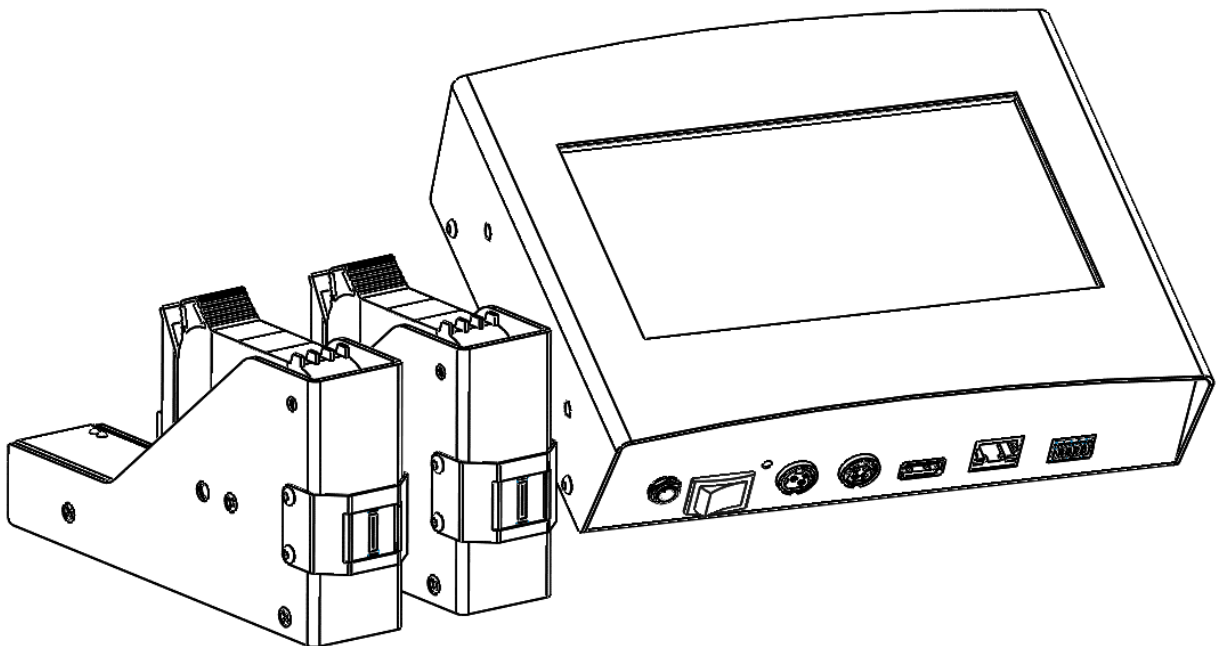


RNJET H1/H2 Plus

Installation manual



RNJET H1/H2 Plus

Industrial Hi-Resolution Inkjet Printing System

Installation Manual

Revised 01 11/11/2021

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Notices & Cautions

Safety

- Always follow safety regulations by wearing safety goggles, gloves and protective clothing during handling, installation, maintenance, and operating procedures for the printing system.
- Keep all print system components and operating liquids away from open flames and excessive heat.
- In case of fluid eye contact, flush immediately with water and receive appropriate medical attention.
- The power source used for print system should comply with all safety regulations and codes required for safe plugging.
- Power, data, and sensor input cables must be inserted appropriately in their respective locations. Where possible, route cables away from moving objects and secure via tie-wraps.

Handling and care

The printhead engine is encased and the print nozzles are exposed through the nozzle guard. Extra precaution should be taken when handling the cartridge during installation, operation, and maintenance. Never use abrasive materials on or near the exposed print nozzles.

Notice1: *Do not allow objects to be in direct contact with the print head's nozzles.*

Notice2: *Store device in temperature range of 0 -45° C*

Notice3: *Store ink in temperature range as described on Cartridge*

Notice4: *Do not forget to put the cartridge cap after removing the cartridge to prevent nozzle clogging*

Ink

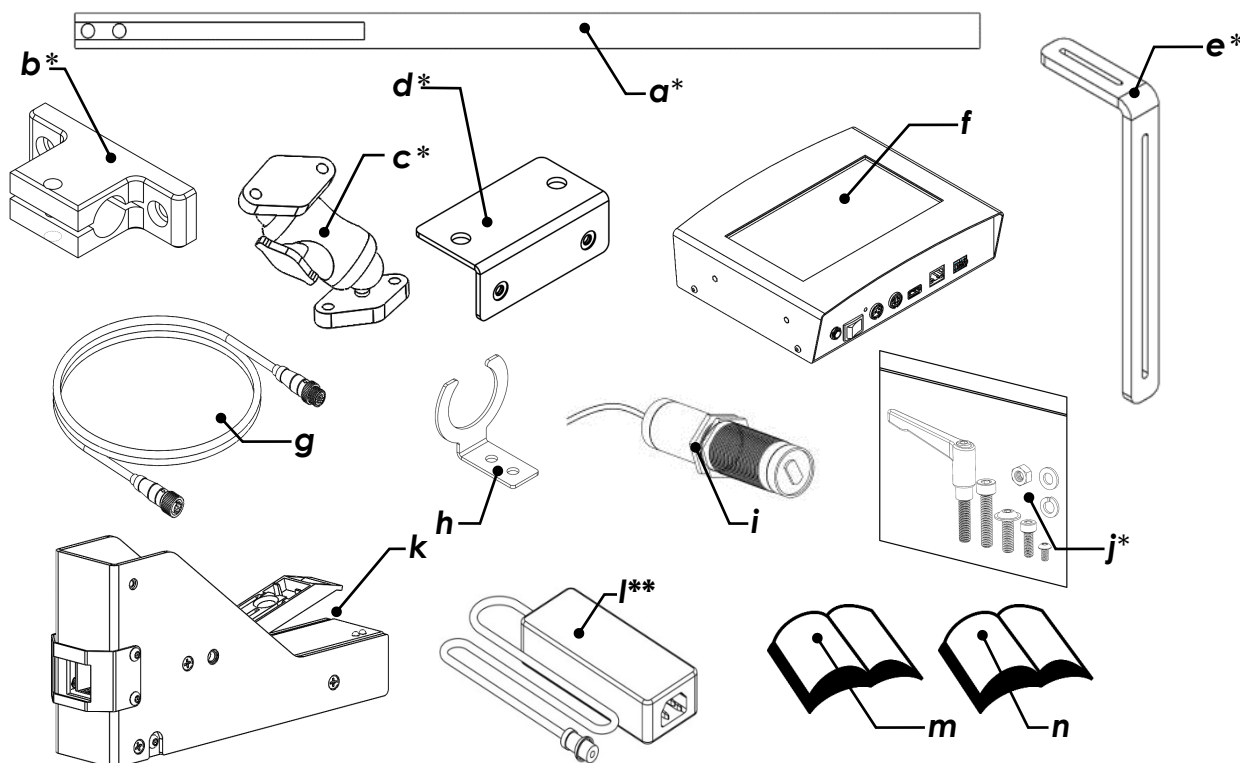
Inks come in different solutions, varieties, and codes (e.g. Water-based for porous substrates, Solvent- Based for non-porous substrates, Food Grade, etc.). Make sure to choose proper ink for each application.

Notice: For best results, always use RN MARK premium inks.

Introduction

What's in the box

Following are all the components that are included inside the device package.



a: Slider Arm(Rod) x 1pcs [2pcs]*

b: Rod Mount x 1pcs [2pcs]*

c: Controller Pivot Mount x 1pcs*

d: L-Mounting bracket x 1pcs [2pcs]*

e: L-shape Unit Mount x 1pcs [2pcs]*

f: Controller x 1pcs

g: Data Cable(2m) x 1pcs [2pcs]

h: Photocell Mount x 1pcs

i: Photocell Sensor x 1pcs

j: Screw Pack x 1pcs [2pcs]

k: Driver Head x 1pcs [2pcs]

l: Power Adaptor x 1pcs**

m: Installation Manual x 1pcs*

n: User Manual x 1pcs*

* These parts are optional in NO-Attachment version of RNJet H1/H2 Plus and must be ordered separately.

