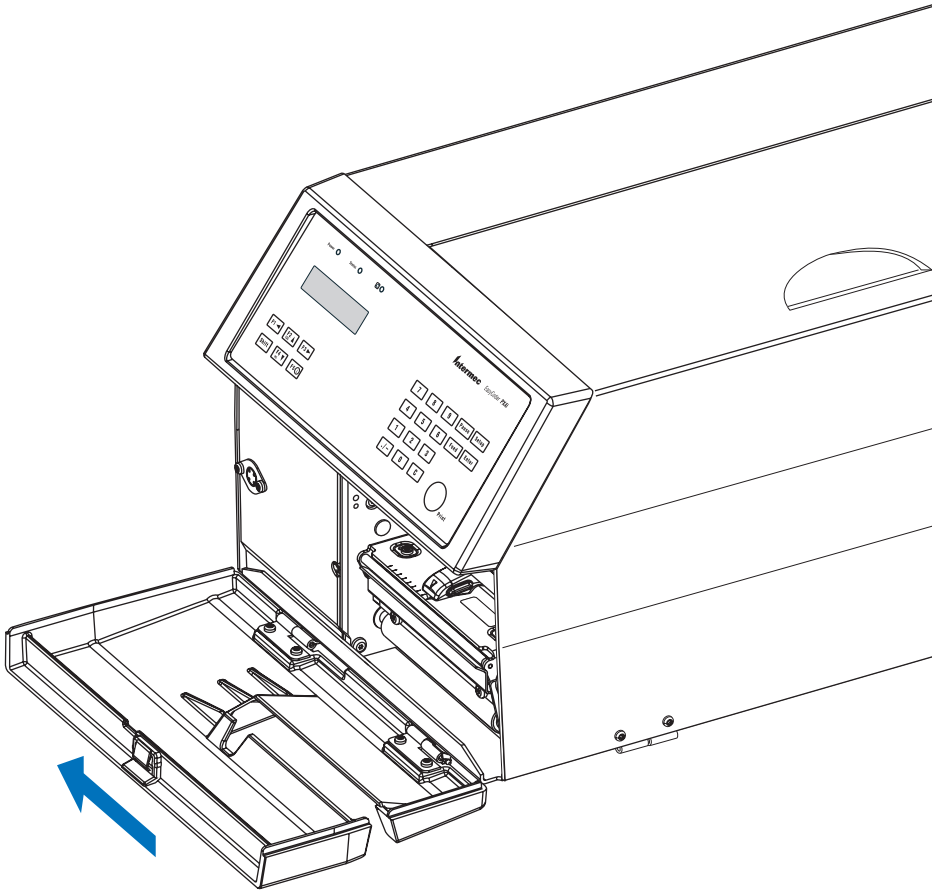
The front door gives access to:

- The front part of the print mechanism
- The paper cutter connector
- The optional label taken sensor

The front hatch is fitted to the bottom plate using two hinges of the same type as those of the right-hand door. The front hatch is kept shut by a snap-lock and can be swung down almost to a vertical position. The hatch can be removed from its hinges by pushing it to the left until the snap-lock on the right-hand hinge disengages.

The front hatch can be replaced by an optional paper cutter unit, see Chapter 11.

Alignment is performed in the same way as the right-hand door, see the previous page.



The front hatch can be removed by pushing it to the left when open (illustration shows an EasyCoder PX4i).

3.3 Left-Hand Cover

The left-hand cover gives access to:

- The electronics incl. CPU board, AC connection, power supply, driver board, and any optional interface boards.
- The motors, belts and pulleys of the media feed, ribbon feed, and the optional liner/batch takeup unit.

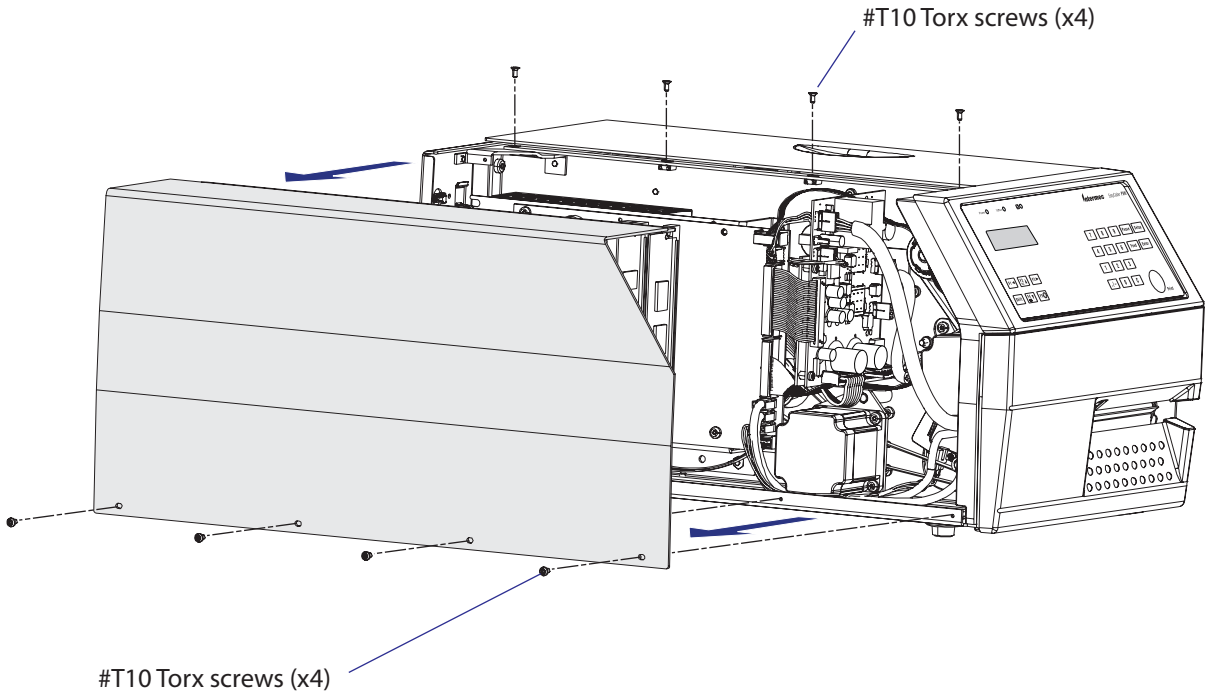
The left-hand cover plate is fitted to the printer's frame using a total of eight #T10 Torx screws; four along the lower edge and another four along the top.

The electronic compartment contains wires and components with dangerous voltage (up to 380V). Make sure that the printer is switched off and the power cord is disconnected, before the left-hand cover is removed.

Before removing the left-hand cover, take standard precautions to avoid causing any electrostatic discharges.

After having disconnected the power cord, open the right-hand door. Using a #T10 Torx screwdriver, remove the four screws along the lower edge first, then remove the four upper screws. Put the cover plate aside on a soft cloth or similar material to avoid scratches.

Fit back the left-hand cover in reverse order. Before finally tightening the screws, check that the cover is aligned with the front moulding and the rear plate and that it does not interfere with the right-hand door.



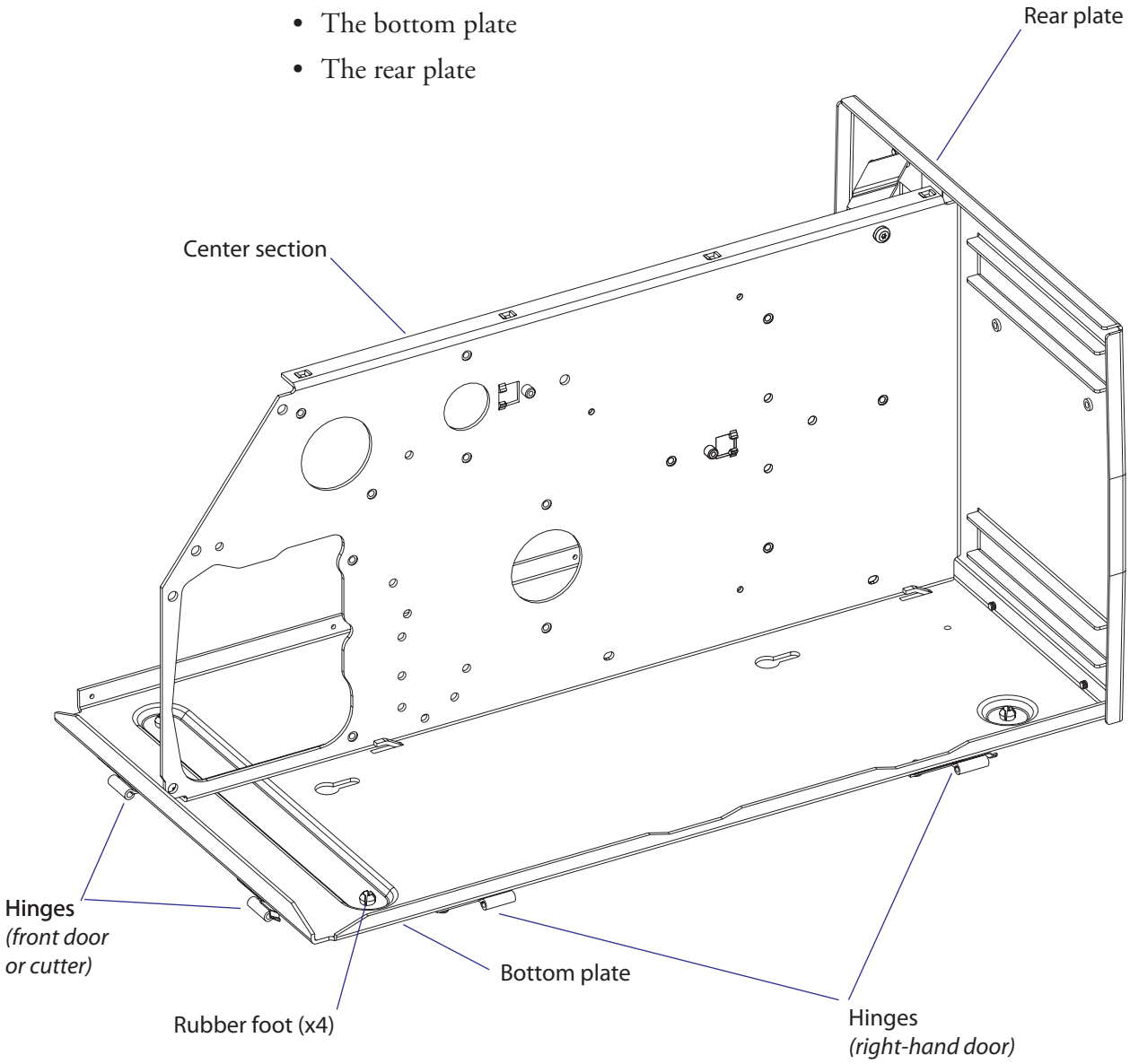
4 Chassis

This chapter describes the center section, bottom plate, rear plate, hinges, and rubber feet, of the EasyCoder PX4i and PX6i printers.

4.1 Description

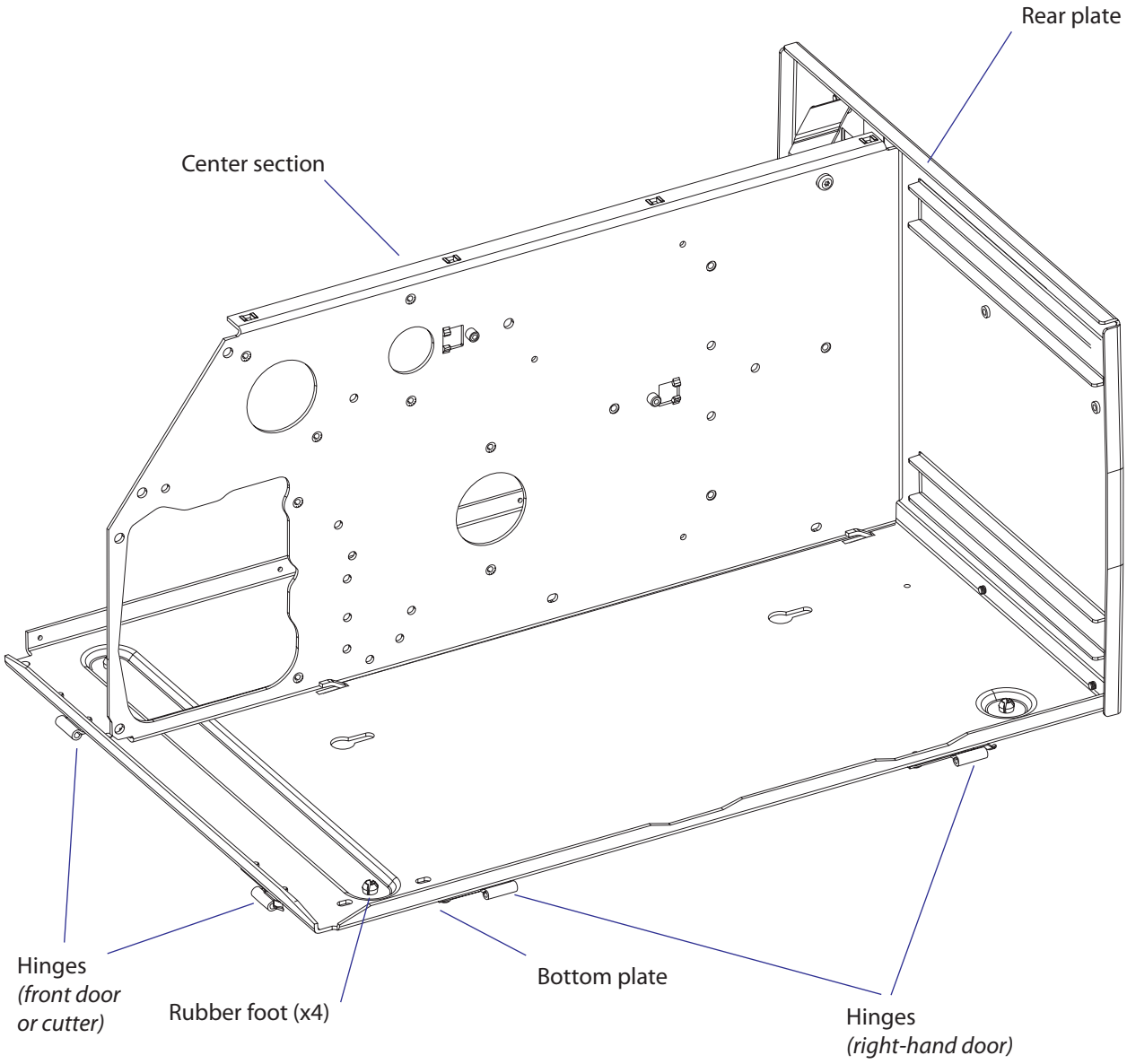
The printer's chassis consists of three main parts:

- The center section
- The bottom plate
- The rear plate



EasyCoder PX4i

The main differences between the chassis of EasyCoder PX4i and PX6i are the widths of the bottom plate and the rear plate.



EasyCoder PX6i

4.2 Center Section

The center section is where most parts are fitted, such as the print mechanism, the transfer ribbon mechanism, the liner takeup unit, and the media supply. The center section is fitted to the bottom plate by four #T20 Torx screws and to the rear plate using three #T20 Torx screws and a bracket.

In the electronics compartment, the CPU board, the driver board, and power supply unit are fitted to the center section.

4.3 Bottom Plate

The bottom plate is fitted to the center section using four #T20 Torx screws and to the rear plate using three #T20 Torx screws. In case of EasyCoder PX6i, there are also two #T20 Torx screws holding the outer gable of the print unit.

The electronic compartment contains wires and components with dangerous voltage. Make sure that the printer is switched off and the power cord is disconnected before the bottom plate is removed.

The bottom plate is fitted with four easily replaceable rubber feet. These feet could be removed and the holes be used to bolt the printer to a frame, table or similar. The holes have a diameter of 7.1 mm (0.28 inches). To reduce noise, fit rubber dampeners between the table and the printer if you bolt it in place.

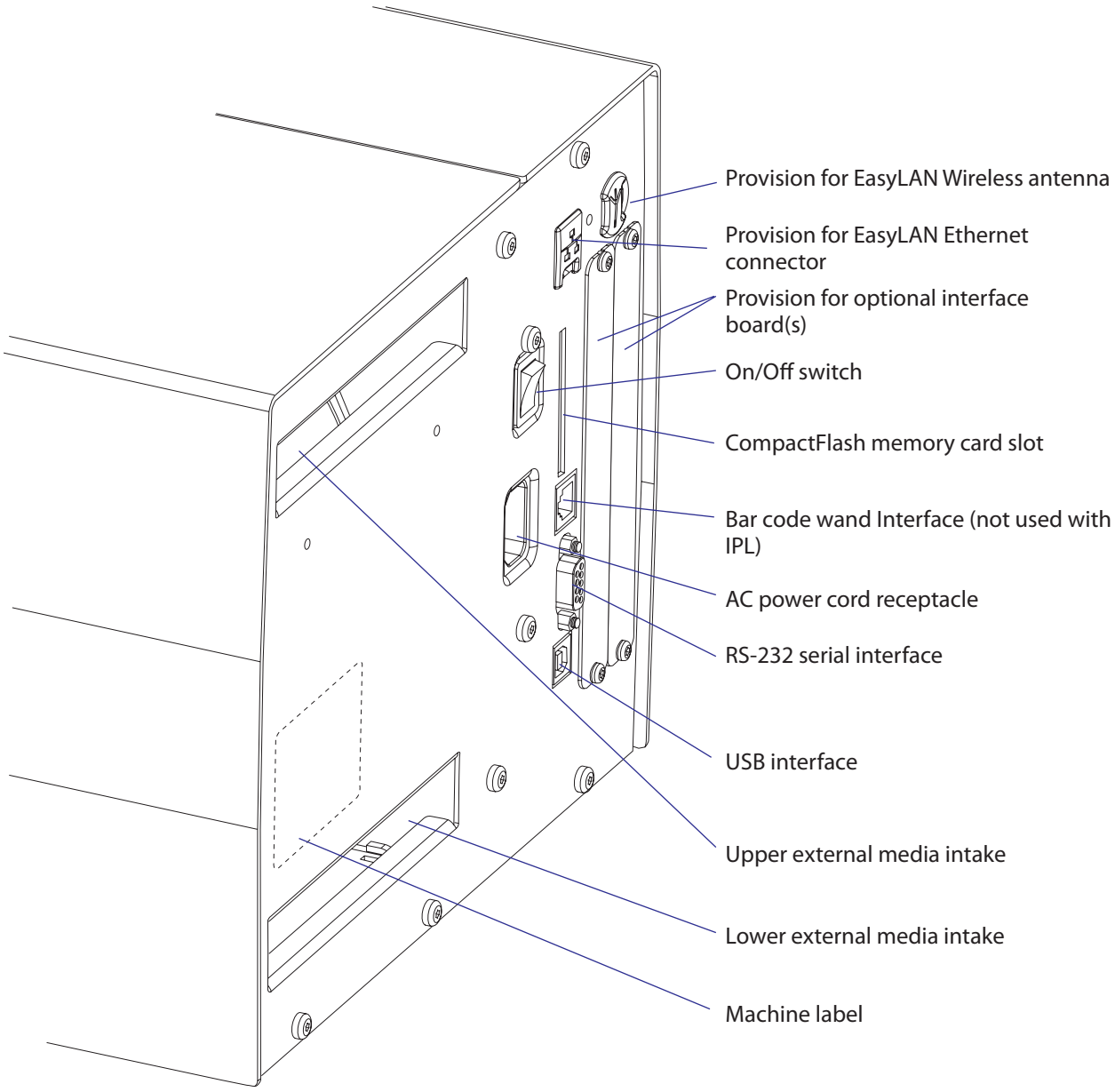
When fitting a replacement foot, insert it through the bottom plate and firmly press the pin so the rivet expands on the upper side of the plate.

The bottom plate is provided with two pairs of hinges for the front door or cutter and for the right-hand door.

The two keyholes must not be used to bolt the printer to a frame, or the bottom plate may be bent. These holes are intended for fixtures during manufacturing.

4.4 Rear Plate

The rear plate is attached to the bottom plate using three #T20 Torx screws and to the center section by two #T20 Torx screws. There is also a bracket between the rear plate and the center section. The rear plate has a number of slots for connectors, switches etc., as illustrated below.



5 Media Supply

This chapter explains the rotating media supply hub with the 3-inch adapter, the media roll retainer, and the paper sensor. Finally, it describes how an external media supply can be used in an EasyCoder PX4i and PX6i printer fitted with a fan-fold guide.

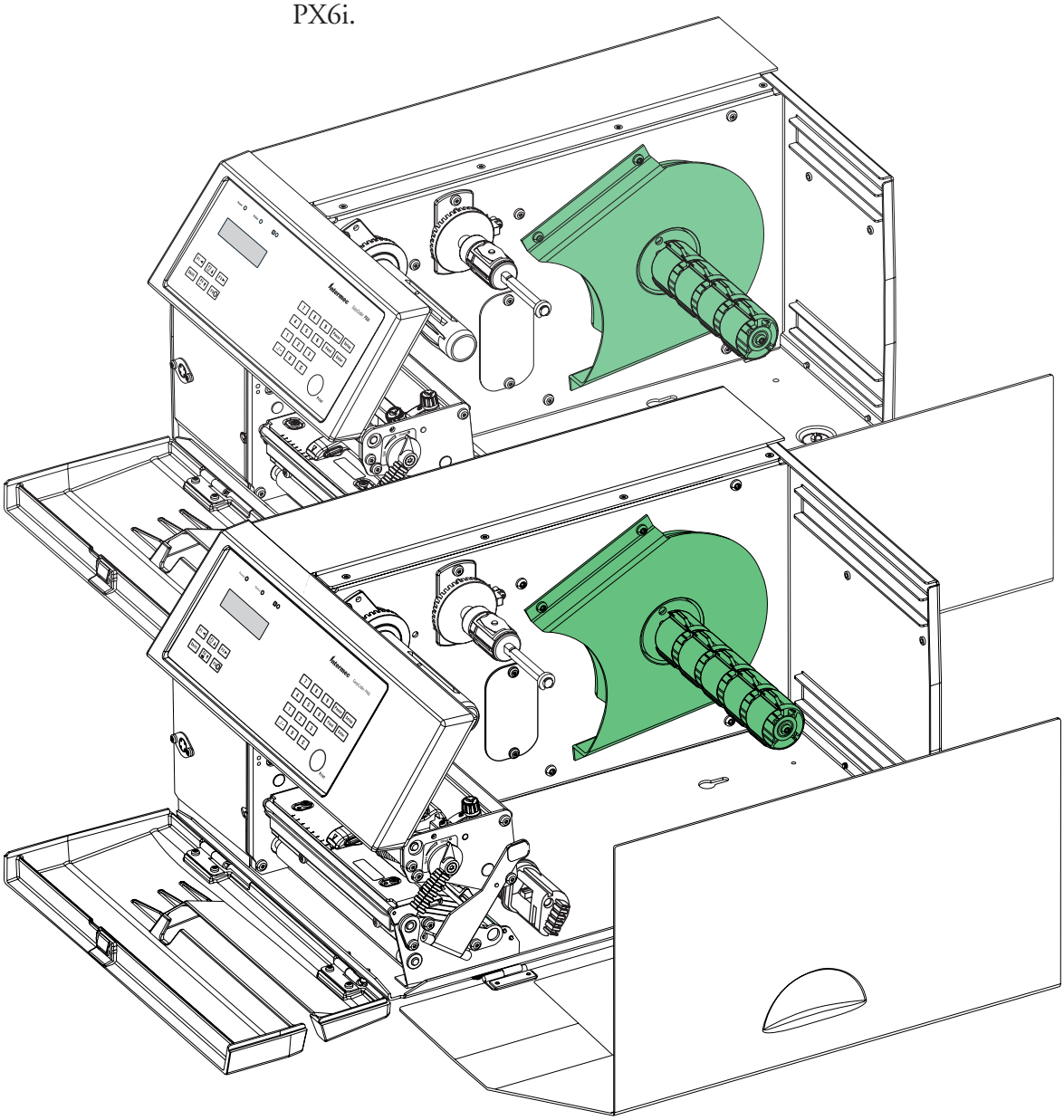
5.1 Internal Supply

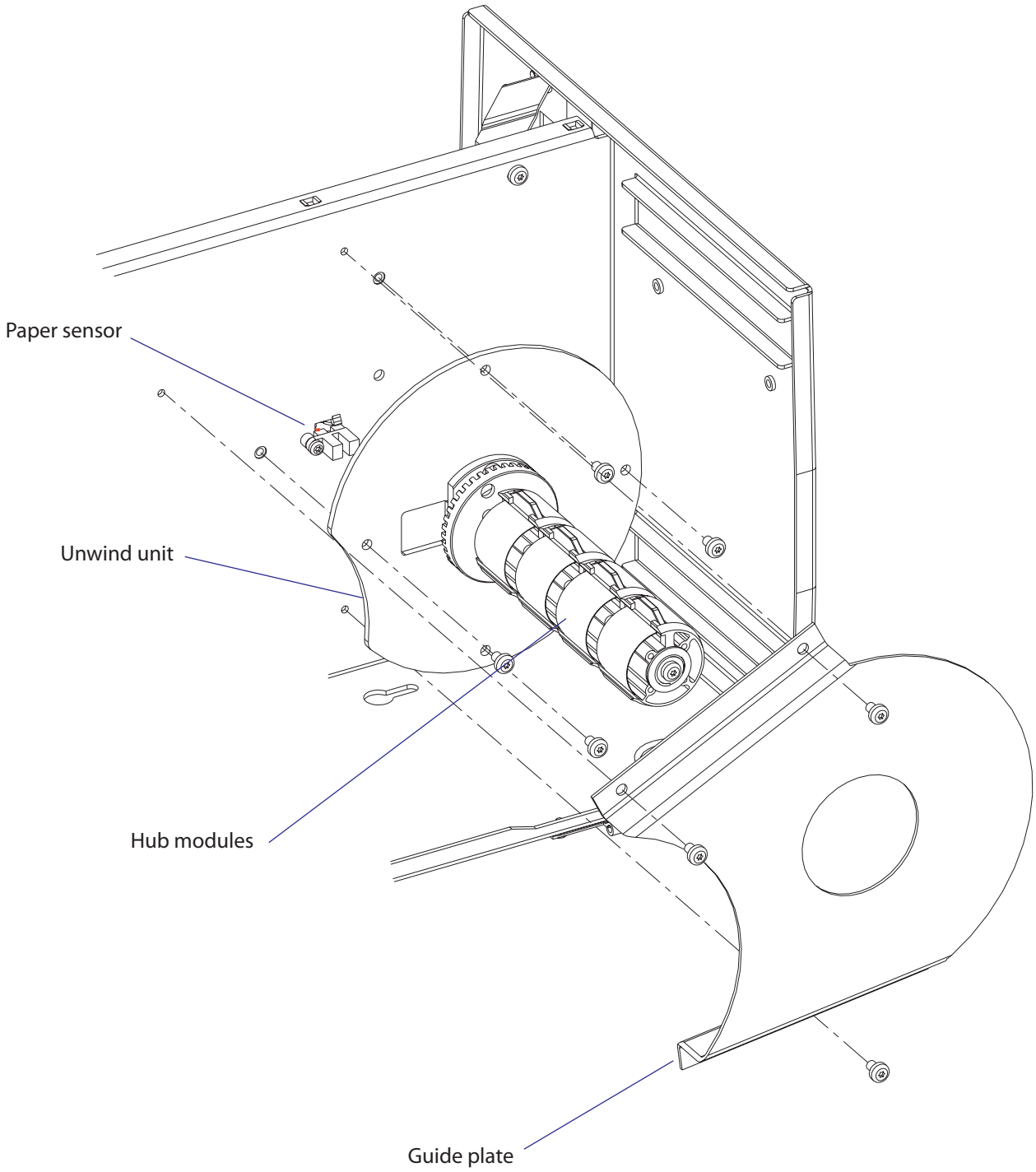
Description

The internal media supply consists of a shaft with four or five modular hubs. The shaft is screwed into a flange fitted to an almost circular plate using two #T20 Torx screws. The plate is fitted to the center section using four #T20 Torx screws. The hub modules are spring-loaded in order to fit media roll cores with an inner diameter between 38 and 40 mm (1.5 inches).

A large crescent-shaped guide plate keeps the media roll aligned with the print mechanism. Inside the guide plate and protruding through a slot in the circular plate, the paper sensor is fitted to the center section.

Maximum diameter of an internal media roll is 213 mm (8.38 inches), except in the case of peel-off and batch takeup operation when the diameter is restricted to 205 mm (8 inches). Maximum width is 120 mm (4.72 inches) for EasyCoder PX4i and 170 mm (6.69 inches) for EasyCoder PX6i.

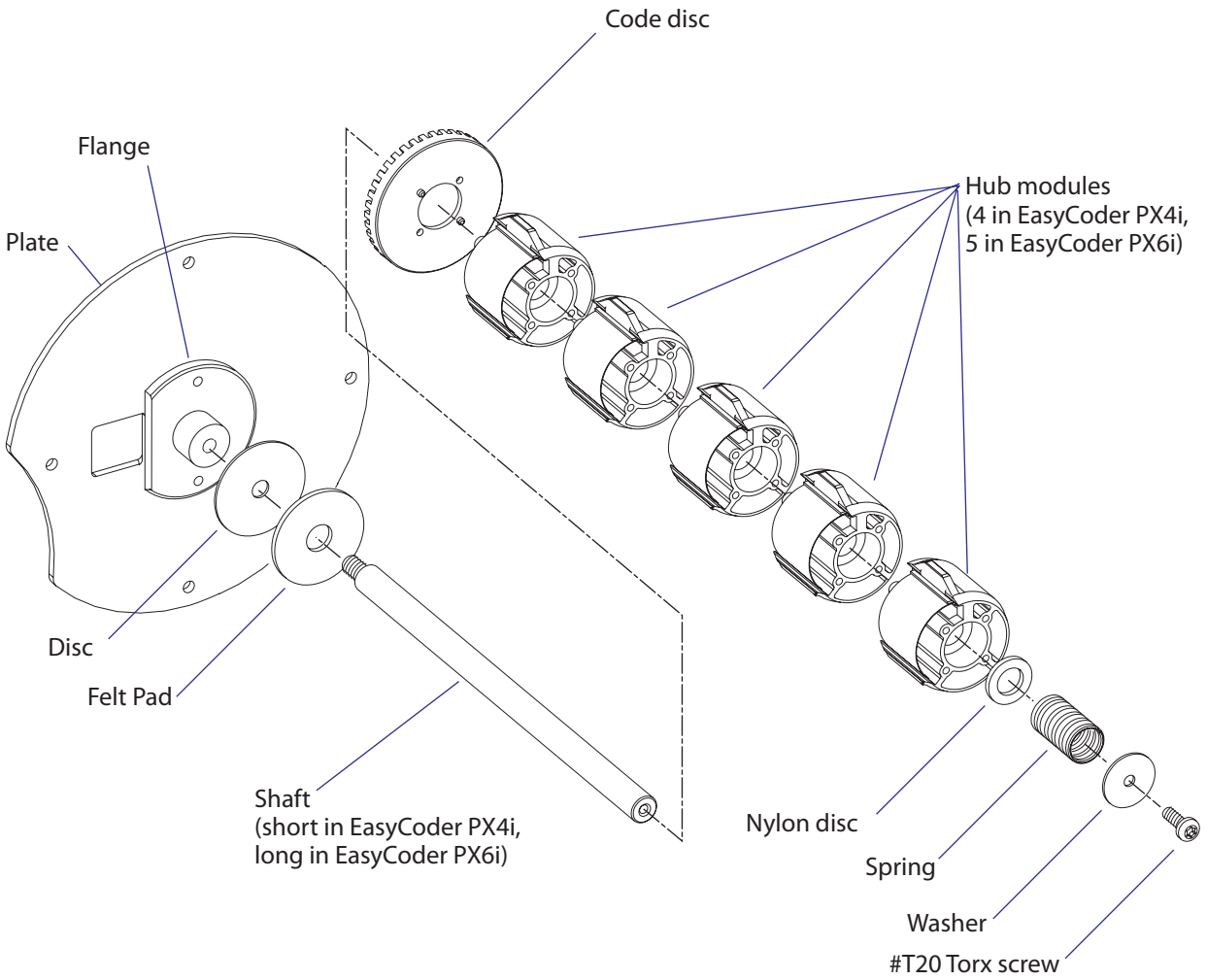



Paper sensor
Unwind unit
Hub modules
Guide plate

The media supply hub package can be dismantled by removing the #T20 Torx screw at the end of the shaft. Inside the outermost hub module, there is a spring that presses the hub package towards a felt pad in order to break the rotation. Else, the momentum of a large and heavy media roll might cause excessive media to be unwound when the printing is stopped. The brake torque should be 70 ±20 Nmm (see Appendix C).

The rotation of the code disc fitted at the innermost part of the hub package is detected by the paper sensor.

Be careful to fit the studs of the innermost hub module into the holes in the code disc when the package is assembled.



5.2 Paper Sensor

Description

The paper sensor allows the firmware to detect when the diameter of the remaining media becomes less than a value set in the Setup Mode.

In Fingerprint, this affects SYSVAR(46) which switches from 0 to 1. Thus, a Fingerprint program can be created, that reads SYSVAR(46) and uses it to issue for example audible alarms or error messages to notify the operator of a pending out-of-media condition. A trap is also sent that can be detected when the printer is connected to a network via an EasyLAN interface.

In IPL, a trap is sent that can be detected when the printer is connected to a network via an EasyLAN interface.

The sensor detects the saw-tooth shape of the code disc at the inner end of the media supply hub. By comparing the rotation speed of the hub and the print speed, the firmware can calculate the diameter of media roll.

The paper sensor assy is fitted to the center section using a #10 Torx screw and is connected to J57 on the CPU board (see Chapter 15.3).

Adjustment

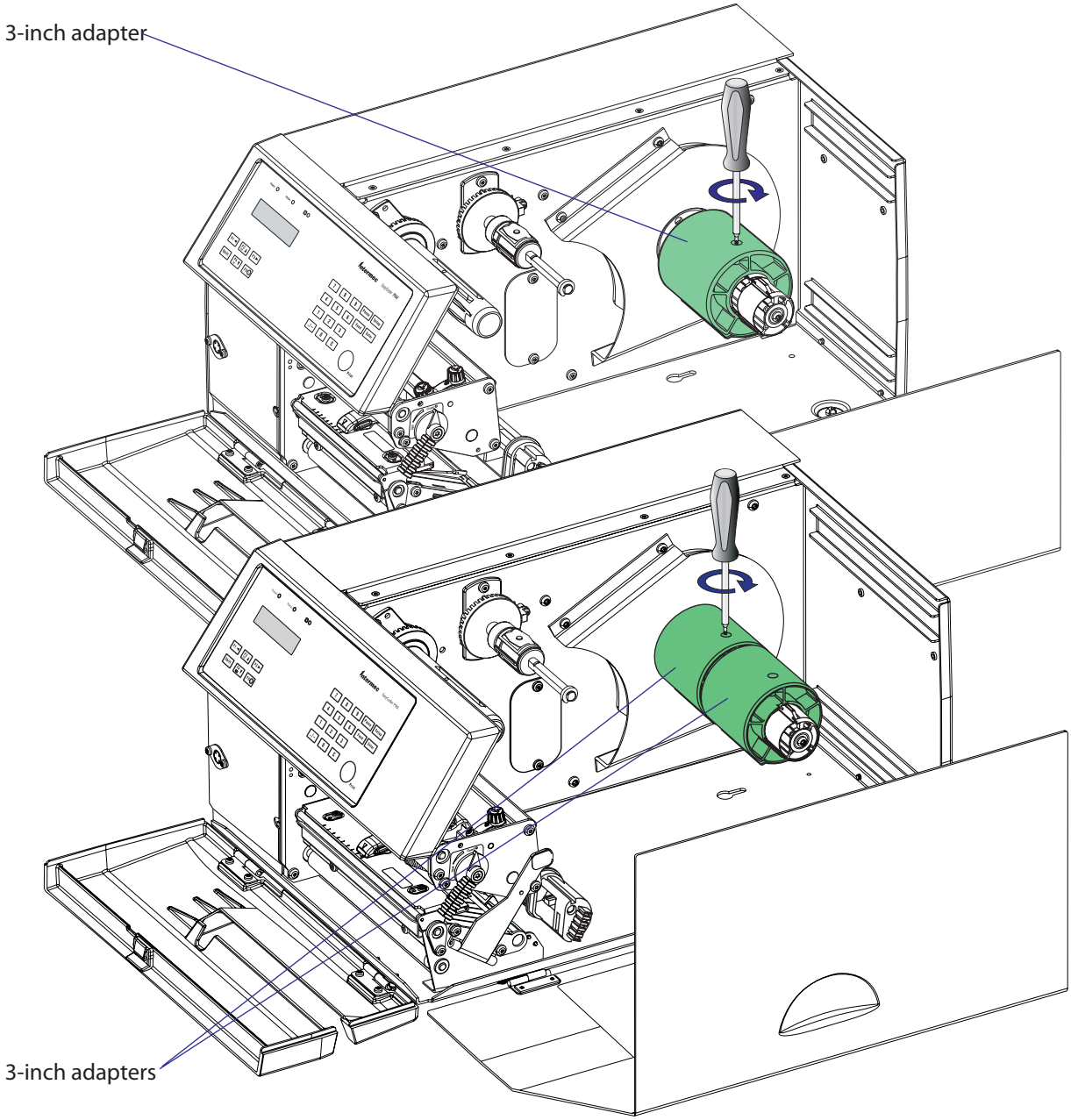
Refer to the chapter “Setting Up the Printer” in the *User’s Guide* for the printer in question.

Replacement

- Switch off the power, disconnect the power cord, and remove the left-hand cover.
- Disconnect the cable from J57 on the CPU board.
- Remove the crescent-shaped guide plate, which is held by three #T20 Torx screws.
- Remove the entire media supply unit which is held by four #T20 Torx screws.
- Remove the single #T10 Torx screw that holds the sensor to the center section.
- Carefully pull out the sensor and its cable through the hole in the center section.
- Install a new sensor assembly in reverse order.

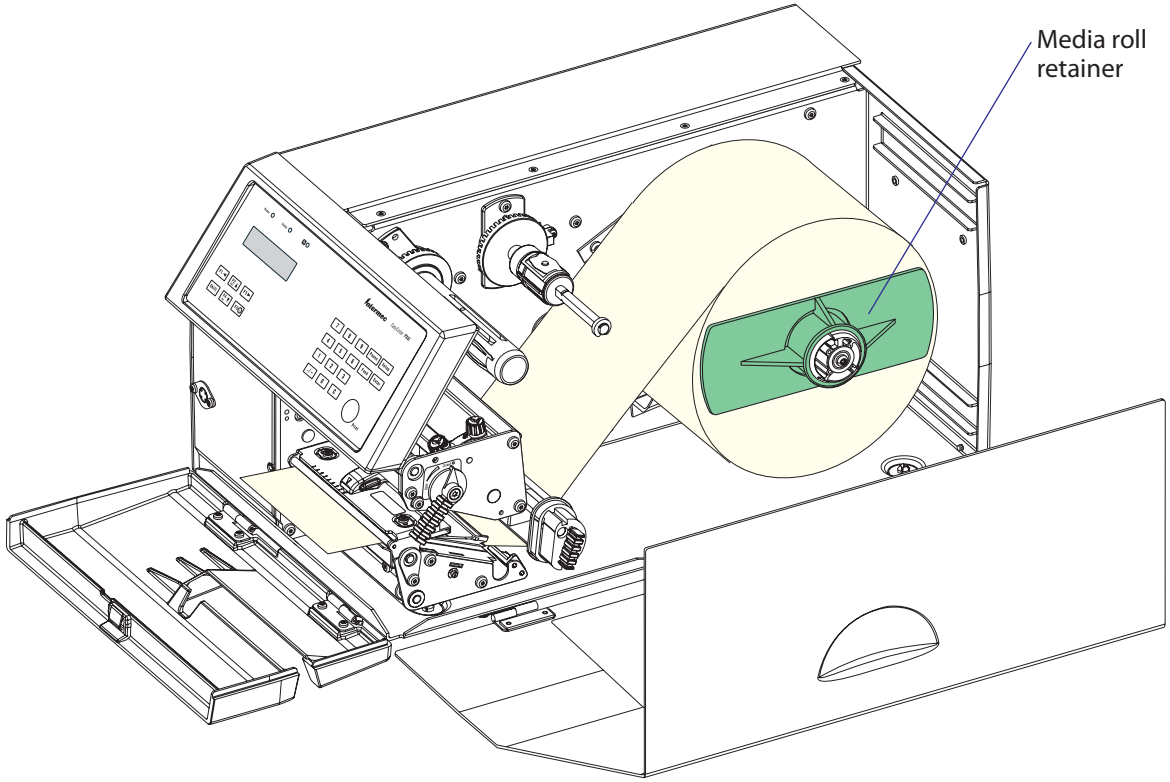
5.3 Three-inch Adapters

One or two adapters (standard accessories) can be fitted onto the media supply hub in order to accept media rolls with 76 mm (3 inches) cores. EasyCoder PX4i has one adapter and EasyCoder PX6i has two. Each adapter is locked using a #T20 Torx screw. Be careful not to let the screw hit the leaf springs or the cams of the hub modules.



5.4 Media Roll Retainer

An optional media roll retainer can be pressed on the hub package (but not on the adapter) of an EasyCoder PX4i in order to hold large media rolls and to prevent the media from getting misaligned on the roll. The retainer is not intended for EasyCoder PX6i



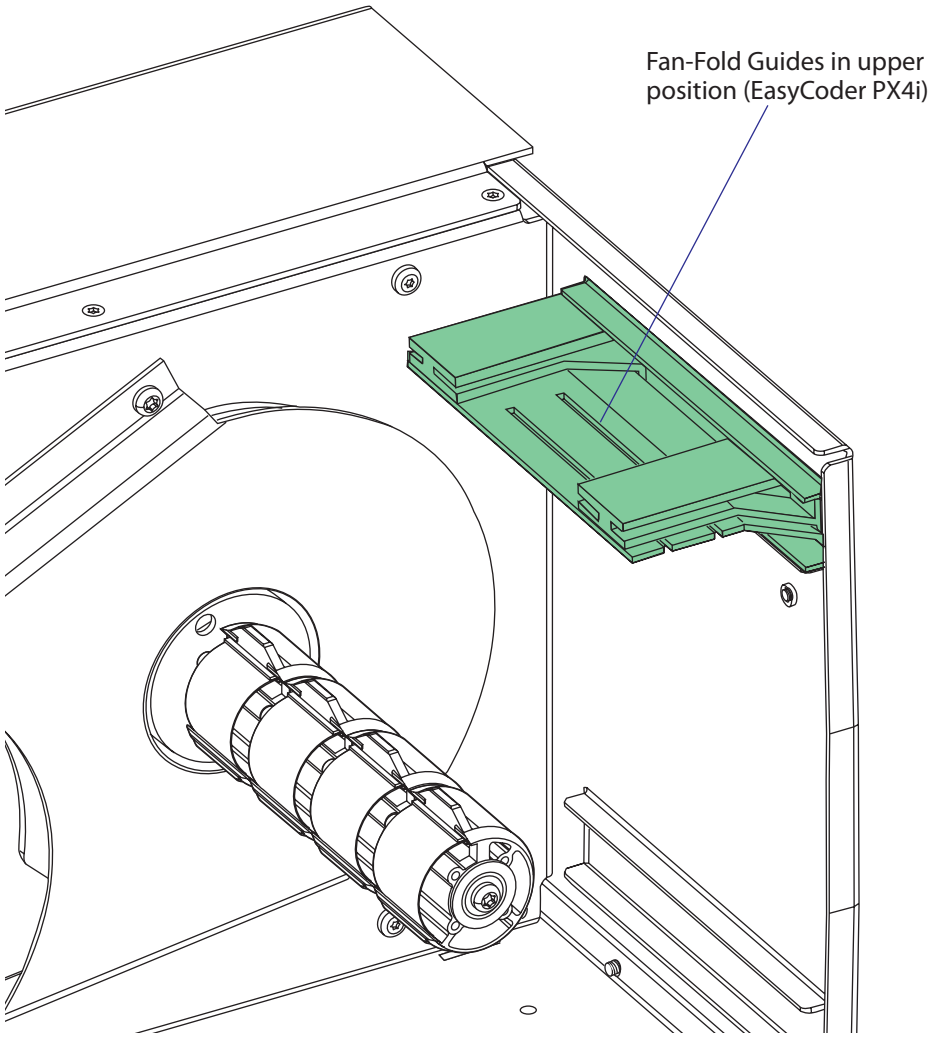
5.5 Fan-Fold Guides

Description

Instead of an internal media roll, the EasyCoder PX4i and PX6i printers can also use media from an external supply, for example an external roll or a stack of fan-folded tickets. The media is inserted into the printer through either the upper or lower slot in rear plate.

It is important that the media path is properly aligned in parallel with the printer's center section. Therefore, Intermec offers an optional "Fan Fold Kit" consisting of a bracket with two guides that can be fitted in either the upper or lower slot in the rear plate. The outer guide is adjustable for different media widths.

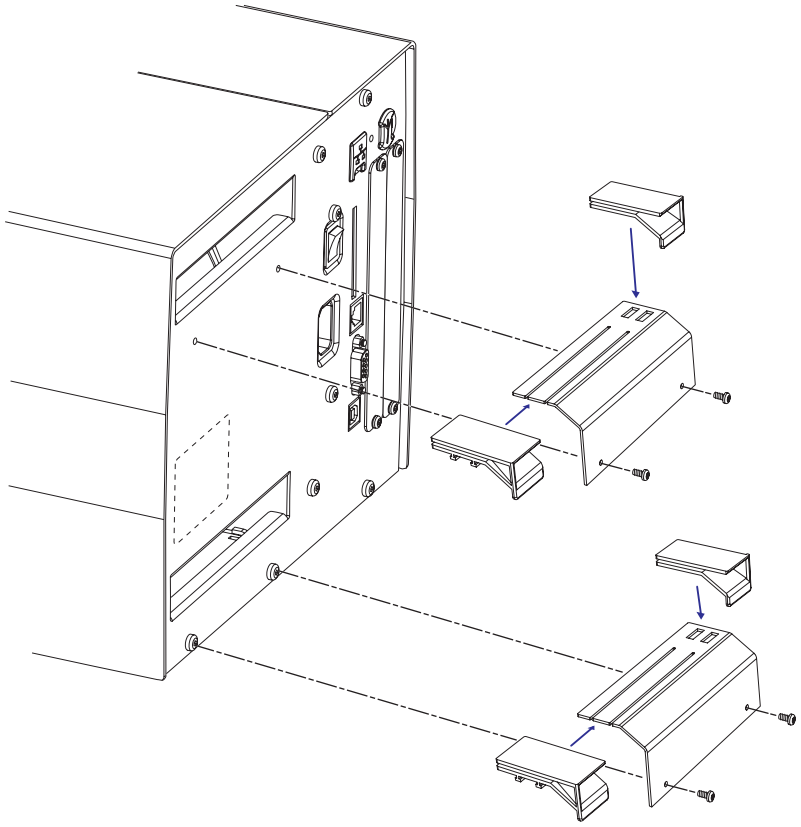
Max. Media Width (Fan-Fold Guides)	
EasyCoder PX4i:	120 mm (4.72 in)
EasyCoder PX6i:	170 mm (6.69 in)
Min. Media Width (Fan-Fold Guides)	
EasyCoder PX4i:	40 mm (1.575 in)
EasyCoder PX6i:	76.2 mm (3.00 in)



Installation

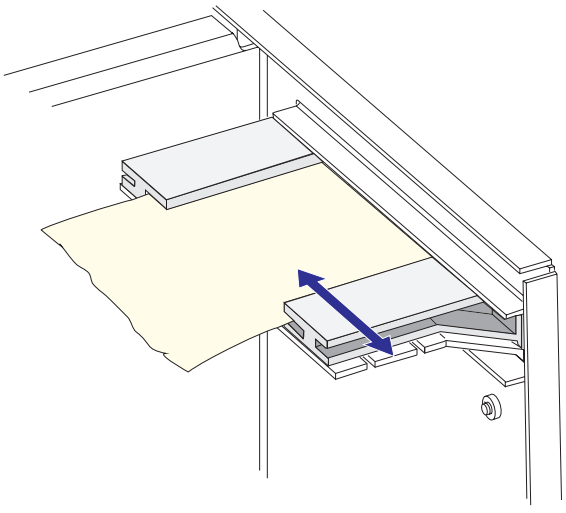
The bracket with the two guides can be fitted either at the upper or lower slot in the rear plate, depending on how the media supply is located in relation to the printer. The principles are the same for EasyCoder PX4i and EasyCoder PX6i.

Insert the complete unit through the slot from the outside and attach it to the rear plate using two #T20 Torx screws. In case of the upper position, use the screws included in the kit, and in case of the lower position, use the two existing screws that hold the rear plate to the bottom plate.



Adjustment

Adjust the position of the outer guide to fit the width of the media.

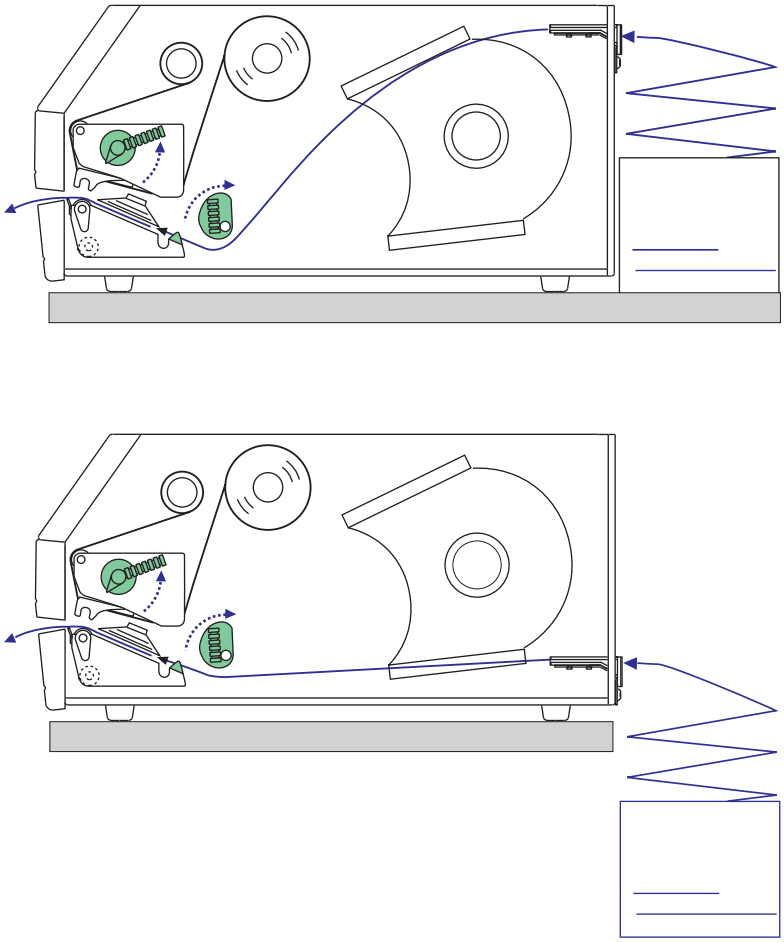


Media Load

Load the media according to the illustrations below.

Caution

The external supply should be protected from dust, sand, grit and other particles that may damage the printhead or impair the printout quality.



Note: If the printer is to be permanently used with an external media supply only, the entire internal media supply unit could easily be removed (see Chapter 5.1).

6 Label Slack Absorber

This chapter describes the label slack absorber fitted as standard in the EasyCoder PX4i and PX6i printers. It covers the following topics:

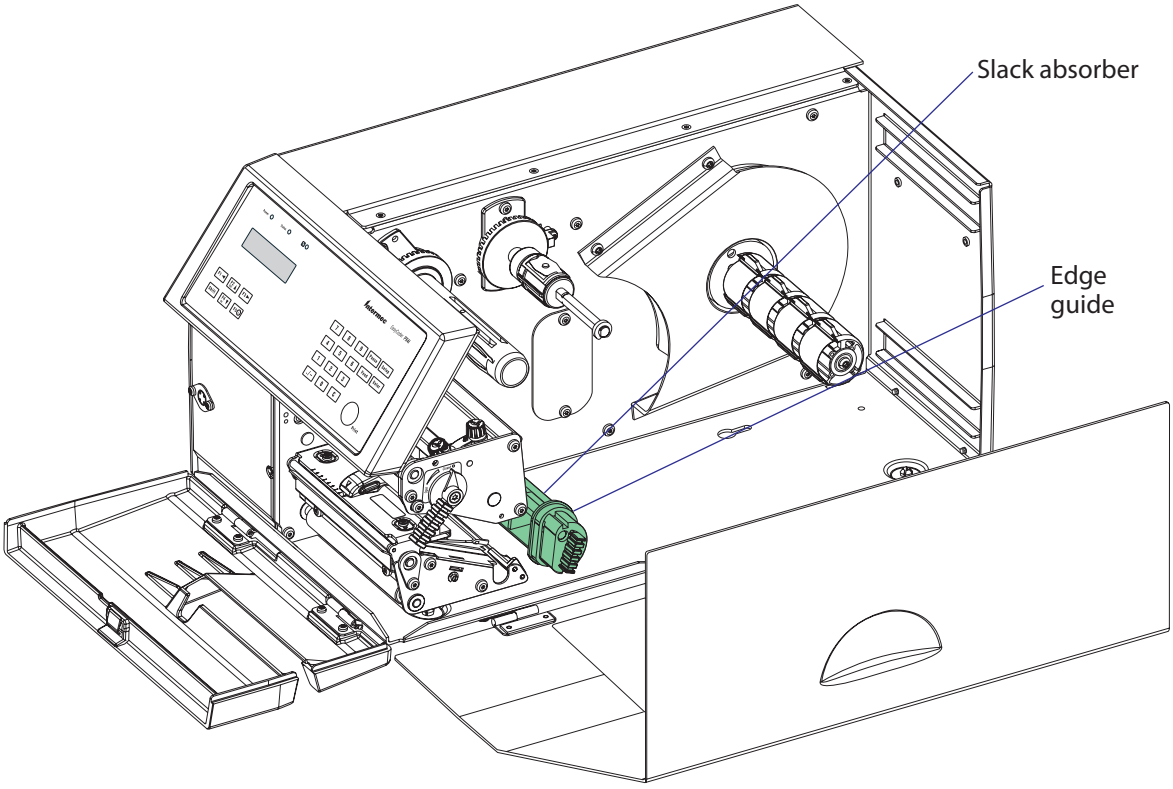
- Description
- Dismantling

6.1 Description

The label slack absorber compensates for sudden jerks at the media, for example when high speed printing is started and stopped. When the printing starts, the tension is increased and the absorber is pulled forward/upward. As soon the heavy media roll starts to rotate, the tension decreases. The spring-loaded absorber can then return towards its original position. During the printing, the absorber will flutter back and forth, compensating for the variations in tension.

To facilitate media load, the label slack absorber can be rotated 180° clockwise. It can be locked in open position using a snap-lock. Remember to unlock the slack absorber before starting to print.

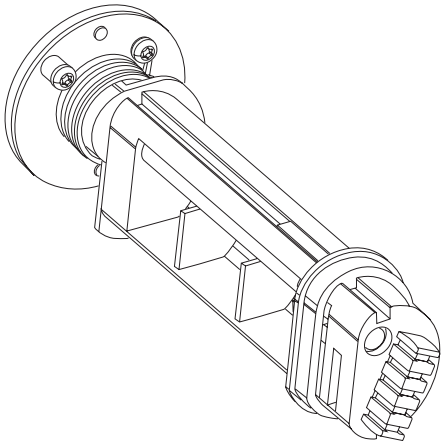
An adjustable edge guide is fitted on the label slack absorber to prevent media misalignment. The guide is fitted as standard, but can be removed to facilitate media load when there are other means of guiding the media, for example a media roll retainer or fan-fold guides (see Chapter 5).

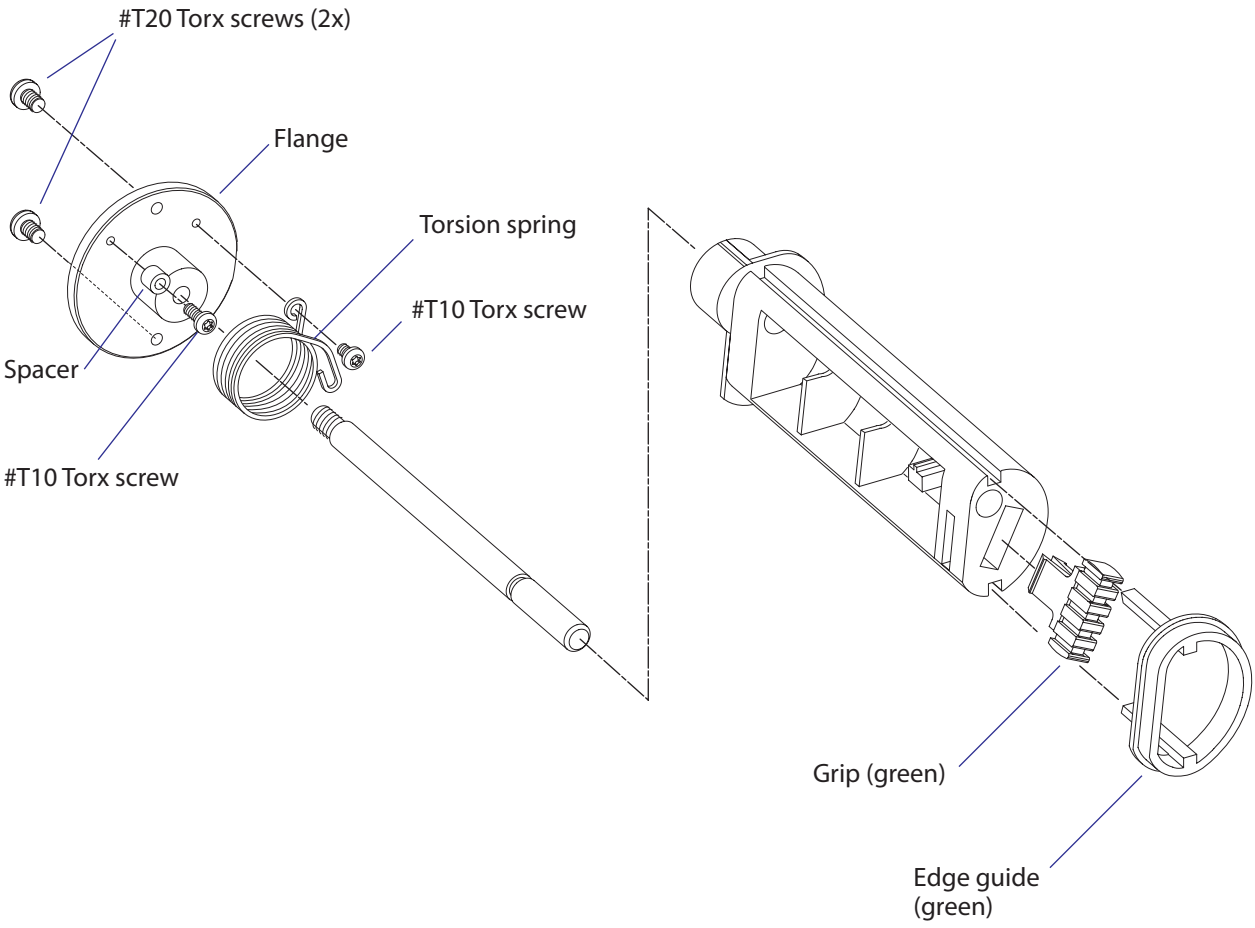


6.2 Dismantling

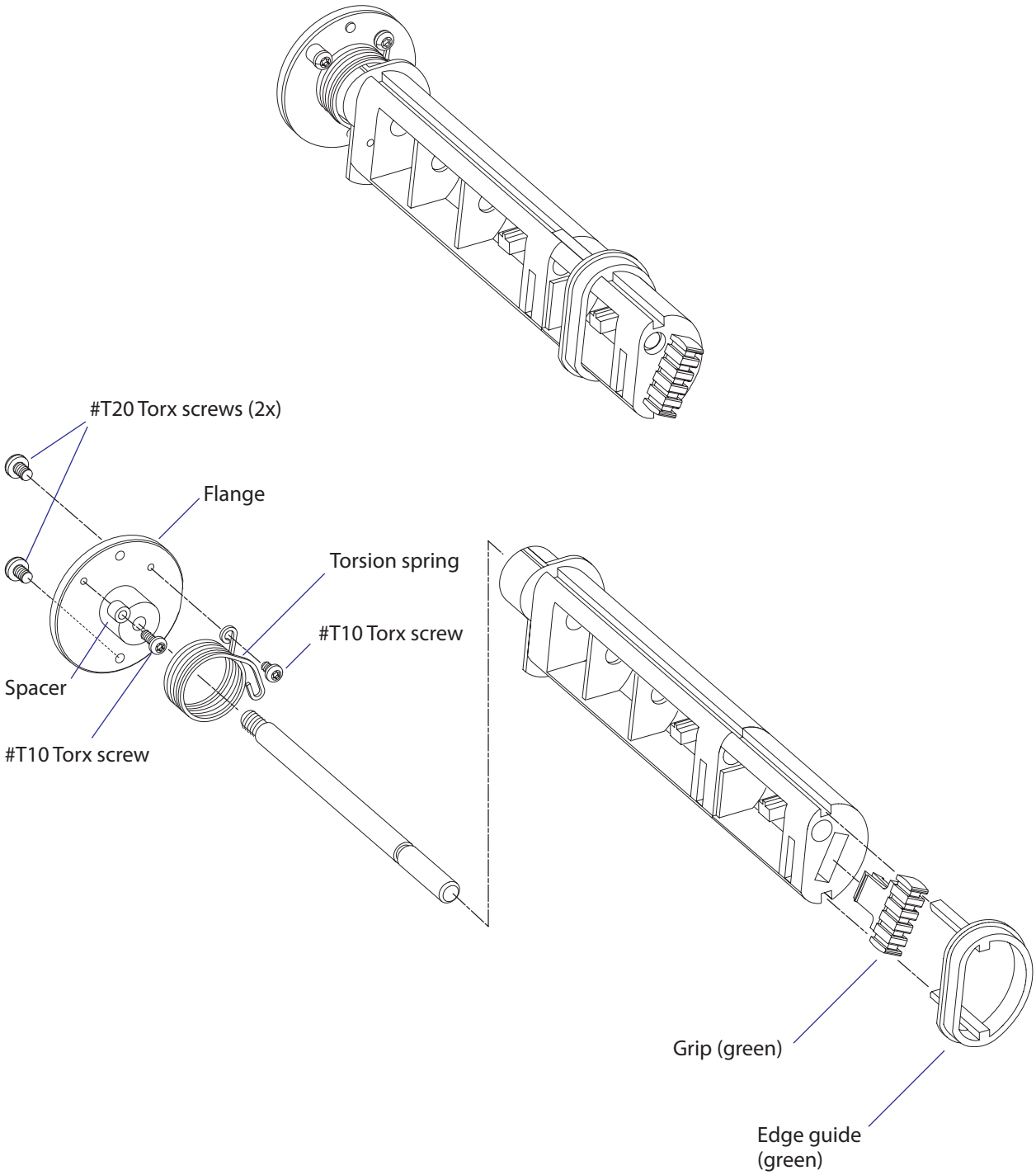
The label slack absorber unit is fitted to the center section using two #T20 Torx screws inserted through the center section from the electronics compartment. The shaft should be screwed into the flange with a tightening torque of 5 Nm.

EasyCoder PX4i





EasyCoder PX6i



7 Transfer Ribbon Mechanism

This chapter describes the mechanism that drives the thermal transfer ribbon in the EasyCoder PX4i and PX6i printer. It covers the following topics:

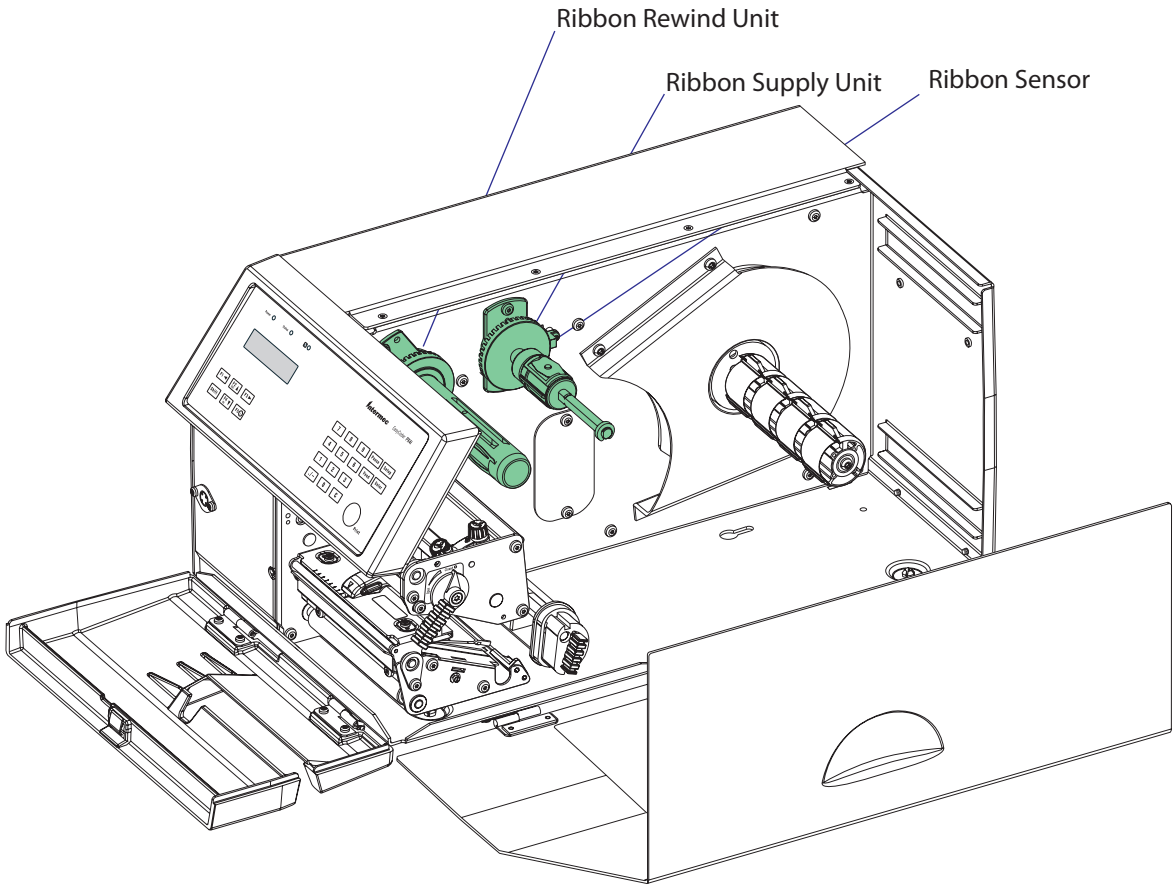
- Description
- Ribbon supply unit
- Ribbon rewind unit
- Ribbon sensor

7.1 Description

The thermal transfer ribbon mechanism is standard in EasyCoder PX4i and PX6i. The mechanism consists of three main parts:

- Ribbon supply unit (see Chapter 7.2)
- Ribbon rewind unit (see Chapter 7.3)
- Ribbon sensor (see Chapter 7.4)

Adjustment of the ribbon assist roller to remedy wrinkling of the ribbon is described in Chapter 8.9.



7.2 Ribbon Supply Unit

Description

The ribbon supply unit is the same for EasyCoder PX4i and EasyCoder PX6i with the exception of the strength of the spring in the spring brake. It is used to accommodate the fresh supply of thermal transfer ribbon. For optimum printout quality and trouble-free operation, only original transfer ribbon from Intermec should be used.

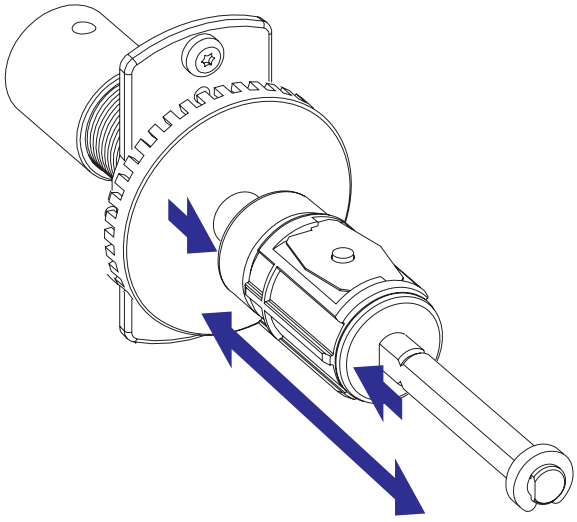
The unit is designed to keep the ribbon tight all the time in order to avoid wrinkling, which would ruin the printout. It consists of a shaft on which a hub is fitted. The hub can pivot ± 1.3° on the shaft and the hub can be moved sideways between 6 fixed positions.

Adjustment

It is most important for avoiding ribbon wrinkling that the pivoting point of the hub is centered in relation to the ribbon width. Therefore, the shaft is provided with six grooves which correspond to the standard widths of Intermec transfer ribbons (see table below). The three innermost grooves are used with EasyCoder PX4i, whereas the three outermost grooves only are used with the wider EasyCoder PX6i. By compressing the hub, its snap-lock will disengage from the presently engaged groove and the hub can be moved sideways to another position. Make sure that the snap-lock has engaged a groove by trying to move the hub without compressing it.

Ribbons with a width less than 55 mm (2.16 inches) can be used provided they are wound on a core with a width of at least 45 mm (1.77 inches).

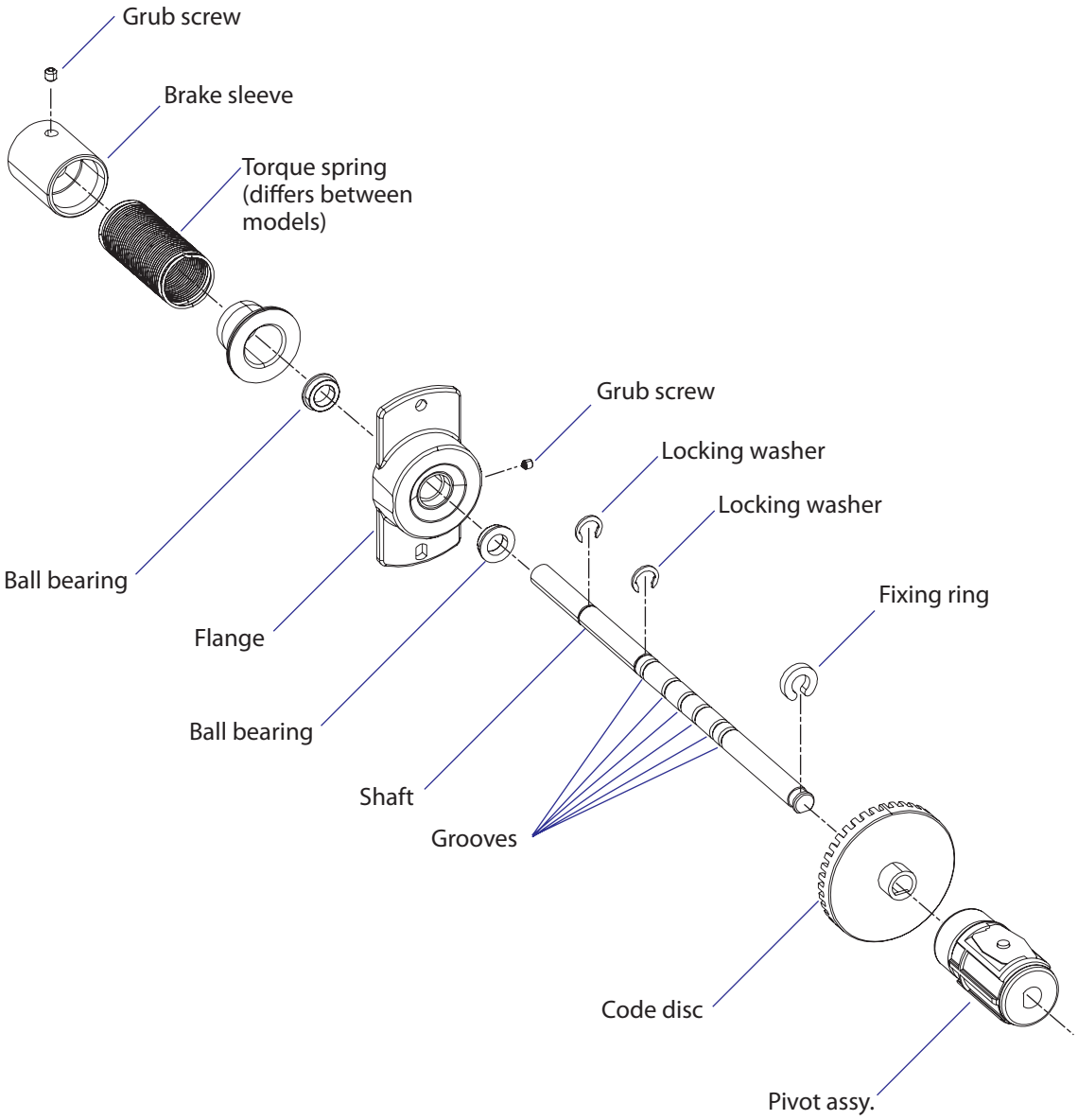
Ribbon Width	Position (groove)	Note
55-60 mm (2.16-2.36 in)	1:st (innermost)	PX4i only
88-90 mm (3.5 in)	2:nd	All
110 mm (4.3 in)	3:rd	All
130 mm (5.1 in)	4:th	PX6i only
154 mm (6.0 in)	5:th	PX6i only
≤ 166 mm (6.5 in)	6:th (outermost)	PX6i only



Working Principles

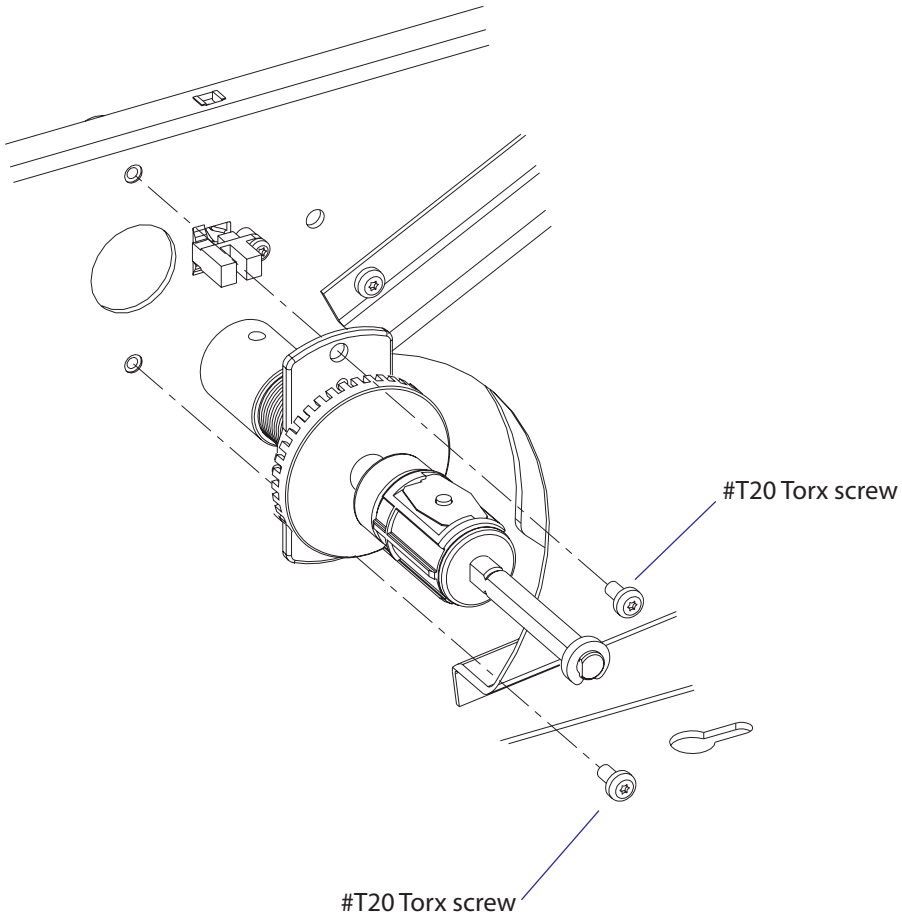
The ribbon supply is braked by a spring affixed to the printer's center section, partly enveloped by a sleeve affixed to the shaft. Initially, the spring expands towards the inner wall of the sleeve, thereby breaking the rotation of the shaft. When the bobbin is forced to rotate (that is, when the ribbon is unwound), the breaking spring is compressed. After approximately half a turn, the diameter of the spring has been compressed enough to allow the sleeve to slip. The brake torque should be 55 ±5 Nmm (see Appendix C). The sleeve is filled with ball bearing grease. If the brake torque deviates from the recommended value, replace the grease. We recommend Castrol Sinplex 2. The expected interval between replacing the grease is 8 to 10 million print cycles.

When the rotating force ceases, the spring tends to pull back the ribbon, keeping it tight.



Replacement

The unit is attached to the center section by two #T20 Torx screws inserted from the media compartment side.

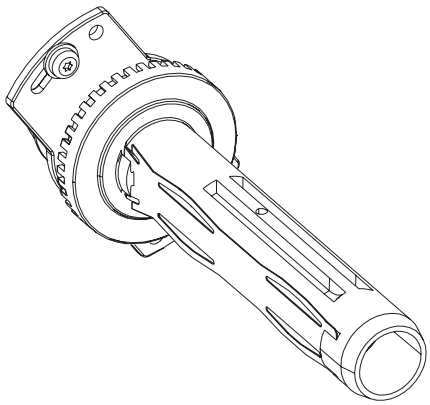


7.3 Ribbon Rewind Unit

Description

The ribbon rewind unit is the same for EasyCoder PX4i and EasyCoder PX6i. It pulls the transfer ribbon around the printhead and winds it up on a cardboard core. The unit is driven via a belt by the same stepper motor that drives the platen roller.

The rewind unit is provided with a friction brake in order to keep the ribbon tight.



