mikmek
TICKET • PRINTER • ENCODER SERVICE

Boca Systems

SUBATM MODEL TICKET PRINTER
Operator's Manual

Rev B: 10/16/2002

Table of Contents   Page

FCC NOTICE

NOTE: The equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and , if not installed and used in accordance with the 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 his own 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

PRINTERS - BOCA warrants each printer to be free of defects for a period of one year from the date of shipment when subject to normal use and service. This warranty covers all parts and labor except for the print head, which is warranted for 90 days. All warranty labor is to be performed at the BOCA facility. Equipment damaged by misuse or negligence, including damage to print heads caused by defective ticket stock, is excluded from this warranty.

Any defective equipment meeting these conditions should be returned to BOCA for repair (freight prepaid) in its original box and packing material. A short note describing the failure should be enclosed with the printer.

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

EXTENDED WARRANTY PLAN - BOCA offers extended warranty plans for all printer models. These plans cover all parts and labor. All labor is to be performed at the BOCA facility. Equipment damaged by misuse or negligence, including damage to print heads caused by defective ticket stock, is excluded from this extended warranty. The customer, at its option, may request BOCA to ship individual parts to expedite simple repair procedures. In certain cases where the customer is unable to wait for the normal repair cycle, BOCA will ship an exchange printer within one business day after notification by the customer. All freight charges are the responsibility of the customer.

1.0 Introduction

The [BOCA SubATM printer](#) is a direct thermal ticket printer with an integrated cutting mechanism designed for self service (Kiosk) ticketing environments. This manual will provide the user with general information regarding printer set-up, configuration and troubleshooting. Please review the [programming guide](#) for additional details.

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.
Tel: (561) 998-9600   Fax: (561) 998-9609

The following items should be in the box:

    a) Ticket Printer
    b) Hopper (if applicable)
    c) AC power cord
    d) Interface cable (optional)
    e) Mounting Plate (optional)
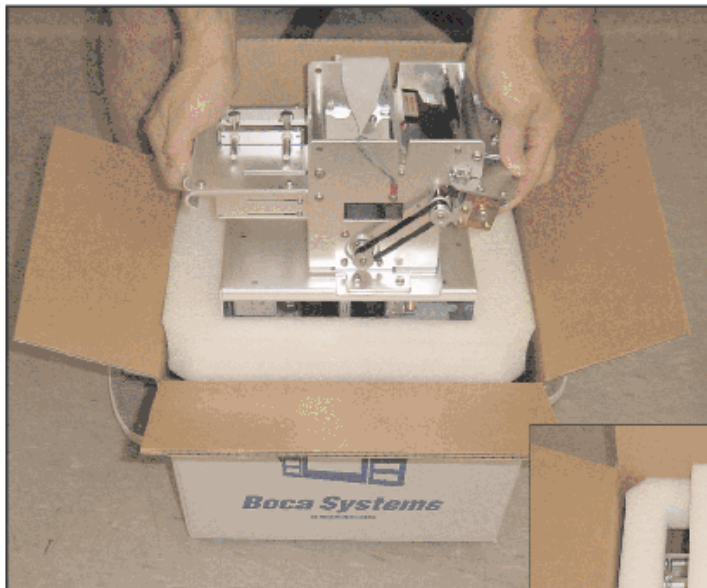
Click here to return to > [Table of Contents](#)

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.

United Kingdom only
- The supply plug must comply with BS1363 (3-pin 13 amp) and be fitted with a 5A fuse which complies with BS1362.
- The mains cord must be <HAR> or <BASEC> marked and be of type H03VVF3GO.75 (minimum).

Europe only:
- The supply plug must comply with CEE 7/7 ("SCHUKO").
- The mains cord must be <HAR> or <BASEC> marked and be of type H03VVF3GO.75 (minimum).

Denmark : The supply plug must comply with section 107-2-D1, standard DK2-1a or DK2-5a.

Switzerland: The supply plug must comply with SEV/ASE 1011.

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.

WARNING: France and Peru only:
This unit cannot be powered from IT† supplies. If your supplies are of IT type, this unit must be powered by 230V (2P+T) via an isolation transformer ratio 1:1, with the secondary connection point labelled Neutral, connected directly to earth (ground).

WARNING: RJ-45 Ports. These are shielded RJ-45 data sockets. They cannot be used as standard traditional telephone sockets, or to connect the unit to a traditional PBX or public telephone network. Only connect RJ-45 data connectors. Either shielded or unshielded data cables with shielded or unshielded jacks can be connected to these data sockets.

4.0 Installation

The BOCA SubATM printer was designed to be mounted within an unattended housing.

Prior to site preparation and installation, the printer should be powered up and run in the self-test mode.

- Lay the printer flat on a counter top.

- Attach the AC cord and interface cable into the proper connectors.

- Turn power on and you will hear the cutter motor cycle.

- Begin loading tickets through the entrance slot with a smooth motion until the printer automatically positions the ticket.

NOTE: Tickets should be loaded with the black mark facing down. Refer to the BOCA systems website at www.bocasystems.com, THERMAL TICKETS section for ticket specifications.

- After the ticket is automatically positioned, press the TEST button located on the electronics box to print a test ticket.

- Verify that the printer properly works with your system by issuing a ticket through your computer system.

You may now install the printer in its permanent location. Adequate room should be provided behind or underneath the printer for the smooth feeding of ticket stock.

5.0 Configuration

The BOCA SubATM printer is factory configured for a variety of customer requirements.

For a comparison of the different electronics packages, refer to the BOCA Systems website at www.bocasystems.com, THE BASICS section.

For a listing of configuration choices, refer to the BOCA Systems website at www.bocasystems.com, SPECIFICATIONS section.

Printers are configured with an adjustable paper guide set to the customer specified width. To change the ticket width setting, refer to section 7.1.4.

Appendix A shows a list of Control Panel functions. The SubATM printer is not supplied with a Control Panel. In order to perform any Control Panel settings, a Control Panel must be connected to the main logic board or commands must be downloaded through your software. Refer to the programming guide to perform settings through your software.

