Flora

LJ3208P USER GUIDE

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Shenzhen Runtianzhi Image Technology Co.,Ltd
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Flora Digital Printing System

Flora Digital Printing System, reserves the right to make changes without prior notice to the specifications and materials contained herein and shall not be responsible for any damages (including consequential) caused by reliance on the materials presented, including but not limited to typographical, arithmetic, or listing errors.
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 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 the user will be required to correct the interference at his own expense.

This printer is a color inkjet printer that uses a Solvent ink, supports up to 3200mm of media width, and has one built-in USB interfaces.

This manual, the LJ3208P User's Guide, describes the features of the printer, names of components, information needed before use, and basic operations, such as how to turn the power ON and OFF, loading and setting of the media and loading of ink.
The following items should be read before proceeding to Section 1;

- Contents of the package
- Safety precautions
- Handling precautions
- Notion

Notice: *Read these items to use the printer safely and properly. Keep this manual in a place where you can quickly access it any time.*

Disclaimer

This is an alpha release of the User's Guide for Flora LJ3208P printer. We have made every effort to guarantee the accuracy and integrity of the information in this manual. If you find some errors or omissions, please bring them to our attention so we can check and correct them accordingly.

This manual can be used as a reference for operation and routine maintenance of the Flora LJ3208P printers. It can't be a replacement for the formal training provided by Shenzhen Runtianzhi Image Technology Co., Ltd, regarding on how to operate the printers properly. Shenzhen Runtianzhi Image Technology Co., Ltd will not take any responsibility for the consequences of misusing this manual and appendix.

Manual Usege Conditions and Limitations

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The text and images are subject to change without prior notice. Any software mentioned in this manual is provided by permission. Use or copy of these softwares must be according and to follow prior regulations. If the information in this manual has changed, there will be no further notice unless it is specified.

Contents of Package

The internal printer components, including the options, are installed on the main unit on delivery. The print heads and extension table assembly are included on a separated box within the main crate.

If any parts are missing or damaged, please contact the shop or dealership where you have purchased the product or the nearest service center.

Printer Introduction

The Flora LJ3208P printer is a wide format digital printer suitable for small up to medium size business use. It uses a Solvent ink. It provides high productivity and is capable to replace traditional silkscreen printing. This type of printer is widely used in the fields such as advertisement, packing, printing, interior decoration, flexible packaging, etc.

Flora LJ3208P series printers use drop-on-demand and Piezo-electric technology. It can print colorful and wide image by using the highest 1200x1200 dpi resolution. It can output any size of images with “tile” feature in the software.

Table 1 General Features

Item No	Description	Specification
1	Printing Method	Drop-on-demand Piezo-electric
2	No. of colors	4 (CMYK)
3	Ink	Solvent
4	Ink reservoir capacity (volume)	4 Li/color (refillable while printing is on progress)
5	Outdoor Durability	1 years for Flora Solvent ink
6	Media handling system	Roll-to-Roll with vacuum
7	Drying system	Dual Drying System
8	Media types	Roll-to-roll including paper, vinyl, adhesive back vinyl, fabrics, banners, PVC, etc
9	Maximum printing size	3.2 m width
10	Rip software	PhotoPRINT V6.1 Flora edition (Windows 7)
11	Driver software	Flora Driver
12	Color management	ICC based color, density adjustment curves
13	File format	Bitmaps, Tiffs, Jpeg, Postcripts3, Eps, Pdf, etc.
14	Work Flow	Rip and Print
15	Warranty	1 year (please consult your local dealer for details)

Table 2 Technical Specification

Item No	D e s c r i p t i o n	Specification
1	Model	Flora LJ3208P
2	Print Head	Binary Drop-on-demand Piezo-electric
3	No. of print heads	8 (CMYK, 2 print heads/color)
4	No of colors	4 colors
5	Printing resolution option	300x200, 300x400, 300x600, 600x400,600x600, 600x800, 1200x1200 dpi
6	Printing quality option	Standard, High and Ultra

7	Printing Speed	Draft Quality: 185 m^2/hr Standard Quality: 125 m^2/hr High Quality: 92 m^2/hr
8	Media maximum width	3.3 m
9	PC minimum operating requirement.	Intel Core 2 Duo, Q6600 @2.40GHz 3GB RAM, 250GB HDD, Windows 7 or XP
11	Operating environment	220VAC/50/60Hz/Single Phase, Distortion< 0.5% Heating:3000W, System:3500W
12	Room temperature	23~33 ºC
13	Humidity	40~70%
14	Dimensions	4.83.m x 1.37m x 1.38m
15	Weight	700 Kg

Table 3 Flora LJ3208P Printer Model Coding

Code	Explanation
Flora	Brand Name
LJ	Light Jet
3208P	320: maximum width 320cm 8: 8 print heads P: Polaris head

About The Manual

The manual provides the end user all the information related to the machine basic functions, software installation, machine parameter calibration, maintenance and troubleshooting of Flora LJ3208P.

Chapter 1 Safety Operating Instructions

1.1 Brief Introduction

This chapter introduces the important safety information. Please read and understand the safety information carefully before operating the printer.

1.2 Safety Information

FLORA printer uses the following chemical substances

- All kinds of printing media
- Solvent Ink
- Cleaning liquid (Solvent Flush)

1.2.1 Solvent and Ink Properties

- Solvent and Ink are flammable.
- Eye contact with the ink and Solvent will break the cornea and weaken the eyesight.
- Contact lens should not be worn when operating printer or when there is no proper ventilation.
- Wear safety glasses and gloves while flushing print heads, ink tube or moving the ink bottles or containers.
- Solvent and ink can be irritating to eyes, throat and skin. Inhaling the ink fumes would result in swoon or other symptoms.
- Solvent vapors are heavier than air and may flow and gather in low spot.

This caution symbol represents danger. If this sign is ignored it may lead to serious injury or damage to the printer.

1.2.2 Danger of Fire and Explosion

Open flames, heat energy or spark around the printer can trigger fire and explosion.

- No smoking, pilot lights, open flames, stoves, heaters or halogen lights should be turned on within 5m distance from any edge of the printer.
- No portable spark-producing equipment (static, electrical or Mechanical) within 5m distance from any edge of the printer.

1.2.3 Anti-ultraviolet Radiation

- Wear solvent protection glasses and gloves when operating the machine and avoid being too closer to solvent lights.
- When doing maintenance task or being close to the flatbed machine, solvent lights must be shut off or close all solvent protection doors.

1.2.4 Proper Ventilation and Exhaust System

- The vacuum exhaust system must be functioning before the printer operates.
- Do not ignore this safety warning sign to avoid accumulation of flammable fumes in the area.

1.2.5 Ink and Solvent spillage, a potential risk of Fire and explosion

- Store ink and Solvent in proper cabinet for flammable liquid storage.
- Keep ink and Solvent containers tightly closed at all times. If a container has sign of damage/leakage, fix or replace it immediately.
- Clean ink or Solvent spillages as soon as possible.
- Only use dry powder, or carbon dioxide type of fire extinguishers.

1.2.6 High voltage may shock people or trigger a fire

- If there's no emergency power switch which can shut down all the power, do not connect the printer to main-power supply.
- When the machine's power is on, do not open the back cover of machine, or avoid touching electrical parts.
- The printer or other equipments should be grounded, according to the local safety

electrical connection regulation. The ground voltage should be less than 3 V.
- Set the machine on smooth ceramic tile or cement ground
- Use specified anti-static floor mat to minimize harmful static build-up.

1.2.7 Printing media rolls are bulky and very heavy

- Wear hand and foot safety protection gear when loading, unloading and handling media to avoid serious body injuries.
- Use proper heavy duty handling equipment if available.

1.3 Fireproofing

Ink and Solvent should be clearly labeled and stored in a specific area for flammable liquid and should be in accordance with local regulations of fireproof and safety standard. Ensure that the specified fire extinguisher is always available near the storage area and should be cleared from any obstacle in case of emergency.

1.4 Exhaust System

The printing area should be equipped with sufficient exhaust system. The exhaust should be installed in such a way build up of fumes is minimized. Best location for the exhaust should be at lowest level, this way the fumes build-up is minimized. Solvent fumes are heavier than air, so fumes build-up concentrates on the lower level of the room.

1.5 Handling Precautions

1.5.1 Power Supply

- Install the printer near an easily accessible electrical outlet.
- Do not provide power to the printer through the same power line as for other noise generating devices such as motors.
- Use a power supply matched with the printer specification.
- Connect the power cable directly to an electrical outlet. Do not plug several devices into one electrical outlet.

1.5.2 Printer

- Do not place anything on top of the printer.
- Do not rest you elbows on the printer.
- Open and close the top cover gently from the front of the printer with both hands.
- Before connecting or disconnecting the interface connector, turn the printer OFF.
- Do not clean the surface of the cover with benzene or paint thinner. The coating may come off or deteriorate. Wipe the cover with a soft cloth, if the cover is very dirty, use a cloth moistened with a neutral detergent.
- Do not touch the ink jet head surface.

1.6 Regular Inspection and Maintenance

The following regular inspection and maintenance must be performed in terms of characteristics of the solvent ink:

a) Clean the carriage unit and the flat table conveyor surface every day.
b) Make sure that the carriage covers are always replaced.
c) Perform ink supply circuit and print head cleaning when leaving the printer for a long time (2 weeks or more with no power).
d) Perform head cleaning after leaving the printer idle for a long time.
e) Shut off the solvent lamp whenever the printer is not in use.

1.7 Consumables

- Always use the recommended consumables (printing media, ink, ink filters). Failure to follow this instruction may cause poor printing quality and breakdown.
- Do not use ink past the expiration date as this may cause a print head breakdown and poor printing quality.

- Put a used ink bottle into a plastic bag and dispose of it as an industrial waste. Observe local regulations for disposal of waste ink bottles.
- Avoid spilling ink into your skin or clothes. Wash any ink off immediately with soapy water.
- Check the waste ink container everyday so as not to permit waste ink to leak from you printer.
- If the waste ink container is being installed or removed, spread a stain preventing sheet so as not to stain the floor with spilled ink.
- Store ink in a dark and cool place. Never store the ink in high temperatures or direct sunlight, doing so may cause the ink to deteriorate.

Chapter 2 Preinstall Requirement

This is a pre-install guide for Flora LJ3208P. Customers are recommended to prepare the room and other necessary devices before the machine arrived and installation. We have made every effort to guarantee the accuracy and integrity of the information in this guide. Should you find some errors or omissions, please bring them to our attention so we can check and correct them accordingly.

2.1 Getting Started

This section provides the necessary information to preinstall the printer. Familiarize yourself with the basic of the printer before reading Section 2.

Contents of this section：

- Operating conditions
- Consumables

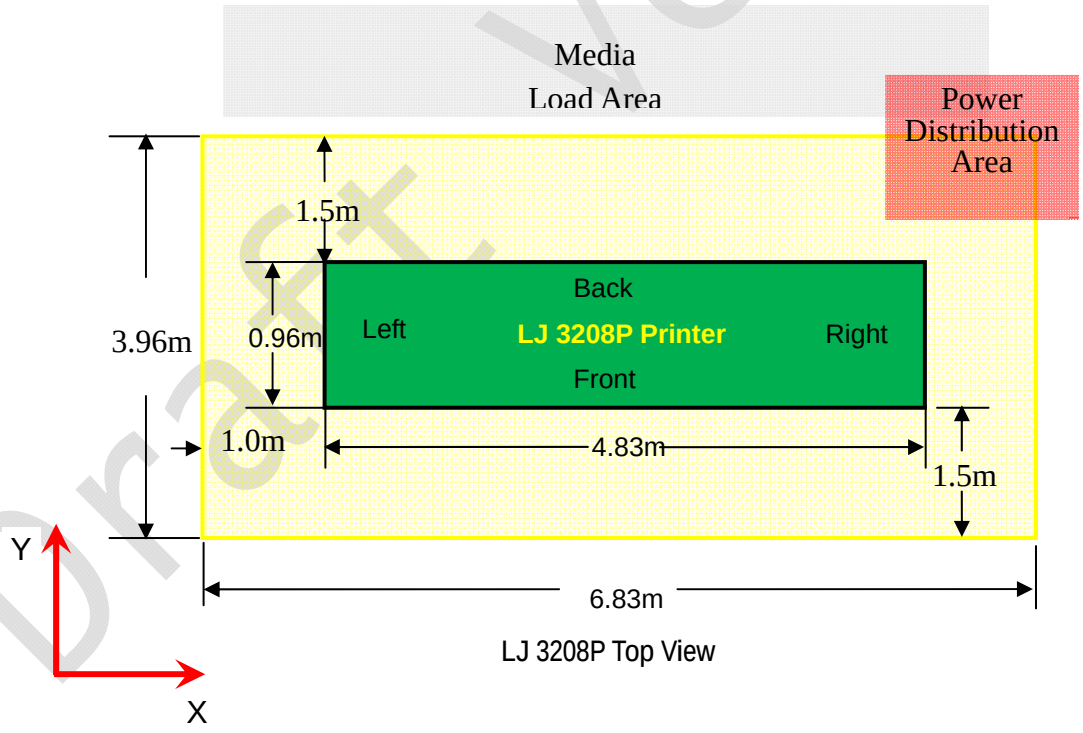
2.2 Operating Conditions

This section describes the operating conditions for the printer.

2.2.1 Installation Space

There must be sufficient space around the printer for the replacement of frequently used parts, for the output of the printed media and for ventilation. In addition, maintenance space, shown below, is required to repair the printer or replace components.

There must be at least 1m of space in every side at X-axis, at least 1.5m of space at in every side Y-axis, at least 1m from the top of the machine.



LJ 3208P Top View

2.2.2 Environment Conditions

2.2.2.1 Operating temperature and humidity levels

The printer should be used within the temperature and humidity ranges as shown below;

- Temperature: 20 ºC to 30 ºC
- Humidity: 40% to 70%

Note: *To obtain better print quality, use the printer within temperature of 25 ºC to 30 ºC.*

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When the operating temperature is lower than 20 ºC or higher than 40º C, printing speed should be reduced to two-thirds of normal print speed to maintain good print quality.

2.2.2.2 Places where the printer must not be installed

Do not install the printer in the following places:

- A location near a fire
- Places exposed to direct sunlight
- Places subject to vibration
- Places with excessive dust
- Places subject to extreme changes in temperature or humidity
- Places near an air conditioner or a heater
- Places where the printer may get wet
- Places near a diazo copier that may generate ammonia gas
- Places with poor ventilation
- Unstable place

2.3 Configuration of Computer

- Intel Core 2 Duo, Q6600 @2.40GHz
- 3G RAM
- 250G Hard disk
- DVD-ROM
- USB 2.0 port(at least 2)

Notice: *This is only for reference, which is used to test in our company! Recommend to use Brand Computer.*

2.4 Power Specification

	System Power	Heating Power
Rated voltage	220VAC (±5%)	220VAC (±5%)
Rated currency	25A	16A
Input power frequency	50/60HZ	50/60HZ
Phase	Single-phase	Single-phase

Electrical Safety:

- The machine should be grounded, according to the local safety electrical regulation.
- The grounding should be less than 3V.
- Use specified anti-static floor matting to minimize the harmful static buildup.
- Use ESD Ground Strap when handling Print heads and any Electronic Boards to avoid any electric static discharge that may damage these parts.
- Do not open the cover where electrical spare parts are located to avoid possible electrical shock.

Notice: *AVR or UPS is recommended to keep supplying stable power to the machine!*

2.5 Suggest Inventory List

PN	Part Name	Number/Machine	Photo
116-0401-132	Printing Control Board	1pcs	
116-0417-011	USB Board	1pcs	

116-0385-022	Servo Card	1pcs	
116-0396-081	HPP Board	1pcs	
312-0015-233	Ink Pump	9pcs	
141-0487-000	Ink Pump Filter	9pcs	
141-0428-006	Disc Filter	16pcs	
116-0340-020	Raster Reader	1pcs	
141-0134-004	Raster Strip	1pcs	

2.6 Available Media Types

The following types of media are available:

- Paper
- Advertising banner
- PVC
- Mesh Fabrics
- Adhesive Vinyl

Note: *Contact our service center for detail!*

Chapter 3 External Views, Part Names and Functions

The mechanical design parts/assembly of the machine are grouped according to its function; namely, the print head carriage, the x-axis movement mechanism, the y-axis movement mechanism, the roll media feeding and take-up mechanism, the ink supply compartment, the electrical control cabinet and the printing platform. The printing system control is a modular control that has the dedicated controller board for a specific function. Other controller board functions as a stand-alone control, like the roll media feeding and take-up control board, that has no communication and no interlock with the other controller board, it needs only the power supply from the machine. The mechanics, the electronics and the standard electrical parts are harnessed together to form a system for large format printing application.

LJII-series Perspective View

Fig.3-1 **Top View**

Fig.3-2 **Left View**

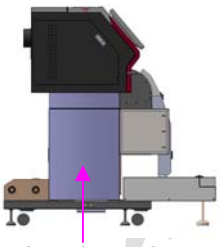


Fig.3-3 **Front View**

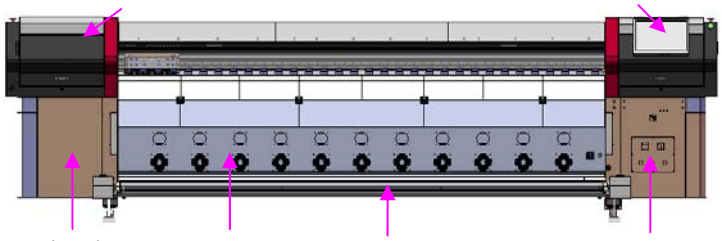


Fig.3-4 **Right View**

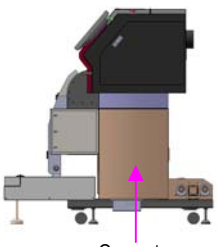
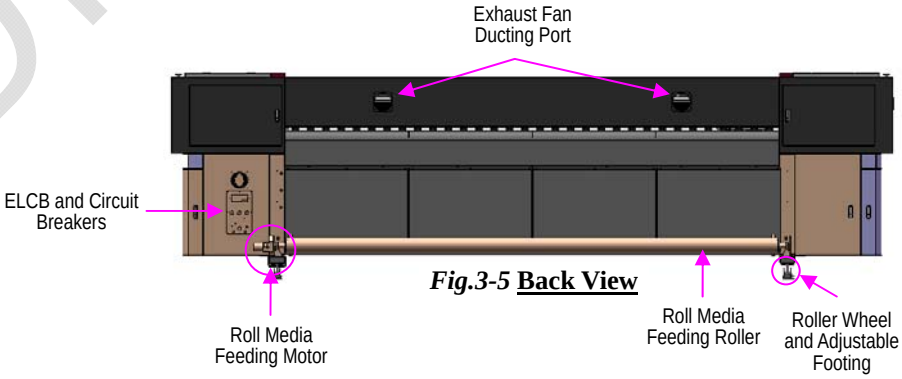


Fig.3-5 **Back View**



3.1 Computer Station

Computer station is control centre, which is located at right side of the machine! It takes charge early treatment before printing including image ripping and print mode setting. Most function starts to work when get the command from computer.

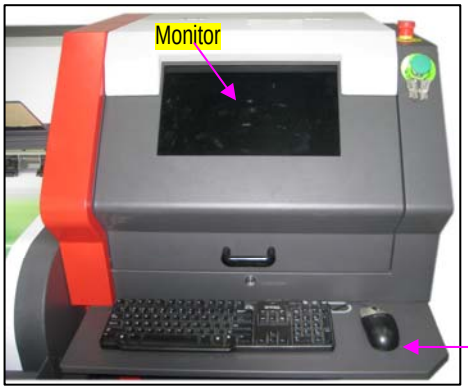


Fig.3.1-1 Monitor&Keyboard&Mouse

Fig.3.1-2 Computer

3.2 Maintenance Station

Maintenance station is in right compartment. When the carriage stopped working, it will come back to station. All the maintenance performance should be done here.

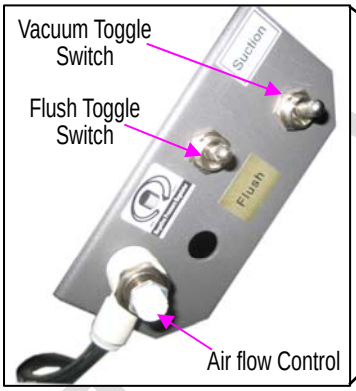


Fig.3.2-1 Maintenance Panel

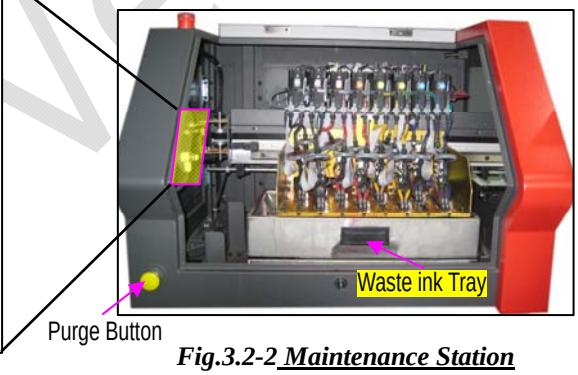


Fig.3.2-2 Maintenance Station

3.3 Carriage & Beam Assembly

The print head carriage assembly houses the print heads, secondary ink tanks, print head control board, raster reader, negative pressure sensor.

Rail guide serves as pathway for carriage moving, and the beam serves as frame for rail guide mounting.

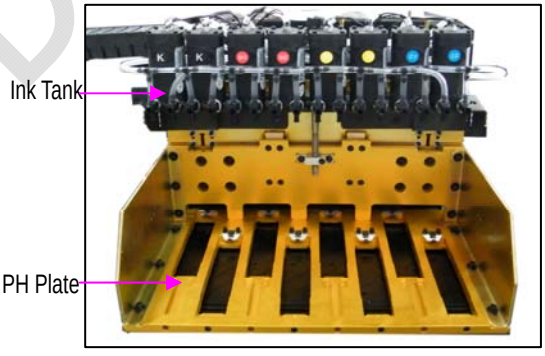


Fig.3.3-1 Carriage Assembly

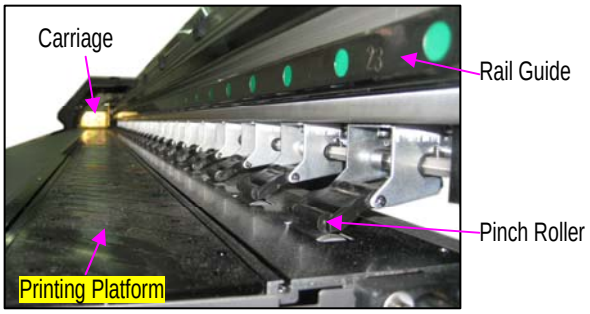


Fig.3.3-2 Beam&Pinch Roller&Plate

3.4 Ink Supply Compartment

Ink supply station contains two compartments. One is on the right side for ink pumps and filter, while the other one is on the back right side for ink bottles.

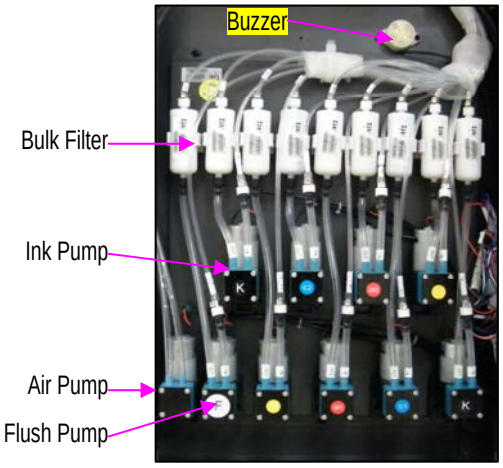


Fig.3.4-1 Ink Pump Compartment

Fig.3.4-2 Ink Bottle Compartment

3.5 Electrical Compartment

Electrical compartment is a shelf for mounting USB Board, Servo Card, Media Board, transformer and DC power supply. It is built in steel frame.

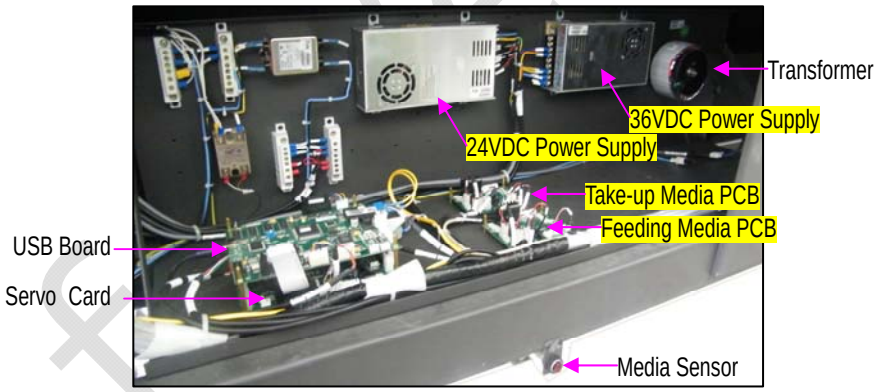


Fig.3.5-1 Electrical Shelf

3.6 Drying System

Because of speciality of the ink, one drying system is necessary for output job. This system is fixed in front of the machine, including Hot drying and Cold drying system.

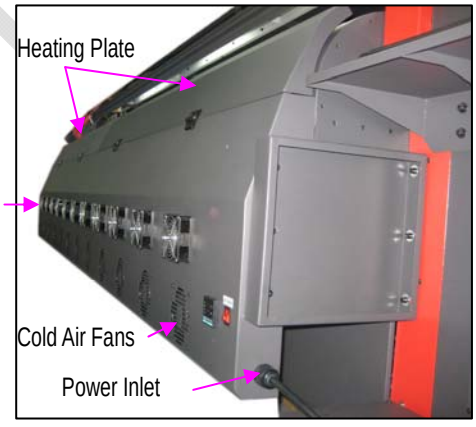


Fig.3.6-1 Drying System

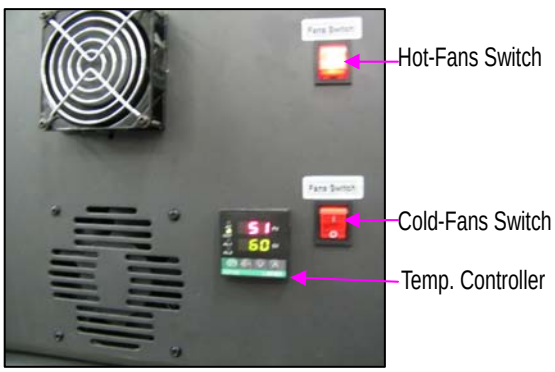


Fig.3.6-2 Fan Switch &Temp. Controller

3.7 Take-up System & Feeding System

Take-up system in the front of the machine is used to roll up the output media, while the feeding system fixed behind the machine used for roll down the media for feeding.

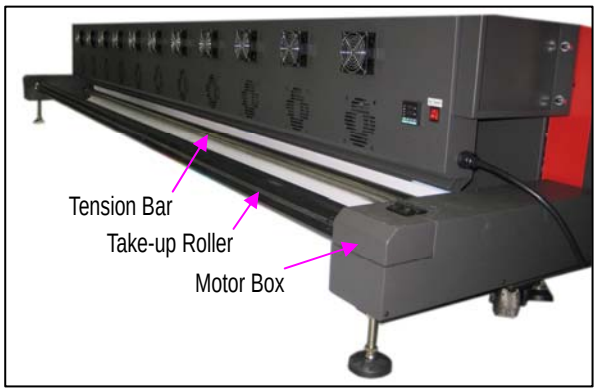


Fig.3.7-1 Take-up System

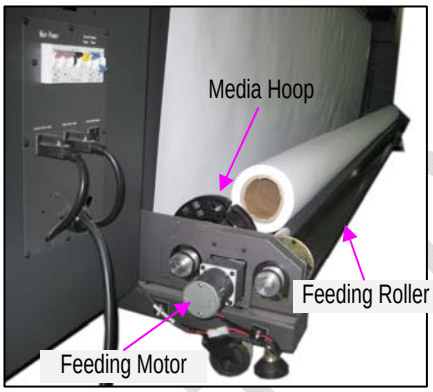


Fig.3.7-2 Feeding System

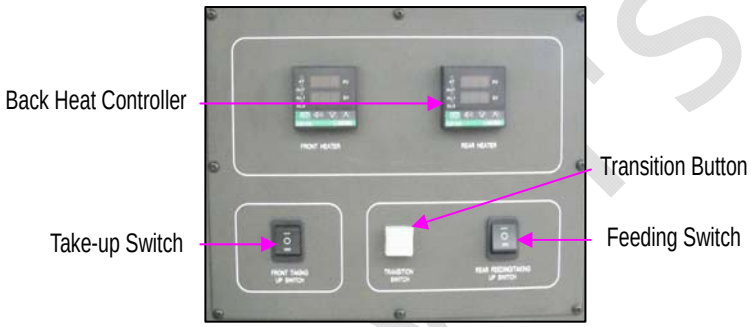


Fig.3.7-3 Control Panel

3.8 Power Control Panel

Power control panel is fixed behind the machine on the right side! On this panel, there is one inlet used for main power input, three built-in outlets two of which are used for computer and monitor.

