

Printer

PRT 100

SERVICE MANUAL

Code XYAA6453-01

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TABLE OF CONTENTS

1. PRODUCT FEATURES AND TROUBLESHOOTING.....	1-1
1.1 INTRODUCTION.....	1-1
1.2 MAJOR COMPONENTS	1-1
1.3 CONTROL PANEL.....	1-2
1.3.1 Button Functions and LED States	1-2
1.4 VIEW BEHIND THE CONNECTORS' COVER.....	1-3
1.5 TECHNICAL CHARACTERISTICS.....	1-5
1.5.1 Overview	1-5
1.5.2 Automatic Cutter.....	1-5
1.5.3 Out of Paper Sensor.....	1-5
1.5.4 Cover Open Sensor.....	1-5
1.6 PRINTER GENERAL BLOCK DIAGRAM.....	1-6
1.7 MAIN BOARD AND CONNECTORS	1-7
1.8 POWER SUPPLY CARD.....	1-8
1.9 PLUGGABLE INTERFACE CARDS.....	1-8
1.9.1 Serial Interface Card Configuration	1-9
1.10 CONFIGURATION	1-10
1.10.1 Printing the Configuration Menu.....	1-10
1.10.2 Self-Test.....	1-11
1.10.3 Setup	1-12
1.10.4 Button Functions in the Setup Mode	1-13
1.10.5 Navigating Through Printer Setup	1-14
1.10.6 Notes and Description of the Parameters.....	1-18
1.10.7 Parameter Selection	1-19
1.11 HEX-DUMP.....	1-19
1.12 FIRMWARE UTILITIES RESERVED FOR PRODUCT SERVICING.....	1-20
1.12.1 Description of the Firmware Utilities.....	1-20
1.13 TROUBLESHOOTING	1-22
 2. PRODUCT INSTALLATION AND MAINTENANCE PRECAUTIONS	 2-1
2.1 INSTALLATION.....	2-1
2.1.1 Choosing a Site for Installation	2-1
2.1.2 Installation.....	2-1
2.2 INSTALLING THE PAPER ROLL ADAPTER.....	2-5
2.2.1 Installing the Adapter for 58 mm Paper Rolls	2-6
2.2.2 Installing the Adapter for 60 mm Paper Rolls	2-7
2.2.3 Powering on the printer.....	2-8
2.2.4 Loading the Thermal Paper Roll.....	2-8
2.2.5 Adjusting the Almost Out of Paper Sensor	2-10
2.2.6 Replacing the Thermal Paper Roll	2-10
2.3 FIRMWARE UTILITIES	2-11
2.3.1 Button Functions in the Firmware Utility Mode.....	2-11
2.3.2 Accessing the Firmware Utility Mode	2-12
2.3.3 Printing the self-test.....	2-12
2.3.4 Exiting the Firmware Utility Mode.....	2-12

2.4	PRODUCT MAINTENANCE PRECAUTIONS.....	2-13
2.4.1	Maintenance Norms and Safety Precautions.....	2-13
2.4.2	Safety Precautions	2-14
2.4.3	Maintenance Operations.....	2-14
2.5	INSTALLING THE DRAWERS (OPTIONS).....	2-15
3.	PRINTER DISASSEMBLY/REASSEMBLY PROCEDURES	3-1
3.1	INTRODUCTION.....	3-1
3.2	PRELIMINARY WARNINGS.....	3-1
3.3	FIRST LEVEL DISASSEMBLY PROCEDURE.....	3-2
3.3.1	Casing Disassembly/Reassembly.....	3-2
3.4	SECOND LEVEL DISASSEMBLY PROCEDURE	3-4
3.4.1	Control Panel and Manual Cutter Disassembly/Reassembly	3-4
3.5	MAIN BOARD DISASSEMBLY/REASSEMBLY	3-7
3.6	PAPER FEED ROLLER DISASSEMBLY/REASSEMBLY	3-8
3.7	CUTTER MOBILE BLADE DISASSEMBLY/REASSEMBLY.....	3-11
3.8	CUTTER MOTOR AND SENSORS' DISASSEMBLY/REASSEMBLY	3-12
3.9	MARKER SENSOR DISASSEMBLY/REASSEMBLY.....	3-14
3.10	CUTTER COUNTER BLADE DISASSEMBLY/REASSEMBLY.....	3-15
3.11	PAPER FEED MOTOR DISASSEMBLY/REASSEMBLY	3-18
3.12	PRINthead DISASSEMBLY/REASSEMBLY	3-20
3.13	ALMOST OUT/OUT OF PAPER SENSOR DISASSEMBLY/REASSEMBLY	3-22
3.14	PAPER GUIDE DISASSEMBLY/REASSEMBLY.....	3-23
4.	LUBRICATION	4-1
4.1	OVERVIEW.....	4-1

PREFACE

This manual is addressed to the field engineers who will install and service this printer model. It provides all the information required for correct product maintenance.

SUMMARY

The information is organized in the following four chapters.

- Chapter 1: provides general information about the system.
- Chapter 2: describes the installation procedures, maintenance norms and safety precautions.
- Chapter 3: explains the disassembly and reassembly procedures necessary for product servicing.
- Chapter 4: gives lubrication guidelines.

PREREQUISITES

Approach to the subjects dealt with in this manual requires knowledge of similar products.

REFERENCES

Spare parts catalogue - code XYAA4450

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1. PRODUCT FEATURES AND TROUBLESHOOTING

1.1 INTRODUCTION

This chapter provides all the information you need to acquire a good working knowledge of the thermal printer. The thermal printhead of this easy-to-use printer makes it extremely silent and very efficient. The possibility of opening the entire paper path facilitates loading of the 80-mm roll of thermal paper.

The printer has been designed according to state-of-the-art sector technology so as to offer a compact, functional, safe product with a modern design. The capabilities provided are able to meet the requirements of the range of users for which this product is intended.

These product characteristics promote short repair times and, therefore, quickly restore the printer to its normal operation.

1.2 MAJOR COMPONENTS

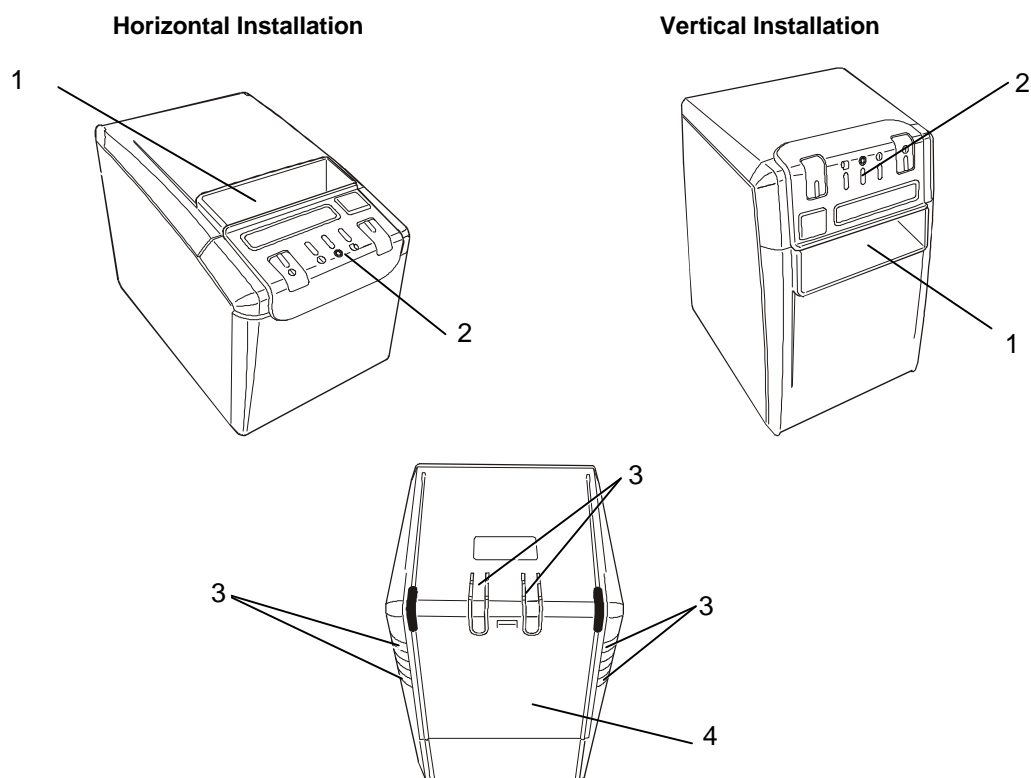


Figure 1-1

- 1) Paper output slot
- 2) Control panel
- 3) Parts that can be removed to favor cable passage
- 4) Connectors' cover

1.3 CONTROL PANEL

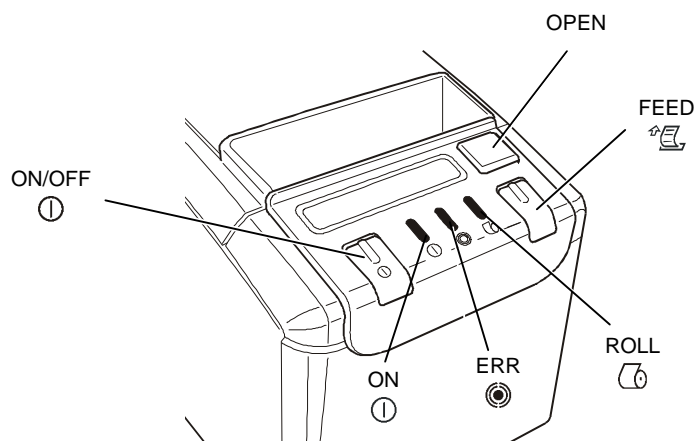


Figure 1-2

1.3.1 Button Functions and LED States

BUTTON/LED	DESCRIPTION
ON/OFF (ⓘ)	<ul style="list-style-type: none">❑ To switch on the printer, press and hold down this button until the ON LED comes on.❑ To switch off the printer, press and hold down this button until the ON LED goes off.
OPEN	<ul style="list-style-type: none">❑ Press to unlock the printer cover so that it can be opened.
FEED (📄)	<ul style="list-style-type: none">❑ Press once to feed the paper by one line feed.❑ Press and hold down to feed the paper continuously.
ON (ⓘ)	<ul style="list-style-type: none">❑ Off: The printer is powered off.❑ Steady green light: The printer is powered on.❑ Flashing green light: The printer is busy.
ERR (🔴)	<ul style="list-style-type: none">❑ Off: The printer is in its normal operating condition.❑ Flashing red light: The thermal printhead is overheated.❑ Steady red light: The printer is in an out of paper condition, cutter locked, printer failure
ROLL (📄)	<ul style="list-style-type: none">❑ Off: The printer is loaded with paper.❑ Steady yellow light: The printer is in an almost out of paper condition.❑ Flashing yellow light: The printer is in an out of paper condition.

1.4 VIEW BEHIND THE CONNECTORS' COVER

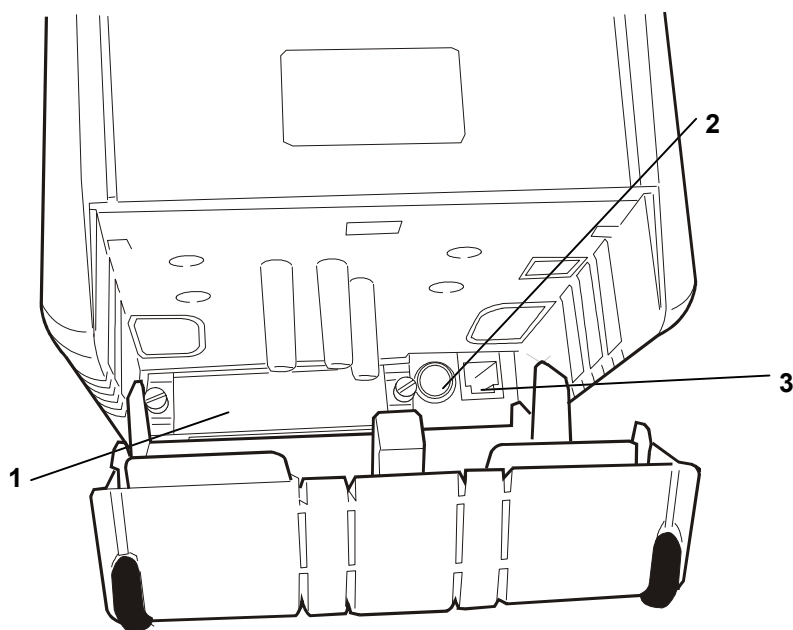


Figure 1-3

1) Interface card slot for the following pluggable interface cards:

- Bi-directional parallel
- 25-pin serial
- 9-pin serial
- USB
- Ethernet

2) Printer power supply jack

3) Drawer interface

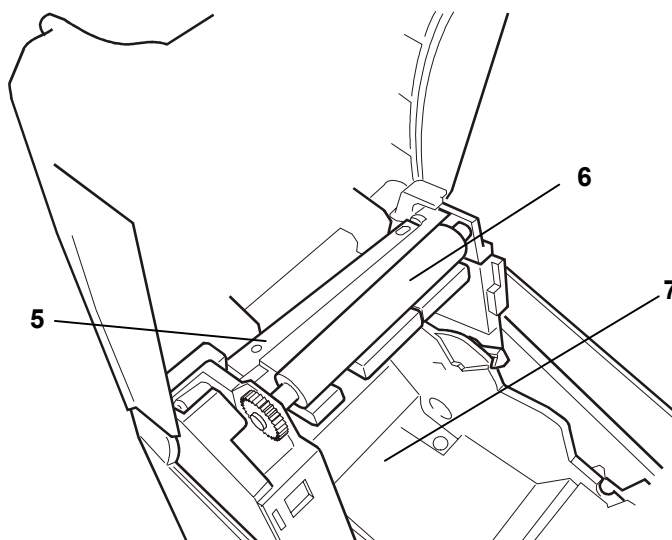


Figure 1-4

5) Automatic cutter blade

6) Paper feed roller

7) Paper roll compartment

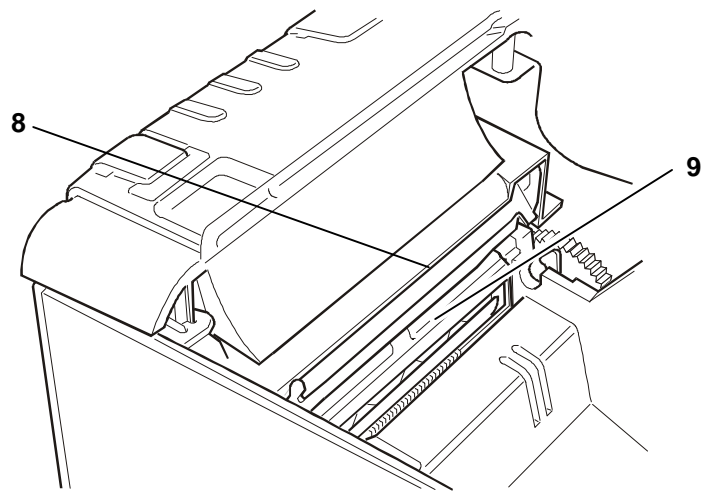


Figure 1-5

- 8) Automatic cutter counter blade
- 9) Printhead

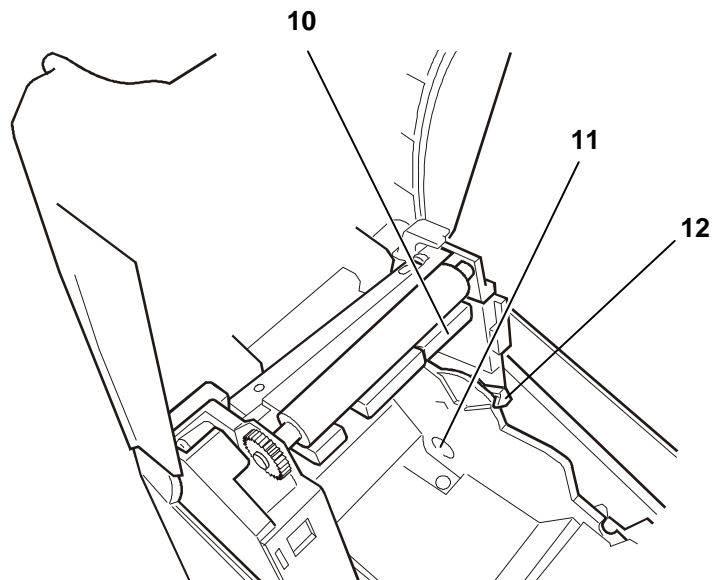


Figure 1-6

- 10) Out of paper sensor
- 11) Almost out of paper sensor
- 12) Almost out of paper sensor adjustment lever

1.5 TECHNICAL CHARACTERISTICS

1.5.1 Overview

❑ Technology:	Direct thermal
❑ Printing resolution:	203 x 203 dpi (8 dots x mm)
❑ Basic line feed:	1/203" (1 pitch)
❑ Max. printing speed:	200 mm/sec
❑ Font:	10 x 19 / 13 x 27
❑ Characters:	
A:	15 cpi (13 x 27)
B:	20 cpi (10 x 19) /
❑ Character size:	1.26 x 2.39 mm / 1.69 x 3.38 mm (L x H)
❑ Character set:	95 alphanumeric, 37 International 128 x 10 graphic symbols
❑ Printing speed:	High speed mode: 60 lps (200 mm/s) Low speed mode: 25 lps (70 mm/s)
❑ Graphic mode speed:	> 100 mm/s
❑ Interface:	RS-232C, USB and Parallel (on optional pluggable interface cards)
❑ Data buffer:	4 KB or 45 byte
❑ User Flash memory:	384 KB, factory-expandable to 1 MB
❑ Max. printing area:	72 mm / 576 dots
❑ Paper width:	80 mm
❑ Max. paper roll diameter:	100 mm
❑ Paper load:	Paper feed open
❑ Cutter:	Automatic with partial cutting and with the manual tear bar
❑ Power supply:	24 Vdc \pm 5%
❑ External power supply unit:	(100-240 Vac 50-60 Hz) – 72W
❑ Emulation:	TM - T88III / TM – T90
❑ Installation:	Horizontal or Vertical
❑ Dimensions (WxDxH):	140 mm x 217 mm x 157 mm

1.5.2 Automatic Cutter

- Cutting method:	Rotating blade
- Type of cut:	With side marker

The cutter mechanism includes an interruption type photo-sensor that indicates the home position of the blades when the printer is switched on and after cutting of the paper. If the cutter is not repositioned, the error LED (red) on the console will begin to flash.

1.5.3 Out of Paper Sensor

This sensor, installed on the paper path, detects that the paper is present due to the effect of the light beam emitted that, reflected by the paper, returns to the receiver sensor.

The paper photosensor is adjusted from the console.

The operator is informed of an out of paper condition by the flashing of the ROLL LED (yellow) and by the steady lighting of the ERR LED (red), both of which are located on the control panel.

1.5.4 Cover Open Sensor

If the cover is open, this sensor blocks the printer.

1.6 PRINTER GENERAL BLOCK DIAGRAM

The block diagram below indicates all the main functional parts of the printer.

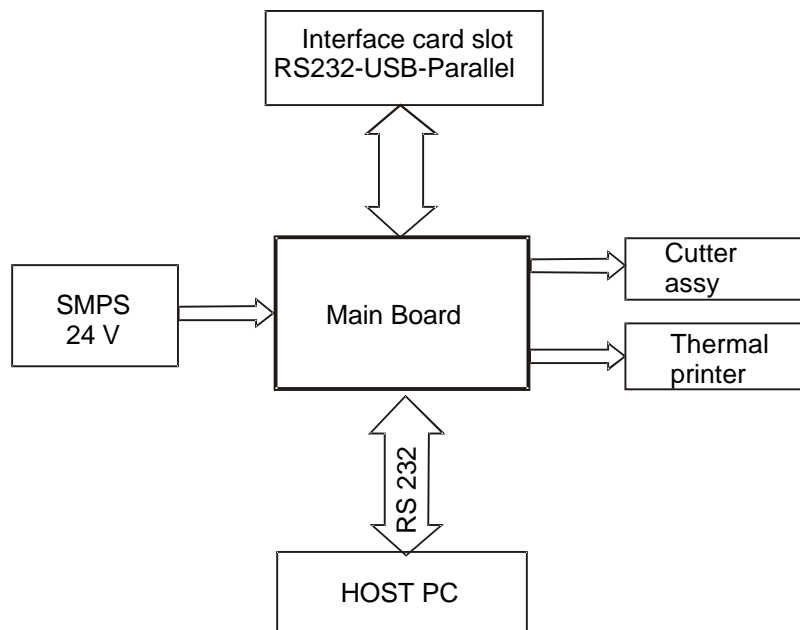


Figure 1-7

1.7 MAIN BOARD AND CONNECTORS

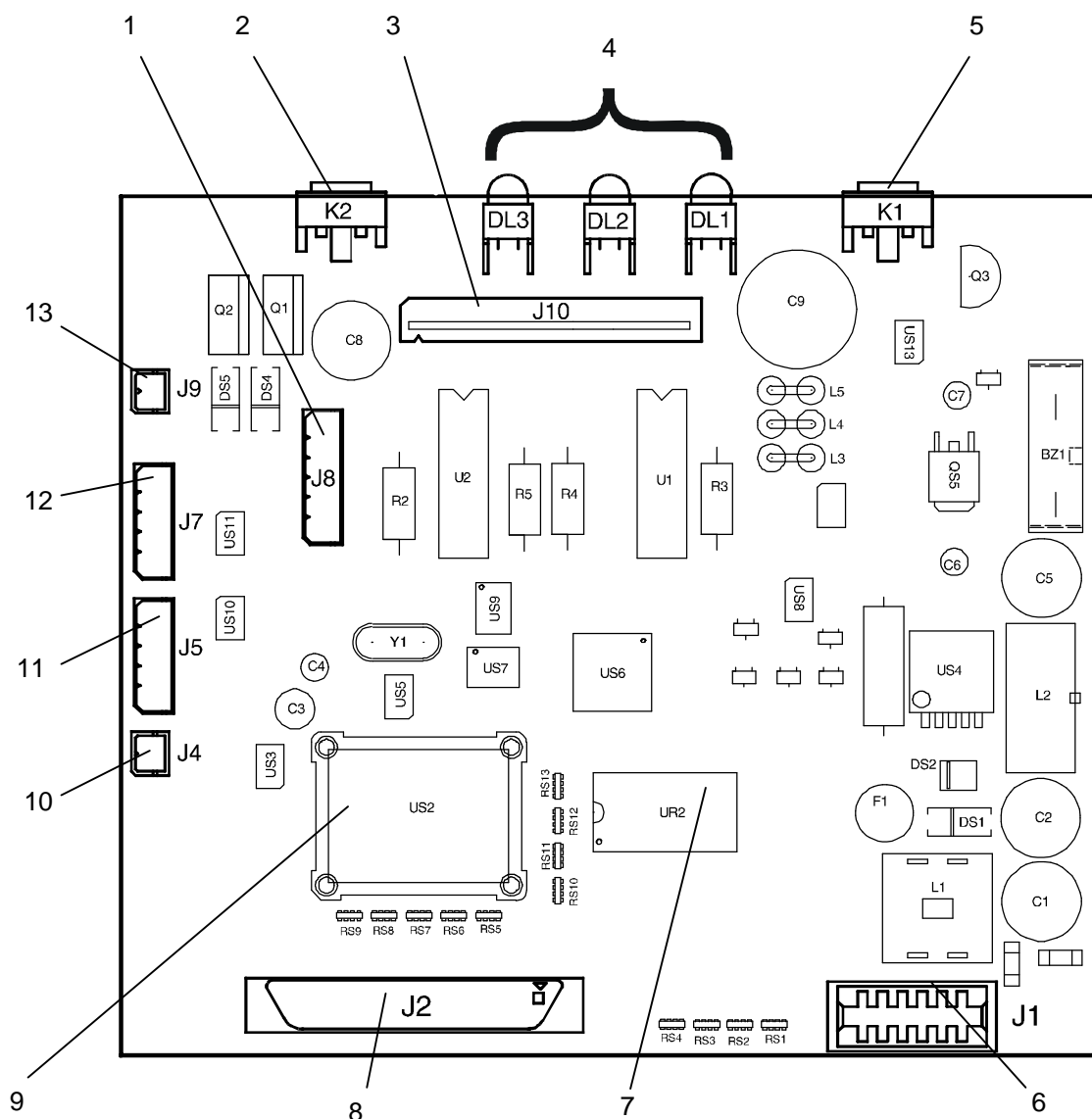


Figure 1-8

Reference	Identifier	Description
1	J8	Paper feed motor
2	K2	Paper feed microswitch
3	J10	Printhead
4	DL1-2-3	LEDs
5	K1	ON/OFF microswitch
6	J1	Power supply board connector
7	UR2	
8	J2	Expansions connector
9	US2	CPU
10	J4	Almost out of paper roll microswitch
11	J5	Paper present at the print bar and/or marker sensor
12	J7	Paper route opening/closing photosensor
13	J9	Cutter blade position detection photosensor

1.8 POWER SUPPLY CARD

The figure below shows the power supply/drawer card.