Click here to return to > Table of Contents

6.0 Standard Interface Pinouts

SERIAL PINOUTS

RS232 (standard)		RS232 (PC type)	
PIN	FUNCTION	PIN	FUNCTION
2	Printer Transmit	2	Printer Receive
3	Printer Receive	3	Printer Transmit
7	Ground	5	RTS (+5V)
5,20	Printer Ready	6	DTR (printer ready)
4,22	RTS (+5V)	7	Ground
		8	CD (+5V)

TYPICAL RS232 PIN CONNECTIONS

(standard) 25 PIN PC BOCA CPU	(standard) 9 PIN PC BOCA CPU	(pc type) 25 PIN PC BOCA CPU	(pc type) 9 PIN PC BOCA CPU
2 ---- 3 RXD	2 ---- 2 RXD	2 ---- 2 TXD	2 ---- 3 TXD
3 ---- 2 TXD	3 ---- 3 TXD	3 ---- 3 RXD	3 ---- 2 RXD
7 ---- 7 GND	7 ---- 5 GND	5 ---- 5 CTS*	5 ---- 8 CTS*
20 ---- 6 DSR	20 ---- 6 DSR	6 ---- 6 DSR	6 ---- 6 DSR
20 ---- 5 CTS*	20 ---- 1 CD*	7 ---- 7 GND	7 ---- 5 GND
20 ---- 8 CD*	20 ---- 8 CTS*	8 ---- 8 CD*	8 ---- 1 CD*

* optional connection

PARALLEL

PIN	FUNCTION
1	Strobe (negative)
2-9	Data (DB0 - DB7)
10	ACK (negative)
11	BUSY
12	PAPER OUT
13	SELECT (negative)
15	ERROR (negative)
18	Ground

RS422 DIFFERENTIAL INTERFACE PINOUTS (422190-9)

FAA PIN	FUNCTION	LOR PIN	FUNCTION
1,7	Ground	1,7	Ground
19	Printer Transmit -	19	Printer Transmit +
25	Printer Transmit +	25	Printer Transmit -
15	Printer Receive -	15	Printer Receive +
17	Printer Receive +	17	Printer Receive -
11	Ready +	11	Ready +
10	Ready -	10	Ready -

NOTE: The above pinouts may vary on certain printers due to special customer request.

Click here to return to >

7.0 Thermal Paper - Theory & Specification

Refer to the BOCA Systems website at www.bocasystems.com, THERMAL TICKETS section for the most current paper specifications.

The print head's life expectancy is composed of both a mechanical and an electrical component. Both of these factors are strongly influenced by the quality of the thermal paper used.

MECHANICAL
The print head has a theoretical rating of 60 kilometers. This number is based upon the assumption that the head will be used with a good quality, top coated thermal paper. Uncoated and poorly top coated thermal papers are abrasive to the print head and have been found to wear through the head after less than one kilometer.

Other factors which may contribute to premature mechanical wear are the use of non-thermal inks and stray metallic particles stuck in ticket perforations. Certain inks colors such as opaque white (which contains titanium dioxide) are also highly abrasive.

Unfortunately, there are no available devices for quantitatively measuring the abrasiveness of a given ticket. Fortunately, we have developed a slightly subjective, but effective method of weeding out overly abrasive ticket stock.

ELECTRICAL
Each heat element, dot, on the print head has a theoretical life expectancy of 100 million activations. This is based on the assumption that each activation will cause the dot temperature to approach the dot's maximum recommended temperature. Running at lower temperatures will increase the theoretical life expectancy, while slight temperature increases will seriously (exponentially) degrade the head life.

The thermal paper can affect the electrical head life in two ways. Insensitive, slow papers will typically encourage the user to increase the voltage to darken the printed image. This will directly increase the head temperature resulting in reduced head life. Additionally, the higher temperatures will frequently cause the ink to peel off the ticket and deposit onto the print head. The ink debris will disrupt the normal transfer of heat from the head to the paper. This further increases the head temperature above the desired level. The use of non-thermal inks and/or non-top coated papers also will cause the ink to release and deposit on the print head.

SPECIFICATION
Based upon the above technical information, BOCA has always tried to encourage our customers to use the proper thermal papers to maximize the life of their print heads. BOCA provides an extensive series of papers which meet the above criteria for low abrasion and high sensitivity. We have also tested and approved a number of Ricoh thermal papers which meet our criteria. While we have not had the opportunity to test other manufacturers' thermal papers, we feel confident that other papers manufactured with the above goals in mind should be acceptable for use in our printers. The following list of papers have been approved by BOCA.

200 dpi usage
BOCA   T7, P11

200 and 300 dpi usage
BOCA   HS7, SFHS7, T5, Hybrid, 2S

Please note that the 300 dpi papers may be used on 100 and 200 dpi printers. In fact, doing so will increase the electrical life of the head as this will allow the head to operate at a lower temperature. DO NOT use 300 dpi heads with 200 dpi paper.

Click here to return to > Table of Contents

8.0 Maintenance and Adjustments

Your ticket 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.

8.1 Paper Guide and Print Head Assembly

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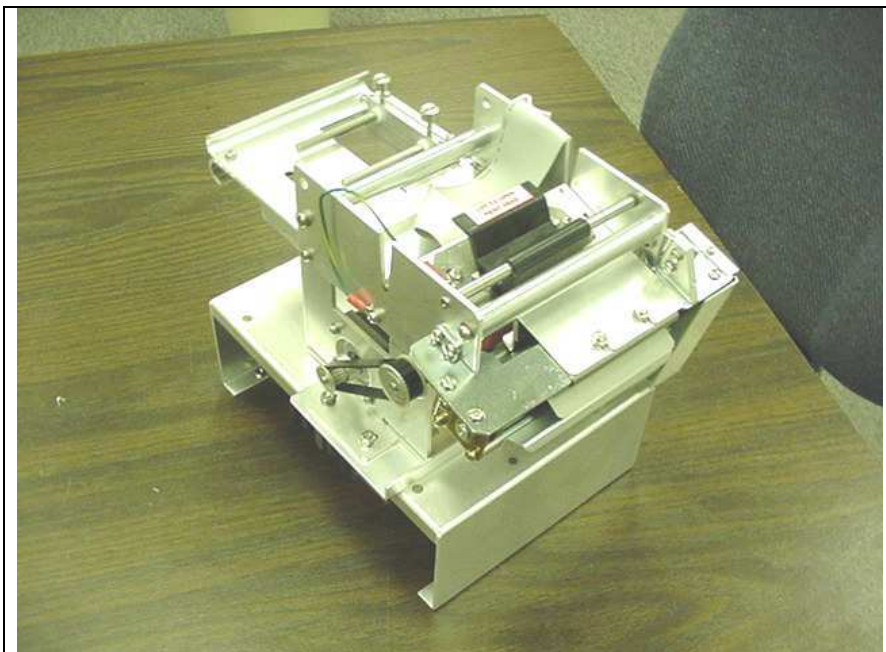
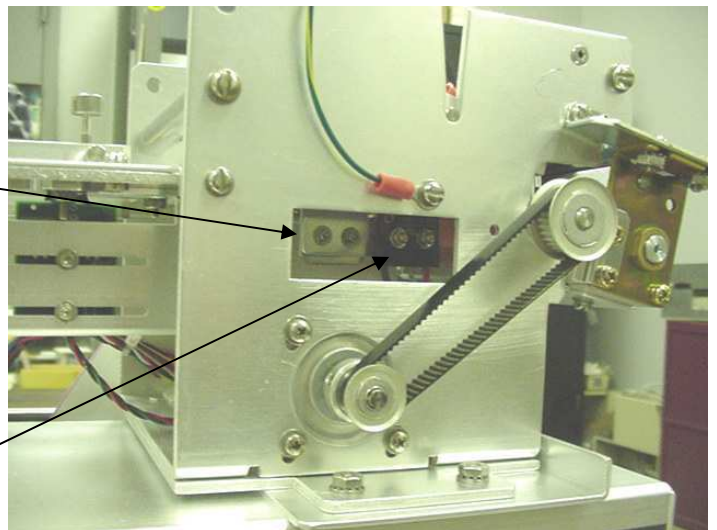Click here to return to > Table of Contents