All the power breakers are also built on this panel!

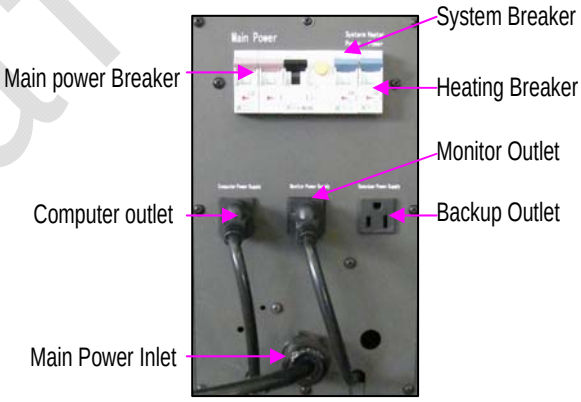


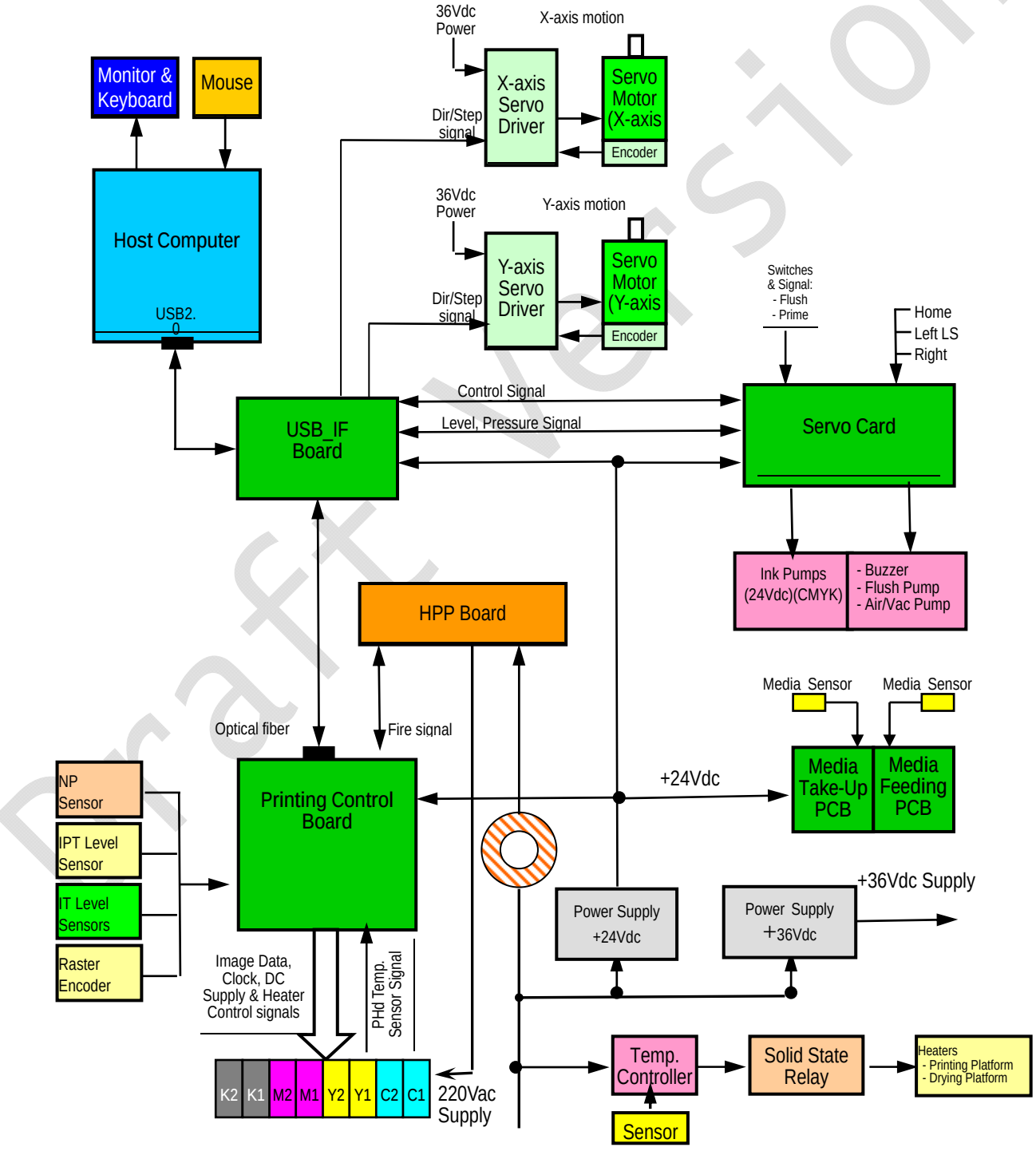
Fig.3.8-1 Power Control Panel

Chapter 4 Working System of Flora LJ3208P

The Flora LJ3208P large format printer is using raster image technology to process photos stored in computer. It is one of the most innovative products, which combines photo digital technology with high precision engine driver. It produces super wide printouts for business use.

It is a high-technology equipment with a user friendly operating system with simple operational and maintenance procedures. Though simple, it is composed of several precise systems. In this chapter, we will introduce the system components and operator guide.

4.1 System Block Diagram



4.2 Polaris Print head Introduce

Feature:

Fig. 4.2-1 Print head

- 35 picoliter nominal drop size
- 512 individual addressable nozzles
- Incorporates versaDropTM binary jetting capability
- Excellent channel-to-channel uniformity
- High frequency continuous operation
- Designed for long service life
- Integral mounting bezel with precision features
- Configurable for single and two-color operation
- Optimized for high viscosity jetting fluids
- Built-in heaters and temperature sensors
- Operation up to 60°C（140°F）
- Simplified field repair with no special tools required
- Supports UV-curable, solvent and aqueous-based inks

Technology Specification Table:

Parameter	Polaris PQ-512/35AAAPrint head	
Number of addressable jets	512	
Print width	64.897mm(2.555inches)	
NOZZLE SPACING		
Single color(4 rows of jets)	127 microns [0.005in.]（200 dpi）	
Two color(2 rows of jets/per color)	254 microns [0.01in.](100 dpi)	
Jet straightness ,1 sigma*	2.0mrad[0.11°]	
Nominal drop velocity	8m/s	
Calibrated drop mass	35ng	
Compatible jetting fluids	solvent-curable, organic solvents, aqueous	
BINARY OPERATION		
Adjustment for drop size	35-80 picoliters	
Productivity	Drop size	Maximum Frequency
	35 pl	30kHz
	80 pl	13kHz
Operating temperature range	Up to 60°C	
Fluid viscosity at jetting	10 to 14 centipoise	
Dry weight	160ams	

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4.3 Printing Control System

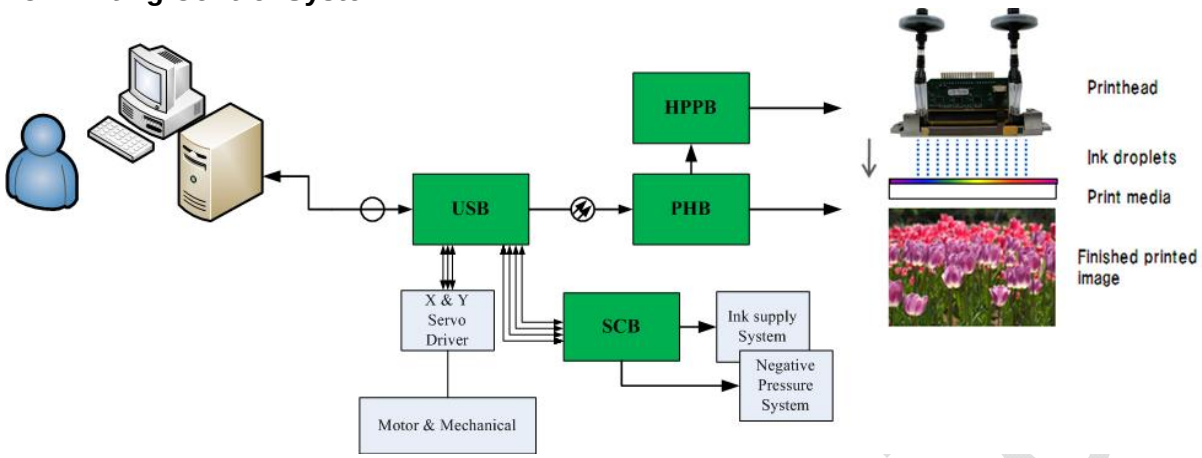


Fig.4.3-1 Printing Control System

4.3.1 Printing Control Board *(116-0401-132)*

The print head control board controls and drives the jetting parameters of the print heads.（as below）. Functions of the board are as follow：

- Receiving optical signal from USB Board ,change it into electric signal and separate the image data & control order from the signal ； as the same time，combine level signal , negative signal , raster signal etc., then change them into optical signal and send them to USB Board
- Supplying power & clock to print head to drive it work
- Detecting automatically: detecting level of ink tank is full or not ; detecting negative pressure is in the range of setting or not ; reading raster signal

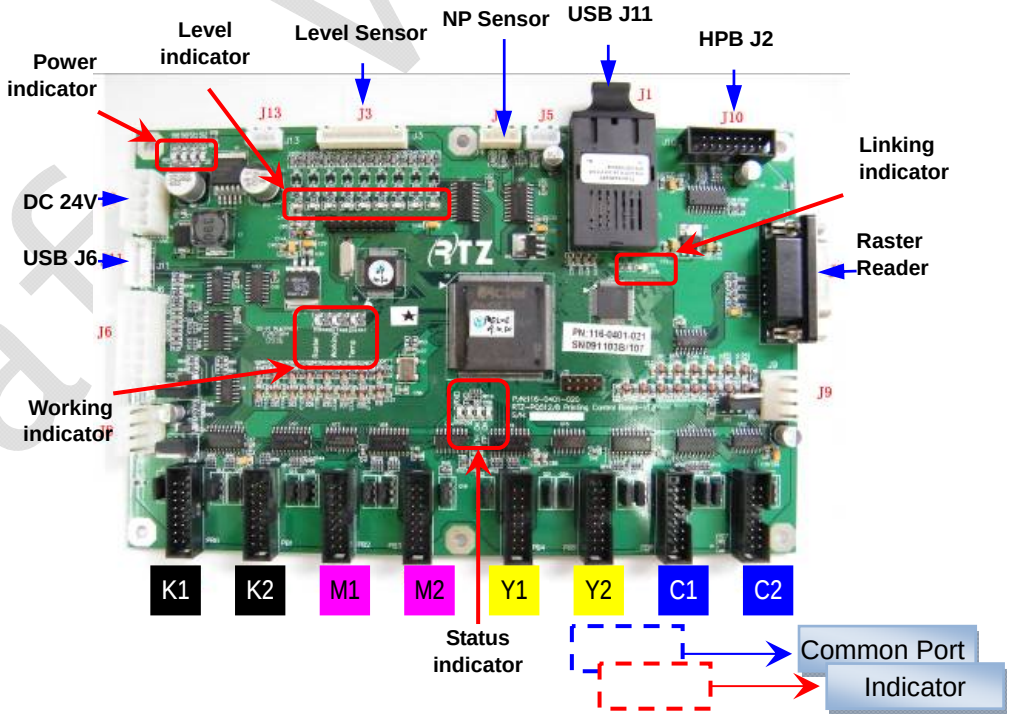


Fig.4.3.1-1 Printing Control Board

Level indicator:

When the tank is full, the responsible indicator will turn on!

	D7	D8	D9	D10	D11	D12	D13	D14	D15
color	NP	Y	M	C	K	K	C	M	Y

Note: *D8~D15 are normal on, while D7 is off. Because the negative pressure tank is always empty.*

Power indicator:
All of these four LEDS will be normal on.
D3: 3.3V
D4: 5V
D5: 24V
D6: 24V

Status indicator:
D56: Fire indicator working normally: on
D57: Configuring indicator working normally: on
D58: TX indicator Transmitting data: on
D59: RX indicator Receiving data: on

Working indicator:
D16: Temperature indicator: heating, on; or it will be off.
D17: Working indicator: shine all the time
D18: Raster reader indicator: Carriage moving, on; carriage stopping, off

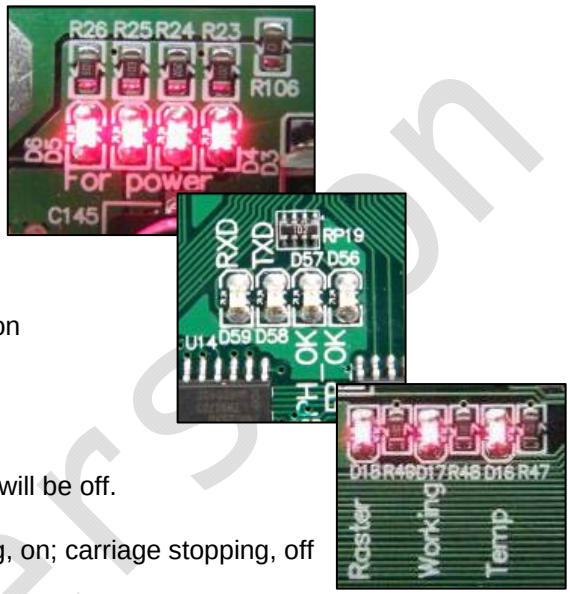


Fig.4.3.1-2 ***Indicators***

4.3.2 USB Board *(116-0417-011)*

The board is an interface between computer and printer, including functions as follow：

- Apply data of image from computer and save it into the buffer, waiting the data request from the printing control board
- Conform the data and the order from computer, convert electric signal into light signal and transmit it to the Printing control board; receive light signal form Printing control board, convert them into electric signal and extract after separating them.
- Communicate with the other boards, servo driver and computer, to coordinate the whole printer working.
- Take order form computer and control motion of the X axis and Y axis

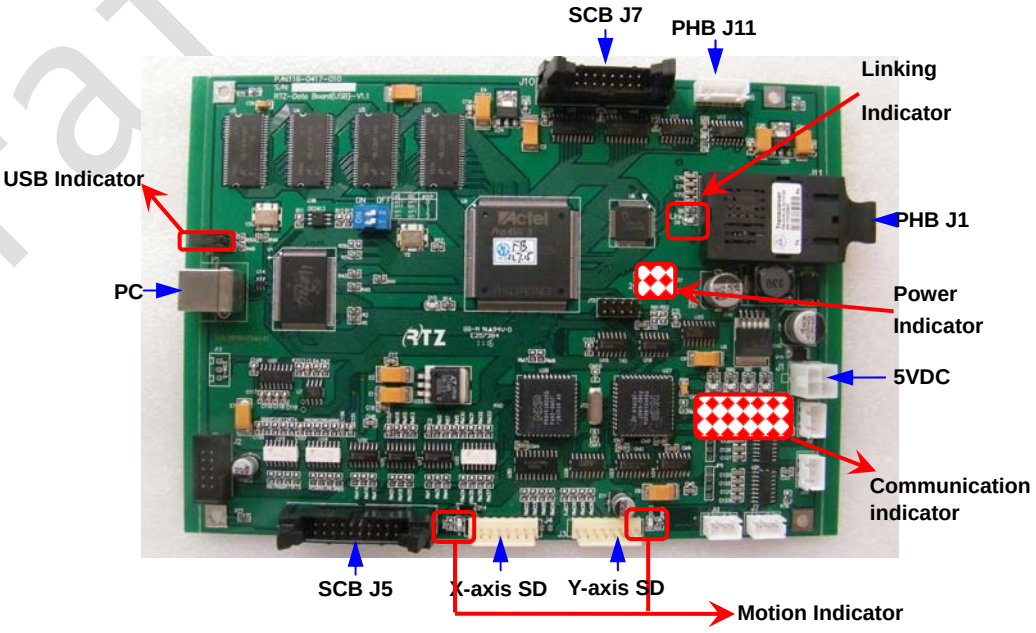


Fig.4.3.2-1 USB Board

USB indicator:
Green Led: working indicator, normally on;
Red Led: Error indicator, normally off

Fig.4.3.2-2 USB Indicators

Power indicator:
D18: 24V power indicator normal on
D19: 5V power indicator normal on

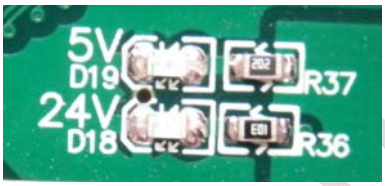


Fig.4.3.2-3 Power Indicators

Communication indicator:
D1, D2, D3: null
D4: Hidem indicator Communication: on
D5: Print head board indicator Communication: on
D6: Y-axis indicator Y motor moving: on
D7: Servo Card indicator Communication: on
D8: X-axis indicator Y motor moving: on
D10: TX indicator Transmitting data: on
D20: RX indicator Receiving data: on

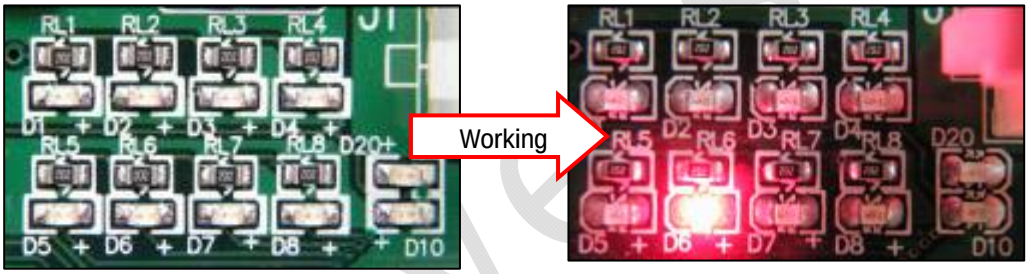
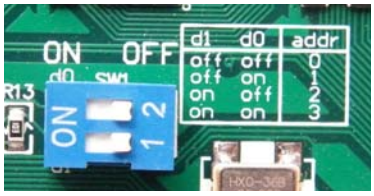


Fig.4.3.2-4 Communication Indicators

Dial Switch
D0=off; D1=off



4.3.3 Servo Card（116-0385-022）

This board serves as assistant functions control board.

- Control pump supply ink automatically
- Ink-supplying timeout warning，limited switch protection，error indication

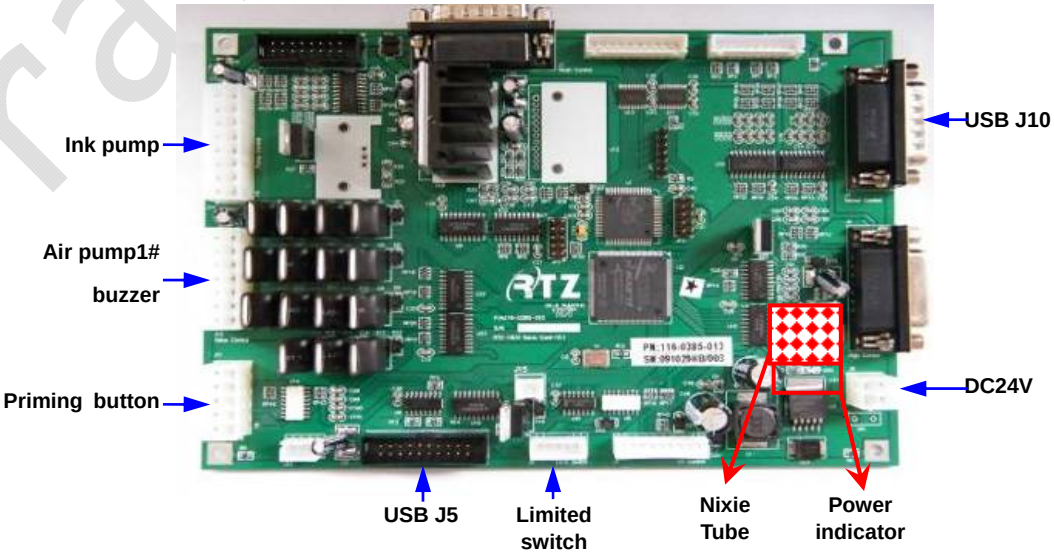


Fig.4.3.3-1 Servo Card

 By Victor Xu

Power indicator:
Power is ok, on; or, off.
Nixie Tube:
Show the error number.

0	No problem	1	Lack of ink
2	Negative problem	3	Movement problem

Fig.4.3.3-2 Nixie Tube

Error indicator----Nixie Tube

- If the digital LED shows 0, it means everything is ok, with no problem.
- Number 1 means that there is no ink in the secondary tank:
  - First, check the ink bottle: make sure the ink bottle is not empty, if there is no ink ,then load ink;
  - Second, check the ink pump to see if it is working, replace it if necessary;
  - Third, check the sensor: make sure the sensor can detect the level exactly, otherwise change it;
  - If everything can't work still, change Servo Card.
- Number 2 means some ink over flowed, which also means there is ink in the negative pressure tank:
  - Check the ink indicator LED is light or not, it means there is ink in the IPT when it's on. Then you need to suck ink out from the tank syringe before start the machine
- Number 3 means the movement system has problem
  - First, check the servo driver report the error or not: if there is a error, shut down the power of the machine and restart it.
  - Secondly, check the limited switch: the left & right limited switches are used for protection. If the switch is pressed, it will stop the motor from working. So you must make sure that switch is ok and it hasn't been pressed by carriage or any other thing.
  - Third, check the motor can work normally or not. If necessary, change it.
  - Forth, if it still can work, change the USB Board.

4.3.4 HPP Board *(116-0396-081)*

The board is an 8-channel high-voltage DC pulse generator, designed to provide fire pulses necessary to actuate piezoelectric elements in Spectra Polaris heads.

Features:

- Up to 8 separate channels of fire pulse outputs
- Each output channel capable of driving up to 512 nozzles
- Programmable fire pulse amplitudes, from 50V to 120V
- Programmable fire pulse widths, from 1 to 10us

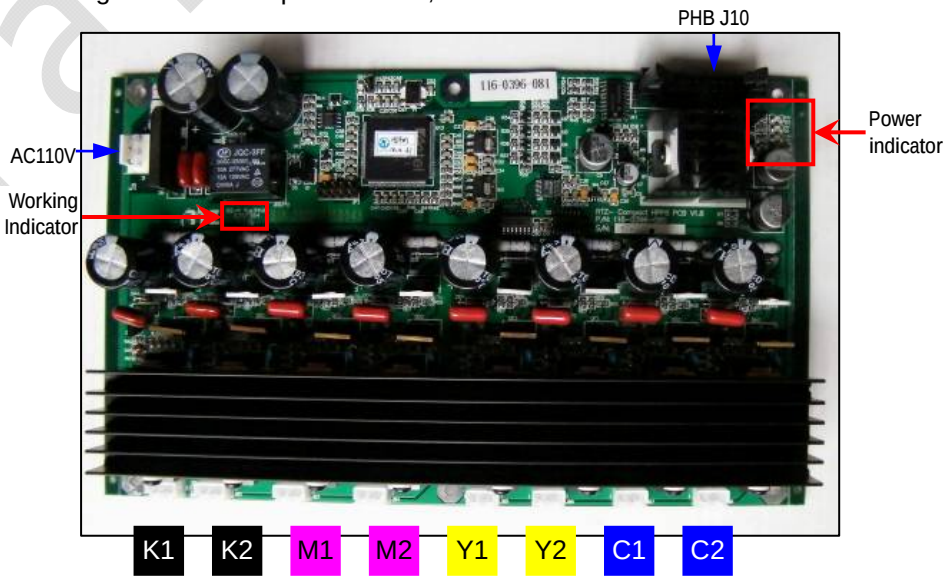


Fig.4.3.4-:1 HPP Board

 By Victor Xu

Power indicator:

D1:	24V power indicator	normal on
D2:	5V power indicator	normal on
D3:	15V power indicator	normal on

Fig.4.3.4-1 Power Indicator

4.3.5 Connector Board*(116-0402-020)*

This board is used as interface board for Print head and the Print head Control Board thru a 16-pin flexible data cable. It is fixed on the print head by insert to the pin of Print head.

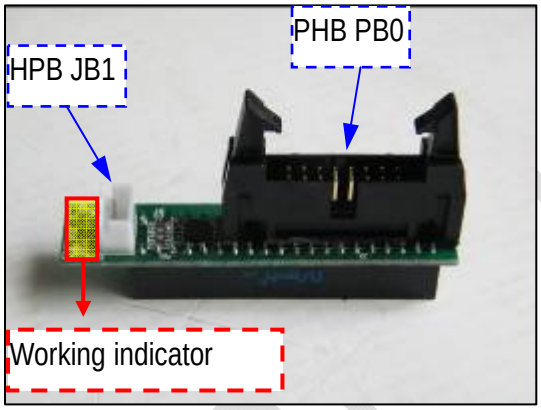


Fig.4.3.5-1: Connector Board

Power indicator:

D1:	5V power indicator	normal on
D2:	high-voltage pulse indicator	bright periodically normal on

4.3.6 RTZ-16UV Media Board-V1.3*(116-0030-041)*

- Taking-up or feeding media automatically

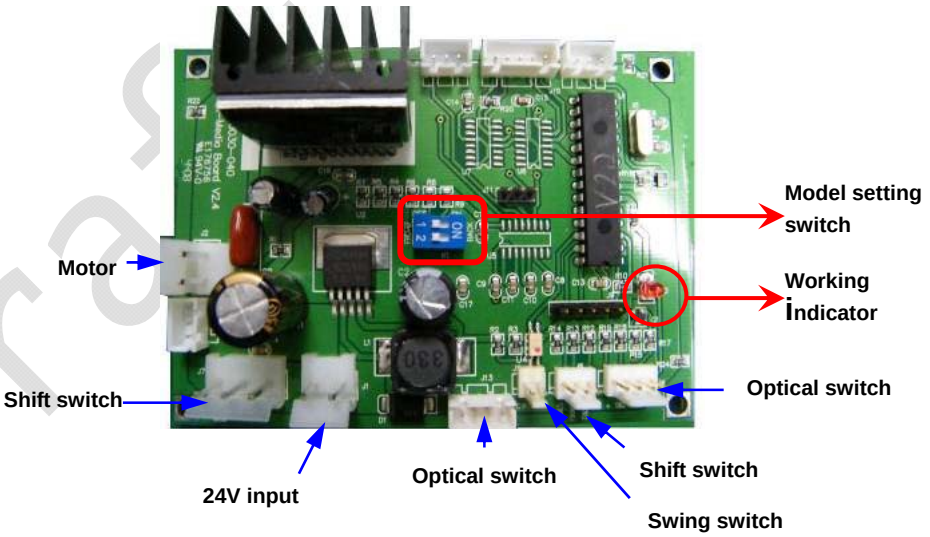


Fig. 4.3.6-1: Media Board

1	2	Model
ON	ON	Take-up board
OFF	OFF	Feed board

4.4 Mechanical Movement System

Movement system is very important part of the machine, which directly decides the printing precision! There are two movement system, X-axis movement (Carriage movement) and Y-axis(Media Feeding).

Both the Carriage and Feeding assembly are driven by servomotors, which are controlled by their respective Servo Driver can prove high precision motion as to enhance the printing quality.

4.4.1 X-axis Movement (Carriage Motion System)

X-axis movement System serves for carriage which will drive the print head moving. The Servo Motor is responsible for the carriage movement from left and right. The print head carriage is driven by the Servo Motor through the timing belt attached to its gear pulley.