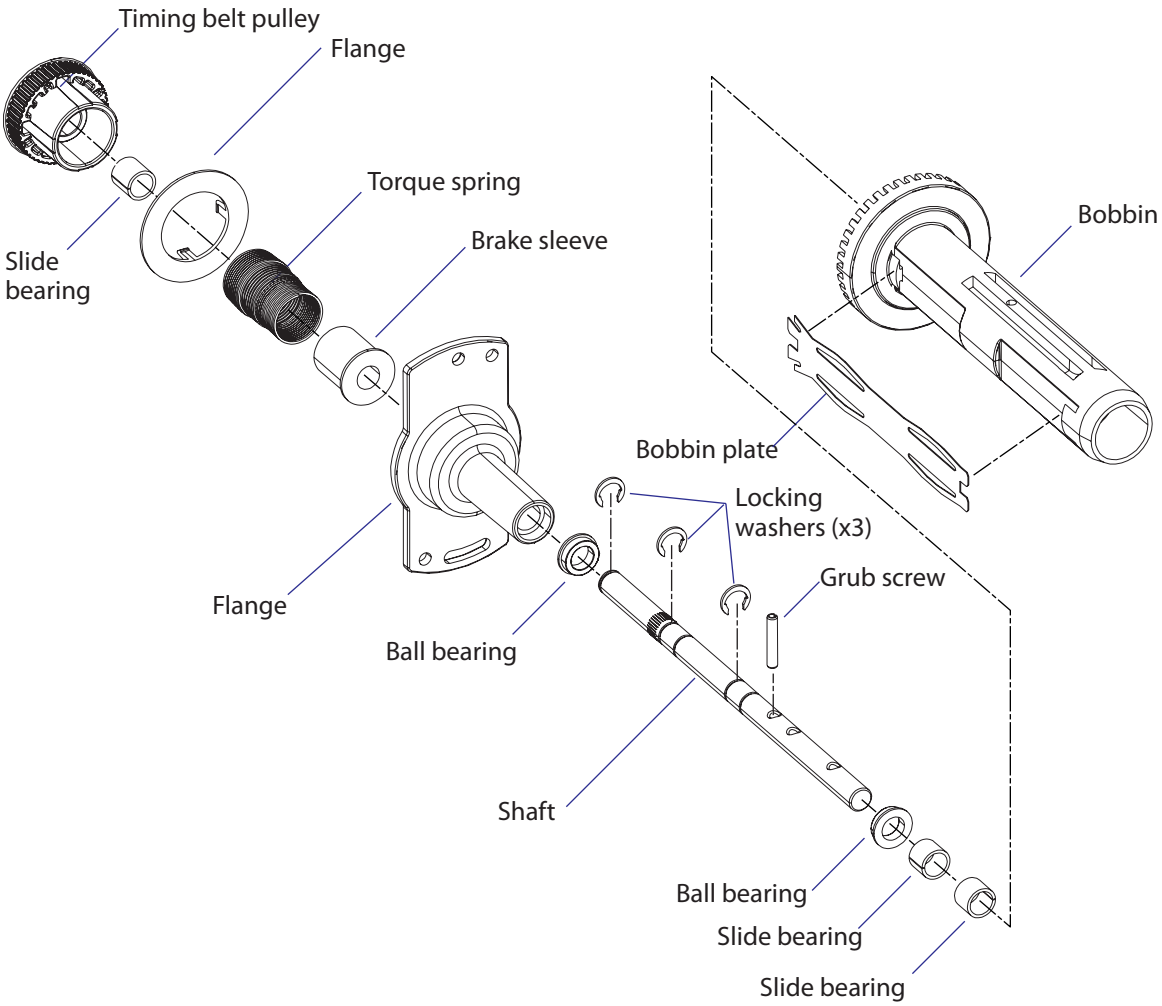
Adjustment

There is no manual adjustment of the ribbon rewind unit other than the tension of the belt to the stepper motor (see Chapter 8.4).

Working Principles

The ribbon rewind unit is driven by the same motor that drives the platen roller in the print unit via a belt that engages the timing belt pulley. The torque spring allows the stepper motor to drive the rewind hub rotate counter-clockwise only. When the media is fed back, the ribbon will not move.

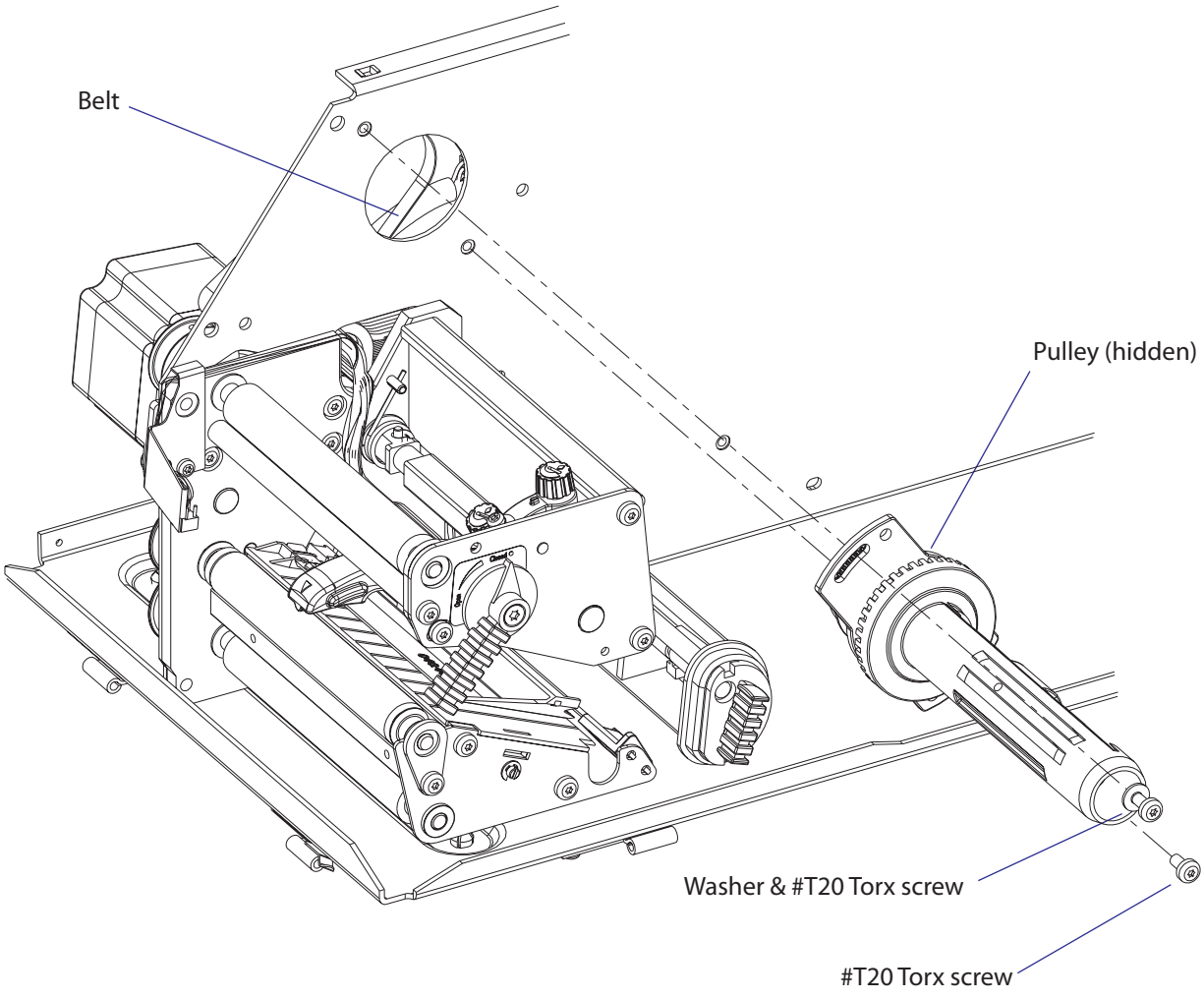
The torque spring arrangement automatically compensates for the gradually increasing diameter of the used ribbon on the rewind hub, so the ribbon will always be fed at the same speed as the media.



Replacement

The ribbon rewind unit is fitted to the center section using two #T20 Torx screws inserted from the media compartment. One of the screws runs in a crescent-shaped slot to allow adjustment or removal of the belt.

- Remove the left-hand cover as described in Chapter 3.3.
- Remove the two #T20 Torx screws and the single washer that hold the ribbon rewind unit.
- Free the belt from the pulley of the rewind unit.
- Pull out the unit into the media compartment.
- Do not dismantle the ribbon rewind unit.
- Fit the new ribbon rewind unit in reverse order, making sure that the belt is properly attached to the pulley, but do not tighten the screws.
- Adjust the tension of the belt as described in Chapter 8.5.
- Tighten the screws.



7.4 Ribbon Sensor

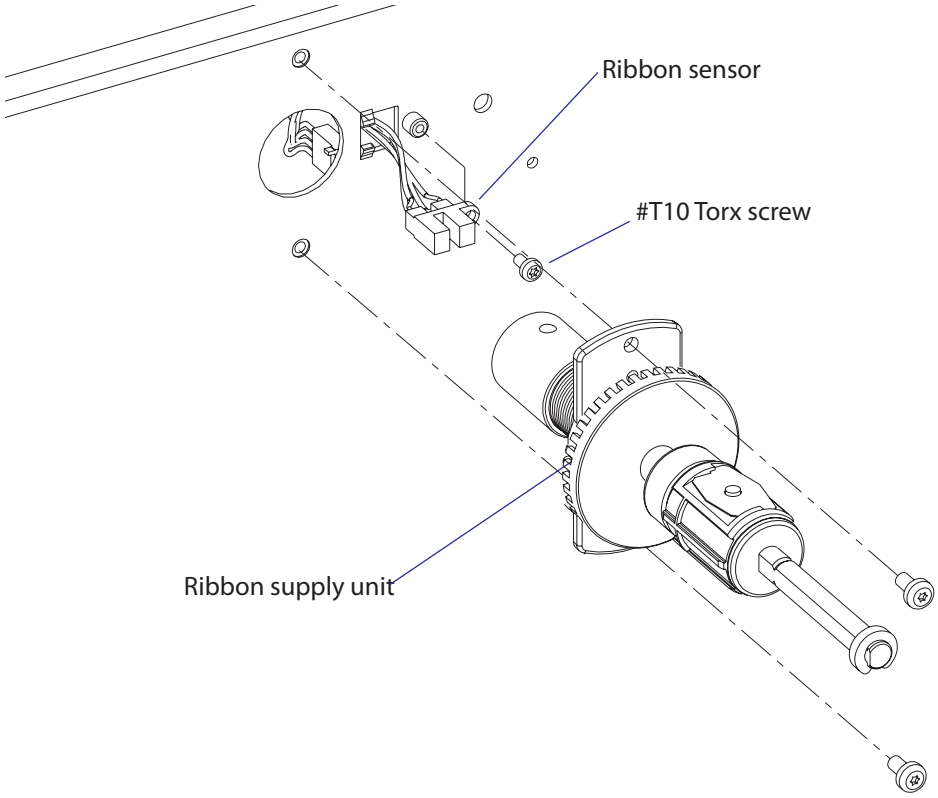
Description

The ribbon sensor is fitted to the center section from the media compartment side and is partly enclosed by the ribbon supply unit (see Chapter 7.2). The sensor consists of a plastic housing with a LED and a photoelectric sensor plus a cable.

The light from the LED is intermittently blocked by the saw-toothed edge of the rotating code disc. The signals from the sensor allow the firmware to detect the speed with which the bobbin rotates and compare it with the speed of the media feed. Thus, both "out of ribbon" and "ribbon low" conditions can be detected.

If no bobbin rotation is detected during media feed, the Fingerprint firmware assumes an error condition (error 1027 *"Out of transfer ribbon"*) provided the printer is set for thermal transfer printing. In IPL, the error message "*Ribbon out"* is displayed.

The ribbon sensor is connected to J56 on the CPU board (see Chapter 15.3).



Replacement

- Remove the cover over the electronics compartment as described in Chapter 3.3, taking all precautions against electric shock.
- Remove any transfer ribbon from the ribbon supply unit.
- Remove the ribbon supply unit as described in Chapter 6.2.
- Disconnect the sensor's cable from J56 on the CPU board.
- Remove the #T10 Torx screw that holds the sensor to the center section.
- Install a replacement sensor unit in reverse order.

Adjustment (Fingerprint)

Low diameter

In the Setup Mode (see Appendix A), it is possible to specify the diameter (in millimeters) of the ribbon supply roll, when a ribbon low condition should occur. By default, this parameter is set to 0, which disables the function. To enable it, enter the desired value.

The status of the ribbon sensor can be polled by reading SYSVAR(26) in a Fingerprint application program. SYSVAR(26) returns 0 if the diameter of the ribbon supply roll is greater and 1 if it is less than the value entered in the Setup Mode. A trap is also sent that can be detected when the printer is connected to a network via an EasyLAN interface.

Note that a full forward rotation of the supply bobbin must have been completed. If not, 0 will be returned.

Note: When the ribbon low function is enabled, error condition 1083 *"Ribbon low"* is reported every tenth time SYSVAR(26) = 1 is detected in connection with a PRINTFEED.

Sensitivity

- Enter the Setup Mode and follow the path:
  Media/Paper Type/Transfer/Ribbon Sensor
- In the Ribbon Sensor menu, press <Enter> to perform a Testfeed.
- The printer will feed out a few labels and feed the ribbon accordingly.
- While the ribbon mechanism is operating, the ribbon sensor is autoadjusted and the resulting adjustment value is shown in the lower line of the menu (read-only).

Adjustment (IPL)

In the Setup Mode (see Appendix A), it is possible to specify the value in millimeters of the ribbon supply roll for the ribbon sensor. When the diameter of remaining ribbon supply roll reaches the set value, an SNMP trap is sent to the printer's home page, provided the printer has an optional EasyLAN connection. Range: 0-80 with preset values at an interval of 5. A value larger than 80 sets the ribbon sensor to 0. Default value: 0

The ribbon low sensor can also be set using an IPL command:
`<STX><SI>kn<ETX>`

There is no facility for adjusting the sensitivity of the ribbon sensor in IPL.

8 Print Unit

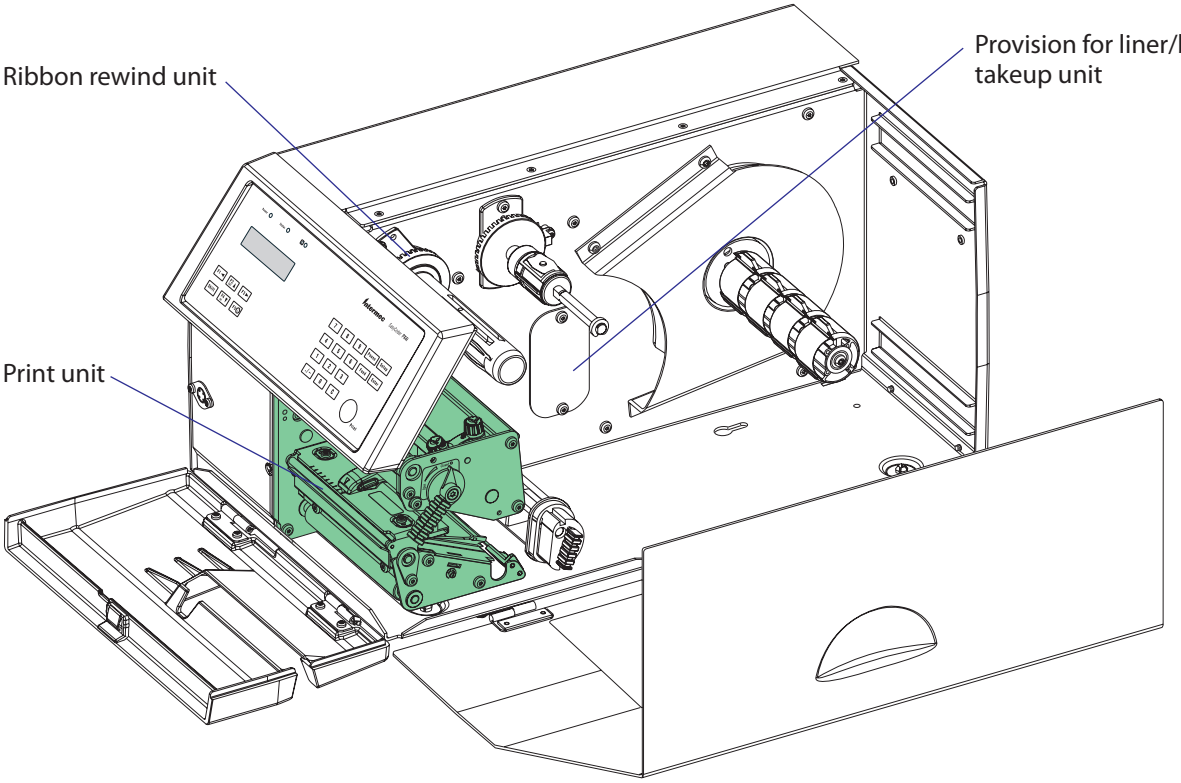
This chapter describes the print unit of the EasyCoder PX4i and PX6i printer and explains how to adjust the various functions and replace part subject to wear. It covers the following topics:

- Description
- Platen roller
- Stepper motor
- Belts
- Label stop sensor
- Printhead
- Headlift sensor
- Headlift mechanism
- Media feed principles

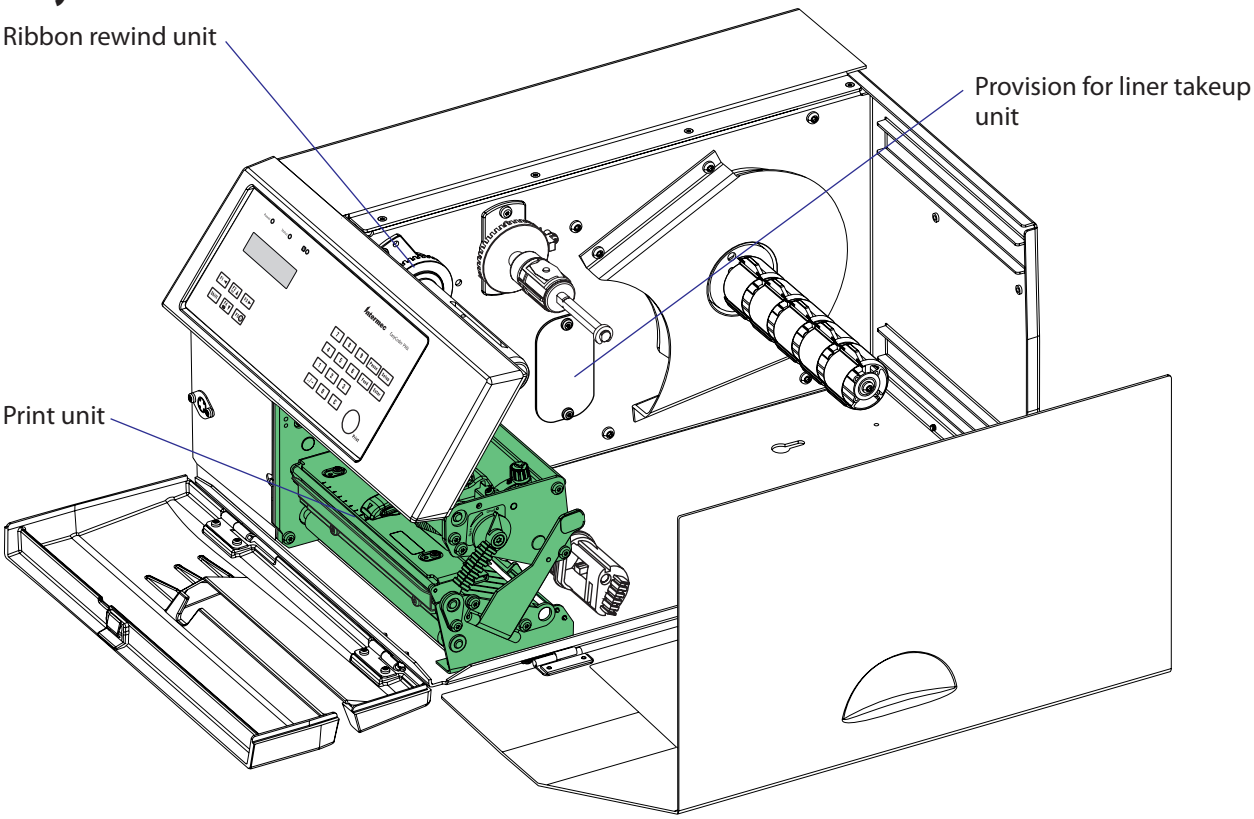
8.1 Description

The print unit is partly integrated with the ribbon rewind unit (see Chapter 7.3) and optional liner/batch takeup unit (see Chapter 9).

EasyCoder PX4i



EasyCoder PX6i



The main parts of the print unit are:

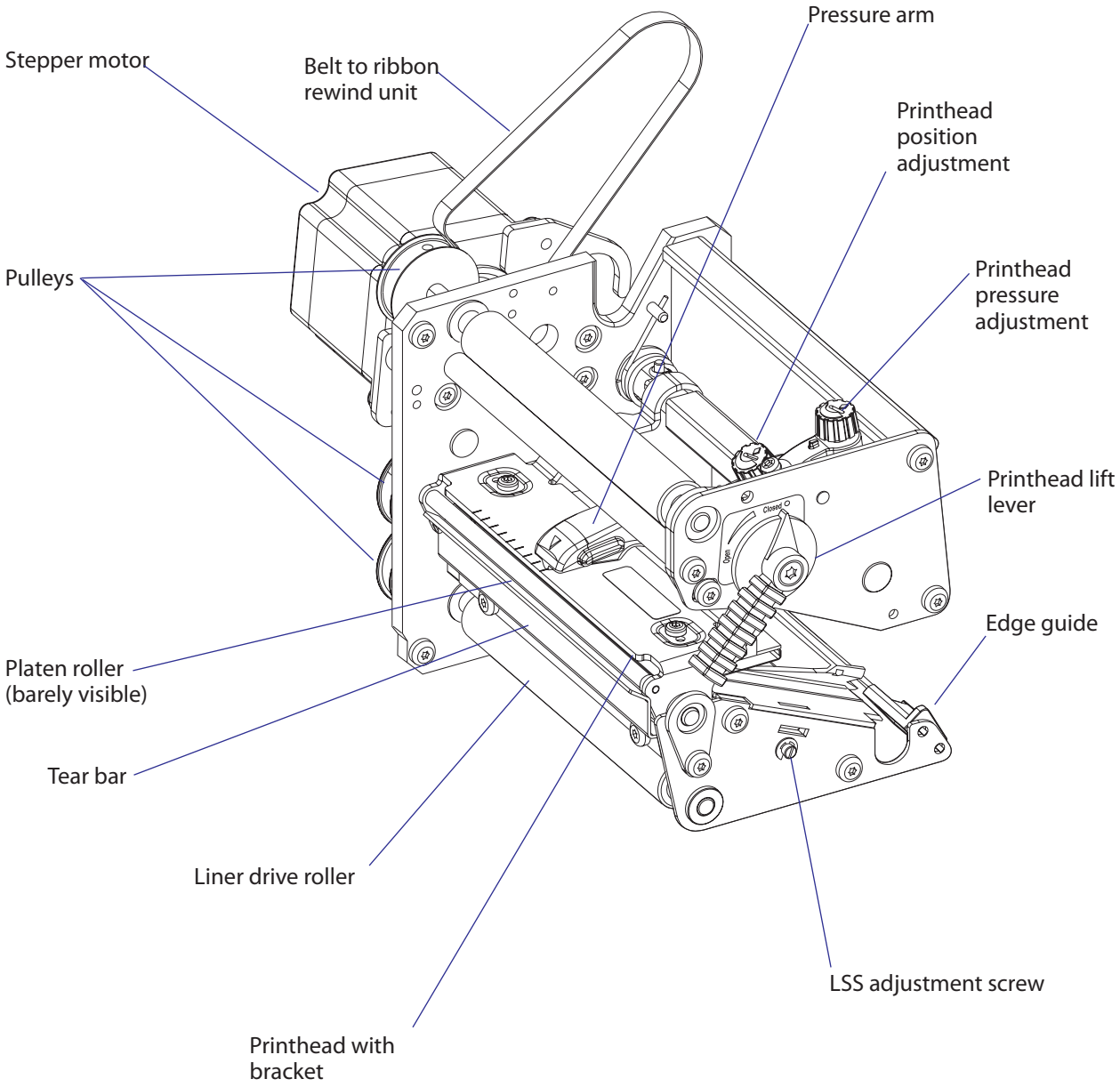
- The rubber-coated platen roller drives the media forward under the printhead and provides the necessary counter-pressure.
- The stepper motor drives the platen roller via one belt and the ribbon assist roller and the ribbon rewind unit via another. The liner drive roller is idle, unless a liner/batch takeup kit is fitted, see Chapter 9.
- The tear bar makes it easier to tear off continuous and pre-perforated media stock. It is also used for peel-off (self-strip) operation.
- The label stop sensor (LSS) controls the media feed and checks for out-of-paper conditions.
- The printhead produces the heat that melts the “ink” on the transfer ribbon or blackens the direct thermal paper in patterns that make up the text, graphics, or bar codes.
- The headlift mechanism presses the printhead against the media or transfer ribbon, or raises the printhead to allow media and ribbon load.

The print unit is a self-contained module and attached to the printer's center section by means of four #T20 Torx screws. There are also a number of cables running from the print mechanism to the driver and CPU boards (see Chapters 14.1 and 15.3), which are not illustrated.

The ribbon rewind unit is driven by a belt from the motor of the print unit via an idle pulley attached to the inside of the center section. The liner drive roller (fitted underneath the platen roller) is either idle or driven by a belt to the optional liner/batch takeup stepper motor. These belts have to be removed before the print unit can be pulled out.

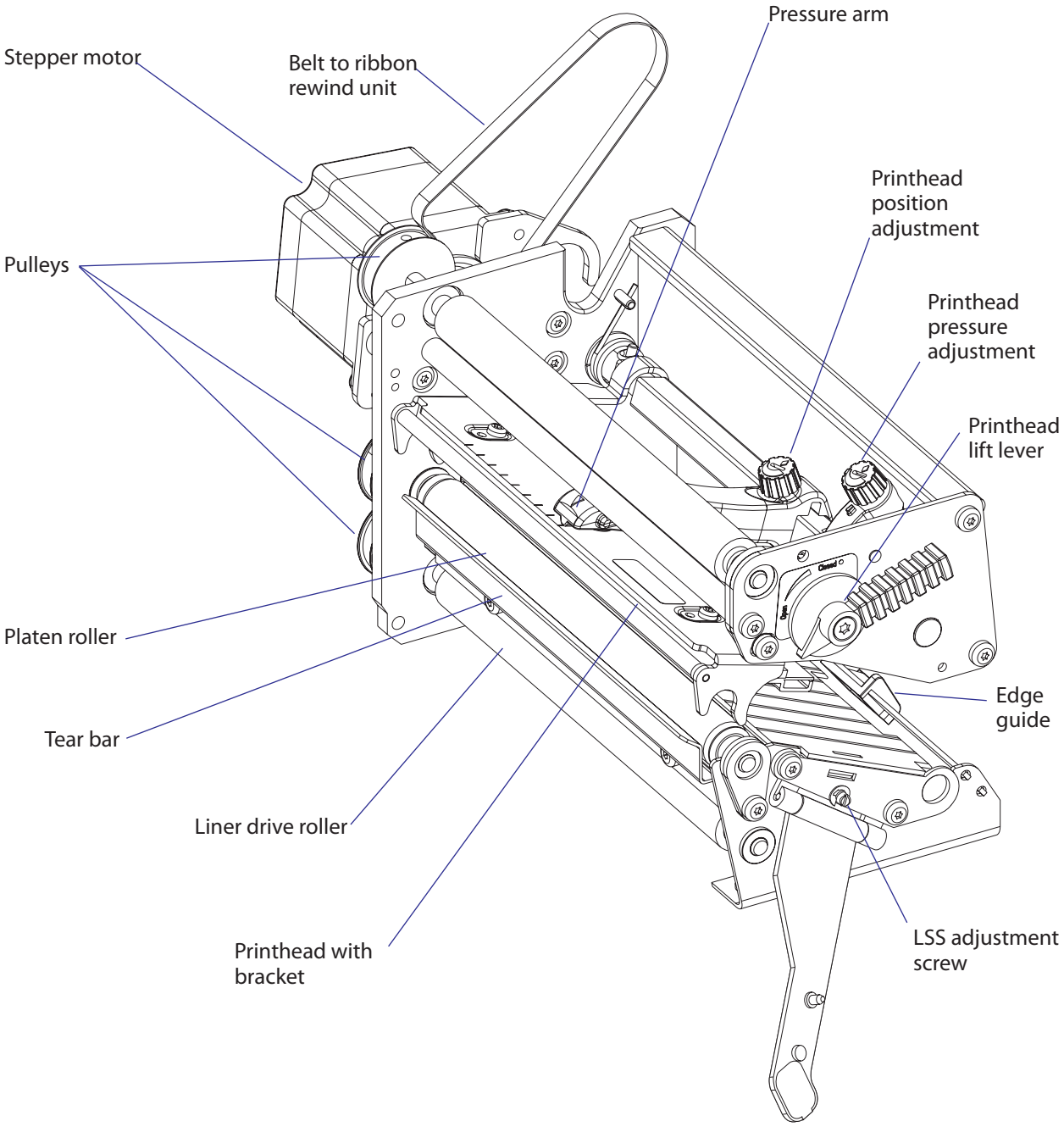
EasyCoder PX4i

The parts of the EasyCoder PX4i print unit, as seen from the media compartment side of the center section, are illustrated below. Cables are excluded.



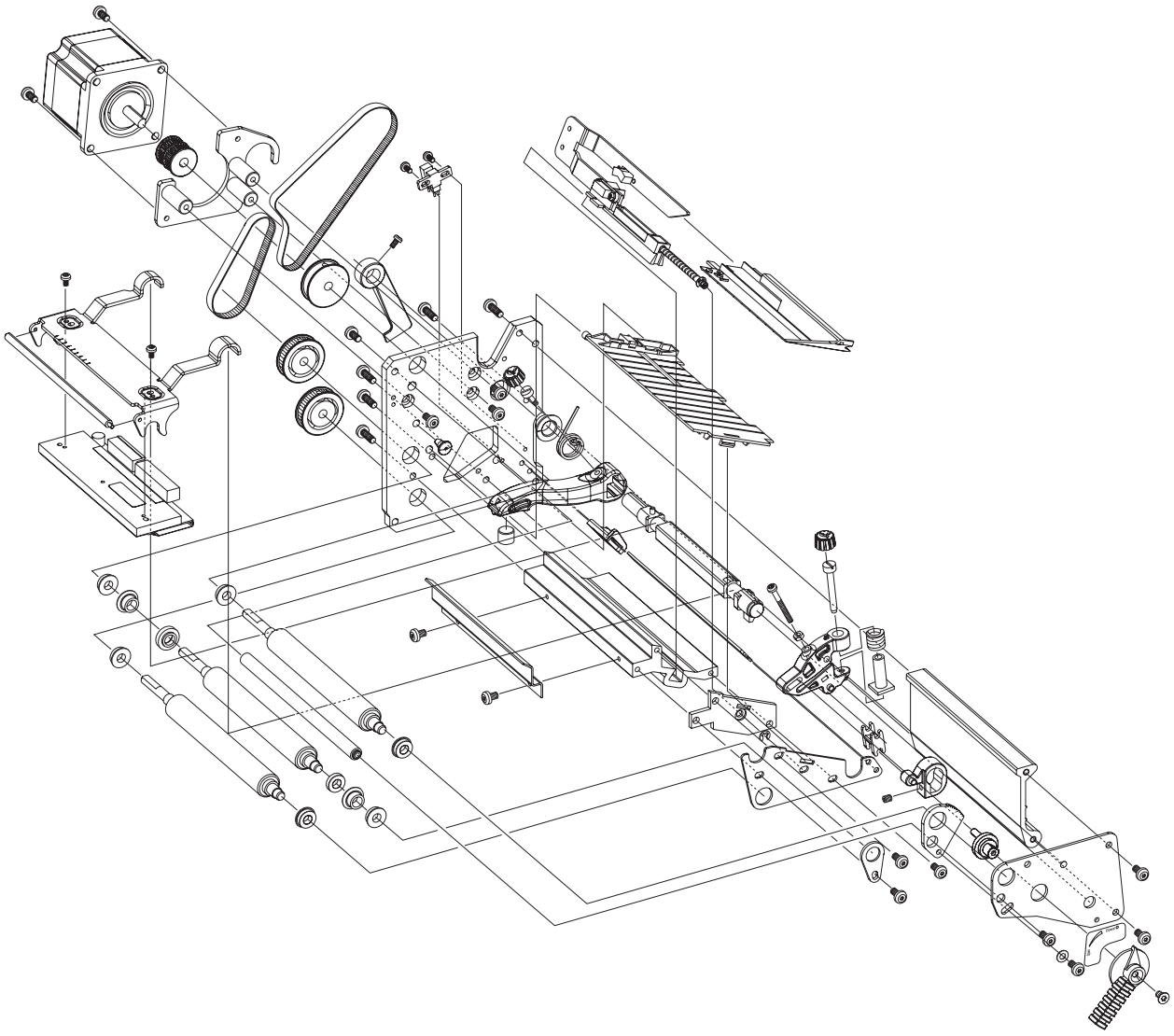
EasyCoder PX6i

The parts of the EasyCoder PX6i print unit, as seen from the media compartment side of the center section, are illustrated below. Cables are excluded.



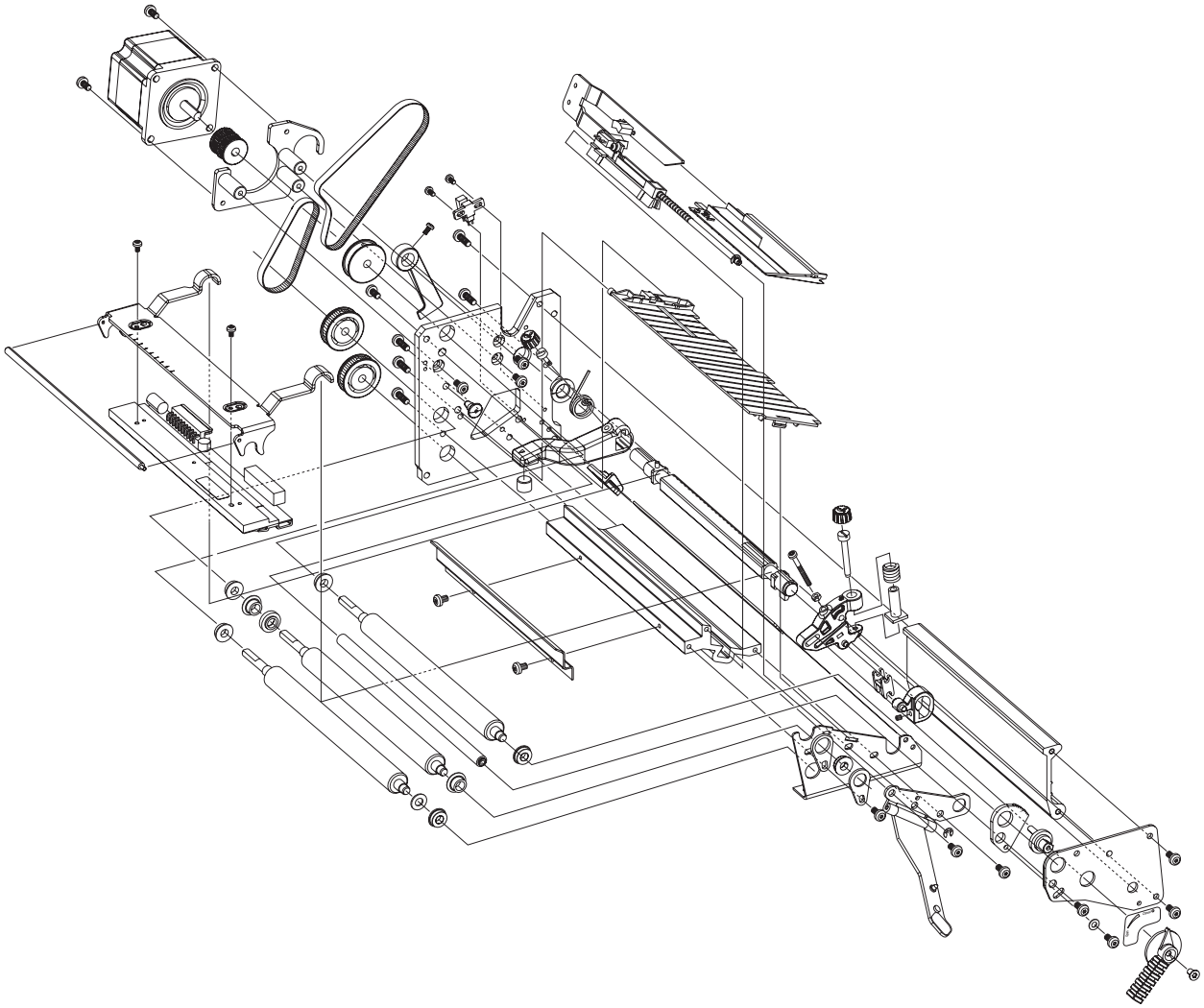
EasyCoder PX4i

This overview illustrates the various parts in the print unit except cables. The idle pulley fitted to the center section and the ribbon rewind unit are not included. Note that many of the parts illustrated here are not available as separate spare parts, but must be bought as ready-assembled units.

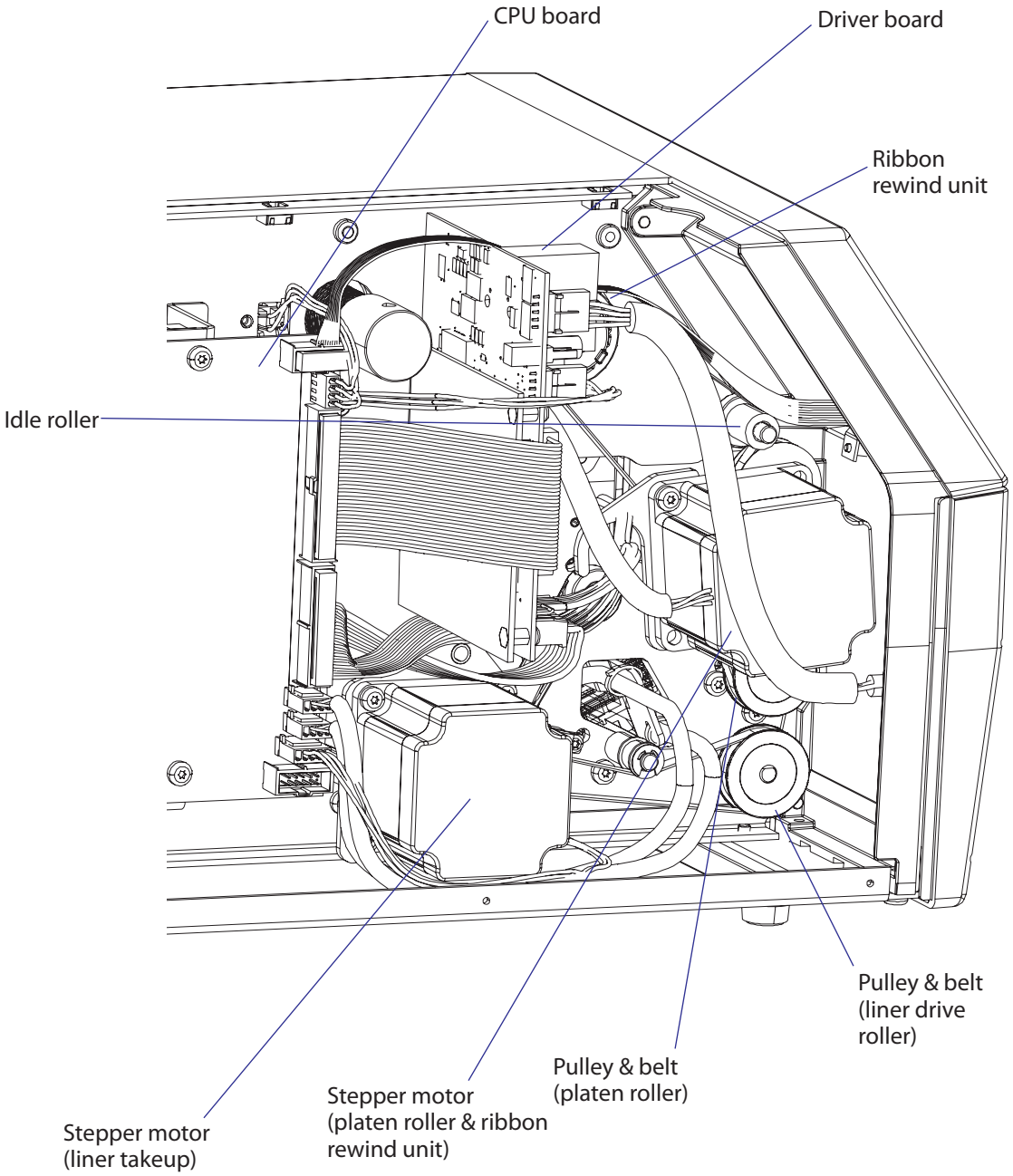


EasyCoder PX6i

This overview illustrates the various parts in the print unit except cables. The idle pulley fitted to the center section and the ribbon rewind unit are not included. Note that many of the parts illustrated here are not available as separate spare parts, but must be bought as ready-assembled units.



The parts of the print mechanism fitted inside the electronics compartment in an EasyCoder PX4i printer are illustrated below.



8.2 Platen Roller

Description

The platen roller is coated with silicon rubber. It is imperative that the roller is kept clean and is free from uneven wear or dents. The platen roller is identical to the liner drive roller, so these rollers could be switched. The same applies to the pulleys and belts. It is normal that the platen roller needs to be replaced after a period of time depending on print volume and other circumstances.

If the platen roller is manually rotated, while the power is switched on, the stepper motor may work as a generator and damage the stepper motor driver on the driver board (see Chapter 14). A typical example is when the operator tears out media that has stuck on the platen roller without switching off the power first.

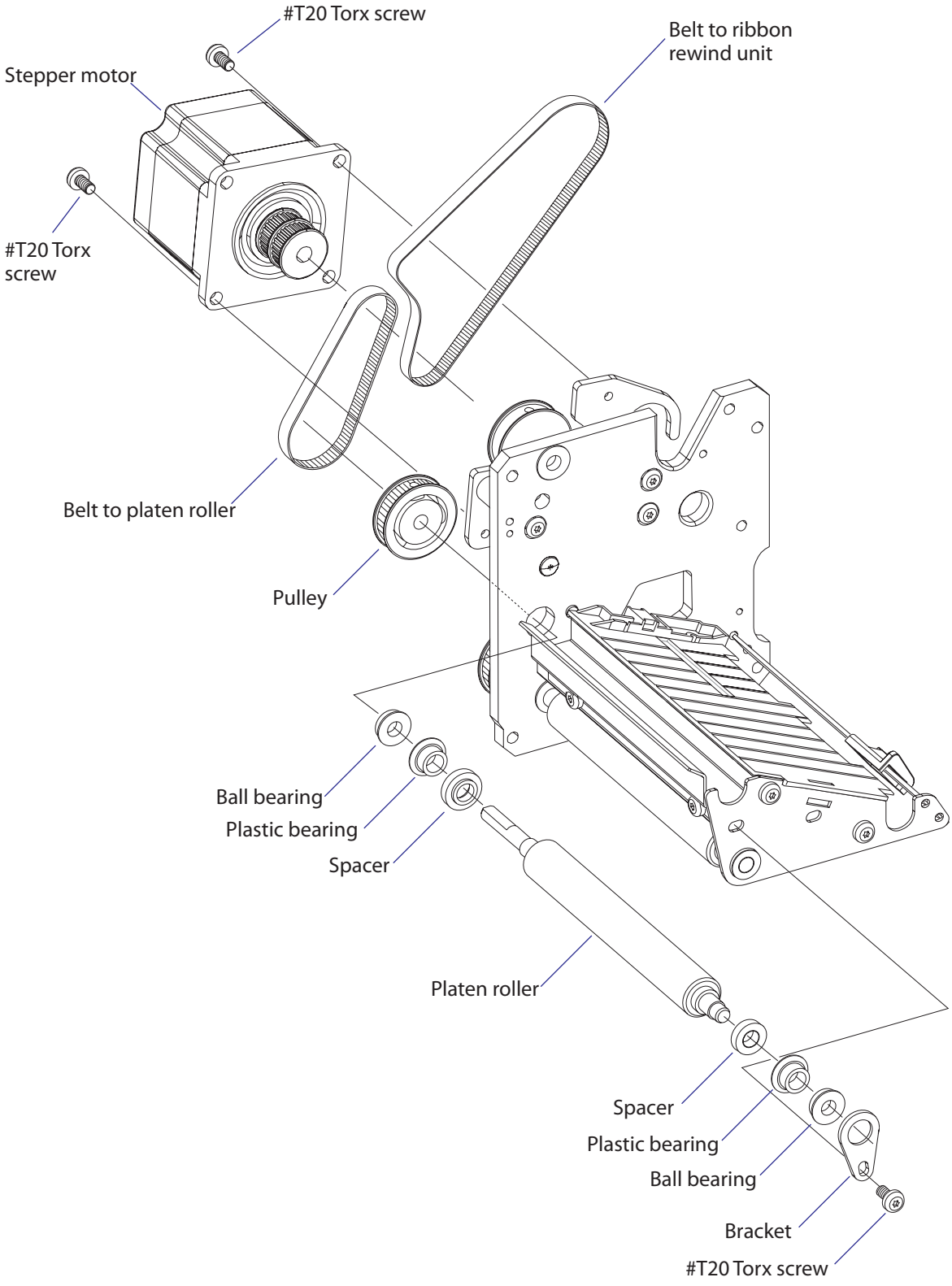
Replacement

This description also applies to the liner drive roller.

- Switch off the power to the printer and disconnect the power cord.
- Open the front and right hand doors.
- Remove the cover over the electronics compartment, which is held by eight #T10 Torx screws, see Chapter 3.3.
- Remove the tension of the belt to the ribbon rewind unit by loosening the two #T20 screws that holds the ribbon rewind unit.
- Dismantle the stepper motor from the bracket by removing the two #T20 Torx screws.
- Free the belt from the pulley of the ribbon rewind unit and manipulate the stepper motor so it comes free from both belts. Remove the stepper motor.
- Remove the belt from the pulley of the platen roller.
- Insert a 2 mm hexagon key through the semicircular slot in the front plate and loosen the grub screw that holds the pulley on the shaft of the platen roller.
- Using a #T20 screwdriver, remove the bracket that holds the outer end of the platen roller and pull out the entire package.
- Reassemble in reverse order using a fresh set of roller and bearings. When fitting back the pulley on the platen roller shaft, check that the distance between the pulley and the inner gable of the print unit becomes 5 mm (0.2 inches.)
- When putting back the stepper motor, fit the short belt first, while letting the long belt hang loosely on the idler in a loop, through which you can insert the pulley of the stepper motor. Do not put the long belt around the pulley of the ribbon rewind unit until you have fitted the stepper motor to the bracket and checked that both belts are engaged by the stepper motor's pulleys.
- Adjust the tension of the belts as described in Chapter 8.4 and put back the cover.

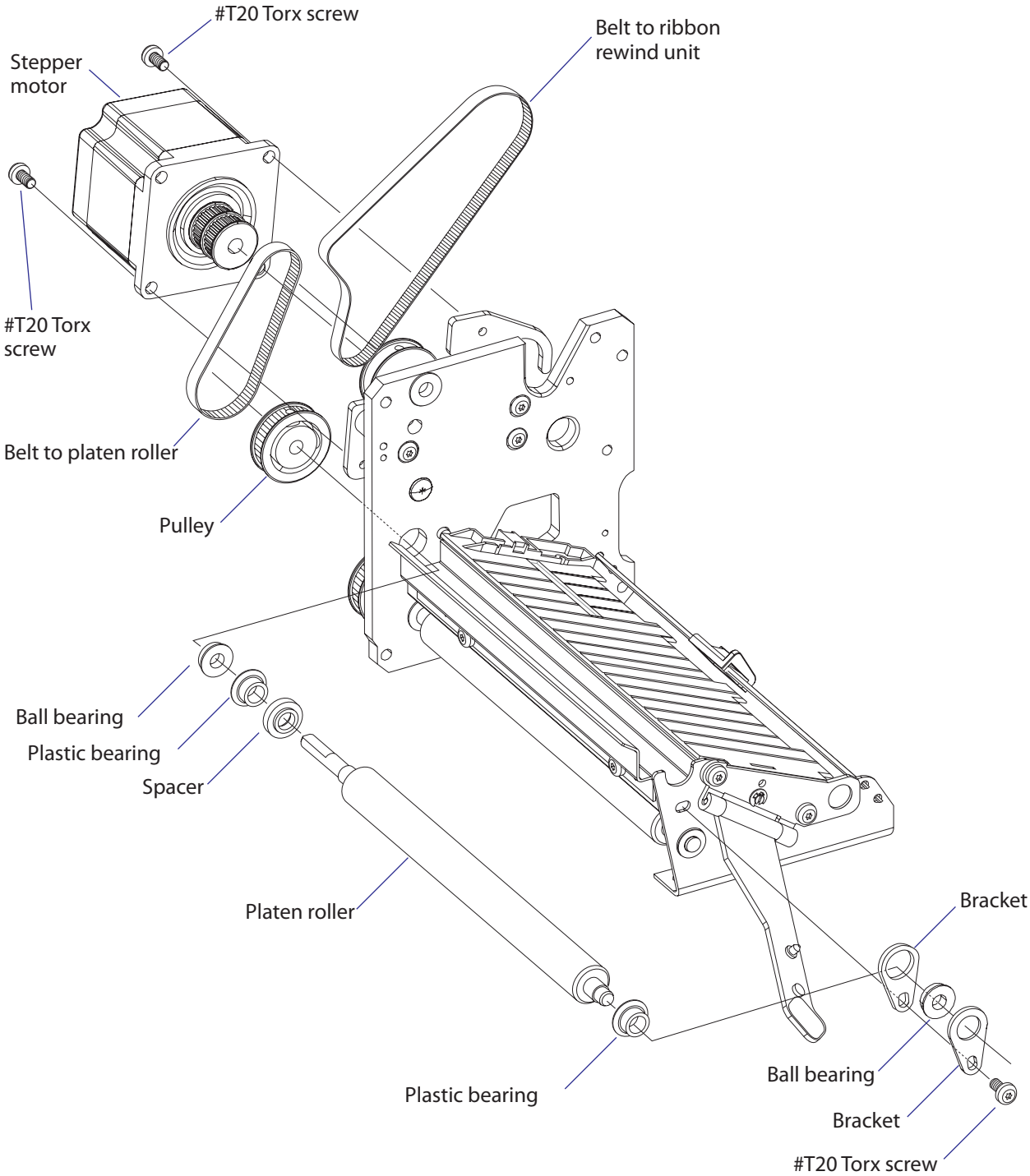
EasyCoder PX4i

In the illustration below, the upper parts of the print unit and the label stop sensor have been removed to improve visibility.



EasyCoder PX6i

In the illustration below, the upper parts of the print unit and the label stop sensor have been removed to improve visibility.



8.3 Stepper Motor

Description

The stepper motor drives the platen roller via a short belt and the ribbon assist roller and the ribbon rewind unit via another, longer belt. A freely rotating pulley attached to the printer's center section makes the outside of the longer belt drive the ribbon assist roller.

The stepper motor is driven in microsteps (8 microsteps per full step) at all speeds.

The stepper motor is fitted by two #T20 Torx screws to a bracket, which in its turn is attached to the print unit gable by three #T20 Torx screws. The pulleys of the stepper motor are permanently glued to the motor's shaft.

Replacement

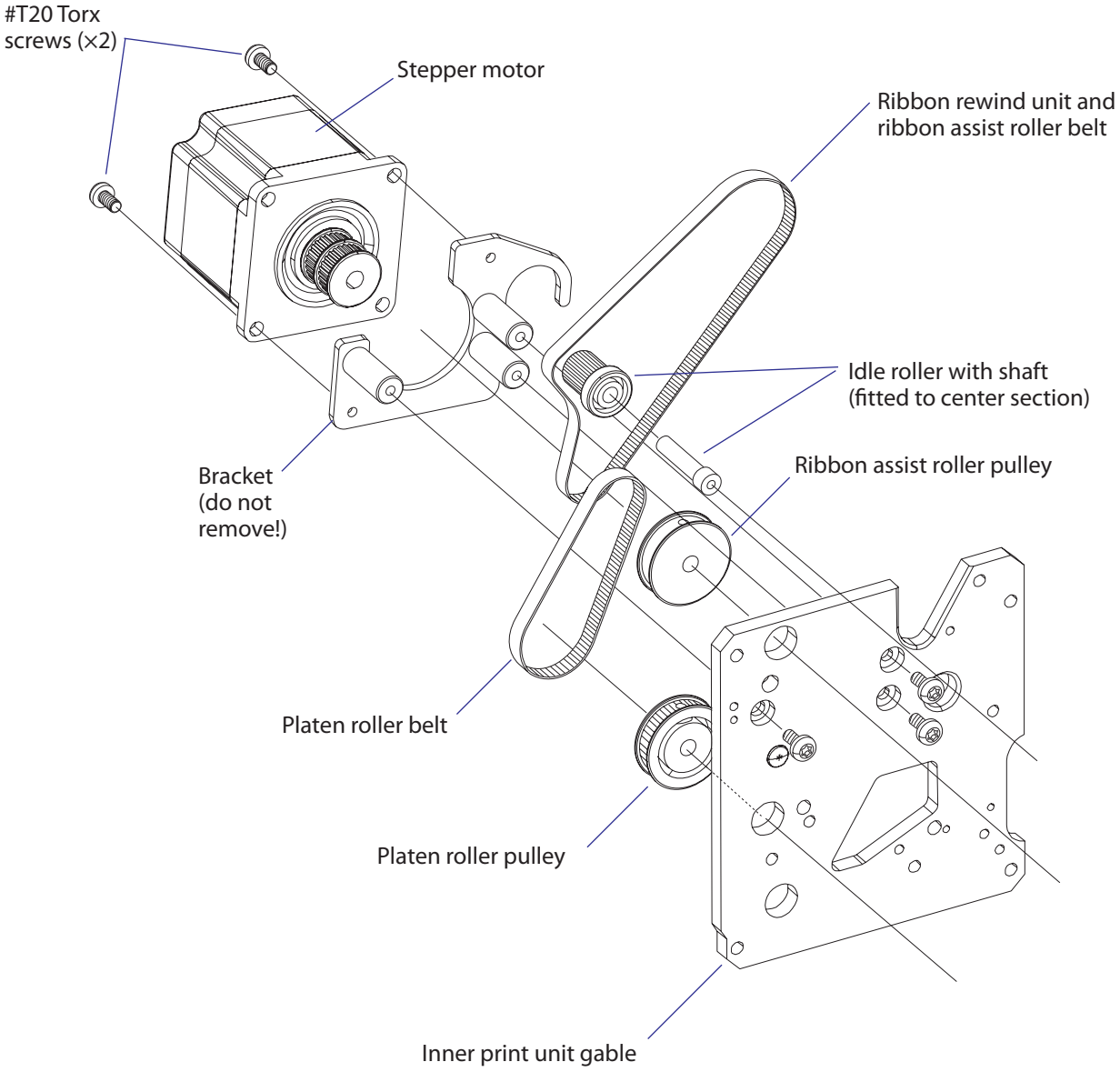
Replace the stepper motor as follows:

- Switch off the power and disconnect the power cord.
- Open the front and right hand doors.
- Remove the cover over the electronics compartment, which is held by eight #T10 Torx screws, see Chapter 3.3.
- Disconnect the cable to the stepper motor from the driver board.
- Remove the tension of the belt to the ribbon rewind unit by loosening the two #T20 screws that hold the unit, see Chapter 7.3.
- Dismantle the stepper motor from the bracket by removing the two #T20 Torx screws.
- Free the belt from the pulley of the ribbon rewind unit and manipulate the stepper motor so it comes free from both belts. Remove the stepper motor.
- When putting back the stepper motor, fit the short belt first, while letting the long belt hang loosely on the idler in a loop, through which you can insert the pulley of the stepper motor. Do not put the long belt around the pulley of the ribbon rewind unit until you have fitted the stepper motor to the bracket and checked that both belts are engaged by the pulleys.
- Connect the cable of the stepper motor to upper connector along the inner edge of the driver board (P10).
- Adjust the tension of the belts as described in Chapter 8.4 and put back the cover.

Refer to illustration on the next page!

In the illustration below, most parts of the print unit have been omitted to improve visibility.

Note: The bracket does not need to be removed from the inner print unit gable when the stepper motor is replaced.



8.4 Belts

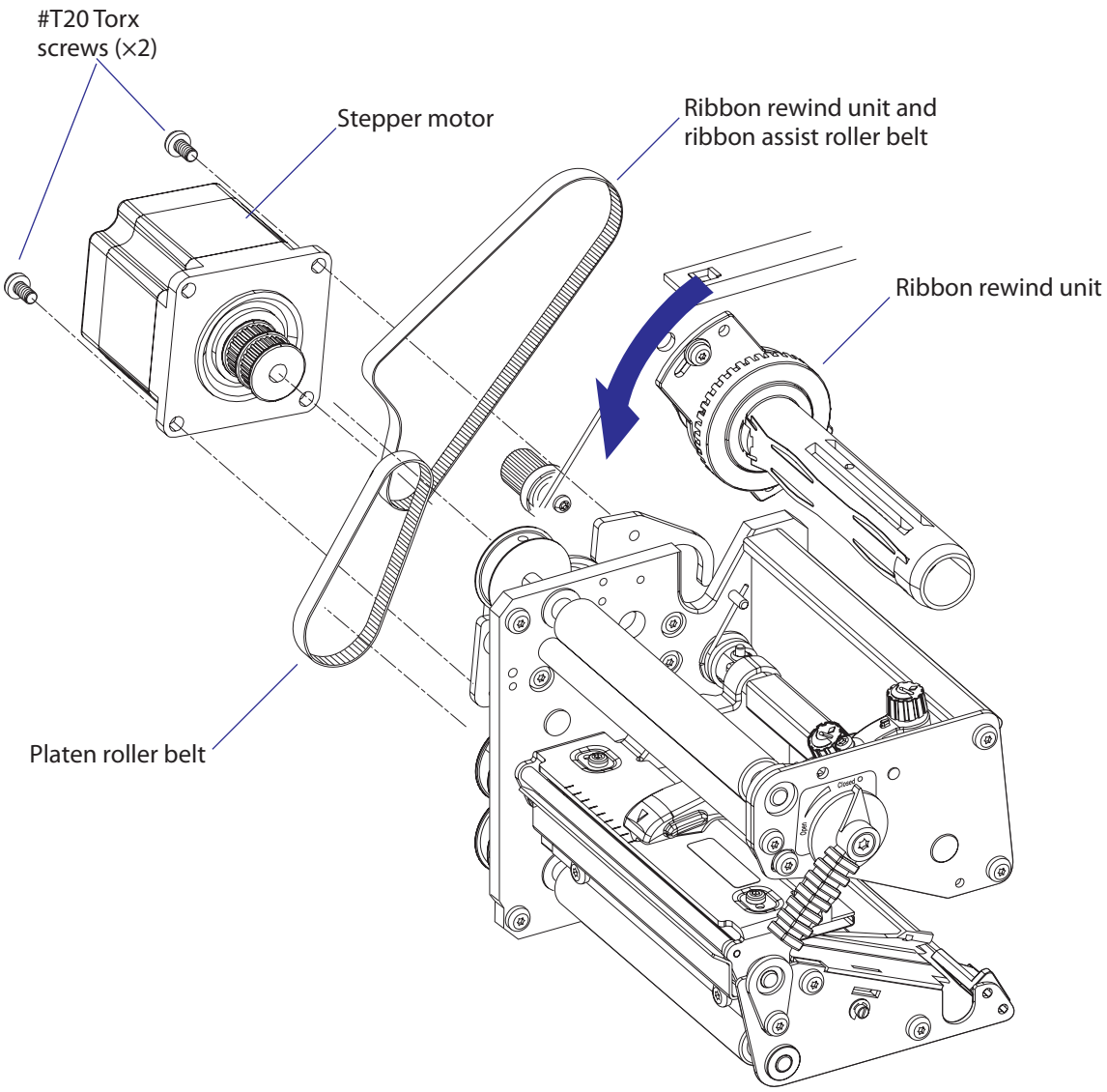
Description

The print unit has at least two timing belts, one that drives the platen roller and another that drives the ribbon assist roller and the ribbon rewind unit. There is also a third belt if an optional liner/batch takeup unit is fitted (see Chapter 9). The belts are subject to wear and may need periodical replacement. Properly adjusted tension and alignment of the pulleys will increase time between replacements.

Replacement

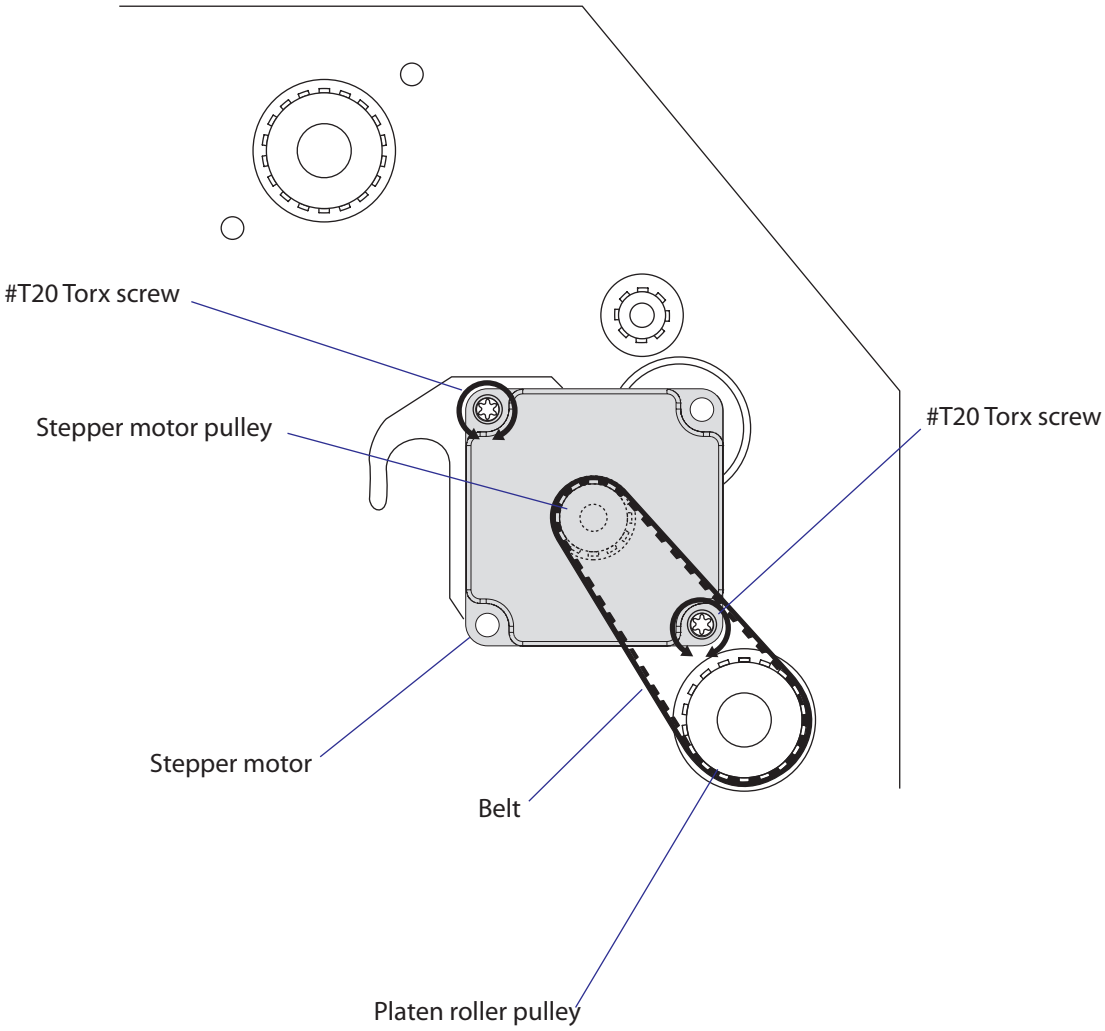
- Switch off the power and disconnect the power cord.
- Open the front and right hand doors.
- Remove the cover over the electronics compartment, which is held by eight #T10 Torx screws, see Chapter 3.3.
- Remove the tension of the belt to the ribbon rewind unit by loosening the two #T20 screws that hold the unit, see Chapter 7.3.
- Dismantle the stepper motor from the bracket by removing the two #T20 Torx screws.
- Free the belt from the pulley of the ribbon rewind unit and manipulate the stepper motor so it comes free from both belts. Remove the stepper motor.
- Replace the defective belt or belts.
- When putting back the stepper motor, fit the short belt first, while letting the long belt hang loosely on the idler in a loop, through which you can insert the pulley of the stepper motor. Do not put the long belt around the pulley of the ribbon rewind unit until you have fitted the stepper motor to the bracket and checked that both belts are engaged by the pulleys.
- Adjust the tension of the belts as described later in this chapter and put back the cover.

Refer to illustration on the next page!


#T20 Torx
screws (×2)
Stepper motor
Ribbon rewind unit and
ribbon assist roller belt
Ribbon rewind unit
Platen roller belt

Adjustment; Platen Roll Belt

Oversized holes allow the position of the stepper motor relative to the bracket to be adjusted so the tension of the belt does not become too tight, causing unnecessary wear. Check that the platen roller can be rotated freely by the belt, which should flex just a little when you press it with your finger.



Adjustment; Ribbon Rewinder Belt

The belt should be adjusted so it neither jump the cogs nor becomes subject to unnecessary wear.

Before adjusting this belt, check the tension of the platen roller belt as described on the previous page.

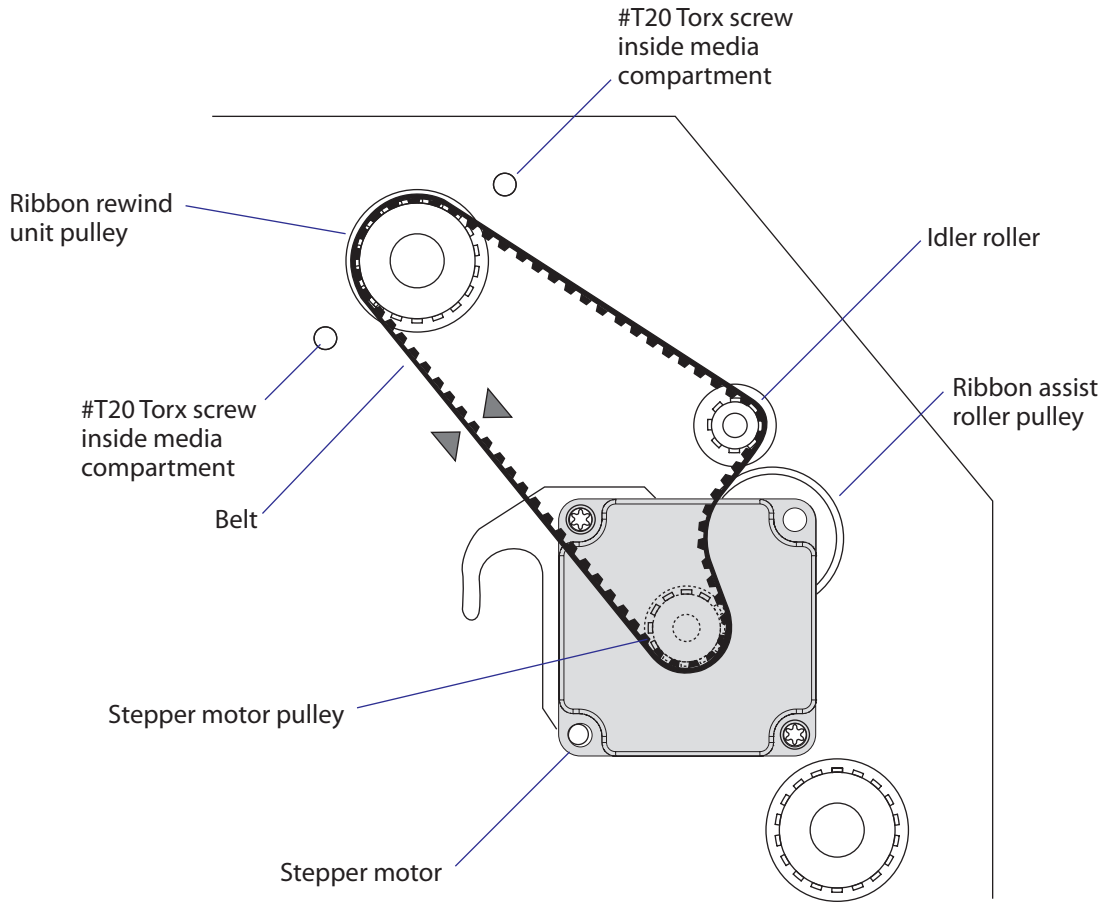
Slightly loosen the two #T20 Torx screws that hold the flange of the ribbon rewind unit.

Turn the ribbon rewind unit so the belt becomes tight, yet will flex slightly when you press it with a finger. Tighten the screws.

Check that the parts can rotate freely and without any unpleasant sound and that the belt does not jump the cogs when you rotate the ribbon rewind unit forcefully.

The ribbon return roller should be easy to rotate manually. Once the motor starts, the belt will be tight and will drive the ribbon assist roller.

If the idler roller starts to squeak, lubricate the inside of the belt with a small quantity of grease.



8.5 Label Stop Sensor

Description

The label stop sensor (LSS) controls the media feed and consists of a sliding carriage on which two photoelectric sensors are fitted. Both sensors are identical and contain one light-emitting diode and one light-sensitive receiver. The distance from the light path between the two parts of the LSS to the dot line on the printhead is 46.3 mm (1.82 inches). The sensors can be moved up to 50 mm (1.97 inches) out from the inner edge of the media path using a screw protruding through the lower outer gable of the print unit. In EasyCoder PX6i, this screw is only accessible when the locking handle is folded down. The label stop sensor is hidden inside the print mechanism and covered by two plastic guide plates, which can be removed for cleaning.

Working Principles

The label stop sensor serves a number of purposes, depending on how the printer is set up in regard of media type in Fingerprint and IPL respectively:

Label (w gaps)/Gap

A beam of light is emitted from the diode in the lower part and received by the sensor in the upper part. The firmware detects the **front** of each label, that is, when the light is completely interrupted by the opaque label, as opposed to the semi-transparent liner in the gaps between labels. If no label has been detected during a media feed corresponding to more than 150% of the set label length, a “next-label-not-found” condition is assumed. If a renewed print operation gives the same result, an “out-of-paper” condition is assumed.

Ticket (w mark)/Mark

Normally, a beam of light is emitted from the diode in the lower part. The beam is reflected back to the sensor in the lower part by the white media, or is absorbed by a black mark. The firmware detects when the front edge of a black mark passes the sensor, that is, when light starts to be absorbed. If no mark has been detected during a media feed corresponding to more than 150% of the set ticket length, a “next-label-not-found” condition is assumed. If a renewed print operation gives the same result, an “out-of-paper” condition is assumed.

By switching the cables from the upper and lower part of the LSS on the CPU board, black marks on top of the media can be detected.

Ticket (w gaps)/Gap

The light is emitted from the diode in the lower part and received by the sensor in the upper part. The light will either pass uninterrupted through a detection gap in the media or be blocked by the non-transparent ticket. The firmware detects the rear edges of detection gaps, that is, when the light starts being interrupted. If no ticket has been detected during a media feed corresponding to more than 150% of the set ticket length, a “next-label-not-found” condition is assumed. If a renewed print operation gives the same result, an “out-of-paper” condition is assumed.

Var. Length Strip and Fix Length Strip/Continuous

The light is emitted from the diode in lower part and received by the sensor in the upper part. The beam will either be blocked by the media or be completely uninterrupted when the printer runs out of continuous stock. The firmware assumes an out-of-paper condition if the light has not been interrupted within a media feed corresponding to 150% of the set length.

General

The information on where the gaps or marks are presently positioned relative the LSS (and thereby also relative the dot line on the printhead) is saved as an "invisible" file in the flash memory's file operating system (see Chapter 15.2). However, if the printhead is raised, or if the power is interrupted during printing, this file may be cleared, which will affect any labels between the LSS and the dot line. In this case, readjust the LSS using a TESTFEED operation (Fingerprint) or by pressing the <Feed/Pause> button (IPL).

Note (Fingerprint only): It is possible to decide if the media feed data should be cleared or not when the printhead is raised using the Fingerprint instruction SYSVAR(28). By default, the media feed data are not cleared.

The LSS checks for gaps or marks at every dot of positive media feed (feed out/print), but gaps or marks are ignored at negative media feed (retract). Gaps and black marks up to 170 dots (21.3 mm/0.84 inches) are allowed.

Testing the LSS

In the Print Defines part of the Setup Mode, you have two ways to test the label stop sensor if you encounter a detection problem; LSS Auto and LSS Manual.

The menus only provide indications from the label stop sensor unit. The testing menus can determine if the sensor unit is not physically in position, is blocked by dust or stuck labels, or is defective in some way. Furthermore, this is an aid if media has detection complications.

Note: There is no way to adjust the LSS-function; the menus only indicate values from the LSS obtained by performing a testfeed operation.

LSS Auto is the quick and normal way to determine if the label stop sensor works properly and is able to detect gaps, slots, or black marks.

LSS Manual shows the actual setting provided by the latest testfeed operation. It is also possible to try other settings. LSS Manual is primarily intended for service and is not described in the *User's Guide*.

LSS Auto

- Check that the printer is set up for the type of media loaded in your printer.
- Perform a testfeed by simultaneously pressing the <Shift> and <Feed> keys on the printer's keyboard (Fingerprint) or by pressing the <Feed/Pause> key (IPL).
- Make sure that there is a label—not a gap or mark—at the LSS.

- Check that the media is routed as close to the center section as the guides allow.
- Enter the Setup Mode and go to Setup Mode→Print Defines→LSS Test→LSS Auto (Fingerprint) or Setup Mode→Test/Service→LSS Test→LSS Auto (IPL).
- The menu should look like this with the cursor placed in the center:

```
LSS Auto
        ■
```

- **Gap or slot detection:**
  Lift the printhead and pull out the media slowly. When the LSS detects a gap or a detection slot, the cursor moves to the right.

```
LSS Auto
                ■
```

- **Black mark detection:**
  Lift the printhead and pull out the media slowly. When the LSS detects a black mark, the cursor moves to the left.

```
LSS Auto
■
```

- It is possible to refresh the centered cursor position by pressing the <▼> key.
- If the cursor behaves as described above, the LSS is working and is properly aligned with the gaps, slots, or black marks.
- If the cursor does not react on a gap, slot, or black mark, check this:
  - Is the LSS laterally aligned with the slots or black marks?
  - Are both the upper and lower part of the LSS aligned with each other?
  - Is the transfer ribbon properly loaded so it does not interfere with the LSS?
  - Are the sensors clean from dust and the LSS guides free from stuck labels or other objects that will interfere with the light that goes from one part of the LSS to the other? If not, clean as described in the *User's Guide*.
  - Does the media have some kind of preprint that can disturb the detection?
  - Is there too little difference between the black marks and the surrounding areas?
  - Does the liner have too little transparency?
  - Does the LSS work with another type of media? (Remember to change the Media Type setup and perform a new testfeed.)

LSS Manual

The LSS Manual option shows the actual setting given by the automatic testfeed. The cursor on the lower line indicates the response on the actual testfeed values for the Gain (sensitivity) and Drive (intensity).

```
LSS  [G: 2]D: 6
                ■
```

You can toggle between gain (G) and drive (D) using the <▶> and <◀> keys and decrease or increase the value using the <▼> and <▲> keys respectively.

Note: Changing the gain and drive does not reset the LSS. It only affects the testing. Once you leave the LSS Manual node, the values obtained by the automatic testfeed become effective again.

If there are preprinted areas on the liner or cut-out slots etc., it can disturb the automatic testfeed. To identify the problem, manually move the media can check the response from the sensor in detail on the display. The solution is often to move the sensor sideways to a position where the preprint or similar is not disturbing.

Other problems, such as low gap opacity, semi-transparent labels when using gap detection, or black marks that do not absorb the light sufficiently, can also be identified by changing the gain and drive manually.

If there is no dust or other things mechanically interfering with the LSS, check the hardware by changing first the gain and secondly the drive values. If the cursor is positioned in either the extreme left or right position and refuses to move, check cables, replace the LSS, or—as a last resort—replace the CPU board.

Sensitivity Adjustment

The LSS should always be adjusted when the user changes to another brand (sometimes even a new batch) of media, and when a defective sensor has been replaced. This is especially the case with self-adhesive labels on liner, because the transparency of the liner may vary and the difference between labels and gaps may be too small. Before starting the adjustment, check that both the upper and lower sensor are clean and free from obstructions and that the edge guides are adjusted so as to guide the media with a minimum of play. Also check that both parts of the LSS are in the same lateral position and aligned with any gaps or black marks.

Fingerprint only

As standard, there are four ways to adjust the LSS:

- Performing a TESTFEED by simultaneously pressing the “Shift” and “Feed” keys on the printer’s built-in keyboard.
- Selecting the TESTFEED option in Intermec Shell.
- Selecting the TESTFEED option in the Setup Mode.
- Executing a TESTFEED statement in a Fingerprint program.

The printer feeds out 1.5 times the set label length or less while testing all levels of the LSS at each millimeter of media feed. The LSS is adjusted according to the result of the check and a full label is fed out according to the present feedadjust setup.

The label stop sensor/black mark sensor can be turned off for a specified amount of media feed using the LBLCOND statement, see *Intermec Fingerprint v8.xx Programmer's Reference Manual.*

IPL only

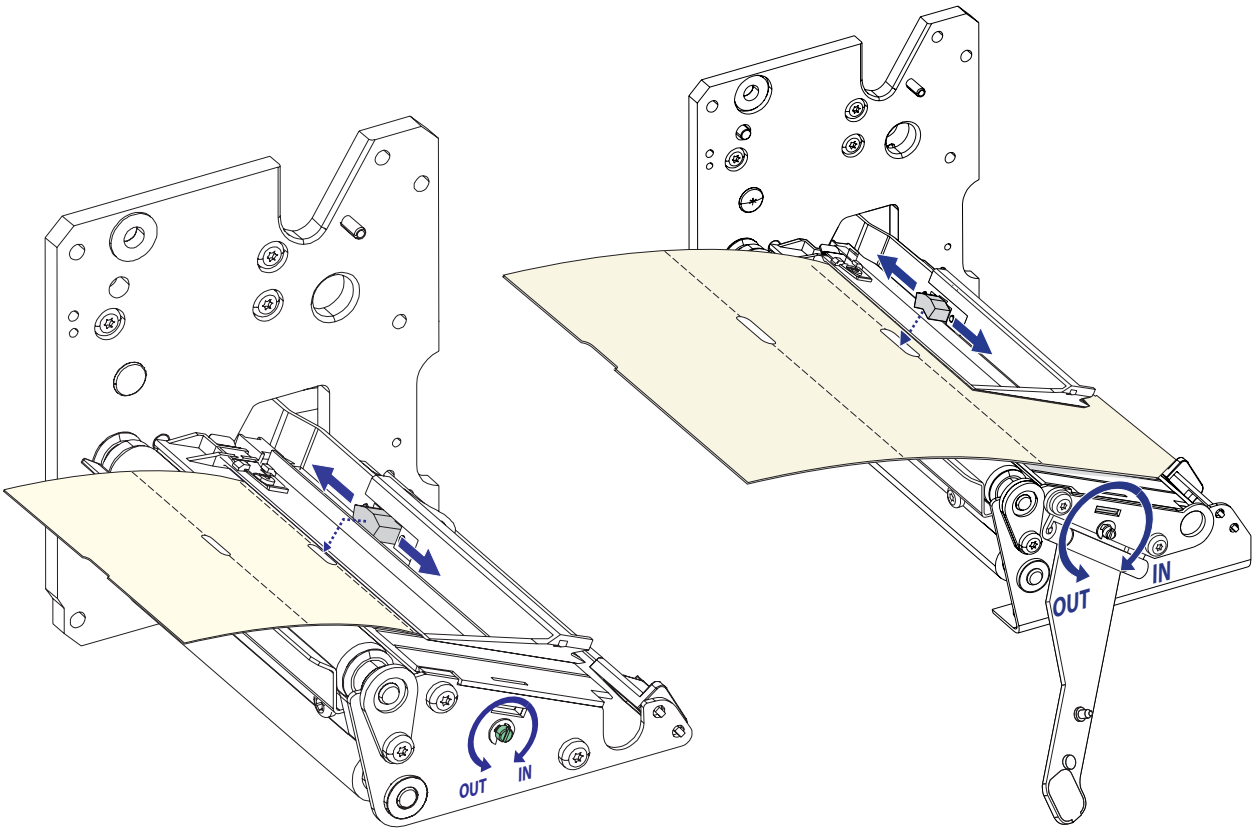
The sensitivity of the LSS is configured at startup. To force adjustment of the sensitivity (corresponding to a TESTFEED in Fingerprint), raise and close the printhead and then press the <Feed/Pause> key.