8.1.1 Load Switch and Cut Opto

There is one micro switch located below the paper guide. This switch is used to sense the presence of ticket stock in the printer. The switch is factory set and adjustment should not be necessary.

The load switch should be positioned such that the printer automatically activates the stepper motor at the proper time when tickets are loaded into the printer. When loading tickets, the stepper motor should turn on when the ticket stops in front of the thermal head. At this point, the ticket will be grabbed out of your hand and fed into the printer.

If the stepper motor activates without ticket stock loaded into the printer or if the ticket stock is properly loaded and the printer does not grab the ticket, the load switch should be adjusted. To adjust the load switch, loosen the two adjustment screws and move the load switch up or down until the desired position is reached. Tighten the two adjustment screws and load ticket stock to ensure that the load switch is properly positioned.

ADJUSTMENT SCREWS

LOAD SWITCH

Click here to return to > Table of Contents

There is one optical device mounted on an aluminum bracket. The opto controls the cut 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 position, use the INC/DEC CUT1/2 settings on the control panel. (see appendix A) The printer should cut the ticket just behind the perforation. The ticket should never be cut in front of the perforation.

If you are not able to get the desired cut position, make sure your ticket stock was manufactured to proper specifications. For major adjustments, loosen the two adjustment screws. Slide the opto forward or back on the opto bracket until the desired cut position is achieved. Tighten the adjustment screws and run a test ticket to ensure the cut position is correct.

OPTO BOARD

ADJUSTMENT SCREWS

OPTO BRACKET
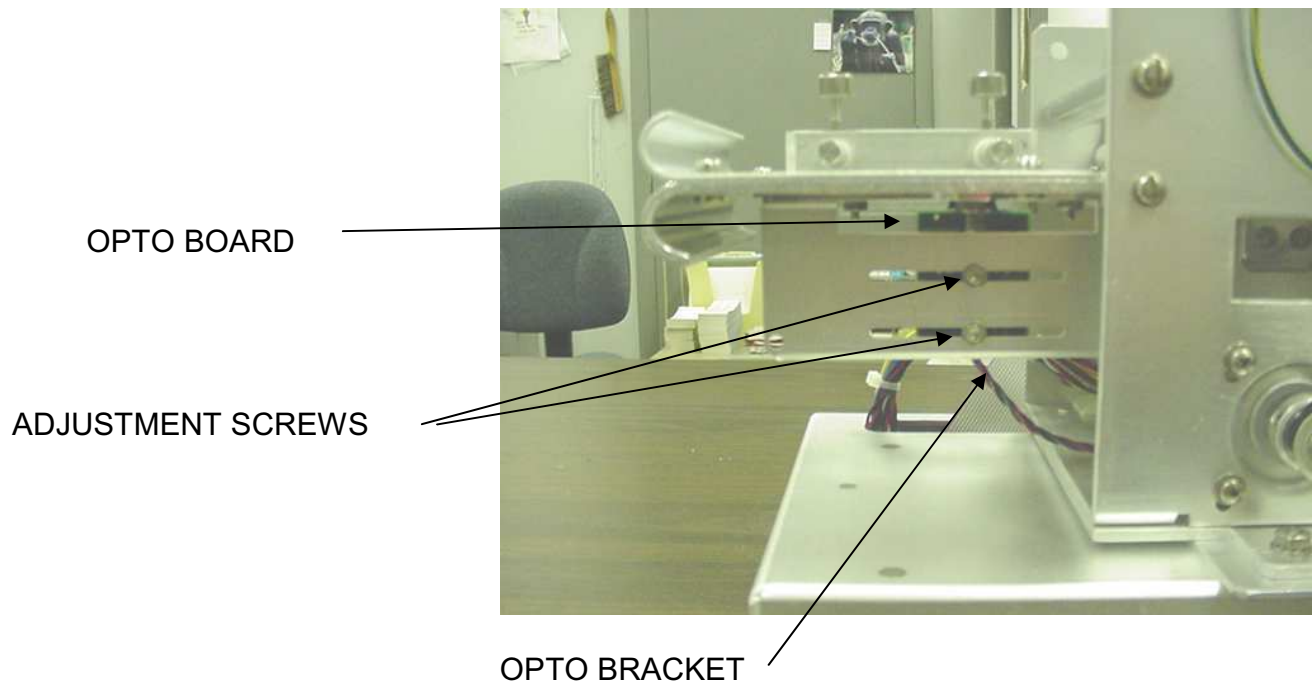
Once a year the optos eyes should be blown off with air. This interval will vary depending upon the environment and the quality of the ticket stock.
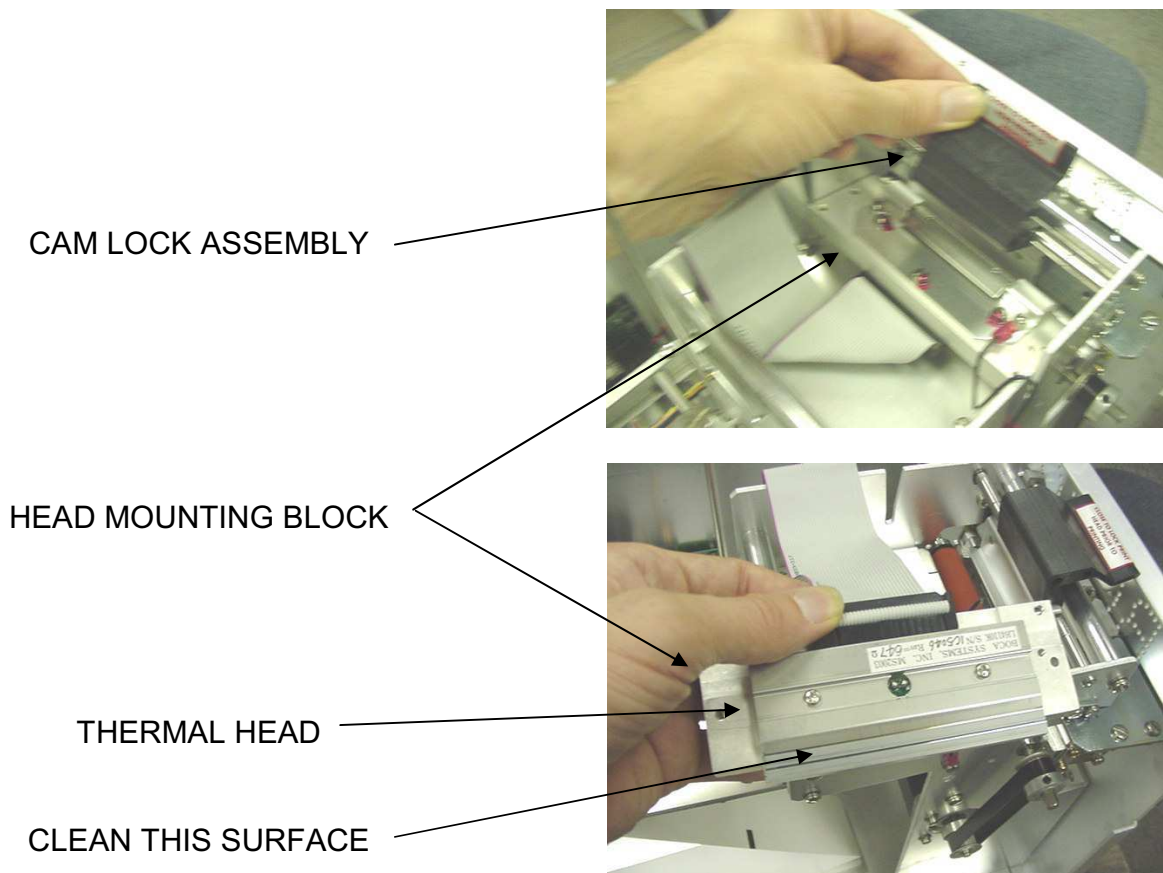
Click here to return to > Table of Contents