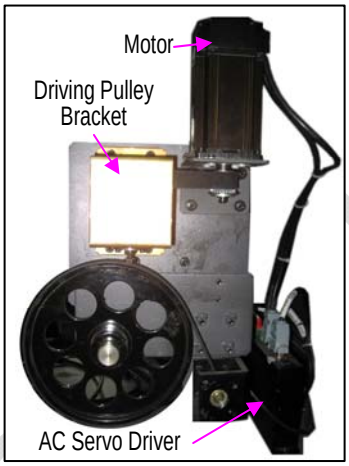


*Fig. 4.4.1-1: **Servo Driver & Motor***

4.4.1.1 Servo Driver & Motor

This machine used ACS806 Servo drive and motor as powerplant. The servo driver installed at the right side behind the Beam, while the servo motor installed at the right side of the beam. Servo driver is a transfer station, which will get movement signal from USB Board then control the motor working.

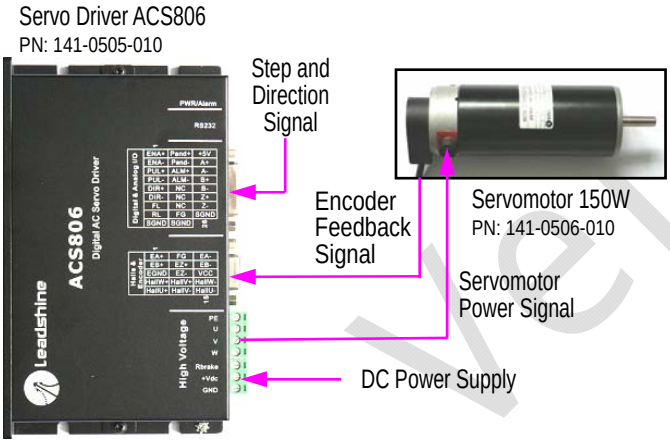


*Fig. 4.4.1.1-1: **Servo Driver Connection***

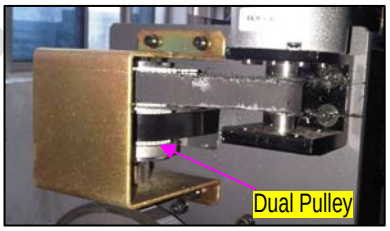


*Fig. 4.4.1.1-2: **Pulley***

4.4.1.2 Raster Reader *(116-0340-020)* & Strip *(141-0134-004)*

Raster reader is a optical reader, raster strip is a rasterized transparent plastic. They work together generate fire signal that will be send to Printing control Board. The raster reader is fixed on the right side of the carriage, while the strip is installed along the beam.

***Notice:** The raster reader set-up must up to standard.*

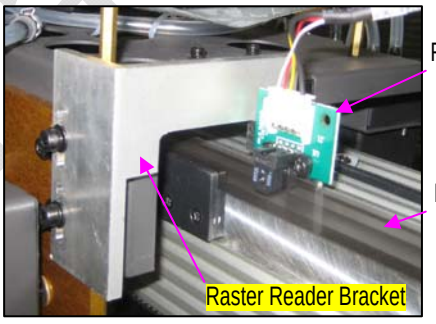


*Fig. 4.4.1.2-1: **Raster Reader***

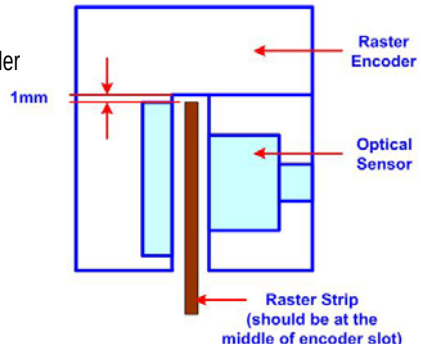


*Fig. 4.4.1.2-2: **Raster Reader Set-up***

4.4.1.3 Limited Switch & Protection Rubber

There are three limit switches for used as electrical protector on this machine. Two of which are installed at the left end of the beam at carriage home position. The left most serves as limit switch for carriage left stroke and the inner side serves as the home position switch. The third is installed at the right most end of the rail serves as the limit switch for carriage right

stroke.

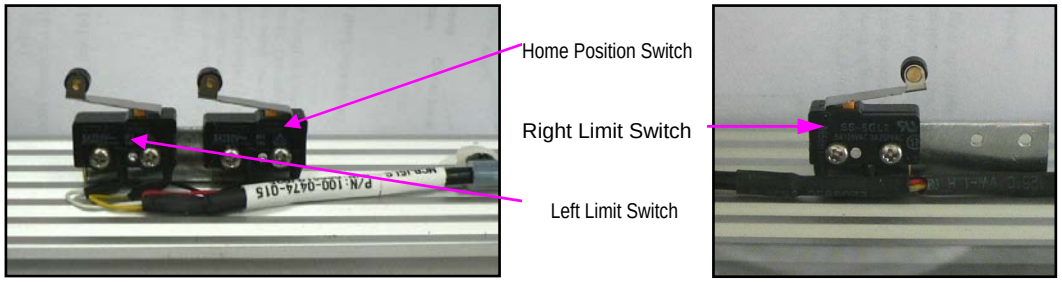


*Fig. 4.4.1.3-1: **Limited Switches***

Besides limited switches, there are two protection rubbers used as mechanical protector. They are fixed on the side of beam.

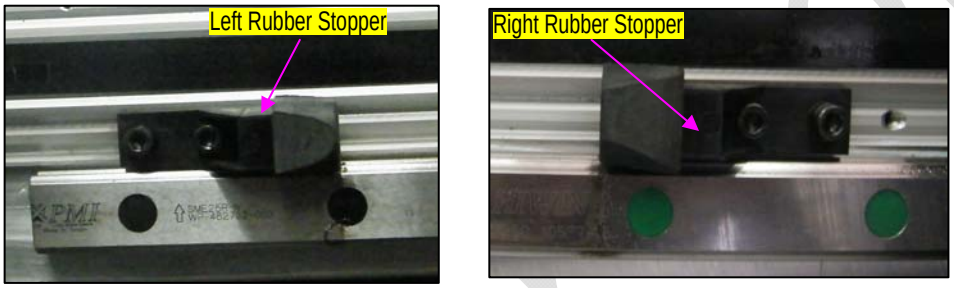


*Fig. 4.4.1.3-2: **Rubber Stopper***

4.4.2 Y-axis Movement (Media Feeding System)

The DC Servo Motor is a brush-commutated DC motor which is responsible for the forward and backward movement of the Media. This motor is powered by 36VDC. To precise movement of the media feeding is controlled by a servomotor with a closed-loop feedback signal from the encoder coupled on the shaft of the motor. The step and direction signal is mainly controlled from the USB Board and this signal is amplified by the Servo Driver to drive the Servomotor.

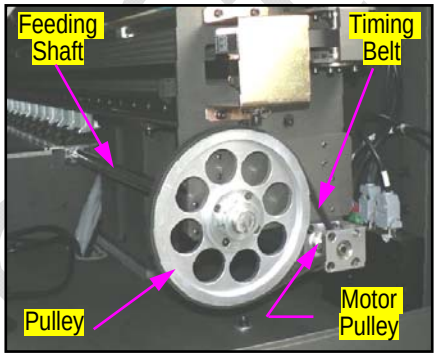


*Fig. 4.4.2-1: **Feeding Mechanical***

*Fig. 4.4.2-2: **Front View***

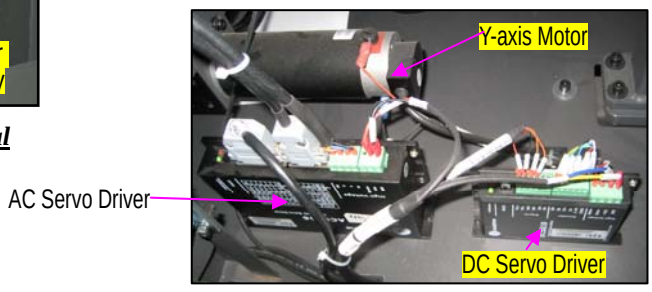


*Fig. 4.4.2-3: **Servo Driver & Motor***

4.4.2.1 Servo Driver & Motor

This machine used ACS806 Servo drive and motor as powerplant. The servo driver installed at the right side behind the Beam, while the servo motor installed at the right side of the beam. Servo driver is a transfer station, which will get movement signal from USB Board then control the motor working.

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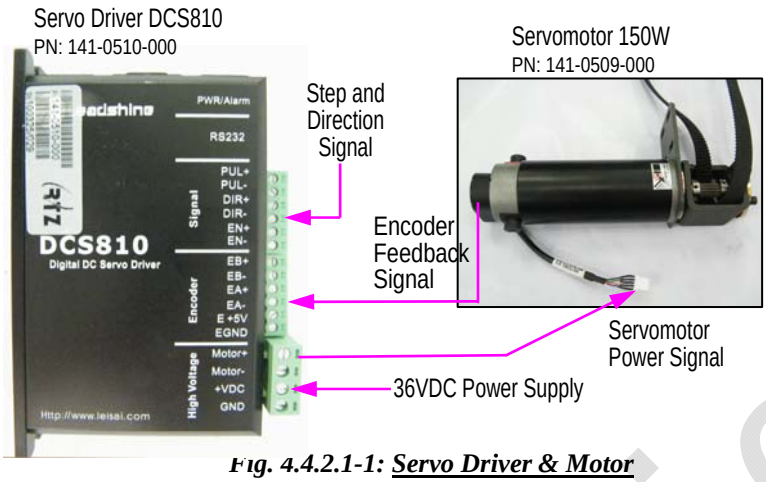


Fig. 4.4.2.1-1: Servo Driver & Motor

4.4.2.2 Pinch Roller & Printing platform

Pinch rollers are used to press the media against the knurl-rollers. It used to hold (grip) the media while on y-axis movement (stepping operation). It helps keep the media from slipping during printing. The printing platform keeps the media flat by the use of suction mechanism in which the suction fans can be switched on/off by the operator. The printing platform is equipped with a set of heaters and can be heated up by turning on the heater controller with the desired temperature level.

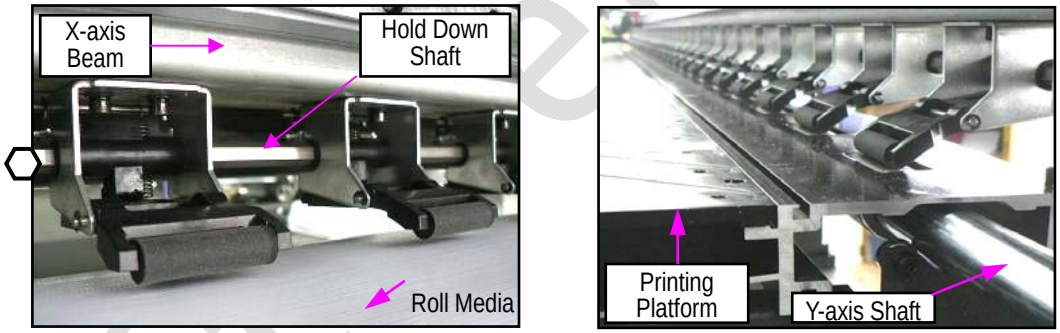


Fig. 4.4.2.2-1: Array of Pinch Rollers

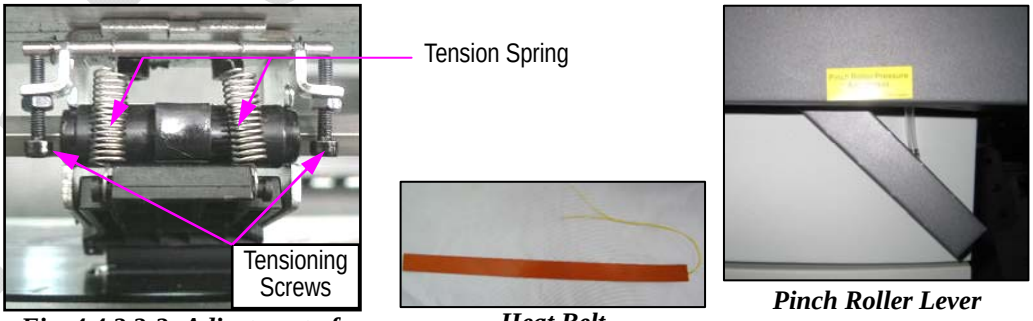
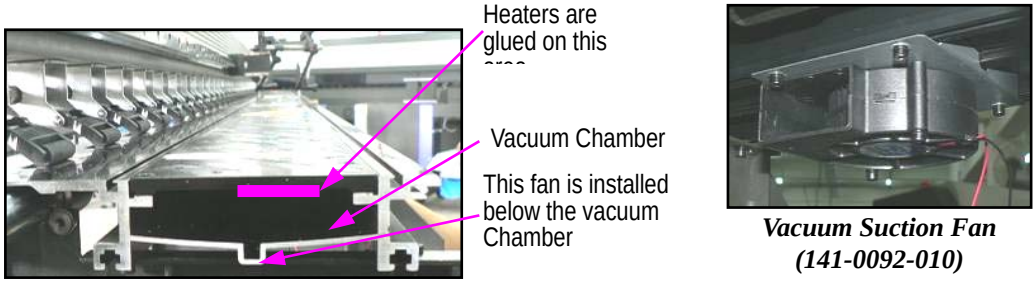


Fig. 4.4.2.2-2: Adjustment of Pinch Roller Pressure

Heat Belt (141-0484-000)

Pinch Roller Lever



Vacuum Suction Fan (141-0092-010)

Fig. 4.4.2.2-3: Printing Platform Chamber and Suction Fan

 By Victor Xu

4.5 Ink Supply & Negative Pressure System

System Circuit:

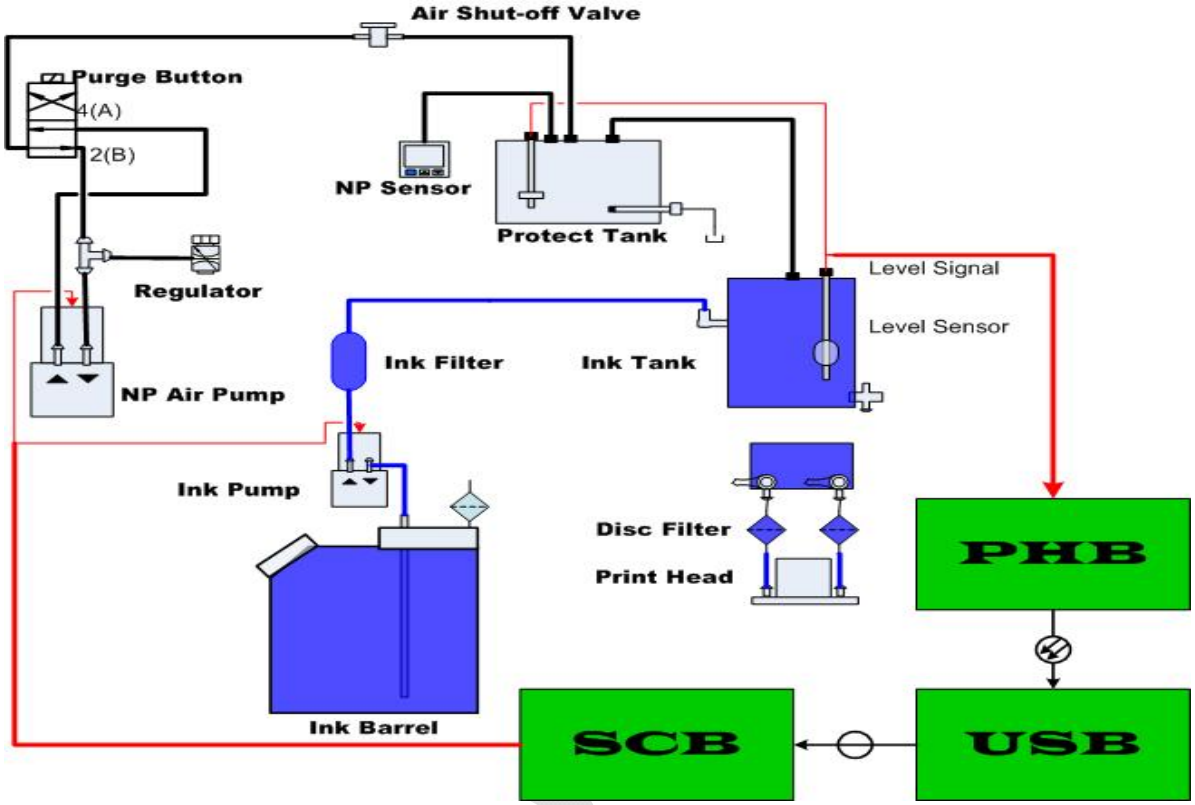


Fig. 4.5.1: System Circuit

4.5.1 Ink Supply System

The ink Bottle/Barrel serves as the main reservoir for ink supply, should be refilled in a timely manner so continuous supply of ink will not be interrupted during printing. The level of ink inside the bottle/barrel can be monitored visually or using the buzzer system. Refilling is done manually.

The ink pumps suck and discharge the ink into the secondary ink tank. A five-micron filter is being provided to prevent the secondary tank from being contaminated by unwanted particles, which are inherent in the ink. Ink level sensor inside the secondary ink tank sends an open or close contact signal to the Print head control board and Ink control board to control the operation of the pumps. An optional micro filter is added to enhance the filtering of ink before it flows into the print heads.

Every time the print heads eject/fire ink droplets, the ink flows and fills the space left by droplets. A negative pressure system is responsible for holding the ink from flowing out of the print head nozzles.

Fig. 4.5.1.1: Ink Supply Compartment

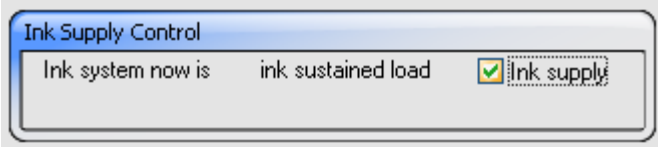
4.5.2 Lack of Ink Warning Function

Ink alarm system plays a part in caution when the ink bottle is empty or the secondary tank is not full.

The level sensor in the bottle detects the level of ink. The print head board will send the level signal to the servo card. The servo card will process this signal then control the pump working, if the pump works more than 25s, it will stop all the pump working and activate the buzzer. Meanwhile, the Servo Card will report error 2.

 By Victor Xu

As warning happened, Click “flood ” check box in the soft ware!



4.5.3 Purge and Flush individually

Individual purge system allows for easy convenient respective maintenance of print head, which will help saving ink also.

If the machine doesn’t work for more than 3 days, flush all the print heads with solvent is recommended. And when the nozzles are blocked seriously, flush is also available.

These two functions are available on this flora machine.

Notice: *The valve must be turned with the correct Valve Key.*

Fig. 4.5.3.1: Ink Tank Valve (312-0010-031)

Situation needs to prime：

- Load ink
- Some nozzles not work or blocked

Situation needs to flush：

- Many nozzles are blocked
- Before you don’t want to use machine for long
- Before you load ink after long time no using the machine

Principle of air exhaust is like injecting water into one tube. After water was injected into the tube from one side, bubble will be pushed out from the other side.

- Exhaust when there is some bubble in the tube。

Note*: Whatever prime, flush or purge, perform it one color at one time. Turn off the other ink valves. This can make sure that there is big enough pressure*..

4.5.4 Negative Pressure System

Negative pressure system is used to hold the ink from dripping out of the print head nozzles. Pressure settings varied on every machine. The recommended setting range is from -2.3 to -2.7Kpa.

- Too low negative pressure setting will result to ink dripping or print head cannot jet ink.
- Too high negative pressure setting will cause ink starving over time and ink overflow in the negative pressure line system.

4.5.5 Overflow Protection Function

Ink protection tank serves as the ink overflow protection for the vacuum line system. If overflow happens, the ink will flow into this tank, once the ink reaches the maximum level, the sensor will shut off the print head control board. Without the ink protect tank, the vacuum system will fail to function if

the tubes are filled with overflowed ink.

There are one ink protection tanks fixed behind the secondary ink tanks!

Note: *There are three actual scenarios where the overflow happens.*

1. The ink overflow situation will happen when the ink tank level sensor fails to detect the full level while the ink pump tends to turn-on and ink is keep on flowing into the ink supply circuit; hence, ink will flow towards the ink protect tank (IPT).
2. The ink level wire connection is wrong at the print head control board connection port.
3. The ink pump wire connection is wrongly connected (reverse connection with the other ink pump).

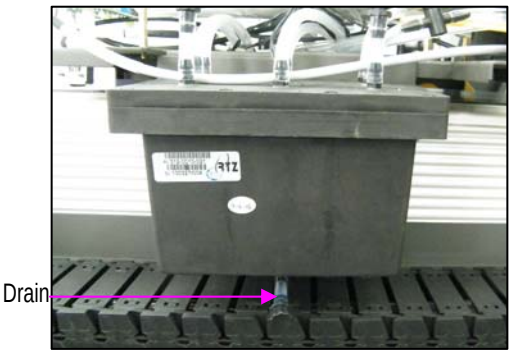


Fig. 4.5.5.1: Ink Protect Tank (IPT) (312-0010-031)

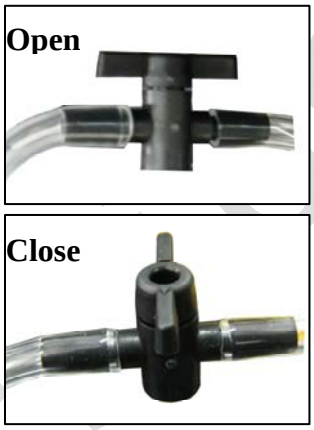
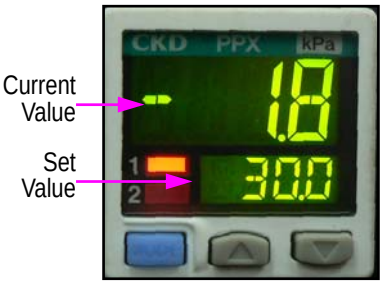


Fig. 4.5.521: Shut-off Valve (141-0436-001)

4.5.6 Other parts intro

Pressure Sensor

The pressure sensor is an electronic programmable sensor that is used to detect both the negative and positive pressure. The tube line is provided to connect the sensing port of the pressure sensor to the IPT. Any level of pressure in the IPT is online displayed and sensed to signal the appropriate output (OUT1 or OUT2) to further trigger the part/component to protect the negative pressure system. The parameter setting is set by the sensor panel keypad; this parameter is used to program the sensor output control characteristic and display indication.



Pressure Sensor (312-0078-014)

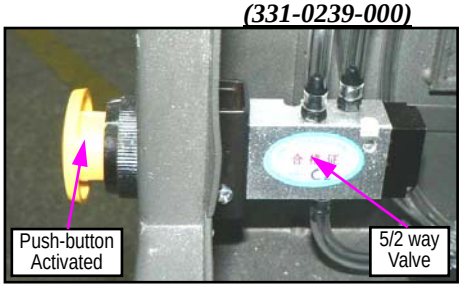
Pressure Regulator (Flow Control Valve)

The flow control valve is actually a pneumatic valve that is used to restrict the flow of air. In the negative pressure circuit, the flow control valve is adjusted appropriately to achieve the right negative pressure needed by the ink supply system. Adjusting the flow control valve will in-turn adjust the negative pressure that goes to the print heads; therefore, acquiring the correct amount of force to hold the ink just on the mouth of every print head nozzle holes.

Flow Control Valve (331-0239-000)

5/2 way Valve (Purge Button)

A mechanically activated pneumatic valve serves as to switch-over the negative pressure to positive pressure. At normal operation, the suction effect of negative pressure (vacuum) is connected towards print heads. During the ink priming operation, the 5/2-way pneumatic valve is manually activated, the air (positive pressure) will replace the vacuum and flows towards the print heads and therefore the ink in the print heads are purged out through all nozzles. In this operation, the



5/2-way Valve(331-0329-000)

nozzles are being cleaned from slight contamination of small debris, and micro-bubbles will be forced out.

Maintenance Toggle Button

Solvent Flush Toggle Switch – used for flushing the solvent into the Print head. This is being done if you want to remove the ink out of the Print head or to remove any clogging from the Print head.

Media Suction Switch – vacuum switch to make sure that the media is laid down flat on the printing platform.

Negative Pressure Adjustment – used to adjust the Negative Pressure value as being shown in the Pressure Gauge

Fig. 4.5.6-1: Maintenance Panel

4.6 Flushing System

This system provides solvent flushing for all print heads. A solvent pump is provided to pump the solvent from the solvent bottle to ink tank manifold then it is distributed through the ink tank manifold. The manifold valve can be turned individually to appropriately enable the flow of solvent flush to each particular print head. The solvent pump is turn-on/activated by a toggle switch that provides the 24Vdc to the solvent pump unit.

The solvent flushing can be done to all print heads at the same time or only print head at one time by closing and opening the ink tank valves accordingly. Solvent flush is necessary if there is stubborn clogging in the print head nozzles or when the machine will not operate over night

Notice: *If had to replace the ink, all ink line must be flush to clear!*

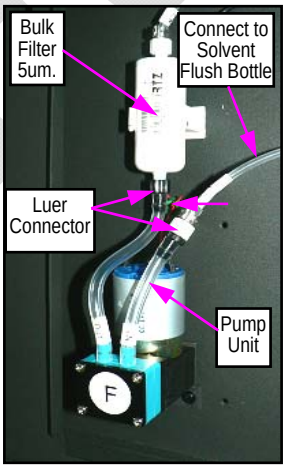


Fig. 4.6-1: Solvent Pump

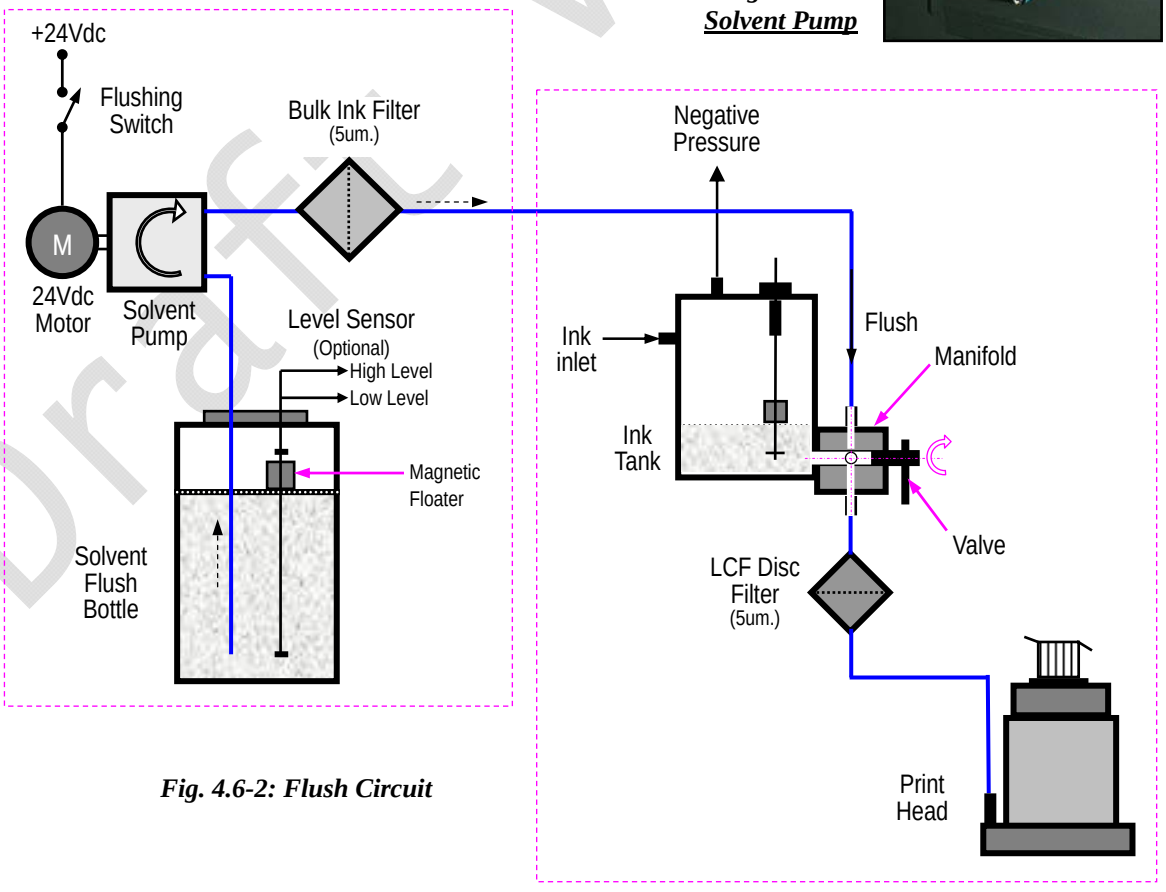


Fig. 4.6-2: Flush Circuit

4.7 Drying System

For this model there are two drying system for high speed output drying! One is Heating System which temperature of heating can be setting by manually, the other one is Cold Fans System.