** Due to different power plug standards worldwide, we do not supply the power cord.

Figure 1

System specifications

General

Gross Weight: **H1:** 4500gr (10 lbs) **H2:** 5400gr (12 lbs)

Net Weight : **H1:** 2800gr (6.2 lbs) **H2:** 3600gr (8.0 lbs)

Box size: 190 x 290 x 380 mm³ (7.5 x 11.5 x 15.0 in³)

Controller Dimensions: 52 x 173 x 203 mm³ (2.0 x 6.8 x 8.0 in³)

Print-head Dimensions: 36 x 88 x 172 mm³ (1.4 x 3.5 x 6.7 in³)

Operating Temperature: 0-45 °C

Max Speed: up to 90 m/min (300 ft/min)

Resolution: 300 DPI

Print Height: 12.7 mm (0.5") [up to 25 mm (1"), conditions apply]

I/O power: (100-240 V 50/60 Hz 5.0A) / (12 V 60W)

I/O data: NPN Sensor input (e.g. photocell) , integrated 7" Touch LCD input, Speed encoder input (shaft encoder), USB input, RS-232 connection.

Cartridge: 45ml Sealed ink cartridge

20 million characters per cartridge (based on 50 dots/character)

Ink-Type Compatibility:

Fast dry solvent-based for porous and non-porous materials, Fast dry water-based for porous material, Food Grade.

Software:

Advanced layout design in RN Soft Windows-based OS (PC)

User-friendly layout design in RN Soft Linux-based OS (Touch LCD)

Dynamic Data Generation

Supports all general graphic input file types & True Type Fonts

Supported Barcode Types:

1-D: All major 1-D barcode formats such as:

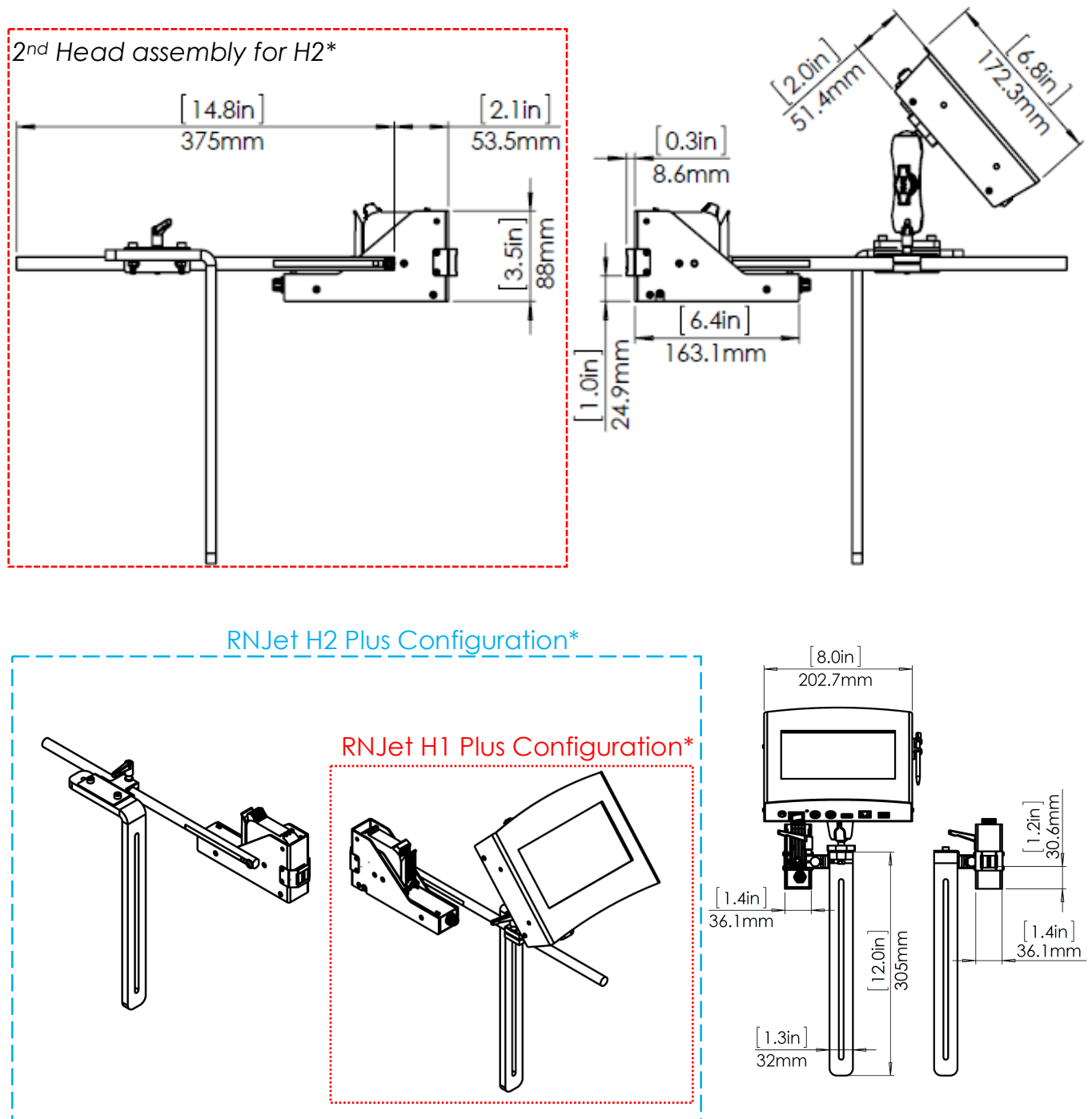
Codabar, Code, EAN, MSI, RSS, UPC, T F, GS1databar, etc.

2-D: QR-Code, ECC200 (Datamatrix), PDF417/macro, Aztec, etc.

Standards & Certificates:

CE, FCC, CSA, ICES, Lead-free & RoHS compliant

Printer Assembly Dimensions:

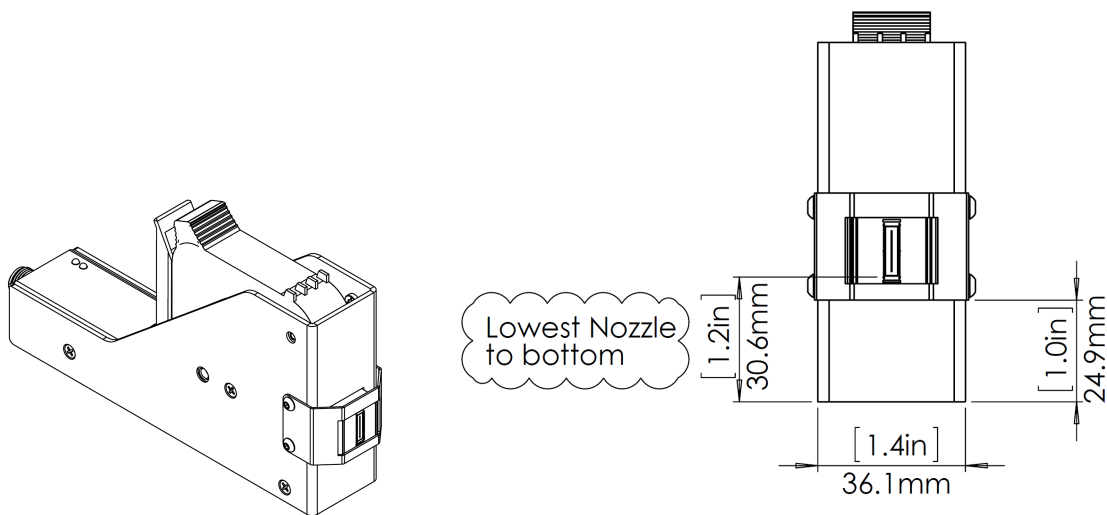
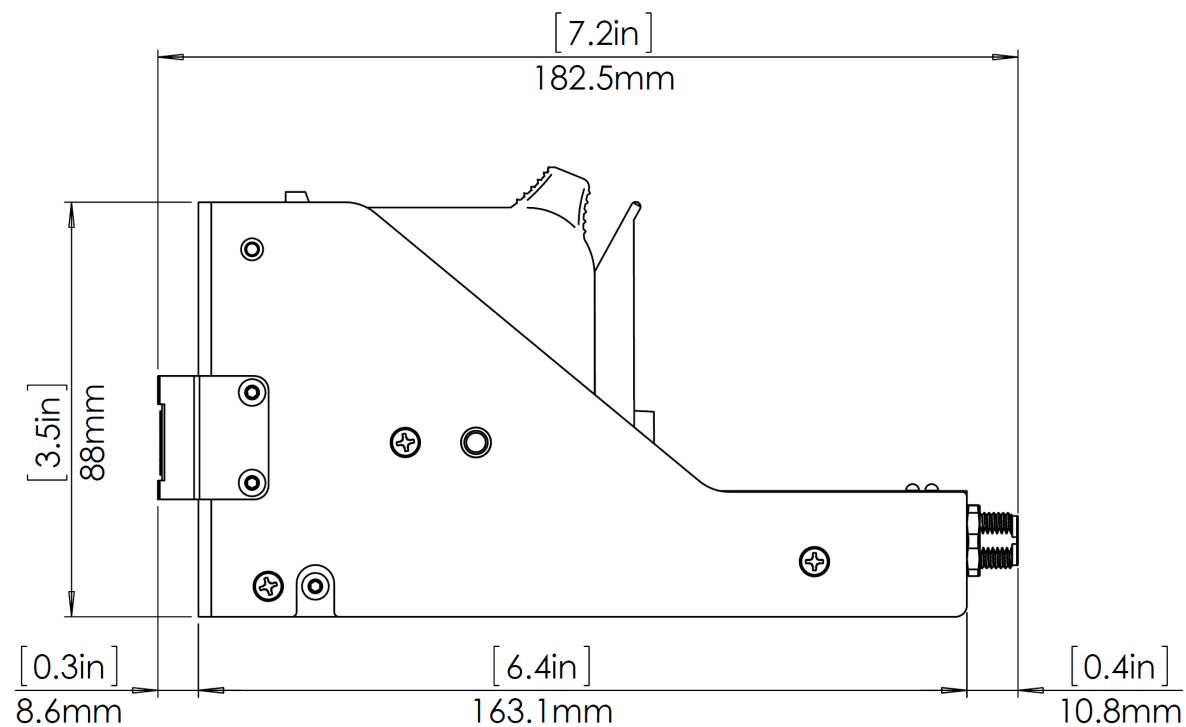


