

Boca Systems

LEMUR-ERAM FLIGHT STRIP PRINTER

User Manual



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FCC NOTICE

NOTE: The equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's expense.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to insure compliance.

WARRANTY INFORMATION

BOCA warrants the equipment manufactured and sold by it to be free from defects in material and workmanship under normal use and service for a specified period of time. Parts damaged by negligence or misuse (bad ticket stock, improper operating conditions, etc.) are excluded from this warranty. Warranties for printers are 1 year from date of shipment. All warranty work is to be performed either by BOCA or by an [authorized BOCA service center](#). Shipping charges to the repair center are the customer's responsibility. BOCA will pay for the equipment's return via ground service. Please go to the link below if you have any reported issues with your new BOCA printer.
www.bocasystems.com/onlinesupportform.html

Equipment damaged in shipping should be reported immediately both to BOCA and to the shipper.

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1.0 Introduction

The BOCA Lemur-ERAM is a direct thermal flight strip printer. This manual will provide the user with general information regarding printer set-up, operational instructions and detailed technical information.

2.0 Unpacking the Printer

The printer is shipped in a ruggedized container. **Please save packing material for future use.** Remove the printer and accessories from the box and inspect for obvious damage. If damage is noticed, please report it immediately to BOCA.

Email: cathy@bocasystems.com Tel: (561) 998-9600 Fax: (561) 998-9609

The following items should be in the box:

- a) Lemur-ERAM flight strip printer
- b) Hopper
- c) AC power cord (10 feet)



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3.0 Important Safety Information



WARNING: The appearance of this symbol indicates the proximity of an exposed high voltage area. Please follow all directions carefully for your personal safety. You must read the following safety information carefully before working on the printer.

As a safety precaution, all service to the printer should be done by **qualified persons** with power off and the AC cord unplugged from the printer. Following any procedure requiring the removal of covers and/or doors, please verify that they have been properly attached and fastened prior to operating the printer.

WARNING: "Provide an earthing connection before the mains plug is connected to the mains. And, when disconnecting the earthing connection, be sure to disconnect after pulling out the mains plug from the mains."

WARNING: Power Cord Set: This must be approved for the country where it is used:

U.S.A. and Canada

- The cord set must be UL-approved and CSA certified.
- The minimum specification for the flexible cord is:
 - No. 18 AWG
 - Type SV or SJ
 - 3-conductor
- The cord set must have a rated current capacity of at least 10A.
- The attachment plug must be an earth-grounding type with a NEMA 5-15P (15A, 125V) or NEMA 6-15P (15A, 250V) configuration.

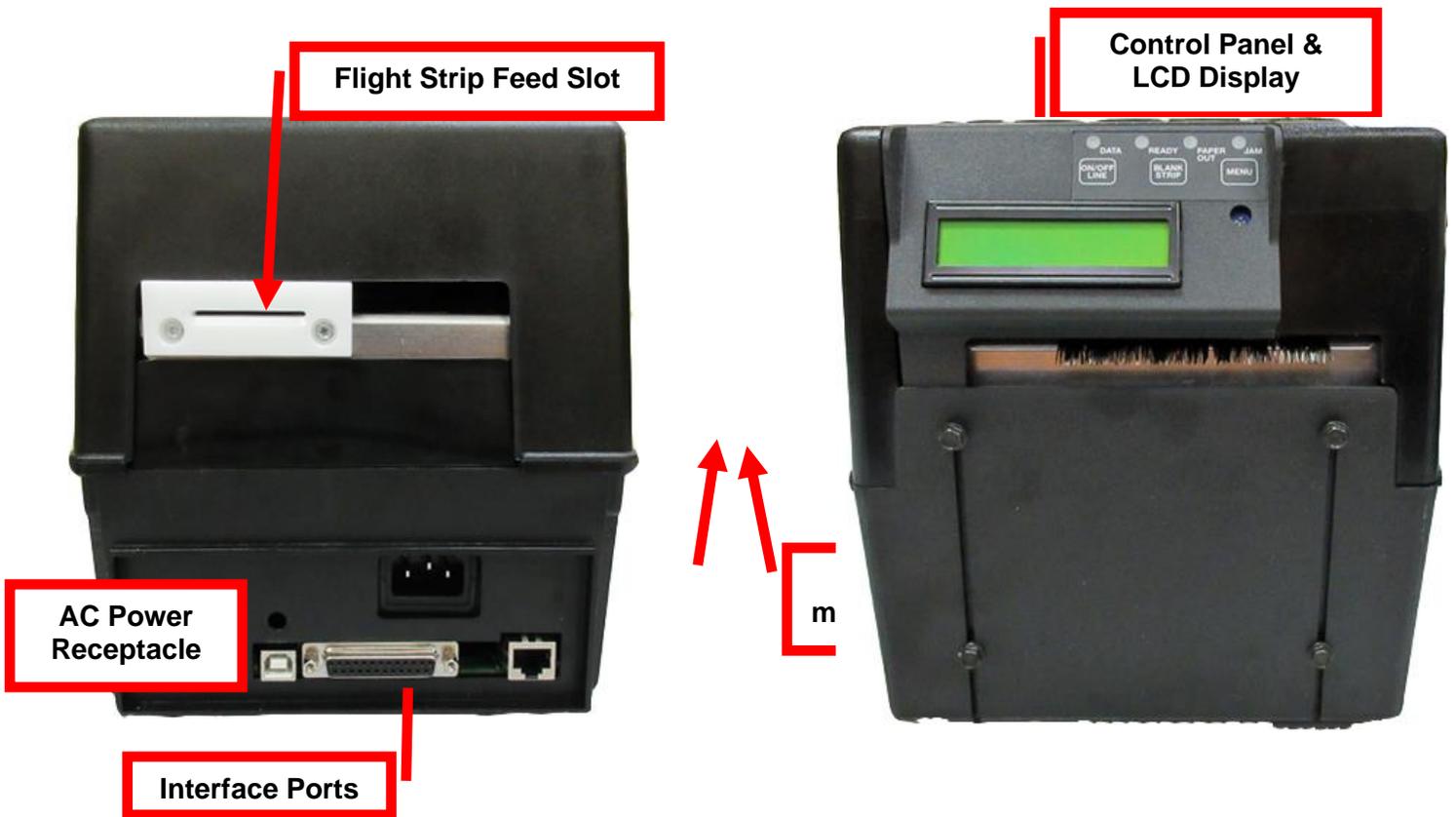
WARNING: The appliance coupler (the connector to the unit and not the wall plug) must have a configuration for mating with an EN60320/IEC320 appliance inlet.

WARNING: The socket outlet must be near to the unit and easily accessible.

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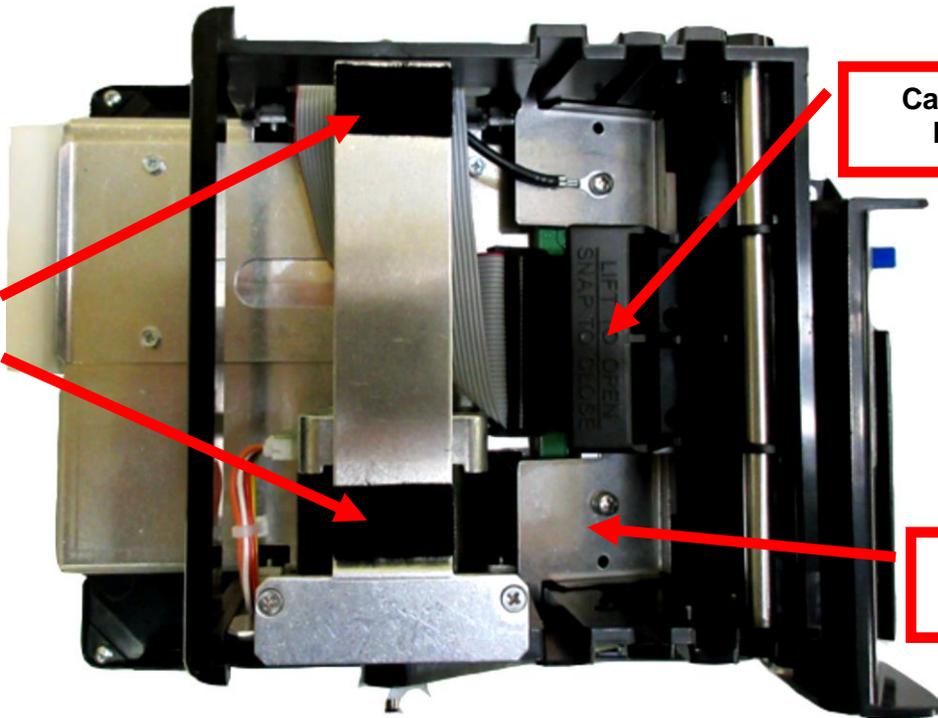
4.0 Printer Tour

The following photos are presented for the purpose of familiarizing the user with the Lemur-ERAM Flight Strip Printer.





**ON/OFF
Switch**



**Cover Velcro
attachment strips**

**Cam Lock
Lever**

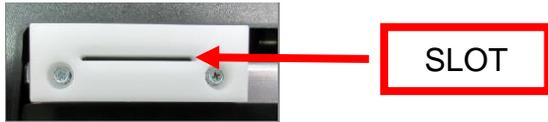
**Print Head
Mounting Plate**

Above shows printer with cover removed

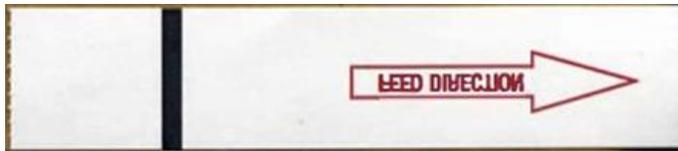
5.0 Installation and Flight Strip Loading

The Lemur-ERAM flight strip printer is designed to be mounted either on a desktop or shelf. Prior to site preparation, installation and loading of flight strips, the printer should be powered up and run in the self-test mode.

- Place the printer flat on a counter top.
- Attach the AC cord and interface cable into the proper connectors.
- Install ticket hopper to catch the flight strips.
- Turn power on. The LCD will display PAPER OUT and the red CHECK PAPER LED will be illuminated. You will hear an audible alarm sound for several seconds.
- **Loading Instructions:** Load flight strips into the printer through the entrance bezel slot with a smooth motion until the printer automatically positions the flight strip.



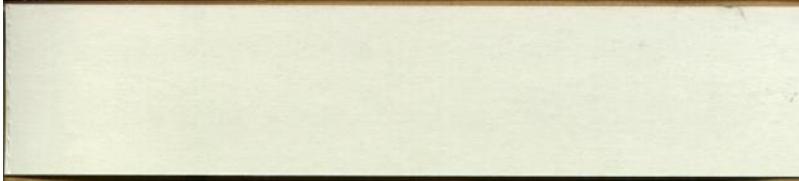
NOTE: You want to make sure that the green side of the ticket is facing up and feed direction as indicated by the red arrow. The stack should be orientated so that the black timing mark is furthest away from the leading edge of the ticket (first part that is fed into the printer).



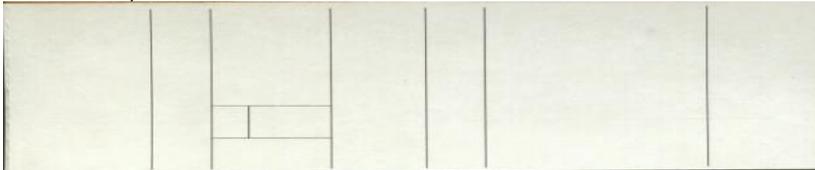
- After the ticket is automatically positioned, press the ON/OFF LINE button (the green READY LED will be illuminated).

The Lemur-ERAM can print three test strips:

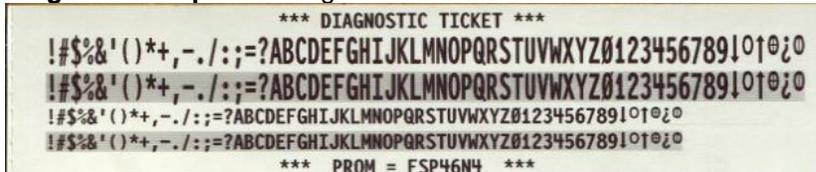
1. **Blank Strip** - Pressing the BLANK STRIP button while the printer is offline (no green READY LED).



2. **Blank Strip with lines** - Pressing BLANK STRIP button while the printer is online (green READY LED illuminated).



3. **Diagnostic Strip** - Pressing BLANK STRIP and ON/OFF LINE buttons will produce the below ticket.



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6.0 Control Panel Options

The FAA-ERAM printer allows the user to adjust various printer options through the front control panel.



Above image shows printer "online". Firmware version may differ what is shown

The printer has four LED lights on the control panel. All LEDs will illuminate briefly after power up.