8.1.2 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 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 <u>NOT</u> UNPLUG CABLE FROM PRINT HEAD.**
3. Lift up on the cam lock assembly (located above the head mounting block) to remove pressure from the thermal head.
4. Lift up on the head mounting block/thermal head to remove.
5. Clean the thermal print head surface (the side that makes contact with the paper) with isopropyl alcohol.
6. Install the head by reversing the above procedures.
7. Restore pressure to the head by pushing down on the cam lock assembly.
8. The printer in now ready for operation. If the print quality is still poor then the thermal head needs to be replaced.
9. To replace print head remove ribbon connector from print head and then remove print head from mounting block by removing two unmarked screws.

CAM LOCK ASSEMBLY

HEAD MOUNTING BLOCK

THERMAL HEAD

CLEAN THIS SURFACE

FOR PRINTERS WITH RED HANDLED LEVER

1. Make sure power is off and the AC cord is disconnected from the printer.
2. **DO <u>NOT</u> UNPLUG CABLE FROM PRINT HEAD.**
3. Open the red handled lever to remove pressure from the thermal head.
4. Disengage the screws that fasten the thermal print head to the mounting block. Allow the screws to remain in the mounting block. Slide the thermal print head back and remove
5. Clean the thermal print head surface (the side that makes contact with the paper) with isopropyl alcohol
6. Install the head by reversing the above procedures.
7. Restore pressure to the head by closing the red handled lever.

8.1.3 Rubber Drive Roller (Platen)

The rubber drive roller should be cleaned once a year to prevent paper dust from building up on the roller. Clean drive roller with a paper towel and alcohol.

1. Unlock the thermal head and tilt back to gain access to platen.
2. Clean the full length of the platen.
3. Rotate the platen clockwise and repeat step 2; continue in the same manner for one full revolution of the platen.
4. Close or lock the thermal head. Printer in now ready for normal operation. (NOTE: The platen may require more frequent cleaning in dusty environments or when using inferior ticket stock.)


RUBBER DRIVE ROLLER
(PLATEN)
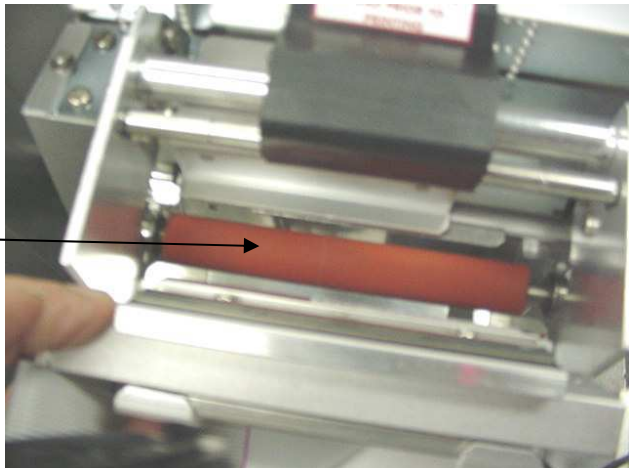
8.1.4 Ticket Width Adjustment

To adjust the paper path for use with a different ticket width, loosen the two thumbscrews located on the adjustable slide block. Slide the block to the fully open position. Insert your ticket stock into the paper guide. Slide the block to the proper ticket width setting and tighten the two thumbscrews.

On reverse adjustable printers (RADJ), the "special head" setting on the control panel must be used to load the new ticket width into the printer's memory. No control panel adjustment is necessary on standard adjustable printers (ADJ). If the printer lacks a control panel, the width adjustment can be made through software. (see the programming guide for both control panel and software adjustments.)

Note: The ticket should move freely in the paper guide, do not pinch the ticket between the adjustable slide block and the opposite paper guide wall.

