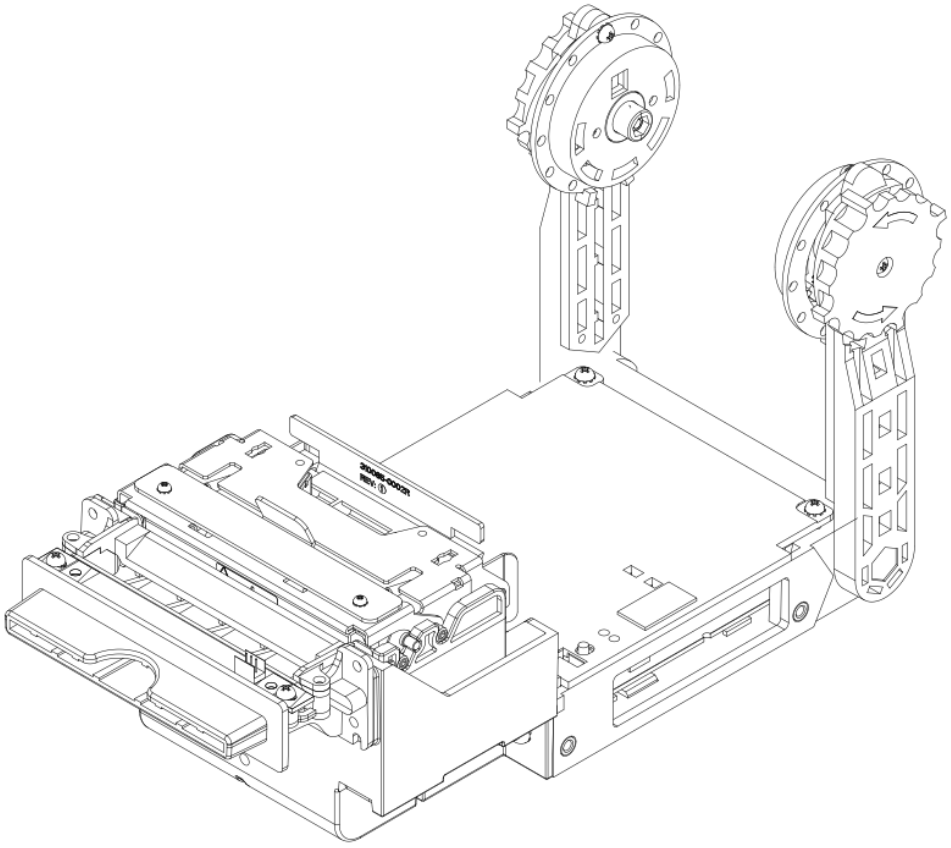
NANOPTIX

# High Speed Video Lottery Advanced

# HSVL ADVANCED™

## *Owner's Manual*



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# Legal Notices

**Disclaimer**
Information in this document is subject to change without notice. Consult your Nanoptix Inc. sales representative for information that is applicable and current. Nanoptix Inc. reserves the right to improve products as new technology, components, software, and firmware become available.





**Trademarks**

Epson is a registered trademark of Epson Corporation.

Windows is a registered trademark of Microsoft Corporation.

Nanoptix is a trademark. Other trademarks and registered trademarks are the property of their respective holders.

**Federal Communications Commission (FCC)**
**Radio Frequency Interference Statement**

**Warning**
Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Note**
This 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.

**Information to the User**
This equipment must be installed and used in strict accordance with the manufacturer's instructions. However, there is no guarantee that interference to radio communications will not occur in a particular commercial installation. If this equipment does cause interference, which can be determined by turning the equipment off and on, the user is encouraged to contact Nanoptix Inc. immediately.

Nanoptix Inc. is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Nanoptix Inc. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

In order to ensure compliance with the Product Safety, ICES, FCC and CE marking requirements, you must use the power supply, power cord, and interface cable which were shipped with this product or which meet the following parameters:

**Power Supply**
UL Listed power supply with standard 60Hz-50Hz, 100-240VAC input and 24VDC output equipped with AC line filtering, over-current and short-circuit protection.

Use of this product with a power supply other than the Nanoptix Inc. power supply will require you to test the power supply and Nanoptix Inc. printer for FCC and CE mark certification.

**Communication Interface Cable**
An approved Nanoptix interface cable must be used with this product. Using a cable other than Nanoptix approved product will require that you test the cable with the Nanoptix Inc. printer and your system for FCC and CE mark certification.

**Power Cord**
A UL listed, detachable power cord must be used. A power cord with Type SVT marking must be used. For applications outside North America, power cords that meet the particular country's certification and application requirements should be used.
Use of a power cord other than described here may result in a violation of safety certifications that is in force in the country of use.

**Industry Canada (IC)**
**Radio Frequency Interference Statement**
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
*Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.*

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# 1. About the Printer

## 1.1 Description of Printer

The Nanoptix High Speed Video Lottery Advanced thermal printer is extremely fast, quiet, and very reliable. With thermal printing technology, there is no ribbon cassette to change, and paper loading is extremely simple. The HSVL Advanced features drop in loading, allowing the printer to be installed between two devices.

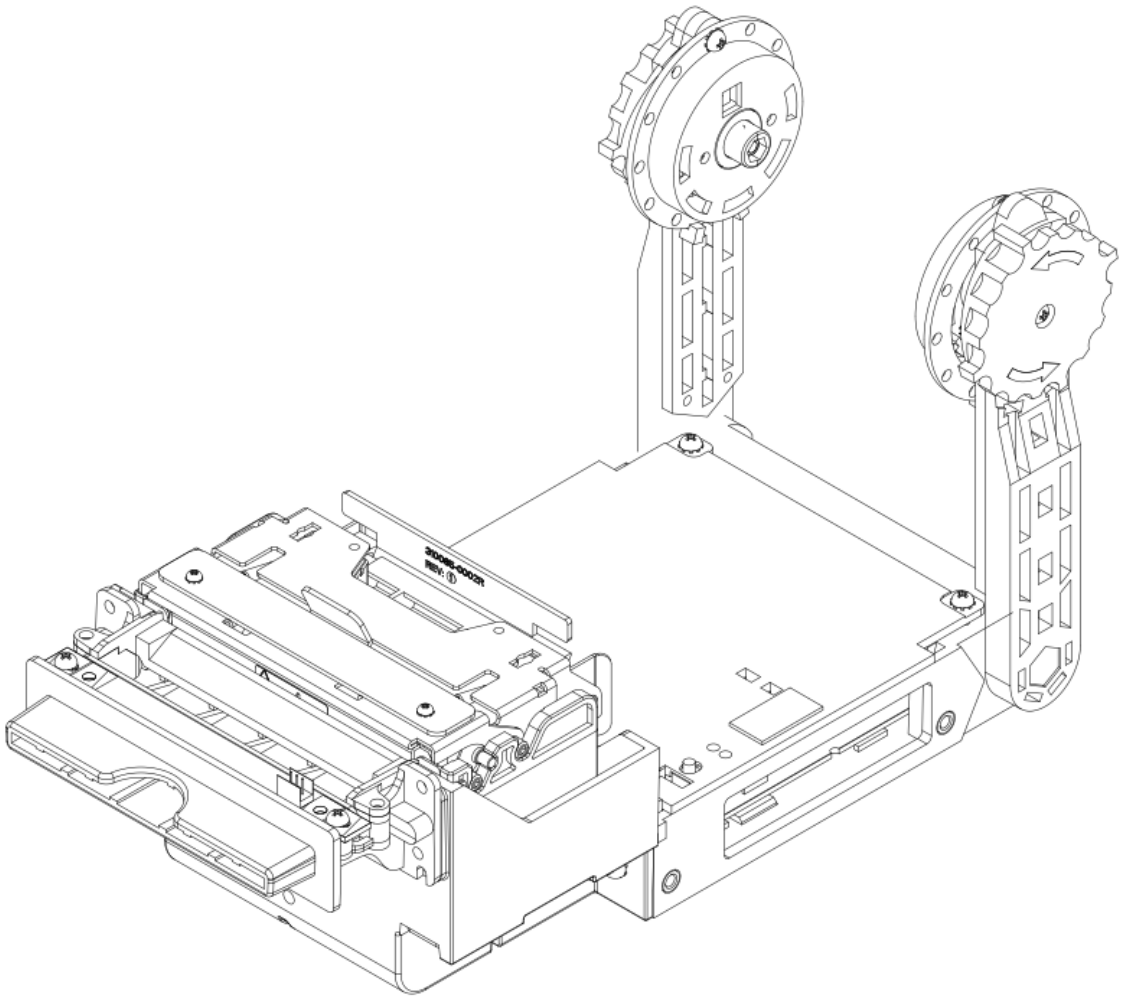


**Figure 1: High Speed Video Lottery Advanced Printer**

## 1.2 Options Available

**There are several options available for the Nanoptix High Speed Video Lottery Advanced thermal printer. Please call your representative for the most recent information at 1-888-983-3030 (Toll-free North America) or 1-506-384-3388 or by e-mail at info@nanoptix.com.**