- **DATA** – flashes green when the printer is receiving data
- **READY** – green when the printer is ready, ONLINE
- **CHECK PAPER** – red when the printer is out of paper
- **PAPER JAM** – red when there is a paper jam

Single Key Press

- Press the "ON/OFF LINE" button - the printer will toggle between online and offline modes. The current on/off line state is displayed on the LCD display and the "READY" light is illuminated when the printer is online and ready to receive data.
- Press the "BLANK STRIP" button - the currently selected blank flight strip will print.

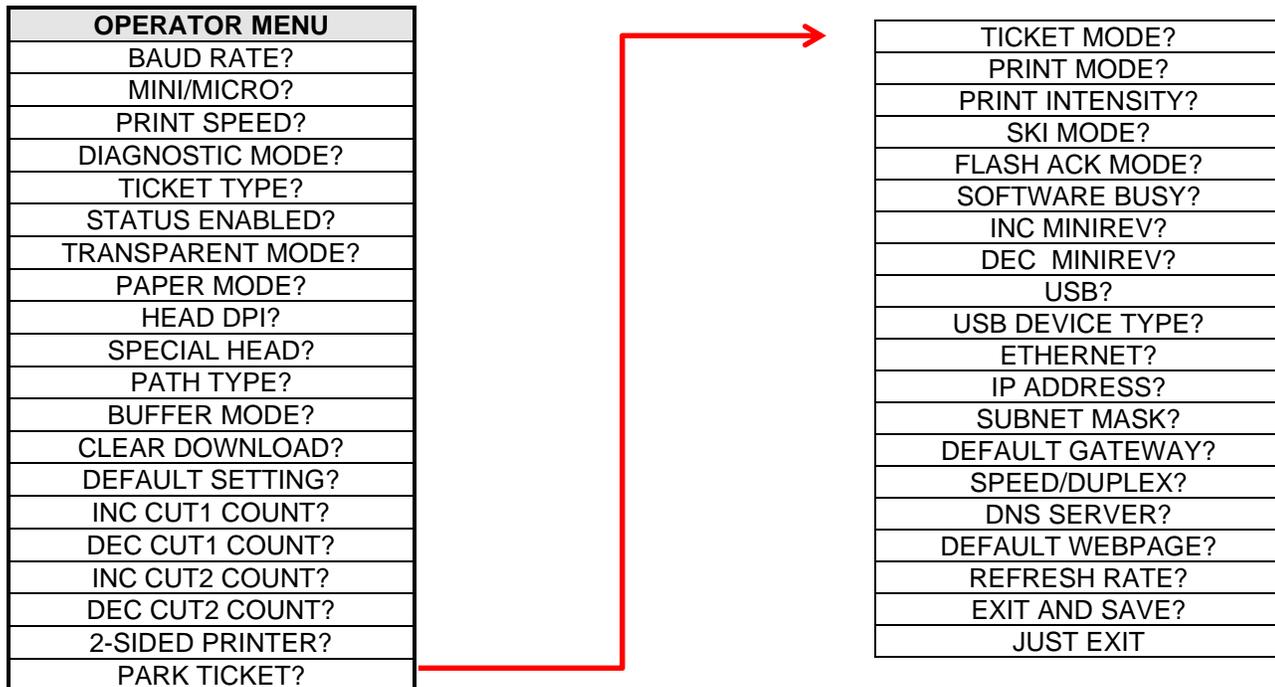
Multi-Key Press

- Print a diagnostic ticket - press and hold "ON/OFF LINE" button first, while continuing to keep the "ON/OFF LINE" button depressed press the "BLANK STRIP" button. A printer diagnostic strip will print which displays a few lines of text using the special flight strip printer fonts. The current printer's firmware revision is shown at the bottom of the diagnostic strip.
- Enter factory menu - press and hold the "MENU" button first, while continuing to keep the "MENU" button depressed press and hold the "ON/OFF LINE" button for approximately two seconds. Once the printer enters the menu system the LCD will display "FACTORY MENU".

To access and use the FACTORY MENU, follow these steps:

1. Ticket stock should be loaded into the printer and the printer powered on.
2. Press and hold the **MENU** button first, while continuing to keep the **MENU** button depressed press and hold the **ON/OFF LINE** button for approximately two seconds. The LCD will display **FACTORY MENU** or start scrolling through different settings. Release the buttons at this time.
WARNING: Improper use of the factory menu may disable your printer.
3. To scroll through the menu topic, press **MENU** button to scroll through the options and stop on the topic you want to change.
4. Press **ON/OFF LINE** button to scroll through choices in the selected topic. **NOTE:** A blinking cursor next to a choice indicates that choice is currently saved in the printer's memory.
5. Once you have found the new value you want, press **BLANK STRIP** button. The LCD window displays **EXIT AND SAVE?** If you wish to save the new value then press **BLANK STRIP** button again.
6. If you do not wish to save the new value then press **MENU**. The LCD window displays **JUST EXIT?** Press **BLANK STRIP** button to exit the FACTORY MENU without saving new values or press **MENU** to enter back into the FACTORY MENU.

The chart below lists the present menu topics. These topics are subject to change.



The following is a brief overview of some representative Menu options:

1200,N,8,1	9600,N,8,1
1200,O,8,1	9600,O,8,1
2400,N,8,1	19200,N,8,1
2400,O,8,1	19200,O,8,1
4800,N,8,1	
4800,O,8,1	

BAUD RATE? Controls the serial interface baud rate, parity bit, data bits and stop bits. Here are the following choices: **9600,O,8,1 is default**

MINI/MICRO? Defines the type of printer.

MINI Is for a printer with a Cutter Assembly. **Factory Default**

MICRO Is for a printer without Cutter Assembly.

PRINT SPEED? Controls the speed the ticket travels at. Also effects the print quality. The numbers range from **0 - FASTEST** to **7 - SLOWEST**. **3 is factory default.**

DIAGNOSTIC MODE? Please consult FGL Programming Guide Your choices are **YES** or **NO**. **NO is factory default.**

TICKET TYPE? Defines how the optos are configured on the paper guide assembly.

Here are the following choices:

NORMAL	Both optos are inline with each other (usually mounted on a black bracket)
GAP	A gap opto is installed on the cutter to detect gap in ticket stock.
LABEL	Same as GAP but the cut opto is to detect black mark on stock.
SPECIAL TICKET	This option is for a Micro MB or a printer with a ticket load switch (DEFAULT)

STATUS ENABLED? Sets status response protocols.

Here are the following choices:

NONE	Disables the XON/XOFF and status response protocols
SERIAL	Enables the XON/XOFF and status response protocol for the serial port.
PARALLEL	Enables bi-directional parallel status responses if printer is configured as bi-directional.
SER/PAR	Enables both bi-directional parallel and serial status responses.
USB	Enables USB status responses
USB/SER	Enables USB and serial status responses (DEFAULT)
USB/PAR	Enables USB and bi-directional parallel
USB/SER/PAR	Enables USB, bi-directional parallel and serial status responses

TRANSPARENT MODE? Please consult FGL Programming Guide

Your choices are **YES** (Enabled) or **NO** (Disabled).

PAPER MODE? It may also be used on roll stock with no black marks on the ticket. Your choices are:

YES (Enabled)

NO (Disabled). **NO is factory default.**

RECEIPT – Only for a Lemur-R model printer

PARTIAL CUT ### - Only for Lemur-R model printer set to partial cut mode.

RX MODE – This mode is specially designed for printers built for RX Safe.

HEAD DPI? Defines thermal head dpi (dots per inch)

Your choices are 200, 300 or **600. 300 DPI IS DEFAULT**

SPECIAL HEAD? Is used when a special paper path size is installed (2.125", 2.5", 2.7")

Here are the following choices: **This feature is set at the factory.**

NO	No special head, RADJW set to 3.25" or RADJ4 set to 4" or ADJ4 (DEFAULT)
ON P1	DUAL & SINGLE PATH PRINTER ONLY (fixed path)
ON P2	DUAL PATH PRINTER ONLY on path #2 (fixed path)
ON BOTH	DUAL PATH PRINTER ONLY on both paths (fixed path)
REV ADJ2 P1	DUAL & SINGLE PATH PRINTER WITH RADJW paper guide set to 2"
REV ADJ2 P2	DUAL PATH PRINTER WITH RADJW paper guide set to 2" on path #2
REV ADJ2 BOTH	DUAL PATH PRINTER WITH REV RADJW paper guides set to 2" on both paths
REV ADJ2.5 P1	DUAL & SINGLE PATH PRINTER WITH RADJW paper guide set to 2.50"
REV ADJ2.5 P2	DUAL PATH PRINTER WITH RADJW paper guide set to 2.50" on path #2
REV ADJ2.5 BOTH	DUAL PATH PRINTER WITH REV RADJW paper guides set to 2.50" on both paths
REV ADJ2.7 P1	DUAL & SINGLE PATH PRINTER WITH RADJW paper guide set to 2.70"
REV ADJ2.7 P2	DUAL PATH PRINTER WITH RADJW paper guide set to 2.70" on path #2
REV ADJ2.7 BOTH	DUAL PATH PRINTER WITH REV RADJW paper guides set to 2.70" on both paths
REV ADJ3 P1	DUAL & SINGLE PATH PRINTER WITH RADJW paper guide set to 3"
REV ADJ3 P2	DUAL PATH PRINTER WITH RADJW paper guide set to 3" on path #2
REV ADJ3 BOTH	DUAL PATH PRINTER WITH REV RADJW paper guides set to 3" on both paths
REV ADJ2.125 P1	DUAL & SINGLE PATH PRINTER WITH RADJW paper guide set to 2.125"
REV ADJ2.125 P2	DUAL PATH PRINTER WITH RADJW paper guide set to 2.125" on path #2
REV ADJ2.125 BTH	DUAL PATH PRINTER WITH REV RADJW paper guides set to 2.125" on both paths
REV ADJ3.25 P1	DUAL & SINGLE PATH PRINTER WITH RADJ4 paper guide set to 3.25"
REV ADJ3.25 P2	DUAL PATH PRINTER WITH RAD4 paper guide set to 3.25" on path #2
REV ADJ3.25 BTH	DUAL PATH PRINTER WITH REV RAD4 paper guides set to 3.25" on both paths

PATH TYPE? Defines the number of paper paths used.

Here are the following choices:

PATH1	Locks a Dual path printer onto path #1 (DEFAULT)
PATH2	Locks a Dual path printer onto path #2
DUAL	Is used for Dual path printer
DUAL SUPPLY	Please consult your Programming Guide (Dual Printer Supplement)
VENTEK DUAL	Special setting only used by certain customers.
PATH1 –OPTO5	
PATH1 – EXIT OPTO	Ticket taking exit opto located at exit of cutter.

BUFFER MODE? Defines when the printer will go busy.

Here are the following choices:

SINGLE MODE1	Go busy after each print command inserted in buffer
SINGLE MODE2	Go busy after receiving <p> command
MULTIPLE MODE	Go busy when the input buffer is full (~ 4k) (DEFAULT)

CLEAR DOWNLOAD? Clears those items downloaded by the operator (PCX or softfonts).

Your choices are **YES** or **NO**.

DEFAULT SETTING Resets the printer back to the factory default setting.

Your choices are **YES** or **NO**.

INC CUT1 COUNT? Enables the operator to move the cut or tear position to the left (towards the ticket entrance area). Cut counts are increments of .003” for 300dpi and .005” for 200dpi. Depressing CHOICES changes the count value. **16 is factory default.**

DEC CUT1 COUNT? Enables the operator to move the cut or tear position to right (towards the ticket exit area). Cut counts are decrements of .003” for 300dpi and .005” for 200dpi. Depressing CHOICES changes the count value. **16 is factory default.**

INC CUT2 COUNT? Same as **INC CUT1 COUNT?** But effects path #2 on a dual path printer. **This feature in not support by this printer.**

DEC CUT2 COUNT? Same as **DEC CUT1 COUNT?** But effects path #2 on a dual path printer. **This feature in not support by this printer.**

2-SIDED PRINTER? Only used with 2S ticket printers.

Your choices are **YES** (Enabled) or **NO** (Disabled). **NO is factory default. This feature in not support by this printer.**

PARK TICKET? Reverse the ticket to the print position after the last ticket in a group has been printed.

Please consult FGL Programming Guide. Your choices are **YES** (Enabled) or **NO** (Disabled). **NO is factory default.**

TICKET MODE? Defines how the printer will treat multiple tickets. Please consult FGL Programming Guide.

Your choices are **SINGLE** or **MULTIPLE**. **SINGLE is factory default.**

PRINT MODE? Defines the automatic ticket length calculation feature.

