MEIJET 3204/3206/2504/2506SK-II Solvent Printer

Operation Guide

Rev. 2.0, September 2, 2008

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List of Warnings:

- **When using the forklift, make sure the forklift not touch the front and back media sensors installed at the middle of the two bottom steal beam. Contact by the forklift could damage the sensors.**
- **The printer must be set in a clean location free from dust. A dusty environment could shorten the life of the print heads and the printer.**
- **During installation of PCI card, tighten the PCI card onto the computer slot so that PCI card will not be loose during printing. A loose PCI card could adversely affect the printing and may damage the PCI card.**
- **Keep the extra length of fiber optical line inside the right cabinet. Do not fold or step on the fiber optic line as it may damage the line.**
- **Do not disconnect the decoder cable during printing. Disconnect this cable only when computer is powered off.**
- **Do not forcefully push the print head converting board as it may damage the connection if the connection is aligned the wrong way.**
- **Do not unplug or plug the software dongle with computer on. Doing so may damage the software RIP dongle and it will not be covered by warranty.**
- **Make sure to use the same resolution for the RIP and ePrint. A different resolution could change the size of the image printed. A 360 dpi RIPed file, when printed with ePrint at 180 dpi, would double the image width. The carriage would likely hit the right hand side stopper. Repeated collision of the carriage with the stopper, especially at fast printing speed, could damage the printer.**
- **Always keep print heads from drying off. When print heads are in protection plate, always make sure that there is enough cleaning solution inside the plate. When print heads are full of inks and are not in protection plate, make sure flash printing is on with print head voltage on, flash jetting selected in software and software/computer not turn off.**

Chapter I: Quick Installation Guide

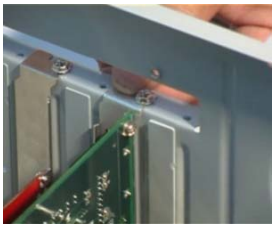
1.1 Set Printer Ready

- Remove all the screws on the crate to open up the crate.
- The printer is tightened to the bottom board of the crate. Remove all the screws that tighten the printer to the bottom board to free up the printer.
- The bottom two steal beams on the printer can be used for forklift to move the printer. Use a forklift to move the printer to an appropriate location. A right location for the printer should be free from dust, relatively temperature stable, and very importantly, well ventilated.
- **Warning: When using the forklift, make sure the forklift not touch the front and back media sensors installed at the middle of the two bottom steal beam. Contact by the forklift could damage the sensors.**
- **Warning: The printer must be set in a clean location free from dust. A dusty environment could shorten the life of the print heads and the printer.**
- Set up grounding by connecting the steel casing of the printer with a water pipe or a steel bar buried inside ground at least 1 meter deep. Proper grounding eliminates static. It also improves the life of electronic boards and image quality.

1.2 Install PCI Card

- Copy ePrint folder onto the C drive of the operating computer. The computer needs to have minimum 1 GB ram memory and is running Window XP.
- Open the spare part box and remove the PCI card as shown below. To prevent damaging to the sensitive electronic boards included, avoid touching the chips on the cards directly with your hands. Handle the boards by the edge. Tighten the PCI card to the computer fitting bracket.

- Disconnect the power cable to the computer. Open up the casing for the computer hard drive. Insert the fitted PCI card into its corresponding position on the back of the computer. Tighten up the fitting bracket onto computer casing so that PCI card is firmly in place. Close the computer cover, and re-connect the computer power cable.

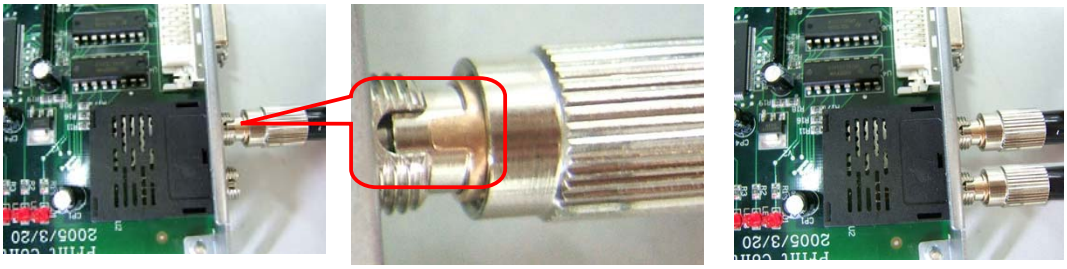


- **Warning: During installation of PCI card, tighten the PCI card onto the computer slot so that PCI**

card will not be loose during printing. A loose PCI card could adversely affect the printing and may damage the PCI card.

