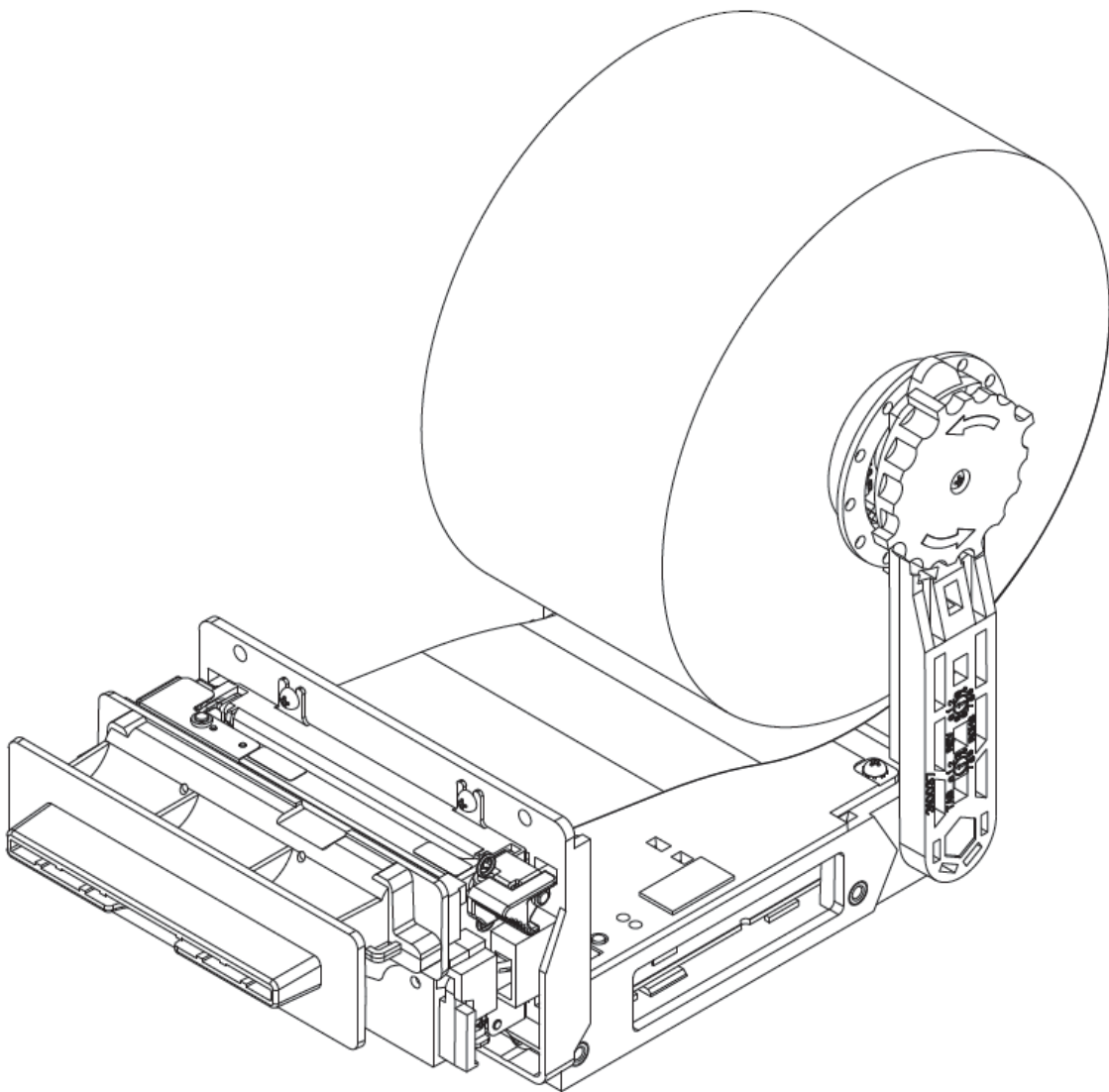




High Speed Video Lottery Thermal Printer *Owner's Manual*



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NANOPTiX

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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 the 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 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 features drop in loading, allowing the printer to be installed between two devices.

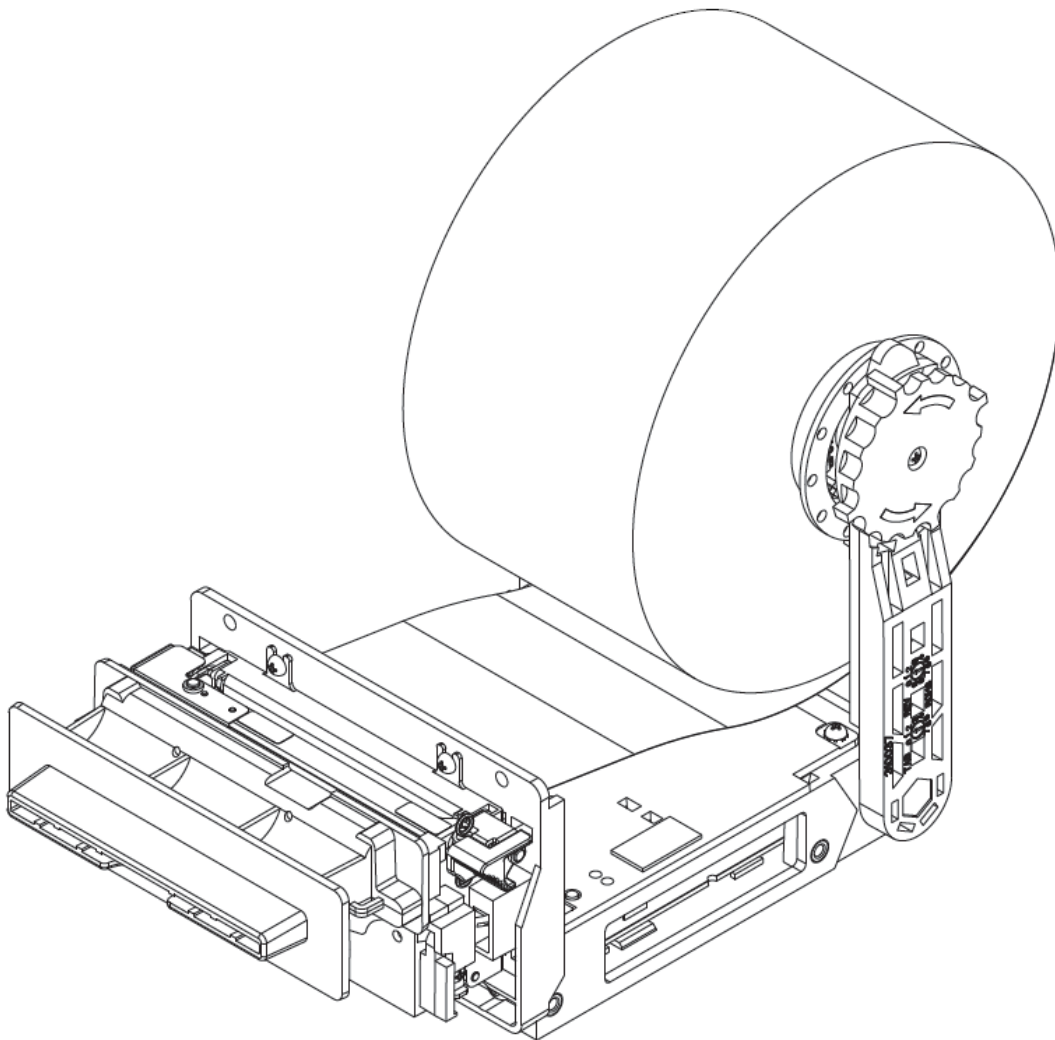


Figure 1: High Speed Video Lottery Printer

1.2 Options Available

There are several options available for the Nanoptix High Speed Video Lottery 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	65 mm, 80 mm and 82.5mm
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) 16MBit Flash (upgradable to 64Mbits) 64KBit non-volatile FRAM memory
Resident Character Sets	Arial Bold (6 sizes) Note: Other Character sets can be programmed quickly
Integrated Bar Codes	UPC-A, UPC-E, interleaved 2 of 5, 3 of 9, Code 128, EAN 8, EAN 13. Note: Other Bar Codes can be programmed quickly
Speed	Up to 250 mm/second
Sensors	Paper in, Paper in chute
Human Interface	Auto-feed paper loading, status LED, paper feed button
Dimensions	128 mm (W) x 142 mm (H) x 225 mm (L)
Weight	0.59 Kg

Table 1: Specification

1.4 Printer Controls

To reset Printer

For the *High Speed Video Lottery* 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.