RNJet H1/H2 Plus* Dimensions are in mm [inch]

* RNJet H1 Plus, shown in dotted box has only 1X Print head driver while RNJet H2 Plus, shown in dashed box has 2X Print head drivers.

Figure 2

Driver Assembly Dimensions:



H1 Driver Dimensions are in mm [inch]

RNJet H1 Plus, shown in dotted box has only 1X Print head driver while RNJet H2 Plus, shown in dashed box has 2X Print head drivers.

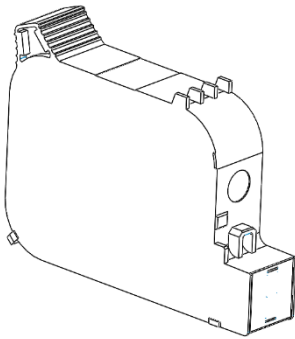
Figure 3

Accessories and Consumables

Below are optional and essential items your device should have in order to function or keep up with the maintenance schedule. (See Figure 4)

You could find more information on accessories and consumables on our website at www.rnmark.com.

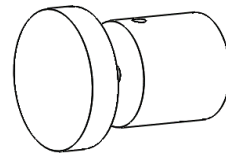
Notice: Items below are not included in this package and should be ordered separately.



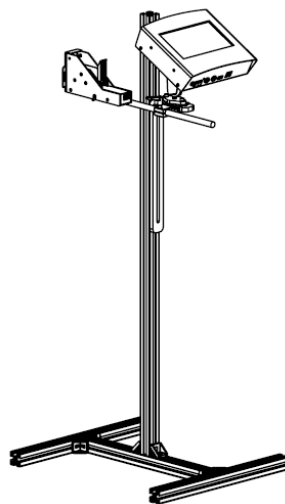
Ink cartridge



Cleaner Spray



Shaft Encoder



Portable stands

Figure 4

Installation

Set-up

L-shape Stand

- Fasten the M5 Lever handle on the rod mount and fix it on the L-plate bracket using two M4 screws as shown in

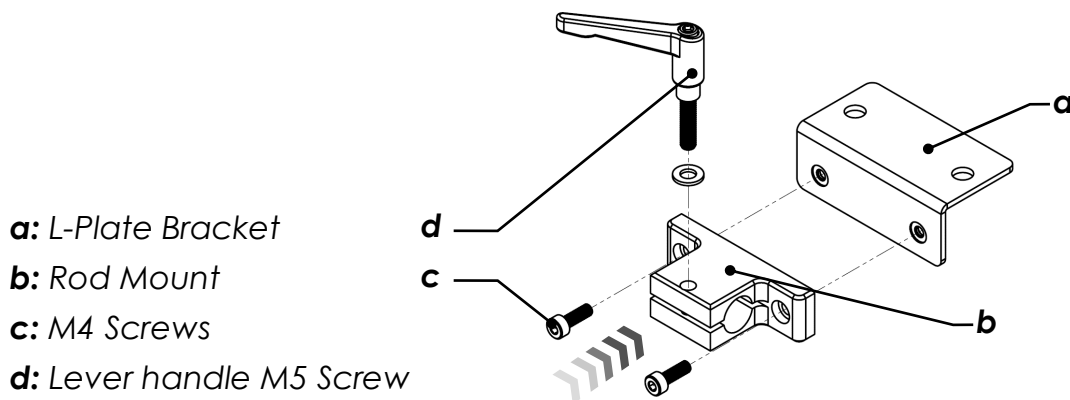


Figure 5

Notice: While assembling note that the unthreaded jaw of the rod mount must be on top (See Figure 6).

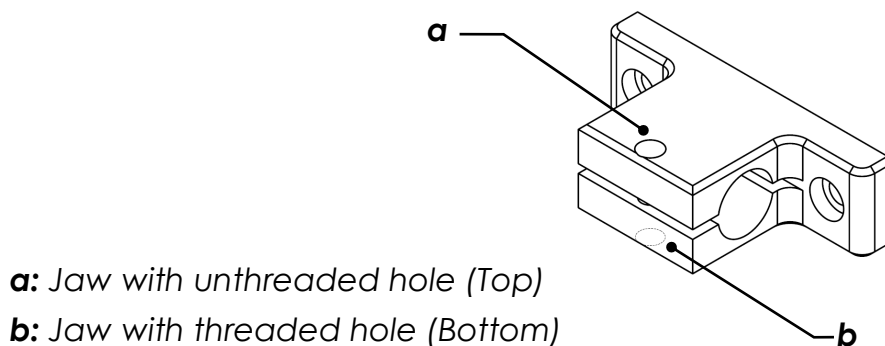


Figure 6

- Place the rod mount assembly between pivot mount base and L-shape stand. Align the pre-drilled holes on pivot mount with the holes on rod mount assembly and fix them all together by two sets of M5 (screw + nut) as shown in Figure 7.

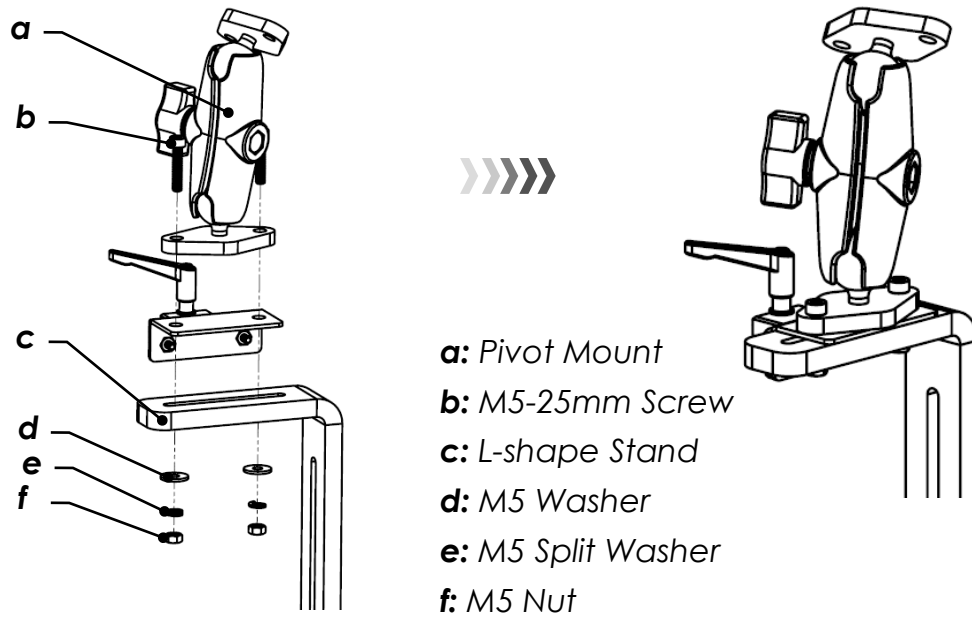


Figure 7

Controller

- Align the other two pre-drilled holes on the pivot mount with the pre-tapped holes under the controller and fix them together using M4 screws. (see Figure 8)

