

Operators and Technicians Manual

Industrial, Direct Thermal Gaming/Lottery Machine Voucher Printer



PSA-66-ST (RS232 Interface)

PSA-66-001N (Netplex Interface)

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PSA-66-ST Operators and Technicians Manual

Industrial, Direct Thermal Gaming/Lottery Machine Voucher Printer

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05/21/2004

MNL-000001

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1 Product Overview

The PSA-66-ST is an advanced thermal printer capable of creating high quality complicated output with a minimum of development and effort on the part of the user. The printer module supports both serial and a Netplex current loop interface to allow it to operate in any standard slot machine on the market.



NOTE: PSA-66-ST refers to both the PSA-66-ST (RS232) and PSA-66-001N (Netplex) versions of the printer.

Features of the PSA-66-ST include:

- May be mounted on an angle or horizontally
- Simple paper loading—no loose parts
- Variable paper capacity via paper trays—200, 400, and 600 ticket trays
- Promotional printing capabilities
- Page mode printing with TCL printer language
- Line printer capability
- High quality laser-like san serif fonts in multiple sizes
- Advanced graphics printing
- Windows® connectivity
- 3 inch per second print speed
- 2k input buffer
- Wide temperature range operation
- Standard and customized serial interfaces available—RS232 and Netplex

2 Operator Interface

2.1 Operator Controls and Indicators

The PSA-66-ST printer is equipped with two status indicators and two operator controls to allow the operator to know the status of the printer at all times.

The status indicators are:

- The front bezel light
- The STATUS and ERROR LEDs on the keypad

The operator controls for the printer are:

- The FEED button
- The Platen Release Lever

Figure 2-1 below illustrates the location of these controls and indicators.

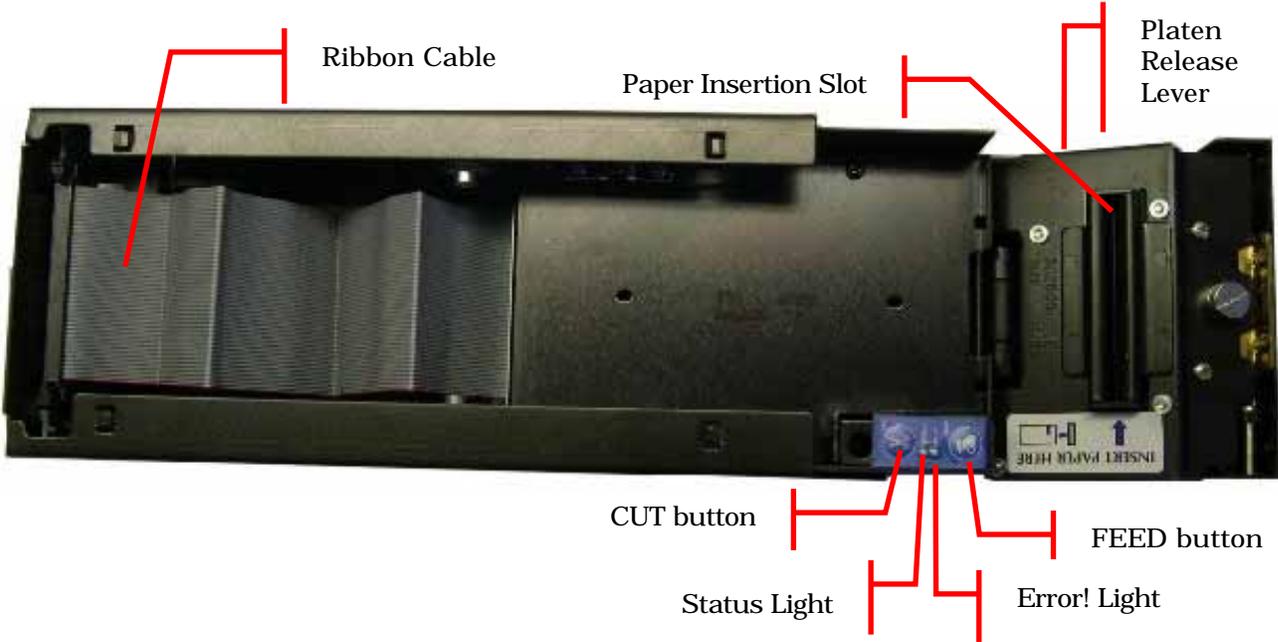


Figure 2-1 Operator Controls and Indicators

2.2 Printer Sensor Functions

There are six primary sensor functions on the PSA-66-ST printer. These sensors work with the game firmware to provide reliable, trouble-free operation. Any error conditions as a result of these sensors are indicated by the front bezel light and keypad LEDs.

Table 2-1 Sensors

| Sensor | Description |
|------------------------|--|
| Paper Out | The Paper Out sensor is located within the pivoting printer head module. It terminates the print operation when paper has run completely out and for proper form registration. The PSA-66-ST will cease printing and feeding operations once it detects a Paper Out condition. A Paper Out condition is corrected automatically by loading more paper to the unit. |
| Paper Low | The Paper Low sensor is located in the paper well. It determines when the paper stack has approximately 30 tickets remaining. A Paper Low condition will be automatically reset once a stack with a greater height has been loaded. Paper low sensing only runs when the system is at idle and takes a few seconds to detect the new paper level. |
| Paper Taken | The Paper Present sensor is located in the presentation chute of the unit. It determines when the customer has actually taken their cash-out voucher. |
| Paper Jam | The printer supports detection of a Paper Jam condition through use of the Paper Present sensor. |
| Printer Platen Engaged | The Printer Platen Engaged sensor detects when the printer platen is in use. |
| Printer Open | The PSA-66-ST printer uses the Printer Open sensor to inform you that the printer is open. |

2.3 Bezel Operation

The front bezel display allows the operator to determine the state of the printer on the casino floor, at a distance, without disturbing the game. The table below lists the various conditions indicated by the bezel.

Table 2-2 Bezel Display Status

| Bezel Display | Status |
|---------------|--|
| Solid On | Printer Idle and Ready |
| Slow Blink | Paper Low or Printer Error |
| Fast Blink | Ticket Printing and/or Ticket in Chute |
| Off | Printer Power Off |

2.4 Keypad LED Operation and Printer Status Conditions

The keypad LEDs provide a more detailed reporting of system status. Table 2-3 below lists the status of the keypad LEDs in a variety of status.

Table 2-3 Keypad LEDs Status Reporting

| Condition | Status_LED | Err_LED |
|--------------------------|------------|------------|
| Unit in Powered Off | OFF | OFF |
| Unit Ready | ON | OFF |
| Unit Flushed | ON | ON |
| Paper Out | OFF | ON |
| Head Up | OFF | ON |
| Temperature Error | OFF | MED BLINK |
| Voltage Error | OFF | SLOW BLINK |
| Print Head Error | ON | FAST BLINK |
| Missing Black Index Mark | ON | FAST BLINK |
| Paper Jam | ON | FAST BLINK |

2.5 Printer Errors

Although there are a variety of error conditions that can occur, most printer errors are a result of the printer running out of paper or the operator raising the head up lever. This section lists the possible errors which can occur, and how each condition is remedied.

Table 2-4 Errors and Error Descriptions

| Error | Error Description | Remedy |
|-------------|--|--|
| Paper Out | Results when the printer detects that paper is not present. The printer scans for a Paper Out condition at all times. | Load a new paper stack. |
| Head Up | Results from lowering the head release lever. | Raise the blue lever on the side of the unit. |
| Temperature | Results when the printer is in an over temperature condition. If the printer is operating in an environment where the ambient temperature is roughly room temperature, this error would most likely be the result of a hardware problem. | The printer will automatically resume operation after the detected head temperature reaches legal operation limits. |
| Voltage | Results if the printer detects a power supply voltage (+24VDC to +25VDC) outside of legal limits. This error could be the result of a poor cable connection. | The printer will automatically resume operation after the power supply is detected within legal limits. |
| Print Head | Results when the printer senses an internal error due to connectivity or interfacing problem with the thermal print head. This can be a result of a cable problem between the main controller board and the printer engine. | The printer will remain in this error state until the power is cycled or the unit is reset. If the problem persists, the printer will require service. |

| Error | Error Description | Remedy |
|--------------------------|---|--|
| Missing Black Index Mark | Results if the paper type selected is indexed paper, and while feeding paper or printing a black mark is not seen within approximately 10" of paper. This error alerts the user to the presence of the wrong kind of paper in the printer or that the paper was inserted in the wrong direction (so the black mark index is rotated 180 degrees). | Raise the head release lever (presumably to change the paper). |
| Paper Jam | Results the printer detected an error in the paper path for presenting the ticket to the customer. | Open the printer head and inspect for a jammed ticket. |

2.6 Paper Loading

In general, the only printer service required is to load new paper stacks. The automatic paper loading feature simplifies this process to essentially two steps; putting the paper stack into the printer paper tray and presenting paper to the paper feed slot in the printer.



