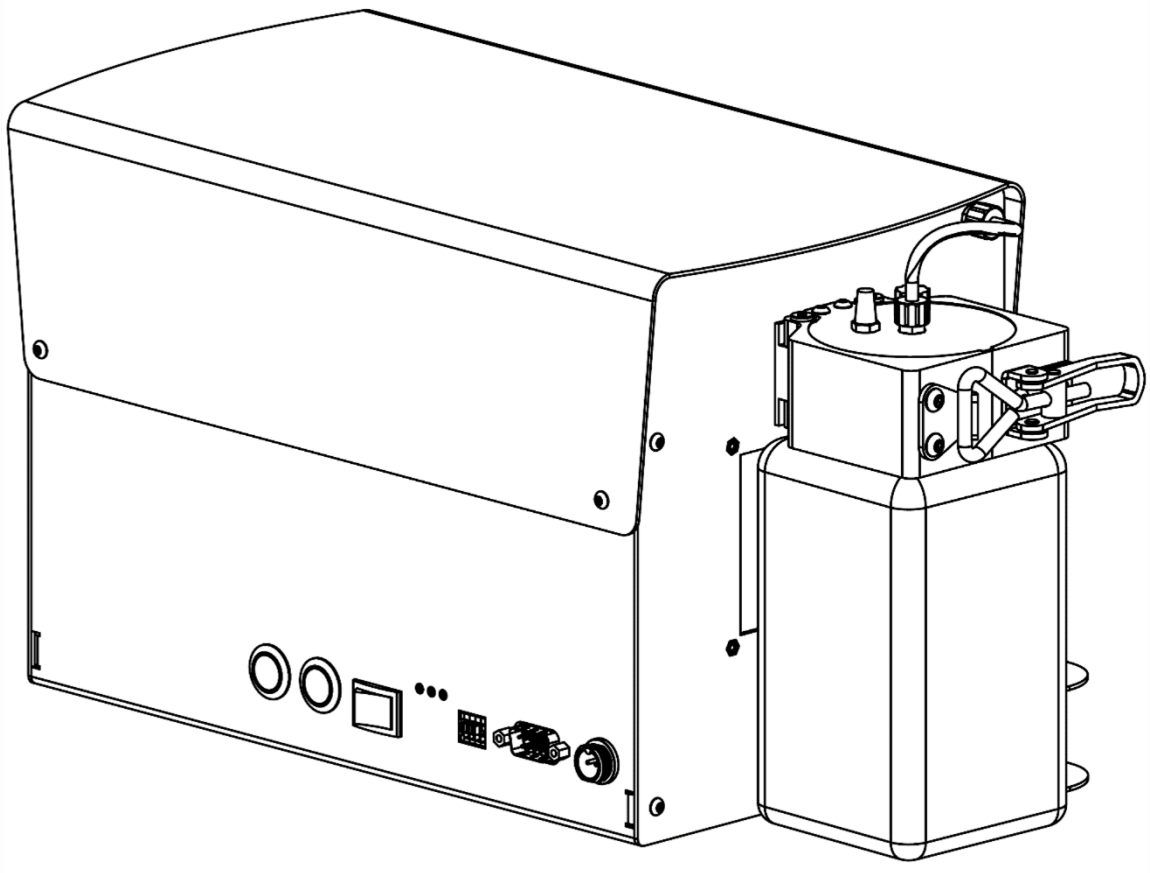
RN MARK Motorized Bulk Ink System

Setup & Installation Manual



RN MARK Motorized Bulk Ink System

Industrial Hi-Resolution Inkjet Printing System

Installation Manual

Revision **13** 11/25/2024

All rights reserved. All trademarks and brand names are the property of their respective owners.
RN MARK INC.
25-16 SIMS CRES. RICHMOND HILL, ON
L4B 2P1
TEL: +1(905)597-4977; Toll-Free: +1(866)551-9406; WhatsApp: +1(647)242-8969
www.rnmark.com

Table of Contents

Notices & Cautions 1
Safety 1
Handling and Care 1
Ink 2
Introduction 3
What's in the box: RNJet100+ and RNJet200+ 3
What's in the box: RNJet E1-72+ and RNJet E1-140+ 4
System Specifications 6
Accessories and Consumables 6
Installation 7
Print Head 8
Small Character Print head (18mm) 8
Large Character Print head (72mm) 10
Bulk Ink System 12
L-Shape Mount 12
Ink Tube 14
Waste Ink Container 15
Power (Ink System) 15
Ink Data 17
Alarm 17
Controller 18
Power Supply (Printer Controller) 19
Data Connections 20
Photocell Sensor 20
Shaft Encoder 23
USB 23
Ethernet 24
External Alarm Terminal (Cartridge Ink System only) 25
Ink Data 25
Serial Port (RS-232) 26

Print Head Ports 26
Start-up 28
Adjusting 28
Adjusting the Slider Clamp 28
Adjusting the Ink Level (For Rare Cases) 29
Mounting Ink Bottle 31
Priming / Purging 32
Initial purge (First time Ink system Startup) 32
Regular purge 33
Downward purge 35
Maintenance and Services 36
Shipping Bulk Ink System 36
Shipping Print Heads and Controller 39
Small Character Print Head 39
Large Character Print Head 40
Technical Support 41

Notices & Cautions

Legal Disclaimer

Accessories could be different to this document without notification due to part shortage or design improvement.

Safety

- During handling, installation, maintenance, and operating procedures for the printing system, always follow safety regulations by wearing safety glasses, gloves, and protective clothing.
- Keep all print system components and fluids away from open flames and excessive heat.
- In case of fluid eye contact, flush immediately with large amount of water and receive appropriate medical attention.
- The power source used for the 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 motorized bulk ink system consists of mechanical, electrical, and electromechanical components. Extra precautions should be taken when handling the ink system during installation, operation, and maintenance. Never tilt the bulk ink system as there is a chance of ink leakage and electrical shock in electronic components.

Ink

Inks come in different solutions, varieties, and codes, make sure to use identical ink for each printer system and avoid exchange of ink with other varieties. Consult our sales team for more information (see last page of this manual).

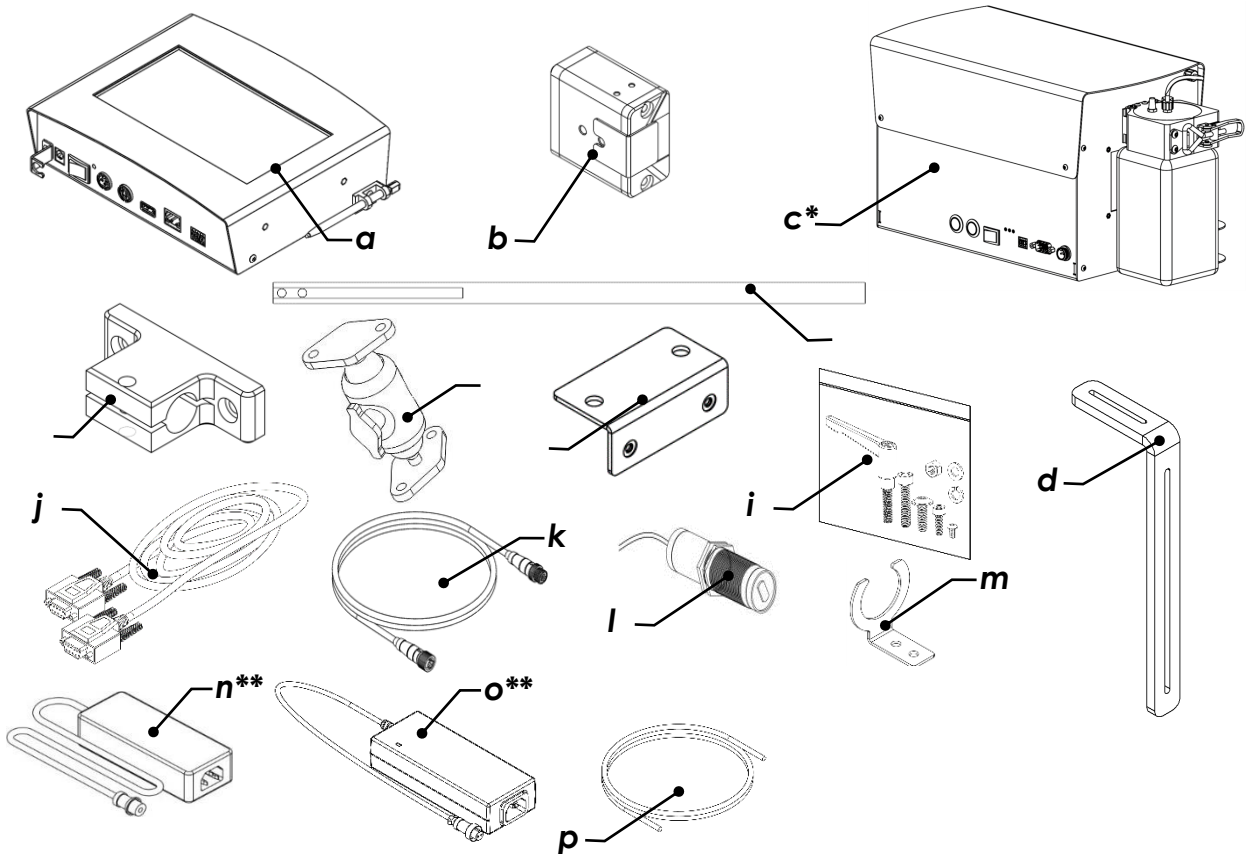
For the best printing results, always use RN MARK PREMIUM INKS.

For more information, please visit http://www.rnmark.com.

Introduction

What's in the box: RNJet100+ and RNJet200+

Following are all the components that are included inside the RNJet100+, and RNJet200+ packages (see Figure 1). *For RNJet 200+, it requires more components and please refer to the quantities inside [ ].*



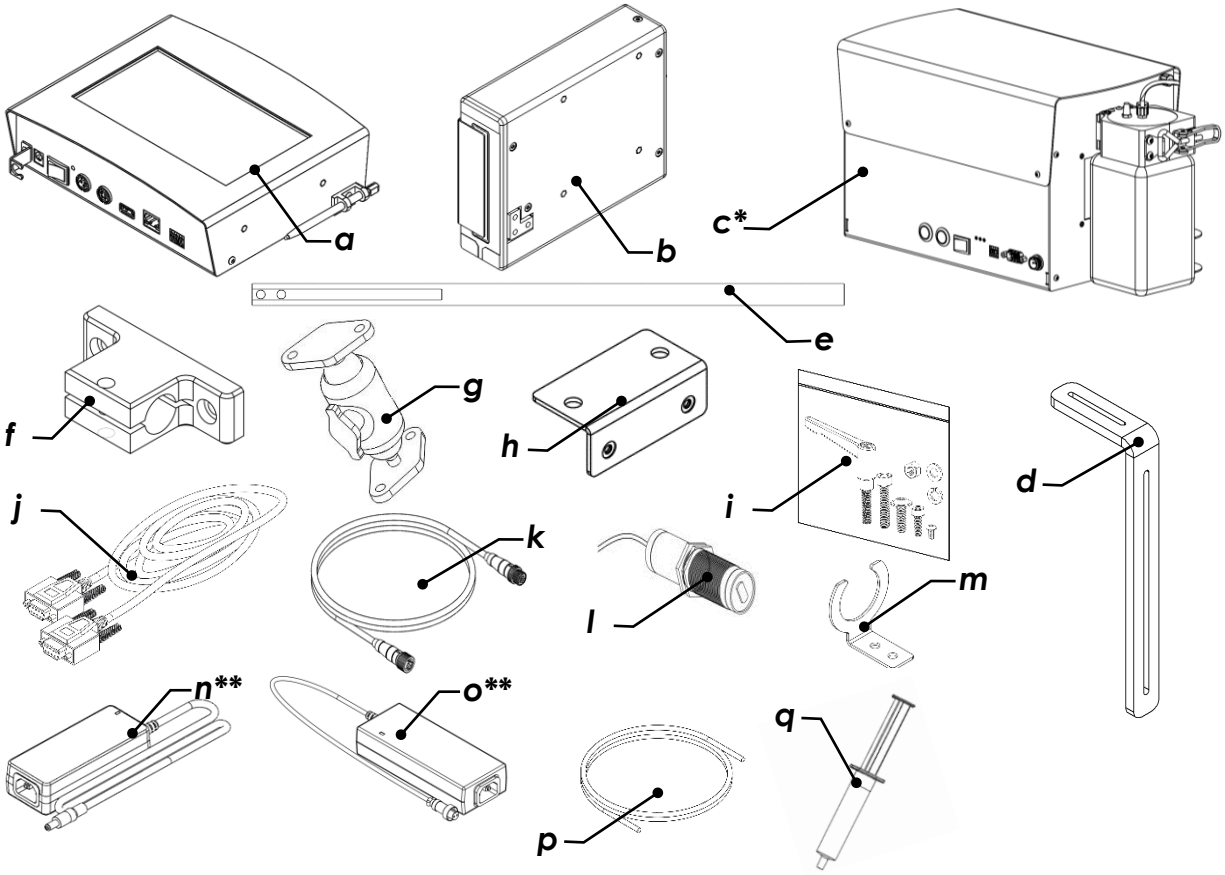
a: *Controller x 1pcs*
b: *Small Character Print Head x 1pcs [2pcs]*
c: *Motorized Bulk Ink System x 1pcs**
d: *L-shape Mount x 2pc [3pcs]*
e: *Rod x1pc [2pcs]*
f: *Rod Mount x 1pc [2pcs]*
g: *Controller Pivot Mount x 1pc*
h: *L-Mounting bracket x 1pcs [2pcs]*
i: *Screw Pack x 1set [2sets]*
j: *Ink Data Cable x 1pcs*
k: *Data Cable x 1pc [2pcs]*
l: *Photocell (Sensor) x 1pcs*
m: *Photocell mount x 1pcs*
n: *Power adaptor 60Wx 1pcs***
o: *Power adaptor 90Wx 1pcs***
p: *Ink Tube x 1pc [2pcs]*