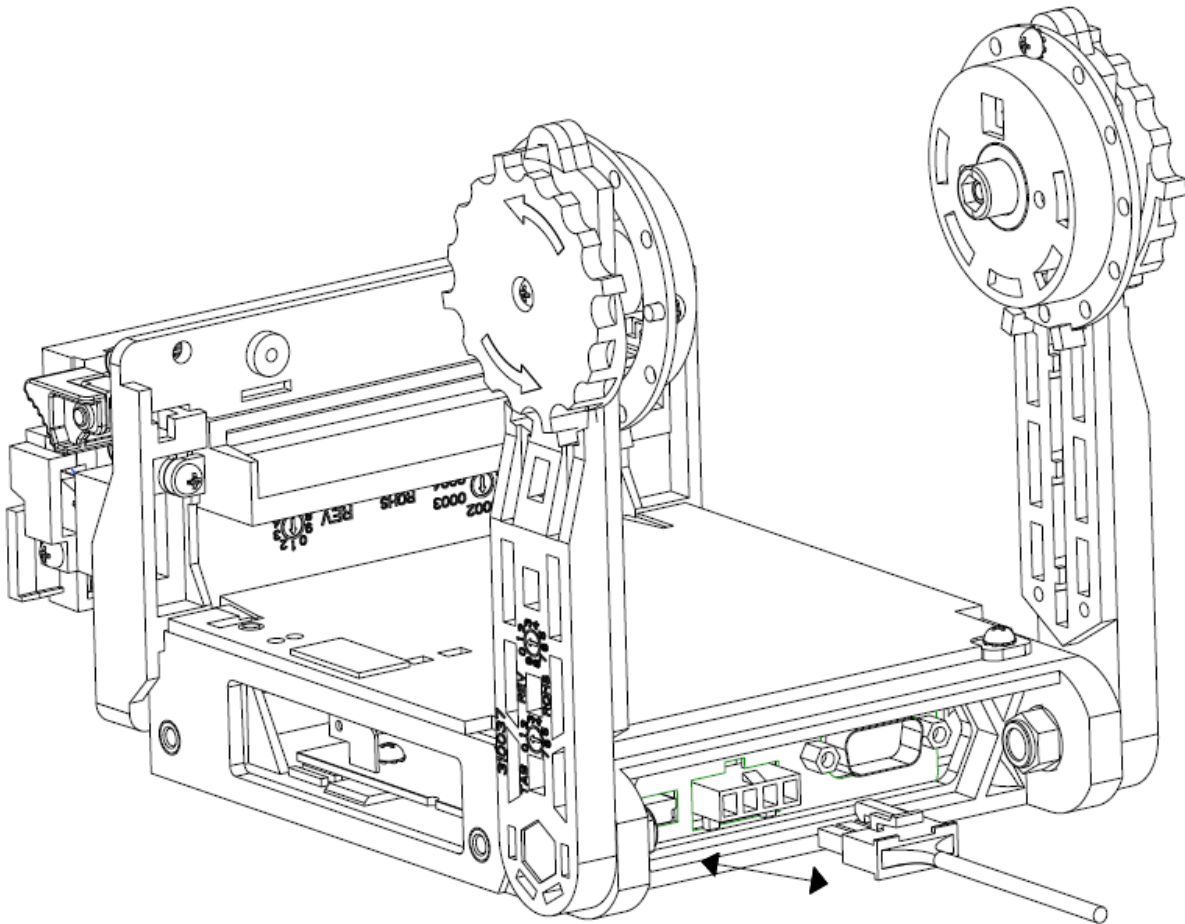


Figure 2: Resetting Printer

Paper Feed Button

Use the Paper Feed Button to advance the paper.

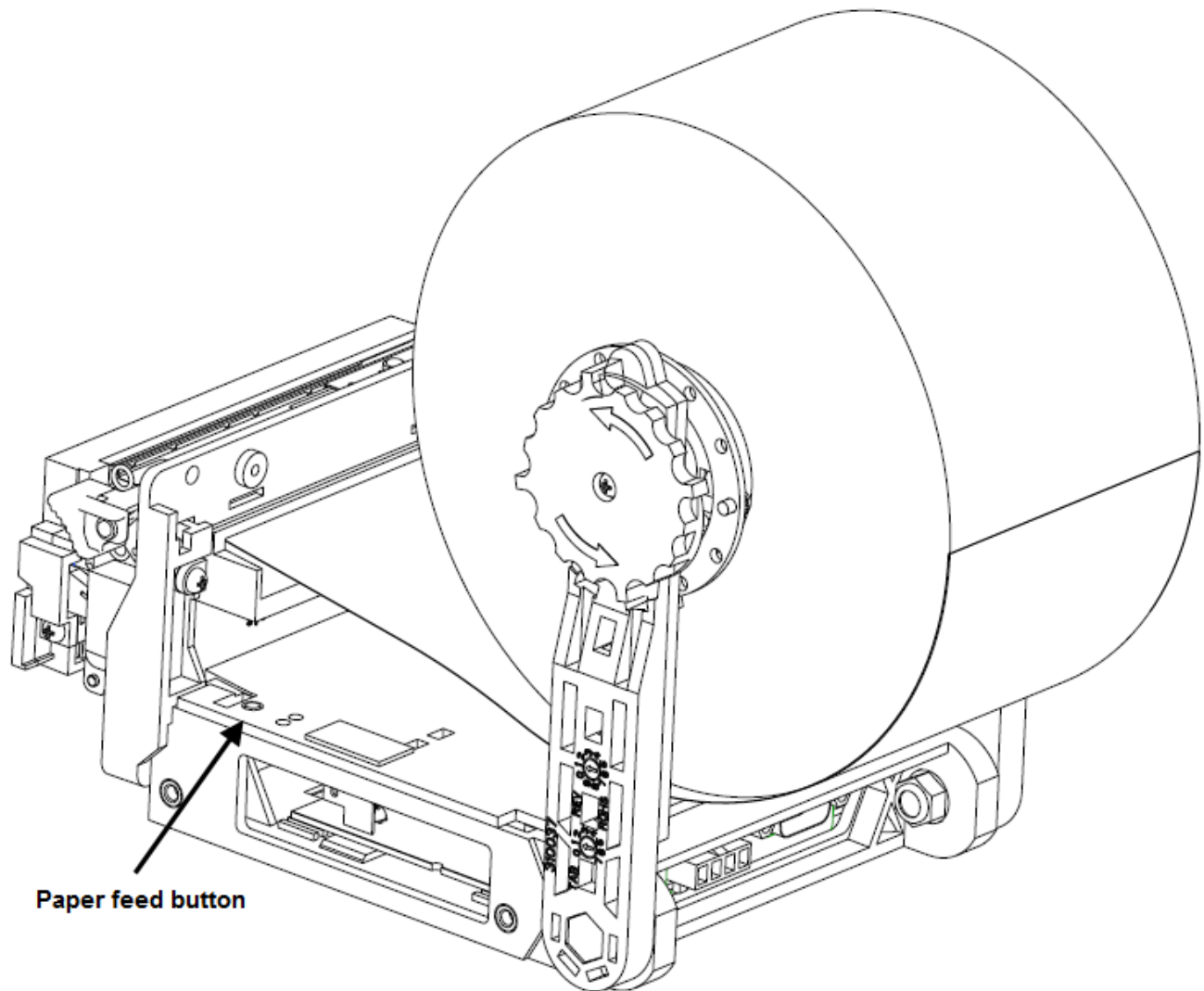


Figure 3: Paper Feed Button

Light Emitting Diode

The LED on the main controller board shows the printer status.

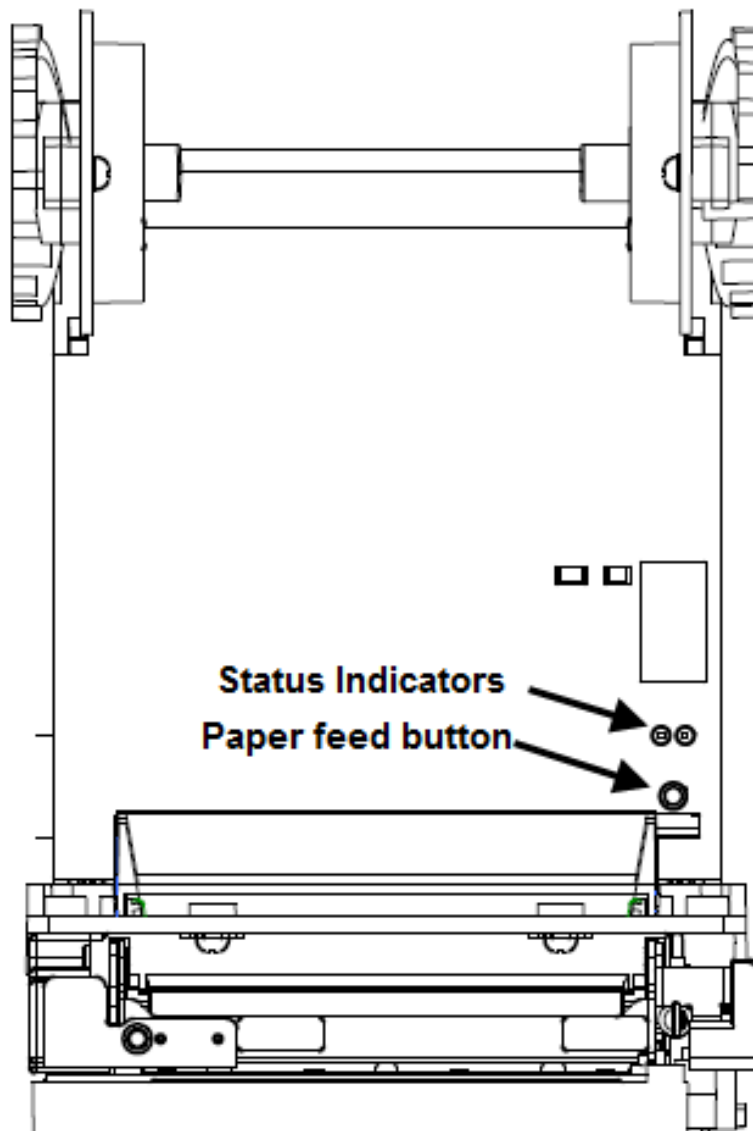


Figure 4: Top View LED Positions

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.