## 1.3 General specifications

| | |
|---|---|
| **Print Method** | Direct Thermal |
| **Resolution** | 8 dot/mm (203 dpi) |
| **Paper Width** | $83^{+0}_{-1}$ mm, $80^{+0}_{-1}$ mm, $60^{+0}_{-1}$ mm, $58^{+0}_{-1}$ mm |
| **Max Roll Diameter** | 150 mm |
| **Operating Temperature** | 0° to 50° C |
| **Storage Temperature** | -30° C to +70° C |
| **Operating Relative Humidity** | 5% to 90% RH at 50C (non-condensing) |
| **Communication Interface Options** | Serial & USB 2.0 |
| **Memory/Firmware** | 64MBit SDRAM (upgradable to 256MBits)<br>16MBit Flash (upgradable to 64MBits<br>64KBit non-volatile FRAM memory |
| **Resident Character Sets** | Arial Bold (6 sizes)<br>Note: Other Character sets can be programmed quickly |
| **Integrated Bar Codes** | UPC-A, UPC-E, Interleaved 2 of 5, 3 of 9,<br>Code 128, EAN 8, EAN 13.<br>Note: Other Bar Codes can be programmed quickly |
| **Speed** | Up to 250 mm/second |
| **Human Interface** | Auto-feed paper loading, status LED, paper feed button |
| **Dimensions** | Height x Weight x Depth (mm)<br>231 x 129 x 149.5 (Without Paper Roll)<br>279 x 129 x 195 (With Paper Roll) |
| **Weight** | 0.985 Kg |

**Table 1: Specification**

## 1.4 Printer Controls

### To reset Printer

For the *High Speed Video Lottery* Advanced thermal printer simply disconnect and reconnect the printer's power connector to reset the printer in case of a fault condition. Once the printer is reconnected, the printer goes through a startup routine and resets itself.

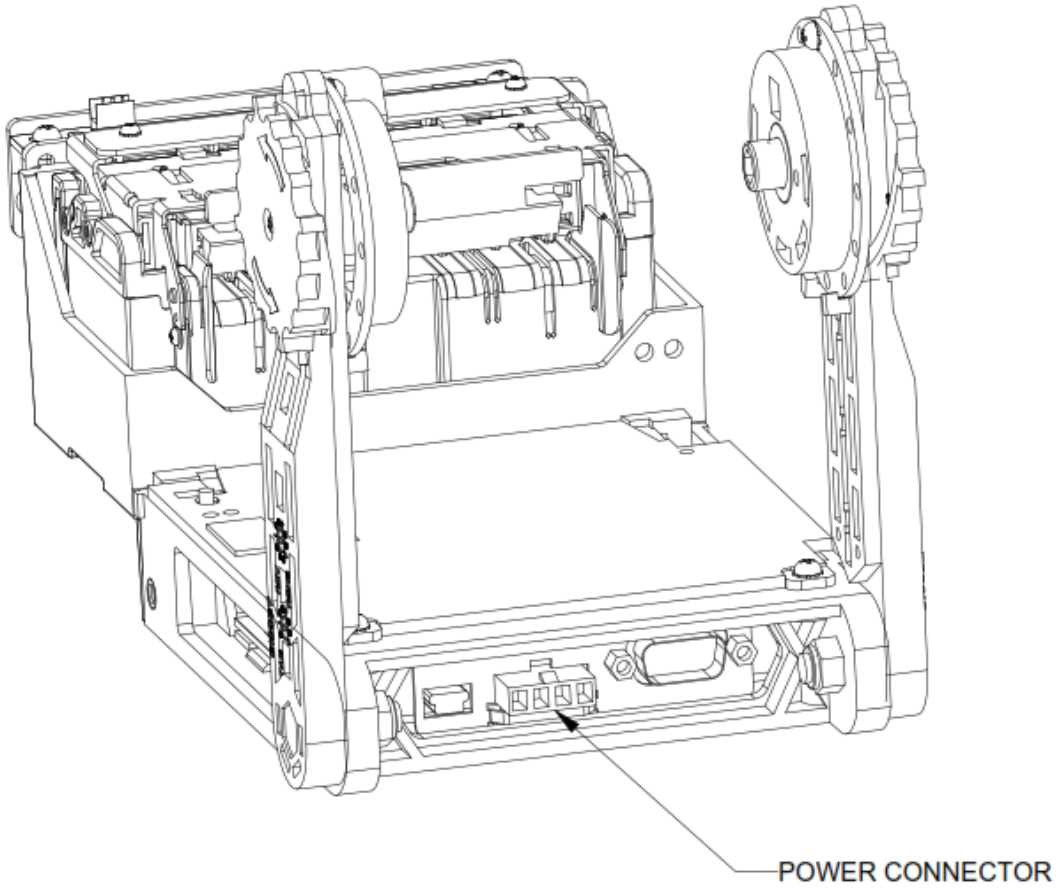



**Figure 2: Resetting Printer**

## Paper Feed Button & Light Emitting Diode

Use the Paper Feed Button to advance the paper.
The LED on the main controller board shows the printer status.

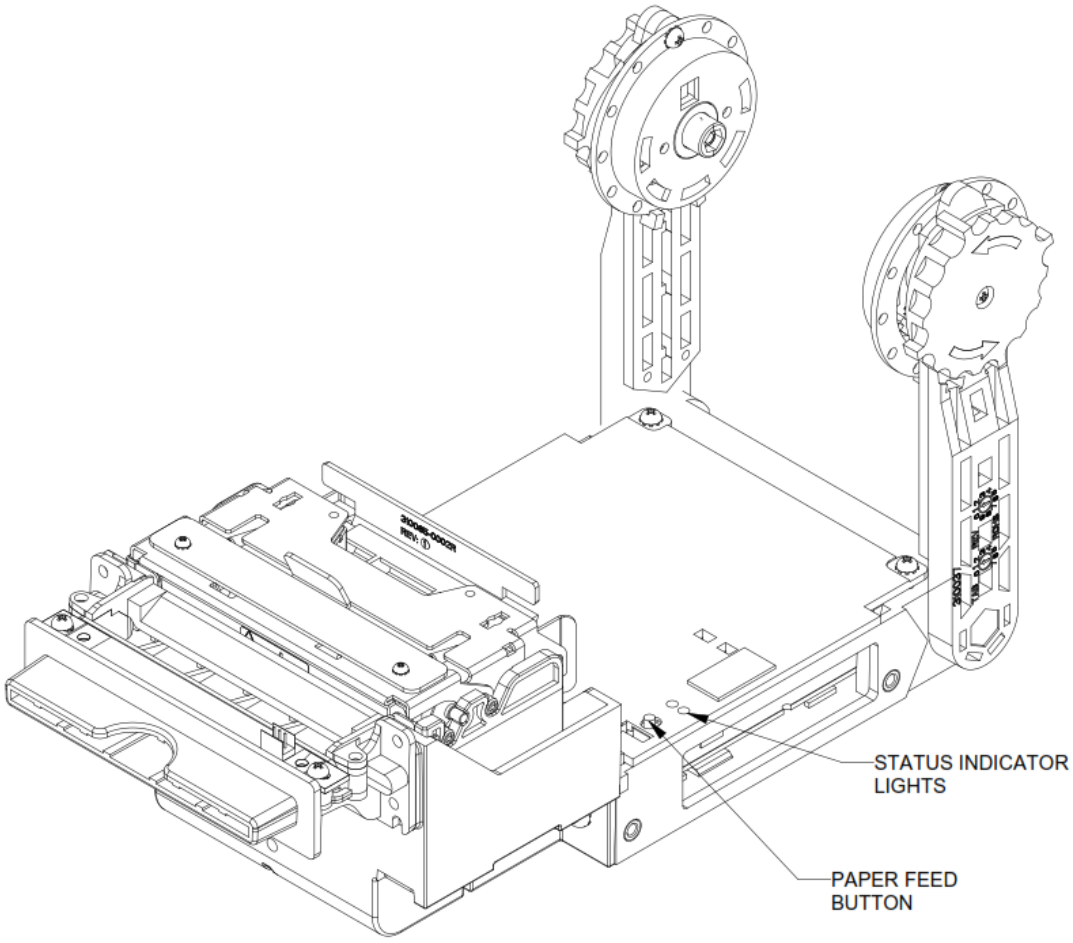



**Figure 3: Paper Feed Button & Status Indicator LEDs**

## 1.5 Changing Paper

**Caution:** Do not attempt to operate the printer if it runs out of paper. The printer will report paper out, but it may continue to accept data from the host computer. Because the printer cannot print any transactions, the data will be lost.