** Depending on the circumstances, can be x1 or x2 for RNJet200+*
*** Due to different power plug standards worldwide, power cord is not supplied.*

Figure 1

What's in the box: RNJet E1-72+ and RNJet E1-140+

Following are all the components that are included inside the RNJet E1-72+ and RNJet E1-140+ packages (see Figure 2). *For RNJet E1-140+, it requires more components and please refer to the quantities inside [ ].*

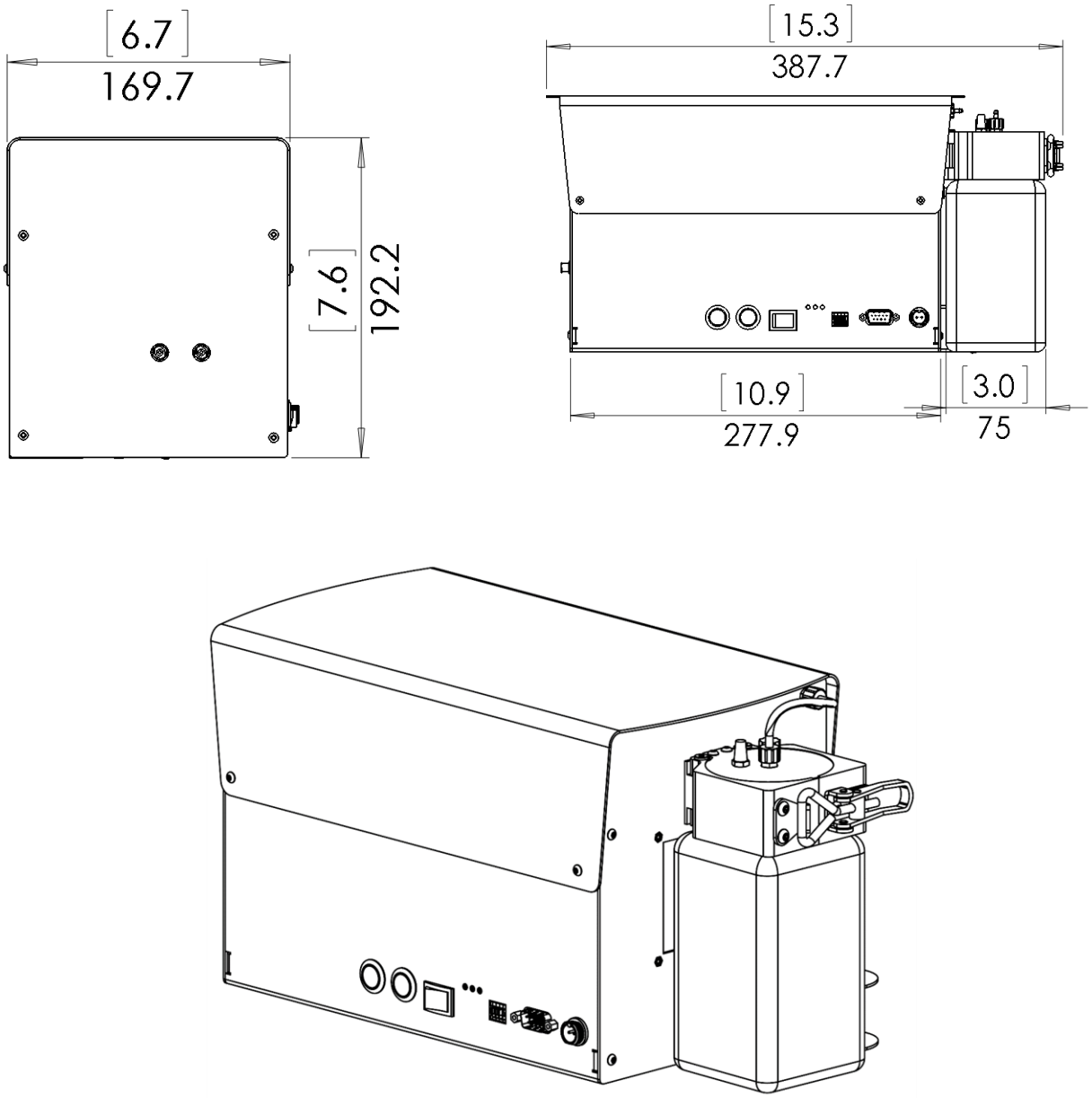


a: *Controller x 1pcs*
b: *Small Character Print Head x 1pcs [2pcs]*
c: *Motorized Bulk Ink System x 1pcs**
d: *L-shape Mount x 2pc [3pcs]*
e: *Rod x1pc [2pcs]*
f: *Rod Mount x 1pc [2pcs]*
g: *Controller Pivot Mount x 1pc*
h: *L-Mounting bracket x 1pcs [2pcs]*
i: *Screw Pack x 1set [2sets]*
j: *Ink Data Cable x 1pcs*
k: *Data Cable x 1pc [2pcs]*
l: *Photocell (Sensor) x 1pcs*
m: *Photocell mount x 1pcs*
n: *Power adaptor 60Wx 1pcs***
o: *Power adaptor 90Wx 1pcs***
p: *Ink Tube x 1pc [2pcs]*

** Depending on the circumstances, can be x1 or x2 for RNJet200+*
*** Due to different power plug standards worldwide, power cord is not supplied.*

Figure 2

Dimensions:



Dimensions are in mm [inch]

Figure 3

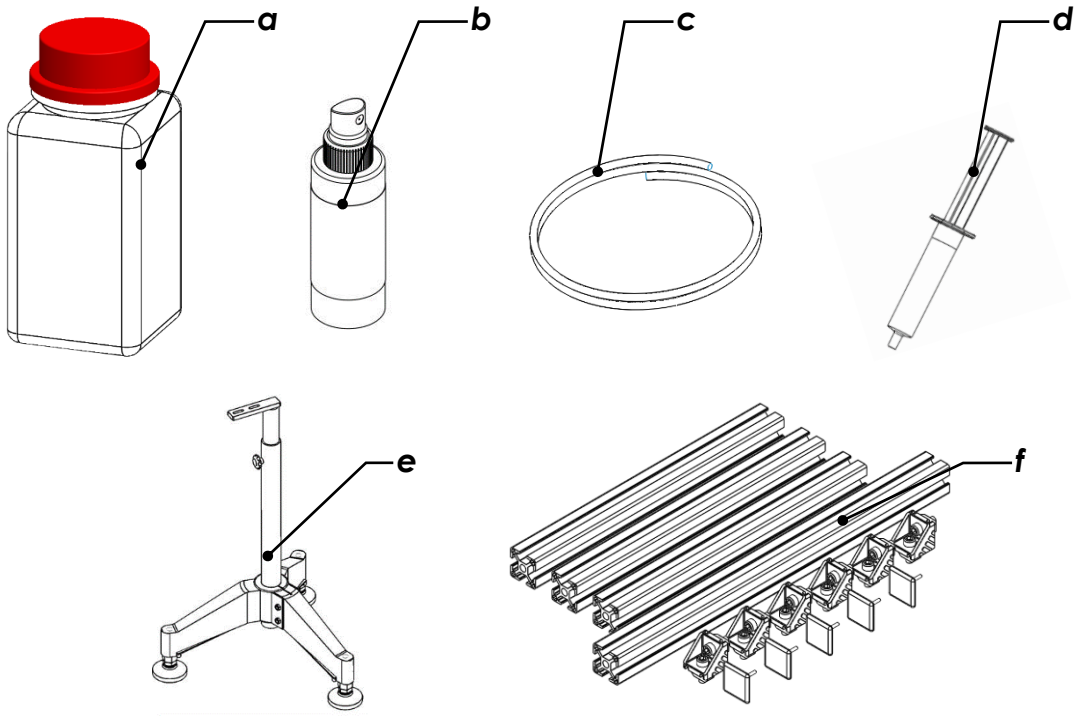
System Specifications

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 about the accessories and consumables on our website at http://www.rnmark.com.

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



a: *Ink and Cleaner Bottle*

b: *Cleaner Spray*

c: *Spare Ink Tube*

d: *Syringe*

e: *Tripod Stand*

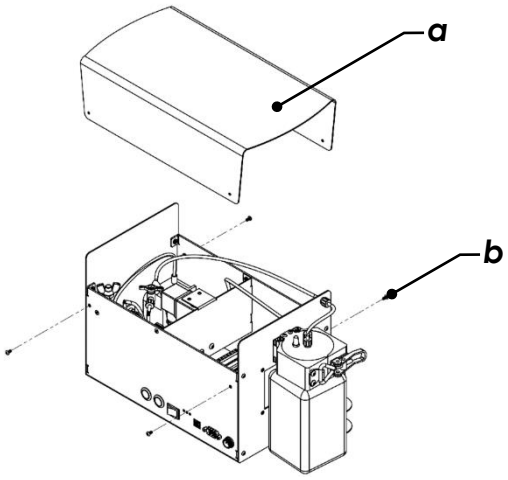
f: *Extrusion Mounting Sets*

Figure 4

Installation

Ink systems can leak during transportation and therefore an internal stopcock valve is devised to prevent possible leakages. This valve **MUST BE OPENED** before operation.

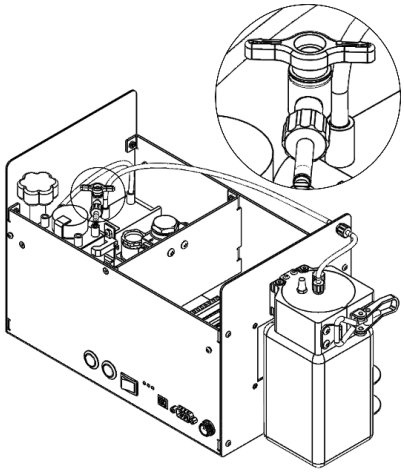
1) Disassemble the controller and print head if required.
2) Unscrew the 4x M3 screws as shown in Figure 5 and take the top cover off.



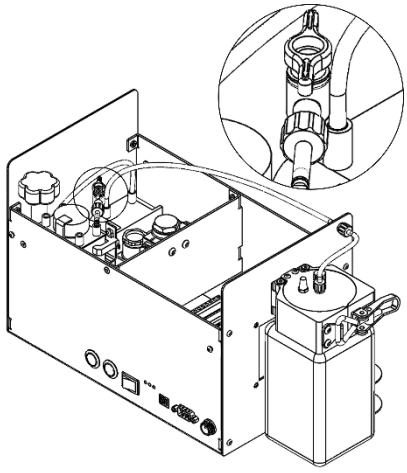
a: *Top Cover*
b: *M3 Screw*

Figure 5

3) Open the stop cock valve. The valve must be OPEN (see Figure 6) when the printer is in function, otherwise the secondary tank can burst or leak.
4) After opening the valve, put the top cover back.



a: Stopcock Valve CLOSED
(During Shipping)



b: Stopcock Valve OPEN
(During Operation)

Figure 6

Print Head

RN Mark Bulk ink system can be utilized by different types of print heads. These print heads have different print swaths.

Print swath for Small-Character print heads is 18mm while for large character print heads print swath is 72mm. You can also use this bulk ink system for double head printers to double the print swath to 36mm and 144 mm for small and big character heads, respectively. Please note that there are limitations for double head printers, and you need to consult our expert sales team.

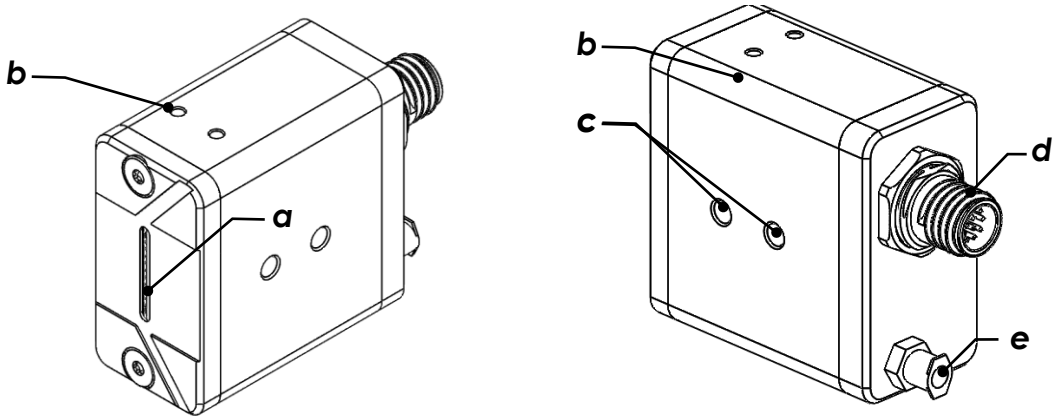
Since your printer is only using one type of these print heads, you could skip the instructions for the other types. These print heads can print different font sizes and terms "Small" / "Large" are used to indicate the maximum print swath.