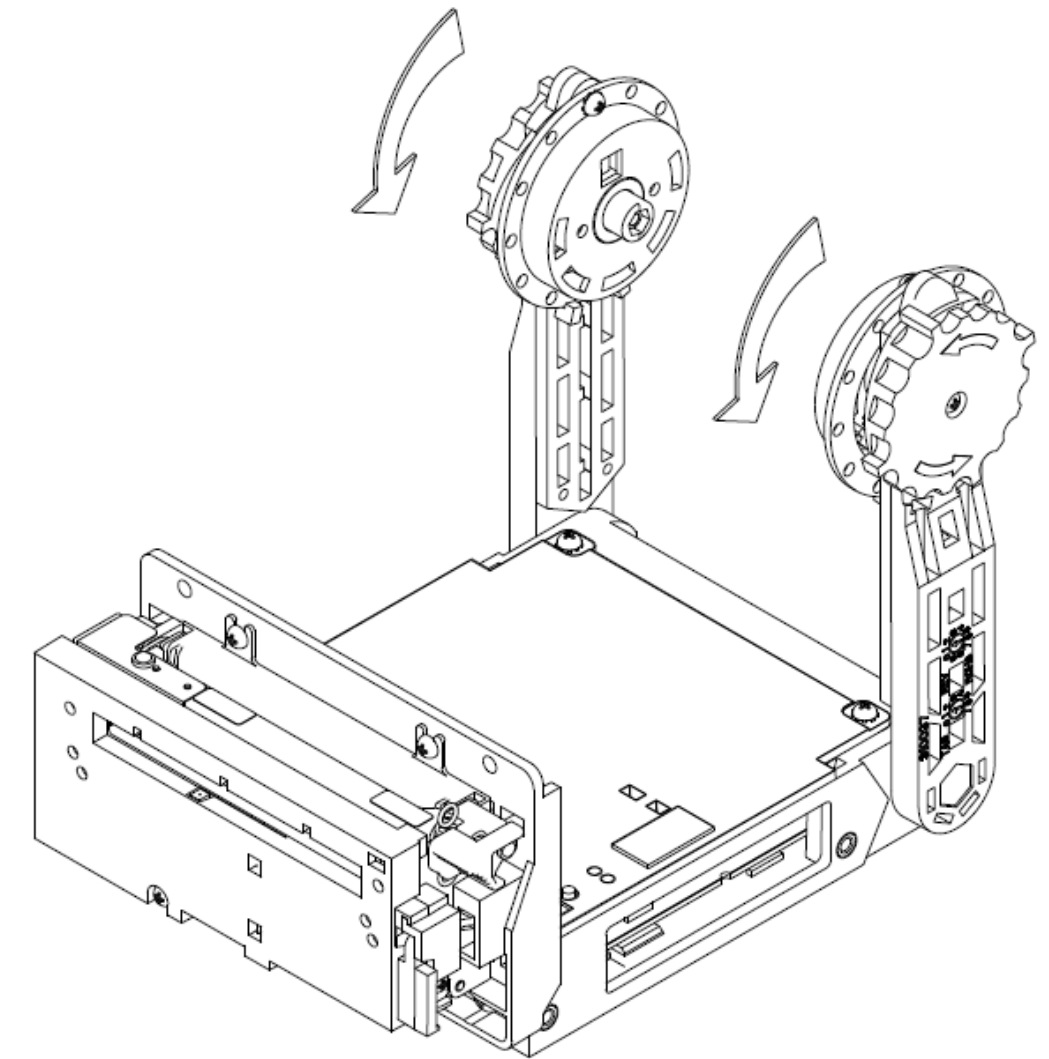


Figure 5: Spindle Movement

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

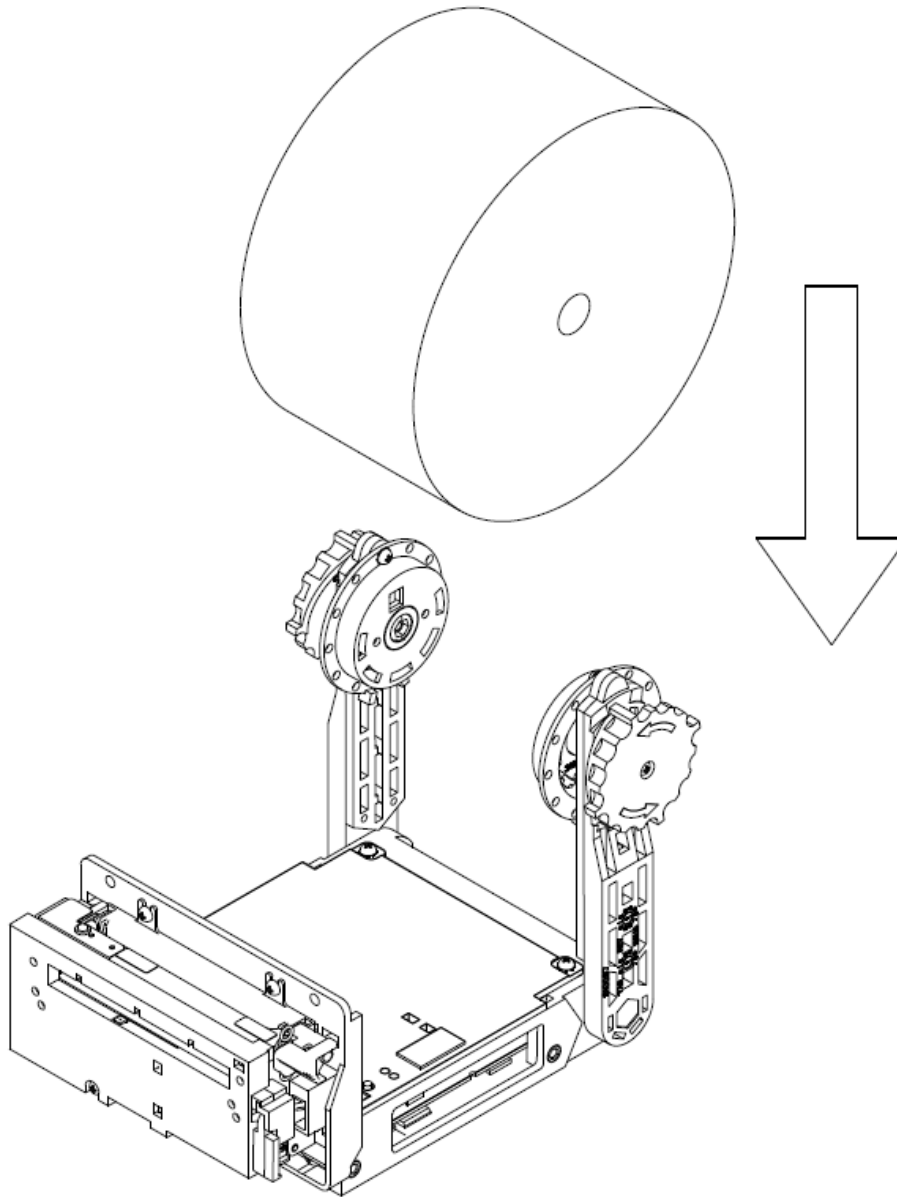


Figure 6: Loading Paper

Caution: The paper must be unwound from the bottom of the roll – Figure 7. Otherwise, the printer may not print or the paper may jam.

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

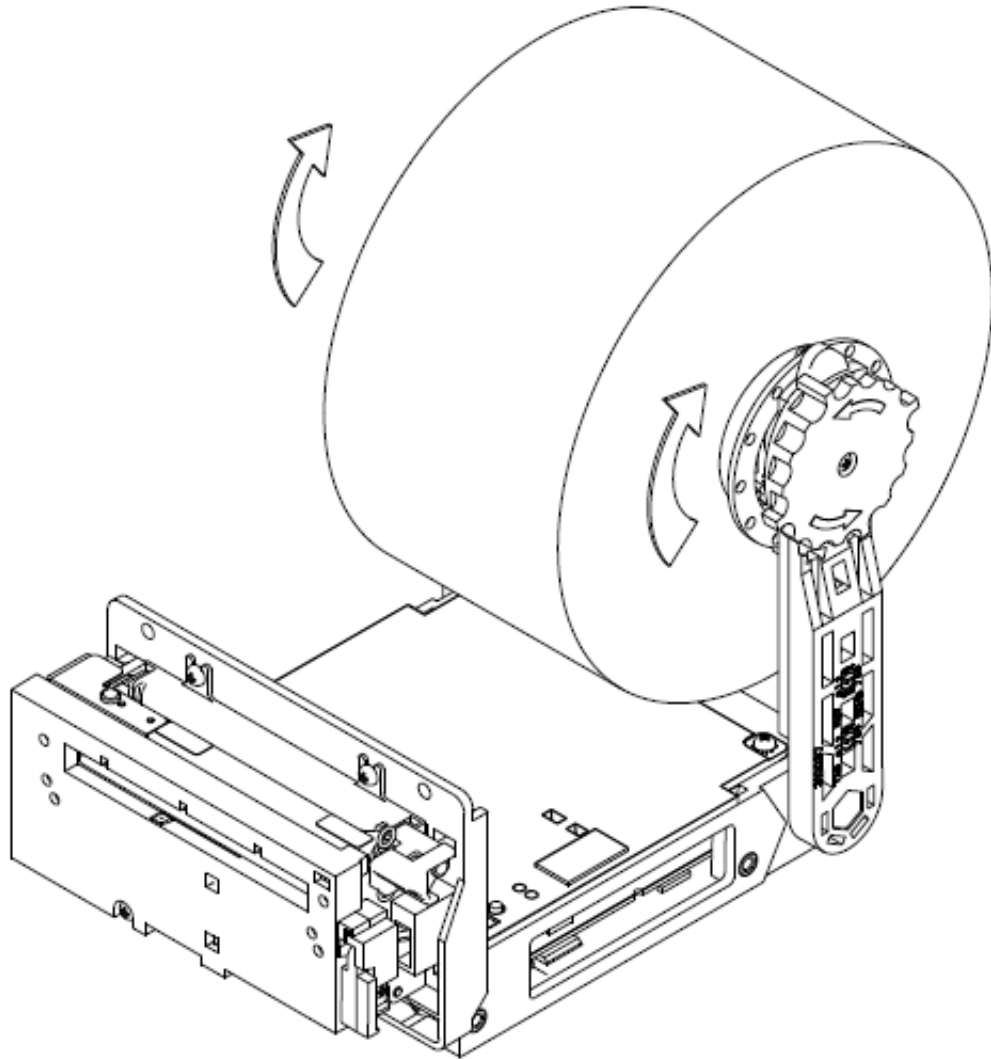


Figure 7: Locking Paper

5. Feed the paper between the metal tabs, once far enough, the paper in sensor will activate and feed paper to a predetermined length. Press the paper feed button (Figure 3 & 4). The paper will advance and the paper will be cut, leaving a clean edge for the next printed ticket.