Adjustment of the LSS Lateral Position

The label stop/black mark sensor (LSS) can be laterally adjusted within a range of 0 to 50 mm (1.96 inches) from the inner edge of the media path by means of a screw accessible through the outer lower gable. Turning the screw clockwise will move the LSS inwards and vice versa. The position of the LSS in relation to the media is best checked by looking head on into the print unit when the printhead is raised. Align the centerpoint of the V-shaped upper sensor with the center of the slots or marks to be detected.

The linear markings on the lower guide plate can also be used for positioning of the LSS as they are spaced with an interval of exactly 1 cm (0.39 inches) from the edge that guides the media. This method is especially useful for black marks (measure the lateral position of the black marks with a ruler before loading the media.)

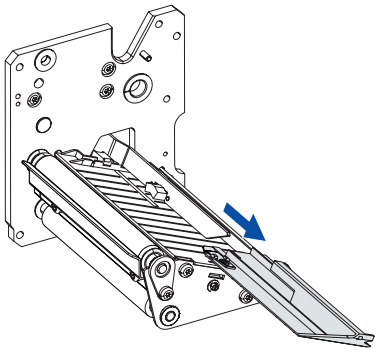
If using irregularly shaped labels, align the LSS with the front tips of the labels.

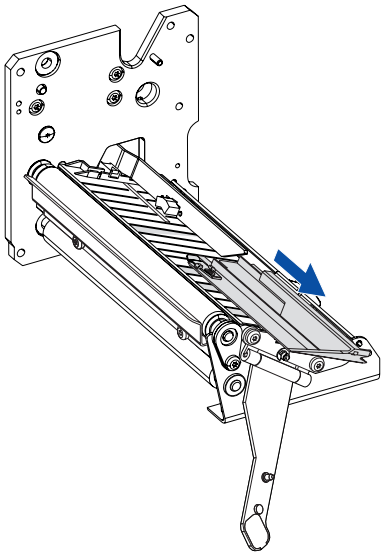


Removing the Guide Plates

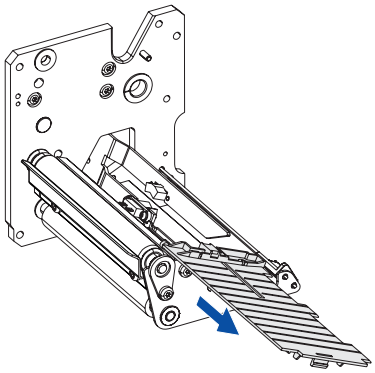
The LSS guide plates will need to be removed for occasional cleaning, replacement and when replacing a defective sensor.

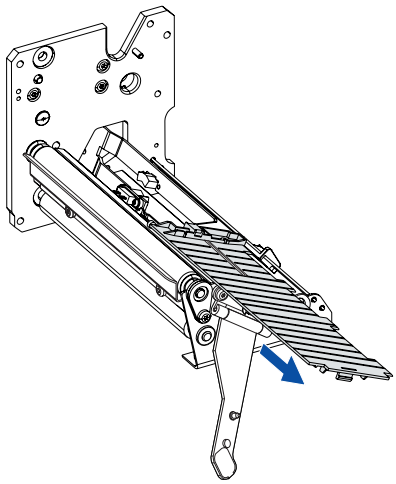
- To remove the upper guide plate, just pull it straight out.





- To remove the lower guide plate, disengage the snap-lock (accessible through a slot in the lower gable) using for example a screwdriver and lift the outer end of the guide plate. Then pull it out.





When cleaning the guide plates, use a soft cloth moistened with isopropyl alcohol. Do not use any other type of chemicals. Blow the sensors free from dust.

Warning

Isopropyl alcohol [$(CH_3)_2CHOH$; CAS 67-63-0] is a highly flammable, moderately toxic, and mildly irritating substance.

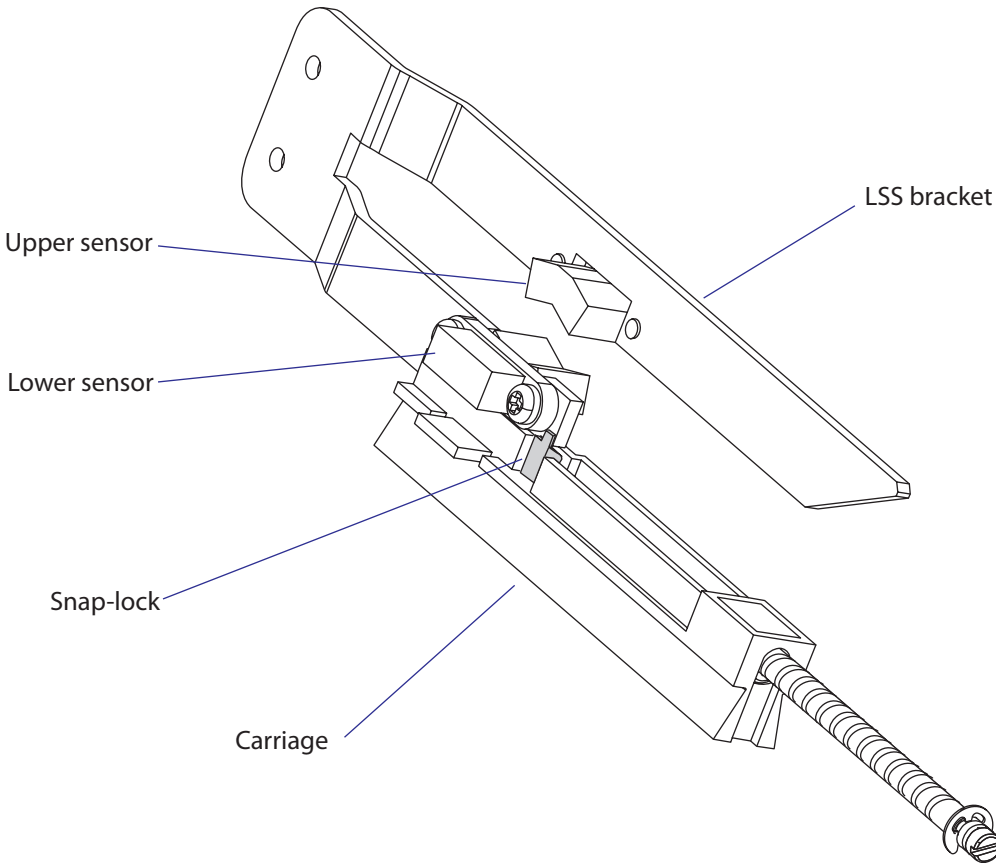
Replacing the Sensors

To remove the LSS bracket from the carriage, for example in connection with cleaning or replacing a sensor, proceed as follows:

- Switch off the power, remove the power cord and remove the cover over the electronics compartment.
- Remove the upper and lower plastic guide plates.
- Adjust the LSS to approximately center position.
- Disconnect the cables from J54 and J55 on the CPU board.
- Disengage the snap-lock, using a screwdriver from the media compartment side, and push the outer end of the LSS bracket upward. Then pull the bracket out from the carriage, taking care not to damage the cables.

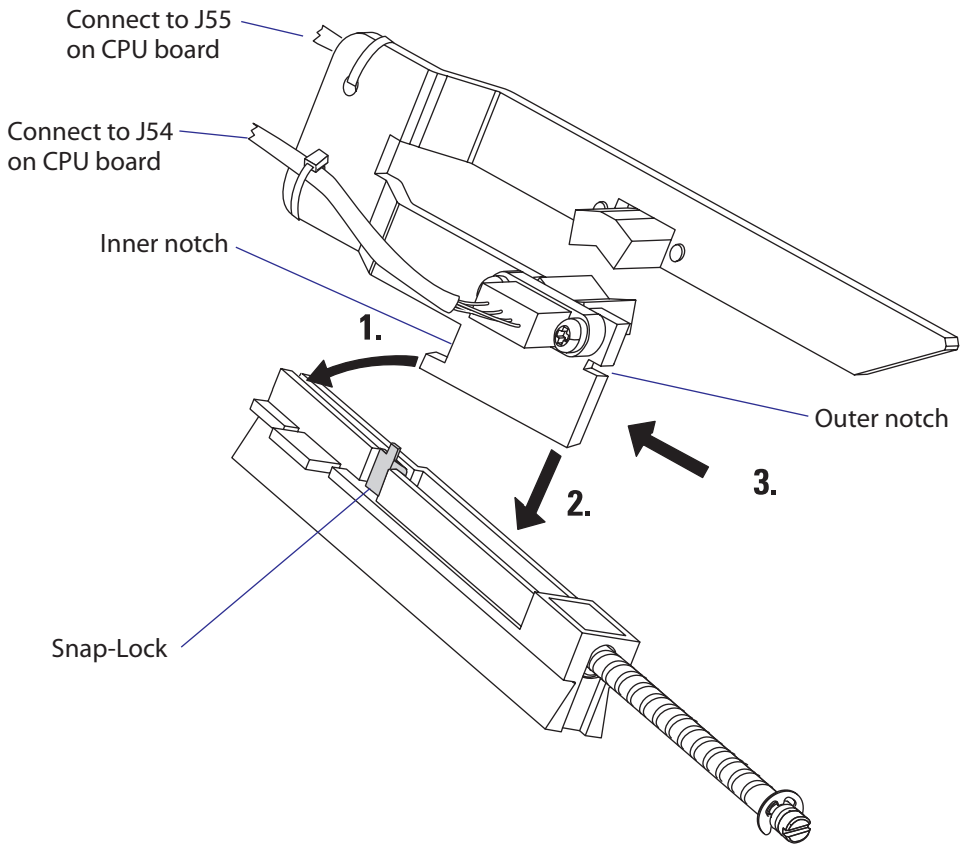
Note! The snap-lock is fragile.

- Remove the two #TX8 Torx screws that hold the defective sensor and replace it.



To reassemble the LSS, proceed as follows:

- Thread the cables through the hole in the inner gable.
- Place the inner, lower corner of the bracket into the groove in the carriage, almost at the innermost end.
- Tilt the bracket up at the outer end and push it inwards so the inner notch in the bracket engages the carriage.
- Press down the outer end of the bracket, so the snap-lock engages the outer notch.
- Press the bracket inwards as far as it goes and check that the bracket is secured by the snap-lock.
- Connect the cable from the lower sensor to J54 (marked “GAP”) and the cable from the upper sensor to J55 (marked “BM”) on the CPU board.
- Put back the guide plates, the electronics compartment cover, and the power cord.
- Adjust the lateral position of the LSS.



8.6 Printhead

Description

The printing is produced by the thermal printhead, which consists of a line of very small, closely spaced resistors on a ceramic tile fitted across the media path. When a current is led through the resistors, commonly called "dots," these will be heated very quickly. When the current is shut off, the dots cool down just as fast.

As the media is fed past the dots, the hot dots will produce a number of black spots on heat sensitive (direct thermal) media, or on other face materials via a thermal transfer ribbon. The spots can be combined into bitmap patterns, which make up characters, bar codes, images, lines, and boxes.

The direct thermal printing method requires special media coated with a thin layer of heat-sensitive chemicals. As the media is fed past the dots, the heat from the dots will make the chemicals react, producing a dark salt, which makes up the imprint under each dot.

In the thermal transfer printing method, a special "ink"-coated transfer ribbon is used. When the ribbon is heated by a dot on the printhead, the "ink" melts and sticks to the receiving face material, where the ink immediately becomes solid again, producing a black spot. Transfer ribbons normally do not smear at room temperature, neither before nor after printing. Nor do the printed labels smear, even if the printout may be smudged by extensive rubbing if an unfortunate combination of ribbon and face material is used. The thermal transfer method makes it possible to use a wide range of face materials for printing, for example papers, boards, plastics, foils, etc. However, an original transfer ribbon from Intermec should always be used.

Information on how to switch between direct thermal and thermal transfer printing is provided in the *User's Guide*.

The basis for all measures and positioning in both the Fingerprint and IPL programming languages is the size of printhead dots.

In an 8 dots/mm (203.2 dpi) printhead, each dot has a nominal size of 0.125 mm (4.92 mils). This means that a heated dot under standardized conditions will produce a black spot which has a diameter of 0.125 mm (4.92 mils).

In an 11.81 dots/mm (300 dpi) printhead (Fingerprint only), each dot has a nominal size of 0.086 mm (3.33 mils). This means that a heated dot under standardized conditions will produce a black spot which has a diameter of 0.086 mm (3.33 mils).

Depending on dot temperature, exposure time, media and ribbon characteristics, etc., the spot may actually be somewhat smaller (weak print) or larger (black print), but that does not affect the calculation of distances, sizes, and positions.

At startup, the printer auto-detects the printhead density as well as the head resistance. The printhead can also be checked using the Fingerprint instructions HEAD, FUNCTEST, and FUNCTEST$. In IPL, the number and size of the dots in the printhead is returned to the host by the command **<STX><ESC>H<ETX>**.

The printhead is fitted to a bracket using two screws. The printhead, the printhead ribbon break shaft, and the bracket are always delivered as a complete assembly and must not be dismantled. Two hooked fingers at the rear of the bracket are fitted over the headlift shaft so as to hold the printhead in place. A U-shaped tab on either side of the bracket engage the platen roller bearings when the printhead is closed, making sure that the printhead becomes properly aligned with the platen roller. There are no facilities for adjusting the position of the printhead relative the platen roller, neither longitudinally nor laterally.

There are two sets of cables in a harness running to the printhead:

- The innermost cable is used for the power to the printhead and is connected to P5 on the driver board.
- The outermost cable is used for data to the printhead and is connected to J40 on the CPU board.

Note: It is important that the cable harness does not prevent the printhead from moving or adjusting itself when it is lowered.

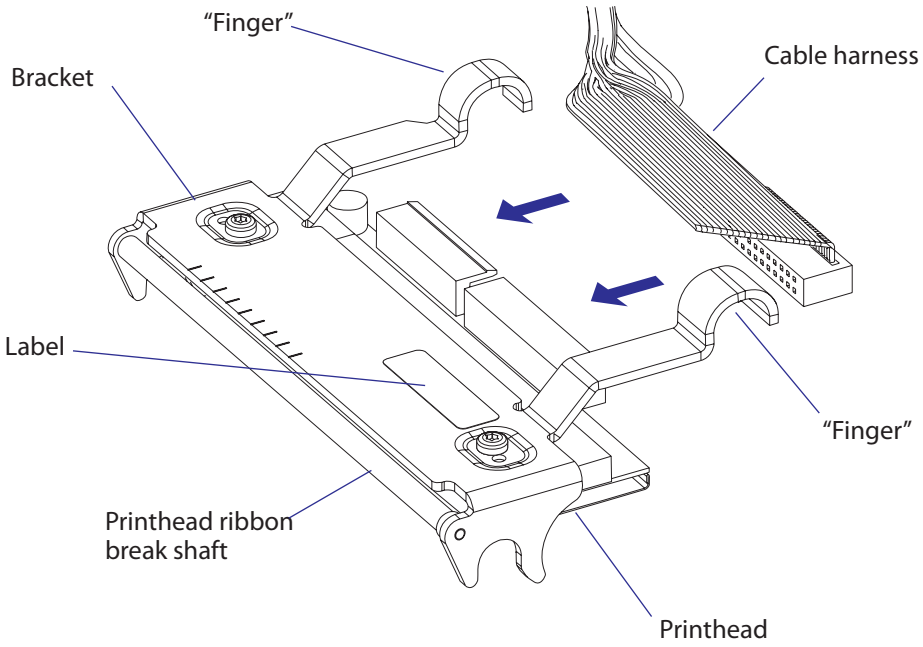


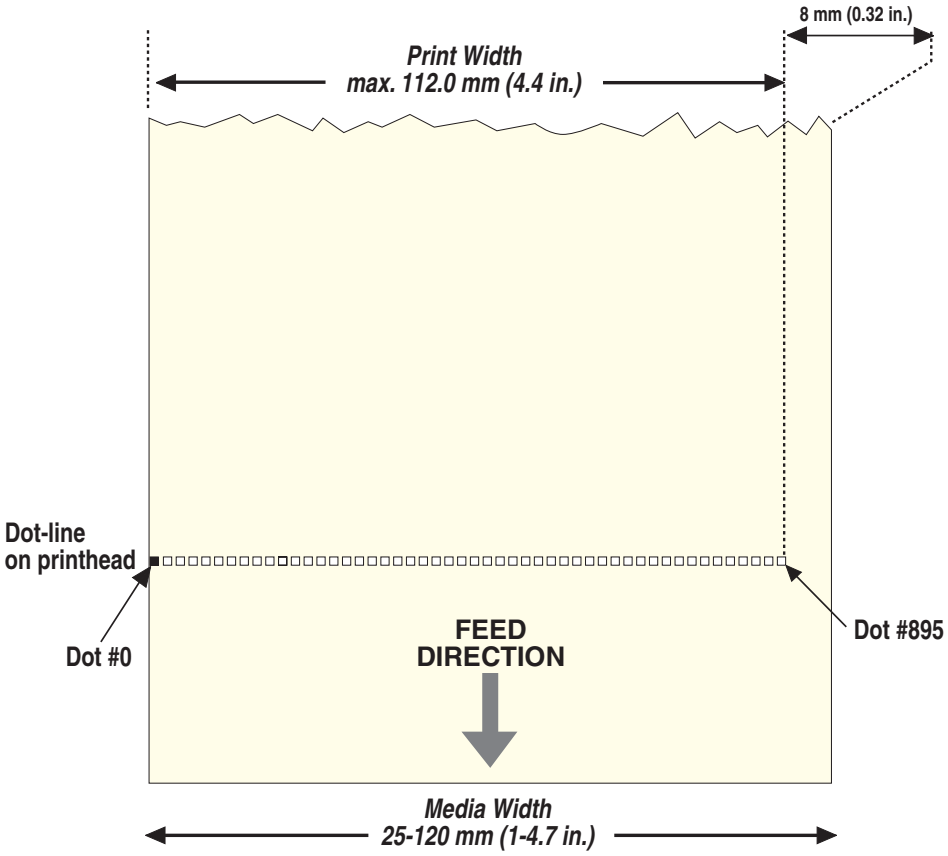
Illustration shows the printhead of an EasyCoder PX4i.
The printhead of EasyCoder PX6i looks in principle the same but is wider.

Print Window PX4i

The EasyCoder PX4i has an 8 dots/mm (203.2 dpi) printhead or, in the Fingerprint version only, an 11.81 dots/mm (300 dpi) printhead.

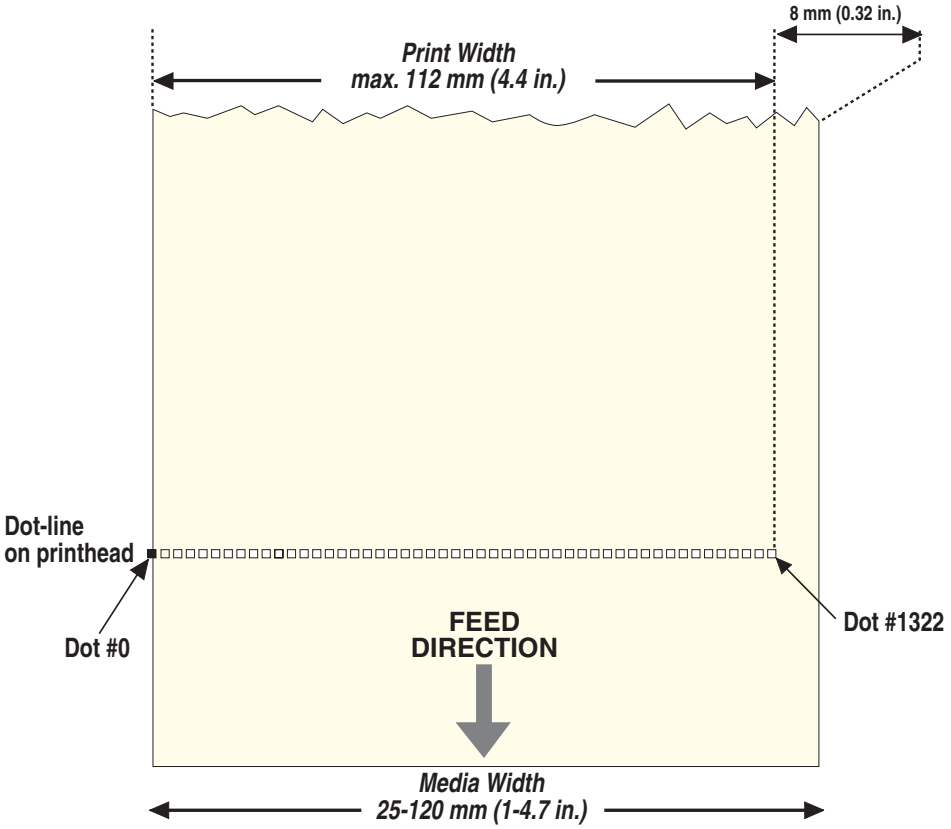
8 dots/mm Printhead

Density	8 dots/mm	(203.2 dots per inch)
Print width	112 mm	(4.4 inches)
Number of dots	896	
Dot size	0.125 mm	(4.92 mils)



11.81 dots/mm Printhead (not IPL)

Density	11.81 dots/mm	(300 dots per inch)
Print width	112 mm	(4.4 inches)
Number of dots	1322	
Dot size	0.085 mm	(3.33 mils)

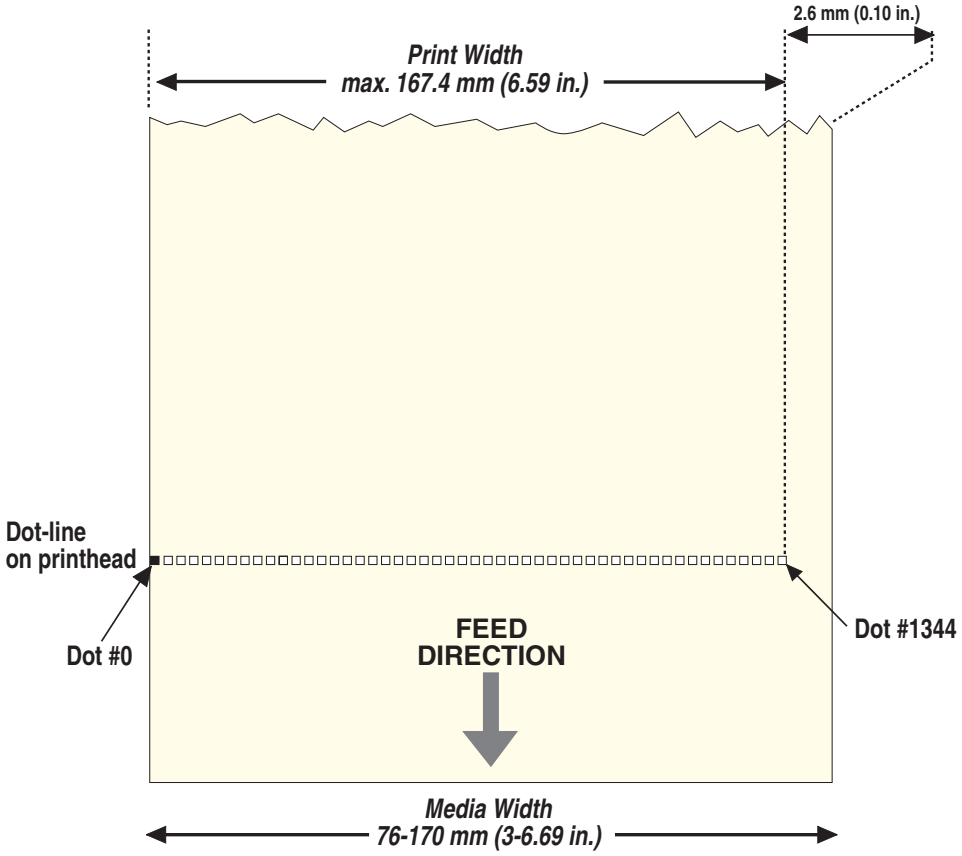


Print Window PX6i

The EasyCoder PX6i has an 8 dots/mm (203.2 dpi) printhead or, in the Fingerprint version only, an 11.81 dots/mm (300 dpi) printhead.

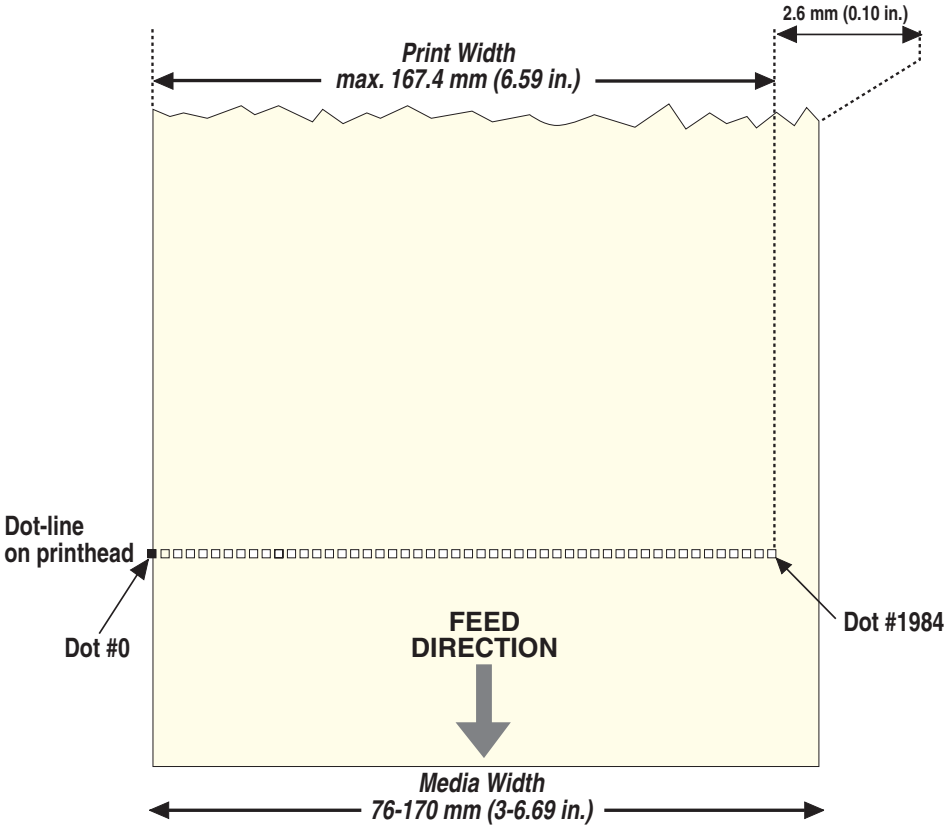
8 dots/mm Printhead

Density	8 dots/mm	(203.2 dots per inch)
Print width	167.4 mm	(6.59 inches)
Number of dots	1344	
Dot size	0.125 mm	(4.92 mils)



11.81 dots/mm Printhead (not IPL)

Density	11.81 dots/mm	(300 dots per inch)
Print width	167.4 mm	(6.59 inches)
Number of dots	1984	
Dot size	0.085 mm	(3.33 mils)



Replacing the Printhead

The printhead is a consumable part subject to wear from both the thermal paper or transfer ribbon, and from the rapid heating and cooling process during printing. Thus, it will require periodical replacement depending on print volume, type of print media, amount of energy to the printhead, and several other factors.

To replace a defective or worn printhead, proceed as follows:

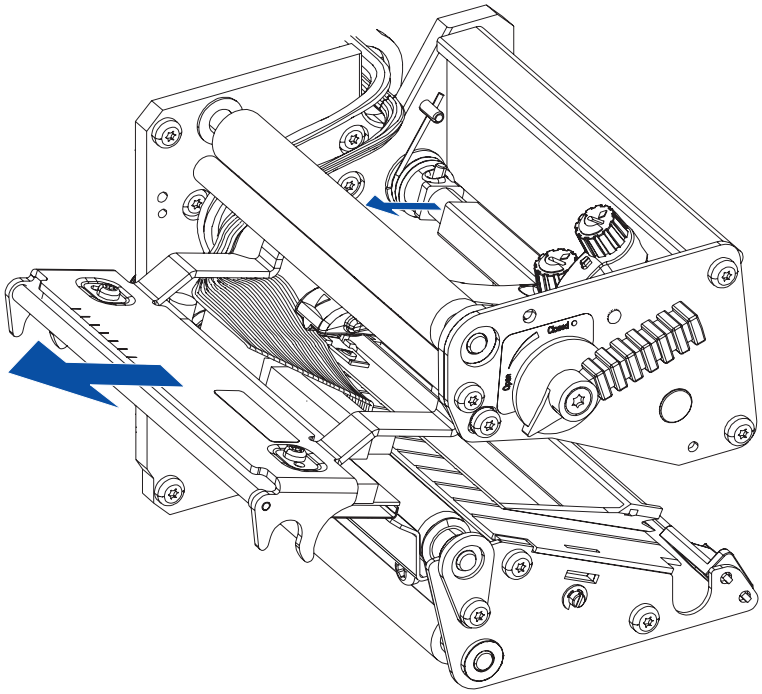
- Switch off the power.
- Open the front and right-hand doors.
- Turn the printhead lift lever to “Open” position.
- Remove any media and/or transfer ribbon from the print unit.
- Carefully pull the printhead bracket away from the magnet in the lift arm.
- Disconnect the hooked fingers at the rear of the bracket from the headlift shaft and pull out the printhead as far as the cables allow.
- Disconnect the two cables from the printhead.

Note the snap-lock on the inner connector. Pull at the connectors, not at the cables!

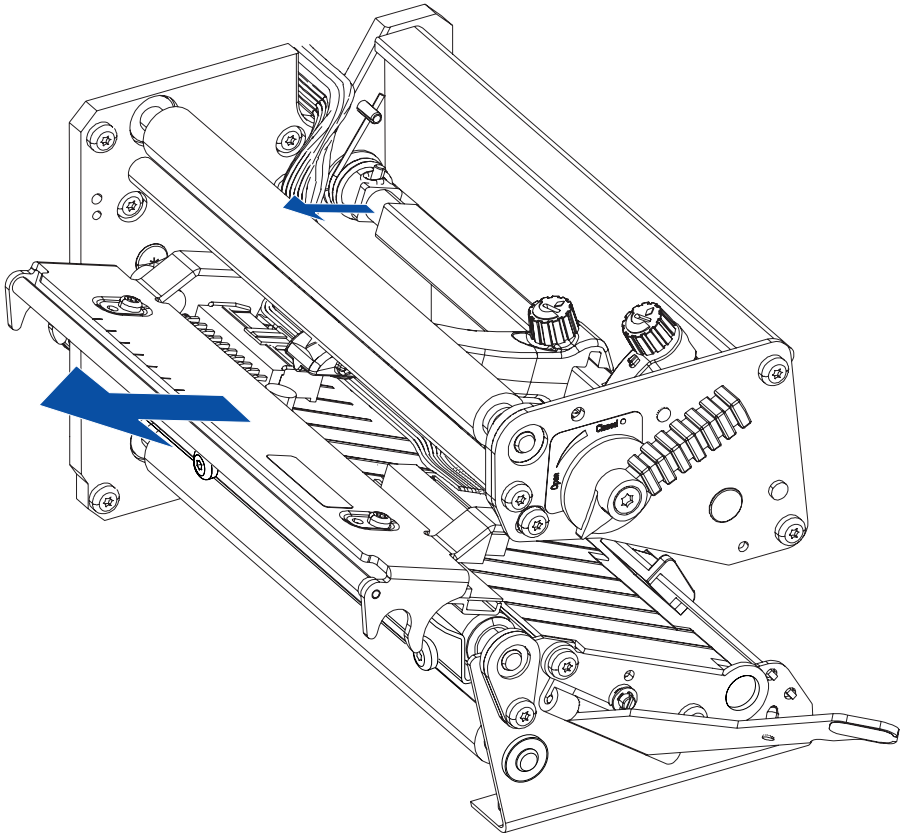
- Connect the cables to the replacement printhead assy with the ribbon cable to the right.
- Insert the printhead assy into the print unit, fitting the bracket’s fingers over the headlift shaft.
- Check so the cables will not interfere with the transfer ribbon, prevent the printhead from moving freely, or have become jammed between parts in the print unit.
- Turn the printhead lift lever to “Closed” position, so the magnet engages the printhead bracket.
- Switch on the power. The printer’s firmware automatically measures the printhead resistance at power-up.
- Load media and, if so required, transfer ribbon again.

Refer to the illustrations on the next page! Detailed step-by-step illustrations can be found in the *User's Guide*, Chapter “Maintenance.”

EasyCoder PX4i



EasyCoder PX6i



Precautions

Some simple measures can be taken by the user to prevent premature wear-out:

- Clean the printhead regularly, as described in the *User's Guide*. Not only will a dirty printhead produce an inferior printout, but any residue on the dots will prevent heat to dissipate through the media.
- Follow the Intermec's recommendations regarding Paper Type or Media Sensitivity setup. Too much energy to the printhead will wear it out rapidly.
- Do not use higher Print Speed setting than necessary.
- Low ambient temperature requires more energy to the printhead dots than room temperatures and will therefore cause more wear to the printhead. High print speed accelerates the wear. Thus, at low temperatures, select as low a print speed as acceptable.
- In Fingerprint, do not use a higher Contrast setting than necessary, especially not in combination with the highest Label Constant or Ribbon Constant settings.
- In IPL, do not use a higher Darkness setting than necessary.
- Do not use a higher printhead pressure than necessary.
- Never print outside the media path. Dots that are not in contact with the media will not be cooled properly.
- When using media with less than full width, be careful to adjust the printhead lift arm so there is an even pressure across the media. Not only will an uneven pressure impair the printout quality, but it may also prevent the dots from being properly cooled. Moreover, a sharp outer media edge in direct contact with the printhead may cause excessive mechanical wear on some dots, which may be visible when printing on wider media later.
- When using preprinted labels or labels with some type of varnish or non-standard top coating for direct thermal printing, use original Intermec labels or inks recommended by leading manufacturers of direct thermal media. The labels must not contain any aggressive substances such as chloride or grinding substances such as titanium dioxide.
- Only use transfer ribbons recommended by Intermec.

8.7 Headlift Sensor

Description

The purpose of the headlift sensor is to detect whether the printhead is raised or lowered. To avoid the risk of overheating the printhead dots, printing can not be performed when the sensor detects that the printhead is raised (the media serves to cool the printhead). An ever so slightly raised printhead would also impair the printout quality. Thus, it is important that the printhead is properly lowered and a sufficient pressure is applied before the sensor detects a "Closed" condition.

The photoelectric sensor is attached to the electronics compartment side of the inner print unit gable by means of two #T10 Torx screws. When the printhead is raised, a beam of light is interrupted by an arm connected to the headlift shaft. This is detected by the firmware so an error message will be returned if you try to print a label. In Fingerprint, error message 1022 "Head Lifted" will be returned if you try to print a label with the printhead lifted. In IPL, the error message "Print Head Up/Press Feed" is displayed.

The headlift sensor is connected to J58 (marked "HEADL") on the CPU board.

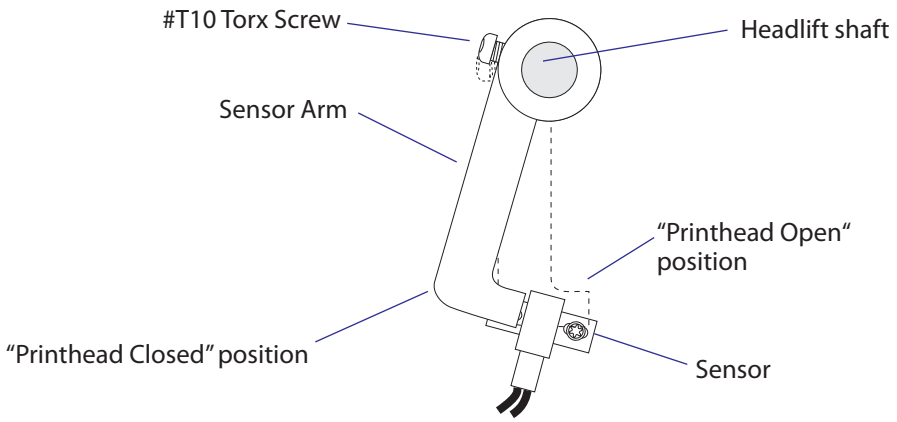
The arm that blocks the light through the sensor is attached to the headlift shaft using a #T10 Torx screw. If the screw is not tightened sufficiently or if the arm is not fitted in the correct angle, a malfunction will occur.

Adjusting the Sensor Arm

- Perform an adjustment of the printhead pressure as described in Chapter 8.8.
- Without switching off the power, remove the cover over the electronics compartment.

The electronics compartment contains wires and circuits with dangerous voltage. Take precautions to avoid electrical shock, short-circuits, and electrostatic discharges.

- Place a 1 mm (0.04 inches) thick feeler gauge between the printhead and the platen roller and lower the printhead. Be careful not to damage the delicate printhead dots!
- Loosen the #T10 Torx screw that holds the sensor arm.
- In case of Fingerprint printers, run the program listed on the next page.
- Move the sensor arm from open position towards closed position until the Error LED goes out, which indicates the correct position.
- Tighten the screw and check that the arm runs freely inside the fork-shaped sensor.
- Put back the cover.



In Fingerprint, run this program which assists you in adjusting the headlift sensor arm:

Status LED red = Printhead open.
Status LED off = Printhead closed.

The correct position is exactly when the Status LED goes off.

You can break the program execution either by pressing <Shift> + <Pause> on the printer's keyboard or by transmitting the character X (uppercase!) from the host.

```
NEW
10        BREAK 1, 88
20        BREAK 1 ON
30        ON BREAK 1 GOSUB 1000
40        LED 1 OFF
50        WHILE (PRSTAT AND 1)=0: WEND
60        LED 1 ON
70        WHILE (PRSTAT AND 1)=1: WEND
80        GOTO 40
1000      BREAK 1 OFF
1010      END
RUN
```

In IPL, check that the sensor is properly adjusted using the Label Path Open Sensor Value command (**<STX>L<ETX>**), see *IPL Programming, Reference Manual*.

Sensor Replacement

Before replacing the sensor, check that the sensor arm is properly adjusted and that the sensor is free from dust, paper shreds, and other things that can block the light.

Replace the sensor as follows:

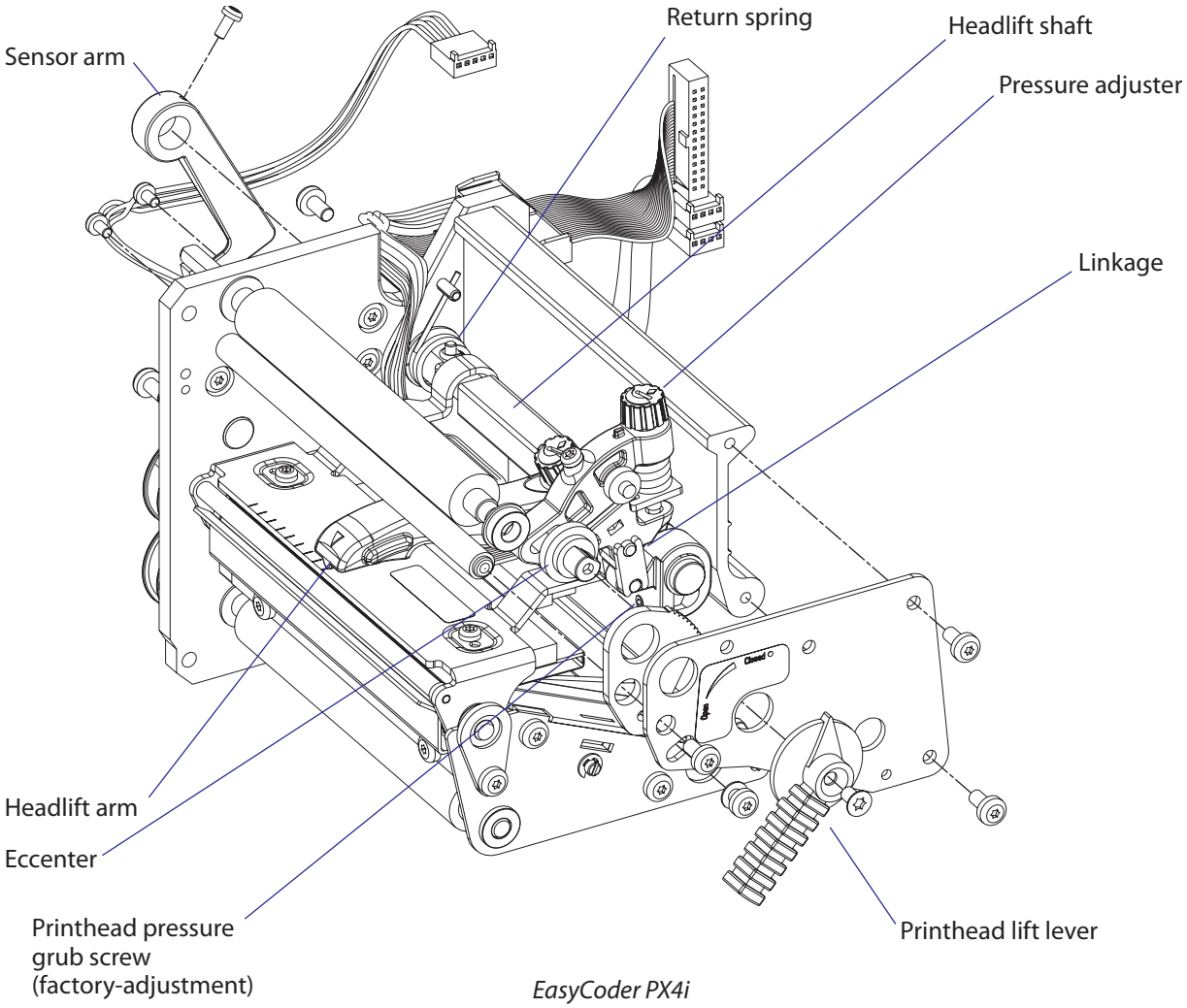
- Switch off the power, remove the power cord, and remove the cover over the electronics compartment.
- Check that the printhead is lowered.
- Remove the #T10 Torx screw that holds the front of the sensor.
- Raise the printhead.
- Remove the #T10 Torx screw that holds the rear of the sensor.
- Pull out the sensor and disconnect its cable from the CPU board.
- Reassemble in reverse order. The sensor's cable should be connected to J58 (marked "HEADLIFT") on the CPU board.
- In Fingerprint, check that the sensor works properly using a PRSTAT statement, see *Intermec Fingerprint v8.xx, Programmer's Reference Manual*.
- In IPL, check that the sensor works properly using the Label Path Open Sensor Value command (**<STX>L<ETX>**), see *IPL Programming, Reference Manual*.

8.8 Headlift Mechanism

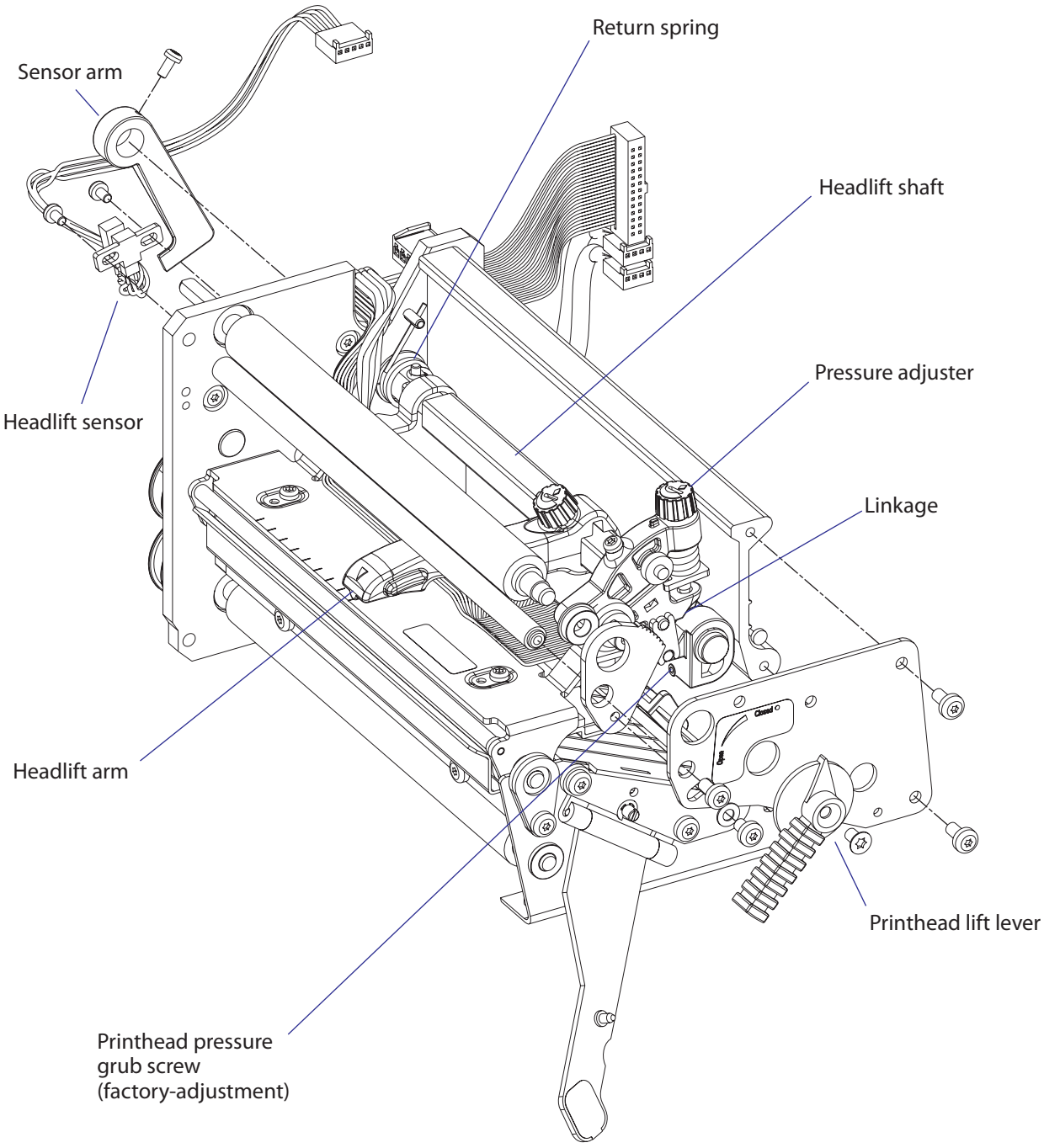
Description

The headlift mechanism is an integrated part of the print unit. The mechanism is activated by the green printhead lift lever at the outside of the upper part of the print unit. The knob is fitted on a shaft, which has a disk with an eccentrically fitted pin on the inside of the upper, outer gable of the print unit. This pin activates a fork-shaped pressure adjuster, that via a linkage is connected to the headlift shaft. The pressure adjuster is fitted with a spring and an adjusting screw. Thus, the operator can easily apply more or less pressure of the printhead against the platen roller depending on type of media, print method, media thickness, and other circumstances.

The headlift shaft is connected to the headlift sensor arm on the inside of the print unit (see Chapter 8.7.) On the headlift shaft, the S-shaped headlift arm is also fitted. At the tip of the headlift arm is a magnet that engages the printhead bracket. The arm can be moved along the headlift shaft, so the pressure can be applied laterally at the center of the media path, even when narrow media are used. The hooked fingers of the printhead bracket are hung on the headlift shaft. The concept allows the printhead to align itself vertically to the platen roller, while maintaining a fixed alignment in the other two dimensions.



EasyCoder PX4i



EasyCoder PX6i

Printhead Pressure Adjustment

The pressure of the thermal printhead against the ribbon or media is factory adjusted. However, the use of thicker or thinner media than normal could require the printhead pressure to be readjusted.

Turn the green adjustment knob clockwise for increased pressure, or counterclockwise for less pressure. Print a few labels, preferably test labels, and check the printout. Increased pressure generally gives a blacker printout and vice versa. Repeat until the desired result is obtained.

To find the basic setting, proceed as follows:

- Remove the transfer ribbon (if any).
- Load the printer with full width media and close the printhead.
- Adjust the headlift arm to center position.
- Turn the green adjustment knob counterclockwise until it feels loose (no pressure left).
- Take up the slack in the green knob until you notice an increased resistance.
- Using a 2 mm hexagonal key, loosen the factory adjustment grub screw (see illustration on the previous page) until the printhead starts to come up.
- Carefully tighten the grub screw until you just start noticing a small resistance when trying to pull out the media.

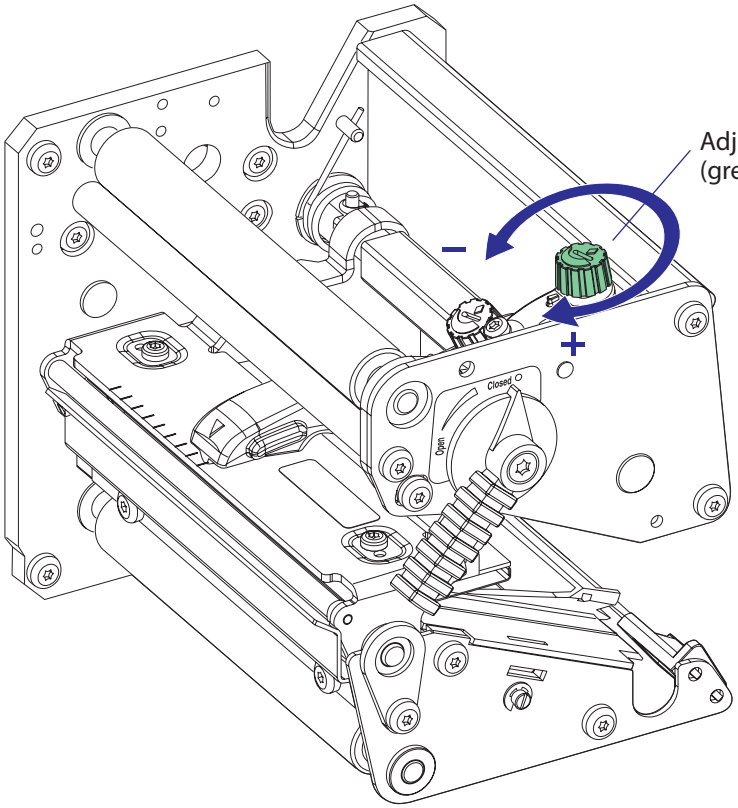
It is possible to apply very high printhead pressure using the factory adjustment grub screw. Such high pressure may damage the printhead, the platen roller, and the headlift arm.

Do not use a higher printhead pressure than necessary, because it may increase the wear of the printhead and thus shorten its life.

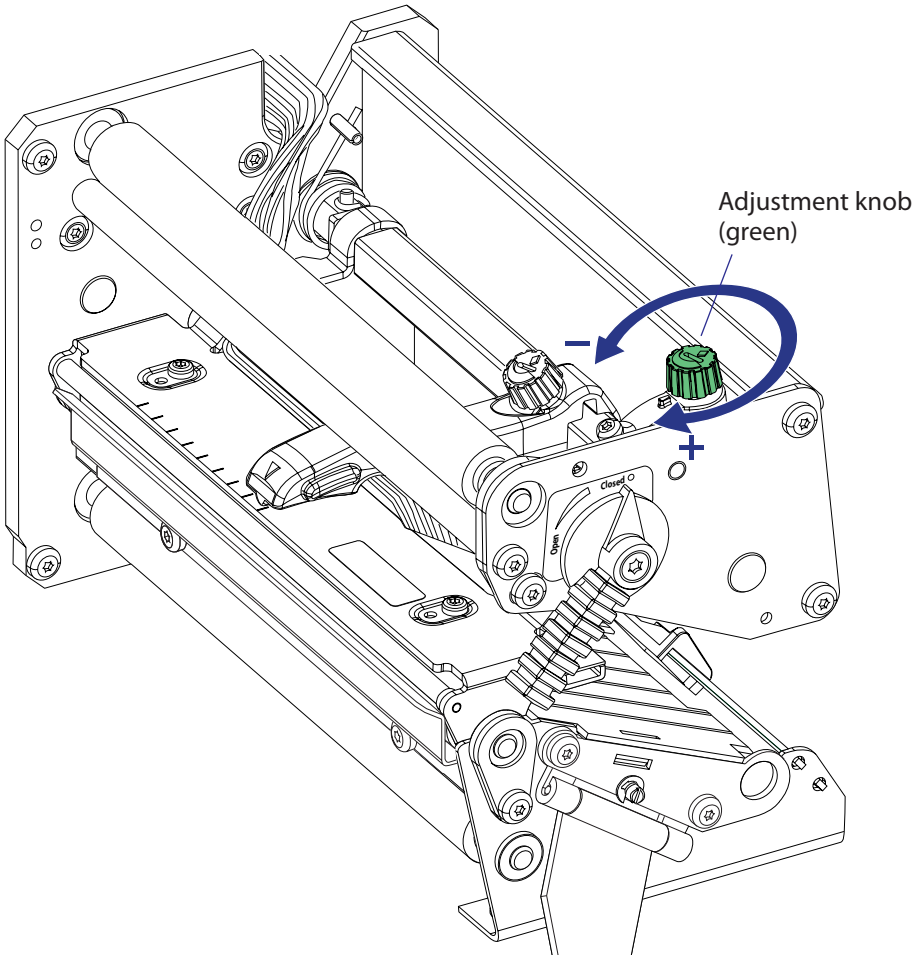
- Apply some locking fluid on the grub screw.
- Raise and lower the printhead.
- **EasyCoder PX4i**:
  Turn the knob 4 full turns clockwise. Each turn increases the pressure by approx. 1 kp to a total of 4 kp (39.2 N).

  EasyCoder PX6i:
  Turn the knob 5 full turns clockwise. Each turn increases the pressure by approx. 1 kp to a total of 5 kp (49.0 N).
- Fine-adjust using test labels and the trial-and-error method (if necessary after having loaded the transfer ribbon again).

Refer to the illustrations on the next page!



EasyCoder PX4i



EasyCoder PX6i

8.9 Ribbon Assist Roller

Description (EasyCoder PX4i and PX6i)

The purpose of the ribbon assist roller is to help the ribbon rewind unit to keep the transfer ribbon tight, thereby avoiding ribbon wrinkling, which could ruin the printout. The angle of the ribbon assist roller relative to the printhead is adjustable.

The ribbon assist roller is subject to very little wear and is expected to last as long as the printer as a whole. Replacement involves removing the belt and pulley as well as the upper, outer gable of the print unit (see illustrations in Chapter 8.8.)

Adjustment (EasyCoder PX4i and PX6i)

If the ribbon becomes wrinkled, a few checks should be performed before the ribbon assist roller is readjusted:

- Is the printhead pressure properly adjusted?
- Is the green edge guide correctly positioned?
- Is there anything that may interfere with the transfer ribbon, for example the printhead cables.

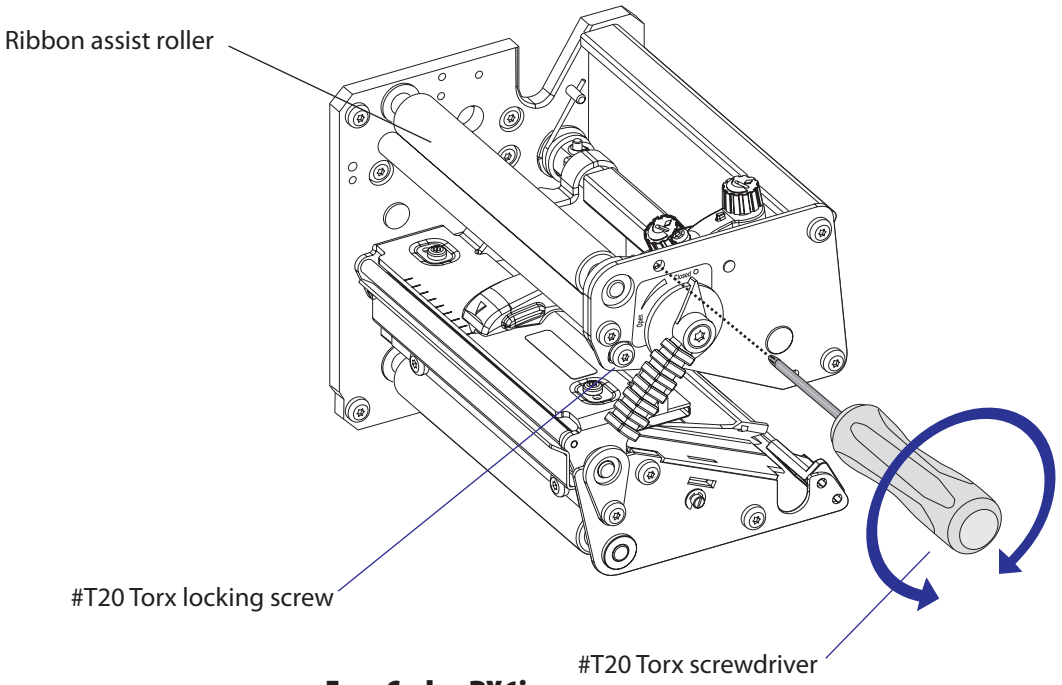
If the wrinkling problem remains, proceed as follows:

- Using a #T20 Torx screwdriver, loosen the locking screw that runs in the crescent-shaped hole in front of the headlift lever.
- Insert a #T20 Torx screwdriver as illustrated on the next page. By turning the screwdriver, you can move the outer end of the roller back and forth:
  - Turn the screwdriver clockwise to move the end of the roller forward.
  - Turn it counterclockwise to move the end of the roller rearward.
- If the ribbon gets wrinkled at the inner edge, you should move the end of the roller slightly rearward, that is, rotate the screwdriver counterclockwise and vice versa.
- Select an appropriate layout, for example a test label, and print it repeatedly while carefully moving the end of the roller back or forth, depending on which side the wrinkling has occurred.
- When the wrinkling ceases, continue the movement ever so slightly to create a small safety margin. The movement is best detected by the relation between the roller bearing and the hole through the upper gable.

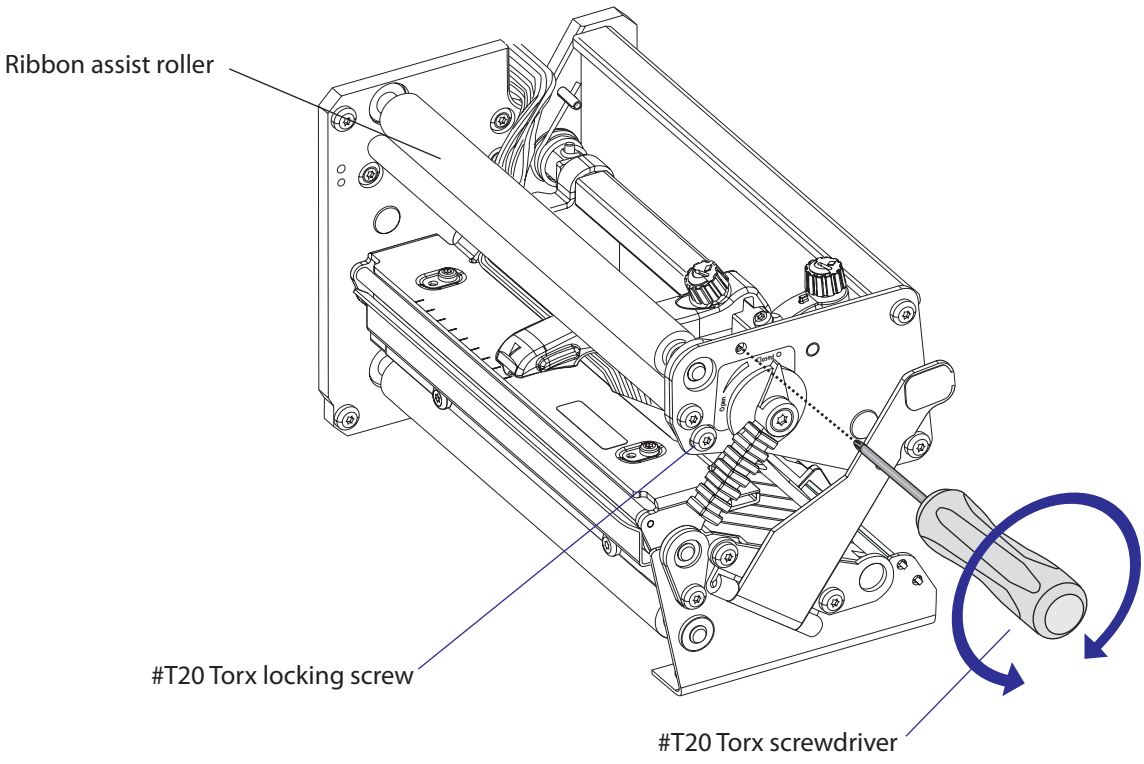
  Another method is to determine the positions where wrinkling starts at either side and adjust the roller to the middle.
- You will need to print several labels before a new adjustment has any noticeable effect.
- When you are satisfied that the problem is cleared, tighten the locking screw and test again by printing several more labels. Readjust if necessary.

Refer to the illustrations on the next page!

EasyCoder PX4i



EasyCoder PX6i

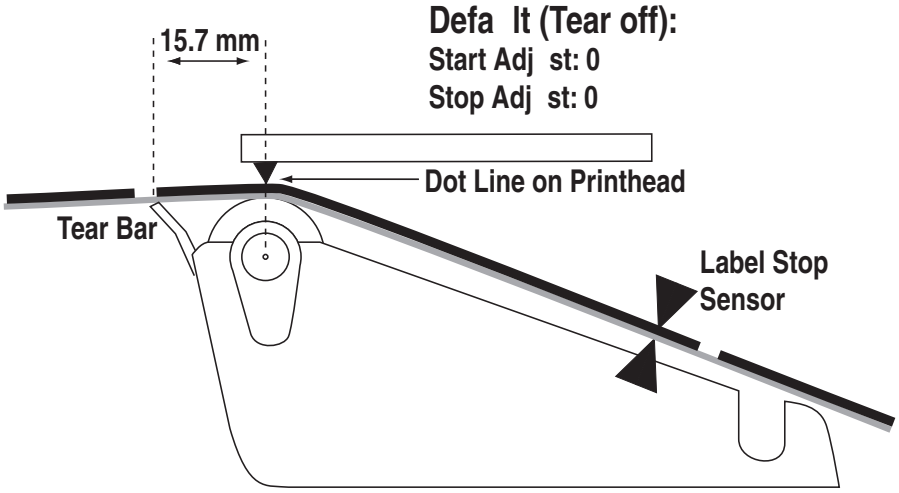


Wrinkling	Turn Screwdriver
Inner side	Counterclockwise
Outer side	Clockwise

8.10 Media Feed Principles

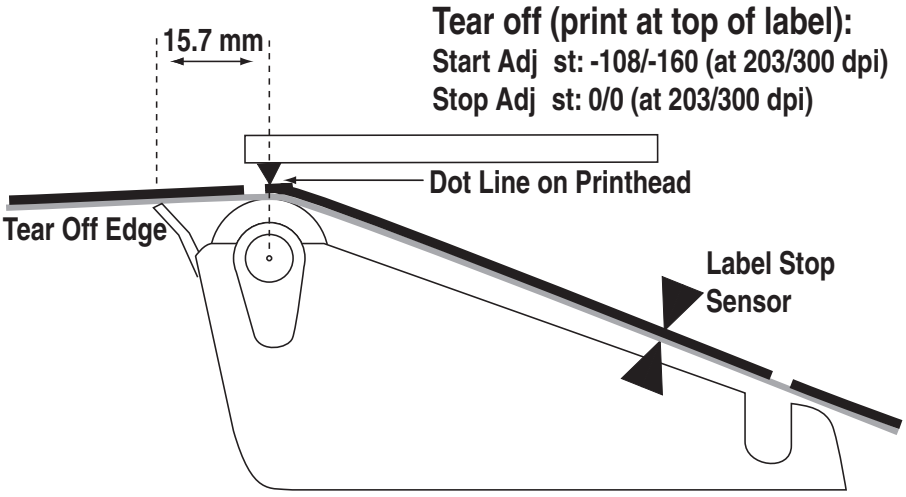
Fingerprint only

The Start and Stop Adjust parameters in the Fingerprint Setup Mode control how the media will be positioned in relation to the printhead when the printing starts and after the printing is completed, respectively. By default, the Start and Stop Adjust parameters are both set to 0, which is suitable for tearing off the media against the tear bar, for example between labels or at the perforation in a pre-perforated continuous stock. However, because the dot line on the printhead is situated 15.7 mm (0.62 inches) back from the tear bar, the printing will not start at the top of the label but further back along the media path.

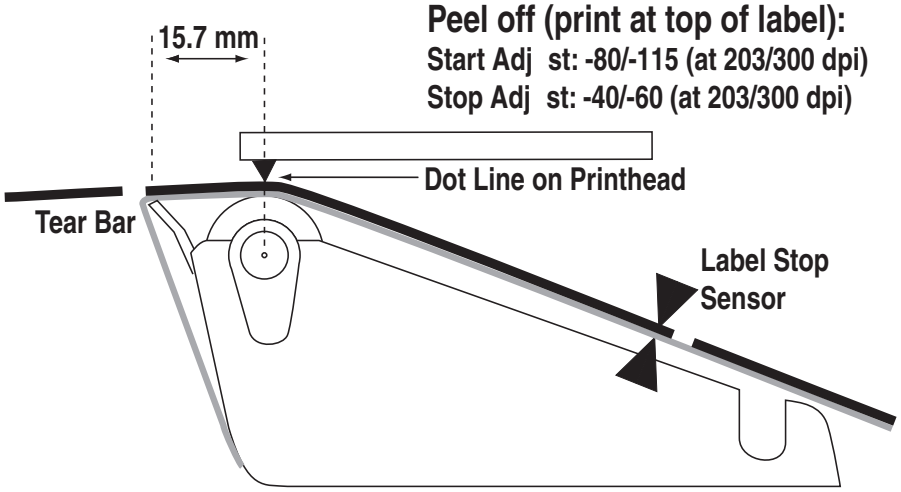


Note: Due to several factors, media feed measurements are not exact and may vary somewhat between applications and individual printers. There is inevitably a small amount of slippage between media and platen roller, which in its turn is affected by printhead pressure, type of media or liner, thickness of the media, roll size, type of media supply device, etc. The platen roller may be worn, giving it a slightly smaller diameter and/or less friction. There is also a certain amount of inexactness in the media feed mechanics and belts and so on. Therefore, the operator cannot expect to reach exact Start and Stop Adjust values simply by calculation. Use the measurements given in this chapter to calculate rough starting points and use the trial-and-error method to find values that give the desired result.

In many cases, it is desired to start the printing immediately at the top of the label. Actually, what you want to do is to pull back the edge of the media to the dot line. You can do this by means of a negative Start Adjust value, for example -108 dots = 13.5 mm/0.53 inches for a 8 dots/mm (203.2 dpi) printer. Be careful not to enter too large a value, or the media may come loose from platen roller.



When using peel-off operation, the labels would drop from the liner and get stuck on for example the desk if you use the default Start Adjust value 0. Use a Stop Adjust value of around -40/-60 (= 5.5 mm/0.22 inches) instead: that is, after the printing is completed 5.5 mm/0.22 inches less of media feed than normal will be performed. However, if you still want to print from the top of the label, you must compensate by a Start Adjust value of around -80/-115 (= 10.0 mm/0.39 inches).



A special case is tickets with black marks. It is recommended to place the black mark adjacent to the perforation or the intended tear-off line. If the black mark is placed further down the media, this must be compensated for by a negative Stop Adjust setting.

IPL only

In IPL, the media feed is affected by the mode of operation. There are three such modes:

- Tear-off (straight-through)
  (default)
- Peel-off (self-strip)
  (enabled/disabled by **<STX><SI>T*n*<ETX>** command)
- Cut-off
  (activated/deactivated when the cutter is enabled/disabled in the Setup Mode or by **<STX><SI>C*n*<ETX>** command)

Each mode has a fixed amount of media feed, which can be fine-adjusted using the Label Rest Point parameter in the Setup Mode (See Appendix A, Setup/Media/Lbl Rest Point) or an **<STX><SI>f*n*<ETX>** command.

The type of detection is decided by the Media Type parameter in the Setup Mode (See Appendix A, Setup→Media→Media Type).

9 Liner Takeup Kit

This chapter describes the optional liner takeup unit and covers the following topics:

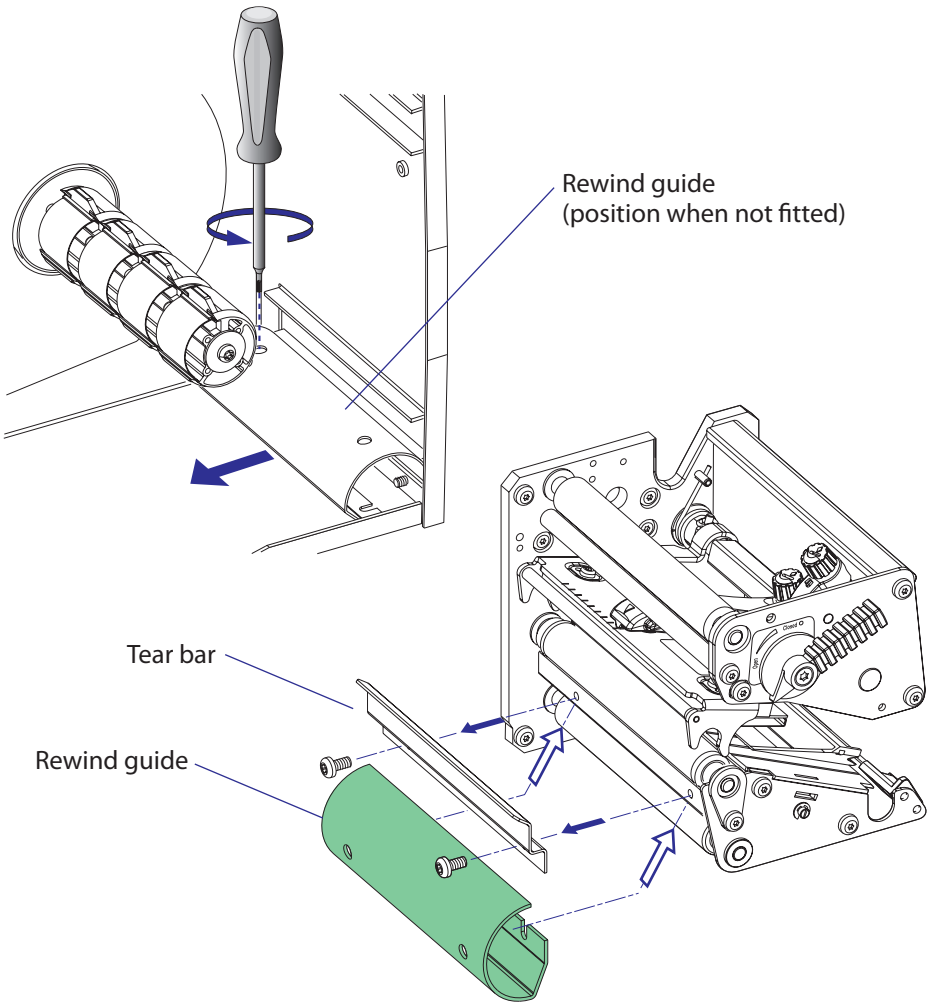
- Description
- Main parts
- Liner/batch takeup unit

9.1 Description

The liner takeup kit is an optional factory-installed device that makes it possible to auto-dispense self-adhesive labels from the liner (peel-off/self-strip operation), and—in case of EasyCoder PX4i—also to wind up printed labels, tickets, or continuous stock internally (batch takeup operation.) The kit consists of two or three main parts:

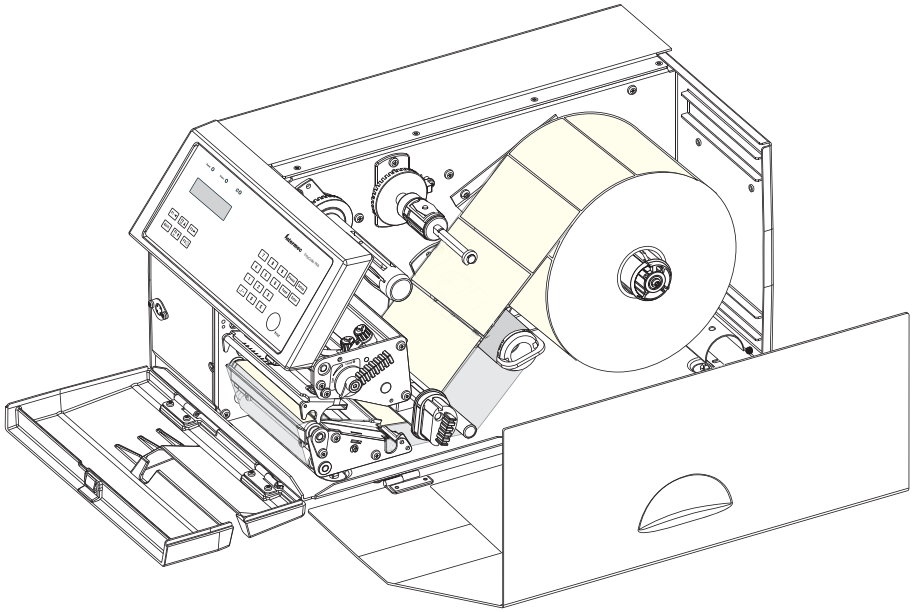
- A stepper motor that drives the liner drive roller in the print unit and the liner/batch takeup unit. The liner drive roller is fitted as standard even when the kit is not installed.
- A liner/batch takeup unit that takes up the spent liner or the printed media to be rewound for later use.
- A guide plate (EasyCoder PX4i only) that replaces the tear bar when labels or other types of printed media are wound up internally (see below). When not used, the guide plate is fitted using one #T20 Torx screw at the rear of the media compartment.

When no rewind unit is fitted, the hole through the center section is covered by a plate held by two #T20 screws.



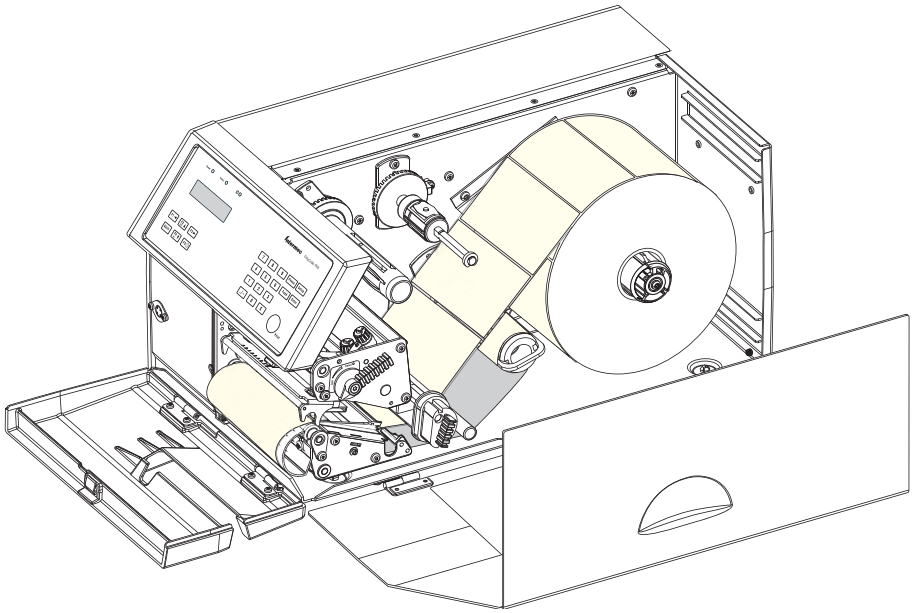
The batch takeup guide plate is only used in EasyCoder PX4i.

EasyCoder PX4i; Peel-Off (Self-strip) Operation



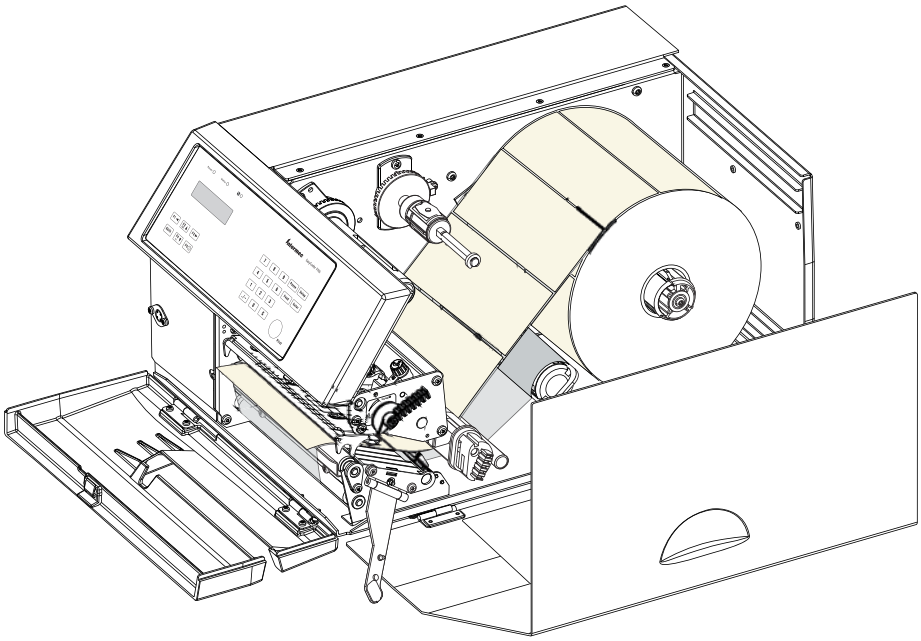
The liner takeup unit can accommodate the liner from a full roll of labels.

EasyCoder PX4i; Batch Takeup Operation



The batch takeup unit can accommodate approximately 1/4 to 1/3 of a full label roll depending on media thickness.

EasyCoder PX6i; Peel-Off (Self-strip) Operation



The liner takeup unit can accommodate the liner from a full roll of labels.

9.2 Main Parts

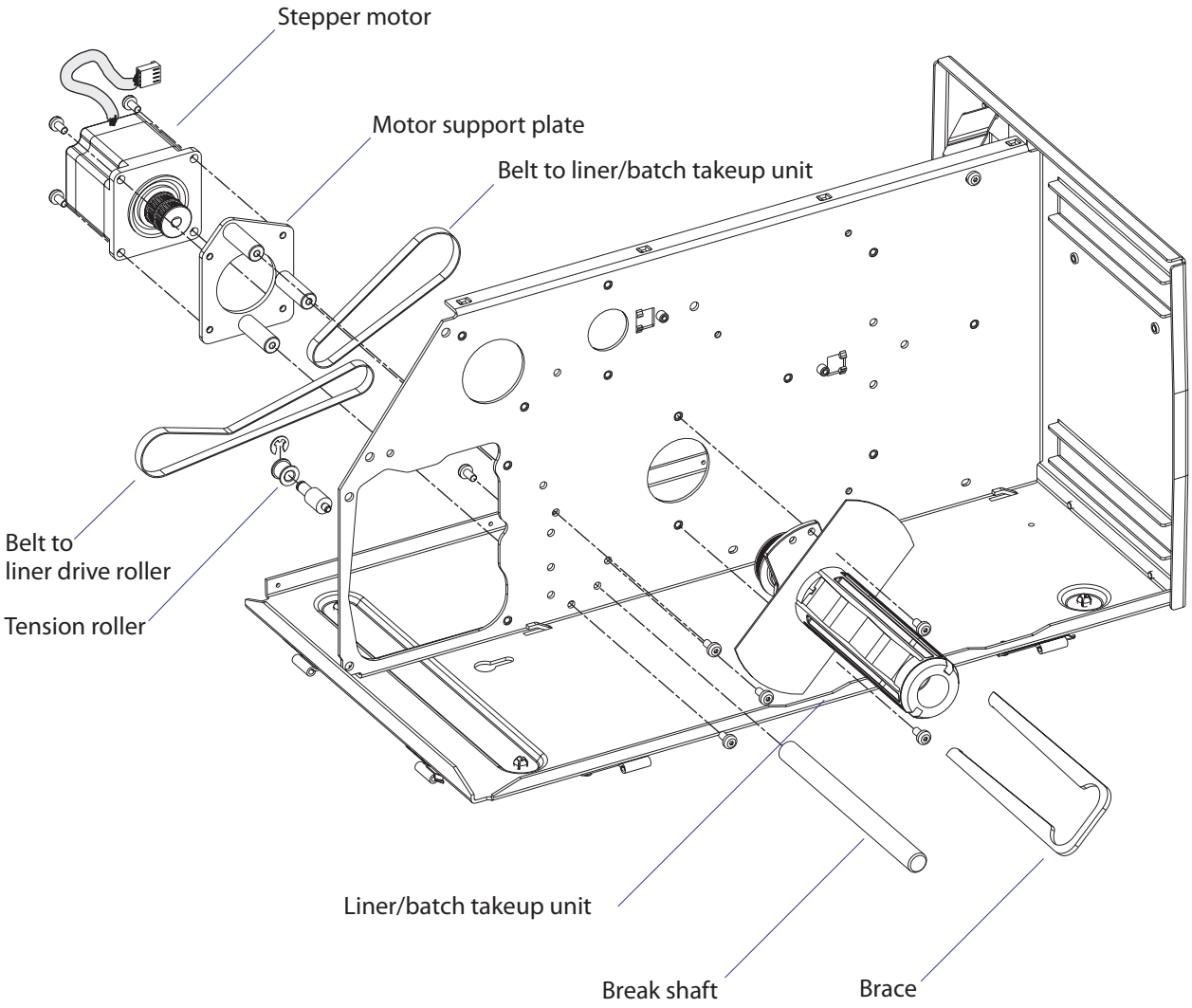
The stepper motor is fitted to the printer's center section using a motor support plate. It drives the liner/batch takeup unit and the liner drive roller in the print unit via two belts. The tension of these belts can be slightly adjusted by moving the stepper motor and/or support plate before the screws are tightened.