Small Character Print head (17mm)

The print head is sealed off for shipping. To assemble, it must be unsealed properly. **DO NOT** use sharp tools to remove the seal.

> ***Notice:*** *All print heads are tested before delivery and may contain a small amount of test ink. Unpack carefully as ink spillage may occur.*

- Remove the sealing wrap from print head.



a: *Nozzles* ***b:*** *M3 Mounting hole(Both sides)* ***c:*** *M5 Mounting hole*

d: *M12 Round Male Pin Connector* ***e:*** *Ink Inlet*

Figure 7

> ***Notice 1:*** *M12 Round Male Pin connector must be connected to the controller using the provided 2m Male-Female cable (Black).*

Notice 2: *It is recommended to install the print head as shown in Figure 7, to eliminate risk of electric short due to ink's electrical conductivity in case of ink leakage.*

Notice 3: *If the print head needs to be shipped or stored, ensure that the exposed print nozzles are protected from damage. Use a lint free material, spray some cleaner solution to the front of the nozzles, mount the nozzle guard back and seal the head using stretch wrap.*

- Drill two holes in your desired position on the side of the conveyor as shown in Figure 9.
- Assemble the print head, bracket, rod, and rod mount on the L-shape mount as shown in Figure 8.

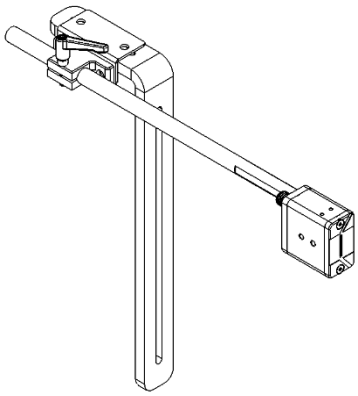


Figure 8

- Assemble the L-shape mount with the print head to the holes you just drilled.

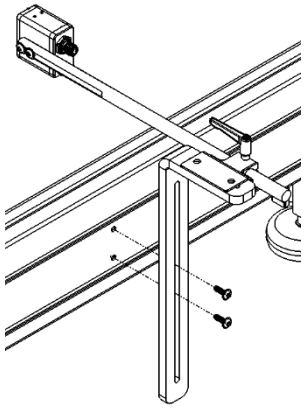


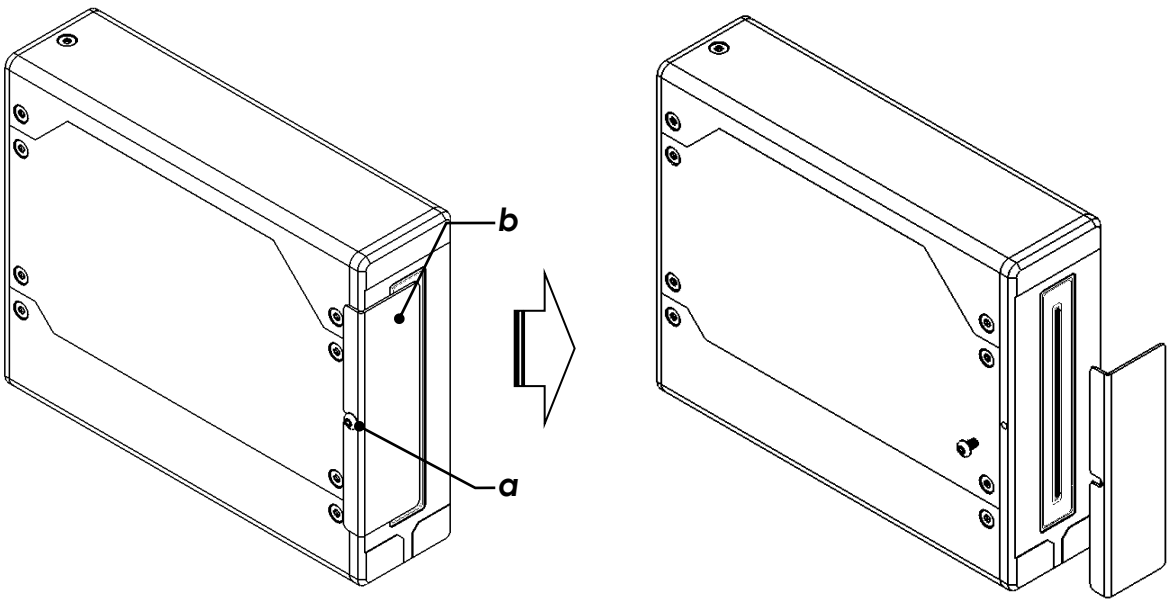
Figure 9

Large Character Print head (72mm)

The print head is sealed off for shipping. To assemble, it must be unsealed properly. **DO NOT** use sharp tools to remove the seal.

Notice: *All print heads are tested before delivery and may contain a small amount of test ink. Unpack carefully as ink spillage may occur.*

- Remove the sealing wrap from print head.
- Loosen the nozzle mount screw and remove the nozzle protection cap as shown in Figure 10 and retain it in a safe place.



a: *Nozzle mount protection cap*

b: *Nozzle mount Screw*

Figure 10

Notice 1: *M12 Round Male Pin connector must be connected to the controller using the provided 2m Male-Female cable.*

Notice 2: *If the print head needs to be shipped or stored, ensure that the exposed print nozzles are protected from damage. Use a lint free material, spray some cleaner solution to the front of the nozzles, mount the nozzle guard back and seal the head using stretch wrap.*

- Drill two holes in your desired position on the side of the conveyor as shown in Figure 12.

- Assemble the print head, bracket, rod, and rod mount on the L-shape mount as shown in Figure 11.

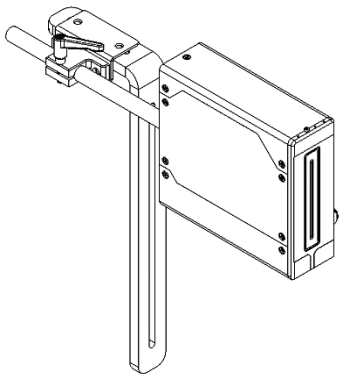


Figure 11

- Assemble the L-shape mount with the print head to the holes you just drilled as shown in Figure 12.

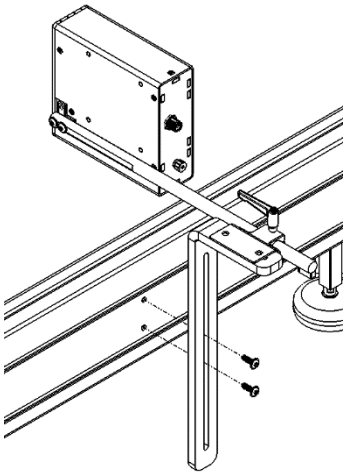


Figure 12

Bulk Ink System

L-Shape Mount

The bulk system can be installed at any desired location (including conveyor) within the ink level limits and we suggest keeping it **AS CLOSE AS POSSIBLE TO THE PRINT HEAD**.

As shown in Figure 13, there are two M5 mounting holes under the bulk ink system. Split washers can be used to fix the screws in place.

a: *M5 Screw*

b: *L-Shape Mount*

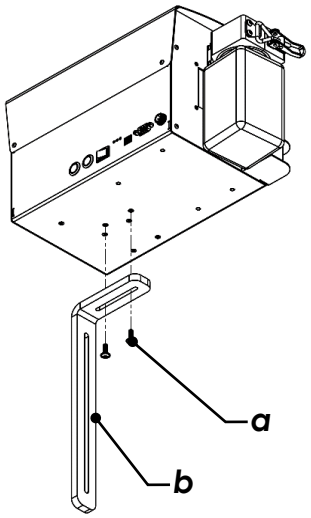


Figure 13

To avoid ink leakages from the print head or ink starvation, the height of the ink system must be adjusted with the print head accordingly. Ink level markings are engraved on the front cover plate as shown below.

For side printing direction (Figure 14), use the screw holes of the print head as reference and keep the print head level 20~30mm higher than the ink level.

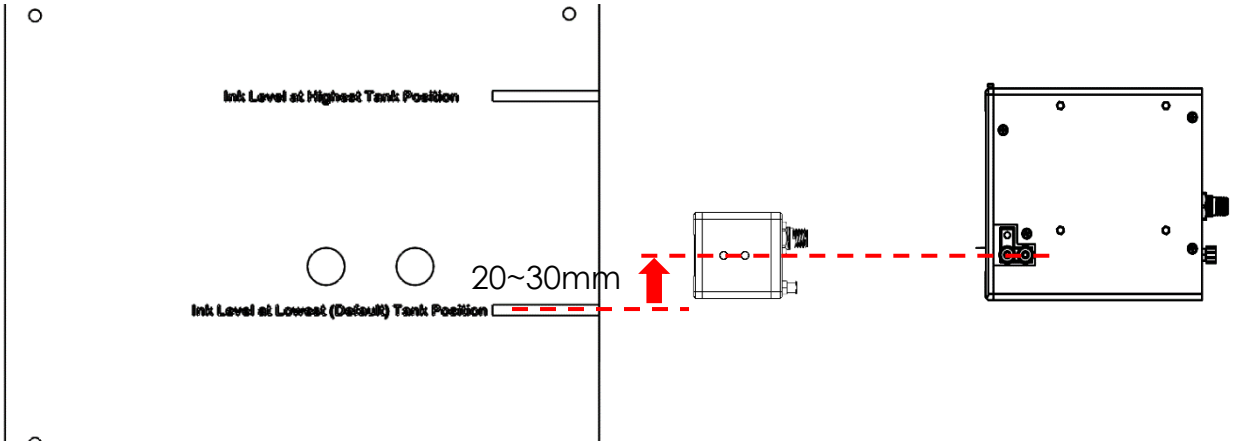


Figure 14

For downward printing direction (Figure 15), use the nozzle surface of the print head as reference and keep the print head level 20~30mm higher than the ink level.

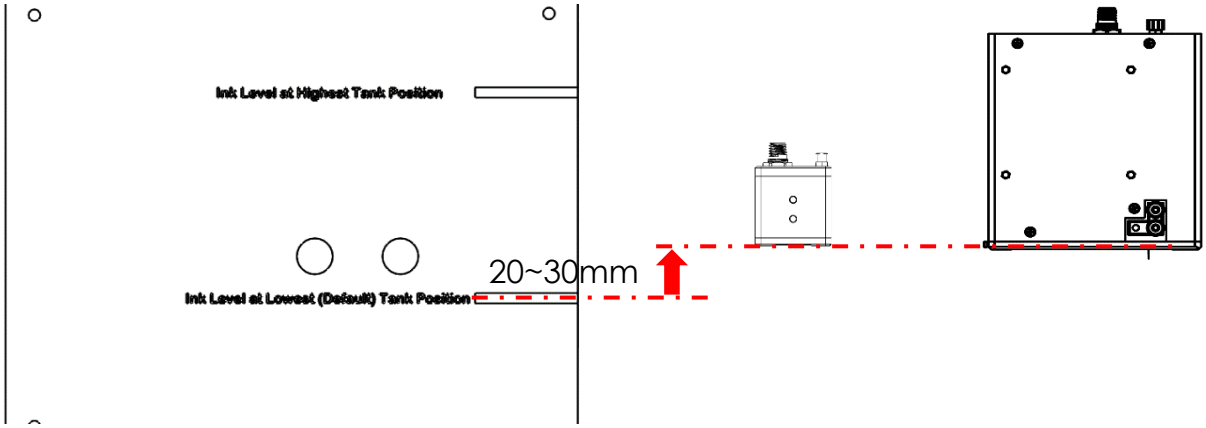


Figure 15

To adjust the print head level, refer to Figure 16, simply loosen the screws on the L-shape mount for the print head, and bring the print head assembly up/down, then tighten the screws back.