1.3 Connect Fiber Optic Line

- Place the socket of the two fiber optic lines into the two slots on the PCI card.



- Note: When print head board is connected via fiber optics line through Rx connector, PCI card must be connected via fiber optics line through the Tx connector, or vice versa.
- **Warning: Keep the extra length of fiber optical line inside the right cabinet. Do not fold or step on the fiber optic line as it may damage the line.**

1.4 Connect Decoder Cable

- Insert the decoder into the PCI card slot and connect the other end to the printer.
- **Warning: Do not disconnect the decoder cable during printing. Disconnect this cable only when computer is powered off.**

1.5 Install Print Head Cleaning Vacuum

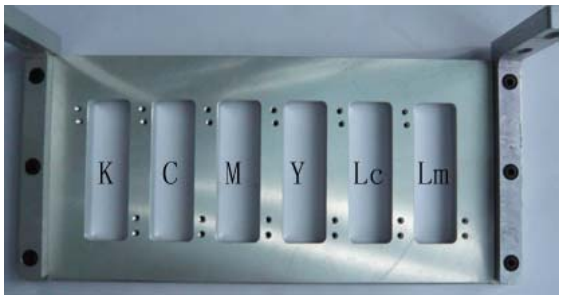
- Insert the conduit of the vacuum into the vacuum connect.
- Insert the vacuum's power plug into the socket inside.
- Switch on the vacuum.

1.6 Flush Print Heads

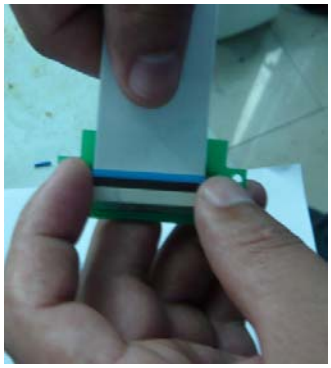
- Take out print head from packaging.
- Use a new plastic syringe and tubing to drive out the wetting oil inside the print head.
- Open a cleaning solution bottle. Withdraw cleaning solution from the bottle. Inject about 60 ml of cleaning solution gently into the print head. Let clean solution stay inside the print head for about 10-15 minutes.
- Repeat last step twice to remove completely the wetting oil inside a new print head. Wetting oil could react with solvent inks and cause nozzle clogging.

1.7 Install Print Head

- Carefully take out the print heads from its boxes. Handle print head by edge. Do not touch the nozzle plate.
- Use screws supplied to place each print head onto the printer head holder plate below.

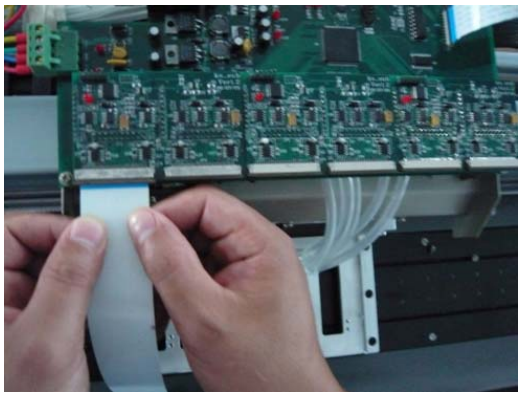


- Install the small print head converting board onto each print head.



- Connect one end of the print head data cable to each print head converting board.

- Connect ink tubing to the print heads. The order for ink color out of ink tubing from left to right is black, cyan, magenta, yellow, light cyan, and light magenta. Put a short, one-end sealed, ink tubing onto the other ink inlet of the print head.
- Connect the other end of each print head data cable to the print head board. Make sure data cable is plugged into the right spots for each print head accordingly.