The takeup unit is fitted with a brace, that holds the liner or media. The unit is fitted to the printer's center section using two #T20 Torx screws inserted from media compartment.

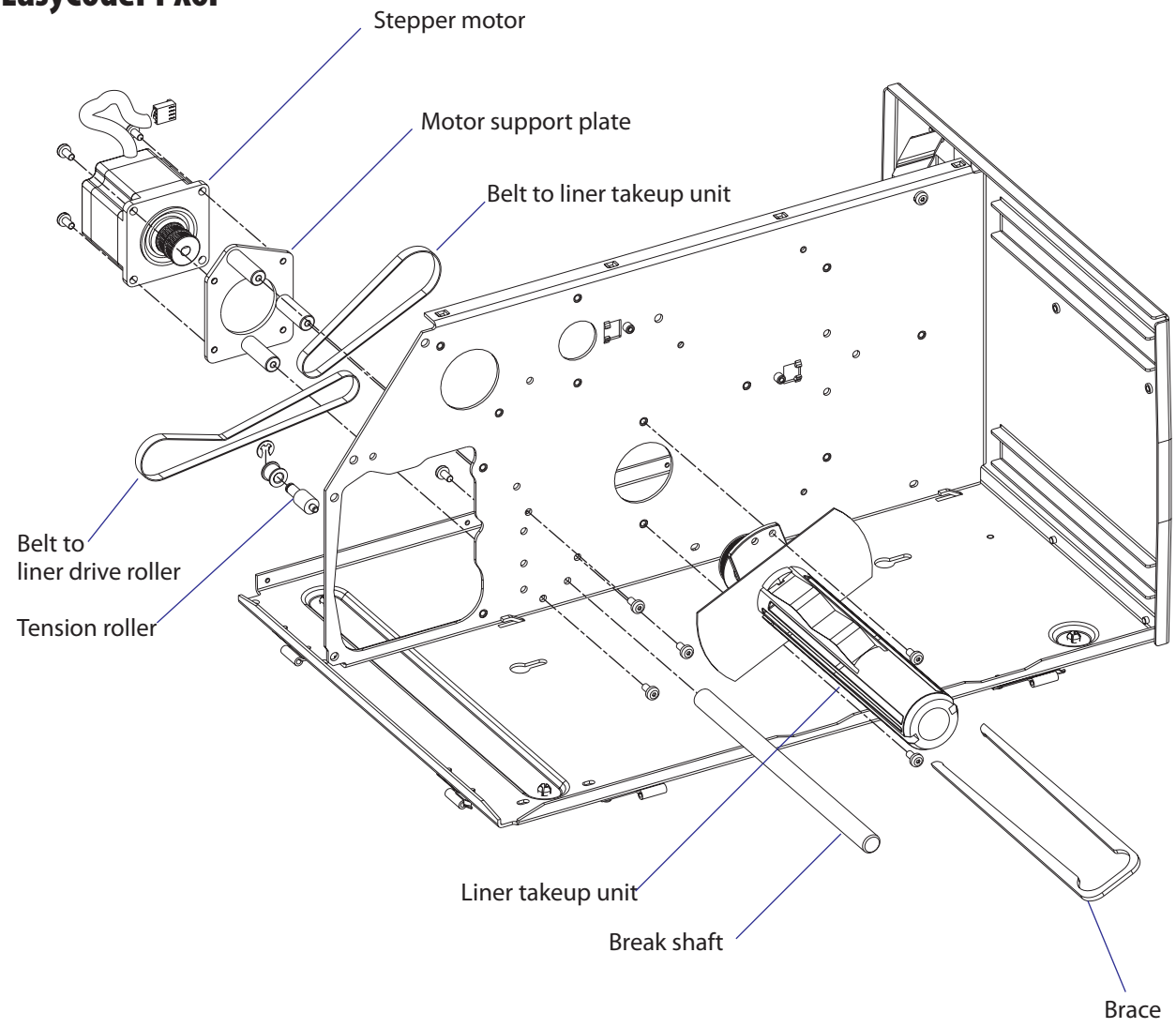
A break shaft in front of the takeup unit guides the liner or media under the slack absorber.

The stepper motor is connected to P11 on the driver board, see Chapter 14.

EasyCoder PX4i



EasyCoder PX6i



9.3 Liner/Batch Takeup Unit

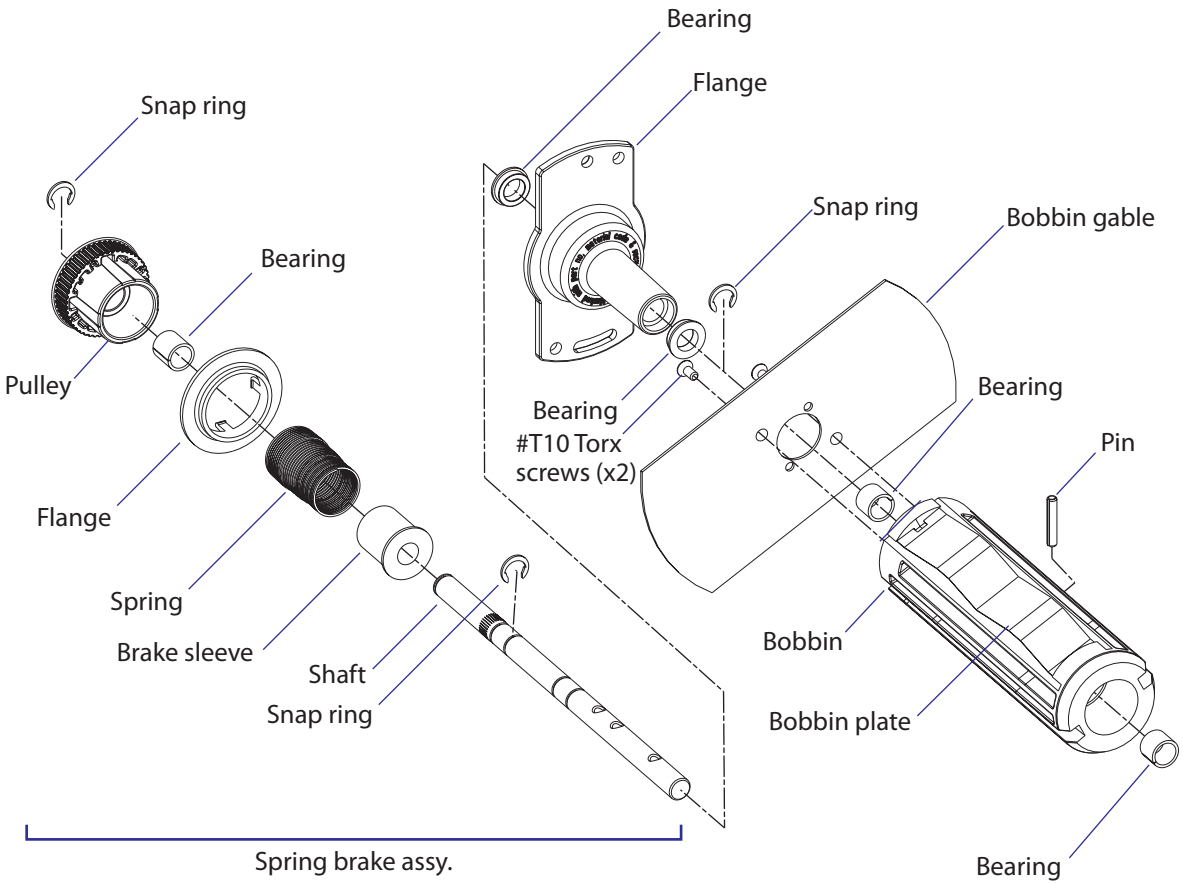
The liner/batch takeup unit is fitted to the printer's center section from the media compartment side using a flange with two bearings. The flange is held by two #T20 Torx screws. On the inner side of the center section is a pulley, which is part of a two-way spring brake. The pulley is held by a snap ring.

On the outer side, the hub and its attached gable are fitted. The rotation is controlled by the spring brake which works the same way as in the ribbon supply unit (see Chapter 7.2). Thereby, it is possible to wind up liner or media manually without running the motor. The spring brake also takes up sudden jerks. A plate helps to hold possible takeup cores. The assembly is held together by snap rings and a pin inserted through the rewind hub and its shaft.

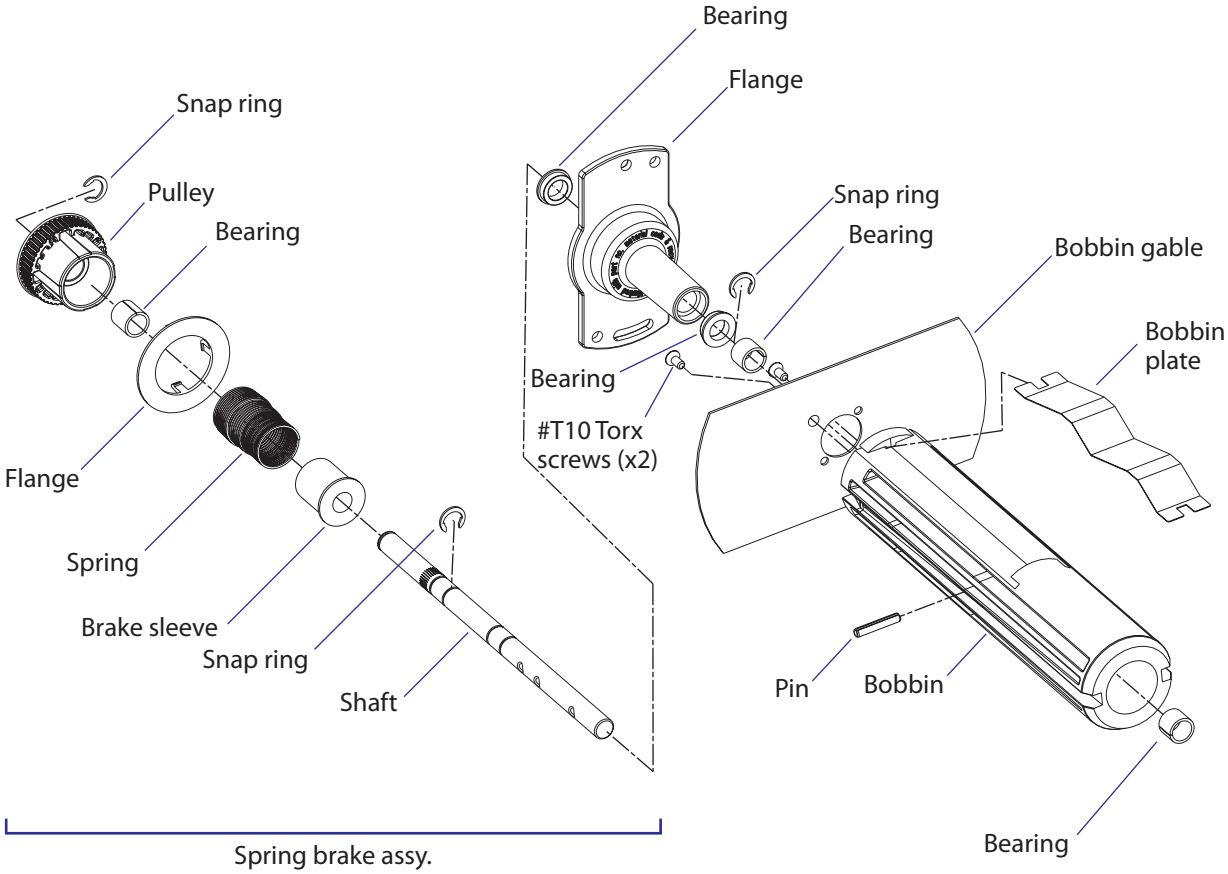
Note: The Liner Takeup Unit of an EasyCoder PX6i is not able to rewind printed labels—only to wind up liner.

The wind-up torque should be 310 to 380 Nmm and the slip torque 30 to 70 Nmm. Refer to Appendix 2 for a description of how to check the torque. If the wind-up torque deviates from the recommended value, replace the entire spring brake assy.

EasyCoder PX4i



EasyCoder PX6i



10 Label Taken Sensor

This chapter describes the optional label taken sensor and covers the following topics:

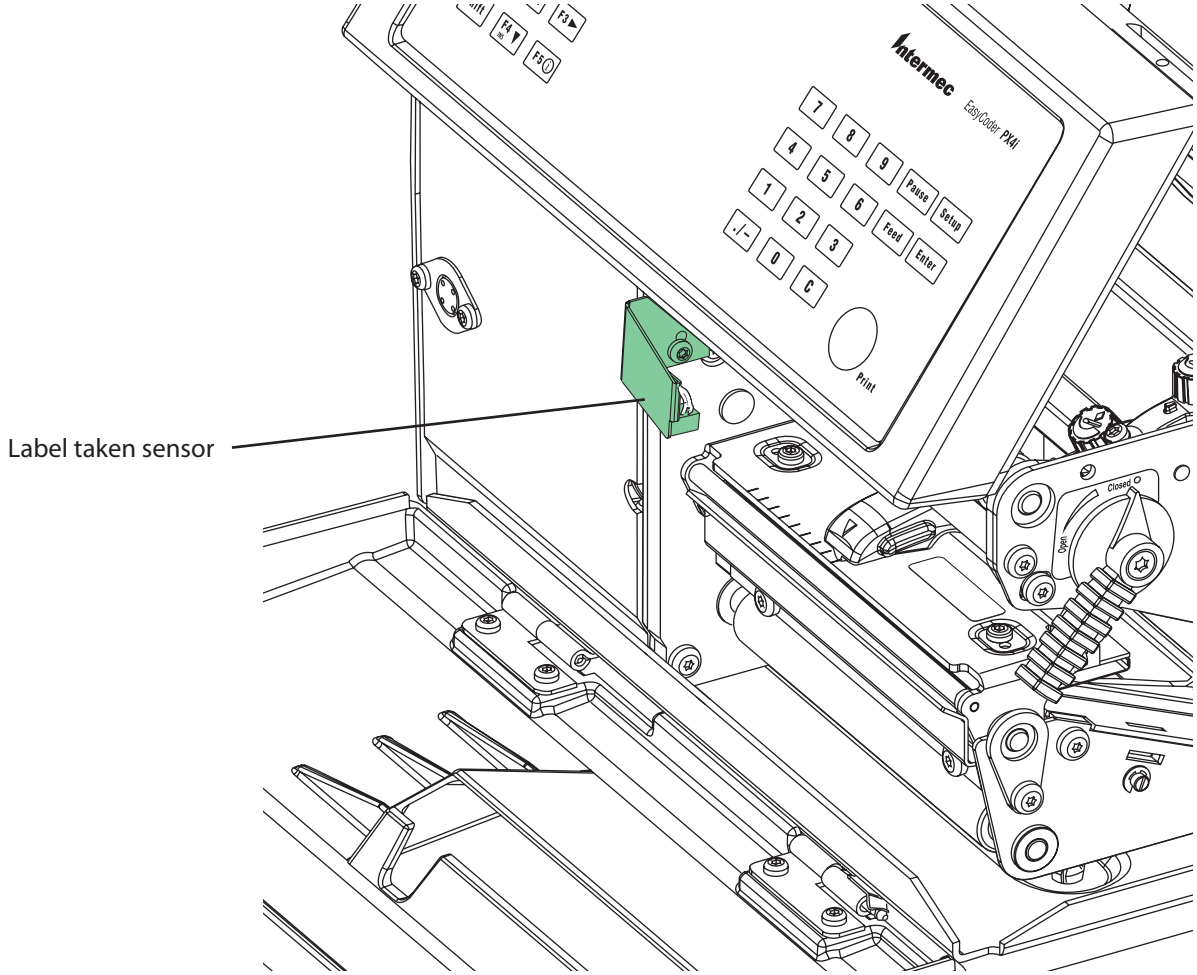
- Description
- Installation
- Activating the LTS
- Adjustment

10.1 Description

The label taken sensor (LTS) is an optional device, which enables the printer's firmware to detect if the latest printed label, ticket, tag etc. has not been removed and hold the printing on the next label until the present label has been taken away from the outfeed area.

The label taken sensor is usually factory-fitted, but it is also available as a kit for upgrading of existing printers by an authorized service technician. It cannot be fitted in combination with a paper cutter.

The label taken sensor consists of a photoelectric sensor with a bracket and a connection cable. The sensor is fitted inside the front door, see illustration below.



The photoelectric sensor emits a narrow beam of light, which will be reflected back to the sensor by any label, ticket, tag, piece of strip, or liner, that has not been removed from the outfeed area.

The LTS is connected to J53 on the CPU board. The sensitivity is adjusted in the Setup Mode, see Chapter 10.4.

The point of detection of the LTS is situated 10 mm (0.39 inches) outside the inner edge of the media path and 22 mm (0.87 inches) in front of the dot line on the printhead.

10.2 Installation

The Label Taken Sensor Kit consists of:

- One Reflecting Sensor assy. with cable and connector
- One Sensor Bracket
- One Screw
- One Installation Instructions booklet

The only tools needed are a set of Torx screwdrivers.

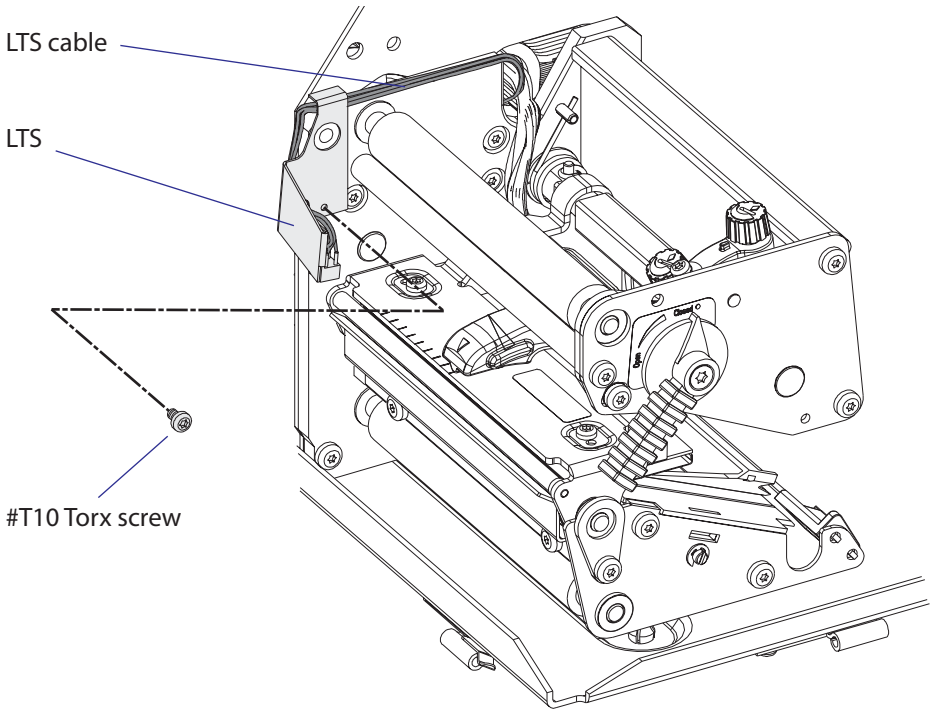
Install the label taken sensor this way:

- Open the right-hand doors and remove the left-hand cover as described in Chapter 3.3.

Warning

The electronic compartment contains wires and components with dangerous voltage (up to 380V). Make sure that the printer is switched off and the power cord is disconnected, before the left-hand cover is removed.

- Using the screw included in the kit, fit the sensor/bracket assembly to the inner wall of the print unit as shown by the two illustrations below. Fit the cable underneath the top part of the bracket, as illustrated below.



- Slip the cable of the label taken sensor through the hole in the center section of the printer into the electronics compartment.
- Connect the cable to J53 on the CPU board. Be careful so the cable does not interfere with any moving mechanical parts or the transfer ribbon.
- Put back the left-hand cover, connect the power cord and switch on the power.

10.3 Activating the LTS

In Fingerprint, the label taken sensor is enabled using the instruction LTS& ON.

In IPL, the self-strip mode must be enabled. This can also be done by executing the following commands:

```
<STX>R<ETX>          (Enter print/configuration mode)
<STX><SI>t1<ETX>     (Enable self-strip)
```

10.4 Adjustment

The sensitivity of the Label Taken Sensor (LTS) may need to be adjusted according to the ambient light conditions and the reflective characteristics of the back side of the media.

Fingerprint

The sensitivity can be adjusted in the Setup Mode (see Appendix A), or by using setup files or setup strings (see *Intermec Fingerprint v8.xx, Programmer's Reference Manual*). In the Setup Mode, the LTS setup options are only displayed if an optional label taken sensor is installed in the printer.

- **LTS Adjust:**
  Press <Enter>. A label is fed out. Remove the label and press <Enter> again. A menu shows the sensitivity automatically selected by the firmware and the range in which the LTS will work. Press <Enter> again and you will proceed to the LTS Test menu.
- **LTS Test:**
  Press <Enter>. A label is fed out. Remove the label and a new label should be fed out automatically. Repeat until you are sure the LTS works properly. Then press <Enter> to stop and exit.
- **LTS Value:**
  Press <**Enter**>. You can enter a new value in the range indicated in the LTS Adjust menu (see above). Min/max values are in the range 0-10.

IPL

The sensitivity can be adjusted in the Setup Mode (see Appendix A).

- In the Setup Mode, select the Configuration option.
- Select LTS Calibration and press the ▼ key.
- Press <Enter>
- A number of labels are fed out. Remove the labels and press <Enter>.
- The sensor has now been automatically adjusted and the resulting sensitivity is displayed as a numeric value in the range of 8 to 14.

11 Paper Cutter

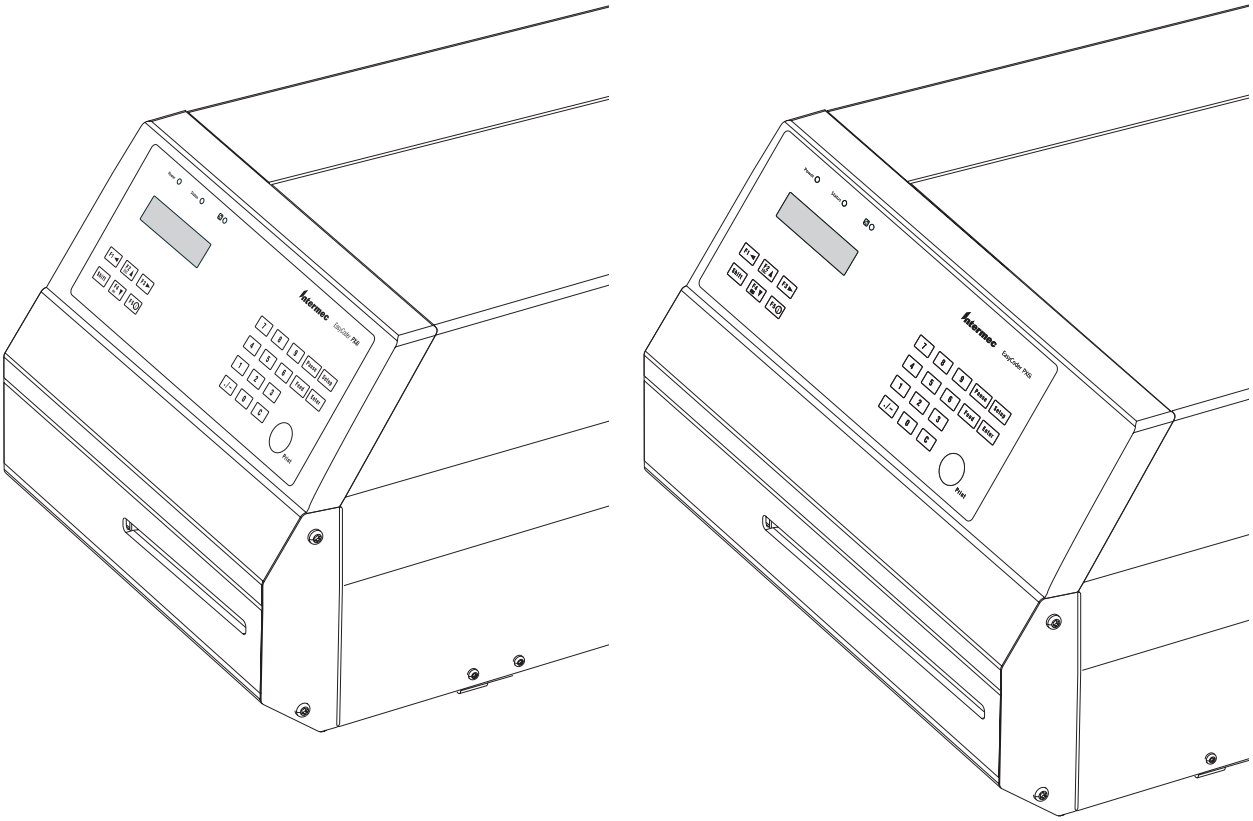
This chapter describes the optional paper cutters for EasyCoder PX4i and PX6i. The chapter covers the following topics:

- Description
- Installation
- Controlling the cutter
- Media load
- Servicing
- Spring replacement

11.1 Description

The EasyCoder PX4i and PX6i can easily be fitted with an optional cutter unless the printer is not already fitted with an label taken sensor (see Chapter 10). The cutter unit is fitted on the same hinges as the front door, which it replaces, and is connected by a single cable to the DIN-connector on the printer's front.

The cutter is available both as a factory-installed option and as a field-installable upgrading kit.



The cutter is intended to cut through continuous non-adhesive paper strip or through the liner between labels. It must not be used to cut through any kind of adhesive or other soft material, that may stick to the cutting parts and render the cutter inoperable or even damage the electric motor.

Maximum paper thickness is 175 µm (≈ 175 g/m^2) for normal paper-based materials.

Minimum practical copy length is 38.1 mm (1.5 inches.)

The cutter increases the total weight of EasyCoder PX4i and PX6i respectively by approx. 1.0/1.65 kg (2.2/3.6 pounds). In both cases, the length is increased by 28 mm (1.1 inches).

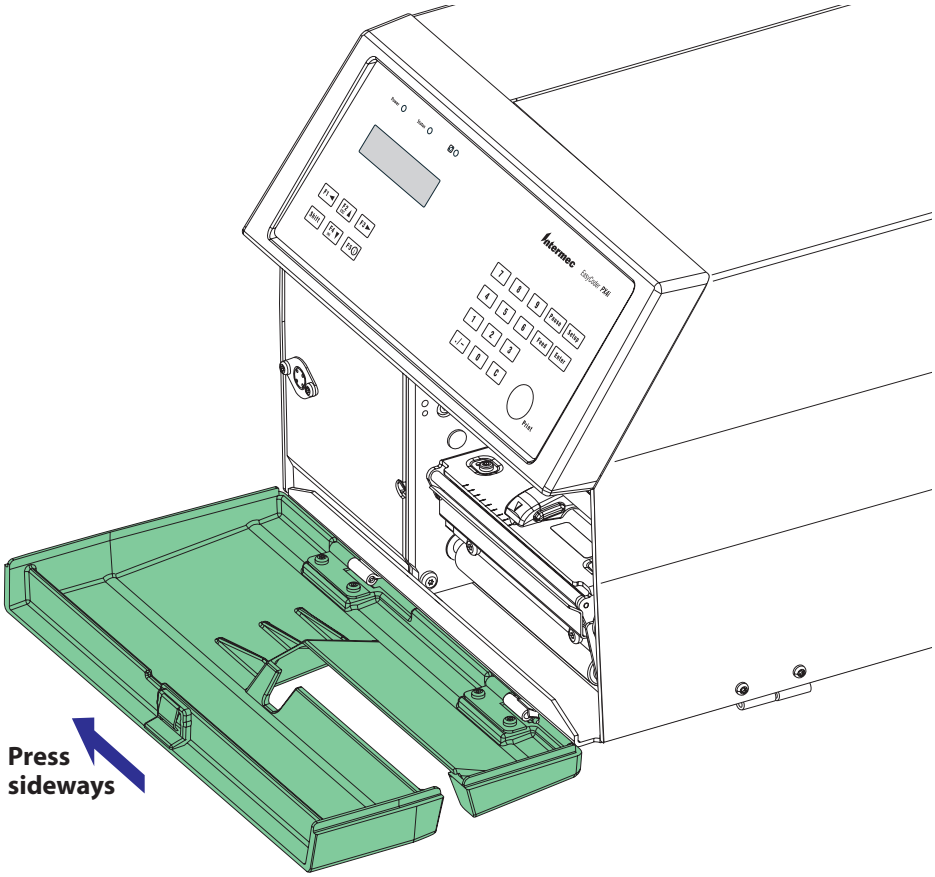
The cutter can be tilted forward in order to facilitate cleaning and media load.

Warning

The cutting edge will rotate to home position when the power is switched on and when the printer is rebooted. Always keep the cutter unit in closed position during operation

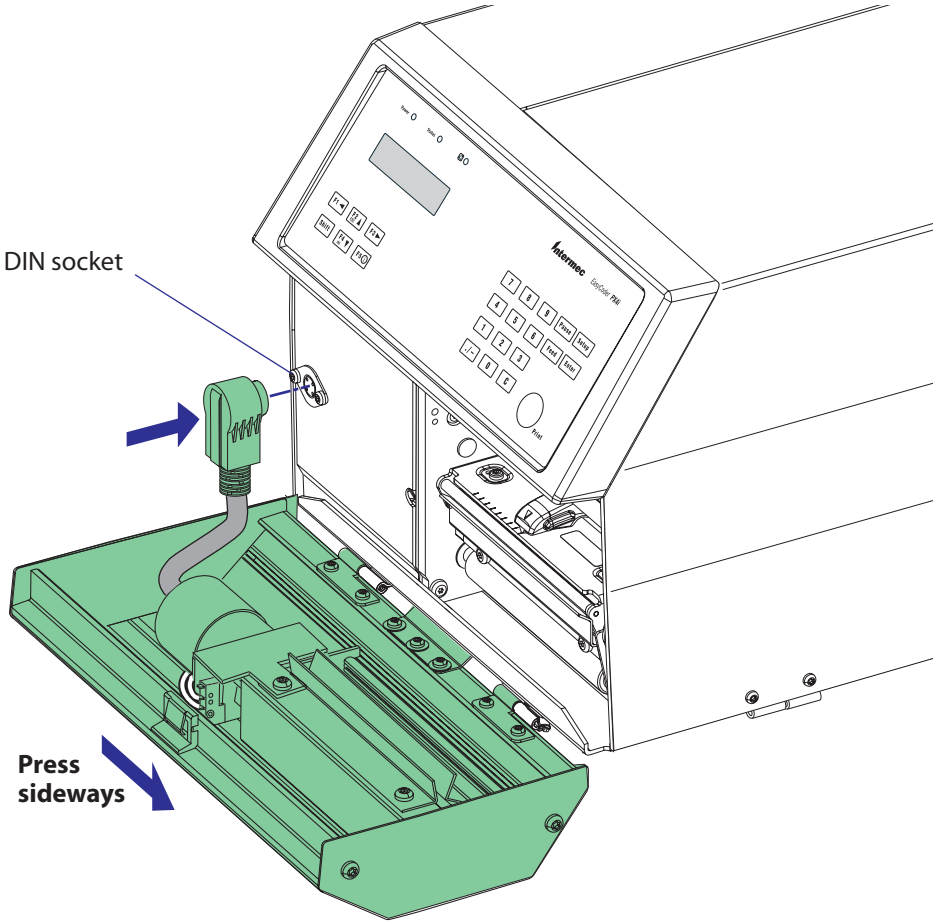
11.2 Installation

- Switch off the power and remove the power cord.
- Open the printer's front door.
- Hold the printer firmly and press the front door sideways to the left so as to disengage the hinges.
- Remove the door completely.

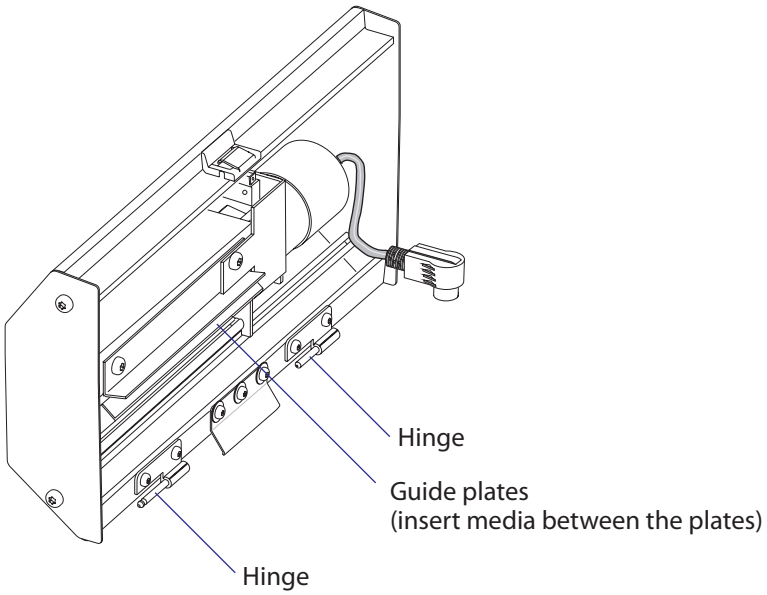


- If the printer is fitted with a label taken sensor (LTS), it has to be removed before the cutter can be fitted, see Chapter 10.

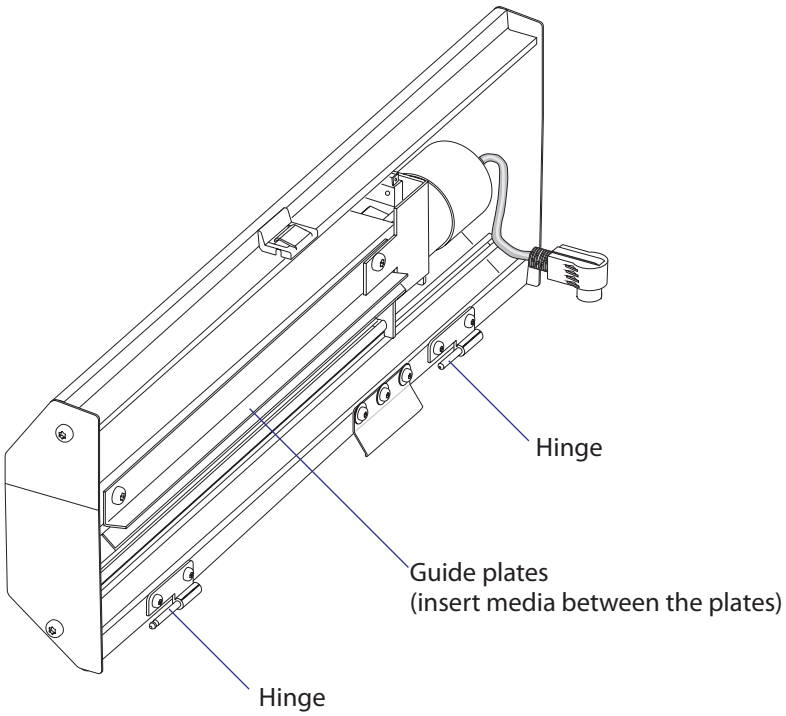
- Fit the cutter unit to the vacant hinges. Make sure that the locking plate snaps into the groove of the right-hand hinge and that the angled plate at the bottom of the cutter is inserted under the printer's bottom plate.
- Connect the cable from the cutter unit to the DIN socket on the printer's front.



- Tilt the cutter unit upwards until it locks into place. If the cutter does not lock properly, the hinges of the cutter unit may need to be adjusted using a #T10 Torx screwdriver.
- Connect the power cord and switch on power. The cutter will perform an idle cycle in order to occupy its home position.
- Switch off the power. Tilt down the cutter and route the media through the cutter unit between the guide plates (see illustration above). Then tilt the cutter up again and lock it in closed position. Check that the printhead is lowered and switch on the power. Now the printer is ready for operation.



EasyCoder PX4i Cutter



EasyCoder PX6i Cutter

11.3 Controlling the Cutter

Fingerprint

The cutter is activated by CUT or CUT ON statements, see the *Intermec Fingerprint v8.xx,* or the *Intermec Direct Protocol v8.xx* manuals. Application programs may have related facilities for operating the cutter.

The edge will cut through the media approx. 37 mm (1.5 inches) in front of the printer's dot line. The following values are recommended for cutting:

Type of Cutting	8 dots/mm printhead	11.81 dots/mm printhead
Cut between labels w. gaps		
Start adjust:	- 287 dots	- 424 dots
Stop adjust:	+ 176 dots	+ 260 dots
Cut fix and variable length strip (no liner!)		
Start adjust:	- 294 dots	- 434 dots
Stop adjust:	+ 298 dots	+ 440 dots

IPL

The cutter can be enabled/disabled in the Configuration part of the setup mode or using the command **<STX><SI>Cn<ETX>**, where n= 0 disables the cutter and n=1 enables it. When the cutter is enabled, the media feed is automatically adjusted for cut-off operation.

When the cutter is not enabled, a cut operation (advance label and cut) can be executed using the command **<STX><SO><ETX>**.

Also see *IPL Programming, Reference Manual*.

11.4 Media Load

Load media following the descriptions in the *User's Guide* for Media Load/Cut-Off operation (optionally with Quick-Load guides). The cutter is held by a snap lock and can be tilted forward to facilitate media load. Always engage the printhead in order to hold the media before closing the cutter.

11.5 Servicing

The cutter mechanism becomes accessible when the cover is opened.

The cutter shears will need to be cleaned from adhesive residue if the cutter has been used for cutting through labels, something that is not advisable. Use isopropyl alcohol (see warning text on the container), but be careful only to apply it where there is any adhesive residue so you do not dissolve the lubrication.

Do not force the spring-loaded anvil blade open more than 5-10 mm (0.2–0.4 inches), or the spring may be damaged. Refer to Chapter 11.6 for information on how to replace the spring.


Warning

Switch off the power or disconnect the cutter before cleaning. Keep fingers away from cutting parts!

Fingerprint only

If the following errors occur, clean the shears from adhesive residue.

- 1701 *"Cutter error1"*
  A cut has been performed but the shear has stopped on its way back to home (bottom) position.
- 1702 *"Cutter error2"*
  The cutter has failed to cut after several attempt (3 is default) and the shear has returned to home (bottom) position.
- 1703 *"Cutter error3"*
  The cutter has failed to cut and the shear has stopped before returning to home (bottom) position.

If the cutter cable connector has come loose from DIN connector, Error 37, *"Cutter device not found"* or Error 1059, *"Cutter does not respond"* will occur.

If the microswitch in the cutter assy is faulty, Error 1704, *"Cutter open"* will occur, even if the cutter in fact is closed.

IPL only

IPL reports if the cutter has failed to return to home position by displaying the message *"Open&shut cutter."* Follow that instruction. If the error persists, clean the shears from adhesive residue and check the microswitch.

11.6 Spring Replacement

The spring that presses the anvil blade against the rotating shear may eventually get slack, especially if the anvil blade is forced open, for example during cleaning. A slack spring must be replaced as follows:

- Remove the right-hand gable of the cutter (two #T20 Torx screws).
- Remove the right-hand gable of the cutter mechanism (two #T20 Torx screws + three Posidrive screws).
- Replace the spring and assemble in reverse order, making sure to put back all the washers.

12 Electronics Compartment

This chapter describes how to access the electronics compartment and shows the main parts.

The electronics compartment contains wires and circuits with high voltage. Before removing the left-hand cover or the bottom plate, make sure that the power is off and the power cord is disconnected from the printer.

Before starting to work inside the electronics compartment, take standard precautions for avoiding electrostatic discharges.

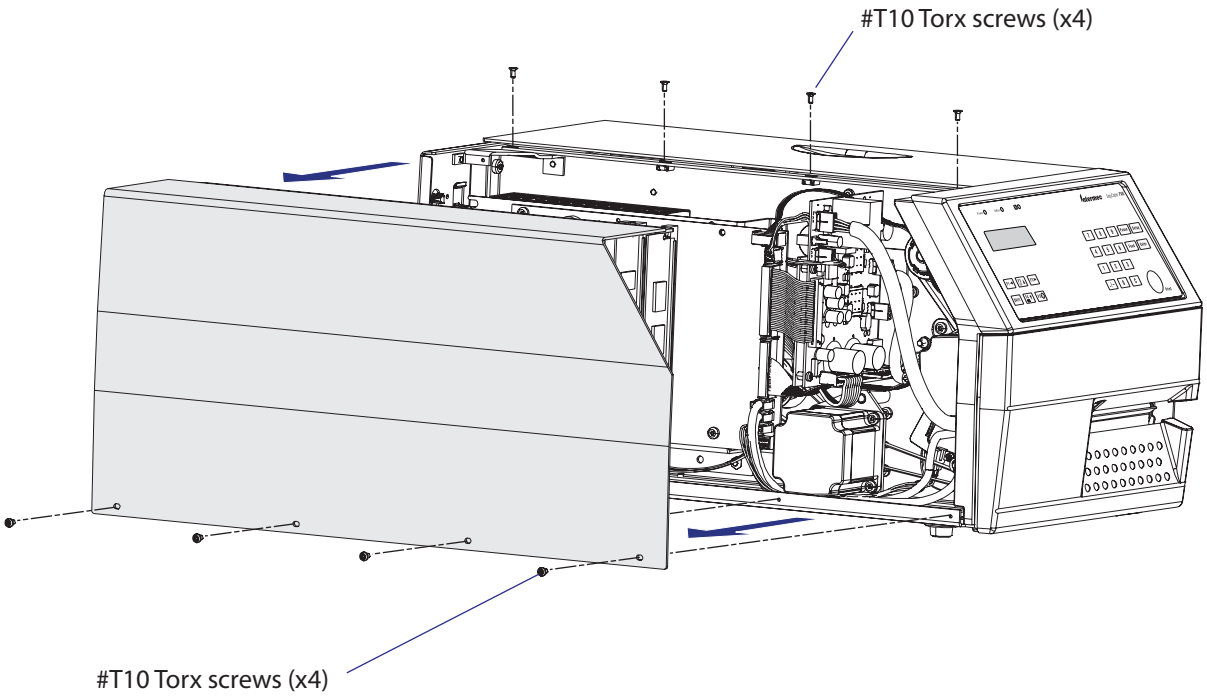
12.1 Introduction

The Electronics Compartment is off limits to the normal user, but for the authorized service technician, it contains a number of parts of great interest:

- The stepper motor and timing belts of the platen roller and ribbon rewind unit.
- The stepper motor and belts of the optional liner/batch takeup unit.
- The headlift mechanism and sensor.
- The CPU board.
- The driver board.
- The power supply unit.
- Optionally one or two extra interface boards and/or one EasyLAN board.

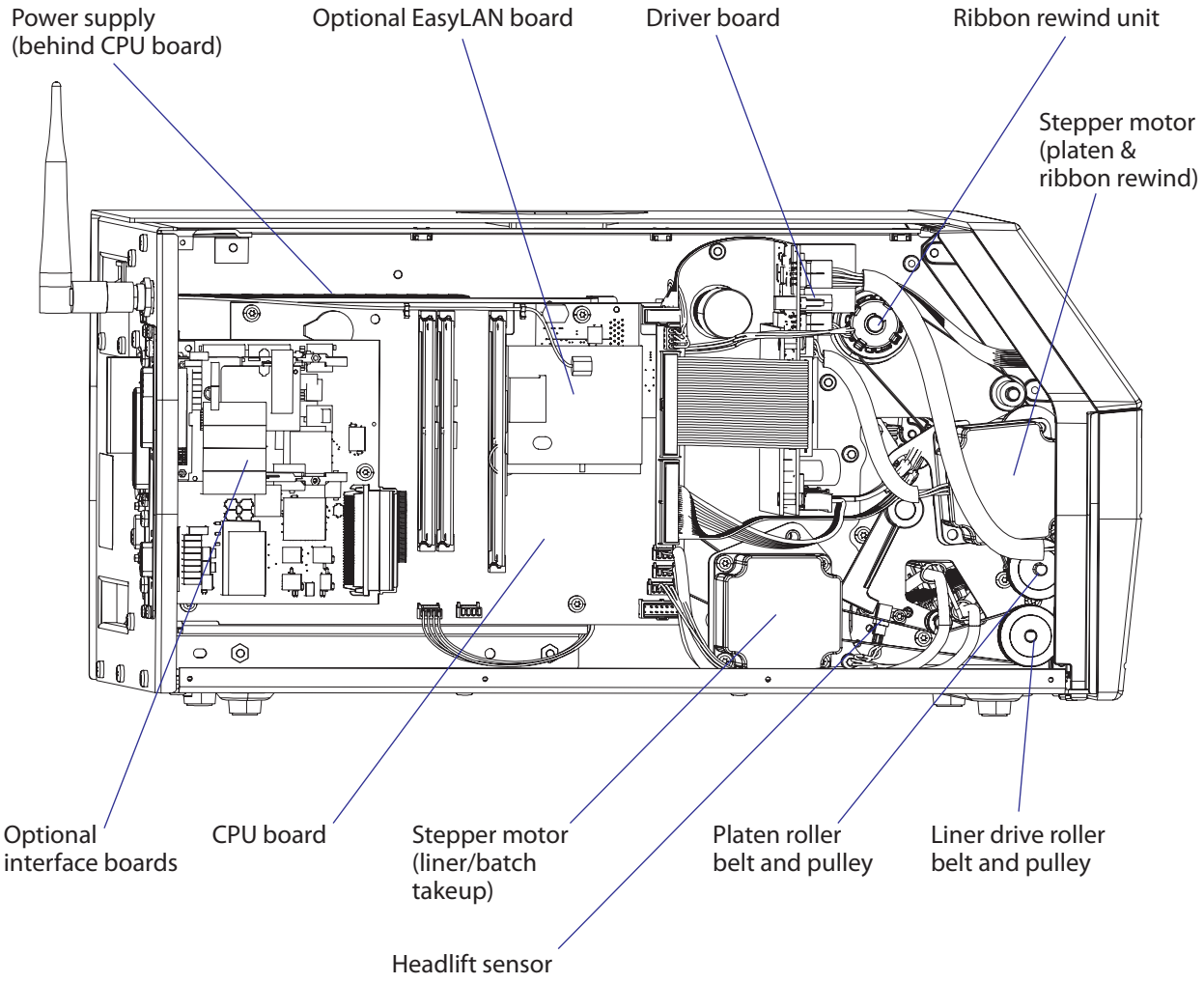
12.2 Accessing the Electronics Compartment

To gain access to the electronics compartment, remove the left-hand cover as described in Chapter 3.3.



12.3 Main Parts

This is what you may see when you remove the front/left-hand cover from an EasyCoder PX4i or PX6i printer.



13 Power Supply

This chapter describes the power supply unit (PSU) which is fitted in the electronics compartment, see Chapter 12.

The chapter covers the following topics:

- Description
- Replacement
- Components
- Schematics

The electronics compartment contains wires and circuits with high voltage. Before removing the left-hand cover or the bottom plate, make sure that the power is off and the power cord is disconnected from the printer.

Before touching the driver board, take precautions to avoid any electrostatic discharges.

13.1 Description

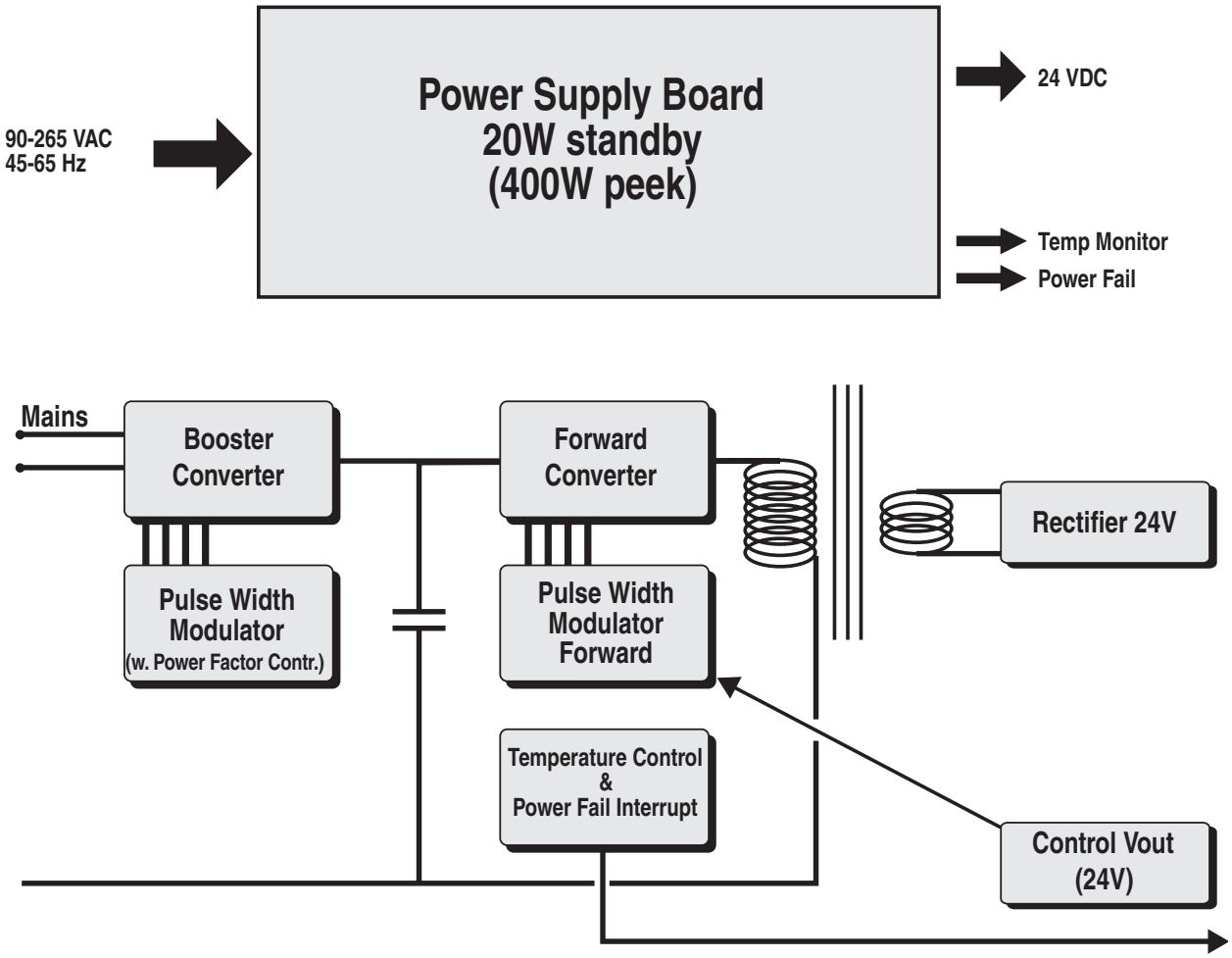
The Power Supply Unit (PSU) is identical in all EasyCoder PX4i and PX6i-series printers. It is situated inside the electronics compartment between the CPU board and the center section.

No attempt to repair this unit is allowed. Never replace a blown fuse, but replace the entire PSU.

The power supply unit is primary-switched with power correction factor controller so as to comply with the CE regulations, which require a sinus-shaped load curve. It is designed for input voltages in the range of 90 to 265 VAC, 45 to 65Hz. There is no manual switch.

The PSU delivers 20W at standby and 400W peak. Typical consumption during printing is approximately 100W. The PSU produces 24 VDC only; all other voltages are transformed from 24 VDC by the driver board and CPU board. The CPU board controls the PSU over the I^2C bus via the driver board, where also identification and error signals are transmitted to the CPU board. Voltage and temperature are monitored and the unit is over-current protected.

The working principles of the PSU are illustrated by this diagram:



Power Factor Control

The power factor control transforms the AC input voltage to 385 VDC by sensing the shape of the curve of the input voltage and chopping it to short pulses, where the pulse amplitude follows the shape of the curve. The booster is protected by two 7A fuses.

Forward Converter

The forward converter transforms 385 VDC to 24 VDC 0-17A. The 24 VDC is the bulk voltage. Other voltages needed for internal devices are converted from 24 VDC by the driver board and the CPU board.

Connections

P2 24 VDC to driver board.

P3 Temperature and power fail signals to driver board

X1 Input voltage 90 to 265 VAC, 45 to 65Hz

Overheating Protection

The power supply unit is fitted with a sensor that will shut down the unit in case of overheating (Power Fail Interrupt or PFI) and another sensor that will warn the main CPU if the power supply is getting hot (Notify). A Power Fail Interrupt (PFI) signal will warn the logics so valuable data can be saved before power is lost. Before a print operation is executed, the Notify signal is checked. If the Notify signal is activated, a warning is shown in the display and the main CPU will reduce the power consumption to avoid shutdown by detaining the printing until the Notify signal is deactivated.

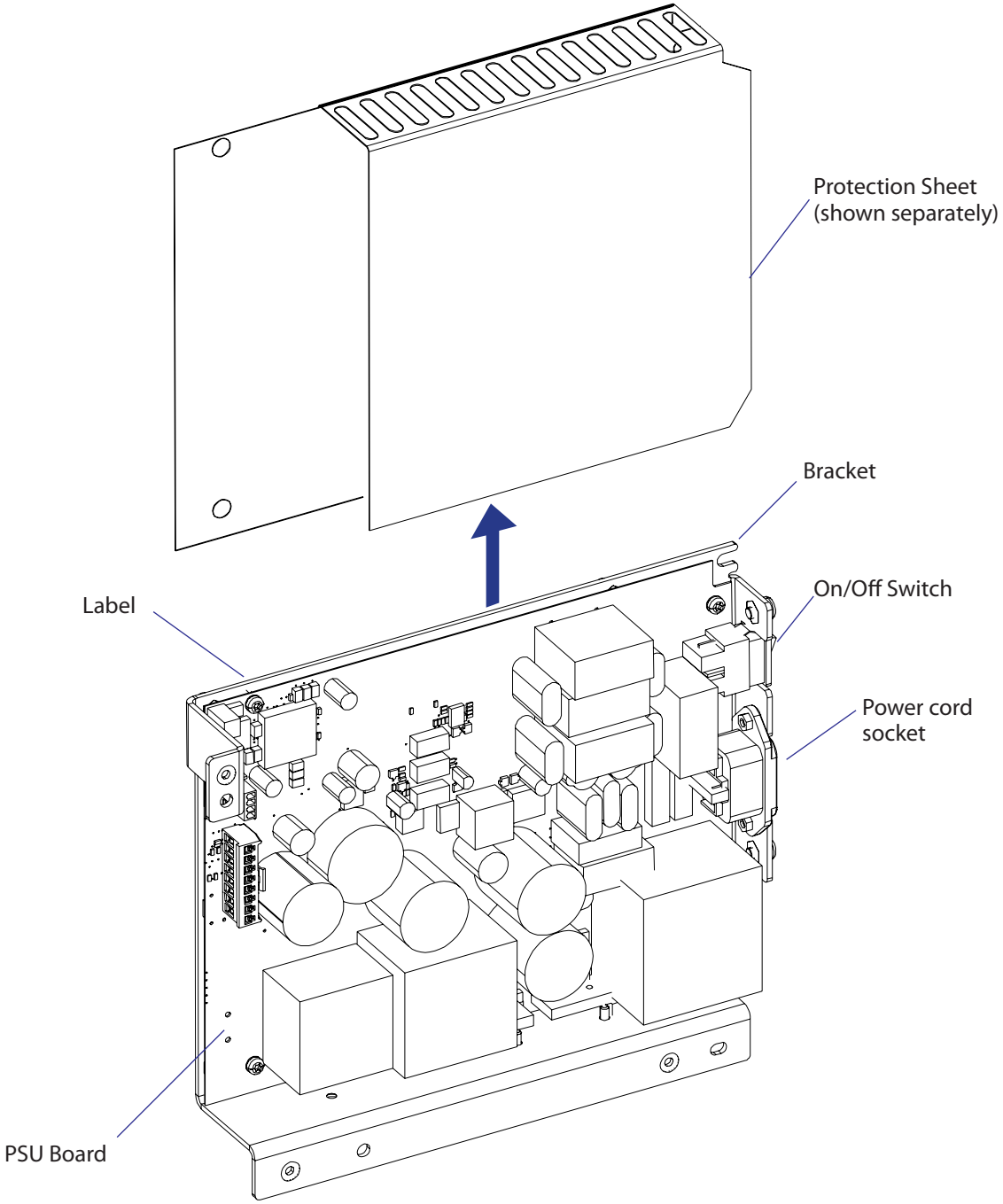
Primary switched power supplies are generally difficult to repair. If one component fails due to aging or overload, a number of other components will also break as a consequence. They are hard to troubleshoot, because the PSU often is "dead" or the fuses blow immediately. It is also impossible to guarantee the life of a repaired PSU, because components may still work but be on the verge of failing. Thus, if a fuse blows, do not attempt repairing the PSU, but replace the entire unit!

Physical Appearance

The PSU comes as a complete unit consisting of a large metal bracket to which the following parts are factory-fitted:

- Plastic protection sheet
- Power supply pcb (attached to the bracket using four #T10 Torx screws and washers)
- AC power cord socket (attached to the bracket using two #T10 Torx screws and nuts)
- On/off switch (attached to the bracket using snap-locks)
- Label

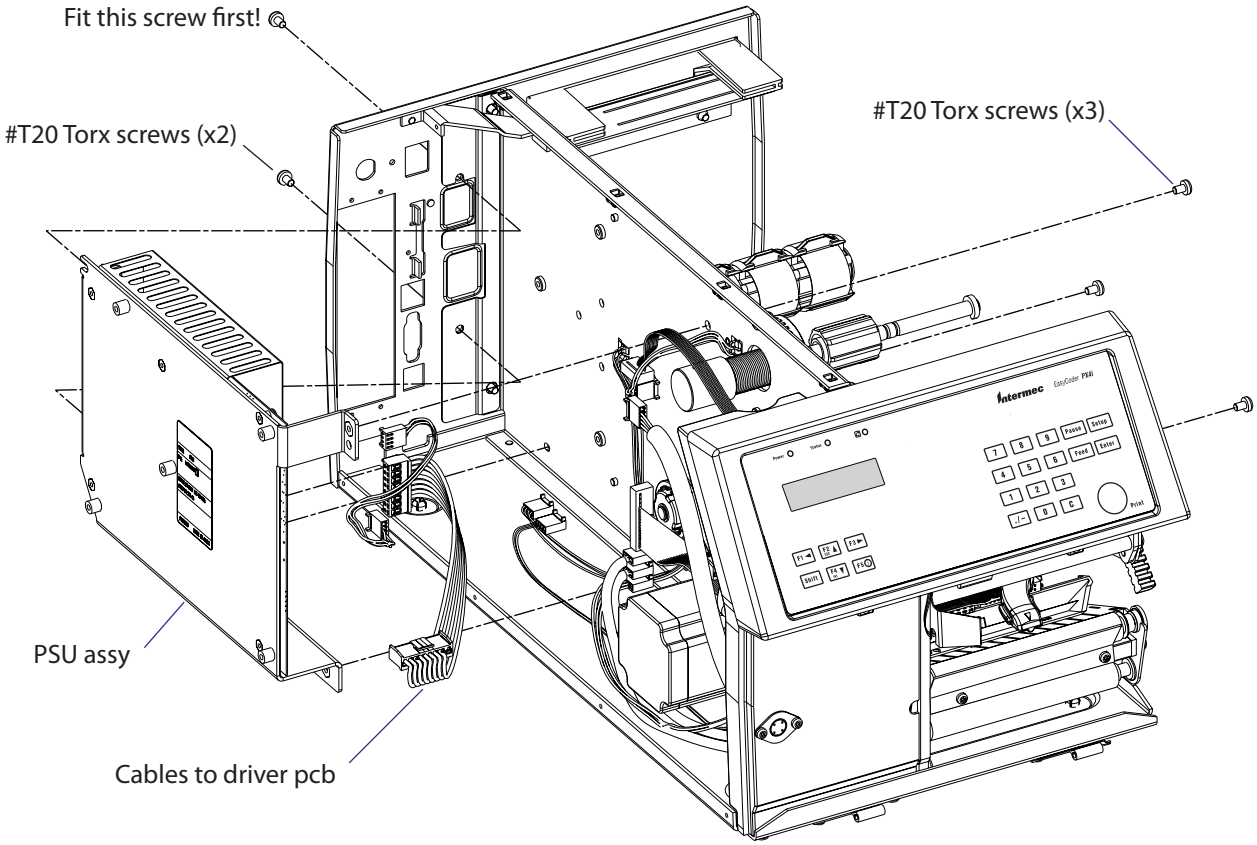
The bracket is fitted to the center section and rear plate using a total of five #T20 Torx screws.



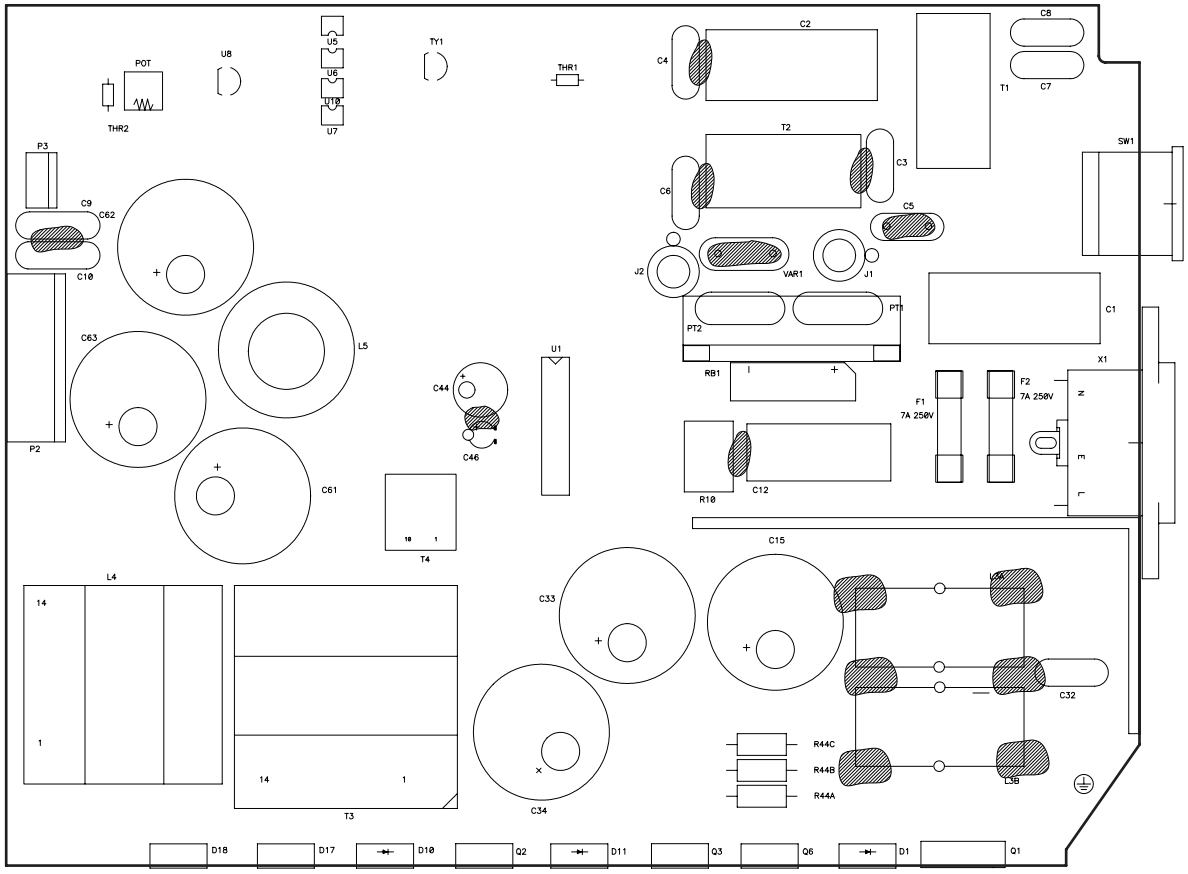
Power supply unit (simplified drawing)

13.2 Replacement

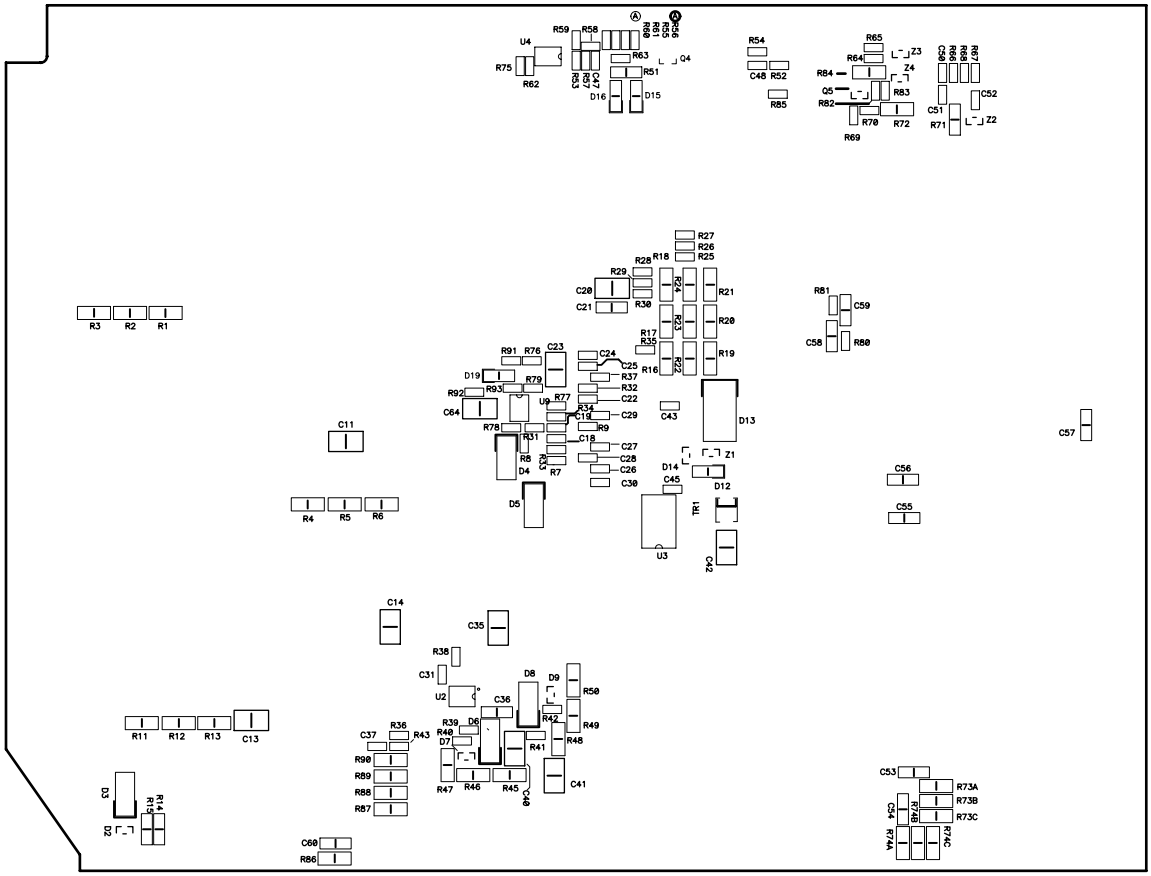
- Take precautions to avoid any electrostatic discharges.
- Switch off the printer and disconnect the power cord and all interface cables on the rear plate.
- Remove the left-hand cover as described in Chapter 3.3.
- Remove any interface board connected or attached to the CPU board.
- Disconnect all cables from the CPU board and remove it (see Chapter 15.3). The CPU board is held to the PSU bracket using four #T20 screws and one hexagonal spacer.
- Disconnect the cables that run between the PSU and the driver board.
- Remove the three #T20 Torx screws that hold the PSU assy to the center section and two #T20 Torx screw that hold it to the rear plate.
- Do not dismantle the PSU. Replace the entire unit!
- Assemble in reverse order. Fit the top screw at the rear plate first.



13.3 Components

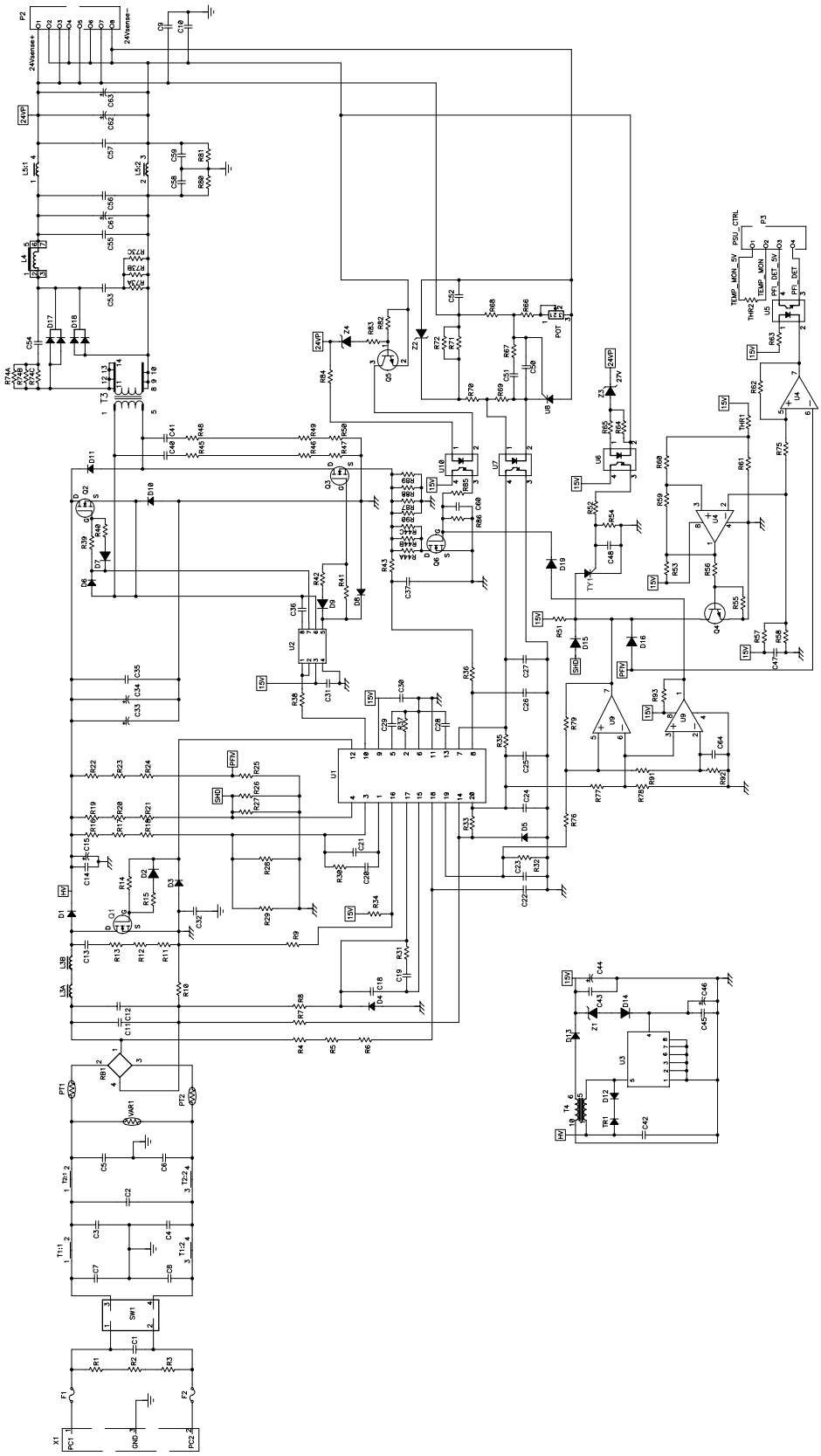


1-971632-25 Power Supply Unit; Component side



1-971632-25 Power Supply Unit; Soldering side

13.4 Schematics



1-971632-25 Power Supply Unit; Schematics

14 Driver Board

This chapter describes the driver board which is fitted in the electronics compartment, see Chapter 12.

The chapter covers the following topics:

- Description
- Replacement
- Components
- Schematics

The electronics compartment contains wires and circuits with high voltage. Before removing the left-hand cover or the bottom plate, make sure that the power is off and the power cord is disconnected from the printer.

Before touching the driver board, take precautions to avoid any electrostatic discharges.

14.1 Description

While the power supply unit (PSU) transforms the AC input voltage to 24 VDC, the driver board converts the 24 VDC to various voltages and distributes them to CPU board, stepper motors, cutter, and printhead.

The driver board is connected to the PSU via two cables (see Chapter 13). One cable, connected to P2, supplies the driver board with 24 VDC and the other one, connected to P3, contains temperature and power fail signals.

The driver board converts the 24 VDC to various voltages required by the printer and distributes them as follows:

P1 24 VDC to CPU board and control signals between driver board and CPU board

P5 24 VDC to thermal printhead

P7 0-12 VDC to fan (presently not used)

P10 33 VDC to platen roller/ribbon rewind stepper motor

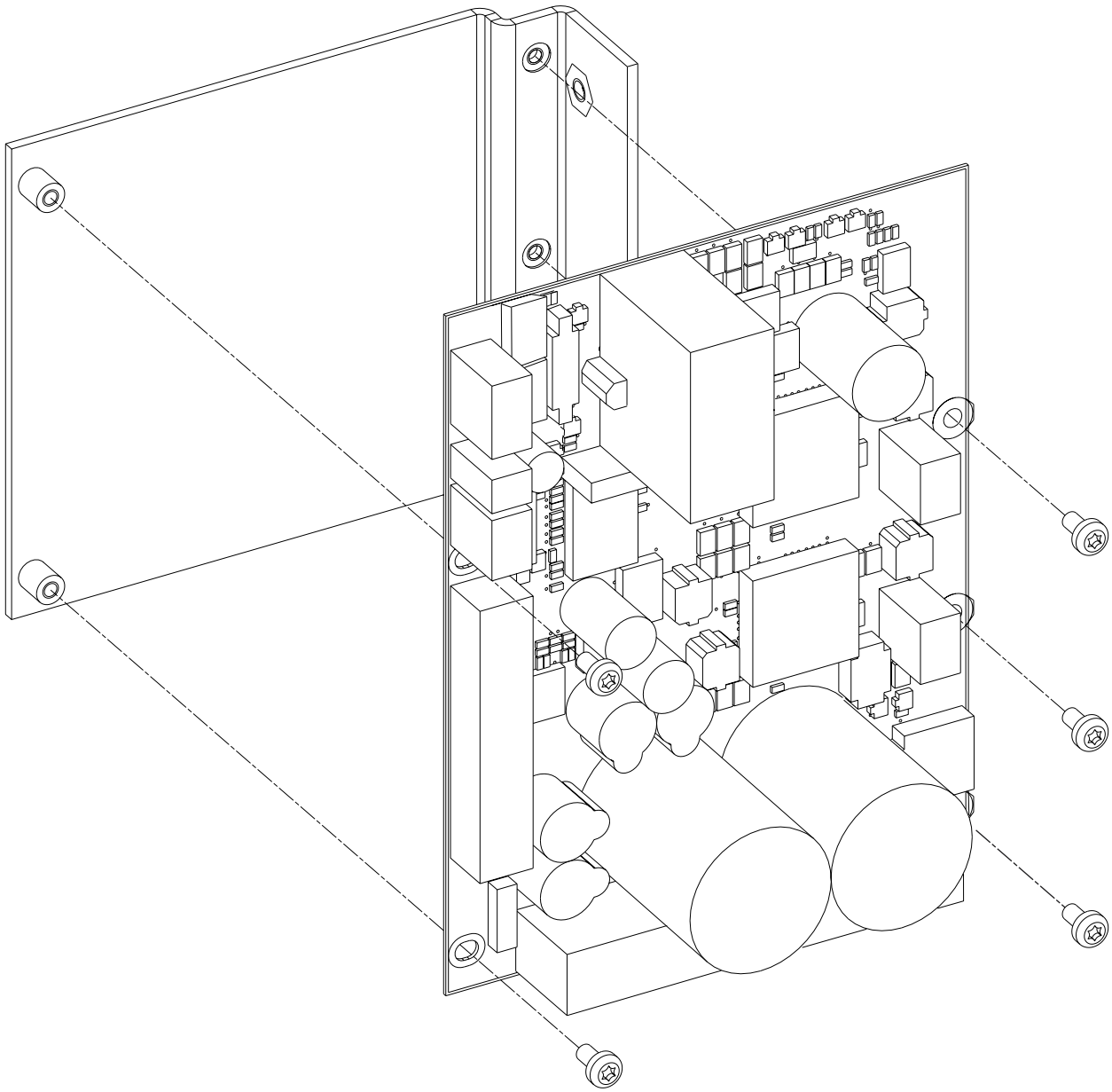
P11 33 VDC to liner/batch rewind unit stepper motor

P12 24 VDC to cutter interface

At start-up, the PIC processor on the driver board checks that the 24 VDC to the printhead and 33 VDC to the stepper motors are within allowed limits. If any extreme values are found, an error condition occurs.