NOTE: The platen release lever, the FEED button, and the CUT button are merely provided as supports for this process. These usually are not required to load paper.

To load paper:

1. Pull open the printer drawer until the paper tray is completely accessible. Place the paper stack in the printer as indicated by the band around the stack and the label in the bottom of the paper tray.



Figure 2-2 Load a Paper Stack

2. Insert paper into the Paper Loading Slot.

The printer will automatically pull through a form or two, leaving it registered at the top of a form.



Figure 2-3 Feed Paper into Slot

3. Remove the excess tickets from the printer.

2.7 Feeding Paper

The printer is designed to run with black mark indexed paper.

Use the FEED button to feed paper into the printer. Each long press (~1 second) of the FEED button will result in paper advancing to the top of the next form.

2.8 Cut Button Functions

The CUT button performs no function in the PSA-66-ST printer.

2.9 Self Test

Press the FEED button during power up or reset to run a self test. This self test prints a configuration ticket if the test passes successfully. The test ticket (illustrated in Figure 2-4) contains important information on how the unit is configured.

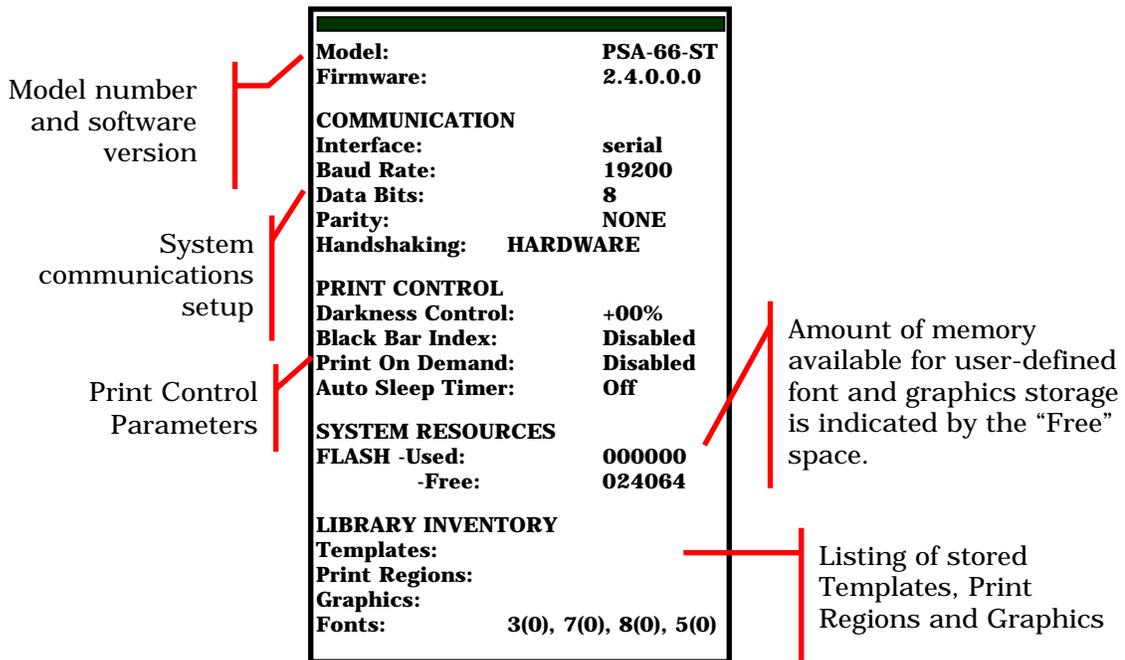


Figure 2-4 Sample Configuration Ticket

2.10 Clearing a Paper Jam

The printer is designed to operate reliably with a minimum of paper jamming. If you need to clear a paper jam, follow the instructions below. After you clear a paper jam, perform this operation in reverse to load paper.

When clearing a paper jam:

- Ensure that all paper paths from the entry point at the back of the paper well, through the printer and cutter and the presentation chute are clear of paper or obstructions.
- Use the platen release lever located on the side of the unit.
- Use the rotary screw at the top of the printer.
- Do not allow a screw driver or other probing object to come into contact with the printer. This can cause permanent damage.

To clear a paper jam:

1. Undo the Mechanism Fastening Screw at the top of the printer plate at the front of the printer.



Figure 2-5 Undo the Screw

2. Swivel the printer open to expose the paper path.

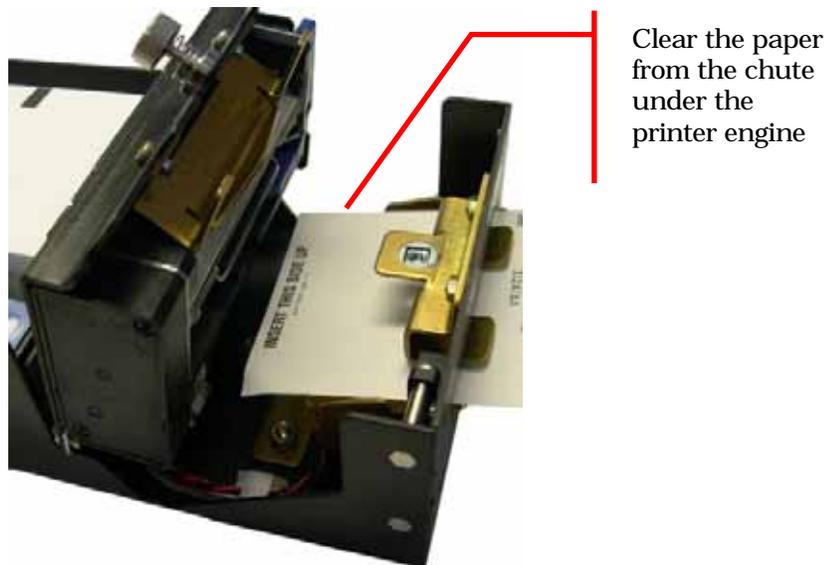


Figure 2-6 Open the Lid

3. Remove any jammed paper.

3 Printer Service

Should the printer require service outside of the game, the sliding module (which includes the majority of the electronics) may be easily removed and replaced.

3.1 Removing the Inner Module

The sliding module of the PSA-66-ST may be removed from its stationary module by following the simple steps given below. To re-install the sliding module, repeat the steps in reverse order.



Warning: Turn off the power. The printer is not hot-connectable. Any attempt to hot connect can permanently damage the printer!

To remove the inner module:

1. Turn off the power.
2. Slide the unit open until it locks in the open position.



Figure 3-1 Slide the Unit until It Locks

3. If you can access the Ribbon Cable which attaches the sliding module to the stationary module, go to the next step.

If you cannot access the Ribbon Cable due to the paper tray being in the way, grab the back of the paper tray by the back fin and rock it forward, pulling it out of the unit.



Figure 3-2 Pull Out Paper Tray

- 4. Release the Ribbon Cable by spreading the finger latches at the rear of the unit.



Figure 3-3 Eject the Ribbon Cable



NOTE: The black end of the ribbon cable connects to the rear daughter board. The gray end of cable connects to main controller.

- 5. Press in the Release Lever under the front of the sliding module to release the sliding printer module.

This will release the locking mechanism. You can now pull the unit out of the stationary module.



Figure 3-4 Press the Release Lever

6. Remove the printer from the machine.

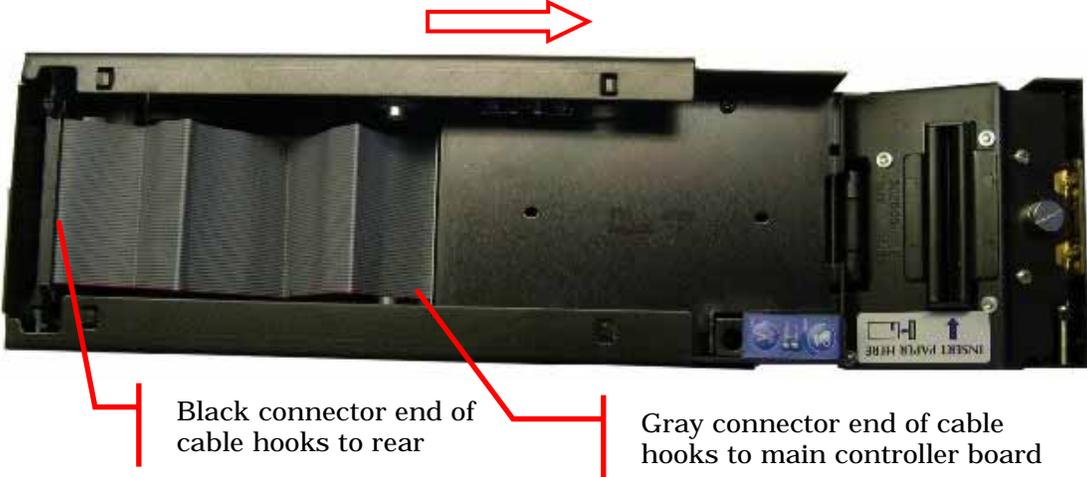


Figure 3-5 Remove the Printer

4 Ports and Dip Switches

This section details the connector pin outs on the PSA-66-ST printer.