THERMAL	Printer will feed out and then retract a ticket during this measurement. (DEFAULT)
RIBBON	Printer will feed out one blank ticket and is used for label stock to prevent peeling.
RIBBON1/THERMAL2	For Lemur-2, Path1 = ribbon & path 2 = thermal
THERMAL1/RIBBON2	For Lemur-2, Path1 = thermal & path 2 = ribbon

PRINT INTENSITY? Controls the darkness of ticket print out.

Here are the following choices:

LIGHT	
MED LIGHT	
NORMAL	(factory default)
MED DARK	
SHORT HEAD LIFE	

SKI MODE? Enables the operator to set an unprintable area on the first .50" of a ticket. This is ideally used for label stock. Your choices are **YES** (Enabled) or **NO** (Disabled). **NO is default**

FLASH ACK MODE? Enables or disables an **ACK** being sent back to the host after a flash operation. Your choices are **YES** (Enabled) or **NO** (Disabled). **NO is factory default.**

SOFTWARE BUSY? Defines if the printer will go busy after each byte is received. Your choices are **YES** (Enabled) or **NO** (Disabled). **This feature is normally be disabled.**

INC MINIREV? Allow horizontal positioning of the flight strip data within the printable area of flight strip to be adjusted. This control is primarily used to adjust the print position at the factory and is not normally needed during normal printer operation. **279 is default**

DEC MINIREV? Allow horizontal positioning of the flight strip data within the printable area of flight strip to be adjusted. This control is primarily used to adjust the print position at the factory and is not normally needed during normal printer operation. **279 is default**

USB? Only used for printer with USB interface connector. Your choices are **YES** (Enabled) or **NO** (Disabled) **YES is default**

USB DEVICE TYPE? Enables operator to change the printer's USB device class from 7 (Printer), 3 (HID) or SERIAL. **HID is default**

ETHERNET? Only used for printer with Ethernet interface connector.

NO	Ethernet not enabled.
YES	Uses the IP address that has been set in the printer by the customer.
Diagonstics	This feature should not be used.
Valid Packets	This feature should not be used.
DHCP Enabled	Automatically attempts to get an IP address from Local Server
DHCP/SUB/GATE	Automatically attempts to get an IP address/Subnet Mask/Gateway from Local Server (DEFAULT)
DHCP/NR	DCHP with Name Registration
DHCP/SUB/GATE/NR	DHCP/SUB/GATE with Name Registration

IP ADDRESS? Enables the operator to change the printer's Ethernet IP Address. Please consult [FGL Programming Guide](#).

SUBNET MASK? Enables the operator to change the printer's Ethernet Subnet Mask value. Please consult [FGL Programming Guide](#).

DEFAULT GATEWAY? Enables the operator to change the printer's Ethernet default Gateway value. Please consult [FGL Programming Guide](#).

DNS SERVER? Enables the operator to change the printer's DNS server value. Please consult [FGL Programming Guide](#).

SPEED/DUPLEX? Enables the operator to change the printer's Ethernet speed and duplex setting. Please consult FGL Programming Guide. Your choices are **AUTO-NEGOTIATE (DEFAULT)**, **100Mbps/FULL**, **100Mbps/HALF**, **10Mbps/FULL** and **10Mbps/HALF**.

DEFAULT WEBPAGE?, REFRESH RATE?, TICKETS REMAIN 1, TICKETS LOW1?, TICKETS REMAIN 2, TICKETS LOW2? : Please consult "REMOTE MANAGEMENT ADDENDUM" of the [FGL Programming Guide](#).

EXIT AND SAVE ! Will save any changes made to the above menu options. If you wish to save the new value then press **TEST**, if not press **MENU**.

JUST EXIT? Will exit the menu options without saving any changes.

7.0 Maintenance and Adjustments

Your Lemur-ERAM flight strip printer is solidly constructed and has been designed for high volume use. It requires minimal care to provide maximum service.



WARNING: The appearance of this symbol indicates the proximity of an exposed high voltage area. Please follow all directions carefully for your personal safety. You must read the following safety information carefully before working on the printer.

This section provides an overview of printer maintenance, including part alignments, adjustment and replacement.

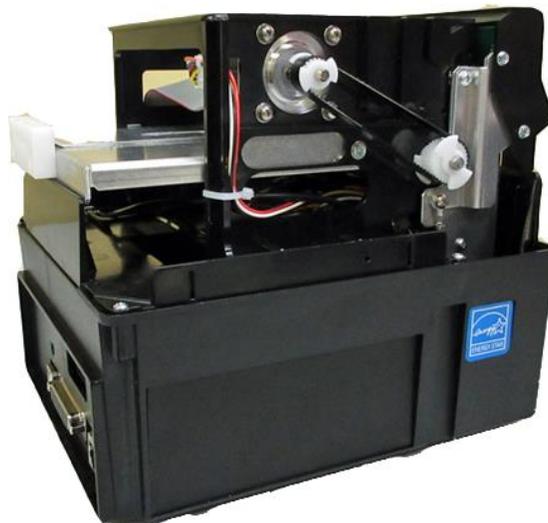
For discussion purposes, the printer consists of three major modules or assemblies:

- Paper guide and print head assembly
- Cutter assembly
- Logic board assembly

As a safety precaution, all service to the printer should be done by qualified persons with power off and the AC cord unplugged from the printer. Following any procedure requiring the removal of covers and/or doors, please verify that they have been properly attached and fastened prior to operating the printer.

7.1 Paper Guide and Print Head Assembly

The principal function of this assembly is to guide the flight strip stock to the thermal print head where thermal printing takes place. Additionally, this assembly houses the drive platen and flight strip positioning sensors. If necessary, the total assembly may be removed from the unit. All replacements and adjustments of the components on this assembly may be done without removing the total assembly. The most common adjustments and replacements regarding this assembly follow:

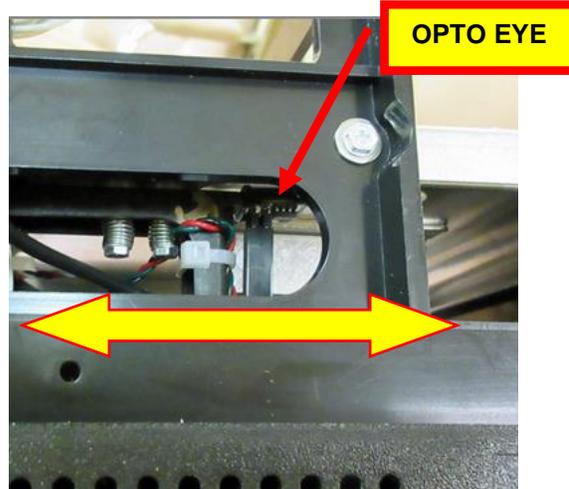


The above photo shows the cover removed from the printer. The cover is held onto the printer via Velcro and may be removed by pulling straight up on the cover.

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7.1.1 Cut Opto Assembly

There is one optical sensor (opto) mounted on an adjustable aluminum bracket. The opto controls the cut or tear position. **Removal or adjustment of the opto should be done without removing the bracket from the paper guide.** The opto position is factory set and adjustment should not be necessary.



Note: Before making any opto adjustments make sure your ticket stock was manufactured to proper [ticket specifications](#).

To adjust the cut or tear position, physically adjust the opto mounting bracket forward or backwards to achieve the desired cut or tear location. On a Lemur with auto cut the cut position should be a 1/16"-1/8" away from the ticket perforation. On a Lemur without auto cut the ticket perforation should line up with the edge of the cabinet or top plate.

Minor adjustments (no greater than 3/16") to the cut or tear position may also be done via the control panel by changing the INC/DEC CUT1/2 settings. (See [6.0 Control Panel Options](#)). For this printer the INC value should not exceed 55. Going beyond these values will cause reliability issues.

If you are not able to get the desired cut position, make sure your ticket stock was manufactured to proper specifications.

Once a year the opto eye should be blown off with air. This interval will vary depending upon the environment and the quality of the ticket stock.

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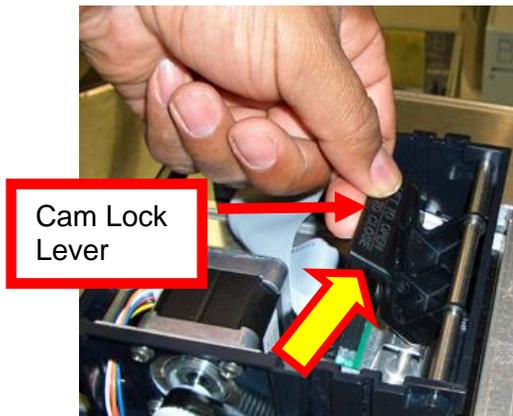
7.1.2 THERMAL PRINT HEAD

The print head should be cleaned periodically to prevent debris from building up on the print element. The required cleaning interval varies greatly depending on the quality of the ticket stock and the amount of dust entering the print area. Excessive dirt build up on the print head will result in reduced quality. Continuing to run the print head in a dirty condition will reduce its life expectancy, as it is unable to diffuse its heat properly.

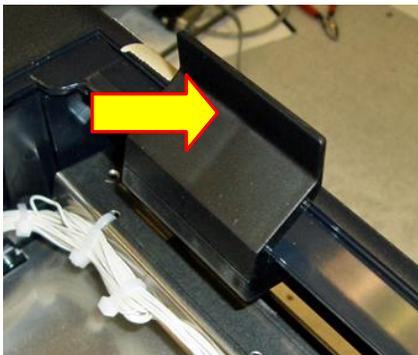
The following needs to be done with the printer powered off and unplugged from the AC source.

The thermal print head can be removed for cleaning or replacement, as follows:

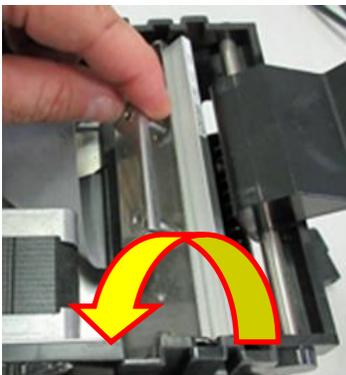
1. Make sure power is off and the AC cord is disconnected from the printer.
2. **DO NOT UNPLUG CABLE FROM PRINT HEAD.**
3. Lift up on the cam lock assembly (located above the head mounting plate) to remove pressure from the thermal head.



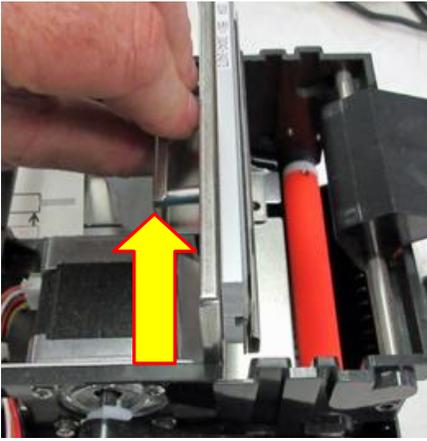
4. Position the cam lock level as far forward as possible.



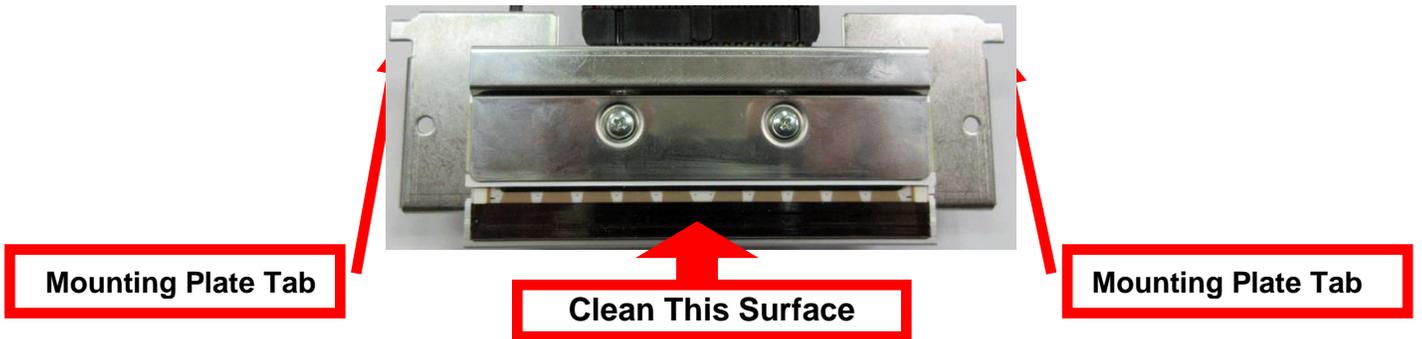
5. Flip the head back toward the rear of the printer. Denote what slot the print head was taken out of. Below photos show the different type of head mounting plates used through the production history of the Lemur series printers.



6. Lift the print head mounting plate straight out.



7. Clean the thermal print head surface (the side that makes contact with the paper) with isopropyl alcohol & paper towel.