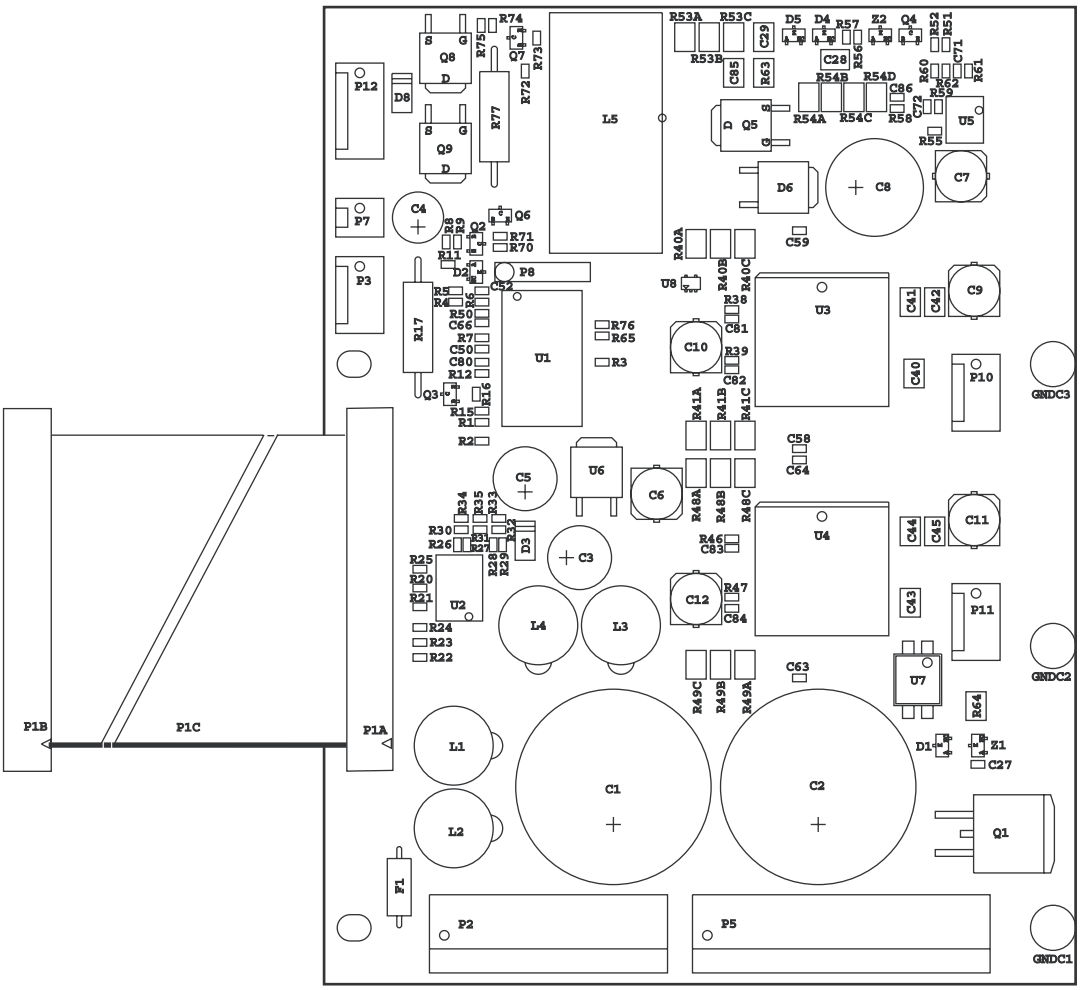
14.2 Replacement

- Take precautions to avoid any electrostatic discharges.
- Switch off the printer and disconnect the power cord
- Remove the left-hand cover as described in Chapter 3.3.
- Disconnect all cables to the driver board.
- From the media compartment, remove the two #T20 Torx screws that hold the driver board assembly.
- The driver board and its plate come as an assembled spare part. Do not dismantle any further. Do not attempt to repair a faulty driver board, but replace it with a new one, unless you know for sure that you have made the fuse blow by causing a short-circuit (see Chapter 17.6).
- Assemble in reverse order.

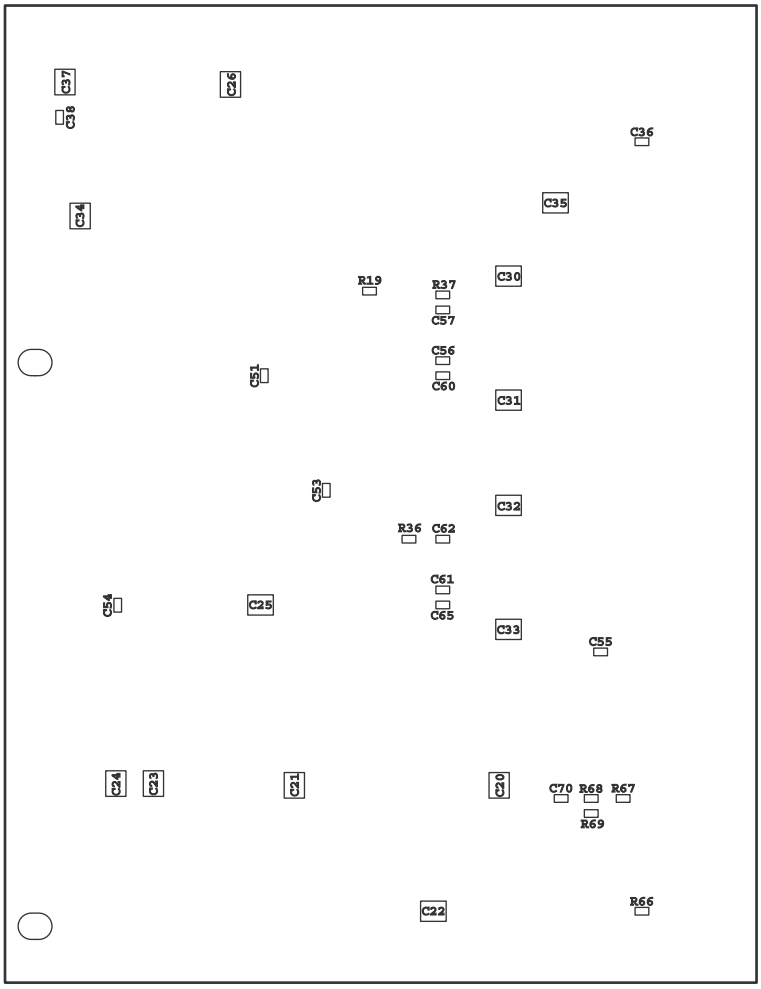


The driver board and its attachment plate come as an assembled spare part.

14.3 Components

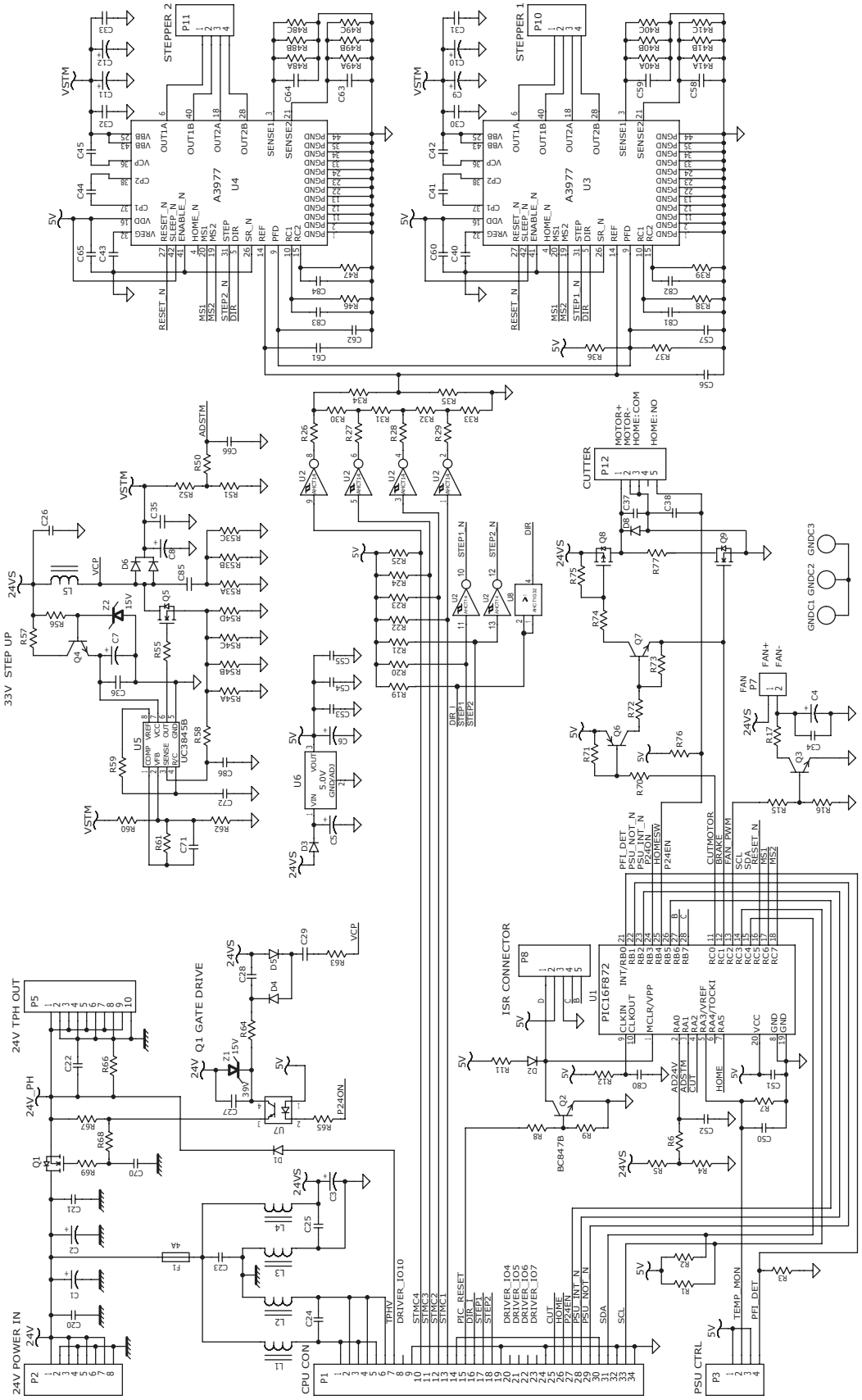


1-971652-26 Driver Board; Component Side



1-971652-26 Driver Board; Soldering Side

14.4 Schematics



1-971652-26 Driver Board

15 CPU Board

This chapter describes the CPU board which is fitted in the electronics compartment, see Chapter 12.

The chapter covers the following topics:

- Description
- Circuits
- Connectors
- Test points
- Startup
- Components
- Schematics
- Replacement

Note: Devices and file systems, such as "/c:" or "uart1:", are only used in Fingerprint. Some may also exist in IPL, but are hidden to the user.

Warning

The electronics compartment contains wires and circuits with high voltage. Before removing the left-hand cover or the bottom plate, make sure that the power is off and the power cord is disconnected from the printer.

Caution

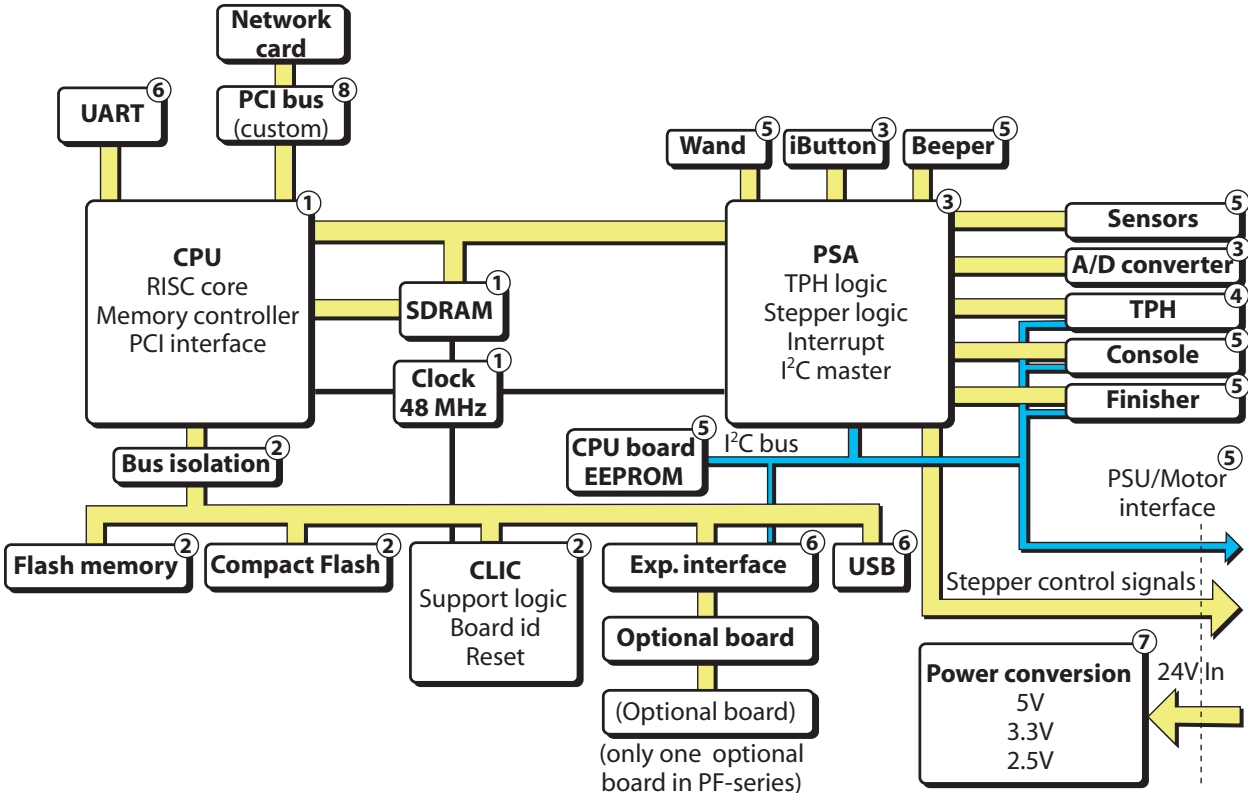
Before touching the CPU board, take precautions to avoid any electro-static discharges.

15.1 Description

The CPU board is a four-layer board with most of its circuits surface-mounted. Inside the laminate are a combined VCC layer (5V/3.3V/2.5V) and a GND layer. The front and back sides are signal routing layers.

The hardware contains of the following main functions:

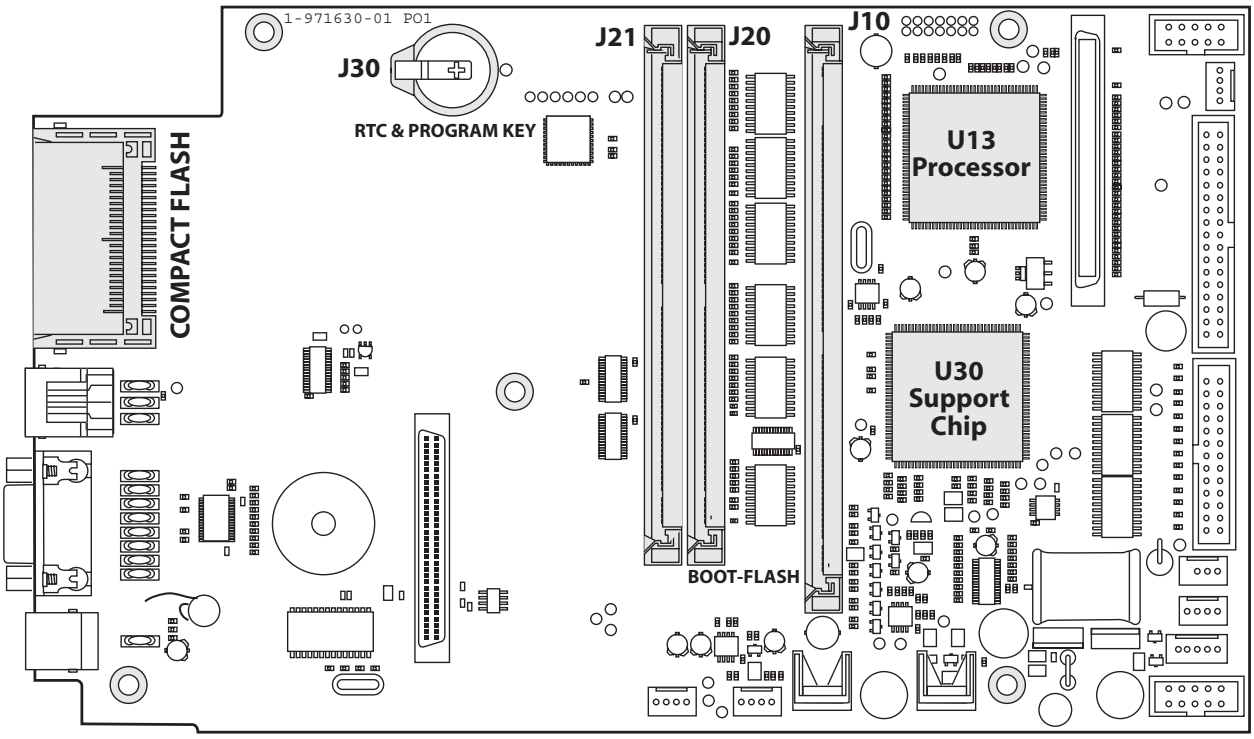
- Processor core
- Thermal printhead driver
- Stepper motor control logic
- Sensor drivers
- Communication, such as UART, USB, etc.
- Flash memory SIMM for the firmware and non-volatile storage
- SDRAM SIMM for working memory
- A/D converter for sensor adjustment, etc.
- Compact Flash memory card expansion
- Expansion bus
- PCI bus (custom)



1-971630-26 CPU board; Block Diagram
(numbers refer to schematics in Chapter 15.7)

15.2 Circuits

Components mentioned in this chapter are marked with gray in the drawing below.



Processor (U13)

The processor is a 32-bit RISC offering about 125 MIPS at the internal clock speed 96MHz. The internal bus speed is twice the external bus speed at 48MHz. The processor has several features, such as integrated SDRAM controller, PCI bridge, DMA, UART, timers, etc.

Support Chip (U30)

The PSA (Processor Support ASIC) is a programmable logic device, which is programmed by the firmware at each startup. It contains most of the printer-specific and other logic functions, such as

- Printhead data and strobe control
- Stepper and DC motor logic
- Sensor interface
- Timers and interrupt control
- Control logic for bar code wand and the electronic key/RTC
- I^2C master
- Beeper signal generation
- Interface to A/D converter, console, finisher, etc.

Flash Memory (J20 and J21)

There are two sockets for Flash SIMMs (marked "BOOT FLASH" and "EXP FLASH"). A SIMM (Single Inline Memory Module) must **always** be fitted in J20 since this bank is the Bootbank. As standard, a single 4MB flash SIMM is fitted. It contains the following sectors:

Device[1]	Size	Type	Used for
–	128K	Boot	Startup
/c	2048K	User file system or Kernel[1]	FP: Customer's programs, files, images IPL: Formats, images, fonts
/c	1856K	User file system	FP: Customer's programs, files, images IPL: Formats, images, fonts
–	32K	TMP area	Media feed info, odometer value, etc.
–	32K	Parameters	Media feed info, odometer value, etc.

[1]/. Devices are used in Fingerprint, but are hidden in IPL.

[2]/. This sector can be used for the kernel or for the file system (/c). If it is used for the file system, the kernel is placed in the file system under the /c/boot directory, which is the normal configuration, enabling the size difference between 2048K and the real kernel size to be used in /c. Refer to the *Intermec Fingerprint v8.xx, Programmer's Reference Manual* for a complete list of files stored in /c and /rom by default. The kernel includes Fingerprint or IPL firmware, bar codes, standard fonts, standard images, Intermec Shell, auxiliary programs, default setup values, and the EasyLAN home page files.

The flash memory retains its content at power off without any battery backup. It consists of sectors that can be erased and written to over and over again. This is done automatically in the background. At power-up, the flash memory is reorganized to avoid fragmentation. Before a sector is erased, its content will be copied to a temporary area as a safety measure if something should go wrong, for example a power failure. For the /c file system in Fingerprint, this area is 64K and is included in the sectors in the table above. For the parameters, it is the 32K TMP sector.

The Boot sector is necessary for Intermec Fingerprint or IPL to start. There is a boot sector in all flash SIMMs at delivery, but the firmware will only accept the boot sector of a SIMM fitted in J20 (marked "BOOT FLASH"). The boot sector is only protected when the flash SIMM is fitted in socket J20 ("BOOT FLASH"). If you move flash SIMMs from one CPU board to another, make sure that the SIMM containing the boot sector is fitted in J20 ("BOOT FLASH") on the other board, or the boot sector will be overwritten.

The Intermec Fingerprint firmware is either stored in the /c file system or in a dedicated area on the boot flash (2MB large). If it is stored in the file system, removing or exchanging an EXP FLASH in J21 may render the printer unstartable. To cure this condition, use a CompactFlash card containing an upgrade file (kernel) to reload the firmware.

As illustrated in the table above, a total nominal capacity of 3904K is used for the /c file system (MIFS, or FOS) and fonts. In Fingerprint, practically, around 2MB are available to the user (about 200-400K less if the kernel is in the dedicated area).

Exactly which fonts, images, files, and programs are stored in the Fingerprint file system may vary between customers and applications.

The parameters sectors store the PFSVARs (see SETPFSVAR Fingerprint statement), odometer values, and a few other "invisible" files with data, that are required for the printer to start up with the same settings as when it was shut off, for example information on the position of label gaps in relation to the LSS.

The printer's permanent memory can be expanded by fitting a second 4MB or 8MB flash memory SIMMs in sockets J21. 4MB and 8MB flash SIMMs can be mixed at will. Flash SIMMs are custom-made and can only be ordered from Intermec.

Note: The first time the printer is started with a SIMM in J21 ("EXP FLASH"), the memory is not increased to enable cloning the first SIMM. The expansion is not done until the second time the printer is started.

Flash Memory Available to the User

J20 (Boot)	J21 (Exp)	J20 (Boot)	J21 (Exp)	SUM
4MB SIMM	–	1.8MB	–	1.8MB
4MB SIMM	4MB SIMM	1.8MB	4MB	5.8MB
4MB SIMM	8MB SIMM	1.8MB	8MB	9.8MB
8MB SIMM	–	5.8MB	–	5.8MB
8MB SIMM	4MB SIMM	5.8MB	4MB	9.8MB
8MB SIMM	8MB SIMM	5.8MB	8MB	13.8MB

SDRAM Memory (J10)

The SDRAM memory (Synchronous Dynamic Random Access Memory) is the printer's temporary memory (Fingerprint device "tmp:"). It will lose its content when the power is switched off or at a power failure. Thus, it should only be used for data that can easily be recreated or that are only relevant for one power-on cycle. It is much faster than the flash memory. Therefore, at startup the kernel is copied from the Flash memory to the SDRAM, where the various instructions are executed.

One SDRAM SIMM (standard size 16MB) must always be installed in socket J10 (SDRAM0-1).

The SDRAM is also used for the font cache and various buffers. The remainder is used for the two print image buffers where the bitmap patterns are stored prior to printing. One buffer is used for the label that is being printed, while the other receives the bitmap for next label as the Intermec Fingerprint instructions are processed. By switching between the buffers, batch printing without stopping between labels can be achieved.

The size of the buffers depends on two factors:

- Number of physical dots on the printhead.
- Present label length setup value in dots.

Calculate the buffer size according to this formula:
(No. of dots / 8 + 4) × (Media length in dots) = Buffer size in bytes
(Buffer size in bytes) / 1024 = Buffer size in kbytes
Buffer size in kbytes × 2 = Memory requirement in kbytes

Example:
The number of dots on the 8 dots/mm printhead of an EasyCoder PX4i is 896.
"Media; Length" is set to 1500 dots (= 187.5 mm/7.38 inches)
[[(896 / 8) + 4) × (1500)] / 1024] × 2 = 340 kbyte total

Regardless of memory size there is an absolute print length limit of 32,767 dots (4,095 mm/161.2 inches).

Electronic Key Circuit (J30), Fingerprint-only option

The optional electronic key circuit is an iButton which contains a real-time clock. It has a built-in battery backup with a life of at least 10 years. When the printer is on, the circuit is power-supplied via the CPU board and will not consume any power from the battery. The circuit also contains 4Kbits (500 bytes) of battery backed-up memory for the devices "lock:" and "storage:".

The Electronic Key Circuit (J30) contains an integrated lithium battery. Replace only with original Electronic Key Circuits from Intermec. Dispose of used Electronic Key Circuits according to local regulations for lithium batteries.

Since the communication between the RISC processor and the electronic key circuit is comparatively slow, the content of the key circuit is copied to SDRAM at startup and used from there. At power off, the content is read back to the key circuit, provided there is time enough. Thus, there is a small risk that new data may be lost, before it has been saved back to the electronic key circuit. The original data in the electronic key circuit will not be damaged, if the read-back process should fail.

Memory Card Adapter (J22)

The CPU board has a built-in memory card adapter which can use standard Type I CompactFlash memory cards with a size of 8MB to 1GB (thickness 3.3 mm/0.13 in.). It is **not** suited for other types of memory or I/O cards! Cards marked “CF+” and Type II cards (thickness 5.0 mm/0.20 in.) cannot be used.

In Fingerprint, CompactFlash cards can be used to expand the printer’s memory (device "card1:"). IPL does not support CompactFlash cards as a means of expanding the memory.

Memory cards are only detected by the firmware at startup and must thus be inserted in the memory card adapter before the power is switched on or the printer is rebooted. Memory cards must only be emoved when the power is off.

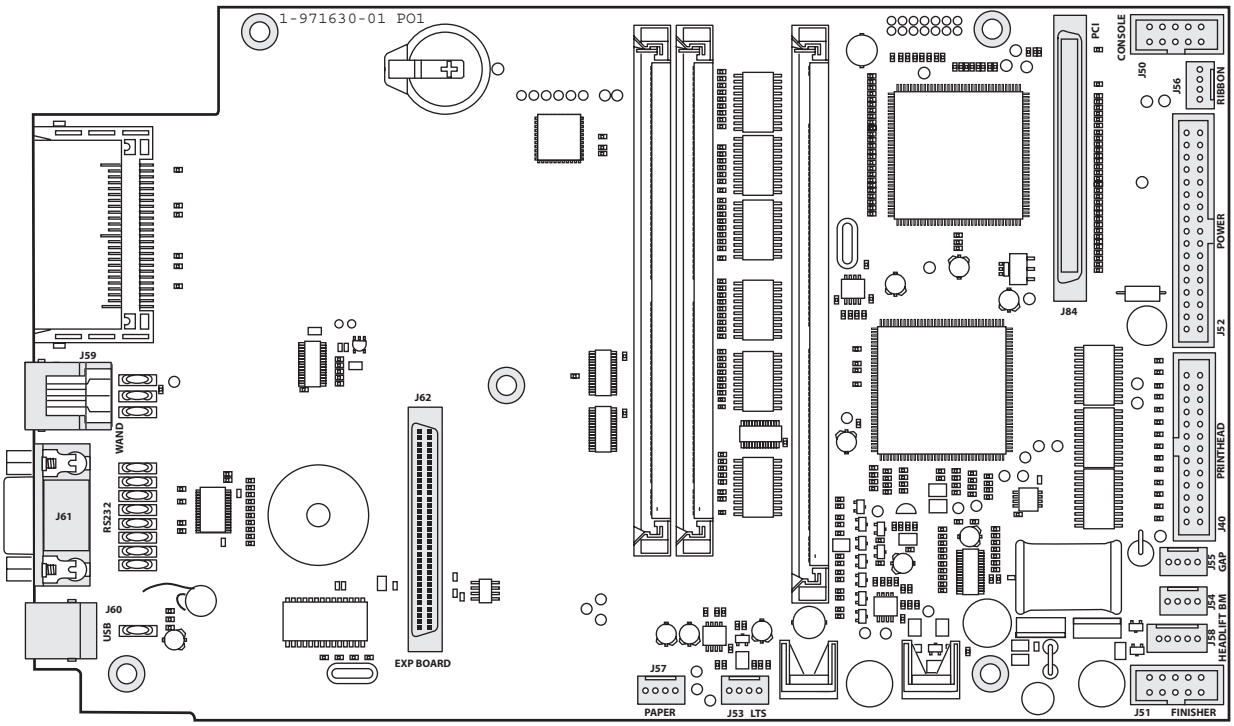
Preprogrammed CompactFlash Memory Cards

There are four types of preprogrammed CompactFlash memory cards from Intermec.

- ***Font Cards***
  Font stored in font cards can only be used while the card is present in the printer’s memory card adapter.
- ***Font Install Cards (Fingerprint only)***
  Install additional fonts in the printer’s memory. These fonts can be used without the card being present.
- ***Firmware Cards***
  Install a new firmware kernel in the printer including standard fonts. Used for upgrading the firmware or switching between Fingerprint and IPL.
- ***Configuration Cards***
  Configures a CPU board for the type of printer in which it is installed, see Chapter 15.8, or changes the printer’s EasyLAN setup.

15.3 Connections

The following connectors on the CPU board are used in the printer for communication with various devices and sensors.



Left side (from top down)

J59 Bar Code Wand (not supported by IPL)

J61 RS-232

J60 USB

Bottom (from left to right)

J62 Expansion board connection (optional interface boards)

J57 Paper Sensor

J53 Label Taken Sensor (option)

J51 Finisher (not used)

Top (from left to right)

J84 PCI (EasyLAN interface, option)

J50 Console (keyboard, display, and print or feed/pause button)

Right side (from top down)

J56 Ribbon Low sensor

J52 Power from driver board

J40 Data to printhead

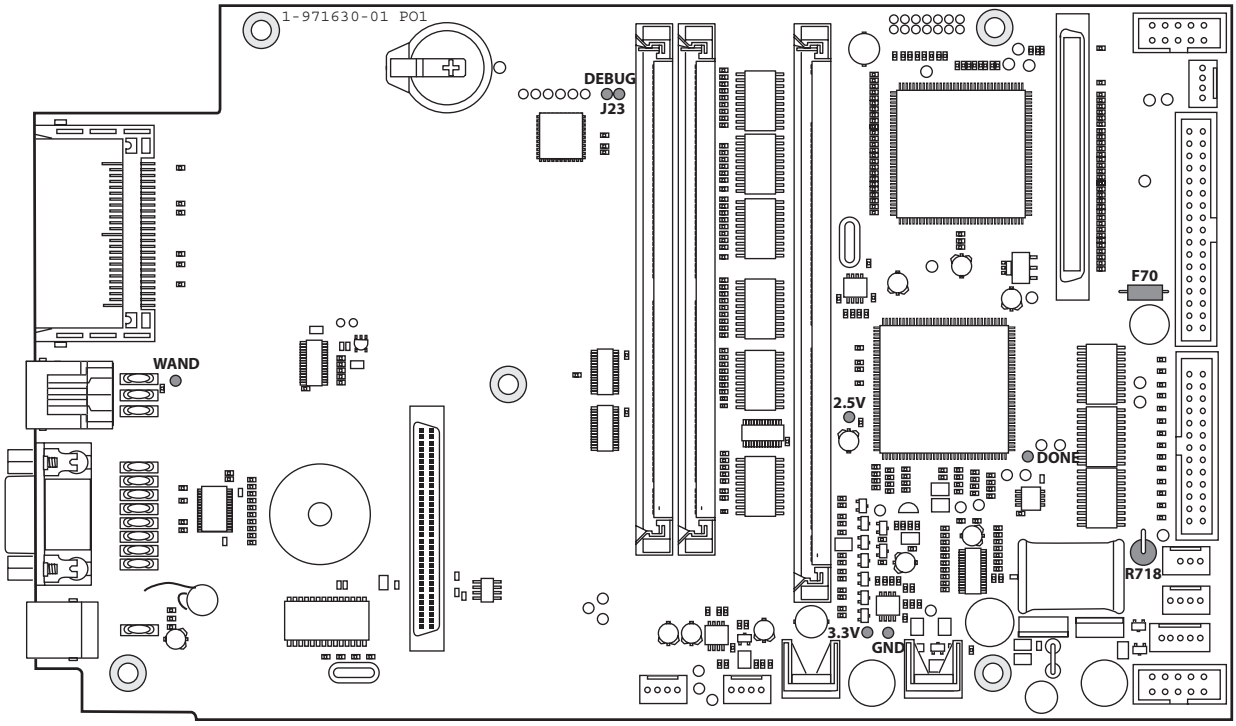
J55 LSS (gap)

J54 LSS (black mark)

J58 Headlift sensor

15.4 Test Points

The CPU board is provided with many test points. Only those of immediate interest to the field service technician are shown below. If further testing or servicing is required, exchange the CPU board and return the faulty board to a service center.



Test Points

If available, use an oscilloscope to measure the various voltages. When using for example a multimeter, a fluttering value may indicate an erroneous voltage.

GND Ground

2.5V 2.5V –> GND (max ± 0.2V)

3.3V 3.3V –> GND (max ± 0.2V)

5.0V R718 –> GND (max ± 0.2V)

24V F70 left side –> GND (allowed deviation ± 2V)
(If no voltage on the left side, check the right side. If voltage there, fuse is blown; else cable, driver board, or PSU trouble.)

DONE High level = U30 programmed, see Chapter 15.5

DEBUG Startup check, see Chapter 15.5

WAND Use an oscilloscope. OK if there is a pulse train when the wand is reading a bar code.

15.5 Startup

The prerequisite for the printer to start is that a flash memory SIMM with a boot sector is fitted in J20. A SDRAM SIMM must also be installed in J10.

At power up, the printer starts executing code in the boot sector and one of the following sequences will be performed:

1. A Compact Flash card with a firmware is recognized.

- The firmware will be copied from the memory card to the internal SDRAM.
- The processor will start to execute code from SDRAM.
- The firmware on the memory card will be copied to the internal flash memory.

2. A valid firmware is recognized in the internal flash memory.

- The firmware will be copied to SDRAM and the processor will start execute code from SDRAM.

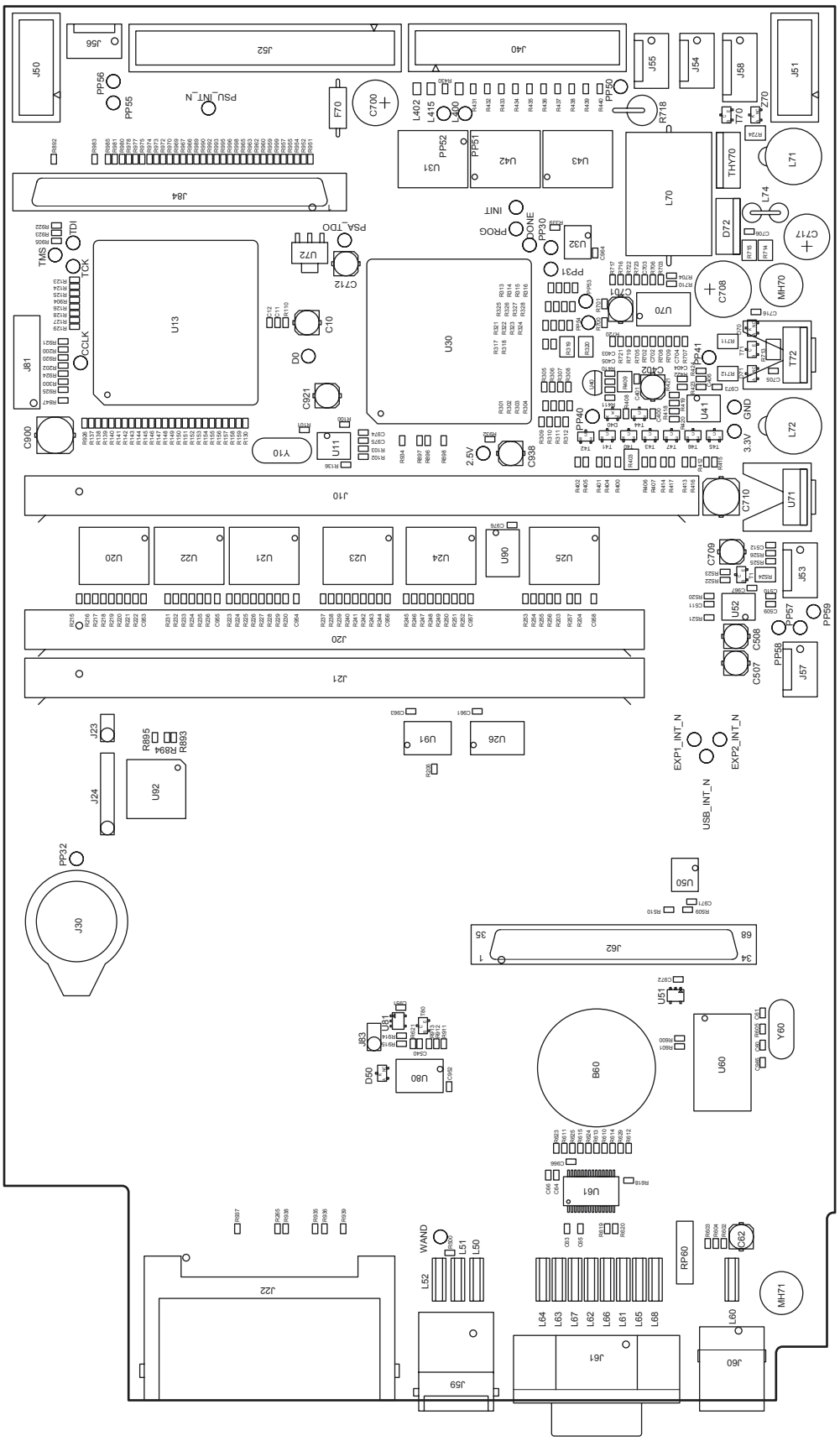
If the printer is fitted with an EasyLAN interface, there are also facilities for updating the firmware from the printer's home page.

After the initial boot sequence is performed, the number of steps will be taken before the printer starts, which includes programming the support chip (U30). The startup procedure can be followed on the printer's display.

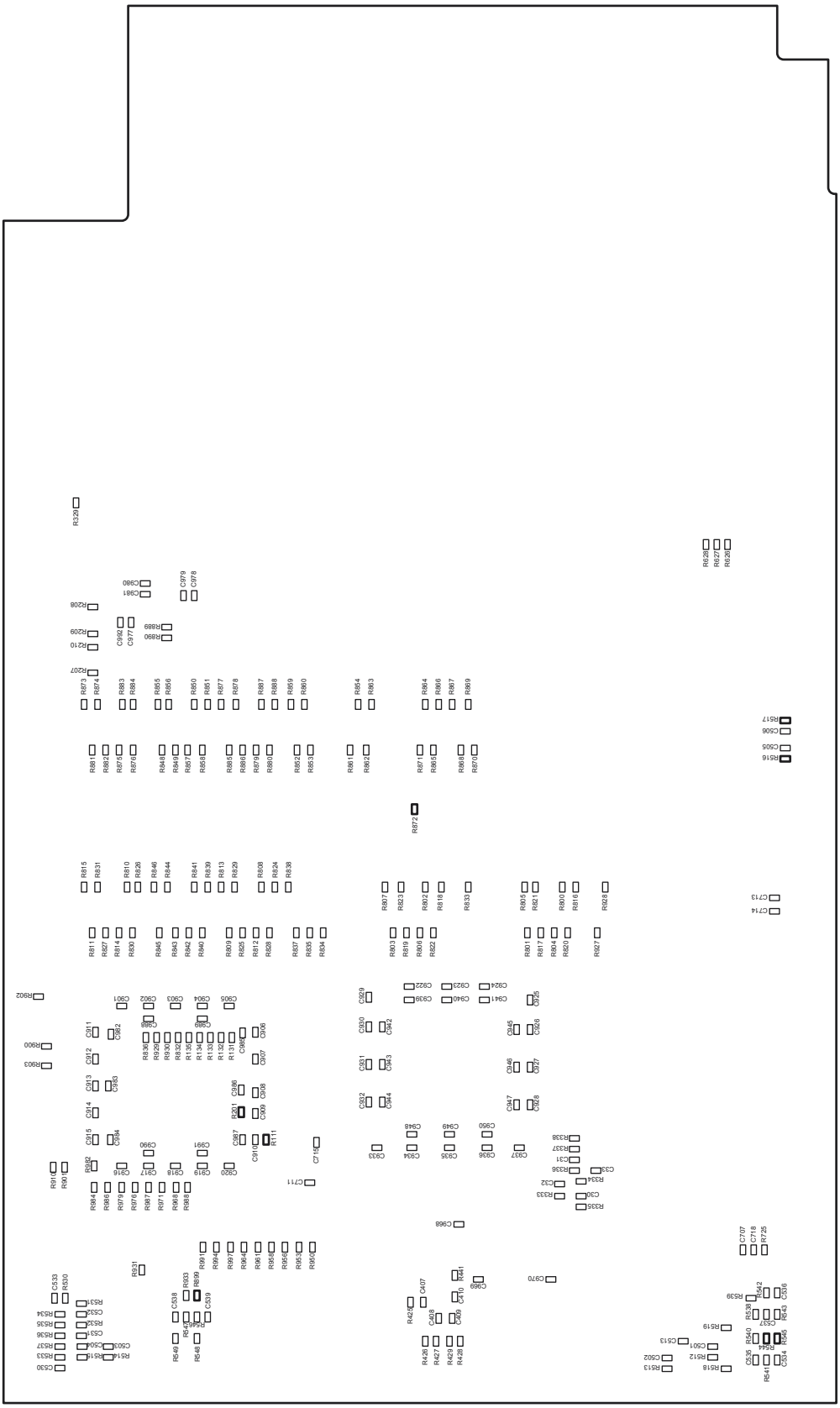
You can also follow the startup from the host provided a strap is temporarily fitted at J23 (DEBUG) on the CPU board. Connection between printer and host should use the default serial communication setup (9600 baud, 8 bits, parity none, 1 stop bit) on the standard serial port "uart1:". For each of the steps, either “OK” or “Fail” is returned on "uart1:". In addition, some other useful information is also returned.

Refer to Appendix B for information on how to upgrade the firmware.

15.6 Components

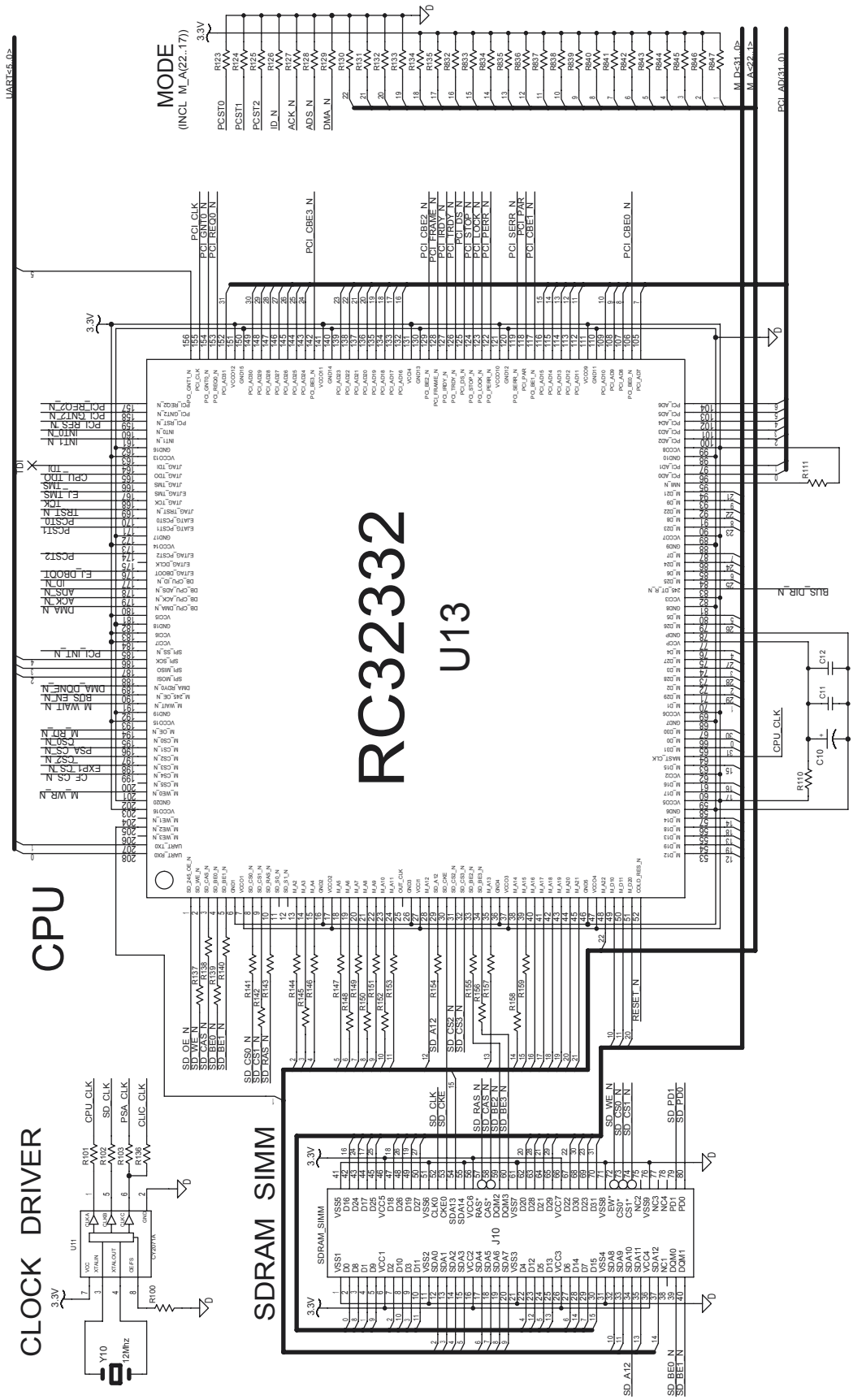


1-971630-51 CPU Board; Component Side

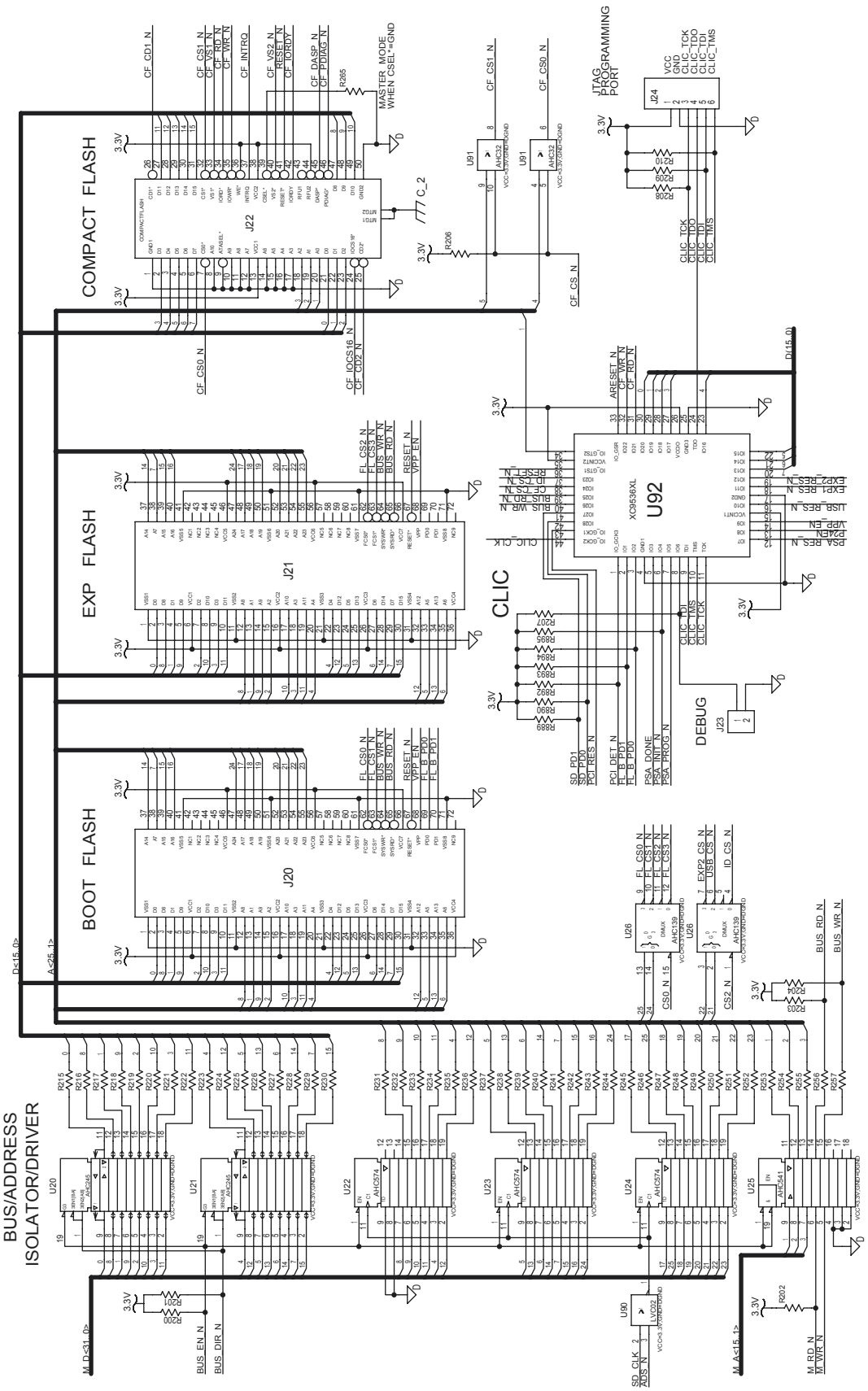


1-971630-51 CPU Board; Soldering Side

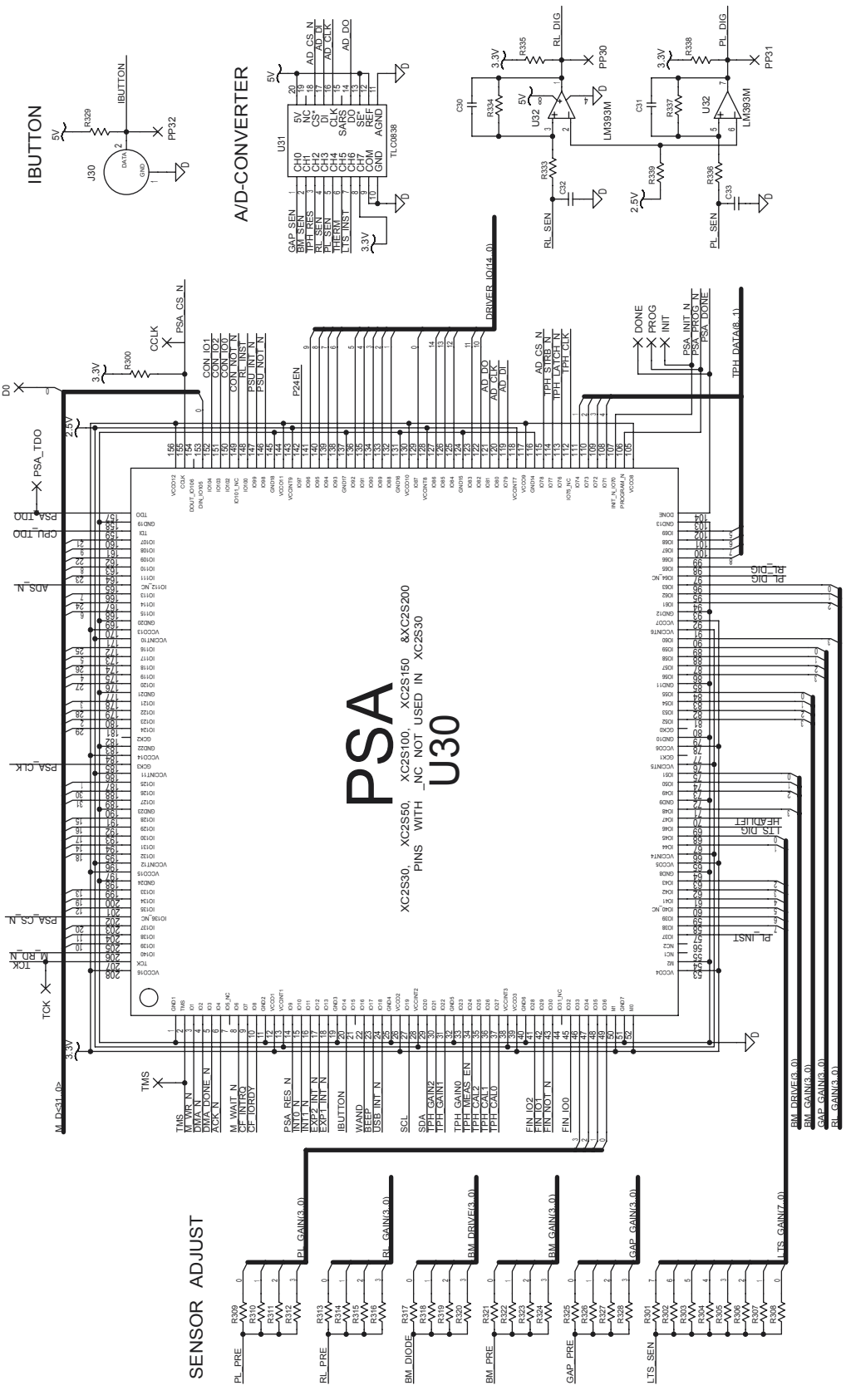
15.7 Schematics



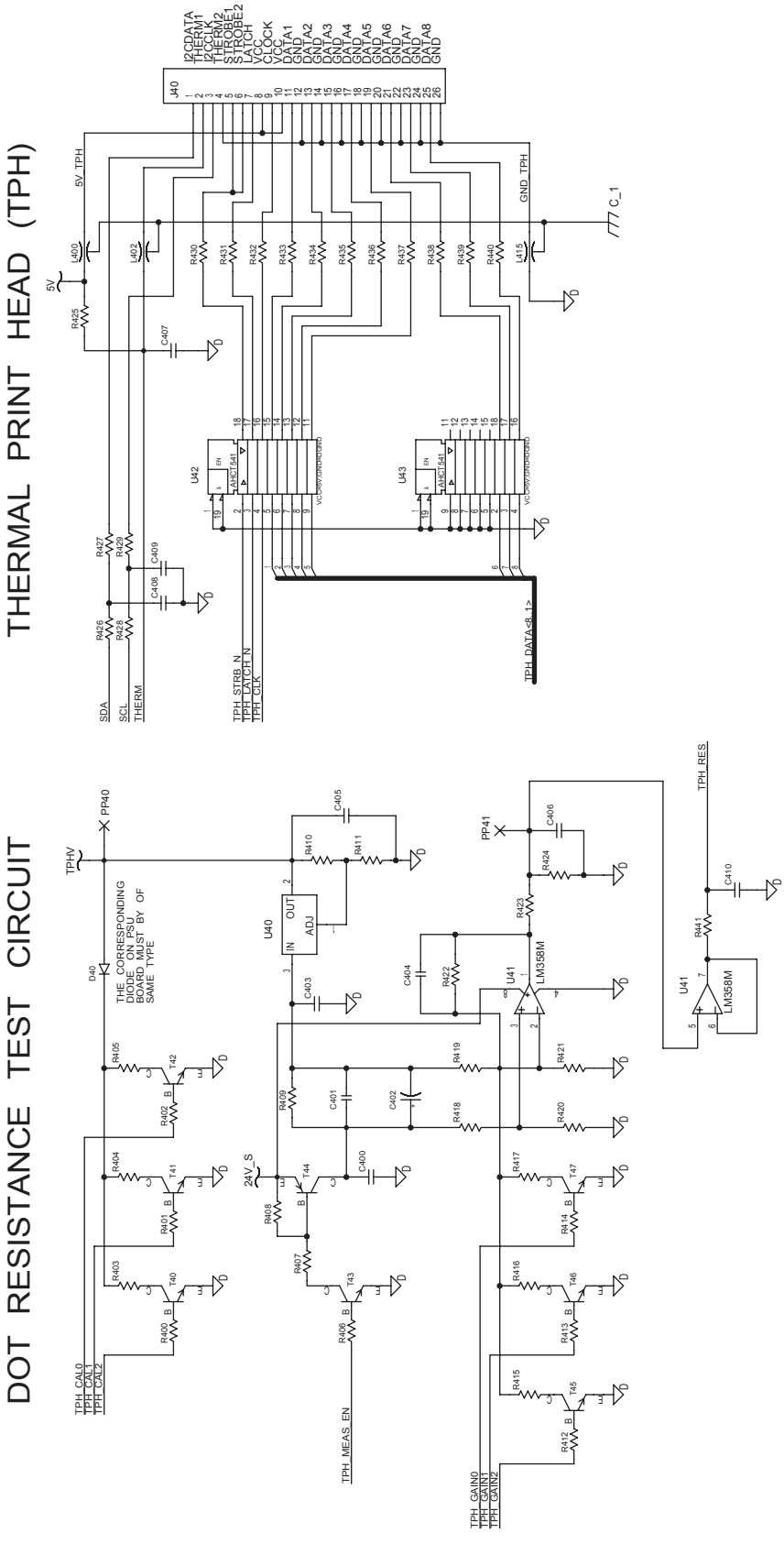
1-971630-26 CPU Board; Core (Schematics #1)



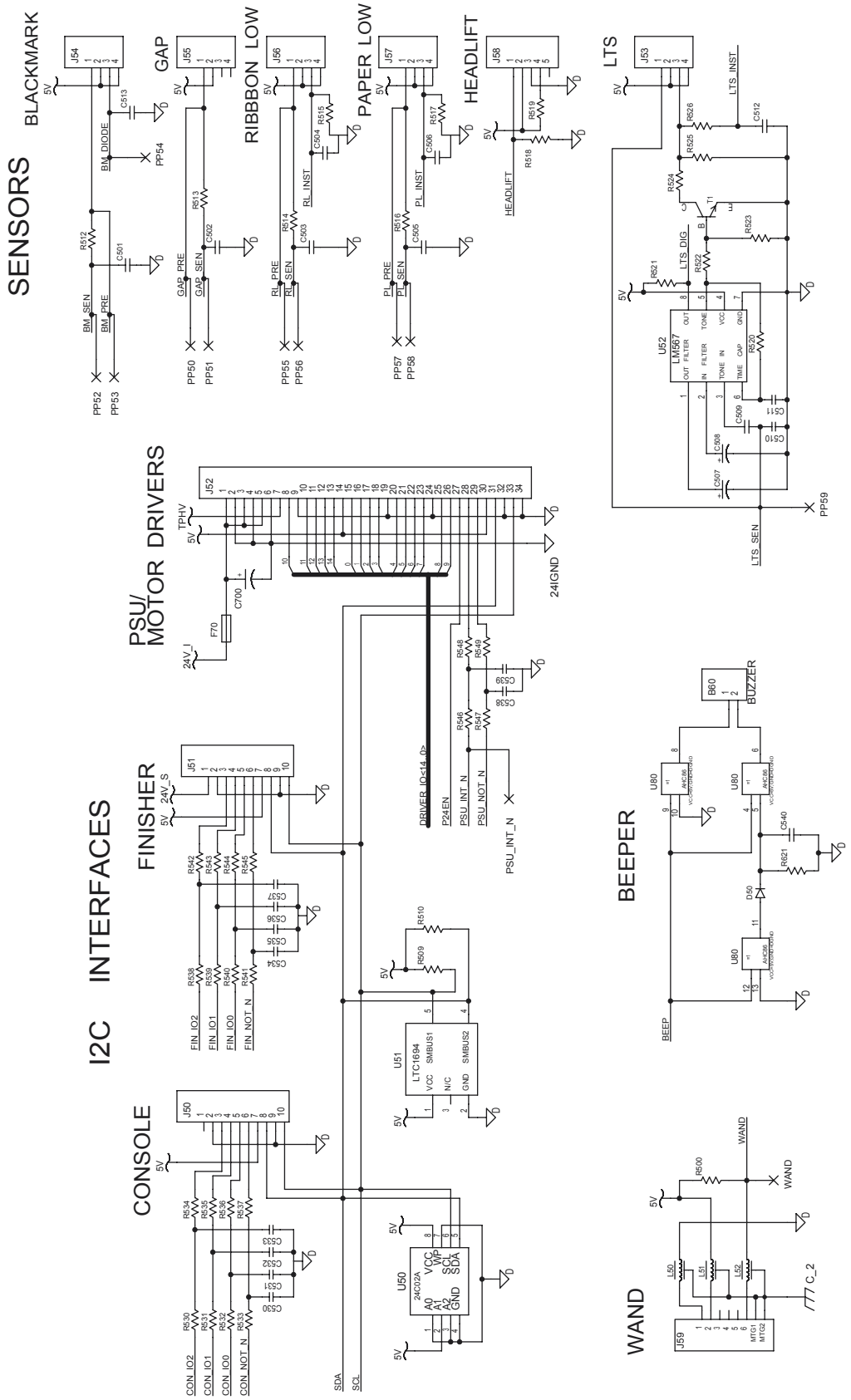
1-971630-26 CPU Board; Flash Interfaces (Schematics #2)



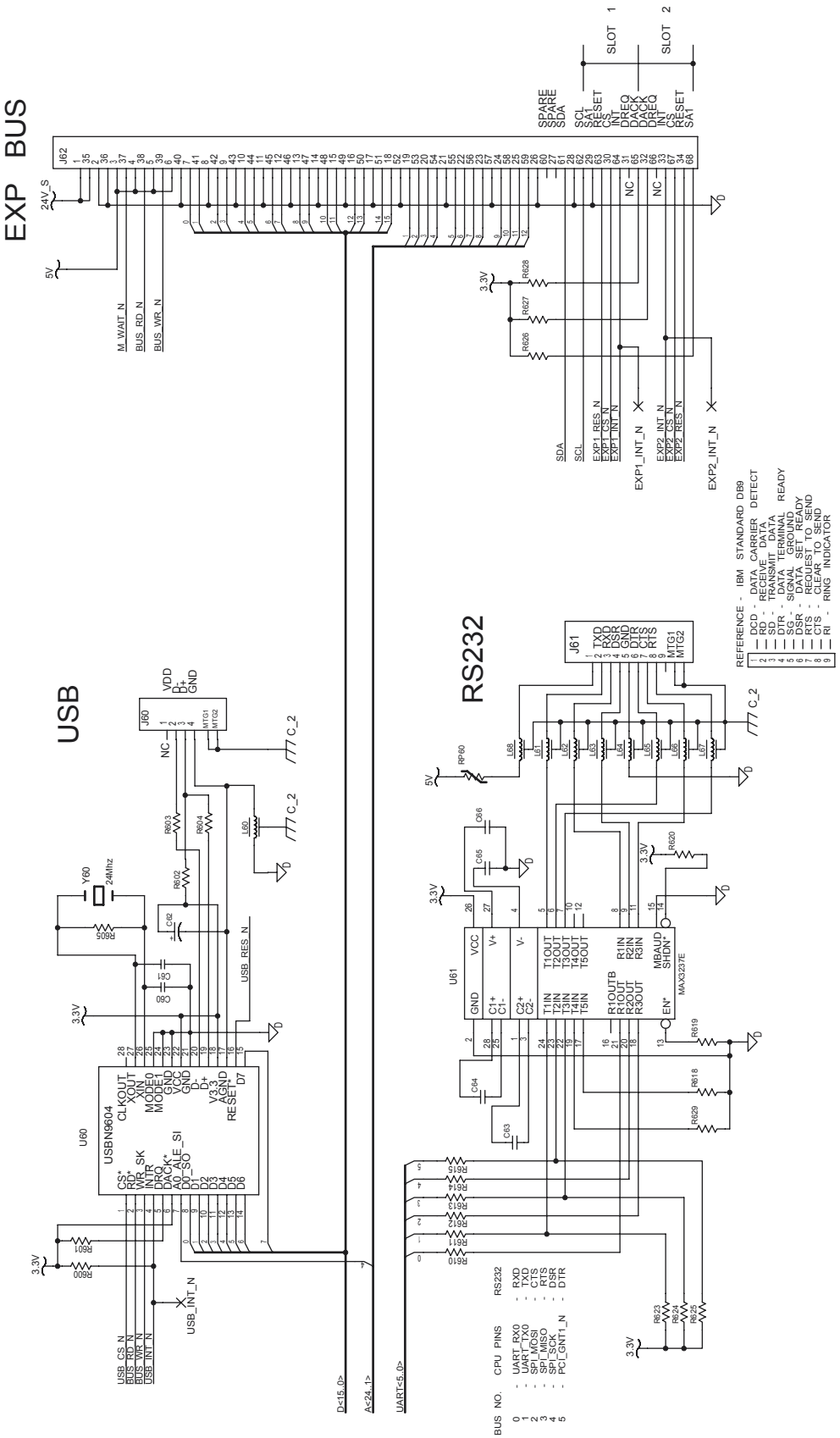
1-971630-26 CPU Board; PSA (Schematics #3)



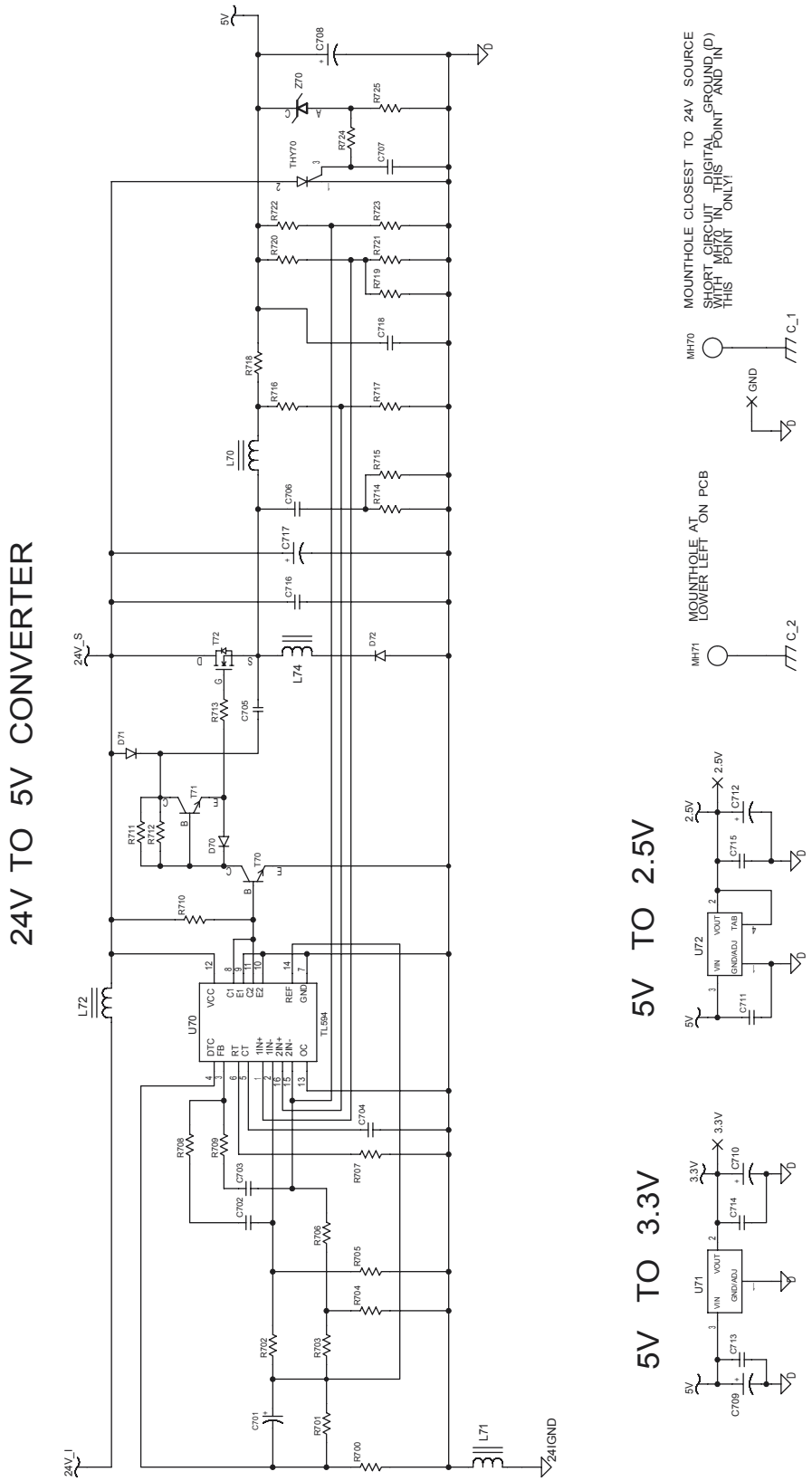
1-971630-26 CPU Board; Thermal Printhead Interface (Schematics #4)



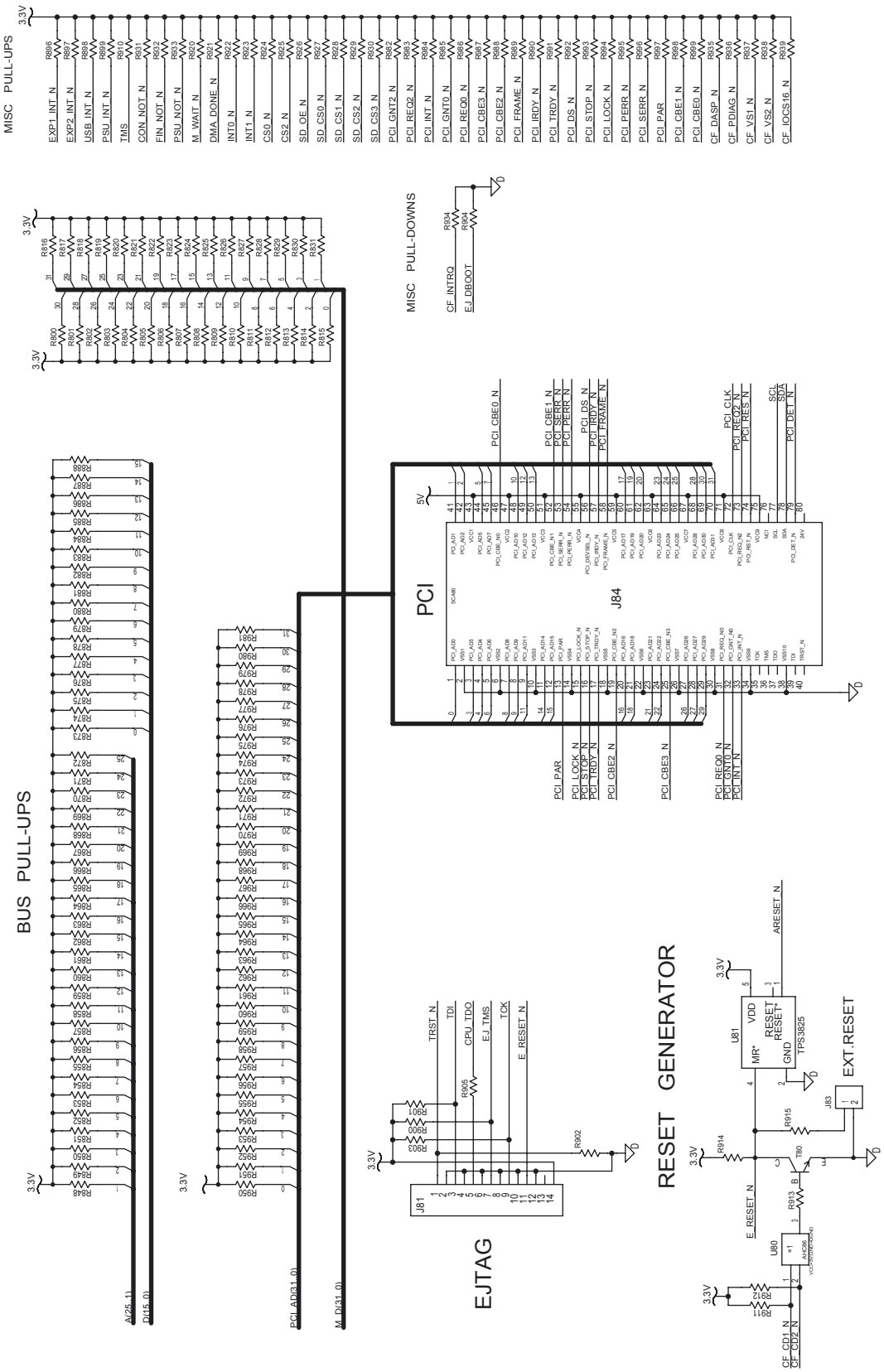
1-971630-26 CPU Board; Internal Interfaces (Schematics #5)



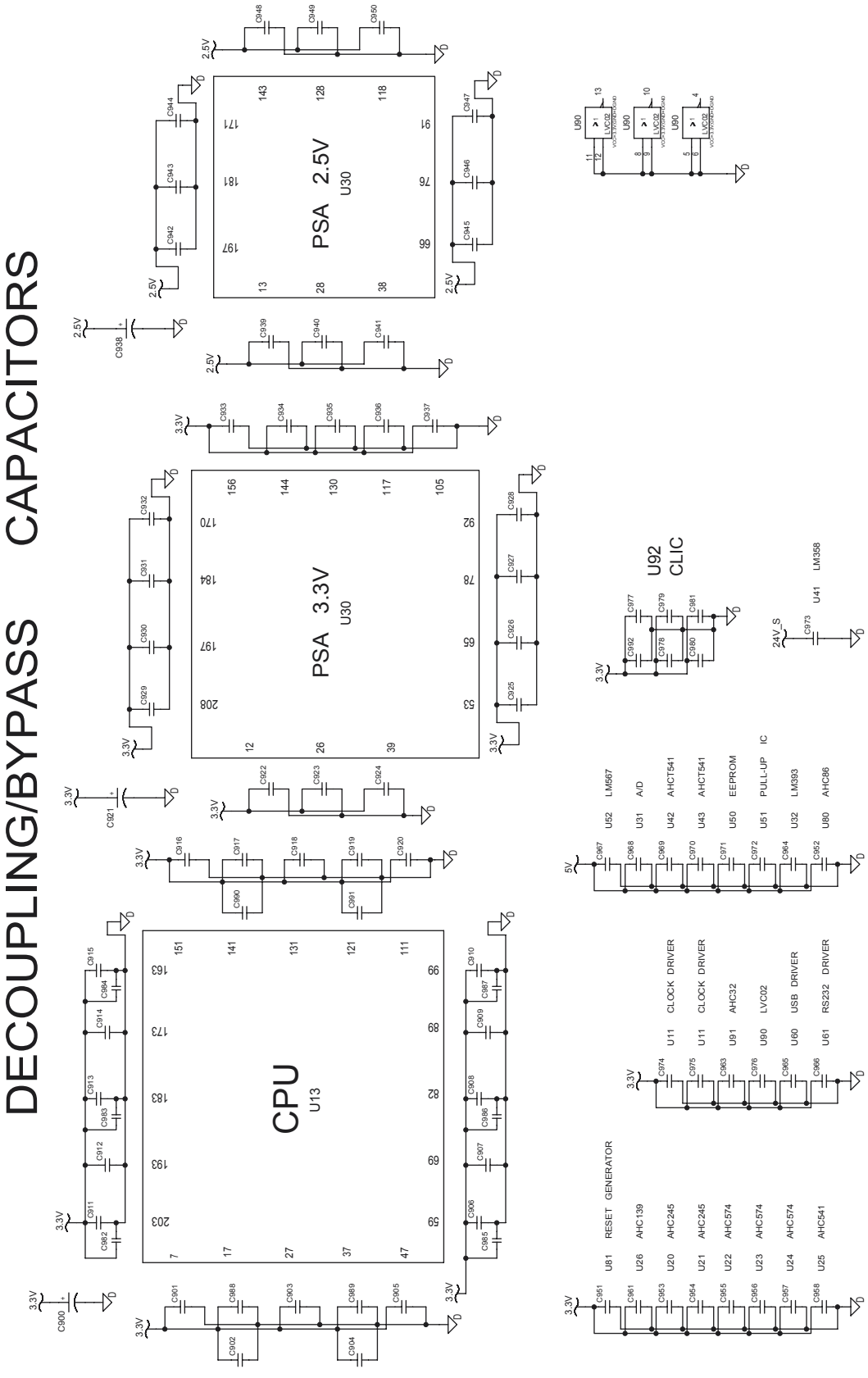
1-971630-26 CPU Board; External Interfaces (Schematics #6)



1-971630-26 CPU Board; Power (Schematics #7)



1-971630-26 CPU Board; Pull-ups (Schematics #8)



1-971630-26 CPU Board; Bypass/Decoupling (Schematics #9)

15.8 Replacing the CPU board

Replace the CPU board this way:

- Switch off the power.
- Remove the left-hand cover as described in Chapter 3.3.
- Remove any optional interface boards.
- Disconnect all cables from the CPU board.
- Remove the four #T20 Torx screws and the hexagonal spacer that hold the CPU board to the plate that covers the power supply unit.
- Lift out the CPU board and remove all SIMMs and any real time clock. Take precautions against electrostatic discharges!
- Fit the SIMMs and possibly the real-time clock on the new board and install it in reverse order.

The same CPU-board can be used for a range of EasyCoder printers. However, the firmware can not detect in which type of printer the CPU board is installed. All replacement CPU boards are preprogrammed for the EasyCoder PF2/4i-series printers, which means that replacement CPU boards always must be reconfigured after being installed in an EasyCoder PX4i or PX6i printer.

If the printer feeds out labels in a peculiar way, the CPU board may be configured for the wrong type of printer (there is a difference in the distance between the dot line and the LSS position). You can easily check if the CPU board is correctly configured by printing the "Hardware Info" or "HW" test label in the Setup Mode or sending the Fingerprint instruction `PRINT VERSION$(1)`.

If the CPU board needs to be reconfigured, do like this:

- Switch off the power.
- Insert a configuration card in the memory card slot.
- Switch on the power.
- Using the same method as in the Setup Mode, select the correct printer type from the menus shown in the display window.
- Switch off the power.
- Remove the card.
- Switch on the power again and check.

16 Interfaces

This chapter describes the various communication interfaces for the EasyCoder PX4i and PX6i printers. However, some interfaces are not supported by the Intermec Programming Language (IPL) even though the connectors are present.

The chapter describes three categories:

- Standard built-in interfaces
  - RS-232 interface
  - USB interface
  - Bar code wand interface (Fingerprint only)
- Optional interface boards
  - Serial/Industrial interface board (Fingerprint only)
  - Double Serial interface board (Fingerprint only)
  - IEEE 1284 Parallel interface board
- EasyLAN interface boards
  - EasyLAN Ethernet interface
  - EasyLAN Wireless interface

The EasyCoder PX4i and PX6i can—in addition to the standard built-in interfaces—also be fitted with one or two optional interface boards and one EasyLAN interface board.

Note: Device designations, such as "uart1:", "usb1:", or "net1:", only apply to Fingerprint, not to IPL.

16.1 Introduction

In Fingerprint, "auto" is by default the standard IN and OUT communication port, that is, the printer will scan all communication channels for incoming data. To select a specific communication port as standard IN and/or standard OUT port, use an Intermec Fingerprint SETSTDIO statement (see *Intermec Fingerprint v8.xx, Programmer's Reference Manual).* This gives better performance. Note that many application programs, for example Intermec Shell, contain instructions that select the correct standard I/O for the application in question. The settings for the selected communication channel will appear in the display window when pressing the <info> key on the printer's keyboard.

In IPL, all communication channels are always scanned for incoming data and the firmware automatically switches to the same channel for output too. The settings for the active communication channel will appear in the display window when pressing the <info> key on the printer's keyboard.

The standard interfaces (RS-232, USB, and Wand) are fitted directly on the rear of the CPU board with connectors protruding through slots in the printer's rear plate. Wand is not supported by IPL.

All optional interface boards, except the EasyLAN boards, are fitted in a slot on the printer's standard rear plate and connected to the CPU board via a flat cable. If no interface board is fitted, the slot is closed by two cover plates.

The EasyLAN boards are fitted directly to the front of the CPU board and connected by wire to a connector or antenna. There are provisions for both the wired EasyLAN connector and the EasyLAN wireless antenna on the standard rear plate. All rear plates have slots for two interface boards as well as for the standard interface connectors.

16.2 RS-232 Serial Communication Port ("uart1:")

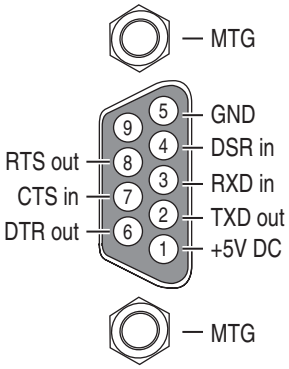
The EasyCoder PX4i and PX6i printers are always fitted with one RS-232 communication port. In Intermec Fingerprint, this port is designated "uart1:" (uart = **U**niversal **A**synchronous **R**eceiver and **T**ransmitter.) The circuitry is fitted on the CPU board (see Chapter 15) and has a fixed set of signals in a DB-9pin female connector which protrudes through a slot in the printer's rear plate.