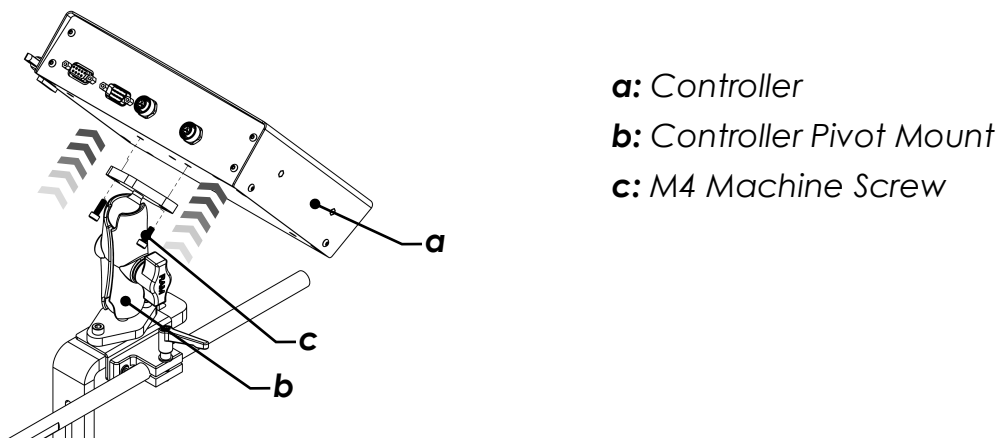


Figure 8

- While firmly holding the controller, turn the knob located on the pivot mount counter-clockwise to disengage clamping force.
- Bring the controller to the desired position for viewing and safe operation. For fixed controller mount You can loosen the M4 screws and tighten them in the desired angle. There would be more limitation with Fixed mount.

- Once the optimal position is determined, turn the knob on pivot mount clockwise to engage the clamp force and tighten in place. The controller should be rigid and not move during operation. (see Figure 9)



Figure 9

Rod

Loosen the M5 lever handle screw and carefully slide the rod into rod mount as shown in Figure 10

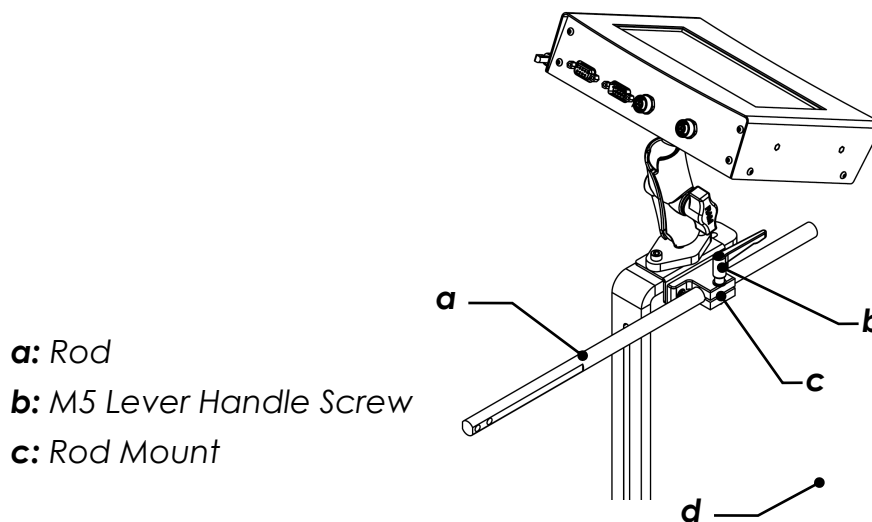


Figure 10

Print-Head Driver

Print head driver can be mounted in different angles. Two of the most common configurations are Sky Scraping Mode (Horizontal) and Downward Shooting Mode (Vertical). This type of Print head cannot print upward and is only functional in a 90 degree range from sky scraping to downward mode.

Align the rod's mounting hole with the M5 threaded hole on the symmetrically placed on each side and fix with the provided M5 screw as shown in Figure 11.

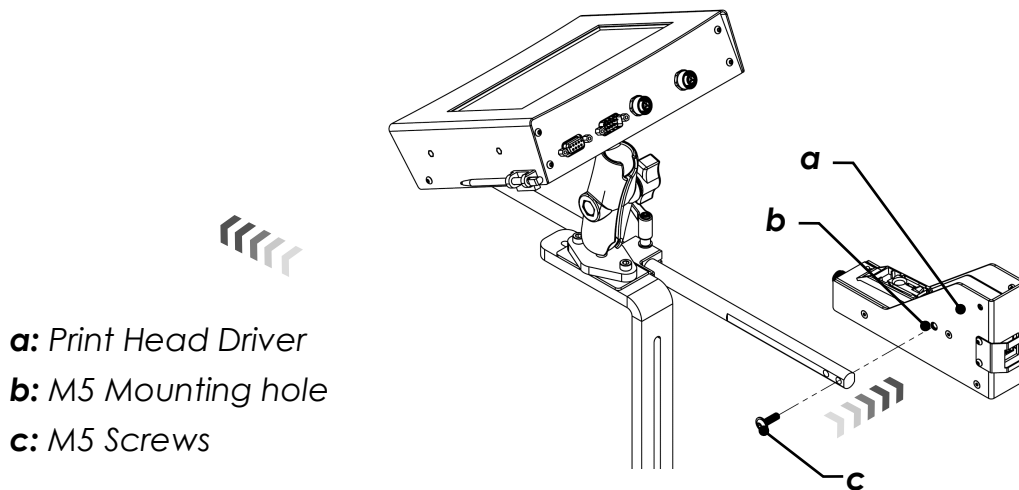


Figure 11

Notice: There are symmetrical M5 mounting holes on each side of the print head driver and depending on the application and line configuration the print head can be mounted from desired side.

Power Supply

- Insert the male end of the power adapter cable supplied at the back of printer (refer to Figure 12).
- Connect an applicable length power cord to the power adapter and plug into power source supply (single phase/120/240V AC 15 amp circuit). Avoid where possible the use of extension cords.

Notice: Due to different plug adaptors around the world and to avoid any misuse of connections, power cord is not provided and should be supplied locally.

- Toggle the two-position power switch to the “ON” position when printer operation is required.

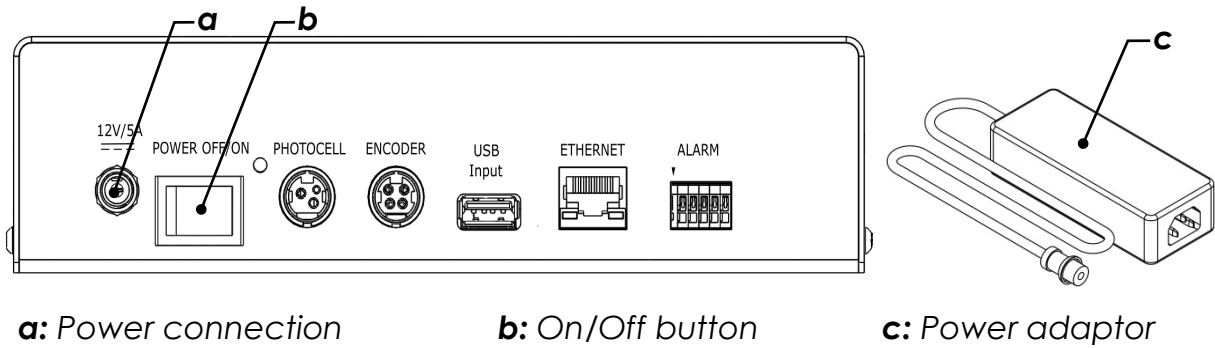


Figure 12

Data Connections

Notice: DO NOT Connect/Disconnect the connectors when the power button is ON.

Notice: Power, data and sensor input cables must be inserted appropriately in their respective locations. Where possible, route cables away from moving objects and secure via tie-wraps.

Photocell Sensor

For print trigger, a photocell sensor is included. Photocell sensor works as Light ON trigger (see Figure 13).