8. Install the head mounting plate by reversing the above procedures. Make sure the print head mounting plate tabs are in the back slot of the print cage slots.



9. Restore pressure to the head by pushing down on the cam lock assembly.
10. The printer is now ready for operation. If the print quality is still poor then the thermal head needs to be replaced. See section [7.1.3 THERMAL PRINT HEAD REPLACEMENT](#)

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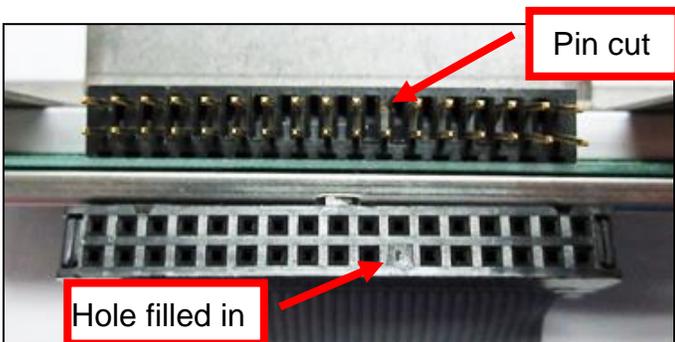
7.1.3 THERMAL PRINT HEAD REPLACEMENT

The following is done with the printer powered off and unplugged from the AC source.

1. Remove the print head mounting plate from the printer (Refer to section 7.1.2 THERMAL PRINT HEAD).
2. Once the head plate has been removed; loosen the two Philip head screws until the thermal print head disengages from the head plate. Take care not to lose lock and flat washers.



3. Gently unplug the cable from the old print head and plug it into the new print head. If your print head has two cables then this should be done one cable at a time so not to mix them up. The cables are keyed (see examples below). The keyed position must be lined up while plugging the cable into the print head. **You should not have to use excessive force to do this.**



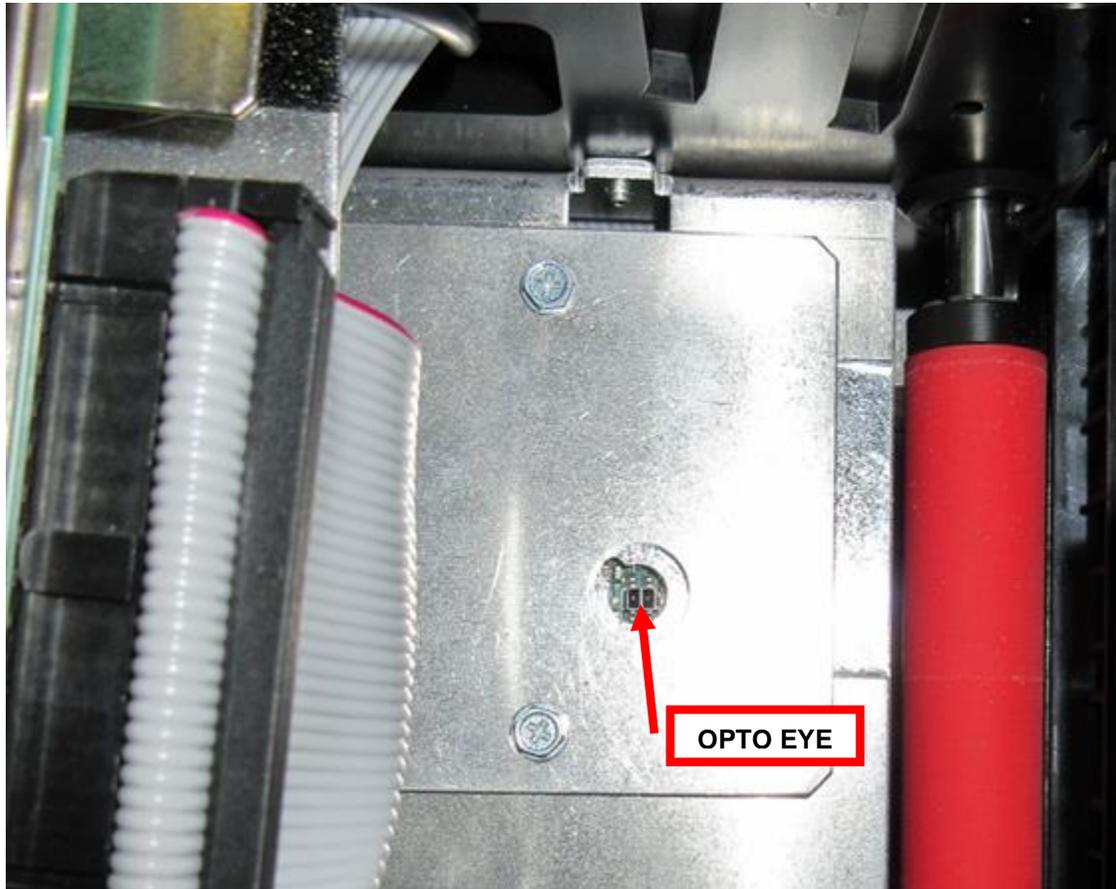
4. Install the print head back onto the print head mounting plate.
5. Install the head mounting plate/ thermal head back into the printer.

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7.1.4 Load Opto

The Load SQ Opto is located on the paper guide assembly. The purpose of this optical sensor is to sense the presence of flight strips. No adjustment is required. You may gain access to this sensor by removing the print head assembly (Refer to section [7.1.2 Thermal Print Head](#)).

Once a year the opto eye should be blown off with air. This interval will vary depending upon the environment and the quality of the flight strip stock.



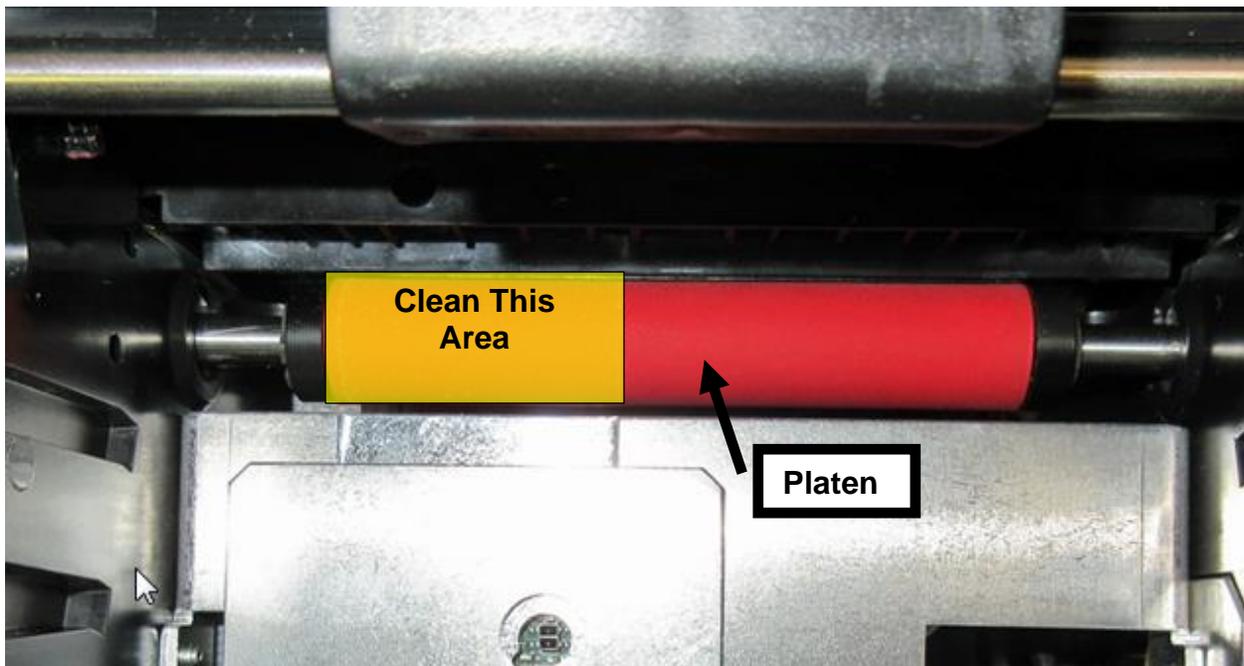
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7.1.5 Platen

The Platen (rubber drive roller) should be cleaned once a year to prevent paper dust from building up on the roller. (NOTE: The platen may require more frequent cleaning in dusty environments or when using inferior ticket stock.)

The following needs to be done with the printer powered off and unplugged from the AC source.

1. Remove head mounting plate. (Refer to section [7.1.2 Thermal Print Head](#)).
2. Apply a small amount of Isopropyl alcohol onto a lint free cloth to clean the rubber roller.
3. Clean only the part of the rubber roller where the ticket stock makes contact with (see yellow highlighted area).
4. Rotate the rubber roller clockwise a little and repeat step 4; continue in the same manner for one full revolution of the rubber roller.
5. Install the head mounting plate and lock the cam lock lever back in place. Printer is now ready for normal operation.



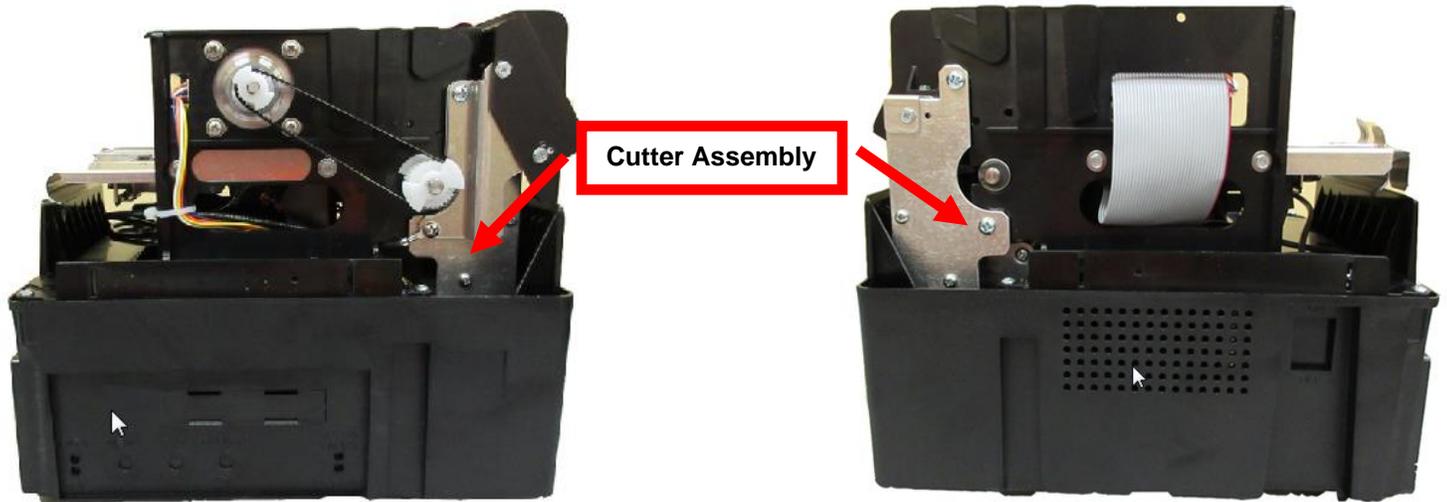
Platen color may vary from what is shown in the photo.

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7.2 Cutter Assembly

The cutter system is a fully integrated cutter knife mechanism powered by a stepper motor. The cutter requires no adjustments and is rated for approximately 1,000,000 cuts. Please be aware of the following:

The cutter area where the flight strips exit the printer should be blown out with air periodically to prevent debris from building up inside the cutter area. The required cleaning interval varies greatly depending on the quality of the ticket stock and the amount of paper dust entering the cutter area.



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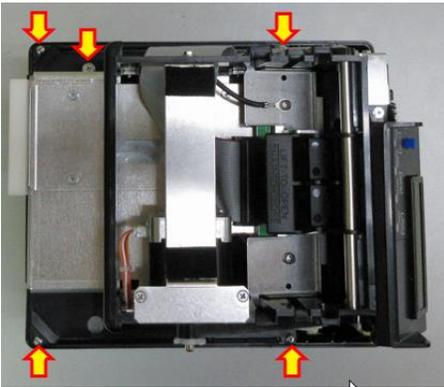
8.0 Removal and Replacement of Major Assemblies

WARNING: All Service must be done with the printer off and the AC cord unplugged from the printer.

8.1 Logic Board Removal/Replacement

The printed circuit boards used in this product have been manufactured using surface mount technology. These printed circuit boards cannot be effectively repaired in the field.

1. Remove the cover from the printer.
2. Gain access to the logic board by removing four Philips head screws and one ¼ inch hex head screw that hold the electronics cover in place. Remove electronics cover.



