

User's Guide

**UV Ink
Color Inkjet Printer**

F1-250 *UV*



Read this User's Guide to use the printer safely and properly. Keep this manual in a place where you can quickly access it at any time.

Table of Contents

Cover Page	1
Table of Contents	2-3
Disclaimer	4
Manual Usage Conditions and Limitations	5
Printer Introduction.....	5
Technical Specification	6-7
 Chapter 1	
Safety Operating Instructions.....	8-10
 Chapter 2	
Basic Operation.....	11
External Views, Part Names and Functions	13-14
Electrical Control Panel.....	14
Feeding/Take up System.....	15
Power Supply Control Panel	15
Media Positioning Bar Lever.....	16
Vacuum Chamber Adjustment Lever.....	16
Control Panel Function.....	16-17
Maintenance Section.....	17
Automatic Capper and Suction Assembly.....	18
Negative Pressure System.....	18
Ink Prime/Purge Switch.....	19
Auto Detect Media Thickness System.....	19
Starting the printer.....	20
 Chapter 3	
Working System of Flora F1 250UV.....	21
Konica Minolta Print head Assembly.....	21-22
Print Head Connector Board.....	22
Servo Driver Board.....	23
Printhead Control Board.....	23-24
USB Interface Board.....	24
X-axis and Y-axis Servo Driver Pack.....	25
Automatic Carriage Height Adjustment System.....	25
Ink Control System.....	26
Negative Pressure System.....	26
Ink Protect Tank.....	27
Limit Switches.....	27
Raster Encoder and Raster Ruler.....	27
Power Supply Modules.....	28
AC Noise Filter.....	28
Media Rollers and Torque Motors.....	28
 Chapter 4	
Setting Up The Printer.....	29
Wooden Crate Proper Handling.....	29
Unpacking the Machine.....	29-31

Pre-Installation Requirement.....	31-32
Machine Pre-Installation.....	32
RIP Software Installation Procedure.....	32-34
Flora Printer Driver Installation.....	34-36
Adding Printer on the device setup.....	36-37
Testing the Printer Functions through PC.....	37
Printhead Installation Procedure.....	37-40
Ink and Solvent Preparation.....	40-41
Print head Alignment	
Mechanical Alignment (Y-Align).....	41-43
Left Internal Align.....	43-44
Internal Right Align.....	44-45
Left Align.....	45-46
Right Align.....	46-47
X Align.....	47-48
Step Align.....	48-49
Printhead Voltage and Temperature Settings.....	50-51

Chapter 5

Operation of the Machine	
Starting-up Activities.....	52
Print head Jetting Check.....	52
Working on PhotoPrint Flora Edition Software Basic Elements.....	53-82

Chapter 6

Service and Maintenance Procedure	
Flushing a Selected Printhead.....	83
Replacing the Print head.....	83
Maintenance of Ink Supply and Vacuum Line System.....	83
Changing Defective Ink Pump and Filter.....	84
Changing Defective ink and Vacuum Pump.....	84
Maintenance of Printer Moving Parts.....	84-85

Chapter 7

Appendix A	Material Safety Data Sheet for UV Inks.....	86-89
Appendix B	Preventive Maintenance Checklist.....	90
Appendix C	Troubleshooting Guide.....	91-93
Appendix D	Glossary.....	94-97

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 UV-curable ink, supports up to 2500mm of media width, and has a built-in USB interface.

This manual, the F1-250UV 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

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 F1-250UV 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 F1-250UV printers. It can not 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 Usage Conditions and Limitations

The manual includes patent information, which belongs to Shenzhen Runtianzhi Image Technology Co., Ltd., the purpose of which is to help the authorized customers. Without the written permission from RTZ Company and the public declaration, any content of this manual should not be used for other purposes.

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, contact the shop or dealership where you have purchased the product or the nearest service center.

Printer Introduction

The Flora F1- 250UV printer is a wide format digital printer suitable for small up to medium size business use. It uses a UV curable ink, which is environment friendly. 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, POP board, glass work, flexible packaging, wooden work, printing circuit board, etc.

F1-250UV series printers uses drop-on-demand and Piezo-electric technology. It can print colorful and wide image by using the highest **1440x1440** dpi resolution. It can output any size of images with "tile" feature in the software. Indeed, it is a combination of roll-to-roll and rigid board printer.

Table 1 General Features

Item No	Description	Specification
1	Printing Method	Drop-on-demand Piezo-electric
2	No. of colors	5 (CMYK+White)
3	Ink type	UV curable
4	Ink reservoir capacity (volume)	4 Li/color (refillable while printing is on progress)
5	Outdoor Durability	2 years for Flora UV curable ink
6	Media handling system	Roll-to-Roll, single sheet, Indexing Conveyor Flat bed with vacuum
7	Media types	Roll-to-roll including paper, vinyl, adhesive back vinyl, fabrics, banners, PVC, etc and flat rigid boards including, corrugated foam, Plexiglas, Sheet metal, sheet film, ceramic tiles, etc.

8	Maximum printing size	2.50 meters width and unlimited length
9	Maximum media thickness	48 mm
10	Rip software	PhotoPrint V5.3 Flora edition (Windows Xp sp2)
11	Driver software	FloraPrint
12	Color management	ICC based color, density adjustment curves
13	File format	Bitmaps, Tiffs, Jpeg, Postscripts3, 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	Description	Specification
1	Model	Flora F1- 250UV
2	Print Head	Binary Drop-on-demand piezo-electric
3	No. of print heads	15 (CMYK+White, 3 printheads/color)
4	No of colors	5
5	Printing resolution option	360x360, 360x1080, 720x720, 1440x1440 dpi
6	Printing quality option	Standard, High and Ultra
7	Printing Speed	Standard Quality: 54 m ² /hr High Quality: 38 m ² /hr Ultra Quality 28 m ² /hr
8	Media maximum width	2.53 m
9	PC minimum operating requirement.	512Mb RAM, 40Gb HDD, Windows XP Service Pack 2
11	Operating environment	220VAC/50-60Hz/Single Phase, 2 outlets 25 Amp each. Distortion: < 0.5%
12	UV lamp power rating	700 W
13	Room temperature	20~30 °C
14	Humidity	40~70%
15	Dimensions	L4.49mx W 0.99m x H 1.56m
16	Weight	1050 Kg

Table 3 Flora F1-250UV Printer Model Coding

Code	Explanation
Flora	Brand Name
F1	The best, fastest, latest model
250	250 cm maximum width of media it can print
UV	Ink Type

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 F1-250UV.

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
- UV Ink
- Cleaning liquid (UV 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 UV protection glasses and gloves when operating the machine and avoid being too closer to UV lights.
- When doing maintenance task or being close to the flatbed machine, UV lights must be shut off or close all UV 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.



Electrical installations inside the printing area must be in accordance with local Electrical Safety Regulation

1.5 Handling Precautions

1.5.1 Power Supply

1. Install the printer near an easily accessible electrical outlet.
2. Do not provide power to the printer through the same power line as for other noise generating devices such as motors.

3. Use a power supply matched with the printer specification.
4. Connect the power cable directly to an electrical outlet. Do not plug several devices into one electrical outlet.

1.5.2 Printer

1. Do not place anything on top of the printer.
2. Do not rest your elbows on the printer.
3. Open and close the top cover gently from the front of the printer with both hands.
4. Before connecting or disconnecting the interface connector, turn the printer OFF.
5. 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.
6. 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 UV-curable ink;

1. Clean the carriage unit and the flat table conveyor surface everyday.
2. Make sure that the carriage covers are always replaced.
3. Perform ink supply circuit and print head cleaning when leaving the printer for a long time (2 weeks or more with no power).
4. Perform head cleaning after leaving the printer idle for a long time.
5. Shut off the UV lamp whenever the printer is not in use.

1.7 Consumables

1. Always use the recommended consumables (printing media, ink, ink filters). Failure to follow this instruction may cause poor printing quality and breakdown.
2. Do not use ink past the expiration date as this may cause a print head breakdown and poor printing quality.
3. 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.
4. Avoid spilling ink into your skin or clothes. Wash any ink off immediately with soapy water.
5. Check the waste ink container everyday so as not to permit waste ink to leak from your printer.
6. 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.
7. 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 - Basic Operation

2.1 Getting Started

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

Contents of this section;

- Operating conditions
- Consumables
- External Views, Part Names and Functions

2.2 Operating Conditions

This section describes the operating conditions for the printer.

2.3 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.

2.4 Environment Conditions

2.4.1 Operating temperature and humidity levels

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

Temperature : 20 C to 30 C

Humidity : 30% to 70%

- Ø To obtain better print quality, use the printer within temperature of 20 C to 25 C.
- Ø When the operating temperature is lower than 20 C or higher than 40 C, print speed is reduced to two-thirds of normal print speed to maintain good print quality.

2.4.2 Places where the printer must not be installed

Do not install the printer in the following places:

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

2.5 Consumables

2.5.1 Available Media Types

The following types of media are available:

For details ask our sales office or a nearby agent.

- ü Paper
- ü Advertising banner
- ü PVC
- ü Mesh Fabrics
- ü Adhesive Vinyl
- ü Glass Sheets
- ü Ceramics
- ü Steel Sheets
- ü Acrylic Boards
- ü KT Boards
- ü PVC Boards
- ü Foam Boards

Note: Contact our service center for detail

2.5.2 Precautions for storing media

- ² Avoid direct sunlight and water both before and after opening the package. Put media in a box or envelope to prevent dust and store media in a cool, dry and dark place.
- ² Avoid rapid change of temperature and humidity, and store media where condensation will not occur.
- ² Do not store media standing on end to prevent disorder of media and damage to the edges.
- ² Do not pile up media rolls.

2.5.3 Precautions for disposing of media

- ² Dispose of media in accordance with local conditions and regulations.

2.6 Precautions in use

- ² Avoid change of temperature of humidity after opening the package. Set media in the printer after leaving media in the operating environment for 3 hours or more. Suppose change of humidity by turning the air conditioner on.
- ² Due to media characteristics, curling of media in low humidity and wrinkling of media in high humidity may occur easily. Use media in a normal temperature and humidity environment (around 23C to 50%RH).
- ² Do not use scratched, wrinkled, curled or dust-stained part of media. Especially, damaged edges (both edges) affect media feeding. Also, do not drop or wet the media. Doing so may adversely affect printing quality and cause malfunctioning.
- ² Hold margins of the media so as not to touch the print surface. Adhesion of sebaceous matter or sweat may adversely affect printing quality.
- ² Roll media correctly before setting in the printer.

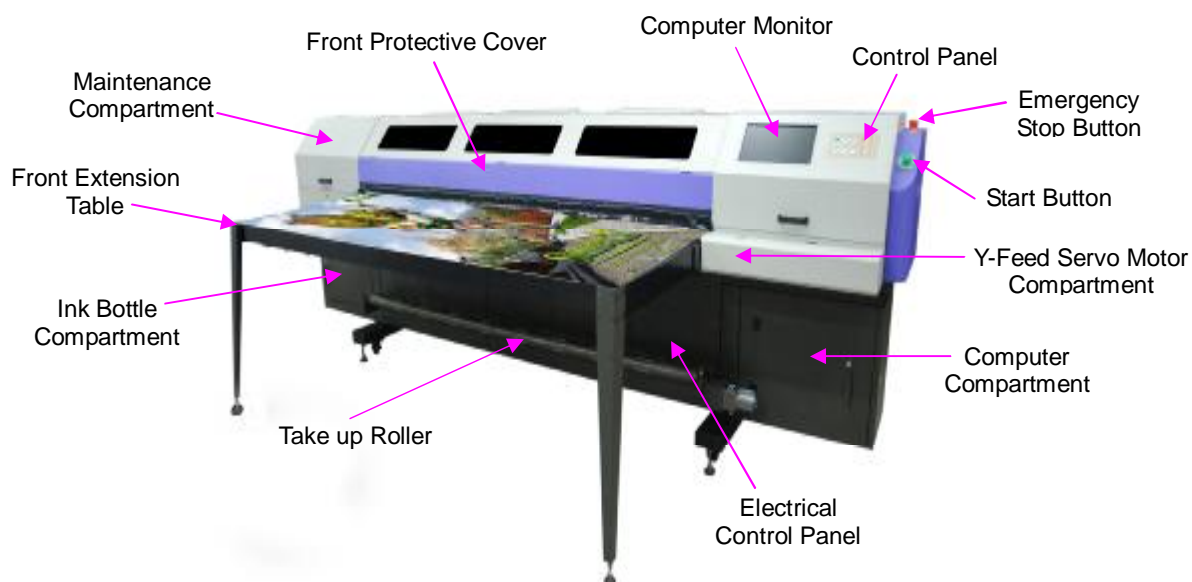
2.7 Precautions for handling prints

- 2 Do not touch the print surface before the ink is completely cured by the UV lamp.
- 2 Hold margins of the media for handling
- 2 Especially use care within 24 hours after printing
- 2 Rubbing of the print surface causes color fading or color transfer
- 2 Do not superimpose print surface to prevent color transfer.
- 2 Do not superimpose on copy prints or laser prints to prevent sticking due to ink or toner.
- 2 Do not rub, scratch or hold the media to prevent peeling.
- 2 Do not rub or leave the media in wet condition to prevent blurring.

2.8 Other precautions

- 2 Aging of media causes color fading and a change in quality
- 2 Check media condition and use well-conditioned media.
- 2 Media dust due to cutting may cause floating of laminated coating.
- 2 When using media with glue, adhesive matter (glue) may stick to the platen. In this case, wipe up adhesive matter.
- 2 Sticking of adhesive matter may cause paper jamming.

2.9 External Views, Part Names and Functions



Front View of F1-250UV

2.9.1 Operation Panel

The operation panel serves as the interface between the machine and the operator. The machine is set online or off line through the on line/off line button. Once the machine is offline from the computer, the movement of the machine can be operated from the operation panel. The UV lamp can be turned on or off from the the operational panel.

2.9.2 Computer Monitor

14" LCD monitor

2.9.3 Emergency Stop Button

The emergency stop button is placed on top of the side covers for both the left and the right cases. Once it is depressed, electrical power for the printer controls is cut-off.

2.9.4 Start Button

The start button is placed on the right side cover accessible to the operator. If the emergency stop button is released, pressing the start button will restore electrical power to the printer.

2.9.5 Y-feed motor compartment

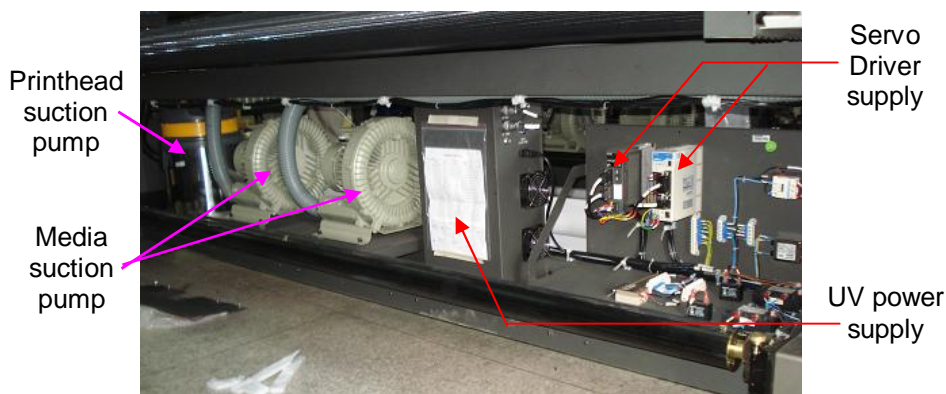
The Y-feed motor compartment also serves as a hold for the computer keyboard and mouse. It is housing the Y-feed or conveyor servo motor and assembly.

2.9.6 Computer Compartment

The computer compartment is used to hold the computer which controls the printer.

2.9.7 Electrical Control Panel

The electrical control panel contains the servo motor driver both for the y-feed motor and carriage motor. Likewise the driver pack for the take up and feed rollers are also mounted on the electrical control panel.



Electrical Control Chamber

2.9.8 Front Protective Cover

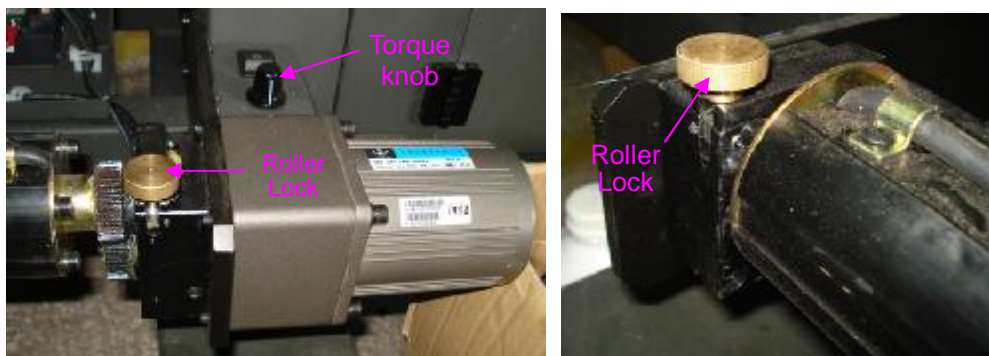
It serves as a mechanical shield against stray UV light that could harm the operator's eyes and skin.

2.9.10 Maintenance Compartment

It is also called left case, where the home position for carriage, ink purging, ink priming and print head suction cleaning is done. By opening the maintenance compartment door, the carriage assembly is exposed to the operator.

2.9.11 Feeding/Take up System

This system is applicable to roll to roll printing mode only. The tension of the roll-to-roll media depends on roller torque settings. The roller torque is adjustable; turning the torque knob clockwise will increase the torque. The roller locking mechanism must be locked when printing to avoid slippage of media.



Media Feeding/Take-Up Roller

2.9.12 Front Extension Table

It holds/support the printed rigid media in flat position after printing. It could hold up to 500 Kg of rigid media.

2.9.13 Ink Bottle Compartment

It serves as a compartment for ink and waste bottles.

2.9.14 Ink Supply Control Compartment

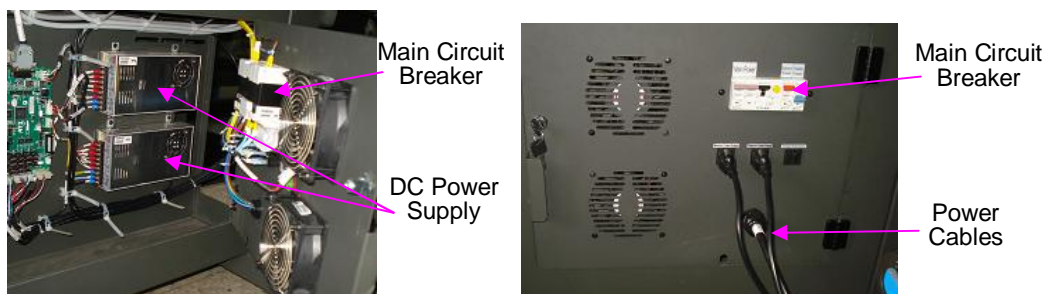
It is located on the side of the ink bottles compartment. The buzzer, negative pressure air pump and the corresponding ink supply pumps are mounted on the ink supply control compartment.

2.9.15 Rear Extension Table

This serves as a support for the rigid media being feed into the conveyor belt of the printer. The rear extension table could hold up 500 Kg of rigid media.

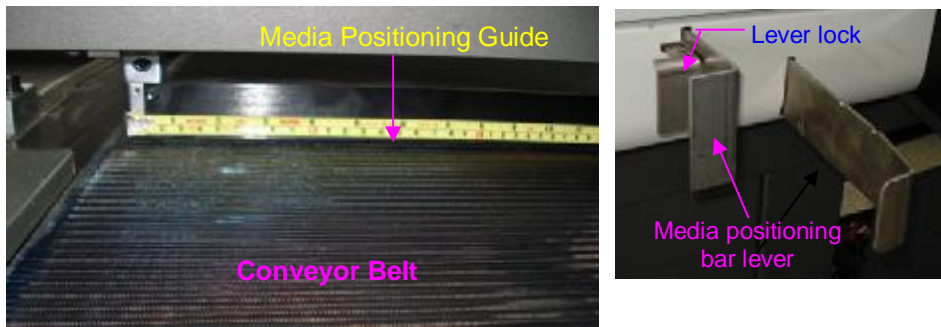
2.9.16 Power Supply Control Panel

The main power circuit breakers are found on the power supply control panel.



2.9.17 Media Positioning Bar Lever

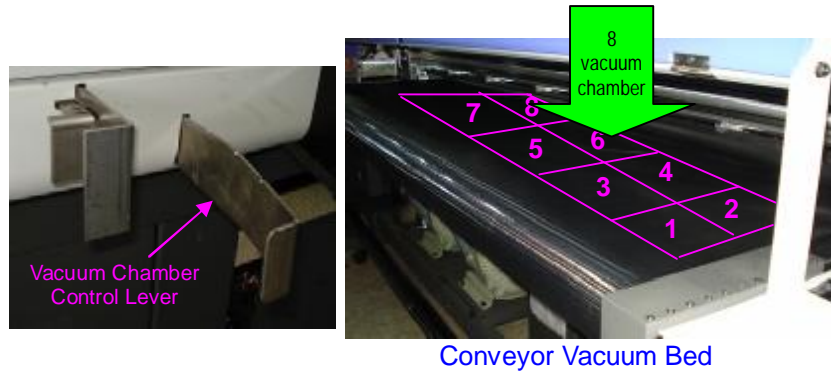
This serves as the actuator to move the media positioning bar in position during alignment of the rigid media when placed on the feed conveyor. Press the lock and pull the lever to position the media guide, press and push after the media was placed on the conveyor belt ready for printing. This is applicable to rigid media board only.



2.9.18 Vacuum Chamber Adjustment Lever

The flat bed is divided into eight (8) vacuum chambers. Vacuum area could be adjusted according to the media size. Vacuum chamber adjustment lever if fully retract, only the vacuum chamber 1 and 2 are working, otherwise if pulled fully all vacuum chambers are working.

Note:
If this lever is fully pulled
all vacuum chamber are
working.



2.9.19 The Control Panel



Figure 2 – Control Panel

2.10.0 On line/Off line Button

This button will set the printer to be connected or disconnected with the computer. Push to set on line and push again to set off line. If the machine is off line the button lamp is turned on while it is turned off otherwise.

2.10.1 Maintenance Button

The carriage head will start automatic print head nozzle clean up procedure. It will purge ink to the print head to refresh the nozzles and perform suction cleaning.

2.10.2 Left Button

This button if the printer is set offline will move the carriage to the left.

2.10.3 Right Button

This button if the printer is set offline will move the carriage to the right.

2.10.4 Forward Button

Pressing this button will make the conveyor advance towards the operator.

2.10.5 Backward Button

Pressing this button will make the conveyor away from the operator.

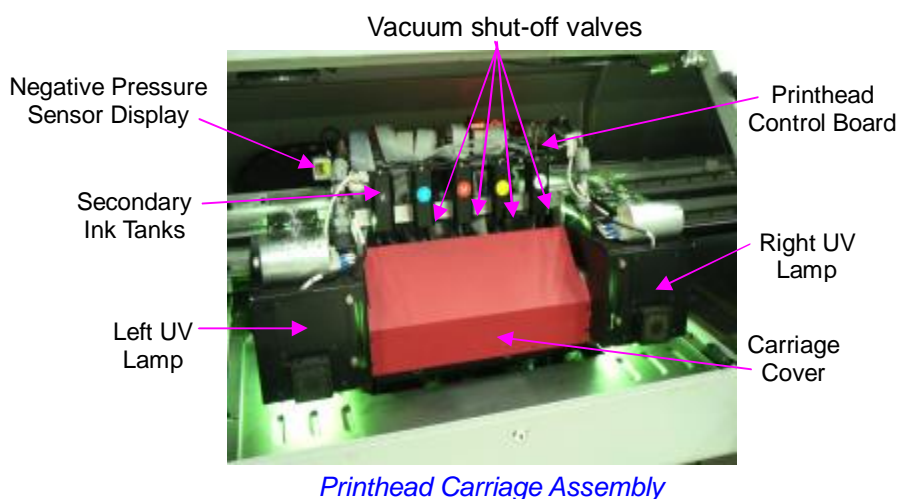
2.10.6 UV Buttons

The UV Buttons will turn on/off the UV lamps. UV1 Buttons controls the left UV lamp while the UV2 controls the right UV lamp.

2.11 Maintenance Section

2.11.1 Print Head Carriage Assembly

The print head carriage assembly houses the print heads, secondary ink tanks, print head control board, raster reader, negative pressure sensor, carriage height adjustment motor and the two UV lamps.

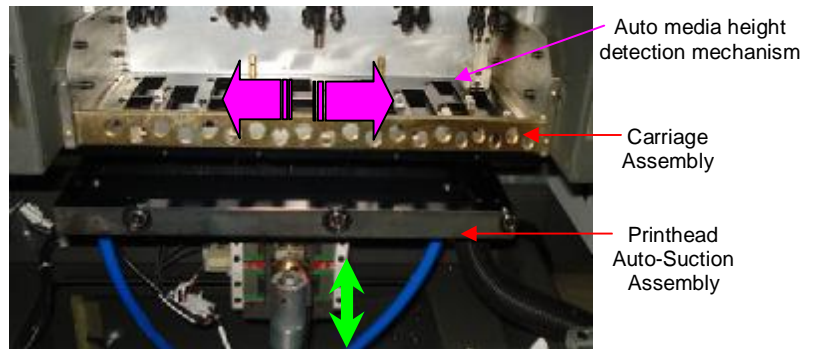


2.11.2 Automatic Capper and Suction Assembly

The automatic capper sits below the print head carriage assembly. The capper moves during performance of print head maintenance. It moves to close the gap between the capper surface and the print head before suction and returns back after the cleaning process is finished.

Note:

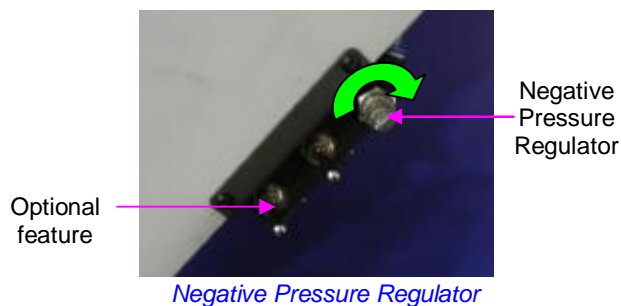
The arrow heads indicate the movement of carriage and the Printhead auto-suction Assemblies.