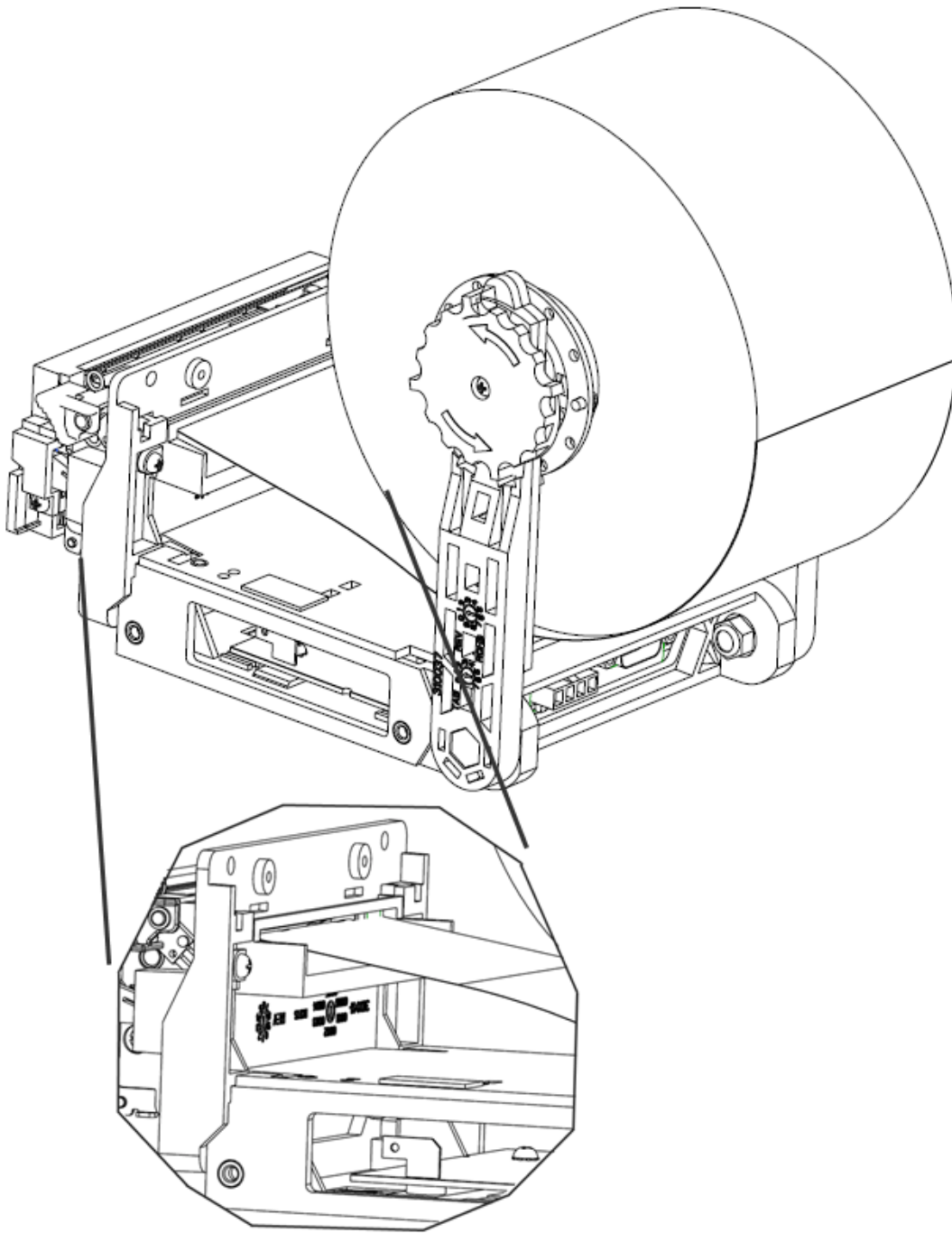


Figure 8: Inserting Paper Zoom

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

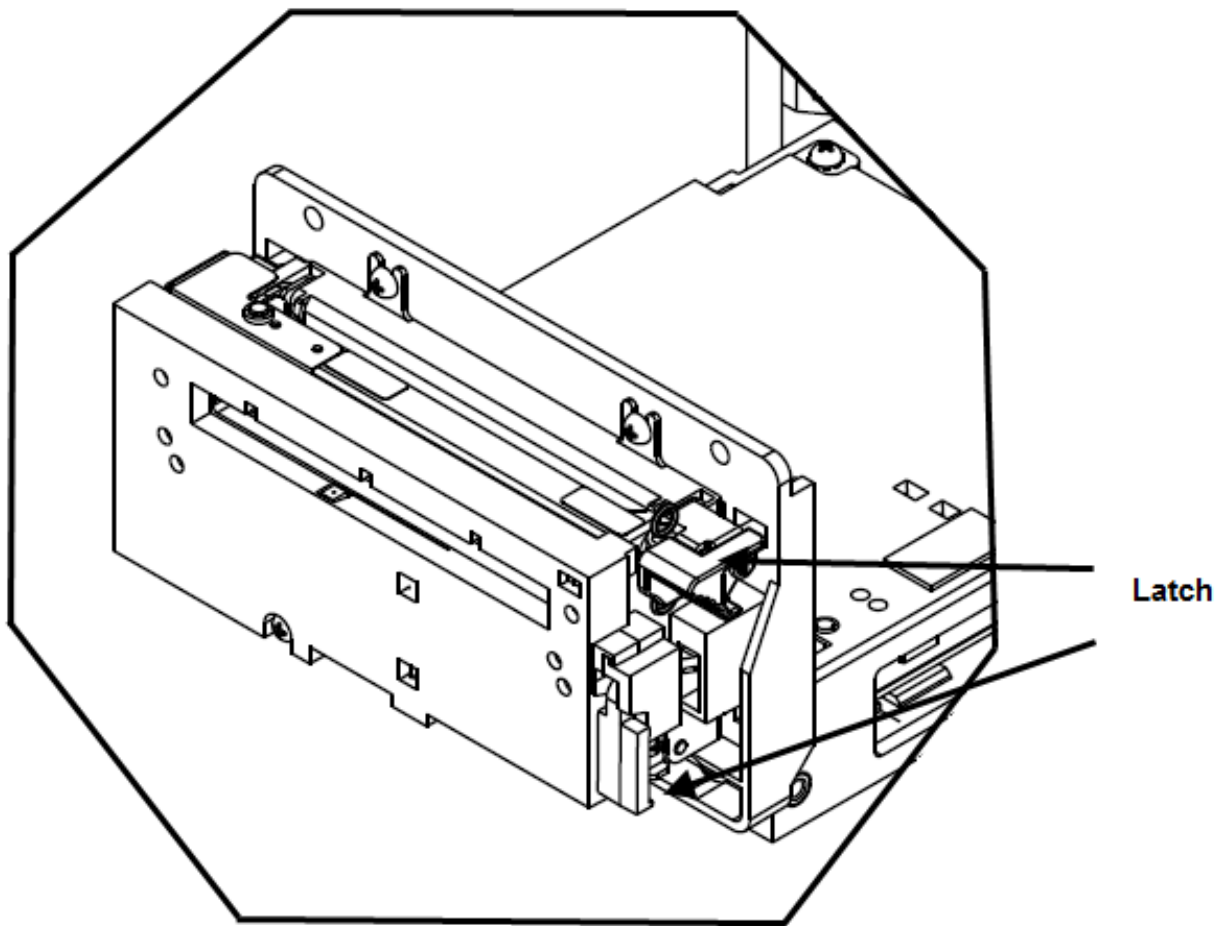


Figure 9: Clearing Paper Jam

- Pull up on the latch to open the door and remove obstruction.
- Follow instructions on inserting the paper (Figure 6).

1.6 Spindle Arm Configurations

The HSVL is known as the “Transformer” since it can be mounted in various positions. The arms can be moved by loosening the mounting nuts using a 8mm wrench or ratchet.