THUMB SCREWS

ADJUSTABLE SLIDE BLOCK
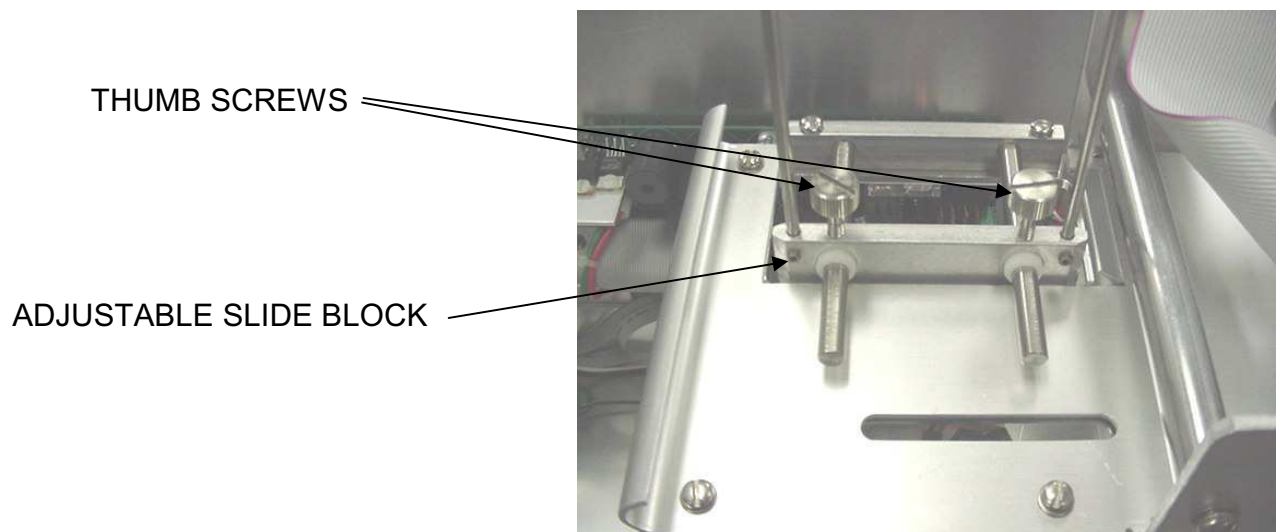
Click here to return to > Table of Contents

8.2 Cutter Assembly

The silent cutter (SC2) system is a fully integrated rotary cutter mechanism powered by a DC motor. The SC2 requires no adjustments and is rated for approximately 750,000 cuts. Please be aware of the following:

Wait five seconds before feeding ticket stock into the printer after power up. During this time the SC2 will rotate once. If ticket stock is fed into the printer before five seconds, a ticket jam could occur.

The SC2 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.

SC2 CUTTER ASSEMBLY
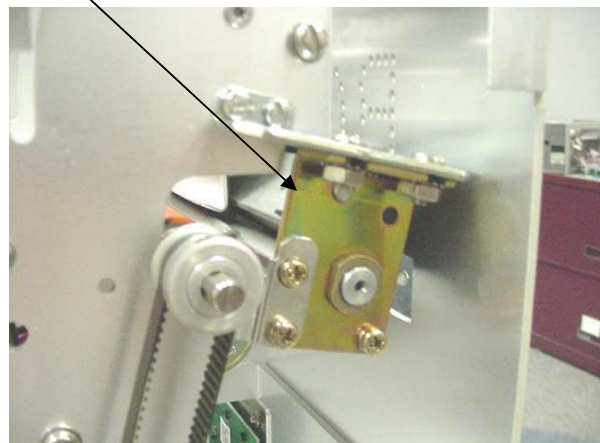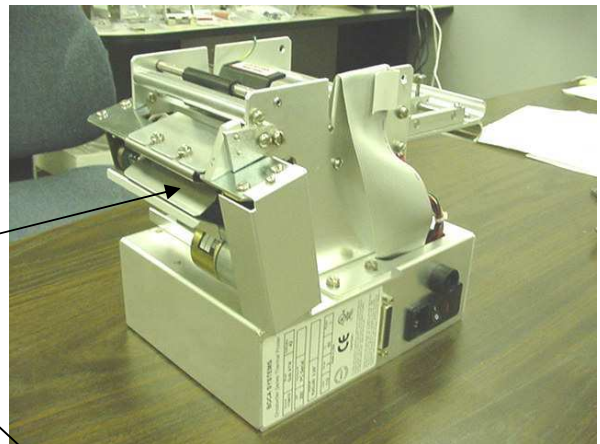
Click here to return to >

8.3 Logic Board

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 and should be returned to the manufacturer if repair is required.

Warning: ALL SERVICE SHOULD BE DONE WITH POWER OFF AND THE AC CORD UNPLUGGED FROM THE PRINTER.

See below picture for main logic board access:
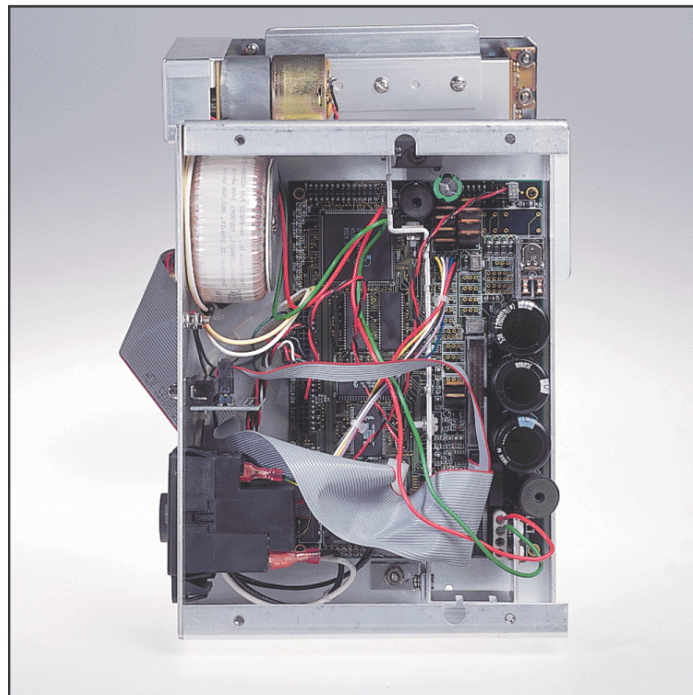
8.3.1 Logic Board (Removal)

1. Gain access to the logic board.
2. Unplug connectors going to the main logic board.
3. Remove the nuts that secure the heat sink to the cabinet.
4. Use a screwdriver to gently wedge the logic board from the fasteners.
5. Lift board and remove.

Click here to return to >

8.3.2 Logic Board (Installation)

1. Align Main Logic Board so that the four mounting holes are above the four fasteners.
2. Press logic board straight down onto the fasteners.
3. Attach connectors going to the main logic board.
4. Secure the heat sink to the cabinet.

8.4 General Cleaning

The interior of the printer should be cleaned whenever there is a visible accumulation of dust. Use a small vacuum for cleaning. Be careful not to jar any of the printer's parts loose.

9.0 Spare Parts List

Refer to the BOCA Systems website at www.bocasystems.com, TECH SUPPORT section for the most current Spare Parts List.