4.1 Overview

There are two versions of the PSA-66-ST printer:

- PSA-66-001N Netplex Printer
- PSA-66-ST RS232 Printer

4.2 PSA-66-001N Netplex Printer

4.2.1 Netplex Front Bezel Port



Figure 4-1 PSA-66-001N Front Bezel Port

This table below lists information on the bezel port. The bezel port drives a printer front action alert light built into the front bezel.

Table 4-1 Netplex Front Bezel Port Pins

| Pin | Function |
|-----|------------------|
| 1 | Modulated +24VDC |
| 2 | No connect |
| 3 | GND |

4.2.2 Netplex Cable

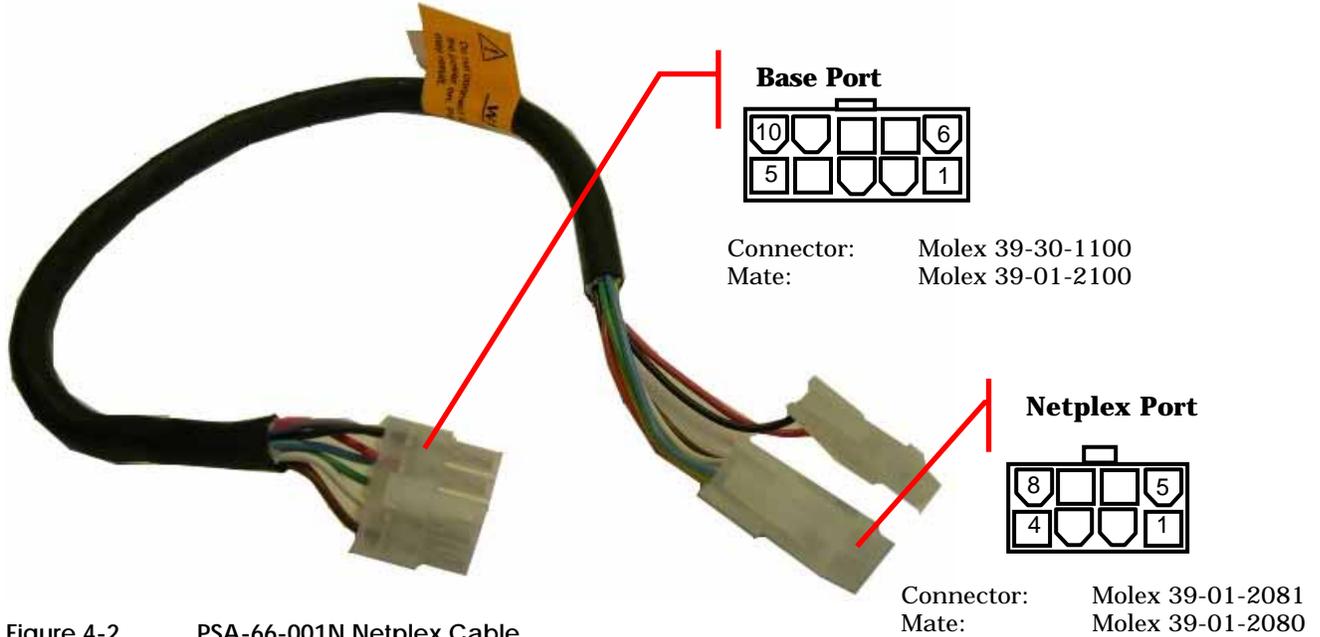


Figure 4-2 PSA-66-001N Netplex Cable

Table 4-2 Netplex Base Port Pin Out

| Pin | Function |
|-----|------------------|
| 1 | MRESET |
| 2 | Netplex TX |
| 3 | +13V |
| 4 | Netplex RX |
| 5 | GND |
| 6 | +24VDC |
| 7 | GND |
| 8 | +24VDC |
| 9 | Modulated +24VDC |
| 10 | GND |

Table 4-3 Netplex Port Pin Out

| Pin | Function | I/O |
|-----|------------|-----|
| 1 | MRESET | I |
| 2 | Netplex TX | I |
| 3 | +13V | - |
| 4 | Netplex RX | O |
| 5 | GND | - |
| 6 | +24VDC | - |
| 7 | BGND | - |
| 8 | NO CONNECT | - |

4.3 PSA-66-ST RS232 Printer

4.3.1 RS232 Front Bezel Port

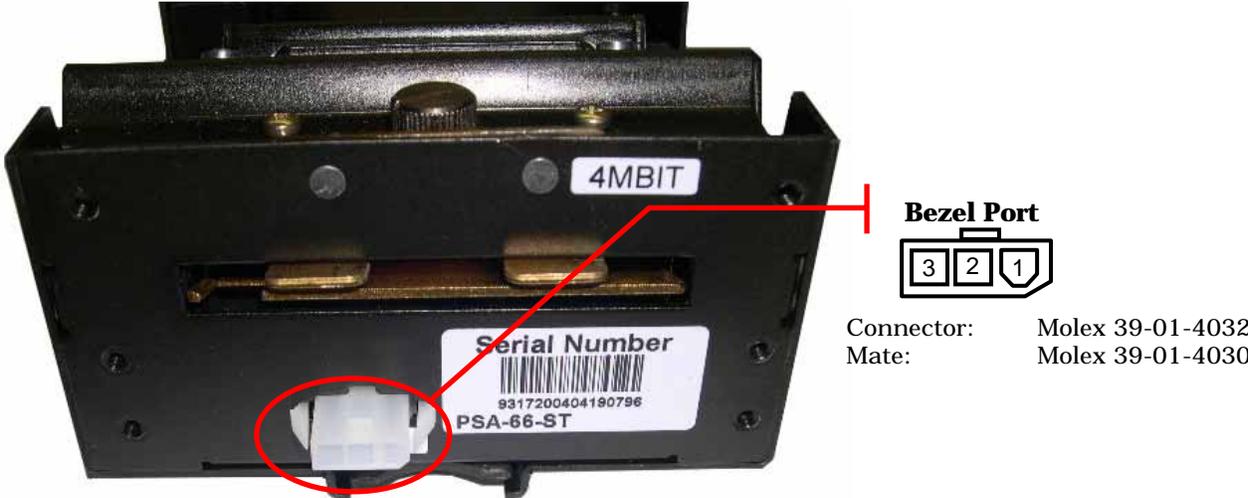


Figure 4-3 PSA-66-ST Front Bezel Port

The table below lists information on the bezel port. The bezel port drives a printer front action alert light built into the front bezel.

Table 4-4 RS232 Front Bezel Port Pins

| Pin | Function |
|-----|------------------|
| 1 | Modulated +24VDC |
| 2 | No connect |
| 3 | GND |

4.3.2 RS232 Cable

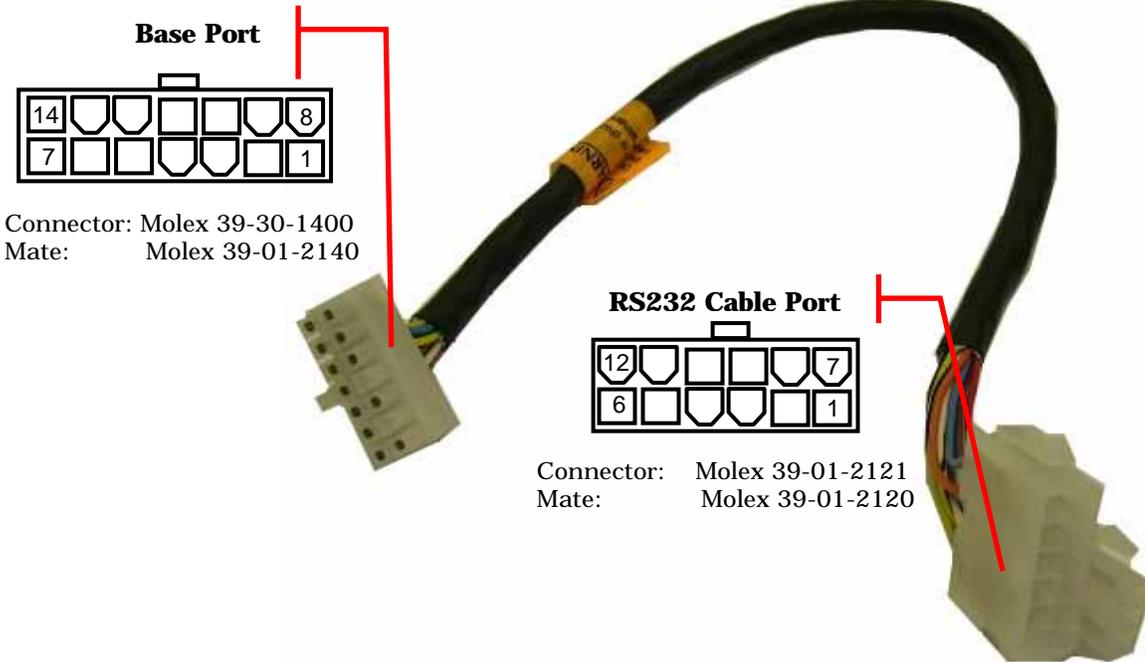


Figure 4-4

PSA-66-ST RS232 Cable

Table 4-5 RS232 Base Port Pin Out

| Pin | Function |
|-----|--------------------------|
| 1 | MRESET |
| 2 | Netplex TXD |
| 3 | +12 VDC (RS232 optional) |
| 4 | Netplex RXD |
| 5 | GND |
| 6 | +24 VDC |
| 7 | GND |
| 8 | +24 VDC |
| 9 | Modulated +24VDC |
| 10 | GND |
| 11 | RS232 RXD |
| 12 | RS232 TXD |
| 13 | DTR |
| 14 | RTS |