Protocol

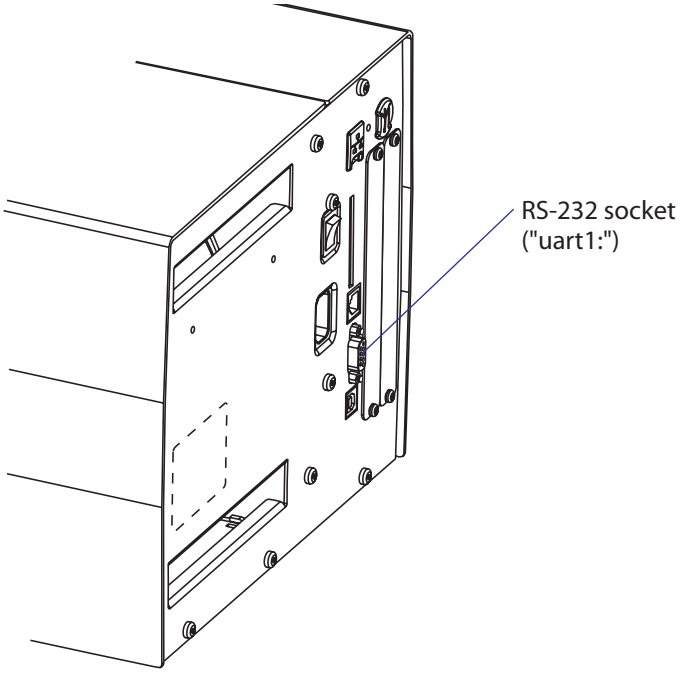
Default setup

Baud rate:	9600
Char length:	8 bits
Parity:	None
Stop bits:	1
RTS/CTS:	Disabled
ENQ/ACK:	Disabled
XON/XOFF:	Disabled in both directions
New line:	CR/LF

Signals on serial port ("uart1:")

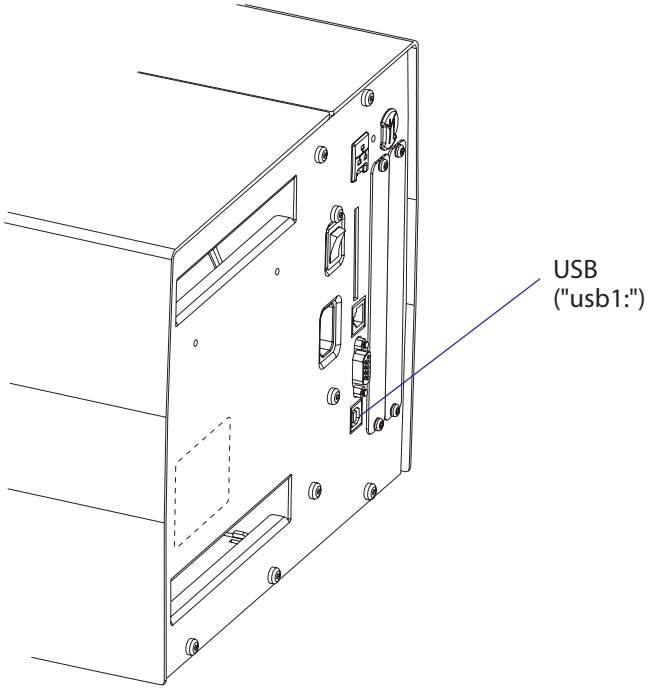


DB-9 socket	Signal	Meaning
1		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected)
2	TXD	Transmit data
3	RXD	Receive data
4	DSR	Data set ready
5	GND	Ground
6	DTR	Data terminal ready
7	CTS	Clear to send
8	RTS	Request to send
9	–	Not used



16.3 USB Interface ("usb1:")

The EasyCoder PX4i and PX6i printers are, as standard, fitted with a USB (**U**niversal **S**erial **B**us) interface connector on the CPU board.

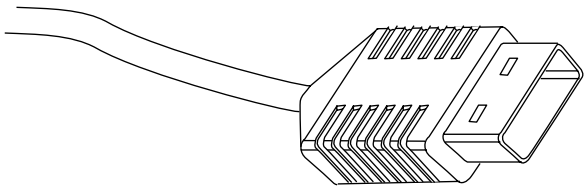


The supported USB version is USB 1.1 (also called “USB 2.0 full speed”).

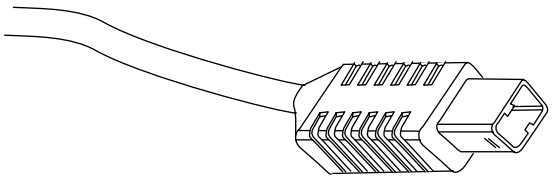
To use the USB interface for printing from a PC, you need a USB-compatible Intermec InterDriver installed in your PC. The printer works only as a “slave”, that is, the USB interface is not suitable for programming. Unlike for example RS-232, there is no communication setup in regard of baud rate, parity, handshaking, etc. Select the USB interface as standard IN/OUT channel in Intermec Fingerprint, the Intermec Direct Protocol, or Intermec Shell as device "usb1:" (communication channel 6).

The EasyCoder PX4i and PX6i printers are so called “self-powered devices.” We recommend that you only connect one printer to each USB port on the host, either directly or via a hub. Other devices, like a keyboard and a mouse, can be connected to the same hub. If you need to connect more than one Intermec USB printer to a host, you should use different USB ports.

Using a USB Class A/B cable, connect the Class A plug to the PC or hub and the Class B plug to the printer.



USB Class A connector. Connect to PC or hub.



USB Class B connector. Connect to USB port on printer's rear plate.

16.4 Bar Code Wand Interface (wand:) (Fingerprint only)

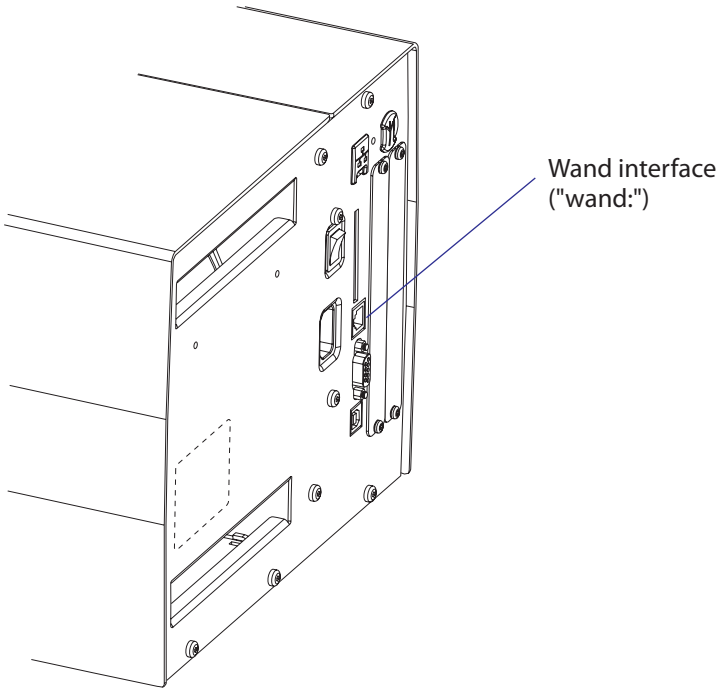
The printer has a socket (J59) on the CPU board for connecting a bar code wand or scanner. The socket is accessible through a slot in the printer's rear plate. The bar code wand interface is not supported by IPL.

If the Code 128 bar code that contains the character FNC3 is read via this port, the data will be treated as a setup string and will change the printer's setup accordingly. A setup bar code may contain a single parameter or a combination of up to 3 or 4 setup parameters. Refer to the *EasySet Bar Code Wand Setup* manual for more information on how to produce setup bar codes.

The printer will acknowledge that a bar code has been successfully read by emitting a short beep signal.

If no FNC3 character is found in the bar code, the data will be stored in a buffer which could be read by specifying the "wand:" device. The buffer is small, so it is recommended to use short bar code data (max. 36 characters) and read the buffer regularly to avoid overflow.

For more demanding applications or for reading bar codes other than Code 128, choose a regular bar code scanner from Intermec's wide product range and connect it to a serial port.



16.5 Installing an Optional Interface Board

To install an optional interface board, proceed according to the step-by-step instructions below.

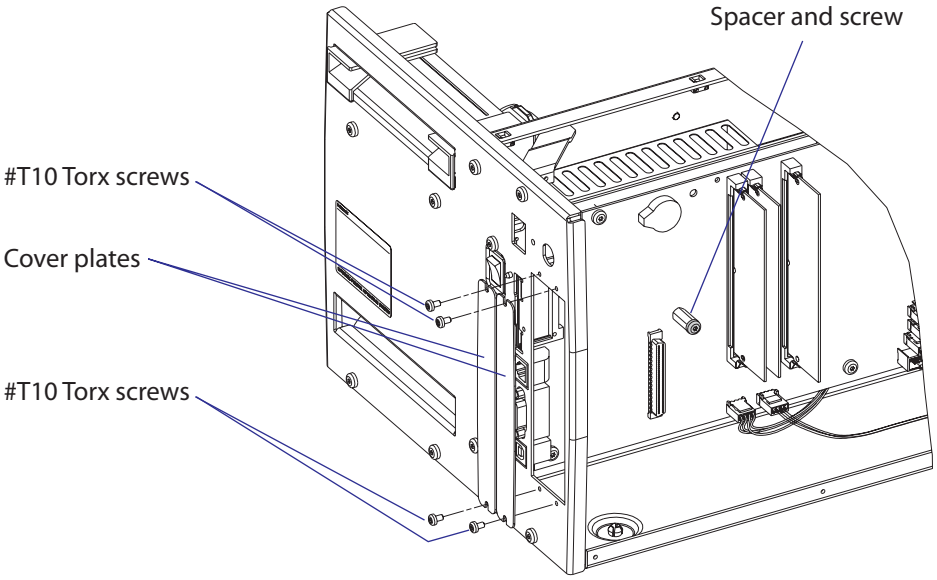
Note: This chapter does not apply to installation of any type of EasyLAN interface board, which instead is described in Chapter 16.9.

- Open the electronics compartment, see Chapter 3.3.

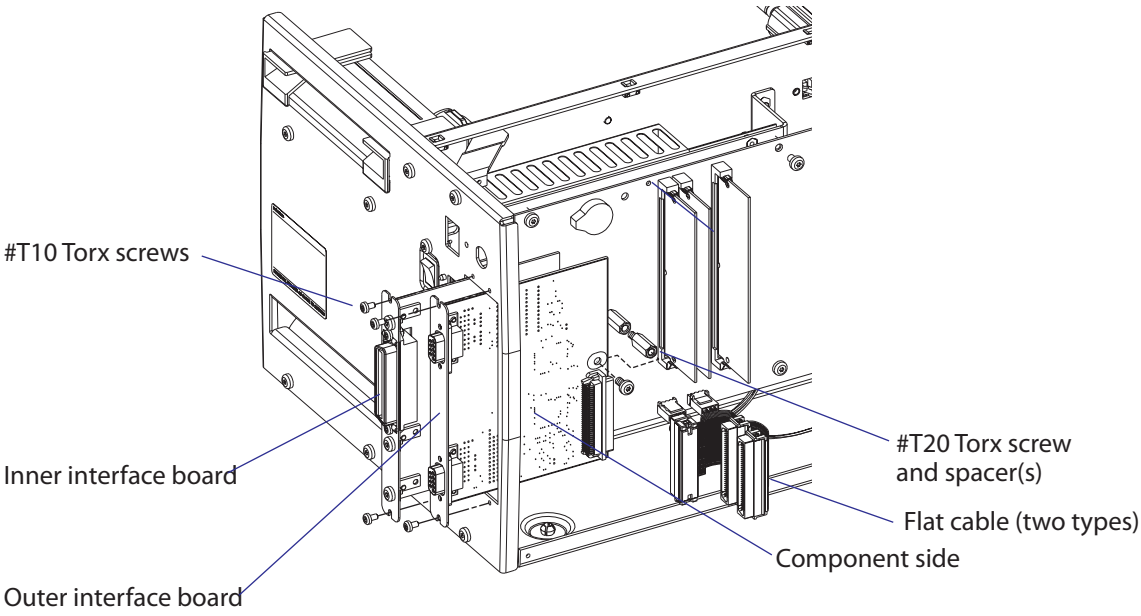
Warning

Switch off the power and disconnect the power cord. The electronics compartment contains high voltage components and wires. Do not open the electronics compartment before the printer is safely disconnected from any AC supply.

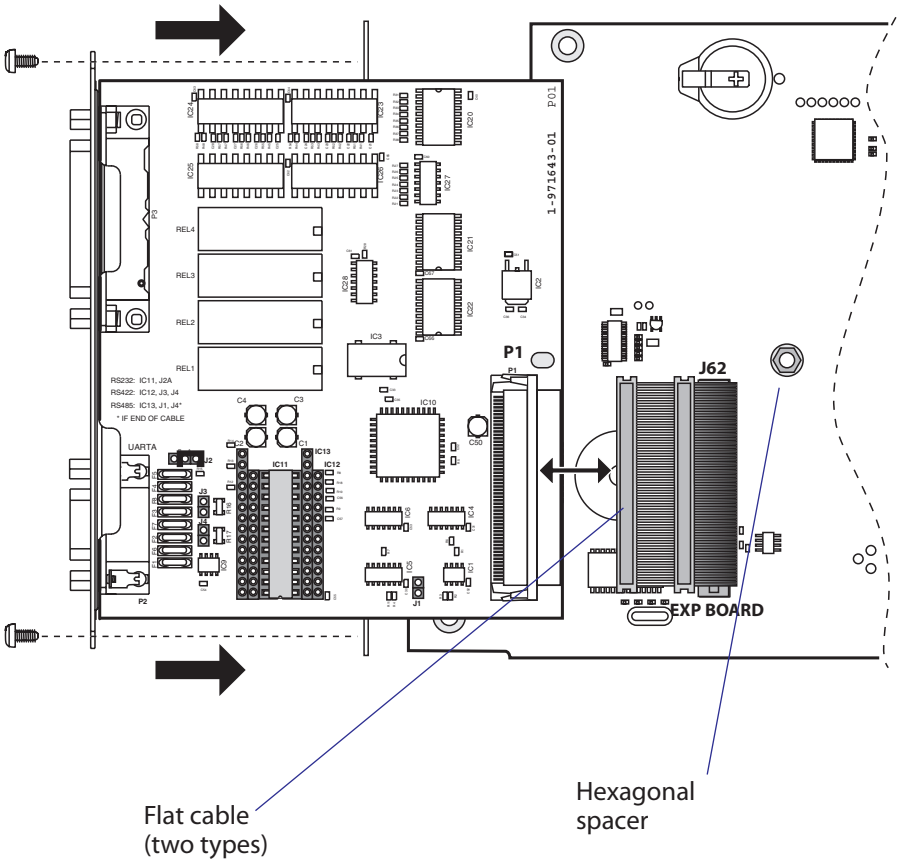
- Remove the one or two cover plates depending on how many interface boards you are going to install. Each plate is held by two #T10 Torx screws. Always start installation at the innermost position.



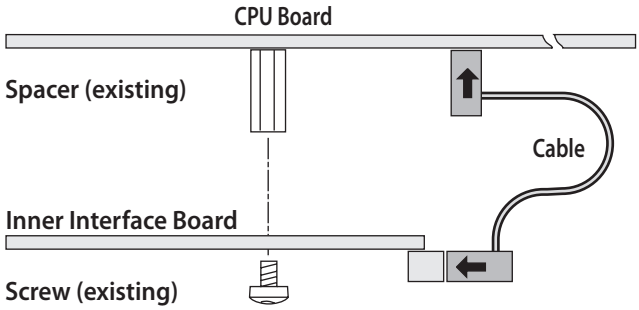
- Save the cover plate(s) for possible later use. Keep the screws.
- Remove the #T20 Torx screw fitted on the hexagonal spacer at the center of the CPU board. Keep the screw.
- If necessary, reconfigure the interface board by fitting or removing circuits and straps according to the descriptions of each board later in this chapter.
- Attach the flat cable included in the kit to connector J62 (marked “EXP BOARD”) on the CPU board (see illustration on the next page).
- Insert the interface board with the component side facing right, as seen from behind.

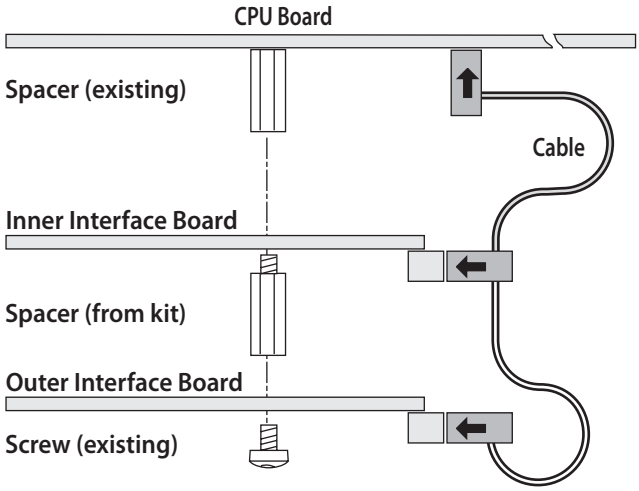


- Installation of one board: Attach the interface board in the innermost slot in the printer's rear plate using the two screws left over when you removed the original cover plate. Using the #T20 Torx screw you previously removed, attach the interface board to the hexagonal spacer at the center of the CPU board.
- Installations of two boards: First install the inner board, then the outer one. Put the hexagonal spacer included in the kit between the inner and the outer interface board, and finally secure the outer board with the screw.



- The kit contains two flat cables, one with two connectors for use with a single interface board and one with three connectors for use with double interface boards. Connect the appropriate flat cable to connector P1 on the interface board, as illustrated below.
- The flat cable should run as illustrated below.





- Put back the cover over the electronics compartment.
- Connect the communication cables to the connectors on the printer's rear plate.
- Connect the power cord and switch on the power.
- In case the interface board provides additional serial communication ports, enter the Setup Mode to set the proper communication parameters for these ports.

Allowed interface combinations (Fingerprint)

Left-hand slot	Ports	Right-hand slot	Ports
Double Serial	uart2: + uart3:	–	–
Double Serial	uart2: + uart3:	Double Serial	uart4: + uart5:
Double Serial	uart2: + uart3:	Serial Industrial	uart4:
Double Serial	uart2: + uart3:	IEEE 1284	centronics:
Serial/Industrial	uart2:	–	–
Serial/Industrial	uart2:	Serial/Industrial	uart3:
Serial/Industrial	uart2:	Double Serial	uart3: + uart4:
Serial/Industrial	uart2:	IEEE 1284	centronics:
IEEE 1284	centronics:	–	–
IEEE 1284	centronics:	Double Serial	uart2: + uart3:
IEEE 1284	centronics:	Serial/Industrial	uart2:

Allowed interface combinations (IPL)

Left-hand slot	Ports	Right-hand slot	Ports
IEEE 1284	parallel	–	–

Remarks:

- The left-hand slot is the slot closest to the center section.
- Always start by fitting an interface board in the left-hand slot.
- RS-485 is only supported by "uart2:"

When fitting driver circuit and straps before installing the interface board, make sure that the circuit is not fitted upside down (see front end markings in the illustrations). Also make sure that the "legs" of the circuit fit into the slots in the socket and are not bent. Take ample precautions to protect the board and circuits from electrostatic discharges.

16.6 Serial/Industrial Interface Board (Fingerprint only)

Description

The Serial/Industrial Interface Board is a Fingerprint-only optional device for EasyCoder PX4i and PX6i. It provides these printers with two extra interfaces.

The Serial/Industrial Interface kit contains:
- One Industrial Interface Board fitted with straps and circuits for RS-232
- One hexagonal spacer
- Two flat cables
- One Installation Instruction booklet

Serial Interface ("uart2:", "uart3:", or "uart4:")

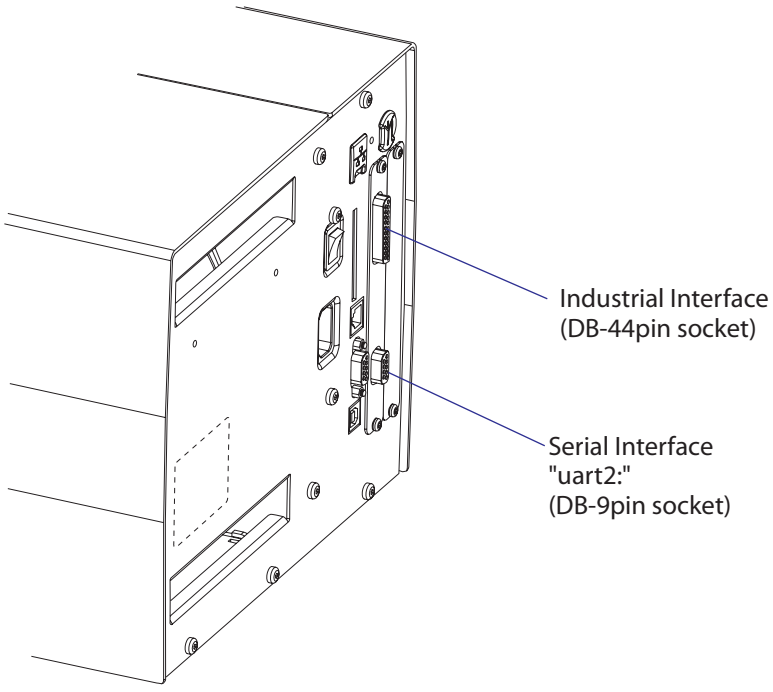
This interface contains one serial communication port ("uart2:", "uart3:", or "uart4:") which can be configured for one of the following alternatives:
- RS-232 non-isolated
- RS-422 isolated, full duplex (reconfiguration required)
- RS-485 isolated, half duplex (reconfiguration required, "uart2:" only)

Selection of type of serial interface is decided by fitting various types of socket-mounted driver circuits and straps.

Industrial Interface

This interface contains eight digital IN and eight digital OUT ports with optocouplers, plus four OUT ports with relays.

The status of all ports can be read by means of PORTIN functions and the OUT ports can be set using PORTOUT ON/OFF statements (see *Intermec Fingerprint v8.xx, Programmer's Reference Manual).* Thus, it is possible to design Intermec Fingerprint application programs which control not only the printer but also various external devices, for example in a production line. The digital IN ports can read the status of various sensors and the program can, for example, switch control lamps on or off, open or close gates, and start or stop conveyor belts accordingly using the relays and the digital OUT ports.

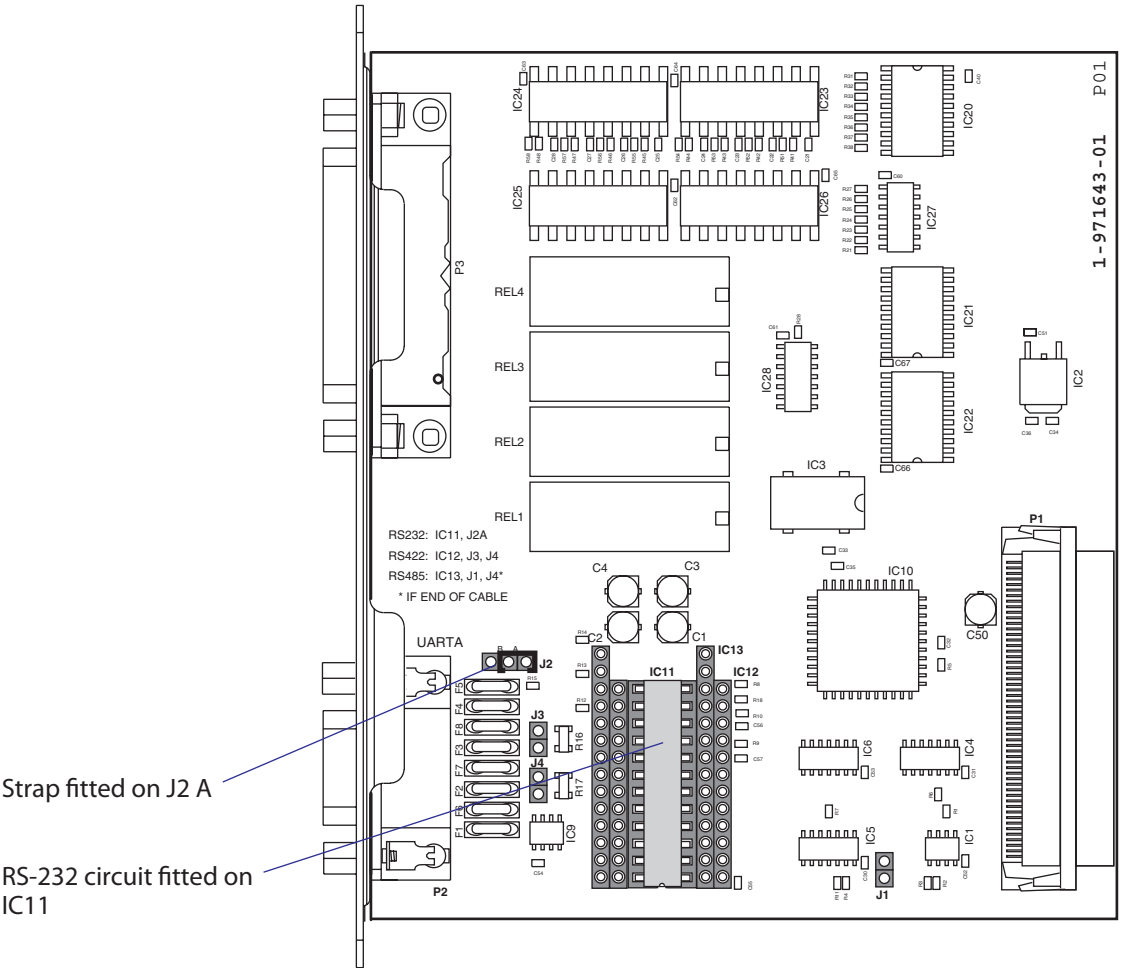


Serial Port Configuration

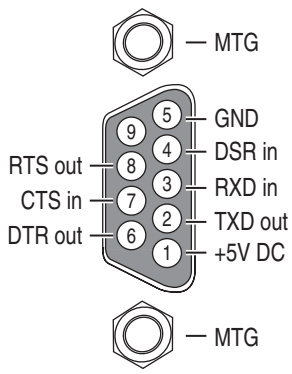
The serial communication port "uart2:", "uart3:", or "uart4:" are configured for RS-232 as standard but can be reconfigured for two other types of serial communication by fitting certain driver circuits and straps. The circuits can be ordered separately from Intermec:

- RS-422 isolated, full duplex
- RS-485 isolated, half duplex ("uart2:" only!)

RS-232 Non-isolated (standard)

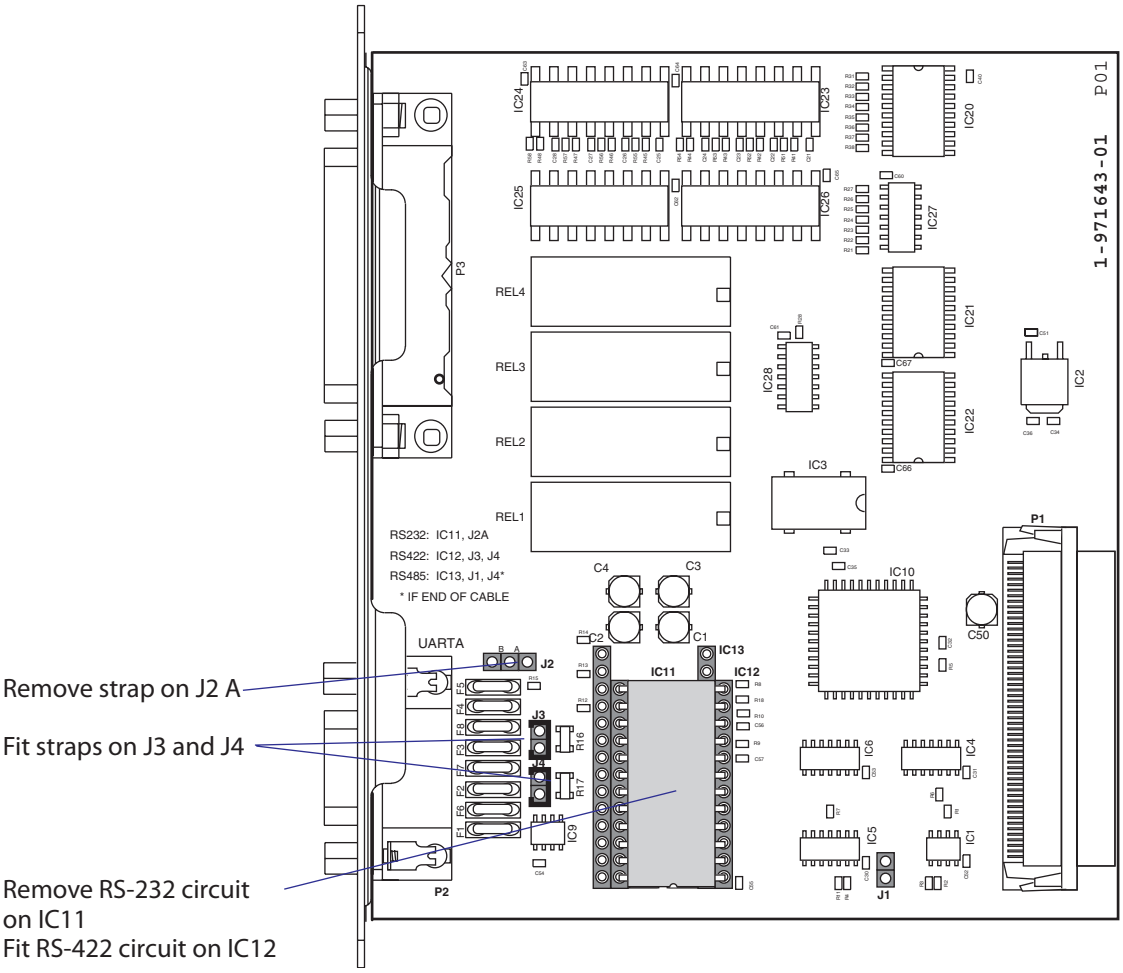


Connector Configuration (RS-232 on "uart2:", "uart3:", or "uart4:")

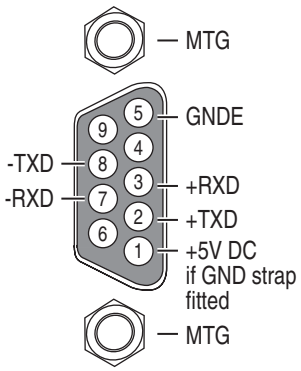


DB-9 socket	Signal	Meaning
1		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected)
2	TXD	Transmit data
3	RXD	Receive data
4	DSR	Data set ready
5	GND	Ground
6	DTR	Data terminal ready
7	CTS	Clear to send
8	RTS	Request to send
9	–	Not used

RS-422 Isolated, Full Duplex (reconfiguration required)

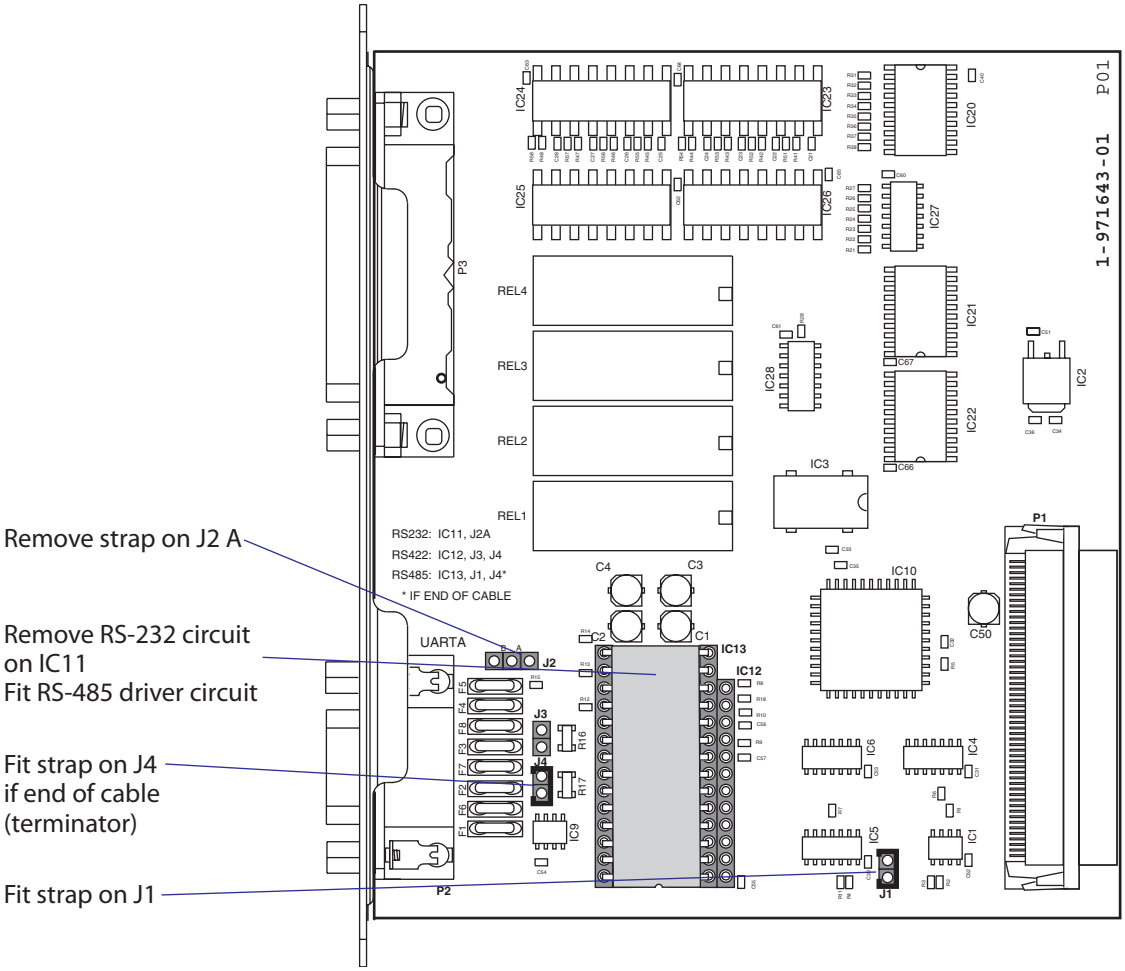


Connector Configuration (RS-422 Isolated on "uart2:", "uart3:", or "uart4:")

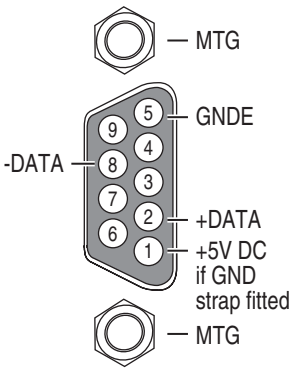


DB-9 socket	Signal	Meaning
1		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected) provided strap is fitted on J2:A which spoils the galvanical isolation
2	+TXD	+Transmit data
3	+RXD	+Receive data
4	–	
5	GNDE	Ground
6	-	
7	-RXD	-Receive data
8	-TXD	-Transmit data
9	–	

RS-485 Isolated, Half Duplex (reconfiguration required)



Connector Configuration (RS-485 Isolated on "uart2:" only)



DB-9 socket	Signal	Meaning
1		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected) provided strap is fitted on J2:A which spoils the galvanical isolation
2	+DATA	
3	–	
4	–	
5	GNDE	Ground
6	–	
7	–	
8	-DATA	
9	–	

Note: The increased use of LAN networks has made the RS-485 interface somewhat obsolete, because RS-485 requires a special communication protocol and a dedicated wiring system limited to 1,200 m (4,000 ft). We only recommend RS-485 for existing applications and advice the customer to consider a LAN network solution for new applications.

Industrial Interface Configuration

The Industrial Interface provides:

- 8 digital IN ports with optocouplers (Opto In)
- 8 digital OUT ports with optocouplers (Opto Out)
- 4 OUT ports with relays (Relay Out)

The Industrial Interface has no straps or circuits to be fitted or removed. All signals are available on a DB-44pin socket and the various ports are controlled by the Intermec Fingerprint instructions PORTIN and PORTOUT ON/OFF (see *Intermec Fingerprint v8.xx, Programmer's Reference Manual*).

Digital Opto In

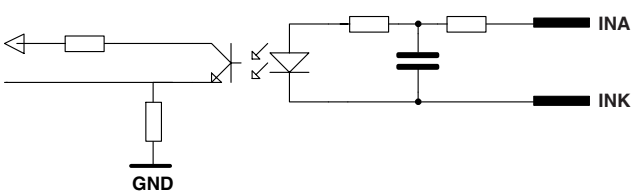
The status of the digital IN ports can be read using PORTIN functions. If a current is led through the optocoupler of the port, PORTIN returns the value -1 (true), else it returns the value 0 (false).

Signal	Description	Min.	Typical	Max.
Vin [High]	Input Voltage High	10V	24V	40V
Vin [Low]	Input Voltage Low	-1V	0V	1V

Connector Configuration

Pin	Signal Name	Description	Fingerprint Ref. No.
10	IN1A	Anode Opto In Channel 1 +	101 (301)
40	IN1K	Cathode Opto In Channel 1 -	
26	IN2A	Anode Opto In Channel 2 +	102 (302)
11	IN2K	Cathode Opto In Channel 2 -	
41	IN3A	Anode Opto In Channel 3 +	103 (303)
27	IN3K	Cathode Opto In Channel 3 -	
12	IN4A	Anode Opto In Channel 4 +	104 (304)
42	IN4K	Cathode Opto In Channel 4 -	
28	IN5A	Anode Opto In Channel 5 +	105 (305)
13	IN5K	Cathode Opto In Channel 5 -	
43	IN6A	Anode Opto In Channel 6 +	106 (306)
29	IN6K	Cathode Opto In Channel 6 -	
14	IN7A	Anode Opto In Channel 7 +	107 (307)
44	IN7K	Cathode Opto In Channel 7 -	
30	IN8A	Anode Opto In Channel 8 +	108 (308)
15	IN8K	Cathode Opto In Channel 8 -	

The Fingerprint reference numbers inside the parentheses refer to a second Serial/Industrial interface board.



Simplified schematics of a digital IN port.

Digital Opto Out

The current to each optocoupler of the digital OUT ports can be turned on and off using PORTOUT ON/OFF statements.

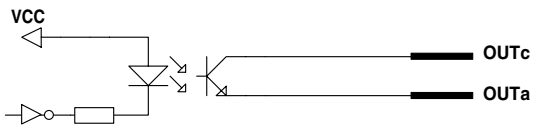
The status of the ports can be read using PORTIN functions. If a current is led through the optocoupler of the port, PORTIN returns the value -1 (true), else it returns the value 0 (false).

Signal	Description	Max.
Vceo	Collector-Emitter breakdown voltage	35V
Veco	Emitter-Collector breakdown voltage	6V
	Collector Current	15 mA
Vog	Output to ground (optocoupler)	100V

Connector Configuration

Pin	Signal Name	Description	Fingerprint Ref. No.
20	Out1c	Collector Opto Out Channel 1	221 (421)
5	Out1e	Emitter Opto Out Channel 1	
35	Out2c	Collector Opto Out Channel 2	222 (422)
21	Out2e	Emitter Opto Out Channel 2	
6	Out3c	Collector Opto Out Channel 3	223 (423)
36	Out3e	Emitter Opto Out Channel 3	
22	Out4c	Collector Opto Out Channel 4	224 (424)
7	Out4e	Emitter Opto Out Channel 4	
37	Out5c	Collector Opto Out Channel 5	225 (425)
23	Out5e	Emitter Opto Out Channel 5	
8	Out6c	Collector Opto Out Channel 6	226 (426)
38	Out6e	Emitter Opto Out Channel 6	
24	Out7c	Collector Opto Out Channel 7	227 (427)
9	Out7e	Emitter Opto Out Channel 7	
39	Out8c	Collector Opto Out Channel 8	228 (428)
25	Out8e	Emitter Opto Out Channel 8	

The Fingerprint reference numbers inside the parentheses refer to a second Serial/Industrial interface board.



Simplified schematics of a digital OUT port.

Relay Out

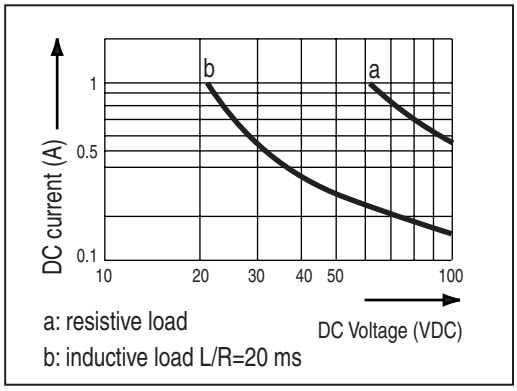
The relays of the OUT ports can be individually activated using PORT-OUT ON/OFF statements.

The status of the ports can be read by means of PORTIN functions. If a relay is activated, PORTIN returns the value -1 (true), else it returns the value 0 (false).

Max AC Load Breaking Capacity

Signal	Description	Max.
I	Current	1A
Psw AC	Switching power	100VA AC
Usw AC	Switching voltage	100V AC

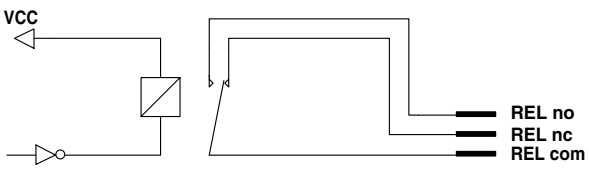
Max DC Load Breaking Capacity



Connector Configuration

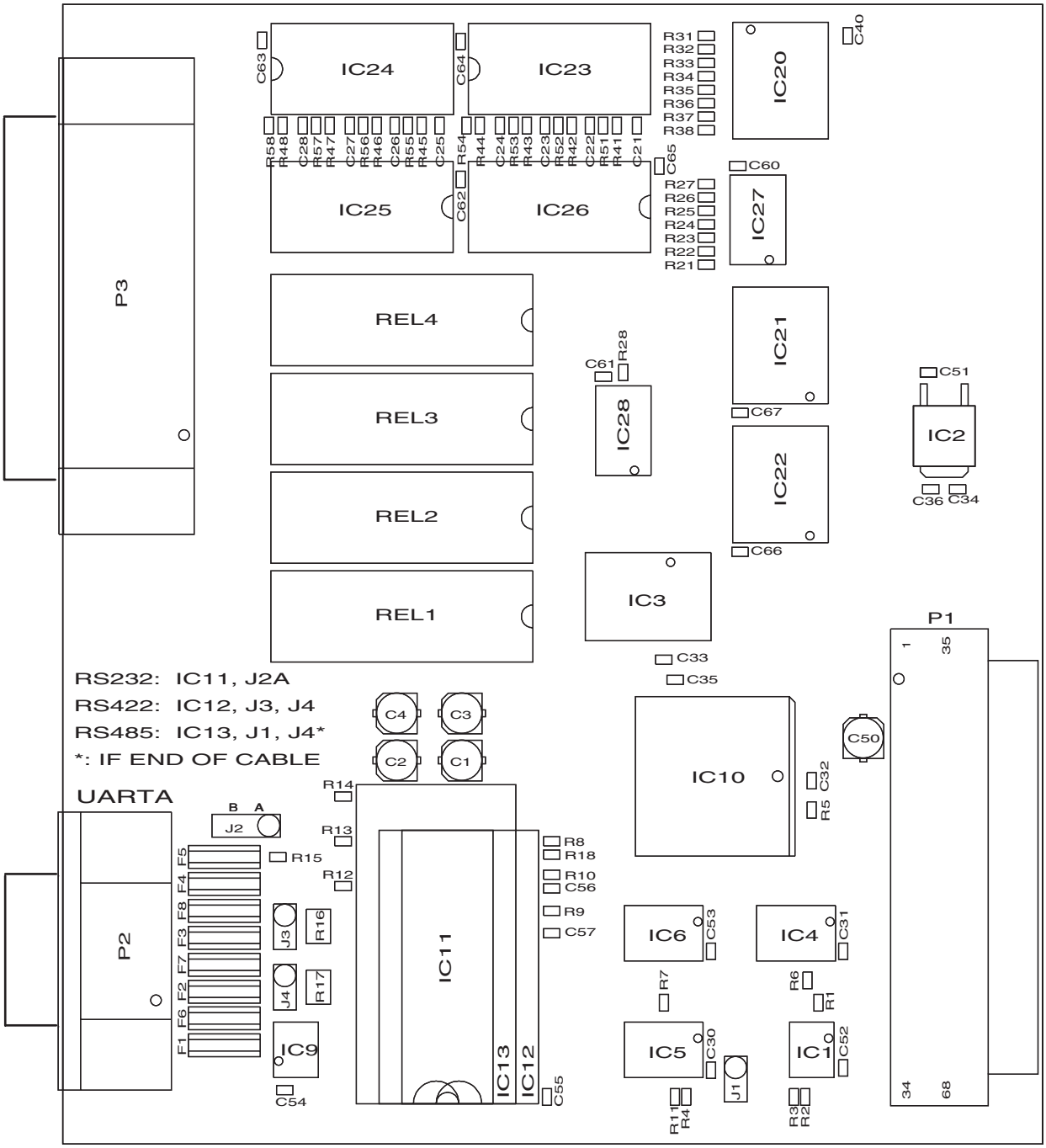
Pin	Signal Name	Description	Fingerprint Ref. No.
16	REL1nc	Relay 1 Normally Closed	201 (401)
1	REL1no	Relay 1 Normally Open	
31	REL1com	Relay 1 Common	
17	REL2nc	Relay 2 Normally Closed	202 (402)
2	REL2no	Relay 2 Normally Open	
32	REL2com	Relay 2 Common	
18	REL3nc	Relay 3 Normally Closed	203 (403)
3	REL3no	Relay 3 Normally Open	
33	REL3com	Relay 3 Common	
19	REL4nc	Relay 4 Normally Closed	204 (404)
4	REL4no	Relay 4 Normally Open	
34	REL4com	Relay 4 Common	

The Fingerprint reference numbers inside the parentheses refer to a second Serial/Industrial interface board.



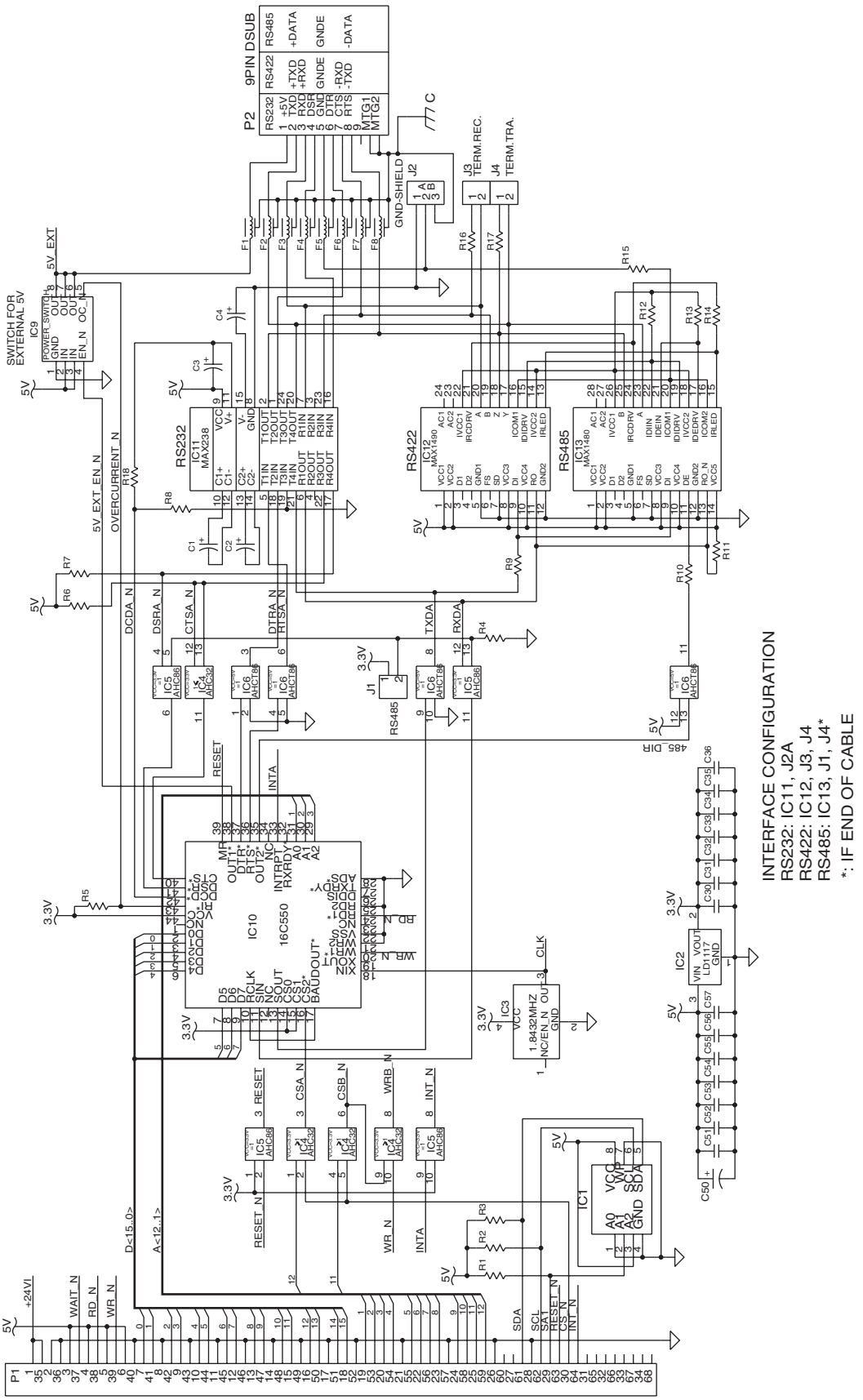
Simplified schematics of a relay OUT port.

Components



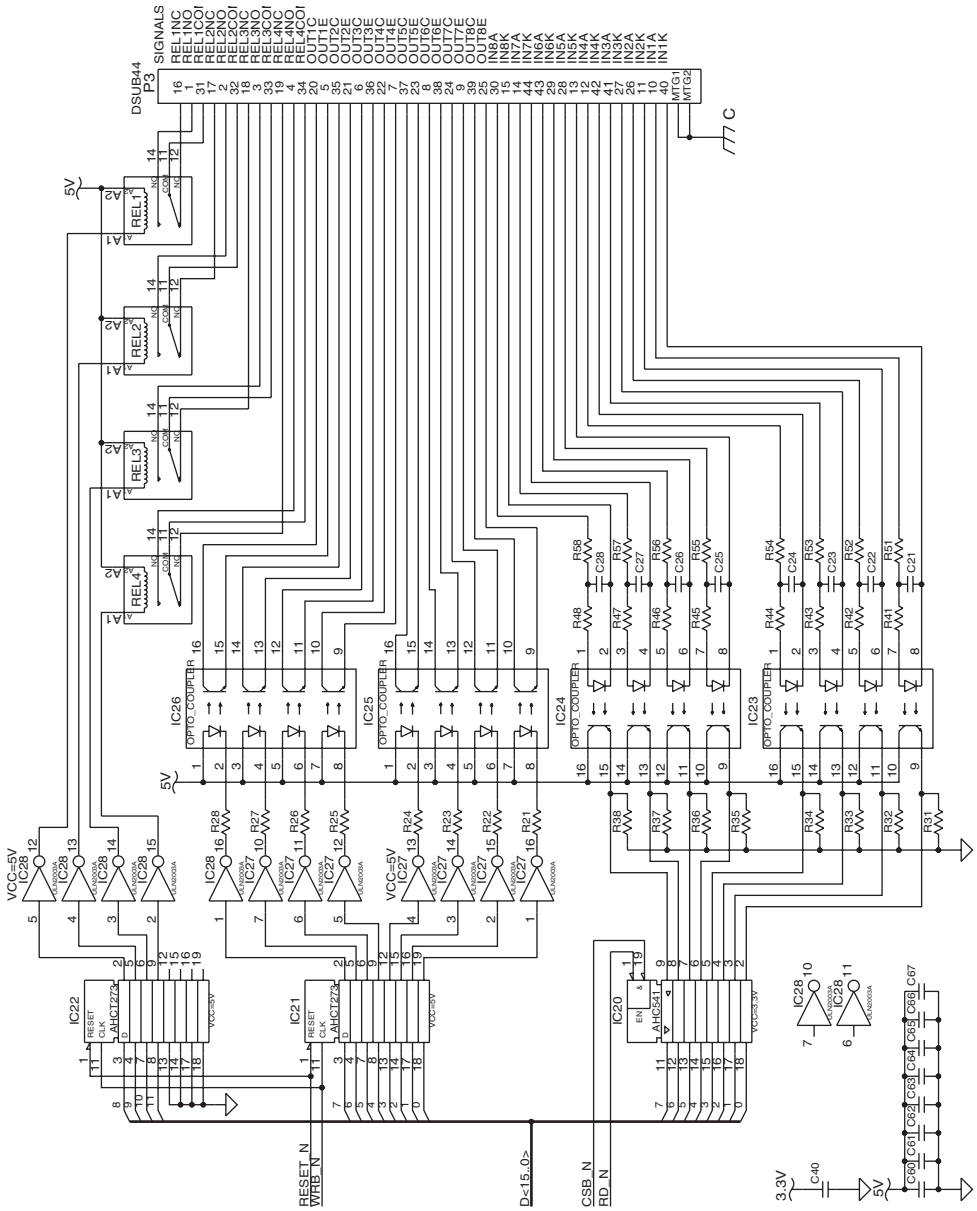
1-971643-26 Serial/Industrial Interface Board; Component side

Schematics; Serial Port ("uart2:", "uart3:", or "uart4:")



1-971643-26 Serial/Industrial Interface Board; Schematics 1

Schematics; Industrial Interface



1-971643-26 Serial/Industrial Interface Board; Schematics 2

16.7 Double Serial Interface Board (Fingerprint only)

Description

The Double Serial Interface Board (DUART) is a Fingerprint-only optional device for EasyCoder PX4i and PX6i printers. It provides these printers with two extra serial interfaces.

"uart2:", "uart3:", or "uart4:"

This interface (marked “UART A” on the interface board) can be fitted with straps and circuits for one of the following alternatives:

- RS-232 non-isolated
- RS-422 isolated, full duplex
- RS-485 isolated, half duplex ("uart2:" only)

"uart3:", "uart4;", or "uart5:"

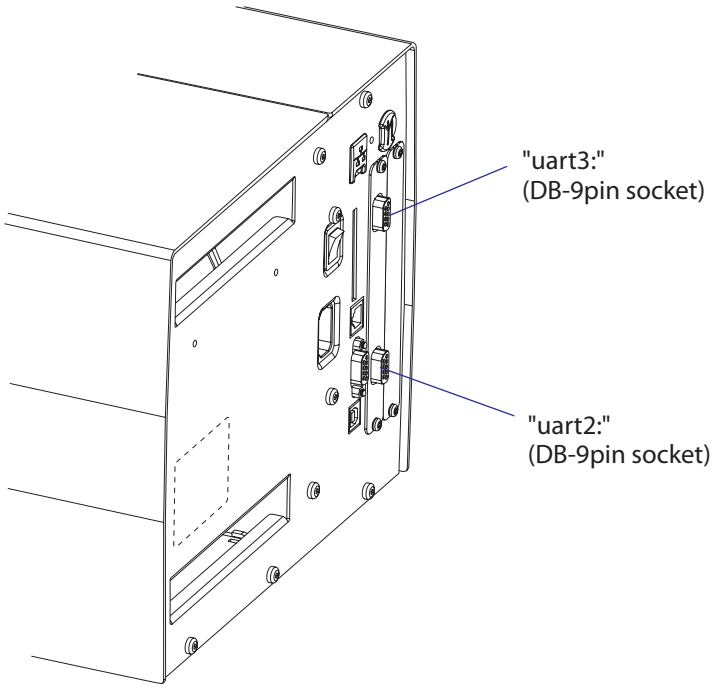
This interface (marked “UART B” on the interface board) can be fitted with straps and circuits for one of the following alternatives:

- RS-232 non-isolated
- RS-422 non isolated, full duplex
- 20 mA Current Loop.

The Double Serial Interface Kit contains:

- One interface board fitted for RS-232 on both ports.
- Two flat cables
- One hexagonal spacer
- One Installation Instruction booklet

Circuits for modifying the board for RS-422 non-isolated, RS-422 isolated, RS-485 isolated, or 20 mA current loop can be bought separately from Intermec.

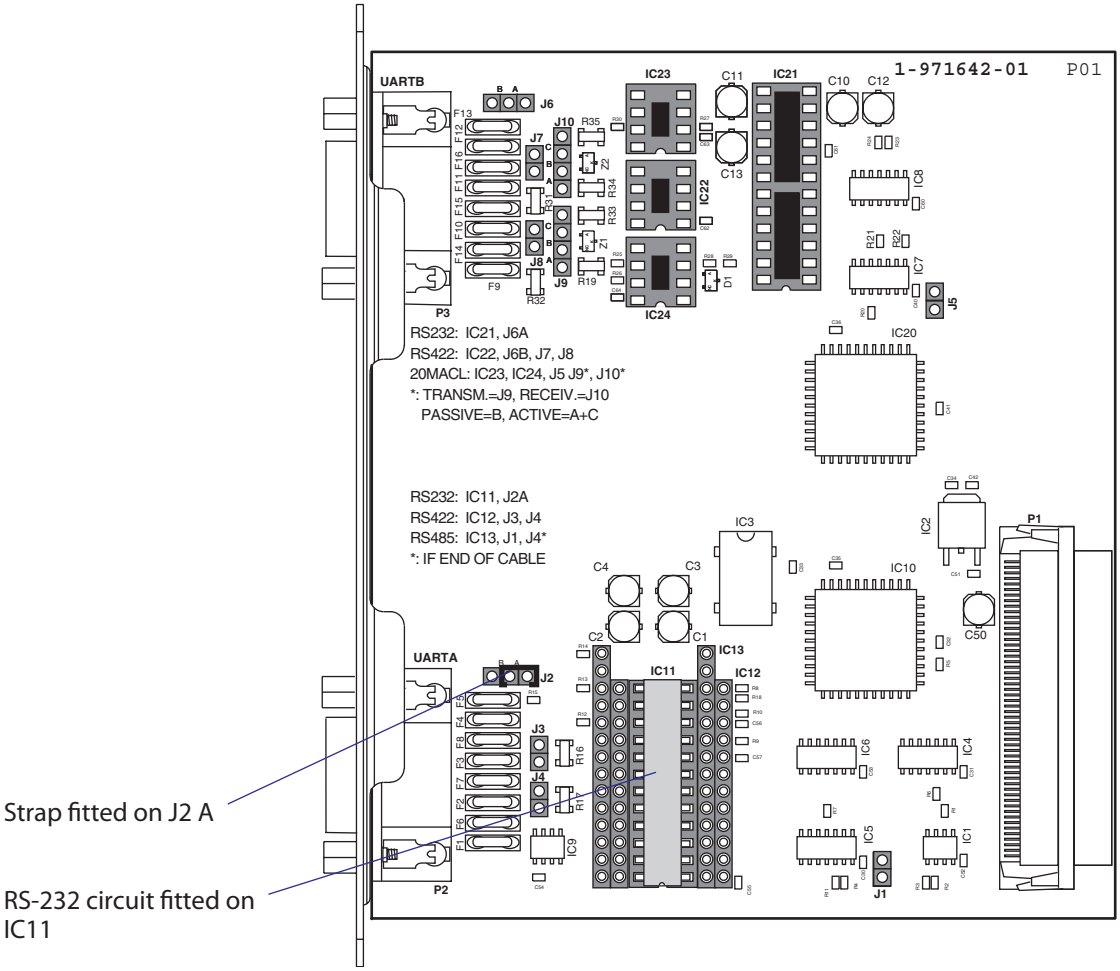


"uart2:", "uart3:" & "uart4" Configuration (connector UART A)

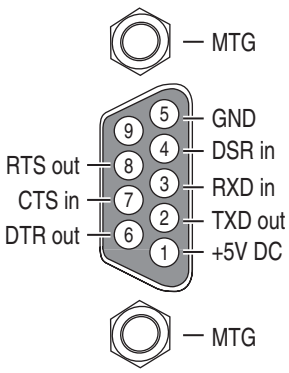
The serial communication ports "uart2:", "uart3:", and "uart4:" can be configured for up to three different types of serial communication respectively by fitting or removing certain driver circuits and straps:

- RS-232 non-isolated
- RS-422 isolated, full duplex
- RS-485 isolated, half duplex ("uart2:" only!)

RS-232 Non-isolated (standard)

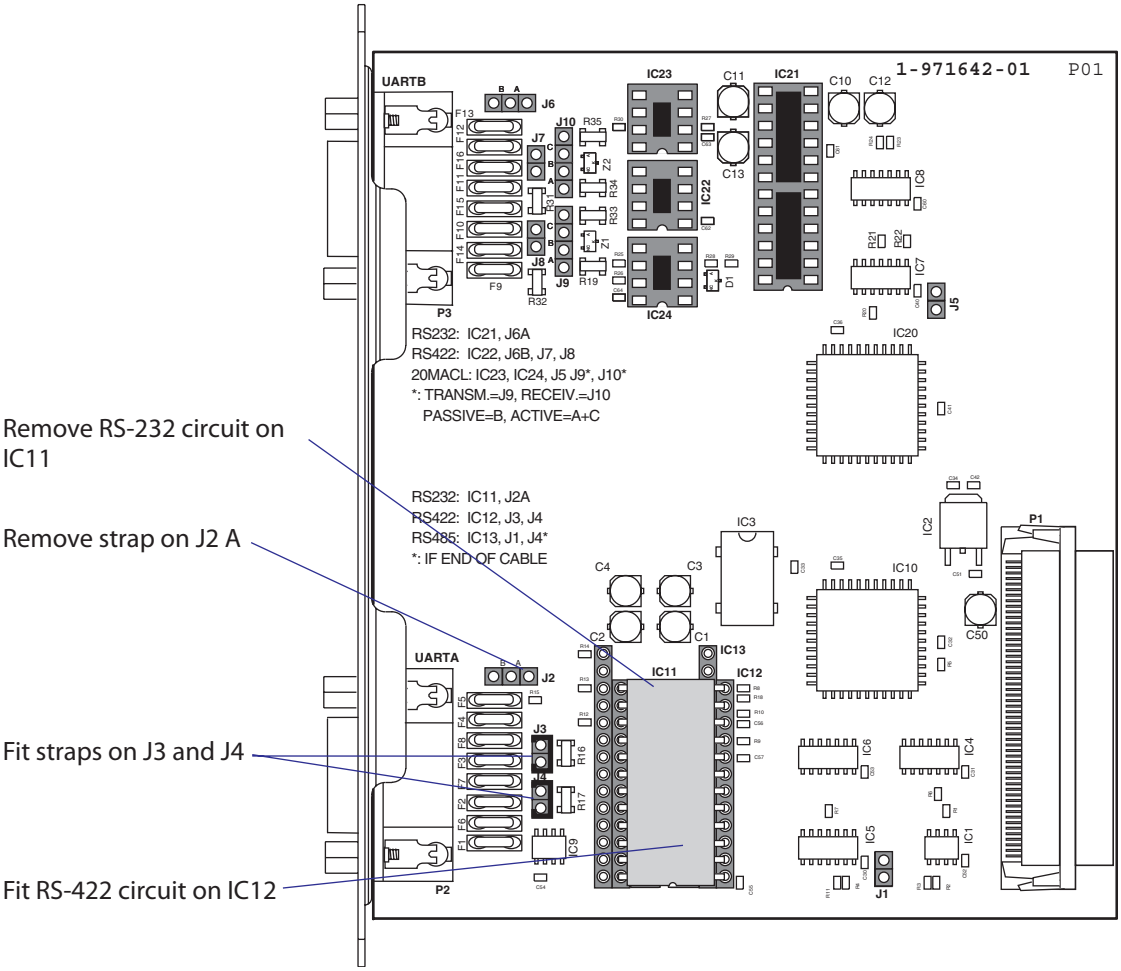


Connector Configuration (RS-232 on "uart2:", "uart3:", or "uart4:")

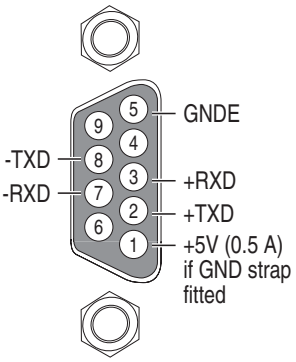


DB-9 socket	Signal	Meaning
1		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected)
2	TXD	Transmit data
3	RXD	Receive data
4	DSR	Data set ready
5	GND	Ground
6	DTR	Data terminal ready
7	CTS	Clear to send
8	RTS	Request to send
9	–	Not used

RS-422 Isolated, Full Duplex (reconfiguration required)

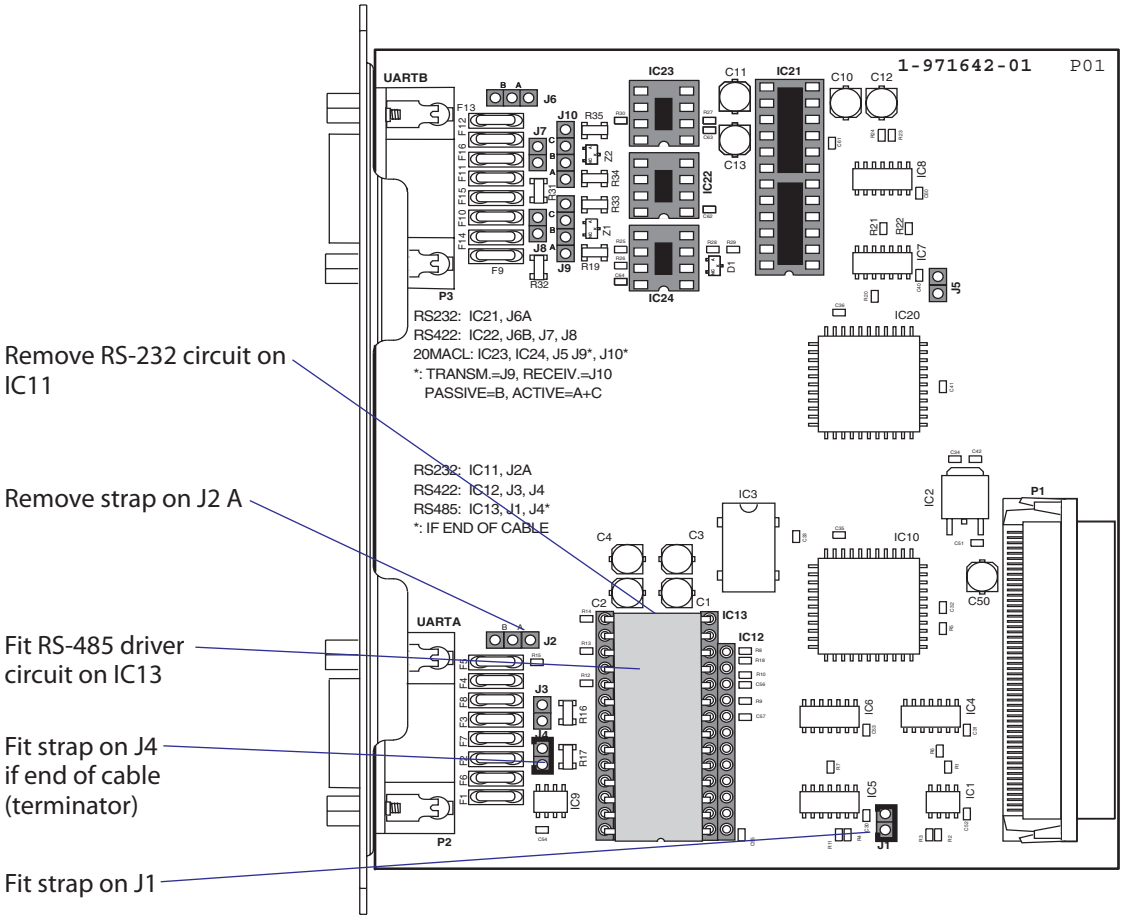


Connector Configuration (RS-422 Isolated on "uart2:", "uart3:", or "uart4:")

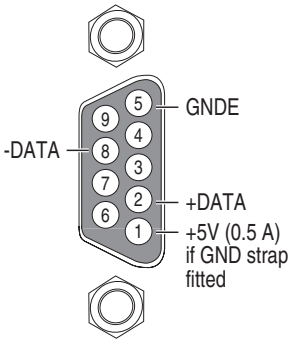


DB-9 socket	Signal	Meaning
1		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected) provided strap is fitted on J2:A which spoils the galvanical isolation
2	+TXD	+Transmit data
3	+RXD	+Receive data
4	–	
5	GNDE	Ground
6	-	
7	-RXD	-Receive data
8	-TXD	-Transmit data
9	–	

RS-485 Isolated, Half Duplex (reconfiguration required)



Connector Configuration (RS-485 Isolated on "uart2:" only)



DB-9 socket	Signal	Meaning
1		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected) provided strap is fitted on J2:A which spoils the galvanical isolation
2	+DATA	
3	–	
4	–	
5	GNDE	Ground
6	–	
7	–	
8	-DATA	
9	–	

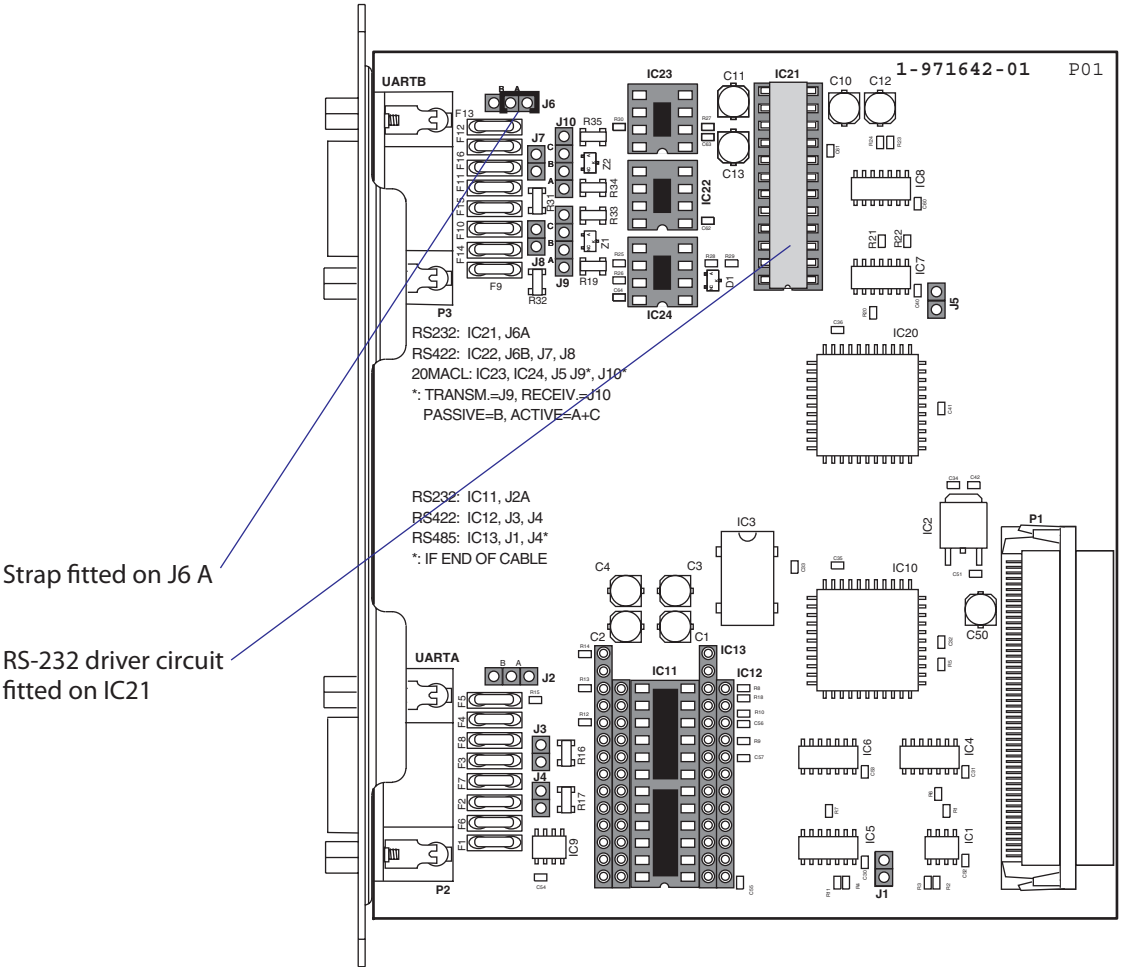
Note: The increased use of LAN networks has made the RS-485 interface somewhat obsolete, because RS-485 requires a special communication protocol and a dedicated wiring system limited to 1,200 m (4,000 ft). We only recommend RS-485 for existing applications and advice the customer to consider a LAN network solution for new applications.