Click here to return to > Table of Contents

PART #	DESCRIPTION
P19-1000	AC CORD
P31-1001	AC FILTER/POWER SWITCH
P49-1010	ADJUSTABLE PAPER GUIDE SLIDER (complete)
P62-1000	ANTI STATIC BRUSH ONLY (2")
P62-1001	ANTI STATIC BRUSH ONLY (3.25")
P62-1002	ANTI STATIC BRUSH WITH MTG. BRACKET (2")
P62-1003	ANTI STATIC BRUSH WITH MTG. BRACKET (3.25")
422226-3	BEZEL, FEED (3.25" VM, AMC paper guide)
422819	BURSTER ASSY. (Mag Mini)
423226-20	CABLE RIBBON, CONTROL PANEL 20" (FLG 22 & 42)
423123	CABLE RIBBON, DATA CABLE PARALLEL (for FGL 22 & 42)
423124	CABLE RIBBON, DATA CABLE SERIAL (for FGL 22 & 42)
422557-16	CABLE RIBBON, THERMAL HEAD (3.25" & 4.0") 16"
422557-18	CABLE RIBBON, THERMAL HEAD (3.25" & 4.0") 18"
422558-16	CABLE RIBBON, THERMAL HEAD (BS2002 & BS3002) 16"
422558-25	CABLE RIBBON, THERMAL HEAD (BS2002 & BS3002) 25"
422355	CABLE, SCSI (6') USED FOR FSP PRINTERS
750732	CABLE, SCSI (3')
432020	CAM LEVER, PAPER GUIDE
421671-1	CONTROL PANEL, FGL 22 & 42
422560-5	CONTROL PANEL DECAL, FGL 22 & 44
422560-6	CONTROL PANEL DECAL, FSP printer
422560-1	CONTROL PANEL DECAL, MINI MB
421671-1MIN	CONTROL PANEL, COVER COMPLETE (Mini MB)
	COVER MTG. HARDWARE (SCREW, FL,LW)
421802-42	COVER, LOGIC BOARD FOR A MINIMB (FGL 20,21,22,40,41,42)
421701-2	COVER, MINI MB (PAPER GUIDE SIDE)
P19-1005	DC HARNESS, MINI MB (FGL 20 & 40)
421682-**	DEFLECTOR, PAPER GUIDE (** Printer Dependent)
P50-1011	DRIVE BELT, 100T
P50-1003	DRIVE BELT, 102T
P50-1012	DRIVE BELT, 105T
P50-1008	DRIVE BELT, 110T

P50-1002	DRIVE BELT, 89T
P51-1007	DRIVE PULLEY, 20T (Large ID .25")
P51-1014	DRIVE PULLEY, 20T (small ID 5mm) Used on printers with LCD displays
P51-1010	DRIVE PULLEY, 22T (Large ID)
P51-1015	DRIVE PULLEY, 22T (small ID 5mm) Used on printers with LCD displays
P51-1011	DRIVE PULLEY, 30T
P51-1002	DRIVE PULLEY, 32T
P51-1003	DRIVE PULLEY, 34T
421597V4MINISC	EXIT DEFLECTOR, VERTICAL (LOWER w/ Mylar)
422076	EXIT DEFLECTOR, VERTICAL (UPPER)
422076-1	EXIT DEFECOTR, MINI PLUS (UPPER)
421993	EXIT TRAY(Only) , SHORT TICKET EJECT
420932C	EXIT TRAY, SHORT TICKET EJECT (complete)
420931-**	EXIT TRAY, STD (** Printer Dependent)
800-250-400	EXIT WHEEL ONLY (RUBBER)
420949-X	EXIT, METAL ROLLER ASSY. (MINI MB)
420929-SC	EXIT, METAL ROLLER ASSY FOR SHORT TICKET EJECT
P29-1002	FUSE, 2A SB
P29-1001	FUSE, 1A SB
423192	GROUND STRAP FOR THERMAL HEAD MOUNTING BLOCK (TOH)
421404	GUARD, CUTTER ENTRANCE
422891	HARNESS, DC FOR MINI MB
422892	HARNESS, AC FOR MINI MB
421359-1	HEAD MTG. BLOCK 2.00"
421359-2	HEAD MTG. BLOCK 3.25"
421359-3	HEAD MTG. BLOCK 4.00"
421359-1TOH	HEAD MTG. BLOCK 2.00" TAKE OUT HEAD ASSY. (Complete)
421359-2TOH	HEAD MTG. BLOCK 3.25" TAKE OUT HEAD ASSY. (Complete)
421359-3TOH	HEAD MTG. BLOCK 4.00" TAKE OUT HEAD ASSY. (Complete)
421887-1	HOLD DOWN PLATE FOR 2.00" FLIP UP DOOR
421888-1	HOLD DOWN PLATE FOR 3.25" FLIP UP DOOR
422006-1	HOLD DOWN PLATE FOR 4.00" FLIP UP DOOR
P40-1012	HOLD DOWN PLATE SCREW
421623- **	HOPPER, SINGLE (** Printer Dependent)
MAX234	IC MAX
421164-1	IDLER ARM EJECT
431010	IDLER ARM EJECT WHEEL
422920-1	INTERFACE BOARD, PARALLEL (for FGL 22 & 42)
422920-PC	INTERFACE BOARD, PC serial, (for FGL 22 & 42)
422920-6	INTERFACE BOARD, SERIAL std (for FGL 22 & 42)
KN-500B	KNOB, DRIVE ROLLER ASSY.
P49-1009	LATCH POST, CABINET (MINI PLUS)
P55-1002	LOCK, MINI PLUS (#305)
FGL42 ***	LOGIC BOARD ASSY, FGL42
430894	LOGIC BOARD, MTG. CLIPS
422414	LOGIC BOARD, Connector for 2 cutter dual
422815-C	MAGNETIC ENCODER MODULE (CENTER)
422815-ISO	MAGNETIC ENCODER MODULE (STD)
P63-1000	MAGNETIC ENCODER CLEANER STRIP
422264-B	OPTO DETECTOR (Burst opto for Mag Mini printer only)
422264-C	OPTO DETECTOR (ATM CUT)
421864-S	OPTO DETECTOR, SEE THROUGH (straight 4 pin connector)
421864-L	OPTO DETECTOR, SEE THROUGH (4 pin connector positioned left)
421864-R	OPTO DETECTOR, SEE THROUGH (4 pin connector positioned right)
421669	OPTO DETECTOR, VERTICAL SEE THROUGH
423256	OPTO JUMPER CABLE (Molex connector to 4 pin female AMP connector)
421428	OPTO MTG. BRACKET
421428-TMPL	OPTO MTG. BRACKET FOR TOP OPTO
	OPTO MTG. HARDWARE (SCREW, FW, LW)
421367-MIC5M4-3	PAPER GUIDE TOP PLATE, 4" fixed for top mounting opto
421367-VMICZZ	PAPER GUIDE TOP PLATE, Adjustable 4" with top mounting optos
422234	PLATEN 1.328" SPECIAL
421385-5M2	PLATEN 2.00" 200 OR 300 DPI (Ghost, Mini, Vmini, MiniMB & Mini Plus)
421508N-2	PLATEN 2.00" 200 OR 300 DPI (Micro, Micro Plus, VM, Dual & Mini Plus SM)