Table 4-6 RS232 Cable Port Pin Out

| Pin | Function | I/O* |
|-----|--------------------|------|
| 1 | MRESET | I |
| 2 | TXD | O |
| 3 | +12 VDC (optional) | - |
| 4 | RXD | I |
| 5 | GND | - |
| 6 | +24VDC | - |
| 7 | GND | - |
| 8 | +24VDC | - |
| 9 | NO CONNECT | - |
| 10 | NO CONNECT | - |
| 11 | DTR | O |
| 12 | RTS | O |

4.3.3 RS232 Dip Switch Settings

The printer has a set of 10 dip switches which appear through an access slot on the bottom of the stationary module. The dip switches are used to select the communications protocol. The switches **must** be set according to the table below.



NOTE: Be sure to set dip switch 7 properly in order to maintain future compatibility between machines.

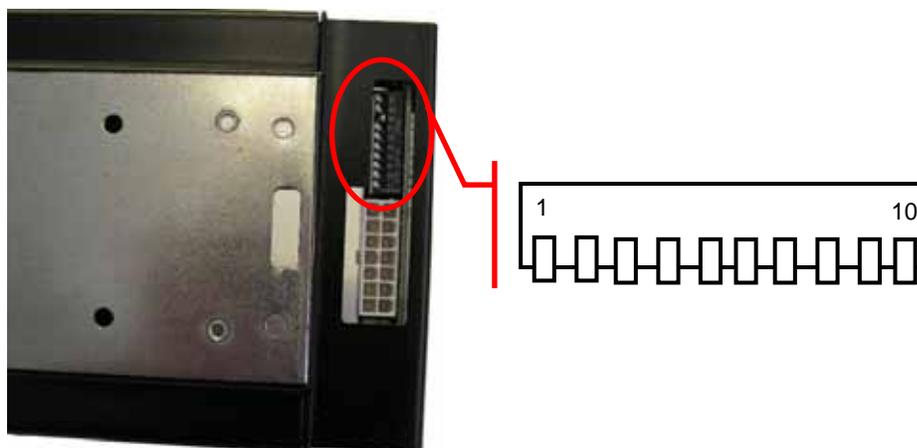


Figure 4-5 PSA-66-ST RS232 Dip Switches Bottom View

Table 4-7 PSA-66-ST RS232 10 Position Dip Switch Settings

| POS | Function | Configuration | |
|----------------------------|--|--|--|
| 1 2 3 4 5 6 | Reserved | OFF | these switches must always be left off |
| 7 | INTERFACE SELECT !Note: this must be set for future compatibility | OFF ON | Not allowed RS232 |
| 8 9 | COMMUNICATIONS PROTOCOL | 9=OFF 8=OFF 9=OFF 8=ON 9=ON 8=OFF 9=ON 8=ON | illegal setting, do not use serial 38400,N,8,1 serial 9600,N,8,1 serial 57600,N,8,1 |
| 10 | HANDSHAKING | OFF ON | XON/XOFF + RTS hardware handshake RTS hardware handshake only |

Appendix A General Specifications

| | | | |
|--------------------------|----------------------------|--|--|
| Printer | Dimensions | 114mm width x 286mm depth x 68mm height* | |
| | Weight | 7 lbs | |
| | Power Requirements | 24VDC @ 2.7A avg. (4.0A peak with 60% Gaming Ticket) | |
| | Print Head Life | 50km (320,000 tickets) *Using US currency size ticket | |
| Printing | Method | Direct thermal, top coated, fan-folded and perforated | |
| | Thickness | 4.5 mil, 1 color/2 colors | |
| | Width (mm) | 62mm (true near-edge printing) | |
| | Storage | 200, 400, and 600 tickets depending on ticket tray | |
| | Ticket Trays | Interchangeable. 200, 400, and 600 ticket tray with quick release bar | |
| | Template Capacity | Up to 30 Coupons | |
| | Graphic Storage | 256k | |
| Specifications | Print Speed | 75mm/second (3 inches per second) | |
| | Complete Print and Present | 2.2 seconds | |
| | Print Resolution | 8 dots/mm (203 dpi) | |
| | Firmware | Application completely in-circuit re-programmable (via Flash) | |
| | Self Test | Yes | |
| | User Interface | 2 LED indicators, FEED button | |
| Paper | Loading | Automatic hands free | |
| | Paper Feed | Manual | |
| | Width | 66mm (dollar bill size) | |
| | Length | 156mm (dollar bill size) | |
| | Sensors | Paper Low sensor | |
| | | Paper Out sensor | |
| | | Printer Drawer Open sensor | |
| | | Ticket Taken sensor | |
| | | Ticket Jam sensor | |
| | | Ticket In Chute sensor | |
| Black Mark sensor | | | |
| Host controllable buzzer | | | |
| Characteristics | Fonts | 4 (5.5 cpi, 7.5 cpi, 10 cpi, 20 cpi) | |
| | Font Scalability | May be independently scaled from 1x - 7x in both height and width | |
| | Barcodes | Interleaved 2 of 5, Code 39, UPC-A, UPC-E, UPC-E+2, UPC-E+5, Codabar, EAN-13, EAN-8, Code 128, MSI | |
| | Data buffer | 8K | |
| | Memory | 512k Flash & 128K Ram | |
| | Bezel Control | 2 High Current Ticket Printing Bezel Control Ports | |

| | | |
|--------------------------|-----------------------|--|
| Print Modes | Printer Languages | TCL Printer Language (Page Description Language) Subset of ESCP2 printer language |
| | Page Mode | Full Page Mode Printing (Simultaneous 4 Orientation Printing: 0°, 90°, 180°, 270°) |
| | | Line and Box Draw Printer Resident |
| | | Bitmap Graphics |
| | | PCX Printer Resident Graphics (Stored in Flash) |
| Interface | | Bi-Directional RS232C, Full Handshaking Set Netplex |
| Physical Characteristics | Dimensions | 114mm W x 286mm D x 68mm H |
| | Weight | 7 lbs |
| Environmental | Operating Temperature | 0°C to 70°C |
| | Storage Temperature | -20°C to 85°C |
| | Operating Humidity | 5 to 95% RH |
| Reliability | Maintenance | No user maintenance required |
| | | Printer completely removable with quick release bar |

Appendix B Paper Specifications

Please contact your sales representative for more information on approved papers.



NOTE: Use Only Approved Paper in the PSA-66-ST and PSA-66-001N Printers. Use of improper paper may cause damage to the device and will void the printer's warranty.

Nominal paper thickness: 4.5mil
 Paper dimensions: 65mm x 156mm (width dimension ± 1 mm)

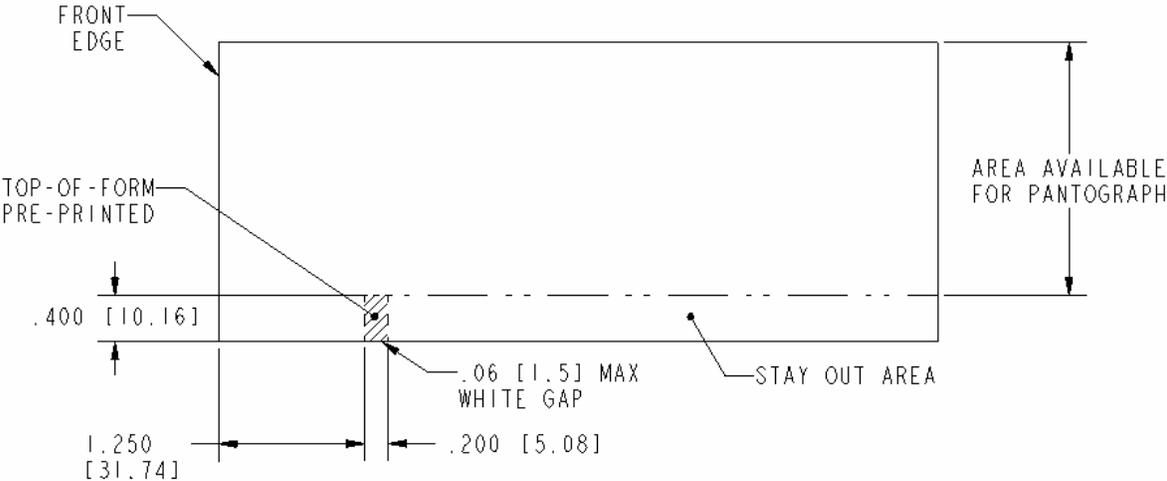


Figure B-1 Ticket Dimensional Specifications

Appendix C Part Numbers – Printers and Spares

This appendix provides the part number and description of each printer and spares.