"uart3:" , "uart4:", and "uart5:" Configuration (connector UART B)

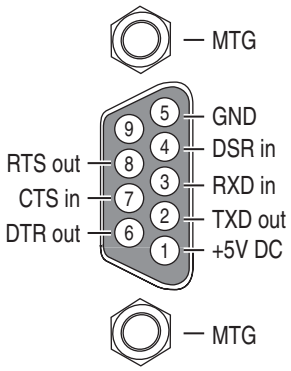
The serial communication ports "uart3:", "uart4:", and "uart5:" can be configured for three different types of serial communication by fitting or removing certain driver circuits and straps:

- RS-232 non-isolated
- RS-422 non-isolated, full duplex
- 20 mA Current Loop

RS-232 Non-isolated (standard)

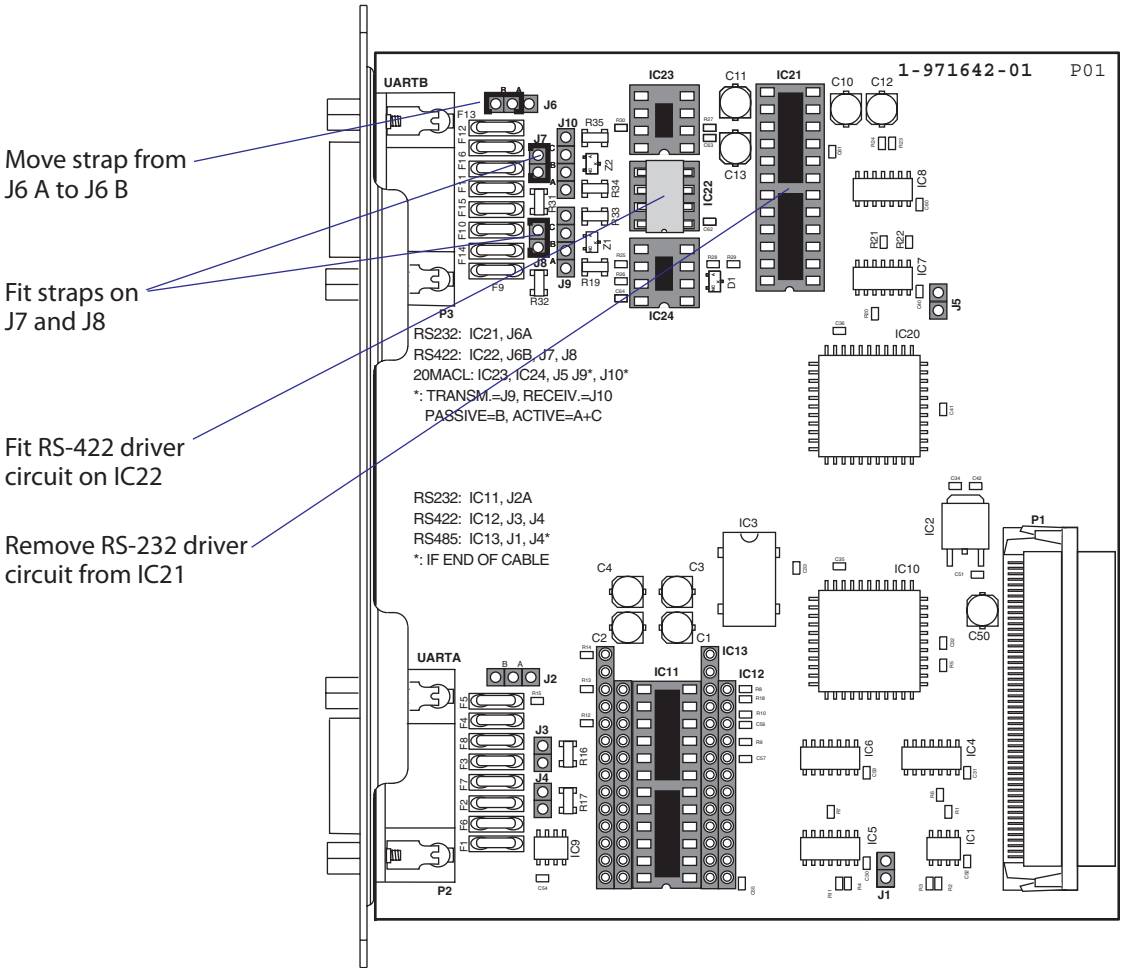


Connector Configuration (RS-232 on "uart3:", "uart4:", or "uart5:")

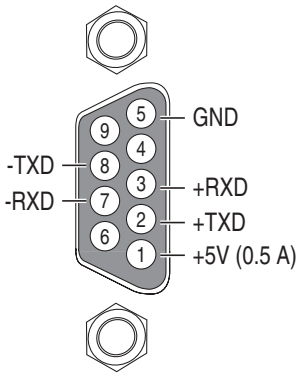


DB-9 socket	Signal	Meaning
1		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected)
2	TXD	Transmit data
3	RXD	Receive data
4	DSR	Data set ready
5	GND	Ground
6	DTR	Data terminal ready
7	CTS	Clear to send
8	RTS	Request to send
9	–	Not used

RS-422 Non Isolated, full duplex (reconfiguration required)

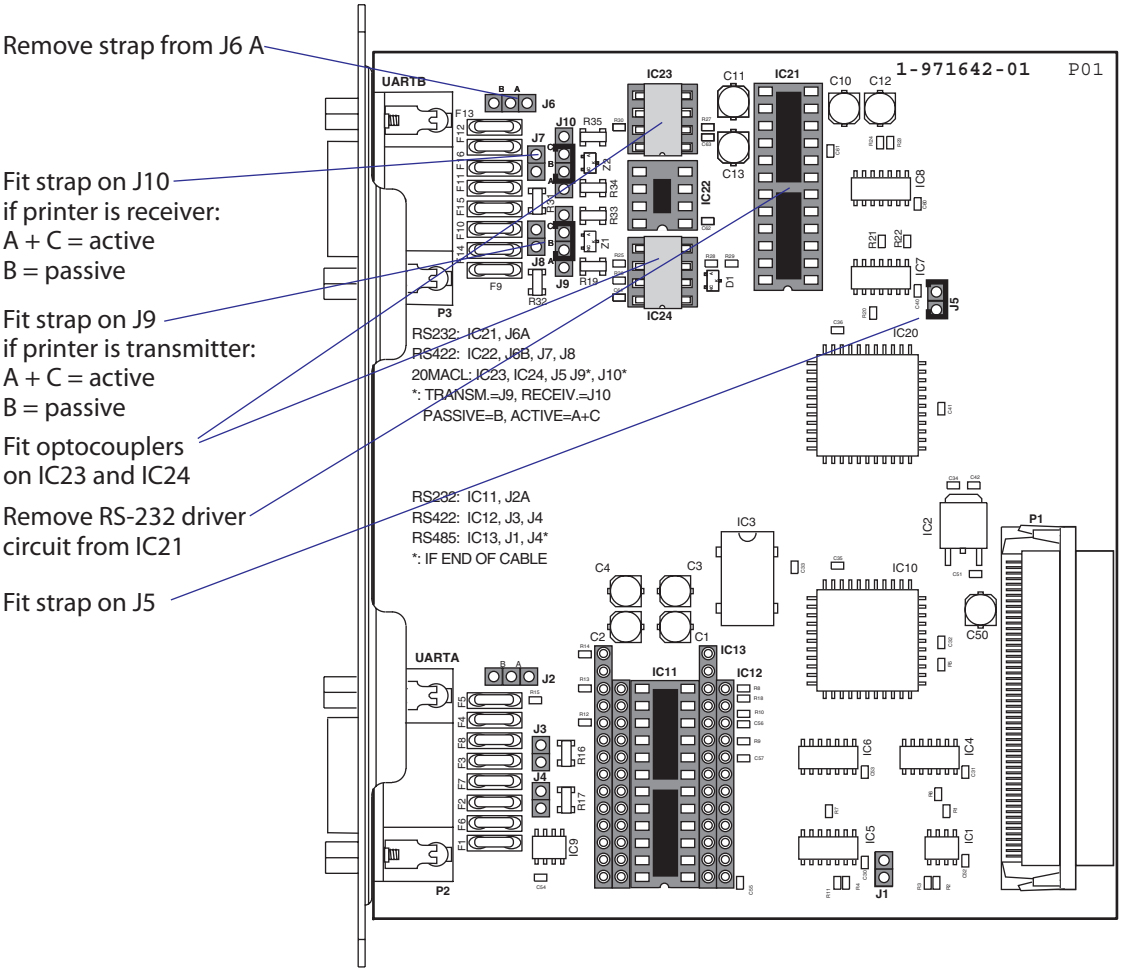


Connector Configuration (RS-422 Non-isolated on "uart3:", "uart4:", or "uart5:)

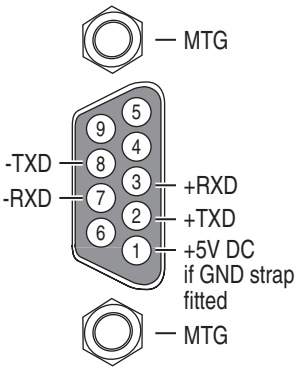


DB-9 socket	Signal	Meaning
1		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected) if strap is moved from J6 B to J6 A.
2	+TXD	+Transmit data
3	+RXD	+Receive data
4	–	
5	GNDE	Ground
6	-	
7	-RXD	-Receive data
8	-TXD	-Transmit data
9	–	

20 mA Current Loop (reconfiguration required)



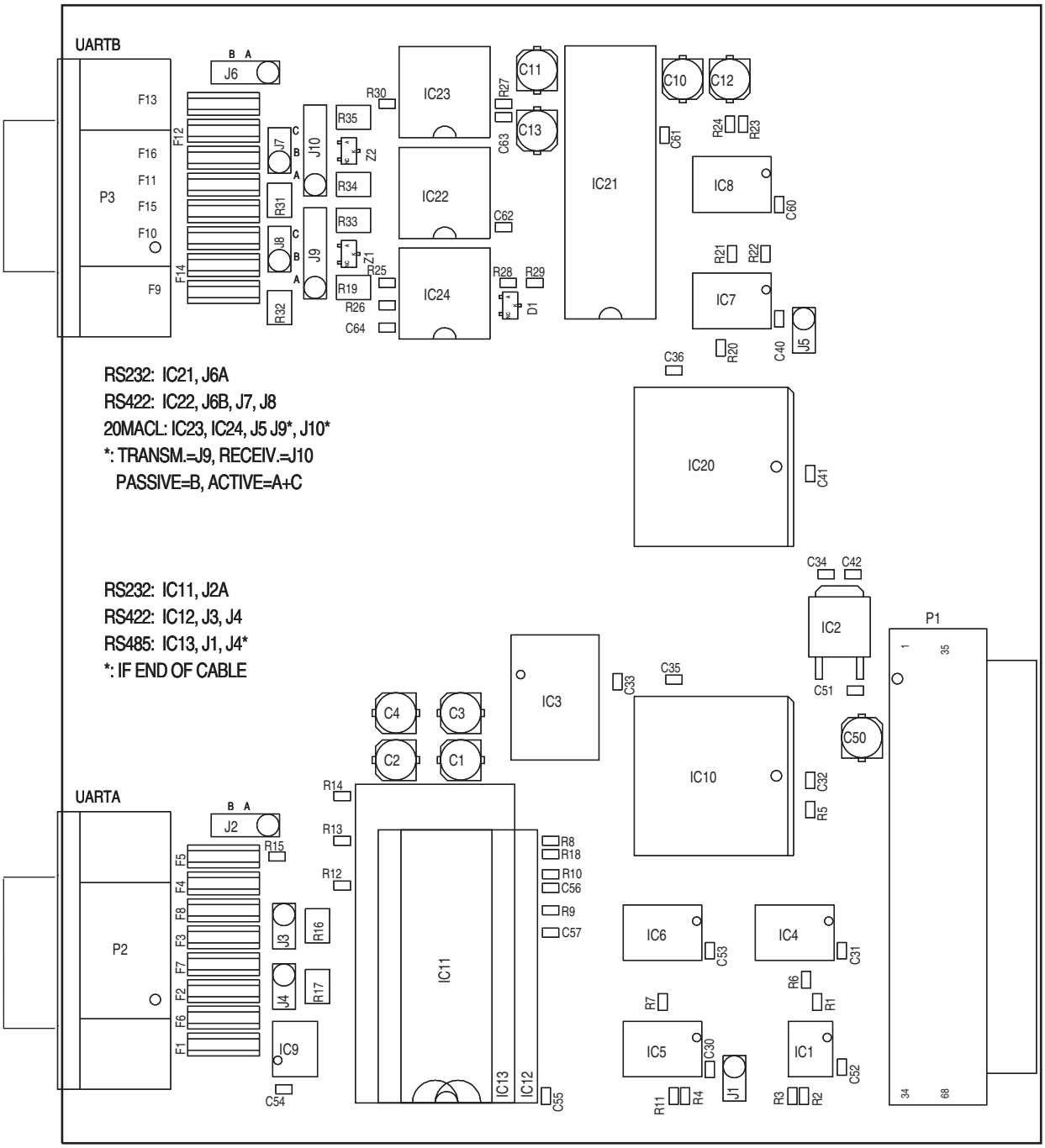
Connector Configuration (20 mA Current Loop on "uart3:", "uart4:", or "uart5:")



DB-9 socket	Signal	Meaning
1		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected) provided a strap is fitted on J6 A which spoils the galvanic isolation.
2	+TXD	+Transmit data
3	+RXD	+Receive data
4	–	
5	GNDE	Ground
6	-	
7	-RXD	-Receive data
8	-TXD	-Transmit data
9	–	

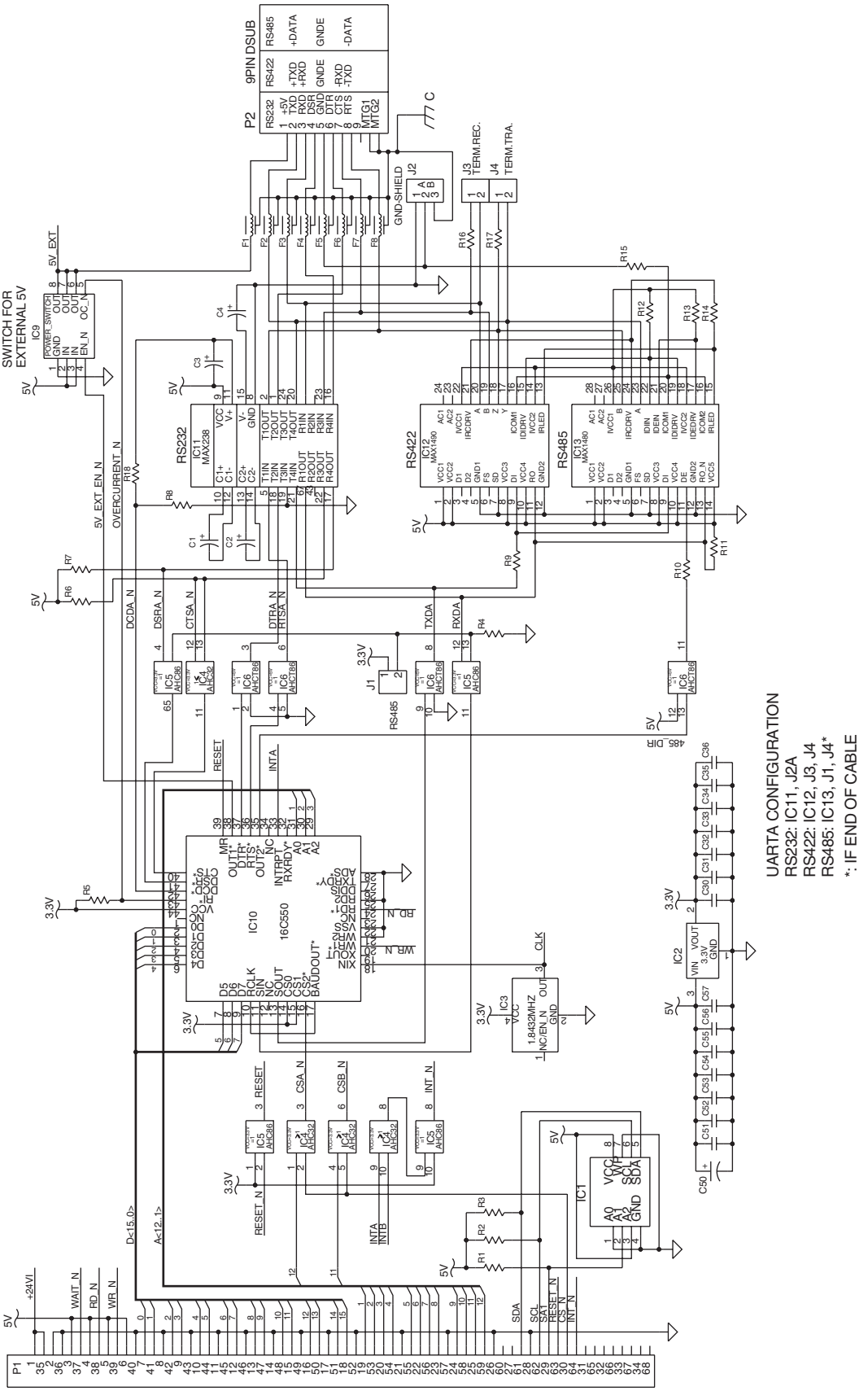
Note: Max. recommended baud rate 9600.

Components



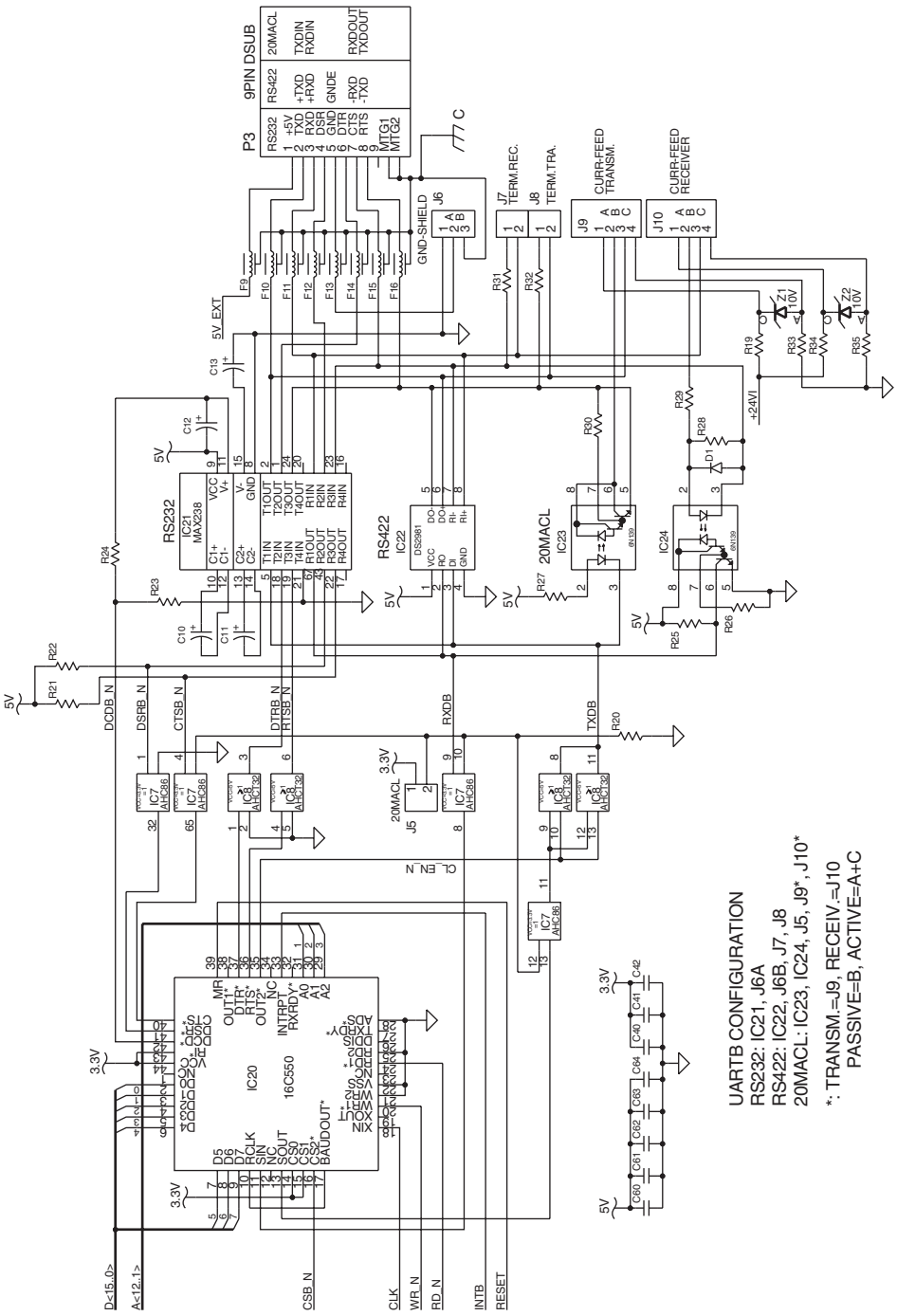
1-971642-26 Double Serial Interface Board; Component side

Schematics UART A



1-971642-26 Double Serial Interface Board; Schematics 1

Schematics UART B



1-971642-26 Double Serial Interface Board; Schematics 2

16.8 IEEE 1284 Parallel Interface Board

Description

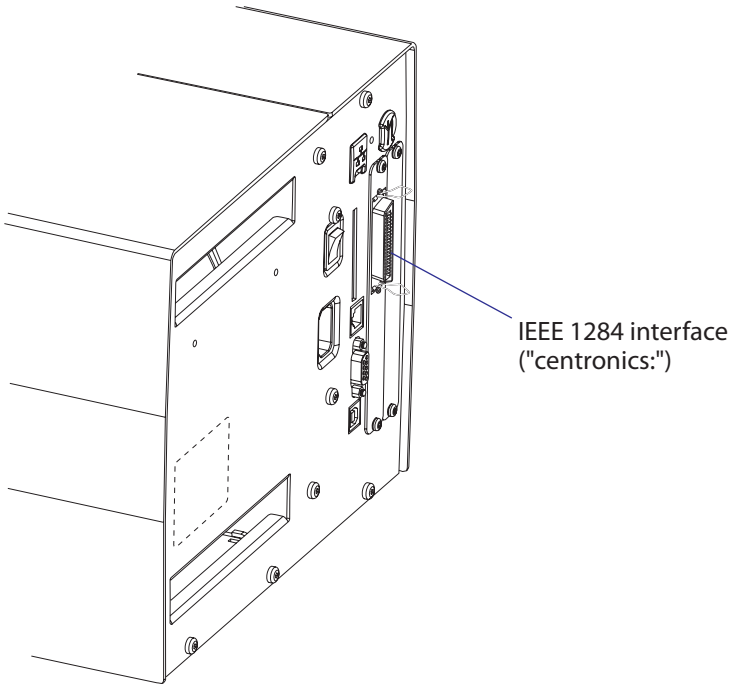
The IEEE 1284 Parallel Interface Board is an optional device for Easy-Coder PX4i and PX6i printers. It provides these printers with one parallel interface port and is supported by both Fingerprint and IPL.

The parallel communication port is addressed in Intermec Fingerprint as device centronics: (communication channel 4). The board is IEEE1284-I compatible. Nibble Mode and device ID is supported. Byte, ECP, and EPP modes from printer to host are presently not supported.

The IEEE 1284 Parallel Interface kit contains:

- One Parallel Interface Board
- Two flat cables
- One hexagonal spacer
- One Installations Instructions booklet.

There are neither any straps nor any other types of physical configuration on this interface board, nor any options in the Setup Mode.

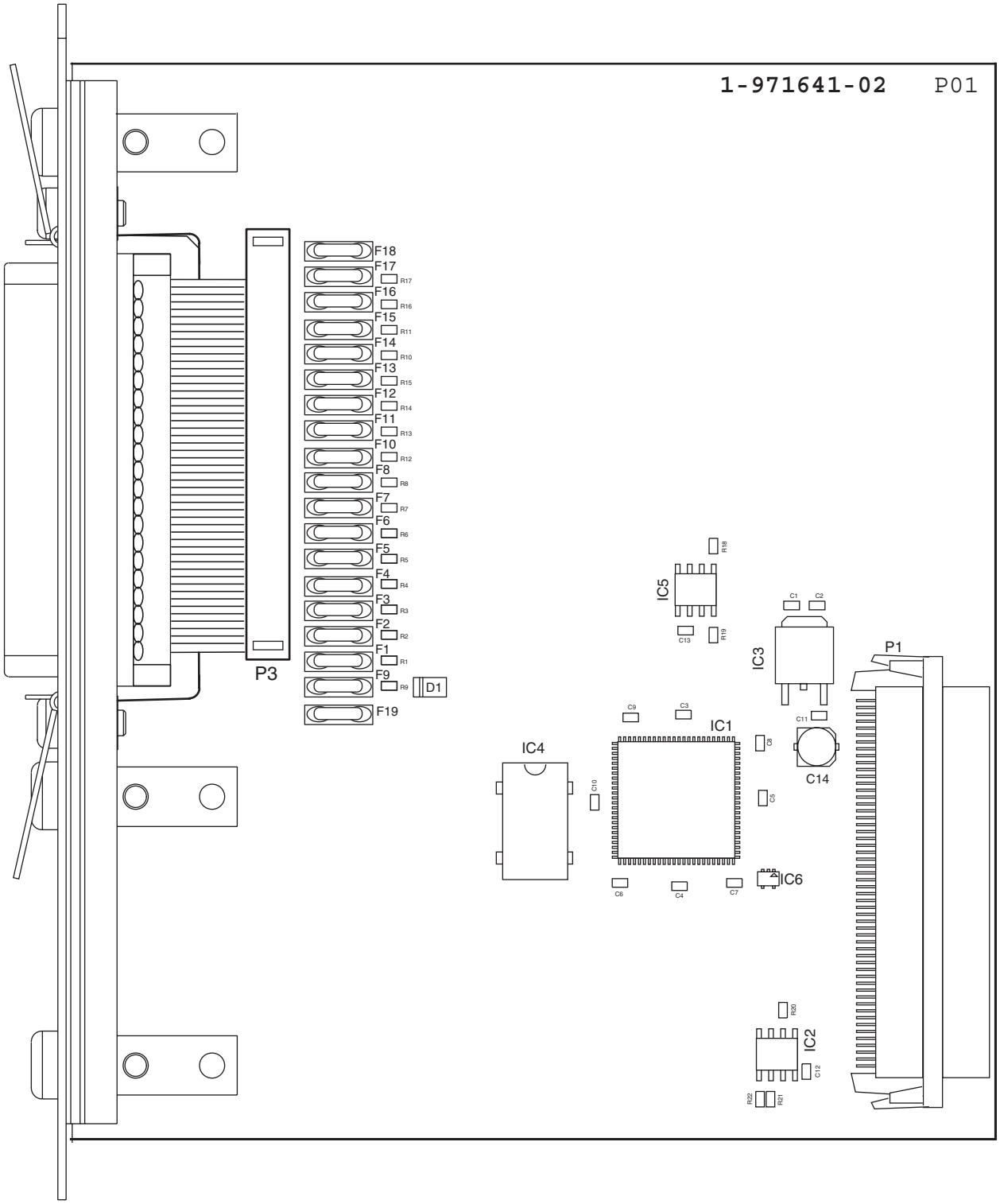


Connector Configuration

The IEEE 1284 board has a standard 36pin IEEE 1284 B socket with the following configuration:

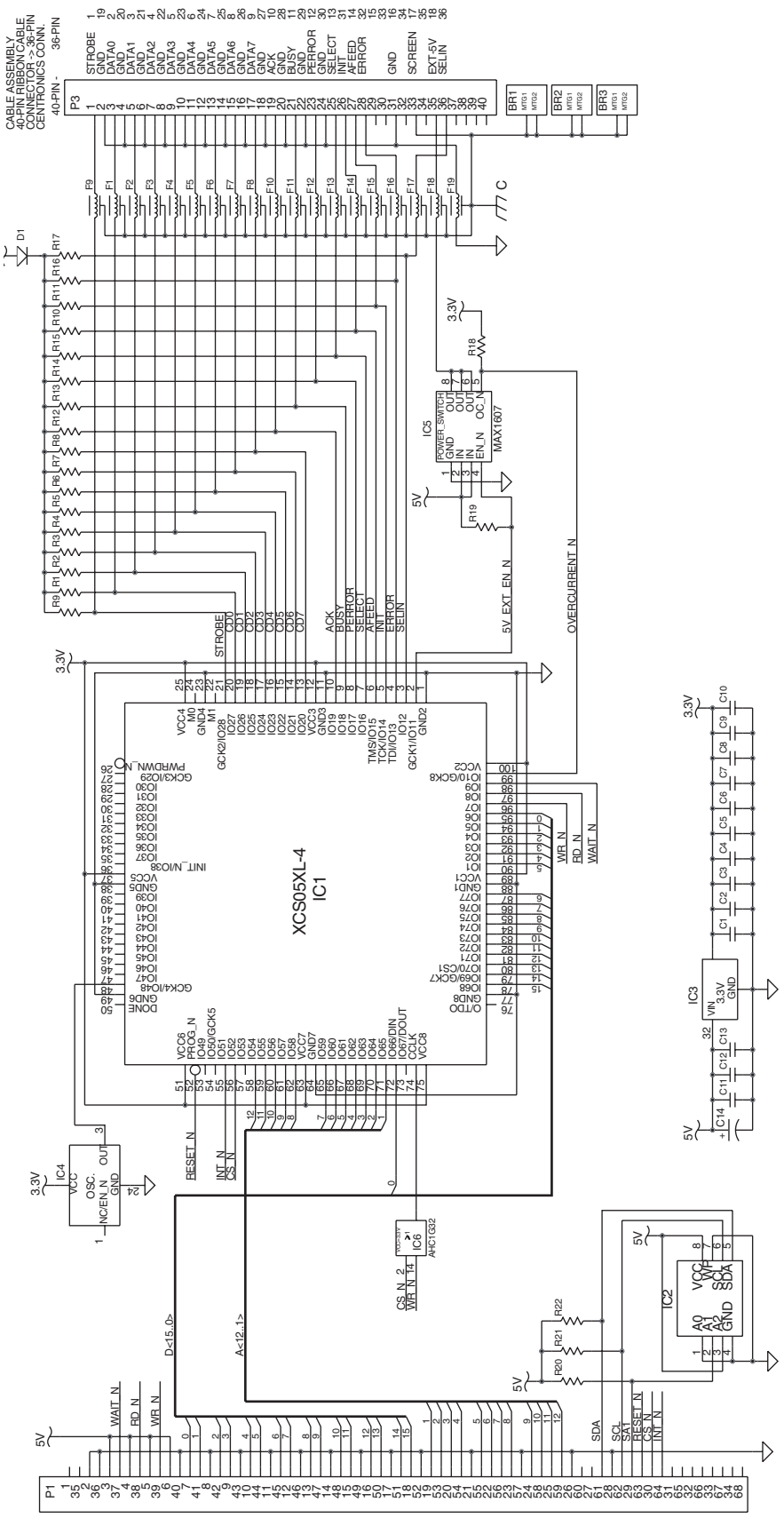
Pin	Signal	Remark
1	DSTROBE	
2	DATA 0	
3	DATA 1	
4	DATA 2	
5	DATA 3	
6	DATA 4	
7	DATA 5	
8	DATA 6	
9	DATA 7	
10	ACK	
11	BUSY	
12	PE	
13	SELECT	
14	AF	
15	N/C	
16	GND	
17	SCREEN	
18		External +5VDC max 500 mA (automatic switch-off at overload, short-circuit protected)
19	GND	
20	GND	
20	GND	
21	GND	
22	GND	
23	GND	
24	GND	
25	GND	
26	GND	
27	GND	
28	GND	
29	GND	
30	GND	
31	INIT	
32	ERROR	
33	N/C	
34	N/C	
35	N/C	
36	SELECTIN	

Components



1-971641-27 IEEE 1284 Parallel Interface Board; Component side

Schematics



1-971641-27 IEEE 1284 Parallel Interface Board; Schematics

16.9 EasyLAN Ethernet Interface Board

Description

This section describes how to install an EasyLAN Ethernet network interface in an EasyCoder PX4i and PX6i printer and how to connect it to a 100base TX Fast LAN, WAN, Intranet, or Internet network via a wired connection.

The installation instructions describes how to physically install the interface board in a printer. Configuration and setup are described in the *EasyLAN Interface Kit, Installation Instruction*s and the *Intermec EasyLAN, User's Guide* on the attached CD-ROM.

This interface kit must only be physically installed by an authorized service technician.

Printer Firmware

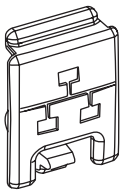
The printer must either be fitted with Intermec Fingerprint v8.30 (or later) or IPL v2.30 (or later). In Intermec Fingerprint, the network port is addressed as device "net1:" (communication channel #5).

Installation Kit

The EasyLAN Interface Kit contains:
- One EasyLAN interface board
- One light guide
- One hexagonal threaded spacer
- One network extension cable
- One cable tie
- One serial number label
- One CD-ROM with software and manuals
- One Installation Instruction booklet

The only tool required for the installation is a #T20 Torx screwdriver.

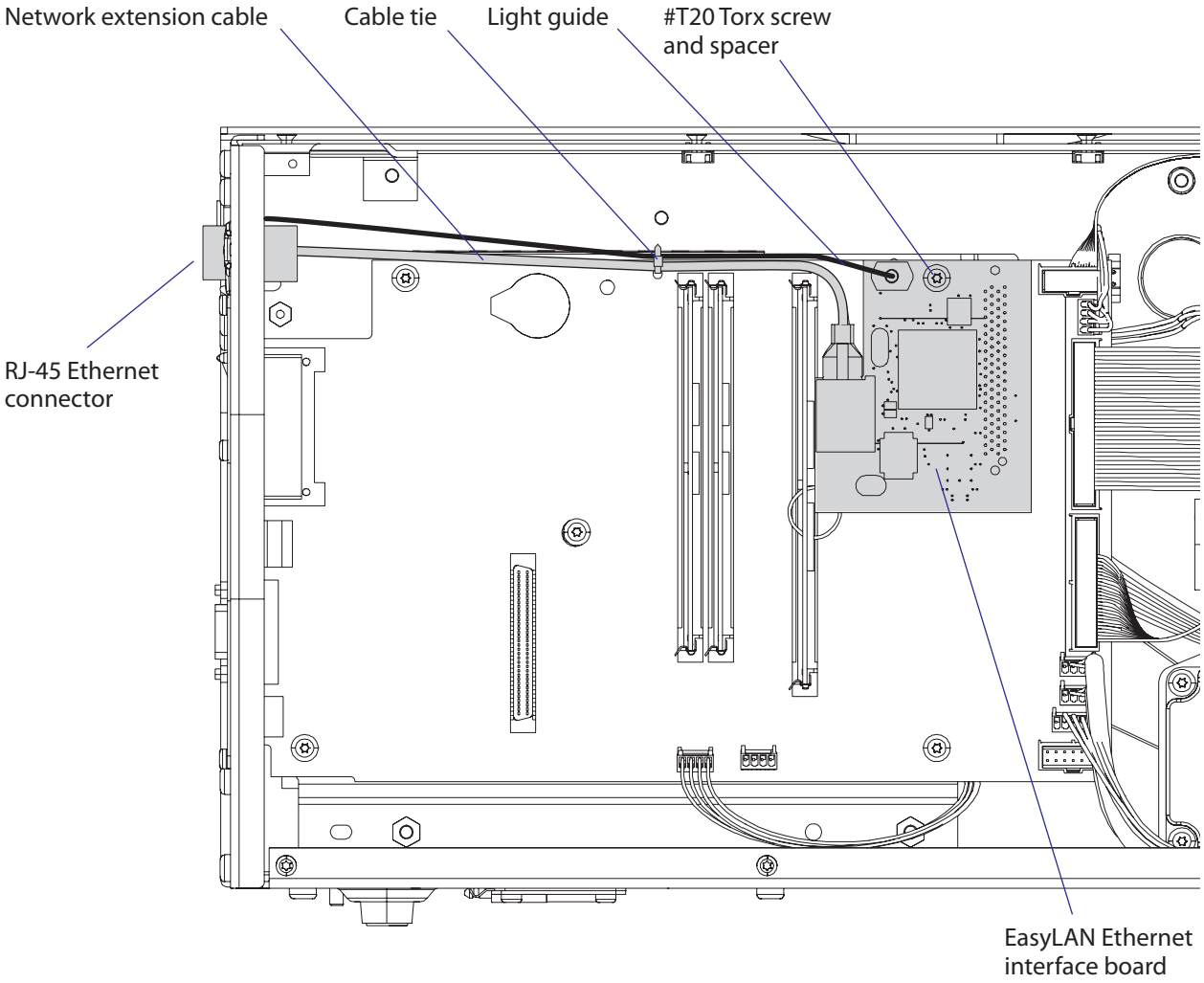
Installation Instructions

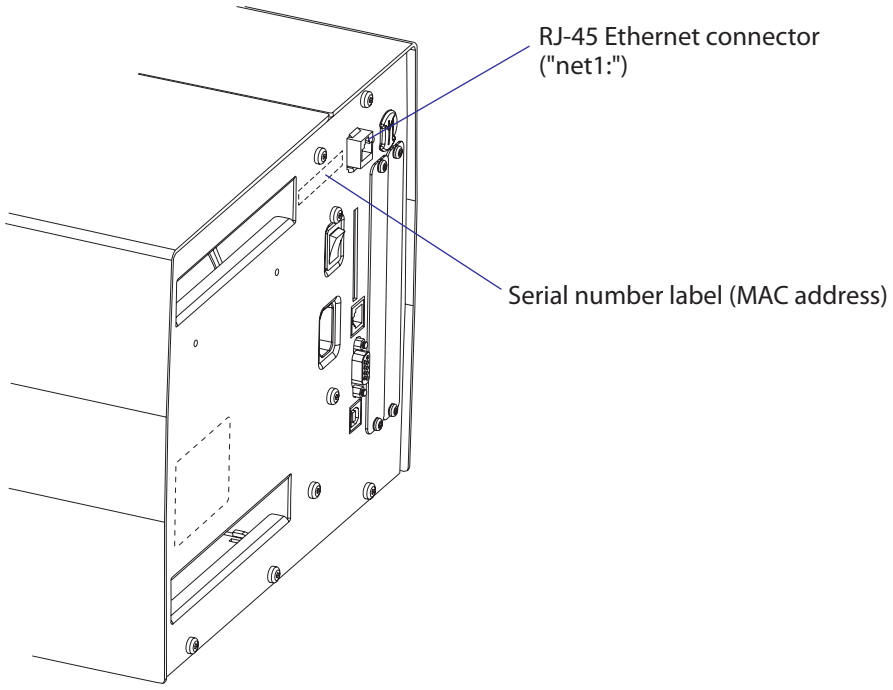


LAN connector plug

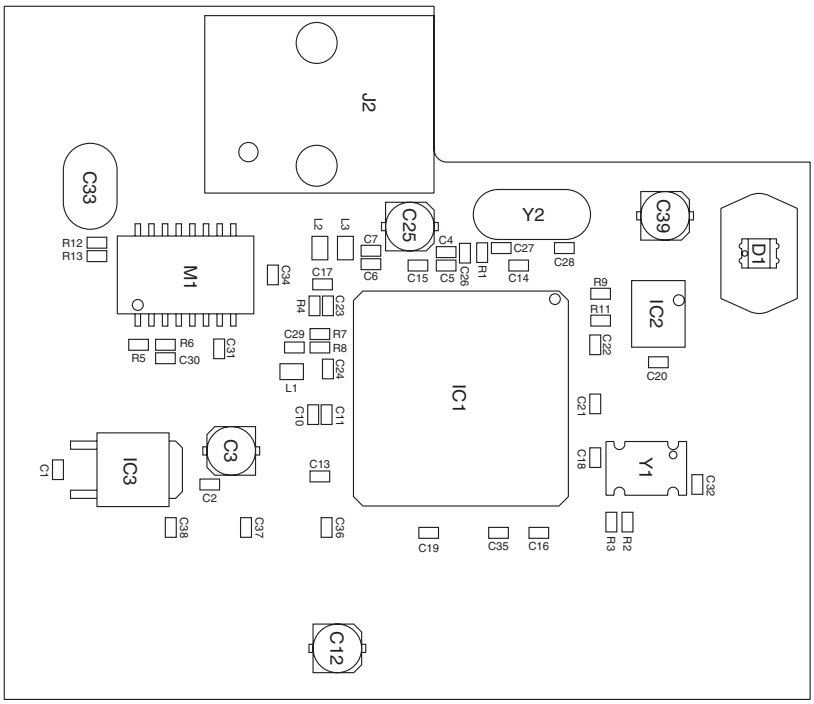
Also see illustration on the next page.

- Switch off the printer and disconnect the power cord.
- Disconnect all communication cables.
- Remove the left-hand cover as described in Chapter 3.3.
- Remove the LAN connector plug, which is snap-locked at the top of the rear plate.
- Remove the #T20 Torx screw that holds the upper/front part of the CPU board to the power supply unit and replace it with the hexagonal spacer included in the kit. Keep the screw.
- Connect the EasyLAN board to the PCI connector (J84) on the CPU board so the hole in the interface board becomes aligned with the spacer.
- Secure the EasyLAN board with the #T20 Torx screw you previously removed.
- From the inside of the electronics compartment, press the metal socket of the network extension cable into the square hole in the rear plate (where you removed the LAN plug) until it is held by its snap-lock.
- Route the extension cable over the SIMMs on the CPU board and connect it to the RJ-45 socket on the EasyLAN interface board (J2).
- From the outside, insert the thin end of the light guide through the small hole next to the RJ-45 socket on the rear plate. Press the clear plastic “lamp” in place. Connect the other end to the black plastic socket (D1) on the EasyLAN interface board.
- Pull the cable tie through the hole in the upper edge of the CPU board between the SIMMs and the RTC socket. Secure both the extension cable and the light guide with the cable tie.
- Fit the serial number label on the rear plate to the left of the RJ-45 socket.
- Put back the left-hand cover. Route the cable from the display unit above the ribbon motor. Connect the cable to connector J50 at the upper front corner of the CPU board.
- Connect the power cord and switch on the power.
- Enter the Setup Mode and print the test label “Hardware Info” in Fingerprint or “HW” in IPL to see if the printer detects the EasyLAN Ethernet interface board. For information on how to enter the Setup Mode and print test labels, refer to the User’s Guide for the printer in question.
- After startup, enter the Setup Mode to set up the network parameters. See Appendix A. Setting the network parameters in IPL, when the server does not support DHCP or BOOTP, is described in *EasyLAN Interface kit, Installation Instructions*.

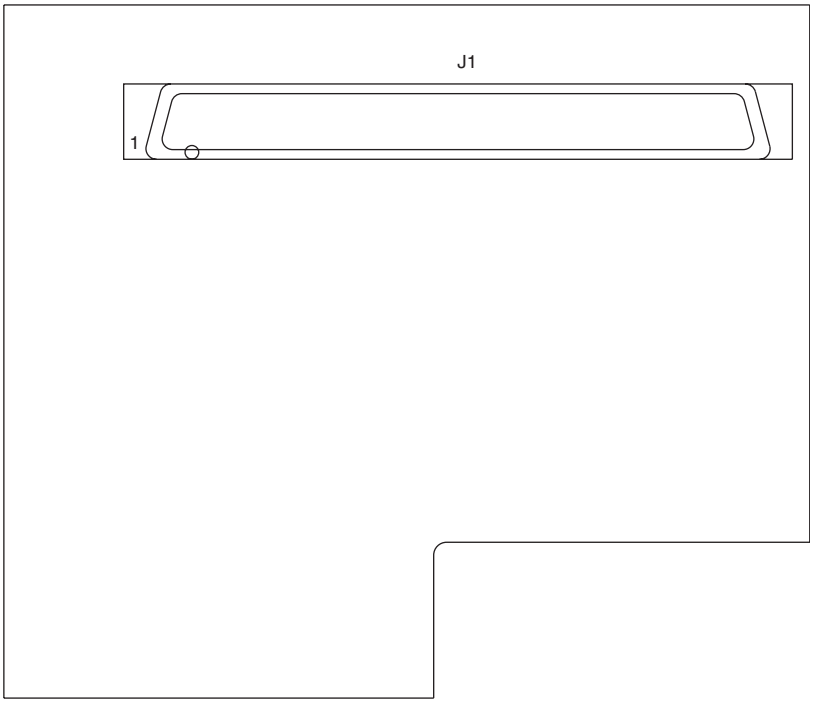

Network extension cable
Cable tie
Light guide
#T20 Torx screw and spacer
RJ-45 Ethernet connector
EasyLAN Ethernet interface board


RJ-45 Ethernet connector ("net1:")
Serial number label (MAC address)

Components

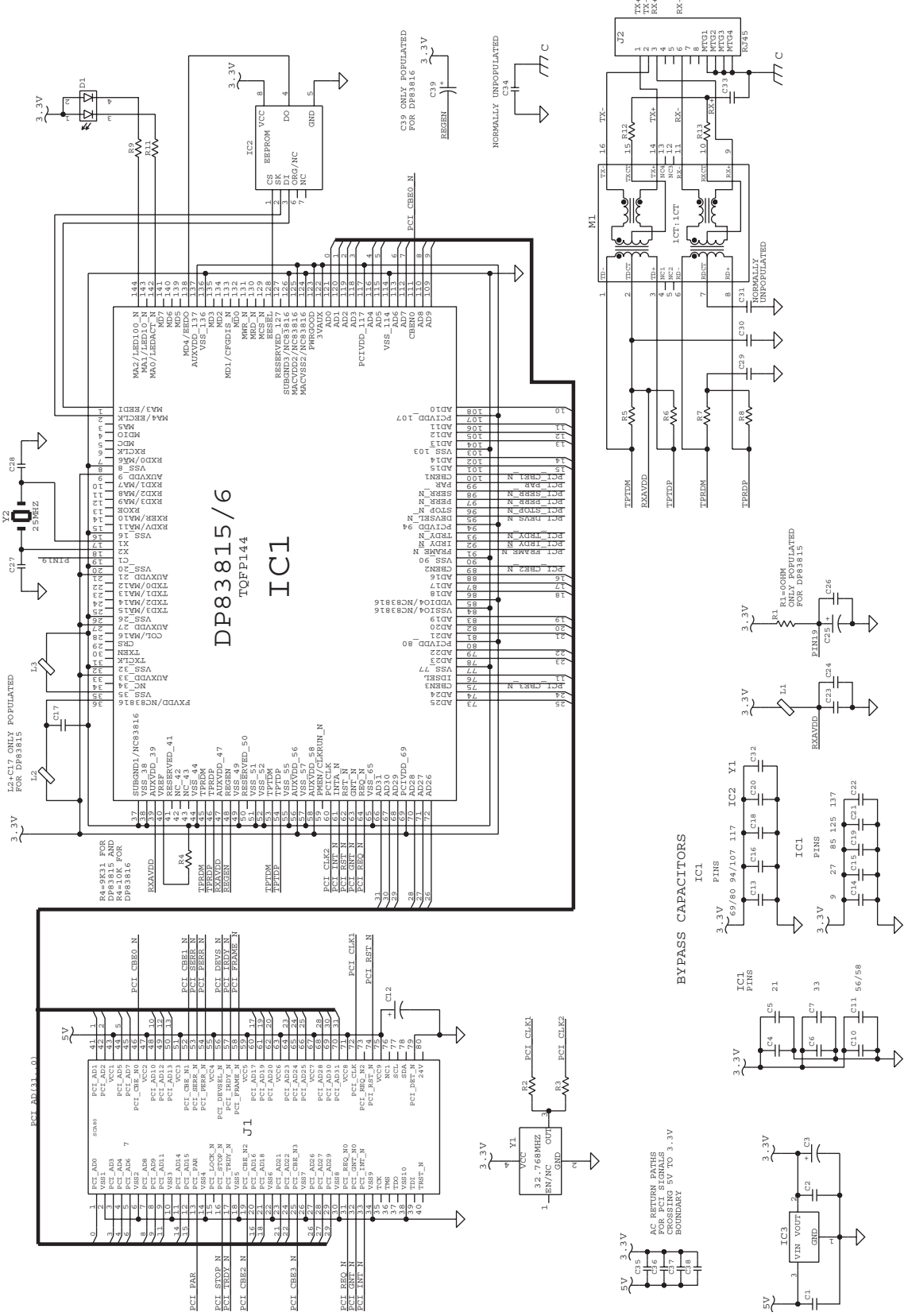


1-971645-26 EasyLAN Interface Board; Component side



1-971645-26 EasyLAN Interface Board; Soldering side

Schematics



1-971645-26 EasyLAN Interface Board; Schematics

16.10 EasyLAN Wireless Interface Board

Description

This section describes how to install an EasyLAN Wireless network interface in an EasyCoder PX4i and PX6i printer and how to connect it to a LAN, WAN, Intranet, or Internet network via a wireless connection.

The installation instructions describes how to physically install the interface board in a printer. Configuration and setup are described in the *EasyLAN Wireless Kit, Installation Instruction*s and the *Intermec EasyLAN, User's Guide* on the attached CD-ROM.

This interface kit must only be physically installed by an authorized service technician. The device is country/region specific and must be ordered for the correct country/region. Use of this device in other region than shown on the device home page/test label may violate applicable law.

Printer Firmware

The printer must either be fitted with Intermec Fingerprint v8.30 (or later) or IPL v2.30 (or later). In Intermec Fingerprint, the network port is addressed as device "net1:" (communication channel #5).

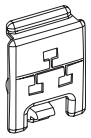
Installation Kit

The EasyLAN Interface Kit contains:
- One EasyLAN adapter board complete with radio module fitted
- Rear plate (for EasyCoder PF2/4i-series printers only)
- RJ-45 plug (for EasyCoder PM4i, PX4i, and PX6i only)
- One light guide
- One hexagonal threaded spacer
- One antenna extension cable
- One antenna
- One cable clip
- One cable tie
- One CD-ROM with software and manuals
- One Installation Instruction booklet

The only tools required for the installation are #T10 and #T20 Torx screwdrivers and a small wrench.

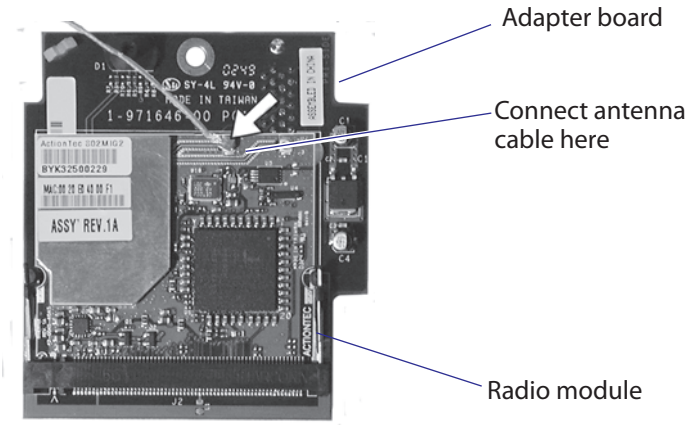
Installation Instructions

- Switch off the printer and disconnect the power cord.
- Disconnect all communication cables.
- Remove the left-hand cover as described in Chapter 3.2.
- Remove any present EasyLAN Ethernet interface including cables etc. Fit the RJ-45 plug included in the kit into the square hole left by the RJ-45 Ethernet connector.



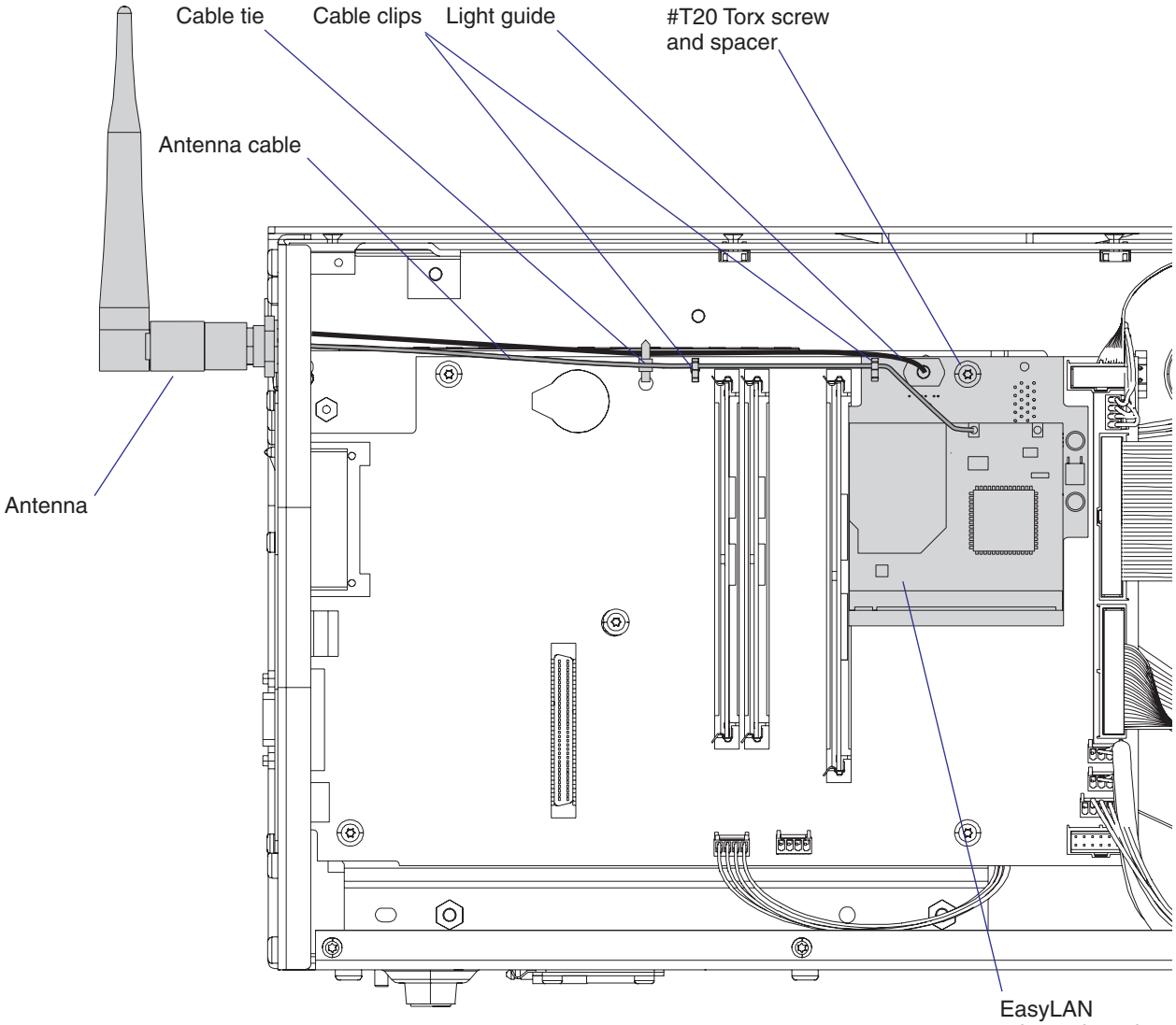
- Remove the antenna plug, which is snap-locked into the rear plate.

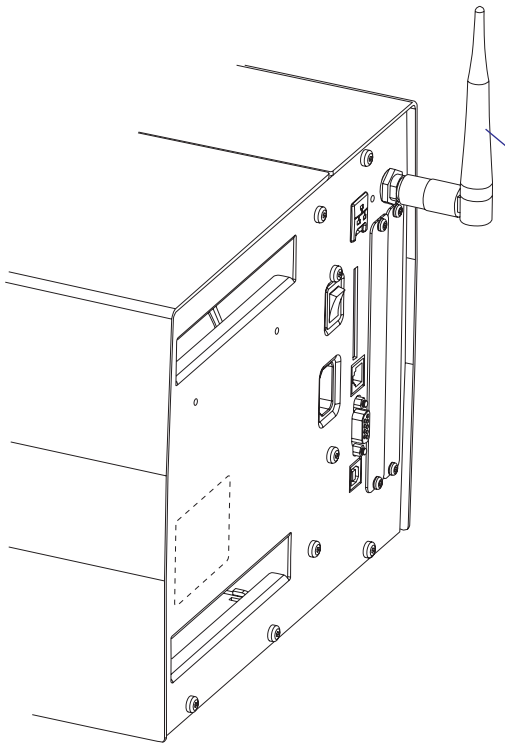
- Connect the antenna cable to the radio module, which is factory-fitted on the EasyLAN adapter board, as illustrated below. Support the upper edge of the radio module with a finger while connecting the cable.



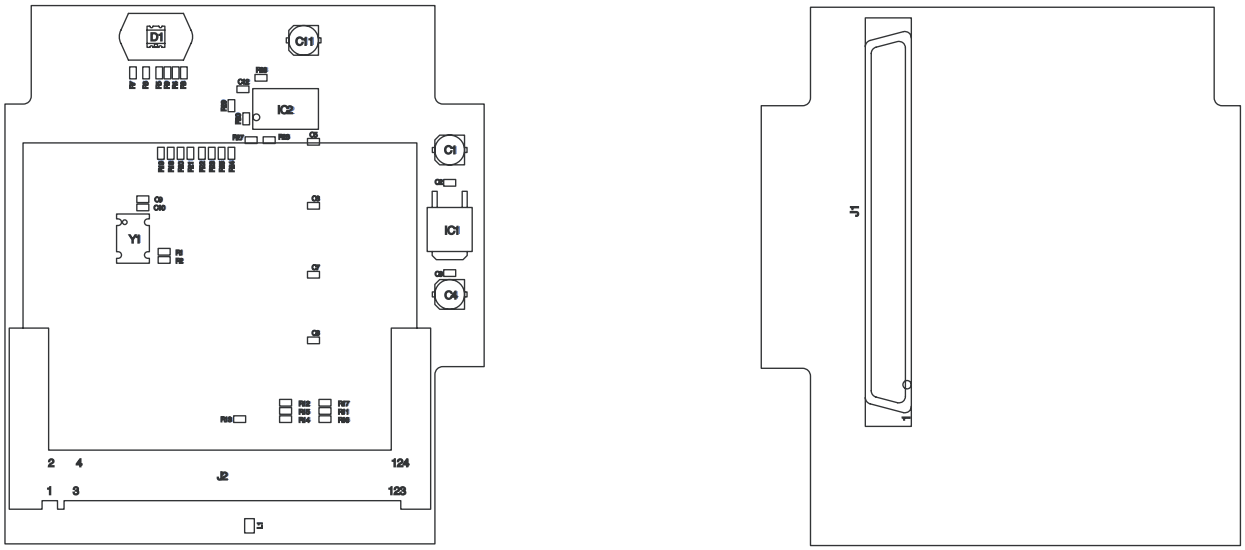
- Remove the #T20 Torx screw that holds the upper/front part of the CPU board to the power supply unit and replace it with the hexagonal spacer included in the kit. Keep the screw.
- Connect the EasyLAN adapter board to the PCI connector (J84) on the CPU board so the hole in the board becomes aligned with the spacer and secure the board with the #T20 Torx screw.
- Route the antenna cable over the SIMMs on the CPU board towards the rear plate and secure it using the cable clips included in the kit. One clip is factory-fitted on the EasyLAN adapter board and the other should be fitted in the small hole at the top of the CPU board immediately to the rear of the memory SIMM sockets.
- From the inside of the electronics compartment, insert the antenna connector through the round hole in the rear plate and lock it with the washer and nut on the outside.

- Fit the antenna to the connector of the antenna cable and bend the hinge so the antenna points straight up.
- From the outside, insert the thin end of the light guide through the small hole next to the antenna on the rear plate. Press the clear plastic "lamp" in place. Connect the other end to the black plastic socket (D1) at the top of the EasyLAN adapter board. Secure it with the cable tie through the hole at the upper edge of the CPU board.
- Put back the left-hand cover. Route the cable from the display unit above the ribbon motor. Connect the cable to connector J50 at the upper front corner of the CPU board.
- Connect the power cord and switch on the power.
- Enter the Setup Mode and print the test label "Hardware Info" in Fingerprint or "HW" in IPL to see if the printer detects the EasyLAN Wireless interface board. For information on how to enter the Setup Mode and print test labels, refer to the User's Guide for the printer in question.
- Set up the network parameters. There are several methods:
  - Connect the printer and a PC and run the EasyLAN Network Setup wizard, which can be found on the attached CD-ROM. Requires a PC running Windows 98 or later.
  - Insert a CompactFlash Card containing a configuration file in the printer and start it up. Configuration Compact Flash cards can be created using the EasyLAN Network Setup wizard on the attached CD-ROM.
  - Fingerprint:
    Establish an RS-232 communication with the printer and set it up using Fingerprint setup strings or setup files. IP address, netmask, default router, and name server can also be set using the printer's built-in keyboard. Only requirement on the PC side is a terminal program that can transmit and receive ASCII characters on an RS-232 line. See *EasyLAN Wireless Kit, Installation Instructions*.
  - IPL:
    Establish an RS-232 communication with the printer and set it up using IPL commands. Only requirement on the PC side is a terminal program that can transmit and receive ASCII characters on an RS-232 line. Select the method of obtaining IP address, netmask, default router, and name server automatically from the server using the printer's built-in keyboard. This requires a server that supports DHCP and/or BOOTP. See *EasyLAN Wireless Kit, Installation Instructions*.


Cable tie
Cable clips
Light guide
#T20 Torx screw
and spacer
Antenna cable
Antenna
EasyLAN
adapter board


Antenna
(packed separately when the EasyLAN Wireless
interface is factory-installed)

Components

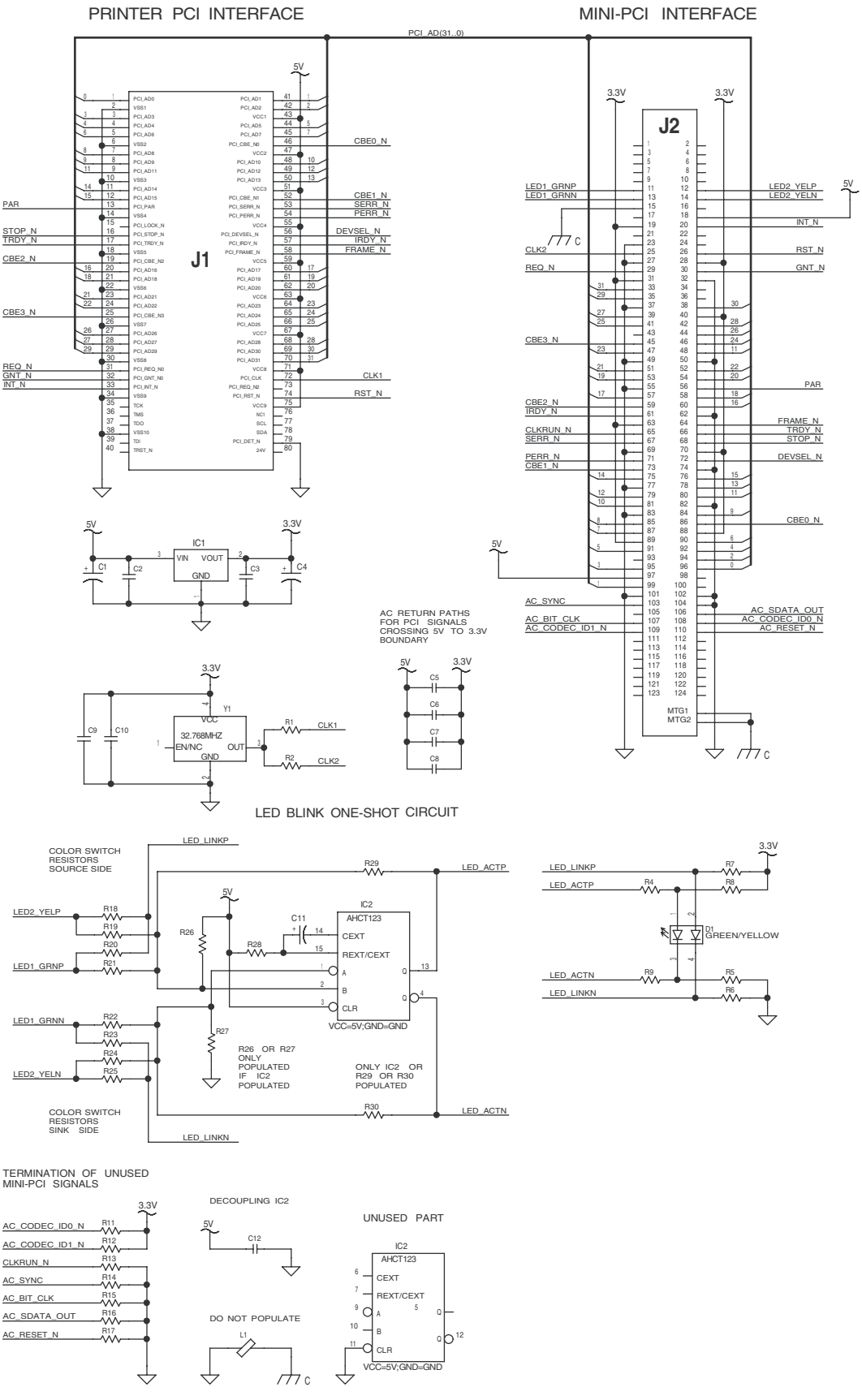


Primary Side

Secondary Side

1-971646-26 Adapter Board

Schematics



1-971646-26 Adapter Board

17 Troubleshooting

This chapter explains how to diagnose and fix troubles that may occur in an EasyCoder PX4i or PX6i printer, even if great effort has been made to safeguard troublefree printing. Some parts are, however, subject to wear and may need periodical replacement, such as the printhead.

Please note that replacement parts are generally only available as complete modules (see the Spare Parts Catalog or Spare Parts List).

This chapter is supplemented by the Technical Bulletins that are distributed as soon as any new problem has been reported and a remedy has been found.

17.1 Diagnosing

To diagnose the printer for faults, take steps in the following order:

- In case the printer is running the Intermec Fingerprint firmware, use Intermec Shell to check printer's setup and functions. Intermec Shell can be accessed regardless of any running autoexec.bat files as described below.
- Browse through the remainder of this chapter to find symptoms that apply to the faulty printer.
- Refer to the *Printer Technical Bulletins* for updated information.

Fingerprint only

The keyboard, display messages, sounds, and other functions will be custom-configured, if a custom-made program is running in the printer. Normally, such a program is started at power-on using an autoexec.bat file.

The procedure of starting up Intermec Shell, bypassing any other autoexec.bat files the printer's memory, is called the Test Mode. In fact, the Test Mode is just a convenient way of accessing Intermec Shell and, via Intermec Shell, also the Setup Mode.

Note: Any changes done in the Test Mode will remain after leaving the Test Mode.

Entering Intermec Shell in the Test Mode

- Switch off the power.
- Raise the printhead.
- Press any key on the printer's built-in keyboard, with the exception of <Shift>, and keep on pressing it.
- Switch on the power.
- The printer will start the initialization procedure.
- Release the key.
- The printer will start up Intermec Shell.
- Press <Enter> before the 5 sec. countdown is completed.

Inside Intermec Shell you have a variety of options, for example:

- Enter the Setup Mode to check or change the setup. Before changing the setup, you should print out or write down the settings so you can restore them before returning the printer.
- Make a printout of the present setup values.
- Perform testfeed operations.
- Print test labels to check the printout quality.
- Reset all setup values to default. Before resetting the setup, you should print out or write down the settings so you can restore them before returning the printer.
- Enter Intermec Fingerprint, for example to check what files the printer's memory contains or to list files.

- Restart the printer and leave the Test Mode.

Refer to the Intermec Shell Overview in Appendix 1 or in the User's Guide.

If the printer works normally in the Test Mode, it is likely that the malfunction is either due to communication problems, abnormal conditions at the site of operation, or a custom-made program.

Returning to Factory Default Setup (Fingerprint and IPL)

There are four ways to return to the factory default setup of the printer:

A Insert a special CompactFlash memory card and restart the printer.

B Use the Default Setup option in Intermec Shell (Fingerprint only).

C Use the Memory Reset option in the Test/Service part of the Setup Mode (IPL only).

D Use the printer's built-in keyboard as described below:

1 Lift the printhead.

2 Switch on the power to the printer and press the <i> key and wait until the printer beeps.

3 Swiftly press the following keys:
<▼> → <▲/Esc> → <▲/Esc> → <◀>

4 The following message will be displayed:

```
Factory Default?
Enter=Yes ESC=No
```

5 Within 10 seconds, press <Enter> to reset the printer to factory default. The parameters will be reset and the printer will continue the normal startup.

If you press <▲/Esc> or wait until the 10 seconds time-out has passed, the normal startup will continue without any reset being performed.

Note: The factory default will remove all files used to store settings. It will not reset settings that already has been read when the files are removed. This means that EasyLAN Wireless settings (SSID, keys, etc.) will retain their values from the previous start. However, the next reboot will reset them to factory default.

Troubleshooting short-list (Fingerprint and IPL)

Use this short-list to find the symptom that applies to the printer:

17.2 No Reaction at Power Up

Description:

There is no visible reaction when the power to the printer is switched on.

- The Power LED does not light up.
- There is no text in the display window.

Possible Causes and Suggested Remedies:

- **No power in AC wall socket.**
  - Check with some other electrical device or a voltage meter.
- **Power cord connectors not completely inserted in printer's power cord receptacle or in wall socket.**
  - Disconnect and firmly connect both ends of power cord. Try again.
- **Faulty power cord.**
  - Replace and try again.
- **Cables between power supply, driver board and CPU board not properly connected.**
  - Test as described in Chapter 17.5 using test points on CPU board (see Chapter 15.5).
- **Power Supply overload.**
  - Too high a temperature in the power supply unit. Leave the power on and wait for the power supply to cool off (may take up to half an hour). When the temperature returns to normal, the printer will automatically restart. If the error persists, examine the power supply as described in Chapter 17.5.
- **Faulty power supply unit.**
  - Refer to Chapter 17.5.
- **Faulty driver board.**
  - Refer to Chapter 17.6.
- **Faulty console unit.**
  - Refer to Chapter 17.7.

17.3 Printer Stops Working after Startup

Description:

The printer stops working after a successful startup.

- The Power LED is lit.
- The <Feed>, <Setup>, and <Print> keys, work properly.

Possible Causes and Suggested Remedies:

- **Communication problems?**
  - Refer to Chapters 17.9-17.11.
- **Printer malfunction?**
  - Check if the printer can print test labels in the Setup Mode.

Description:

The printer stops working after a successful startup.

- The Power LED is lit.
- There is no reaction on software commands.
- There is no reaction on any keys on the printer's keyboard.

Possible Causes and Suggested Remedies:

- The printer's main program has halted due to high external disturbances from other electrical sources.
  - Restart the printer and find out if there are disturbances coming via the AC supply, via a communication channel, or from other electrical appliances.
- **CPU board failures.**
  - Refer to Chapter 17.4.
- **Power Supply Unit failures.**
  - Refer to Chapter 17.5.
- **Driver board failures.**
  - Refer to Chapter 17.6.
- **Console errors.**
  - Refer to Chapter 17.7.

Description:

The printer stops working after a successful startup.

- The Power LED is not lit.

Possible Causes and Suggested Remedies:

- **Error in the supply of AC power to the printer.**
  - Refer to Chapter 17.2.
- **Faulty console, faulty power LED, or faulty cabling between CPU board and console.**
  - Refer to Chapter 17.7.

17.4 CPU Board Failures

Description:

The power LED is lit, but the printer has one of the following faults:

- The printer refuses to start.
- The program execution is halted.
- The stepper motor does not work.
- At startup, the message "Starting" is displayed followed by the message "Timed Out."

Possible Causes and Suggested Remedies:

- **Flash or SDRAM SIMMs not properly fitted.**
  - A SIMM is not fully inserted in its socket. Remove all SIMMs and fit them back again, making sure they are being firmly held by the snap-locks.
- **No Boot Flash SIMM in socket J20.**
  - A Flash SIMM containing a boot sector must be fitted in socket J20, or the printer will not start.
- **Fluttering voltages.**
  - Check voltages on the CPU board test points, see Chapter 13.4. If a voltage flutters with an interval of approximately one second, there may be a short-circuit on the CPU board. If a voltage is missing, there is probably an error in the power supply unit or the driver board, see Chapters 17.5 and 17.6.
- **Startup error.**
  - Execution of the initial boot sequence can be checked as described in Chapter 15.5. If the execution stops prematurely, try changing to a Flash SIMM that works in another printer. If that does not help, note where the startup sequence is halted and contact Intermec's Printer Product Support dept.
  - If there is no reaction neither on the display nor on the serial channel, there is a major error on the CPU board. Check the Flash and SDRAM SIMMs by installing them in another printer. Inspect the CPU board visually in the area of the processor (U13) and the support chip (U30). If no obvious fault is detected, replace the CPU board.

Description:

The power LED does not become lit when the power is switched on.

Possible Causes and Suggested Remedies:

- **Blown fuse.**
  - First check that the fault is not caused by an interruption of the 90-265 VAC input voltage, a faulty power cord, or a disconnected power cord.
  - Inspect the fuse F70. If the fuse has blown and you are positively sure that the fuse has blown because of a short-circuit of your own doing, you can cut off the legs of the fuse and solder a new fuse in its place. If the fuses blows again, replace the CPU board.

17.5 Power Supply Unit Failures

Description:

The printer refuses to print.

- The message “Temperature high please wait" (FP) or “Printhead hot” (IPL) appears in the display window.

The power supply unit contains wires and circuits with dangerous voltages. For safety reasons, it is strictly forbidden to try to repair a power supply unit or to replace a blown fuse. Generally, in a primary-switched power supply, a blown fuse is an indication that components in the power supply has been damaged or degraded. Even if you could get the power supply working by replacing a fuse, there is a risk that it soon will fail again and more components will be damaged. Therefore, whenever a fuse blows, always replace the entire power supply unit.

Possible Causes and Suggested Remedies:

- **Power Failure Interrupt signal activated because of a Power Supply overload.**
  - Too high a temperature in the power supply unit, for example caused by extreme ambient temperatures (possibly in connection with large black areas in the print image, high speed printing, and media that require a high energy level), triggers the automatic overheating protection switch.

    Leave the power on and wait for the power supply to cool down (may take up to half an hour). When the temperature returns to normal, the printer will automatically restart. If the error persists, examine the power supply (also see Chapter 13).

Description:

The printer stops working or functions are unstable.

- The power LED is unstable, weak or not lit..

Possible Causes and Suggested Remedies:

- **Wrong or missing 24 VDC voltage from power supply.**
  - Check the 24 VDC output on connector P2.
  - Check the cables between the power supply unit, the driver board, and the CPU board. If the cables are OK, try to find out whether the power supply or driver board is faulty (also see Chapter 17.6). Replace the faulty unit.
  - If there is no 24 VDC and you can rule out that the PSU has been shut down because of overheating (see above), check for a blown fuse in power supply. If any of the fuses F1 or F2 has blown, replace the entire power supply unit. Do not replace a blown fuse and do not attempt to repair the power supply unit (see “Warning” notice above).

17.6 Driver Board Failures

Description:

- Some or all of the following functions do not work properly.
  - Console
  - Printhead
  - Platen roller/ribbon rewind stepper motor
  - Liner rewind stepper motor
  - Cutter

Possible Causes and Suggested Remedies:

- Faulty driver board.
  - Check voltages using the test points on the CPU board, see Chapter 15.4. If all voltages are missing, check the 24 VDC output from the CPU board and the cable between the power supply and the driver board. If the 24 VDC input to the driver board is OK, the trouble is likely to be in the driver board.
  - Check the 24 VDC to the CPU board on connector P1, pin 1.
  - Check the 24 VDC to the printhead on connector P5 while performing a print operation.
  - Check the 33 VDC to the platen roller/ribbon rewinder stepper motor on connector P10 while performing a feed or print operation. The stepper motor driver may be damaged because the platen roller has been manually rotated while power was on, unintentionally making the stepper motor work as a generator.
  - Check the 33 VDC to the platen roller/ribbon rewinder stepper motor on connector P11 while performing a feed or print operation.
  - Check the 24 VDC to the cutter on connector P12 while performing a cut operation.

  If the any of the voltages are missing or are wrong, replace the driver board without attempting to repair it. The only exception is if you are positively sure that the fuse F1 has blown because of a short-circuit of your own doing. In that case, you can cut off the legs of the fuse and solder a new 4A fuse in its place.

17.7 Console Errors

Description:

The complete console is “dead”.

- Power LED is not lit.
- Green background lighting in display window is not lit.
- The 5V on the CPU board is OK (see Chapter 15.4).

Possible Causes and Suggested Remedies:

- **Defective cable.**
  - The cable between the CPU board and the console pcb. may be defective or not properly connected. Check cable and connector J50 on CPU board.
- **Defective console pcb.**
  - Replace. Do not attempt to repair.

Description:

No keys on the keyboard seem to be working or no keybeep.

- Power LED is lit.
- Green background lighting in display window is lit.

Possible Causes and Suggested Remedies:

- **Bad connection between keypad and console pcb.**

- Check connections on the two flat cables between the keypad and connectors P2 and P3 on console pcb.

- **Keys disabled or keyboard remapped by a custom-made program (Fingerprint only).**
  - If the printer does not respond to any keys in the Test Mode, the keyboard is defective and needs to be replaced.
- **Keybeep disabled by a custom-made program (Fingerprint only).**
  - If no beep is heard when the keys are pressed in the Test Mode, but the printer nevertheless responds to the keys, the beeper is out of order.
- **Keyboard damaged by moisture.**
  - Soaking the keyboard with, for example, water or cleaning fluids, may cause short-circuits. Let it dry, replace if necessary.

Description:

No messages appear in the display window after power-up.

- Power LED is lit.
- Green background lighting in display window is lit.

Possible Causes and Suggested Remedies:

- **Display not utilized by custom-made program (Fingerprint only).**
  - If there is no display function in the Test Mode, the display is out of order and the console unit needs to be replaced. Else, check out the custom-made program.

17.8 Error Messages

Description:

An error message appears in the display window or is returned via a serial port.

- The printer stops functioning.
- The Error LED is usually lit.
- Consult the *Intermec Fingerprint v8.xx, Programmer's Reference Manual* or *IPL Programming, Reference Manual* for the meaning of the different error codes and use that information to correct the error.

Depending on the firmware, printer's mode, or running program, there are different ways of giving the error message.

Immediate Mode (Fingerprint only)

- The firmware can detect and return three error conditions, provided the printhead is lowered and a media feed is executed.
  - Error 1005 (“Out of paper”)
  - Error 1027 (“Out of transfer ribbon”)
  - Error 1031 (“Next label not found”)

Programming Mode (Fingerprint only)

- At every erroneous instruction during programming, the printer transmits an error code on the selected standard OUT channel (serial communication only), provided the verbosity is not disabled. The same applies if programming errors are detected when the program is run.
- When a program is executed, the same errors as in the Immediate Mode will be detected. The execution stops and an error message is transmitted. It is recommended to included some kind of error handler in any custom-made application program, for example ERRHAND.PRG.

Intermec Direct Protocol (Fingerprint only)

- Eleven error conditions can be detected. Note that by default verbosity is **off** in the Intermec Direct Protocol.
  - Error 15 ("Font not found")
  - Error 18 ("Disc full")
  - Error 37 ("Cutter device not found")
  - Error 43 ("Memory overflow")
  - Error 1003 ("Field out of label")
  - Error 1005 (“Out of paper”)
  - Error 1006 (“No field to print”)
  - Error 1022 (“Head lifted”)
  - Error 1027 (“Out of transfer ribbon”)
  - Error 1031 (“Next label not found”)
  - Error 1606 (“Testfeed not done”)

  The Intermec Direct Protocol has a programmable error-handler. Refer to the *Intermec Direct Protocol v8.xx, Programmer's Reference Manual*.

IPL only

- Ten possible errors are indicated by messages in the display window:

Error	Displayed message
Empty/Paused	PAUSE
Out of media	PAPER OUT
Out of ribbon	RIBBON OUT
Printhead lifted	PRINT HEAD UP/PRESS FEED
Cutter error	OPEN&SHUT CUTTER
Ribbon fitted	RIBBON FITTED
Paper fault	PAPER FAULT
Power supply error	PSU ERROR
Power supply too hot	PSU OVER TEMP
Printhead too hot	PRINTHEAD HOT

  Some additional errors can be returned to the host as an ASCII number by the <BEL> command, see *IPL Programming, Reference Manual*.

Firmware Error

- In case the CPU is unable to access data on a given address, the internal program will light up the red error LED regardless of any error-handling program.

17.9 No Communication (general)

Description:

The following actions are valid for all communication interfaces installed in the printer.

Possible Causes and Suggested Remedies:

- **Defective cable between printer and host.**
  - Check that the communication cable is correctly inserted and that it is of the correct type and is correctly configured.
  - Check that any clips or ground screws are properly engaged.
  - Inspect cable for physical damage.
  - Disconnect and connect the cable a few times to rub off possible oxide from the connectors.
  - Try using another identical cable.
- **Defective cable between interface board and CPU board.** This does not apply to the serial port ("uart1:"), the USB port, or any EasyLAN board which all are fitted directly on the CPU board.
  - Check that the cable is connected correctly.
  - Inspect cable for physical damage.
  - Disconnect and connect the cable a few times to rub off possible oxide from the connectors.
  - Replace the cable.
- **Error in host.**
  - Try connecting the printer to another host computer.
- **Erroneous data.**
  - If using Fingerprint, check if the data string contains the correct characters using the Line Analyzer program included in Intermec Shell (see the *User's Guide*).

17.10 No Serial Communication

Description:

The following actions are valid for the standard RS-232 serial interface ("uart1:" in Fingerprint) fitted on the CPU board and to some extent also to any other serial interfaces on optional interface boards. Also see Chapter 17.8.

Possible Causes and Suggested Remedies:

- **Communication setup mismatch.**
  - Press the <i> key or enter the Setup Mode to check that the printer and host are set for the same communication parameters, such as baud rate, parity, character length, stopbits, new line and handshaking. It is strongly recommended to use some kind of handshaking, for example XON/XOFF or RTS/CTS.
- **Damaged RS-232 driver circuit.**
  - With the aid of an oscilloscope, or some kind of line analyzer ("break-out box"), verify that the interface signals to and from the CPU board are correct. The RS-232 driver (U61) could have been damaged as a result of voltage transients from the interface, necessitating the CPU board to be replaced. Repeated damage is an indication of insufficient cable screening, or the electrical environment being too noisy.
- **Circuits or straps on an optional interface board missing or fitted incorrectly.**
  - See configuration instructions in Chapter 16.
- **No supply voltage.**
  - Verify that the +3.3 VDC and +5 VDC voltages are present (see Chapter 15.4).
- **No external +5 VDC.**
  - The printer supplies max. 500 mA. The current is automatically switched off at higher loads. Check the consumption of the connected device.
  - The switch (RP60 on the CPU board; IC9 on the Industrial Interface Board and the Double Serial Interface Board) may be out of range and need to be replaced.
- **Too long communication cables.**
  - RS-232 max. 10-17 m (33-49 ft).
  - RS-422 max. 1,200 m (4,000 ft).
  - RS-485 max. 1,200 m (4,000 ft).
  - Current Loop max. 500 m (1,500 ft).

- **Input buffer on host overflow.**
  - The input buffer should normally be handled by the software of the host. Increase the receive buffer in the printer to a large value, restart the host to empty its input buffer and try again.
- **No response from printer a custom-made program is run (Fingerprint only).**
  - The verbosity can be controlled using the Fingerprint instructions VERBON/VERBOFF and SYSVAR(18). In the Intermec Direct Protocol, verbosity is disabled by default. Check the program for instructions that affect the verbosity.
  - Verify that the correct communication port is selected as standard IN/OUT channel.
- **Interface type mismatch (Fingerprint only).**
  - A communication cable is connected to a port configured for another type of serial interface; for example an RS-232 cable is connected to an RS-422 port. In the Setup Mode, the type of interface for which the interface board is configured is indicated for each communication port ("uart2:" to "uart5:"), see Appendix A.

17.11 Network Communication Troubles

This section applies both to EasyLAN Ethernet and EasyLAN Wireless communication between a printer and a local area network. It does not cover general network troubles in other types of equipment, such as wiring, access points, routers, switches, servers, etc. It is assumed that the network is in good working order, that is, other devices connected to the network works well and the trouble can be pinpointed to the printer.

Description:

The printer cannot communicate with the network after the network interface has been installed.

Possible Causes and Suggested Remedies:

- **Defect interface board or bad connection between interface board and CPU board.**
  - Print a Hardware test label in the Setup Mode to see if the printer recognizes the interface board. Also check if the Network node is shown in the Setup Mode. If not, switch off the power, disconnect the interface board, clean the connectors, and connect the interface again. Switch on the power. Print a new Hardware test label. If the troubles remains, replace the interface board.

    Wireless only: Also check visually that the radio module is properly connected to the adapter board. If the radio module is not connected properly, the Network node will be displayed in the Setup Mode but the wireless interface will not be recognized on the hardware test label.
- **Bad internal cabling.**
  - Ethernet only: Check that the network extension cable is properly connected to the interface board. Visually check the cable for breaks or shavings.
  - Wireless only: Check that the antenna cable is properly connected to the connection point marked “MAIN” on the radio module. Visually check the cable for breaks or shavings.

    Check that the antenna is properly connected and is pointing straight up.
- **Bad connection between printer and an Ethernet networ**k
  - Check the network LED indicator at the back of the printer. There should be a green light flashing occasionally showing network activity or a solid yellow background light if connected to a 100 Mbps network. Note that there is no background light indication provided for 10 Mbps wired networks.
  - Check that the network cable is connected correctly to the network wall socket, hub, or similar and to the RJ-45 socket on the printer’s rear plate.

- Check that the cable connecting to the network is not of "crossover" type. Use a straight "pin to pin" cable to connect to a LAN, but use a crossover cable to connect directly to a PC.

  If you are trying to connect the printer directly to a PC via a crossover network cable, you may need to disable the web browser's proxy settings on your computer to get in contact with the printer's web pages.

- **Bad communication between printer and a Wireless network**
  - Check the network LED indicator at the back of the printer. There should be a green light flashing occasionally showing network activity, or a solid yellow background light if the network card is associated with an access point, or flashing yellow light if the network card is searching for an access point.
  - Press the <**i**> key on the printer's front panel and browse to the network information. There you can see the present signal strength and channel. If both are 0, the network card is not associated with any access point and/or the WLAN settings are wrong.
  - Check if the access point is on.
  - Check if the access point lists the MAC address of the network card.
  - Check if other devices associated with this access point are working.
  - Inspect the location and see if there is any reason why the radio transmission between printer and access point is prevented, such as shielding objects like walls, shelves, fork lifts, metal grids, etc. Sometimes, just moving the printer around a little may help.

    For demanding applications, Intermec offers a series of high gain antennas that can replace the standard antenna.
  - Check SSID settings.
  - Check WEP settings. Note that you must have the same WEP key settings in both the printer and the access point in regard of both the content of the WEP keys and the order of the WEP keys. However, you can have one active WEP key selected in the printer and another in the access point.
  - Check the region setting, which can be found on the Network Info test label.