421385-5M3	PLATEN 3.25" 200 OR 300 DPI (Ghost, Mini, Vmini, MiniMB & Mini Plus)
421508W-2	PLATEN 3.25" 200 OR 300 DPI (Micro, Micro Plus, VM, Dual & Mini Plus SM)
421385W-NMIC	PLATEN 3.25" 200 OR 300 DPI (Micro MB)
421508VAR-MPL	PLATEN 4.00" 200 OR 300 DPI (Ghost, Mini, Vmini, MiniMB & Mini Plus)
421508-5M4	PLATEN 4.00" 200 OR 300 DPI (Micro, Micro Plus, VM, Dual & Mini Plus SM)
421508-5M4-MB	PLATEN 4.00" 200 OR 300 DPI (Micro MB)
421370-5M	PRESSURE BLOCK ASSY.
2002	PRINT HEAD, THERMAL (2.00" 200 DPI)
3002	PRINT HEAD, THERMAL (2.00" 300 DPI)
2003	PRINT HEAD, THERMAL (3.25" 200 DPI)
3003	PRINT HEAD, THERMAL (3.25" 300 DPI)
2004	PRINT HEAD, THERMAL (4.00" 200 DPI)
3004	PRINT HEAD, THERMAL (4.00" 300 DPI)
BS135-1	ROLLER CATCH ASSY., MINI PLUS CABINET
P49-1000	SHOULDER SCREW, PAPER GUIDE
421639-4	SILENT CUTTER ASSY. 4"
422710	SILENT CUTTER ENTRANCE DEFECTOR (UPPER) 2"
422710W	SILENT CUTTER ENTRANCE DEFECTOR (UPPER) 3.35" & 4"
P28-1015	SILENT CUTTER MICRO SWITCH
P33-1006	SILENT CUTTER MOTOR (ONLY)
422810	SILENT CUTTER MOTOR GEAR BOX (ONLY)
422371-1	SILENT CUTTER MOTOR PINION GEAR
420816-SC2	SILENT CUTTER MTG. BRACKET (2" wide paper path)
420816-WSC2	SILENT CUTTER MTG. BRACKET (3.25" wide paper path)
420816-5M4	SILENT CUTTER MTG. BRACKET (4.0" wide paper path)
P44-1011	SPRING, PRESSURE ADJ. BLOCK
P41-1014	STAND OFF, CUTTER STRAP MTG.
422590	STEPPER MOTOR ASSY. (FGL20,40,22 & 42)
422590M	STEPPER MOTOR ASSY. (FGL20 through FGL42) Molex
423227	SWITCH, FOR MAG with mtg bracket (used for both feed and burst)
P28-1013	SWITCH, POWER (4 tab)
P28-1012	SWITCH, TEST
421724	TAKE OUT HEAD CAM LOCK ASSY. (Complete)
P49-1006	THUMB SCREW, Paper guide slider plate
421422	TICKET CATCHER, (SET) (Vertical Ghostwriter)
422888-230	TRANSFORMER, 220VAC (Sub Micro / Sub ATM)
422888-115	TRANSFORMER, 110VAC (Sub Micro / Sub ATM)
2N6388	TRANSISTOR

As of December/95 the 422264 opto took the place of the 421056 opto.

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 contact BOCA at
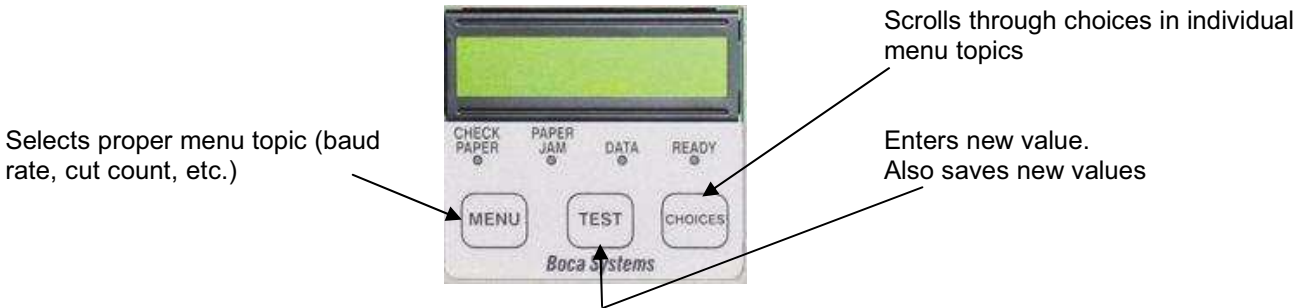Tel: (561) 998-9600   Fax: (561) 998-9609

1.　　NO OPERATION, POWER INDICATOR IS OUT
　　　a. Check the power cord for proper installation at both ends.
　　　b. Check main fuse and replace if blown. (2amp SB for 115V or 1amp SB for 220V)
　　　c. Check that there is power at the AC receptacle.

2.　　POWER IS ON BUT NO OPERATION
　　　a. Check all electrical connections on the printer.
　　　b. If cutter motor does not rotate after power up, See # 6.
　　　c. Unplug the thermal head and turn on the printer. If printer works, replace the
　　　　thermal head.
　　　d Replace the Main logic board.

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 "Thermal Print Head" section.
　　　c. Check that the ticket stock is being loaded correctly.
　　　d. With printer powered on feed the ticket stock into the printer until it stops. If the
　　　　printer does not grab the ticket stock properly, then the load switch position needs
　　　　to be adjusted
　　　e. Replace ticket load switch.
　　　 f. Replace the Main logic board.

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 off opto eyes
　　　c. Check that the platen is clean. Consult "Rubber Drive Roller" section.
　　　d. Replace ticket cut opto.
　　　e. Replace the Main logic board.

5.　　ERRACTIC PRINT POSITION
　　　a. See # 4

6.　　CUTTER BLADE DOES NOT ROTATE
　　　a. Check for blockage in the cutter area.
　　　b. Make sure printer is set for MINI
　　　c. Replace the cutter motor
　　　d. Replace the Main logic board.

7. POOR PRINT OUT (light print out)
   a. Make sure the print head/cam lock assembly if fully locked in the closed position.
   b. Consult "Thermal Print Head" section.
   c. Clean print head. Consult "Thermal Print Head" section.
   d. Adjust print intensity setting via the control panel. (see Appendix A)
   e. Replace thermal head.