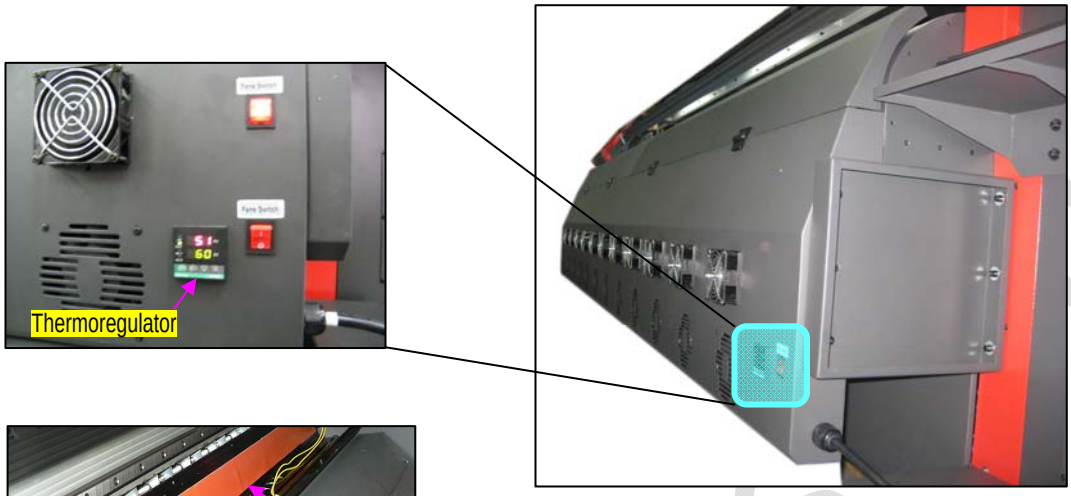


Fig. 4.7-1: Drying System

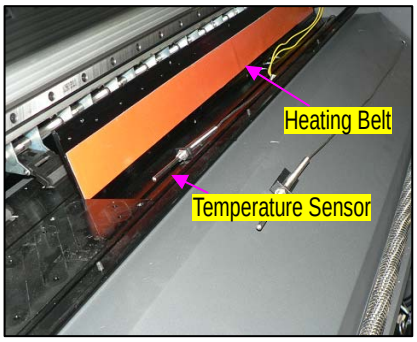


*Fig. 4.7-2: **Back Heating***

*Fig. 4.7-3: **Control Panel***

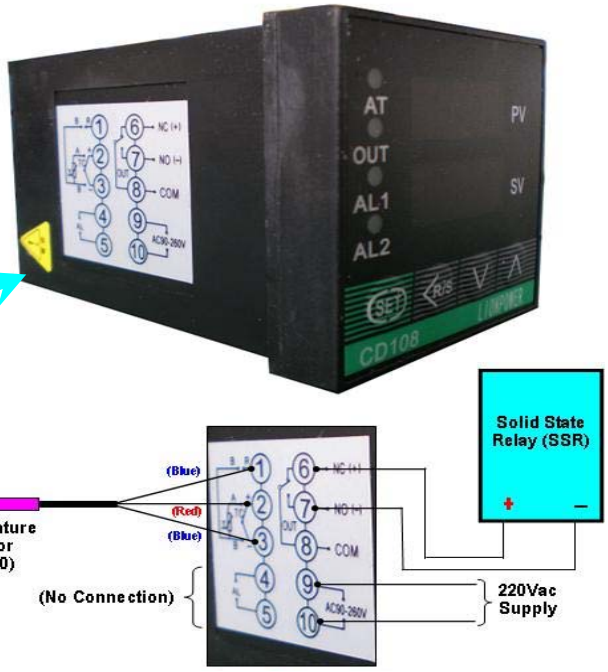


*Fig. 4.7-4: **LionPower Connetion***

4.8 Take-up and feeding System

During printing, the roll media indexes forward by the stepping action of the Y-axis Servomotor that rotates the Pinch Roller. Henceforth, after a certain number of indexes, the roll media will clear the Feeding Optical Sensor. The clearing of optical sensor will activate the DC Motor to rotate the spooler roller and lay forward the media until the optical sensor is blocked. This automatic action is kept on cycling as the printing process is on progress.

On the other hand, when the roll media at the front side becomes loosed and the Front Optical Sensor is blocked, the Take-up DC Motor will then rotate to wind (spool-in) the printed media. During the winding of the printed media, the Front Optical Sensor will be cleared and then will automatically stop the DC Motor. The rotation of the Take-up Roller in Auto Mode energizes the DC Motor (clockwise rotation) with the image prints turning outside the roller while the Manual Mode turns the other direction which loosen up the media from the roller.

On the other hand, the Feeding Roller System has a transition switch to change the direction of the

Feeding Roller depends upon the printing-side orientation of the media.

Fig. 4.8-1: ***Spooling Set-up of the Media***

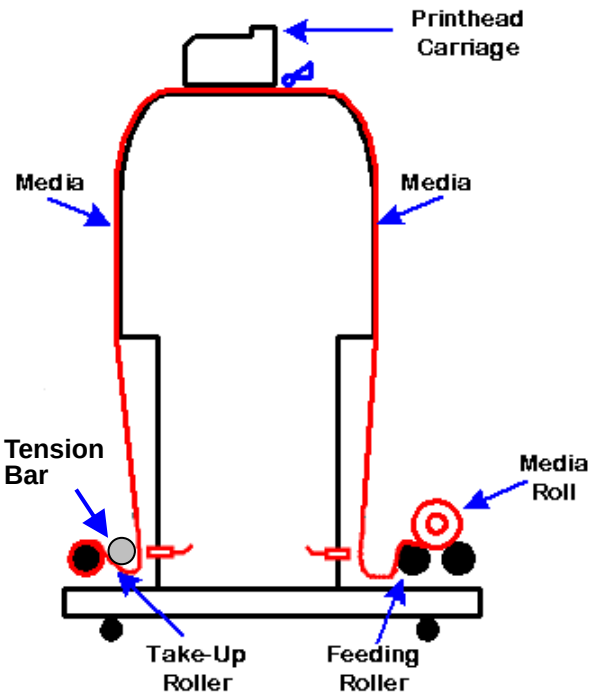


Fig. 4.8-2: ***Feeding and Take-Up Switches***

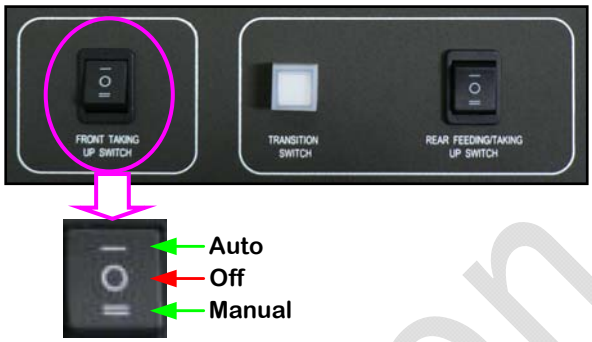


Fig. 4.8-3: ***Media Sensor***

Fig. 4.8-4: ***Take up Roller Assembly***

Fig. 4.8-5: ***Feeding Roller***

Chapter 5 Installation Manual of Flora LJ3208P

5.1 Machine Pre-installation

- The minimum working area should content the space for the operator to move around the machine conveniently and safely.
- Prepare the necessary AC plug on the power cord attached to the machine. Please see the Technical Specification table for the power requirements.
- If the PC is not supplied with the machine, customer must meet the minimum PC specification requirement to be used in this machine
- Safety signs must be available within the working area.
- Exhaust System must be provided for the solvent and Ink fumes. Please note that fumes are heavier than air so it is most likely the concentration happens at the lower level of the room.
- Lightings should be sufficient enough.
- Flammable Storage Cabinet for the Ink and flushing solution stock is highly recommended to secure them very well.
- Waste Container should be available for ink and flushing liquid waste as well as ink/solvent contaminated cloth inside the Printing area.
- Waste disposal should be in accordance with your local laws governing Hazardous Waste Disposal.

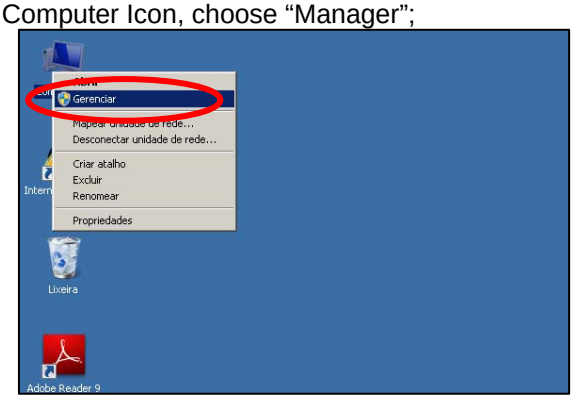
Once the machine is placed and all spare parts are thoroughly checked, start doing the following pre-installation activities:

- Install the drying device.
- Check the height of the Print head Carriage over the printing platform. The height should be at least 3mm above the media printing surface.
- Check the movement of the Print head Carriage for any obstruction by moving it manually from one end to the opposite end.
- Install the LCD Panel / Monitor and the PC, keyboard and mouse to be used on this machine.
- Place the CPU to the computer compartment provided if applicable.

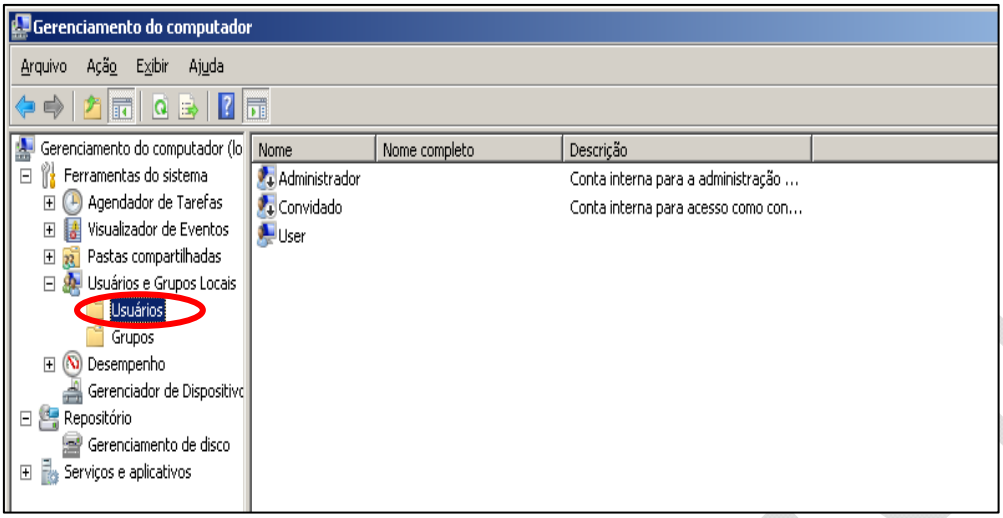
5.2 Installation of Software

This model supports both Windows 7 and Windows XP. For Windows XP, USB Driver need to be installed manually. And the account type of computer must be Administrator. And the account must be active as below:

1) Right click on Computer Icon, choose “Manager”;

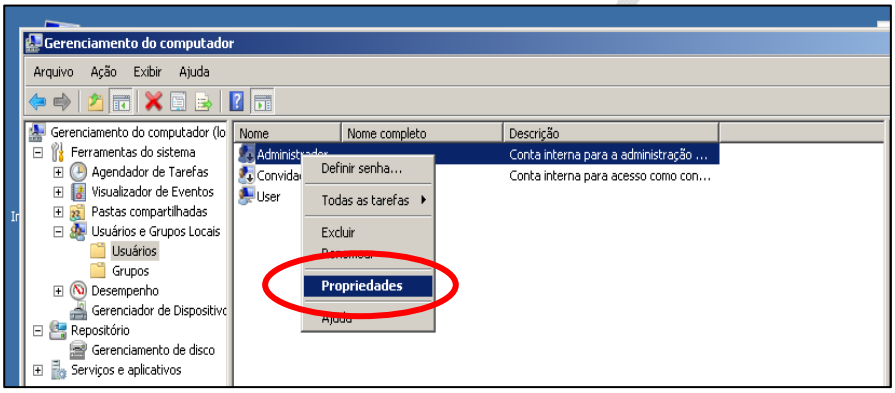


2) There is coming with 【Computer Manager Windows】 as below. Click on “Local User and Group”, you will find two folders in list;

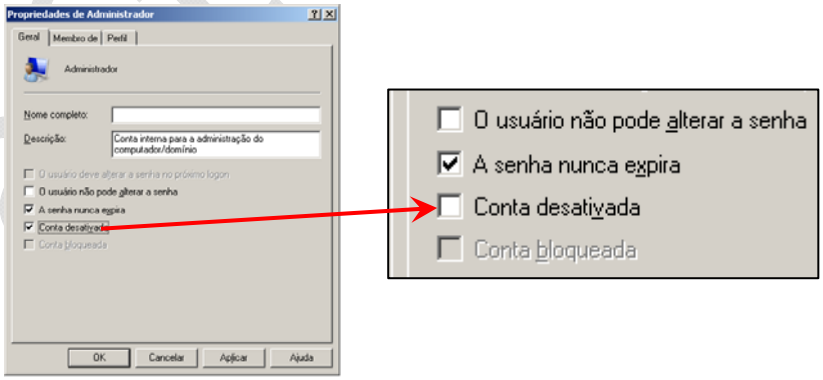


3) Click ***"User"*** folder, you will find Account in the left windows as above;

4) Right click on ***"Administrator"***, Choose ***"Proprieties"*** and click it;



5) 【Administrator Proprieties Windows】will come out. Activate the account by un-tick the check box as below;



6) click ***"Apply"*** and ***"OK"***, then finished

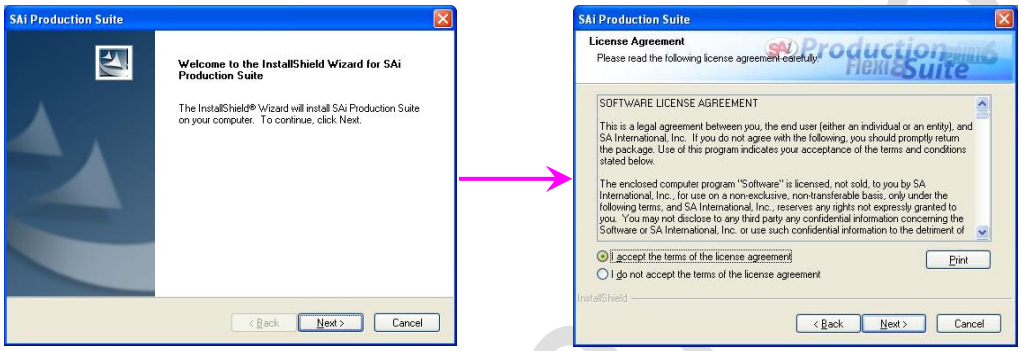
5.3.1 Install PhotoPRINT Server Flora Edition 6.1v2

7) Turn-on the Main Power to give power to the PC and Monitor.

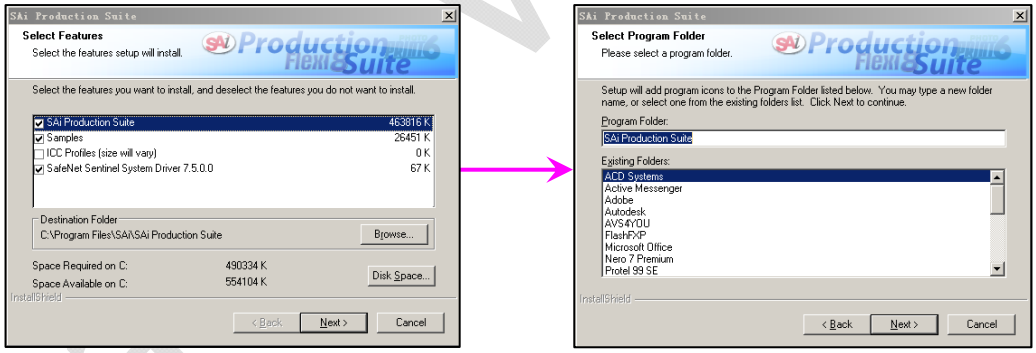
8) Insert the CD supplied with the machine with label PhotoPrint 6.1V2 for the necessary installation.

9) Then screen will prompt you with【Choose Setup Language】window; Select which language you will use. Then click "OK". Starting 【InstallShield Wizard…. 】

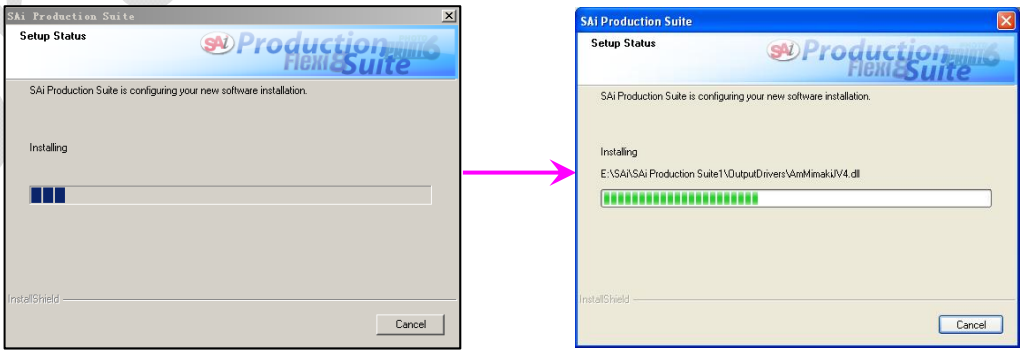
10) The Application Installer Setup will now prepare the Install Shield for the setup process，then click ***"Next"***. You will get a window for 【License Agreement】, please choose ***"I accept the terms of the license agreement"***



11) Click ***"Next"*** ，then 【Select Features】 and the 【Select Program Folder】 screen window will show up.



12) Then you will get a window for 【Setup Status】, wait it finish.



13) The 【Product Selection】 window will comes in after that. Please enter password which you can find from the dongle. And then choose ***"PhotoPRINT SERVER Flora Edition 6.1v2"*** from product

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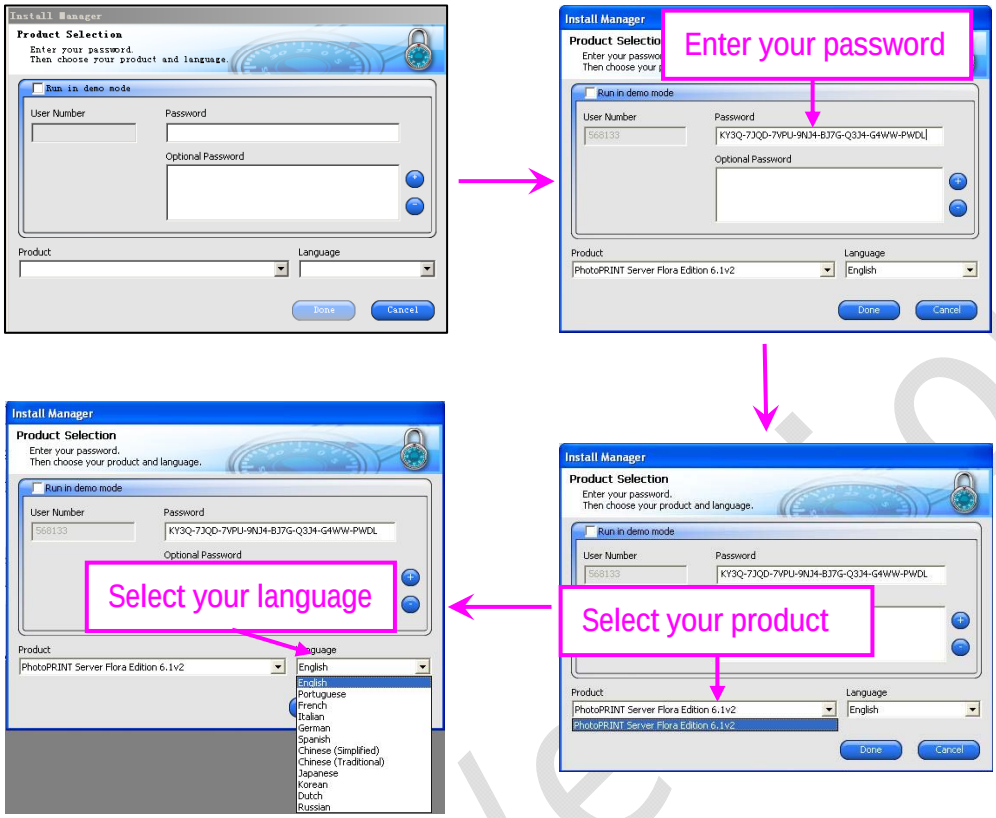
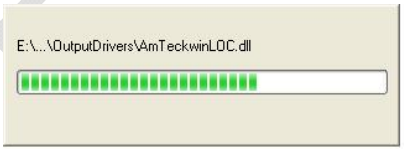


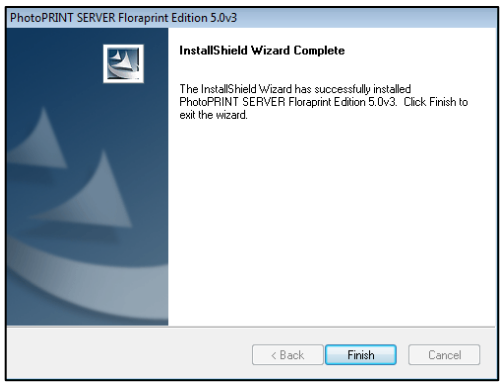
14) Un-tick the "***Install to desktop"*** selection on 【Install Manager】 window. Then click ***"OK"***.

15) 【Start Copying Files】 window will appear. Click ***"Next"***.

16) Click ***"Next"***, software files will now start to install.



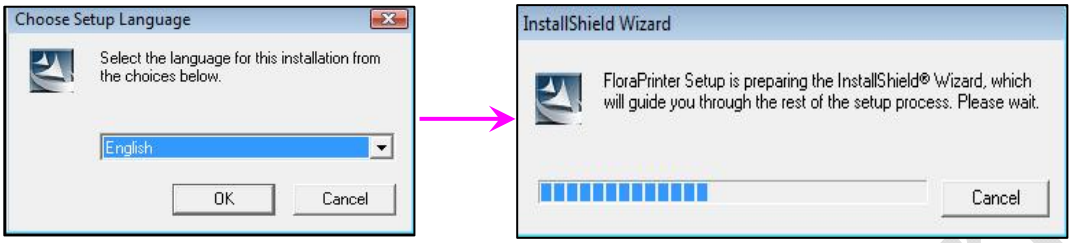
17) Click ***"Finish***" after completing the successful installation.



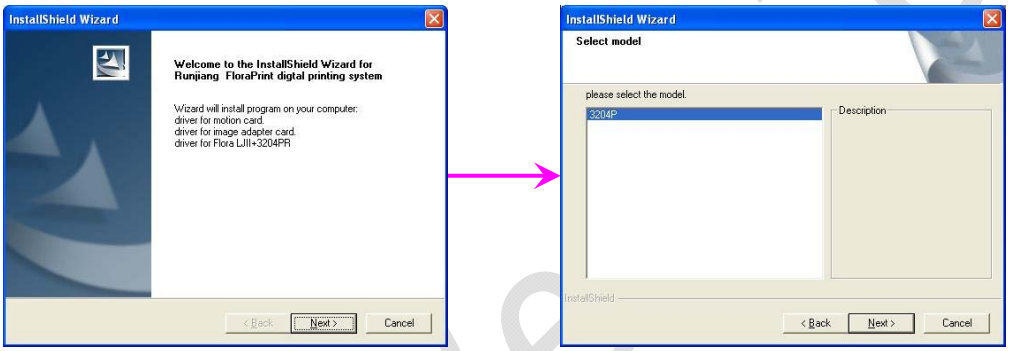
5.3.2 Install Flora Driver

1) Insert the Flora Driver. From the list of Folder under Print Driver, select corresponding machine model (Eg: Flora_3208P_3204P_NewUsb_8heads_V1.1.1.1 for 6.12(2011.06.02).exe). Then double-click the setup file;

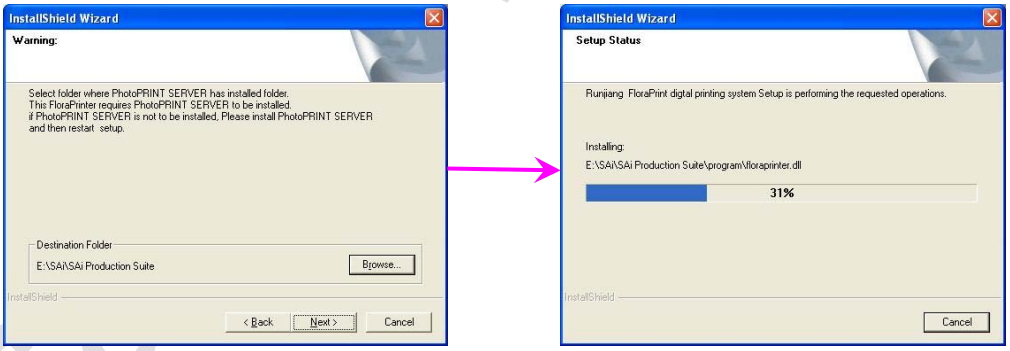
2) Files will be extracted and later on【Welcome】window will appear. Click ***"Next"***, coming with【choose setup language】 window, select you language then click ***"Next"***;



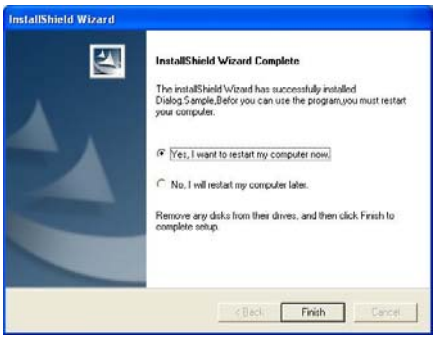
3) Click ***"Next"*** when【Welcome】window. Then,【Select Model】window will appear. Choose the particular model of the machine you are about to install, then click ***"Next"***;



4) The software will now start to detect the specified destination folder, if it is not auto detected, you need to browse ***?:\??\SAi\SAi Production Suite***. Click ***"Next"*** to initiate the installation process;



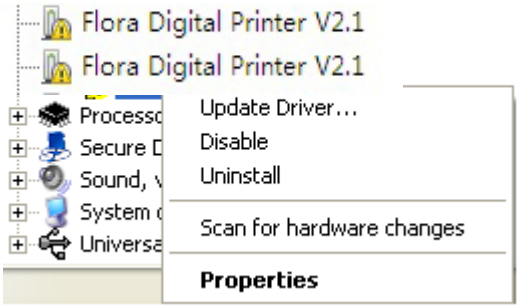
5) Click ***"Finish"*** after the successful installation and restart your computer;



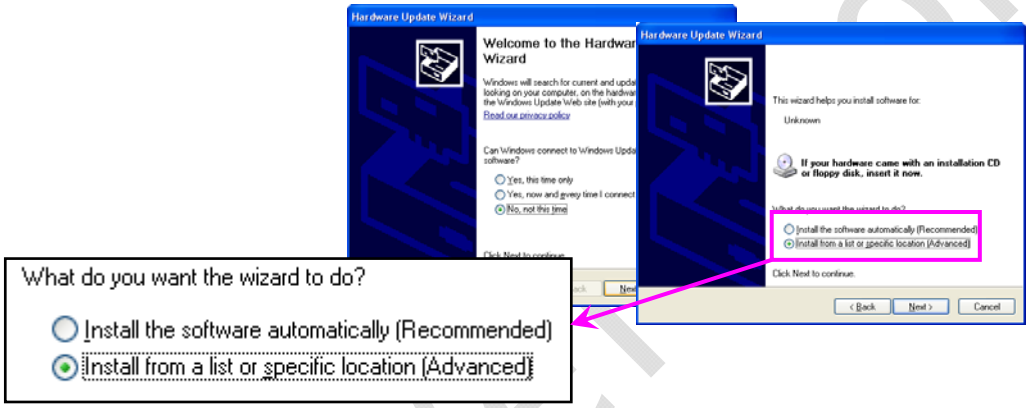
5.3.3 Install USB Driver

For this machine, there are two USB Boards and the driver for USB need to be installed by manually.