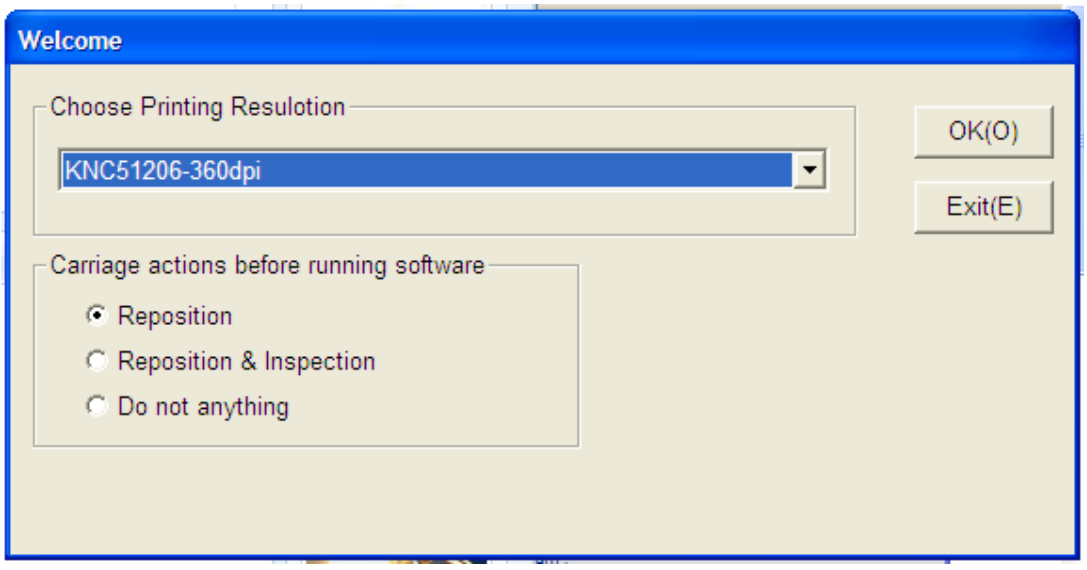


1.8 Install PCI Drive Software

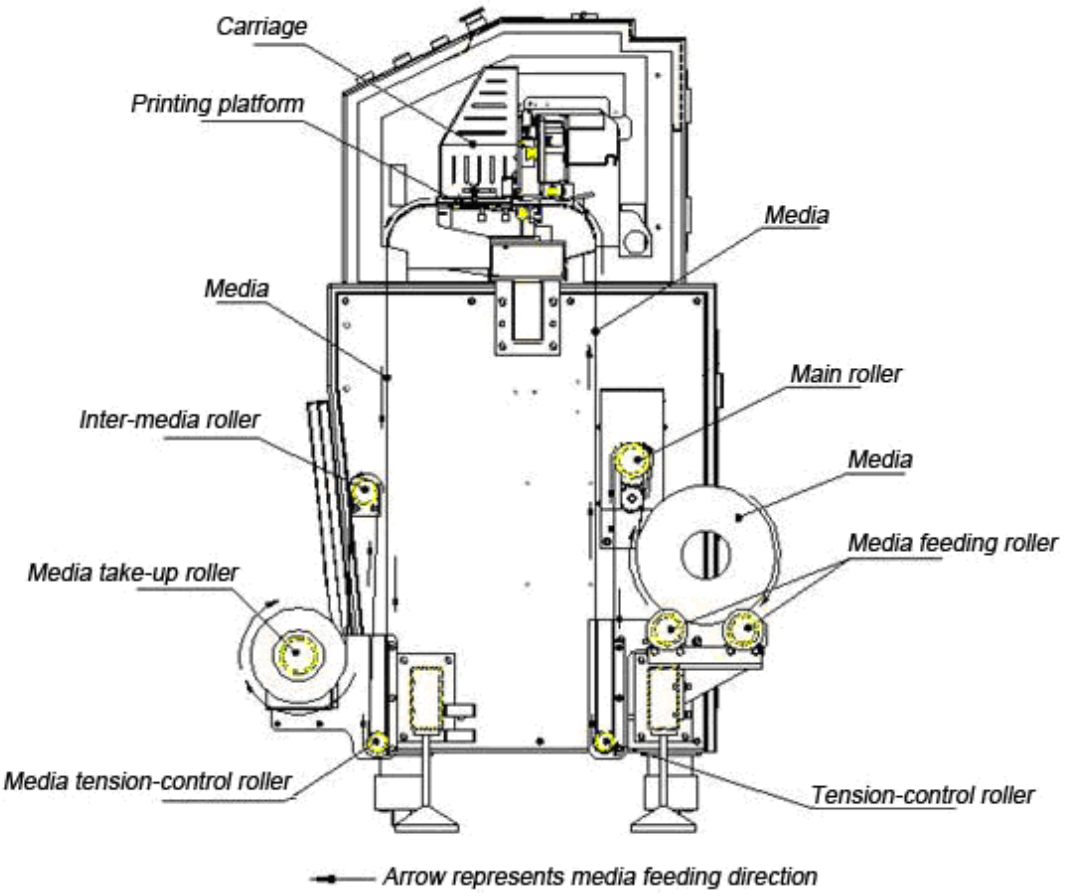
- Turn on the computer.
- After Windows start up, the computer will find the PCI card. "New hardware found" would show up on computer screen. Install the PCI card driver from the instruction on the computer screen. PCI card driver is located insider the Printer Driver folder and the file name is PCICardDriver.exe.