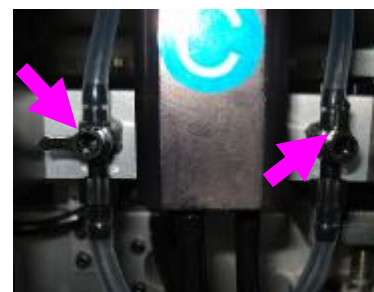
Maintenance Station

2.11.3 Negative Pressure System

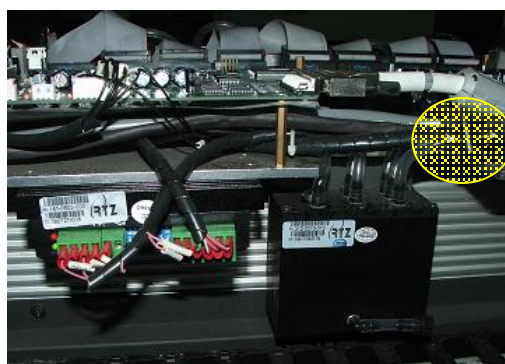
The negative pressure system is used to hold the ink and preventing it to drop. The negative pressure can be adjusted thru its regulator. Turn clockwise to increase the vacuum and turn counter clockwise otherwise. Negative Pressure Shut off/on valves are provided at the back and front of the carriage to keep the negative into the system when the power is shut-off.



Negative Pressure Regulator



Front of Carriage



Back of Carriage



Negative Pressure Shut off/on Valve

2.11.4 Manual White Color Recirculation Switch

This switch is used to run the white ink recirculation pump manually. It is used to prevent the settling of the white ink pigment on the bottom of the ink bottle. Optional feature for this machine.

2.11.5 Ink Prime/Purge Switch

The ink prime or purge switch is used to activate ink priming.

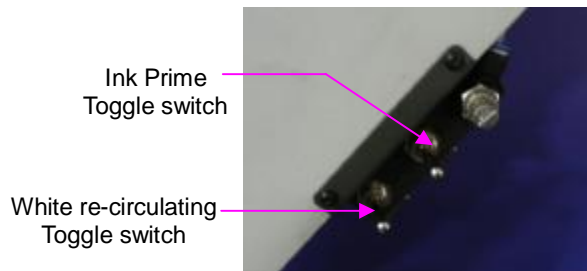
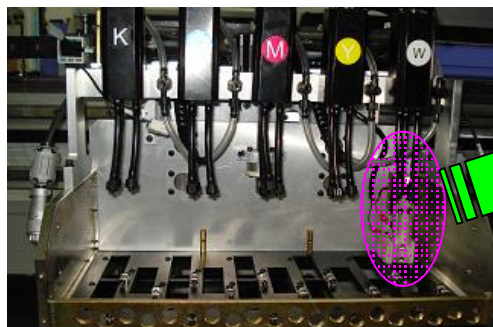


Figure 5 – Ink Prime and White Ink Recirculation Switch

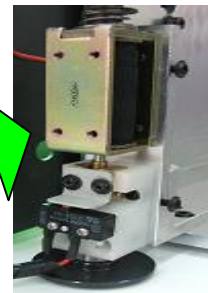
2.11.6 Auto Detect Media Thickness System

This mechanism will perform media thickness check every time you send an image for printing. A message will pop as shown below, the first window will ask you if you want to adjust the carriage height. The second window will pop out if you click YES and ask you how much you want the height to be set.

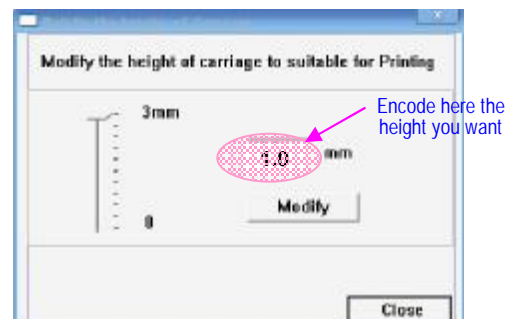
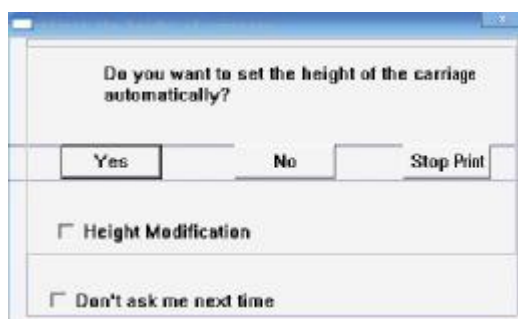
You must click the modify button every time you made changes otherwise the change will not be updated and click close to continue printing. Clicking No or Stop Print button will just simply send the carriage to start printing directly.



Carriage Assembly



Media Height Detector Assembly



Chapter 3 – Working System of Flora F1 250UV

3.1 Brief Introduction

The Flora F1-250UV 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.

3.2 Konica Minolta Print head Assembly

In a high quality and high performance configuration, Konica Print head offers a high-resolution, high-speed and compact inkjet print head lineup suitable for both wide format and industrial applications.

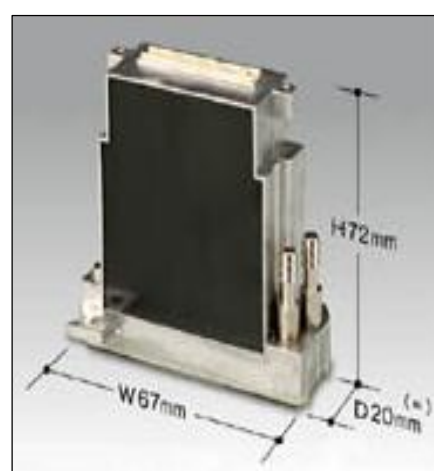
Konica Minolta print heads are based on piezo-electric materials (PZT), in which can be made to move by applying an electric field across it. Ink channels composed of piezo walls can eject small drops of ink in accordance with the electrical signals applied to the electrodes on the walls.

The KM512 Print Head is driven by “shear mode”, in which the walls bend inward and outward to generate a pressure wave inside the channel. This mechanical ejection principle allows a wide range of inks including oil and solvents, which is a great advantage when compared with the thermal ejection inkjet head.

This section introduces the KM512 Print Head technologies.

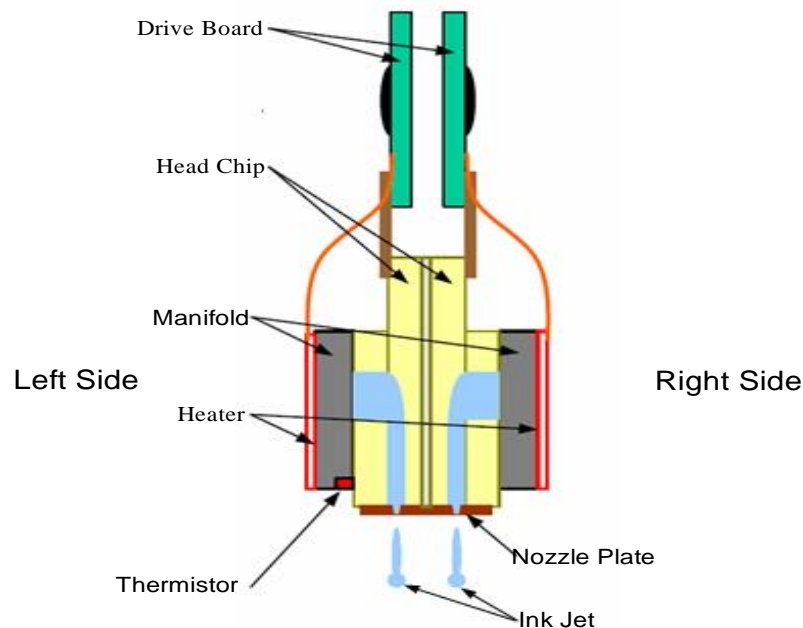
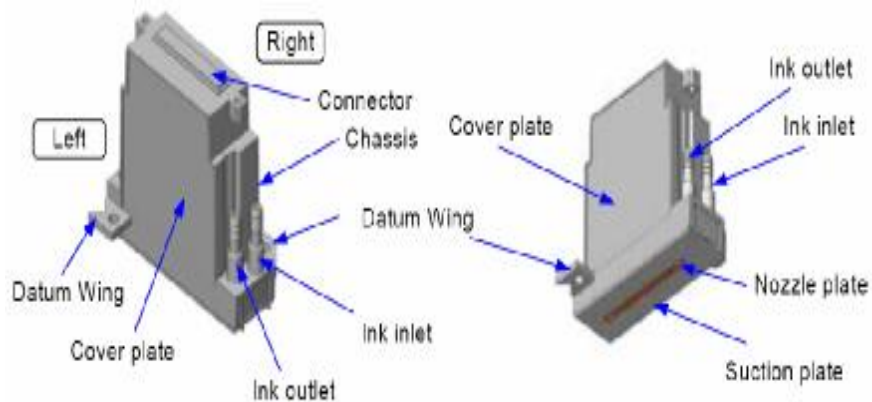
Main Features:

Technology	Piezo Drop On Demand (Shared Wall 3 Cycle)
Number of Nozzles	512 Nozzles (256 nozzles x 2 rows)
Resolution	360 dpi
Nozzle Spacing	70.5um pitch (141 um pitch×2 rows)
Maximum Frequency	12.8 kHz
Drop Volume/Size	14 pL
Drop Speed	6 ± 0.5 m/s
Printing Width	36.03 mm
Heater Temperature	Under 55° Celsius



Konica Minolta Print head Dimensions

Table 1 – Features of Konica Minolta Print head



Parts of the Konica Minolta Printhead

3.3 Print Head Connector Board *(PN: 116-0381-010)*

This board is used as interface board for Printhead and the Printhead Control Board thru a 30-pin flexible data cable.



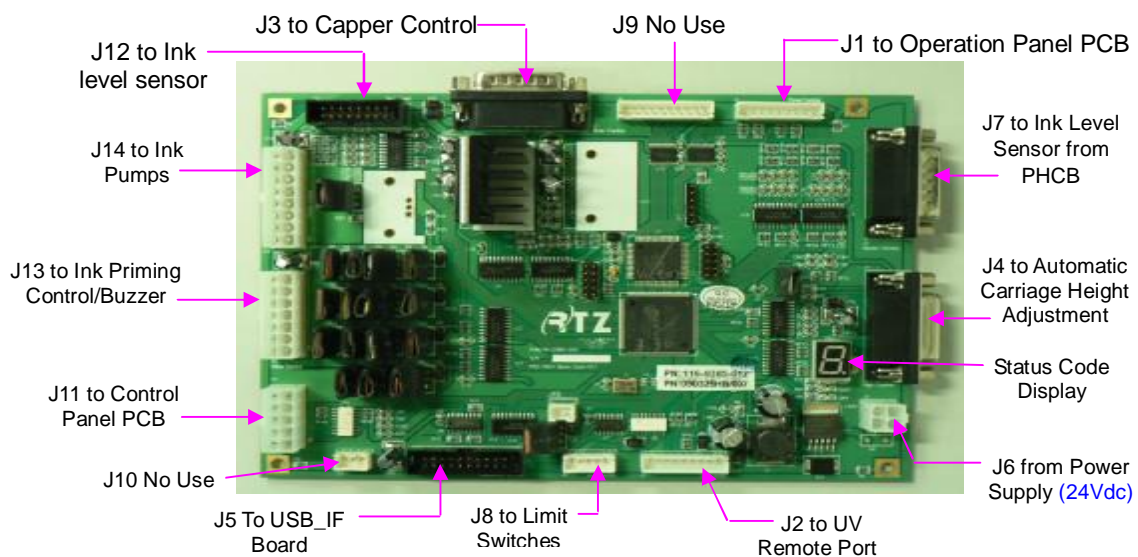
Print Head Connector Board

3.4 Servo Driver Board

The Servo Driver Board serves as the movement control board and ink control board packed into one circuit board.

Power to the corresponding ink pumps are sent by the Servo Driver Board as well as the control signals from the secondary ink tank level sensors are being received and processed. This binary information about the status are being processed accordingly in order to provide the power to turn on the ink pumps to fill in the secondary ink tanks.

The control for the automatic carriage height adjustment is also handled by the servo driver board as well as the UV status and the x-axis limit sensors. The controls for the ink prime and printhead cleaning are also handled by this board. The inputs from the status of the switch on the operational panel are being received and processed by this board. *The connectors J15, JP1, JP2 and JP5 are not use.*



The Servo Driver Control Board

3.5 Printhead Control Board (PN: 116-0386-021)

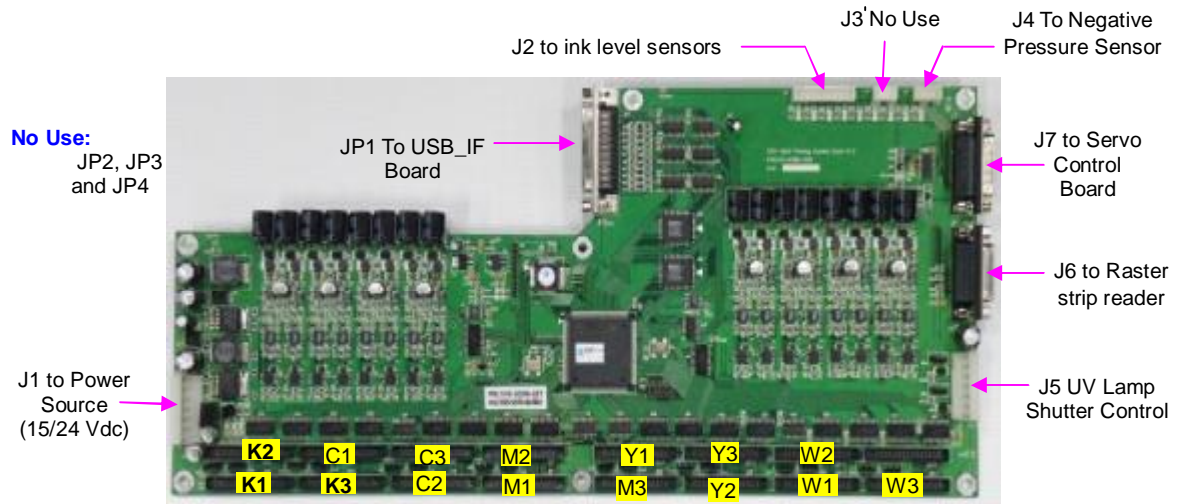
The image data is fetched by the Print Head Control Board from the USB_IF buffer through the Image Data Cable (UCBJ10PHBJP1) and 100-pin JP1 AMP connector. The image is then processed by the image data processor and dispatch to the print heads. The printheads fires the ink depending on the binary status read by the Raster Reader which is sent to the print head control board.

Likewise, the print head heating control is also integrated into the Print Head Control Board. Thus, the print head temperature can be accessed from the Floraprint driver graphical user interface or GUI.

J1 connects to the AC power source for the print head heating current source. The carriage displacement pulse signal is sent from the encoder reader to the print head control board through PHBJ9ENR1 into J9 D-sub connector.

The secondary ink tank level sensor signal from the secondary ink tanks pass through cable J2 and into the J2 connector of the print head control board. If the secondary ink tanks are full, corresponding LED indicators will turn on near the J4 connector. The binary status for the secondary ink tank level is then sent to the Servo Driver Board through cable SCBJ7PHBJ7. It is then processed on the Servo Control Board to activate the ink pump motors.

The shutters of the UV lamps were also controlled from the Print Head Control Board. For both the UV lamps shutter control they are both connected through J5. The Print heads are connected to the Print Head Control Board by connectors JB1 to JB16.



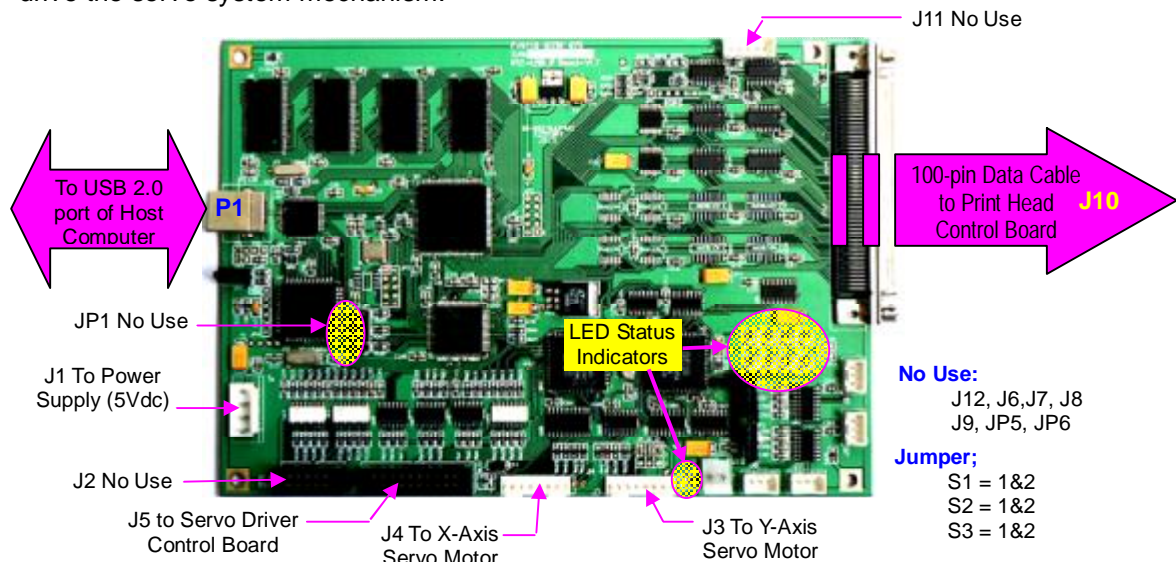
Print head Control Board with connection for 15-heads configuration

3.6 USB Interface Board (PN: 116-0336-072)

The USB board is the main interface of the machine to PC. The image data and control information are transmitted from the PC USB port to the USB port of this board. The communication and image data transfer are conveyed through the 100-pin data cable.

For this particular printer model, the USB board is also used to communicate with and control the servo driver control board.

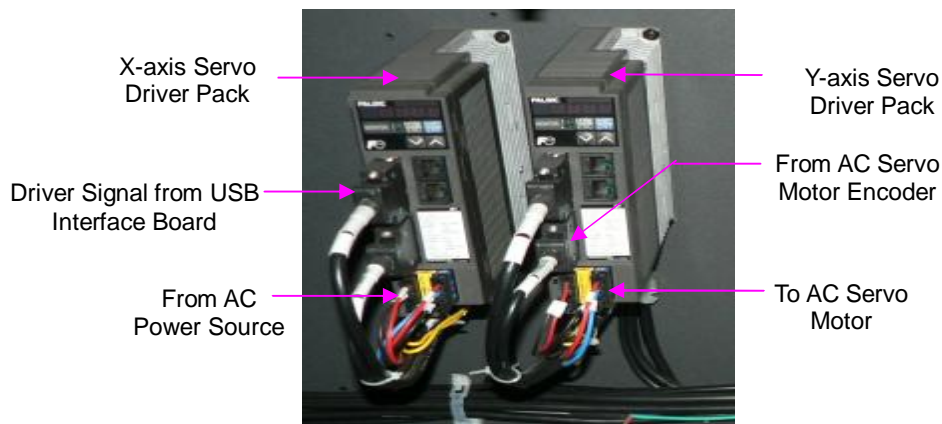
There is a separate control circuitry designed to control the x-axis and y-axis movement. It conveys a signal for the servomotor step and direction; and hence, the servo driver can be able to drive the servo system mechanism.



Connection Information for the USB Interface Board

3.7 X-axis and Y-axis Servo Driver Pack

The movements of the Carriage and conveyor belt Servomotors are controlled by their respective Servo Driver. This servo motors are basically two-phase, reversible, induction motors modified for servo operation and used in applications requiring rapid and accurate response characteristics. To achieve these characteristics, this ac servo motors have small diameter, high resistance rotors. The ac servo motor's small diameter provides low inertia for fast starts, stops, and reversals. High resistance provides nearly linear speed-torque characteristics for accurate servo motor control

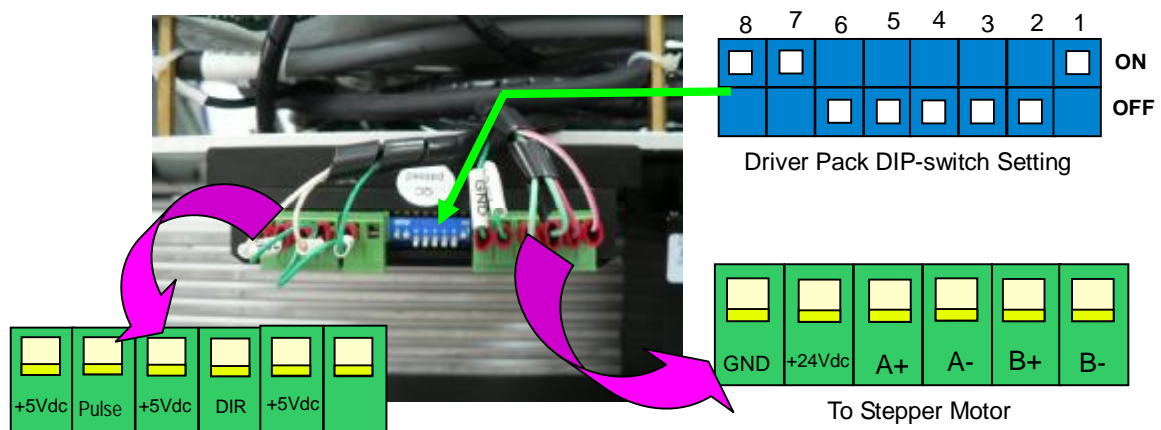


Servo Driver Packs

3.8 Automatic Carriage Height Adjustment System

In order for the printer to print seamlessly on different kinds of media, the carriage height should adjust automatically to whatever media thickness it should print upon. For this specific printer model it is equipped with a carriage that could automatically adjust its height depending on the media thickness to be printed upon. The user can choose whether to print using the default carriage gap between media of 2.0 mm or opt to increase the gap up to 5mm.

The assembly uses a solenoid activated mechanical touch sensor to sense the media height. This mechanical sensor protrudes downward from the carriage assembly during media height test. The system also uses a raster strip and encoder to determine the accurate height adjustment from default height settings.



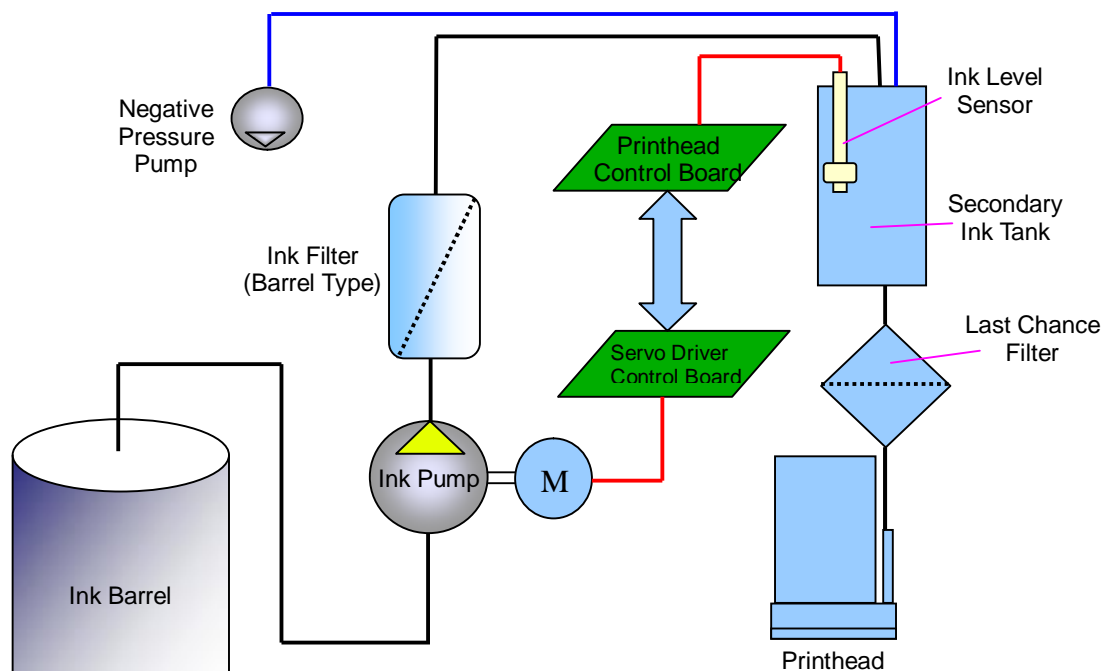
Connection Information for Automatic Carriage Height Adjustment Stepper Motor

3.9 Ink Control 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.



Ink Control System

3.10 Negative Pressure System

Negative pressure system is used to hold the ink from dripping out of the print head nozzles. Pressure settings vary on every machine. The recommended setting range is from -2.4 to -2.6Kpa. 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.



Shows the actual vacuum system pressure

Note:

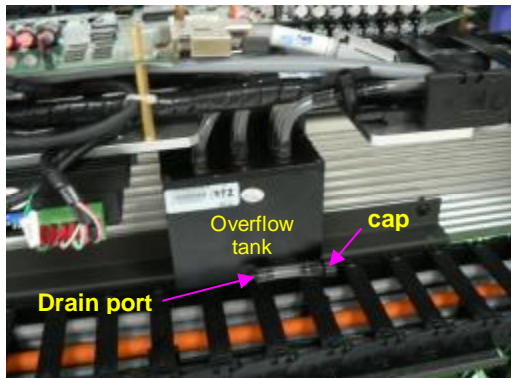
Push the arrow up and arrow down buttons simultaneously to reset the negative pressure to zero.

Please refer to negative pressure setting parameters for further details.

Negative Pressure Digital Sensor Display

3.11 Ink Protect Tank

This 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.



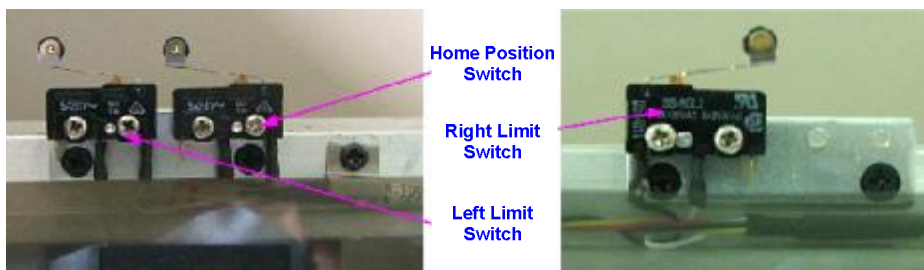
The Ink Protect tank

Note:

When resetting the negative pressure to zero, you should open the tube connector cap. After the negative pressure is reset replace and tightened cap properly.