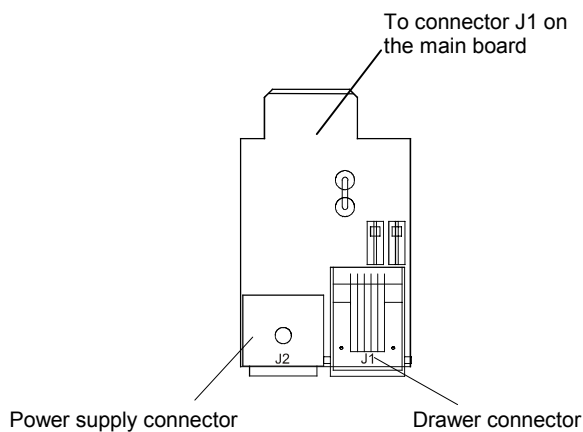


Figure 1-9

1.9 PLUGGABLE INTERFACE CARDS

The following pluggable interface cards can be installed in the printer:

1. Bi-directional parallel
2. Serial (25 pin)
3. USB and Display
4. Serial (9 pin) and Display
5. Ethernet

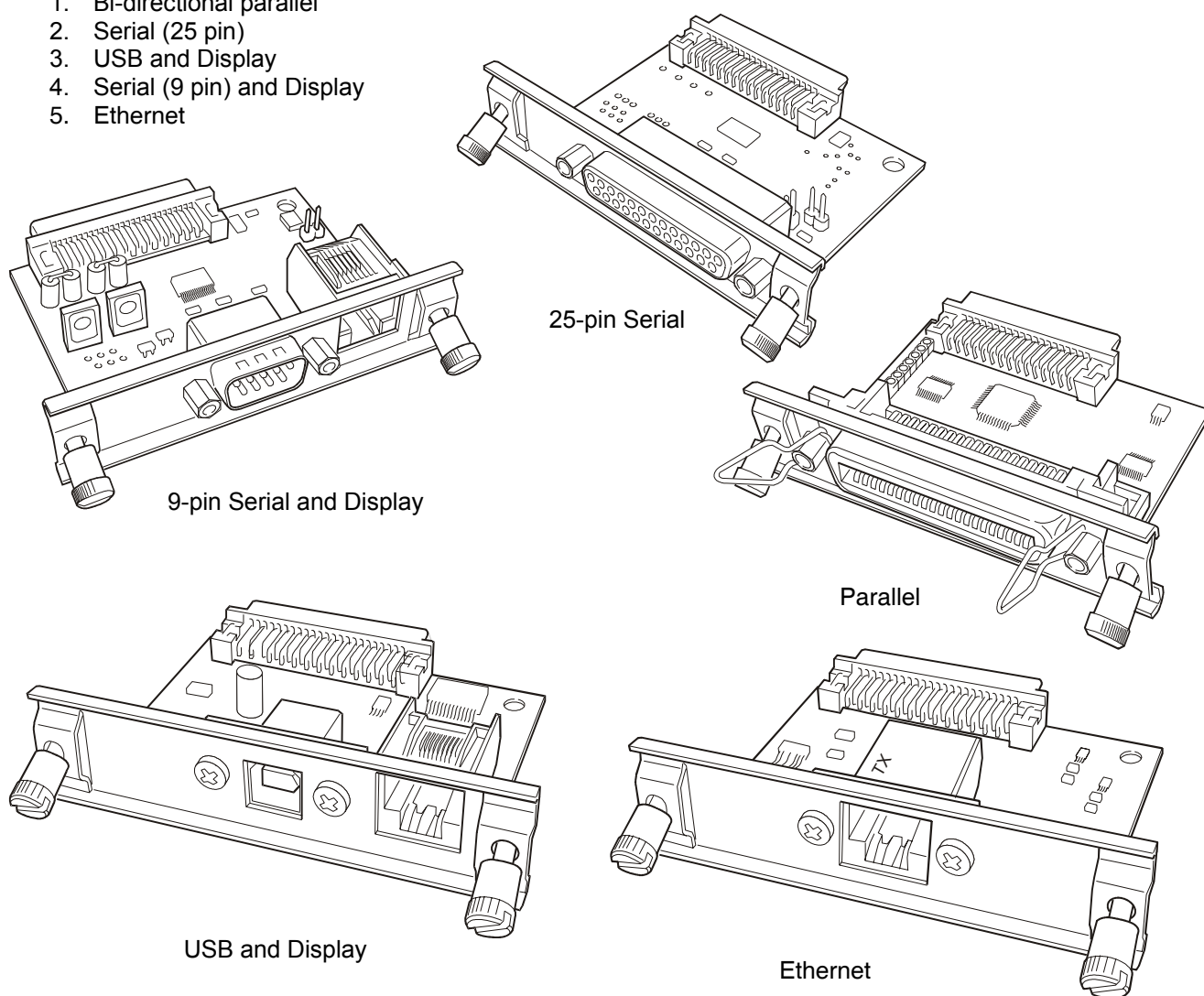


Figure 1-10

1.9.1 Serial Interface Card Configuration

Before installing the card, configure its jumpers accordingly as shown in the table below.

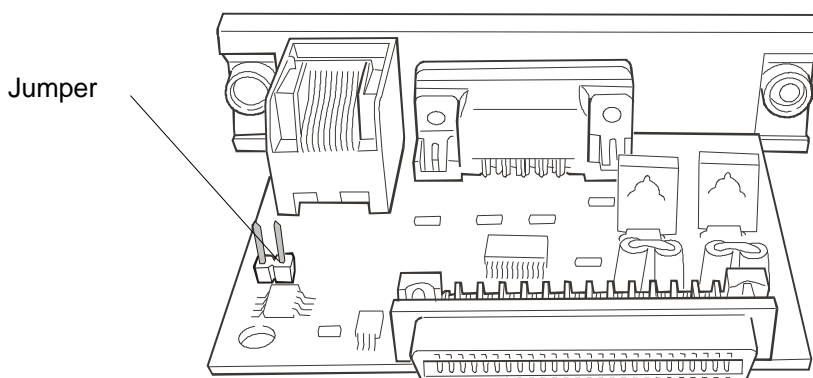


Figure 1-11 9-pin Serial

ON	I/F pin 6 reset signal
OFF	Used as DSR signal

If the jumper is installed (ON) and the signal is MARK for at least 1 ms, the printer is reset.

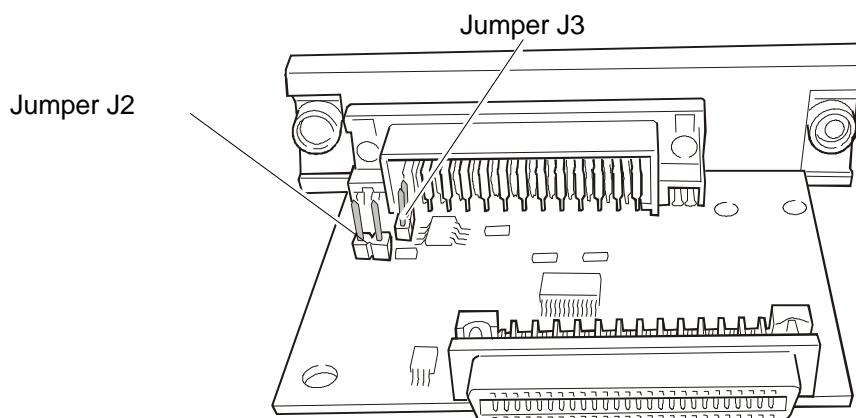


Figure 1-12 25-pin Serial

Jumper J2	ON	Pin 6 reset signal
	OFF	Used as DSR signal
Jumper J3	ON	Pin 25 reset signal
	OFF	Not used

If J3 is installed (ON) and the signal is SPACE for at least 1 ms, the printer is reset.

1.10 CONFIGURATION

With this printer model you can print the SELF-TEST, configure its SET-UP parameters and the different modes of operation, and print the codes received from host in HEX DUMP (hexadecimal coding).

To access these operating modes, the printer must be set to the Configuration Menu mode as described below.

1.10.1 Printing the Configuration Menu

Proceed as follows to access the Configuration Menu.

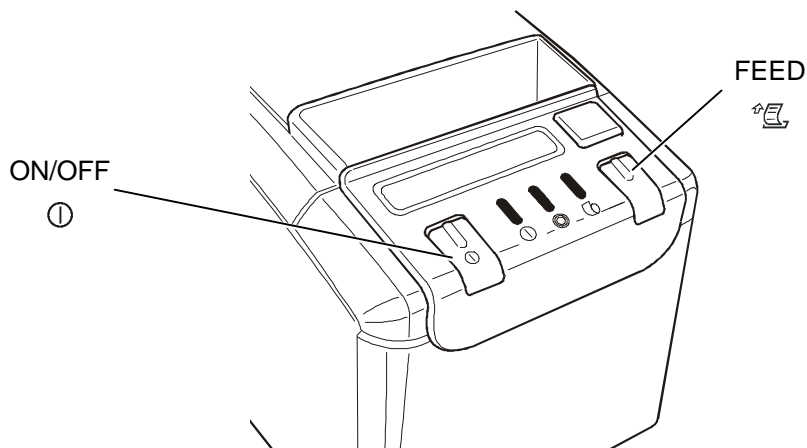


Figure 1-13

1. With the printer attached to the electrical outlet but powered OFF and with the paper roll loaded, power on the printer by pressing the **[ON/OFF]** button while simultaneously holding down the **[FEED]** button until the LEDs comes on.
2. Release both buttons.
3. The following menu is printed.

0 Self-test
1 Set-Up
2 Hex Dump

The number printed beside the menu option indicates the number of times the **[ON/OFF]** button must be pressed to access the related environment.

5. Press the **[FEED]** button to confirm and activate the procedure.

1.10.2 Self-Test

Information on how to access self-test mode is provided below.

You can access self-test mode by pressing the **[FEED]** key; the machine prints the set-up parameters and the code page selected and then switches to on-line mode.

To run the self-test again, repeat the procedure from the beginning.

An example of the Self-test is provided below.

[illegible]

1.10.3 Setup

With the printer Setup facility, you can access printer configuration parameters. These parameters have already been programmed with predefined (factory-set) values and are used to enable the printer or the option installed to run specific applications. The setup parameters may be modified so that the printer can operate according to the user's requirements.

Information regarding Setup mode is provided below.

- To access printer set-up, press the **[ON/OFF]** button once.
- Press the **[FEED]** button to confirm and activate the procedure.

The printer is now in setup mode and therefore prints the data, including the list of setup parameters and the related values, the description of the two buttons of the control panel and the first of the three available menus.

Current Set Up	
BOOT Release 4.02 Ver. 011 FW Release 5.02B Ver. 12 User ID PRINTER..... :PRT100-Training I/O Interface installed :USB Display Baud :19200 Display Data Bits :8 Display Parity :None Advanced I/O Receive buffer size :4096 bytes Busy condition :Offline/buf full Auto LF :No Pw-On Device enabled :Display Emulation Emulation :TM-T88 III Print Format Roll width :80mm Nation (codepages) :cp 437 CPI (default font) :15 (Font A) Print Density :0 Optimize for :Speed Line length :42-56 chars/line Advanced Options..... Sound signal :No On connection to AC :Printer Off Power On transmit :None Tof position :Shortened Paper with Maker :No Find Marker :No Cutter :Yes To change current setup, please use ON/OFF key to move between options FEED key to select wanted option You can exit from setup using SAVE menu. Open and close cover anytime to discard all changes and return to normal mode.	Firmware/Boot Release Interface Card Installed Set-up parameters and related values Description of button functions First Setup Parameter

The printer can now be programmed by modifying the setup parameters according to specific requirements (refer to the following sections).

Note: If you switch to the Setup mode when the printer is in an almost out of paper condition, a continuous beep will sound until the cover is opened or closed.

In an almost out of paper condition, after printing the menu the printer will no longer print and will not provide any type of indication.

In any case, when the printer signals an out of paper condition it is suggested that you change the paper roll before proceeding with any type of operation.

1.10.4 Button Functions in the Setup Mode

The functions of the control panel buttons in the Setup mode are described below.

[ON/OFF]

Prints the next parameter of the item selected or the next menu item.

[FEED]

Confirms selection of the last item or parameter printed; prints the first parameter of the item selected or the next item of the menu.

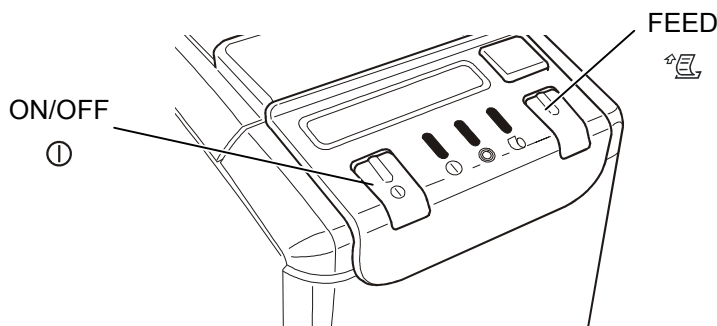


Figure 1-14

1.10.5 Navigating Through Printer Setup

Flow Chart

The following flow chart shows how you can navigate through printer Setup. The default values are indicated in the shaded boxes.