3. Denote where all the cables are plugged into the logic board. Gently unplug cables from logic board.
4. Remove six Philips head screws shown in the below photo.

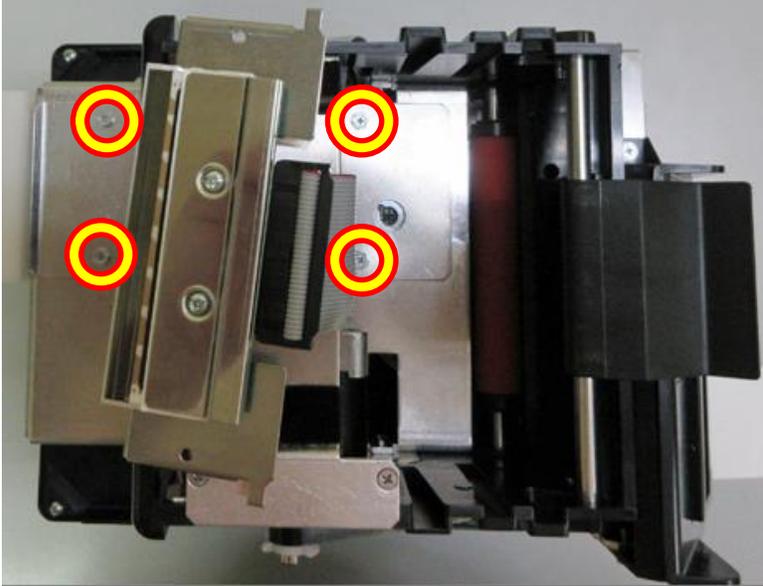


5. Gently remove logic board from cabinet.
6. Install the board by reversing the above steps.

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8.2 Cut Opto Removal/Replacement

1. **Make sure power is off and the AC cord is disconnected from the printer.**
2. Remove head mounting plate. (Refer to section [7.1.2 Thermal Print Head](#)).
3. Remove the four 3/16" hex head screws that hold the upper paper guide in place.



4. Remove the Philip head screw that holds the cut opto onto the mounting bracket. Unplug the connector from the opto.



5. Plug the connector into the new replacement opto and install it back onto the mounting bracket.
6. Install the upper rail back in place.
7. The printer is ready to be put back into service.
8. If needed the cut position may be adjusted by physically moving the cut opto location (Refer to section [7.1.1 Cut Opto Assembly](#)).

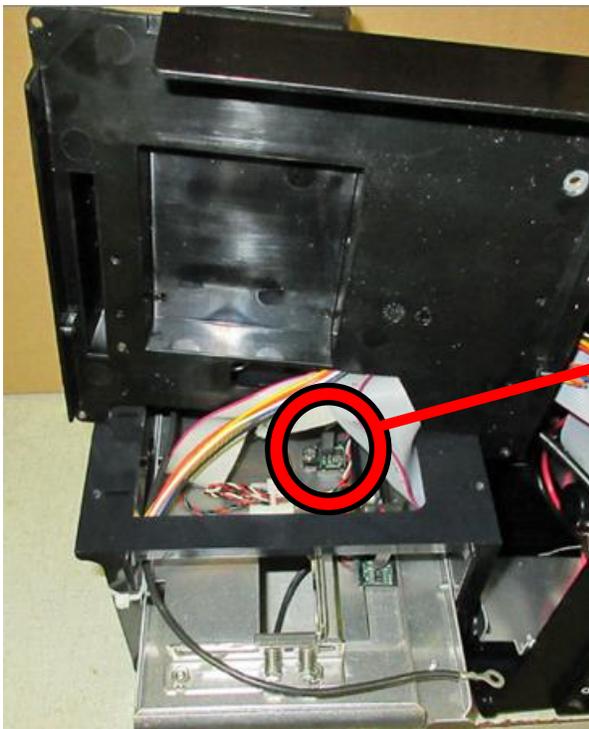
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8.3 Load Opto Removal/Replacement

1. **Make sure power is off and the AC cord is disconnected from the printer.**
2. Remove the electrical cover from the printer (Refer to section [8.1 Logic Board Removal](#)).
3. Remove the four Philip head screws that hold the print cage onto the electrical cover.

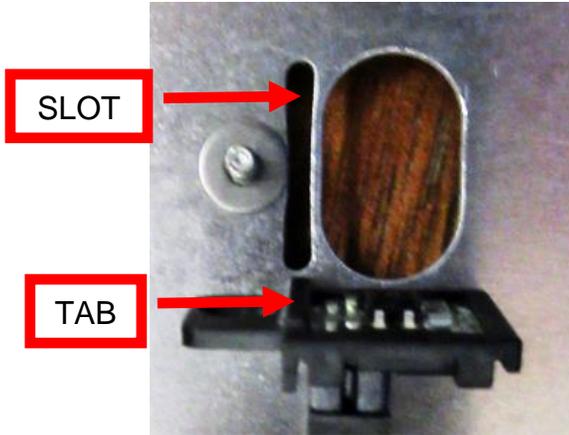


4. Once the screws have been removed the electrical cover may be gently tilted away from the print cage to gain access to the SQ load opto.



5. Remove the 1/4" nut with either a nut driver or socket.
6. Once the nut and flat washer are removed the black SQ load opto mounting bracket may be pulled up so the connector may be unplugged and a new SQ load opto (Gold dot on IC) installed.

7. There is a washer just under the black SQ load opto mounting bracket that must not be removed. When installing the opto back in place make sure the tab on the black opto mounting bracket lines up with the slot in the paper guide. Installed the flat washer and 1/4" nut back in place then tighten.



8. Mount the print cage back onto the electrical cover; take care to make sure wires are not being pinched.
9. Electrical cover may be installed back onto the printer.

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8.4 Control Panel Removal/Replacement

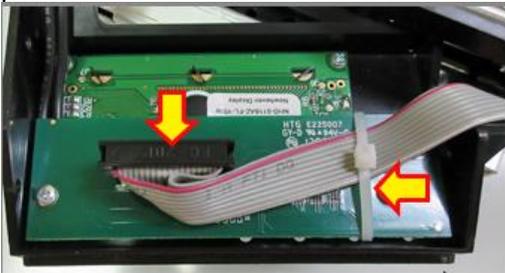
1. Make sure power is off and the AC cord is disconnected from the printer.
2. Remove the three 3/16" hex head screws that hold the control panel in place.



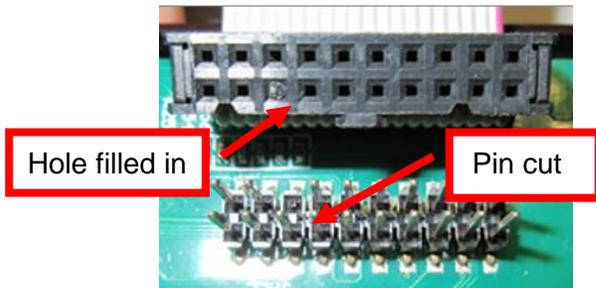
3. Remove the Philip head screw that secures the ground wires to the cutter assembly.



4. Cut the zip tie holding the cable in place and gently unplug the keyed grey ribbon from the control panel.



5. Plug the grey ribbon cable into the replacement control panel. Take care to make sure the keyed areas of the cable and connector line up. Zip tie the cable back in place.

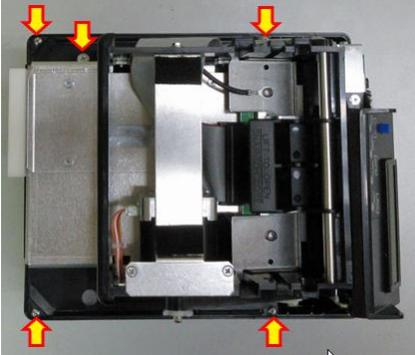


6. Install the control panel back in place and secure the ground wires back in place by installing the Philip head screw back in place.

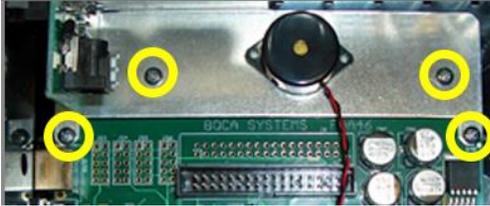
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8.5 Power Switch Board Removal/Replacement

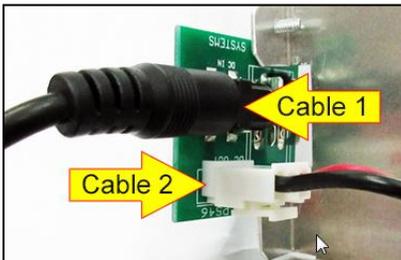
1. Make sure power is off and the AC cord is disconnected from the printer.
2. Remove the cover from the printer.
3. Gain access to the power switch board by removing four Philips head screws and one ¼ inch hex head screw that hold the electronics cover in place. Remove electronics cover.



4. Remove the four Philips head screws shown in the below photo.



5. Gently remove the power switch board metal mounting bracket.
6. Unplug the two cables that are connected to the power switch board.



7. Remove the one 3/16" hex head screw that attaches the board onto the metal mounting bracket.

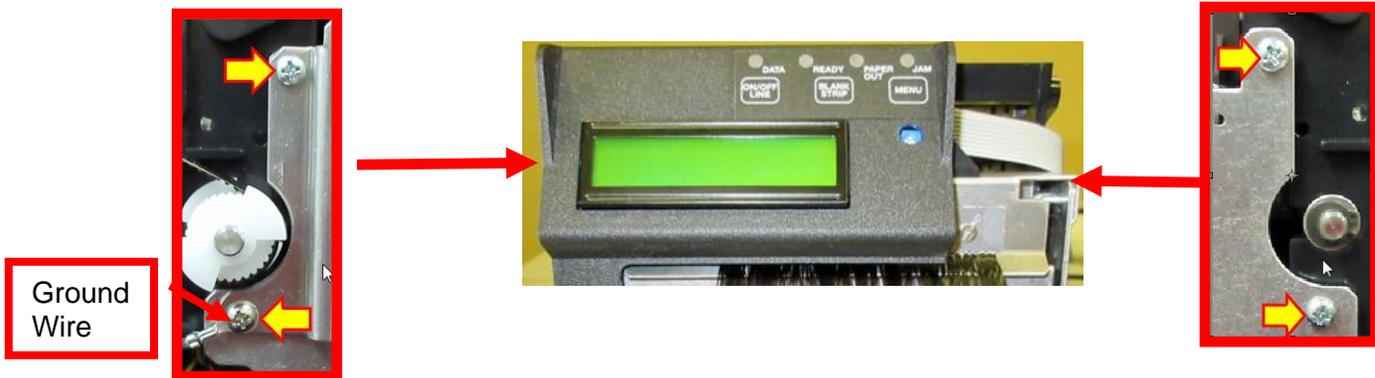
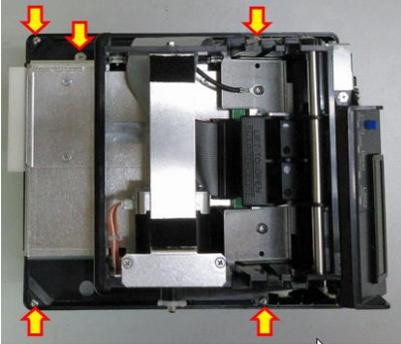


8. Install the replacement switch power board by reversing the above steps.

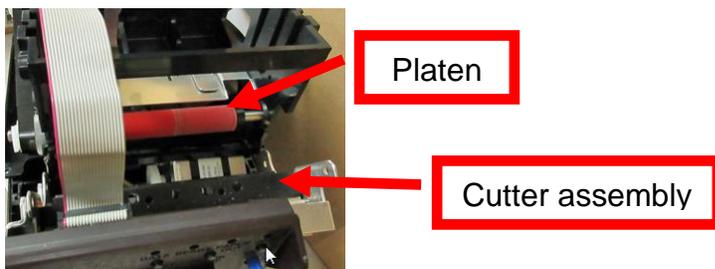
Click here to return to > [Table of Contents](#)

8.6 Platen Removal/Replacement

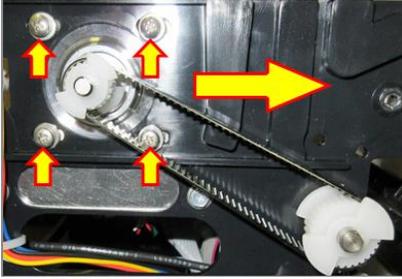
1. Make sure power is off and the AC cord is disconnected from the printer.
2. Remove the cover from the printer.
3. Remove the printer head mounting plate/ print head from the printer. See section [7.1.2 Thermal Print Head](#).
4. Loosen the electronics cover by removing four Philips head screws and one ¼ inch hex head screw that hold the electronics cover in place.