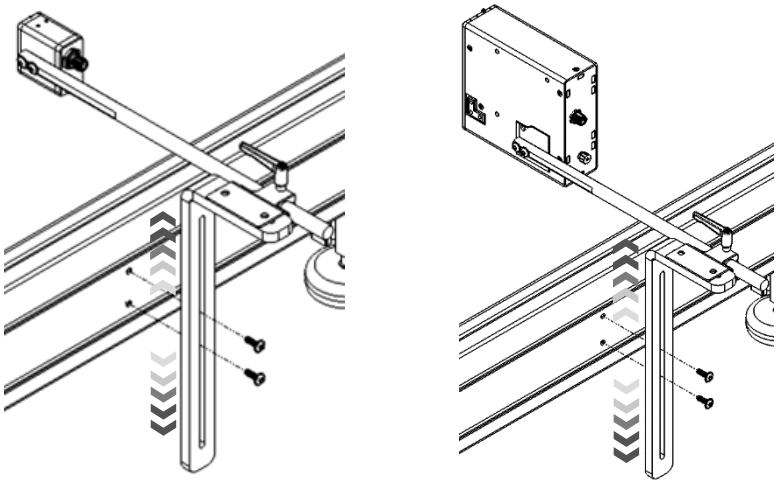
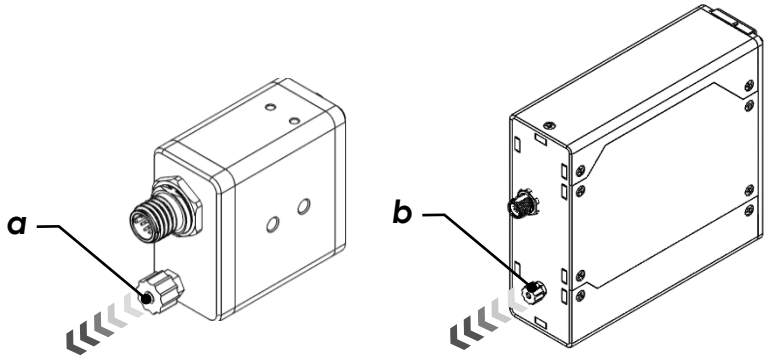


Figure 16

Ink Tube

Note: *The print head is pre-loaded with residual amount of ink which will be expelled during installation. Holding or placing an absorbent material between the print head assembly and the conveyor is recommended during setup. Do not forget to remove it before testing and operating.*

- Unscrew the plastic tube cap located on the back of the print head (see Figure 17).

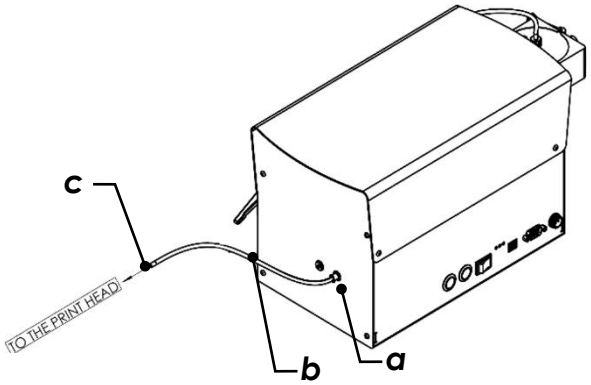


a: *Tube cap on Small Character print head* ***b:*** *Tube cap on Large Character print head*

Figure 17

- Plug one end of the ink supply tube to the print head and connect another end to the ink system and press firmly into place (see Figure 18).

Notice: *Retain the caps for potential re-use during disassembly for storage or transport.*



a: *Ink outlet to ink system* ***b:*** *Ink Tube* ***c:*** *Ink inlet to Print head*

Figure 18

Waste Ink Container

If there is any air leak during purge, secondary ink tank will overflow. Waste ink container shown in Figure 19 is devised to collect excess ink through a hose in case of overflow.

> ***Notice:*** *Make sure not to clog the waste ink hose as it is vital for pressure regulation during print. If waste ink is detected, contact RN Mark Technical support immediately.*

a: *Waste container*
b: *Waste ink hose*

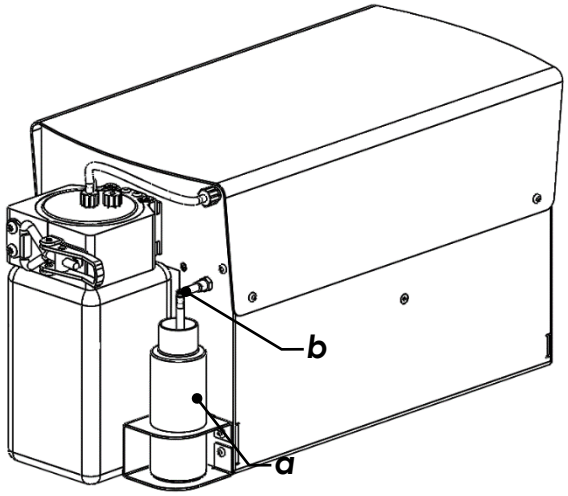


Figure 19

Power (Ink System)

- Please note that there are two power adaptors provided with the Printer. Power adaptor with two male pin plug is for Bulk ink system.

a: *24V-90W Power Adaptor*
b: *2P Female Connector*

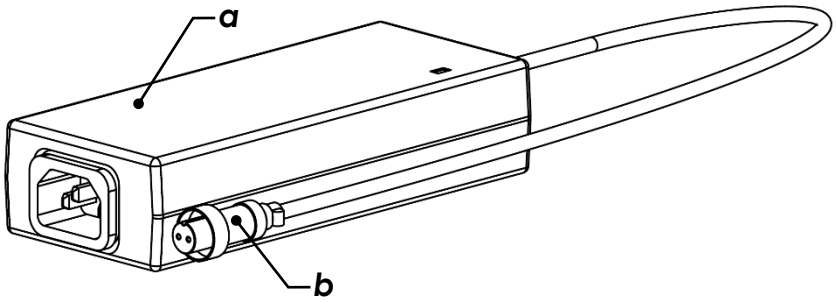


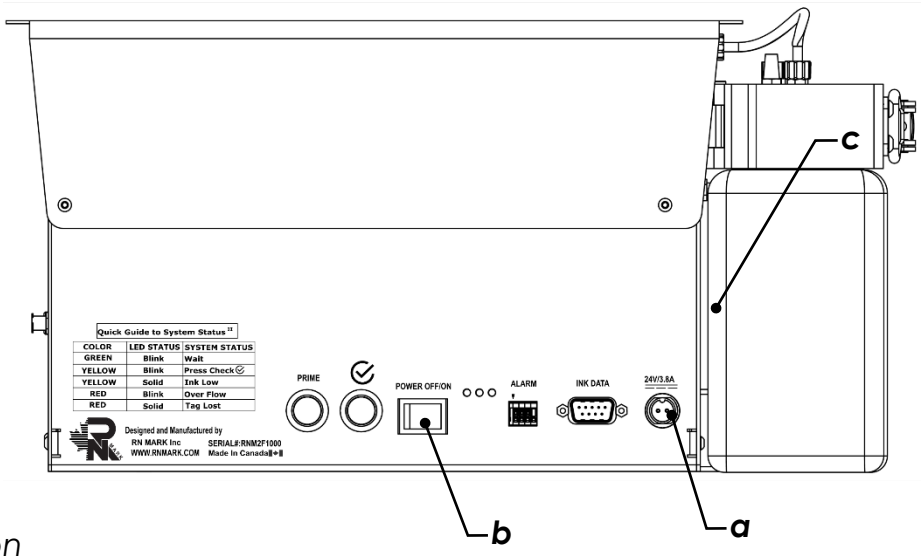
Figure 20

- Insert the male end of the power adapter cable supplied at the back of printer (refer to Figure 21).

- 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 (Refer to Figure 21).



a: *Power Input*

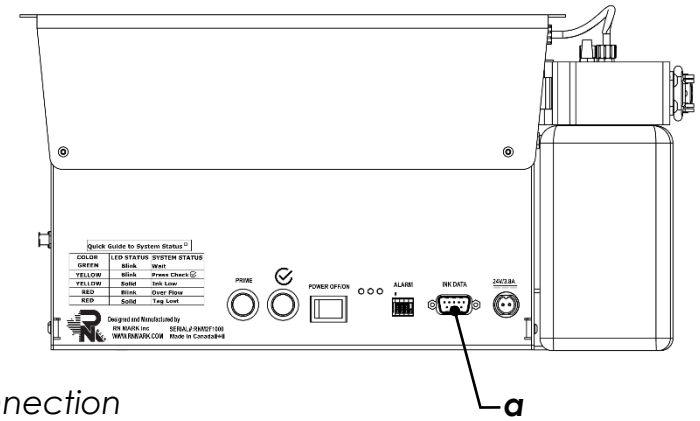
b: *On/Off button*

c: Receptacle Power Entry Connector

Figure 21

Ink Data

As shown in Figure 22 the Ink system communicates with controller for ink data delivery/reception/calculation. Please plug the Serial DB9 cable provided.

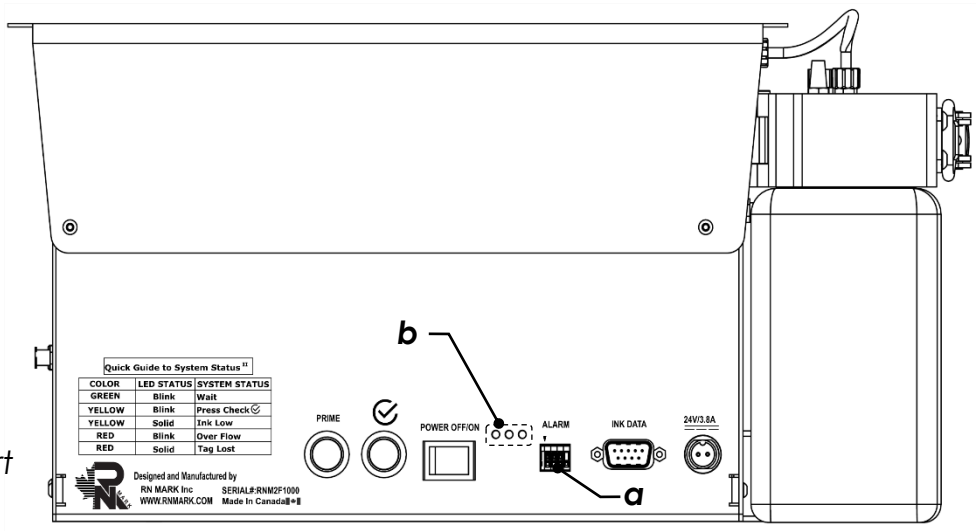


a: *Ink Data connection*

Figure 22

Alarm

3 color LED alarm shown in Figure 23 indicates the status of the ink system.



a: *External Alarm Port*

b: *3-Color LED Alarm*

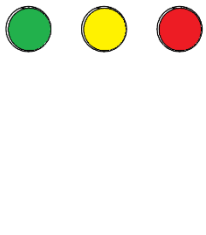
Figure 23

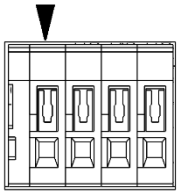
Each color has a definition described in Table 1.

Color	LED Status	System Status
GREEN	Blink	Wait
YELLOW	Blink	Press Check
YELLOW	Solid	Ink Low
RED	Blink	Overflow
RED	Solid	Tag Lost

Table 1

External 24V Alarm tower can be connected to "4-Position Wire to Board Terminal Block" if required. Pinout for terminal port is shown in Figure 24 and Pin1 is indicated by ▼ on the left.





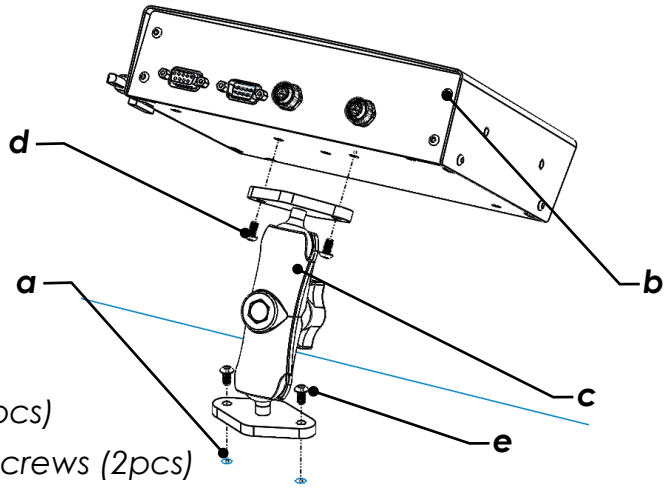
Pin1: Green
Pin2: Common/ GND
Pin3: Yellow
Pin4: Red
V=24Volts;
I= 5mA(Max)

Figure 24

Controller

The controller can be mounted at any desired location within 1.5m from the bulk ink system. The installation procedures are as below:

- Depending on the screws you are available to work with, drill two holes (and tap the holes if needed) on your desired location.
- Align the controller pivot mount to the holes you just drilled and fix it using two M4 screws.
- Align the holes on the back of the controller with other two holes on the controller pivot mount and use two M4 screws to fix it in place (see Figure 25).



a: *Desired Location*
b: *Controller*
c: *Pivot Mount*
d: *M4 Machine Screws (2pcs)*
e: M4 Self-tap/ Machine Screws (2pcs)

Figure 25

- While firmly holding the controller, turn the knob located on the pivot mount counter-clockwise to disengage clamping force.

- Adjust the position and angle of the controller as desired.
- Rotate the knob on pivot mount clockwise to tighten in place. The controller should be rigid and does not move during use (see Figure 26).