Description:

The printer seems to be physically connected to the network but cannot communicate.

Possible Causes and Suggested Remedies:

- **Bad IP Settings in printer**
  - Use a PC connected to the same network as the printer. First of all verify the network configuration of the printer as described in the Installation Instructions provided with the kit.

PC Settings

You should verify that the PC has a working connection to the network. Do this by opening a **Command Prompt** and type the command that corresponds to your operating system:
- For Windows 95, 98 and ME, use the command *WINIPCFG*.
- For Windows NT4, 2000 and XP, use the command *IPCONFIG*.

The PC will show a table with its configuration containing the settings for IP-address, Subnet Mask and Default Gateway. Verify these settings to be sure that the computer is correctly configured to access your network.

Printer Settings

Check the IP address of the printer. Press the <**i**> key on the printer's keyboard and use the <◀> and <▶> keys to browse to the IP address. In Fingerprint, a prerequisite is that the standard IN port is set either to "auto" or "net1:", which can be done using Intermec Shell.

Another method is using the Setup Mode:

Press the <**Setup**> key, on the printer's internal keyboard, and step your way to "*NETWORK*" using the <▶> key.

By pressing <**Enter**> on the printer, you can step through the configuration to verify the settings.

Press <**Setup**> to exit the Setup Mode.

More information about configuration settings can be obtained by printing a test label.

Also check on the printer's home page (Configuration [TCP/IP]) that the net1 TCP Port Number is correct (default 9100).

Verifying IP Address

In the *User's Guide* of the printer, you will find information on how to print test labels in the chapter *"Setting Up the Printer"*. Print the network test label and find the IP Address field. If the IP address is set to 0.0.0.0, the network card has not received a IP address. Verify the *IP SELECTION* setting under the *NETWORK* menu in the Setup Mode. See the *Installation Instructions* for information on various methods for setting the IP address automatically or manually.

Verifying Subnet Mask

Check subnet mask of PC and printer and make sure they belong to the same segment. For example:

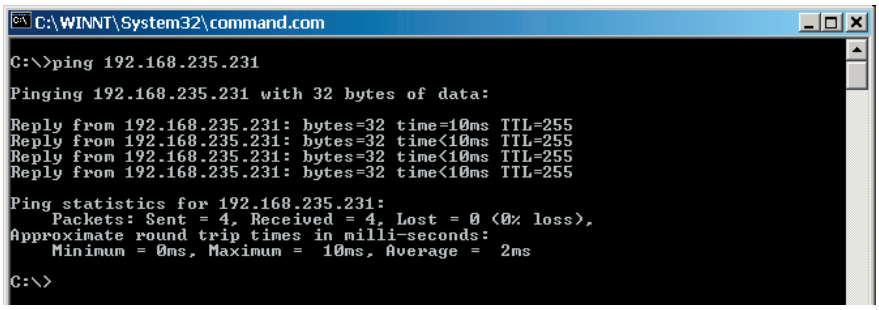
If they have the subnet mask	The numbers in the PC and Printer IP addresses have to be
255.255.255.0	<Same>.<Same >.<Same >.<Any >
255.255.0.0	<Same>.<Same >.<Any >.<Any >
255.0.0.0	<Same>.<Any >.<Any >.<Any >
Other subnet masks	Contact the network administrator

In case the addresses are not in the same network segment, the printer may not be reachable from the LAN side. Check the configuration with the administrator.

Pinging the Printer

Start the **Command Prompt**. In the Command Prompt, type *Ping <printer IP-Address>* and then click **OK**.

This command sends an echo command to the EasyLAN to check if the PC and the printer can reach each other through the network. The following figure shows a correct response to the Ping command.



The first reply to the first Ping command often takes more time than the following. This is a normal behavior. The first time the Ping command is executed, the PC needs some extra time to perform a "discovery" of the network address (ARP request). The Ping command makes the printer's network LED flash green.

If you have completed the test procedure and all the conditions are met, but you do not get any answer to the Ping command, then you probably have a hardware problem.

Description:

The performance of a Wireless network connection ceases to work or the performance deteriorates after having worked properly for some time after installation.

Possible Causes and Suggested Remedies:

- **Bad radio connection between printer and access point.**
  - Either the printer or the access point has been moved after installation or some kind of obstruction has come between printer and access point. In principle, there should be a free line-of sight between the access point and the antenna. There is also a distance limit.

    Check the signal strength.

    - Check network test label for statistics.

    - Try moving either the printer or the access point (or both) or consider fitting a higher gain antenna.
- **Slow response.**
  - Too many devices associated with the same access point.

17.12 Sensor Malfunctions

Label Stop Sensor (LSS)

Description:

Label (ticket) gap or black mark not detected by the label stop sensor (LSS) or wrong amount of media feed.

Possible Causes and Suggested Remedies:

- **Lost or obsolete media feed data, for example after a headlift, change of media, or replacement of the sensor.**
  - In Fingerprint, perform a TESTFEED operation, for example by simultaneously pressing <Shift> and <Feed> or selecting the Testfeed option in the Setup Mode.
  - In IPL, adjust the media feed by pressing the Feed/Pause button.
- **Bad LSS lateral alignment.**
  - Check that the gaps or marks actually pass between the upper and lower parts the label stop sensor (lateral alignment), see Chapter 7.5.
  - Check that both parts of the LSS are adjusted to the same lateral position, see Chapter 7.5.
- **Light path obstructed.**
  - Check that both the upper and lower sensors are free from dust and the slots in the upper and lower guide plates are free from stuck labels, or other matters that may interfere with the path of light.
- **Printer set for wrong media type.**
  - Set up the printer for the correct media type.
- **Media feed detection using PRSTAT (Fingerprint only).**
  - PRSTAT AND 8 only checks for out-of-media conditions once as opposed to the normal error checking (errors 1005 and 1031) that checks for out-of-media conditions almost continuously. Thus, when using PRSTAT, a dark spot or a bad media angle can give an incorrect out-of-media indication, especially when using tickets (w. mark).
- **Bad connection**
  - Check the LSS cables and make sure that they are correctly connected to J54 and J55 on the CPU board, see Chapter 13.3.
- **Faulty sensor or diode.**
  - Replace LSS as described in Chapter 7.5.
- CPU board not configured for the right type of printer.
  - Reconfigure the CPU board as described in Chapter 15.8.

Note: The LSS Test option in the Setup Mode is useful for identifying LSS troubles. Refer to Chapter 8.5.

Headlift Sensor

Description:

- The printer does not work, although the printhead is lowered.
- Error condition 1022 *"Head lifted"* (FP) or *"Print Head UP/Press Feed"* (IPL) is indicated at any attempt of printing a label.

Possible Causes and Suggested Remedies:

- **Headlift sensor blocked.**
  - Check the sensor for dust or foreign objects.
- **Bad connection.**
  - Check that the sensor's cable is connected to J58 on the CPU board. Inspect cable for damage.
- **Faulty sensor.**
  - Replace as described in Chapter 7.8.

Label Taken Sensor (LTS)

Description:

The label taken sensor (LTS) is not working properly.

Possible Causes and Suggested Remedies:

- **Intermec Fingerprint instruction missing.**
  - The LTS must either be enabled using an LTS& ON statement, or the status of the LTS must be polled using a PRSTAT function in the current Intermec Fingerprint program.
- **IPL instruction missing.**
  - The self-strip mode must be enabled using the commands **<STX>R<ETX>** and **<STX><SI>t1<ETX>**.
- **Bad connection.**
  - Check that the LTS is correctly connected to J53 on the CPU board.
  - Check that the cable between CPU board and sensor is not damaged.
- **Dirty sensor.**
  - Make sure that the active parts of the sensor are not obstructed by dust or foreign objects.
- **Wrong LTS sensitivity.**
  - The sensitivity of the sensor's receiver and the light intensity of the sensor's emitter are adjustable, see Chapter 10.4.
- **Interference from sunlight or lamps.**
  - Shield the sensor from interfering light source.
- **Defective sensor.**
  - If still no reaction, the sensor is probably defective. Replace.

Ribbon Sensor

Description:

The ribbon sensor is not working properly.

Possible Causes and Suggested Remedies:

- **Bad sensor adjustment (Fingerprint only).**
  - Adjust the sensor in the Setup Mode as described in Chapter 6.4.
- **Bad connection or faulty sensor.**
  - Cable between the ribbon sensor and J56 on the CPU board damaged or not correctly connected?
  - Sensor blocked by dust or foreign matters? Clean.
  - Faulty ribbon sensor? Replace.
- **Bad detection pattern inside ribbon supply bobbin.**
  - Check the black and silvery sector pattern at the inner end of the ribbon supply bobbin for scratches or dust.

Paper Sensor

Description:

The ribbon sensor is not working properly.

Possible Causes and Suggested Remedies:

- **Bad sensor adjustment.**
  - Adjust the sensor in the Setup Mode.
- **Bad connection or faulty sensor.**
  - Cable between the paper sensor and J57 on the CPU board damaged or not correctly connected?
  - Sensor blocked by dust or foreign matters? Clean.
  - Faulty paper sensor? Replace.
- **Bad detection pattern inside media supply bobbin.**
  - Check the black and silvery sector pattern at the inner end of the media supply bobbin for scratches or dust.

17.13 Printing Troubles

The best way to start is to get an overall check of the printout quality by printing a series of test labels in the Test Mode.

If you suspect a defective printhead, you can check it out using the following Intermec Fingerprint instructions (see *Intermec Fingerprint v8.xx, Programmer's Reference Manual*):

- FUNCTEST$ ("HEAD")
- HEAD
- SYSVAR(21)
- SYSVAR(22)

Description:

No printout at all.

Possible Causes and Suggested Remedies:

- **Bad connection.**
  - Is the cable between the printhead and P5 on the driver board fitted correctly and not broken or otherwise damaged?
  - Is the cable between the printhead and J40 on the CPU board fitted correctly and not broken or otherwise damaged?
- **Dirty printhead.**
  - Is the printhead clean? Residue from label adhesive, thermal paper topcoating, or preprint ink prevents the printhead from functioning correctly. Clean the printhead as described in the *User's Guide*.
- **Wrong type of direct thermal media.**
  - In case of direct thermal printing, verify that the media is intended for direct thermal printing (not thermal transfer!) and of an approved quality.
- **Wrong type of thermal transfer ribbon.**
  - In case of thermal transfer printing, verify that the stock of ribbon is of an approved quality.
- **Transfer ribbon loaded incorrectly.**
  - Verify if the ribbon is loaded with the ink-coated side facing the receiving face material. If not, reload the ribbon as described in the *User's Guide*.
- **Transfer ribbon mechanism failure.**
  - See Chapter 17.14
- **Wrong printhead voltage.**
  - Check the printhead voltage +24 VDC ±2V (see Chapter 15.4). If the power on the CPU board is OK, but the trouble remains, disconnect the power cable on the inner side of the printhead and use probes to measure the voltage during printing between two adjacent lines in the socket. If wrong voltage, check driver board and cables.

- **Wrong printhead pressure.**
  - Check the printhead pressure, see Chapter 8.8.
- **Headlift sensor out of order.**
  - Check the headlift sensor as described in Chapter 17.11.

Description:

Overall weak printout.

Possible Causes and Suggested Remedies:

- **Various reasons.**
  - Check as for "No printout at all".
- **Wrong Contrast/Darkness setup.**
  - Check setup for extremely low value.
- **Wrong Paper Type/Media Sensitivity setup.**
  - Verify that setup matches the direct thermal media or the combination of transfer ribbon and media.
- **Wrong printhead voltage.**
  - Measure the +24 VDC on the CPU board, see Chapter 17.3 "No printout at all."
- **Printhead pressure too low.**
  - Adjust as described in Chapter 8.8.

Description:

Weaker printout on either inner or outer part of label.

Possible Causes and Suggested Remedies:

- **Bad printhead pressure alignment.**
  - Adjust the position of the headlift arm as described in Chapter 8.8.

Description:

Overall too dark printout (bleeding). Too dark a printout is particularly troublesome when printing compact bar codes, in which case spaces between the bars become less distinctive, and consequently less readable.

Possible Causes and Suggested Remedies:

- **Wrong Contrast/Darkness setup.**
  - Check Contrast/Darkness setup for extremely high value.
- **Wrong Paper Type/Media Sensitivity setup.**
  - Verify that setup matches the direct thermal media or the combination of transfer ribbon and media.
- **Wrong printhead voltage.**
  - Measure the +24 VDC on the CPU board, see Chapter 17.3 "No printout at all."

Description:

Weak or missing printout of some dots.

Possible Causes and Suggested Remedies:

- **Dirty printhead or platen roller.**
  - Examine the printhead and the platen roller for dust, adhesive residue, or visible damage.
  - Clean or replace.
- **One or two missing dots.**
  - May be due to mechanical damage to the printhead. Try to establish why such damage have occurred in order to prevent future failures of this kind. (Hard foreign particles, electrostatic discharge?)
  - If the printer has been used for printing on less than full width labels for some time, the platen roller and possibly also the printhead may have become worn from the outer edge of the media. This will show up when reverting to wider labels. Change the platen roller and possibly also the printhead.
- **Preprinted ink has got stuck to the dot line.**
  - Avoid preprinted labels with ink that has a low melting point (less than +225°C/+437°F).
- **Many dots, or a block of dots, are missing.**
  - The internal IC circuit of the printhead is probably damaged. Replace the printhead.

Description:

Unexpected black printout (completely or partially).

Possible Causes and Suggested Remedies:

- **Wrong printhead voltage.**
  - If the printer unexpectedly produces completely or partially black printout, or prints a black line across the media at startup (regardless of label layout), check the printhead voltage +24 VDC ±2V (see Chapter 15.4). If the power on the CPU board is OK, but the trouble remains, disconnect the power cable on the inner side of the printhead and use probes to measure the voltage during printing between two adjacent lines in the socket. If too high, in the range of 40 to 50V during printing, replace the power supply unit.
  - The printhead is most certainly damaged too and will also need to be replaced.

Description:

Media feed does not work properly.

Possible Causes and Suggested Remedies:

- **Faulty stepper motor.**
  - Connect a replacement stepper motor to P10 on the driver board (see Chapter 14) and perform a print or feed operation. If this motor runs, the original stepper motor is probably damaged and needs to be replaced (see Chapter 7.3).
- **Dirty or worn platen roller.**
  - Inspect the platen roller for visible wear. Replace if necessary (see Chapter 8.2).
  - Clean the platen roller using a cleaning card or a soft cloth moistened with isopropyl alcohol. Paper dust or adhesive residue can deteriorate the media feed function or make the media slip.
- **Intermec Fingerprint instruction missing.**
  - Verify that a print command is actually issued in the current Intermec Fingerprint program.
- **Power Supply Unit malfunction or bad connection.**
  - The stepper motor could be incorrectly connected to P10 on the driver board, or its drive circuit (U3) on the driver board could be damaged.
  - Check that all pins in the connector of the stepper motor's cable are fully inserted.
  - Measure the +24 VDC on the driver board, see Chapter 14. If there is no power, when an attempt to print is made, the power supply unit or driver board is probably faulty.
- **CPU board configured for wrong printer model.**
  - A replacement CPU board must be configured for the correct printer model after installation. Refer to Chapter 15.8.

Description:

Excessive wear of printhead.

Possible Causes and Suggested Remedies:

- **Various reasons.**
  - Refer to Chapter 8.6 "Printhead/Precautions" for advices on how to reduce the wear of the printhead.

17.14 Transfer Ribbon Troubles

Description:

The thermal transfer ribbon breaks.

Possible Causes and Suggested Remedies:

- **Wrong brand of ribbon.**
  - Check if the transfer ribbon is of an approved brand. If not, recommend the customer to use approved brands only.
- **Bad ribbon load.**
  - Check that the ribbon is routed so it runs above upper guide (that is, the one where the upper part of the LSS is fitted).
- **Wrong paper type setup.**
  - Check that the printer is set up correctly for the type of thermal transfer ribbon in use, see the *User's Guide*.
- **Wrong printhead voltage.**
  - Check printhead voltage, see Chapter 15.4.

Description:

The thermal transfer ribbon wrinkles.

Possible Causes and Suggested Remedies:

- **Media misalignment.**
  - Are the edge guides positioned so as to guide the media closely along the printer's center section?
  - Is the media supply roll as far in on the hub as possible?
- **Ribbon misalignment.**
  - Are both the ribbon supply roll and the ribbon rewind core pressed as far in on their hubs as possible?
- **Ribbon path obstructed.**
  - Check that nothing obstructs the path of the transfer ribbon.
- **Wrong or uneven printhead pressure.**
  - Check that the pressure arm is center-aligned in the relation to the width of the media, see Chapter 8.8.
  - Check the printhead pressure, see Chapter 8.8. Decrease the pressure somewhat and test for both wrinkles and printout contrast. You may need to feed out 25-50 cm of ribbon (1-2 ft.) before you can see any effect.
- **Bad ribbon break shaft adjustment.**
  - Check the adjustment of the ribbon assist roller, see Chapter 8.9. Do not change the adjustment before you have performed all other checks mentioned above.

Description:

No transfer printout.

Possible Causes and Suggested Remedies:

- **Refer to Chapter 17.13 for general printout troubles.**
- **Bad ribbon load.**
  - Transfer ribbon loaded incorrectly so the ink-coated side does not face the receiving face material. Reload ribbon.

Description:

Ribbon fed out in front of printer.

Possible Causes and Suggested Remedies:

- **Printer is set up for direct thermal printing, but a ribbon is loaded.**
  - Remove ribbon or change the paper type setup to thermal transfer.
- **Ribbon rewinder belt broken.**
  - Replace as described in Chapter 8.4.

17.15 Liner Takeup Troubles

Description:

The internal liner takeup unit does not work properly.

Possible Causes and Suggested Remedies:

- **Bad liner takeup or bad separation of labels from liner at the tear bar.**
  - Check that the media is routed correctly as described in the *User's Guide*.
  - Check that the liner is securely locked to the takeup hub by the brace, so it cannot slip.
  - Check the setup for incorrect media type and feed adjust settings.
- **Takeup unit slips.**
  - Spring clutch inside the takeup hub is broken.
  - Either the outside of the pulley or the inside of the hub has become worn.
- **Either the liner drive roller in the print mechanism or the takeup hub is not driven by the stepper motor.**
  - Check if any of the belts from the stepper motor is broken or has come off the pulleys, see Chapter 9.2.
- **Neither the liner drive roller in the print mechanism nor the takeup hub is driven by the stepper motor.**
  - Check if the stepper motor runs. If not, check as for "Media feed does not work" in Chapter 17.13.
  - Check if both the belts from the stepper motor are broken or have come off the pulleys, see Chapter 9.2.

17.16 Memory Card Troubles

Description:

The printer cannot read a memory card. Note that in IPL, memory cards are not used to expand the printer's memory.

Possible Causes and Suggested Remedies:

- **Memory card not inserted at startup.**
  - The card must be inserted before the power is switched on or the printer is rebooted.
- **Memory card incorrectly inserted.**
  - Check that the card is inserted as far as it goes.
- **Bad contact between card and adapter.**
  - Switch off the printer. Pull out and insert the card a few times to rub off any oxide on the connectors.
- **Wrong type of memory card.**
  - The memory cards must be Type I CompactFlash cards (thickness 3.3 mm/0.13 in.) commonly used with digital cameras. PCMCIA-cards or Type II CompactFlash cards (thickness 5 mm/0.20 in.) cannot be used. If a CompactFlash card is marked CF+, it is probably not a regular memory card and cannot be used.
- **Error in content of the card.**
  - If you have access to a PC equipped with a CompactFlash card reader, list the memory content of the PC memory card to see if it is correct.
  - If you can communicate with the printer via a PC, you could see what files are stored in the memory card and their sizes with the aid of Intermec Fingerprint command FILES "card1:".
  - The memory card must be formated for FAT12 or FAT16
  - If the memory card is formated for FAT32, an "ERROR 41" message will occur.
  - Try to format the card in the printer using the Fingerprint instruction FORMAT "card1:",A. Also see *Intermec Fingerprint v8.xx, Programmer's Reference Manual*.
- **Hardware error.**
  - Inspect the memory card for mechanical damage.
  - Examine the memory card adapter on the CPU board for damaged card mating pins, breakage, or bad soldering.

17.17 Paper Cutter Troubles

Description:

The printer cannot detect the cutter.

- In Fingerprint, error 37, *"Cutter device not found"* or Error 1059, *"Cutter does not respond"* occurs.

Possible Causes and Sugged Remedies:

- **No reboot has been performed after installation.**

- Cycle the power to the printer.

- **Cable between cutter pcb and CPU board is not fitted properly.**

  - Check that the cable has not come loose from the cutter interface connector, see Chapter 11.2.

  - Check that the cable from the cutter interface connector is properly connected to P12 on the driver board.

- **Faulty cable, driver board, or CPU board.**

  - Replace one at the time, reboot, and check.

Description:

The cutter does not cut.

Possible Causes and Suggested Remedies:

- **Error 1704, "Cutter open" occurs in Fingerprint.**

  - Check that the cutter is positively in closed position.

  - The home position microswitch in the cutter assy may be defect. Replace the cutter assy.

  - Faulty cable, driver board, or CPU board. Replace one at the time, reboot, and check.

- **Errors 1701-1703 occurs in Fingerprint.**

  - Check the cutting shears and cutter mechanism for adhesive residue, label shavings, stuck labels, or other things that may prevent the cutter from operating mechanically. Clean if necessary, but do not use any solvent that can dissolve the grease.

  - Replace the cutter assy or cutter pcb, one at the time.

- **No error occurs but cutter does still not cut.**

  - If using Fingerprint, check that the application program utilizes the Fingerprint statements CUT or CUT ON/OFF correctly. See the *Intermec Fingerprint v8.xx, Programmer's Reference Manual*.

  - If using IPL, check that the cutter has been enabled in the Setup Mode.

Description:

The cutter cuts at the wrong place.

Possible Causes and Suggested Remedies:

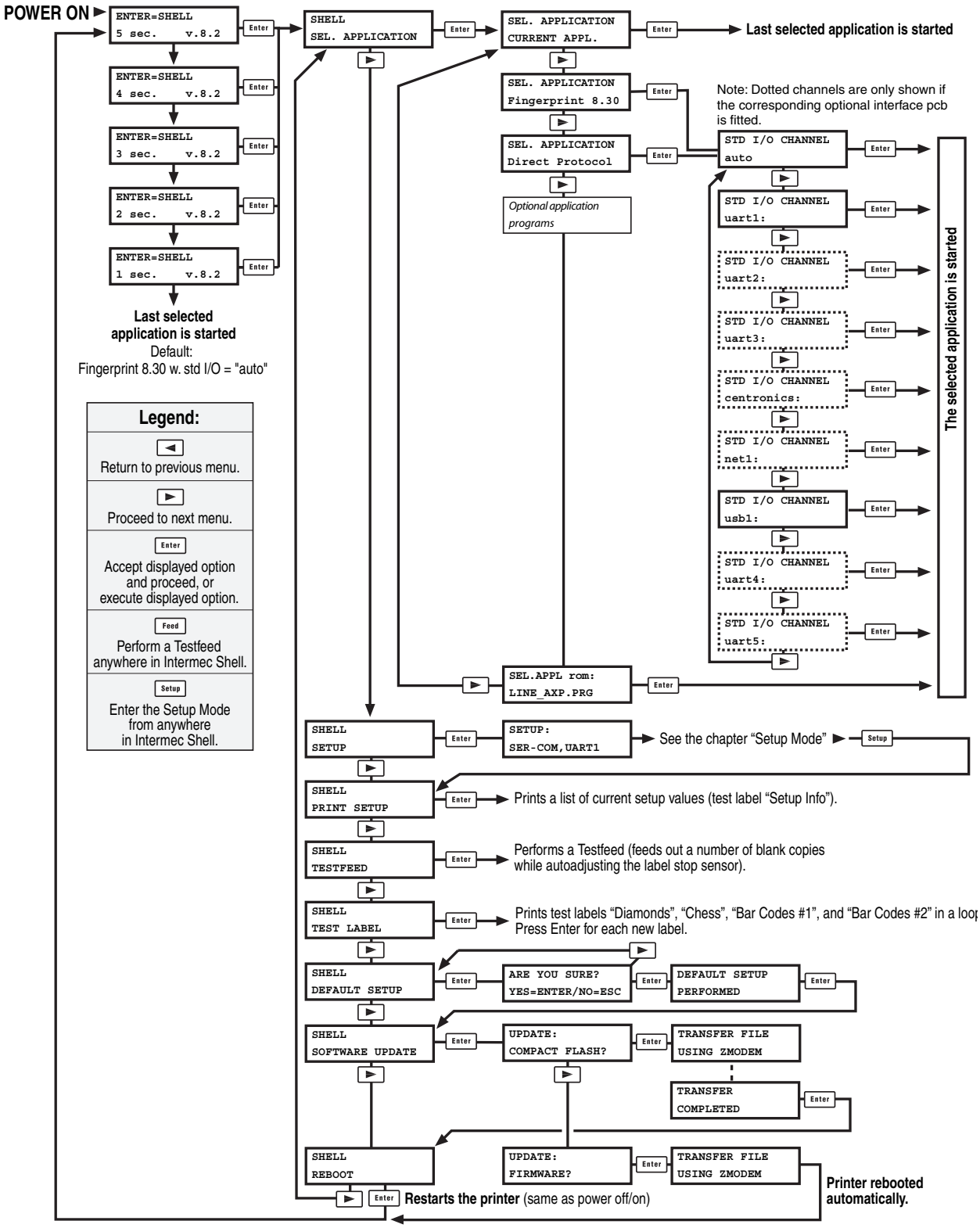
- **Faulty LSS or bad Feedadjust setup.**
  - In Fingerprint, perform a Testfeed to adjust the LSS.
  - In IPL, adjust the media feed by pressing the Feed/Pause button.
  - Check Start- and Stopadjust setup values (Fingerprint only).
  - Check application for FORMFEED<nnn> instructions (Fingerprint only).

A Program Overviews

This appendix shows overviews of the Intermec Shell and the Intermec Fingerprint Setup Mode followed by overviews of the IPL Setup Mode.

Refer to the User's Guides for information on the various parameters and instructions for navigation.

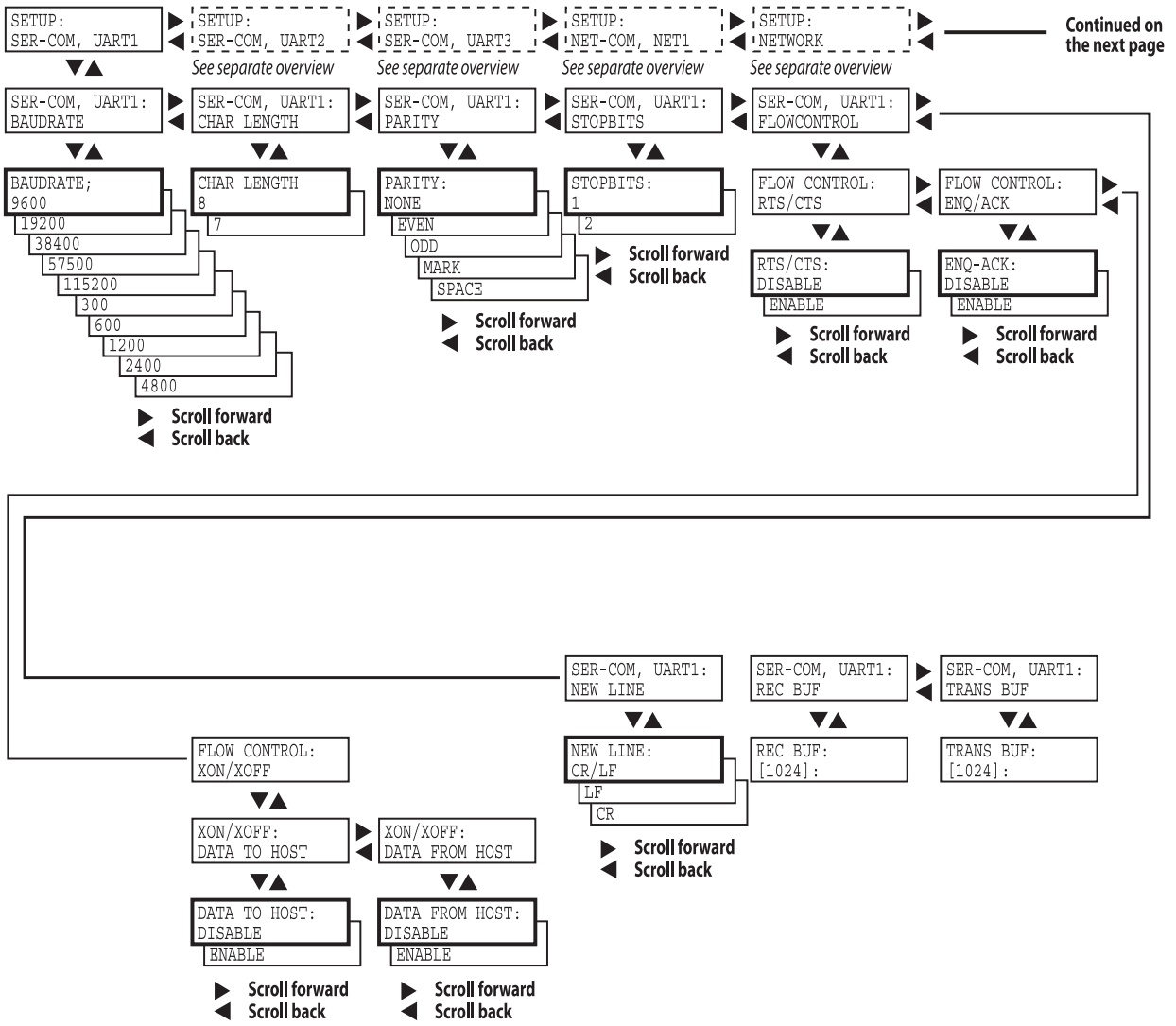
Intermec Shell v8.2 Overview



Note: To enter Intermec Shell if an autoexec-file prevents access, lift the printhead and press any key (except the <Shift> key), then turn on the power while continuing to press the key. When the Shell countdown begins, release the key and press <Enter> to start Shell. Do not forget to lower the printhead if you, for example, want to print test labels.

Setup Mode Overview (FP v8.30)

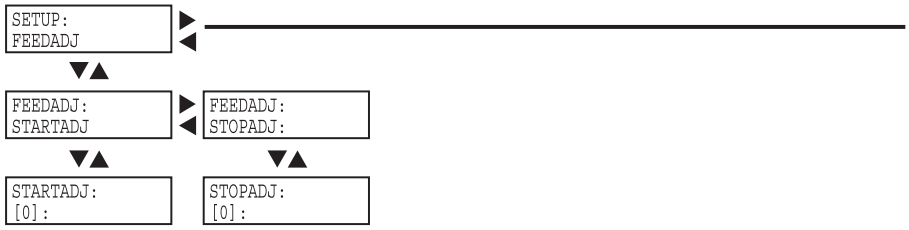
Ser-Com, uart1:



Setup Mode Overview (FP v8.30)

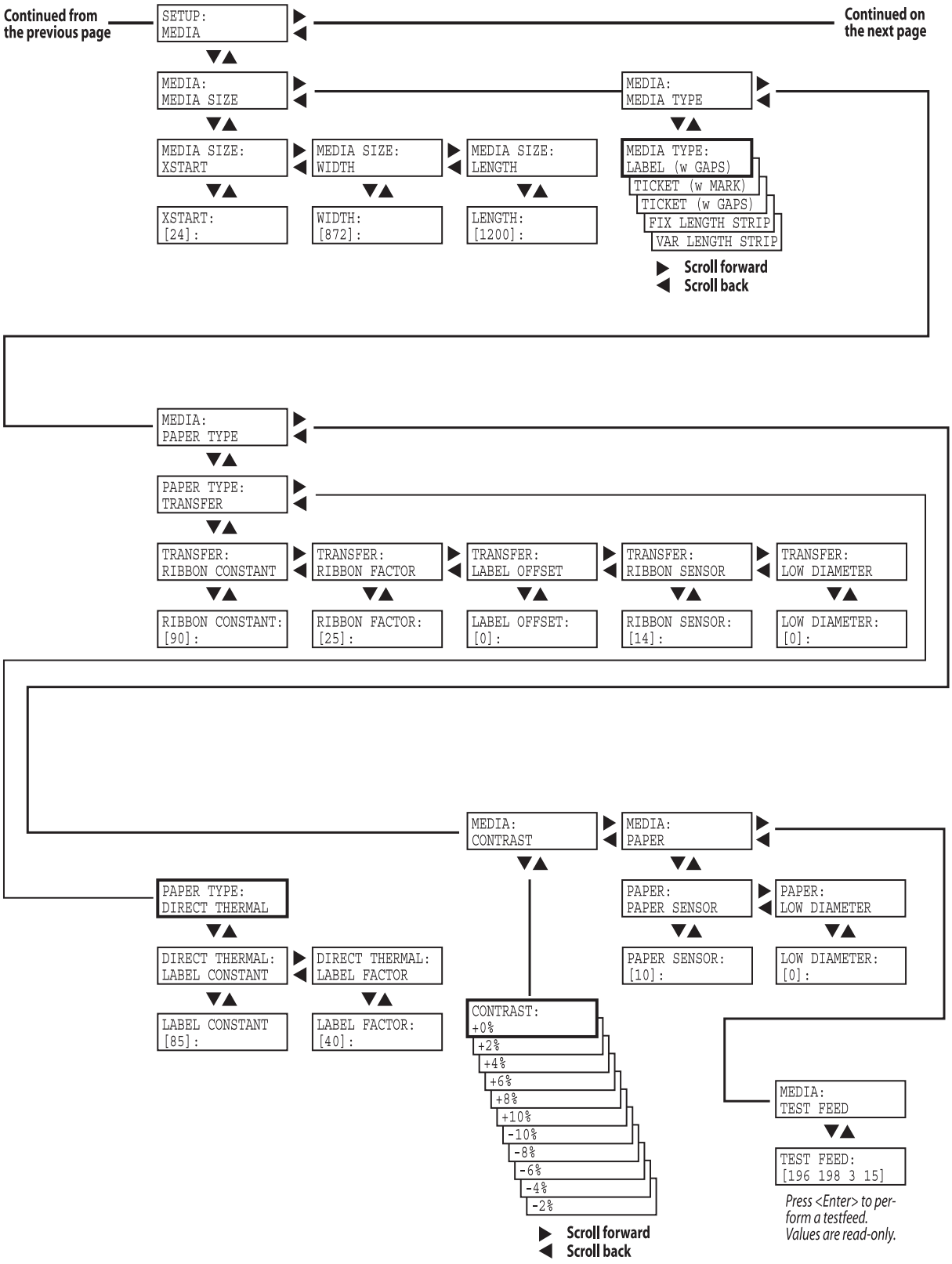
Feed Adjust

Continued from the previous page



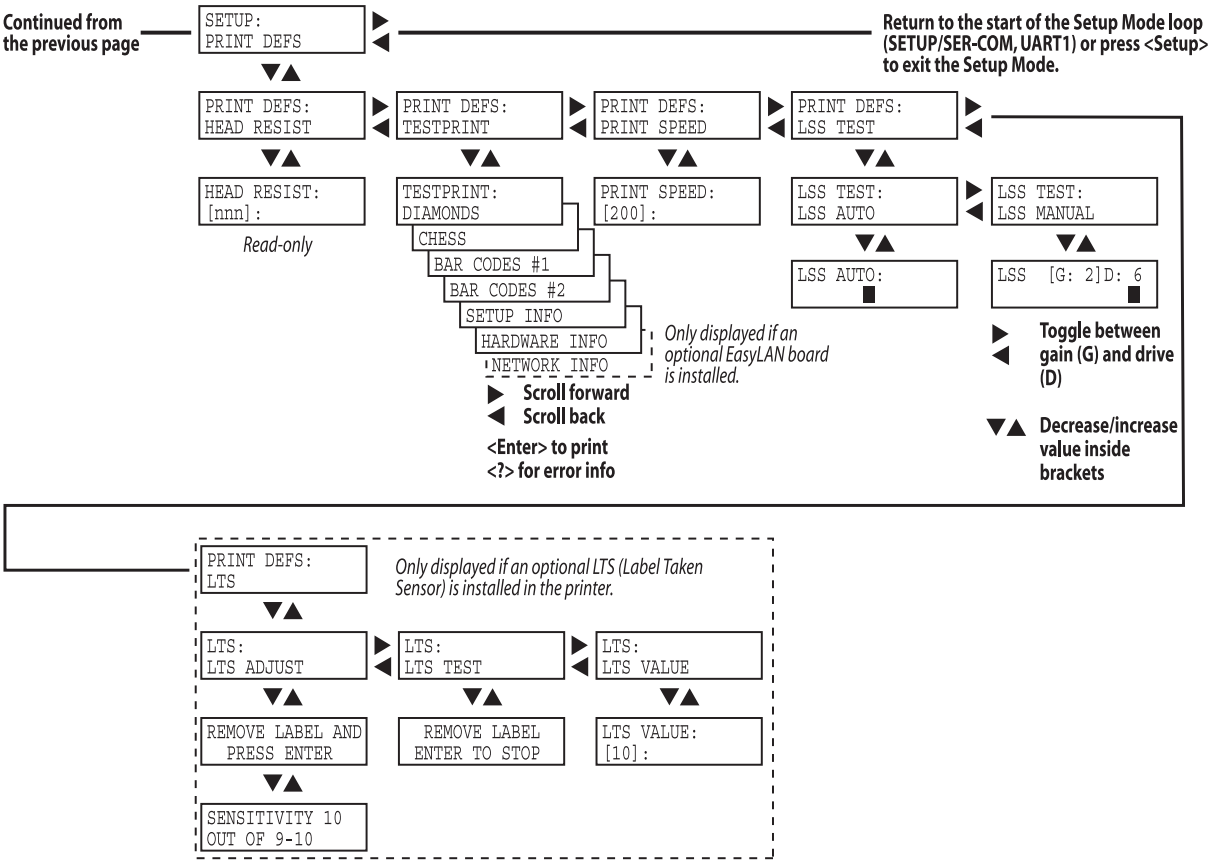
Continued on the next page

Setup Mode Overview (FP v8.30) — Media

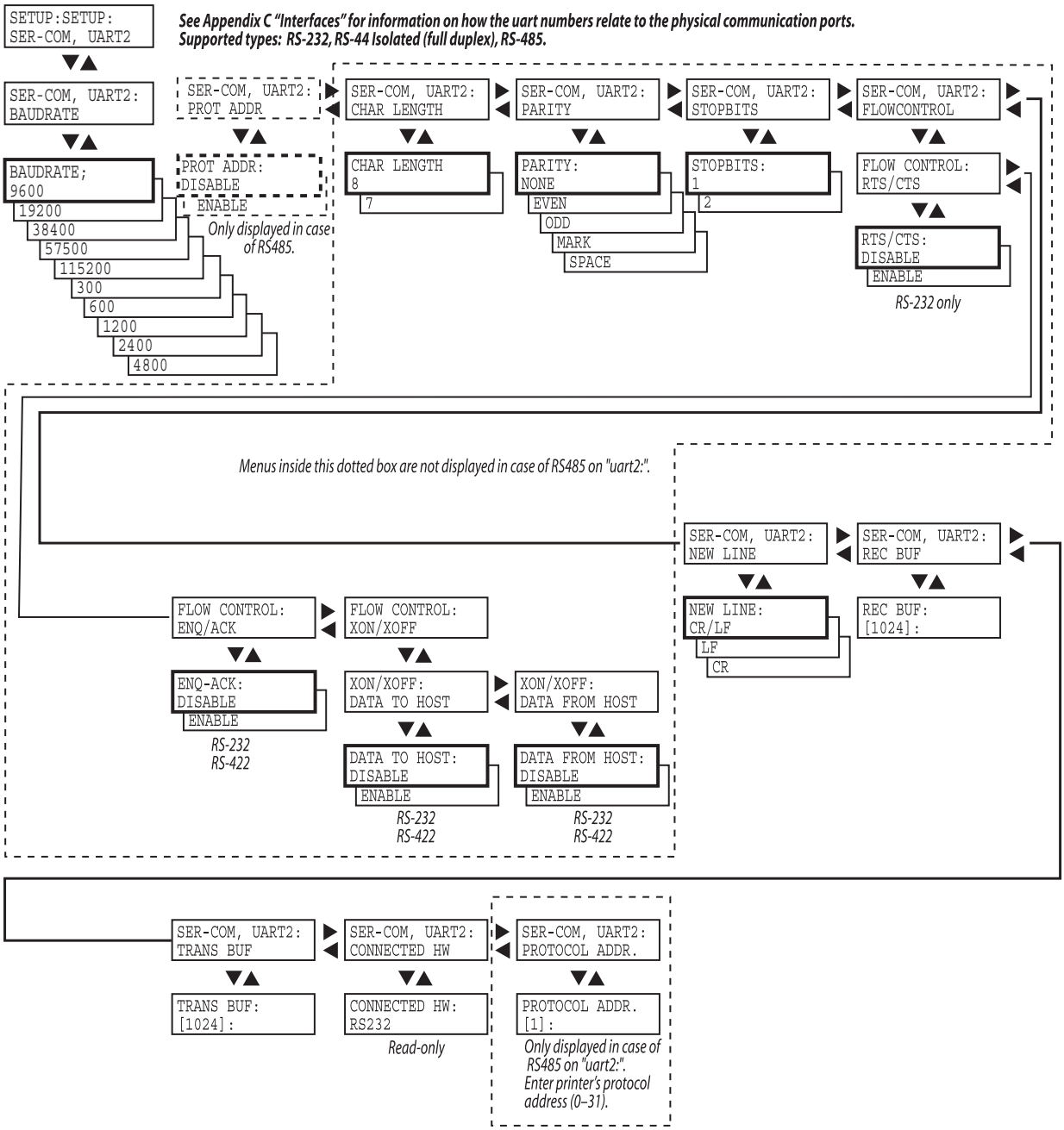


Setup Mode Overview (FP v8.30)

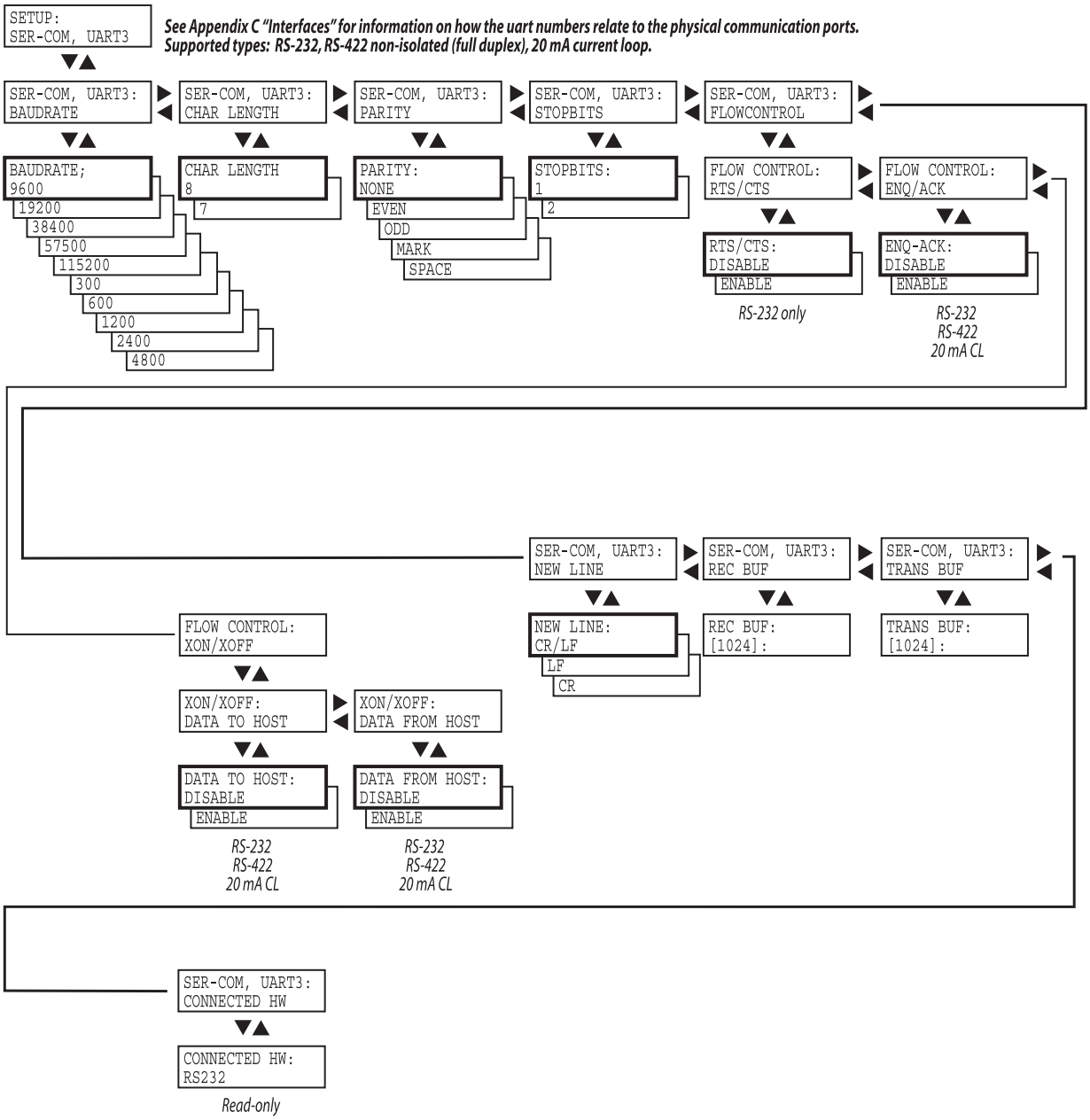
Print Defs



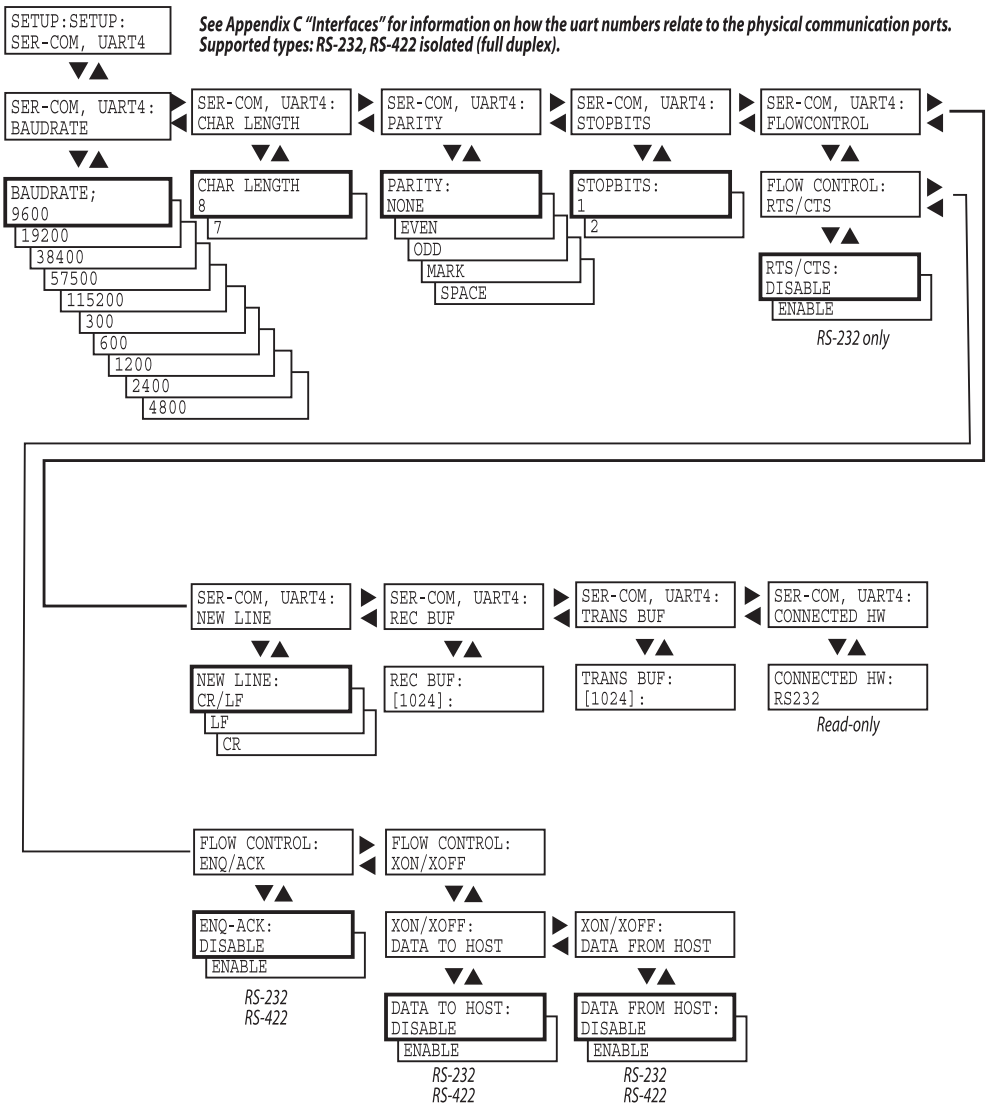
Setup Mode Overview (FP v8.30) Ser-Com, uart2



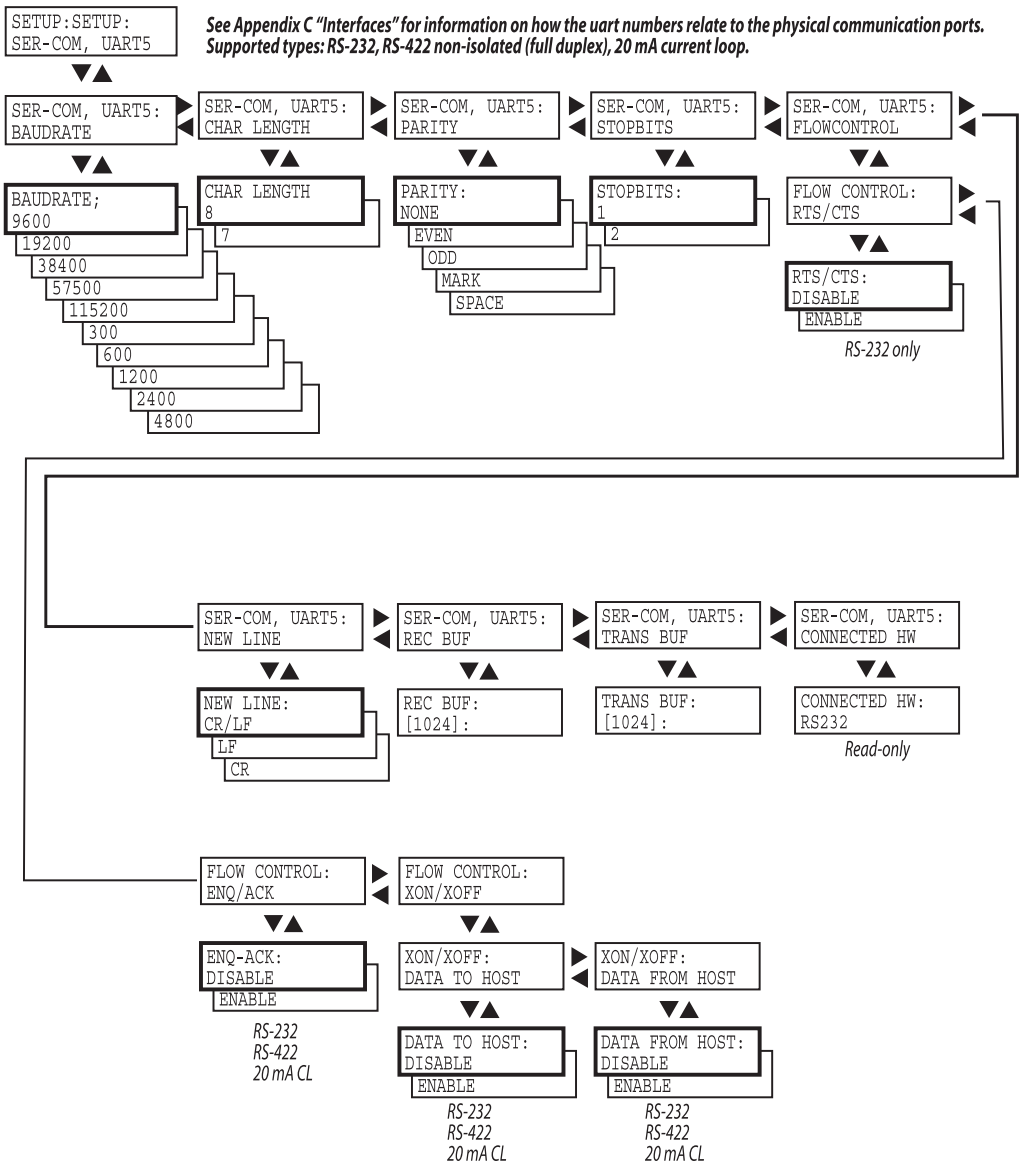
Setup Mode Overview (FP v8.30) Ser-Com, uart3



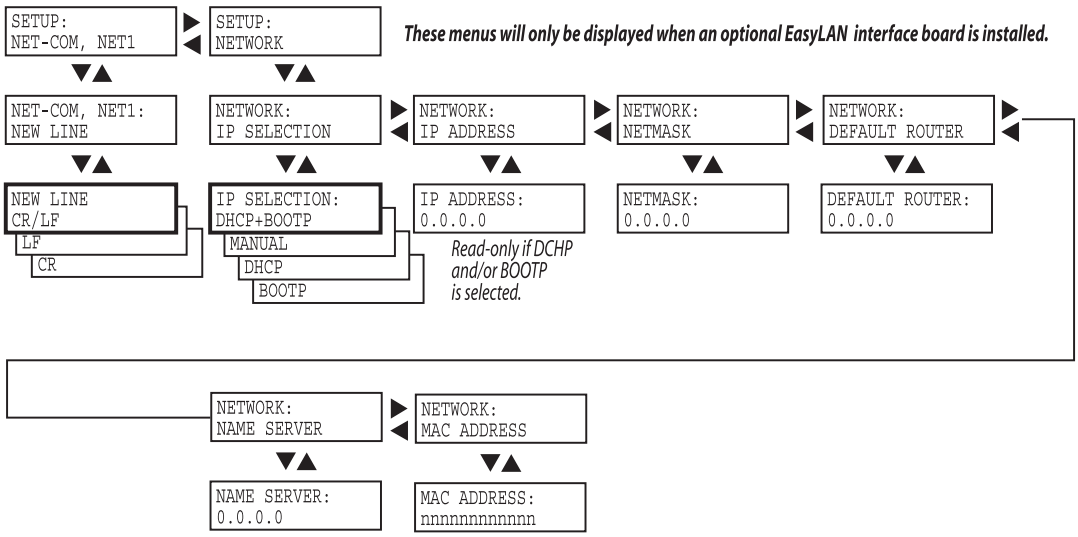
Setup Mode Overview (FP v8.30) Ser-Com, uart4



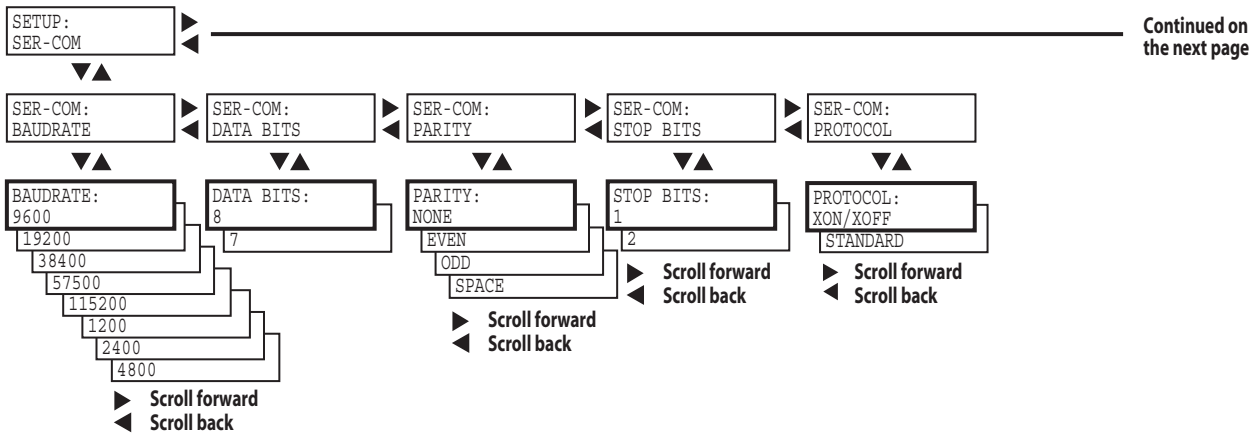
Setup Mode Overview (FP v8.30) Ser-Com, uart5



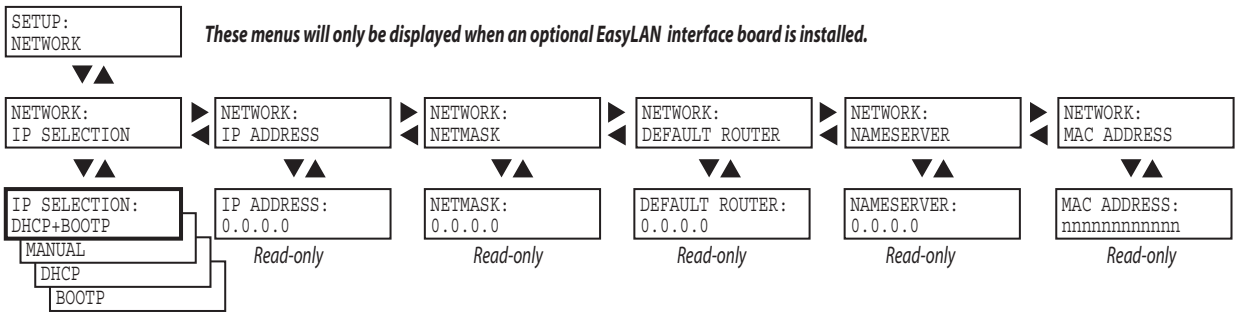
Setup Mode Overview (FP v8.30) Network Communication



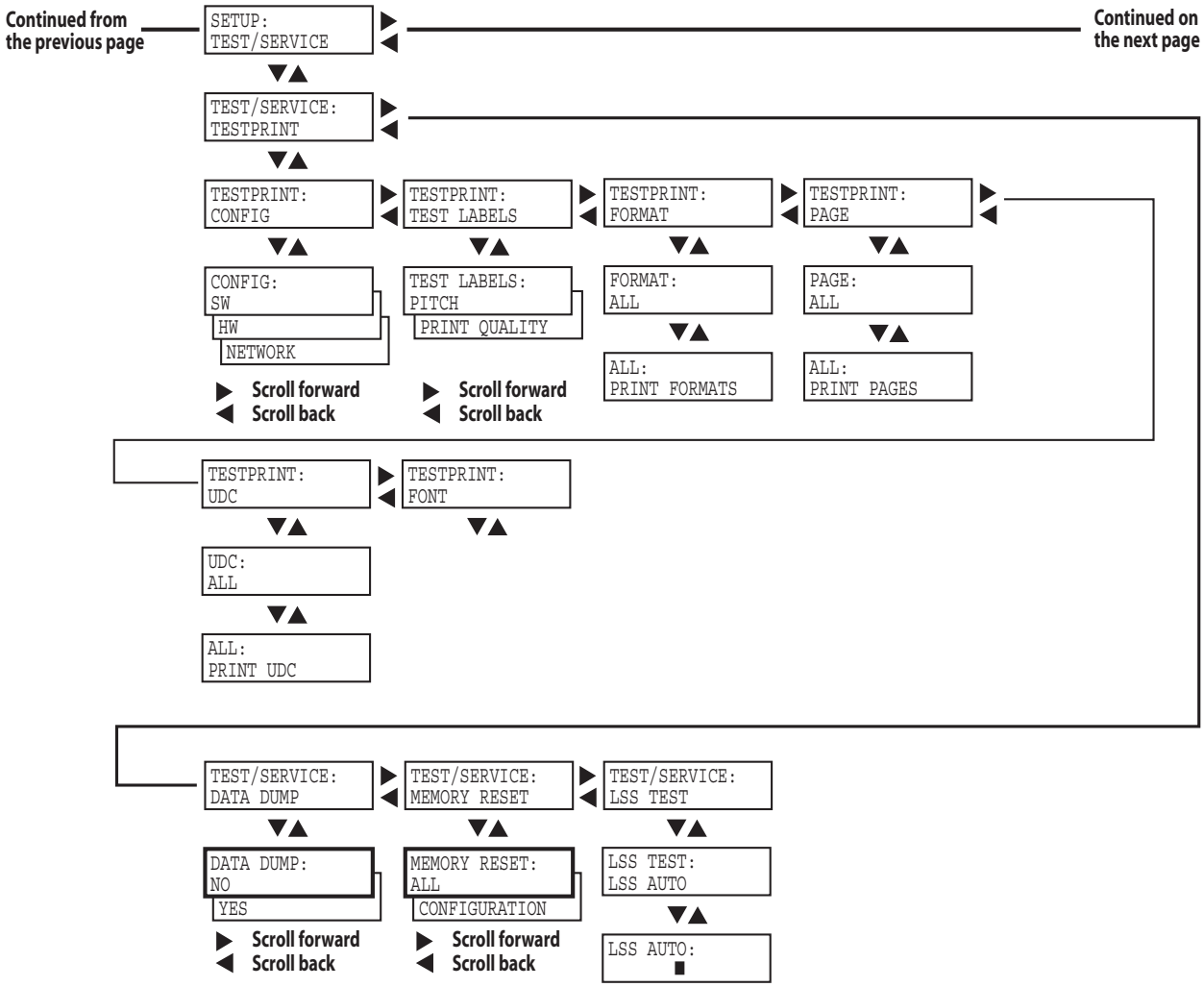
Setup Mode Overview (IPL v2.30) Serial Communication



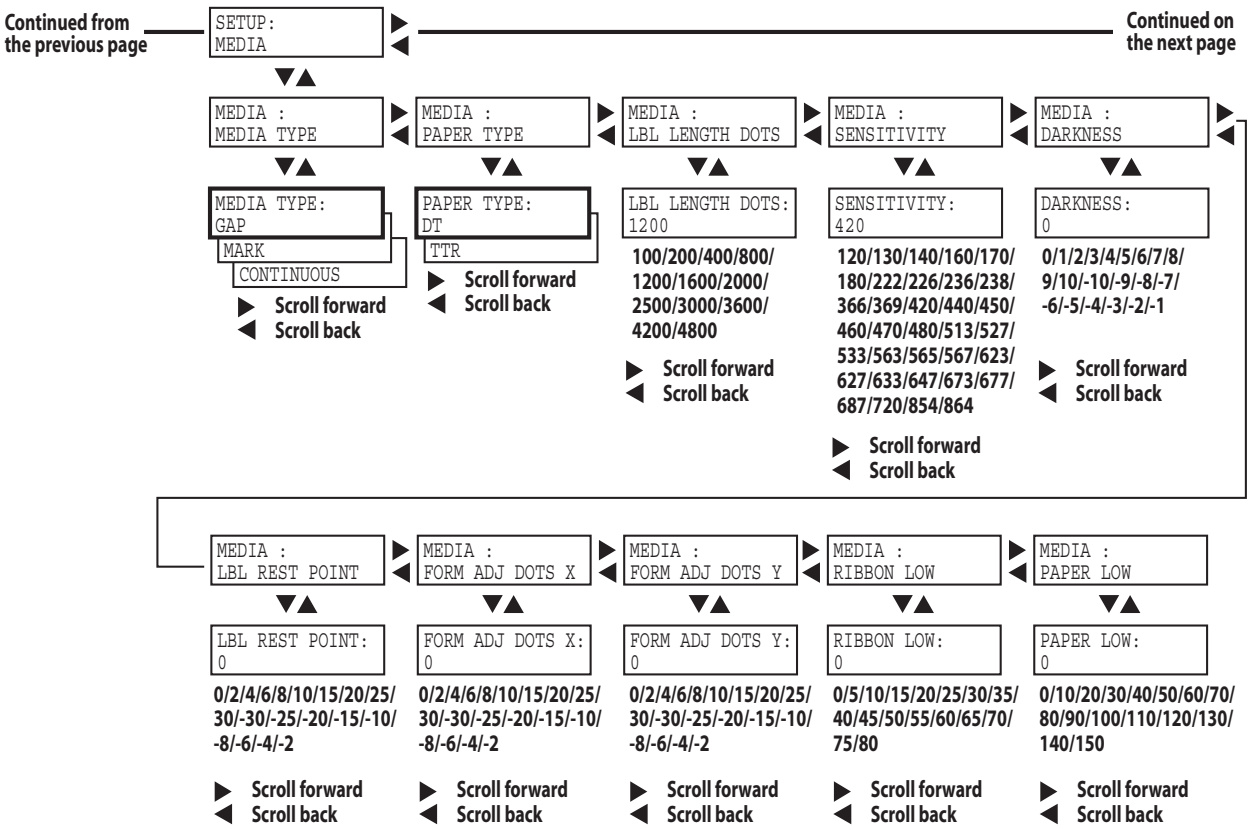
Setup Mode Overview (IPL v2.30) Network (option)



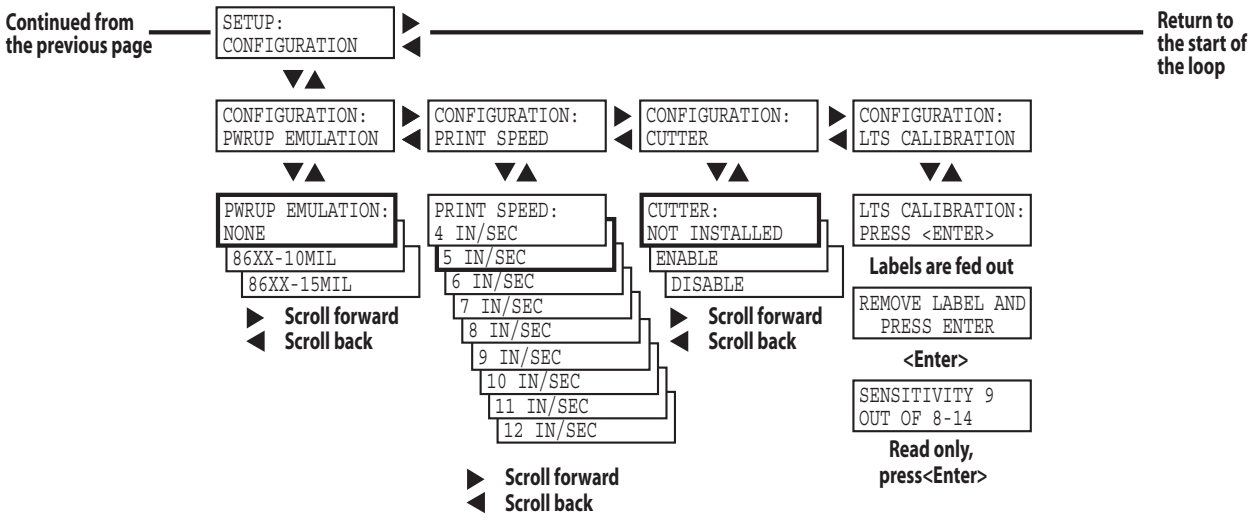
Setup Mode Overview (IPL v2.30) Test/Service



Setup Mode Overview (IPL v2.30) Media



Setup Mode Overview (IPL v2.30) Configuration



B Firmware Upgrading

This appendix describes various methods for upgrading the printer's firmware and for switching from Intermec Fingerprint to IPL or vice versa.

Introduction

All EasyCoder PX4i and PX6i printers can use both Fingerprint v8.xx and IPL v2.xx firmware. There are many ways to upgrade or exchange printer's firmware. Use the most convenient way. You can either do it from host by sending the file to the printer or by inserting a CompactFlash card in the memory card slot at the printer's rear plate. There are 3 different file types containing the firmware. The file types are related to the way of upgrade procedure. The files can be obtained from Intermec.

File Description

File name	Type of file
1-972020-xx.bin (for FP) 1-972105-xx.bin (for IPL)	These **.bin** files contain the firmware kernel file only. To be sent on serial port to printer using a communication program, for example HyperTerminal or Printset, or via FTP. Can also be stored on a CompactFlash card.
1-972021-xx.bin (for FP) 1-972106-xx.bin (for IPL)	These **.bin** files contain the firmware kernel file and the factory default setup parameter values. To be stored on a CompactFlash card. Note: These files remove all files except the firmware files, so it is advised to make a backup before running such a file. They are primarily intended to allow restoring forgotten passwords.

Another format is **.uff** files, which are created by, for instance, NetPrintSet. They contain the kernel and optional instructions (if necessary), images, fonts, etc. To be stored in CompactFlash memory cards.

General Principles

- During upgrading, do not switch off the printer. Wait and follow the prompts in the printer's display.
- If changing firmware from IPL to Fingerprint, we recommend to erase memory to factory setup setting [FORMAT "/c",A] after the upgrade procedure is completed.
- Some update of Fingerprint may show the error "mcs: Error during setup" at host terminal. This just means that there was an instruction that erased "/c" [FORMAT "/c",A]. This is a normal condition! The error shows that no setup file [.setup.saved] is detected on "/c". The "/rom" setup file is copied automatically into "/c" which gives printer a factory setup setting.
- If an EasyLAN interface board is installed, by default only admin is allowed to upgrade. See *EasyLAN User's Guide* for more information.

Upgrading From a Memory Card

This chapter describes how to upgrade the printer from a CompactFlash card.

1 Insert the card and switch on the printer. The printer's display will automatically show ongoing steps. The procedure ends with a normal startup of the printer.

2 Switch off the printer and remove the card. Printer is ready for use.

CompactFlash cards with firmware (Fingerprint or IPL) can be ordered from Intermec. Empty CompactFlash cards can be ordered from Intermec or procured locally.

If there are more than one firmware files on the memory card, it is not foreseeable which one will be selected. However, by renaming the desired file to FIRMWARE.BIN, you can make sure that the file will be selected.

How to make an upgrading card

There are two possible places to program a CompactFlash card. One is your PC CompactFlash card slot, another is the printer's card slot.

At the PC-side

1 Use a computer fitted with a PCMCIA slot and a CompactFlash adapter and insert the CompactFlash card.

2 Copy the upgrade .bin or .uff file to the CompactFlash card.

At the printer side (Fingerprint only)

1 Insert the CompactFlash card in the slot at the printer's rear plate.

2 Start up the printer and select Intermec Shell.

3 Press <Enter> to go to the "Sel. Application" menu.

4 Press <⇒> repeatedly to browse to "SOFTWARE UPDATE".

5 Press <Enter> to go to "UPDATE: COMPACT FLASH?"

6 Press <Enter>.

7 Start sending the file using a communication program, for example HyperTerminal. The communication program must use zmodem. (There is a one-minute time-out on the printer side.) Shell will automatically rename the file to FIRMWARE.BIN to make sure that this file will upgrade the printer.

8 Switch off the printer and remove the card.

Note: A special case is if the CompactFlash card already has a Fingerprint firmware. Inserting such card will always install firmware in the printer according to CompactFlash card. However, perhaps you like to install a later firmware version picked from the web. If so, proceed like this:

1. Insert the CompactFlash card with a upgrade firmware on. Switch on and wait for a completed upgrade and the normal startup of the printer so you are in Fingerprint mode.
2. Activate the Shell program from "/rom" like this:
   ```
   LOAD "/rom/SHELLXP.PRG"
   MERGE "/rom/ERRHAND.PRG"
   RUN
   ```
3. In Shell, select the option “UPDATE: COMPACT FLASH?” and press <Enter>.
4. Send the .bin or .uff file from the host using zmodem.

Upgrading From the Host

Software Suggestions

1. Intermec PrintSet (IPL and Fingerprint)

Install Intermec Printset software and a serial cable. Intermec PrintSet is included in the printer companion CD. It can also be obtained from the Intermec Printer Support Web.

2. Terminal program (Fingerprint only)

Use Terminal program included in Windows (95/98/Me or NT/2000/XP) and a serial cable. At serial communication, the software has to be prepared by a protocol Zmodem and have same communication settings on both side. We recommend hardware handshaking (RTS/CTS).

3. Command prompt with FTP

Use command prompt in Windows (95/98/Me or NT/2000/XP) and an Ethernet network.

4. Intermec NetPrintSet (Fingerprint only)

Use Intermec NetPrintSet software and a serial cable. Intermec NetPrintSet can be obtained from the Intermec Printer Support Web.

Cable Suggestions

RS-232 Serial Cable

DB-9pin female -> DB-9pin male (see *Spare Parts Catalog*)

Ethernet Cable

Intermec does not provide any Ethernet cable. The cables are normally provided locally. At a straight connection between a host and printer, a cross RJ-45 cable is needed.

Parallel Cable

(see *Spare Parts Catalog*)

How to use Intermec PrintSet and serial cable.

1. Connect a serial cable between host and printer
2. Start up the printer and select Fingerprint via Shell and to listen on serial port "uart1:" on for example baud rate 115,200.
3. Start PrintSet. The program will automatically set the communication parameters and is ready for use.
4. Select ”DataXfer\Change firmware”. Depending on settings, PrintSet may ask for the admin password.
5. Send one of the following files:
   1-972020-xx.bin (Fingerprint)
   1-972105-xx.bin (IPL)
6. After file is received in printer, it will automatically replace the firmware and boot up with the new one.
7. The printer’s display will automatically show ongoing steps. The procedure ends with a normal startup of the printer.

How to use MS HyperTerminal and a serial cable (Fingerprint only)

1. Connect a serial cable between host and printer.
2. Start the HyperTerminal or a similar terminal program. Select port com1. Use a high communication speed (115,200 baud).
3. Start up the printer and select Fingerprint via Intermec Shell[1] to listen on serial port "uart1:".
4. Make sure that your are in contact with printer by typing for example FONTS and the printer will respond showing fonts.
5. Type a download command[2] so printer is ready for receiving data:
   `RUN "dlk"`
   Select .bin upgrade file. Now printer waits for about 1 minute to get the file sent using zmodem as protocol.
6. Go to “Send file” and send it.
7. After file is received in printer, it will automatically replace the firmware and the printer will boot up with the new one.
8. The printer’s display will automatically show ongoing steps. The procedure ends with a normal startup of the printer.

[1]/. In Intermec Shell it is also possible to select printer to be in the receiving mode. Start up Intermec Shell and use <⇒> to browse to “Software Update\Update:Firmware”. (You have one minute to send the file.) Also check the printer’s baud rate in the Setup Mode. Continue with items 6-8. If the printer is fitted with an EasyLAN board, **user** must be allowed to upgrade.

[2]/. **dlk** only works if the current user is allowed to update. **RUN "su admin"** could be required.

How to use command prompt FTP and Ethernet

1. Connect a printer on Ethernet LAN or by a cross cable between host and printer
2. Open an FTP session to the printer typing this command from your Windows command prompt: **`FTP <`***ip address of the printer***`>`**
3. You will get a prompt asking you for User: type **`admin`** or **`user`**. You may get a prompt for a Password: type **`pass`** (default; case sensitive).

Note: The user you log in as must be allowed to upgrade.

4. After some answers on your screen you will see the prompt FTP>. At this point type **`bin`** + <Enter>, then type **`hash`** + <Enter>.
5. Now send the firmware to the printer with the command: **`put <filename.bin> FLASH`**
6. Some ###### will appear on your screen showing the ongoing transfer.
7. The printer's display will automatically show ongoing steps. The procedure ends with a normal startup of the printer.
8. Close FTP session typing **`bye`** + <Enter>.
9. After file is received in printer it will automatically replace the firmware and the printer will boot up with the new one. The printer's display will automatically show ongoing steps and the procedure ends with a normal startup of the printer.

How to use Intermec NetPrintSet and serial cable (Fingerprint only)

What is NetPrintSet

NetPrintSet is a printer configuration utility for Intermec printers that allows you to upgrade or configure the printer. Makes font upgrades and other maintenance a child's play. Available both as Netscape plugin and standalone executable.

- NetPrintSet can merge printer's necessary file to one file either using a CompactFlash card or download direct to printer. Necessary files are for example Images, Fonts, Firmware, or other custom-made files.
- How to use? Please refer to the Help included in the software.

If upgrading directly via NetPrintSet and printer

1. Start up the printer and select Shell. Press <Enter> to go to the "SEL. APPLICATION" menu. Use <⇒> to browse to "SOFTWARE UPDATE". Press <Enter> to go to the "UPDATE: COMPACT FLASH?" menu. Use <⇒> to go to "UPDATE: FIRMWARE?". Finally, press <Enter>.

   User might not be allowed to update.
2. Start to send the file from the software. (There is a one-minute time-out before the printer exits the receive mode.)
3. After file is received in printer, it will automatically replace the firmware and the printer will boot up with the new one.

C Measuring the Brake Torque

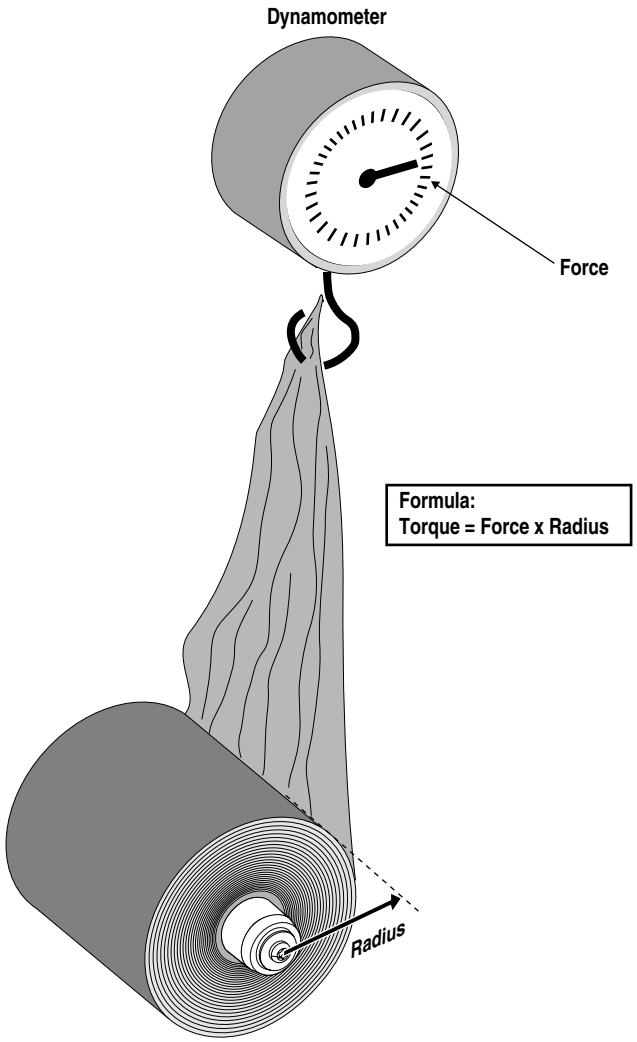
This appendix describes a simple way to measure the brake torque when advanced tools are not available.

Measuring the Brake Torque

If you do not have access to a torque-measuring instrument, you could easily make a provisional instrument using a roll of spent transfer ribbon, a simple dynamometer and a ruler:

- Fit the ribbon roll on the spool you want to check. The larger roll, the better accuracy.
- Measure the radius from the center of the spool to the edge of the ribbon roll.
- Fit the end of the ribbon to the dynamometer and pull.
- Read the dynamometer.
- Calculate the torque using the formula:

  Torque (Nmm) = Radius (mm) × Force (N)



Intermec Technologies Corporation
Corporate Headquarters
6001 36th Avenue West
Everett, WA 98203
U.S.A.

tel 425.348.2600

fax 425.355.9551

www.intermec.com

EasyCoder PX4i & PX6i Service Manual

1-960624-00