5. Remove the four Philips head screws that hold the cutter assembly in place.
6. The electronics cover may be gently lifted up a little to enable the cutter assembly to separate from the print cage. This will enable you to get access to the platen.



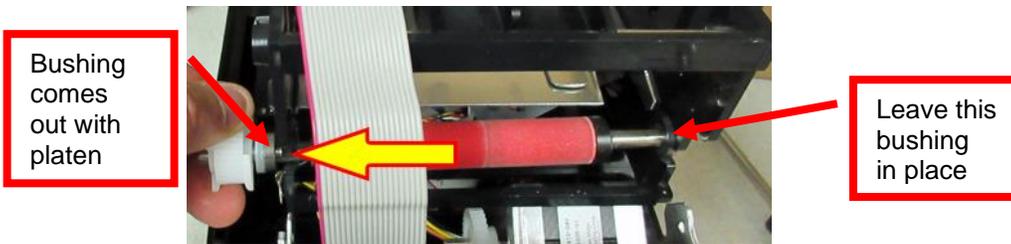
7. Loosen the four Philips head screws that hold the stepper motor in place. Move the stepper motor forward to enable the drive belt to be removed.



8. Remove the grip ring from the platen shaft.



9. The platen may be removed by grabbing onto white pulley and sliding it out towards that side. On the pulley side you will want to make sure the bushing comes out of the print cage. The bushing on the other side should be left alone.



10. Install the new replacement platen in place. Install the grip ring back onto the shaft.

11. Make sure the platen is manually able to spin freely. If it not able to spin freely then the grip ring may be binding too tight and need to be adjusted a little. You also want to make sure the pulley is not rubbing against the cutter assembly.

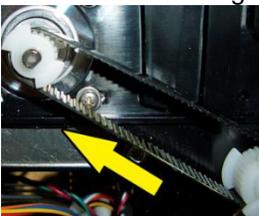


12. There should also be very little side to side free play too. Adjust the location of the grip ring if needed.



13. Install the drive belt back on the pulleys. Slide the stepper motor back just enough to take up the belt tension and tighten the four Philip head screws.

14. Grab onto the driver belt and turn it a few times. You want to make sure the platen still moves freely. There should be no binding. If there is binding then you may have too much tension on the drive belt. Adjust if needed.

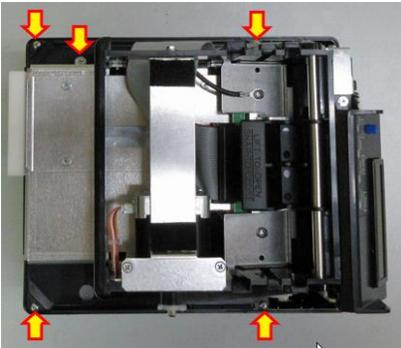


15. Install the cutter assembly back onto the print cage and make sure the ground wire is attached back on as shown in step #4.
16. Install the head plate/ print head back in place and lock the cam lock lever.
17. Install the electrical cover back in place. You will need to make sure that the two wire tabs go back through the ¼" Hex head screw.
18. The printer may now be put back into service.

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8.7 Cutter Assembly Removal/Replacement

1. **Make sure power is off and the AC cord is disconnected from the printer.**
2. Remove the cover from the printer.
3. Loosen the electronics cover by removing four Philips head screws and one ¼ inch hex head screw that hold the electronics cover in place.



4. Remove the four Philips head screws that hold the cutter assembly in place. The longer set of screws



go on the same side the ground wire and pulley are on.

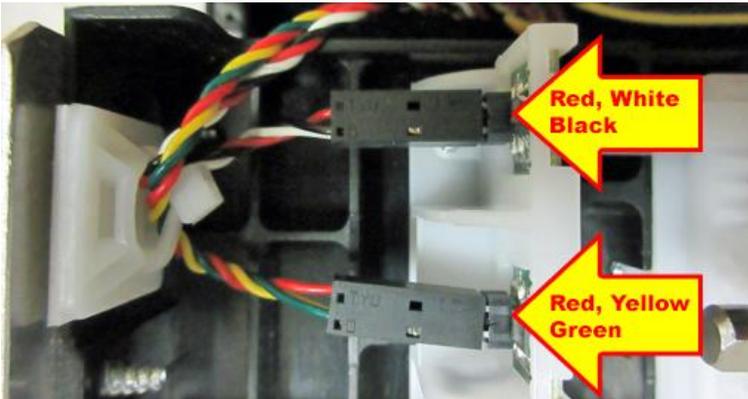
5. Remove the one 3/16" hex head screw that is holding the control panel onto the cutter. Place control panel out of the way.



- The electronics cover may be gently lifted up a little to enable the cutter assembly to separate from the print cage. This will enable you to get access to wires that connect to the cutter assembly. Cut the zip ties that hold the wires in place and unplug the wires. The cutter assembly can now be removed.



- Connect the wires to the replacement cutter assembly and zip tie in place. Take care to make sure the wires are properly connected to their respective sensors. See photo below.



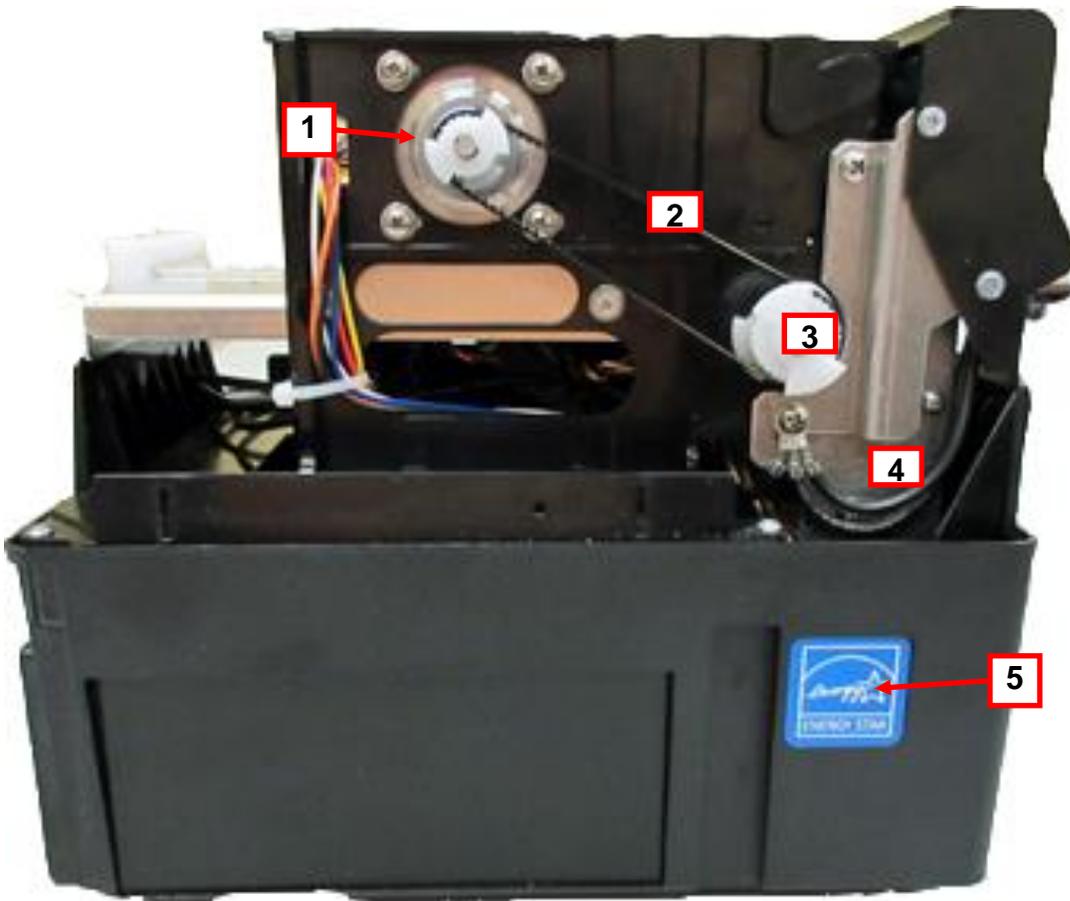
- Secure the control panel back onto the cutter assembly.
- Install the cutter assembly back onto the print cage and make sure the ground wire is attached back on as shown in step #4.
- Install the electrical cover back in place. You will need to make sure that the two wire tabs go back through the 1/4" Hex head screw.
- The printer may now be put back into service.