3.12 Limit Switches

There are three (3) limit switches used on this printer. Two of which are installed at the left end of the rail at carriage or home position. The left most serves as overrun 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 over run limit switch for carriage right stroke.



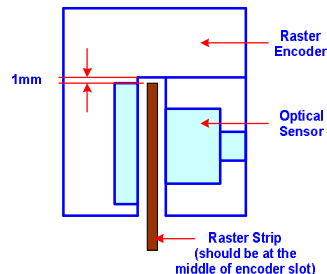
The X-axis Limit Switches

3.13 Raster Encoder and Raster Ruler

The Raster Ruler is a lined semi transparent plastic strip installed on the carriage rail. The raster encoder is responsible for reading the lines across the strip length, then generate pulses that will be sent to the Print head to fire the ink droplets.



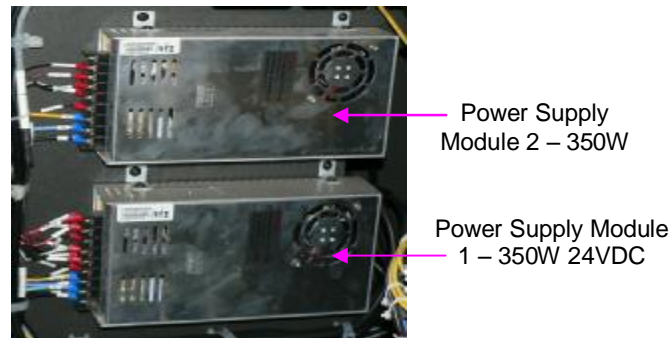
Raster Encoder



Raster Encoder Setup

3.14 Power Supply Modules

There are two power supply modules which are AC-DC converters used in this printer. One outputs 15Vdc and the other is 24Vdc. These modules give out all the necessary supply voltages to power all the electronic boards on this printer.



The Power Supply Modules

3.15 AC Noise Filter

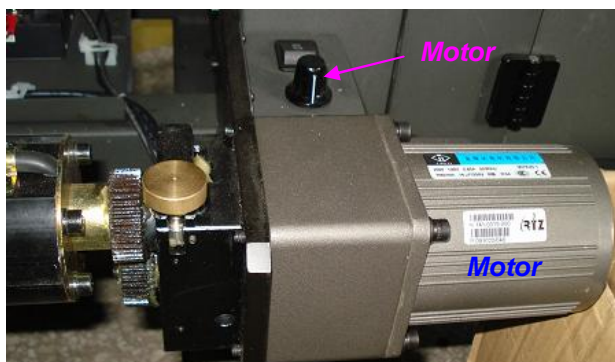
The AC noise filter comes standard with the printer. It is used to filter spikes in the incoming electric power. It is located in the electrical control panel.



The AC Line Filter

3.16 Media Rollers and Torque Motors

The media rollers torque control the tension of roll-to-roll media and the torque can be adjusted thru the torque Knob, turning the knob clockwise will increase the torque of media roller. The voltage control module regulates the voltage for the roller torque motor.



Media Roller Torque Motor



Voltage Control Module

Chapter 4 – Setting Up The Printer

4.1 Brief Introduction

This is to describe the proper procedure in unpacking and setting-up the machine.

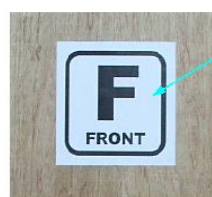
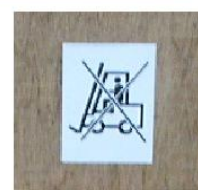
4.2 Wooden Crate Proper Handling

The F1-250UV printer is packed inside a W100 x L330 x H160 cm wooden crate.

- Ø Check the condition of the crate prior to unloading it out of the container van.
- Ø Take some digital photos in case there are some traces of damages on the crate due to mishandling for future reference or other purposes.
- Ø Please pay attention when using fork lift, there are label signs on some portion of the crate that prohibits the use of forklift.
- Ø Bring the crate to the unpacking area where there is enough space to move around when opening the crate. Minimum unpacking area is 3m x 5m.



Figure 62 – Outside View of the Crate



Front side of the machine

Back side of the machine

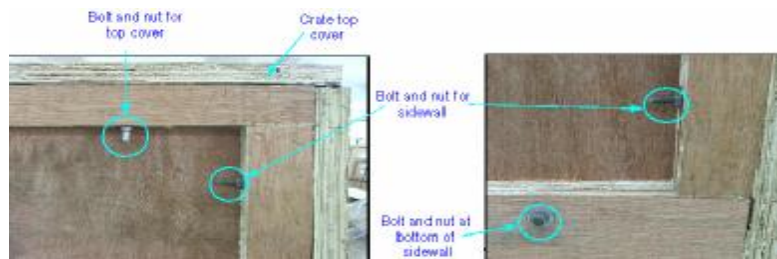


Wooden Crate Labels

4.3 Unpacking the Machine

The unpacking area should have a leveled floor strong enough to support the machine weight. Never try to open the crate at elevated platform or inclined floor. At least two persons are needed to do the uncrating activities below.

- 2 Start removing the bolts and nuts from the crate top cover.



- 2 Bring down the top cover on the floor and put away from the working area so that you can move around freely and safely during unpacking.
- 2 Remove the front cover of the crate by removing all the bolts and nuts around this cover. Be careful in opening the front cover as the spare parts and other machine accessories inside the crate might have moved or disoriented during the transit of the package. Put away the front crate cover.
- 2 Remove the side cover by removing the bolts and nuts and keep away from the unpacking area.
- 2 Take and separate the machine accessories, spare parts and inks from the machine to give more space in moving the machine off the platen. Check all the items against the packing list provided.
- 2 Remove the nuts from the bracket that hold the machine base from the platen.



Machine is fixed with holding fixture

- 2 Use forklift or other handling equipment to unload the machine from the platen. Make sure weight is balance on each side of the machine when using the forklift.



Lifting-up the machine using forklift

- 2 Open and remove the anti-static cover and air bubble pack from the machine.



Machine covered with Anti-static sheet



Machine Covered with bubble pack

4.4 Receiving Report

In case there are discrepancies noted between the actual parts received and packing list, it should be reported to our nearest representative. This report includes defective, deformed or missing parts, damaged due to mishandling, wrong delivered parts, etc.



Spare parts and packing list

4.5 Pre-Installation Requirement

- Ø The minimum working area should be 570 cm x 220 cm, this includes the space for the operator to move around the machine conveniently and safely.
- Ø Provide vertical clearance of at least 50cm above the top surface of the machine body, for top cover opening clearance.
- Ø Prepare the necessary AC plug on the power cord attached to the machine. Please see the Technical Specification table for the power requirements.
- Ø If the PC is not supplied with the machine, customer must meet the minimum PC specification requirement to be used in this machine
 - ü Pentium 4 1.0 GHz, 1Gb RAM, 80GB Hard Disk memory
 - ü At least 4x CD-ROM or DVD Drive,
 - ü USB Port for Hardware Key
 - ü Windows XP Professional Service Pack 2
 - ü LCD monitor
- Ø Safety signs must be available within the working area.
- Ø 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.
- Ø Lightings should be sufficient enough.
- Ø Storage Cabinet for the Ink and Solvent stock is highly recommended to secure them very well.

- Ø Waste Container should be available for ink and solvent waste as well as ink/solvent contaminated cloth inside the Printing area.
- Ø Waste disposal should be in accordance with your local laws governing Hazardous Waste Disposal.

4.6 Machine Pre-Installation

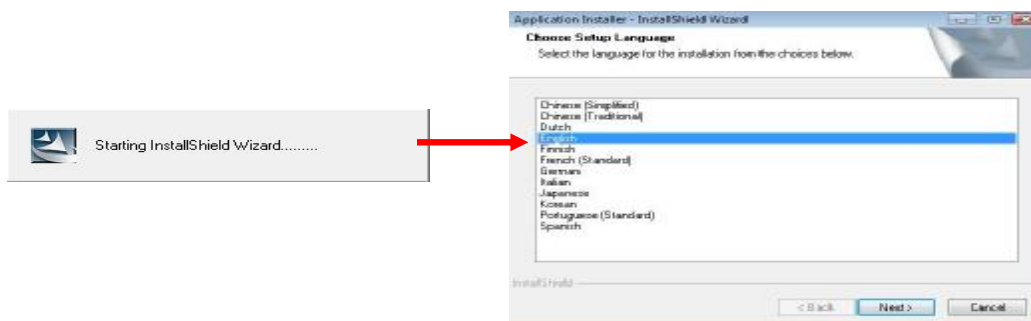
Once the machine is placed and all spare parts are thoroughly checked, start doing the following pre-installation activities;

- 2 Install the automatic Feeding and Take-up Rollers if applicable.
- 2 Removed the Tie Wires which hold the Print head Carriage from moving.
- 2 Check the height of the Print head Carriage over the printing platform. The height should be at least 2mm above the media printing surface.
- 2 Check the movement of the Print head Carriage for any obstruction by moving it manually from one side to the other end.
- 2 Prepare the necessary power source for the machine.
- 2 Install the LCD Panel / Monitor and the PC, keyboard and mouse to be used on this machine.
- 2 Place the CPU to the computer compartment on the right side of the machine.

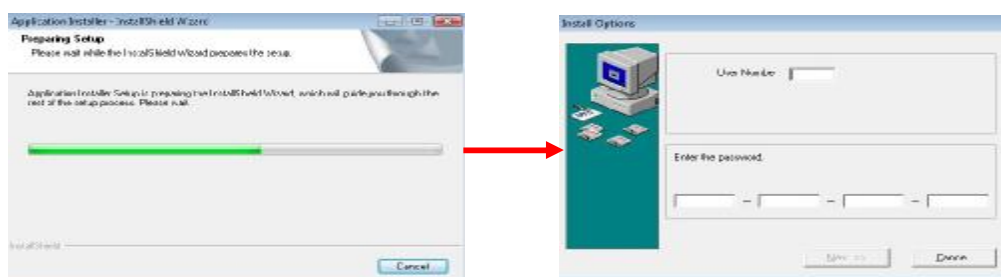
4.7 Software Installation Procedure

4.7.1 PhotoPrint 5 Installation

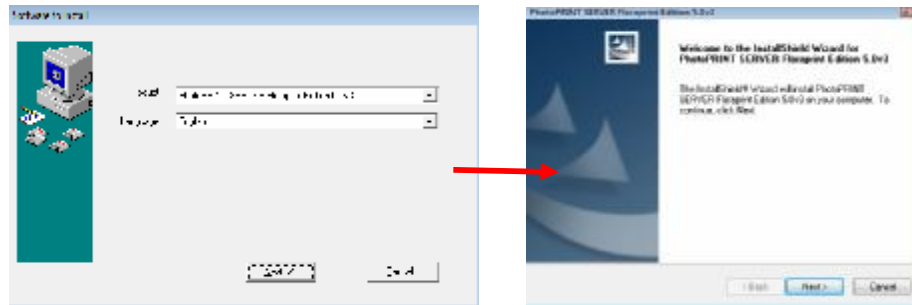
- Ø Turn-on the Power for PC and Monitor.
- Ø Insert the CD supplied with the machine with label PhotoPrint FloraPrint Edition 5.0v3 for the necessary installation.
- Ø The screen will prompt you with starting InstallShield Wizard..., then Choose Setup language window. Select which language you will use. Then click **Next**.



- Ø The Application Installer Setup will now prepare the InstallShield for the setup process and it will prompt you later to enter your user number and password of the Hardware Key (Dongle Key). The user number and password can be found on the Hardware Key. Click **Next**.

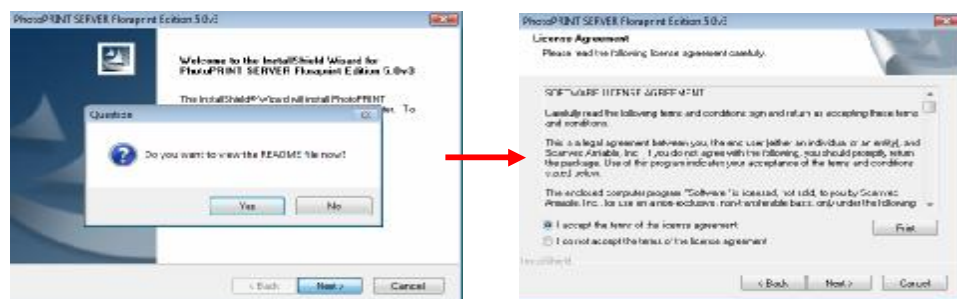


- Ø Click **Next** when **Software to Install** and the **Welcome** screen window shows up.

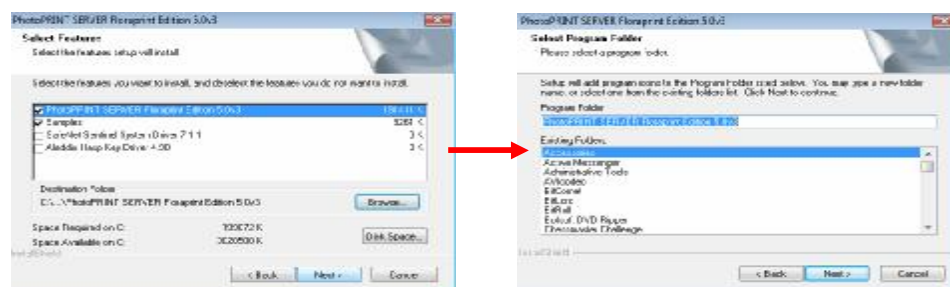


- Ø Click Yes to view the Readme file. The Readme file contains the last-minute issues and information that are not included in this documentation.

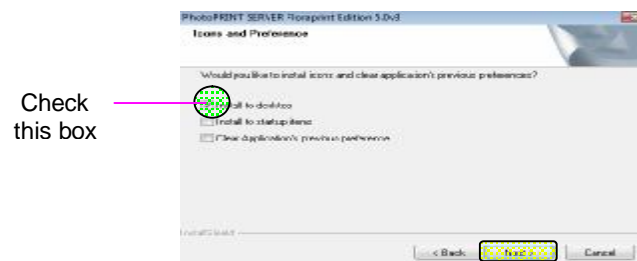
- Ø Read the Software License Agreement. Select "I accept the terms of the license agreement" and click **Next** to accept.



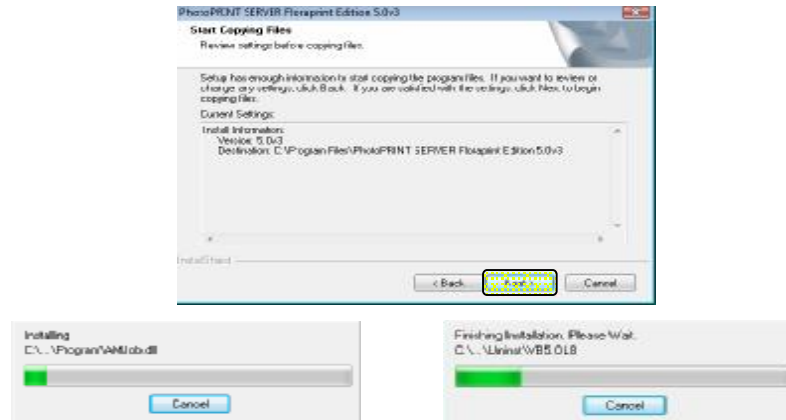
- Ø Click **Next** when **Select Features** and **Select Program Folder** window comes in.



- Ø Install to desktop check box must be checked and then click next.



- Ø Click “Next” on the Start Copying Files window.

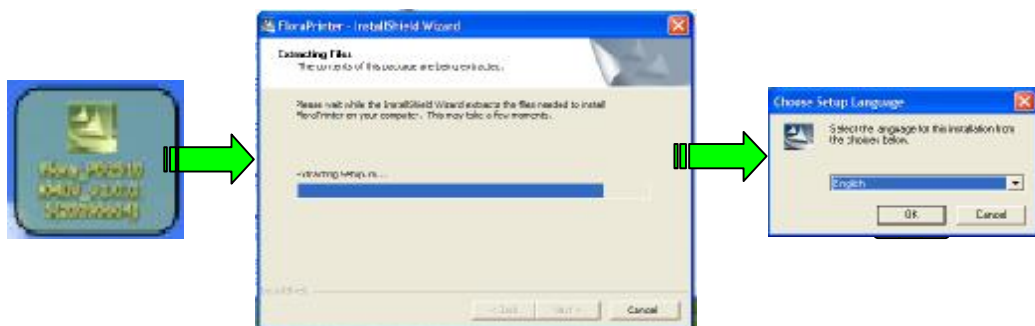


- Ø Click “**Finish**” after successfully completing the software installation. Then remove the installation CD.

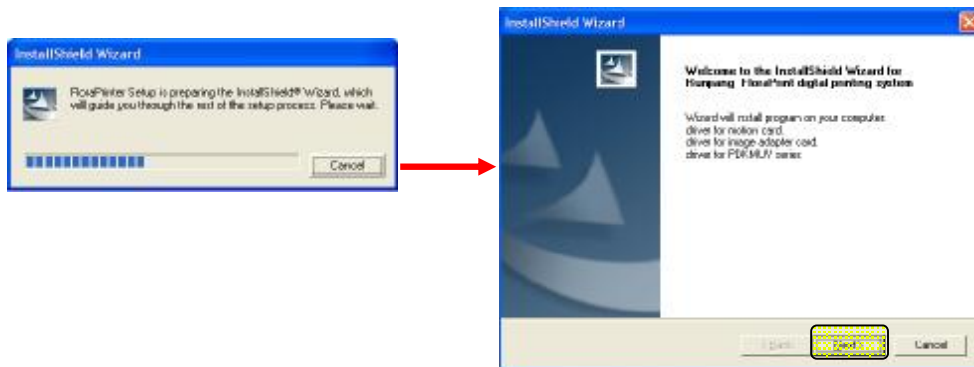


4.7.2 Flora Printer Driver Installation

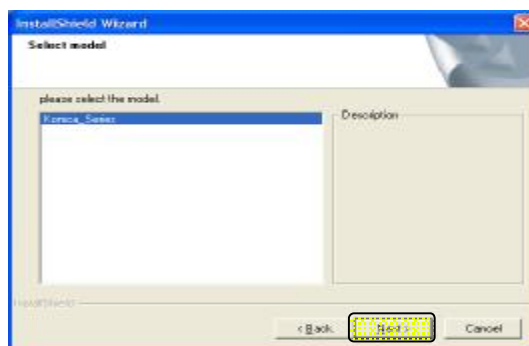
- Ø Insert the CD supplied with the machine with label Flora Print-driver CD-V2.0 into the DVD ROM.
- Ø Copy the driver software from the CD installer to desktop or any other local drive. The filename should **PD_2515KMU.V.exe**
- Ø Double-click the installation program. The installer package will be extracted and once it finished extracting the setup files, the operator will be prompted to select the installation language. After selecting the preferred language, click “**OK**”.



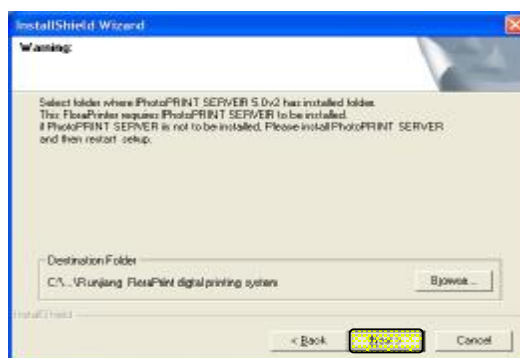
- Ø The installer will prepare the InstallShield Wizard. Click **“Next”**.



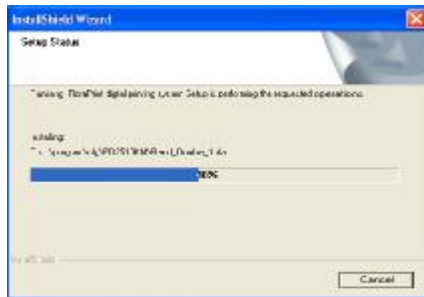
- Ø Select the printer model to install. Click **“Next”** to continue.



- Ø Select the destination folder and click **“Next”**.

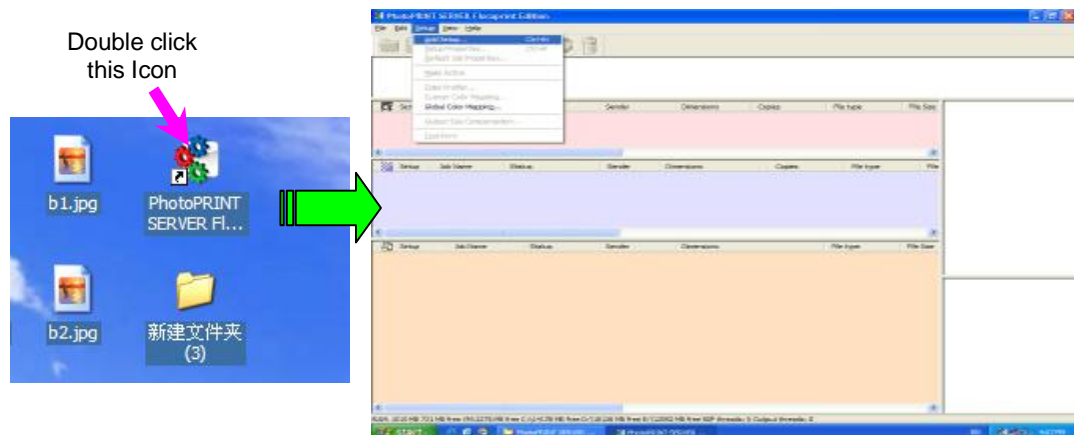


- Ø As soon as the installer finished copying the necessary files, the Wizard complete dialog box will show, select **“Yes, I want to restart my computer now.”** and click **“Finish”**. The computer will restart and your installation of the driver is complete.



4.7.3 Adding Printer on the device setup

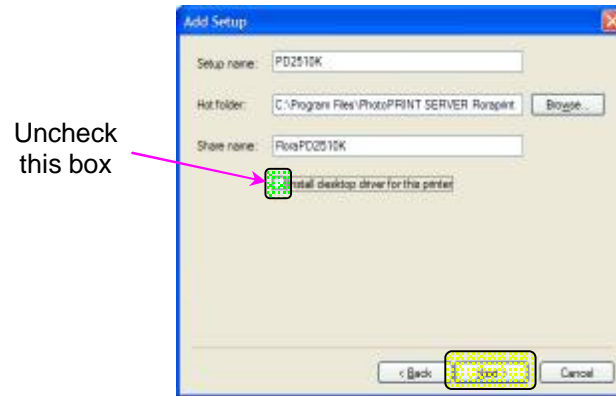
- Ø Double click the Photo Print server Icon on the Desktop to open the PhotoPrint Server FloraPrint Edition. From "Setup" Menu, select and click **"Add Setup"**.



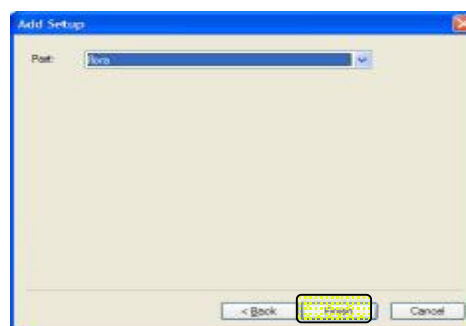
- Ø Select the appropriate printer model and click "Next" to continue.



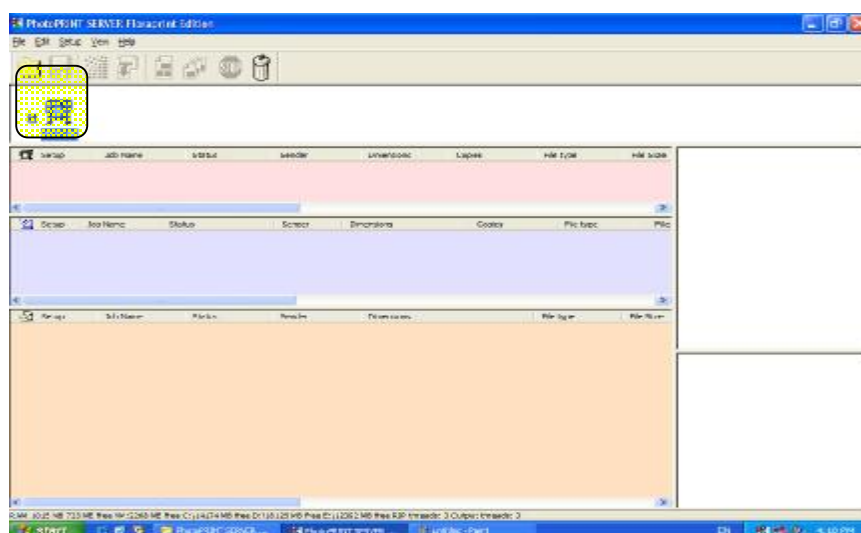
- Ø “Remove the tick on the “Install desktop driver for this printer” tick box and click “Next” to continue.



- Ø Click “Finish” button on the window to complete the add setup process.



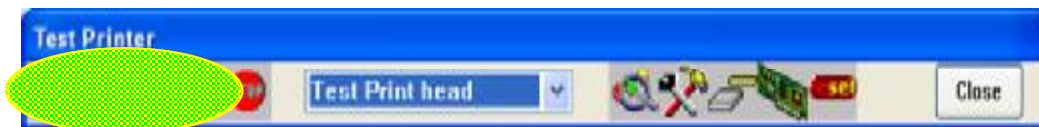
- Ø If the setup is successful the installed device or printer will be shown on the Photoprint GUI.



4.7.4 Testing the Printer Functions through PC

This is to check the mechanical functionality of the Printer through PC.