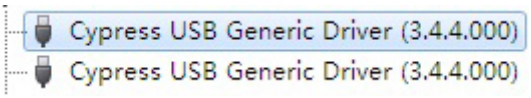
1) Go to Device Manager, you can find that the hardware name Flora Digital Printer V2.1;



2) Right click on this option, choose Update Driver as above. Click it, if will pop Hardware Update Wizard windows as below;



3) Browse the installation folder, click USB install package. Then you will get the Cypress USB Generic Driver (3.4.4.000) under Universal Serial Bus Controller;



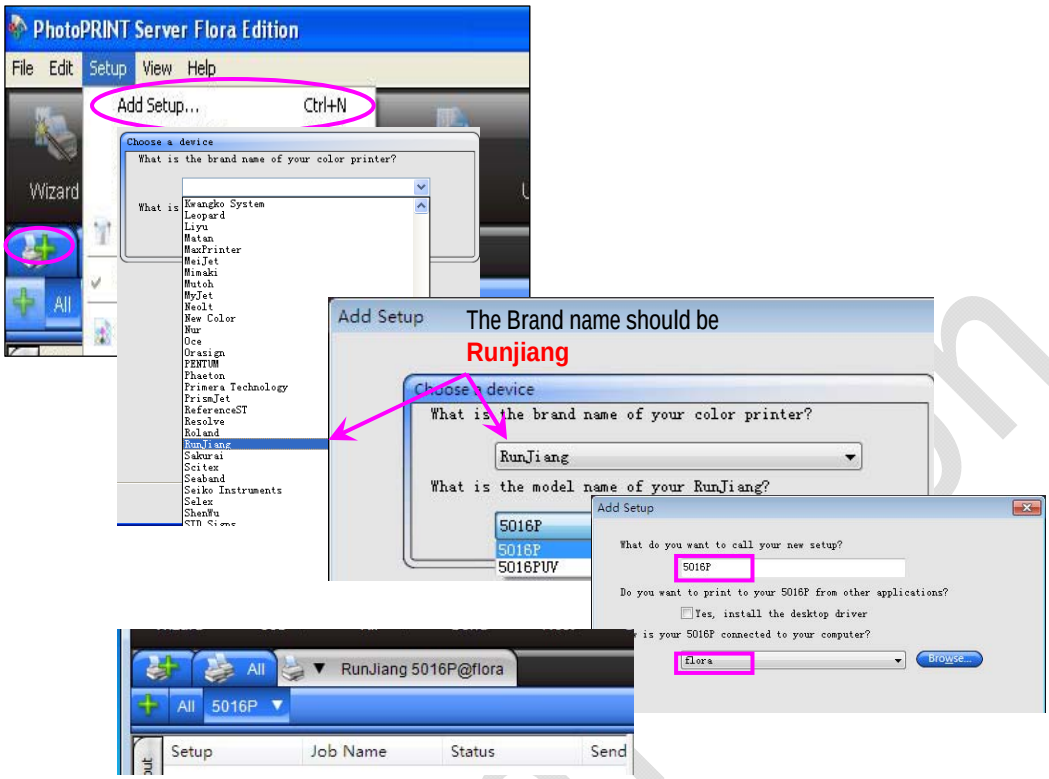
4) Finished!

5.3.4 Add setup

1) Find the PhotoPRINT Server Flora Edition 6.1v2 on the desktop and double click to open;
2) If it is the first time your install, it will prompt you to add your setup,

   If not, you can click “Add Setup…” from “Setup” menu;

   Or you can click add setup icon directly



3) Then select the brand name of the printer and the model name. Then click “Next”;
4) Click “Finish” after the final process. Then you can find the device. If the setup is successful the installed device or printer will be shown on the PhotoPRINT GUI.

5.3 Install Print Heads

i. Unpacking the Print head

a) Open the package, and then take out the anti plastic bag.
b) Open the anti-static plastic bag check the SN. of print head with label on the box.

Fig.5.3-1 Package

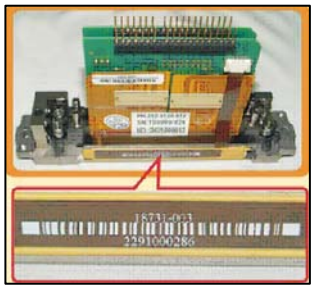


Fig.5.3-2 Print head

Note:

- ✧ The head is pre-loaded with ink analog to prevent drying of the nozzles during transportation.
- ✧ Wrap the head with a non-woven cloth to protect the nozzle surface and prevent drying of the ink analog.

ii. Connect the ink tube and connector PCB

Note:

- ✧ The ink tube must be tightened, or it will cause leakage.
- ✧ The pins of the print head should match with connector PCB one by one.

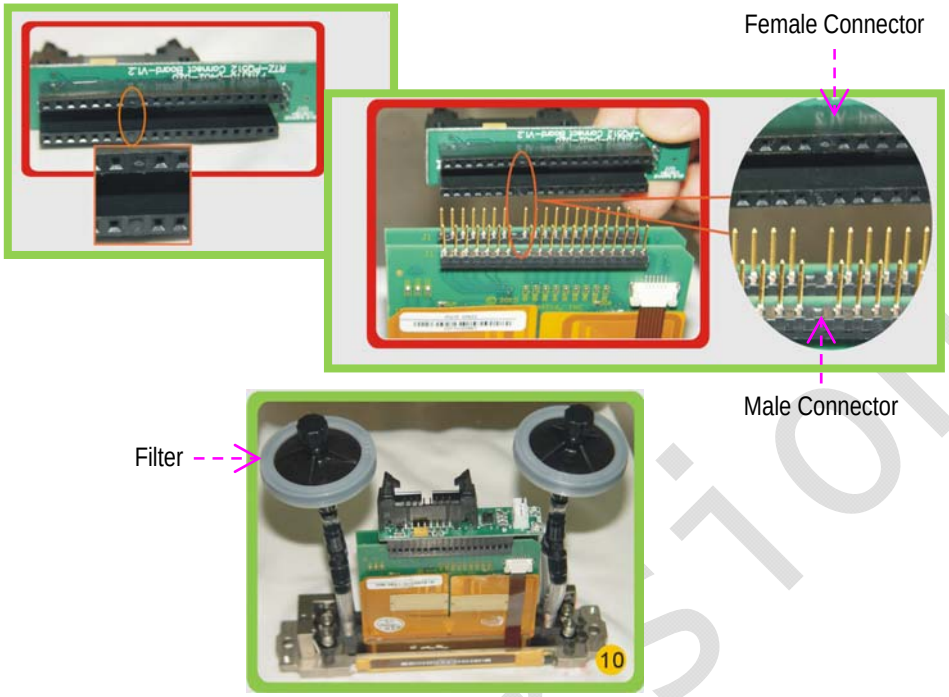


Fig.5.3-3 Print head Assembly

iii. Install the print head one by one, position the print head and then tight the two fixation screws accordingly.

Note:

- ✧ The back fixation screws must be tightened to fasten fixing tabletting, meanwhile the front fixation screw must be tightened properly before doing Y-align.
- ✧ Take note of proper print head orientation.

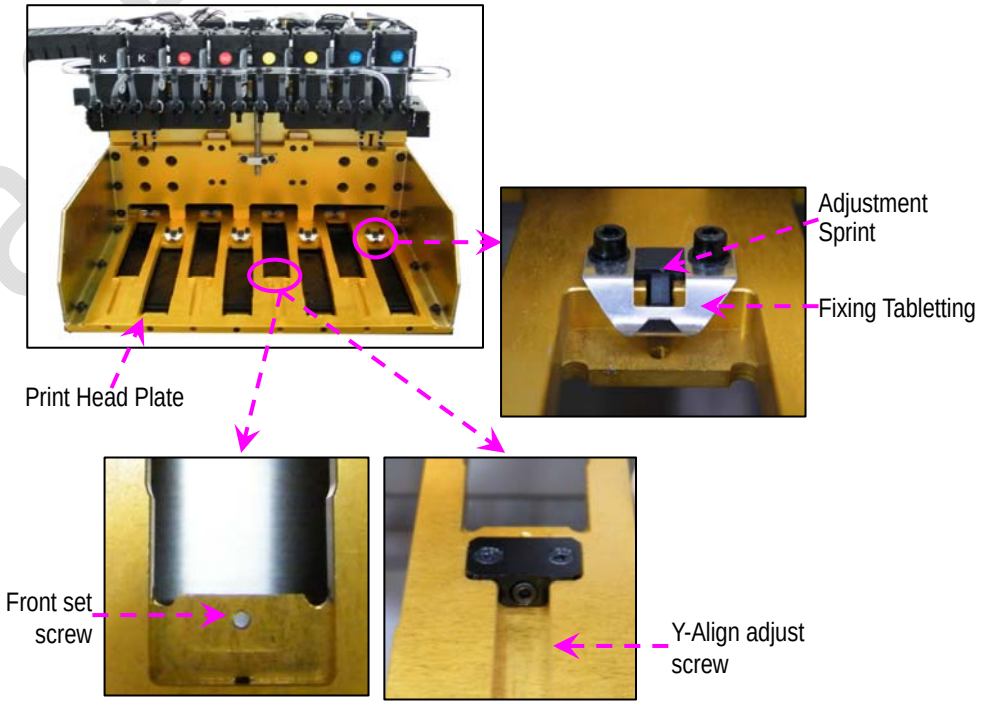
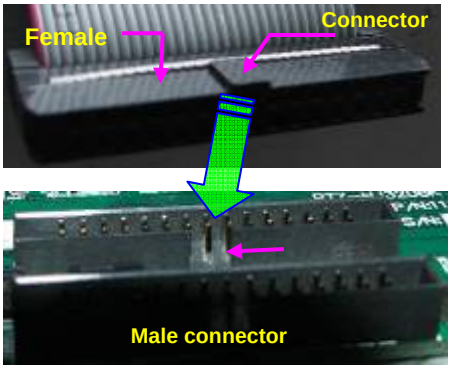


Fig.5.3-4 Print head Installation

iv. Connect the 30pins flexible print head data cable to the Print head Control Board and print head. Please take note of the proper connection of cable.

v. Connect the input tubing of print head to the Ink tank supply port accordingly,
Take note not to interchange the connection for input and the bleeding tubes.



Proper Connection of Flat Data Cable

Print head Data Cable
(100-0069-012)

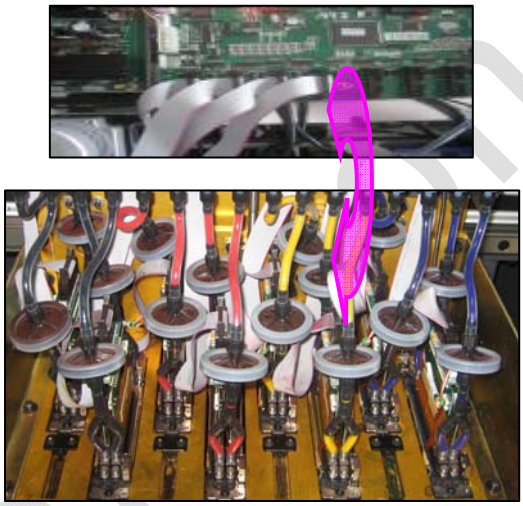


Fig.5.3-5 Data Cable Connection

vi. Check all the connections again to ensure there are no misconnections or loose connections on the data cables. Power on the machine and check for any functional abnormalities on the carriage.

Install print heads, you must take notice as below:

- Switch off the power before install print heads
- The ink tube shouldn't be too long or short, keep the filter flat as standard
- The installation of screws mounting the print head should moderate, the end of screw can't be beyond the carriage plate
- All the connectors and interface should be properly connected. No loose, no reversed or wrong connection!

Fig. 5.3-6: Carriage with PHs

 By Victor Xu

5.4 Ink and Solvent Preparation

- Pour the ink and solvent in their corresponding ink/solvent barrels. Be sure to observe proper procedure in handling the ink. See Chemical Safety Information
- Flush the print head with solvent, clean the analog.
- Switch on the printer power
- Connect the ink pumps one at a time and check for any leakage along the solvent and ink line system.

5.5 Head Alignment

This is to check the mechanical functionality of the Printer through PC. Meanwhile it is to describe the proper procedure in aligning the Print heads.

5.5.1 Test Print Tool Bar

Using the RTZ Driver software, move the Print head Carriage from left to right, then back to home position. Check if the X-axis and Y-axis Servo Motor are working by clicking the appropriate arrow head below.

Fig.5.5.1-1 Test Print tools Bar

5.5.2 Set Parameter & Nozzle Check

Before alignment, nozzle test is very important! Good test print is the premise of alignment. Then you can get precision output. This section will describe the necessity to calibrate the Voltage and Temperature settings for each print head.

- Perform Ink Prime by activating the toggle switch. Do ink bleeding one print head at time to remove air bubbles trapped inside the print head.
- Clean the print heads with clean cloth by manually.
- Send Test Print head to see if all print heads prints a shown below;

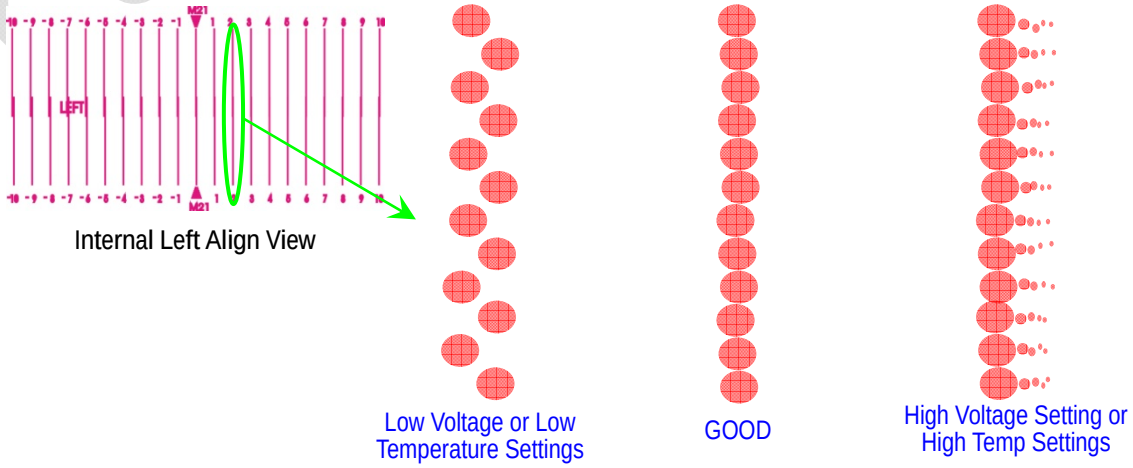


Fig.5.5.2-1 Dots Illustration

For the purpose of getting the best dot print quality is a painful process so it needs patience. All you can do is play with temperature and voltage settings.

The recommended Voltage setting range is controlled by Flora driver software so there's no chance for you to set the voltage beyond the recommended range.

The recommended voltage is 70~75V, While the recommended temperature setting is 30-35ºC in most cases. The procedure is as below:

Voltage(V)	Temp.(° C)	Pulse(us)
70~75	30~35	7
Adjustable Range	Adjustable Range	Adjustable Range
50~120	10~60	5~10

1. Change the voltage / temperature in the textbox
2. Click "Write" Button
3. Check the value, click "Read" Button

Notice:

Every ink manufacturer has its own recommended temperature and voltage settings. The recommended setting applies to Flora ink!

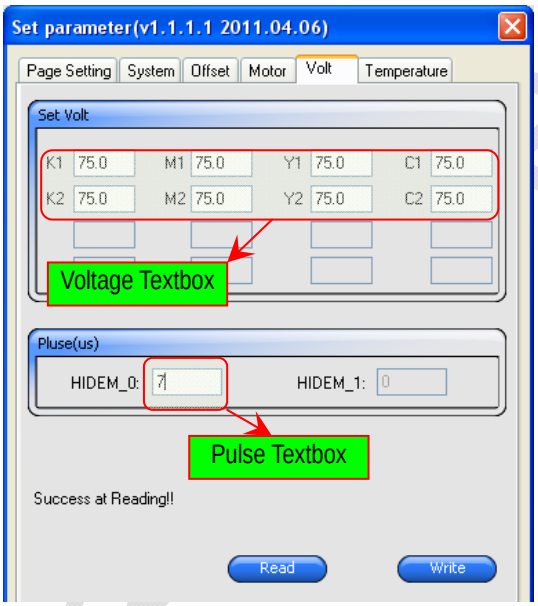


Fig.5.5.2-2 Voltage Tag

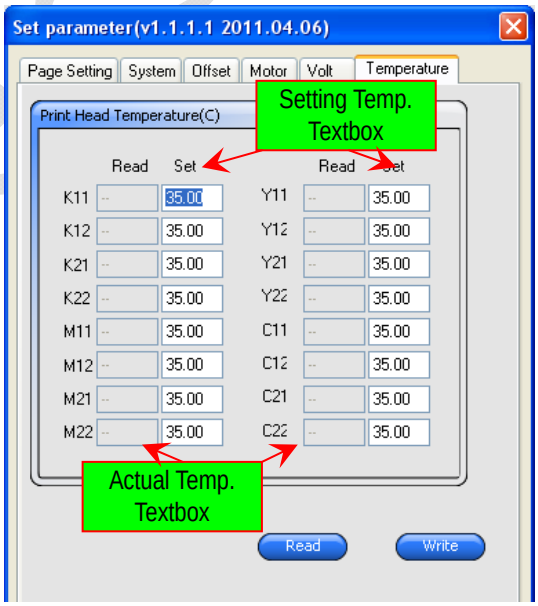


Fig.5.5.2-3 Temperature Tag

Other factors than can influence print quality are:

- Room Temperature
- Humidity
- Ink Viscosity
- Negative Pressure Settings
- Carriage Printing Speed

Note:

In most difficult cases playing with Uni-direction and at low speed can help improve the print quality significantly.

5.5.3 Print head Y Alignment

Print head Y Alignment is a mechanical alignment, which is the most important alignment. So the Y alignment should be performed first.

For this machine, there are 8 print heads in total, and divided into 2 two rows.

Unaligned print head will affect ink composition a picture. So for every row print heads, the first nozzle of every print head must be on the same coordinate at Y-axis. The gap between two rows should be same with the gap between two nozzles. Print head installation must ensure the print head is perpendicular to Y-axis, and in parallel with X-axis.

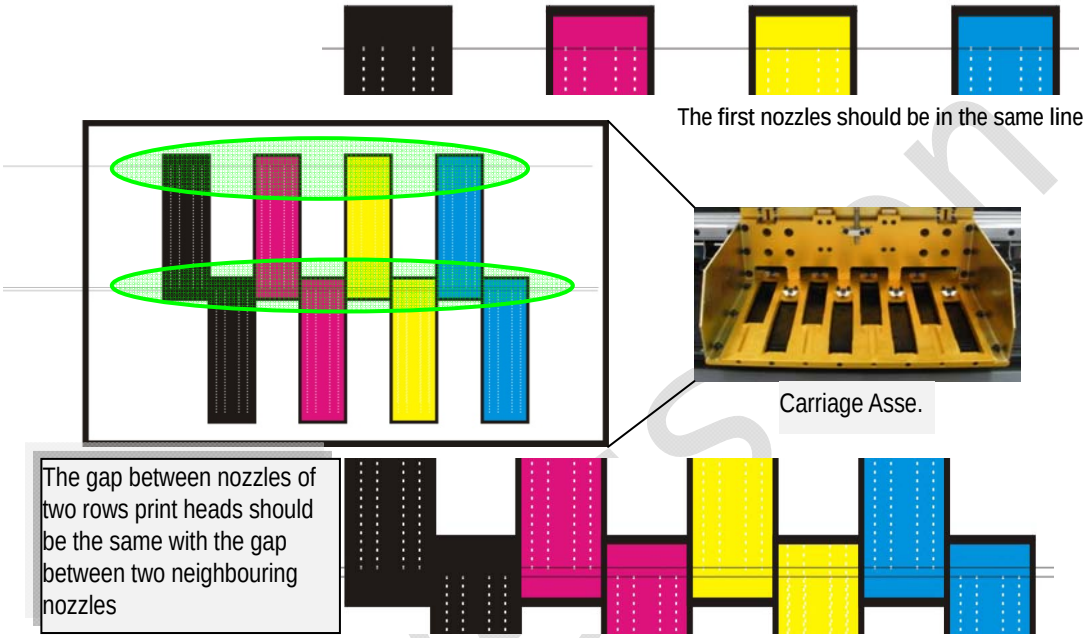


Fig.5.5.3-1 PH align

1. Highlight Y Align from test drop list, and send to print by click send print icon;

Fig.5.5.3-2 Y Align

2. Y Align procedure should be as below:

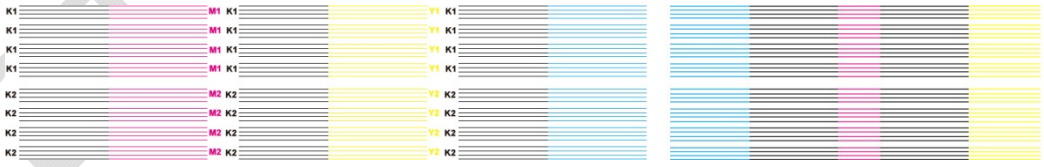


Fig.5.5.3-3 Y Align Drawing

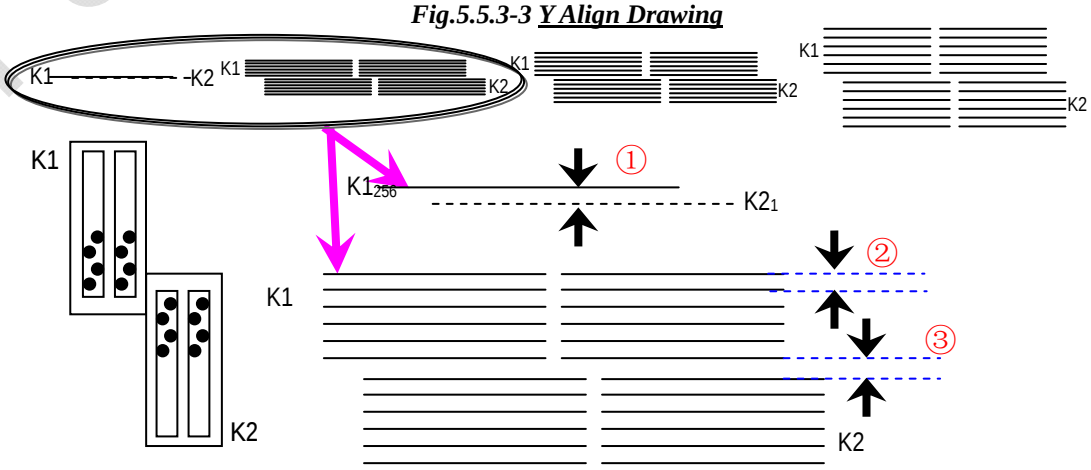


Fig.5.5.3-4 Illustration for Align K2

 By Victor Xu

a) Align K2 with K1. The gap between 256th nozzle of K1 and 1st one of K2（① or ③） must be equal to the gap between two nozzles(②).

✧ If ③ > ②, push print head K2 go upward.(K1 is basic print head, you mustn't adjust K2)

✧ If ③ < ②,pull print head K2 downward.

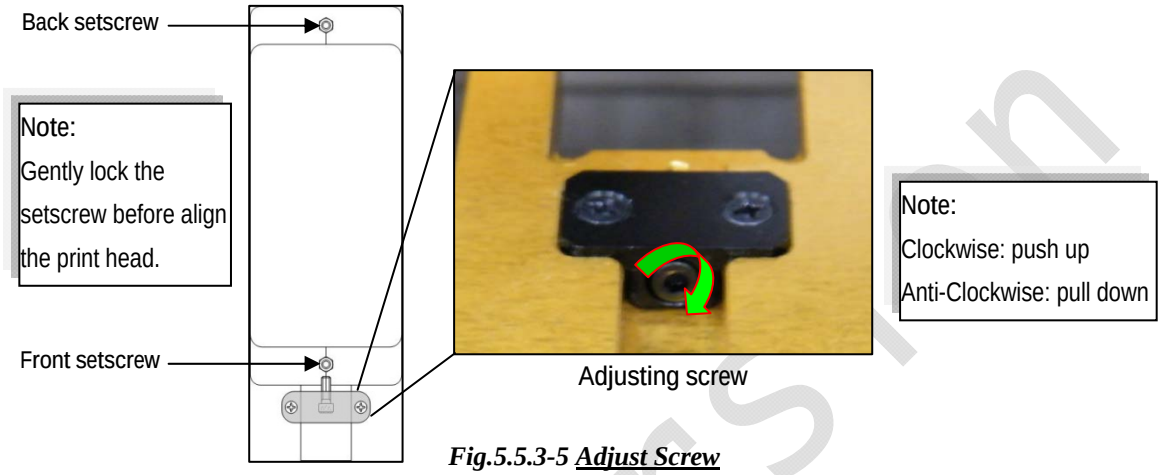


Fig.5.5.3-5 Adjust Screw

Note:

Carful and gradual adjustment should be taken in to consideration when doing Y Align.

It will take several prints and adjustments before you are able to get perfect alignments.

b) Align C, M and Y print heads refer to K print head. The line of C, M or Y should overlap the K line perfectly.

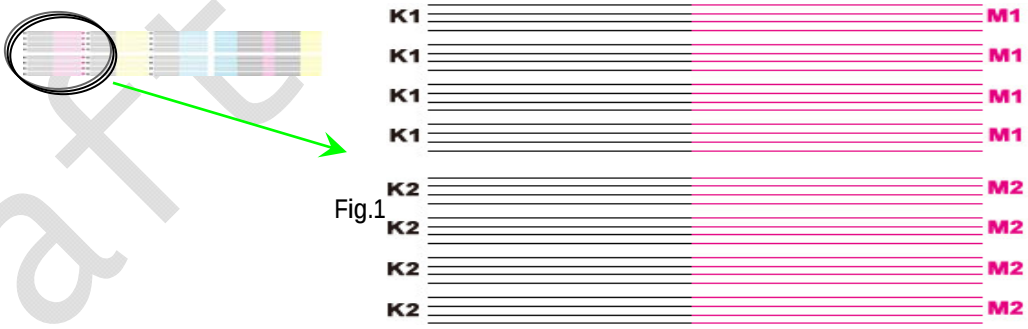


Fig.5.5.3-6 Enlarge view of Drawing

✧ If K1 print head is above C1, M1 or Y1, pull the C1, M1 or Y1 down.

✧ If K1 print head is below C1, M1 and Y1.push the C1, M1 or Y1 up.

Fig.5.5.3-7 Illustration for Align C, M Y

Note:

 By Victor Xu

- *K1 is the reference print for 1# print heads, while K2 is the reference for 2# print heads.*
- *When perform Y alignment, K1 and K2 print head mustn't be adjusted unless C, M or Y heads were in maximum position. If on this occasion, K1 and K2 should be aligned again!!*

c) After finishing all the alignment, double check if all print heads are aligned perfectly referring to below figure.

Or you can align the print heads through it also. Just keep C, M or Y lines are overlap the K lines perfectly.