1. Remove the used roll.

2. Tear off the end of the new roll so that the edge is loose. Turn the spindles until the rollers are flush with the arms.

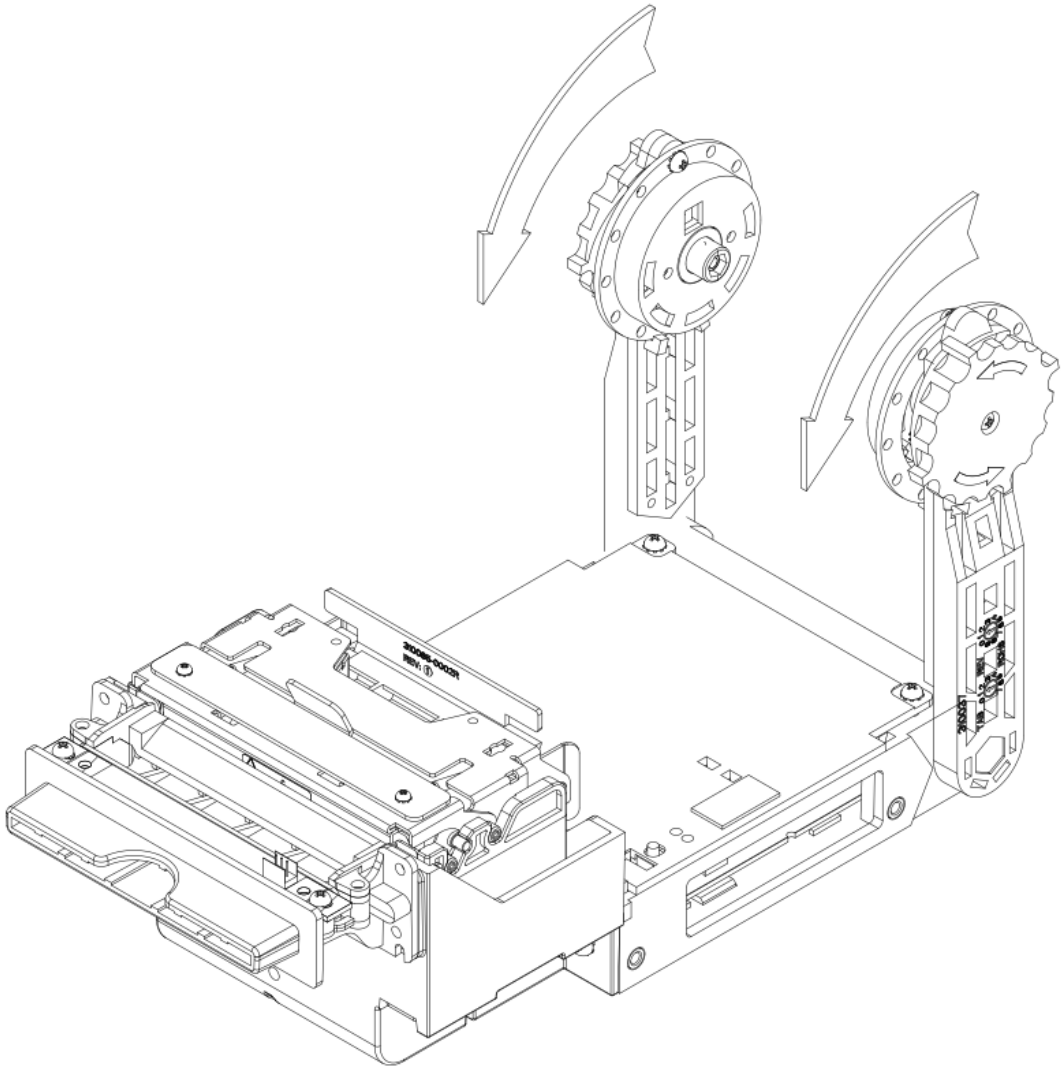


**Figure 4: Spindle Movement**

3. Place the new paper roll between the arms so that the spindle roller fits into the paper rolls core.

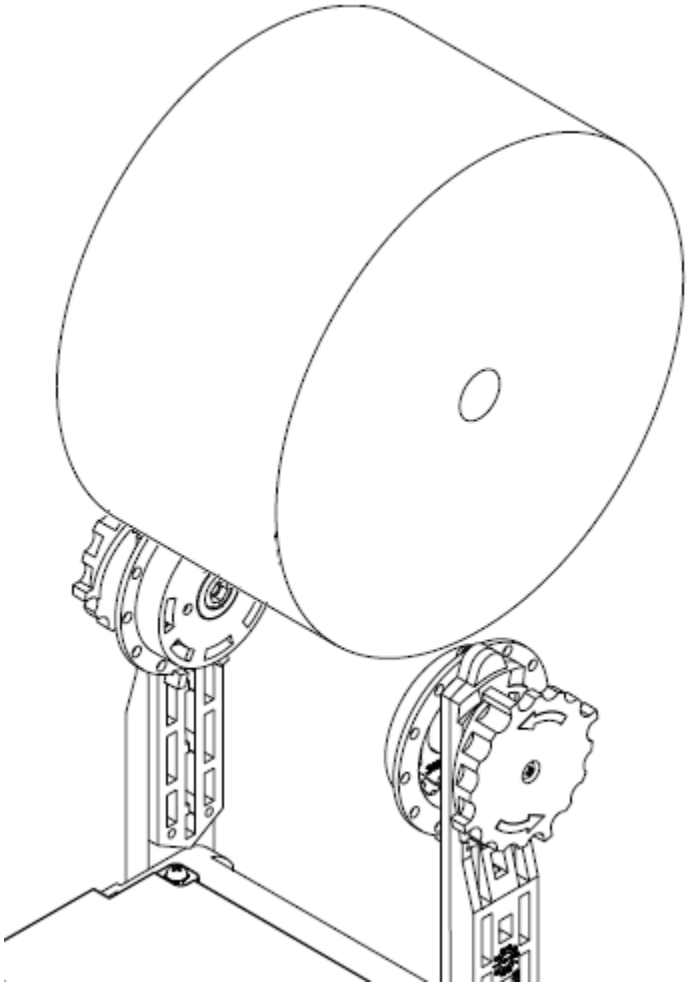


**Figure 5: Loading Paper**

**Caution**: The paper must be unwound from the top of the roll – Figure 5. Otherwise, the printer may not print or the paper may jam.

4. Move the spindles back into their original position, locking the paper roll in place.

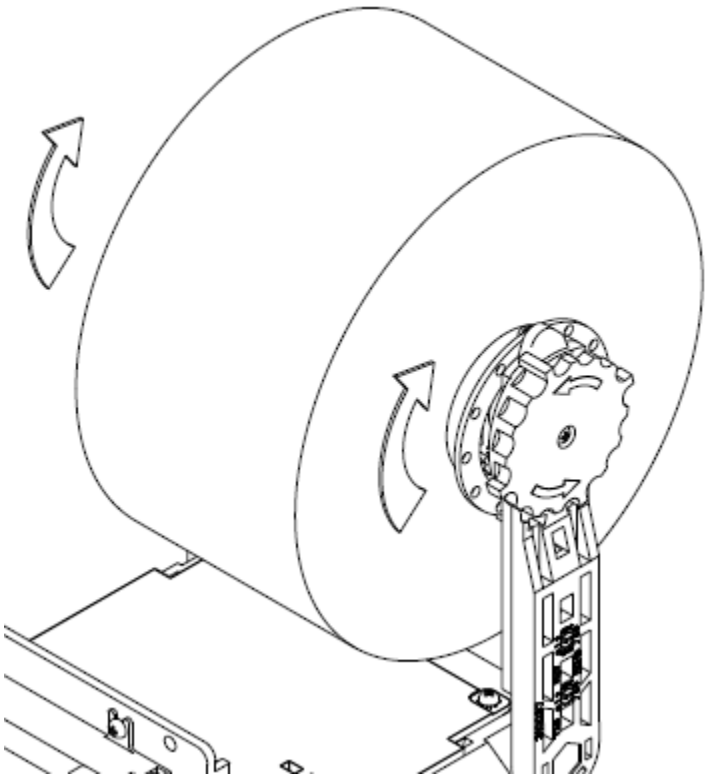


**Figure 6: Locking Paper**

5. Feed the paper into the paper path, once far enough, the paper in sensor will activate and feed paper to a predetermined length. Press the paper feed button (Figure 3). The paper will advance and the paper will be cut, leaving a clean edge for the next printed ticket.

**Note:** In the event of a paper jam follow the steps below:

- Pull up on the top-front portion of the print mechanism to open the mech to the paper path and remove any paper/obstructions.
- Close the print mechanism and re-feed the paper.