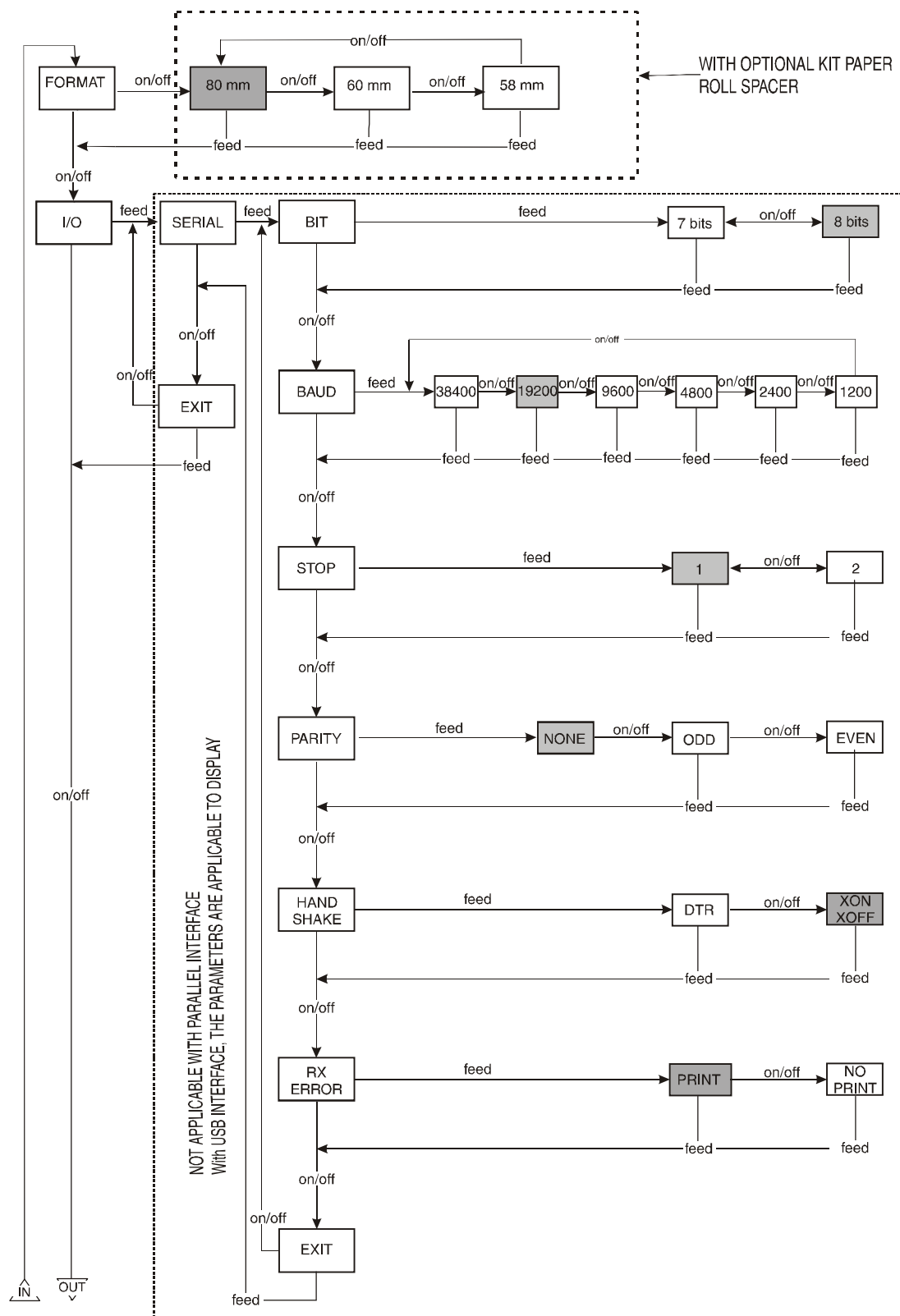


Figure 1-15

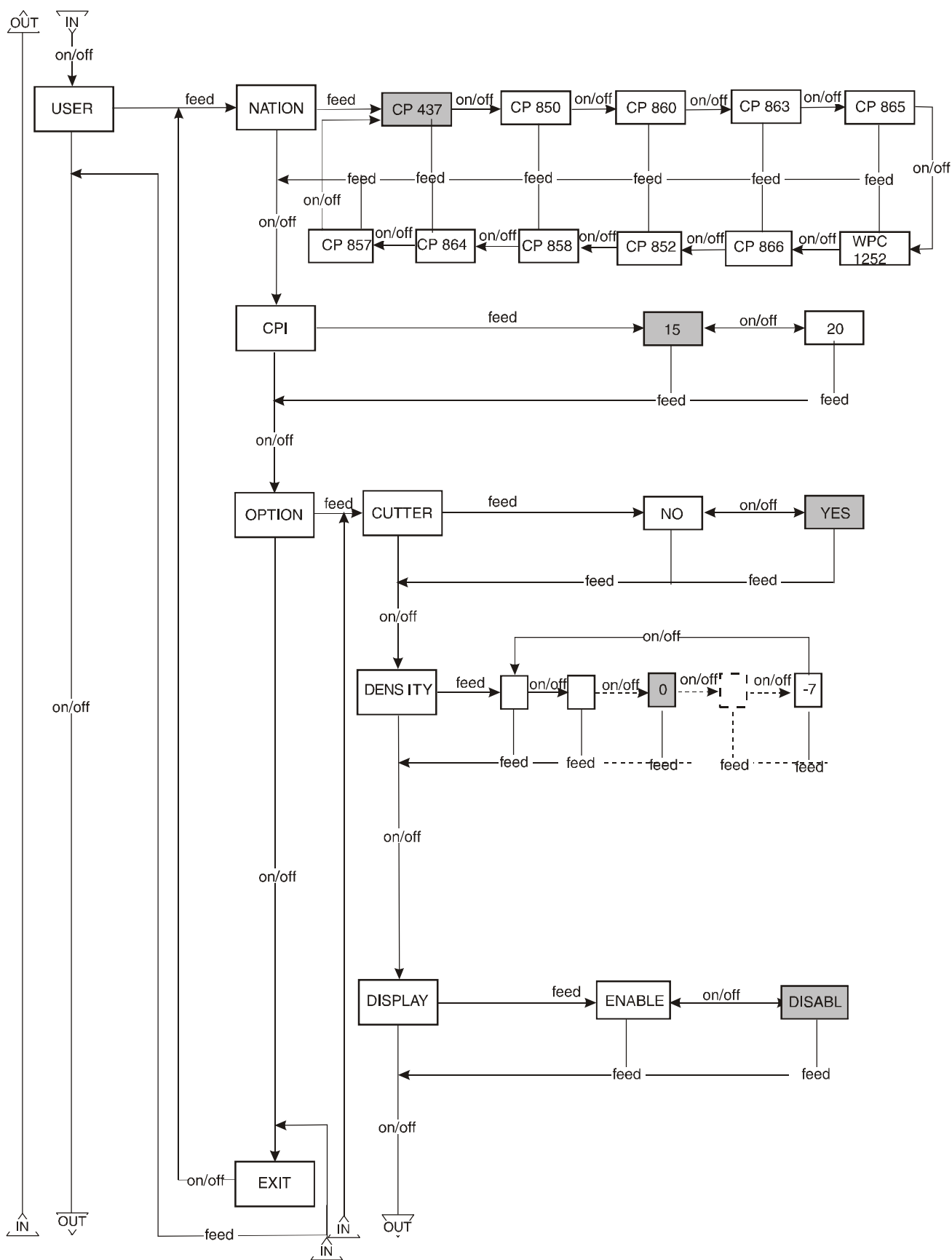


Figure 1-16

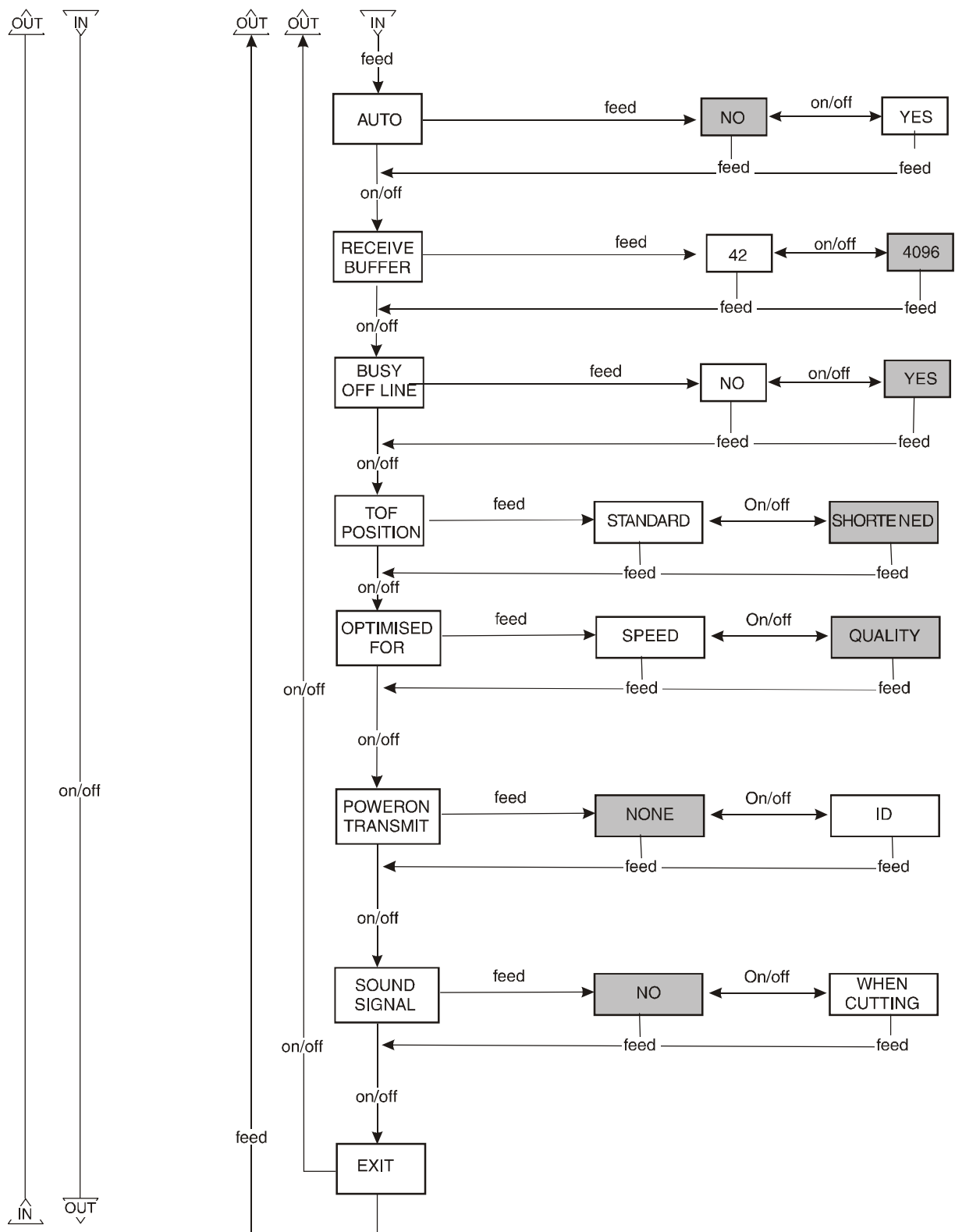


Figure 1-17

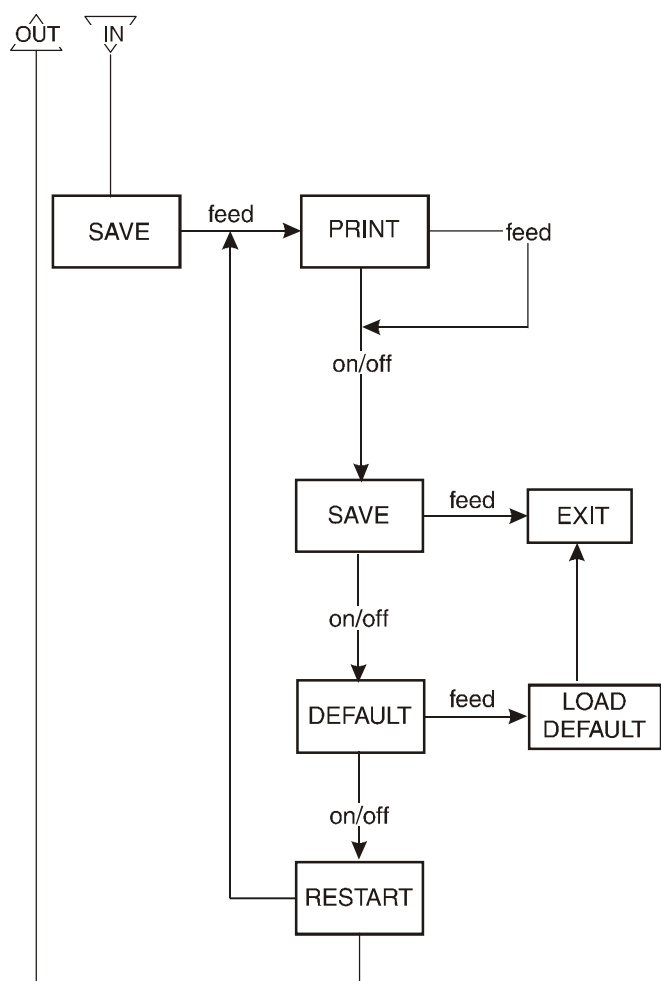


Figure 1-18

1.10.6 Notes and Description of the Parameters

The set-up parameters, listed in alphabetical order to facilitate consultation, are indicated in the table below. The default values are indicated in boldface.

PARAMETER	MEANING
AUTO LF: NO , YES	Automatic line feed: (NO: disabled – YES: enabled)
BAUD: 1200, ..., 19200 , ..., 38400	Data transmission/reception speed.
BIT: 7, 8	Data format, 7 or 8 bits.
BUSY OFFLINE: YES - NO	The printer is BUSY when: - it is off-line or the reception buffer is full (YES); - the reception buffer is full (NO).
CPI: 15 , 20	Print pitch selection, expressed as number of characters per inch.
CUTTER: YES , NO	Cutter: (NO: disabled - YES: enabled)
DEFAULT	Restores the default values.
DENSITY: -7, -6, ..., 0 , 1, ..., 7	Print density.
DISPLAY: DISABLE , ENABLE	ENABLE: printer ready to receive data. DISABLE: printer not ready to receive data.
HANDSHAKE: DTR - XON/XOFF	Data handshaking protocol.
I/O	Interface menu (Input/Output)
NATION: 437 , 850 ...	National variants of the character set.
OPTIMIZED FOR: SPEED , QUALITY	SPEED: faster printing at a lower print quality QUALITY: slower printing at a higher print quality
PARITY: NONE , ODD, EVEN	Type of parity checking.
POWERON TRANSMIT: NONE , ID	ID: the printer automatically sends three sync bits at power on. NONE: no transmission takes place at power on.
PRINT	Prints the current set-up parameters.
RECEIVE BUFFER: 4096 , 42	Reception buffer in number of bytes.
RESTART	Re-initializes the setup procedure without saving the settings made previously.
RX ERROR: PRINT ? , IGNORED	Data reception error: print "?" or ignore.
SAVE & EXIT	Saves the values set during the setup session and exits.
SERIAL	Serial interface parameter menu selection.
SOUND SIGNAL: NO , WHEN CUTTING	WHEN CUTTING: the printer emits a warning beep when receipt cutting is complete NO: no beep is emitted by the printer
STOP: 1 , 2	Number of stop bits
TOF POSITION: STANDARD, SHORTENED	Sets the distance between the cut of the receipt (paper leading edge) and the first line printed: STANDARD: ≈ 42 mm; SHORTENED: ≈ 7 mm;

1.10.7 Parameter Selection

In setup mode, you can modify the parameters of the printer:

1. In Setup mode, one item or parameter is printed or proposed at a time.
2. The item or parameter is confirmed or selected using the **[FEED]** button or is rejected pressing the **[ON/OFF]** button.

1.11 HEX-DUMP

To access Hex-Dump mode of the printer, proceed as follows:

- To access Hex-Dump mode, press the **[ON/OFF]** button twice.
- Press the **[FEED]** button to confirm your selection and to activate the procedure.

The following hexadecimal codes are printed.

```
1B 40 1D 48 32 1D 6B 48 07 43 6F 64 65 20
33 39 0A 1B 40 1D 48 32 1D 6B 48 07 43 6F
64 65 20 33 39 0A 1B 40 1D 48 32 1D 6B 48
07 43 6F 64 65 20 33 39 0A 1B 40 1D 48 32
1D 6B 48 07 43 6F 64 65 20 33 39 0A 1B 40
1D 48 32 1D 6B 48 07 43 6F 64 65 20 33 39
0A 1B 40 1D 48 32 1D 6B 48 07 43 6F 64 65
20 33 39 0A 1B 40 1D 48 32 1D 6B 48 07 43
6F 64 65 20 33 39 0A 1B 40 1D 48 32 1D 6B
48 07 43 6F 64 65 20 33 39 0A 1B 40 1D 48
32 1D 6B 48 07 43 6F 64 65 20 33 39 0A 1B
40 1D 48 32 1D 6B 48 07 43 6F 64 65 20 33
39 0A 1B 40 1D 48 32 1D 6B 48 07 43 6F 64
65 20 33 39 0A 1B 40 1D 48 32 1D 6B 48 07
43 6F 64 65 20 33 39 0A 1B 40 1D 48 32 1D
6B 48 07 43 6F 64 65 20 33 39 0A 1B 40 1D
48 32 1D 6B 48 07 43 6F 64 65 20 33 39 0A
1B 40 1D 48 32 1D 6B 48 07 43 6F 64 65 20
33 39 0A 1B 40 1D 48 32 1D 6B 48 07 43 6F
64 65 20 33 39 0A 1B 40 1D 48 32 1D 6B 48
07 43 6F 64 65 20 33 39 0A 1B 40 1D 48 32
1D 6B 48 07 43 6F 64 65 20 33 39 0A
```

Figure 1-19

1.12 FIRMWARE UTILITIES RESERVED FOR PRODUCT SERVICING

To access the Firmware Utilities reserved for product servicing, proceed as follows:

- With the printer powered but OFF and paper roll loaded, press and hold down the **[ON/OFF]** button to power on the printer; when the power ON LED comes on, open the printer cover (by pressing button **1** as far as it goes) and then close the cover and release the **[ON/OFF]** button.
- The printer prints and normal functioning of all the LEDs is restored.
Press ON/OFF key to change
then FEED key to confirm
- Confirm selection with the FEED key.

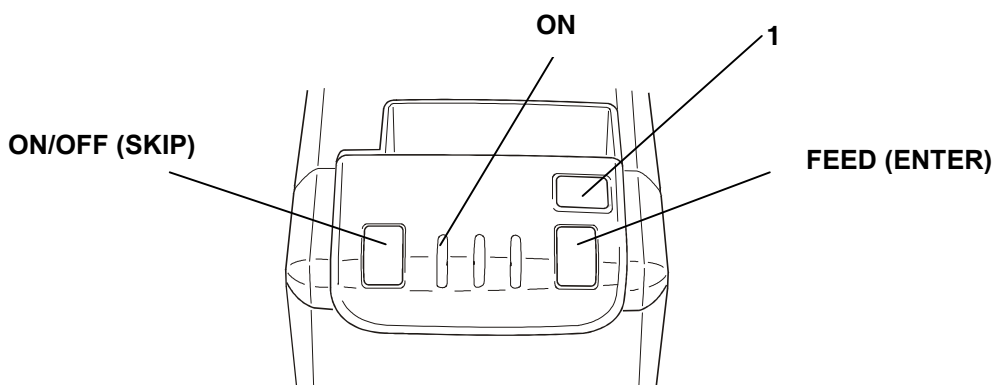


Figure 1-20

- The following Firmware Utilities menu will be printed:

```
Press ON/OFF key to change  
then FEED key to confirm the selection
```

```
0 - Set-Up  
1 - Hex Dump  
2 - Calibration  
3 - Slot Informations  
4 - Memory maintenance
```

- With reference to the menu printed, select the utility required by pressing the **SKIP** button on the control panel the number of times indicated by the number that precedes the name of the utility; then press the **ENTER** button to confirm and access the related menu. Counting is cyclical and is accompanied by a beep at each change of utility.

Opening the printer cover, in any condition, restores normal operating status.

1.12.1 Description of the Firmware Utilities

A short description of each item of the reserved firmware utilities menu is provided below.

0 – Set-Up

For a description of the features of this utility, refer to the “**Configuration**” section of this chapter.

1 – Hex Dump

For a description of the features of this utility, refer to the “**Configuration**” section of this chapter.

2 – Calibration

After accessing this utility, the following submenu is printed after confirming with the FEED key:

```
0 - Photo Sensor Calibration
1 - Cutter Calibration
2 - Marker Calibration
```

Press the SKIP button to move from one item to the next and then press the ENTER button to confirm your selection.

0 – Photo Sensor Cal.

Selection of this submenu accesses Photosensor Calibration mode. The printer prints the procedure to be performed for correct calibration, as indicated below:

- 1- Wait for the flashing Paper end LED
- 2- Open the cover
- 3- Remove the paper roll
- 4- Close the cover
- 5- Press the FEED key
- 6- Wait for the flashing Paper end LED
- 7- Open the cover
- 8- Insert the paper roll
- 9- Close the cover
- 10- Press the FEED key.

1 – Cutter Calibration

Selecting this submenu activates cutter calibration; the printer continues to cut the paper until you exit from the menu.

2 – Marker Calibration

Selecting this submenu activates calibration of the market recognition sensor if paper rolls of this type are used.

3 – Slot Information

This utility prints the contents of the E2prom present on the slot card. It is used by the machine to identify the type of interface installed.

4 – Memory maintenance

Not managed

1.13 TROUBLESHOOTING

	PROBLEM	<input type="checkbox"/> The printer does not power on.
	SOLUTION	<input type="checkbox"/> Check the status of the green LED on the external power supply unit: <ul style="list-style-type: none"> - if it is off, make sure that the power cord of the external power supply unit is properly connected to the electrical outlet. - if it is on, make sure that the power cord of the external power supply unit is properly connected to the printer.
2	PROBLEM	<input type="checkbox"/> The paper is jammed.
	SOLUTION	<input type="checkbox"/> Remove the paper roll; make sure that the printer compartment is clear of paper dust or residue and then reload the paper roll as explained in the section Loading the Thermal Paper Roll.
3	PROBLEM	<input type="checkbox"/> The paper is not cut (cutter locked).
	SOLUTION	<input type="checkbox"/> Reset the cutter by opening and closing the printer cover. <input type="checkbox"/> Open the printer cover and remove the wrinkled paper, then reload the paper roll again as explained in the section Loading the Thermal Paper Roll. <input type="checkbox"/> Open the printer cover and then remove and reload the paper roll as explained in the section Loading the Thermal Paper Roll.
4	PROBLEM	<input type="checkbox"/> The yellow out/almost out of paper LED (ROLL) is on or flashing.
	SOLUTION	<input type="checkbox"/> Load a new paper roll as explained in the section Loading the Thermal Paper Roll.
5	PROBLEM	<input type="checkbox"/> The red ERROR LED (ERR) is on.
	SOLUTION	<input type="checkbox"/> If the paper is jammed, clear the paper jam by following the instructions of step 2. <input type="checkbox"/> If the cutter is locked, unlock the cutter by following the instructions of step 3.
6	PROBLEM	<input type="checkbox"/> The power LED (ON/OFF) is flashing.
	SOLUTION	<input type="checkbox"/> Wait for the LED to stop flashing.
7	PROBLEM	<input type="checkbox"/> The paper is not fed.
	SOLUTION	<input type="checkbox"/> Open the printer cover and then close it again by pressing simultaneously on the right-hand and left-hand sides of the cover's paper output slot.

2. PRODUCT INSTALLATION AND MAINTENANCE PRECAUTIONS

2.1 INSTALLATION

2.1.1 *Choosing a Site for Installation*

When choosing where to install the printer, remember to:

- place the printer on a flat, vibration-free surface.
- not expose the printer to direct sunlight; do not install the printer close to heat sources (for example, radiators, etc.) or in damp or very dusty places.

2.1.2 *Installation*

For a correct product installation, proceed as follows:

- Unpack the printer and its components.
- Press the cover open button (1) as far as it goes to open the printer cover.

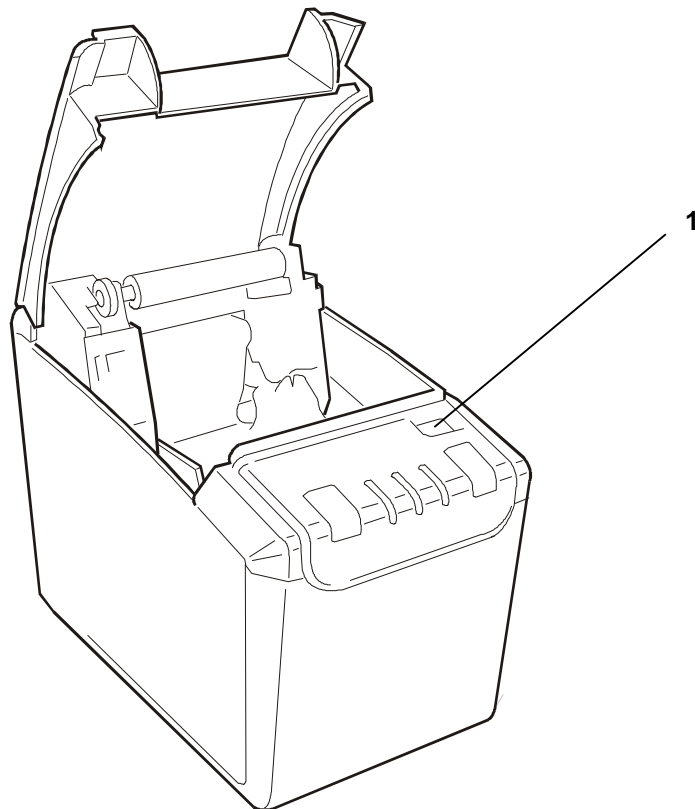


Figure 2-1

- Remove the cardboard (2) that protects the printhead during transportation.

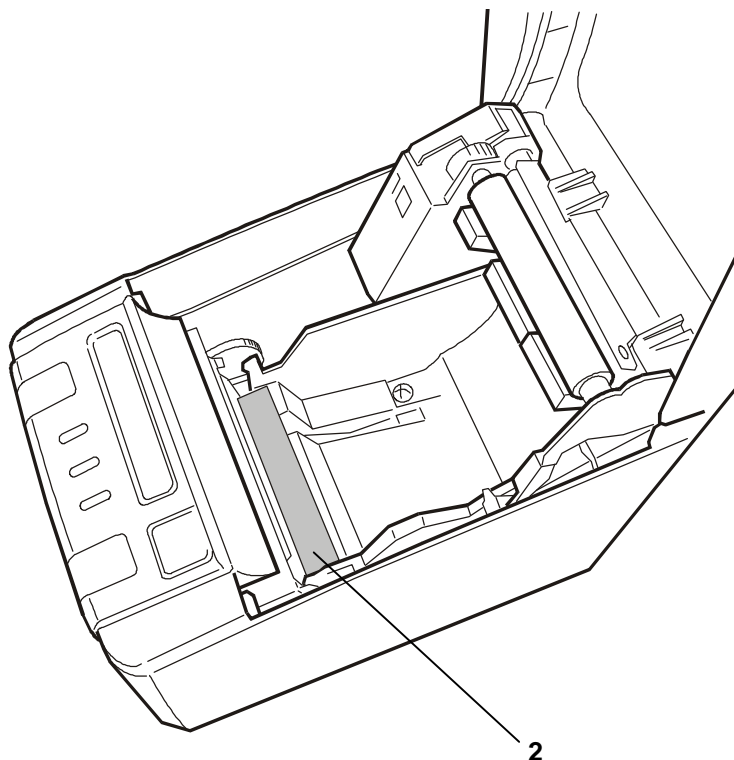


Figure 2-2

- Position the printer vertically and then open and remove the rear connectors' cover by releasing its snap hook, using a screwdriver, and lifting it off.