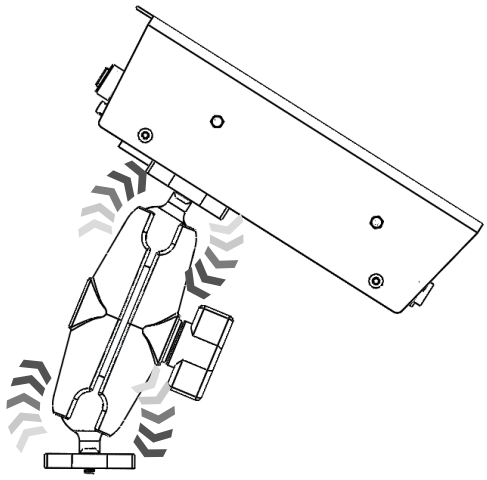


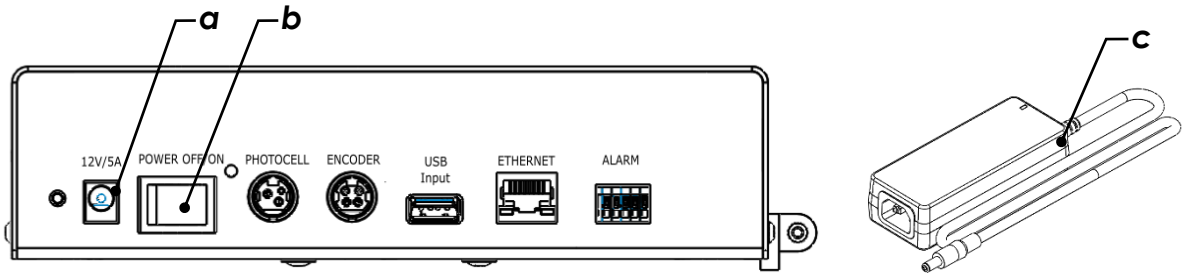
Figure 26

Power Supply (Printer Controller)

- Insert the male end of the power adapter cable supplied at the back of printer (refer to Figure 21).
- 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.



a: *Power connection* ***b:*** *On/Off button* ***c:*** *Power adaptor*

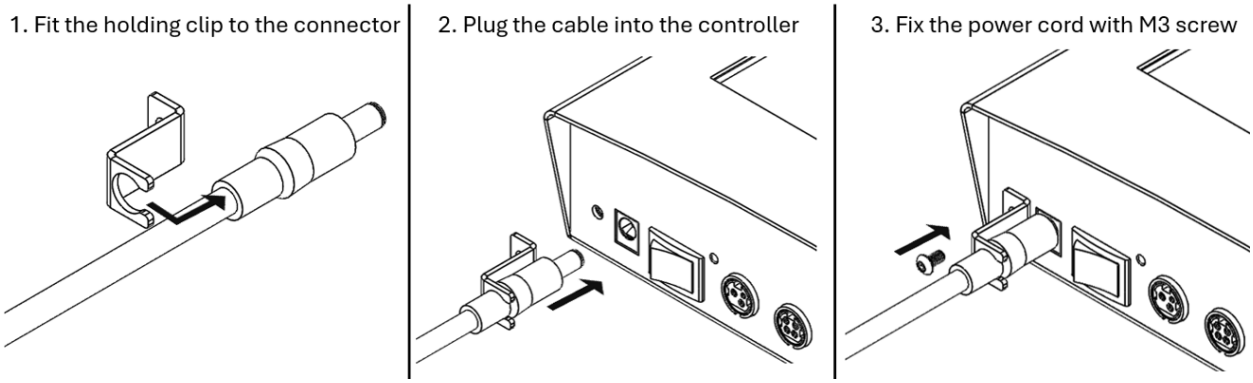


Figure 27

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. Please see Figure 28.

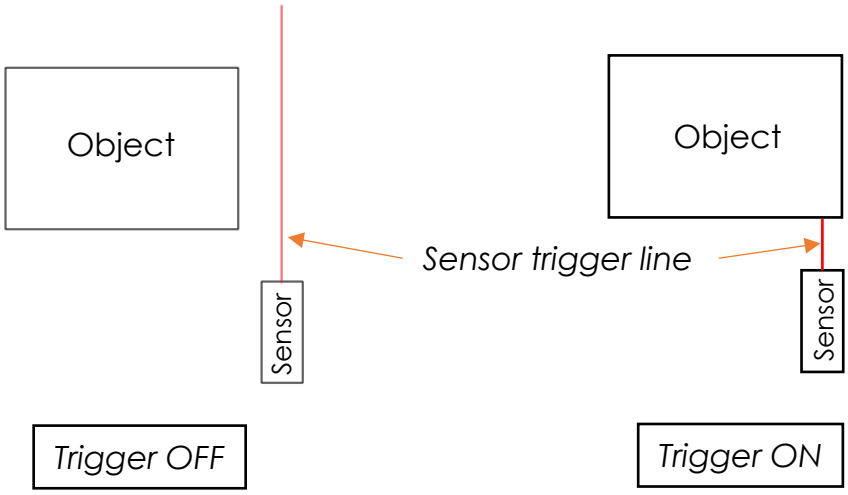
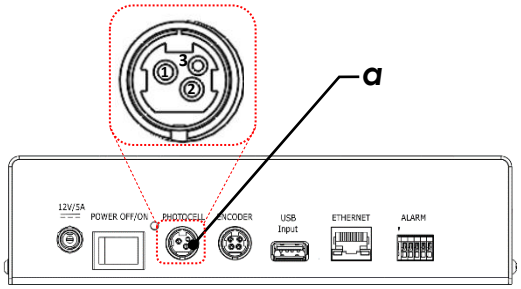


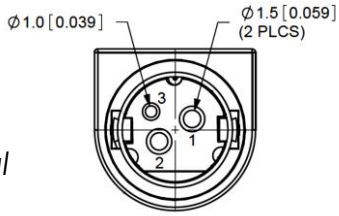
Figure 28

As shown in Figure 29, the printer system provides an NPN sensor signal input which triggers print command. It could be used with any 12 VDC NPN sensor.



a: *Photocell Female connector (board side)*

1: *12 VDC*
2: *Ground*
3: *NPN Signal*



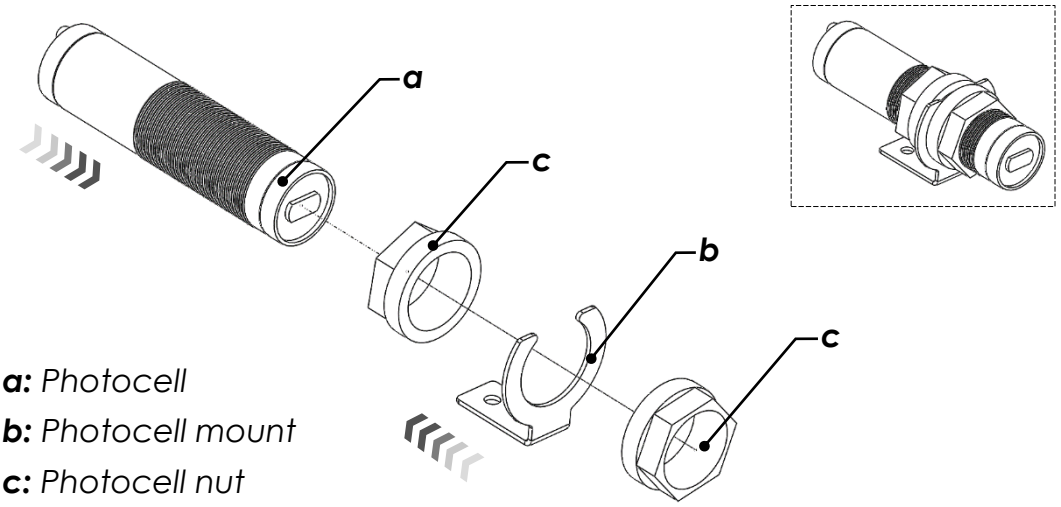
b: *Photocell Male connector (cable side)*

Figure 29

A Photocell sensor with proper 3-Ppin connector as well as a photocell mount bracket is included for versatile mounting on conveyor system.

> **Notice:** *Photocell mount can be installed on the print head using M3 screw provided on devised threaded holes, or any other desired location based on print configuration. It is recommended to install it as close to the printhead as possible.*

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 30. Use your fingers to tighten both locking nuts until there is no movement between the sensor and mount.

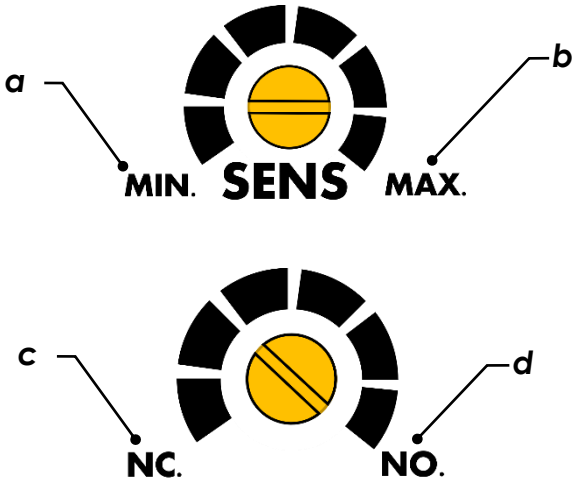


a: *Photocell*
b: *Photocell mount*
c: *Photocell nut*

Figure 30

As shown in Figure 31, 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.



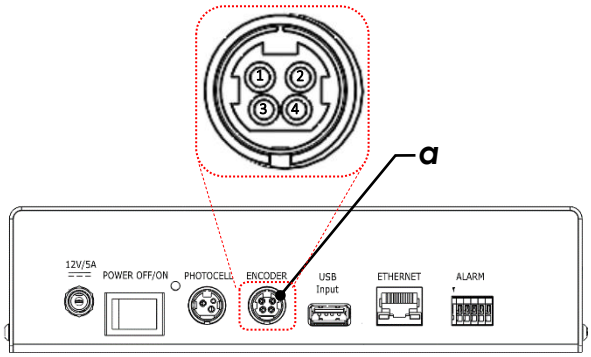
a: *Minimum Sensitivity (distance)*
b: *Maximum Sensitivity (distance)*
c: *Normally Closed Mode*
d: *Normally Open Mode*

Figure 31

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

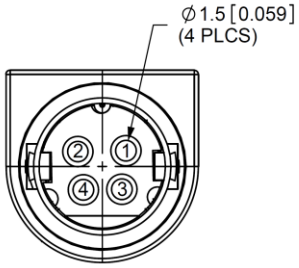
Shaft Encoder

Printer system is shaft encoder ready and provides a 12 VDC signal input (NPN configuration) on board which triggers print command (Figure 32). This function is available on demand. Consult your distributor for more details.



a: Photocell Female connector (board side)

1: 12 VDC
2: Ground
3: Signal 1
4: Signal 2



b: Photocell Male connector (cable side)

Figure 32

The print head resolution is **R=180 DPI**. For an encoder with **N** number of pulses per revolution, Wheel Diameter **D**, is calculated by equation below:

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

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

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

For example, the wheel diameter for a Shaft Encoder with **N=1800 pules per revolution** is: $D = \frac{1800 \times 1 \times 25.4}{180\pi} = 80.8mm\ (3.18")$

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:*** *Before turning ON the machine, insert the USB in the USB connector which is located on the side of the printer*

a: USB Port

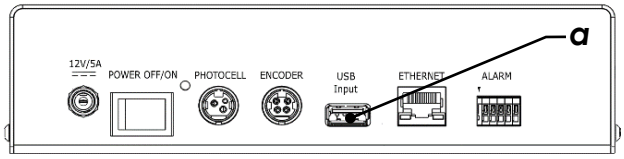


Figure 33

Ethernet

Ethernet connection is capable of connecting 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.*

a: Ethernet Port

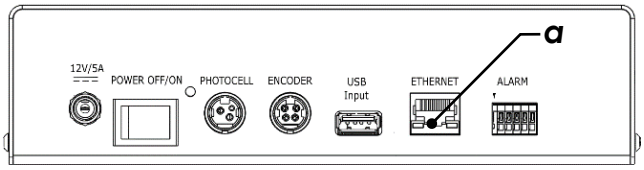


Figure 34

External Alarm Terminal (Cartridge 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. The pin out is indicated in Table 2.

a: Alarm Terminal

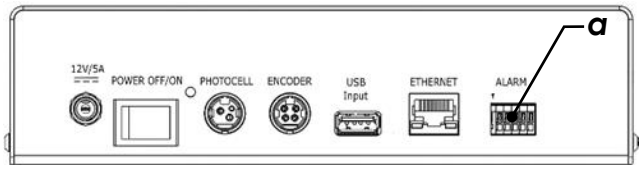


Figure 35

Notice1: *This function is not available in H-Series.*

Notice2: *For Bulk ink system use the port on the ink system and avoid using this port.*

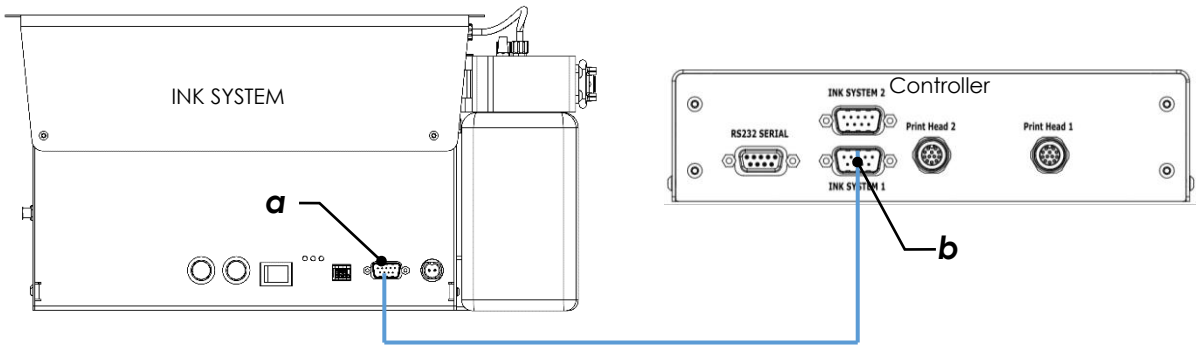
Pin#	Color	Function
1	Green	Print ON
2	Yellow	Ink Low
3	Gray (GND)	-
4	Red	No Ink/Tag Lost
5	Reserved	-

Table 2. 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 36.