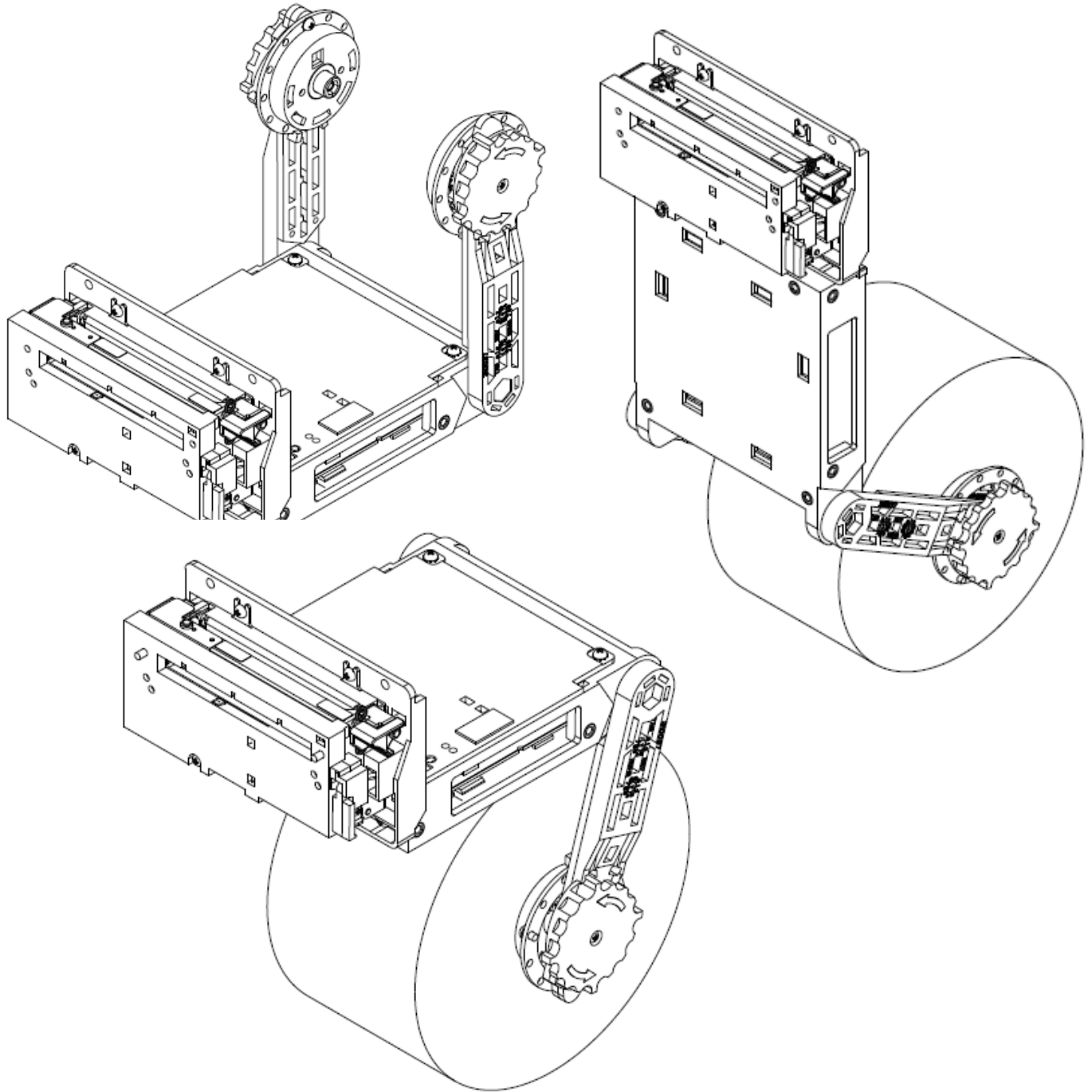


Figure 10: Spindle Configurations

1.7 Testing the Printer

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

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

```
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:           VL00000
Date Code:            YYYYMMDD

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

Figure 11: Configuration Ticket

Performance Report	
Nanoptix HSVL Statistics	
Printer ID:	VL00000
Model:	HIGH SPEED VL
Firmware:	HSV-5.43D (0xC79F)
Power cycles:	246
Meters Printed:	5
Number of Cuts:	65
Jams:	0
Voltage errors:	0
Temp. errors:	0
TOF errors:	1
Drawer opened:	7
On time:	0002:01H:43M:36S

Figure 12: Performance Report

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	LED Status (Green)	LED Status (Red)
Unit ready	ON	OFF
Unit is in Reset or Booting	ON	OFF
Unit in standby (powered off)	OFF	OFF
Paper Out	OFF	ON
Door Open	Fast Blink	ON
Paper Jam	ON	Fast Blink
Missing Black Index Mark	ON	Slow Blink
Temperature Error	OFF	Medium Blink
Voltage Error	OFF	Slow Blink
Print Head Error	OFF	Fast Blink

Table 2: Troubleshooting With Status LED

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

1.8 Printer Configuration

BOOT MODE SELECTOR DIP SWITCHES

To access the dip switch, remove plate that is covering the main board (see section 4).

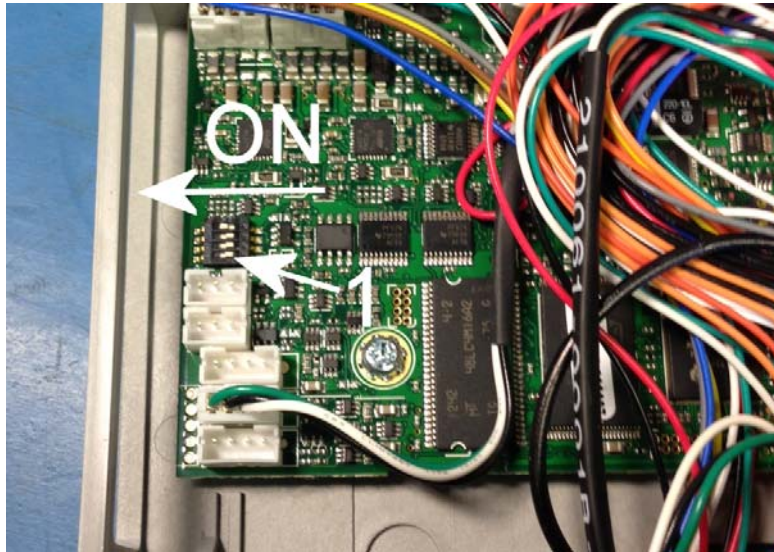


Figure 13: Boot Dip Switch

DIP switch settings 1 – 2 – 3 – 4	Function
OFF-OFF-OFF-ON	Run mode (default setting)
ON-ON-OFF-OFF	Recovery mode (Corrupted firmware)

Table 5: Boot Selector Functions

CONNECTION LAYOUT

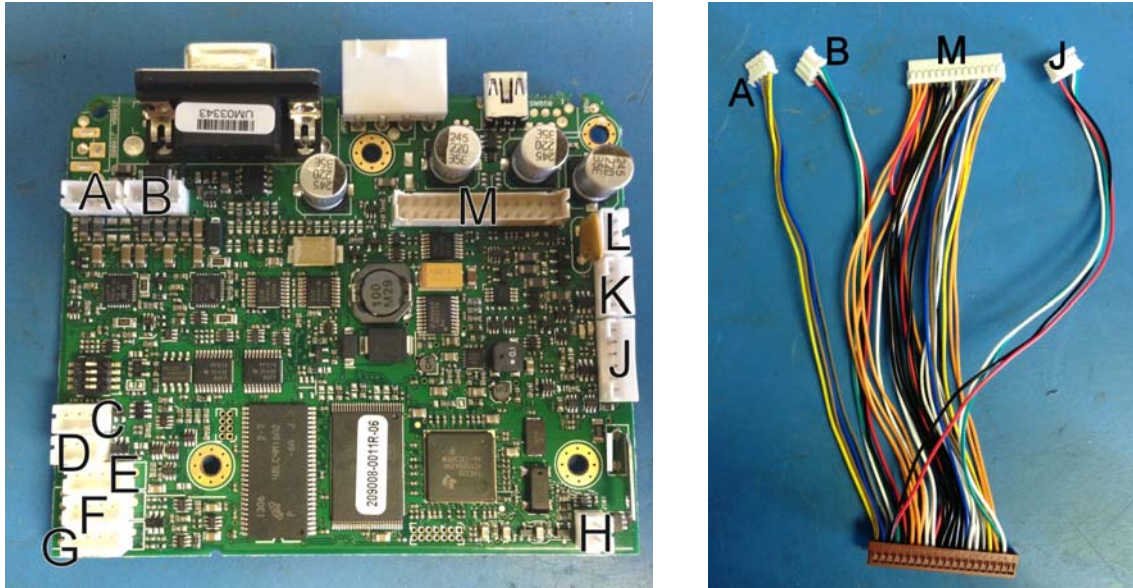


Figure 14: Connector Layout

Item	Reference Designator	Function
A	J450	Cutter motor
B	J400	Feed motor
C	J451	Cutter home switch
D	J801	Platen open
E	J800	Ticket taken
F	J750	Paper low
G	J700	Paper in
H	J101	Battery Interface
I	J301	Print head ground
J	J600	Top of form (Index mark)
K	J850	Paper feed / LED
L	J901	Bezel Illumination
M	J300	Thermal head

Table 6: Connector Layout

2. Media and Supplies Guide

2.1 Thermal Paper Specifications

The printer requires qualified thermal paper with the following dimensions:

Paper roll width	82.5 mm \pm 0.05 mm (3.25 in. \pm 0.001 in.)
Paper roll diameter (max)	152.4 mm (6 in.)
Paper thickness (max)	155 micrometers (6.1 mil)
Core Internal diameter (max)	25.4 mm (1 in.)
Core Thickness (max)	3.175 mm (1/8 in.)

Table 7: 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
Appleton Specialty Papers 825 E Wisconsin Avenue P.O. Box 359 Appleton, WI 54912-0359	Tel: 920-734-9841 Toll-free: 800-922-1729
Kanzaki Specialty Papers (USA) 1350 Main Street Springfield, MA 01103	1.888.KANZAKI Tel: 888-526-9254 Fax: 413-731-8864

Table 8: 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 (standard C13 "square" inlet connector)
102080-0001R	Power Cord -Continental Europe (standard C13 "square" inlet connector)
210007-0601R	24V, 60W Power Supply (4 Pin Molex connector) GDS Standard

Table 9: 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 10: 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 11: 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 12: 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)

Please contact your sales representative if you require other emulations. If we do not have the emulation you need, we can provide most emulation 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 suggestions on which command will meet your requirements.

3. Parts List

3.1 Exploded View

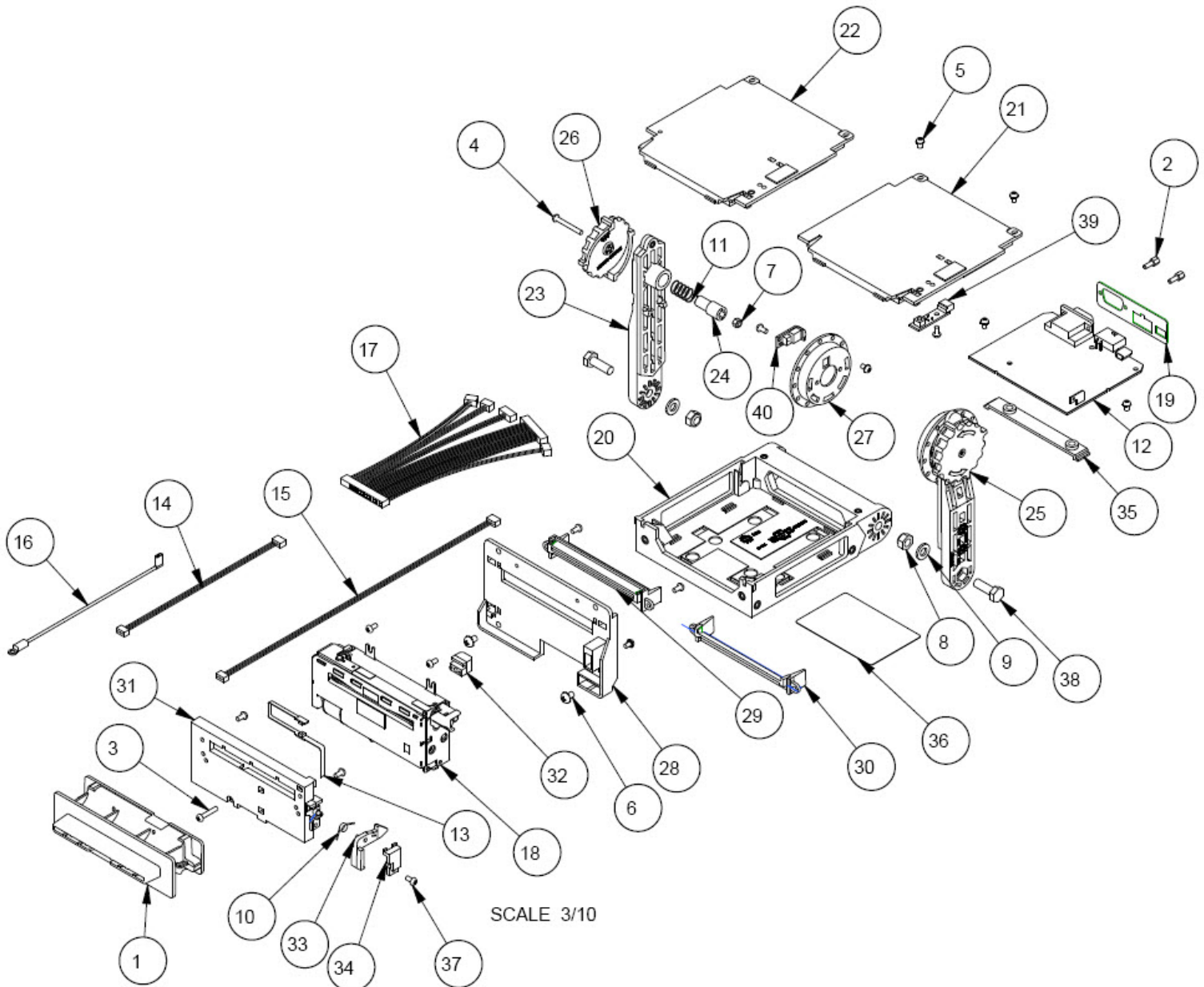


Figure 15: Exploded View

3.2 Parts List

Item	Lvl	Qty	Part Number	Description
2	1	2.00	100029-3001R	4-40 Male Female Hex Spacers
3	1	1.00	100041-0167R	Screw, M3x16, Pan Hd, St ZP
4	1	2.00	100041-0169R	Screw, M3x25, Pan Hd, Cross,
5	1	7.00	100041-1163R	Screw, SEMS, M3x5, Pan Hd, StZP
6	1	2.00	100041-1243R	screws, M4X6, 0.7, cross, zinc
7	1	2.00	100050-0103R	Nut, M3, Nylon Lock, St ZP 0.5
8	1	2.00	100050-0107R	Nut, M6x1.0, Nylon Lock, St ZP
9	1	2.00	100051-0111R	Washer, Flat, M6, 11.8OD, ST ZP
10	1	1.00	100069-1001R	spring, torsion, 0.375lb/in, L
11	1	2.00	100069-2006R	Spring, Compression
12	1	1.00	209008-0011P	BAP,UMB5509,HSV L Printer
13	1	1.00	208026-0001R	Paper in chute sensor - flex
14	1	1.00	210032-0001R	HAP,Paperfeed,4JST-3JST,150mm
15	1	1.00	210032-0002R	HAP,Paperfeed,4JST-3JST,265mm