## 1.6 Spindle Arm Configurations

The HSVL Advance can be mounted in various positions. The arms can be moved by loosening the mounting nuts using an 8mm wrench or ratchet.

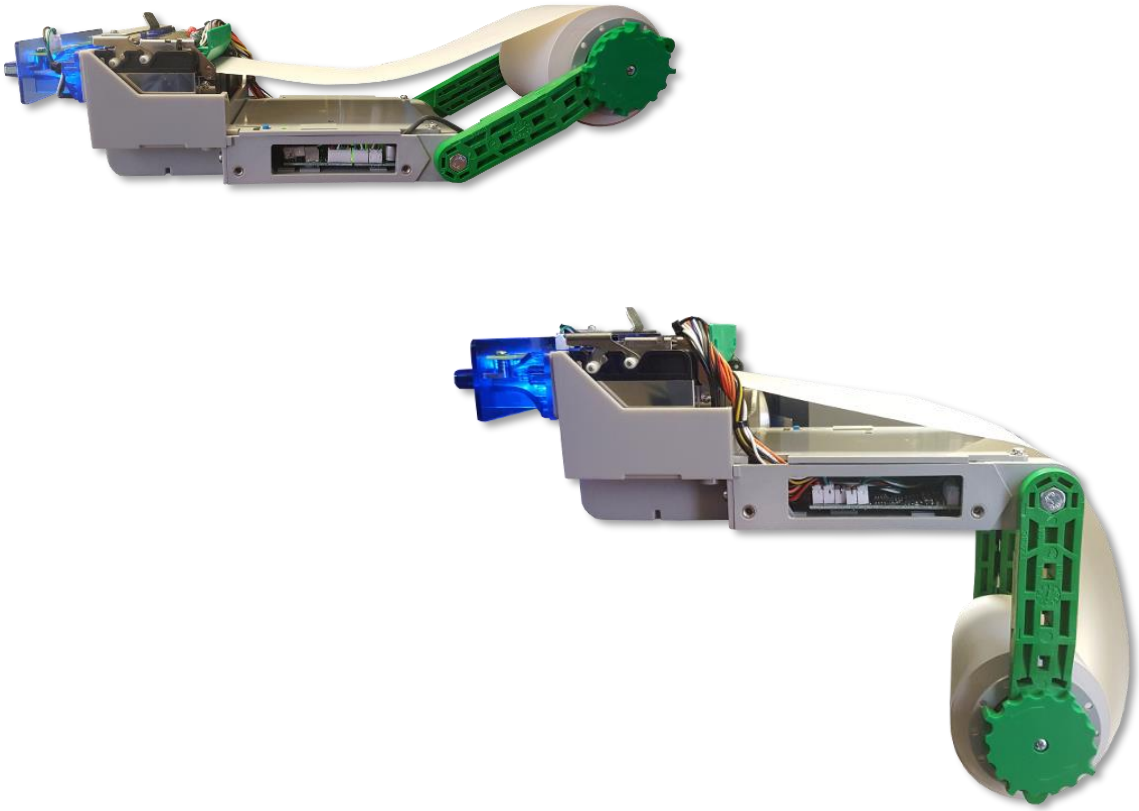


**Figure 7: Spindle Configurations**

## 1.7 Testing the Printer

Run this test to check the printer. The test prints and cuts a resident test ticket. Verify this ticket to ensure the unit is printing and operating correctly.

To print the test ticket, power-on the printer while pressing and holding the Paper Feed Button (Figure 3) for approximately 3 seconds. A test ticket will be printed approximately 5 seconds later. Example:

```
Model:                          DSP-HPQ
Firmware:                       HSVL – 5.15B
Protocol:                       E-T88
COMMUNICATION
  Interface:                    Serial
  Baud Rate:                    9600
  Data Bits:                    8
  Parity:                       NONE
  Handshaking:                  PRT+RTS
  Print Mode:                   Line
  Aux Port:                     Disabled
PRINT CONTROL
  Print Method:                 No HPQ
  Final Speed:                  250 mm/sec
  Black Bar Index:              Disabled
  No HPQ Burn Time:             400 us
  Cutter PWM:                   80 %
  Motor Current:                3
PRINTER ENVIRONMENT CONDITIONS
  Voltage:                      24.4 Volts
  Temperature:                  20 Celsius
SYSTEM RESOURCES
  FLASH:   -Used: 0
           -Free: 24576
MANUFACTURING INFORMATION
  Printer ID:
  Date Code:                    ffffffff

A to D:   03ca, 01e4, 01e6, 03d0
STATUS:
  *S| 0 |HSVL-1.38U|@|@|@|H|@|P | *
```

**Figure 8: Testing Printer**

When powered on, the paper feed button can also pressed and held for several seconds to print a performance report including number of prints, errors, firmware, on time, etc…

## 1.8 Troubleshooting the Printer

The printer is simple and generally trouble-free, but from time to time minor problems may occur. Follow these procedures to determine the cause and resolution of any problems the printer may be having. If the procedures in this section do not correct the problem, contact a service representative.

### Printer LED

| Condition | Bezel LED (if equipped) | LED Status (Green) | LED Status (Red) | Buzzer |
|---|---|---|---|---|
| Unit ready | ON | ON | OFF | OFF |
| Downloading firmware | OFF | OFF | Slow Blink | Slow Beep |
| Unit is in Reset or Booting | OFF | OFF | ON | OFF |
| Unit in standby (powered off) | OFF | OFF | OFF | OFF |
| Paper Out | Slow Blink | OFF | ON | OFF |
| Door Open | Slow Blink | Fast Blink | ON | OFF |
| Temperature / Print Head Error | Slow Blink | OFF | Fast Blink | Fast Beep |
| Voltage Error | Slow Blink | OFF | Slow Blink | Fast Beep |
| Cutter Error | Slow Blink | ON | Medium Blink | Fast Beep |
| Paper Low | Slow Blink | ON | ON | OFF |

**Table 2: Troubleshooting With Status LED**

**NOTE:** LED Blinking Rates (Period).

- Fast – 200ms
- Medium – 800ms
- Slow – 1600ms

## Printing Problems

| Problem | Possible Causes | What to Do |
|---|---|---|
| Receipt does not come out all the way. | Paper is jammed. | Press latch to open door, inspect the cutter, and clear any jammed paper. |
| Printer starts to print, but stops while the receipt is being printed. | Paper is jammed. | Press latch to open door, inspect the cutter, and clear any jammed paper. |
| Receipt is not cut. | Paper is jammed. | Press latch to open door, inspect the cutter, and clear any jammed paper. |
| | The printer is not configured for a cutter. | Contact your authorized service representative. |
| Print is light or spotty. | Paper roll loaded incorrectly. | Check that the paper is loaded properly. |
| | Thermal printhead is dirty. | Use recommended thermal receipt paper. |
| Vertical column of ticket is missing. | This indicates a serious problem with the printer electronics. | Contact your authorized service representative. |
| One side of receipt is missing. | This indicates a serious problem with the printer electronics. | Contact your authorized service representative. |

**Table 3: Troubleshooting Printing Problems**

## Printer Does Not Work

| Problem | Possible Causes | What to Do |
|---|---|---|
| Printer Does Not Function When Turned On. | Printer not plugged in. | Check that printer cables are properly connected on both ends. |
| | | Check that the host or power supply is switched on. Check Printer LED. |
| | Door not fully closed. | Close the door. |

**Table 4: Printer Does Not Work**

# 2. Media and Supplies Guide

## 2.1 Thermal Paper Specifications

The printer requires qualified thermal paper with the following dimensions:

| | |
|---|---|
| **Paper roll width** | $83^{+0}_{-1}$ mm, $80^{+0}_{-1}$ mm, $60^{+0}_{-1}$ mm, $58^{+0}_{-1}$ mm |
| **Paper roll diameter (max)** | 152.4 mm (6 in.) |
| **Paper thickness (max)** | 155 micrometers (6.1 mils) |
| **Core Internal diameter (max)** | 25.4 mm (1 in.) |
| **Core Thickness (max)** | 3.175 mm (1/8 in.) |

**Table 5: Thermal Paper Dimensions**

The paper must not be attached to the core. If Top of Form Option is installed, paper with a colored stripe at the end can be used to indicate that the paper is running low.