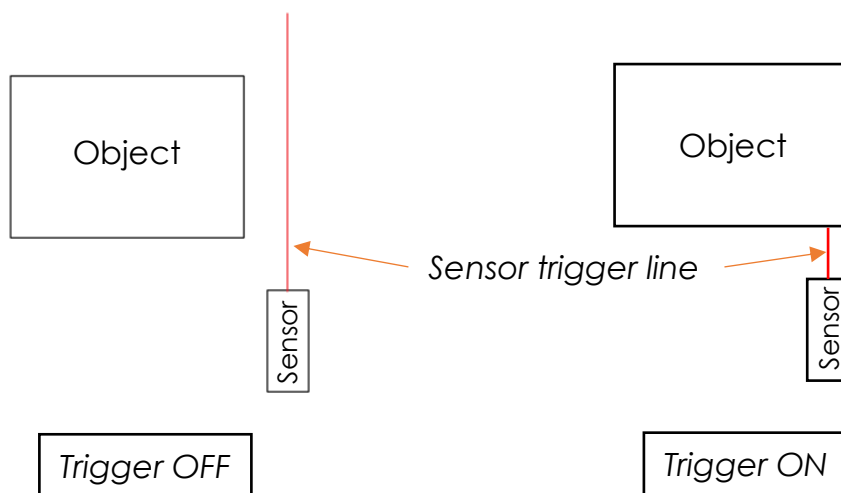


Figure 13

As shown in Figure 14, the printer system provides an NPN sensor signal input which triggers print command. It could be used with any 12 VDC NPN sensor.

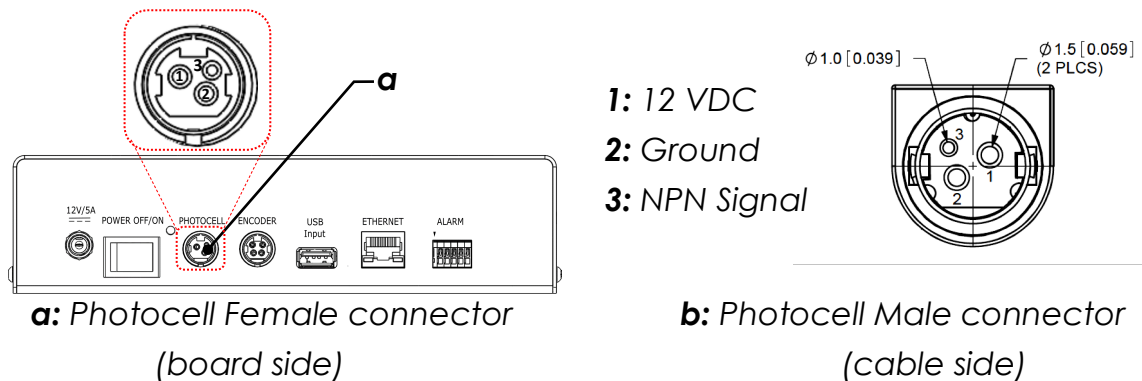


Figure 14

A Photocell sensor with proper 3-Pin connector as well as a photocell mount bracket is included for versatile mounting on conveyor system. Photocell bracket can be mounted on either side of the head if possible (See Figure 15).

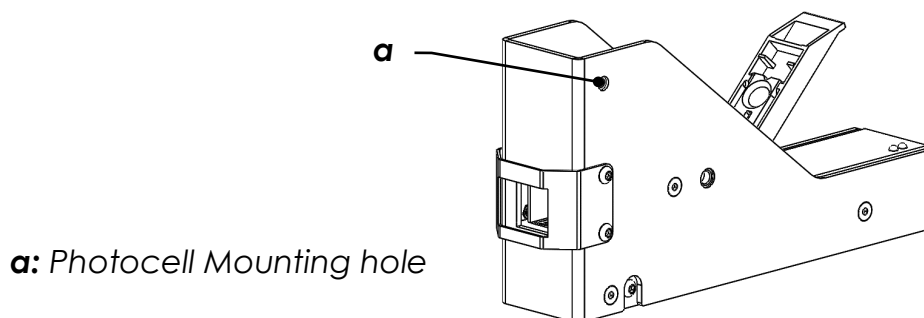


Figure 15

Slide the sensor through the sensor mount and re-secure by installing one locking nut from the top and the other from the bottom as shown on Figure 16. Finger tighten both locking nuts to fix the sensor in place.

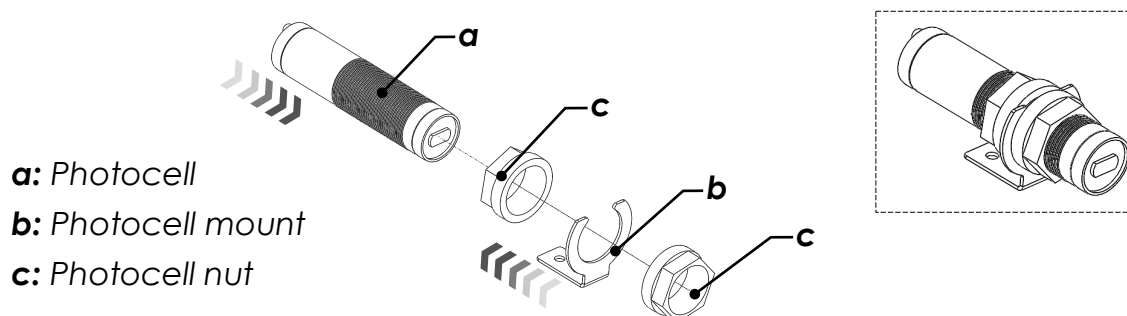


Figure 16

As shown in Figure 17, There are two settings on the photocell sensor body for adjusting sensing range (270° Potentiometer) and operating mode (2 positions).

Sensor is more sensitive to lighter colors (Highest: White) and less sensitive to darker colors (Lowest: Black). It also must be in Normally Open mode to trigger the print every time the printing substrate passes by.

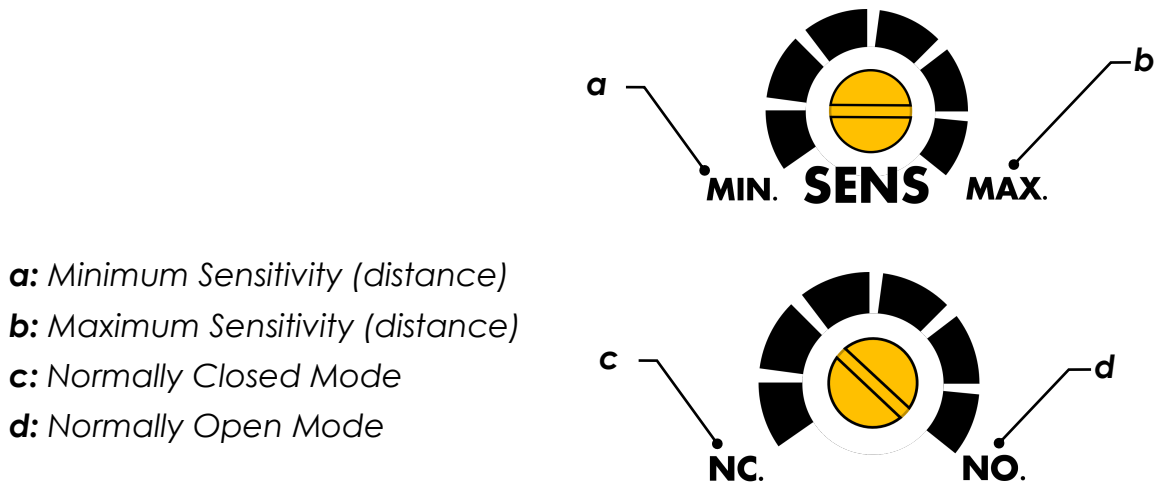


Figure 17

Notice: Sensor is preadjusted to Max sensitivity and Normally Open mode. Please do not touch the settings unless required otherwise.

Shaft Encoder

Printer system is shaft encoder ready and provides a 12 VDC signal input (NPN configuration) on board which triggers print command (Figure 18). This function is available on demand. Consult your distributor for more details.