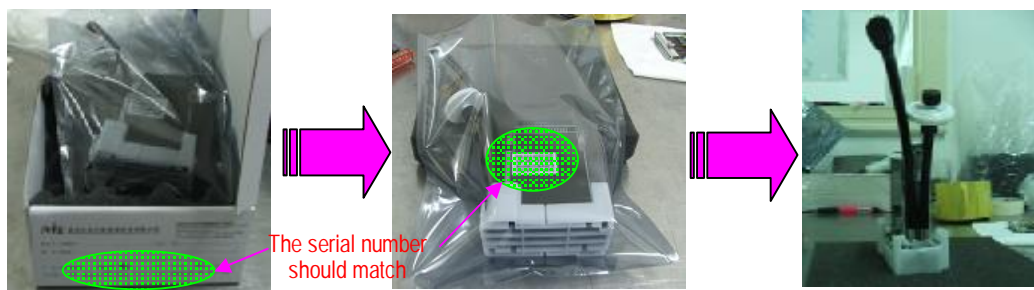
- Ø Using the RTZ Driver software, move the Print head Carriage from left to right, then to home position. Check also if the Y-axis Servo Motor is also working by moving the forward and backward button by clicking the appropriate arrow head below.



- Ø Once all the printer functions are working normally, shut-off the printer power.

4.7.5 Printhead Installation Procedure

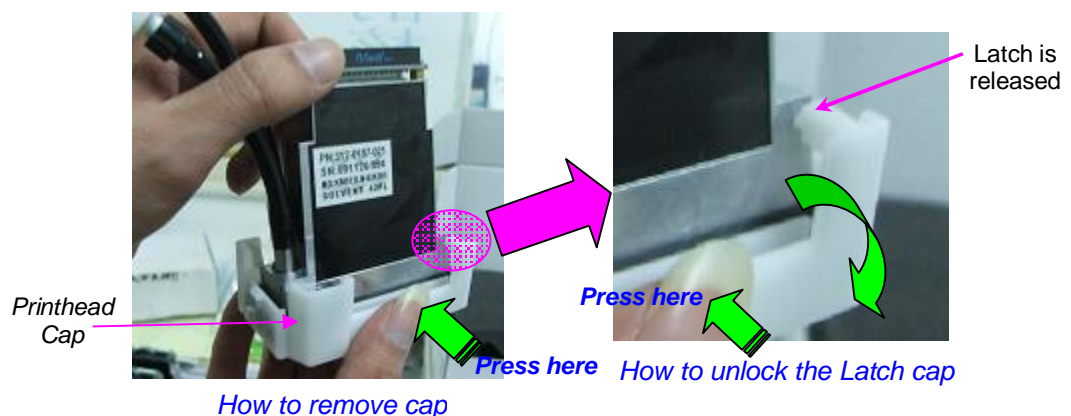
- Ø Unpacking the Print head
 - 2 Open the package, and then take out the anti plastic bag.
 - 2 Open the anti-static plastic bag and remove the head.
 - 2 Remove the head cap.



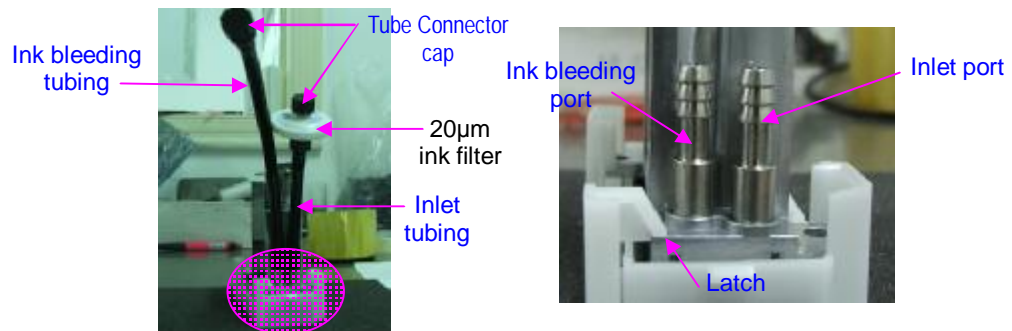
Note:

- ✚ The head is pre-loaded with ink analog to prevent drying of the nozzles during transportation.
- ✚ The head is also equipped with a cap to protect the nozzle surface and prevent drying of the ink analog.

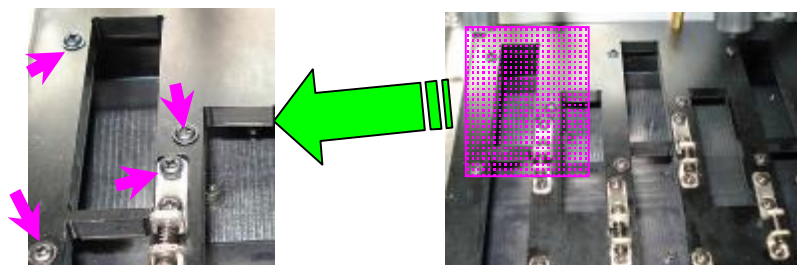
- Ø Hold the middle of both sides of the cap squeeze and twist the cap to release the latch that holds the head as shown below.



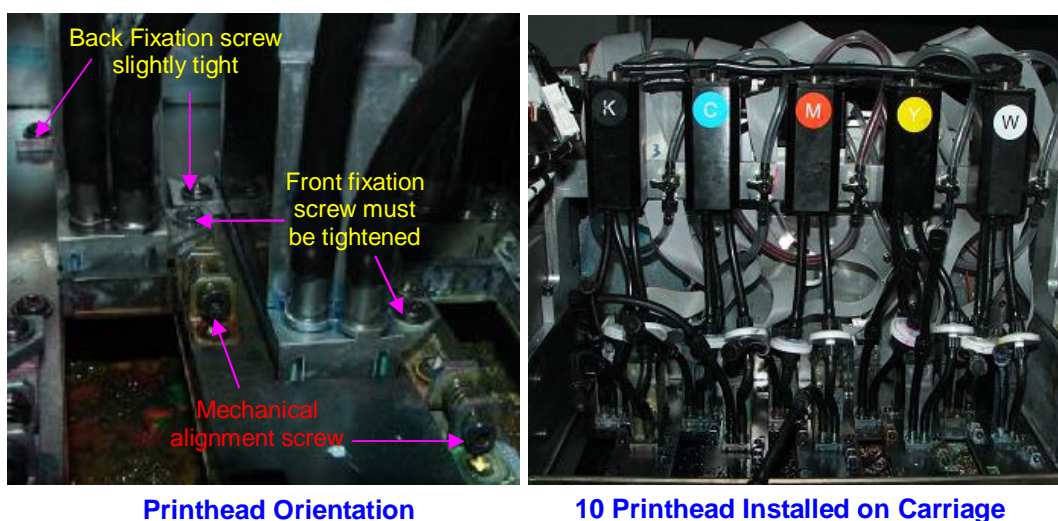
- Ø Take note each printhead must have input and bleeding tubing. The input tubing must be connected to the right port with disc 20µm ink filter. While the bleeding tubing should be connected on the left port and must be closed using a connector tube connector cap. See photo below.



- Ø Take-out the printhead fixation screws from the carriage printhead mounting plate. See those pointed by arrow heads below.



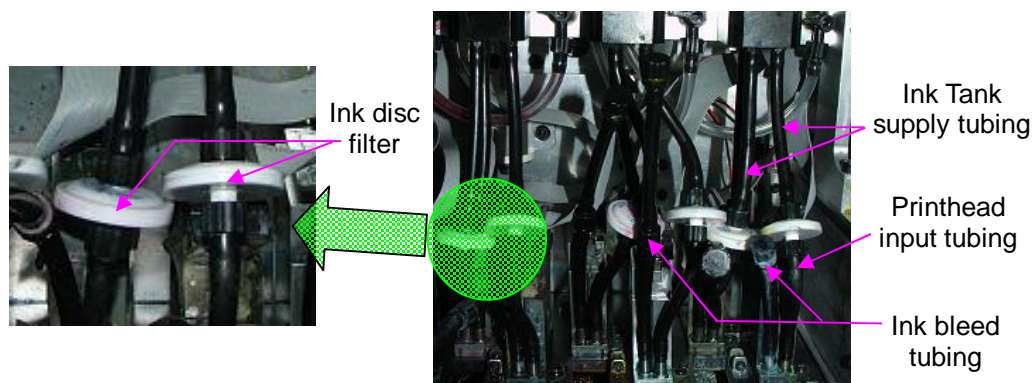
- Ø Install the print head one by one and slightly tighten the fixation screws enough for the printhead to move when doing the mechanical alignment (Y-align). Please take note of proper printhead orientation. See photo below.



Printhead Orientation

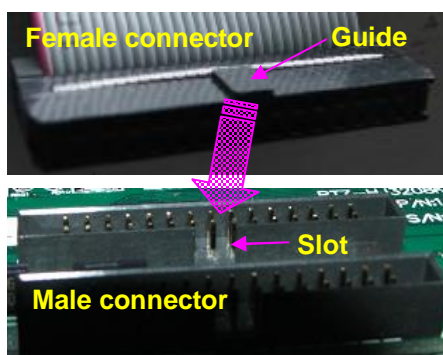
10 Printhead Installed on Carriage

- Ø Connect the input tubing of printhead to the Ink tank supply port accordingly as shown below.



All Printheads input tubing connected to Ink tank

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



Proper Connection of Flat Data Cable



Printhead Control Board



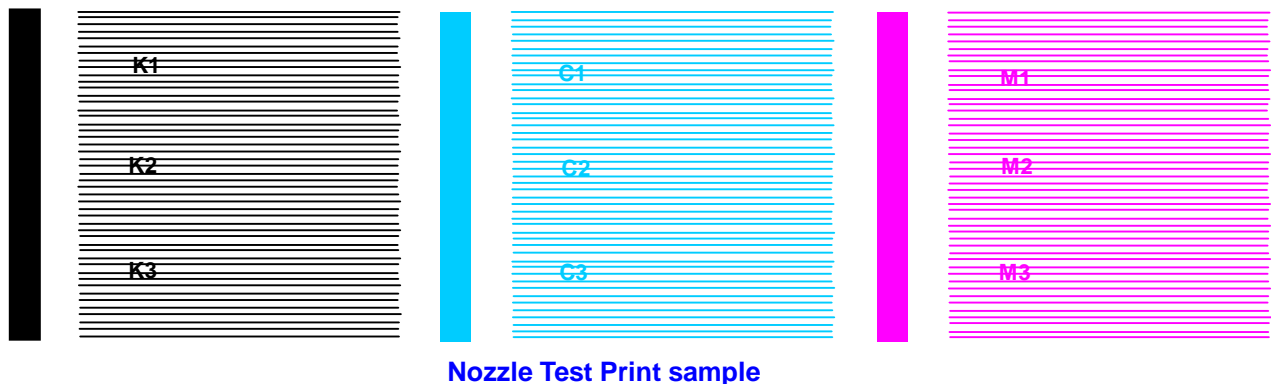
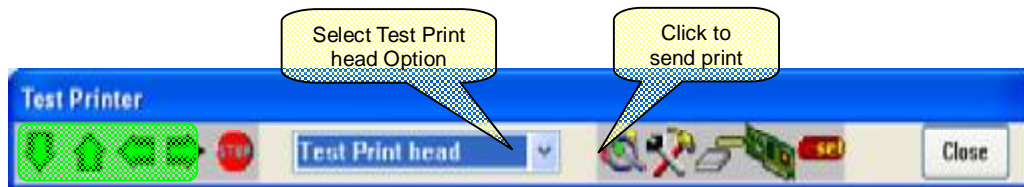
Printhead

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

4.8 Ink and Solvent Preparation

- 2 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.
- 2 Switch on the printer power.
- 2 Connect the ink pumps one at a time and check for any leakage along the solvent and ink line system.

- 2 Perform Ink Prime by activating the toggle switch. Do ink bleeding one printhead at time to remove air bubbles trapped inside the printhead.
- 2 Perform auto clean for printheads thru maintenance switch on the control panel or from the Flora driver GUI.
- 2 Send Test Printhead to see if all printheads prints a shown below;



Note: Above is an Illustration of Nozzle Test Print, only three colors are shown due to space constraint, Yellow and White printheads must print the same result.

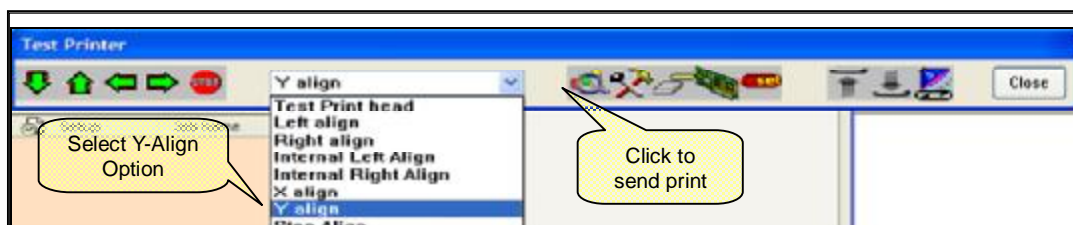
4.9 Print head Alignment

4.9.1 Brief Introduction

This is to describe the proper procedure in aligning the Print heads.

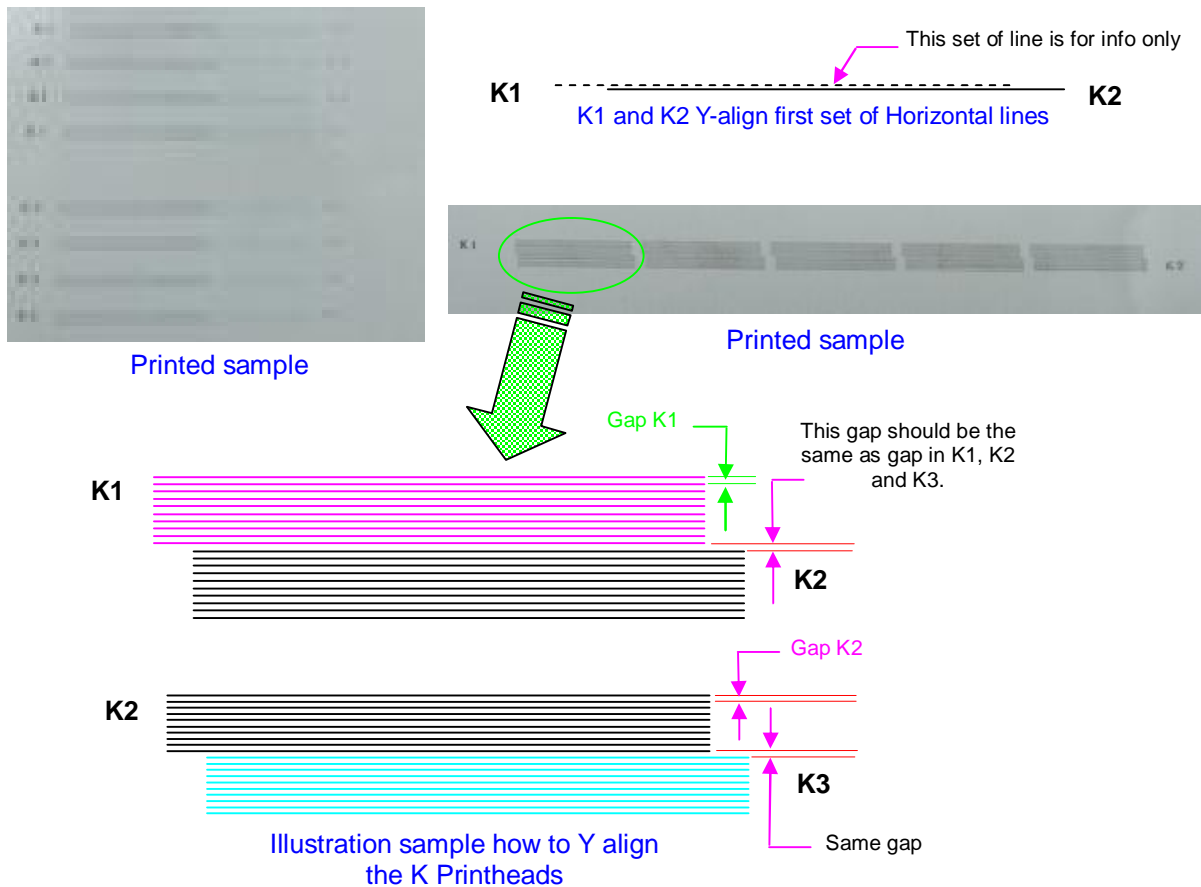
4.9.2 Printheads Mechanical Alignment (Y-Align)

- Ø On Flora driver GUI, click Test Print button and on the Test Printer tab select Y-align then click "Test print" button. The result should look as shown below.

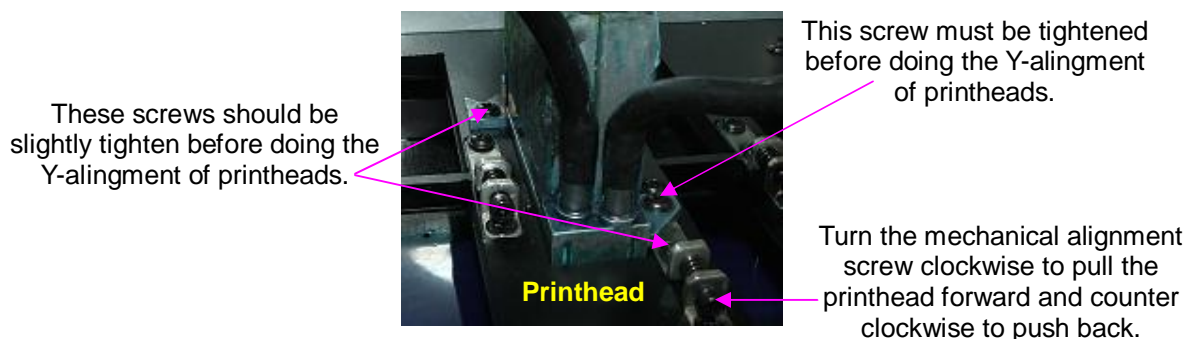


- Ø Noticed there are sets of horizontal lines for K1, K2 and K3. For the purpose of identifying sets of horizontal lines, K1 horizontal lines are colored pink, the K2 is black and K3 is blue though in actual print they are all printed black.

- Ø The first sets of horizontal lines is a K1 single broken line and K2 solid line, ignore the first 4 sets, select the rightmost set (with more horizontal lines) to get more accurate alignment. First you must align K1 to K2 then K2 to K3. The gap between K1 and K2 horizontal lines must be the same as the spacing between all K1 or K2 horizontal lines. Please see Illustrations below.



- Ø Once K1, K2 and K3 printheads are aligned, tighten the two fixation screws properly. Do Y-align to other printheads in such a way C1, M1, Y1 and W1 will be aligned to K1, C2, M2, Y2, W2 and C3, m3, Y3, W3 to K2 and K3 respectively. Below shows how to do Y-alignment of the printheads.



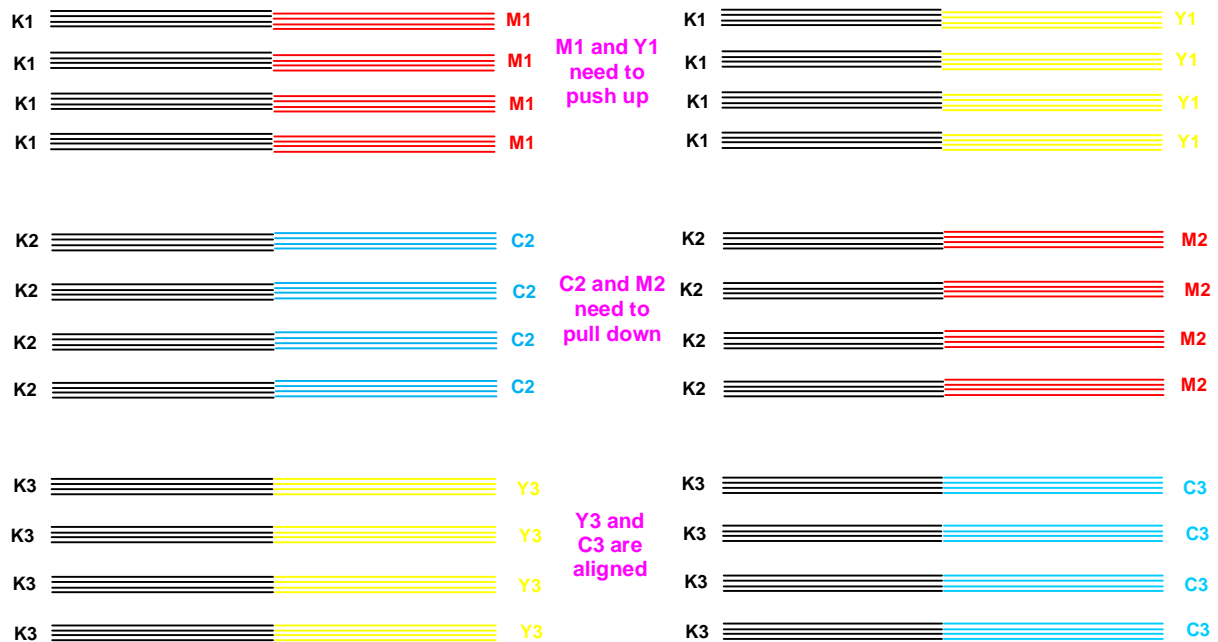


Illustration for all printheads Y Align

Ø Again due to space constraint not all print heads Y-align are shown above, however for those other printheads you can follow the same steps

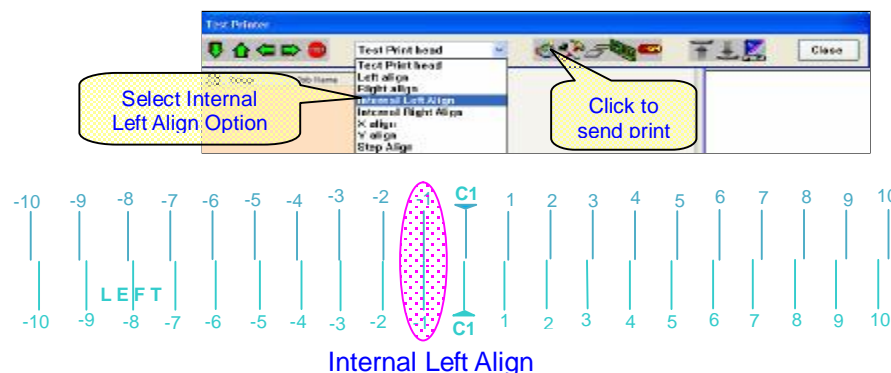
Note : Once the Y-alignment is completed, make sure you tighten the two fixation screws for each printhead.

4.9.2 Printhead Internal Alignment

Internal align is necessary for Konica heads because the Konica 512 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 printhead internal align is required for both printing directions;

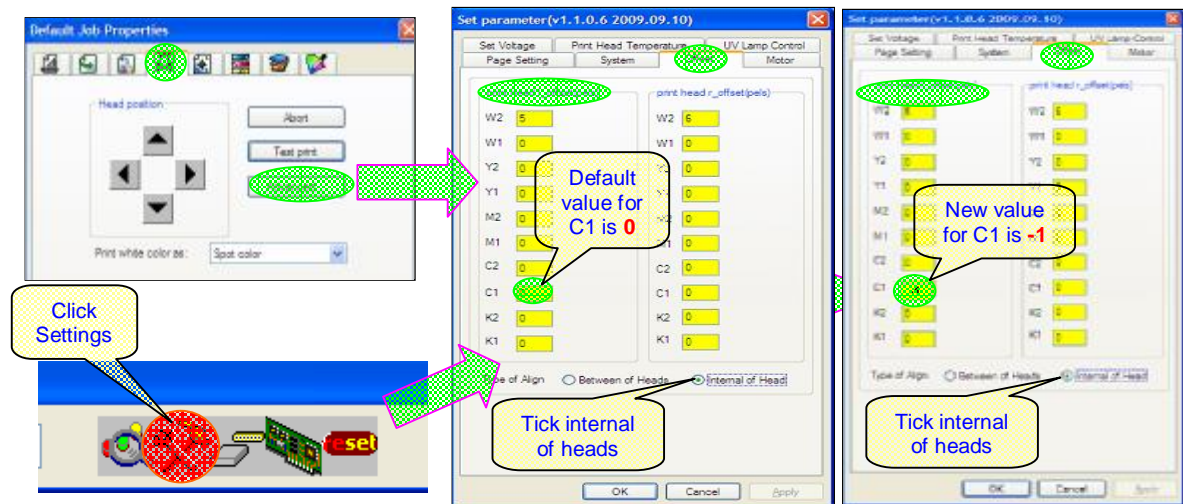
4.9.2.1 Internal Left Align

Ø On the printer tab select Internal Left Align option then click send print as shown below. Further below shows how the print out should look like, the Illustration shows the C1 alignment happen at **-1** (*in-circled*).



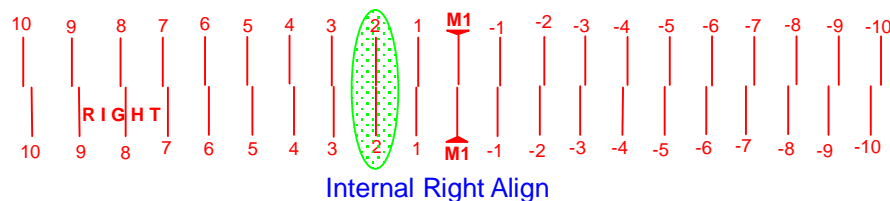
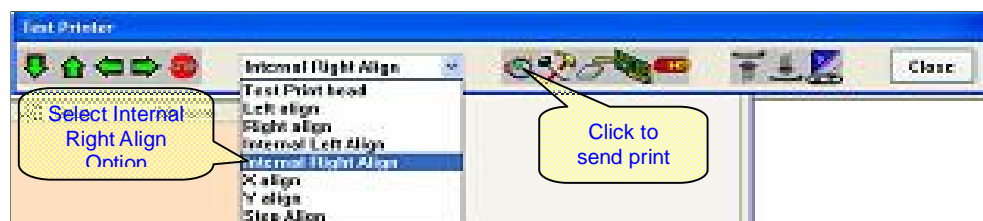
Internal Left Align

- Ø On the Photoprint Job Properties click Driver Option > click advance button > offset button > tick the Internal of head and add the **-1 mathematically** on the Left table for C1 box as shown below.
- Ø You can also navigate thru Test Printer Tab by clicking the settings icon as shown in the lower left of Illustration.