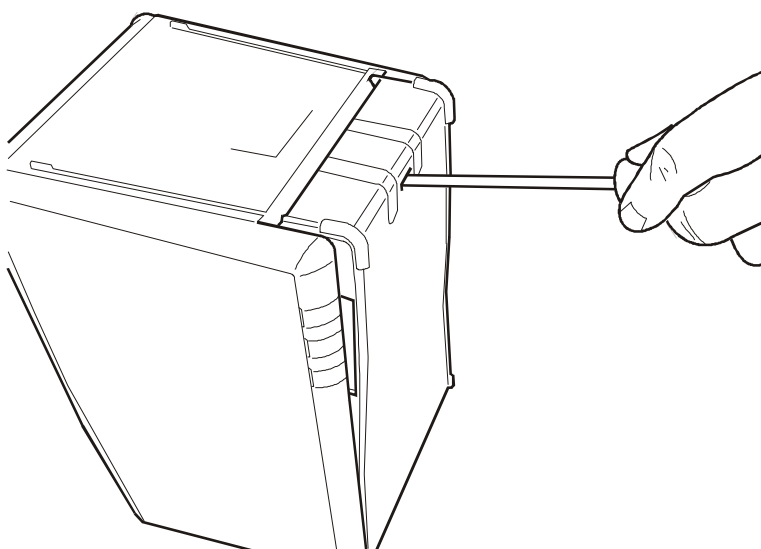


Figure 2-3

- Plug the interface cables **(2)** into the related connectors on the printer, as shown in the figure, and then route the cables through the cable blocks to prevent accidental disconnections. Tighten the securing screws, if present, on the interface cable connectors.

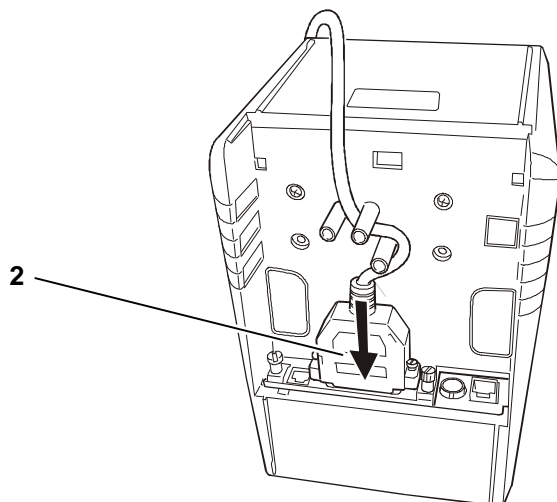


Figure 2-4

- Plug the power cord of the external power supply unit into printer power jack **(3)**.

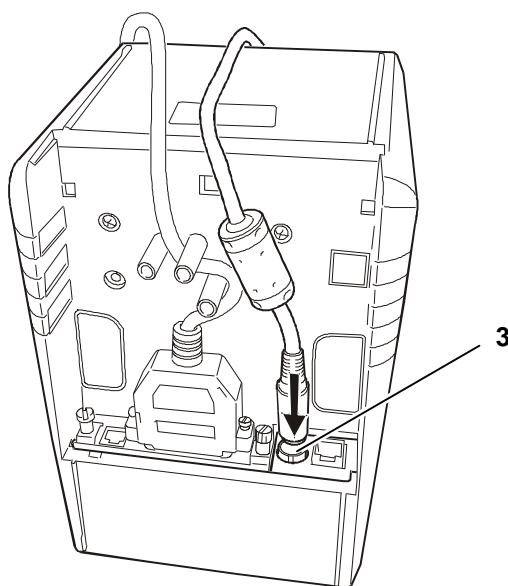


Figure 2-5

- Attach one end of the power cord, provided with the printer, into the related connector **(4)** on the external power supply unit.

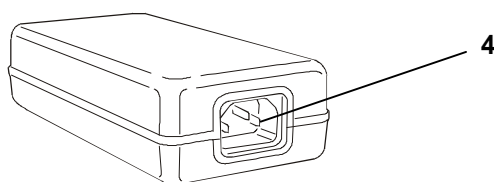


Figure 2-6

- Using a screwdriver, remove the extractable parts **(5)** on the casing and on the cover so that you can then route the cables externally according to your needs.

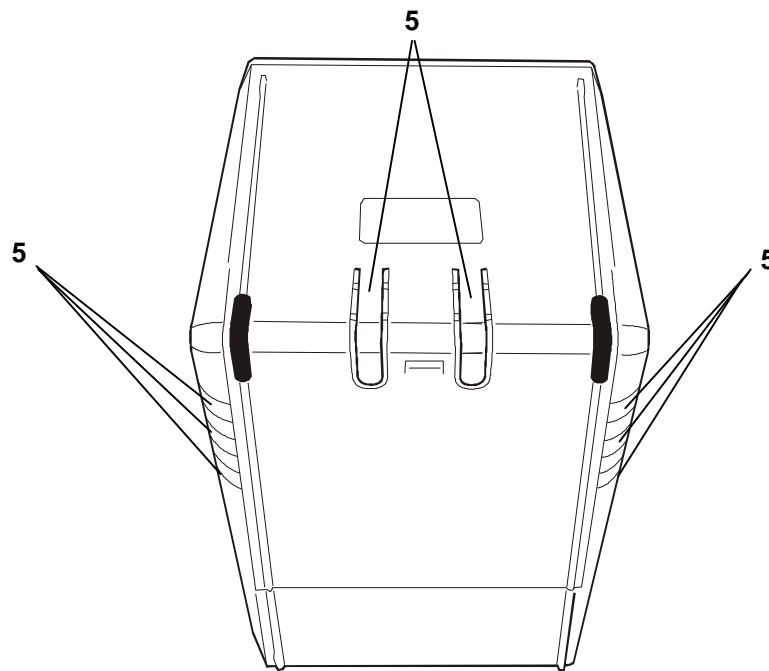


Figure 2-7

- Refit the connectors' cover by inserting the cover's lower and upper tabs into the corresponding slots **(6)** and **(7)**, routing the cables through the passage slots that were opened in the previous step.

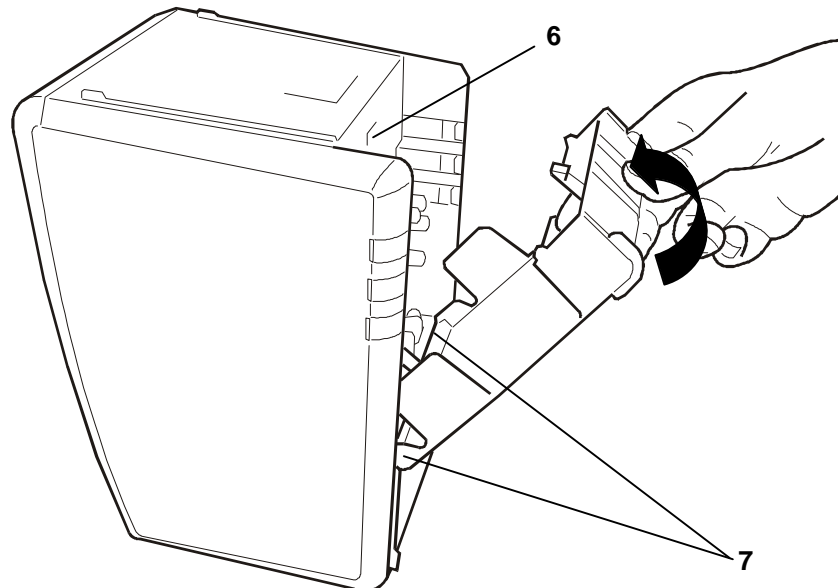


Figure 2-8

- Plug the free end of the power cord into the electrical power outlet.
- Power on the printer and then load the paper roll as explained in the section Loading the Thermal Paper Roll.

2.2 INSTALLING THE PAPER ROLL ADAPTER

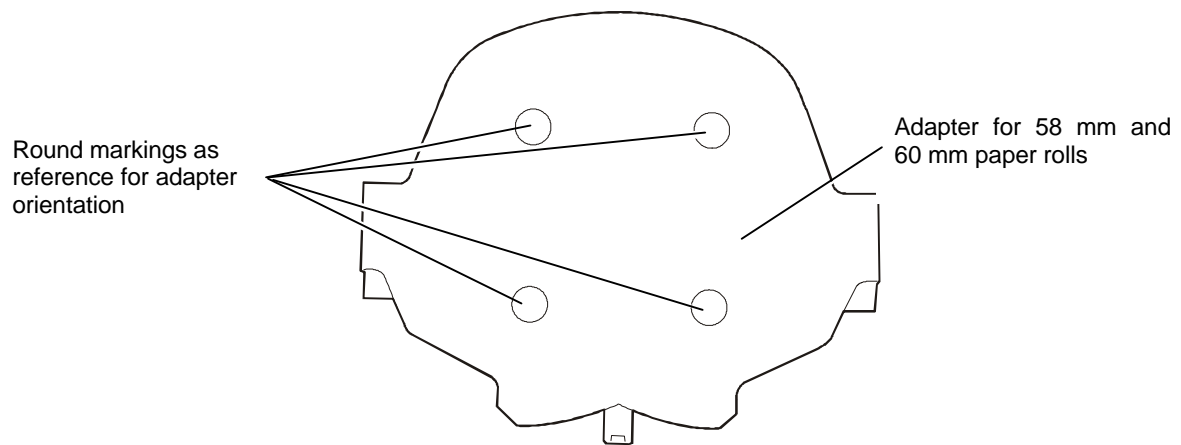


Figure 2-9

- Open the printer cover by pressing the Open button **(A)**.

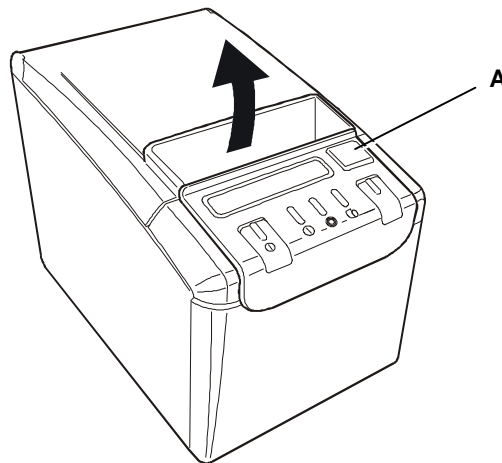


Figure 2-10

2.2.1 Installing the Adapter for 58 mm Paper Rolls

- Install the adapter with the four round markings facing the left-hand side of the printer by inserting protrusions **(A)** of the adapter into the related slots on the printer as shown in the figures below.

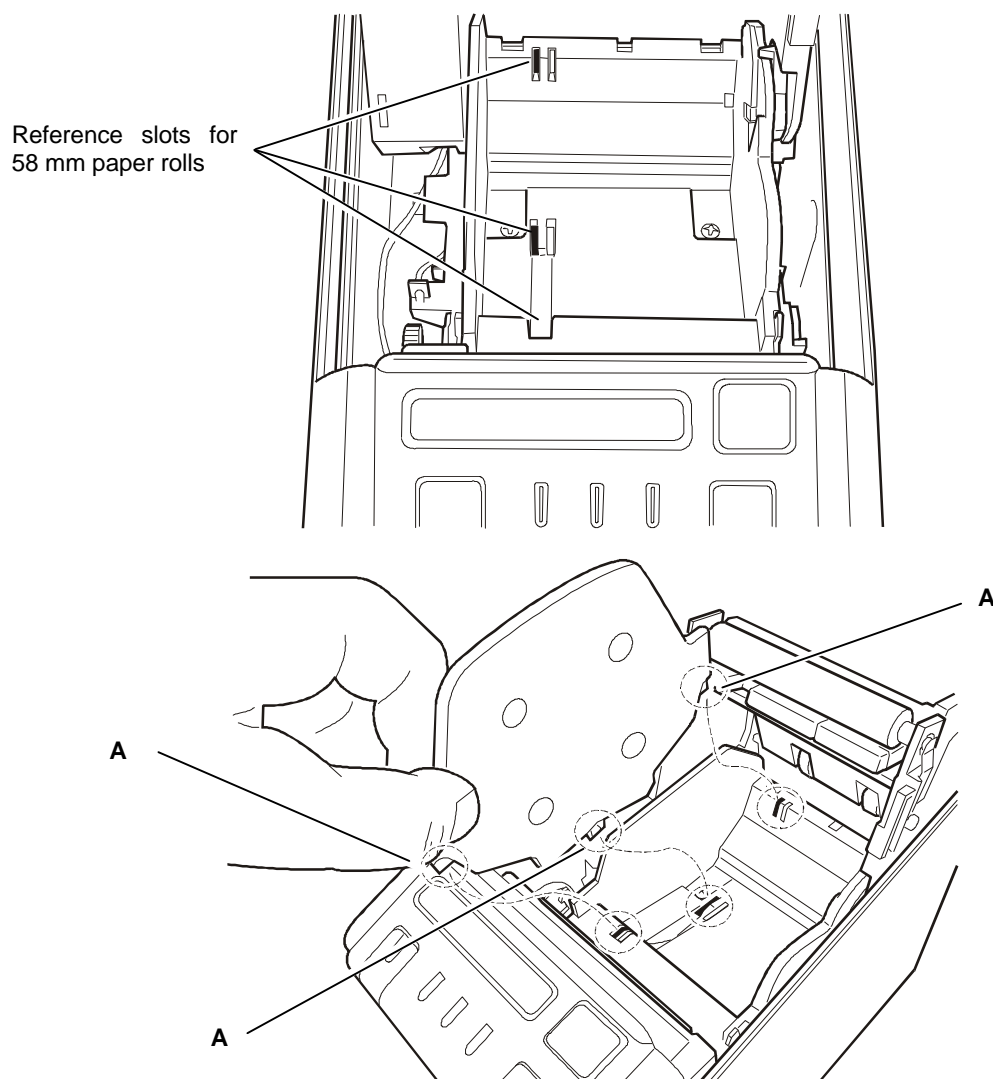


Figure 2-11

NOTE: After printing on 58 mm and 60 mm paper rolls, the print quality may not be guaranteed when using wider rolls (for example, 80 mm paper rolls).

2.2.2 Installing the Adapter for 60 mm Paper Rolls

- Install the adapter with the four round markings facing the inside of the printer by inserting protrusions (A) of the adapter into the related slots on the printer as shown in the figures below.

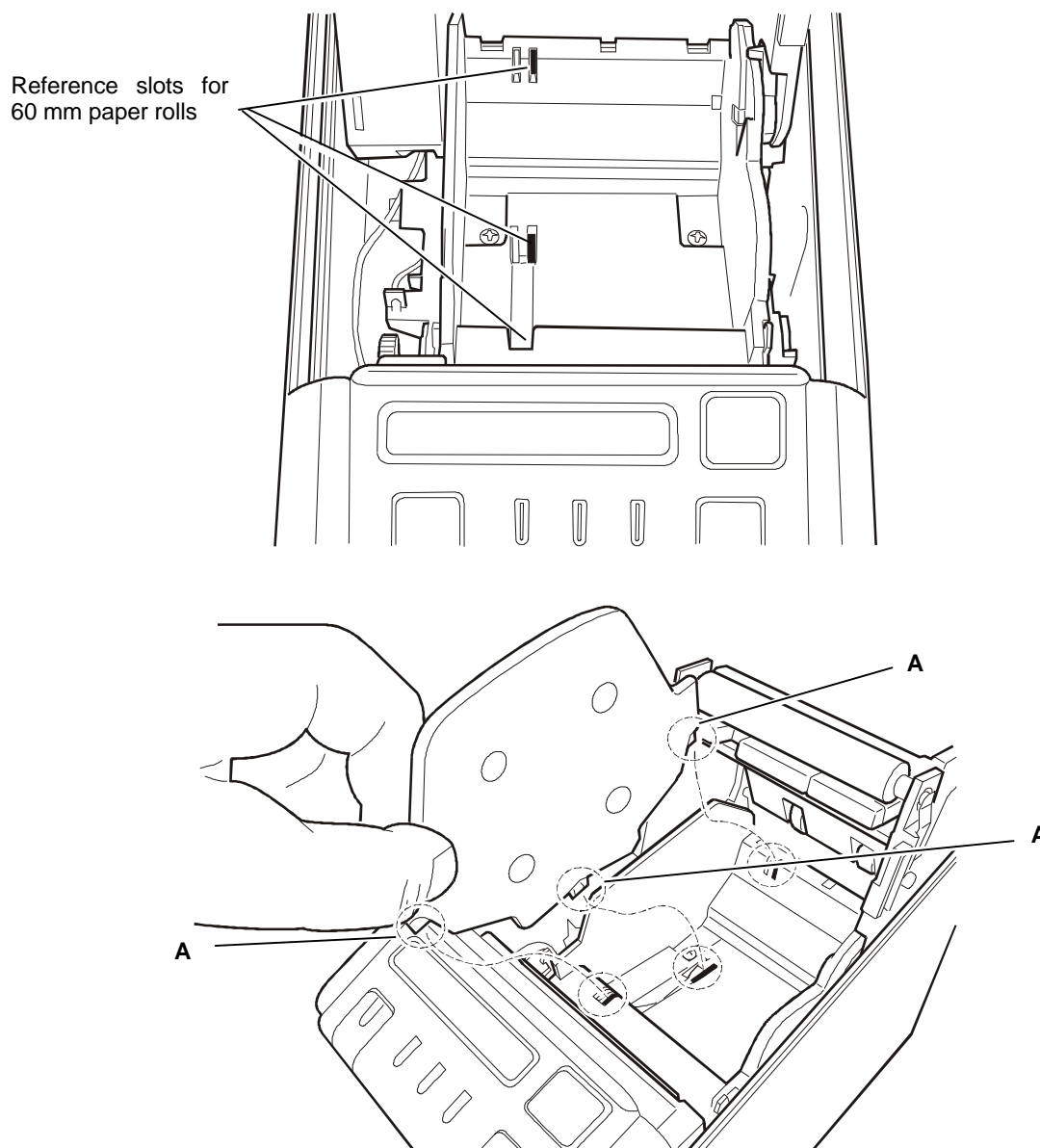


Figure 2-12

NOTE: After printing on 58 mm and 60 mm paper rolls, the print quality may not be guaranteed when using wider rolls (for example, 80 mm paper rolls).

2.2.3 Powering on the Printer

To power on the printer, proceed as follows:

- Make sure that the external power supply unit is plugged into an electrical socket.
- Load the paper roll as explained in the section Loading the Thermal Paper Roll.
- Power on the printer by pressing and holding down the ON/OFF button **(1)** on the operator console until the green (ON/OFF) LED **(2)** comes on.

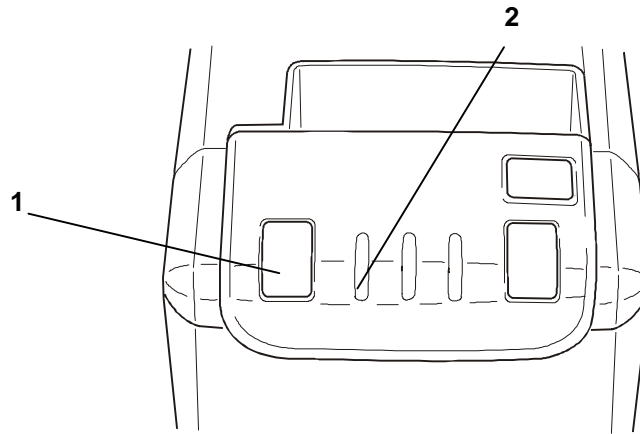


Figure 2-9

NOTE: Under normal operating conditions, with the printer powered on only the green power (ON/OFF) LED should be on. Therefore, if the LEDs of the operator console indicate a different printer condition, refer to the section Troubleshooting for any corrective actions.

2.2.4 Loading the Thermal Paper Roll

To load the thermal paper roll, proceed as follows:

- With the printer powered on, open the printer cover by pressing the Open button **(1)** as far as it goes.

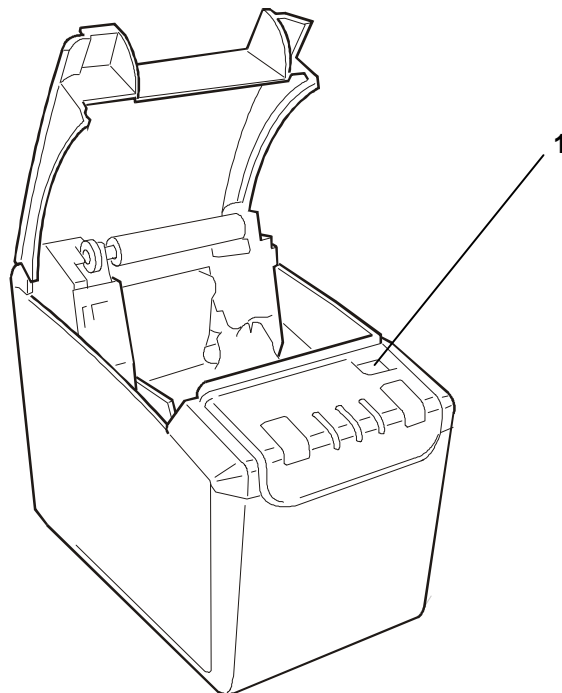
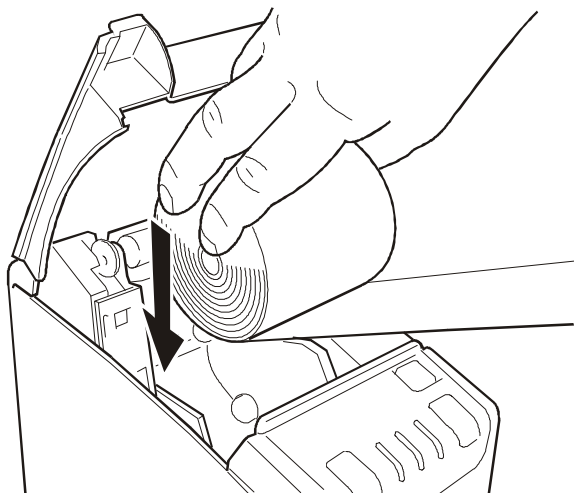
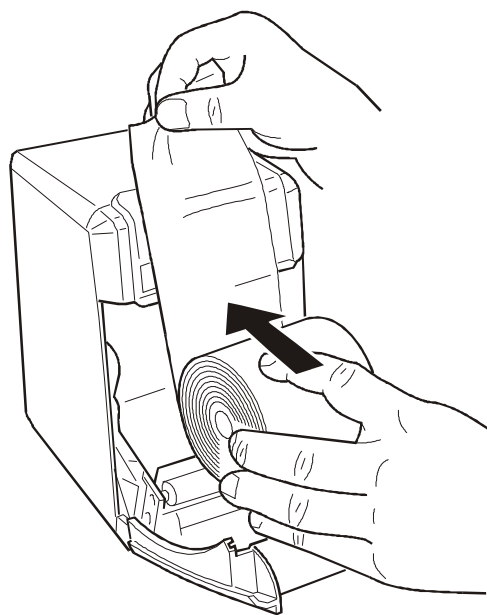


Figure 2-10

- With the paper roll oriented as shown in the following figures, unroll about 20 cm of paper and then insert the roll into its compartment inside the printer while holding the unrolled portion of paper.