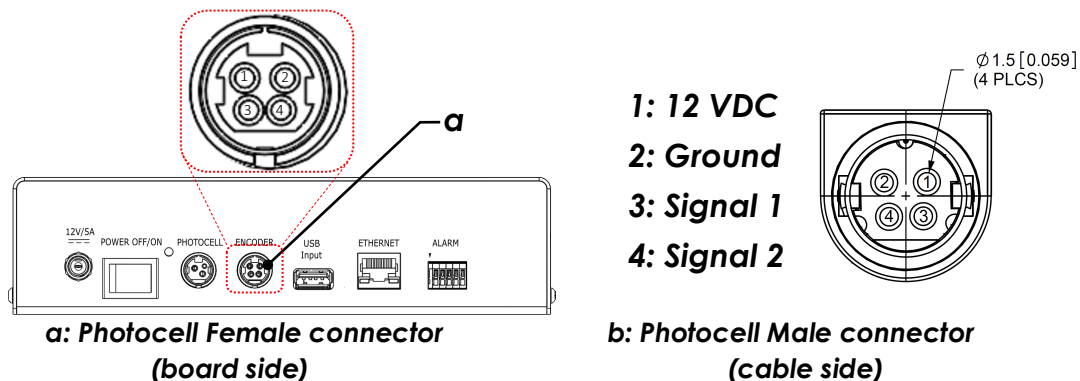


Figure 18

The print head resolution is **R=300 DPI**. For an encoder with **N** number of pulses per revolution, Wheel Diameter **D**, is calculated by equation below:

$$D = \frac{N}{\pi R} [in] \quad or \quad D = \frac{25.4N}{\pi R} [mm]$$

The units used in the shaft diameter calculation formula for **n=1** revolution is as shown below:

$$D[in] = \frac{N [pulse/rev] \times n[rev]}{\pi R[pulse/in]} \quad or \quad D[mm] = \frac{N [pulse/rev] \times 1[rev]}{\pi R[pulse/in]} \times \frac{25.4 [mm]}{1 [in]}$$

For example, the wheel diameter for a Shaft Encoder with **N=2500 pules per revolution** is:

$$D = \frac{2500 \times 1 \times 25.4}{300\pi} = 67.4mm (2.65")$$

USB

USB port is used for data uploading on typical flash drives compatible with USB2.0 connections and should not be used for any other purposes.

Notice: Insert the USB before turning the machine ON

α: USB Port

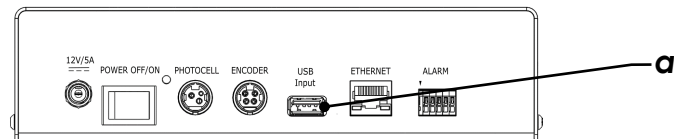


Figure 19

Ethernet

Ethernet connection can connect print system to external controllers using IP based communication with PCs, PLCs, etc. Print system programming and message layout uploading/downloading is managed through this port.

Notice: For more information on print system configurations and Ethernet connection capabilities, please refer to "USER's MANUAL" accompanied with the device.

α: Ethernet Port

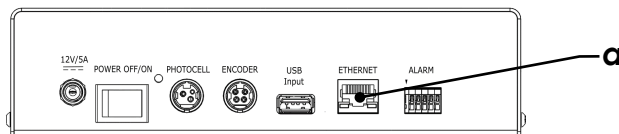


Figure 20

External Alarm Terminal (Ink System only)

An external beacon alarm can be connected to the alarm terminal if necessary. Pin 1 is the first terminal on the left.

Notice: This function is not available in H-Series.

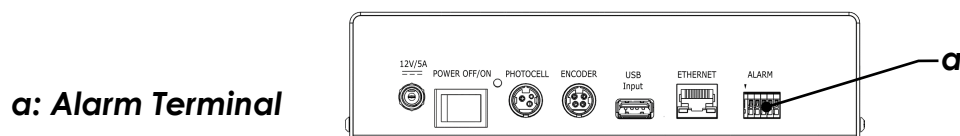


Figure 21

The pin out is indicated in Table 1.

Pin#	Color
1	Green
2	Yellow
3	Gray (GND)
4	Red
5	Reserved

Table 1. External Alarm Terminal Pin Out

Ink Data

Controller communicates with ink system while printing and it would stop if this connection were lost. Controller must be connected to the ink system via 9 Pin Data cable as shown in Figure 22.

Notice: Connect the cables provided accordingly before turning on the Printer.

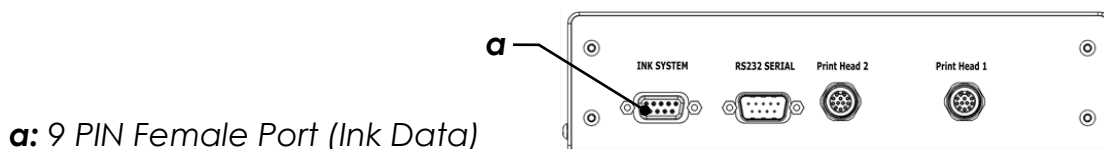


Figure 22

Notice: This function is not available in H-Series.

Notice: Connect the cables provided accordingly before turning on the Printer.

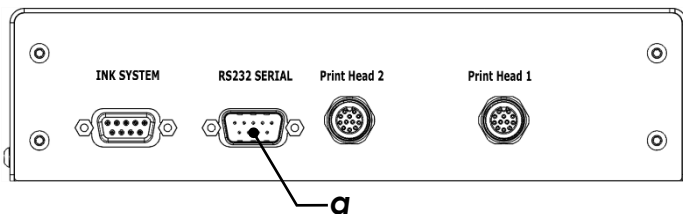
Notice: DO NOT Connect/Disconnect the connectors when the power button is ON.

Notice: Power, data and sensor input cables must be inserted appropriately in their respective locations. Where possible, route cables away from moving objects and secure via tie-wraps.

Serial Port (RS-232)

RS-232 port, shown in Figure 23, is used for data communication through PLC/PC for external command/TEXT through compatible RS-232 cables and should not be used for any other purposes (for more information please refer to “USER’s MANUAL” accompanied with the device).

Notice: Before turning ON the machine, insert the RS-232 connector which is located on the side of the printer.



a: Male Pin Serial Port (RS-232)

Figure 23

Print Head Ports

Print head drivers need to be connected to the ports on the Controller (shown in Figure 24) via provided cables.

Notice: Connect the cables provided accordingly before turning on the Printer.

- a:** Head1 (12 PIN Female Port)
- b:** Head2 (12 PIN Female Port)
- c:** Groove

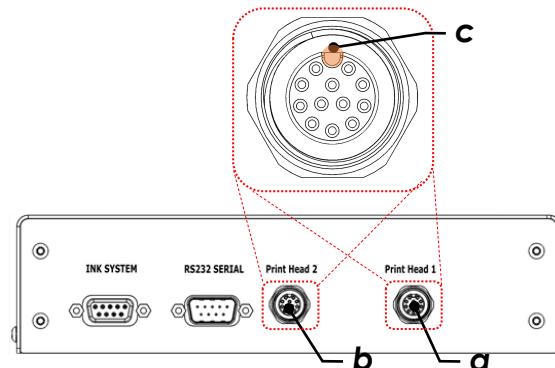


Figure 24

The ports on the controller are Female type and therefore must be connected to the Male Pin side of the cable. The plastic tongue on the cable connector must be aligned with the groove on the female connector and gently finger tighten

the threaded part into the port. The arrow indicator on the connector shows the location of plastic tongue and must always be faced up.

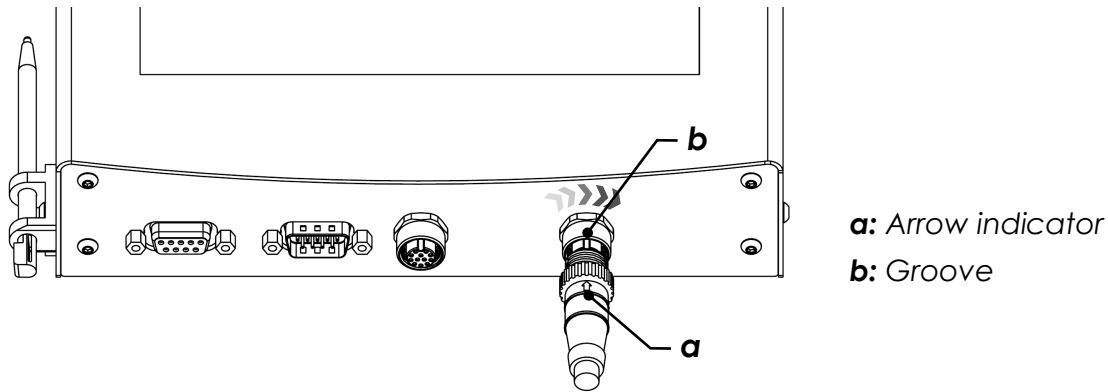
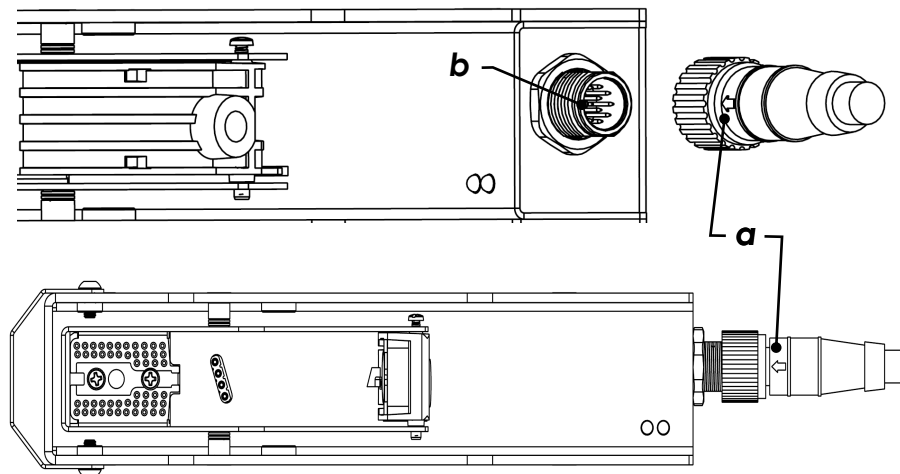


Figure 25

The other end of the cable is Round 12 Pin Female connector which also has an arrow indicator for the groove, must be aligned with the plastic tongue on the Print head driver port as shown in Figure 26.