8. POOR PRINT OUT (white voids in print out)
   a. Clean print head. Consult "Thermal Print Head" section.
   b. Replace thermal head.

9. NO PRINT OUT
   a. Check head cable for electrical connection at both ends
   b. Check to make sure head cable is plugged in properly into the thermal head.
   c. Replace the thermal head.
   d. Replace the Main logic board.

10. PRINTER SKIPS TICKETS WHILE PRINTING
    a. Check all electrical connections on the printer.
    b. Check position and quality of black mark on the ticket stock.
    c. Clean off opto eyes. Consult "Load Switch and Cut Opto" section.
    d. Replace ticket cut opto.
    e. Replace ticket load switch.

11. PRINTER SKIPS TICKETS AND DIES
    a. See # 9.

12. TICKET JAM ENTERING THE CUTTER AREA
    a. Check all electrical connections on the printer.
    b. Replace cutter assembly.

Click here to return to > Table of Contents

APPENDIX A - CONTROL PANEL

The FGL44 printers allow the user to adjust various printer options through the control panel. To access the control panel menu, press both **MENU** and **TEST** switches simultaneously for about 3 seconds. The LCD will display the **"OPERATOR MENU!"** message to indicate that it has entered the control panel menu mode. Once in this mode, please use the following switches in the manner indicated to choose the proper menu topic and to select the proper setting.

Scrolls through choices in individual menu topics

Selects proper menu topic (baud rate, cut count, etc.)

Enters new value.
Also saves new values

To access and use the OPERATOR MENU, follow these steps:
1. Ticket stock should be loaded into the printer. The LCD window displays **FGL44B# - A#**   (# - number value depends on revision level; B represents the software series level; A# is the font)
2. Press both **MENU** and **TEST** switches simultaneously for about 3 seconds. The LCD window displays **OPERATOR MENU. (**To access the factory menu, press **MENU and CHOICES** instead of **MENU** and **TEST**.) **WARNING: Improper use of the factory menu may disable your printer.**
3. To scroll through the menu topic, use **MENU** stopping on the topic you wish to change.
4. Press **CHOICES** to scroll through choices in the selected topic. **NOTE:** The printer displays a blinking cursor for the values presently stored in the printer.
5. Once you have found the new value you want, press **TEST**. The LCD window displays **EXIT AND SAVE?.** If you wish to save the new value then press **TEST** again.
    6. If you do not wish to save the new value then press **MENU**. The LCD window displays **JUST EXIT?.** Press **TEST** to exit the **OPERATOR MENU** without saving new values or press **MENU** to enter back into the **OPERATOR MENU**.

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

OPERATOR MENU		FACTORY MENU	FACTORY MENU (Continued)
BAUD RATE?		BAUD RATE?	DEC CUT2 COUNT?
MINI/MICRO?		MINI/MICRO?	PRINT MODE?
PRINT SPEED?		PRINT SPEED?	2-SIDED PRINTER?
DIAGNOSTIC MODE?		DIAGNOSTIC MODE?	PARK TICKET?
TICKET TYPE?		TICKET TYPE?	TICKET MODE?
TRANSPARENT MODE?		TRANSPARENT MODE?	PRINT INTENSITY?
STATUS ENABLED?		STATUS ENABLED?	TEST TICKET?
PAPER MODE?		PAPER MODE?	BASEBALL MODE?
INC CUT1 COUNT?		HEAD DPI?	USB?
DEC CUT1 COUNT?		SPECIAL HEAD?	FONT ENCODING?
INC CUT2 COUNT?		PATH TYPE?	MAGNETICS?
DEC CUT1 COUNT?		BUFFER MODE?	SKI MODE?
PRINT MODE?		CLEAR DOWNLOAD?	FLASH ACK MODE?
PRINT INTENSITY?		DEFAULT SETTINGS?	SOFTWARE BUSY?
TEST TICKET?		INC CUT1 COUNT?	BI-DIRECTIONAL?
EXIT AND SAVE?		DEC CUT1 COUNT?	EXIT AND SAVE?
JUST EXIT		INC CUT2 COUNT?	JUST EXIT

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

BAUD RATE? Controls the serial interface baud rate, parity bit, data bits and stop bits.
Here are the following choices:

1200,N,8,1	4800,N,8,1	19200,N,8,1	38400,E,7,1
1200,E,7,1	4800,E,7,1	19200,E,7,1	57600,N,8,1
1200,O,7,1	4800,O,7,1	19200,0,7,1	57600,E,7,1
2400,N,8,1	9600,N,8,1	28800,N,8,1	115200,N,8,1
2400,E,7,1	9600,E,7,1	28800,E,7,1	115200,E,7,1
2400,O,7,1	9600,0,7,1	38400,N,8,1	

MINI/MICRO? Defines the type of printer.
MINI   Is for a printer with a Silent Cutter Assembly (SC2) (Mini, Mini Plus, Mini MB, Dual Mini)
MICRO   Is for a printer without a SC2 (Micro, Micro Plus, Micro MB, Dual Micro)

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? Your choices are **YES** or **NO**. **NO is factory default. (**Please consult your Programming Guide)

TICKET TYPE? Factory setting. Do not modify.

STATUS ENABLED? Sets status response protocols.

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
USB/PAR	Enables USB and bi-directional parallel
USB/SER/PAR	Enables USB, bi-directional parallel and serial status responses

TRANSPARENT MODE? **YES** (Enabled) or **NO** (Disabled). (Please consult your Programming Guide)

PAPER MODE? Is generally used only for test purposes. It may also be used on roll stock with no black marks on the ticket. Your choices are **YES** (Enabled) or **NO** (Disabled). **NO is factory default.**

INC CUT1/2 COUNT? moves the cut/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.** (1 is for path one; 2 is for path 2 [dual only])

DEC CUT1/2 COUNT? moves the cut/tear position to the 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.**

PRINT MODE? Defines the automatic ticket length calculation feature.
THERMAL The printer will feed out and then retract a ticket during this measurement.
RIBBON The printer will feed out one blank ticket. This mode is used for label stock to prevent peeling.

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 |

TEST TICKET? Defines they type of self-test ticket printed.

STANDARD	Normal self test ticket pattern **(factory default)**
CONFIGURATION 1	To print configuration settings if printing on a 1" wide ticket
CONFIGURATION 2	To print configuration settings if printing on a 2" wide ticket
CONFIGURATION 3	To print configuration settings if printing on a 3" wide ticket
CONFIGURATION 4	To print configuration settings if printing on a 4" wide ticket

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.
If you with to exit without saving the new value then press **TEST**, if not press **MENU**.