1.9 Install Printing Software, ePrint

- Run ePrint.exe, which is the printing operation software. A dialog will pop up on the screen as show below. Two (X direction) resolutions are offered at 360 and 180 dpi. Select the print resolution needed to start.



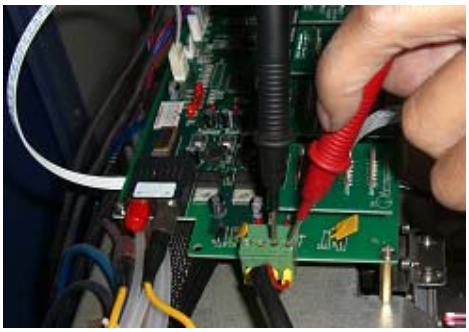
1.10 Load Media Roll



Lift up the lever, load the material according to the media track shown in the picture above onto the platform. Make sure media is aligned and smooth on platform. Tape the front edge of the media to the media roll up reel. Tighten the media on the media path by rotating the media roll to make sure no wrinkles on the media. Release the level.

1.11 Power-on Printer

- Quit all programs and turn off the computer.
- Plug the printer power cord into a 220v, 10 Amp power source.
- Switch on the main power of the printer next to the power cord plug.
- Check both emergency switches. Pull them up if they are pressed down.
- Turn on the air break switch inside the right cabinet as shown in picture below, if they are set at "off" position.
- Press down print head voltage button. Check print head voltage using a multi-meter as shown below. Print head board voltage should be at 24+/- 0.3 volts. This step is to safeguard expensive print heads. If print head board voltage is out of range, check the power inlet voltage and the voltage from all power converters according to Chapter IV.

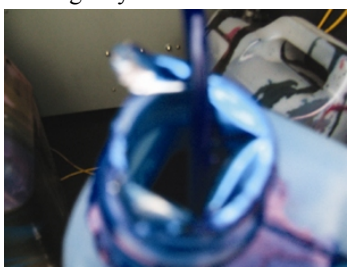



1.12 Install Inks

- Remove all the ink tubing from the clean solution bottle, and place the tubing onto a clean surface.
- Cut a small opening on the bottle seal. Open ink bottles and place the ink bottle next to the clean solution bottle. Don't cut the opening too big as shown below.
- Turn on the computer. Start the printing software. Click to reset the printer. This will make the carriage back to its original position. Make sure flash jetting is set on in the software.
- Push "Purge Ink" button to remove the cleaning solution in the line and inside ink sub-tanks. Release the button when cleaning solution is depleted as observed from print head jetting. Make sure print head voltage button is not pressed on. You will hear ink pump running dry during this process.
- Insert ink tubing through the cut into the respective ink bottle. Ink pump will carry ink automatically through ink line into ink sub-tank.