- a:** Arrow indicator
- b:** Plastic Tongue

Figure 26

Notice: The threads on the connectors are meant to be finger-tightened and must never be over forced by wrench or mechanical tools.

Start-up

Adjusting

Adjusting the Slider Clamp

- Loosen the clamp screw to free the slider clamp (see Figure 27).
- The Slider Clamp can be moved in and out once the clamp screw is not fully tightened.
- Adjust clamp slide according to the distance between the printer head and printing surface (see Adjusting the Print Head for more information regarding printing position)

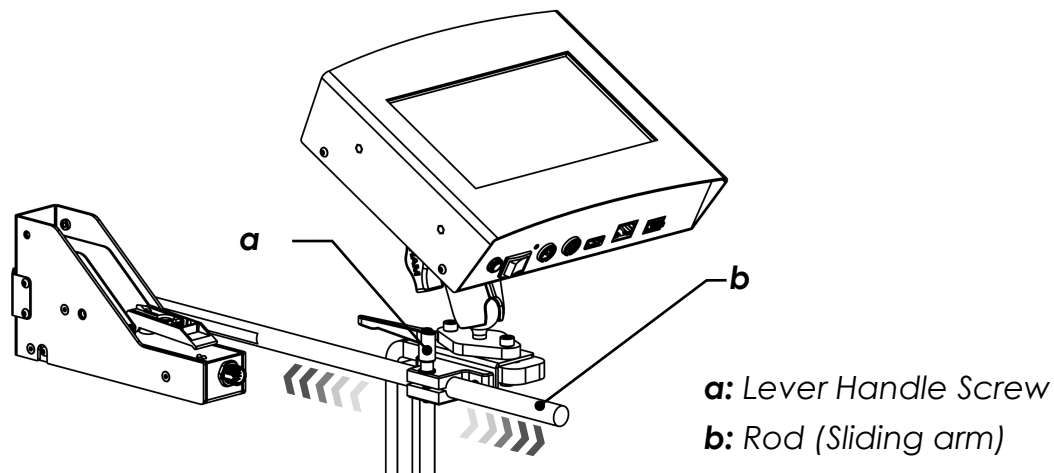


Figure 27

Adjusting the Printhead

Notice: DO NOT run conveyor during the adjustment process.

- Place a printable sample on the stopped conveyor in the approximate location where printing is to take place.³

Print Head Driver in Sky Scraping Mode

The print-head can be Horizontally (Sky Scraping Mode) mounted on the rod in desired side as shown in Figure 28.

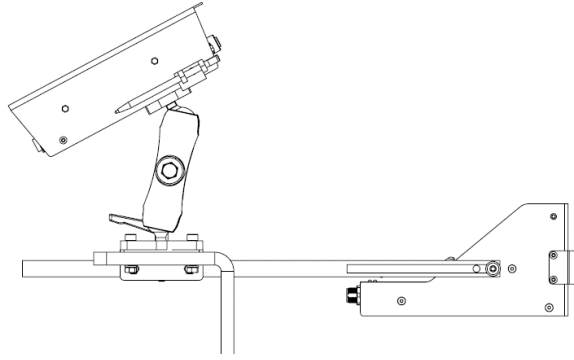


Figure 28

Print Head Driver in Downward and Angled Mode

To assemble the print head driver Vertically (Downward Mode) on the mounting plate loosen the M5 screw and bring the print head driver to the desired angle and fix it by re-tightening the M5 screw as shown in Figure 29.

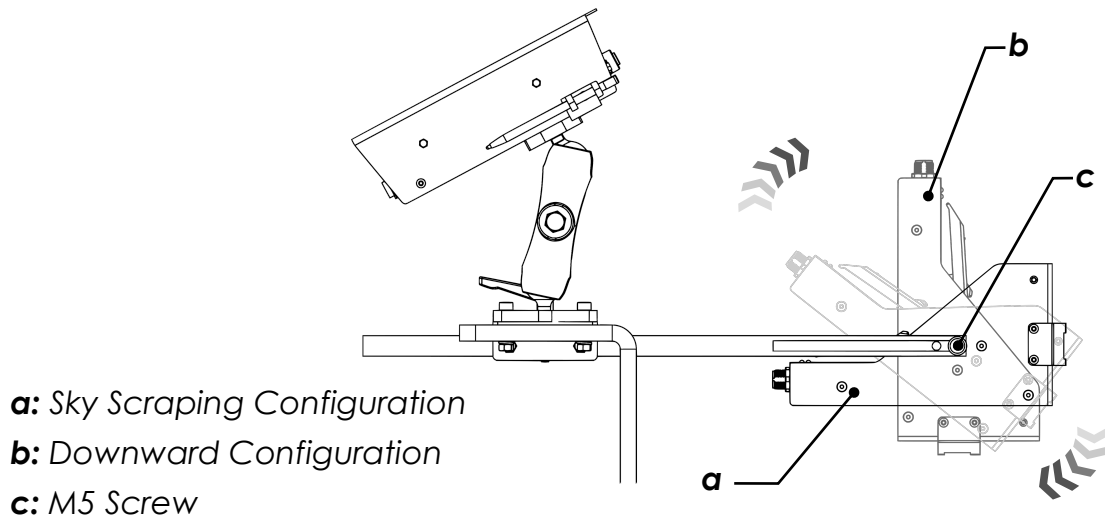


Figure 29

Notice: The print head driver can only be installed in an angle between 0° (Horizontal or Skyscraping mode) and 90° (Vertical or downward mode)

The full assembly can be directly mounted on the belt-conveyor as shown in Figure 30.

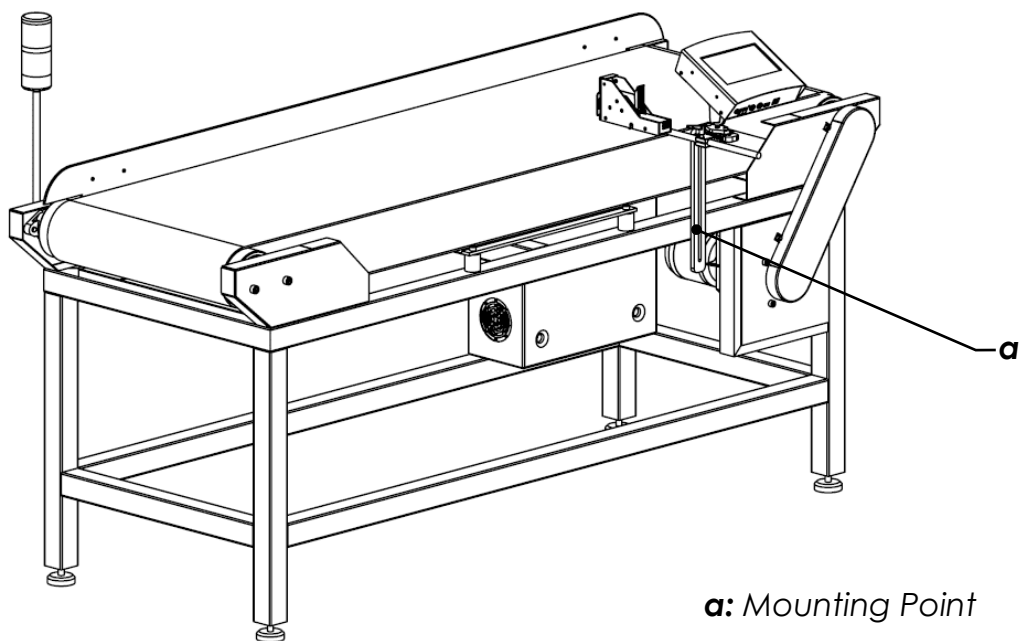


Figure 30

The printer assembly can also be mounted on a customized stand. Overall height can be adjusted by sliding the L-Shape on the Aluminum bar as shown below.