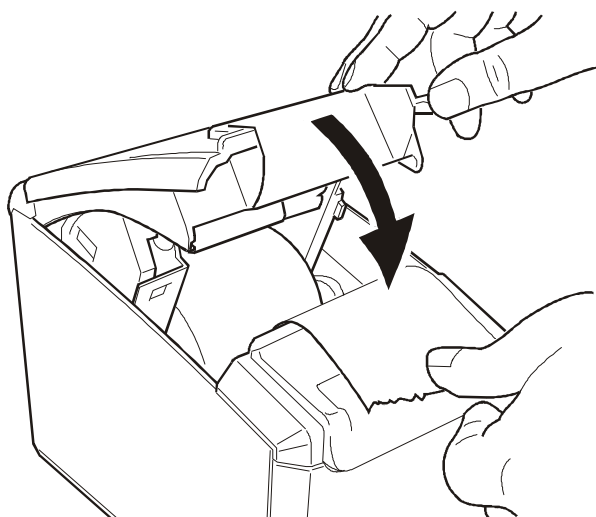
Horizontal



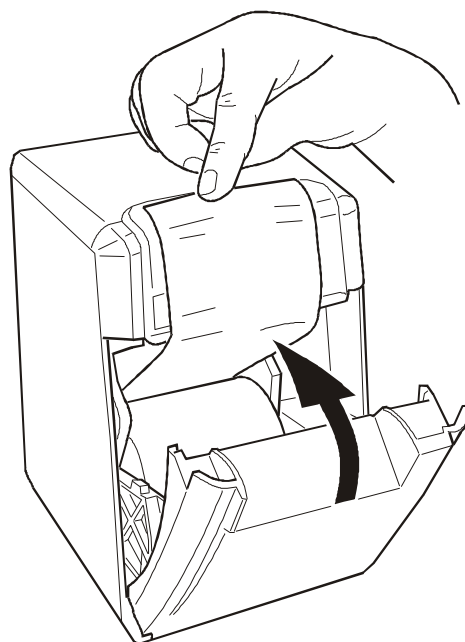
Vertical

Figure 2-11

- While holding the unrolled portion of paper, close the printer cover by pressing simultaneously on the right-hand and left-hand sides of the paper output slot. Make sure that the cover is closed properly on both sides.



Horizontal



Vertical

Figure 2-12

2.2.5 *Adjusting the Almost Out of Paper Sensor*

The almost out of paper detection sensor is adjusted at the factory to be functionally compatible with the most widespread paper rolls. However, this setting can be modified in order to delay or anticipate the signal according to requirements.

Adjustment is based on the diameter of the core of the paper roll used. The larger the diameter of the core, the earlier the paper almost out signal is emitted by the printer. Vice versa, the smaller the diameter of the core, the later the signal will be emitted.

This procedure is usually carried out prior to replacing the paper roll (and is therefore regulated for the next roll) in order to obtain confirmation of effective functioning of the sensor with the previous roll.

To adjust the paper roll almost out sensor, proceed as follows:

- Open the printer cover by pressing the Open button on the operator console as far as it goes.
- Move the green adjustment lever **(1)** towards the front of the printer to set an anticipated signaling (in the case of larger diameter cores) or towards the back of the printer for delayed signaling (in the case of small diameter cores).

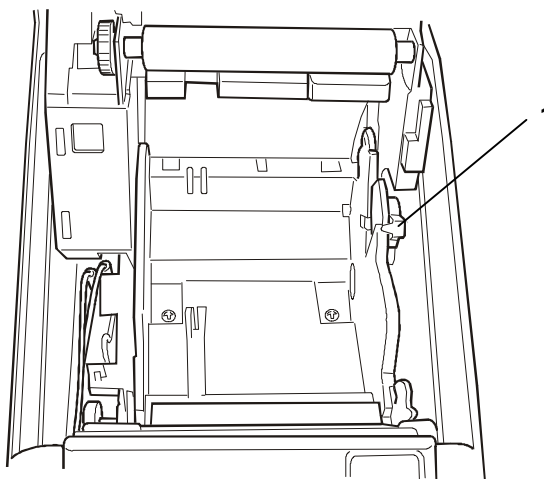


Figure 2-13

2.2.6 *Replacing the Thermal Paper Roll*

The paper roll must be replaced when the yellow (ROLL) LED of the operator console indicates one of the following two conditions:

- Almost out of paper (LED on steadily)
- Out of paper (LED flashing).

The appearance of a red stripe on the edge of the paper is a further indication of an almost out of paper condition.

To replace the paper roll, proceed as described in the section Loading the Thermal Paper, after removing the core of the used roll.

2.3 FIRMWARE UTILITIES

The following Firmware Utility can be used during the installation of this printer:

- Self-test

2.3.1 Button Functions in the Firmware Utility Mode

In the Firmware Utility mode, the buttons of the operator console assume a different meaning with respect to when the printer is in its normal operating mode.

In this mode the buttons are used to scroll the various parameters or options proposed, and to confirm selection. The operator console with indication of the new functions of the buttons is shown in the figure below:

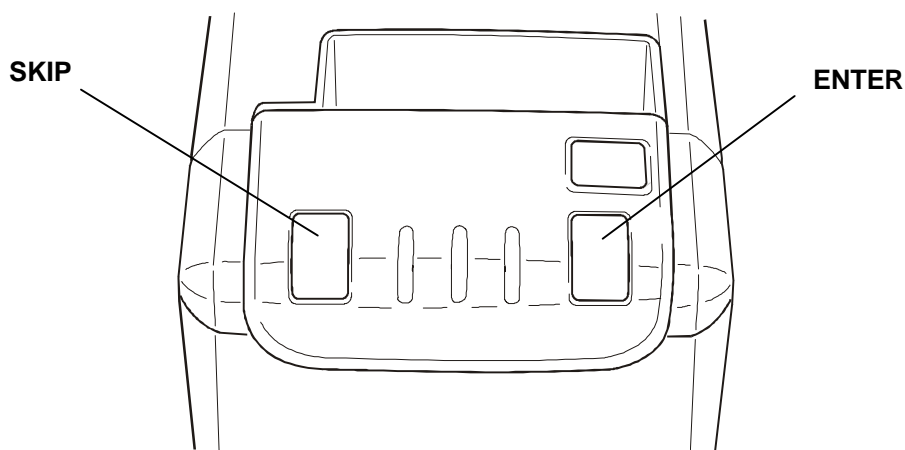


Figure 2-14

The new functions of the buttons are as follows:

BUTTON IN FIRMWARE UTILITY MODE	DESCRIPTION
SKIP	Press this button the number of times necessary to print the option or parameter required.
ENTER	Press this button to confirm your selection.

2.3.2 Accessing the Firmware Utility Mode

To access the Firmware Utilities, proceed as follows:

- Press and hold down the ON/OFF button (SKIP) to power on the printer. When the green power ON LED comes on, press the paper feed FEED (ENTER) button simultaneously for around 4 seconds until the remaining LEDs come on and the related beep is sounded. At this point, release both buttons.

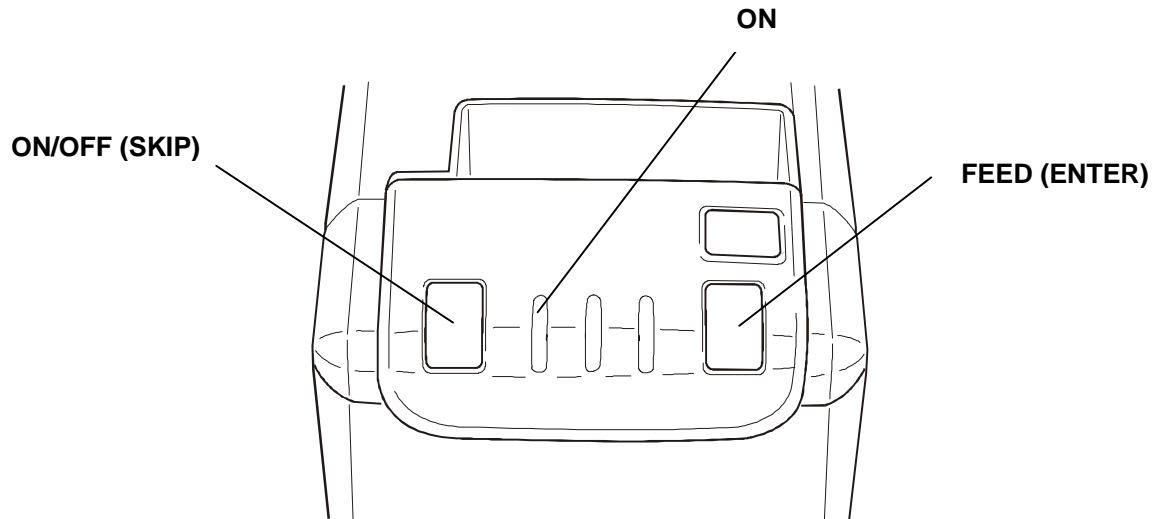


Figure 2-15

The printer switches to the Firmware Utility mode and prints the utility menu with a short description of how the buttons are used.

2.3.3 Printing the Selftest

Printing the self-test is useful for making sure that the printer is installed correctly. This test provides a slip with useful technical information, such as the version of the firmware installed, etc..

The self-test also prints the entire contents of the printer's character generator present on the printer so as to check the characters available and the print quality.

To run the self-test, proceed as follows:

- With the printer in Firmware Utility mode, press the ENTER button.

The self-test is printed. To interrupt the self-test, open and close the printer cover.

2.3.4 Exiting the Firmware Utility Mode

To exit from the Firmware Utility mode, open and close the printer cover.

2.4 PRODUCT MAINTENANCE PRECAUTIONS

2.4.1 Maintenance Norms and Safety Precautions

The general safety norms to comply with scrupulously during maintenance and troubleshooting operations are indicated below.

Be very careful when touching parts (1), (2) and (3) indicated in the figures below:

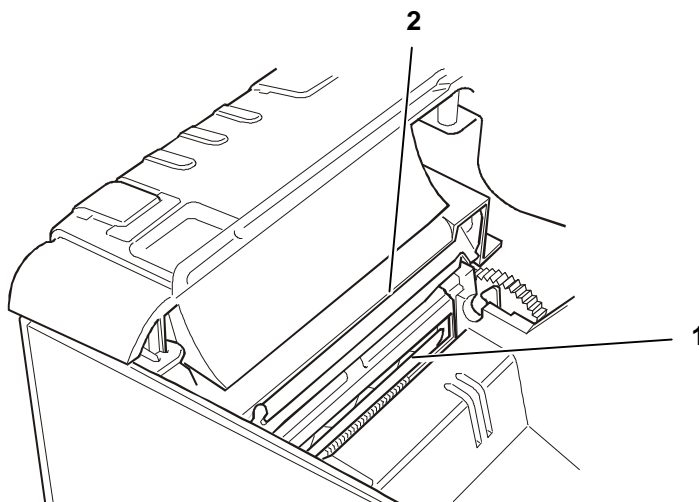


Figure 2-17

- 1. Printhead: danger of burning hazard immediately after printing
- 2. Cutter blade: cutting hazard

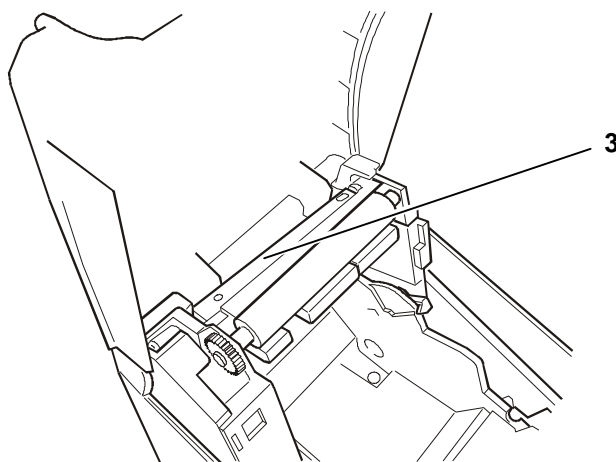


Figure 2-18

- 3. Cutter counter blade: cutting hazard.

2.4.2 Safety Precautions

During maintenance and troubleshooting operations, take into account the following points in order to avoid injuries and/or damage to the printer.

- Handle the printhead carefully as the head itself and surrounding area are very hot immediately after the printing.
- Handle the cutter very carefully as it is very sharp.
- Do not pull the paper from the output slot when the printer cover is closed.
- Do not open the printer cover during printing or during cutting of the paper by the cutter.

2.4.3 Maintenance Operations

The recommended maintenance operations are described below.

WARNING: Before performing any type of product maintenance, unplug the external power supply cable from the electrical outlet and follow the indications given in the section Safety Precautions.

Cleaning the Paper Roll Compartment

Clean the paper roll compartment to remove any paper dust or residue that could impair print quality. Proceed as follows:

- Open the printer cover by pressing the cover open button.
- Remove the paper roll from the paper roll compartment and then clean the compartment with a soft cloth being careful to avoid touching the printhead and cutter blades. Refer to the section Maintenance Norms and Safety Precautions in order to locate these parts.
- Load the paper roll as explained in the section Loading the Thermal Paper Roll.

Cleaning the Printer Case

- Clean the printer's external case using a soft cloth. Do not use solvents or hydrocarbons.

Cleaning the Printhead

Cleaning of the printhead consists in removing any dust that may have deposited, which could impair the print quality, from the surface of the thermal head.

WARNING: The printhead could be easily damaged so it is suggested that you clean it with extreme care, without scratching it.

Proceed as follows to clean the printhead:

- Open the printer cover and remove the paper roll.
- Gently pass a cotton swab dampened with isopropyl alcohol (IPA) over the surface of the thermal printhead and then load the paper roll.
- As an alternative to the cotton swab, a specific cleaning pen can be used.

2.5 INSTALLING THE DRAWERS (OPTIONS)

To install the optional drawers, follow the instructions in the documentation that comes with them.

Provided below is the electrical diagram of the cable to be used for the connection of this printer model with the two drawers

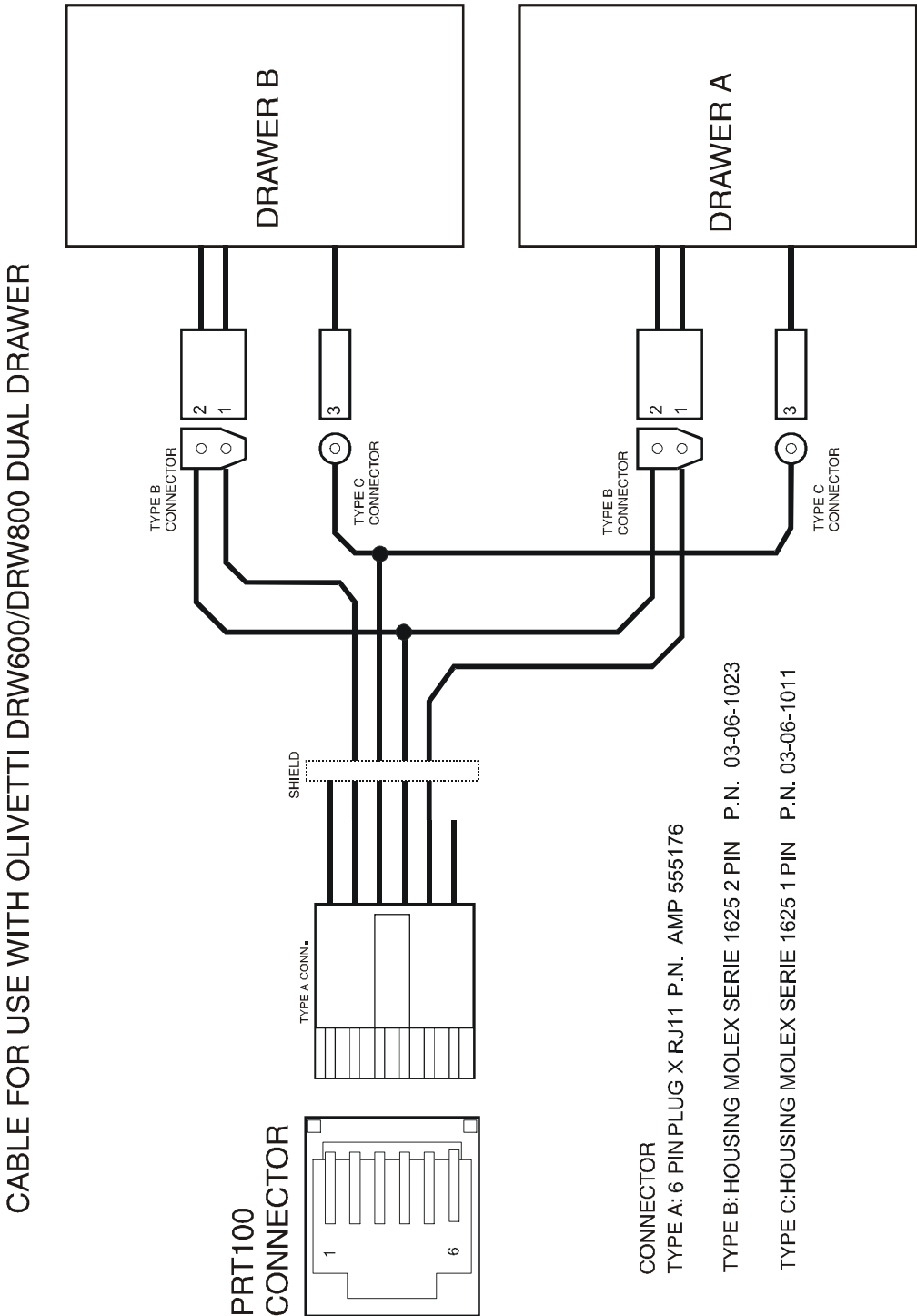


Figure 2-22

3. PRINTER DISASSEMBLY/REASSEMBLY PROCEDURES

3.1 INTRODUCTION

This chapter describes the disassembly and replacement procedures for all of the main printer components.

These procedures are to be performed by field engineers to ensure correct product maintenance.

Warning! *Before disassembling the modules, remember to power off the printer and unplug its power cord from the electrical socket.*

3.2 PRELIMINARY WARNINGS

- All operations must be carried out in clean, unobstructed areas.
- Perform the procedure carefully; do not unscrew parts that are not to be removed.
- Store the disassembled parts in a clean place where they cannot be lost.
- After replacing the parts, make sure that they have not been deformed during assembly; if necessary, restore the correct conditions.
- To reassemble the parts, follow their disassembly procedure in reverse order.
- Check that all connectors are correctly inserted.
- When replacing the power supply unit, check that the electrical characteristics of the new unit correspond to the value indicated on printer's electrical data plate.
- When finished, test the printer to make sure that it is working correctly.

3.3 FIRST LEVEL DISASSEMBLY PROCEDURE

This section describes how to remove the printer casing.

3.3.1 Casing Disassembly/Reassembly

To remove the casing, proceed as follows:

- Unplug the power cord from the electrical outlet.
- Position the printer as shown in the figure.
- Insert an Allen screwdriver in point (1) to release the hook that secures the connectors' cover (2) and then remove the cover in the direction indicated by the arrow.

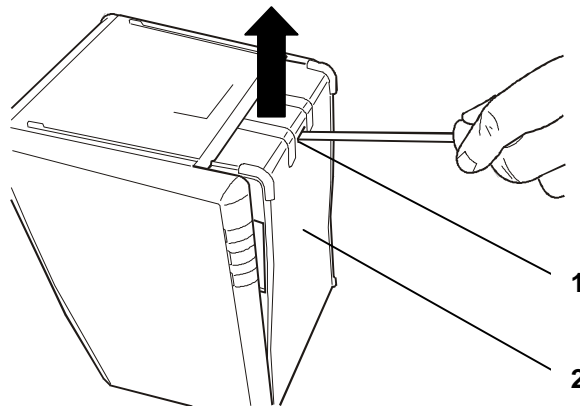


Figure 3-1

- Unscrew the two screws (3) and remove the interface card.
- Unscrew the three screws (4) that secure the casing to the internal metal frame.