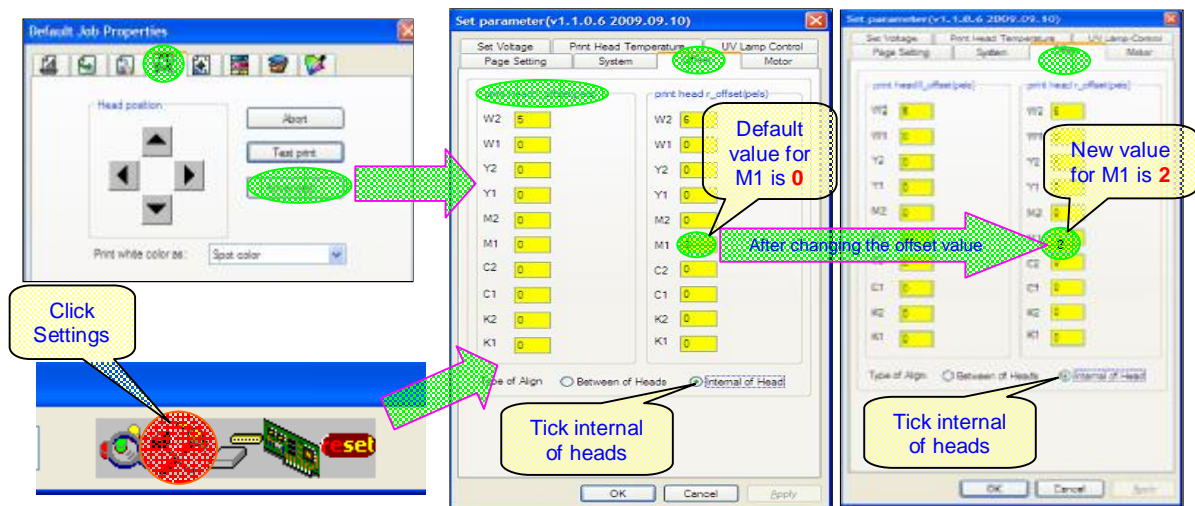


4.9.2.2 Internal Right Align

- Ø On the printer tab select Internal Right Align option then click send print as shown below. Further below shows how the print out should look like, the Illustration shows the M1 alignment happen at **2 (in-circled)**.



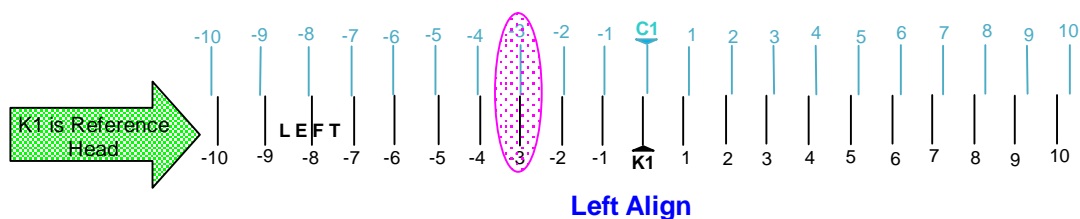
- Ø On the Photoprint Job Properties click Driver Option > click Advance button > Offset button > tick the Internal of Head and add the **2 mathematically** on the Right table for M1 box as shown below.
- Ø You can also navigate thru Test Printer Tab by clicking the settings icon as shown in the lower left in Illustration below.



- Ø Follow the same steps when doing Internal of head alignment for other printheads not shown in the Illustration above.

4.9.2.3 Printhead Left Align

- Ø On the printer tab select Left align option then click send print as shown below. Further below shows how the print out should look like. The Illustration shows the C1 alignment happen at -3 (in-circled). Please note that this time K1 is the reference printhead in aligning all other printheads.

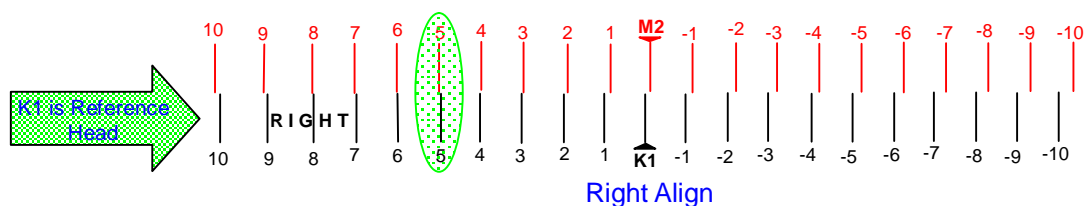
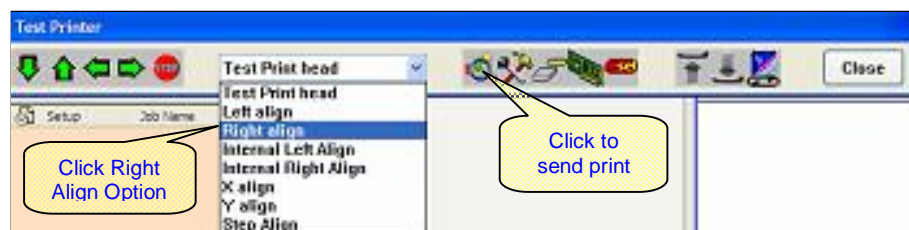


- Ø On the Photoprint Job Properties click Driver Option > click Advance button > Offset button > tick the Between of Heads and add the -3 mathematically on the Left table for C1 box as shown below.
- Ø Basically the navigation is the same as the in Section 4.9.2.1 except for test option and parameter table.



4.9.2.4 Printhead Right Align

- Ø On the printer tab select Right align option then click send print as shown below. Further below shows how the print out should look like, the Illustration shows the M2 alignment happen at 5 (in-circled).. Please note that this time K1 is the reference printhead in aligning all other printheads.

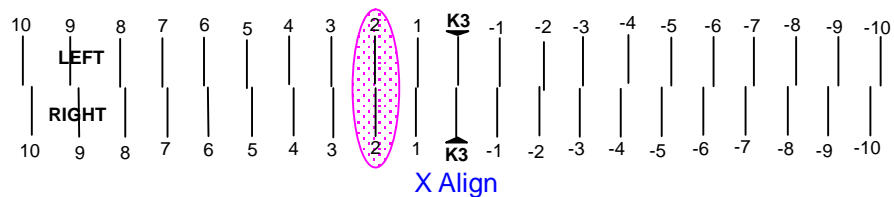
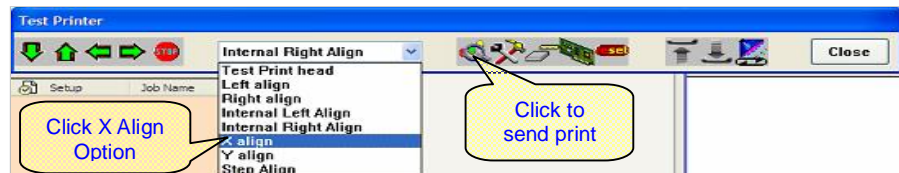


- Ø On the Photoprint Job Properties click Driver Option > click Advance button > Offset button > tick the Between of Heads and add the 5 mathematically on the Right table for M2 box as shown below.
- Ø Basically the navigation is the same as the in Section 4.9.2.1 except for test option and parameter table.

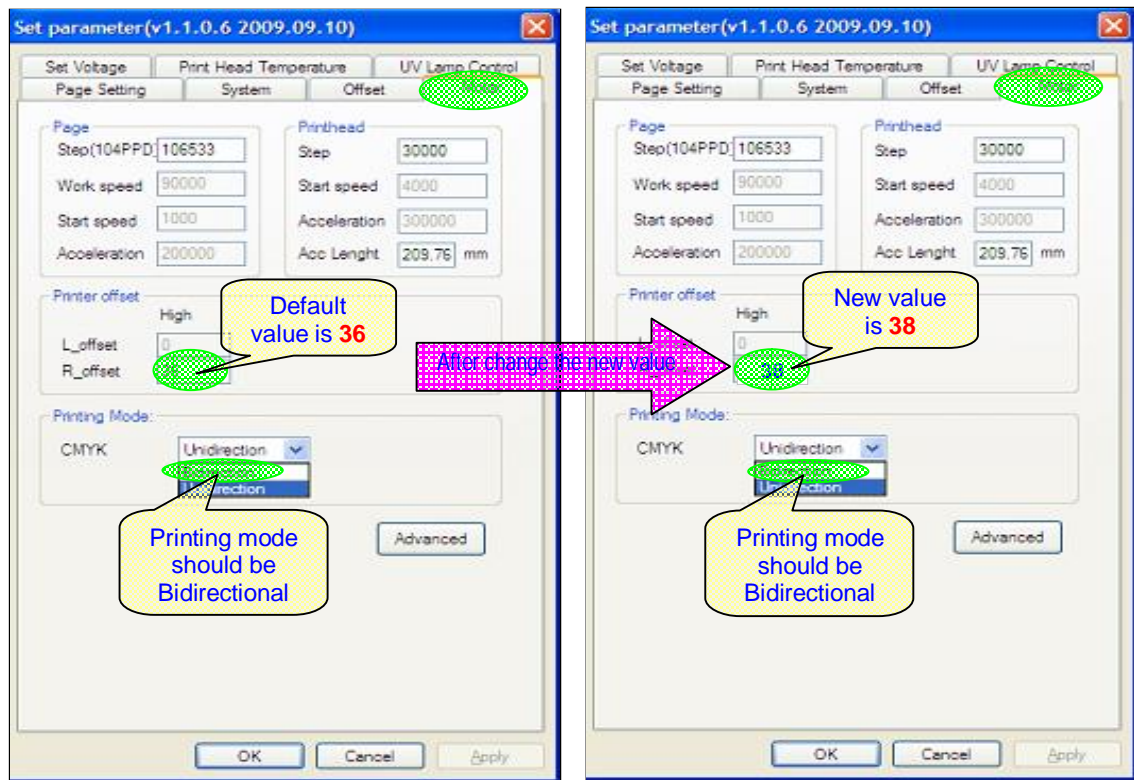


4.9.2.5 Printhead X Align

- Ø On the printer tab select X Align option then click send print as shown below. Further below shows how the print out should look like, the Illustration shows the K3 alignment happen at 2 (in-circled). This time you align the left and right printing directions.



- Ø On the Photoprint Job Properties click Driver Option >click Advance button> click Motor button and add the 2 mathematically on the R_offset box as shown below.
- Ø Basically the navigation is the same as the in Section 4.9.2.1 except for test option and parameter table.



X Align

4.9.2.6 Printhead Step Align

- Ø On the printer tab select Step Align option then click send print as shown below. Further below shows how the print out should look like. The illustration shows three different scenarios.
- Ø The broken line was colored pink for the purpose of better understanding how this , the horizontal lines are printed black in actual output. When you do step align the first pass will print broken lines while the second pass will print the solid lines.

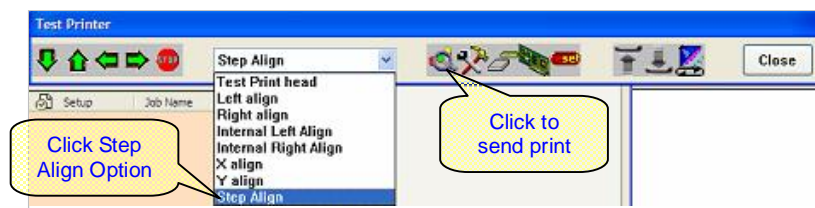


Figure 1 – Excessive Media Feeding Step

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



Figure 2 – Insufficient Media Feeding Step

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

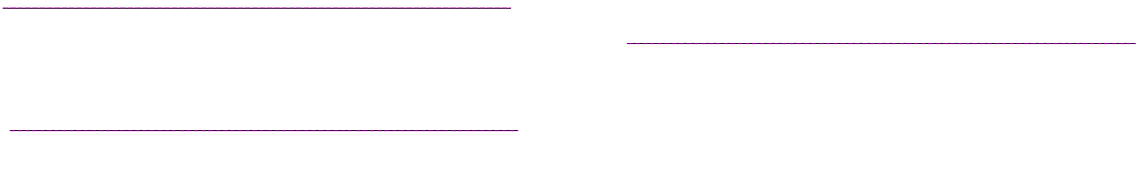
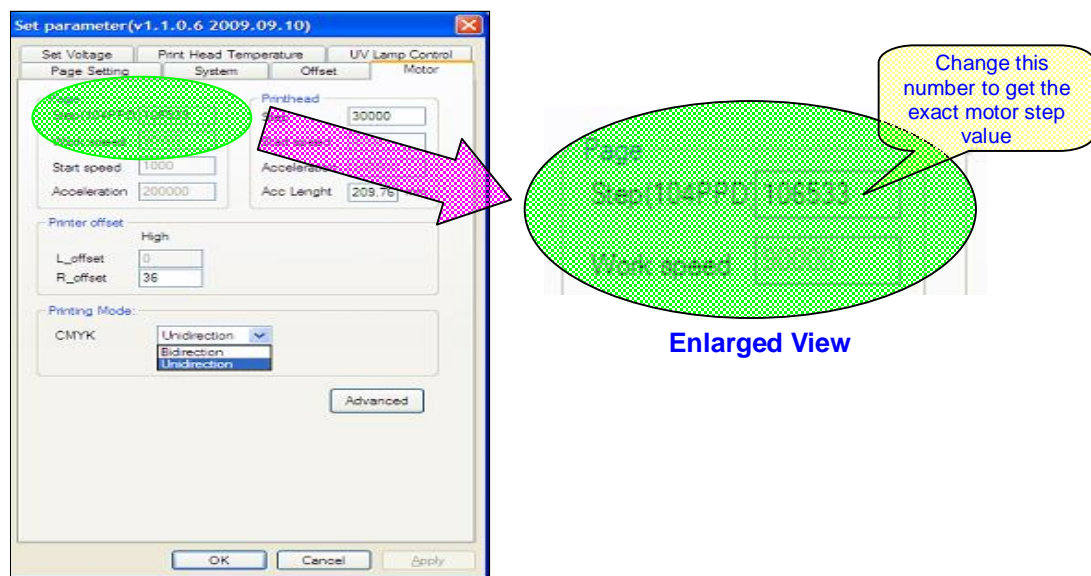


Fig. 3 – Correct Media Feeding Step

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



Motor Step Parameter Tab

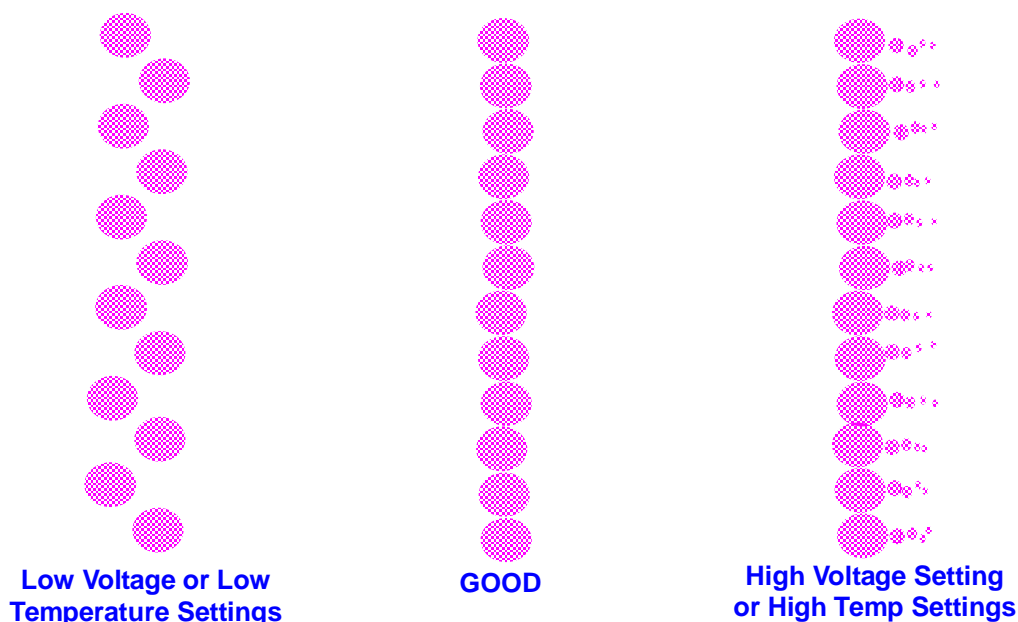
4.10 Printhead Voltage and Temperature Settings

This section will describe the necessity to calibrate the Voltage and Temperature settings for each printhead.

- Ø By looking on the Left or Right Align printed samples in section 4.9.2.3 or section 4.9.2.4 respectively you can determine what need to be done to get a better print quality.
- Ø First you need to see the magnified printed sample for each printhead. Lets take the illustration sample below.

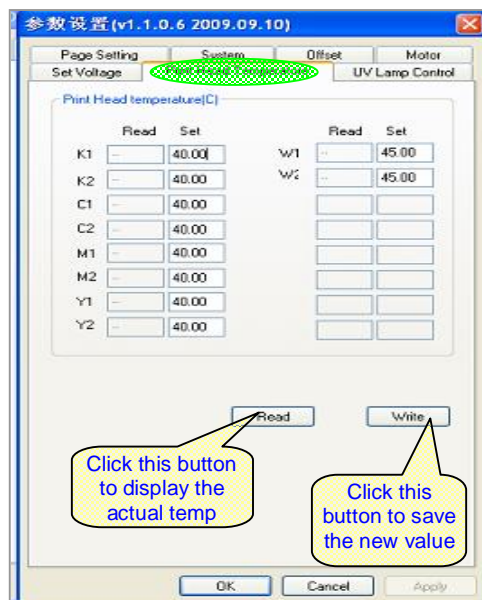


- Ø Assuming the green shaded area will be view over a magnifying lens at least 40X (*100X magnification is better*) the vertical lines are actually a group of dots pre arranged according to printhead nozzle design. For the case of Konica head it should look like below.

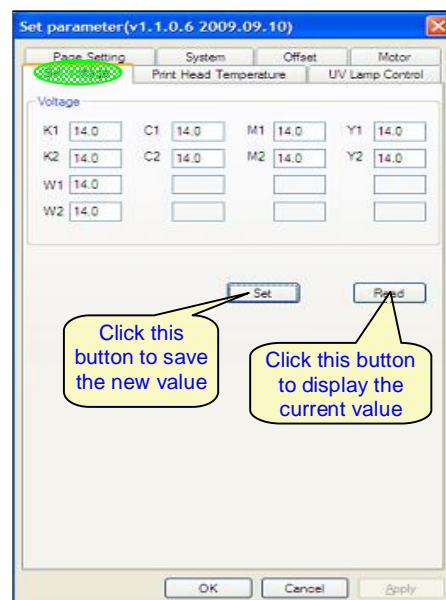


- Ø Sometimes getting the best dot print quality is a painful process so it needs patience. All you can do is play with temperature and voltage settings.

- Ø The recommended Voltage setting range is controlled by Flora driver software so there's no chance you set the voltage beyond the recommended range. While the recommended temperature setting is 40-45°C in most cases ink manufacturers have their recommended temperature settings.
- Ø When changing the Voltage and Temperature settings click setting icon on the [Test Printer tab](#) or refer to section 4.9.2.1 how to navigate then click Voltage or Temperature button whatever is applicable.



Temperature Window Tab



Voltage Window Tab

Note: The actual reading for both Voltage and Temperature will appear only when the [Read Button](#) is click.

- Ø To change the temperature setting simply over write the existing value with your desired value then click [Write](#) button. While for Voltage you need to click the [Set](#) button to update the Voltage setting to your desired value.
- Ø 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 Negative Pressure Setting and printing at slower speed can help improve the print quality significantly.

Chapter 5 - Operation of the Machine

5.0 Brief Introduction

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

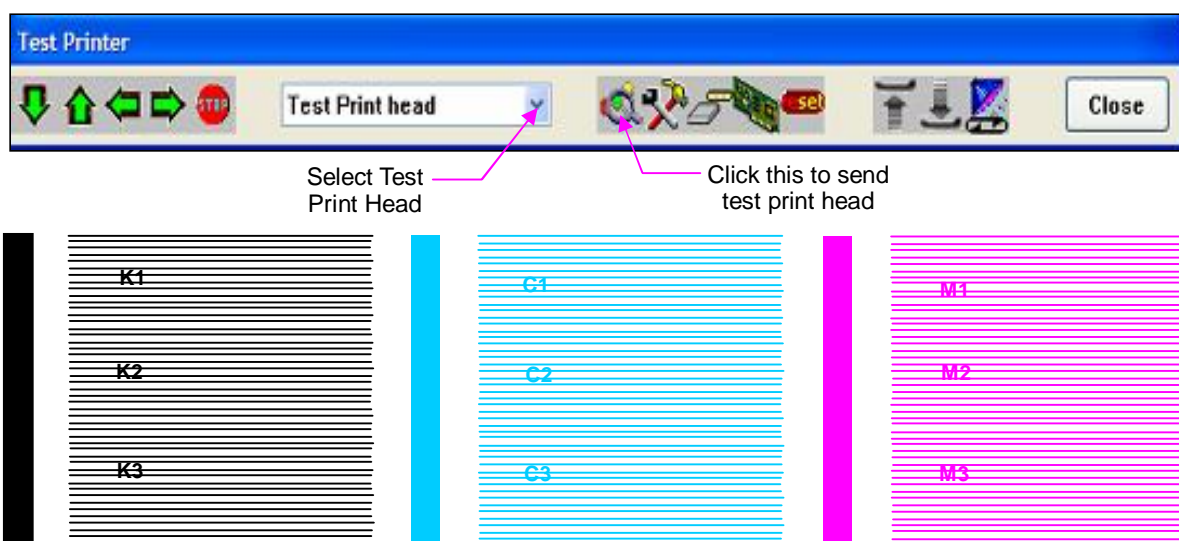
5.1 Starting-up Activities

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.

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

5.2 Print head Jetting Check

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

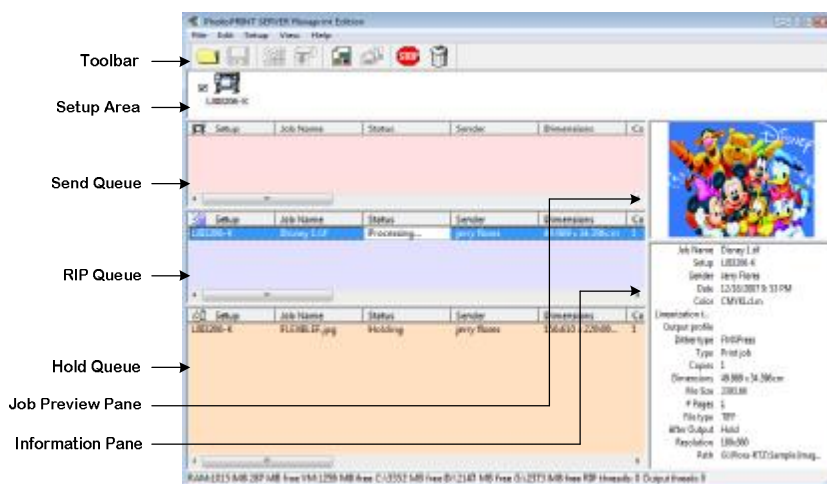


Note: Above Illustration show only three colors, yellow and white are excluded due to space constraint, please take note that all printheads must print the same.

5.3 Working on PhotoPrint Flora Edition Software

Basic Elements of the Software

The following are some of the basic elements in your software:



Setup Pane

- Each output device is represented by an icon in the setup pane

Job Preview Pane

- Double-clicking the job preview pane generates a preview of the selected job.

Queues

In PhotoPRINT Server, files progress through three queues during the course of processing.

Hold Queue

- This queue lists all jobs that have been sent to the server but have not yet been moved to other queues. It is a holding place for jobs before they are processed.

RIP Queue

- This queue lists the jobs that are being RIPPed, or have finished RIPPing.

Send Queue

- This topmost queue holds jobs that are in the process of being output. Output jobs are automatically deleted from the queue.

Resizing Queues

- To resize the queues, drag their borders with the mouse.

Resizing Columns

- To resize the columns in a queue, drag the edges of the headers left or right.

Queue Column Headings

Setup - The name of the device to which the file will be output.

Job Name - The name of the file, followed by its internal PostScript name in parentheses.

Status - The current status of the job.

Sender - The name of the computer that sent the job.

Dimensions - The physical dimensions of the job.

Copies - The number of copies to be printed.

Information Pane (displays information about the selected job)

Job Name - The name of the file, followed by its internal PostScript name in parentheses.

Status - The current status of the job.

Sender - The name of the computer that sent the job.

Dimensions - The physical dimensions of the job.

Copies - The number of copies to be printed.









File type - The format of the file.

File Size	- The size of the file.
ICC	- The ICC output profile selected to be used when outputting the job, if any.
Linearization Table	- The linearization file to use when outputting this job.
Color	- The color mode of the job.
After Output	- What to do with the job after output.
Dither Type	- The dither type selected to be used when outputting the job.
Type	- The type of job: print or contour.
Date	- The date and time the job was added.
# of pages	- The number of pages in the job.
Resolution	- The resolution at which the job will be output.
Path	- The path to the folder the file is stored in.

Toolbar

A toolbar is located at the top of the main window. It contains tools for the most commonly used functions. To show or hide a toolbar, select **Toolbar** from the **View** menu.

The toolbar functions are:

	Add Job	Adds a job to the selected output device.
	Save As	Saves the selected job to a file.
	RIP Job	RIPs the selected job, and leaves it in the RIP queue.
	Print Job	Prints the selected job to the specified output device, RIPPING it if necessary.
	Nest	Nests the selected print jobs together so as to use the minimum amount of the output media.
	Unnest	Unnests the selected set of nested jobs.
	Abort	Stops selected file from RIPPING or printing.
	Delete	Deletes the selected job or jobs.

Program Menu

File Menu

Add	Adds a job to the selected output device.
Move Job	Moving jobs to a different output device
Job Properties	Window dialog which allows you to edit a large number of settings that control how a job will be output.
Nest Jobs	The ability to combine multiple jobs together in order to minimize the amount of material needed to output the jobs.
Unnest Jobs	To separate a set of nested jobs into its component jobs:

Export Preset To export the current settings to a preset file:

Import Preset To import settings that were previously saved to a preset file:

Save As... Saves the selected job to a file.

RIP RIPs the selected job, and leaves it in the RIP queue.

Send Sends the selected job for RIPing and printing

Abort Stops selected file from RIPing or printing

Exit To exit from the software

Edit Menu

Select All To select multiple jobs

Delete To delete selected jobs

Preferences To set-up archive and file paths, RIP set-up, units, appearance etc.

Setup Menu

Add Setup Adds a setup to provide the link between the software and your output device.

Setup Properties Configuration of Job Workflow, Communication and Automatic Nesting

Default Job Properties To make the current job properties the default settings for all new jobs that are added to this setup

Make Active To make an *active setup* ready to output jobs.

Color Profiler An optional provision use for ICC profiling

Custom Color Mapping Allows you to map spot colors to exact output values for your specific output device.