Note: Part numbers effective June 1, 2004.

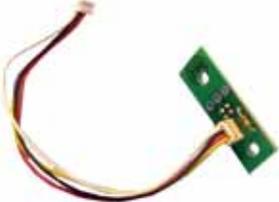
| Printer | | |
|-------------|-------------------------------|--|
| Part Number | Description | |
| 220-00003 | PSA-66-001N Printer, Netplex* |  |
| 220-00016 | PSA-66-ST Printer, RS232 |  |

*Netplex equipped printers meet the Netplex specification of International Game Technology Corporation.

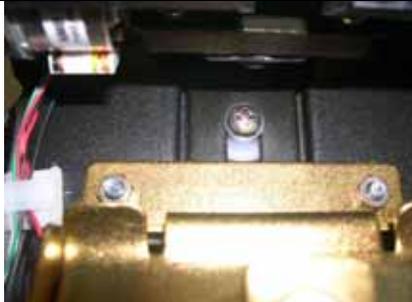
| Spares | | |
|-------------|---|---|
| Part Number | Description | |
| 100-00001 | Stationary Module, Complete With All Parts, Netplex |  |

| Spares | | |
|-------------|---|---|
| Part Number | Description | |
| 100-00003 | Stationary Module, Complete With All Parts, RS232 |  |
| 100-00007 | Stationary Unit, Chassis Only Assembly |  |
| 100-00008 | Sliding Unit, Chassis Only Assembly |  |
| 310-00035 | 200 Ticket Tray |  |
| 310-00036 | 400 Ticket Tray |  |

| Spares | | |
|-------------|--|---|
| Part Number | Description | |
| 310-00037 | 600 Ticket Tray |  |
| 400-00005 | Printer Mechanism (for Printers with Serial # starting at 0) |  |
| 400-00006 | Printer Mechanism (for Printers with Serial # starting at 9) |  |
| 140-00004 | PCB, Motherboard, Netplex Firmware |  |
| 140-00026 | PCB, Daughterboard, Netplex |  |
| 140-00005 | PCB, Motherboard, RS232 Firmware |  |

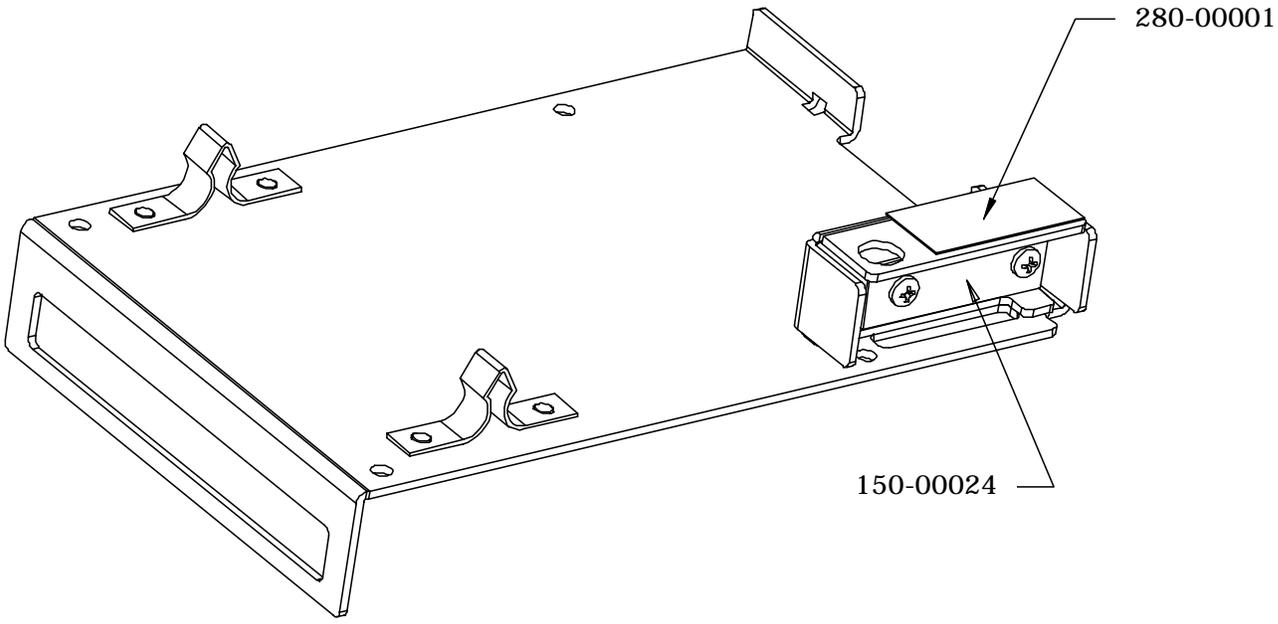
| Spares | | |
|-------------|---|---|
| Part Number | Description | |
| 140-00027 | PCB, Daughterboard, RS232 |  |
| 150-00024 | PCB and Cable, Paper Low Assembly |  |
| 150-00010 | Cable, Ribbon, 50pin To 50pin |  |
| 150-00009 | Cable, Netplex Communications And Bezel Port |  |
| 150-00012 | Cable, RS232 Communications And Bezel Port |  |
| 150-00008 | Cable, Front Bezel Port |  |
| 140-00018 | Cable Assembly, Ticket Taken (Requires Gold Bursting Bar Set) |  |

| Spares | | |
|-------------|---|---|
| Part Number | Description | |
| 280-00001 | Membrane Control Panel |  |
| 486-00017 | Chassis Fasteners Hardware Kit | |
| 485-00000 | Spring, "W" Shape, Bulk Bag | |
| 485-00001 | Spring, Release Lever Extension, Bulk Bag | |
| 485-00002 | Spring, Ground Flat, Bulk Bag | |
| 360-00006 | Packaging, Inner Box | |
| 360-00007 | Packaging, Master Box | |
| L2300 | Print Head Release Lever (use with Part # 390110) | |
| LTP2000 | Head Up Switch (use with Part # 390110) | |
| 378-00003 | Print Head Release Lever White Clip (use with Part # 390110) | |
| 150-00006 | 16 Pin to 16 Pin Print Mechanism Cable (use with Part # 390110) |  |
| 150-00013 | Cable, Evaluation, PSA-66-ST RS232 |  |
| 350-00031 | 24V Power Supply (use with Part #s 5005000, 5005001, 5005007) | |
| 5005000 | Download Support Kit, PSA-66 XXX | |

| Spares | | |
|-------------|--|---|
| Part Number | Description | |
| 5005001 | Netplex Test Kit, PSA-66 | |
| 5005002 | Gold Bursting Bar Set (Bottom Guide, Blade Bracket, Top Bracket) | |
| 310-00040 | Guide, Bottom, Gold |  |
| 310-00041 | Bracket, Blade, Gold |  |
| 310-00042 | Bracket, Top, Gold |  |
| 370-00001 | Stationary Guide, Teflon -LH |  |
| 370-00002 | Stationary Guide, Teflon -RH |  |