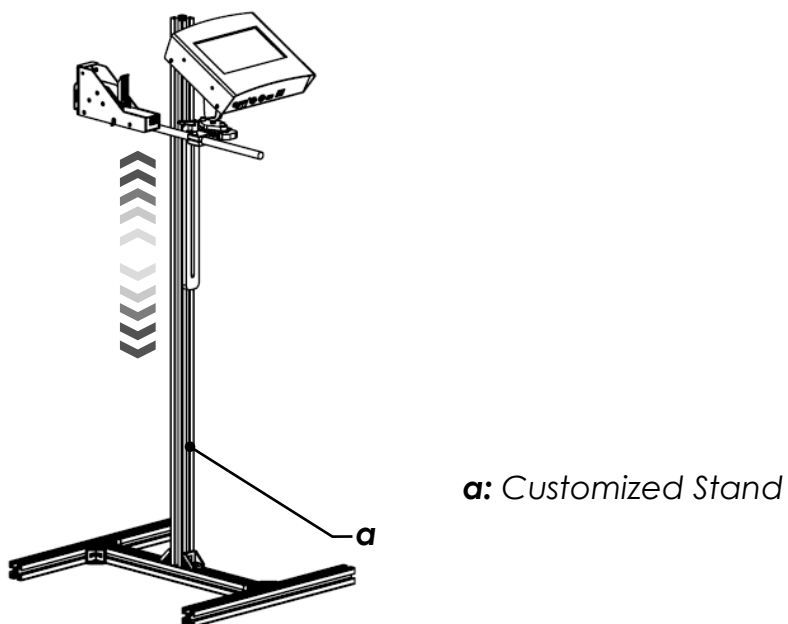
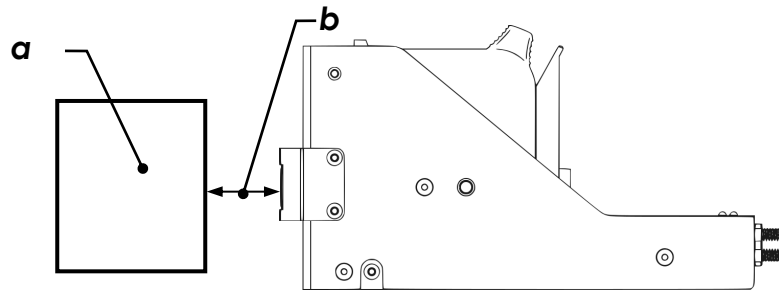


Figure 31

The **operating distance** between the exposed print nozzles on the cartridge and the desired printable surface **is 1-10mm** (see Figure 32). This may vary depending on the printing speed and operating environment conditions.



a: Substrate

b: distance between Printhead and substrate [1-10 mm]

Figure 32

Notice: Care must be taken to ensure that no part of the moving object comes in direct contact with the printer head assembly, clamping slider or any cables or cords.

Inserting cartridge

To obtain the best results always use RN MARK premium cartridges provided by HP Technology inc. that are equipped with smart chip. The chip initializes the print-head and optimizes the drop volume and ink consumption based on environmental conditions to achieve the highest print quality. The print-head is compatible only with RN Mark premium cartridges. Please avoid using any other cartridges provided by third parties.

- Open the Green latch on print-head as shown in Figure 33.
- Carefully insert the cartridge into the print-head and make sure that it is perfectly in place as shown in Figure 33. Avoid any extra force to prevent damage on cartridge or driver pins.

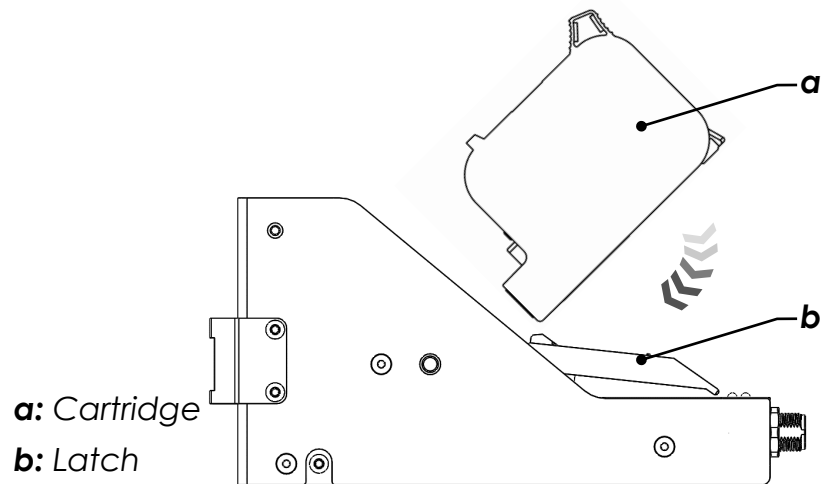


Figure 33

- Close the latch and lock the cartridge in place as shown in Figure 34.

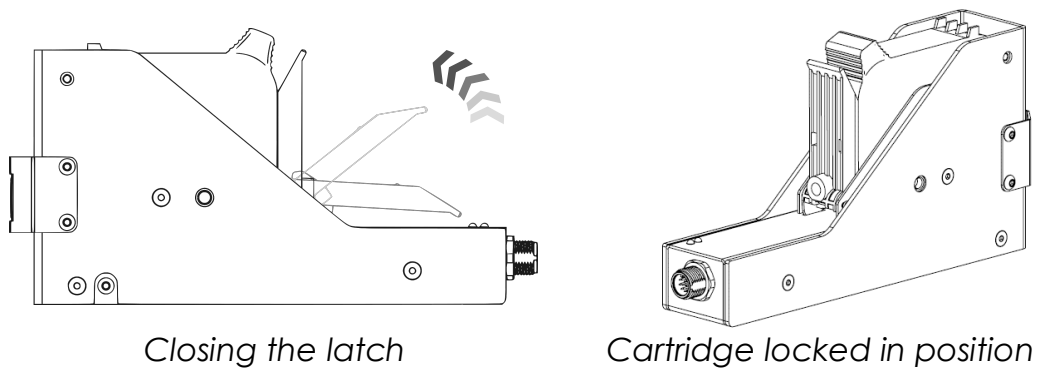


Figure 34

ATTENTION: Never remove the cartridge when the print is ON!

Notice: Take out the cartridge at the end of the day and put the cover back to prevent nozzle clogging. Cartridge must not be left unattended for more than 10 hours.

Priming / Purging

The ink system must be primed and purged before the first print. It is recommended that an absorbent material (preferably lint free) be held under nozzle plate.

- Hold the cartridge with nozzle plate facing down and press it toward the absorbent material over a flat surface. Let the gravity drain the ink out of nozzles.
- You will see two lines of ink trace, one for each nozzle column, if not gently apply pressure from sides until ink flows out.
- Gently dab the print nozzle guard with an absorbent material (preferably lint free) to remove any expelled ink.

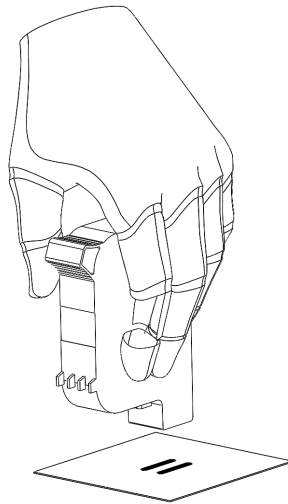


Figure 35

Maintenance and Services

The printer head may require cleaning and maintenance due to environmental or product debris such as dust, hair, fibers etc. Care must be taken during cleaning to ensure the exposed print nozzles are not damaged.

Notice: Always store the cartridges with nozzle plate facing down to prevent nozzle clogging.

Notice: Use only RN MARK Spray cleaner for printhead maintenance.

Installation and Technical Support

Telephone and Whatsapp technical support are available Monday through Friday 9:00am to 5:00pm EST.

Toll-Free: 1 866 551 9406

Sales: 1 905 597 4977

Sales: 1 905 597 4978

Tech Sup: 1 905 597 9406

Tech Sup: 1 905 597 9406 (Whatsapp and Google Duo Available)

Questions and comments can also be sent to: ts@rnmark.com

WWW.RNMARK.COM