Global Color Mapping Allows you to map the colors in your job using LAB color space, a device-independent color space.

Output Size Allows you to measure slight variations in output size and Compensate for them.

Test Print The software allows you to output print and/or contour cut test jobs to appropriate output devices.

View Menu

Tool Bar Contains tools for the most commonly used functions.

Vertical/Horizontal View Allows you to set the queues and panes in the main window to either horizontal or vertical orientation.

Hide/Show Info Window To show or hide the information on the Information Pane

View RIP Log To view the RIP log

Clear RIP Log To clear out the RIP log

Refresh To refresh the view of the main window

Using Built-In Mathematical Operations

The software is able to perform a number of calculations whenever a numerical value is being entered.

Automatic Unit Conversion

If you enter a value using a different unit of measurement than the default unit, the software will automatically convert the value to the default unit.

For instance, if your default unit is inches, you can enter a value of **1 ft**, and the software will convert the measurement to **12 in**.

Supported Units are;

in, "	inch
ft, '	foot
mm	millimeter
cm	centimeter
m	meter
pt	point

Calculation of Ratios

If you enter a ratio in the format **A:B**, the software will scale the previous value in the field by the ratio entered. For instance, if a value is set to **12**, and you enter **2:3**, the new value will be **8**.

Calculation of Percentages

If you enter a percentage in the format **X%**, the software will scale the previous value in the field by the percentage entered. For instance, if a value is set to **10**, and you enter **90%**, the new value will be **9**.

Simple Arithmetic Operators

If you enter a simple arithmetic expression, the software will calculate the result of the expression and enter that value in the field. The available arithmetic operators, in order of precedence, are:

/	Division
*	Multiplication
+	Addition
-	Subtraction

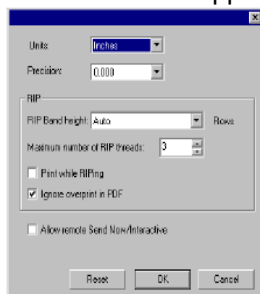
For example, if you enter **1/8**, the value **0.125** will be calculated. Operator precedence determines the order in which the arithmetic operations will be calculated when more than one operation is specified. In the previous list, operators are listed from top to bottom in order of operator precedence. For instance, if you enter **6/2*3**, the software will calculate **6/2** first then multiply the result by **3**, yielding a result of **9**.

Automatic Application of Entered Values and Arithmetic

Once you enter a numerical value, ratio, or arithmetic expression in a numerical field, the software will automatically apply that value after a brief delay. There is no need to select another field or click an "Apply" button in order to force a calculation or apply a new value to a job preview.

Setting Application Preferences

To set application preferences, from the **Edit** menu select **Preferences**.



The following settings are available:

Units

Precision

RIP Band Height

- The units of measurement displayed.
- The degree of precision to use with measurements.
- Sets the band size that is processed during RIPing. Smaller values allow large files to RIP but will take longer to

- process.
- Max number of RIP threads** - Sets the number of jobs that can be RIPed at one time. One RIP thread is required for each file being RIPed, and one RIP thread is required to generate a preview for each file.
 - Print while RIPing** - If this option is selected, the software will RIP and print the job simultaneously. RIPing and printing simultaneously may affect overall performance.
 - Allow remote Send Now/ Interactive** - If this option is selected, the software will allow Send Now and Interactive operation from a remote design station.

Exiting the Software

By default, the software loads automatically each time the OS is restarted (using a shortcut in the Startup folder). The software is minimized after starting, and its icon appears in the System Tray area of the Windows Taskbar. Clicking the **Close** button in the top right corner of the title bar () minimizes the software instead of closing it.

To exit the software, from the **File** menu select **Exit**, or right-click on the software icon in the system tray and select **Exit** from the context menu.

Working on Setup

Changing/Adding New Setups

To change the setup in use or add new setups:

1. From the **Setup** menu, select **Change Setup** or **Add Setup**.
2. Click the **Manufacturer** and **Model** of your setup
3. Provide for the **Setup Name**
4. Click Finish after specifying the Flora **Port**..

Selecting a Setup

To select a setup, highlight its icon in the Setup Pane. Only one device can be selected at any time.

Activating Setups

An *active setup* is a setup that is ready to output jobs. To make a setup active, do one of the following:

- Check the box next to its icon in the Setup Pane.
- Select the setup icon, then from the **Setup** menu, select the **Make Active**.
- Right-click on the setup icon and select **Make Active** from the context menu.

Deleting Setups

To delete a setup, do one of the following:

- Select the setup icon in the Setup Pane and click on the **Delete** button in the toolbar.
- Select the setup icon in the Setup Pane, then from the **Edit** menu, select **Delete**.
- Select the setup icon in the Setup Pane and press the **Delete** key on your

keyboard.

- Right-click on the setup icon in the Setup Pane and select **Delete** from the context menu. Deleting a setup will also delete all jobs associated with the setup.

Editing Setup Properties

To edit the setup properties associated with a particular output device, do one of the following:

- Right-click the setup icon in the Setup Pane and select **Properties**.
- Select the setup icon in the Setup Pane, then from the **Setup** menu, select **Setup Properties**.
- Double-click the setup icon in the Setup Pane.

Setting Default Job Properties

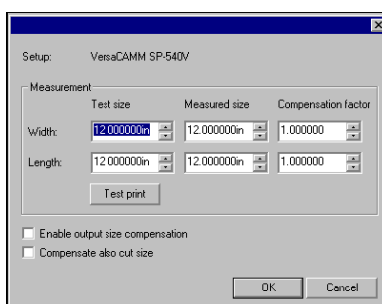
The **Job Defaults** button allows you to set the default job properties for this setup. All jobs that are manually added to this setup will inherit the default job properties. Jobs sent from a client application will use the job properties set in the client application. This is useful because it allows you to create multiple specialized setups for each output device. One setup might have the default settings for a proof copy, for instance, while another might be preset for final output.

Using multiple setups this way prevents you from having to change the job properties for each stage of each job. You can also set the default job properties by clicking the **Save as Default** button in the Job Properties dialog.

Using Output Size Compensation

Output Size Compensation allows you to measure slight variations in output and compensate for them. To use Output Size Compensation with a given setup:

1. Select the output device setup.
2. From the **Setup** menu, select **Output Size Compensation**.



3. If you are using a hybrid device, and you want to apply output size compensation to the device's cut output as well as its printed output, check **Compensate also cut size**.
4. Enter the **Width** and **Length** of the test print you want to output under **Test size**. For best results, the print should be as large as possible while still fitting onto the output media.
5. Click **Test Print**.
6. Measure the actual size of the test print and enter the **Width** and **Length** of the test print under **Measured size**.
7. The software automatically calculates the compensation factors that will scale the output size to compensate for the difference between the test size and the

measured size.

7. Check **Enable output size compensation** to automatically scale all future output from this setup using the compensation factors derived from your measurements.
8. Click **OK**.

Note: You must set up Output Size Compensation separately for each output device setup. Output size compensation does not affect the size of the job as it appears in the Job Properties dialog.

Working With Print Jobs

Adding New Jobs - Jobs can be sent to the software in a number of different ways.

Adding Jobs from a File

To add a file as a new job:

1. From the **File** menu, select **Add Job**.
2. Select the file to be added.
3. If you want to copy the file to the local job folder, check **Copy to job folder**.
4. If the job is on removable media or a network drive, copying it to a local folder will allow you to process the job after removing the media or disconnecting from the network.
5. Select the **Setup** you want to use to print the file.
6. Select the **Preset** whose settings you want to apply to the job.
7. Click **Add**.

Copying the File to the Hot Folder

Each output device that has a setup in the software has a *hot folder*. The hot folder is used to store all the files that are queued up for that output device. By default, hot folders are installed in the **C:\Program Files\[Software]\Jobs** folder.

The software continuously monitors each hot folder. Whenever a job is copied or moved into a hot folder, it will automatically be added to the Hold Queue.

Dragging a File into the Software

Dragging a file into the software will automatically add it to the list of jobs in the Job Area. The job will be assigned a status of **Holding**. The file must be of a supported file type.

Selecting Jobs

Multiple jobs can be selected using the standard Windows **CTRL** and **SHIFT** methods:

- Hold the **CTRL** key to select multiple individual jobs.
- Hold the **SHIFT** key to select a range of jobs by clicking on the first and last jobs in the range.
- To select all the jobs, from the **Edit** menu select **Select All**.

Setting Job Properties

The Job Properties dialog allows you to edit a large number of settings that control how a job will be output.

Processing Jobs

Once the server receives a job, it can be RIPPed and printed.

Moving jobs to a Different Output Device

To move a job to a different output device setup, do one of the following:

- Select the job and select **Move** from the **File** menu, then select the new setup and click **OK**.
- Click and drag the job onto the icon for the new output device's setup in the Setup Pane.

RIPing Jobs

To RIP a job, do one of the following:

- Select the job and from the **File** menu, select **RIP**.
- Drag the job into the RIP Queue with the mouse. Once a job is moved into the RIP Queue, it will automatically be RIPPed if it has not been RIPPed previously.
- Right-click the job and select **RIP** from the context menu. Jobs in the RIP Queue will process in the order of the Job Priority setting in their Job Properties. When multiple jobs with the same priority are waiting in the queue, the job that was received first will process first.

Printing Jobs

To print a job, do one of the following:

- Select the job and from the **File** menu, select **Print**.
- Right-click the job and select **Print** from the context menu.
- Drag the job into the Send queue with the mouse. Once a job is moved into the Send queue it will be automatically be RIPPed if it has not been RIPPed already. It will then automatically be printed on the appropriate device. Jobs in the Send queue will process in the order of the Job Priority setting in their Job Properties. When multiple jobs with the same priority are waiting in the queue, the job that was received first will process first.

Aborting the Processing of a Job

To abort the processing of a job while it is being RIPPed or printed, do one of the following:

- Select the job and from the **File** menu, select **Abort**.
- Select the job, then click on the **Abort** button in the toolbar.
- Right-click the job, then select **Abort** from the context menu.
- Drag the job back into the Hold Queue with the mouse. If a job is aborted while being RIPPed, its status is set to Aborted. It will need to be RIPPed again before it can be printed. If a job is aborted while being printed, its print status freezes at 0%.

Deleting Jobs

To delete a job, do one of the following:

- Press the **Delete** or **Backspace** key on your keyboard.
- Select the job and from the **Edit** menu, select **Delete**.
- Select the job, then click on the **Delete** button in the toolbar.
- Right-click the job, then select **Delete** from the context menu.

Outputting Test Jobs

The software allows you to output print and/or contour cut test jobs to appropriate output devices.

Outputting a Test Print Job

To print a test job:

1. Select the setup you want to send the test job to.
2. From the **Setup** menu, select **Test Print**.

Using the RIP Log

Each time a job is RIPed, an entry for that job is added to the RIP Log. The RIP Log entry lists the relevant details about the job: where it came from, its basic characteristics, job property settings, and the RIP time.

Viewing the RIP Log

To view the rip log:

1. From the **View** menu, select **View RIP Log**. The RIP Log is formatted as an HTML file, and displays in the default browser for the operating system.

Clearing the RIP Log

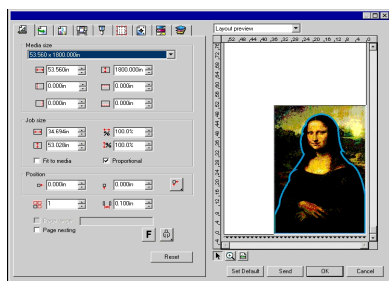
To clear out the rip log:

1. From the **View** menu, select **Clear RIP Log**.

Setting Job Properties

The Job Properties dialog allows you to edit a large number of settings that control how a job will be output.

Accessing the Job Properties Dialog



To access the Job Properties dialog, select the job and do one of the following:

- Double-click on the job.
- From the **File** menu, select **Job Properties**.
- Right-click on the job and select **Job Properties** from the context menu.

The left side of the dialog contains the tabs on which the job properties can be set. The right side contains a preview pane that displays the job as it will appear on the output.

Setting the Preview Pane View

Select one of the three available views from the list at the top of the preview pane:

Page preview

Displays each page of the job scaled to fill the preview area. If there is more than one page in the job, a list of the page numbers will appear above the preview, allowing you to select the page to display.

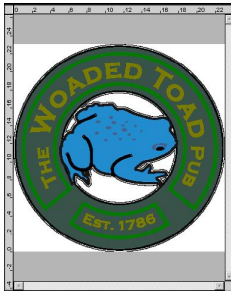
If you are using PhotoPRINT SE, only the first page will be displayed in Page Preview. Selected automatically when the **Workflow**, **Color Management**, **Printer Options**, **Cut**, or **Color Adjustment** tab is selected.

Layout preview

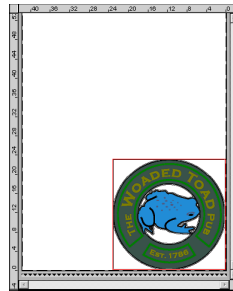
Displays the job as it will appear on the output media. The preview is scaled so that the output media fills the preview area. Selected automatically when the **Layout**, **Labels**, or **Separations** tab is selected.

Tiling Preview

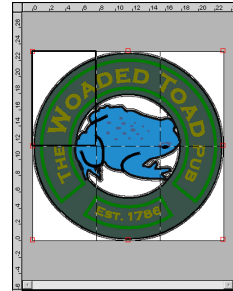
Displays the job with the outlines of the tiles that it will be broken up into superimposed over the image. Selected automatically when the **Tiling** tab is selected.



Page Preview



Lav-out Preview



Tiling Preview

Setting Default Job Properties

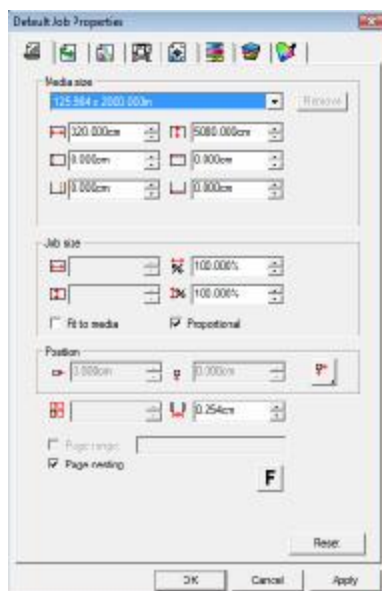
To make the current job properties the default settings for all new jobs that are added to this setup, click **Set Default**. You will be asked to confirm the change in the default settings.

Setting Job Properties

Different tabs within the Job Properties dialog let you set layout options, tiling/paneling options, color calibration options, color adjustment options and labels. The exact number of tabs and the settings on those tabs will vary depending on the type of job and output device selected, as well as the version of the software in use.

Layout Tab

The Layout tab controls how the job will be positioned on the output media, what size it will be, and the layout of the output.



Media Size

The size of the media loaded into your output device. Select from one of the preset sizes, or specify unique dimensions below.



The width and height of the media



The margins of the printable area

When a set of unique dimensions is specified, it is automatically added to the list of preset sizes.

Borderless printing

If checked, the job dimensions will automatically be set for borderless (full bleed) printing. Only media sizes that support borderless printing will be listed. If a different media size is selected, the job dimensions will automatically be adjusted to match the new size.

Job Size

Choosing one of these options allows you change the output size and orientation of the page.



The job's width and height.



The job's width and height as a percentage of the original.

Fit to Media Scales the job proportionally so that it is as large as possible while still fitting within the printable area of the output media.

Proportional When this option is selected, the height and width of the job are increased or decreased together to keep the original proportions intact.

Position These settings change the position of the job on the media.



The distance between the job and the right and bottom margins of the printable area.



Places the job at the specified distances from the lower and right edges of the printable area of the output media.



Centers the job along the width of the printable area.



Centers the job in the middle of the printable area. Only available for sheet material.



The number of copies to be output.



The amount of space that will exist between the various tiles, copies, and/or nested jobs that will be output as part of the job.

Page Range If checked, you can specify the range of pages that will be output for a multi-page job. Format is **x-y**. Also accepts “,” to put in multiple ranges.
Ex: **5** Prints page 5.

2-5 Prints pages 2, 3, 4 and 5.

3, 5-10 Prints pages 3, 5, 6, 7, 8, 9 and 10.

Page Nesting If checked, the pages, tiles and color separations of the job will automatically be nested.



Flips the selected image on the vertical axis, so that your image will be mirrored when printed.



Rotates image on the media in 90-degree increments. Click the button until you achieve the desired orientation.

Workflow Tab

The Workflow tab displays settings related to the time and order that the job will be processed in.

Setup name

- Name of the setup.

Hot folder

- The folder that the software will use to store job files for this output device.

Share Name

- The share name assigned to the setup.

After Receive

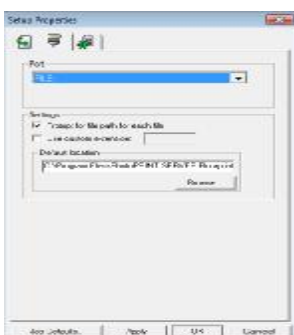
- Sets what to do with jobs after they are



- received:
- Hold** - Places jobs in the Hold Queue.
 - Auto Start** - Begins processing jobs immediately.
 - Schedule** - Outputs jobs at the time specified in the **Output Time** field.
 - Output Time**- If **Schedule** is selected, this field allows you to enter the time at which the queued jobs will begin to be processed.
 - Rotate image to fit media** - If checked, the image will automatically be rotated to better fit the dimensions of the output media if needed.

Communication Tab

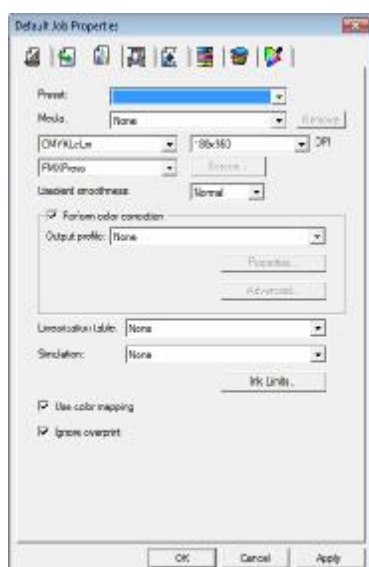
The **Settings** section of this tab changes depending on the port used to connect to the output device. Ports are listed in order of popularity for each device. Only the ports that are usable by the output device are listed. The standard port for the device is selected by default. Some of the port settings may still need to be entered or edited, however.



- Port** - Select the port to which the output device is connected. The port list is limited to the ports that are actually present on your computer and usable with your output device.
- FILE** - The **File** port allows you to save the output data as a file. The following settings are available:
 - Prompt for file** - If checked, you will be prompted to **path for each file** provide a filename for the output file when each job is saved to a file.
- TCP/IP** - Use this port if your output device supports network connection.
- TCP/IP address** - The TCP/IP address of the output device (required).
- Port Number** - The port number used for printing to the output device. Select from the list or enter a custom number.

Color Management Tab

The Color Management tab displays the settings related to the printing device. The layout of this tab may differ depending on the output device.



- Preset** - Select a job properties preset to apply to the job.
- Media** - Select the media type the output will be printed on.
- Print mode** - Select the print quality for the output. This setting will vary for each type of printer.
- Gradient Smoothness** - Select **Normal**, **Enhanced** or **Super**. The higher settings cause the software to render gradients using more elaborate algorithms that produce smoother dithering.
- Color Mode** - Select the color mode that matches the inks set in the printer.
- CMYK** - The image will be printed using a combination of cyan, magenta, yellow and black inks.
- CMY** - The image will be printed using cyan, magenta and yellow inks. All black will be CMY process black.
- Grayscale** - The image will be printed using black ink only, producing a black and white image with shades of gray.
- CMYKLcLm** - CMYK plus Light Cyan and Light Magenta inks. This color mode provides smoother Gradations between lighter shades

- of colors.
- Dither type** Select the dithering for the output. It is the pattern in which the individual dots that make an image are applied to the media. Each dither type has advantages in terms of quality and RIP speed. The default dither type is usually the best setting for your machine.
- The software offers several dithering options to optimize your output. Usually, quality and speed are in tradeoff, with KF Diffusion offering the highest quality and the LX Diffusion or FMXPress offering the fastest processing times. The available patterns (in descending order of quality) are:
- KF Diffusion** This is an enhanced version of the error diffusion method. While it takes longer to RIP (5-6 times more than FMXPress), it provides the highest detail and contrast for most inkjet printers.
- Error Diffusion** This method produces high-quality images. The enhanced image quality requires intensive processing (3-4 times more than FMXPress), and the time it takes to RIP a file using this method is the second longest of the available options.
- Random Diffusion** A balance between image quality and RIP time. It takes 2-3 times longer than FMXPress.
- FMXPress** The default diffusion method. It's the fastest in terms of RIP time and is suitable for most prints.
- LX Diffusion** A faster option as far as RIP times are concerned. It's a good choice for large prints that will be viewed from a considerable distance.
- Angled Screen** Designed for use with thermal printers to produce vibrant, saturated colors. This is also used to produce screen print positives. Click **Screen** to set advanced options.
- Smooth blends** Select **Normal**, **Enhanced** or **Super**. The higher settings cause the software to render gradients using more elaborate algorithms that produce smoother dithering.
- Perform color correction** Checking this option activates the color correction settings. If this setting is not checked, incoming jobs are assumed to have already color corrected in the design application. If color correction is off, the software will use a generic CMYK profile, instead of a profile generated from actual color measurements of output from the device.
- Output profile** Once the image is in a neutral color space, the output profile is used to convert the image into the color space of the output device.
- Select the ICC profile that matches the combination of ink, media, resolution, and dither type of your output device. To add an ICC output profile from another source, select **Add** from the list of available profiles.
- Properties** Clicking the **Properties** button will launch the Profile Properties dialog, which contains information pertaining to the ICC output profile that has been selected.
- Advanced** Click to set advanced color correction properties.

Linearization Table Simulation

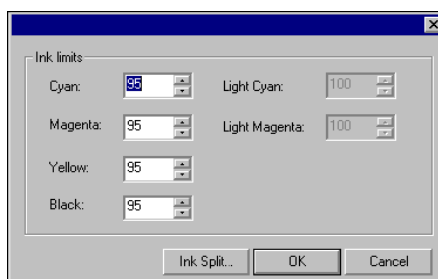
Select the linearization table to use. Printer simulation allows you to simulate the output of one printer on another. You can simulate a large format job on a small format printer. To simulate the output of another printer, select **Add** from the **Simulation** list.

Select an ICC profile from the device that you want to simulate and click **Open**. Printer simulation does not support the spot color rendering intent. If you try and output an object that has been assigned the spot color rendering intent while using printer simulation, an error message will be displayed.

Ink Limits

Click to set the ink limits for the output device.

Set the ink limit for each color of ink to the maximum percent coverage that the device can output without causing bleeding or drying issues, then click **OK**. Click **Ink Split** to determine when a light or medium colored ink will be used instead of the normal ink. This feature is only present for output devices that use light or medium colored inks.



Use Color Mapping

Check to print spot colors based on settings in global and custom color mapping. Click **Color Mapping** to set custom color mapping options.

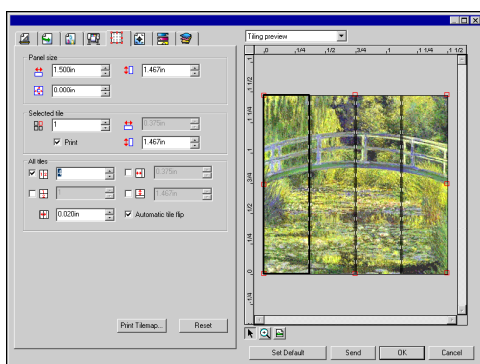
Ignore overprint If this option is selected, the software will ignore any overprint settings that may exist in jobs it outputs.

Tile Tab



The tiling feature of the software allows you to split a print job up into a number of smaller tiles that are then output separately. This can be used to produce a larger job than a device is capable of outputting in one piece.

Tiling and Cropping Jobs



The tiling feature of the software allows you to split a print job up into a number of smaller tiles that are then output separately. If a job is larger than the output media, it is automatically tiled into pieces small enough to output. When a job is rotated or resized, all tiling is removed. If the job is larger than the output media after it is rotated, it will automatically be retiled. All tiling is done from the **Tile** tab of the Job Properties dialog. To access the tiling features:

1. Select the job.
2. From the **File** menu, select **Job Properties**.
3. Select the **Tile** tab.

The following settings are available:

Panel Size The panel is the part of the job that will be split up into tiles and output by the software. If the panel is reduced in size so that it does not cover the entire job, only the parts covered by the panel will be output.



Shows the width and height of the panel. To adjust, enter a number or use the arrows.



The size of the margin. The margin is the part of the panel that extends outside of the boundaries of the job.

Selected Tile

Selects which tile's width and height are displayed in the fields below.



Selects a tile to be edited. The selected tile is highlighted in the preview pane.



Shows the width and height of the selected tile. To adjust, enter a number or use the arrows.

Print If checked, the selected tile will be output with the rest of the job. If cleared, the tile is marked with a mesh overlay in the preview pane, and will not be output.

All Tiles These settings apply to all tiles and help you quickly set up automatic tiles, of equal size.



Selecting this option divides the job vertically into the number of columns specified. Each column will be of equal width.



Selecting this option divides the job into the number of rows specified. All rows will be of equal height.

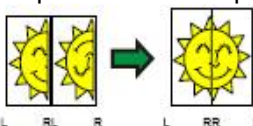
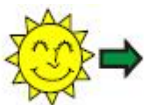


If you know that you want tiles of a certain size, enter the values for the width and height of the tiles here. All tiles will be changed to the specified size.



Sets the amount of overlap between tiles. Enter a negative number to create an offset between tiles.

Automatic tile flip If **Automatic tile flip** is checked, every other tile that is printed will be rotated 180° so that adjacent vertical edges are always printed with the same side of the print head. This helps them match up cleanly.



Print Tilemap Outputs a tile map to aid in assembly of the finished job.

Reset The reset button will restore the original values and settings.






Dividing a Job Into Tiles

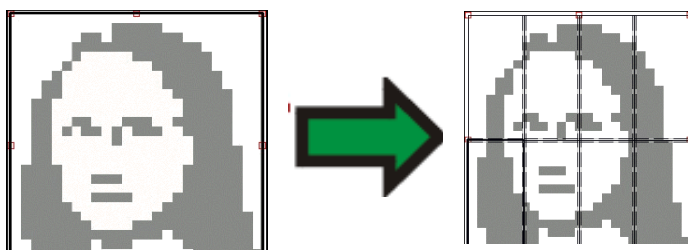
The job starts as a single large tile that covers the entire job. This tile is selected by default. To divide the job into multiple tiles, reduce the width and/or height of the first tile using the fields in the **Selected Tile** section. New tiles will automatically be created to cover the exposed areas of the job.