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



a: *Male 9 PIN Port (Ink Data)* ***b:*** *Female 9 PIN Port (Ink Data)*

Figure 36

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

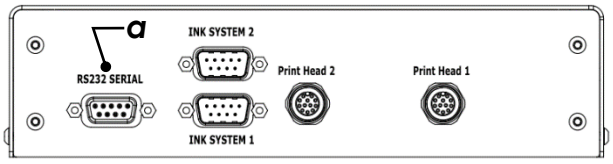
Notice: *DO NOT Connect/Disconnect the connectors when the power button is ON.*

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 37, 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: *Serial Port (RS-232)*

Figure 37

Print Head Ports

Print head drivers need to be connected to the ports on the Controller (shown in Figure 38) 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*

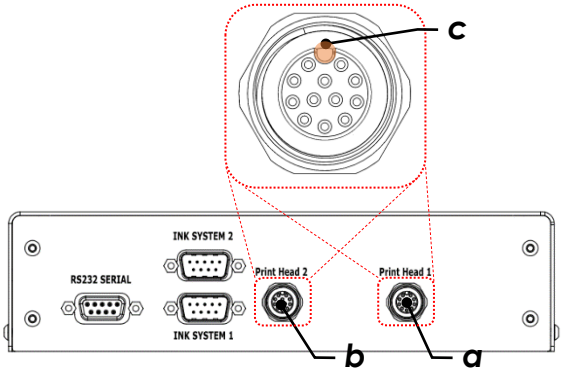
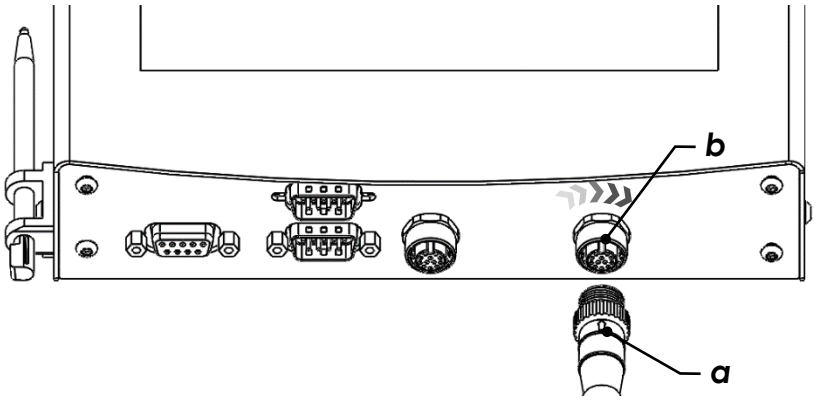


Figure 38

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

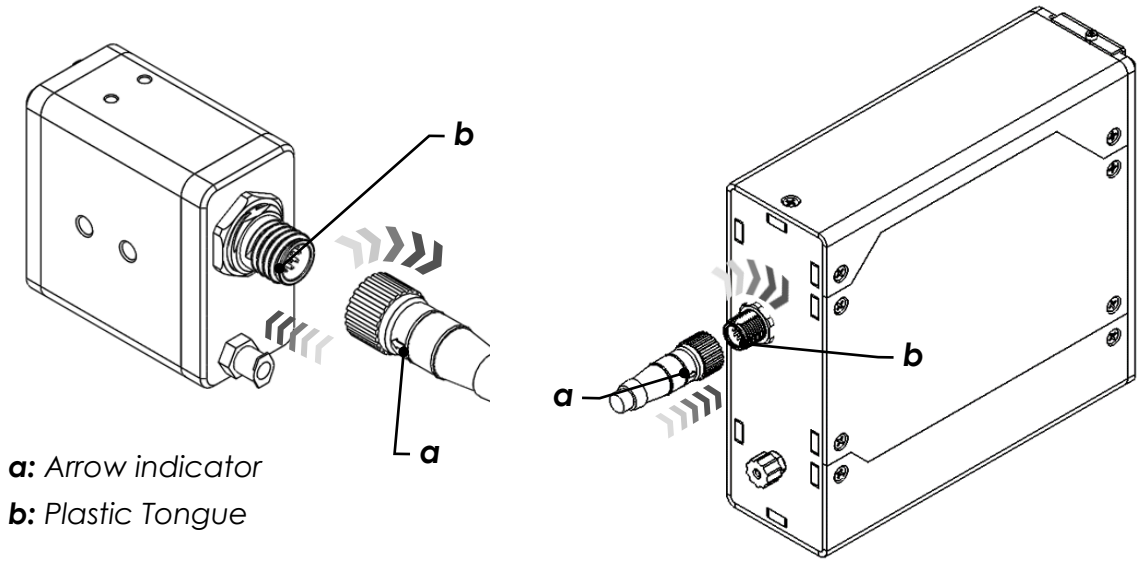
aligned with the groove on the female connector and gently finger tighten the threaded part into the port. The arrow indicator on the connector shows the location of plastic tongue and must always be faced up.



a: *Arrow indicator*
b: *Groove*

Figure 39

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 port as shown in Figure 40.



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

Figure 40

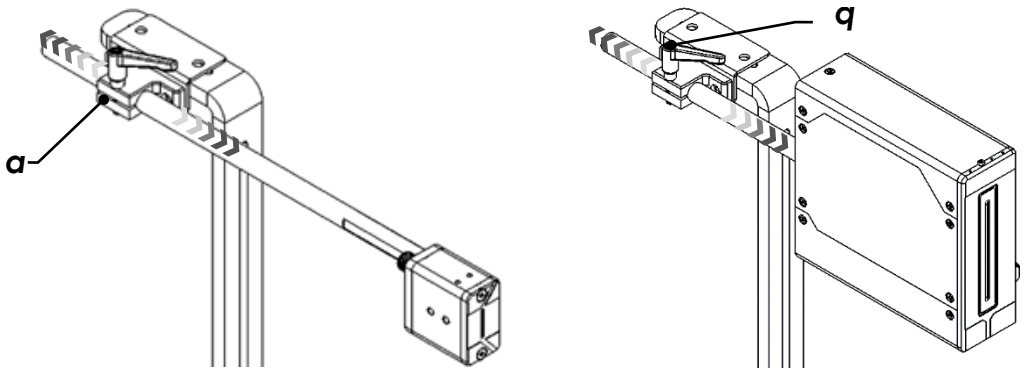
Notice: *The threads on the connectors are meant to be finger-tightened and must never be over forced by wrench or mechanical tools.*

Start-up

Adjusting

Adjusting the Slider Clamp

- Unmount clamp screw to free the slider clamp (see Figure 41).
- 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 Figure 42 for more information regarding printing position)



a: *Slider clamp (Rod Mount)* ***b:*** *Clamp screw*

Figure 41

The **operating distance** between the exposed print nozzles and the printing substrate is **1-10mm** for Small Character head and **1-15mm** for Large Character Head (see Figure 42). This may vary depending on the printing speed and operating environment conditions.

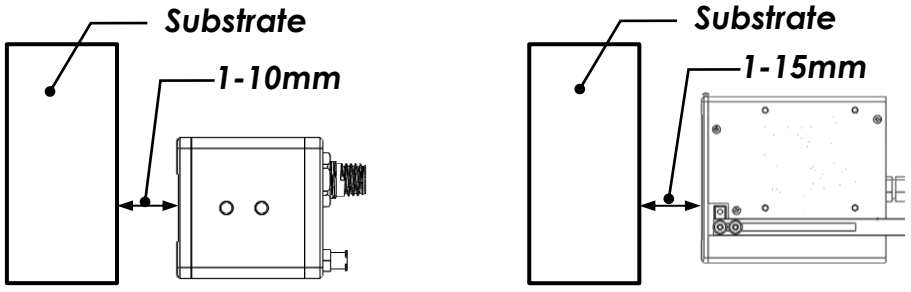


Figure 42

Notice: *Make sure that no moving object comes in direct contact with the printer head assembly, clamping slider, ink supply tube or any cables or cords.*

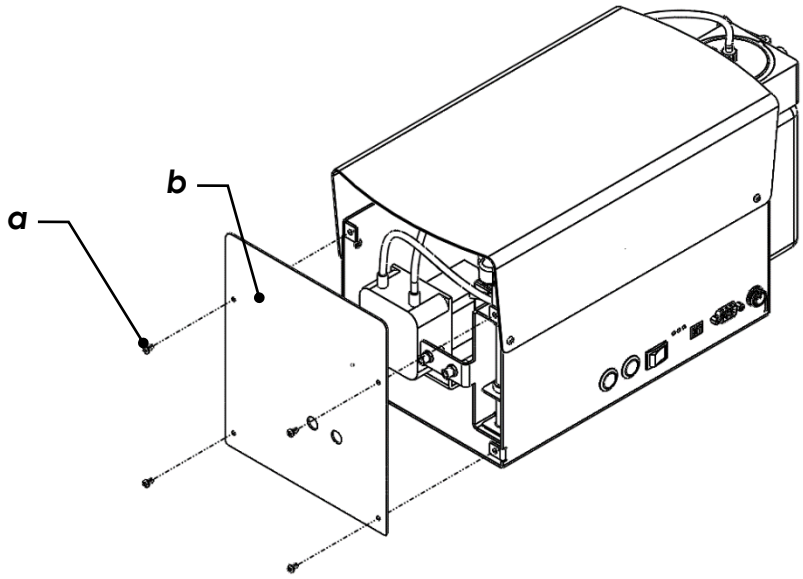
Adjusting the Ink Level (For Rare Cases)

For those rare cases that the height of the print head and bulk ink system could not be adjusted with the L-shape mount mentioned in Page 11 & 12, an extra ink level adjustment / fine-tune mechanism could be used in the bulk ink system to deal with ink starvation issue.

If possible, try not to use this INK LEVEL ADJUSTMENT MECHANISM.

Notice: *DO NOT start the conveyor during the adjustment process.*

- Unscrew the 4 X M3 screws shown in Figure 43 and take out the cover plate.

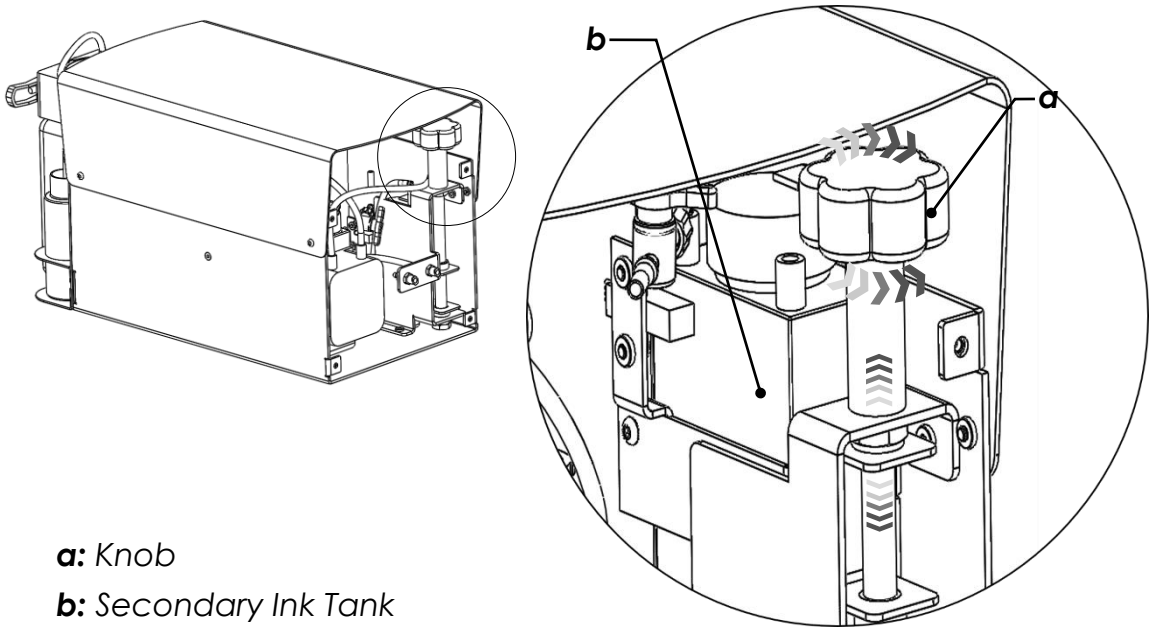


a: *M3 screw*
b: cover plate

Figure 43

Adjust the height of the secondary ink tank to the desired height by turning the knob. Turn it Counter-Clock-wise (C.C.W.) in case of starvation to bring the secondary tank up as shown in Figure 44.