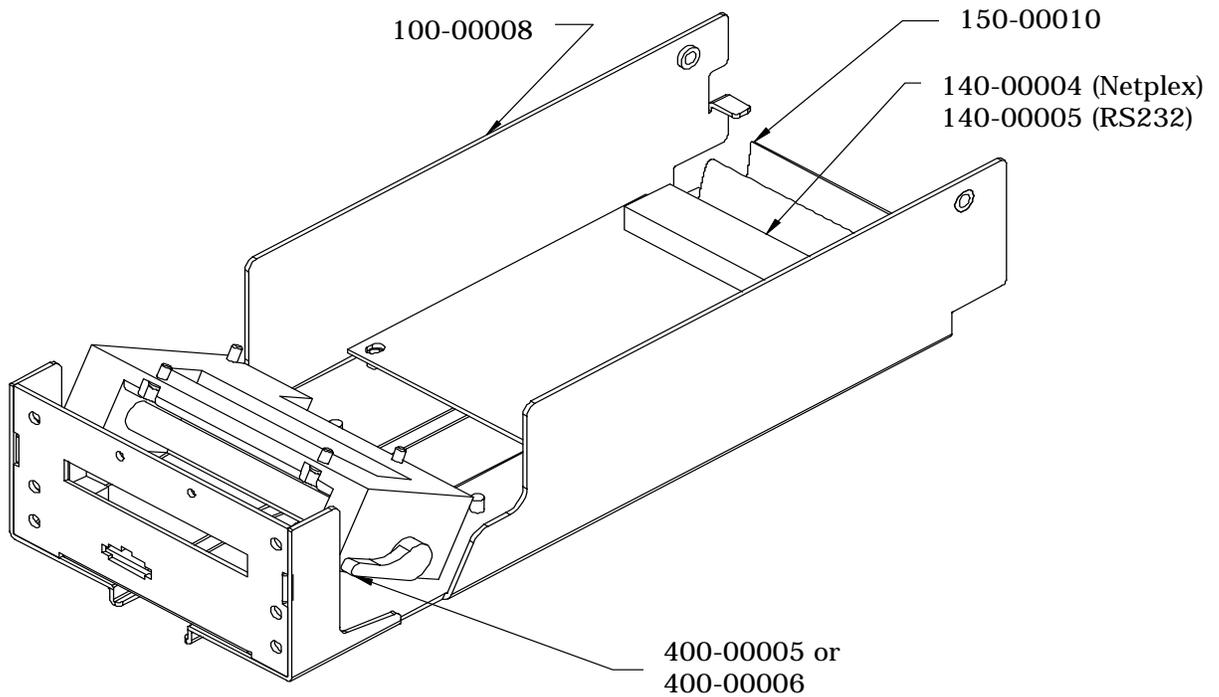
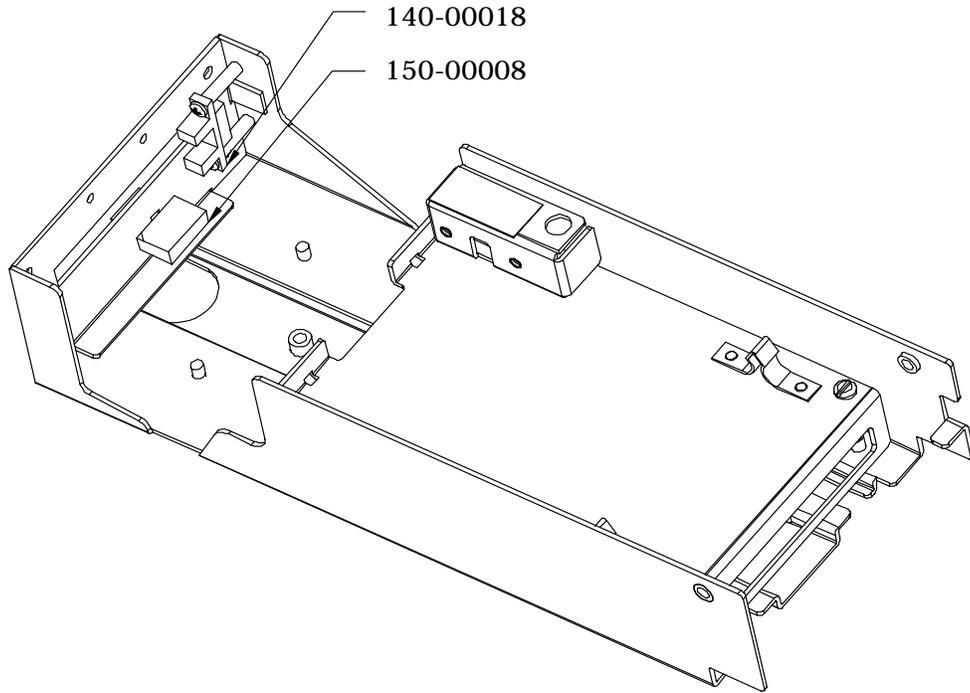
PSA-66-ST

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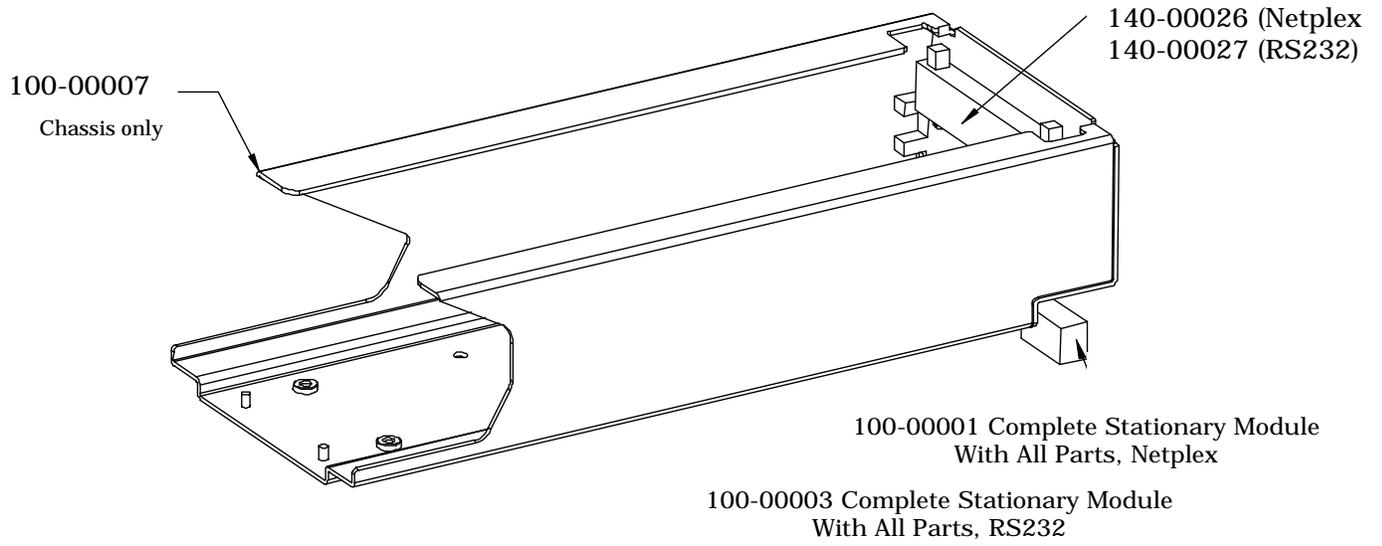
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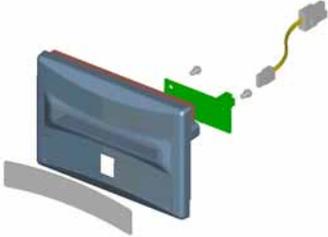
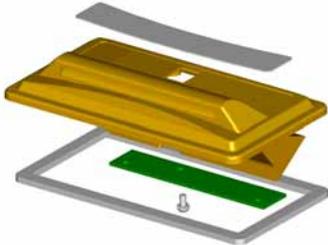
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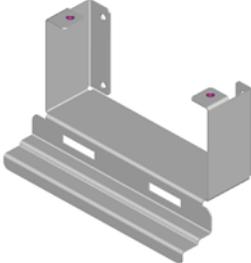
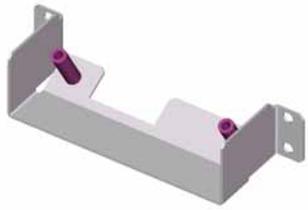
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Appendix D Part Numbers – Bezels

The bezel systems shown in this section are designed to bolt to the four M3 holes on the front chassis plate of the printer and their descriptions given below.

| Part Number | Description | Bezel |
|-------------|---|---|
| 652233 | Upright Bezel Only |  |
| 652241 | Upright Bezel Kit |  |
| 646021 | Slant Top Bezel Only |  |
| 646023 | Slant Top Bezel Kit |  |
| 581405 | Vision Upright and Slant Top Guide Bezel Only/S2000 Upright |  |

| Part Number | Description | Bezel |
|-------------|----------------------------------|--|
| 626289 | Upright Bezel Bracket |  |
| 626292 | Upright Vision/S2000 LED Bracket |  |
| 751226 | PCB Assembly, Vision Upright |  |