For instance, to divide a 30x25 job into two vertical tiles, set the field to **15**, reducing the size of the first tile to 15x25. A second 15x25 tile will automatically be created.

Dividing a Job into Uniform Rows and Columns of Tiles






To divide the job into a specified number of uniform rows and columns of tiles:

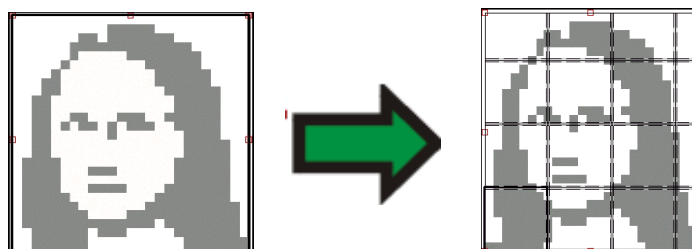
1. Check  or  to tile the job vertically or horizontally.
2. Enter the number of columns of tiles in the  field.
3. Enter the number of rows of tiles in the  field.
4. Set the amount of overlap between the tiles in the  field.




Dividing a Job into Uniform Tiles of a Specified Size

To divide the job into uniform tiles of a specified size:



1. Check  and  to set all tiles in the job to be of the specified size.
2. Set the  and  fields to the width and height desired for the tiles.
3. Set the amount of overlap between the tiles in the  field.
4. If the specified tiles do not cover the job evenly, the tiles at the top and right edges will be made small enough to fit in the gap.

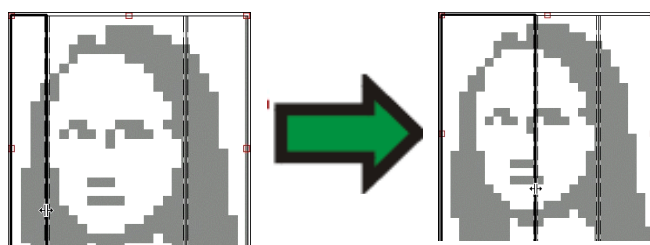


Selecting a Tile



To select a tile, either click on the tile in the preview pane, or select the tile using the  field in the **Selected Tile** section of the Tile tab.

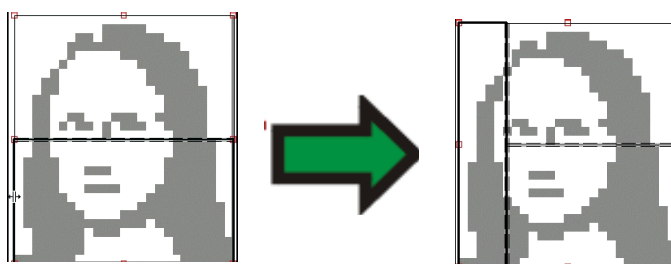
Editing Tiles

To edit the size of the selected tile, change the values in the  and  fields. You can also resize tiles by dragging their edges in the Preview Pane.



Click and drag to resize

- If any of the **Tiles** checkboxes are checked, the  and  fields may be disabled. In this case, the fields have been overridden in order to keep all tiles uniform. The tiles will not be editable using the Preview Pane either. If you drag the edges of the panel over so that part of the job is exposed, a new tile will be created to cover the exposed area of the job. The exception to this is if you resize the panel using the cropping handles. Click and drag the edge of the panel to add another tile.

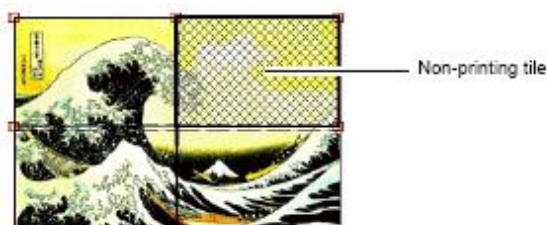


Preventing a Tile From Being Output

To prevent a tile from being output with the rest of the job:

- Double-click on the tile in the preview pane.
- Right-click on the tile in the preview pane.
- Select the tile in the **Selected Tile** section of the Tile tab and clear the **Print** checkbox.
- Non-printing tiles are marked with a hash pattern.
- Double-click or right-click the tile again to toggle it back on.
- Select the tile in the **Selected Tile** section of the Tile tab and check the **Print** checkbox.

Note: One tile in each job must always remain printable. If you try to set all tiles to non-printing, one of the tiles will become printable again.



Printing a Tile Map

The software can print out a map showing how the job will be broken up into tiles. Each tile has the tile number printed within its outline.




To print a tile map:

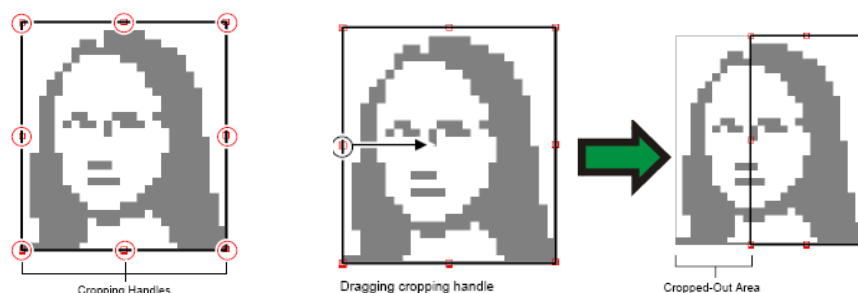
1. Click the **Print Tile Map** button on the **Tile** tab.
2. Select the printer you want to use to print the tile map.
3. If you would like to send the tile map to a desktop or network printer, first create a setup for that printer, then select that setup here.
4. Click **OK**.

Cropping a Job

To crop out part of a job so that it will not be output:

1. Open the Job Properties dialog for the job.
2. Select the Tiling Preview view of the job.
3. Drag the red cropping handles so that the unwanted parts of the job are cropped out. Cropped-out areas of the job will not be output.

You can also crop a job by reducing the panel size using the  ,  and  fields in the **Panel Size** section of the **Tile** tab.



Removing All Tiling and Cropping

To remove all tiling and cropping and make the job one piece again, click on the **Reset** button.

If the job is bigger than the media, it will still be tiled to fit the media.

Labels and Marks Tab



You may choose to print crop marks, and information about the job along with any notes that you enter.



- Color** Select the ink that will be used to print labels and marks.
- Width** Sets the width of the labels.
- Print Labels** This option must be checked to have access to label printing options.
- Position** Select where to print labels relative to the job.
- Font and Size** Allows you to select a font and font size.
- Printer Name** Prints your printer name on printout.
- Resolution** Prints the resolutions settings on printout.
- ICC output Profile** Prints the ICC output profile used on the printout.
- Tile Number** Prints the tile row and column number.
- Overlap** Prints the overlap distance between tiles.
- Job name, size and type** Prints the job name size and type on the printout.
- Dither type** Print the selected dither type on the printout.
- Starting time of RIP** Prints the time that the RIP process started on printout.
- Page number** Prints the page number for a multiple page file.
- Number of Copies** Prints the number of copies made on printout.
- Notes** Allows you to print a text note on printout.
- Print Marks** Allows you to select type of crop marks to be used on printout.
Only the crop mark supported by the output device will appear in the list.



None No print marks.



Crop Marks

Crop marks will be printed at the corners of the job to allow the job.



Standard Marks

Standard marks intended for aligning color separations. Automatically turned on whenever color separations are output.



Swatch

Color swatches for each color of ink will be printed around the job.



Overlap Marks

Overlap marks will be printed, indicating how the tiles of a tiled job should overlap.



Tonal Scale

Color swatches containing blended CMY colors and a gray scale will be printed around the job.



Margin

Marks will be printed at the corners of the job indicating its outside margins.



Border

A border will be printed around the outside edge of the job.



Tile overlap lines

Check to print lines on tiles indicating where the edge of the overlap is. These can then be used to align the tiles. If **On both tiles** is checked, the overlap lines will appear on both tiles. If not, the overlap line will only appear on the second tile.



Print color bands

Check to print color bands at the positions selected. **Color**

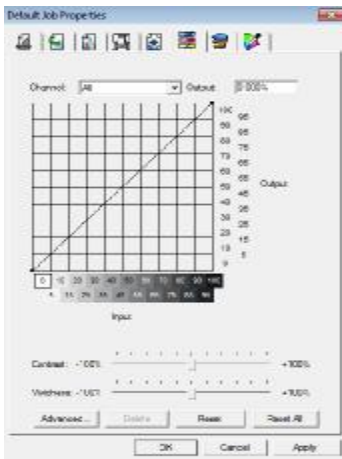
Color Adjustment Tab

The Color Adjustment tab provides some basic tools to manually adjust the output color. Each color channel is listed separately as a linearization curve that determines what percentage of coverage will be used (output) for a specified percentage in the original image (input).

Preview Check to see the changes in your color settings reflected in the preview pane.

Channel Select the color channel that you want to edit.

Output The value for the point that is currently selected on the linearization curve.



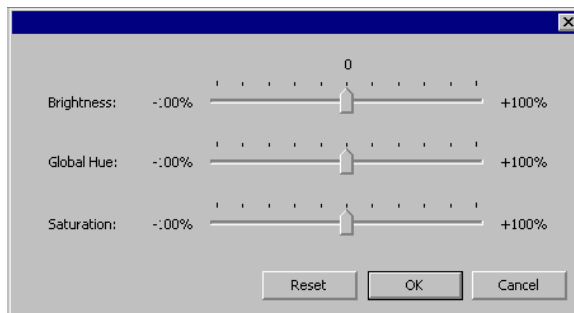
- Click on the curve to select a different point to edit. You can also select a point by clicking on the input axis label.
- To change the value at given point on the curve, edit the value in the **Output** field, or click and drag the point up or down.

Contrast Adjusts the amount of contrast in the image. This setting is only available when **All** color channels are selected.

Vividness Adjusts the vividness of the image. Higher settings boost color saturation and brightness at the expense of color fidelity and detail. Lower settings decrease color saturation and brightness, but increase contrast.

- This setting is only available when **All** color channels are selected. Also, you must have an ICC profile selected in the Color Management tab.

Advanced Click to edit the color settings in the image using a more advanced model.



- This setting is only available when **All** color channels are selected. Also, you must have an ICC profile selected in the Color Management tab.

Brightness Higher values make all colors in the image lighter in shade. Lower values darken the colors in the image.

Global Hue This setting adjusts the overall hue of the picture. It can make the image bluish, or sepia-toned. For this setting, the range of values from -100% to +100% represents the spectrum of colors that can be applied to the image.

Saturation Higher values increase the amount of color in the image, but can reduce the contrast and detail. Lower values reduce the amount of color.

Reset Click to reset all sliders to their defaults.

OK Click **OK** to accept changes and return to the Color Adjustment tab.

Delete Click to delete the selected point from the linearization curve.

Reset Click to restore the values and settings for the current channel to its original states.

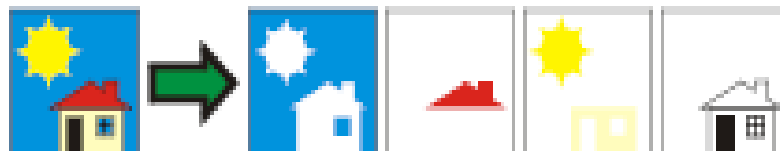
Reset All Click to restore the values and settings for all channel to their original states.

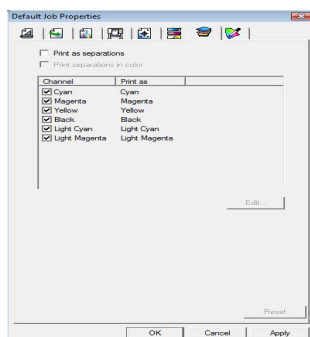
Separations Tab

The Separations tab contains a number of options related to printing color separations.

Print as separations

Check to print each color plane separately. To print separations for certain colors only, clear the checkboxes for the colors you do not want to print.





Print separations in color

Check to make each process color separation print in the appropriate color of ink. If this option is not selected, all process color separations will print in black.

Separations for spot colors will always print in black.

Edit Click to edit the way that color channels will be output.

Setting Angled Screen Dithering Options

If you have selected the Angled Screen dither type, you can edit the dithering options for each color from the Separations tab.

Editing Color Channel Details

If the **Print as Separations** box is checked, but **Print separations in color** is not checked, you can select how the separations for each color channel will be output by selecting the desired color channel and clicking **Edit**.

The Channel Details dialog will open. It will look different depending on whether the color channel is for a process color or a spot color.

For process colors, set **Print as** to the color of ink you want to use to output the color channel, and click **OK**.

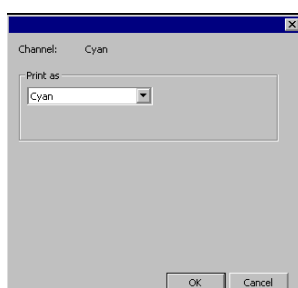
For Spot colors:

1. Set **Print as** to one of the following:

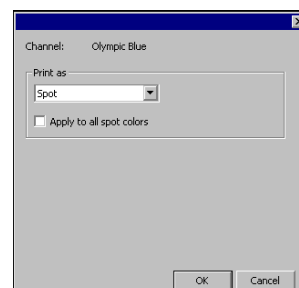
Process Spot colors will be converted to their best process color approximations and included in the process color separations.

Spot Each spot color will be printed as an individual separation using black ink.

2. Check **Apply to all spot colors** to apply the settings for the current color to all spot colors.
3. Click **OK**.



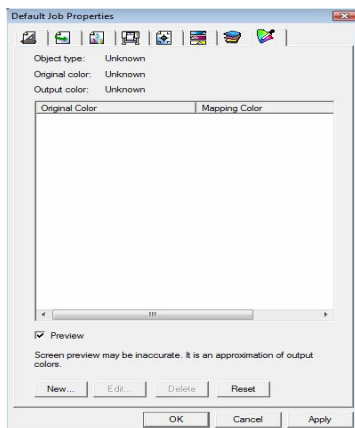
Process Color



Spot Color

Object Color Control Tab

The Object Color Control tab in the Job Properties dialog allows you to map the colors in a job to the device-specific process color values that will be used to output the colors.



If the **Preview** box is checked, the preview pane will update to reflect any color mapping and editing that you do.

Inspecting Colors

To view the output color values currently assigned to objects or areas in your job, simply move the mouse over that object or area. The output color values will be displayed in the Object Color Control tab, in the area above the list.

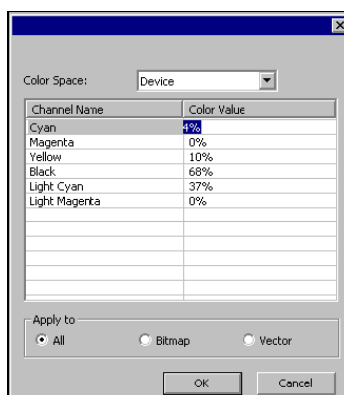
Object Color Control does not support spot colors. Spot colors are automatically replaced by the process color used to display them.

Selecting Colors

To select a colored object or area, click on it in the preview pane. The color will appear in the list. If you click on the same color again, the color will be highlighted in the list.

Setting Color Mappings to be Enabled or Disabled

To enable a color mapping, check the box next to it. Clearing the box disables the mapping.



Editing Colors

To edit the output color values for a given color in your job:

1. If you have not already selected it in the design, do so (see above).
2. Select the color in the color list.
3. Click **Edit**.

4. Set **Color Space** to the color space you want to work in:

5. Edit the color values for the color.

- Color values are always specified for the color at 100% coverage. If a tint was specified, the software will assume that the specified color values are for 100% coverage, and will compute the actual output values based on the percentage of coverage specified for the tint.

6. Check whether you want the color mapping to apply to **Bitmap** objects, **Vector** objects, or **All** objects.

7. Click **OK**.

Adding New Colors

It is possible to add new color mappings to the list, even if the original colors are not contained in the job. This may be useful if you want to save the color mappings to a preset file for use with other print jobs,

For example: if you know that most of your jobs will contain the spot color

Company Logo Purple, you can add a color mapping for that color even if it doesn't appear in the current job. You can then save all the color mappings to a preset file, and reapply them to future jobs in one step.

To add a new color mapping to the list:

1. Click **New**.

2. Select **Input Color**.

a. Set **Color Space** to the color space of the new color.

b. Enter the color values for the new color as they would appear in a job.

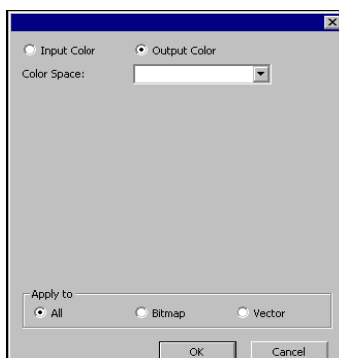
3. Select **Output Color**.

a. Set **Color Space** to the color space you want to use to specify the output color.

b. Enter the color values for the output color.

4. Check whether you want the color mapping to apply to **Bitmap** objects, **Vector** objects, or **All** objects.

5. Click **OK**.



Resetting Color Values

To clear the color list and reset the color mappings to their original state, click **Reset**.

Saving Object Color Control Settings to a Preset

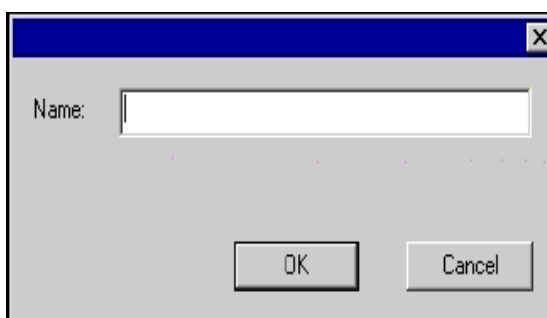
You can save color mappings to a preset the same way you save any other Job Property settings. It is possible to make a preset that contains ONLY color mappings. Simply uncheck all other settings apart from Color Mapping. Selecting a preset saved in this manner will load the color mappings from the preset while leaving all other settings untouched.

Adding New Media Types to a Device

The software allows you to add new media types to the list of media types for a given make and model of output device. The new media type will only appear for that make and model of device, not for all devices.

To add a new media type:

1. Select a setup for the device you want to create a new media type for.
2. From the **Setup** menu, select **Default Job Properties**.
3. Select the **Color Management** tab.
4. From the **Media Type** list, select **Add Media**.
5. Enter a **Name** for the new media type. The name can be up to 32 characters long, and may not contain any wild card characters (#, * or ?).
6. Click **OK**.



Removing Media Types

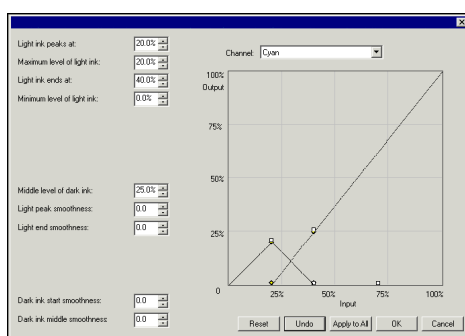
To remove a media type that has been added for a certain output device, select it in the Default Job Properties dialog and click **Remove**. The default media types defined by the software cannot be removed.

Setting Ink Split Options

The Ink Split Curve dialog allows you to set the points at which light or medium colored inks will be used instead of normal “dark” inks. This provides a greater number of light-colored shades, and reduces banding in light-colored areas. Ink split is only used when a color mode that includes light such as **CMYKLCm** is selected.

To access the Ink Split Curve dialog:

1. Open either the job properties or default job properties dialogs:
 - From the **File** menu, select **Job Properties**.
 - From the **Setup** menu, select **Default Job Properties**.
2. Select the **Color Management** tab.
3. Click on the **Ink Limits** button.
4. Click on the **Ink Split** button.



Each shade of ink is represented by a curve plotted on the chart. The chart illustrates the amount of each shade of ink that will be output in order to provide a certain amount of coverage. The range of coverage that can be specified in the image (0% to 100%) is plotted on the X-axis, and the corresponding coverage of each shade of ink is plotted on the Y-axis.

The available settings are:

Channel Select the color channel you want to edit ink split settings for. Only the color channels that have multiple shades of ink on the current printer are listed.

Light Ink Peaks At The point on the X-axis at which the light ink curve peaks.

Maximum Level of Light Ink The amount of light ink coverage at the peak of the light ink curve.

Light Ink Ends At The point on the X-axis where the right side of the light ink curve hits its minimum value.

Minimum Level of Light Ink The minimum amount of light ink coverage for the right end of the light ink curve. The light ink curve always starts at the origin.

Middle Level of The amount of dark ink coverage at the point where the right side of the light ink curve **Dark Ink** hits its minimum value.

Light Peak Smoothness The amount of curve present at the peak of the light ink curve. Select **0** for a sharp peak.

Light End The amount of curve present at the point where the right side of the light ink curve hits **Smoothness** its minimum value. Select **0** for a straight line.

Dark Ink Start Smoothness The amount of curve present at the start of the dark ink curve. Select **0** for a straight line.

Dark Ink Middle Smoothness The amount of curve present in the middle of the dark ink

curve. Select **0** for a straight line.

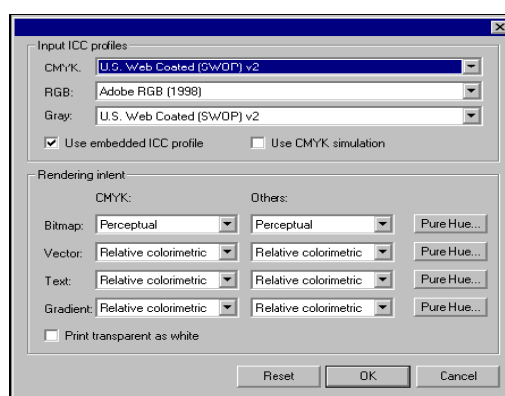
Reset Undo Click to restore the ink split settings for the current channel to the factory defaults. Click to undo the last change made to the ink split settings.

Apply to All Click to apply the current ink split settings to all color channels.

Setting Advanced Color Correction Properties

To edit the advanced color correction properties for a job:

1. Open the job properties for that job.
2. Select the **Color Management** tab.
3. Click on the **Advanced** button.



Setting ICC Input Profiles

Select the ICC input profile to use to convert the image into a neutral color space. There are three types of ICC input profiles that can be specified.

CMYK The CMYK input profile applies to all elements of a job that are in CMYK color mode. If your image is in CMYK color mode, then your file was previously separated for output to a specific output device. Whenever is possible, use the profile used for separation in your design application as the CMYK input profile. Try using similar profiles for common ink sets (such as CMYK SWOP or High End SWOP) if you don't have the matching profile.

RGB The RGB ICC input profile applies to all elements of a job that are in RGB color mode. An RGB input profile can be for either a monitor or a scanner. If you scanned your image without color correcting it, it is recommended to use the scanner profile as a RGB input profile. If you have done any on-screen color correction, you should select your monitor profile as a RGB input profile.

Gray The Gray ICC input profile applies to all elements of a job that are in grayscale color mode. This may refer to either a grayscale scanner or a grayscale monitor.

Check **Use embedded ICC profile** to force the RIP to use the input ICC profile embedded in the file. The name of the embedded profile is listed. If **Use CMYK Simulation** is checked, RGB images will be imported using the RGB input profile, then converted to CMYK and reimported using the CMYK input profile.

Adding ICC Profiles from Other Sources

To add an ICC input profile from another source, choose **Add** from the combo box.

Setting Rendering Intents

Rendering intent specifies how a color space from the input file gets mapped to the color space of the output device. Rendering intents can be specified for four different types of objects that make up jobs:

- Bitmap** The rendering intent to use with bitmap images (raster images) contained in your job file.
- Vector** The rendering intent to use with vector objects such as circles, polygons, lines, arcs and Bezier curves contained in vector-based files like PostScript, DXF or Adobe Illustrator.
- Text** The rendering intent to use with text objects contained in PostScript and other vector-based files.
- Gradient** The rendering intent to use with vector-based gradient objects contained in PostScript and other vector-based files. Gradients created in bitmap files will be rendered using the **Bitmap** rendering intent.

If a type of object does not appear in the current job, its rendering intent will be disabled. Text objects are only detected in PostScript-based files (PS, EPS, PDF) in which the text has been saved as a text object (not saved as paths).

Different rendering intents can be specified for CMYK objects versus all other objects (RGB, grayscale, LAB, etc.).

Choose from one of the following rendering intents:

Perceptual This intent is best for photographic images. Colors outside of the output device's gamut are either clipped or compressed to fit the output device's color space.

Saturation This intent is best for graphic images, such as vector art, where vivid colors are more important than true color matching. Colors outside of the output device's gamut are mapped to colors at the extent of the gamut's saturation. Colors that fall within the gamut of the output device are shifted closer to the gamut's saturation extent.

Relative This intent is best for images, such as logos, where the output needs to match the original

Colorimetric image. Colors that fall outside of the output device's gamut are clipped. This method may reduce the total number of colors available. The white point of Relative Colorimetric is always zero

Absolute This intent is similar to Relative Colorimetric, but has a different white point value.

Colorimetric Absolute Colorimetric represents colors relative to a fixed white point value of D50. For example, the white of paper A will be simulated when printing on paper B. This intent is best for color proofing.

Spot Color This intent was created to supplement the Saturation intent. Spot Color maps colors similarly to the Saturation rendering intent, but Spot Color rendering intent produces the greatest saturation possible, and should not be used with photographic images.

No color correction The object will be printed without any color correction.

Print Transparent as White

If this box is checked, transparent areas of the design or areas in which there are no objects will be printed in white, instead of being left blank.

Using Pure Hue Settings

The Pure Hue buttons allow you to specify that certain color channels should not be mixed in with other colors when the job is rendered. These settings can be different for each of the 4 types of object. For instance, if a job contains yellow text, you could check the Pure Hue setting on the yellow color channel for text, so that no other colors appear in the yellow text.