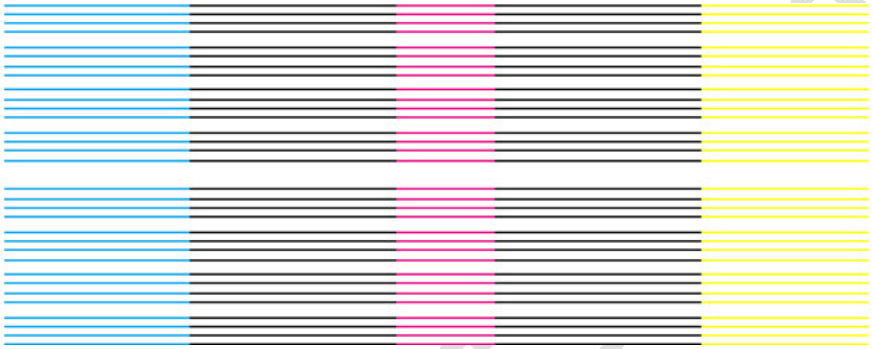


Fig.5.5.3-8 Check Align

5.5.4 Vertical Alignment

5.5.5 Internal Right Align

Internal right align is necessary for Polaris heads because the Polaris head nozzles are made wherein the 512 nozzles are divided into 2 parallel rows of 256 nozzles.

Due to some uncontrollable manufacturing errors (tolerances) perfect alignment is not guaranteed. The internal align is required for both printing directions, especially for monochrome.

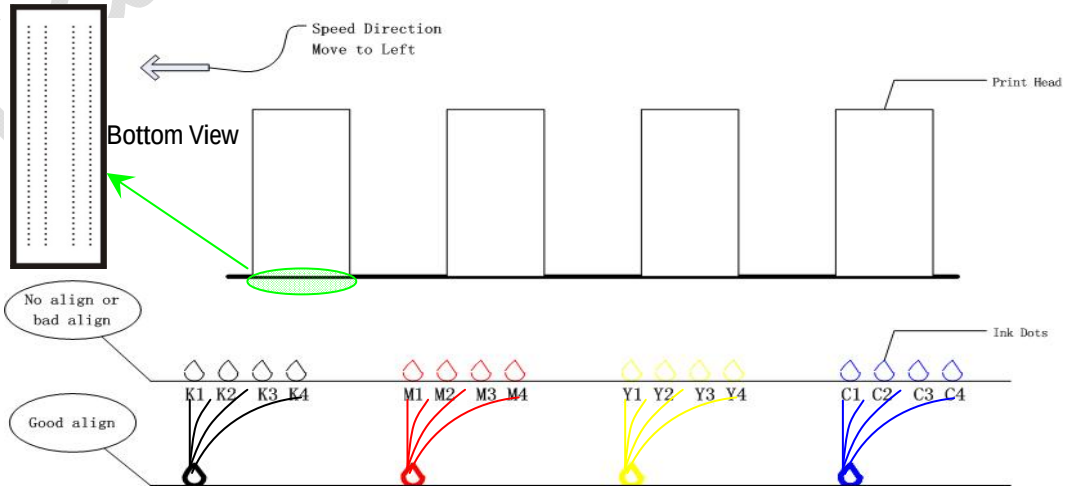


Fig.5.5.5-1 Illustration for Align C, M Y

 By Victor Xu

1. Highlight Internal Right Align from test drop list, and send print by click align color icon; you will get prints as below. Every color will have three units of prints, take K for example:

Fig.5.5.5-2 Send Internal Right Align

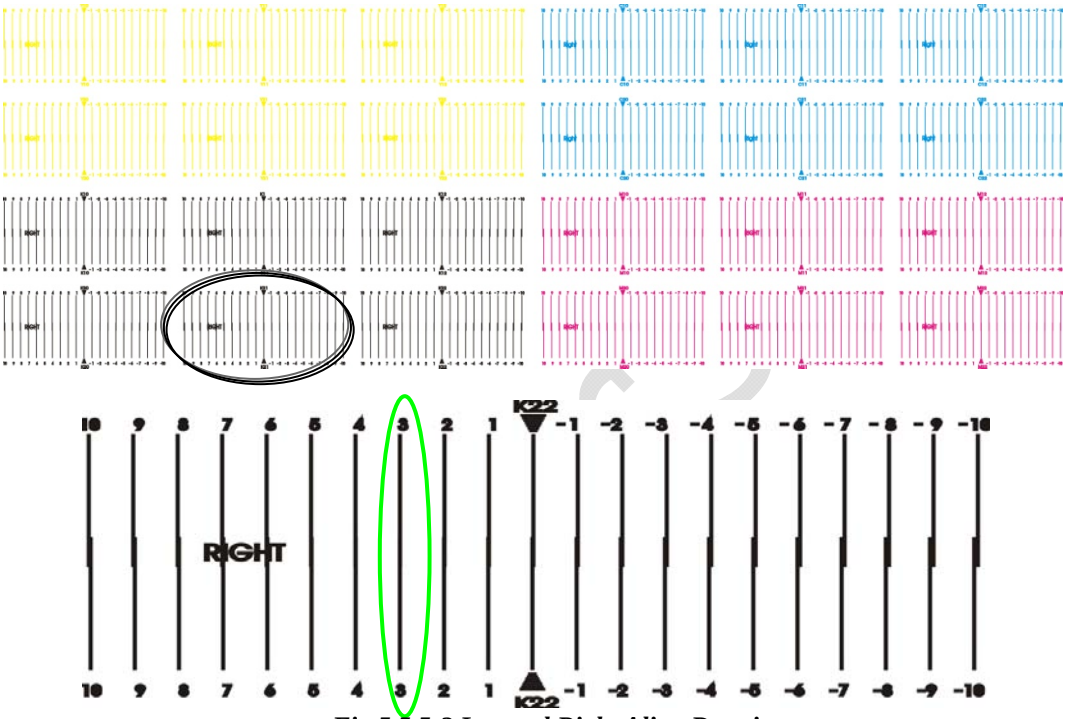


Fig.5.5.5-3 Internal Right Align Drawing

2. The “0 position” of the top K22 must be aligned with “0 position” of down K22. In illustration Fig., K22 meets at “3 position” (in green circle), and the default value of K22 is 0. So the K22 should be 0+3=3.

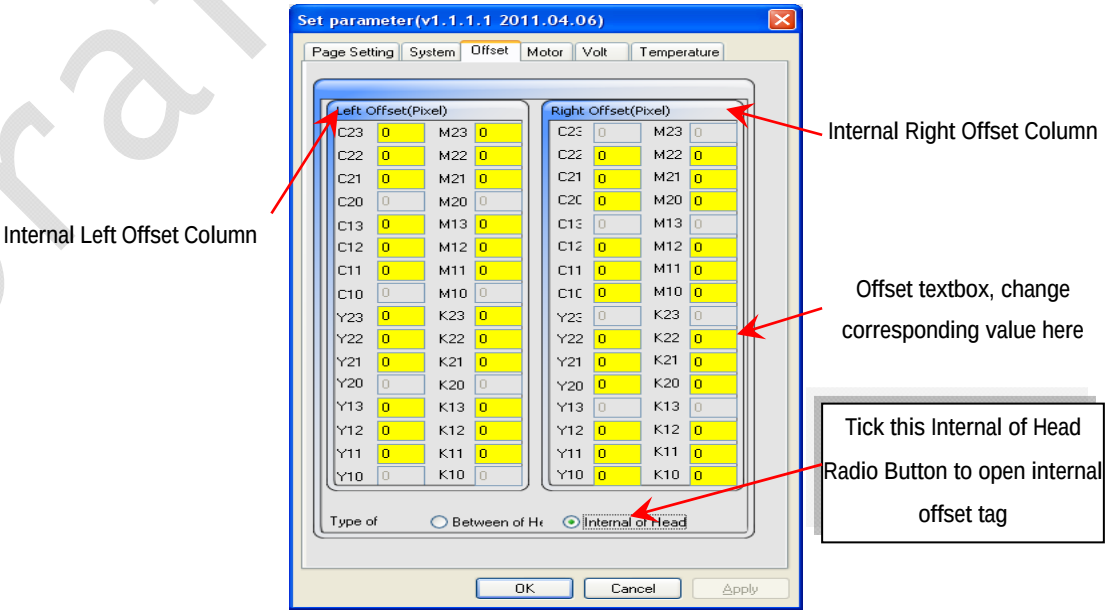


Fig.5.5.5-4 Offset Tag

 By Victor Xu

◆ **Path for setting Internal Left alignment:**

Print Option Tag → Advanced (Test Print Tools Bar → Parameter Setting Icon) → Offset Tab → Internal of Head

5.5.6 Internal Left Align

Internal left align is similar with internal right alignment, only the moving direction is different. Because of opposite direction, the inkjet position from bi-direction is different, that is why bi-direction alignment is in need.

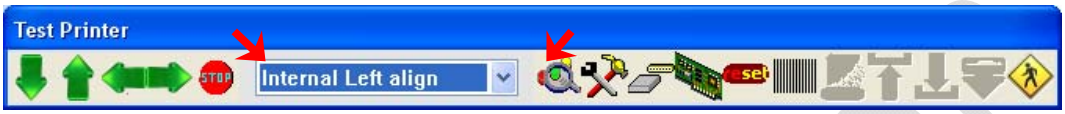


Fig.5.5.6-1 Send Internal Left Align

1. The procedure for Internal Left Align is the same with Internal Right Align, please refer to 1.4.

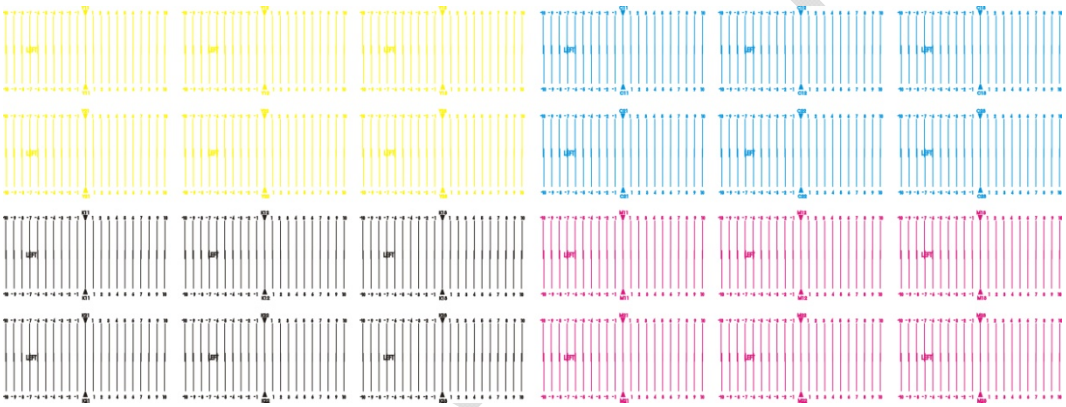


Fig.5.5.6-2 Internal Left Align Drawing

5.5.7 Right Align

There are 8 print heads in 4 colors in total. As they are fixed in different physical position, it is necessary to do Right Alignment for secondary colors, otherwise the secondary color will be fuzzy and the output picture will be rough.

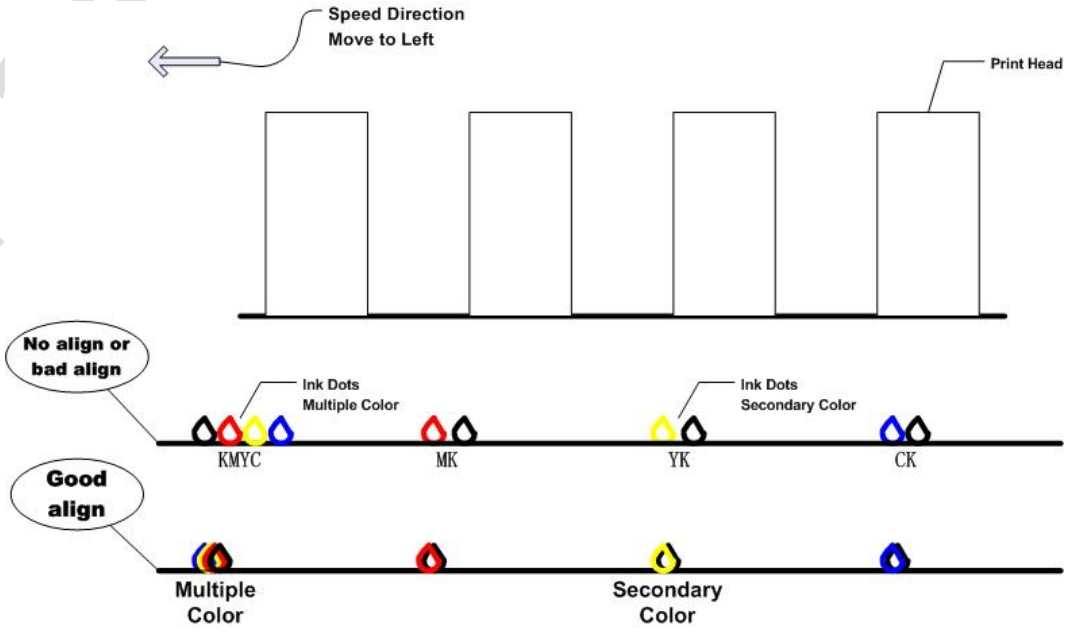


Fig.5.5.7-1 Illustration for Right Align

For Flora machine, we take K1 as the base to align the other print heads.

1. Highlight Right Align from test drop down list, and send print by click align color icon. You will get prints as below.

Fig.5.5.7-2 Send Right Align

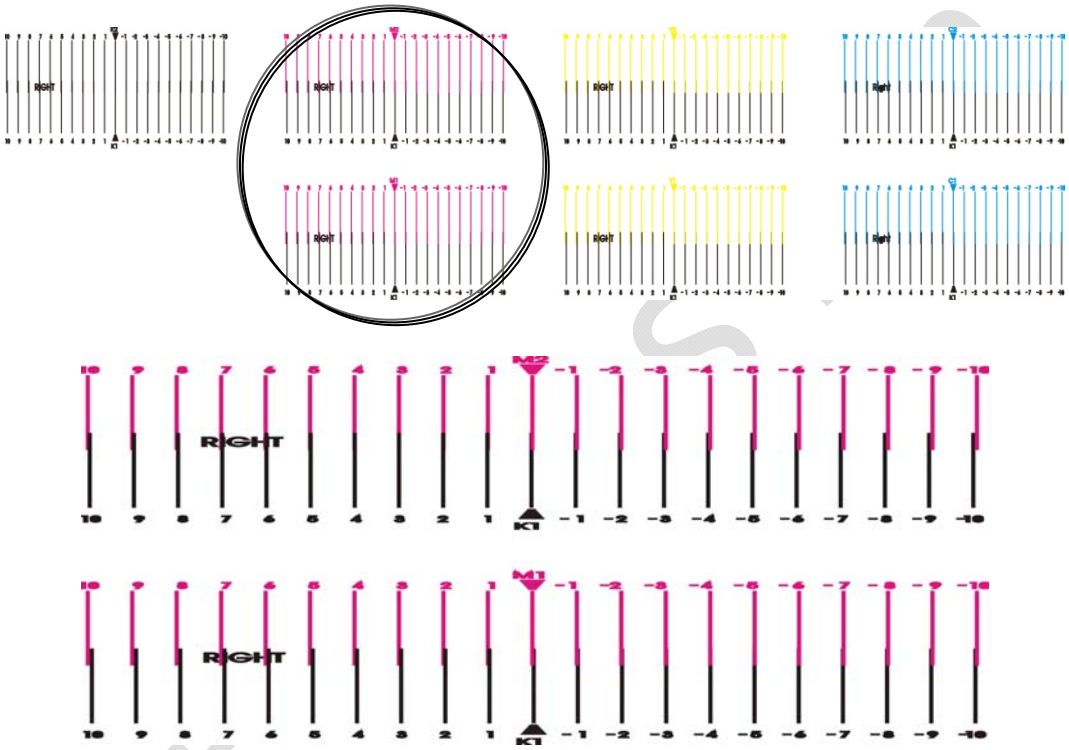


Fig.5.5.7-3 Right Align Drawing

2. All the print heads will take K1 as basic. The "0 position" of K1 print heads must be aligned with "0 position" of all the other print heads. Because of the space problem, I take M print head as example. K1 meets M1 at "- 4 position" (in green circle), M2 at "4 position".

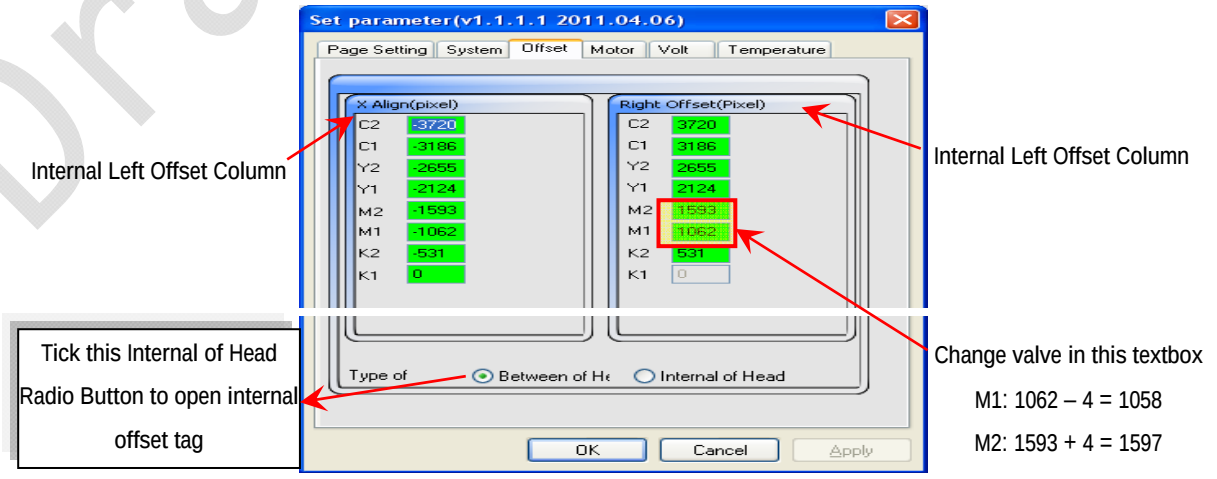


Fig.5.5.7-4 Offset Tag

 By Victor Xu

◆ **Path for setting Right alignment:**

Print Option Tag → Advanced (Test Print Tools Bar → Parameter Setting Icon) → Offset Tab → Right align Check Box

Print Heads	Previous Value	Test Results	Modified Value
M1	1062	-4	1058
M2	1593	4	1597

3. Align the other print heads as the same procedure.

5.5.8 X Alignment

X alignment is very necessary for Bi-direction print mode. If this alignment is not good, the output image will be rough and fuzzy because of dislocation output coming from double directions.

X alignment is similar with Right alignment. But every print head will take itself as reference print head! The way to set the value is the same with right alignment!

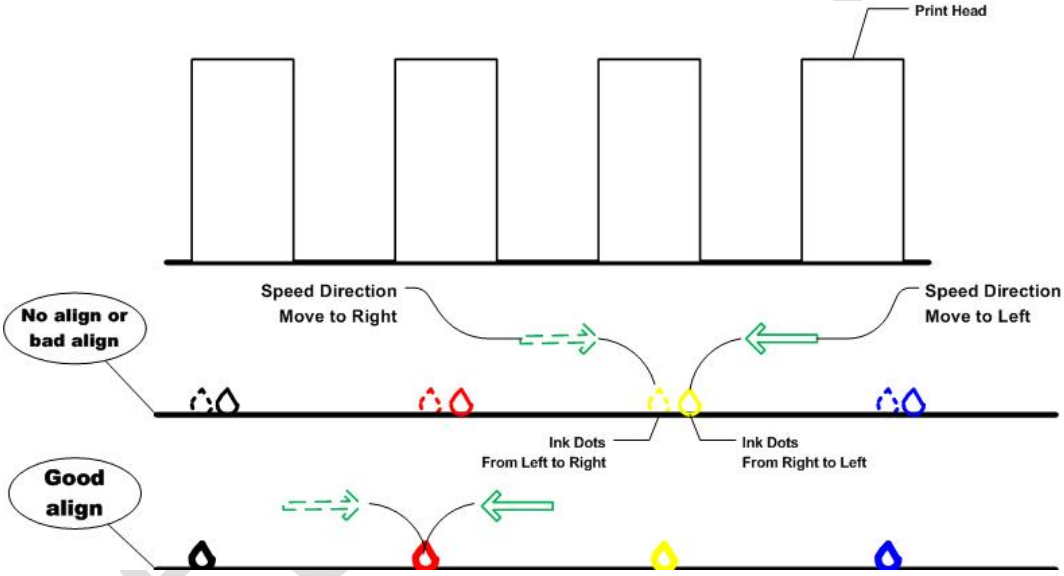


Fig.5.5.8-1 Illustration for X Align

1. Highlight X Align from test drop down list, and send print by click align color icon;

Fig.5.5.8-2 Send X Align

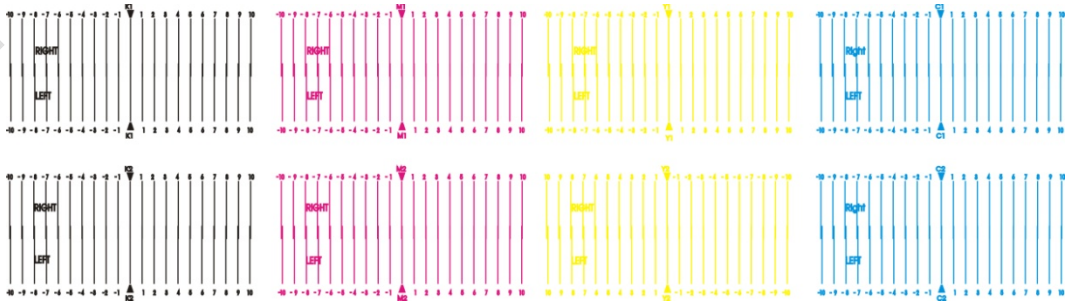


Fig.5.5.8-3 X Align Drawing

◆ **Path for setting X alignment:**

Print Option Tag → Advanced (Test Print Tools Bar → Parameter Setting Icon) →

Offset Tab → X align Check Box

5.5.9 Step Alignment

Step alignment is an important alignment for Y-axis.

If the step is too big, the output will have blank line;

otherwise, the output will have overlap line.

1. Highlight X Align from test drop down list, and send print by click align color icon;

Fig.5.5.9-1 Send Step Align

2. The first pass will print dotted line, and the printer will feed media forward, after that it will print straight line. You may get three possible cases as below:

Fig. 1 – Insufficient Media Feeding Step

- Figure 1 shows the motor step value when the test was sent is higher than exact value so we need to increase, by trial and error method you can get the correct value.

Fig. 2 – Excessive Media Feeding Step

- Figure 2 shows the motor step value when the test was sent is lower than exact value so we need to decrease, by trial and error method you can get the correct value.

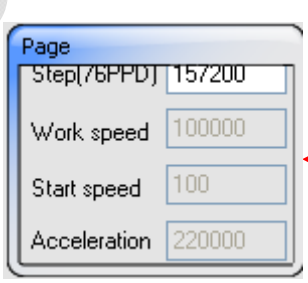
Fig. 3 – Correct Media Feeding Step

- Figure 3 shows the motor step has exact value so no need for any changes. To determine the exact motor step value setting, you need to bring the broken and solid lines closer until you can see one single line only.

3. Below is the table where you can find the Step Parameter setting.

◆ **Path for setting X alignment:**

Print Option Tag → Advanced (Test Print Tools Bar → Parameter Setting Icon) → Motor Tag → Page windows



Enlarge View

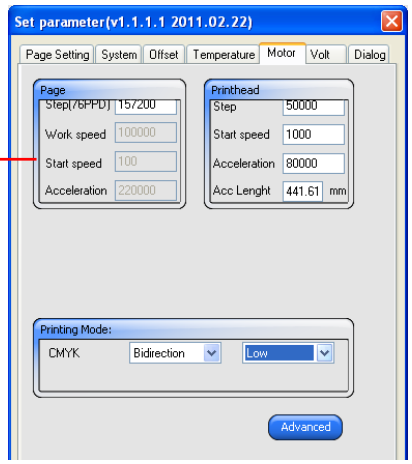


Fig.5.5.9-2 Motor Tag

Notice:

If any factor (temperature, voltage and highness of the carriage) which will affect viscosity or firing speed has changed, you must check Internal left & right alignment, right alignment and X alignment!

Chapter 6 Operation Manual of Flora LJ3208P

6.1 Brief Introduction

This chapter introduces the details of operating the operating instructions of the machine from starting up to shutdown procedure.

Before start on the machine, the operator must read this chapter carefully.

6.2 Starting-up Activities

It is highly recommended to do housekeeping before starting to operate the machine. Maintaining good housekeeping helps improve the quality of the output as well as the safety of operator. Below is the check list of activities that operator should do prior to operation of the machine.

- Turn on the ventilating and lighting system inside the printing room.
- Check and clear for any traces of ink spillage on the machine and the floor.
- Check if the Waste Ink Bottle is already full and replace if necessary
- Check if there is enough ink for printing and flush solution for cleaning the print head.
- Check and ensure that the printing platform along the print head carriage path is free from loose parts or obstructing object
- Turn on the Main Power Switch and power-on the PC.
- Turn on the Printer Power
- Check the Negative Pressure setting
- Perform Ink Priming procedure on the Print head

6.3 Print head Jetting Check

Check the jetting status of each Print head periodically before, during and after using the machine.

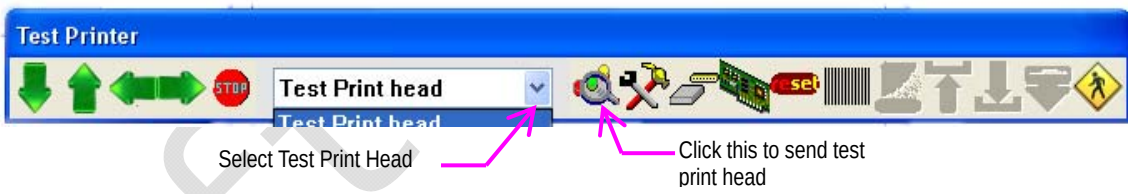
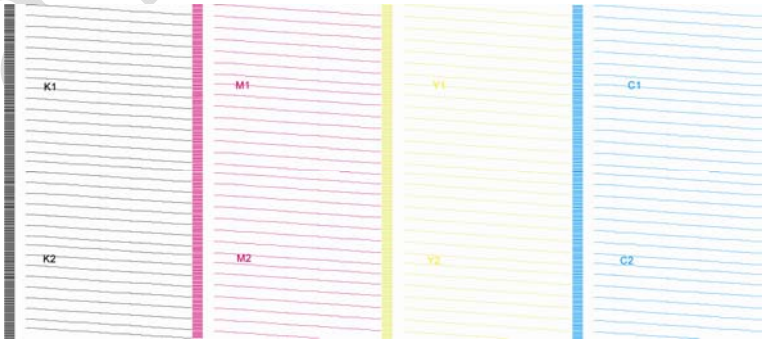


Fig.6.3-1 Send Test Print

The ideal prints should as below:



Note:

Please take note that all print heads must print the same. If not, do purge or flush the print heads.

6.4 Operational Approach of PhotoPRINT Server Flora Edition 6.1v2

6.4.1 Job Folder

Figure below shows the current job list and statuses, the printer model, add job icon and other printing instructions. It is divided into three queues:

Printing job queue shows the jobs that are currently printed and those queued for printing.

Ripping job queue shows the jobs that are under ripping process, have completed the ripping process and those ready to be sent for printing.

Job queue shows the list of all jobs that have been printed, aborted, ripped and new added jobs waiting to be sent for editing or ripping.