Notice: *Dripping for a few seconds after purging is normal and there is no need to adjust the secondary ink tank level. Shortly after releasing the purge button, a click sound can be heard (from Solenoid valve) and dripping will gradually stop after that.*



a: *Knob*

b: *Secondary Ink Tank*

Figure 44

After adjusting the tank level, mount the cover plate back in place as shown in Figure 43.

<u>If possible, try not to use this INK LEVEL ADJUSTMENT MECHANISM</u>

Mounting Ink Bottle

To replace the ink bottle, follow the steps below.

The ink bottle has an NFC tag **((NFC))** which should face toward and stay as close as possible to the Antenna (See Figure 45).

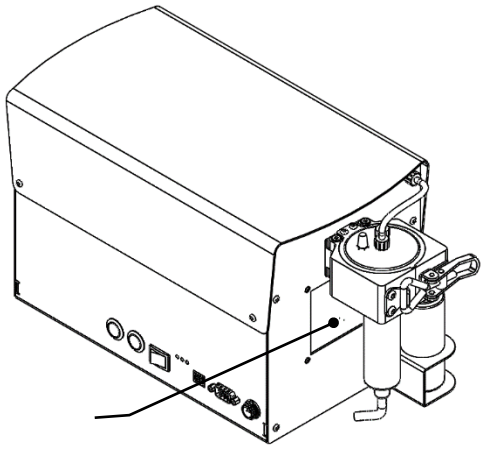
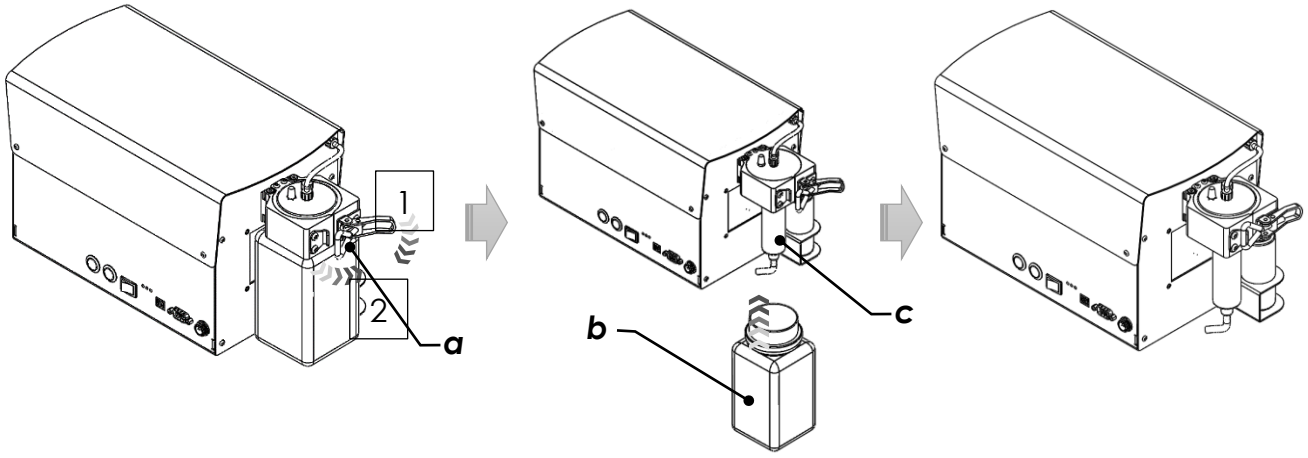


Figure 45

Notice: If the bottle is not placed properly, antenna will not read the tag and ink system will stop working (Red LED will Light).

To open the latch, pull the handle toward yourself and release the triangular catch. Bring the bottle in and lock the clamp around the neck.



a: *Latch* ***b:*** *Ink Bottle* ***c:*** *Filter*

Figure 46

Priming / Purging

The ink system must be primed and purged before the first print. It is recommended that a lint-free absorbent material be held or placed under the print head and the print-head tube inlet during purging, as ink will be expelled during this process.

The ink will be drawn through a long cylindrical filter mounted on the bottle clamp assembly. Please beware that for the first run it will take some time to fill the filter, internal and external ink tubes, and secondary ink tank.

> ***Important Notice:*** *Priming and purging are different concepts, but they have been used interchangeably in the literature and in this document.*

Initial purge (First time Ink system Startup)

- When the system is turned ON for the first time, it will attempt to run an autofill cycle.
- Autofill cycle will stop after a while for safety precautions while only a small portion of 2ndary container is filled. Pressing check ☑ button will initiate another autofill cycle.
- It might take around 5-7 attempts to fill the ink into the 2ndary tank.
- When the floating level probe inside tank reaches the trigger point auto purge will stop and pressing check button will not function anymore.
- Now that the secondary tank is full enough, the ink must be carried to the print head by pressing Prime (purge) button.
- Upon pressing the prime(purge) button Solenoid valve will activate (a click sound will be heard), and the pump will start filling immediately.

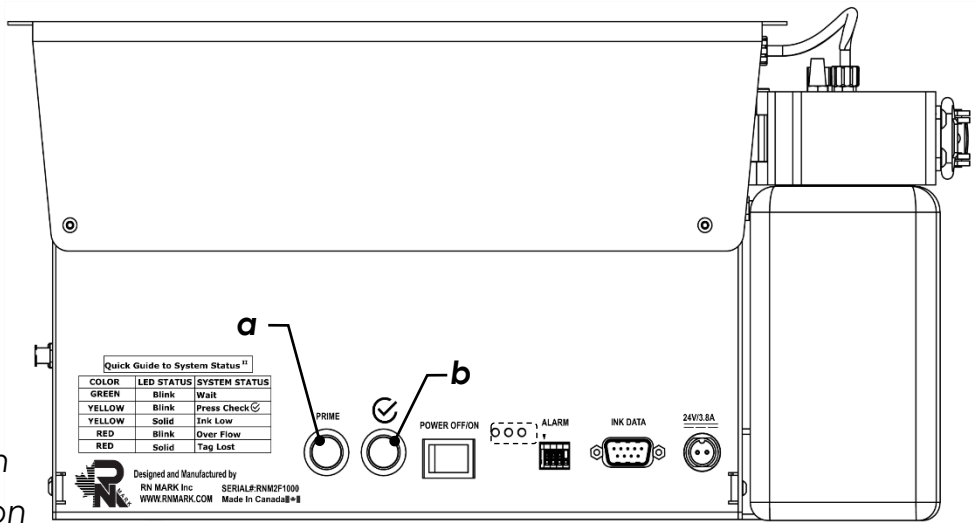
> ***Notice1:*** *The purge button is a momentary push button and will stop purging as soon as it is released. For proper purging please push and hold the button if required (see Figure 47).*

> ***Notice2:*** *Purge is estimated to be completed after a certain amount of time and it will automatically stop as a safety measure to avoid over-pressurizing the internal tank (secondary tank), after certain period.*

- After priming/purging stopped automatically, the Green LED will blink and during blinking the system will be locked to recover.
- Repeat the previous step (Push and Hold Prime button) until the ink starts flowing through ink tube and eventually bleeds from nozzles. (You will see ink coming through the ink tube)

  Notice 4: *There is a delay after releasing the purge button to avoid over filling, known as waiting time. The Green LED will blink in this wait period and none of the push-buttons will be in function*

- Carefully examine the ink tube and make sure there are no air bubbles in it.
- The expelled ink from nozzles may contain air bubbles, Keep purging as long as you see air bubbles coming out of nozzles.
- Blot or dab the print nozzles with an absorbent material to remove expelled ink.



a: *PRIME Push-Button*

b: *CHECK Push-Button*

Figure 47

Regular purge

If the printer has been inactive for a while, the ink will dry on the nozzles of the print-head and temporarily clog some of them. In some cases, due to negative relative pressure, air can be sucked in through loose connections and create an air pocket inside the head. This will yield to missing nozzles and poor print quality. To clean the clogged nozzles, you need to:

1) Spray Solvent cleaner on the nozzles to dissolve the external dried ink.

IMPORTANT Notice: If your ink is oil-based avoid spraying solvent spray and skip this step.

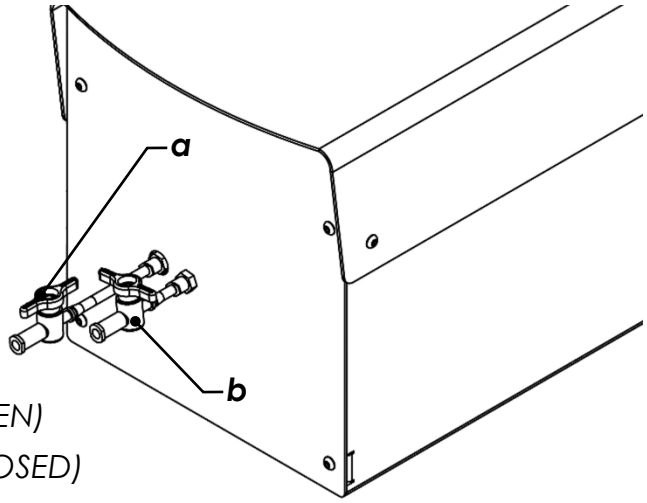
2) Push the Prime button once and hold it to purge and clear the nozzles.
3) Gently dab the excess ink from nozzles using a lint free paper towel

Notice 1: Do not over-purge the ink system as the secondary ink system has limited capacity and professional service is required in case of overflow.

Notice 2: *Make sure the hoses and the fittings are air-tight and fixed in place.*

If the printer is Dual head (36 or 140) and is fed by single bulk ink system, each head must be purged individually. For individual purge, close the external valve for other head and follow the purge steps. After successfully purge for one head, switch the valves (shut the corresponding valve and turn the other valve to open position) and purge the other head as well. Finally, when both heads are fully purged put the stopcock valves in open position for both heads.

IMPORTANT Notice: Never purge while both valves are closed, otherwise the secondary tank will be over-pressurized and may leak or burst.



a: *Stopcock valve for head 1(OPEN)*
b: *Stopcock valve for head 2(CLOSED)*

Figure 48

Downward purge

If the large character print head is purged by push button in downward printing mode, ink level may raise causing some leakage. We strongly recommend not to use the push button and instead use a syringe to purge the ink out.

Bring the print head to skyscraping mode, fill the syringe with air, Remove the breathing tube and plug the syringe to the breathing port.

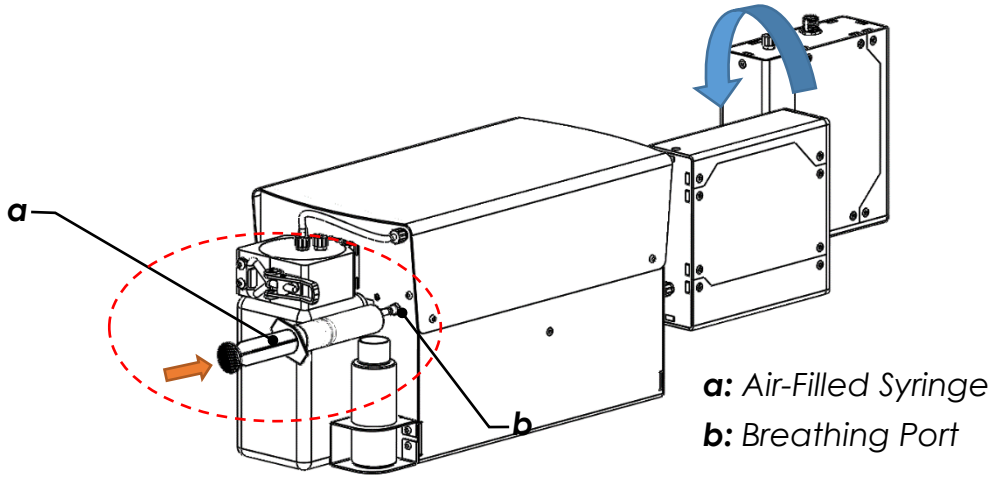


Figure 49

Push the piston in and hold it untill the autofill starts, this will purge the excess ink out and keep the ink level at its lowest.

Remove the syringe and put the breathing tube back. Retain the syringe for future use. Gently put the head back to the downward printing mode dab the excess ink and print.