To adjust the Pure Hue settings for a type of object:

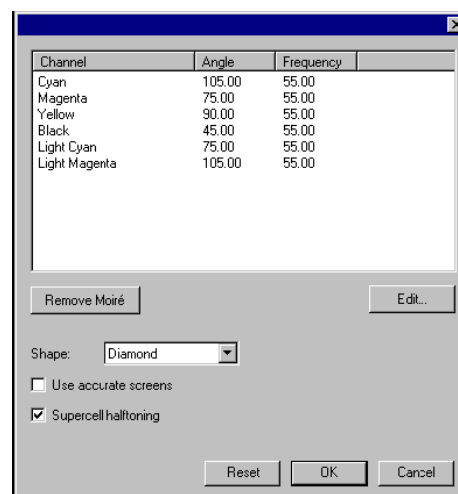
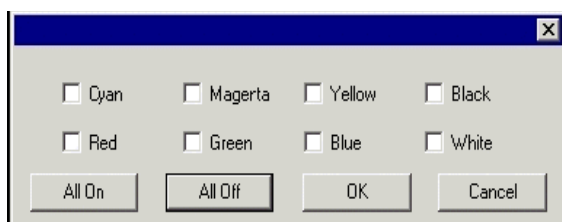
1. Click the **Pure Hue** button next to the object's rendering intent.
2. Check the boxes for each color channel that you want to preserve unmixed.
Click **All On** to check all color channels, or **All Off** to clear all channels.

2. Click **OK**.

Setting Dither Options for Angled Screens

The Angled Screens dialog displays the dither options that are available for angled screens. To access the dialog, select

Angled screen as your dithering option in the Printer tab of the Job Properties dialog, and click on the **Screen** button.



The following options are available:

Remove Moiré Click to recalculate angles and frequencies to remove Moiré patterns. This function recalculates the angles and frequencies of the CMY color channels based on the angle of the black color channel. All other color channels will remain unchanged.

Screen To set the screen angle and frequency for a color channel, select the channel in the list

Angle and Frequency and click **Edit**.

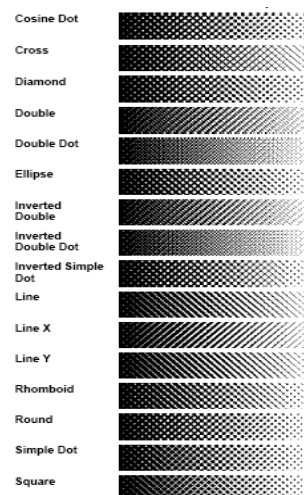
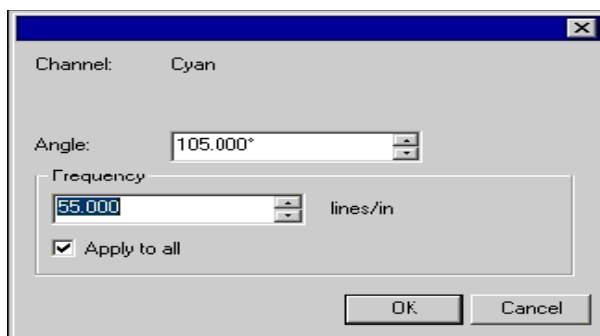
Enter the angle and frequency desired, then click **OK**. Check **Apply to All** to apply the new frequency to all color channels.

Shape The shape of the dots that make up the halftone screen. For best results, choose either **Diamond** or **Ellipse**.

Use Accurate Screens If checked, a special algorithm is used that produces highly accurate halftones, but is computationally expensive

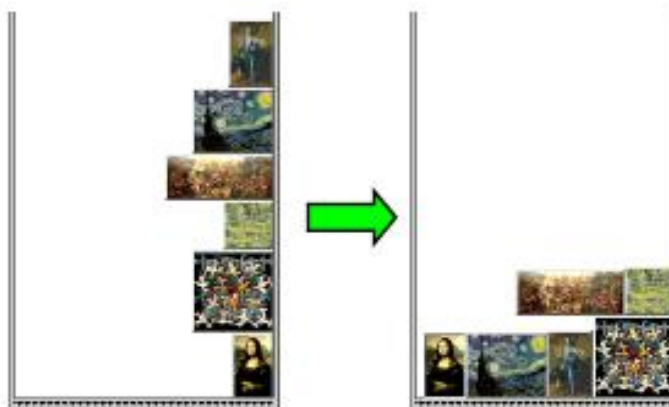
Supercell If checked, supercell halftoning will be used. Supercell halftoning produces

halftones that **Halftoning** have four times the shades of gray at the same resolution compared to standard algorithms. This creates smoother images when printing angled screens. However, the amount of processing needed to generate halftones is increased.



Nesting Jobs

The software has the ability to nest jobs together in order to minimize the amount of material needed to output the jobs. Nesting reorganizes the jobs on the output media so that they line up across the media width and are packed into as compact an area as possible. Jobs must be in the same queue in order to be nested together, and must share the same output device and resolution.



Nesting Jobs Manually

To nest jobs:

1. Select the jobs.
 2. From the **File** menu, select **Nest Jobs**.
- If a single job is selected, its pages will be nested.

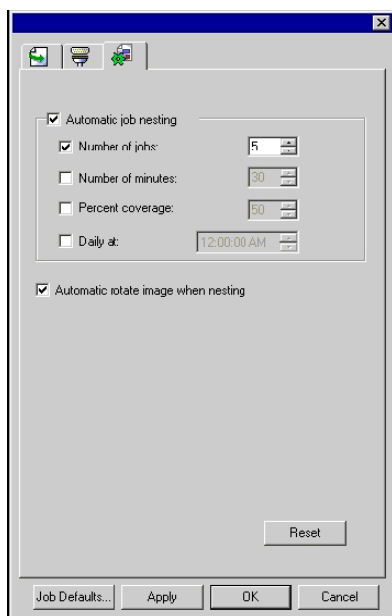
Un-Nesting Jobs

To separate a set of nested jobs into its component jobs:

1. Select the set of nested jobs.
2. From the **File** menu, select **Unnest Jobs**.

Using Automatic Nesting

The software can be set to automatically nest jobs as they are added to the Hold Queue. To set up automatic nesting, from the **Setup** menu select **Setup Properties**, then select the **Automatic Nesting** tab.



Automatic job nesting

Automatically nests jobs using one or more of the criteria specified below. This allows you to work more efficiently by grouping their jobs for output. You can add several jobs into the queue and nest them into one job.

Number of jobs

Select this option to automatically nest jobs once the specified number of jobs has accumulated in the queue.

Number of minutes

Select this option to automatically nest jobs once the specified number of minutes has passed.

Percent coverage Daily at

Select this option to automatically nest jobs once the specified percentage of the media has been covered.

Select this option to automatically nest jobs once a day at the specified time.

Automatic rotate image when nesting

If checked, the images may automatically be rotated when nested so that less of the output media will be used up.

Set Number of jobs to 1

Automatically nest pages, tiles and separations.

Nesting Pages, Tiles and Separations

The software is able to nest the pages of a multi-page job so that they line up across the width of the output media and take up less material.

To nest the pages of a multi-page job:

1. On the **Layout** tab of the Job Properties dialog for the job, check **Page Nesting**.
2. Select the job.
3. From the **File** menu, select **Nest**.

Rearranging Nested Jobs

The software allows you to rearrange a set of nested jobs using the Job Properties dialog. You can move, rotate and mirror the jobs. To rearrange a set of nested jobs, select the set of jobs and from the **File** menu, select **Job Properties**. In the Job Properties dialog, select the **Layout** tab. A red border appears around the edges of the selected image.

Moving Images

To move a nested image, click and drag the image in the preview pane of the Job Properties dialog.

Rotating Images

To rotate an image 90°, select the image and click on the **Rotate Image** button. Clicking the button a second time will toggle the image back to its original orientation.

Mirroring Images

To flip all images along their vertical axes, click on the **Mirror Image** button. The images are flipped, but their positions on the output media do not change.

5.15 Shutdown Procedure (Applicable if the machine will not operate for more than 4 days)

- Ø Shut-off the UV lamps.
- Ø Shut-off the negative pressure valves.
- Ø Shut-off the power for machine and PC.
- Ø Disconnect the printhead input line from the Ink Supply line.
- Ø Connect the printhead input line to the syringe filled with clean applicable flushing solutions.
- Ø Slowly push the flushing solution out of the Print head to gradually remove the ink presence on the Print head.
- Ø Continue flushing the print head until a clear flushing solutions are jetting out of the printhead nozzles.
- Ø Re-connect the printhead input tubings to ink supply line.
- Ø Do the same procedure on other Printheads.
- Ø After completing the flushing of all the Print head, prepare the Print head Capping material.
- Ø Pour Flush solution to the lint free cloth on top of the prepared print head capping material.
- Ø 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
- Ø Wipe-off any ink contamination.
- Ø Turn off the Main Power switch.
- Ø Close the left case cover.
- Ø Switch-off the ventilation and lighting in the printing room if necessary.
- Ø Perform Housekeeping if necessary.

5.16 Overnight Shutdown

- Ø Shut-off the UV lamps
- Ø Shut- off the negative pressure valves.
- Ø Shut-off the power for machine and PC
- Ø Close the machine covers
- Ø Do housekeeping if necessary

Chapter 6 – Service and Maintenance Procedure

6.10 Brief Introduction

This is to describe the various service and maintenance procedure to be observed in using this machine

6.11 Flushing a Selected Print head

- Disconnect the connection of the Ink Tube Inlet from the Ink Supply line, insert the tubing of the Syringe with the compatible solvent inside.
- Slowly push the solvent out of the Print head and check if all the nozzles are working well.
- Continue flushing out until all the printhead nozzles are showing straight jetting of flushing solution.
- Reconnect the Ink input tubing to the supply line, Do Ink prime by activating the toggle switch.
- Click the Auto Clean Mode on the RTZ software to auto-clean the Print head.
- Wipe the Print heads with a lint-free cloth to removed excess ink residue around the Print heads.

6.12 Replacing the 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 data cable.
- Remove the Print head Connect card by removing the two screws securing this card
- Remove the two screws which secure the print head from the print head carriage.
- Remove the Ink Inlet and Ink bleed tubing from the Print head's ink supply and bleeding port.
- Safe keep the old Print head.
- Install the new Print head to the Print head accordingly.
- Replace the two fixation screws of the Print head.
- Connect the Ink Inlet and Ink bleed tubing to the new Print head's accordingly.
- Install the Print head Connect Card on top of the Printhead, securing it with two screws.
- Install the 30pins Print head flexible data cable.
- Perform Flushing procedure to make sure that all jets are working well.
- Turn on the printer power.
- Perform Ink Priming
- Click the Auto Clean Mode on the RTZ software to auto-clean the Print head.
- Wipe the Print heads with a lint-free cloth to removed excess ink residue around the Print heads nozzle.

6.13 Maintenance of Ink Supply and Vacuum Line System

- Check the ink supply line system specifically the connectors, plugs and valves for any traces of leakages or broken plastic tubing.
- Check and clear any traces of ink or solvent flow from the ink protect tank. If overflow happens, clean the affected line immediately. Check possible traces of leakages and fix them accordingly. Ink dripping or starving will happen on the print head as a result of unstable vacuum line system.

6.14 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 LED doesn't light after 2 mins 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 three months or approximately 800 operational hours to ensure continuous ink and solvent flow into the system

6.15 Changing Defective ink and Vacuum Pump

If the time for the ink to reach the secondary ink tank is longer than normal, the pump might be defective or it might be a leaking problem. When changing the Ink Pump, take note of the polarity of the power supply cable and the direction of the arrow head for tubing connections.



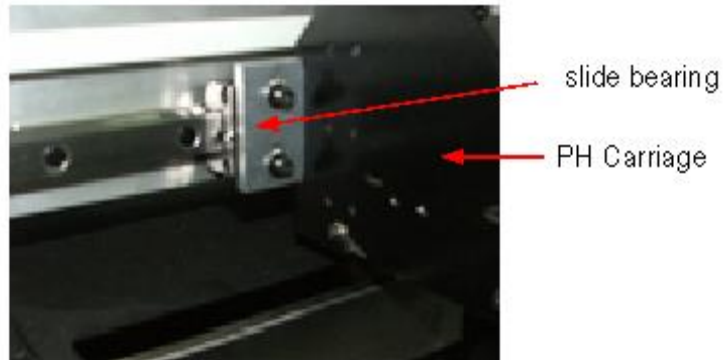
Likewise, when the ink priming pressure becomes weak and the negative pressure will go down below -2.0 reading, the air pump is defective or there might be some leakage somewhere in the vacuum line system or the 4/2 way valve is malfunctioning. Usually, the vacuum pump can attain 20-30KPa pressure when you do ink priming. When changing the vacuum pump, you must take note of the power supply cable and flow direction of air is determined by the arrowhead on the pump.

6.18 Maintenance of Printer Moving Parts

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 the slide bearing, ball bearings for timing belt pulleys, gears and ball bearing for automatic take-up system and pinch rollers on a weekly basis.



Chapter 7 - Appendices

Appendix A

Material Safety Data Sheet for UV Inks

SECTION 1: Chemical Product And Company Identification

PRODUCT NAME: VUV-Yellow/Magenta/Cyan /Black/LightMagenta/LightCyan
PART NO: VUV-Y /VUV-M/VUV-C/VUV-K/VUV-LM/VUV-LC
SUPPLIER: SHINY COLOR INKS INC.
AGENT: XUKE Advertising Equipment Inc.
Shenzhen, Guangdong China
TEL NO: 0086-755-84150772
FAX NO: 0086-755-84150773

SECTION 2: Composition/ Information of Ingredients

<u>INGREDIENT NAME</u>	<u>CAS NO</u>	<u>CONTENTS</u>	<u>HEALTH RISK</u>
Organic Pigment		2.0-6.0 %	
Ester Resin		0.1-5.0 %	
Vinyl Resin		1.0-8.0 %	
Cyclohexanone	108-94-1	1.0-5.0 %	Xn 36
2-Butoxyethyl acetate	112-07-2	60-80 %	Xi 20/21
DE-Acetate	112-15-2	10-20 %	Xi 37/41
N-Methyl Pyrrolidinone	872-50-4	1.0-5.0 %	Xn 36

SECTION 3 Hazard Identification

HEALTH: Harmful if inhaled or adsorbed through skin and irritating to eyes
FIRE: Product is not classified as flammable.

SECTION 4 First Aid Measures

GENERAL ADVICE: Please call hospital emergency in case of any accident that is not instructed how to handle

INHALATION: Take the victim to the place for fresh air at once

INGESTION: Call hospital emergency

SKIN: Wash skin with clean water immediately

EYES: Make sure to remove any contact lenses from the eyes before rinsing. Rinse at least 15 minutes. Call hospital emergency if still feel uncomfortable

SECTION 5 Fire Safeties

EXTINGUISHER: Use Foam, Carbon dioxide (CO₂) Powder.

PROTECTION EQUIPMENT: Wear mask and safety glasses

SECTION 6 Handling ink spillage

PERSONAL SAFETY: Use protective gloves and mask; avoid contact with skin or eyes.

SPILL CLEANUP METHODS: Apply toilet paper

ENVIRONMENTAL PRECAUTION: Avoid pouring waste ink into tap water drainer and soil.

SECTION 7 Handling and Storing

USAGE PRECAUTIONS:

Keep container sealed.

Provide good ventilation.

Avoid spilling, skin and eye contact.

Avoid inhalation of vapors.

STORAGE PRECAUTIONS

- Keep in cool, dry, ventilated storage and sealed containers.
- Protect from light, including direct sunrays.
- Keep away from heat and flame.
- Store away from oxidizing material, alkalis, acidic.

SECTION 8 Exposure Controls and Personal Protection

INGREDIENT NAME	CAS No	STD	LT EXP	ST EXP
		(8 hrs)	(15min)	
Cyclohexanone	108-94-1	25ppm		NE
2-Butoxyethylacetate	112-072	25ppm		NE
DE -Acetate		112-15-2	25ppm	NE
N-Methyl Pyrrolidone	872-50-4		NE	NE

INGREDIENT COMMENTS:

OES = Occupational Exposure Standard.

PROTECTIVE EQUIPMENT:



PROCESS CONTROL MEASURES: Use engineering controls to reduce air contamination to permissible exposure level. Provide eyewash station.

VENTILATION: Provide adequate general and local exhaust ventilation.

PROTECTIVE GLOVES: Use suitable protective gloves to reduce risk of skin contact.

EYE PROTECTION: Use approved safety glasses or mask.

OTHER PROTECTION: Wear suitable protective cloth for protection against splashing or contamination.

HYGIENIC WORK HABITS: Wash hands at the end of each work shift, before eating, smoking and using the toilet.

Change cloth that becomes wet. Isolate contaminated cloth and wash before reuse. Use appropriate hand lotion to prevent aging and cracking of skin. No eating or drinking while working with this material.

SECTION 9 Physical and Chemical Properties

Existing form:	Liquid
Color:	Yellow/Magenta/Cyan/Black
Boiling degree:	191
Flash degree:	88
Auto ignition Temperature:	no data
Flammability limits (vol %):	no data
Relative density (g/cm ³ ,25):	not determined
Solubility in water (g/l,20):	not soluble

SECTION 10: Stability and Reactivity

Stability: Stable under normal conditions in tightly closed container decomposition if used according to specifications.

Materials to Avoid: Avoid contact with oxidizing materials, strong acids, strong bases, air or oxygen.

Hazardous Polymerization: Not relevant.

Conditions to Avoid: Avoid sources of ignition

SECTION 11: Toxicological Information

INHALATION: Gas or vapor in high concentrations may irritate respiratory system.

SKIN CONTACT: Acts as a defeating agent on skin may cause cracking of skin.

EYES CONTACT: Primary irritant effect may cause severe irritation to eyes.

INGESTION: Low acute oral toxicity.

SECTION 12: Environmental Information

MOBILITY: Partly miscible with water.

BIO ACCUMULATION: Bio accumulation unlikely.

DEGRADABILITY: Readily biodegradable. Do not allow product to reach ground water course or sewage system.

SECTION 13: Disposal Considerations

GENERAL/CLEANING:

Refer to Section 7 before handing the product or containers.

DISPOSAL METHODS:

Disposal must be in accordance with current national and local regulations. Chemical residues generally count as special waste.

SECTION 14: Transport Information

GENERAL: Not regulated.

LABEL FOR CONVEYANCE: No transport warning sign required.

ROAD:

HAZARD CLASS (ADR): Not classified for transportation. The product is not subject to transport regulations of Rail, Sea, Air.

SECTION 15: Regulatory Information

LABEL FOR SUPPLY:

VUV Yellow/ Magenta/Cyan/Black

DANGER SYMBOL:

Xn (Harmful)

RISK SYMBOL:

R-36: Irritating to eyes.

R-21: Harmful by inhalation

R-20: Harmful in contact with skin

SAFETY PHRASES:

S-25 Avoid contact with eyes.

S-26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S-28 After contact with skin, wash immediately with plenty of water.

S-36/37/38 Wear suitable protective cloth and gloves and eye/face protection

S-60 This material and its container must be disposed of as hazardous waste.

SECTION 16 Other Information

This data sheet is prepared in accordance with directive. The information on this sheet is intended to provide general guidance to health and safety based upon our knowledge of the handling, storing and using of our products. It is not applicable to other products.

Appendix B Preventive Maintenance Checklist

Item	Daily	Weekly	Monthly	Quarterly	Semi-annual	Annual
Ink Supply Level	Check and shake on startup					
Waste Ink Bottle	Check for level, dispose if full or nearly full					
Ink Filters				Change		
Ink Pumps				Check and replace if necessary		
UV Lamps			Check and change if necessary, left UV lamp and right UV lamp at the same time			
UV Lamp Filters		Check and Clean				
Flat Bed Conveyor		Clean				
Carriage Linear Guide Rail		Check, Clean and Lubricate				
Carriage Bearing		Check, Clean and Lubricate				
Carriage Belt				Check the tension, adjust tension if necessary		
Y-feed conveyor drive gear head oil				Oil change		Oil Change
Vacuum Cleaner and Filter Bag		Check for waste ink level and Clean if necessary				Change Filter Bag
Cleaning Station		Check and Clean				
Raster Strip/Ruler	Wipe with lint free cloth before startup					
Automatic Carriage Height mechanism	Check if spring is functional (The plunger should return at up/home position)					

Note: 500 Hrs after installation, the Y-feed conveyor drive gear head oil should be changed.

Appendix C Troubleshooting Guide

Problems	Probable Causes	Solution
<ul style="list-style-type: none"> ✓ One particular color is not printing 	<ul style="list-style-type: none"> ○ No ink flowing to the tube line of the Print head Carriage ○ Empty ink supply in the Ink barrel ○ Clogged Ink line tubing and ink filter ○ Defective Ink Pump ○ Defective Print head Control Board ○ Defective Motion Control Board ○ Air bubbles on the ink tube 	<ol style="list-style-type: none"> 1. Fill-up empty ink barrel 2. Replace clogged ink line tubing and ink filter 3. Replace defective Ink Pump 4. Replace defective Print head Control Board 5. Replace defective Motion Control Board 6. Purge air from the affected ink tube.
<ol style="list-style-type: none"> 1. Some Print head Nozzles are not firing 2. Print head firing is not straight 	<ul style="list-style-type: none"> ○ Clogged Print head ○ Print head problems ○ Defective Print head Cable ○ Defective Print head Control Board 	<ul style="list-style-type: none"> • Perform Ink Priming • Replace defective Print head • Replace defective Print head Cable • Replace defective Print head Control Board • Adjust the Print head Voltage
<ul style="list-style-type: none"> ✓ Ink Starvation 	<ul style="list-style-type: none"> ○ Insufficient Negative Pressure value ○ Print head nozzles are not working well ○ Insufficient ink flowing from the Disc Filter to the Print head because of clogged disk filter 	<ul style="list-style-type: none"> § Increase the Negative Pressure value from -2.2KPa to -2.6KPa § Perform Test Print to check if all the Print head nozzles are working well, flush and ink prime as needed § Replace Filter
<ul style="list-style-type: none"> ✓ Cannot achieve correct negative pressure ✓ Negative pressure keeps on changing from time to time 	<ul style="list-style-type: none"> ○ Presence of ink in the Ink Protect Tank ○ Defective Negative Pressure Regulator ○ Defective Pressure Gauge ○ Defective Air Pump ○ Possible leak in the vacuum line system (negative pressure line) 	<ul style="list-style-type: none"> § 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
<ul style="list-style-type: none"> ✓ Air Pump is not working ✓ Ink Pumps are not working 	<ul style="list-style-type: none"> ○ Presence of ink in the Ink Protect Tank ○ Ink Tank Sensor might not be working that is why ink is overflowing to the Ink Protect Tank 	<ul style="list-style-type: none"> § Fix/replace the Ink Tank Sensor § Remove the ink from the Ink Protect Tank using the Syringe from the Ink Outlet Tube vent
<ul style="list-style-type: none"> ✓ All Ink Pumps are not working 	<ul style="list-style-type: none"> ○ Presence of ink in the Ink Protect Tank ○ Defective / Out of Position Ink Protect Level Sensor 	<ul style="list-style-type: none"> § Remove or purge any presence of ink in the Ink Protect Tank § Replace/Fix Ink Protect Level Sensor by opening the Ink Protect Tank

<ul style="list-style-type: none"> ✓ No Print at all ✓ No presence of Printhead Voltage from RTZ software 	<ul style="list-style-type: none"> ○ The Optical Cable must have been interchanged during installation 	<ul style="list-style-type: none"> § Interchanged again the Rx/Tx connection of the Optical Cable either from the PCI card or in the Printhead Control Board
<ul style="list-style-type: none"> ✓ Carriage gets in contact with media during printing 	<ul style="list-style-type: none"> ○ Gap between carriage and media (printing platform) is too close. ○ Media suction is not working ○ Wrinkled / curled media 	<ul style="list-style-type: none"> § 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
<ul style="list-style-type: none"> ✓ Carriage is not moving, left to right stroke 	<ul style="list-style-type: none"> ○ Defective AC Servo Motor ○ Corrupted/Defective Servo Driver ○ Worn-out Timing Belt ○ Defective Motion Control Board 	<ul style="list-style-type: none"> § Replace defective Servo Motor § Re-program the Servo Driver, replace if defective § Replace worn-out Timing Belt § Replace Motion Control Board
<ul style="list-style-type: none"> ✓ Media is not moving, backward and forward stroke 	<ul style="list-style-type: none"> ○ Defective DC Servo Motor ○ Defective Movement Control Board ○ Worn-out Timing Belt ○ Defective Motion Control Board 	<ul style="list-style-type: none"> § Replace defective DC Servo Motor § Replace worn-out Timing Belt § Replace Movement Control Board\ § Replace Motion Control Board
<ul style="list-style-type: none"> ✓ Ink is not drying 	<ul style="list-style-type: none"> ○ Heat is not enough to dry the ink ○ Heater is not working ○ Heater controller is not working ○ Density or the ink limits of the image setup is too high 	<ul style="list-style-type: none"> § 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
<ul style="list-style-type: none"> ✓ Horizontal banding 	<ul style="list-style-type: none"> ○ Clogged Print head ○ Step alignment is not good ○ Print head alignment is not good 	<p>Perform solvent flushing and Ink Priming (make a longer flushing if needed) then check status of the Print head in Test Print.</p> <p>Adjust the motor steps (see Print head alignment Procedure)</p> <p>Aligned the Print head very well (see Print head Alignment Procedure)</p>
<ul style="list-style-type: none"> ✓ A particular portion of the printer is showing horizontal banding 	<ul style="list-style-type: none"> ○ Feeding of the Pinch Roller is not equal 	<p>Adjust the tension of the Pinch Roller (see Pinch Roller Adjustment Procedure)</p>

✓ Inconsistent step align problem	<ul style="list-style-type: none"> ○ Feeding of the Pinch Roller is not equal ○ Worn-out Gear Box Assembly ○ Defective Motor Encoder ○ 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	<ul style="list-style-type: none"> ○ Raster Strip might have scratches on that portion ○ Loose connection on the Print head Cable Data lines ○ 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	<ul style="list-style-type: none"> ○ Raster Strip is too dirty ○ Portion of Raster Strip has severe scratches ○ Defective Raster Strip ○ Defective Raster Encoder ○ 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	<ul style="list-style-type: none"> ○ The RIPed image dimension is almost /more than 2000in/50m. ○ 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	<ul style="list-style-type: none"> ○ Tension Roller problem ○ Needs to perform Output Size Compensation 	§ Adjust/setup the roller tension properly § See page 48 for proper procedure in using Output Size Compensation

Appendix D 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 device used to measure the density of printing ink.

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

DCM Driver Chip Module - Part of Spectra 96 chip print head. Consists of a printed circuit board with driver chips, attached to a lead frame of sprung legs that are pushed into contact with pads on the PZT.

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 gradual 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 lies.

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