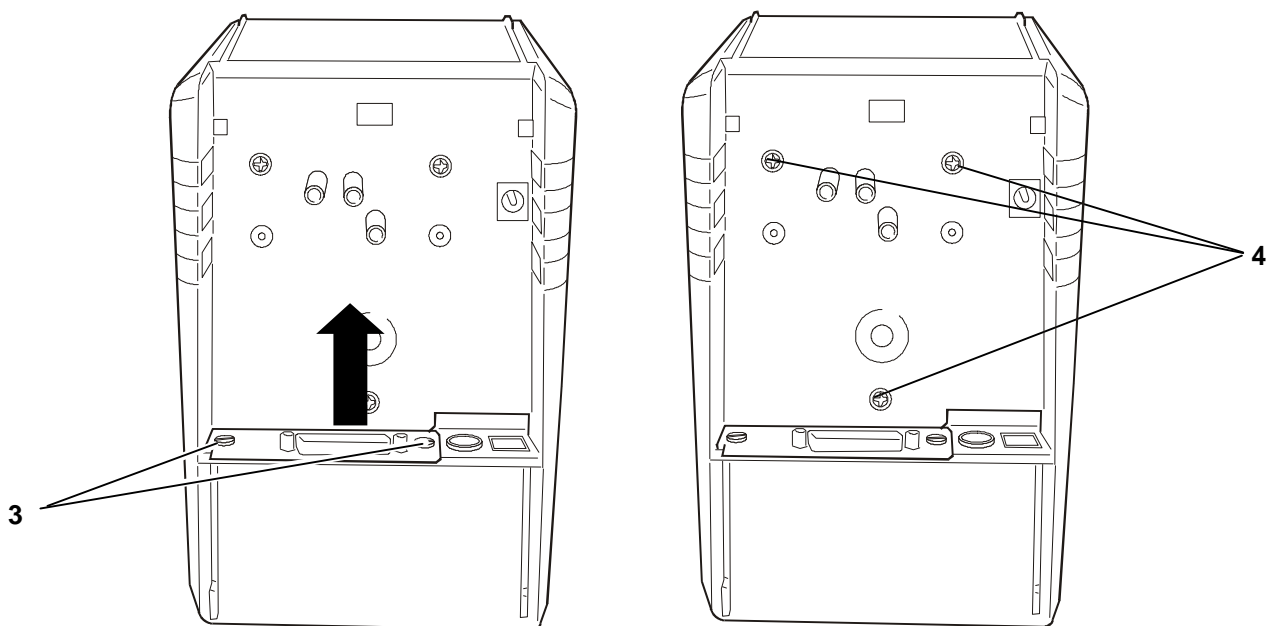


Figure 3-2

- Remove the printer assy from its casing by lifting it out in the direction of the arrow in the figure below.

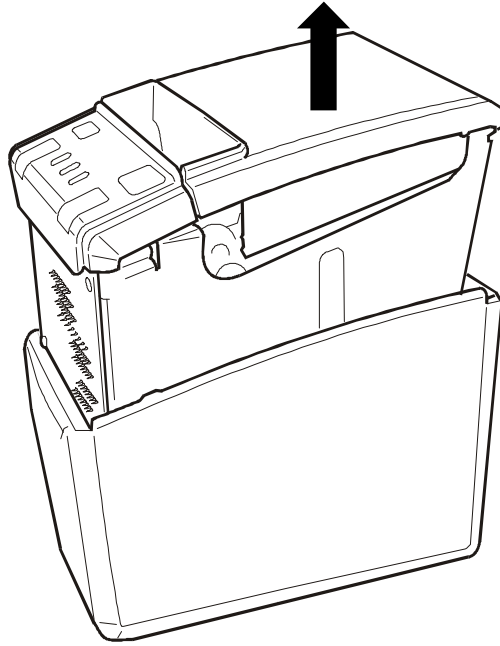


Figure 3-3

The figure below shows a view of the printer assy without the casing.

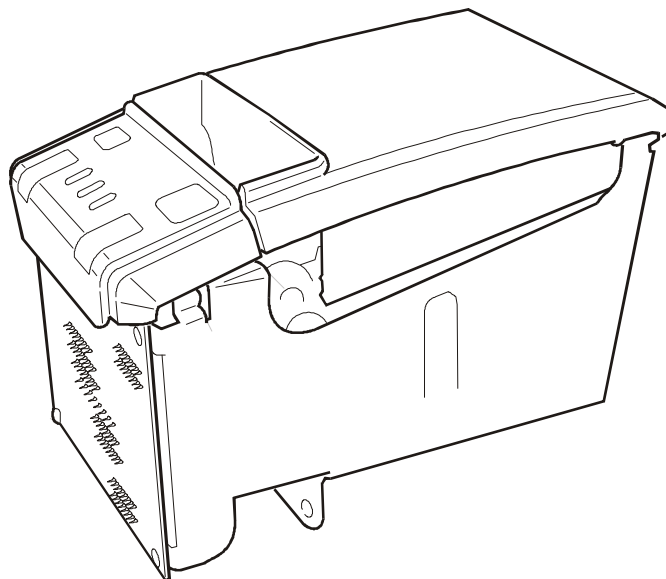


Figure 3-4

- To reassemble, follow the disassembly procedure in reverse order.

3.4 SECOND LEVEL DISASSEMBLY PROCEDURE

This section describes the procedures to be carried out to separate the metal frame from the print assy.

3.4.1 Control Panel and Manual Cutter Disassembly/Reassembly

To remove the control panel, proceed as follows:

- Perform the first level disassembly procedure.
- Unscrew the two screws (1) that secure the console cutter assy (2) on the metal cradle of the printer.

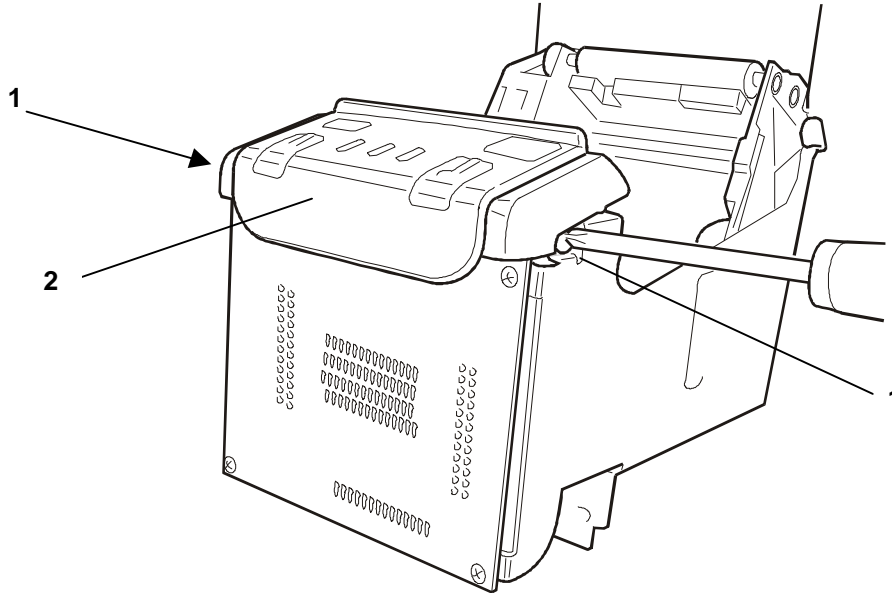


Figure 3-5

- Lift the control panel in the direction indicated by the arrow.

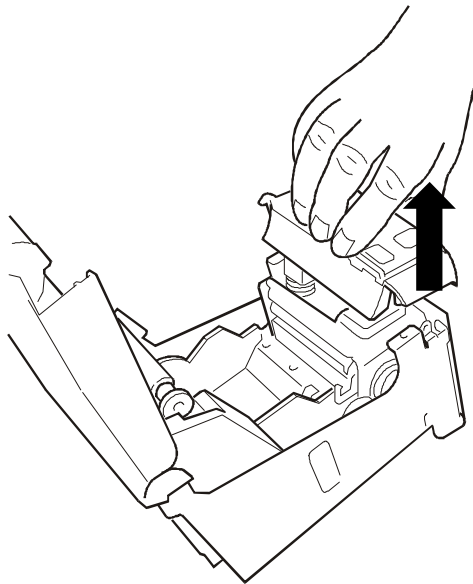


Figure 3-6

- Remove the light conveyor (3)
- Unscrew the four screws (4) that secure the main board (5) to the frame.
- Unplug all the connectors from the main board and remove the board.

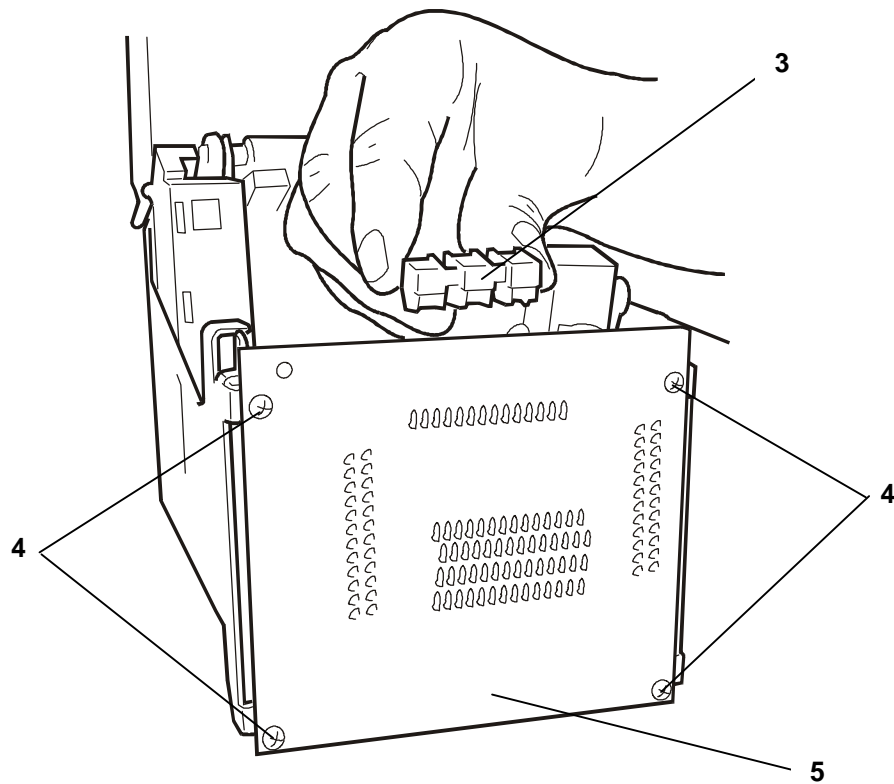


Figure 3-7

- Unscrew the two screws (6) that secure the print assy to the metal frame.

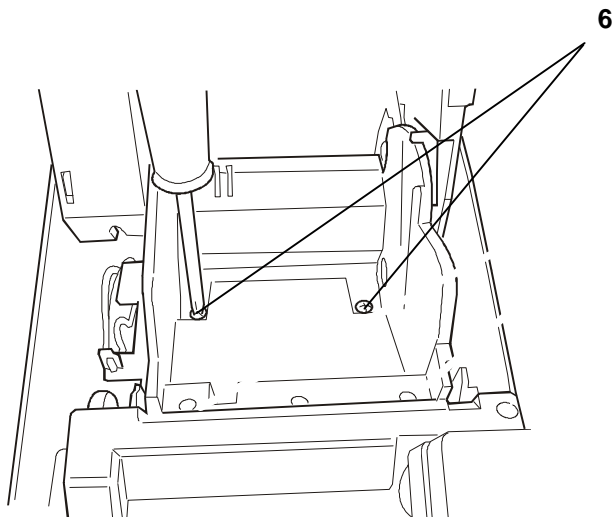


Figure 3-8

- Retract the right-hand mobile pivot pin (7) of the clamshell cover, and then twist the cover on the left-hand side to deform it so that it can then be released from pin (8) of the clamshell.

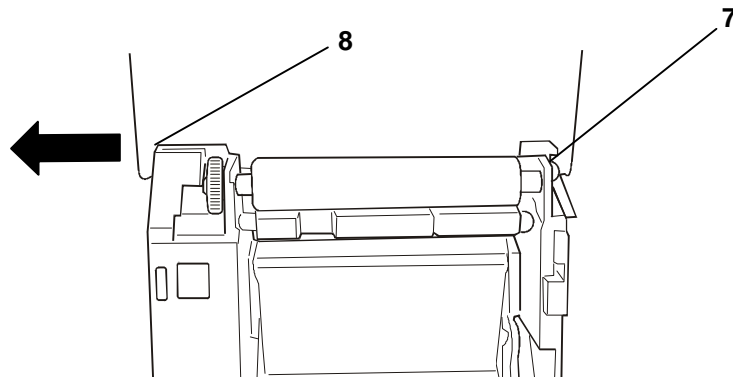


Figure 3-9

- Remove the print assy (9) from the frame (10), lifting this in the direction of the arrow shown in the figure and paying particular attention to the cable feed.

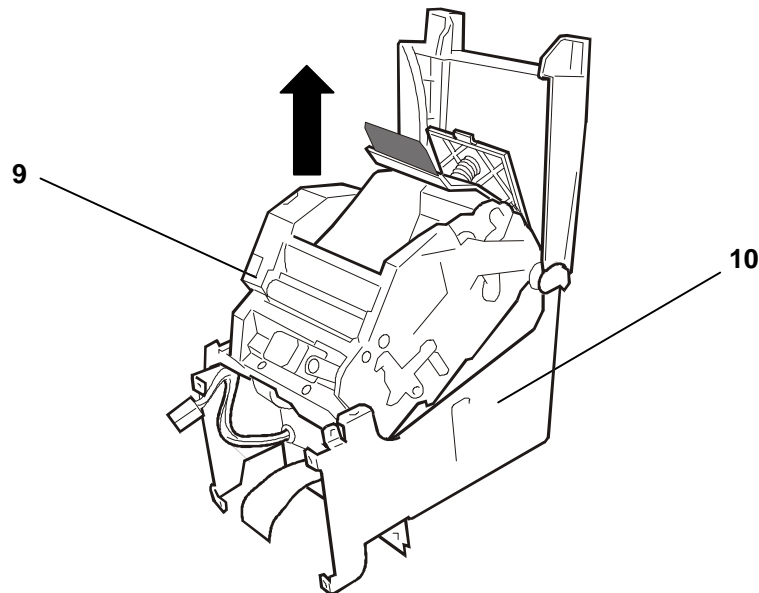


Figure 3-10

The figure below shows the print assy separated from the metal frame.

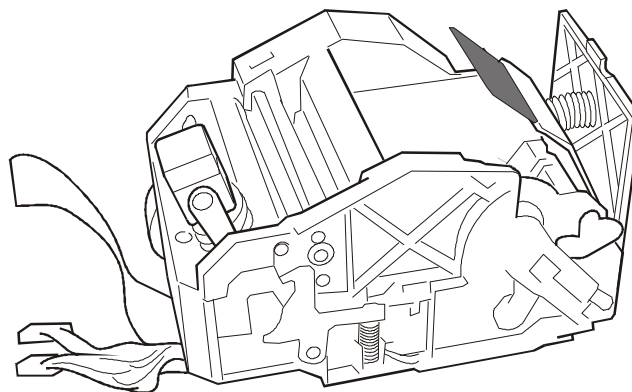


Figure 3-11

3.5 MAIN BOARD DISASSEMBLY/REASSEMBLY

To remove the main board, proceed as follows:

- Perform the first level disassembly procedure.
- Remove the control panel from the metal cradle of the printer as described in the section Second level disassembly procedure.
- Remove the light conveyor and the four screws that secure the main board to the metal cradle of the printer as described in the section Second level disassembly procedure.
- Unplug all the cables from the main board (1) and remove this board.

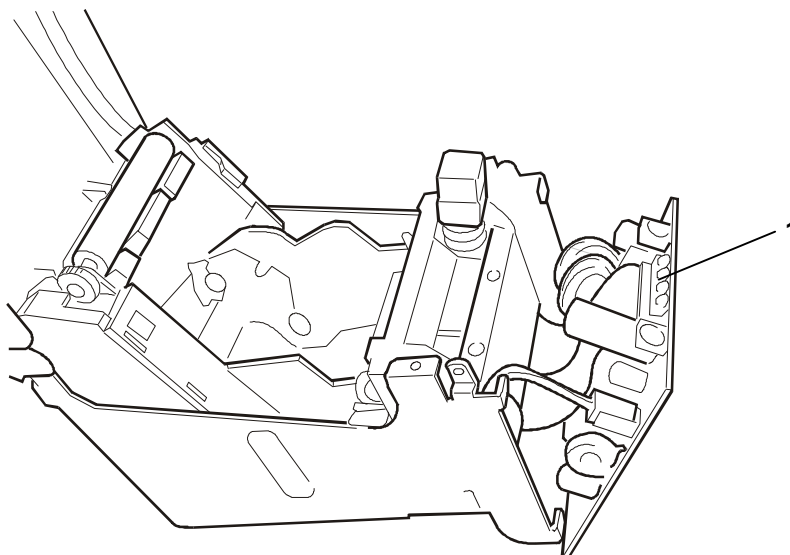


Figure 3-12

- To reassemble, follow the disassembly procedure in reverse order.

3.6 PAPER FEED ROLLER DISASSEMBLY/REASSEMBLY

To remove the paper feed roller, proceed as follows:

- Perform the Second level disassembly procedure.
- Remove the cutter motor cover, releasing this from the clips (1) with the aid of a screwdriver.

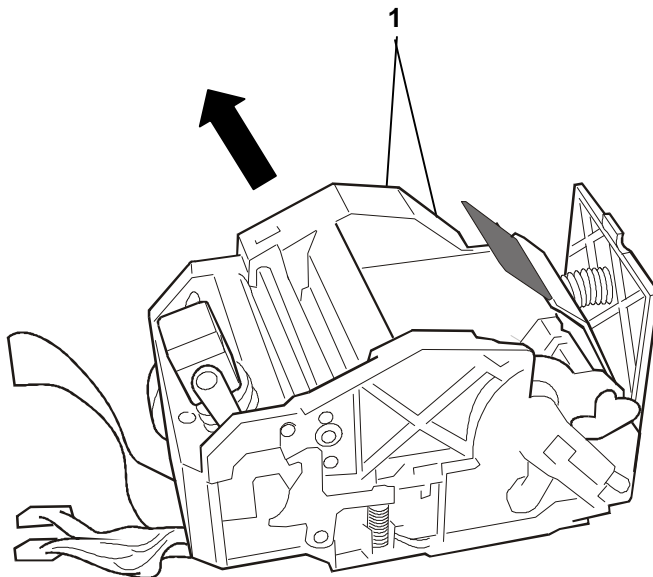
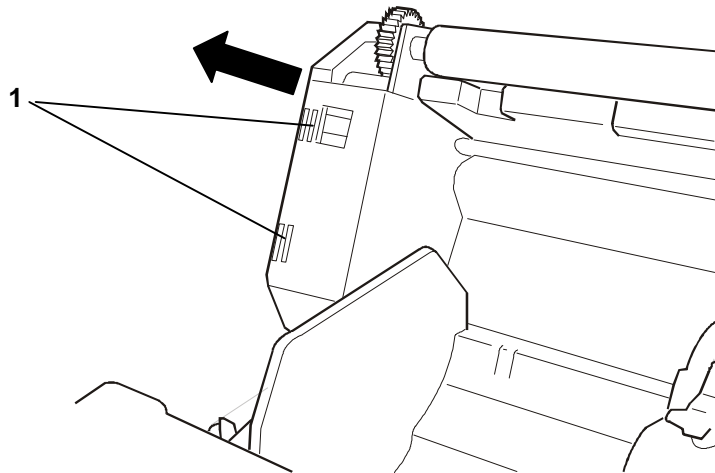


Figure 3-13

- Remove the two snap rings (1) that secure the paper feed roller.

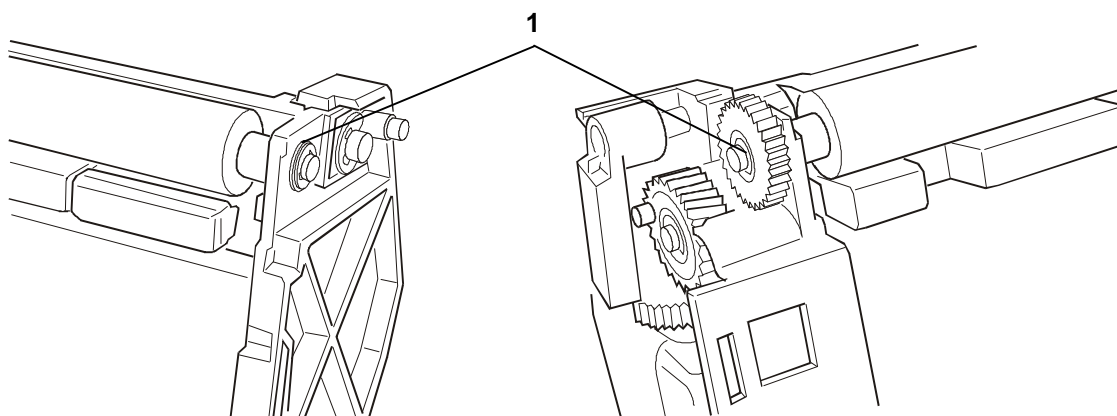


Figure 3-14

- Slide out the sprocket wheel (2) from the roller shaft in the direction indicated by the arrow.

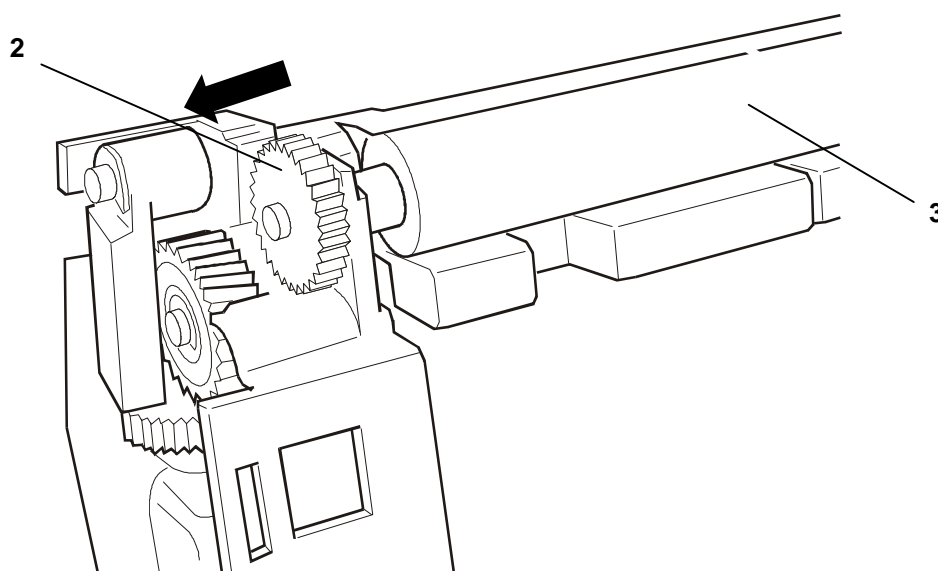


Figure 3-15

- Remove the paper feed roller assy shown in the figure.