## 2.2 Ordering Thermal Paper

| Manufacturer | Numbers |
|---|---|
| **Appvion Specialty Papers**<br>825 E Wisconsin Avenue<br>P.O. Box 359<br>Appleton, WI 54912-0359 | Tel: 866-315-0467<br>Toll-free: 800-922-1729 |
| **Kanzaki Specialty Papers (USA)**<br>1350 Main Street<br>Springfield, MA 01103 | 1.888.KANZAKI<br>Tel: 888-526-9254<br>Fax: 413-731-8864 |

**Table 6: Ordering Thermal Paper**

**Note:** Contact your Nanoptix sales representative for more information from our toll free line at 1-888-983-3030.

## 2.3 Ordering Miscellaneous Supplies

### Ordering Power Supply and Power Cords

Please specify the *Nanoptix part number* when ordering power cords.

| Part Number | Part Description |
|---|---|
| 102080-0000R | Power Cord -North America<br>(standard C13 "square" inlet connector) |
| 102080-0001R | Power Cord -Continental Europe<br>(standard C13 "square" inlet connector) |
| 213005-0013R | 24V, 60W Power Supply (4 Pin Molex connector) GDS Standard |

**Table 7: Power Cord Part Number**

Contact your Nanoptix sales representative for more information from our toll free line at 1-888-983-3030.

### Ordering Communication Cables

Please specify the *Nanoptix part number* when ordering communication cables.

| Part Number | Part Description |
|---|---|
| 102085-0002R | Mini USB communication Cable 6ft. |
| 102082-0000R | RS232 cable DB9M to DB9F Straight Through. |

**Table 8: Communication Cables Part Numbers**

Contact your Nanoptix sales representative for more information from our toll free line at 1-888-983-3030.

## Communication Cables Pin-Out

Your printer uses industry standard connections for Serial, USB and is therefore compatible with standard printers and hosts on the market.

Please note that due to the power requirements of thermal printers, the unit will not function with the USB cable alone. The power cord must be connected to the printer.

Several connector options are available depending on the interface card installed on the back of the printer.

The table below details the connection pin-out for the RS-232 interface on the printer side.

| Pin | Signal Name | Printer I/O | Host I/O | Printer Function |
|---|---|---|---|---|
| 1 | AUX_PWR | 5V Output | n/a | Aux Power (100mA) |
| 2 | RS232_TXD | Output | Input | Data transmit |
| 3 | RS232_RXD | Input | Output | Data receive |
| 4 | No connect | n/a | n/a | n/a |
| 5 | DGND | Ground | Ground | Signal Ground/Aux Ground |
| 6 | No connect | n/a | n/a | n/a |
| 7 | RS232_CTS | Input | Output | Handshake |
| 8 | RS232_RTS | Output | Input | Handshake |
| 9 | NC or PWR | No connect | No connect | reserved |

**Table 9: RS-232 DB9 Female Interface**

The table below details the connection pin-out for the power supply interface on the printer side. The Nanoptix power supply conforms to GDS Standards.

| Pin | Allocation |
|---|---|
| 1 | +12V |
| 2 | Ground |
| 3 | Ground |
| 4 | +24V |

**Table 10: 4 Pin Molex Power Interface**

## 2.4 Communicating with the Printer

Over the years, Nanoptix has developed emulations for compatibility with the most popular printers in the market. At the time of printing this manual, the following emulations are available:

- TM88 / Nanoptix Command set (default from factory)
- Epson 570

Please contact your sales representative if you require other emulations. If we do not have the emulation you need, we can provide most emulations in a short timeframe. If you are not required to emulate other printers, please ask your sales representative for the latest Nanoptix Windows Driver or the "Nanoptix Programming Guide" which will list the Nanoptix ESC/P commands.

# 3. Printer Disassembly

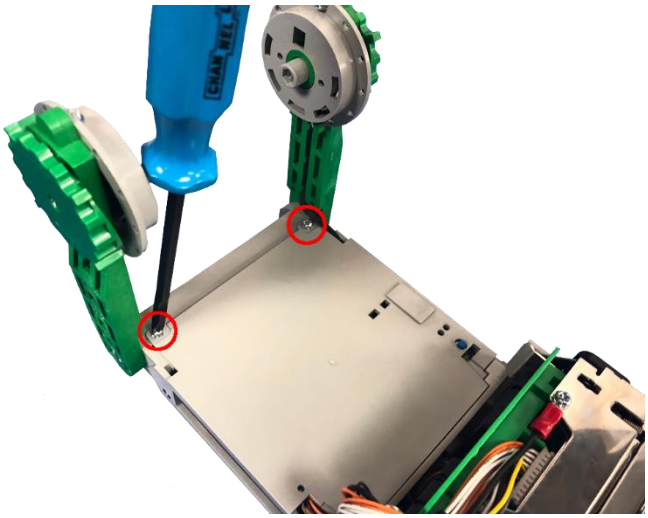
Use ESD protection (such as a wrist strap) anytime a PCB is exposed

## 3.1 Removing the Mech. Assembly

1. Remove the power source from the printer before disassembly.

2. Remove the paper roll from the printer by following the steps in reverse outlined in 1.5 (Changing the paper)

3. Remove the two screws holding on the plastic plate covering the main board. Slide the cover away from the mech. assembly.



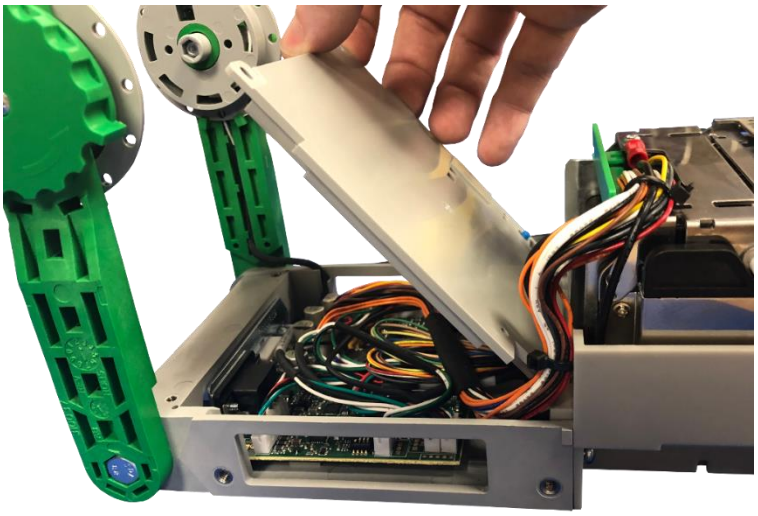


**Figure 9: Circuit Board Cover Removal**

4. Remove the two screws holding on the print mechanism to the printer base. Remove the harnesses going to the main board and lift the print mechanism.