Right Way

Wrong way



- Push "Purge Ink" button to bring ink into print heads. Watch for air inside the ink inlet line from the ink sub-tank to print head. Press the button again to remove the air if present.
- Wipe off inks on print head and print head plate with the non-woven cloth supplied.

1.13 Test Print

- Push the "Print Head Voltage" button. One can check for the ink jetting by placing a piece of paper under the head plate for a second, then pull it out.
- Click the "Test" button on the menu, it will run "Nozzle Check" test automatically.
- From now on, we are ready to go to next chapter for print head and printer calibration.

1.14 Printer and Print Head Calibration

- Refer to 2.2.6 c) "Check, Set" section in Chapter II to calibrate X and Y movement
- Refer to 2.3.2 in Chapter II to calibrate print heads under both 360 and 180 dpi resolution
- Refer to 2.3.2 to calibrate bi-direction difference
- Refer to 2.3.2 to adjust step offset (or media advance). One also needs to print a small image to confirm

the step offset adjustment. If printed image has dark line banding, this means that there is not enough media advance and two passes are overlapping each other. One needs to add a positive number to the value in step offset box. If printed image has white line banding (and no nozzles were missing), this means that media advance is too much. One needs to reduce media advance by add a negative number to the value in step offset box. This finer adjustment of step offset can be left done in 1.16.

1.15 Rip an Image File

- Install the RIP software comes with the printer. Put the CD in the drive and install the Rip program by following the instruction on the screen.
- **Warning: Do not unplug or plug the software dongle with computer on. Doing so may damage the software RIP dongle and it will not be covered by warranty.**
- Under "File" select "Printer Setup". Select the correct printer model MJ3204SK-II, and click on the "Property" box. Under "Property", set the correct resolution and color mode. Under "Port", select "FILE". Click "OK" and "Exit" to exit from the dialog box.
- Under "File" select "Canvas Setup". Set the width accordingly or to the maximum at 3.3 m.
- Under "Edit", select "Add Image" to locate and open the image file to be RIPed. The acceptable file format by current RIP includes bmp, jpeg, and tiff file format.
- Adjust the image file accordingly if needed.
- Click on the "Print" button. A dialog box will show up. Select the right resolution, media, and ICC profile to be used. Click "Print" button in the dialog box to proceed. Please refer to the instruction manual and demo video on the CD of RIP software on how to create a custom color ICC profile.
- The RIP software will start to RIP the file and output file will be saved in "program file/ultraprint/output folder"

1.16 Print an Image

- Go to ePrint program, open the RIPed file from the above folder or by clicking the "Refresh" button (if a file from the same location was opened previously).
- **Warning: Make sure to use the same resolution for the RIP and ePrint. A different resolution could change the size of the image printed. A 360 dpi RIPed file, when printed with ePrint at 180 dpi, would double the image width. The carriage would likely hit the right hand side stopper. Repeated collision of the carriage with the stopper, especially at fast printing speed, could damage the printer.**
- Make sure print heads are in good working condition by clicking "Test" button for "Nozzles Checking". If some nozzles are blocked, clear the blockage by pushing down "Ink Flushing" button on the printer, Ink will start to flow out of print head nozzles. Clear off excessive ink by gently wiping the ink off with a piece of non-woven cloth or the sponge tip as supplied by Meijet.
- Select the number of passes, speed, and the margin (where the print start at X direction). Click on "Print" button, and a dialog menu for ink limit will show up. Typically the ink limit is set at 100% when the right ICC profile is used. If other ICC profile (profile made for other media or at other passes) is used that could lead to ink over saturation, adjust the ink limit accordingly to eliminate ink saturation.
- For Konica printer with Meijet high density ink, we recommend printing at 3 or 4 passes at 360dpi to get the better combination of printing spend and image quality.
- Click on "Print". The image will start to be printed.
- Adjust step offset according to 1.14 during printing if necessary.