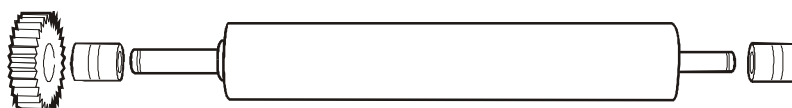


Figure 3-16

- Prior to reassembly, to make it possible to drive-on the sprocket wheel on the roller shaft, remove the clamshell by slightly deforming it so as to release it from the rotation pins.

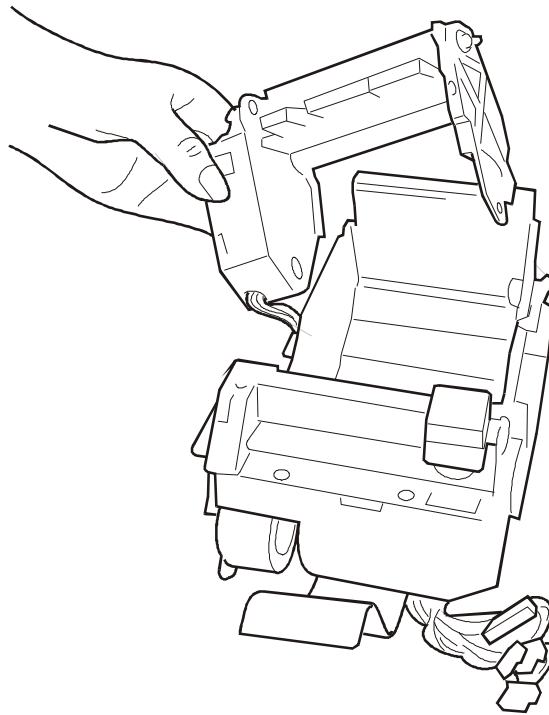


Figure 3-17

- To reassemble, insert the roller shaft and the related bushes in the holes of the clamshell, then drive the sprocket wheel on the shaft, matching the key present on the hole with the milling (4) on the shaft. To perform this operation, rest the opposite end of the shaft on a hard surface.

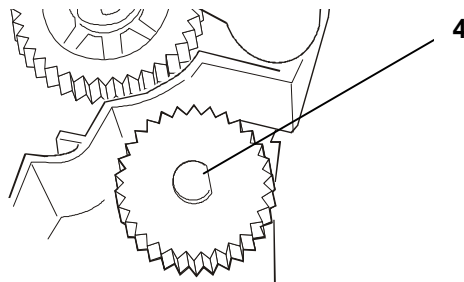


Figure 3-18

- To reassemble, follow the disassembly procedure in reverse order.

3.7 CUTTER MOBILE BLADE DISASSEMBLY/REASSEMBLY

To remove the cutter's mobile blade, proceed as follows:

- Perform the second level disassembly procedure.
- Remove the cutter motor cover as described in the section Paper feed roller disassembly/reassembly.
- Remove the snap ring (1) on the right-hand side.

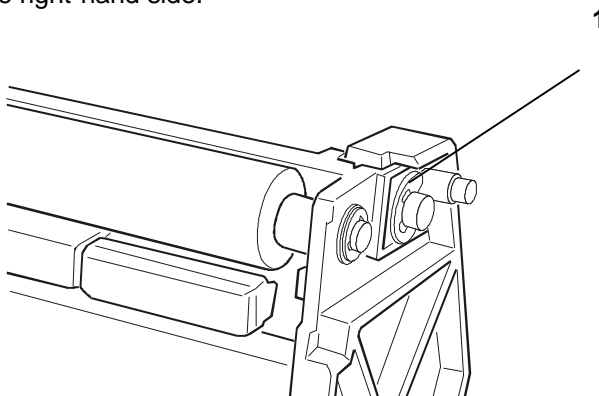


Figure 3-19

- Slide out the cutter control lever and blade assy (2) in the direction indicated by the arrow.

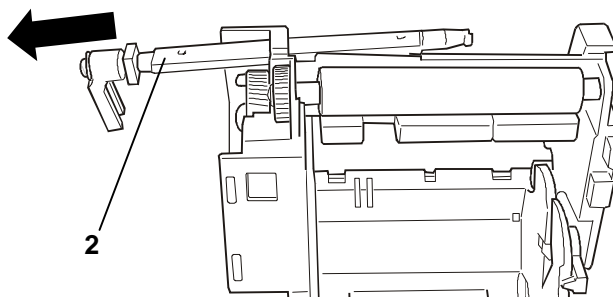


Figure 3-20

- To reassemble, perform the disassembly procedure in reverse order, taking care to couple the control lever with the cam (3) on the wheel.

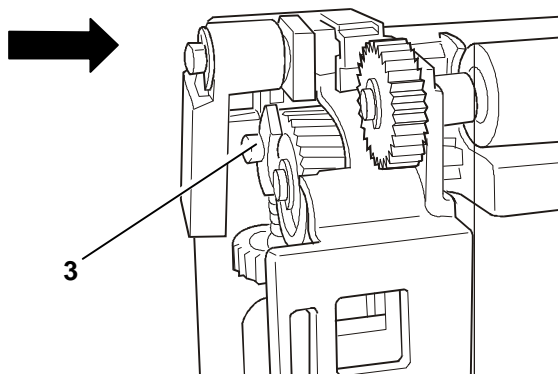


Figure 3-21

3.8 CUTTER MOTOR AND SENSORS' DISASSEMBLY/REASSEMBLY

To remove the sensor motor assy, proceed as follows:

- Perform the second level disassembly procedure.
- Remove the cutter motor cover by proceeding as described in the section Paper feed roller disassembly/reassembly.
- Remove the snap ring (1).
- Remove the cutter control lever (2) from the rotation shaft in the direction indicated by the arrow.

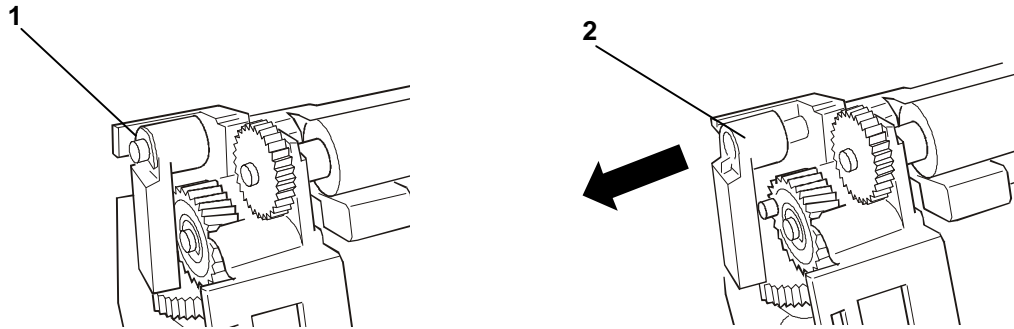


Figure 3-22

- Unscrew the lock screw (3) and remove the cutter motor and sensors in the direction indicated by the arrow.
- Unscrew the screw (4) that secures the sensors (5) to the cutter motor (6).

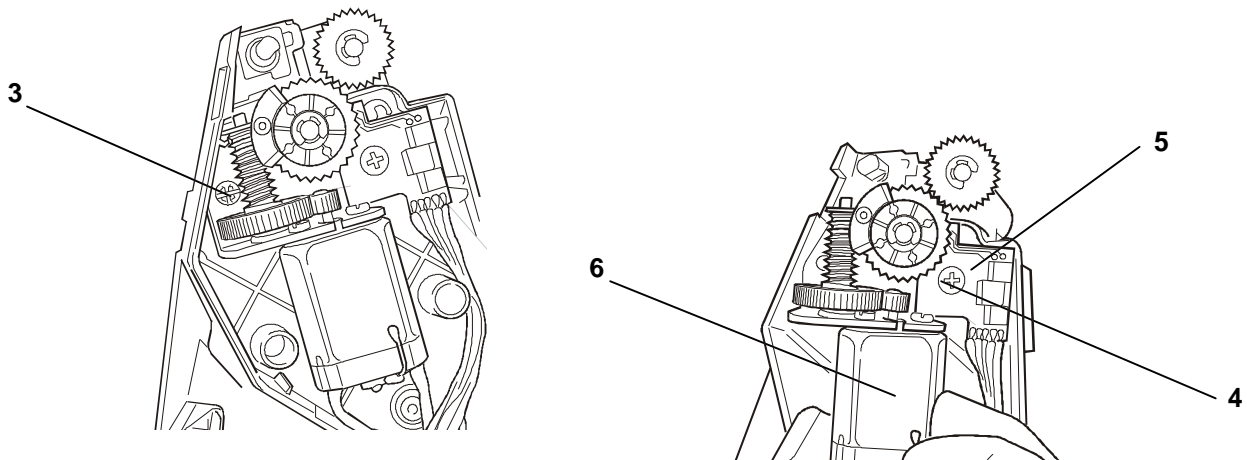


Figure 3-23

- Remove the motor (6) with its cables.

- Remove the sensors assy that includes the cutter position sensor (7) and the clam position sensor (8) with the related cables.

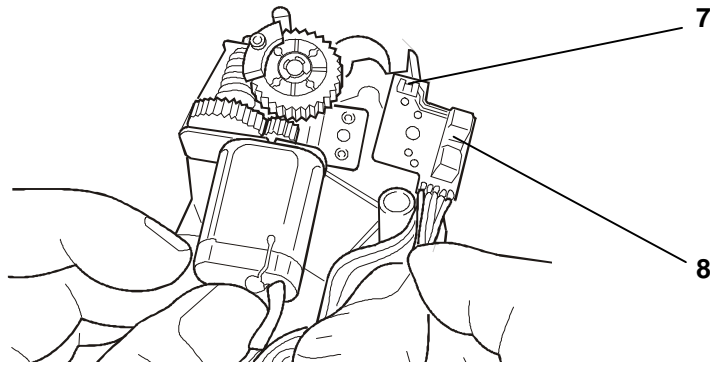


Figure 3-24

Note: If you only want to remove the sensors assy, you do not need to remove the cutter motor.

- During the reassembly of the sensors assy and the cutter motor, perform the disassembly procedure in reverse order taking care to position the sensors assy correctly: make sure that the cam (9) obscures the cutter position sensor (7) as shown in the figure.

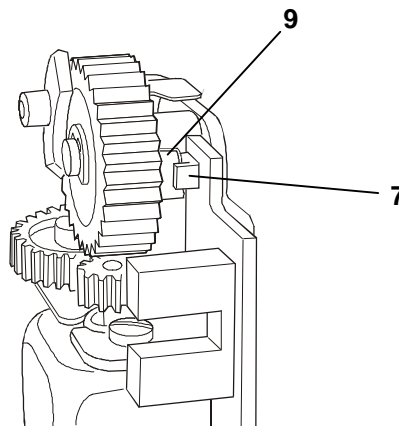


Figure 3-25

- During the reassembly of the cutter control lever, take care to couple the control lever with the cam (10) on the wheel.

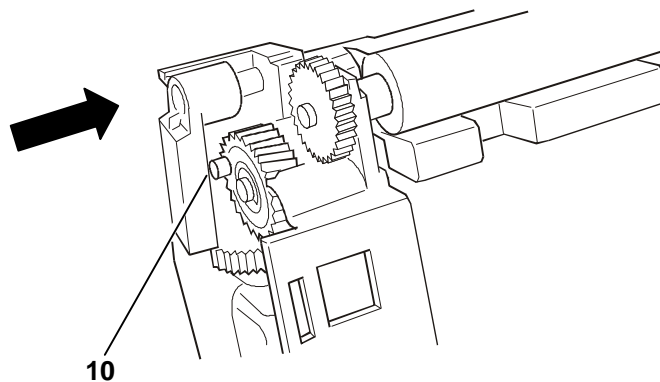


Figure 3-26

3.9 MARKER SENSOR DISASSEMBLY/REASSEMBLY

To remove the Marker sensor, proceed as follows:

- Perform the second level disassembly procedure.
- Using a pair of pliers, remove the Marker sensor (1) in the direction indicated by the arrow.

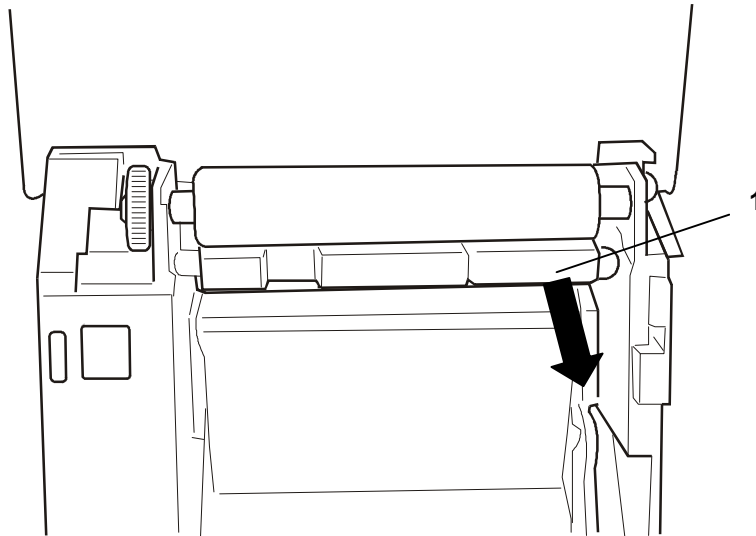


Figure 3-27

- Slide out the connection cables along with the main board.
- To reassemble, follow the disassembly procedure in reverse order.

3.10 CUTTER COUNTER BLADE DISASSEMBLY/REASSEMBLY

To remove the cutter's counter blade, proceed as follows:

- Perform the second level disassembly procedure.
- Remove the two screws (1) that secure the cover (2).

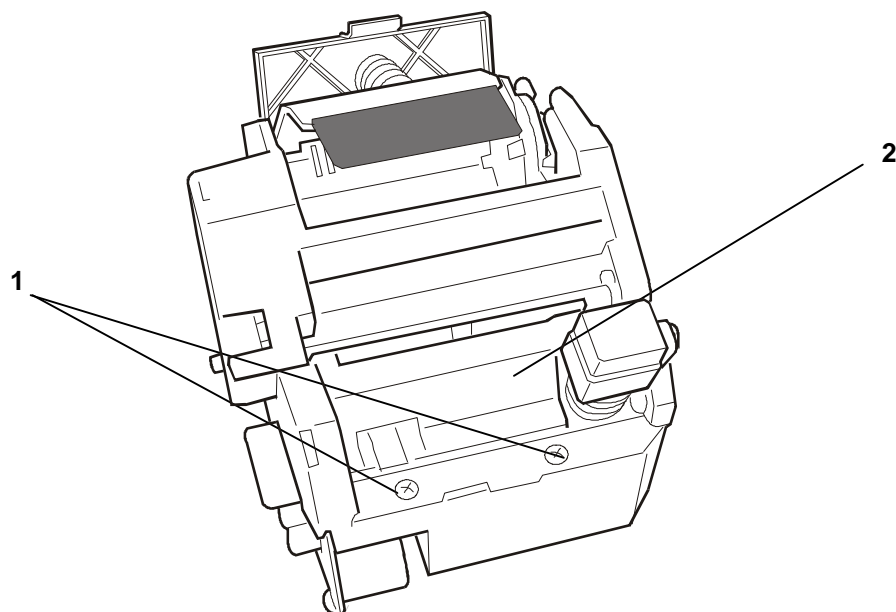


Figure 3-28

- Gently twist the cover (2) on the left-hand side to deform it slightly so that it can then be raised to be released from the reference pin (3). Perform the same operation on the right-hand side.

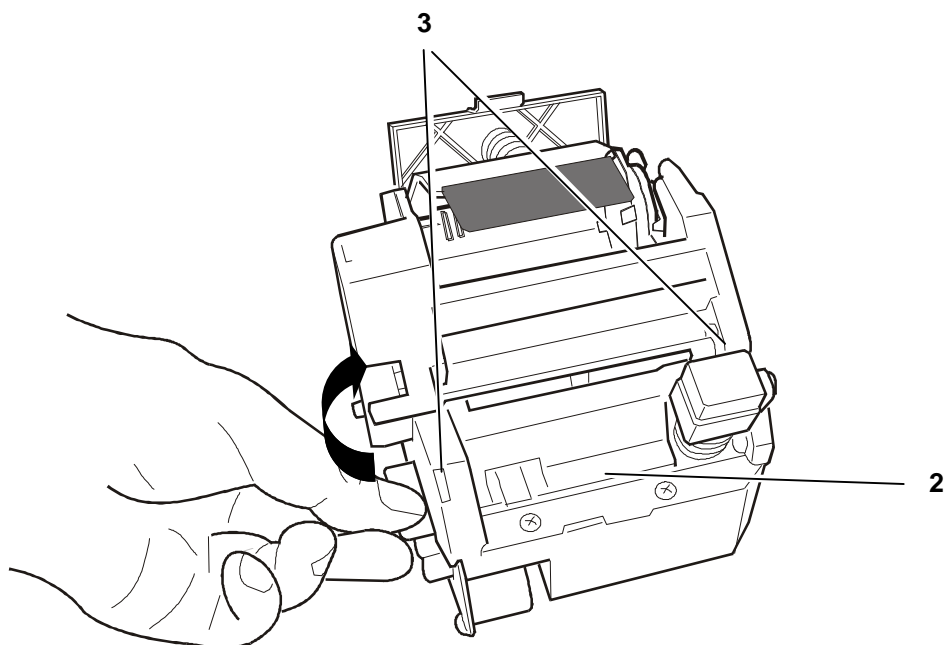


Figure 3-29

- Holding down key (4), move the cover slightly to the left so as to release the connecting rod (5) from the pin of the release assy (6), then lift the cover (2) removing it from its housing.

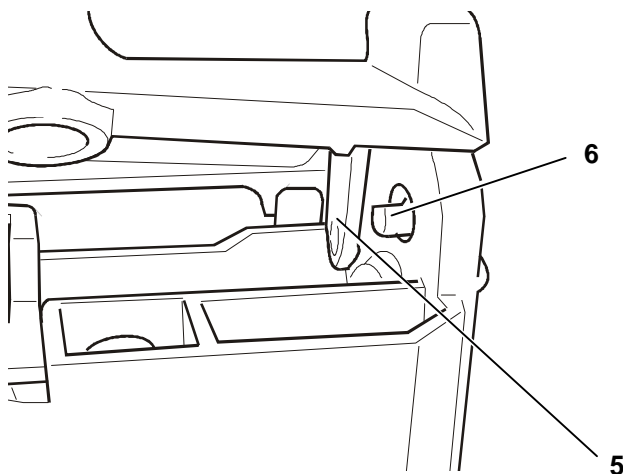
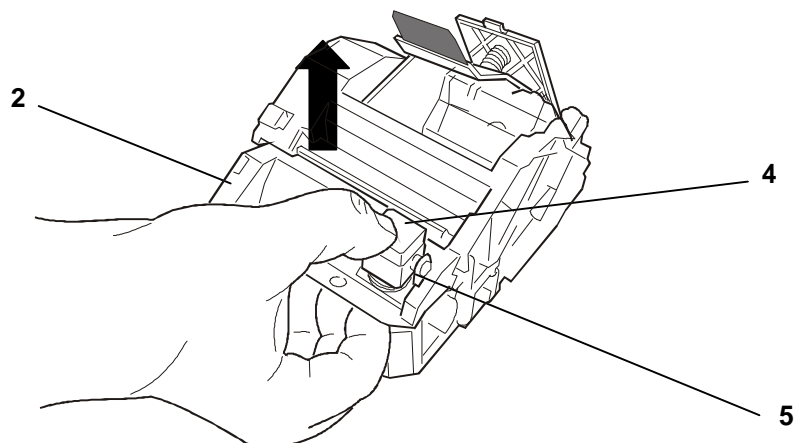


Figure 3-30

- Loosen the three screws (8) of the metal support.

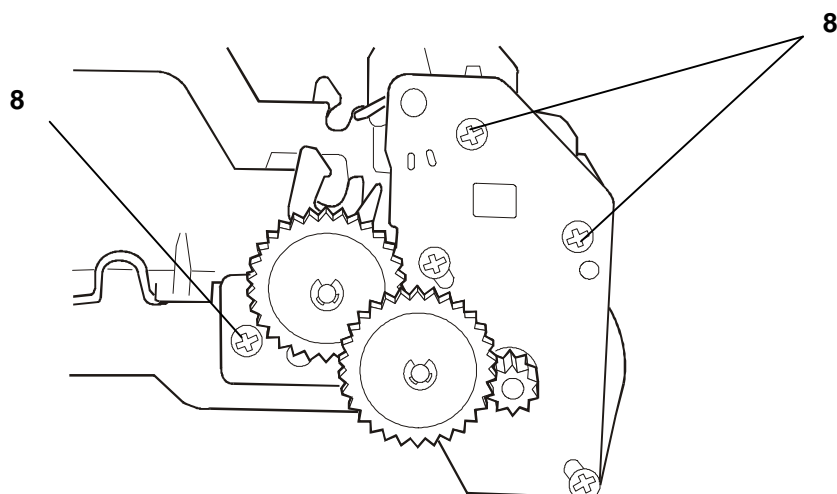


Figure 3-31

- Release the tension on the metal sideplate as shown in figure, then remove the cutter (9) being careful not to lose the spring (10).

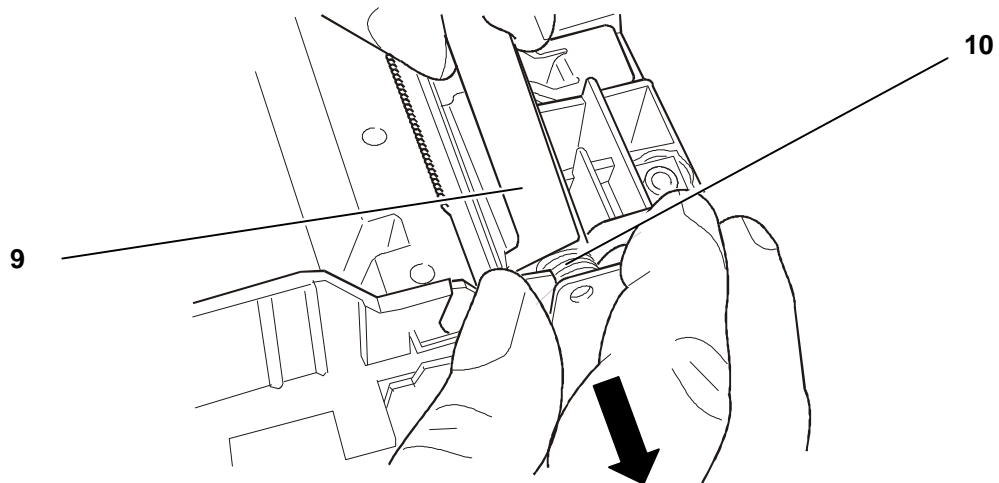


Figure 3-32

- To reassemble the fixed part of the cutter, follow the disassembly procedure in reverse order. During reassembly, take care to fit the spring correctly: hook (11) must be positioned in the slot indicated in the figure while hook (12) must be positioned below the cutter (9).