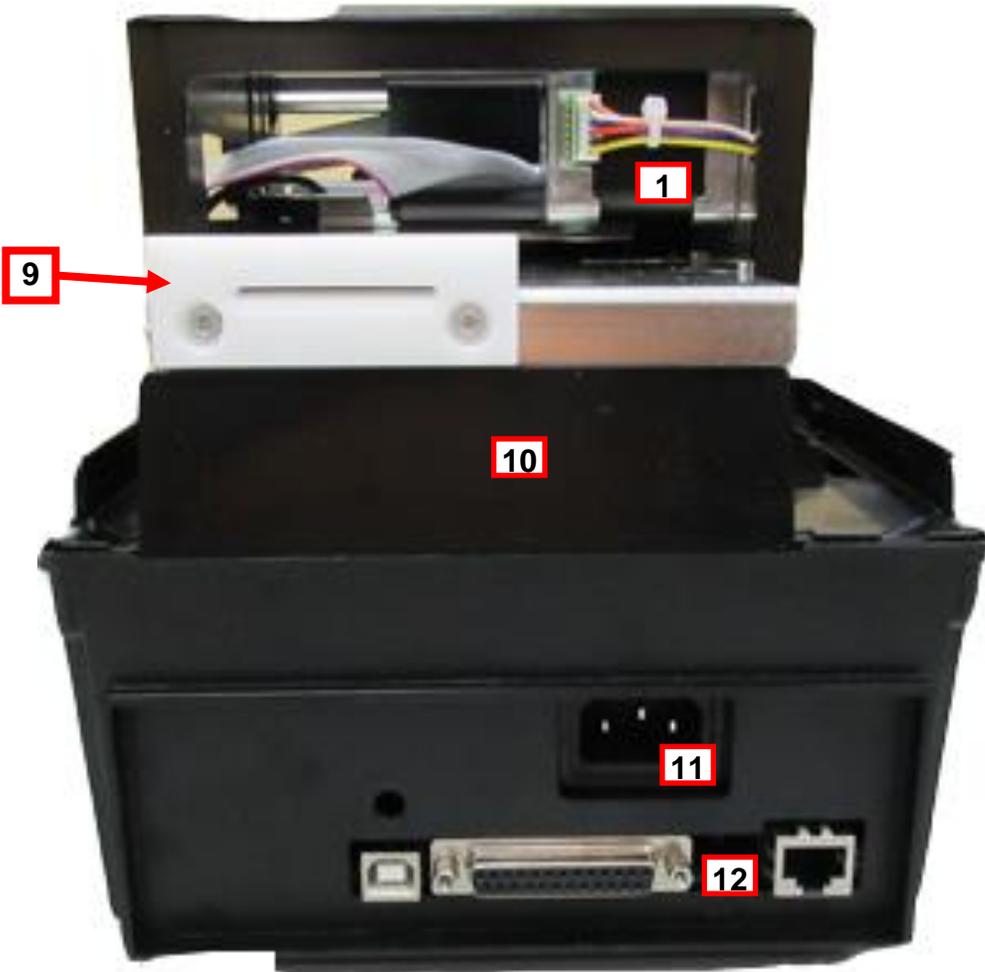
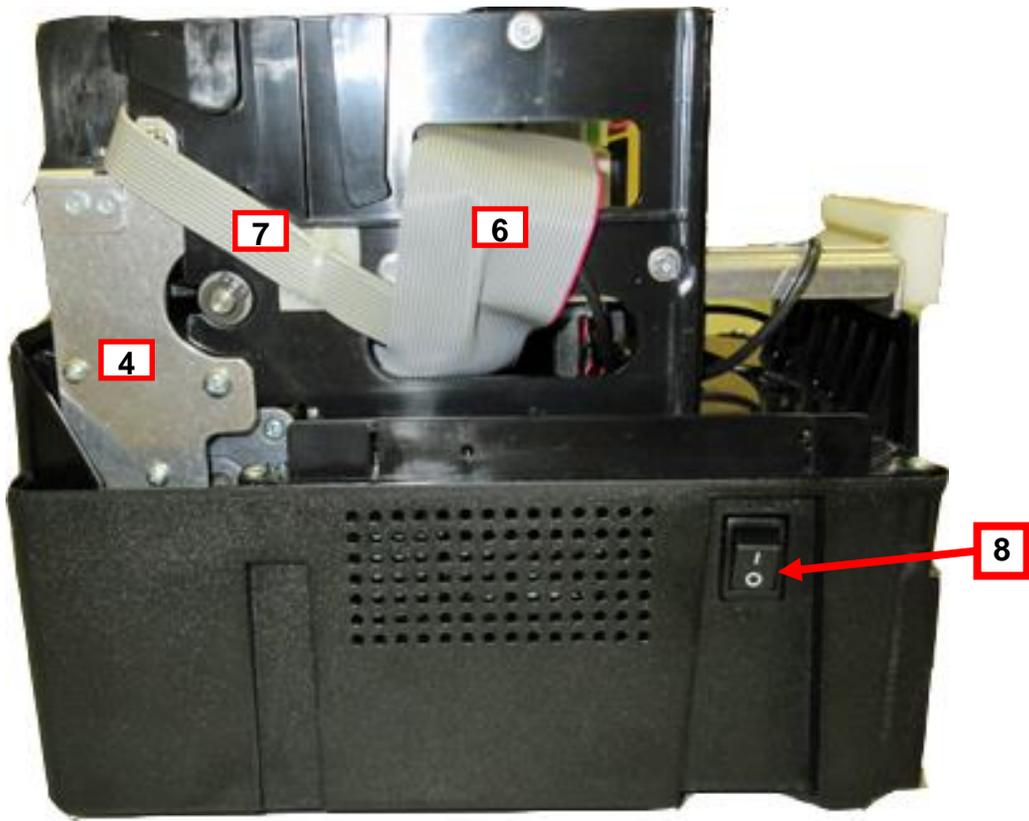
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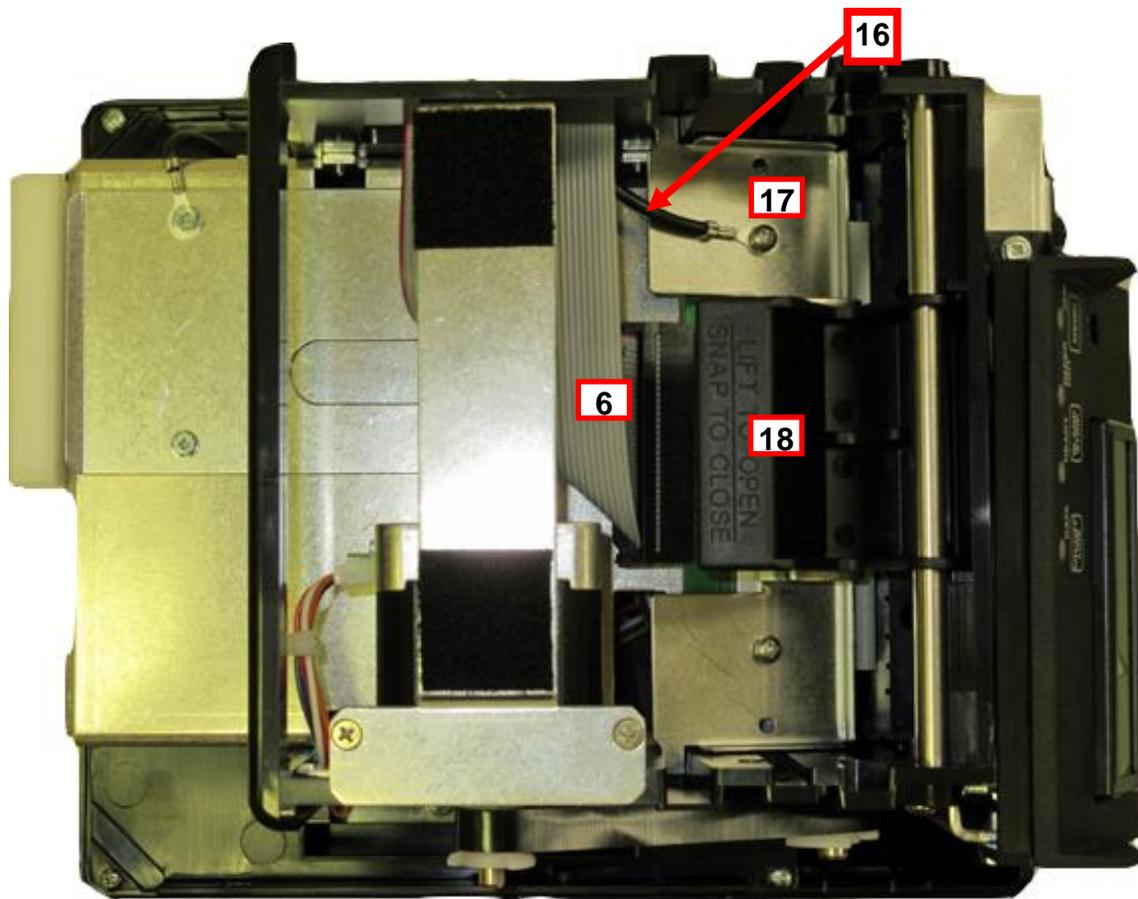
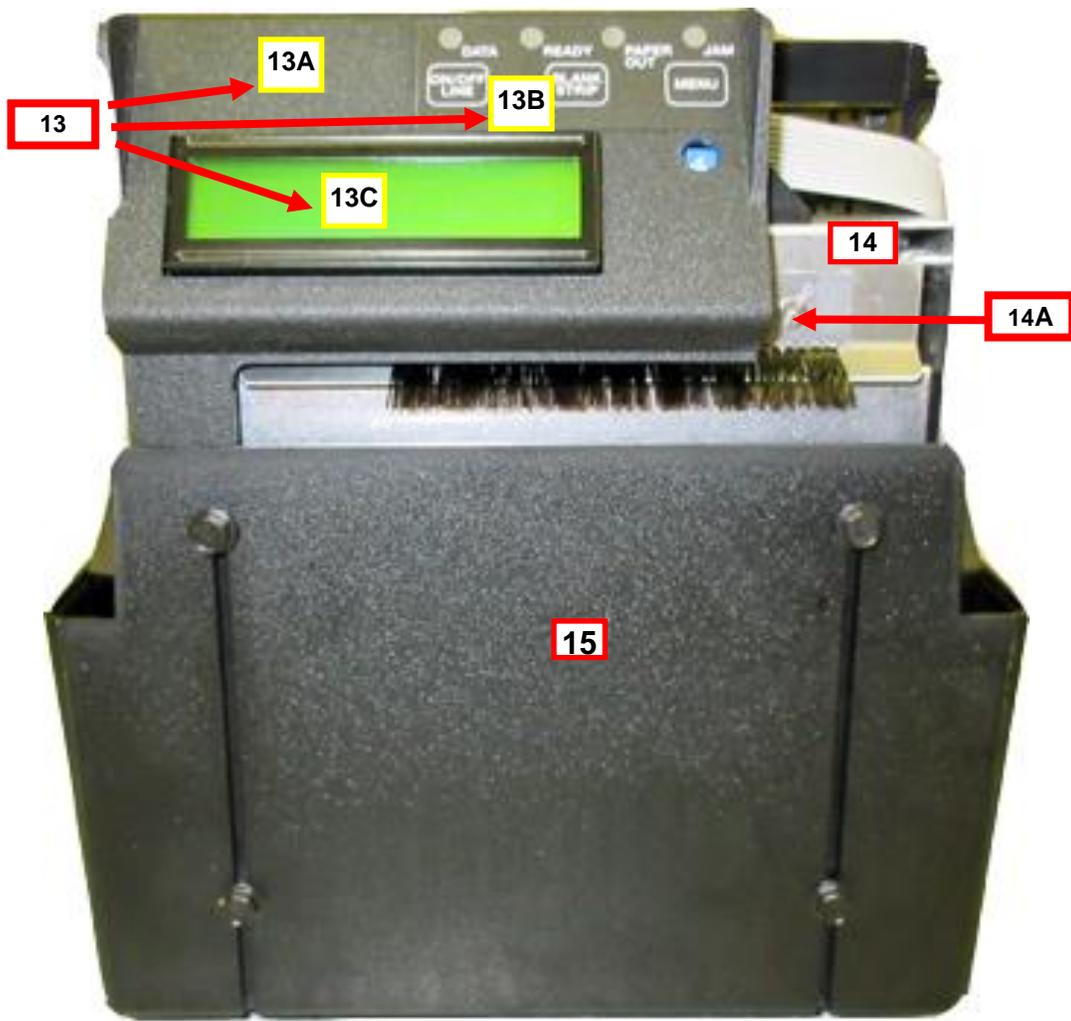
9.0 Spare Parts List with Visual References

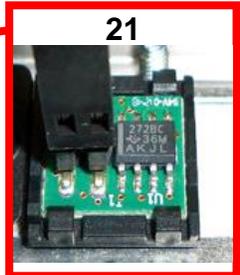
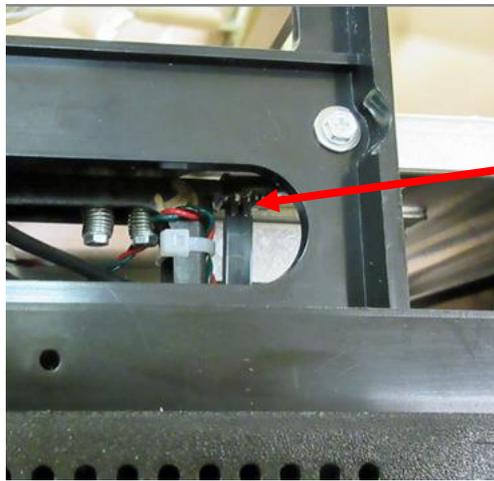
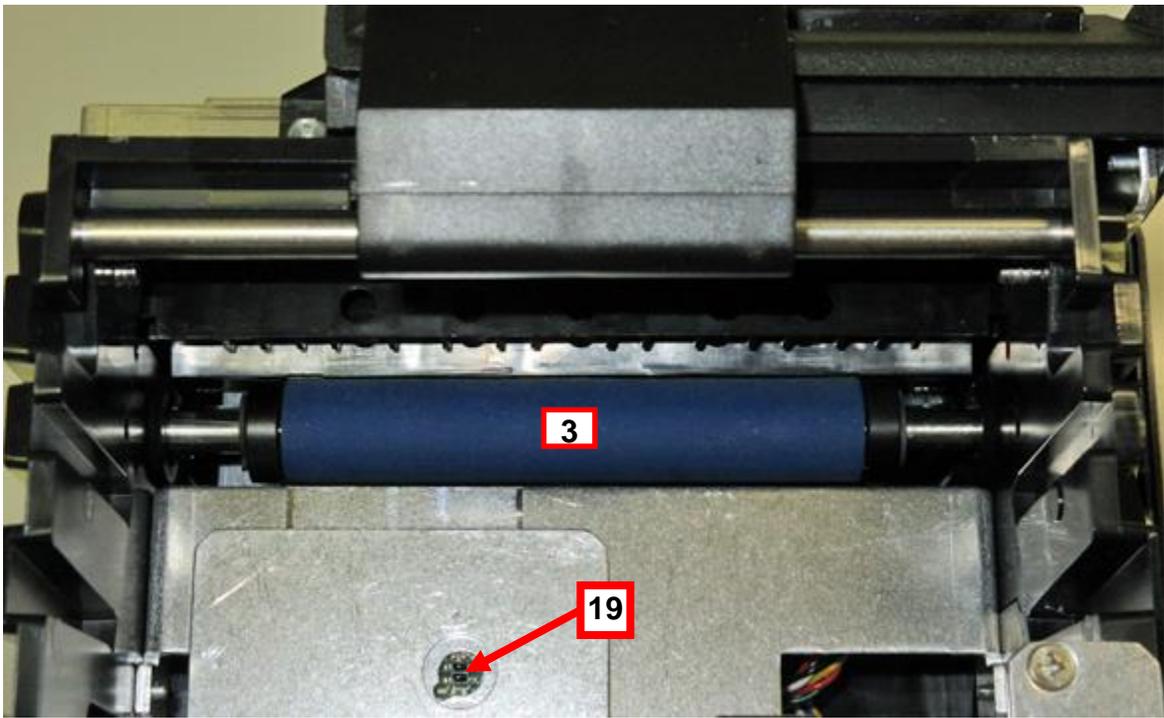
Item #	Part Number	Description
1	422590-C	Stepper Motor & 20 drive pulley
2	P50-1003	Drive Belt, 102T (for 300dpi)
3	423760-FSP-1-C	Platen complete
4	424008-C	Cutter Assembly (BC5) Complete
5	423793	Energy Star Decal
6	422557-25	Cable, Thermal Head (for 3003 print head only)
7	422589-20	Cable, Control Panel
8	PS46	Switch, For power supply 424009-L
9	422419	Input Bezel
10	423842Z-P1	Electronics Cover,
11	424009-L	Power Supply 24VDC (65W)
12	FAA46-ERAM	Main Logic Board (FAA-ERAM)
13	424148	LCD Cover complete w/ LCD & control panel
13A	420881P-1A	LCD Cover only
13B	422560-FAA	Control Panel Decal ONLY
13C	LCD-FAA	LCD Display only
13D*	CPANEL3-ERAM	Control panel board (LCD is connected to this board)
14	423480Z-FAA	Upper Exit Deflector ONLY BC5
14A	422718WV	Anti-Static Brush (only)
15	420880P-2	Cabinet Base, FAA-ERAM
16	423192	Ground Strap
17	423496-5	Head mounting plate
18	423236P	Cam lock lever
19	SQ OPTO-L	SQ Load Opto
20	3003	Print Head
21	SQ OPTO	SQ Cut Opto
22	423843-2PC	Power Switch Mounting Bracket
23	424052	Buzzer
24	423938	DC Harness, cutter
25	420881P-1-FAA	Cover
26	422113Z-FSP6	Exit Hopper
*	423625	Rubber Feet on bottom of printer
*	P19-1000	Cable, AC cord 110VAC (US)