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: *Use only RN MARK Spray cleaner for print-head maintenance.*

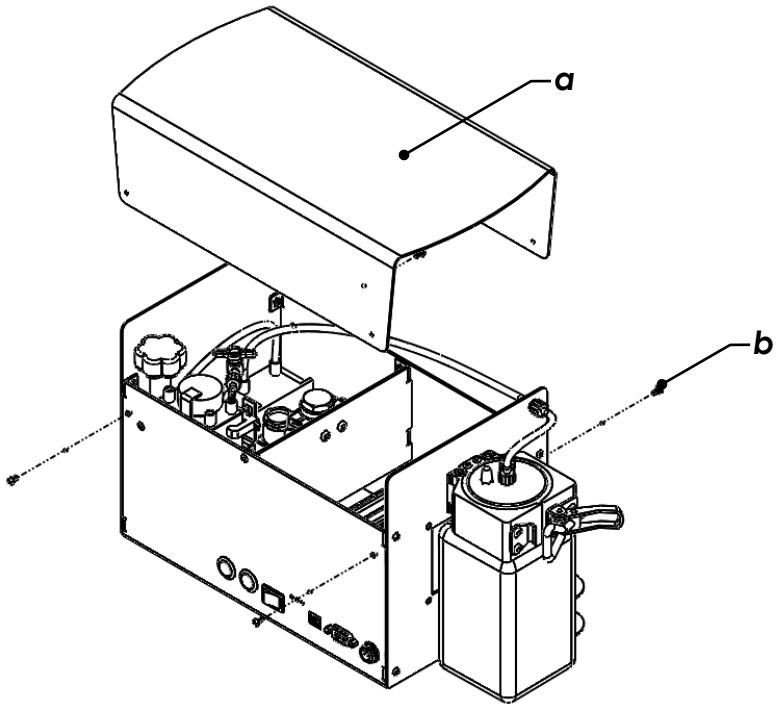
Please contact RN Mark's technical support team to help you with the service and maintenance of your ink system.

Shipping Bulk Ink System

In case you need to ship the ink system you need to drain the ink inside the secondary tank and shut the internal stopcock valve. For moving it, you just need to shut the internal stopcock valve off and after relocating put it back in to open position. Follow the steps below to close the stopcock valve.

Important Notice: *You will receive the bulk system with this valve closed, please make sure to open the valve before operation otherwise the secondary tank could burst or leak.*

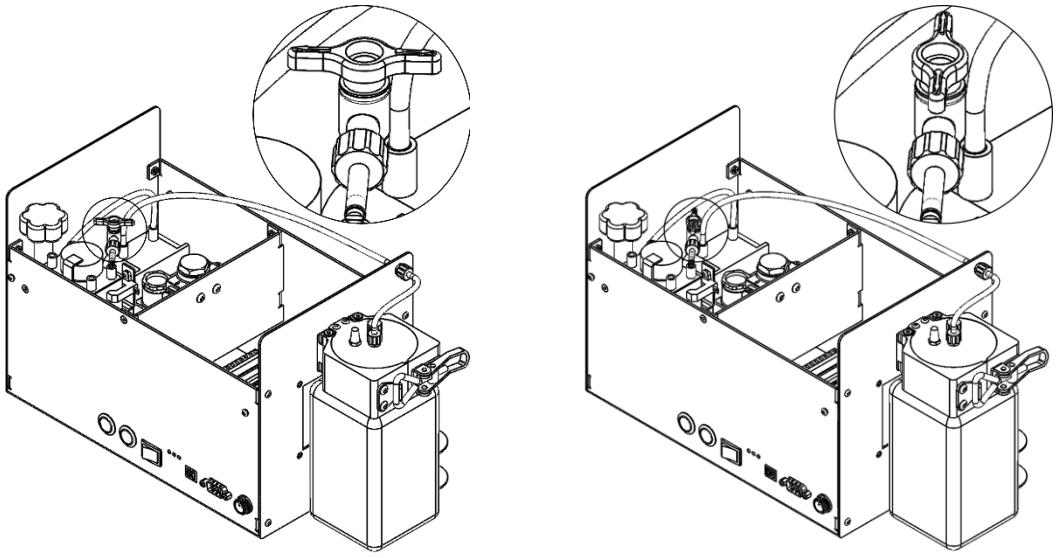
5) Disassemble the controller and print head if required.
6) Unscrew the 4XM3 screws as shown in Figure 50 and take the top cover off.



a: *Top Cover*
b: *M3 Screw*

Figure 50

7) Open/close the stop cock valve. The valve must be OPEN when the printer is in function, otherwise the secondary tank can burst or leak.
8) After relocating open the valve and put the top cover back.



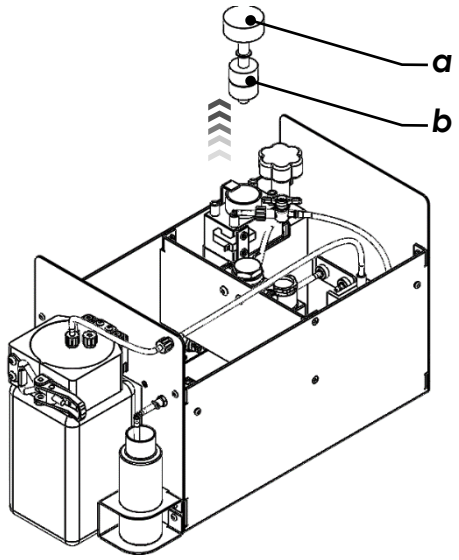
a: Stopcock Valve CLOSED
(During Shipping)

b: Stopcock Valve OPEN
(During Operation)

Figure 51

If the bulk system is required to be shipped, the ink inside the system must be drained.

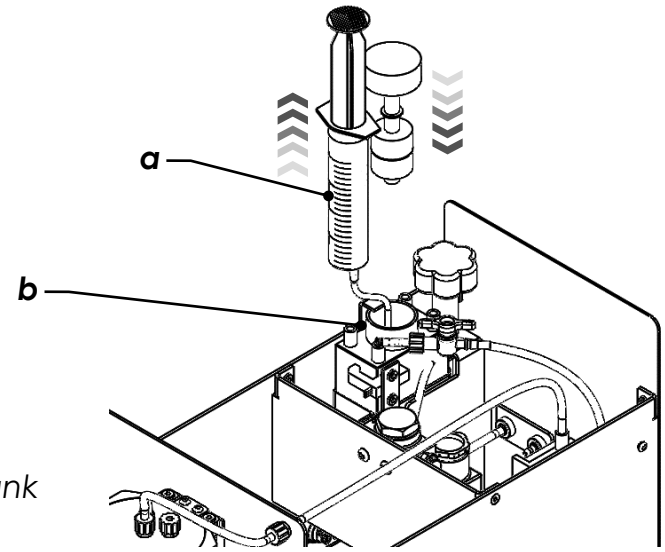
1) Unscrew the cap for the internal tank and carefully take out the level sensor.



a: *Internal (2ndary) Ink Tank Cap*
b: *Ink Level Sensor*

Figure 52

2) Use a syringe to draw the leftover ink and cap the tank when there is no ink left inside.

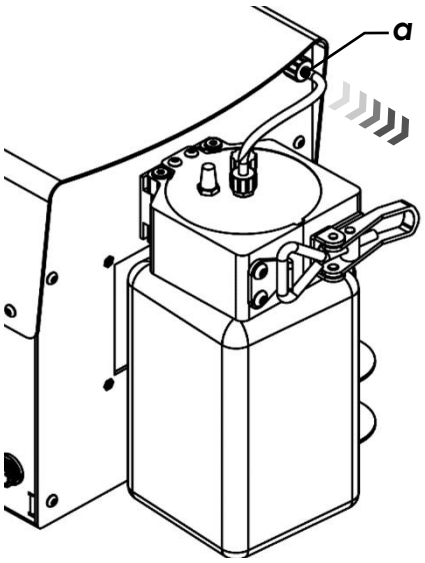


a: *Syringe*

b: *Internal (2ndary) Ink Tank*

Figure 53

3) Shut the stopcock valve off as showed in Figure 51.
4) Cap the ink outlet as shown in Figure 18.
5) Remove the tube from ink inlet and hold it up to drain the ink inside the filter and tubing with gravity (See Figure 54).



a: Ink Inlet

Figure 54

6) After the filter is drained, put the tube back and use an empty bottle or a Nylon Bag to cover the filter.

Notice: *If the filter is not properly sealed, the ink will dry inside, and the leftover ink may leak.*

7) Put everything back (follow the steps in reverse), wrap the bulk ink system with stretch film and secure it with bubble wraps. Please use original packaging for shipment.

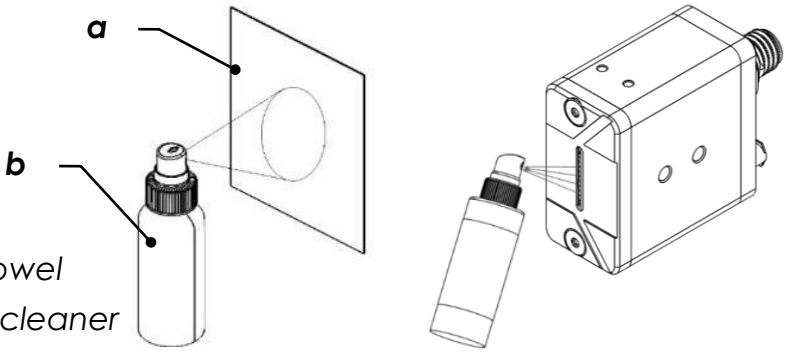
Notice: If the ink system is only being relocated inside the facility, you only need to disassemble the top cover, shut the valve, and move the ink system to the desired location. Open the valve and put the top cover and tubing back.

Shipping Print Heads and Controller

For shipping the controller, cover the LCD with flat cardboard and secure it in place. Use original packaging otherwise make sure the parts are fully secured. IF the print heads are required to be shipped, please follow the steps below:

Small Character Print Head

- Spray some cleaner solution on the nozzles. Fold a lint free paper towel to size of 5" x 5" or 13 cm x 13 cm and spray some cleaner on it.



a: *Lint-free paper towel*
b: *RN Mark Solvent cleaner*

Figure 55

- Fold the sides in a way that it wraps around head and use a stretch wrap to seal the print head airtight.

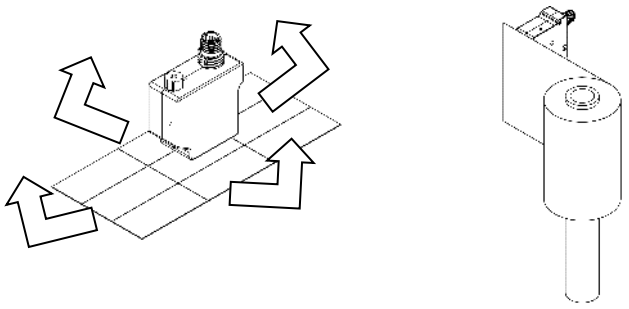
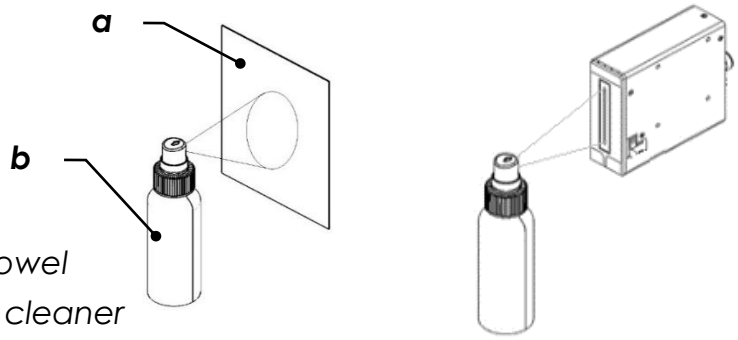


Figure 56

Note: *Please note that this step is particularly important to keep the nozzles wet by minimizing ink evaporation to prevent clogging of the nozzles during shipment.*

Large Character Print Head

- Spray some cleaner solution on the nozzles. Fold a lint free paper towel to size of 5" x 5" or 13 cm x 13 cm and spray some cleaner on it.



a: *Lint-free paper towel*

b: *RN Mark Solvent cleaner*

Figure 57

- Fold the sides in a way that wraps around head and put the protection plate back. Use a stretch wrap to seal the print head airtight.

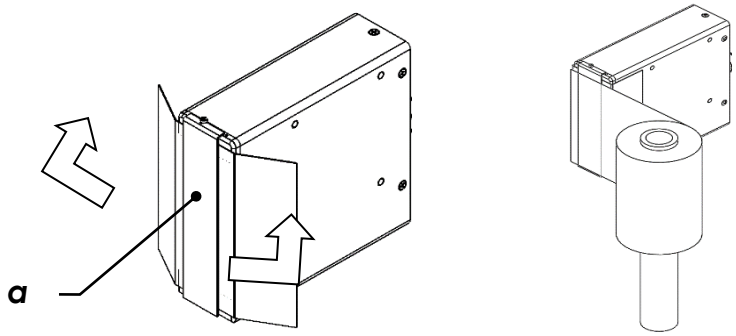


Figure 58

Note: *Please note that this step is particularly important to keep the nozzles wet by minimizing ink evaporation to prevent clogging of the nozzles during shipment.*

Technical Support

Telephone and Video Chat 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: 1 647 242 9406 (Whatsapp and Google Duo Available)

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

WWW.RNMARK.COM