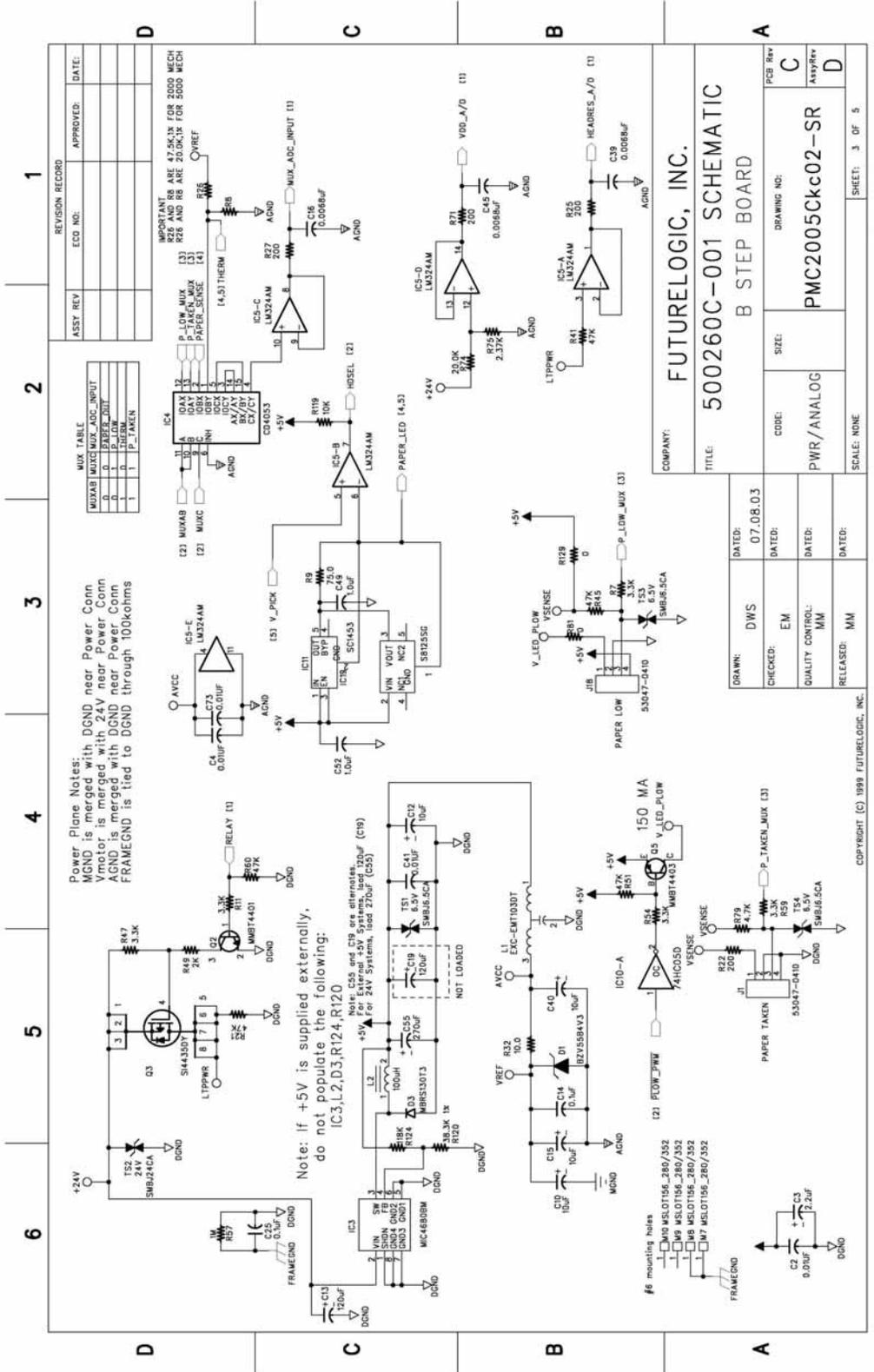


Appendix E Schematics

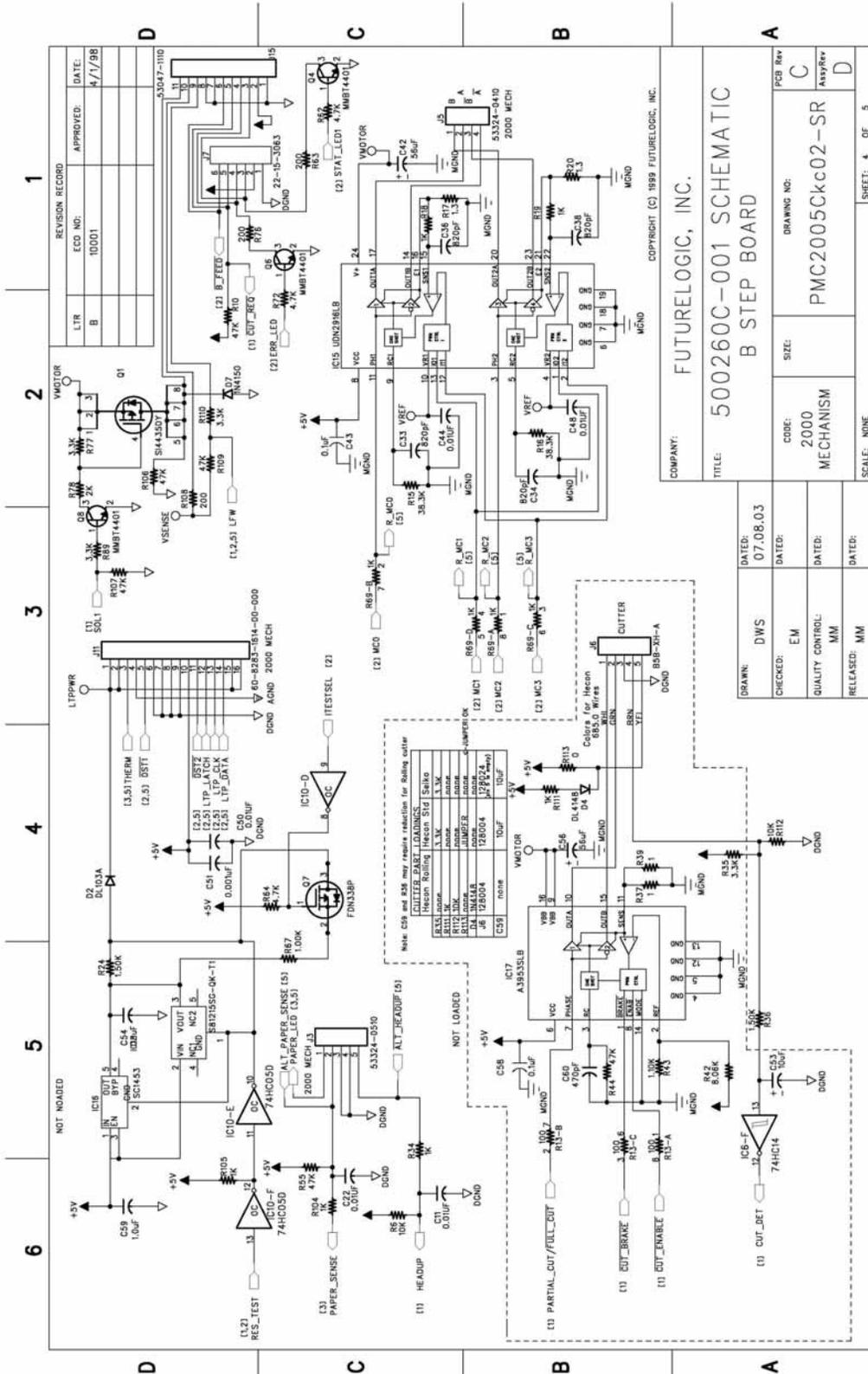
The schematics included in this appendix are provided solely for use by technicians who service the printer. This information is provided AS IS and without warranty, expressed or implied.



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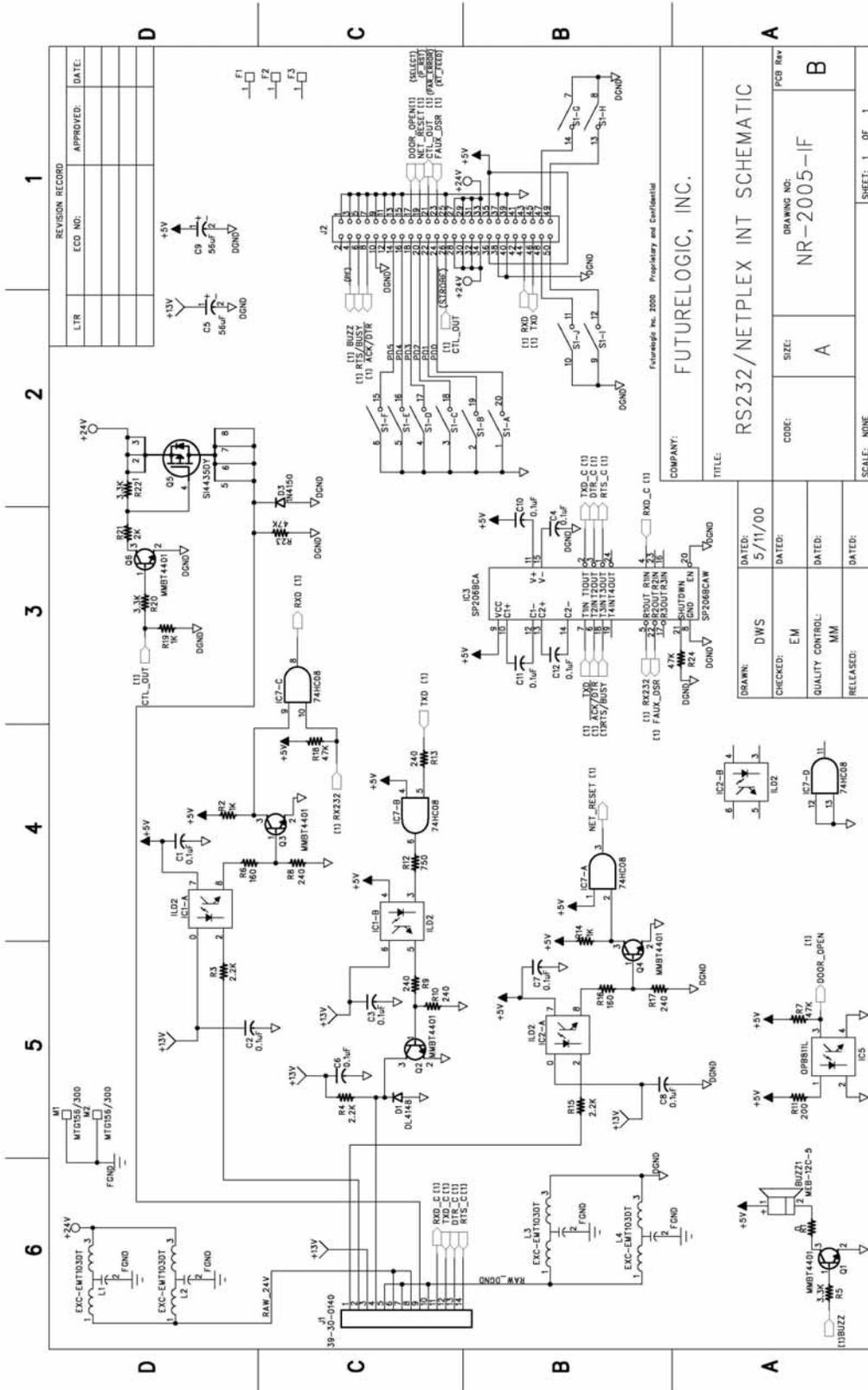