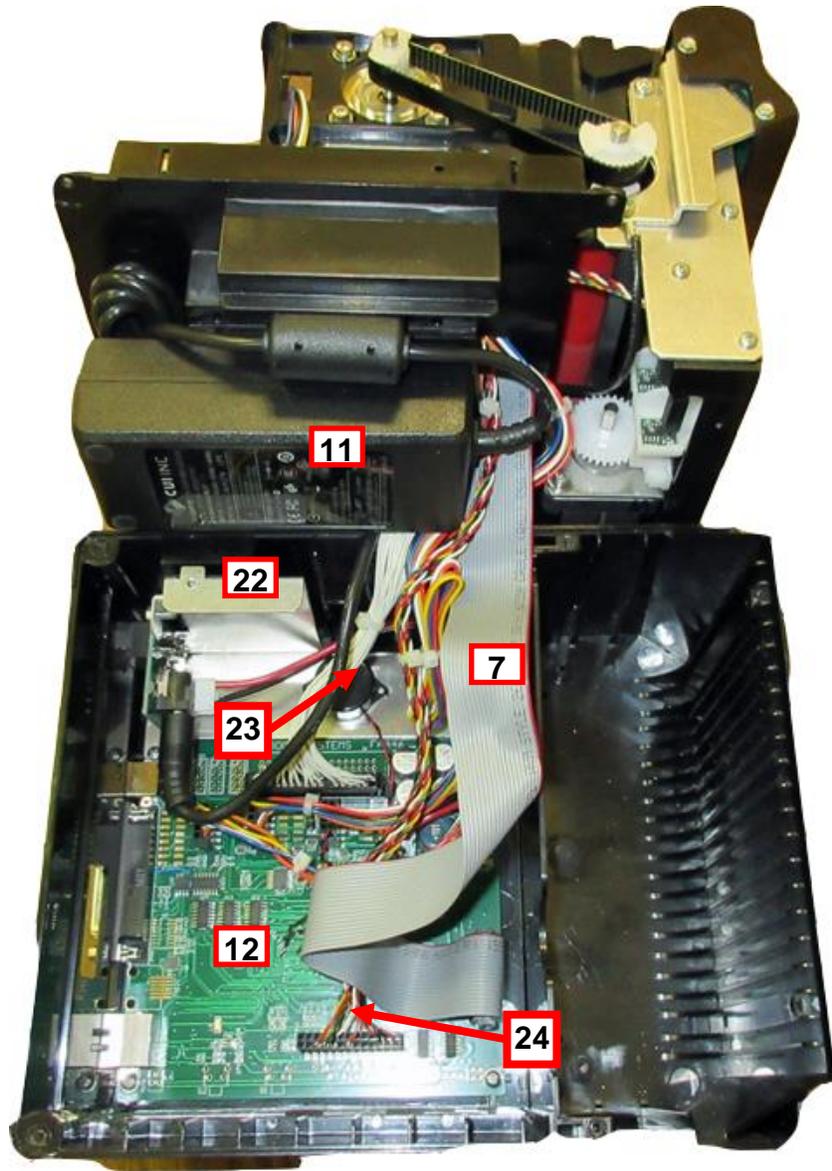
* Not shown in photos











10.0 Troubleshooting Guide

This is a simplified troubleshooting guide listing some of the typical problems. It is not intended to provide technical details or repair methods, but can serve as a guide to fault isolation in the field. **As a safety precaution, all service to the printer should be done by qualified persons with power off and the AC cord unplugged from the printer. Following any procedure requiring the removal of covers and/or doors, please verify that they have been properly attached and fastened prior to operating the printer.** If you need additional help, please visit the link below www.bocasystems.com/onlinesupportform.html

1. NO OPERATION, LED'S DON'T LIGHT UP UPON POWER UP
 - a. Power the printer off and wait 30 seconds then power it back on.
 - b. Check the power cord for proper installation at both ends.
 - c. Check that there is power at the AC outlet.
 - d. Contact your system provider or [BOCA](#) for further assistance.

2. POWER IS ON BUT NO OPERATION
 - a. Make sure the stock is being loaded properly into the printer. Consult section [5.0 Installation and Flight Strip Loading](#).
 - b. Clean the SQ load opto. Consult section [9.1.2 Load SQ Opto](#)
 - d. If cutter knife does not go up and down after power up, See # 6.
 - e. With the printer powered off, unplug the thermal head and turn on the printer. If printer works then replace the thermal head ([7.1.3 Print Head Replacement](#)).
 - f. Contact your system provider or [BOCA](#) for further assistance.

3. POWER IS ON BUT TICKET WILL NOT LOAD
 - a. See # 2
 - b. Make sure the print head/cam lock assembly is fully locked in the closed position.
Consult [7.1.2 Thermal Print Head](#).
 - c. Check that the ticket stock is being loaded correctly. Consult [5.0 Installation and Flight Strip Loading](#).
 - d. Replace SQ load opto. Consult [8.3 Load Opto Removal/Replacement](#)
 - e. Contact your system provider or [BOCA](#) for further assistance.

4. ERRATIC CUT POSITION
 - a. Check for defective ticket stock. Is the black mark unevenly spaced apart or light in color? Is the ticket too wide for the paper path?
 - b. Clean the cut opto with air. Consult [7.1.1 Cut Opto Assembly](#).
 - d. Check that the platen is clean. Consult [7.1.5 Platen](#).
 - e. Default printer settings. With printer powered off hold down the TEST button and then power up the printer. Keep the test button held down for 10 seconds and release (the printer will reset).
 - f. Replace cut opto. Consult [8.2 Cut Opto Removal/Replacement](#)
 - g. Replace platen. Consult [8.6 Platen Removal/Replacement](#)
 - h. Contact your system provider or [BOCA](#) for further assistance.

5. ERRACTIC PRINT POSITION
 - a. See # 4

6. CUTTER KNIFE DOES NOT MOVE
 - a. Check for blockage in the cutter area.
 - b. Default printer settings. With the printer powered off hold down the TEST button and then power up the printer. Keep the TEST button held down for ten seconds and release (the printer will reset).
 - c. Replaced the cutter assembly. Consult [8.7 Cutter Assembly Removal/Replacement](#)
 - d. Contact your system provider or [BOCA](#) for further assistance.

7. POOR PRINT OUT (light print out)
 - a. Try a different stack of ticket stock.
 - b. Make sure the print head/cam lock assembly is fully locked in the closed position.
 - c. Clean print head. Consult [7.1.2 Thermal Print Head](#)
 - d. Replace thermal head ([7.1.3 Print Head Replacement](#)).
 - e. Replace platen. Consult [8.6 Platen Removal/Replacement](#)
 - f. Contact your system provider or [BOCA](#) for further assistance.

8. POOR PRINT OUT (white voids in print out)
 - a. Clean print head. Consult [7.1.2 Thermal Print Head](#)
 - b. Replace thermal head. Consult [7.1.3 Print Head Replacement](#)
 - c. Contact your system provider or [BOCA](#) for further assistance.

9. NO PRINT OUT
 - a. Try a different stack of ticket stock.
 - b. Check to make sure head cable is plugged in properly into the thermal head.
 - c. Check head cable is plugged in properly into the main logic board. Consult [8.1 Logic Board Removal/Replacement](#) to gain access to the logic board.
 - d. Replace thermal head. Consult [7.1.3 Print Head Replacement](#)
 - e. Contact your system provider or [BOCA](#) for further assistance.

10. PRINTER SKIPS TICKETS WHILE PRINTING
 - a. Check position and quality of black mark on the ticket stock.
 - b. Clean the cut opto with air. Consult [7.1.1 Cut Opto Assembly](#).
 - c. Check that the platen is clean. Consult [7.1.5 Platen](#).
 - d. Default printer settings. With the printer powered off hold down the TEST button and then power up the printer. Keep the TEST button held down for ten seconds and release (the printer will reset).
 - e. Replace cut opto. Consult [8.2 Cut Opto Removal/Replacement](#)
 - g. Contact your system provider or [BOCA](#) for further assistance.

11. PRINTER SKIPS TICKETS AND DIES
 - a. See # 10.

12. TICKET JAM ENTERING THE CUTTER AREA
 - a. Make sure the entrance to the cutter area is not blocked.
 - b. Replaced the cutter assembly. Consult [8.7 Cutter Assembly Removal/Replacement](#)
 - c. Contact your system provider or [BOCA](#) for further assistance.

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11.0 Interface Pinouts

RS-422 (DB25F Connector)

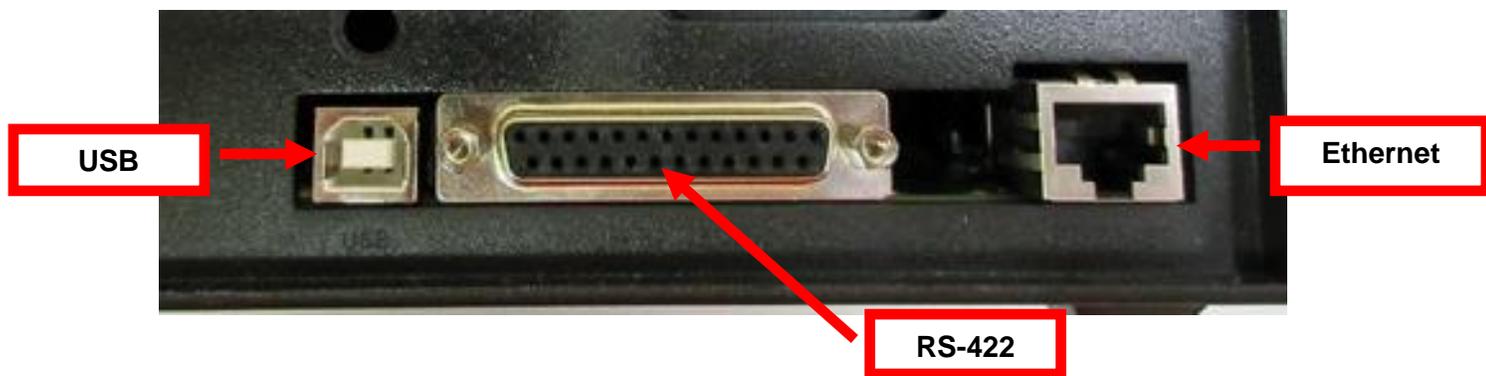
Pin 1	Frame Ground
Pin 7	Signal Ground
Pin 15	Receive (+)
Pin 17	Receive (-)
Pin 19	Transmit (+)
Pin 25	Transmit (-)

USB 2.0 Compliant

Pin 1	VCC (+5vdc)
Pin 2	D- (Data -)
Pin 3	D+ (Data+)
Pin 4	Ground

ETHERNET RJ15

Pin 1	TX+ _D1 (Transmit Data+)
Pin 2	TX- _D1 (Transmit Data -)
Pin 3	RX+ _D2 (Receive Data+)
Pin 4	BI+ _D3 (Bi-directional+)
Pin 5	BI- _D3 (Bi-directional-)
Pin 6	RX- _D2 (Receive Data-)
Pin 7	BI+ _D4 (Bi-directional+)
Pin 8	BI- _D4 (Bi-directional-)



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Appendix A – Technical Support

Please go to the link below if you require technical support with your BOCA printer. There is no fee for initial email support.

www.bocasystems.com/onlinesupportform.html

Printer Return Procedure

The printer should be returned to BOCA for repair (freight prepaid) in its original box and packing material. **Please enclose a completed repair form (see below link) with each printer.** Failure to do so will delay the repair.

www.bocasystems.com/documents/Boca_Repair_Sheet1.pdf

Please return the printer to the following address:

Boca Systems, Inc
1065 South Rogers Circle
Boca Raton, FL 33487
Attn: Printer Repair Dept.

Phone: (561) 998-9600
Fax: (561) 998-9609
Email: cathy@bocasystems.com

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