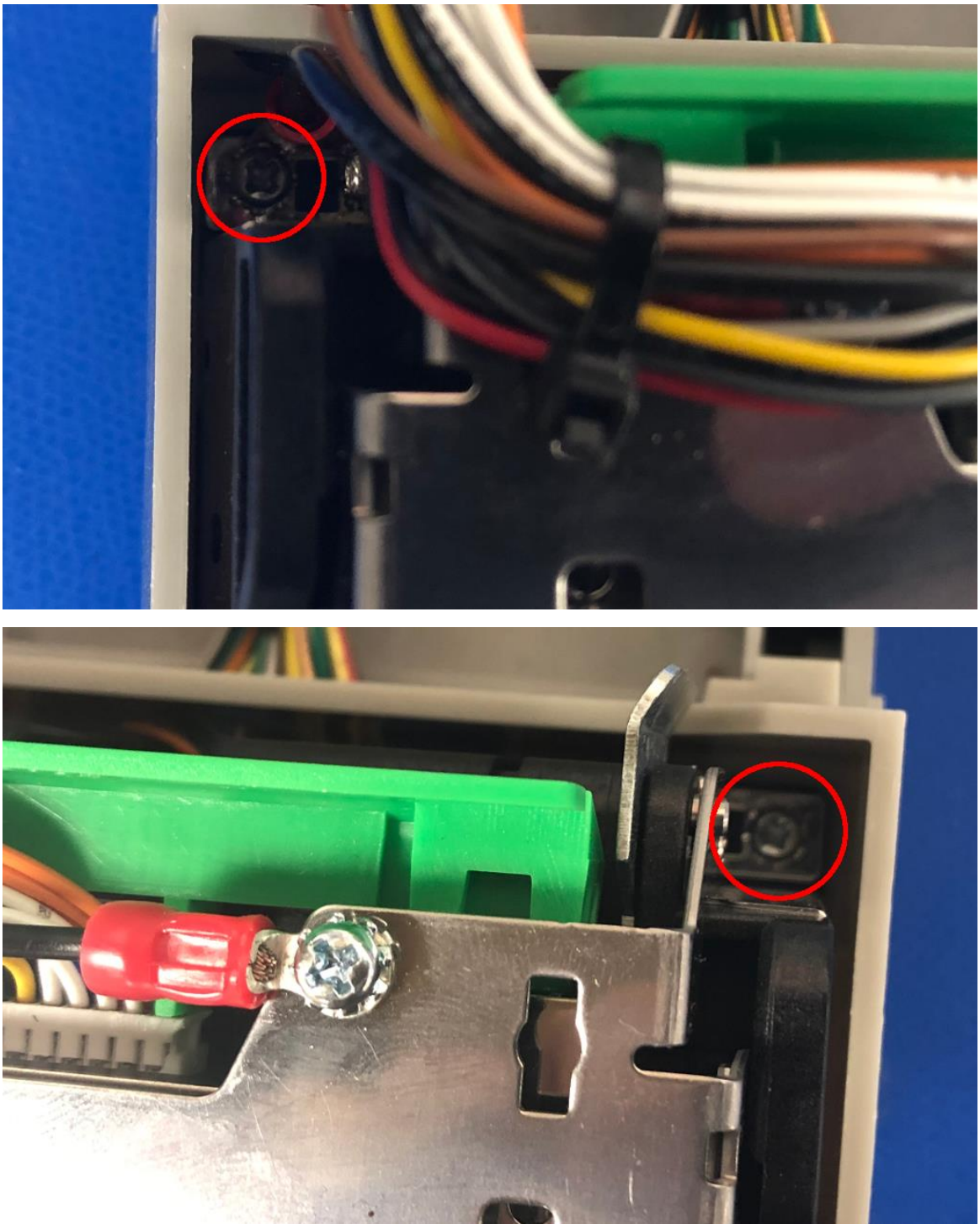


**Figure 10: Mech Removal**

## 3.2 Access to the Main Board

1. Remove the power source from the printer before disassembly.

2. Remove the paper roll from the printer by following the steps in reverse outlined in 1.4 (Changing the paper)

3. Remove the two screws holding the DB9 serial connector located on the back of the printer.

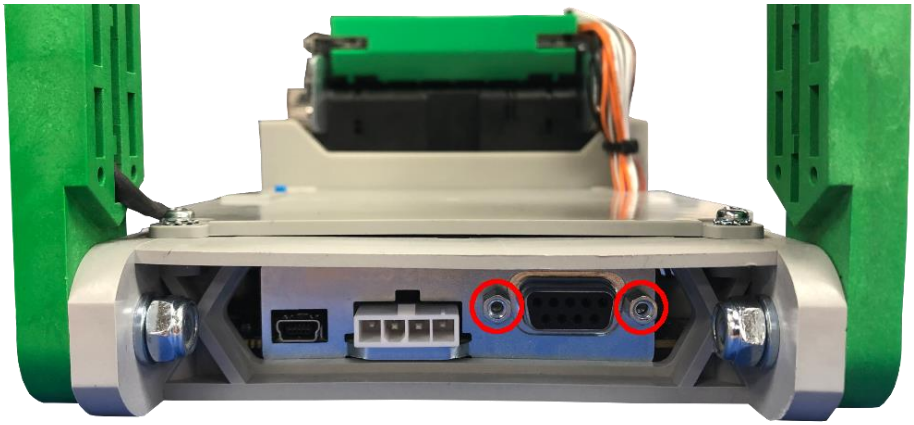


**Figure 11: DB9 Screw Location**

4. Remove the two screws holding on the plastic plate covering the main board. Slide the cover away from the mech. assembly – see "Removing Mech. Assembly" step 3.

5. Disconnect harnesses, grounds, etc. Remove the last two screws holding the circuit board to the printer base.

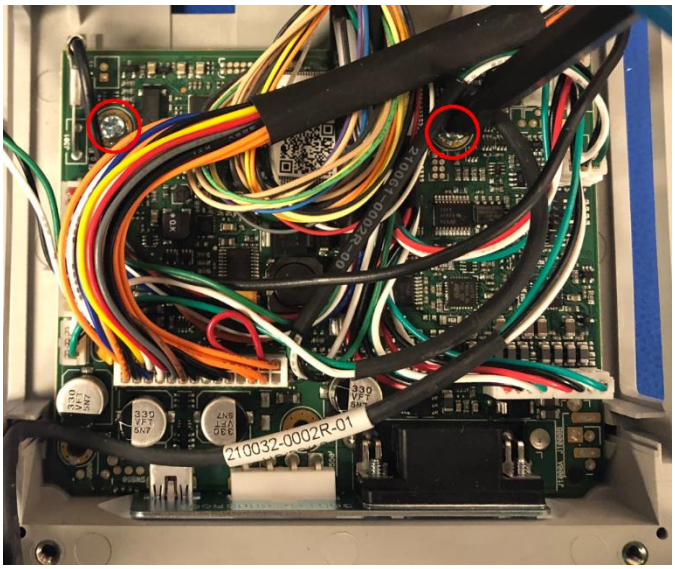



**Figure 12: Main Board Screw Location**

6. The paper feed button can be removed from the main board cover by feeding the wiring between the notches and removing the screw.