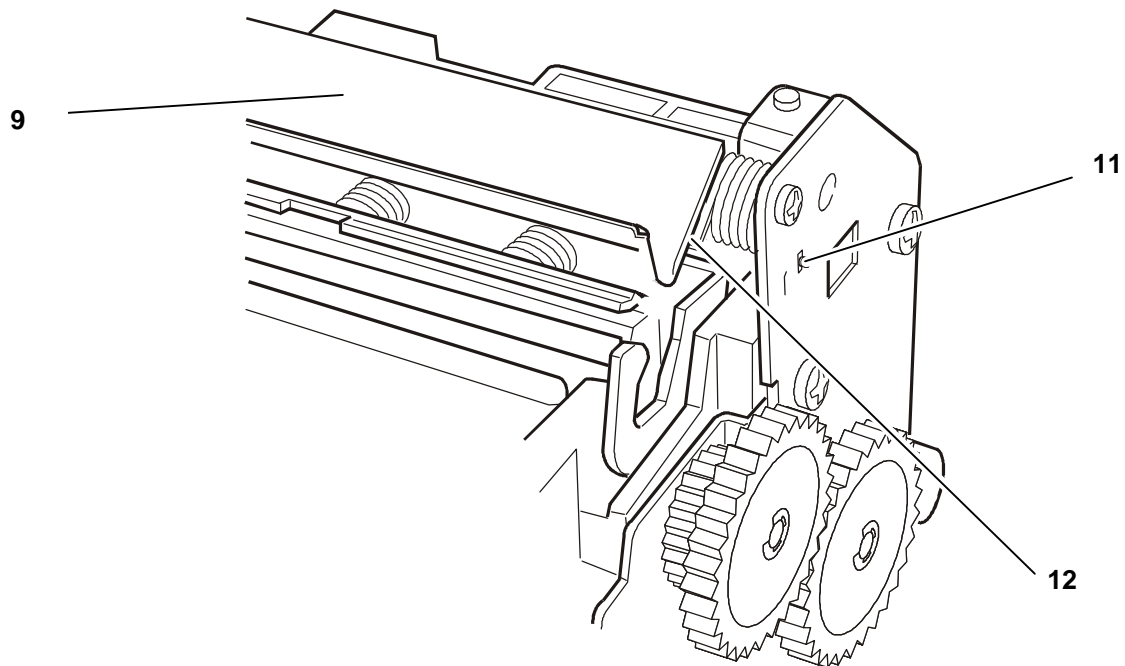


Figure 3-33

3.11 PAPER FEED MOTOR DISASSEMBLY/REASSEMBLY

To remove the paper feed motor, proceed as follows:

- Perform the second level disassembly procedure.
- Unscrew the three lock screws of the metal support (1) and the two lock screws of the paper feed motor (2).

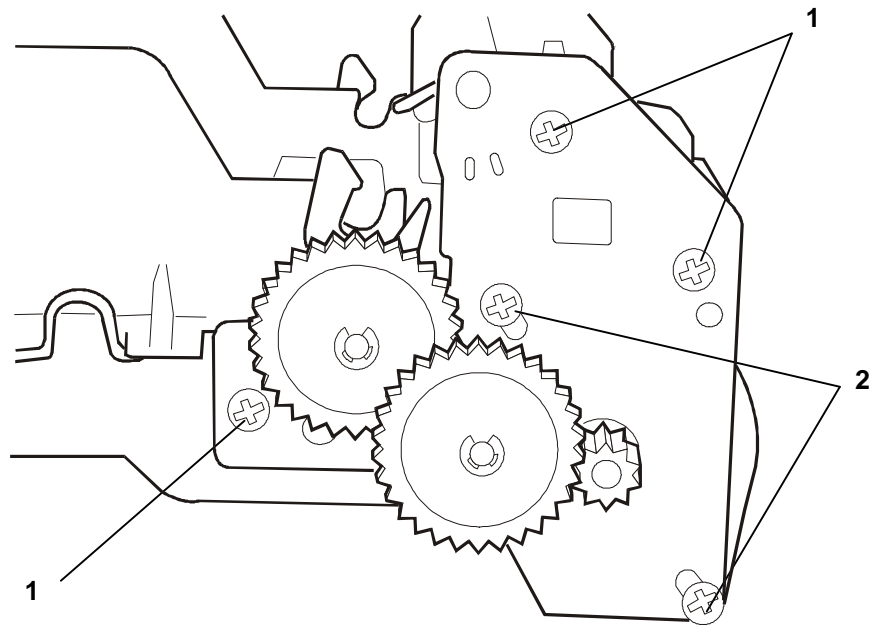


Figure 3-34

- Remove the snap ring (3) shown in the figure.

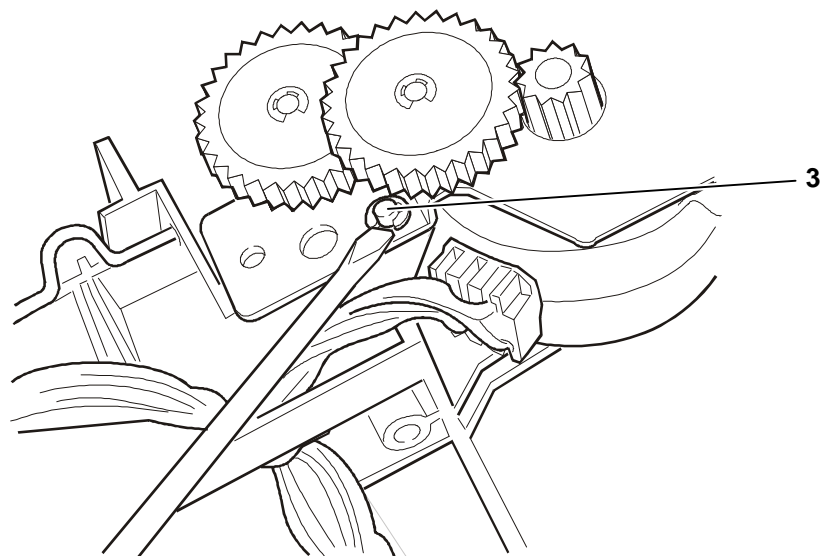


Figure 3-35

- Lift the metal support (4) in the direction indicated by the arrow.

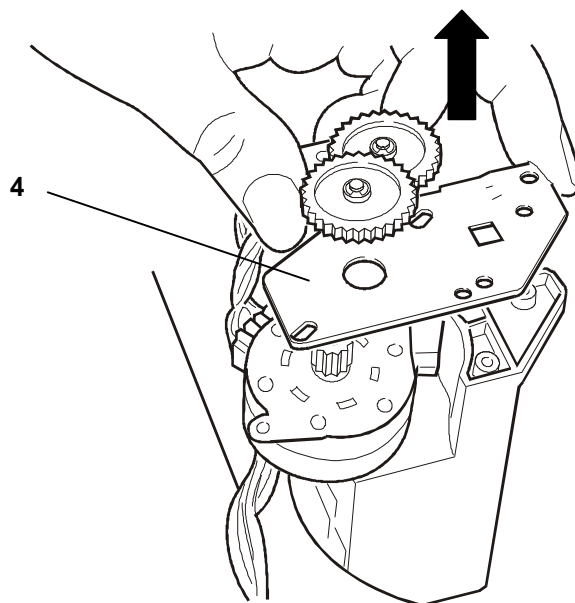


Figure 3-36

- Remove the motor (5) with its cables.

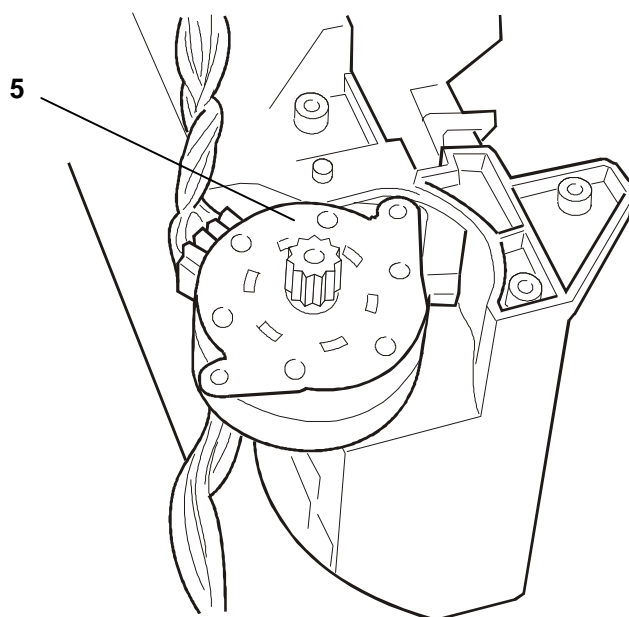


Figure 3-37

- To reassemble, follow the disassembly procedure in reverse order.

3.12 PRINTHEAD DISASSEMBLY/REASSEMBLY

To remove the printhead, proceed as follows:

- Perform the second level disassembly procedure.
- Remove the printhead cover and the cutter counter blade by proceeding as described in the section Cutter counter blade disassembly/reassembly.
- Remove the bracket (1) and the springs (2).

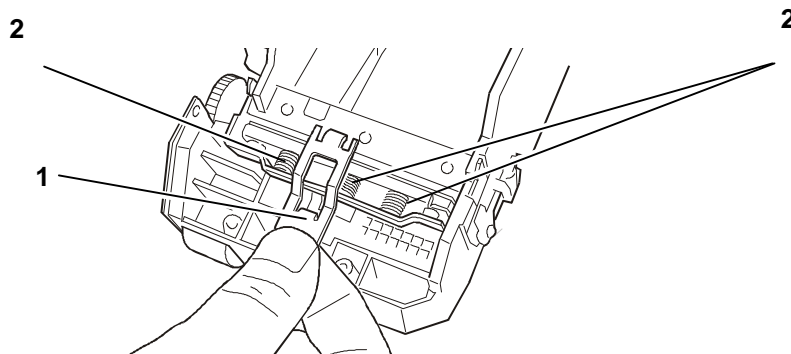


Figure 3-38

- Remove circlip (3) and metal bracket (4), spring included.

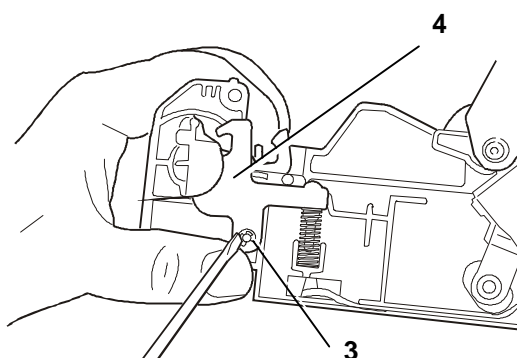


Figure 3-39

- Slide out the release assy (5) in the direction indicated by the arrow.

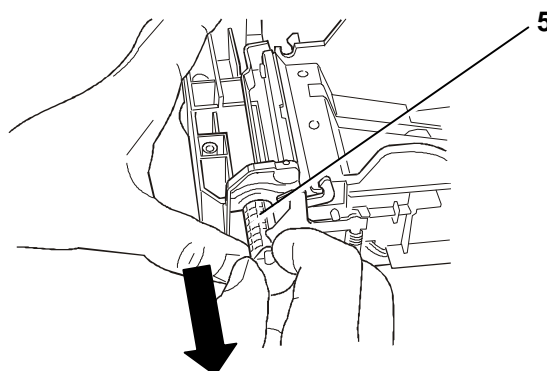


Figure 3-40

- Remove the snap ring (6).

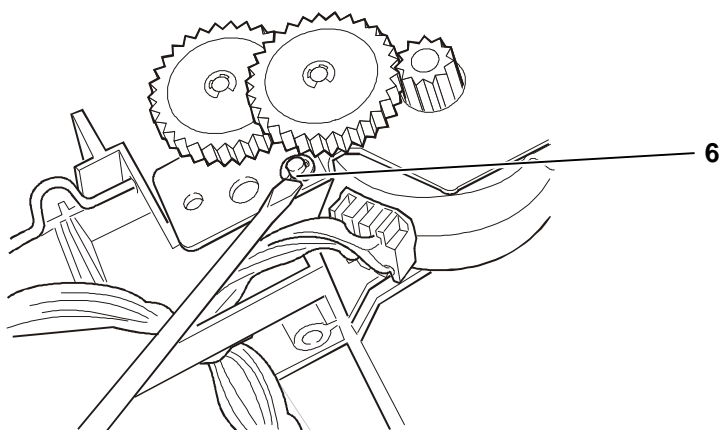


Figure 3-41

- Using a pair of pliers, slide out the lock pin of the printhead (7) as shown in the figure.

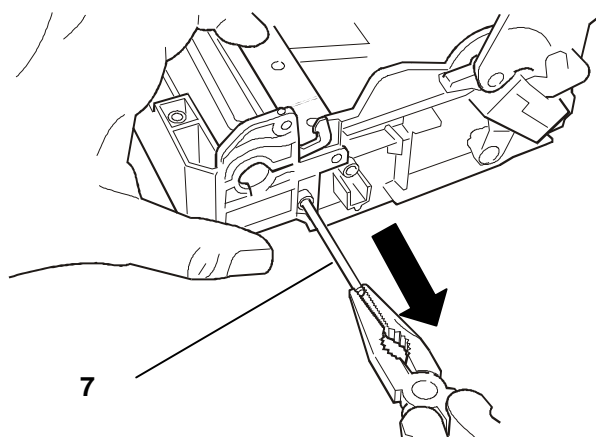


Figure 3-42

- Extract the printhead assy as shown in figure, disconnecting it from its motherboard flat cable.

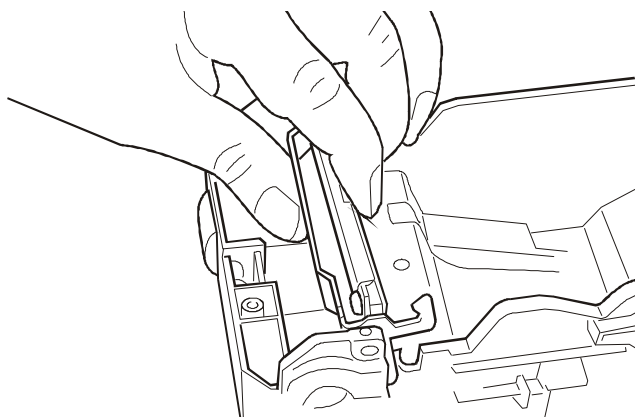


Figure 3-43

3.13 ALMOST OUT/OUT OF PAPER SENSOR DISASSEMBLY/REASSEMBLY

To remove the almost out of paper/out of paper sensor, proceed as follows:

- Perform the second level disassembly procedure.
- Slide out the almost out of paper sensor adjustment lever (1) as shown in the figure.

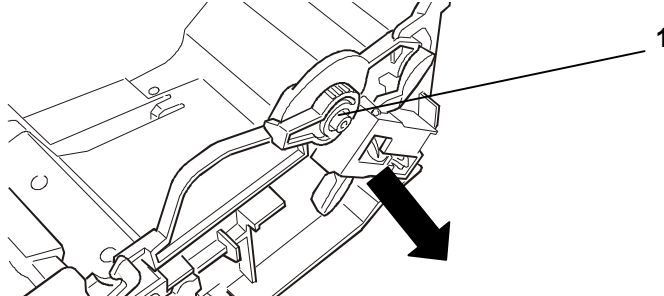


Figure 3-46

- Remove the spring (2) and push the almost out of paper/out of paper sensor in the direction indicated by the arrow.

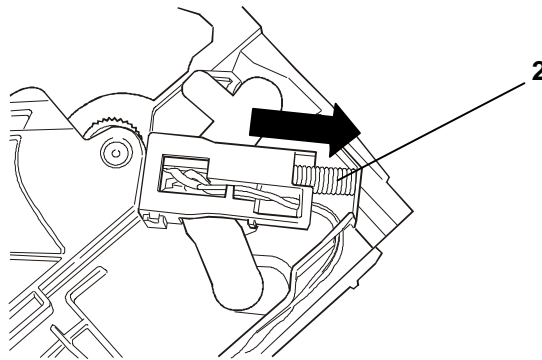


Figure 3-47

- Remove the sensor from its slot (3) as shown in figure and slide out the related connection cable with the main board.

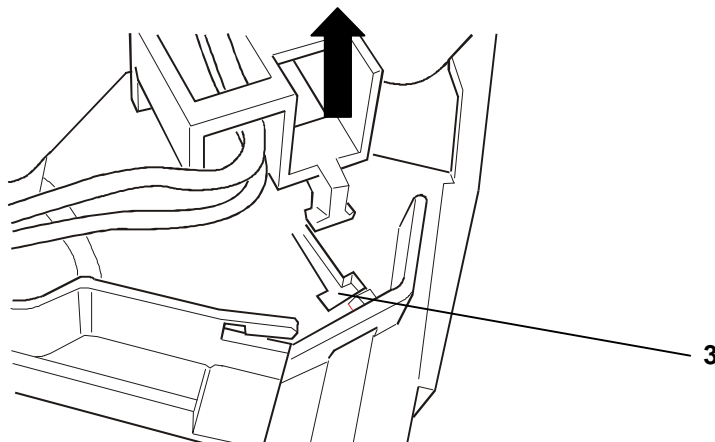


Figure 3-48

- To reassemble, follow the disassembly procedure in reverse order.

3.14 PAPER GUIDE DISASSEMBLY/REASSEMBLY

To remove the paper guide, proceed as follows:

- Perform the second level disassembly procedure.
- Slide the guide (1) in the direction of the arrow shown in the figure to free it from the clips.
- Remove the guide from the frame.

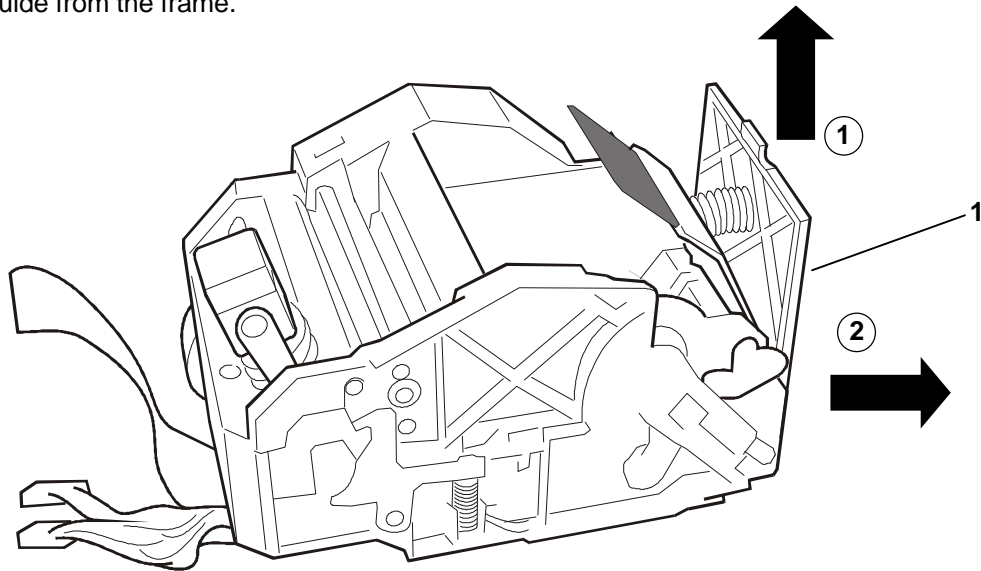


Figure 3-49


- To reassemble, follow the disassembly procedure in reverse order.

4. LUBRICATION

4.1 OVERVIEW

Although lubricant top-ups are not required during the life of the printer, each time the printer is serviced the field engineer should check the lubrication of the parts with reference to the figures below.

If necessary, the lubricant must be restored to the correct levels using MAGNALUBE – G STUART code 150377 M grease.

The points to be lubricated are identified in the figures below with the  symbol.

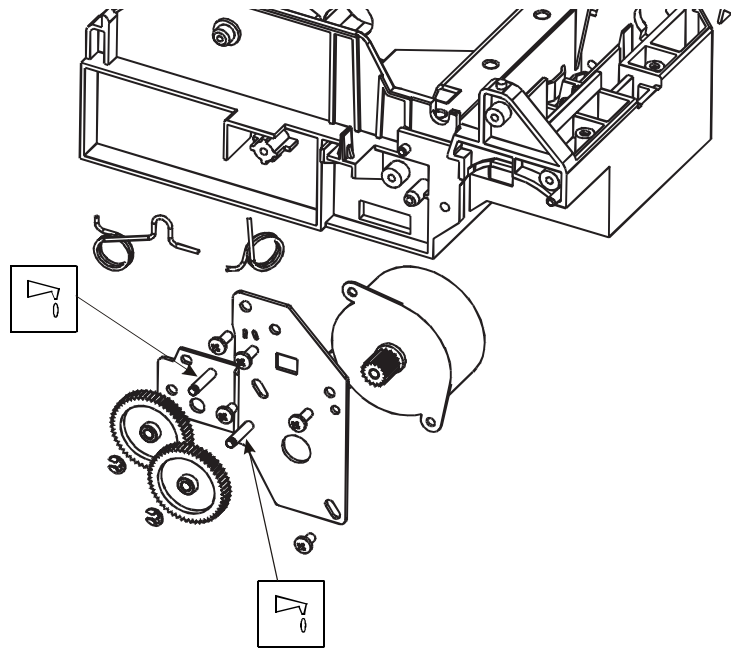


Figure 4-1

UPDATING STATUS

[illegible]