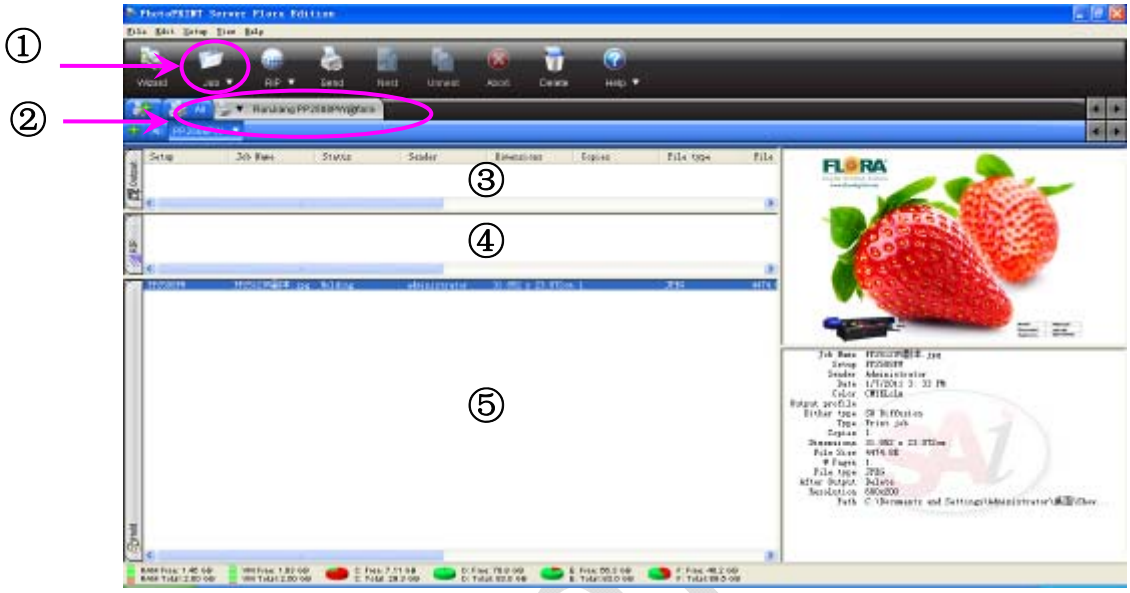


Fig.6.4.1-1 Main Windows

Table.6.4.1-1 Window Area

①	②	③	④	⑤
Add job icon	Printer model	Printing job queue	Ripping job queue	Ripping job queue

6.4.2 Layout Tag

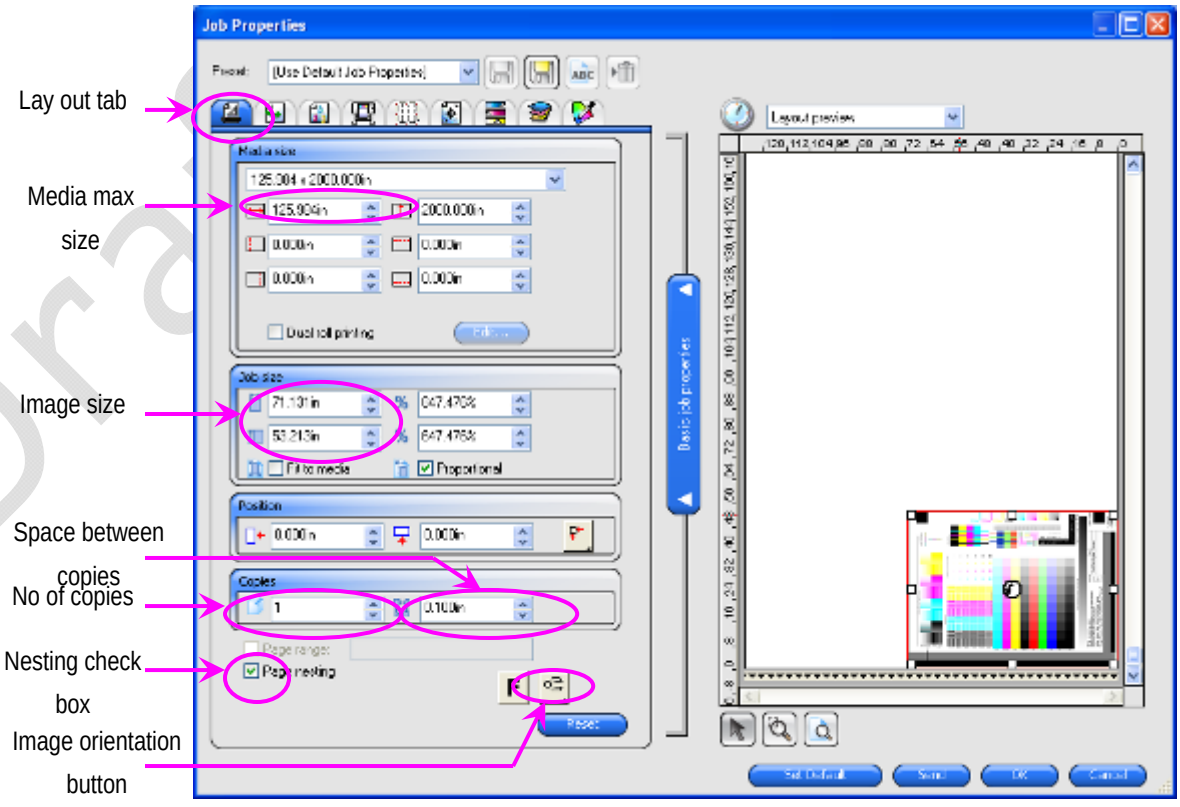


Fig.6.4.2-1 Layout Windows

Figure above shows the image layout parameters like: printing size, margins, number of copies and orientation of image. This is the first window that will pop out every time you click the job or default job properties. After editing you can directly send the job for printing by clicking send button or send for ripping by clicking OK button. Clicking the reset button will change all the parameters back to default settings. Other parameters shown on this window are self- explanatory.

6.4.3 Work Flow Tag

Figure below shows the option what to do with the job file after printing. There are three options available for the end users:

- Delete – the image will be lost after printing is completed
- Hold – the image will be retained in the job folder after printing is completed
- Archive – the image will be sent in archive folder after printing is completed

***Notice**: Click "**OK**" button after you select from the option.*

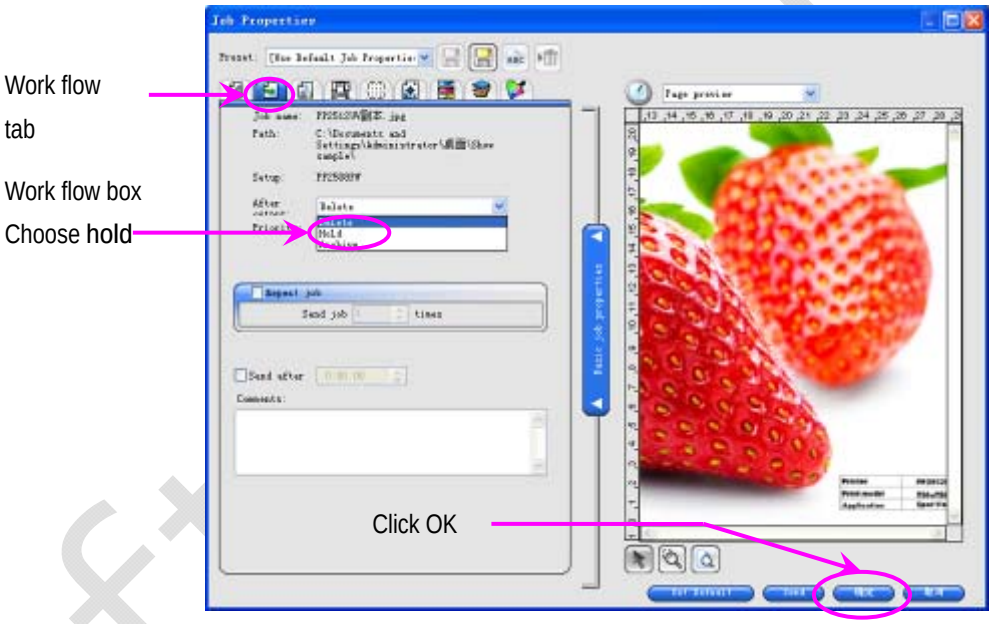


Fig.6.4.3-1 Workflow Windows

6.4.4 Color Management Tag

Figure below shows the image printing parameters in terms of resolution, ripping quality, type of media, ICC profile and others. Detail explanations can be read in PhotoPrint manual, which is available after the RIP software has been installed in the PC.

Click OK button or send button if all parameters are finalized.

Note:

1，Color correction Box: You can choose print with ICC correction or not.

2，ICC check box: Select ICC you want to use.

3，Media check box: Choose Media mode when you create ICC named.

4，Resolution option box: Choose different resolution.

5，Color mode box: By default it is CMYK mode.

6，Dither type box: Choose different dither type, you can get different print quality. But the speed of ripping will be different. The higher quality you want, the slower it will be ripping.

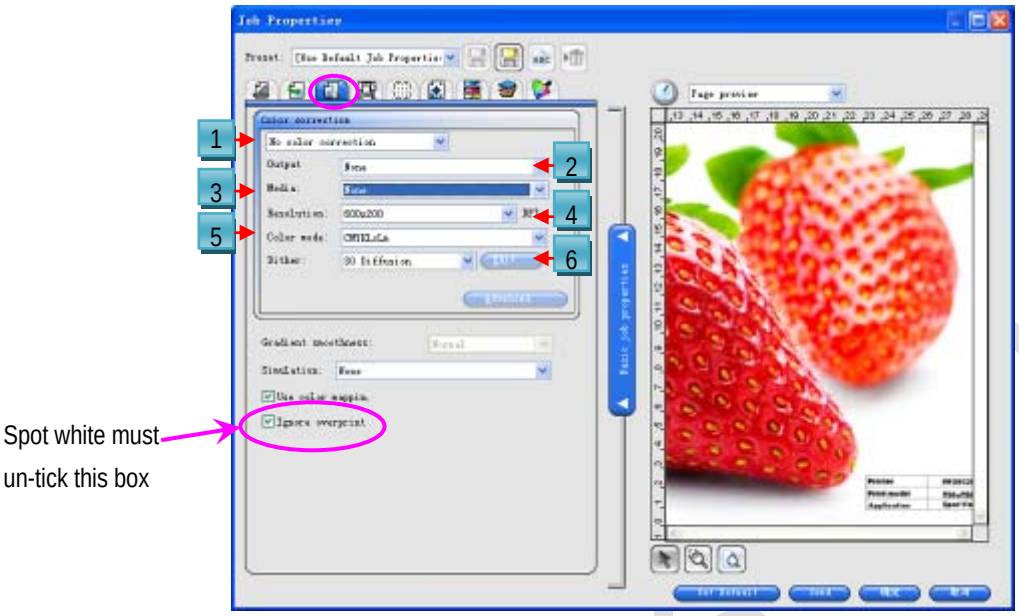


Fig.6.4.4-1 Color Management Windows

6.4.5 Print Option Tag

This test is being performed in order to verify the conditions of the Print head nozzles before printing. It prints a swatch which could represent the nozzles to be firing on a definite order.

From the FloraPrint driver window, select “Test Print head” the drop-down list click on the “Align colors” button.

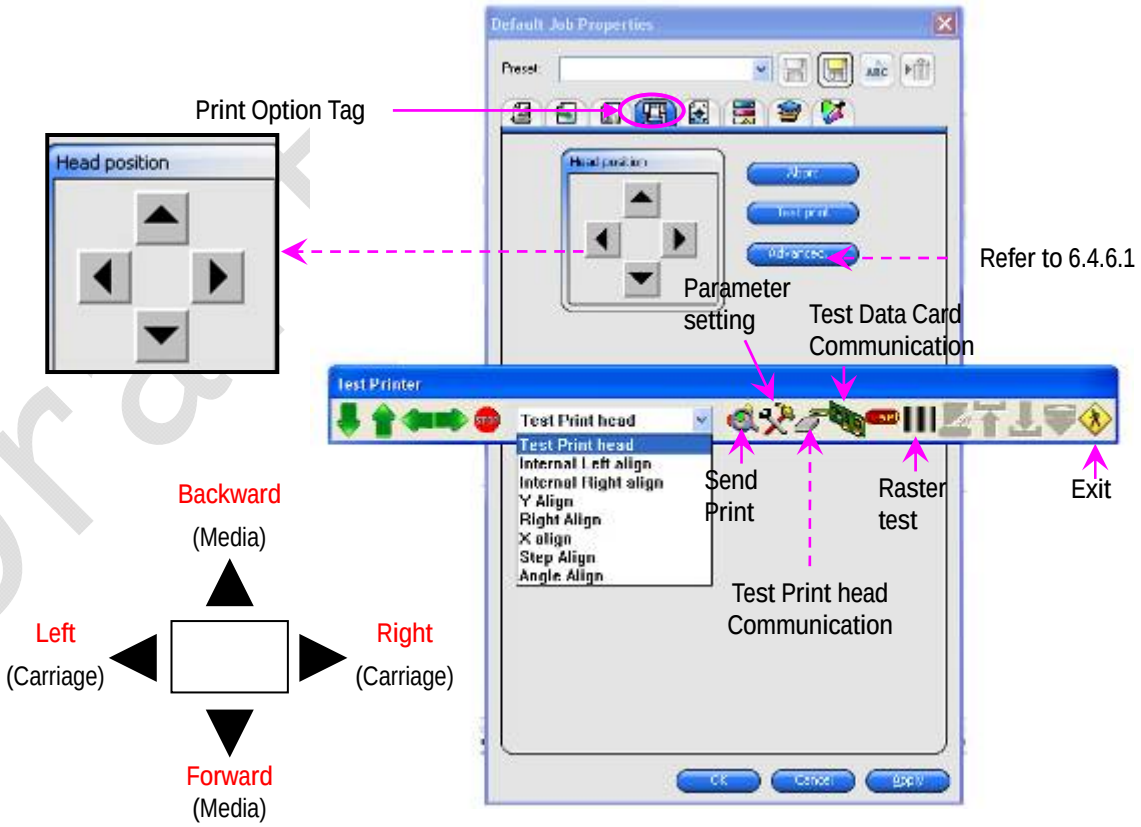
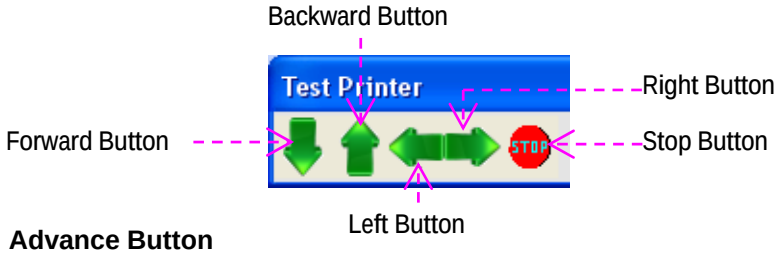


Fig.6.4.5-1 Print Option Tag & Test Print Tool Bar



6.4.5.1 Advance Button

Figures below will pop out when you click the advance button under job properties printer option. The following pop out windows representing a printing parameter setting. They will appear as soon as you click their designated button.

Page setting Tab

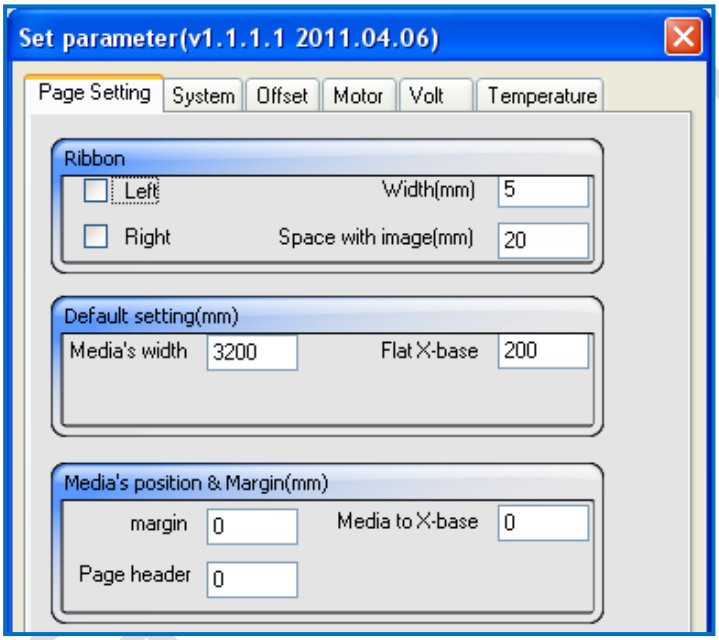


Fig.6.4.5.1-1 Page Setting Tab

Table.6.4.5.1-1 Page Setting

Ribbon			
Left	Tick this check box, the machine will print ribbon on the left side of the image.	Width	set the width of the ribbon
Right	Tick this check box, the machine will print ribbon on the right side of the image.	Space with image	Define the space between ribbon and the image
Default setting			
Media's width	Define the maximum size of the image can be printed	Flat X-base	Define 0 position on X-axis
Media's position & Margin			
margin	keep the margin on the media	Media to X-base	set the counter-position to print
Page header	keep header space on the media		

System Tab

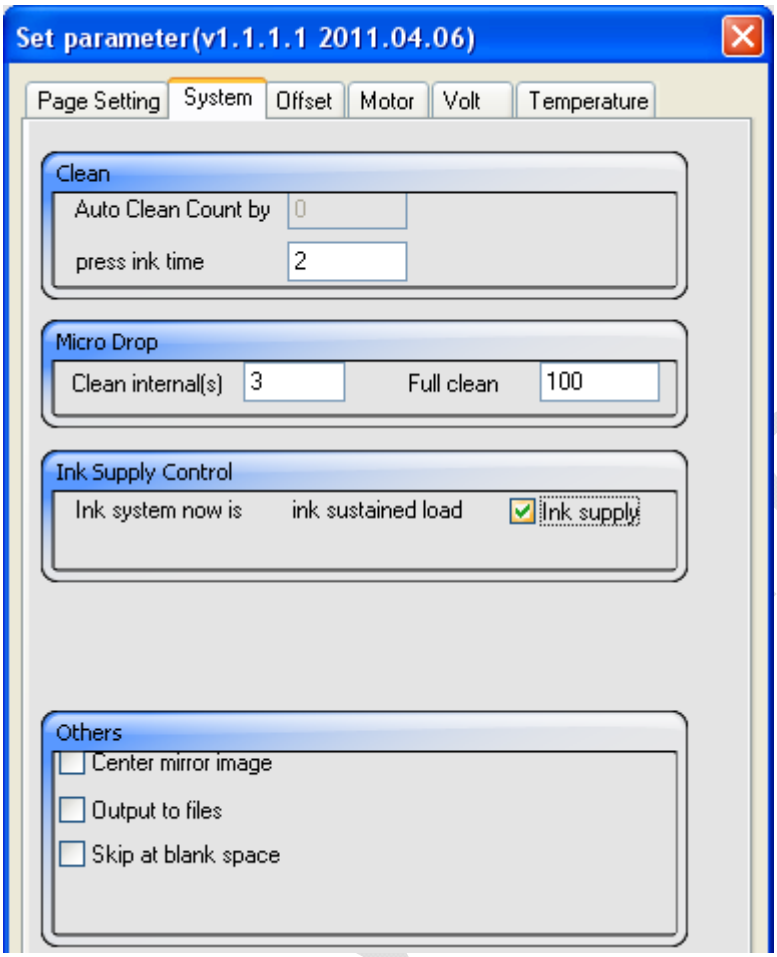


*Fig.6.4.5.1-2 **System Tab***

*Table.6.4.5.1-2 **System***

Clean			
Auto Clean Count by	The clean times can be set in this text box		
Press ink time	Priming time can be set in this text box		
Micro Drop			
Clean internal(s)	Set the micro drop period	Full clean	Set the drop size of the micro drop
Ink Supply Control			
ink supply check box	If tick this box, the pump will supply ink until the sub-tank is full, or the pump will stop working within 25 seconds		
Other			
Center mirror image	----		
Output to files	----		
Skip at blank space check box	Tick this box, the printer will skip over the blank space in the image, and start to print from image.		

Offset Tab

The tab supplies text box for soft ware alignment. Please refer to Section 5.5.5 for more details.

Motor Tab

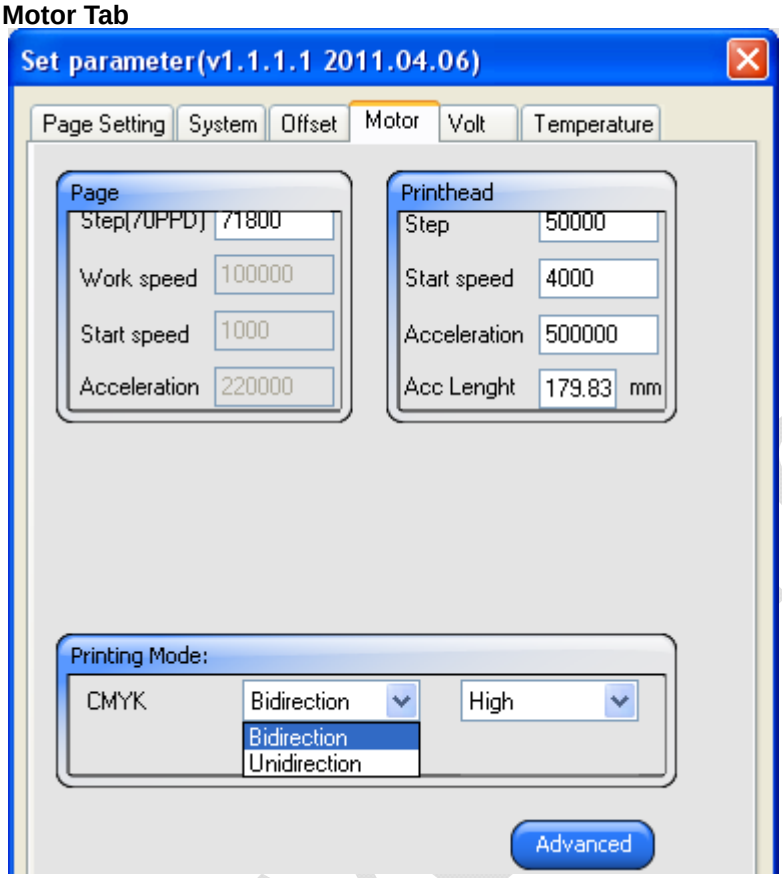


Fig.6.4.5.1-3 Motor Tab

Table.6.4.5.1-3 Motor

Page		**Print head**	
Step (111PPD)	this text box used to change page feeding step(Refer to Step Align)	Step	this text box used to set the carriage moving step when clicking right moving icon on test print tool bar
Work speed	Feeding Speed	Start speed	Carriage motor start speed
Start speed	Feeding motor start speed	Acceler ation	Carriage acceleration at both sides
Acceleration	Feeding acceleration	Acc Length	Acc length for speed up
Printing Mode			
CMYK	Choose Direction	Choose Speed	

Temperature Tab

Refer to Section 5.5.2 for more detail.

Voltage Tab

Refer to Section 5.5.2 for more detail.

6.4.5.2 Pass Number Setting

This section will introduce how to set pass number. The same resolution with different pass number will produce different quality, so it is important for you to handle this.

- **Path:**

  Default job properties → Advanced(Parameter setting) → Motor → Advanced:

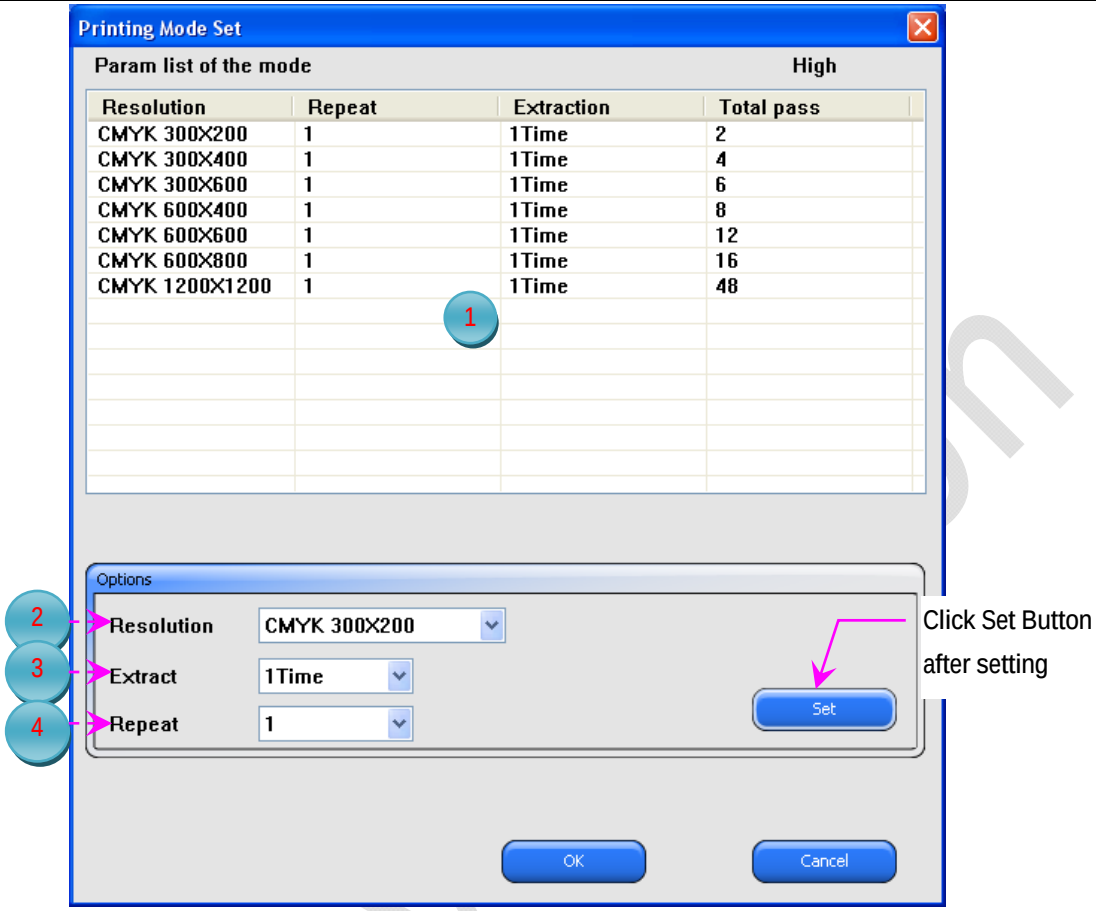


Fig.6.4.5.2-1 Page Mode Set

1 is display list which will shows repeat times, extraction and total pass for every resolution. After setting the printing mode, the detail will be showed in this list.

- Resolution: The DPI or dots per inch of an image. Measured by how many dots or pixels are in one inch of a design. It is a measurement of the fineness or detail. The higher the resolution is, the finer the detail in an image.
- Extract: extract dots from original design and print more passes with the same ink limited. This will control the print head to jet ink dots on the media more averagely, which will be helpful to improve the pass banding and other banding coming with clogged nozzles.
- Repeat: repeat printing double, triple, quadruple times. More repeat times makes darker image output.

Note:

Total pass is concerned with resolution, extraction and repeat times. There is a formula to count the total pass.

Total Pass = $\frac{\text{Re}\,solution}{300*200}*(Extraction+1)*\text{Re}\,peat$

For example: If the resolution is 600*600DPI, extraction 1 time, repeat 1 time:

$$\frac{600*600}{300*200}*(1+1)*1$$

=2*3*2*1

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=12pass

6.5 Shut-off procedure

6.5.1 Over-night protection

- Flush print head one by one until you can't see ink in the ink tube.
- Wipe-off any ink contamination on carriage plate bottom.
- Pour Flush solution to the lint free cloth on top of the prepared print head capping material.
- Install the Print head Capping into the bottom of the Print head Carriage securing it with the cling wrap which is wrapped-around the print head carriage
- Shut off the negative pressure valves.
- Shut-off the power for machine and PC
- Close the machine covers
- Do housekeeping if necessary

6.5.2 Long term protection

- Flush the print head until a clear flushing solution are jetting out of the print head nozzles.
- Shut-off the negative pressure valves.
- Disconnect the print head input tube from the Ink Supply line, cap the inlet interface.
- Uninstall the print head, package it with lint free cloth. Then put it into anti-static plastic bag.
- Do the same procedure on other Print heads.
- Wipe-off any ink contamination.
- Turn off the Main Power switch.
- Close all the machine cover.
- Switch-off the ventilation and lighting in the printing room if necessary.
- Perform Housekeeping if necessary.

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Chapter 7 Service and Maintenance Manual of Flora LJ3208P

7.1 Brief Introduction

This is to describe the various service and maintenance procedure to be observed in using this LJ3208P machine. Every operator must read this chapter carefully.

Maintenance Frequency

- Clean Raster Strip	Daily
- Replace Ink Filter	once every 3 months~6 months
- Lubrication	twice a month
- Circuit inspection	once a month

7.2 Maintenance of print heads

7.2.1 Flushing Print head

- Set the Ink Tank valve to flush position.
- Press Flush Button Switch on the Control Panel. The ink will go out from the print head nozzles.
- Wipe the print heads with a lint-free cloth to removed excess ink residue near the nozzles.
- Continue flushing out until all the print head nozzles are showing straight jetting of flushing solution.