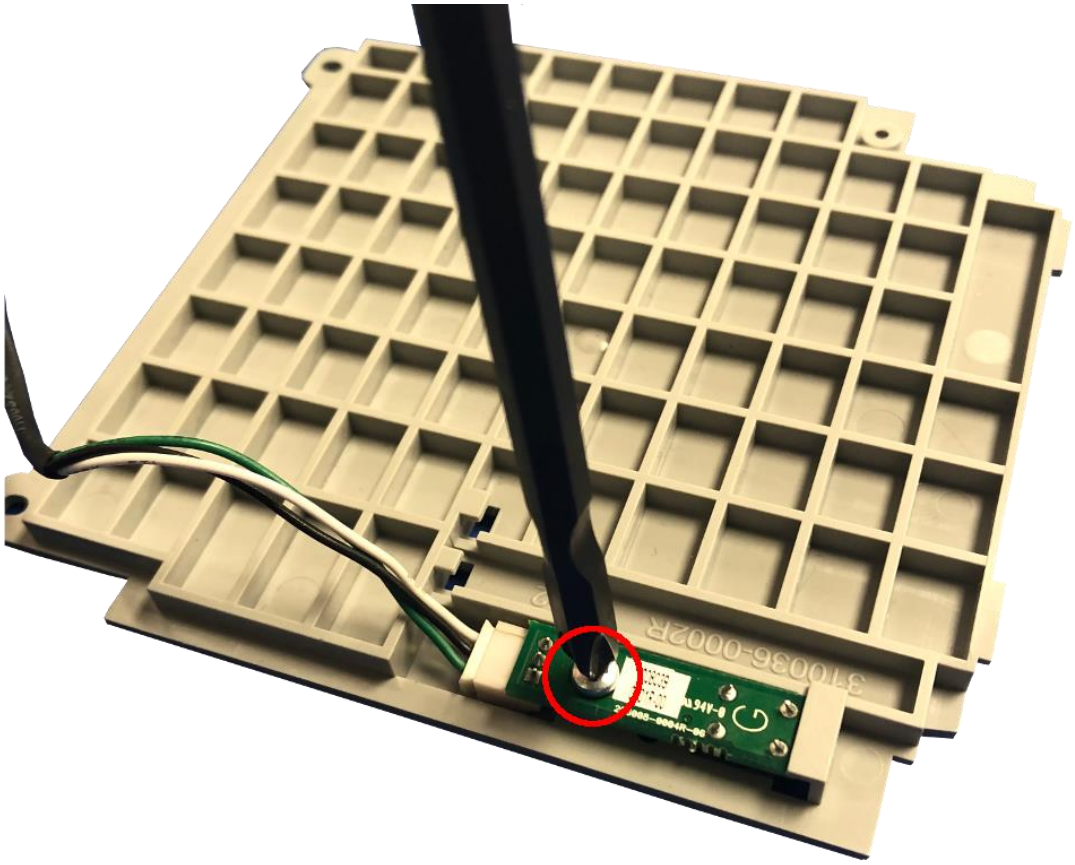


**Figure 13: Paper Feed Board Screw Location**

# 4. Mechanical Drawings

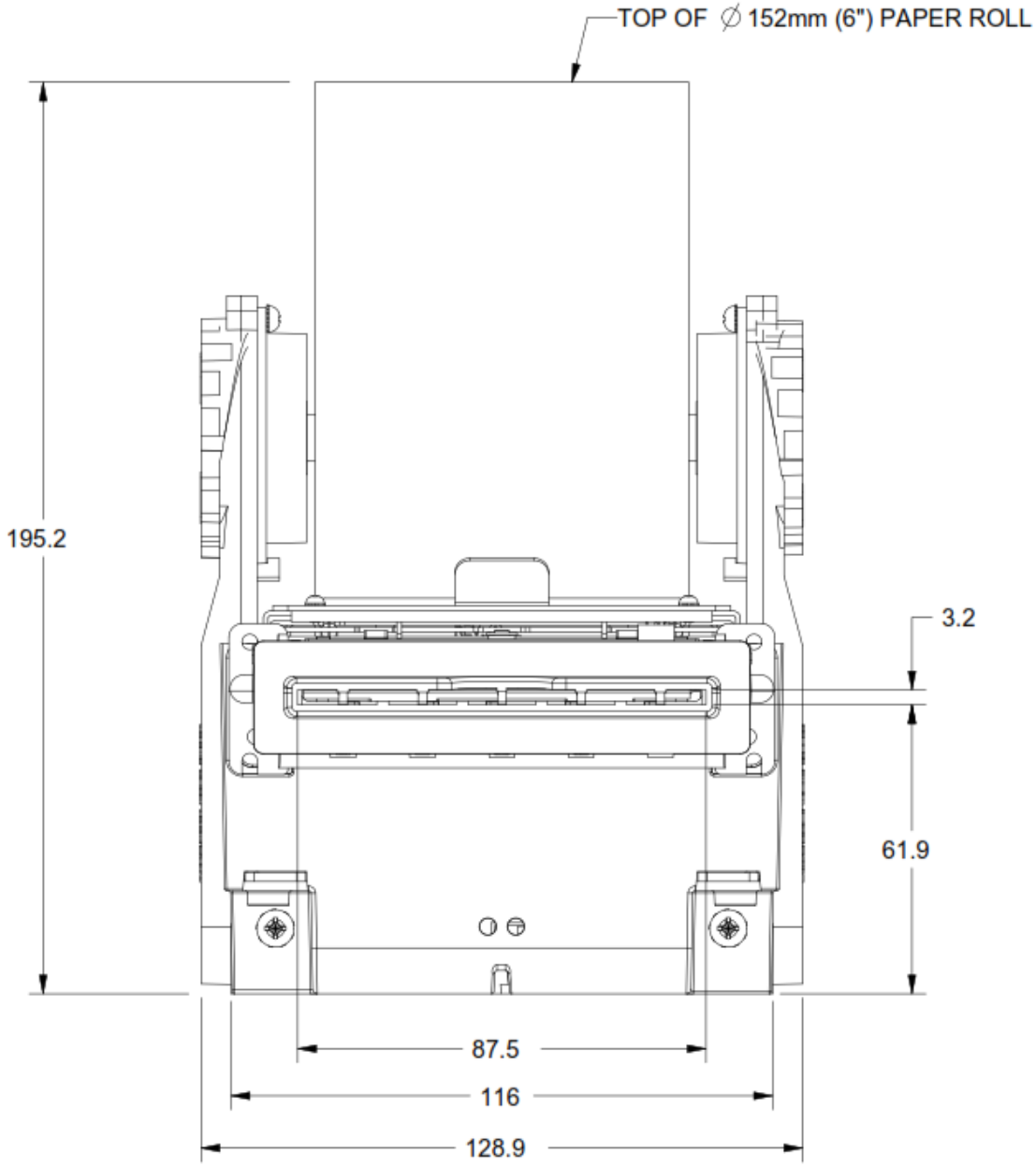



**Figure 14: Mechanical Dimensions - Front View**

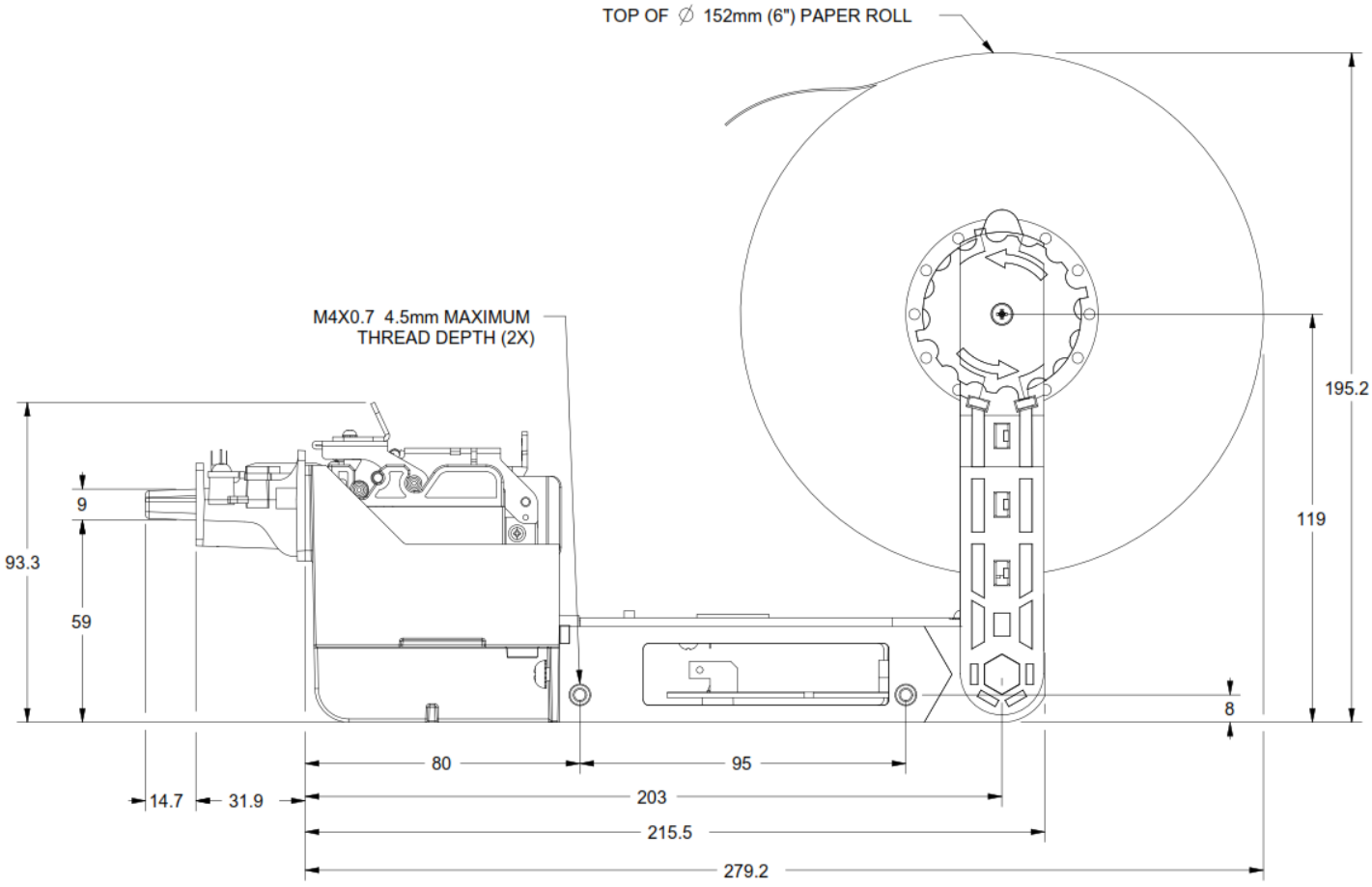



**Figure 15: Mechanical Dimensions - Side View**

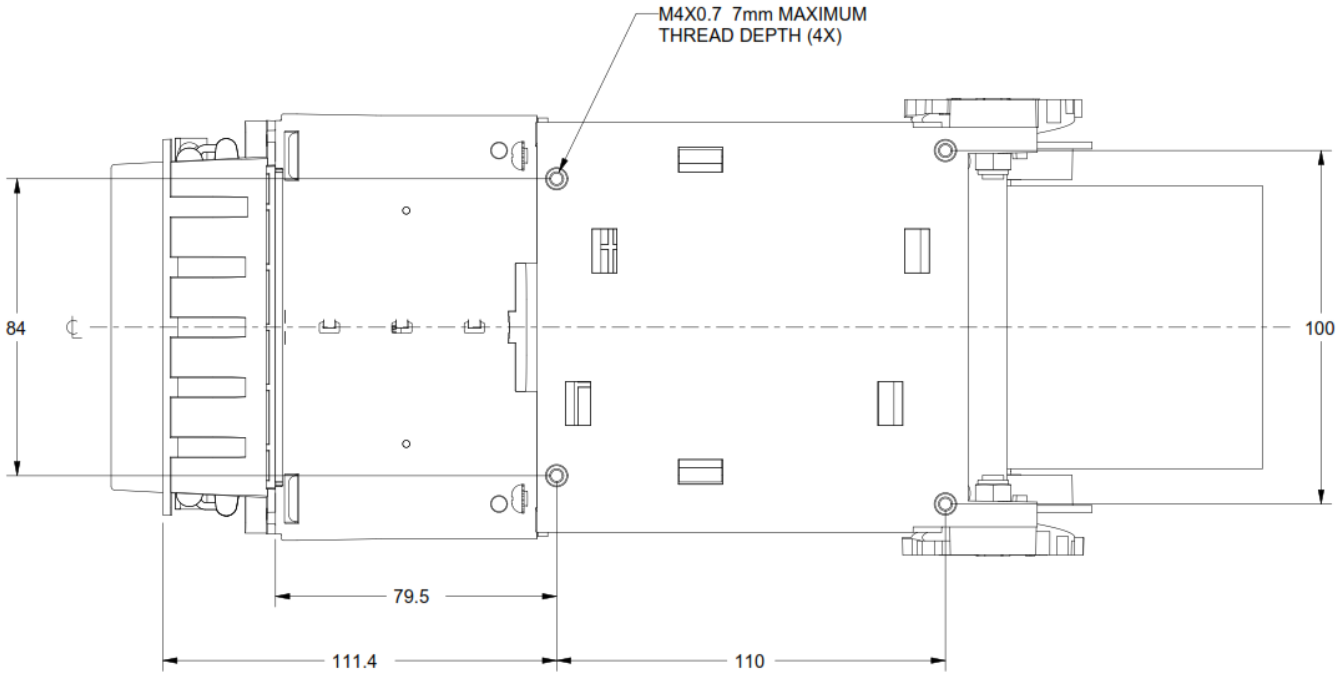
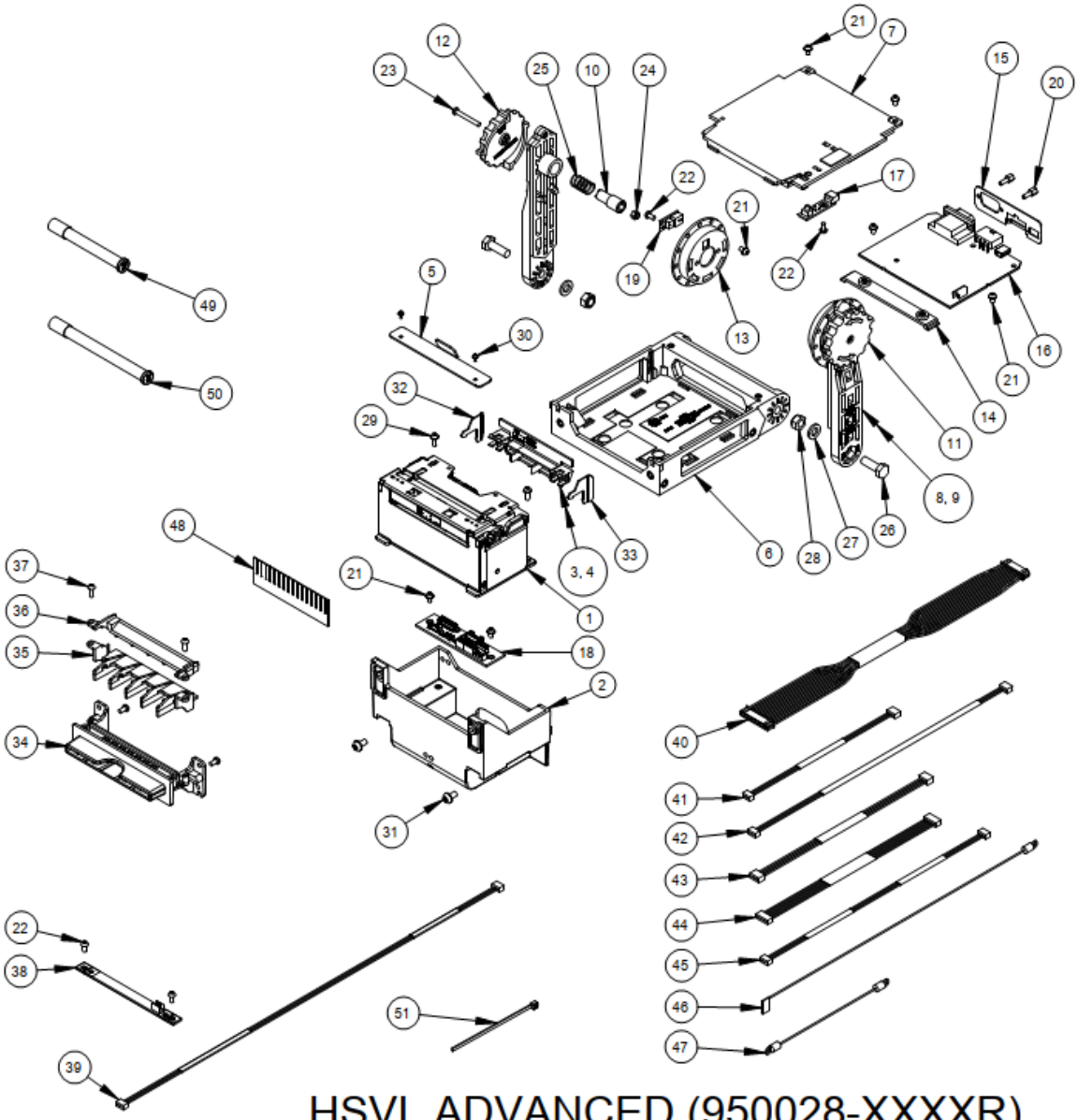



**Figure 16: Mechanical Dimensions - Bottom View**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DOCUMENT NUMBER 390029-0010R-001-A

# 5. Printer Maintenance Instructions

**Note:** Under normal operating conditions, the minimum interval for cleaning the Nanoptix HSVL printer is 3 months or 5km of paper printed, whichever is reached first. Do not clean the head unit immediately after printing.

1. Unlatch the print mech pulling up on the top front portion of the print mech. Unlatch the roller assembly by pushing up on the top green lever.

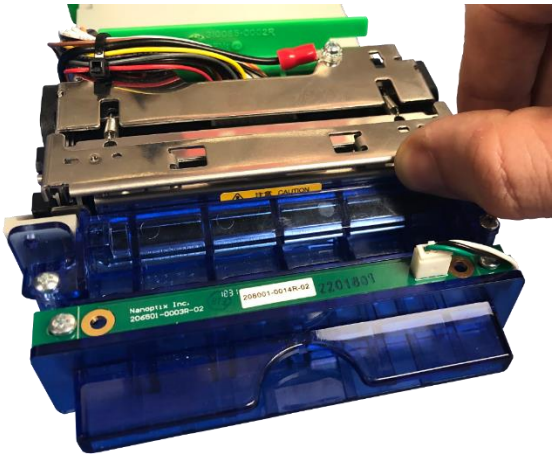

**Figure 17: Opening Paper Path**

2. The top of form sensor is located opposite the thermal head platform. The sensor can be cleaned with a cotton swab and isopropyl alcohol. Wait for the alcohol to dry before closing.