1.17 End of Day

- Refer to 3.1.3 to protect print head at the end of a day. Turn printer power off before put on the protective plate underneath the print head plate.

1.18 Start Another Day

- Move the carriage with the print head protection plate underneath off the printing platform. Take the protection plate off. Place the protection plate inside the left cabinet of the printer, and put a piece of plastic film on top of the plate to keep it away from dust.
- Power on the printer and computer. Open ePrint. Click “Home” button on ePrint to make sure the connection between the computer and printer is established.
- Make sure “Print Head Voltage” is on.
- Before start a printing job, one need to flush out the cleaning solution inside the head first. The cleaning solution inside the heads comes from the solution added to the protection plate to protect the print heads. Purge out the cleaning solution and do a nozzle check to make sure all nozzles are in good condition.
- Rip or print files according to 1.15 and 1.16.

Chapter Two: Control Software

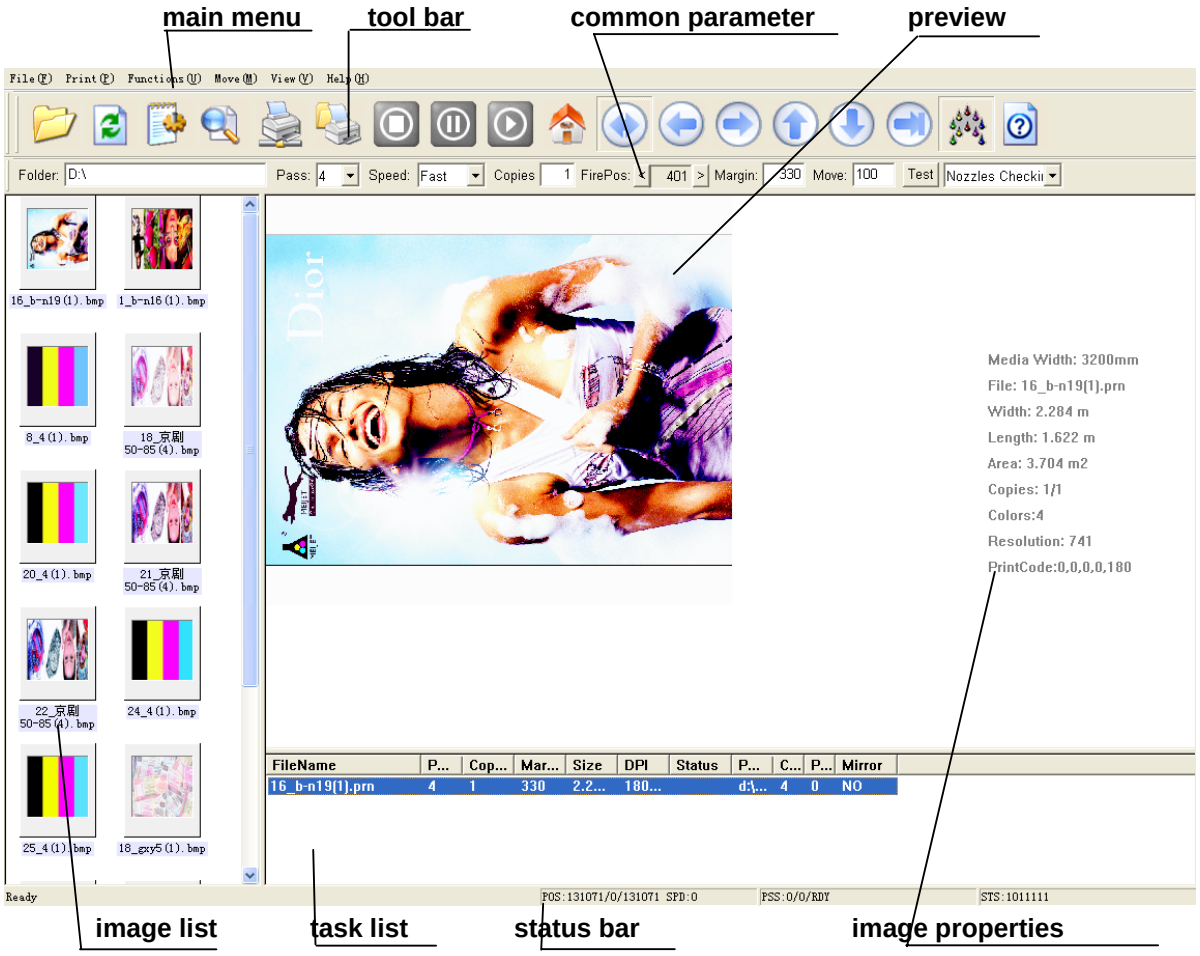
2.1 Software Features

- print head: Konica 14pl 360 dpi, 512 nozzle print head, 4 or 6 combinations,
- automatic print head voltage adjustment to temperature change, manual adjustment for print head voltage,
- resolution: 360 DPI and 180 DPI,
- color: 4 colors or 6 colors,
- print mode: 1, 2, 3, 4, 6, 8, 12, 16 passes,
- output preview: prn file can be converted into bmp file and then be previewed,
- free to start and stop each individual print head,
- intelligent printing:
- multi-image printing,
- auto cleaning: auto cleaning during printing,
- flash jetting: prevent clogging when a print head is not printing,
- color bar: prevent a print head from clogging, monitors the status of the print head. The distance and the width of the color bar can be adjusted.
- capable of adjusting print head data queue, media feeding step, and printing position during printing,
- media sensor: check media width, configure the picture's white borders,
- uni-directional (direction can be selected) or bi-directional printing capability and mirror printing capability,
- edge fading-out: to minimize banding from multiple passes.
- footnote printable
- x-motor acceleration setting
- proof printing

2.2 Software Functions

2.1.1 Main Menu

Start the software and open the main menu



2.2.2 Main Function