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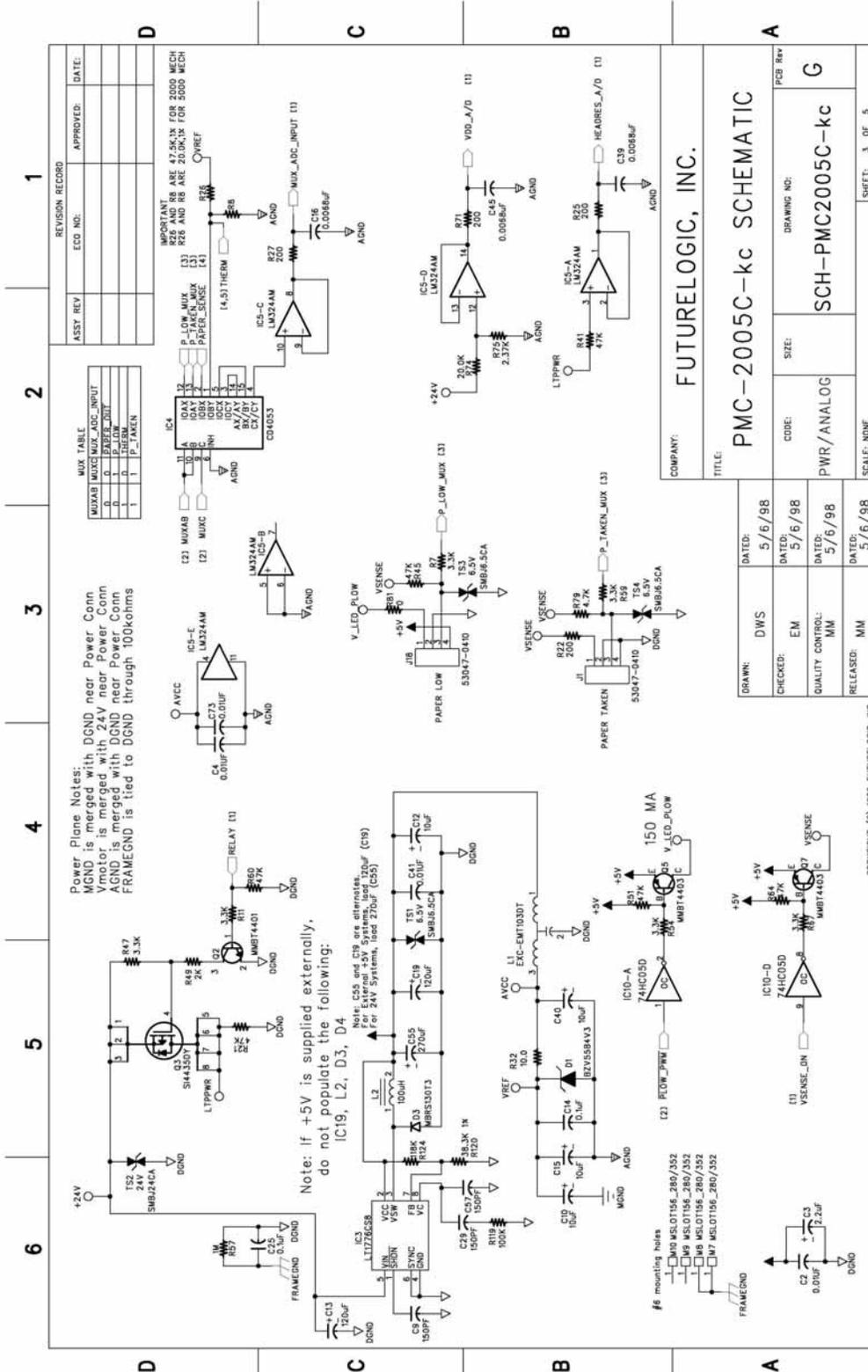


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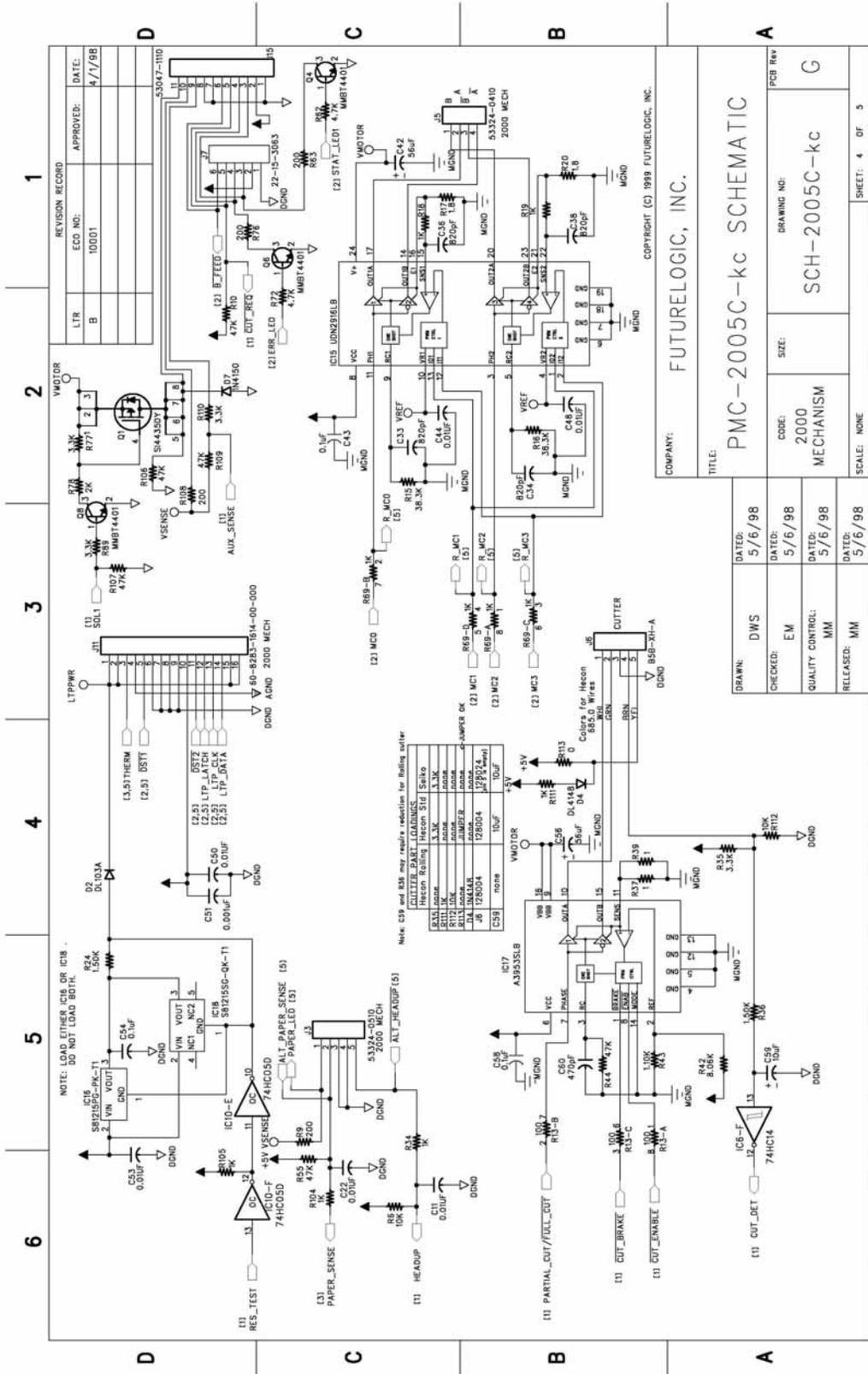
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