16	1	1.00	210056-0002R	HAP,Ground Wire, HSV L printer
17	1	1.00	210059-0001R	HAP,SeikoTPH,UnivMB,HSV L
18	1	1.00	270022-0001R	TPrintMech,640dots,24V,cutter
19	1	1.00	300115-0002R	Plate, Connector, HSV L
20	1	1.00	310035-0001R	Frame, HSV L
21	1	1.00	310036-0001R	Cover, Main Board, HSV L
23	1	2.00	310037-0001R	Arm, HSV L
24	1	2.00	310038-0001R	Spindle, HSV L
25	1	1.00	310039-0001R	Knob, Spindle, Right, HSV L
26	1	1.00	310039-0002R	Knob, Spindle, Left, HSV L
27	1	2.00	310040-0001R	Cover, Paper Low, HSV L
28	1	1.00	310041-0001R	Mount, Mech, HSV L
29	1	1.00	310042-0001R	Guide, Paper, 82.5mm, HSV L
31	1	1.00	310044-0001R	Faceplate, HSV L
32	1	1.00	310045-0001R	Clamp, Faceplate, HSV L
33	1	1.00	310046-0001R	Latch, HSV L
34	1	1.00	310047-0001R	Cover, Latch, HSV L
35	1	1.00	310048-0001R	Holder, Main PCB, HSV L
37	1	7.00	340300-0306R	Screw, Plastite 45, Met., M3X6
38	1	2.00	340520-0618R	Screw, Hex Head, M6x18, St ZP
39	1	1.00	HSV L_PAPER_FEED	HSV L, PCB, PAPER FEED
40	1	1.00	HSV L_PAPER_LOW	HSV L, PCB, PAPER LOW

High Speed Video Lottery Thermal Printer Owner's Manual

Item	Lvl	Qty	Part Number	Description
				-
				<u>Power Supplies (Nanoptix Approved)</u>
	1	1	210007-0601R	<u>Power Supply - w/ 4 pin receptacle</u>
	1	1	102080-0000R	<u>Power Cord - North American</u>
				-
				<u>I/O Cables</u>
	1	1	100390-0001R	<u>Cable, USB, A-B, 6 ft.</u>
	1	1	102082-0000R	<u>Serial DB9F to DB9M Straight Through</u>
	4	1	102805-0000R	<u>Serial DB9F to DB9M Null Modem</u>
				-
				<u>Bezels</u>
				<u>Note: each kit includes: Bezel, LED PCB, harness & 4 screws</u>
1	1	1	310001-0001R	<u>Bezel Kit - short, w/green LED</u>
1	1	1	310001-0002R	<u>Bezel Kit - short, w/blue LED</u>
				-
				<u>Thermal Print Head Cleaning supplies</u>
	1	1	103218-0000N	<u>Isopropyl Alcohol Pens (12/pkg, each)</u>
	1	1	103217-0000N	<u>Pre-saturated Cards (2.5" wide * 6" long, 25/pkg)</u>

Table 13: Parts List

4. Printer Disassembly

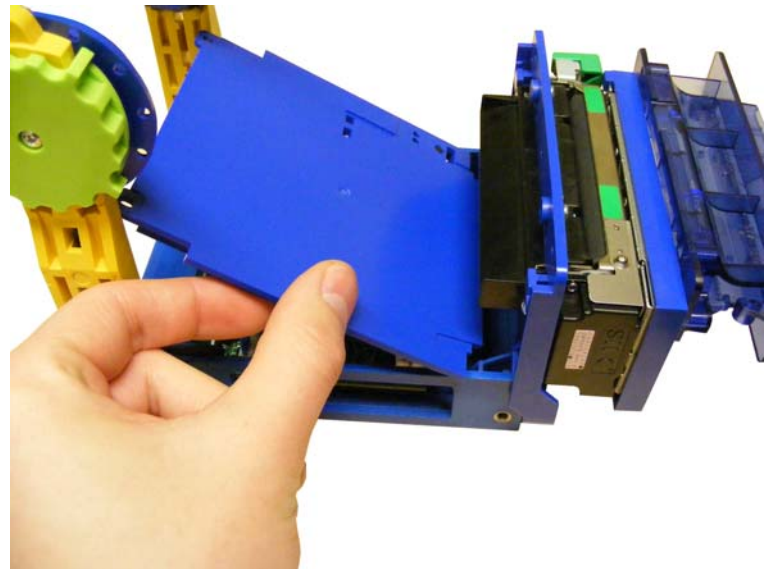
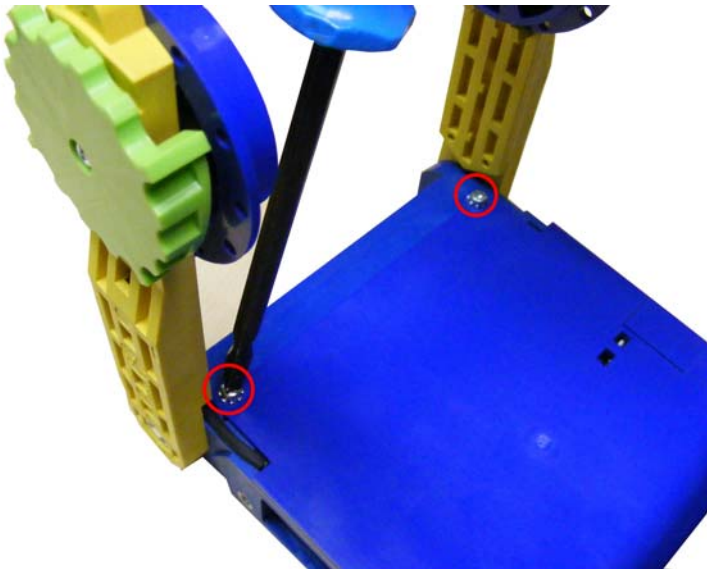


Use ESD protection (such as a wrist strap) anytime a PCB is exposed



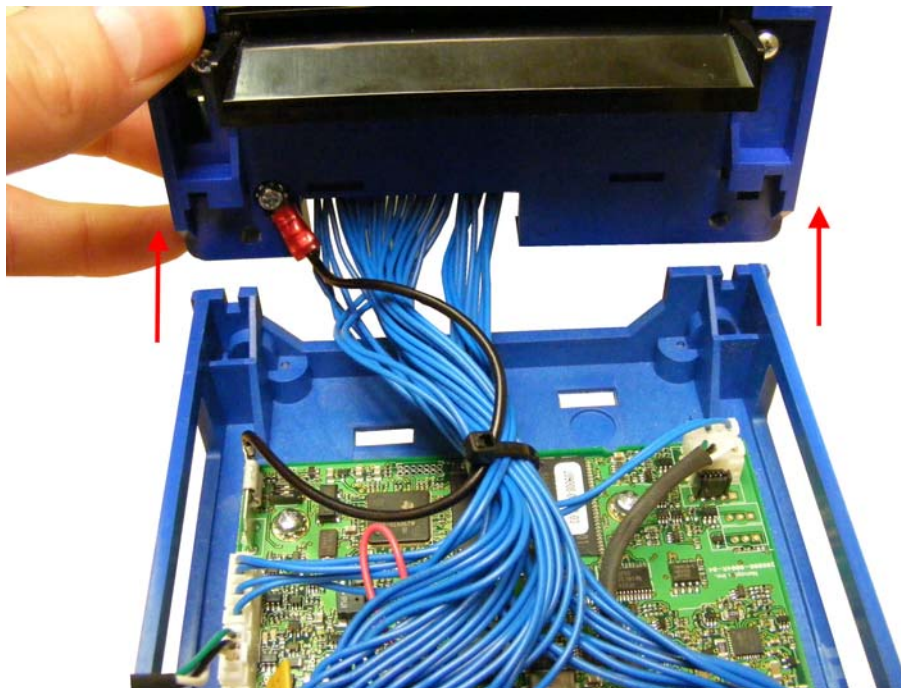
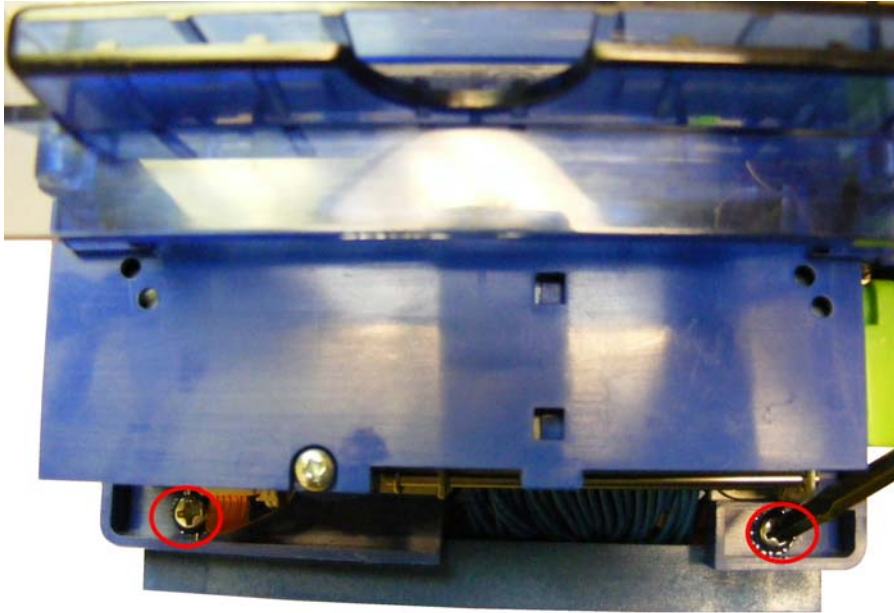
4.1 Removing the Mech. Assembly