Main Function	Secondary Function	Explanation of the Functions
File		
	Open	selected image will be shown in the image list
	Delete	click the file to be deleted on the list, press "del" key to delete file
	Refresh	refresh image list
	Repreview	
	Property	
	Exit	quit the software and a dialog box will appear to confirm whether print heads are to reset to their original position for protection
Print		
	Home	initialize PCI card. Carriage goes to its original home position

	Measure	
	Option	enter option dialogue box, adjust printing parameters
	Base Head Alignment	enter head alignment box
	Network Print	not available
	Print	print selected image
	Stop	stop and cancel the printing job
	Pause	pause the printing job, the carriage goes back to home position
	Continue	resume printing job stopped by “pause”
	Clean Head	use vacuum to clean print head
	Flush	turn print head flash printing on or off
	Tension	turn the media tension control on or off (not available)
	Cleaner	turn the vacuum cleaner on or off
Move		
	Left	move carriage to the left direction
	Right	move carriage to the left direction
	Feeding	advance media to
	Backward	advance media backward
View		
	Tool Bar	show/hide tool bar
	Status Bar	show/hide Status bar
	Option Bar	show/hide Option bar
	Refresh	refresh image list
	Preview	(fix;1/2X;1X;2X)： zoom in/zoom out preview
	Parameter of Print Head	not available
	Experiment and adjust	
Help		
	Help	
	About printer	
	Register	

2.2.3 Tool Bar

There is a tool bar under the main menu.

a) open: the same as "open path" in the menu
b) refresh: the same as "refresh" in the menu
c) options: the same as "options" in the menu
d) measure material: if media sensor is mounted, the boarder and the width can be measured
f) print: the same as "print" in the menu
g) stop: the same as "stop" in the menu
h) break: the same as "pause" in the menu

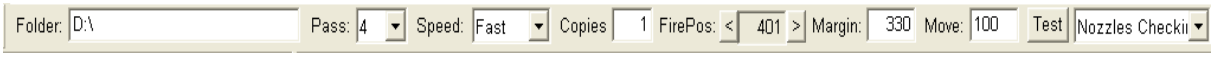
i) continue: the same as " continue" in the menu
j) reset: the same as "reset" in the menu
k) clean: the same as "clean print head " in the menu
l) left: move print head to the left according to selected parameters
m) right: move print head to the right according to selected parameters
n) feed material: feed material according to selected parameters
o) receive material: receive material according to selected parameters
p) flash jetting: the same as "flash jetting" in the menu
q) about: the same as "about..." in the menu