7.2.2 Prime Print head

- After performing a flush procedure, set the Ink Tank Valve to Ink Prime Position
- Press Ink Prime Button Switch on the Control Panel. The ink will go out from the print head nozzles.
- Turn the right ink tank valve to flush position, prime until there is no air bubble in the ink tube. Then turn it to ink position.
- Wipe the print heads with a lint-free cloth to removed excess ink residue near the nozzles.

7.2.3 Replacing Print head

- Turn-off the printer power.
- Perform the flushing procedure on the print head that needs to be replaced.
- Remove the 30pins print head flexible flat data cable.
- Remove the Print head Connector board gently.
- Remove the two print head fixation screws.
- Remove the input tubes from the print head's ink supply.
- Safe keep the old print head.
- Install the new print head in the carriage accordingly.
- Replace the two fixation screws of the print head.
- Connect the Ink supply tubing to the new print head's accordingly.
- Install the Print head Connector board on the print head.
- Install the 30pins print head flexible data cable, take note of the correct cable

direction.

- Orientate the port when connecting the flat data cable on the print head and Print head Control Board.
- Perform flushing procedure to make sure that all jets are working well.
- Turn on the printer power.
- Perform Ink priming
- Wipe the print heads with a lint-free cloth to removed excess ink residue around the Print head nozzles.

7.3 Maintenance of Ink Supply and Vacuum Line System

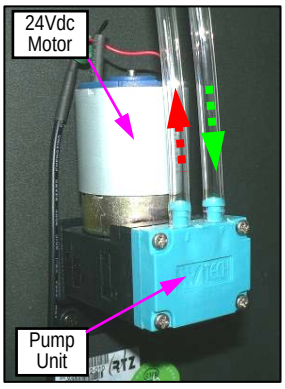
7.3.1 Changing Defective Ink Pump and Filter

Usually the ink pump stops pumping the ink when the secondary tank is full of ink. The level sensor will energize the LED on the Print head Control Board when the secondary ink tank is full.

If the level LED doesn't light after 2 minutes of pumping, then most likely the pump is defective or there's a leak somewhere along the input line. Please take note of the polarity of the power supply cable for the ink pump, usually the red wire is connected to positive "+" while the black is to negative "-".

Change the ink and solvent filters every six months to ensure continuous ink and solvent flow into the system.

Disc Filter



Bulk Filter **Ink Pump**

7.4 Maintenance of Printer Moving Part

For the purpose of getting high quality output, maintenance of moving parts is very necessary which

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can insure high-precision carriage moving and paper feeding .

- Clean and lubricate the print head carriage rail on a weekly basis, apply enough light duty grease or oil in the contact area
- Clean and lubricate slide bearing, ball bearings for timing belt pulleys, gears and ball bearing for automatic take up/feeding system on a weekly basis.
- Periodically check the tension of all timing belts, adjust them if necessary.
- Check the screws on moving parts, assemblies and those that fix the carriage bumper on the rail. Tighten them if necessary.

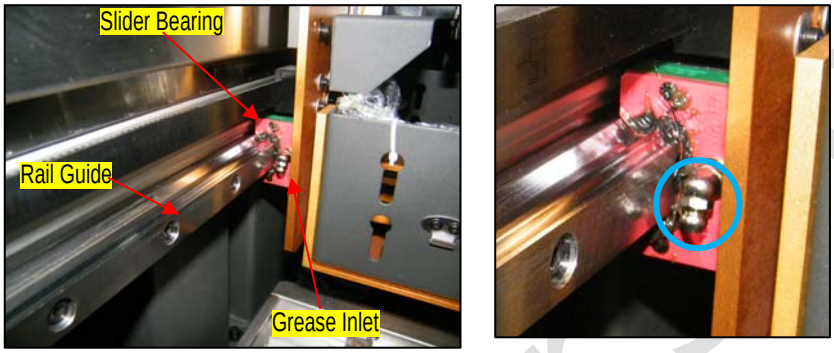

Fig. 7.4-1: Slider Bearing & Rail Guide

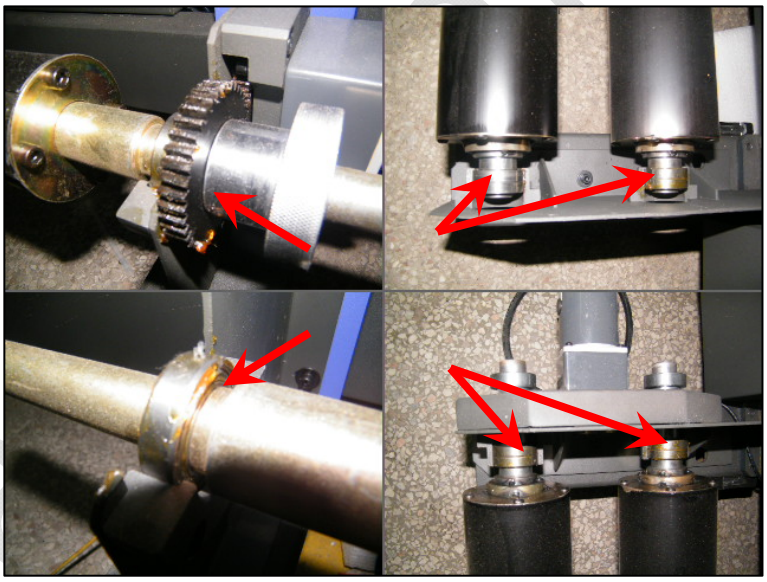

Fig. 7.4-2: Take-up & Feeding Asse.

7.5 Adjust Timing Belt Tension

Carriage timing belt can be adjusted through the two Tension Adjusting Bolts installed at the left end of the carriage rail.

a) Open the left side cover of the machine ,you can see a driven pulley fixed as below figure Loosen up the Lock Nut

b) Turning the Tension Adjusting Bolts clockwise will tighten the tension while turning it counter clockwise will loosen up the tension. The Timing Belt should be ideally stay in the middle portion of the Pulley.

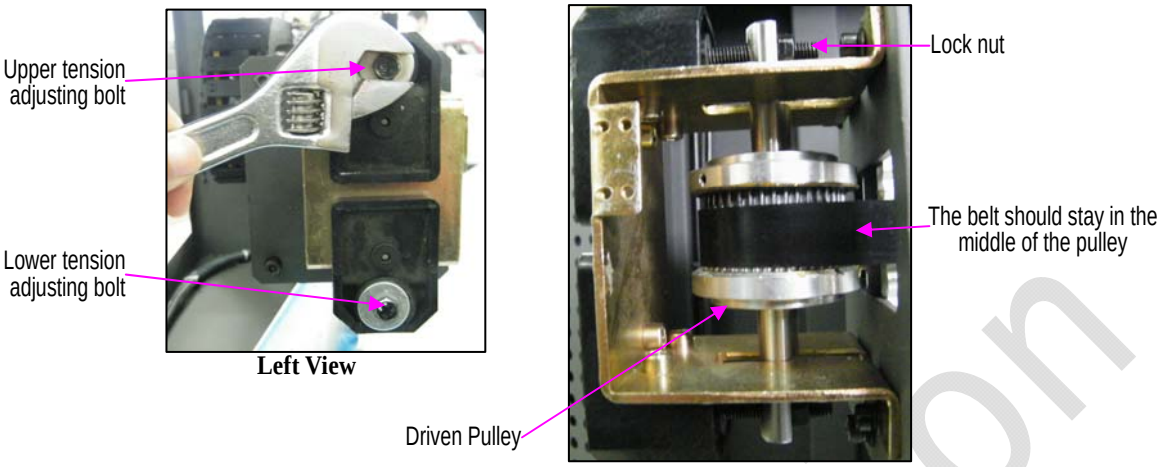

Fig. 7.5-1 Carriage Tension Belt Assembly

c) Measure the belt pull tension load at the middle of the rail with a distance of 60-70mm should be 1000g, using a pull test gage and a steel ruler.

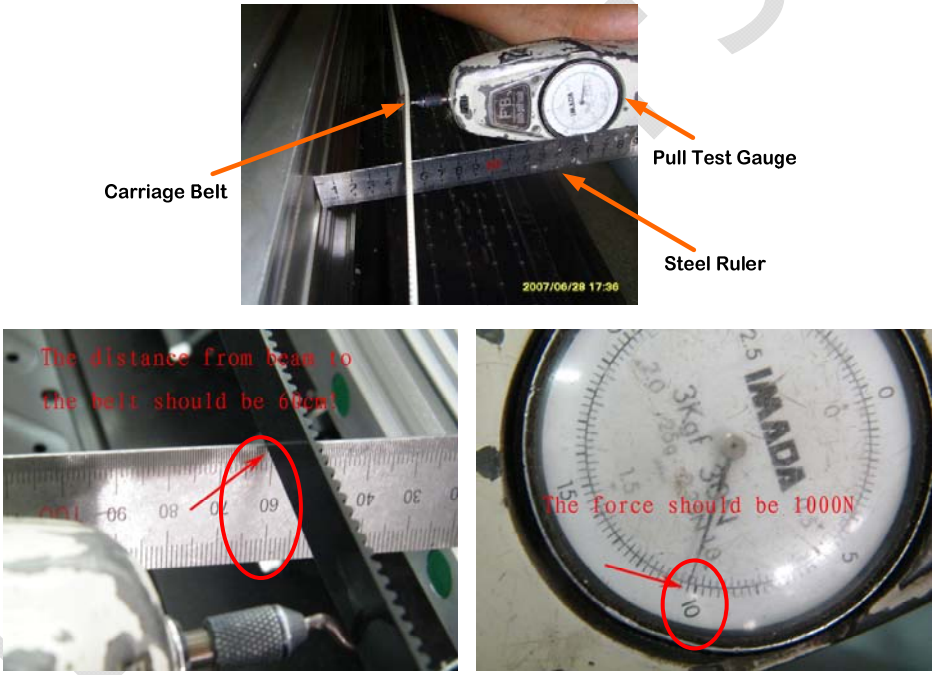

Fig.7.5-2 Measuring Belt Tension using Pull Test Gaug

Appendix A Troubleshooting Guide

Problems	Probable Causes	Solution
❖ One particular color is not printing	o No ink flowing to the tube line of the Print head Carriage o Empty ink supply in the Ink barrel o Clogged Ink line tubing and ink filter o Defective Ink Pump o Defective Print head Control Board o Defective Motion Control Board	• Fill-up empty ink barrel • Replace clogged ink line tubing and ink filter • Replace defective Ink Pump • Replace defective Print head Control Board • Replace defective Motion Control Board
❖ Some Print head Nozzles are not firing ❖ Print head firing is not straight	o Clogged Print head o Print head problems o Defective Print head Cable o Defective Print head Control Board	• Perform solvent flushing and Ink Priming (make a longer flushing if needed) • Replace defective Print head • Replace defective Print head Cable • Replace defective Print head Control Board • Adjust the Print head Voltage
❖ Ink Starvation	o Insufficient Negative Pressure value o Print head nozzles are not working well o Insufficient ink flowing from the Disc Filter to the Print head because of clogged disk filter	▪ Increase the Negative Pressure value from -1.8KPa to -2.1KPa ▪ Perform Test Print to check if all the Print head nozzles are working well, flush and ink prime as needed ▪ Replace Filter
❖ Cannot achieve correct negative pressure ❖ Negative pressure keeps on changing from time to time	o Presence of ink in the Ink Protect Tank o Defective Negative Pressure Regulator o Defective Pressure Gauge o Defective Air Pump o Possible leak in the vacuum line system (negative pressure line)	▪ Remove or purge any presence of ink in the Ink Protect Tank ▪ Replace defective Negative Pressure Regulator ▪ Replace Pressure Gauge ▪ Replace Air Pump ▪ Fix any air leak from the vacuum line system. ▪ Replace Air Fittings if necessary
❖ Air Pump is not working ❖ Ink Pumps are not working	o Presence of ink in the Ink Protect Tank o Ink Tank Sensor might not be working that is why ink is overflowing to the Ink Protect Tank.	▪ Fix/replace the Ink Tank Sensor ▪ Remove the ink from the Ink Protect Tank using the Syringe from the Ink Outlet Tube vent

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❖ l Ink Pumps are not working	o Presence of ink in the Ink Protect Tank o Defective / Out of Position Ink Protect Level Sensor	▪ Remove or purge any presence of ink in the Ink Protect Tank ▪ Replace/Fix Ink Protect Level Sensor by opening the Ink Protect Tank
❖ No Print at all ❖ No presence of Printhead Voltage from RTZ software	o The Optical Cable must have been interchanged during installation	▪ Interchanged again the Rx/Tx connection of the Optical Cable either from the PCI card or in the Printhead Control Board
❖ Carriage gets in contact with media during printing	o Gap between carriage and media (printing platform) is too close. o Media suction is not working o Wrinkled / curled media	▪ Adjust the Printer Carriage between 2.0 – 2.5mm. ▪ Check the 24V supply of suction fans, replace defective suction fan if necessary ▪ Replace the media to avoid wrinkled media to be in contact with the print head during printing
❖ Carriage is not moving, left to right stroke	o Defective AC Servo Motor o Corrupted/Defective Servo Driver o Worn-out Timing Belt o Defective Motion Control Board	▪ Replace defective Servo Motor ▪ Re-program the Servo Driver, replace if defective ▪ Replace worn-out Timing Belt ▪ Replace Motion Control Board
❖ Media is not moving, backward and forward stroke	o Defective DC Servo Motor o Defective Movement Control Board o Worn-out Timing Belt o Defective Motion Control Board	▪ Replace defective DC Servo Motor ▪ Replace worn-out Timing Belt ▪ Replace Movement Control Board\ ▪ Replace Motion Control Board
❖ PC has no communication from the printer ❖ Printer's functionality cannot be accessed	o Corrupted Printer Driver o Defective PCI Card o Defective 15pins I/O cable	▪ Re-install the Printer Driver Software ▪ Replace defective PCI Card ▪ Replace defective 15pins I/O Cable
❖ Ink is not drying	o Heat is not enough to dry the ink o Heater is not working o Heater controller is not working o Density or the ink limits of the image setup is too high	▪ Increase the heater's temperature from the printing platform as well as the front heater ▪ Replace defective heater ▪ Replace heater controller ▪ Lower the ink limits of the image profile ▪ Decrease the Ink limits of the image
❖ Horizontal banding	o Clogged Print head o Step alignment is not good o Print head alignment is not good	▪ Perform solvent flushing and Ink Priming (make a longer flushing if needed) then check the status of the Print head in Test Print ▪ Adjust the motor steps (see Print head Alignment Procedure) ▪ Aligned the Print head very well (see Print head Alignment Procedure)

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❖ A particular portion of the printer is showing horizontal banding	o Feeding of the Pinch Roller is not equal	▪ Adjust the tension of the Pinch Roller (see Pinch Roller Adjustment Procedure)
❖ Inconsistent step align problem	o Feeding of the Pinch Roller is not equal o Worn-out Gear Box Assembly o Defective Motor Encoder o Worn-out Timing Belt	▪ Adjust the tension of the Pinch Roller (see Pinch Roller Adjustment Procedure) ▪ Replace worn-out Reducer Gear Box ▪ Replace Y-Axis Servo Motor ▪ Replace Timing Belt
❖ Vertical Banding on the right side portion of the machine	o Raster Strip might have scratches on that portion o Loose connection on the Print head Cable Data lines o Tension on energy chain assembly	▪ Replace the Raster Strip ▪ Fix loosed Print head Cable Data lines ▪ Fix/replace the energy chain ▪ Re-setup and cabling on the energy chain
❖ Carriage suddenly stops during operation ❖ X-alignment problem during printing	o Raster Strip is too dirty o Portion of Raster Strip has severe scratches o Defective Raster Strip o Defective Raster Encoder o Raster Encoder is not properly setup with raster strip	▪ Clean Raster Strip . ▪ Replace defective Raster Strip ▪ Replace defective Raster Encoder ▪ Perform Raster Alignment
❖ Portion of the RIPed image was not printed	o The RIPed image dimension is almost /more than 2000in/50m. o The RIPed image file is more than 4G bytes	▪ Reduce the size to be RIPed to manageable size to avoid RIPing error
❖ Output size of the image print is not same with the defined image dimension	o Tension Roller problem o Needs to perform Output Size Compensation	▪ Adjust/setup the roller tension properly ▪ See page 48 for proper procedure in using Output Size Compensation

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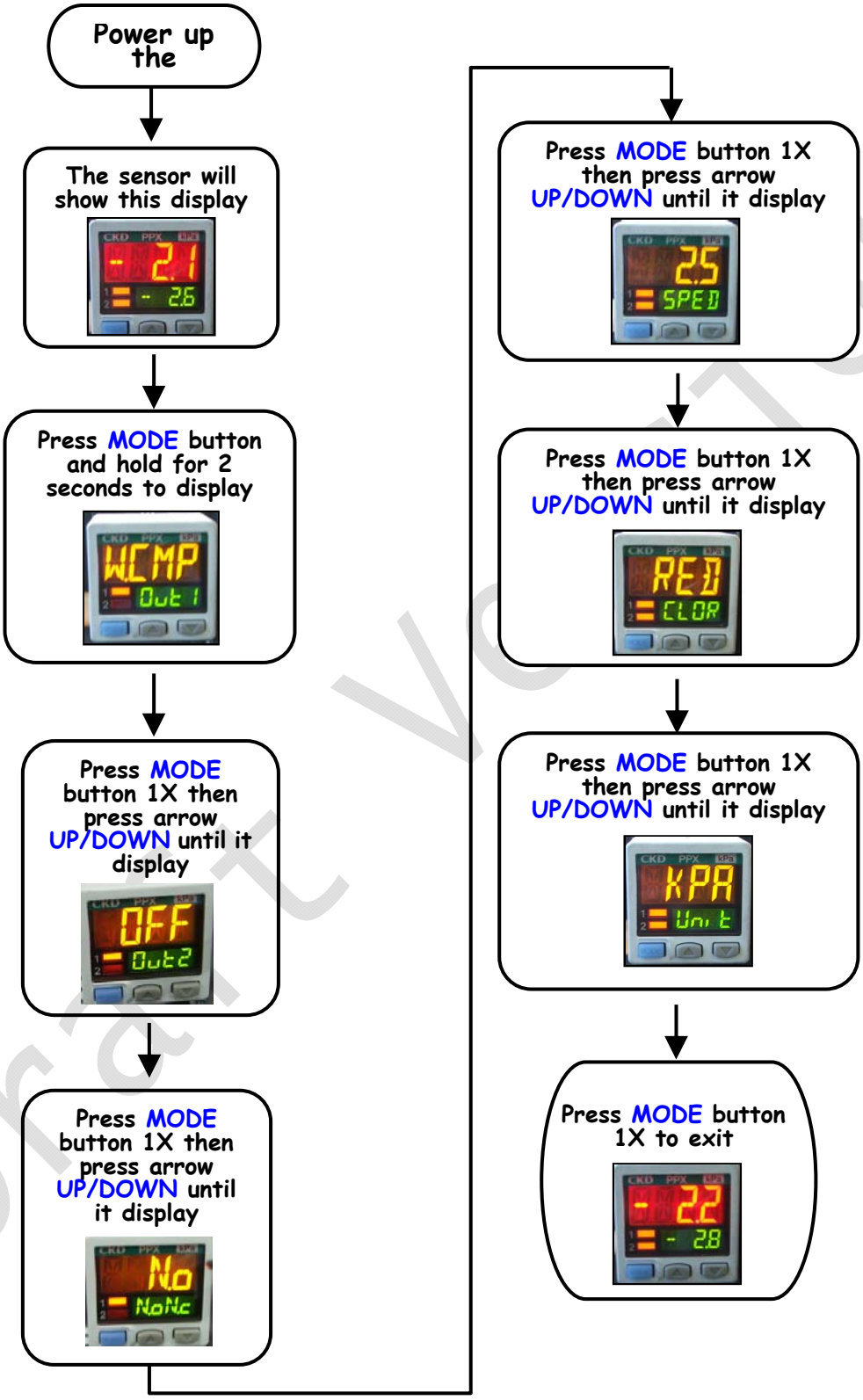
Appendix B HOW TO SET NEGATIVE PRESSURE SENSOR (CKD) DISPLAY



HOW TO SET NEGATIVE PRESSURE PARAMETERS

Press MODE button 1X to display the encircled below

Press arrow UP/DOWN button to set the parameter

Press MODE button 1x to display the encircled below

Press arrow UP/DOWN button to set the parameter

Press MODE button 1X to exit

Appendix C Glossary

Adobe Acrobat - Software package created by Adobe for converting any document to an Adobe Portable Document Format (PDF) file. Anyone can open your document across a broad range of hardware and software using the downloadable, free software Adobe Acrobat Reader, and it will look exactly as you intended—with layout, fonts, links, and images intact.

Aliasing - A defect which occurs when a graphic file does not have enough resolution to reproduce image detail and causes visible jagged lines along the edges

Attachment - When referring to e-mail, an electronic file placed within an e-mail for the purpose of sending through the Internet.

Banding - It is the horizontal, parallel lines in an ink jet print caused by a falsely aligned or defective print head. It is also the vertical lines caused by some mechanical problem.

Bi-directional Printing - Printing in which the print head alternates printing a line left to right, then the next line right to left, etc.

Bitmap Images - Computerized image made up of a collection of dots or pixels; these images appear blocky when you zoom in; also known as raster images

Bleed - Ink which prints beyond the trim edge of the page, created for the purpose of allowing ink to extend to the edge of the page after trimming. Without bleed, cutting the product becomes extremely difficult and may sacrifice the quality of the product.

CMYK - cyan, yellow, magenta, black. The subtractive primaries, or process colors, used in color printing. Black (K) is usually added to enhance color and to print a true black.

Color Bar - Strips of color used as a tool to check color accuracy and density

Color Mapping - The terminology that permits the “best match” in appearance to the “source image”.

Color Separations - The process of preparing artwork, photographs, transparencies, or computer-generated art for printing by separating color into the four primary printing colors: cyan, magenta, yellow and black.

Contrast: The comparing of light and dark on an image, such as low = gray (light).

Crop - To cut off parts of a picture or image.

Crop marks - Printed lines showing where to trim a printed sheet.

Densitometer - A quality control devise used to measure the density of printing ink.

Density - The degree of color or darkness of an image or photograph.

Dithering: Creating dots to “fool the eye” into seeing shades of gray.

Dot Size - Relative size of halftone dots as compared to dots of the screen ruling being used. There is no unit of measurement to express dot size. Dots are too large, too small or correct only in comparison to what the viewer finds attractive.

Dots-per-inch - Measure of resolution of input devices such as scanners, display devices such as monitors, and output devices such as laser printers, image setters and monitors. Abbreviated DPI. Also called dot pitch.

Drop-On-Demand (DOD) / impulse - an ink jet system in which pressure pulses are generated directly in the print head by piezo crystals or heated resistors to eject drops of ink only when they are needed to print a dot

Drop Mass or Drop Volume - The size of a jetted drop of ink, usually measured in nanograms. Adequate

jet-to-jet drop mass uniformity is required in many applications to eliminate banding When the specific gravity is 1, 1picoliter (pL) = 1 nanogram (ng).

Drop Velocity - The speed at which a drop of jetting fluid travels from the orifice plate to the receiving medium.

Encapsulated Postscript File (EPS) - An Adobe graphic file format for high resolution images; it translates graphic and text into code that tells a printer to print in the highest resolution possible and also has low resolution view files for quick screen viewing.

Encoder - An encoder is a device or transducer that converts linear or rotary motion information into uniformly spaced incremental signals.

First In First Out (FIFO) - A form of low-level memory (for example, a shift register. Used in the data path for temporary storage of bitmap data on its way to a print head.

Fire Pulse - A high voltage electrical signal of precise shape, amplitude, and width, causing a jet to eject a drop. Also called a drive pulse.

Firmware - Embedded software, i.e., software that is not loaded from a storage device at startup, but instead resides on the board or in the chip.

Fire Pulse Amplitude (FPA) - The peak voltage of a fire pulse.

File Transfer Protocol (FTP) - The language used to facilitate the transfer of files from a server on the Internet to another location, such as a desktop computer or another server.

GIF Graphic Interchange Format - An image format type generated specifically for computer use. Its resolution is usually very low (72 dpi, or that of your computer screen), making it undesirable for printing purposes.

Gradient - Color in shades from one starting point to another gradually blending in between. A grade change in a hue. It is a transition of color, creating a blended change between screen percentages of a single color or between two different colors

Grain - The direction in which the paper fiber lie.

Head Drive Electronics Module (HDEM) - This is the component of the Apollo PSK that creates the high voltage drive pulses. It is programmable for pulse amplitude and width, as well as rise and fall time.

Hypertext Markup Language (HTML) - A series of formatting commands that describes the components of graphics and text material presented on the World Wide Web in a consistent manner

Image Area - Portion of paper on which ink can appear.

Image - Usually a photograph that is “translated into a bitmapped” image by scanning Ink Jet Printing Method of printing by spraying droplets of ink through computer-controlled nozzles. Also called jet printing.

Initialization File - A file, usually with the extension .INI, that sets startup variables for an application program.

Large Format Printing - refers to large sized prints, typically A1 sized or larger, produced in full color utilizing full color digital ink jet printers.

Materials Safety Data Sheet (MSDS) - This is a document which describes the potential safety hazards of a chemical, liquid or solid, and instructs how to handle it safely and how to respond to exposures or spills.

Meniscus - The curved surface at the top of the water column, or at any interface between a liquid and a solid. Nozzles have a meniscus, whose shape and position are set by a slight negative pressure in

the jets at rest, balanced against the surface tension of the liquid.

Meniscus Pressure Used at Spectra - the meniscus pressure often refers to an inward bubble pressure that equals the fluid pressure at a print head jet nozzle when that jet is not activated. A negative meniscus pressure is applied to inactivated jets only when the print head system is operating, helping to prevent the jetting fluid from leaking at the nozzles. More generally, meniscus pressure is the negative pressure created behind a meniscus, due to surface tension.

Portable Document Format (PDF) - An electronic document format from Adobe that allows the distribution of digital files across any platform that can display a document as originally designed and formatted without having the software application or fonts on the viewing computer.

Pigment - Particles that absorb and reflect light and appear colored to our eyes; the substance that gives ink its color.

Pixel - A single dot on a monitor or on digital image.

Print head - part of a digital printer that is directly responsible for applying ink to a substrate

Protocol - The set of conventions defining communication between electronic components, for example, and a host computer and its interface. The way information is placed on a network. The steps needed to communicate or activate an operation or exchange of information in or between computers.

Purge - Performed for a variety of print head maintenance reasons, a purge is a regulated pressure applied for a fixed amount of time at the air interface to the ink reservoir attached to the print head jetting assembly to force ink, along with air bubbles and debris if present, out the jets through the nozzles.

Raster - A line of pixels. Also, the process of rendering an image or page, pixel by pixel, in a sweeping horizontal motion, one line after another.

Rasterization - The process of converting mathematical and digital information (vector commands) into a series of dots by an output device.

Raster Image Processor (RIP) - A combination of computer software and hardware that controls the printing process by calculating the bit maps of images and instructs the printing device to create the images.. Most RIPs operate on PostScript.

Resolution - The DPI or dots per inch of a design. Measured by how many dots or pixels are in one inch of a design. The measurement of the fineness or detail. The higher the resolution the finer the detail in an image

Satellites - Small droplets of jetting fluid generated behind the main drop as the main drop detaches from the nozzle.

Substrate - Any surface on which printing is done.

Tagged Image File Format (TIFF) - A standard graphic image file format often used for storing high resolution images that can easily handle up to 24 bits of photographic image color.

Transmission Control Protocol/Internet Protocol (TCP/IP) - is an open communications protocol implemented on diverse systems and the Internet and is the preferred protocol for practical interoperability.

Varnish - A clear liquid coating applied to printed sheet for protection and glossiness.

Varnishing - a finishing process whereby a transparent varnish is applied over the printed sheet to produce glossy finish.

Viscosity - the tendency of a liquid to flow slowly or quickly resulting from the friction of its molecules