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 1.4 (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.



Figures 16 & 17: Circuit Board Cover Removal

4. Remove the two screws holding on the cutter/roller mech. assembly to the printer base. Lift the mech. assembly from the printer base.



Figures 18 & 19: Mech Removal

4.2 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 20: 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 “Moving Mech. Assembly” step 3.
5. Disconnect harnesses, grounds, etc. Remove the last two screws holding the circuit board to the printer base.



Figure 21: 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 22: Main Board Screw Location

5. Mechanical Drawings

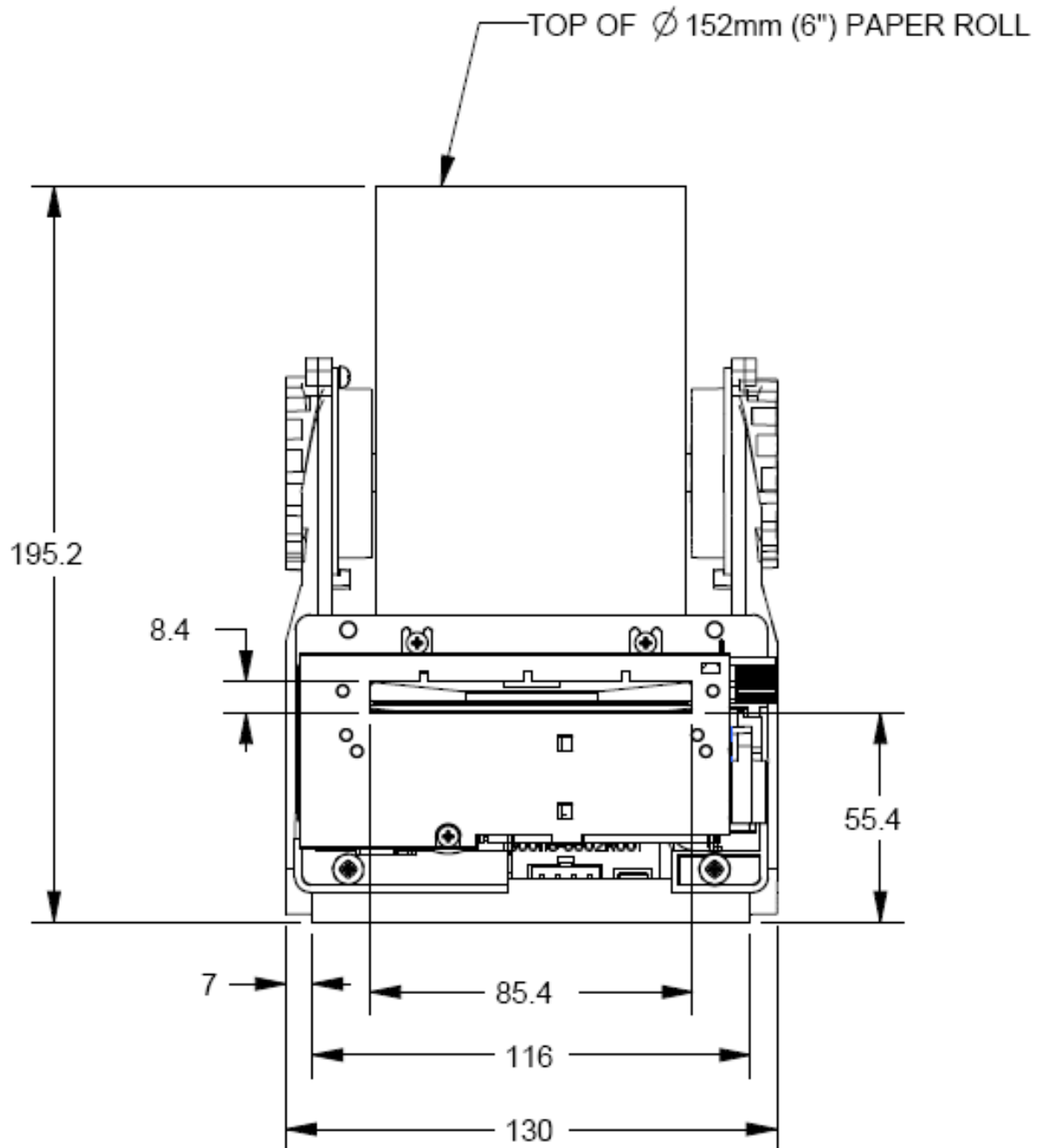


Figure 23: Mechanical Dimensions - Front View

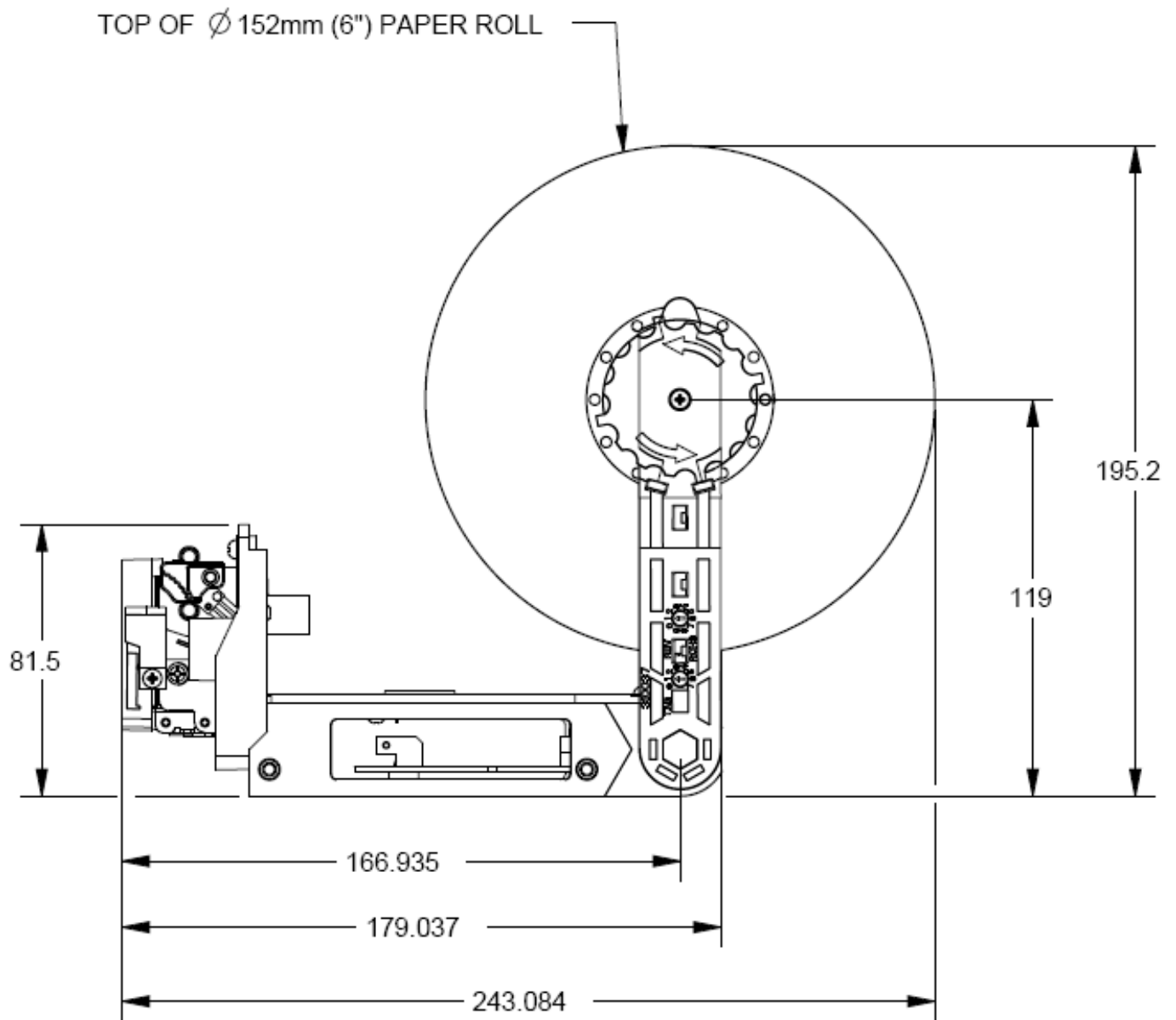


Figure 24: Mechanical Dimensions - Side View

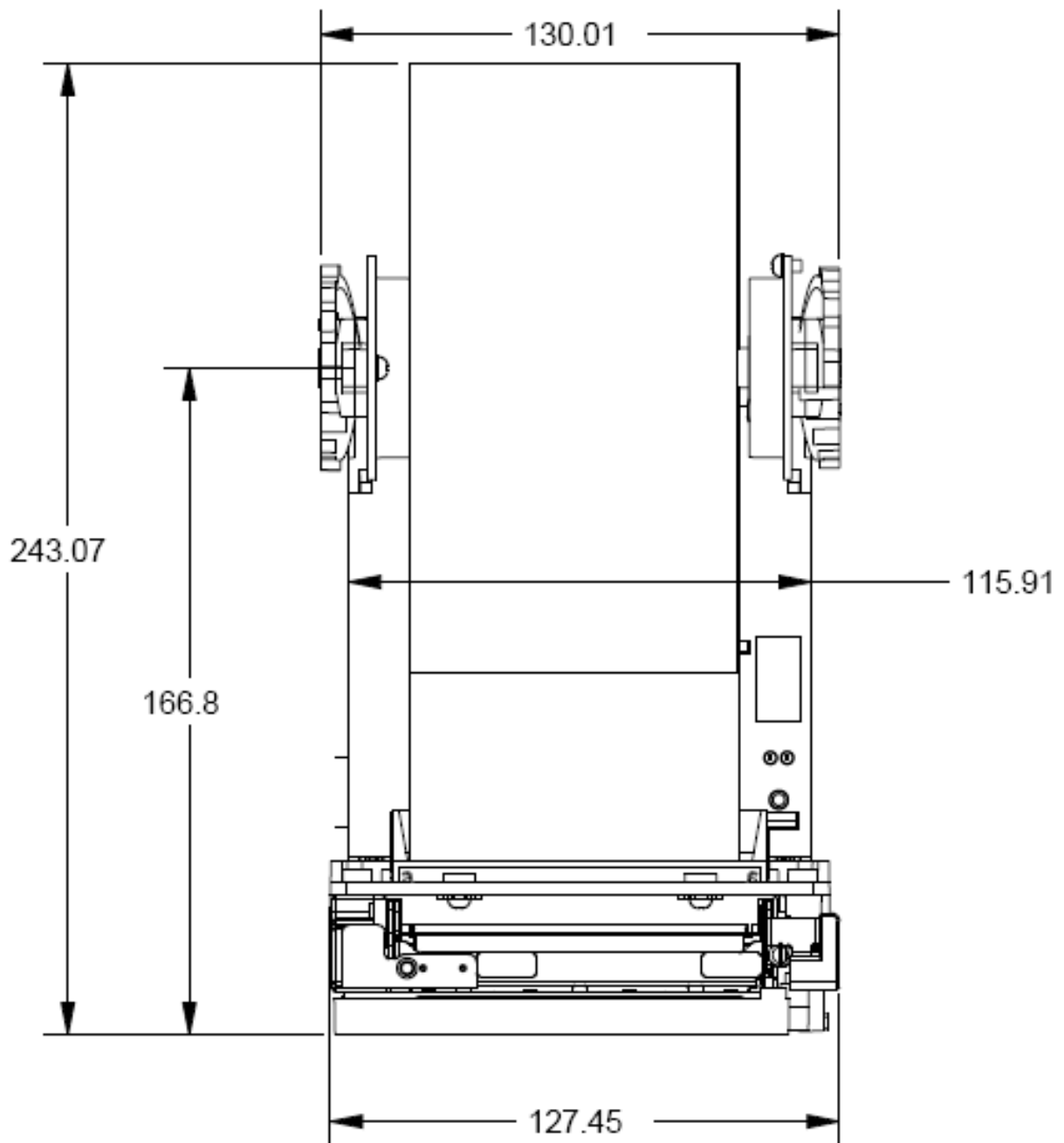
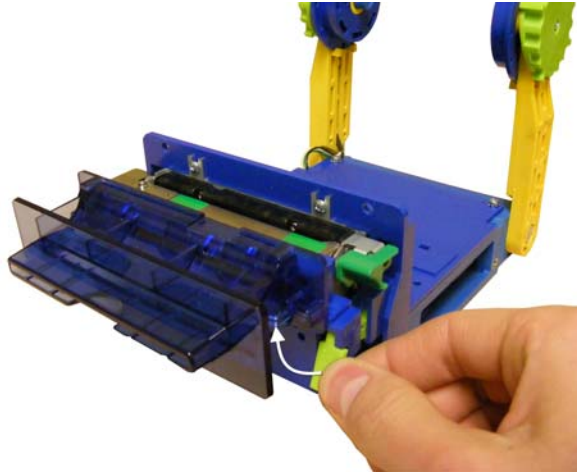


Figure 25: Mechanical Dimensions - Top View

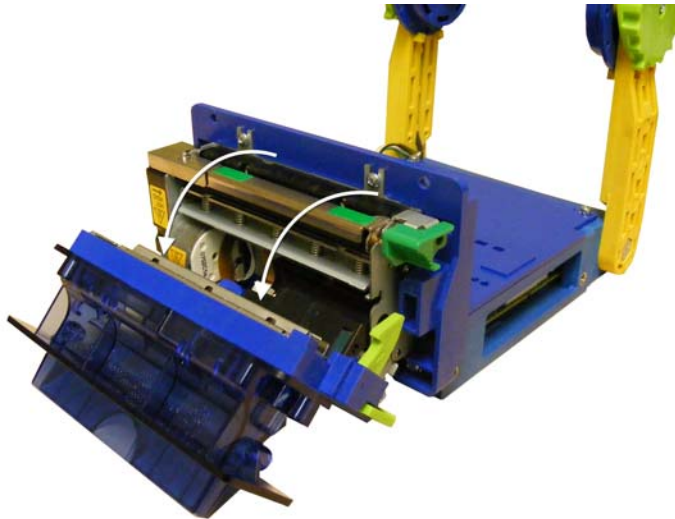
6. Printer Maintenance Instructions

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. by pulling on the bottom green lever.

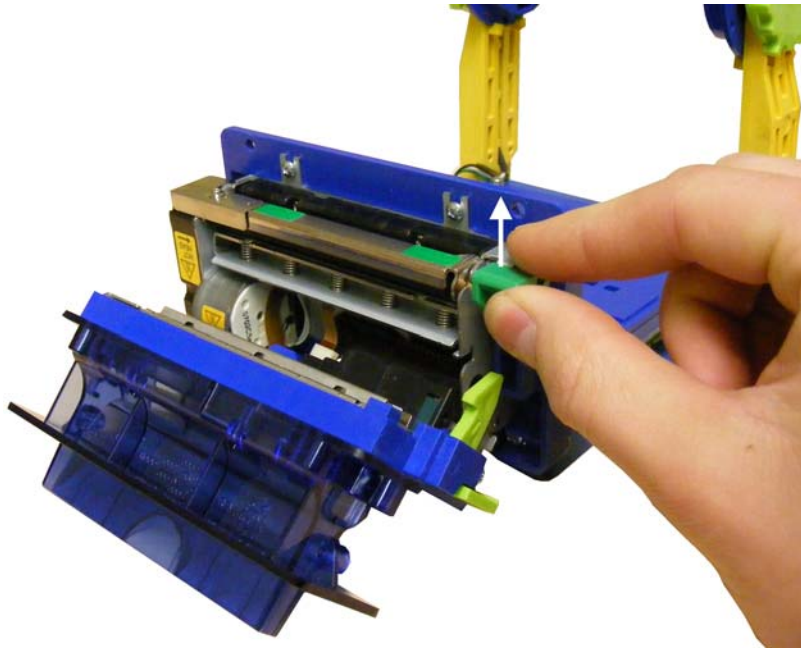


2. Lightly bring the paper guide housing down.

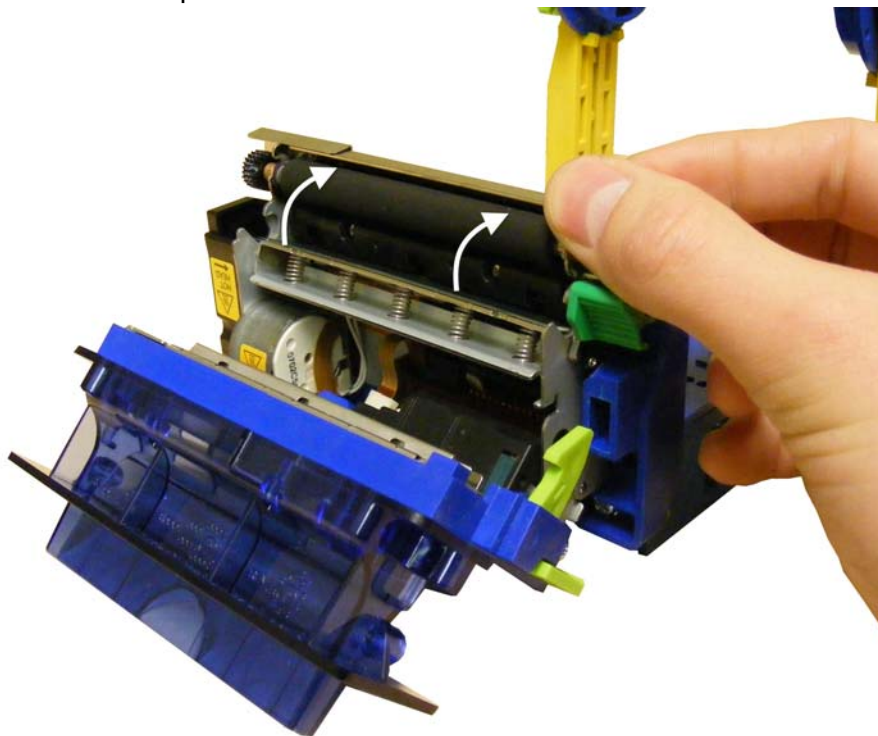


Figures 26 & 27: Paper Guide Housing

3. Unlatch the roller assembly by pushing up on the top green lever.



4. Gently lift the roller assembly up. The thermal head can be cleaned with a cotton swab and isopropyl alcohol. Wait until the alcohol dries before closing. The platen roller should be cleaned with mild soap solution.



Figures 28 & 29: Roller Assembly

5. The paper in sensor, labeled “1”, is located on the same platform as the thermal head. The top of form sensor, labeled “2”, is located opposite the thermal head platform. Both can be cleaned with a cotton swab and isopropyl alcohol. Wait for the alcohol to dry before closing

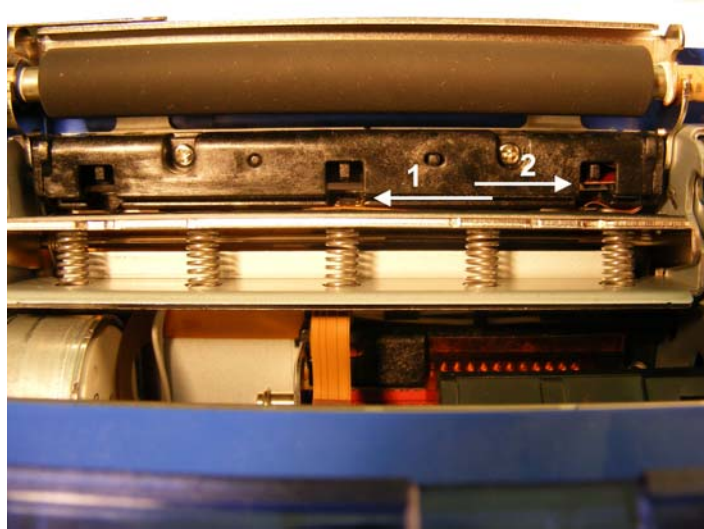


Figure 30: Paper in & Top of Form Sensors

6. The paper low sensor 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 31: Paper Low Sensor