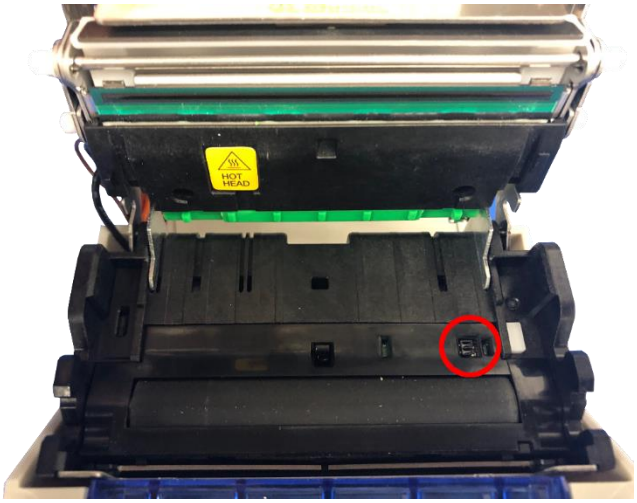


**Figure 18: Top of Form Sensors**

3. The paper low sensor (not included on all models) is located in the HSVL arm spindle. Unload the paper roll from the printer and gently clean the sensor with a cotton swab and isopropyl alcohol.

**Figure 19: Paper Low Sensor**

# 6. Service & Support

## 6.1 Returning printers back to Nanoptix for repairs (RMA)

- Send repair approval request to Nanoptix Inc. which should include:
  - Printer model #
  - Serial #
  - Brief problem description
- Ship defective products to Nanoptix Inc.
- Ensure that each package being sent is identified by the specified RMA number

NOTE: Make sure to place a blank ticket or a piece of paper between the thermal print head and roller for shipping and storage.

**United States of America Canada and International**
RMA # XXXXXX
Nanoptix Inc.
699 Champlain St.
Dieppe, NB, Canada E1A 1P6

NOTE: It is imperative to have every package clearly identified by an RMA number.

## 6.2 Technical Support Contact Information

Service department
Nanoptix Inc.
699 Champlain St.
Dieppe, NB, Canada
E1A 1P6
Tel: 506.384.3388
Fax: 506.384.3588
E-mail: support@nanoptix.com
Web site: www.nanoptix.com