2.2.4 Short-Cut Key

To facilitate and speed up operation, some short-cut keys are set as follows:

a) Ctrl+Home equal to "reset" key
b) Crtl+End equal to "clean" key
c) Crtl+ Pause equal to" break" key and "continue" key
d) Crtl+ ← equal to "left" key
e) Crtl+→ equal to "right" key
f) Crtl+ ↑ equal to "feed material"
g) Crtl+ ↓ equal to "receive material"

2.2.5 Parameter Bar

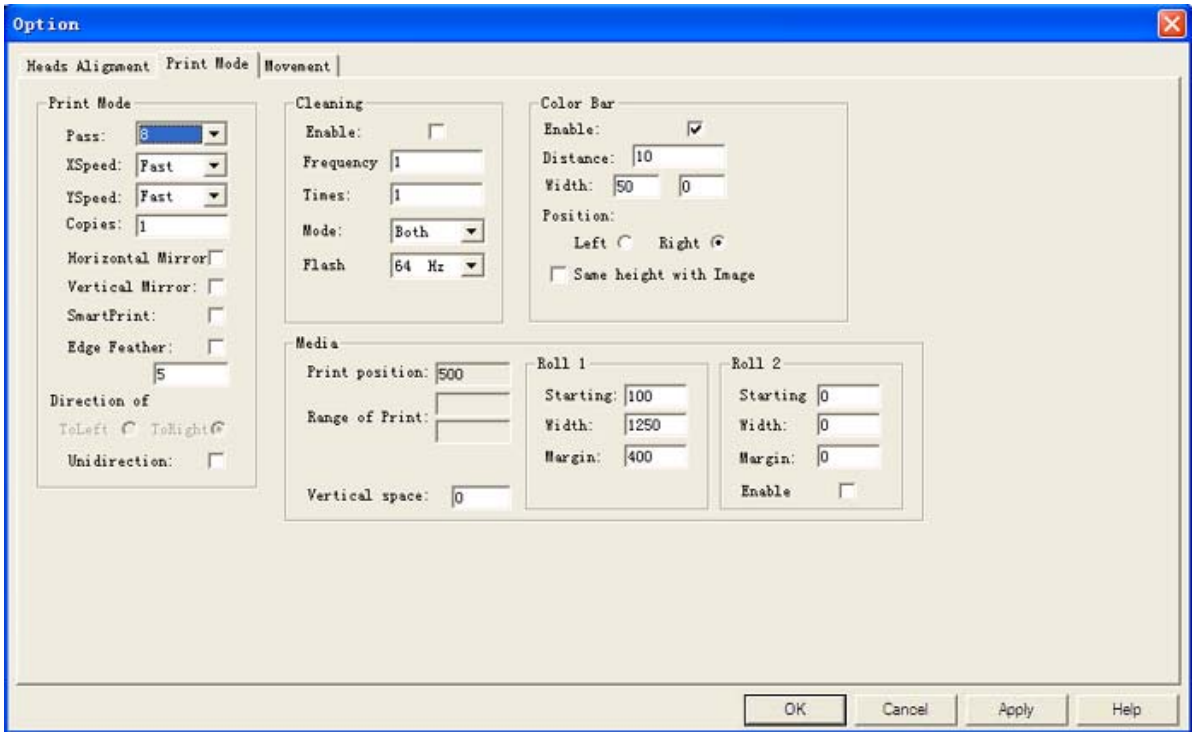


To facilitate operation, there is a parameters bar under the tool bar

a) folder: save the current printing path
b) pass: printing mode. There are 1, 2, 3, 4, 6, 8, 12 and 16 pass to choose from
c) speed: speed of the print head. Three speeds are available: slow, middle, and fast
d) copies number of the same images to be printed
f) firepos: the start printing position of the image. i.e. the distance to the left in mm
g) margin: distance between image and the media edge in mm
h) move: the distance carriage or media movement in mm
h) test: print test to adjust print head settings.

2.2.6 Parameter Setting

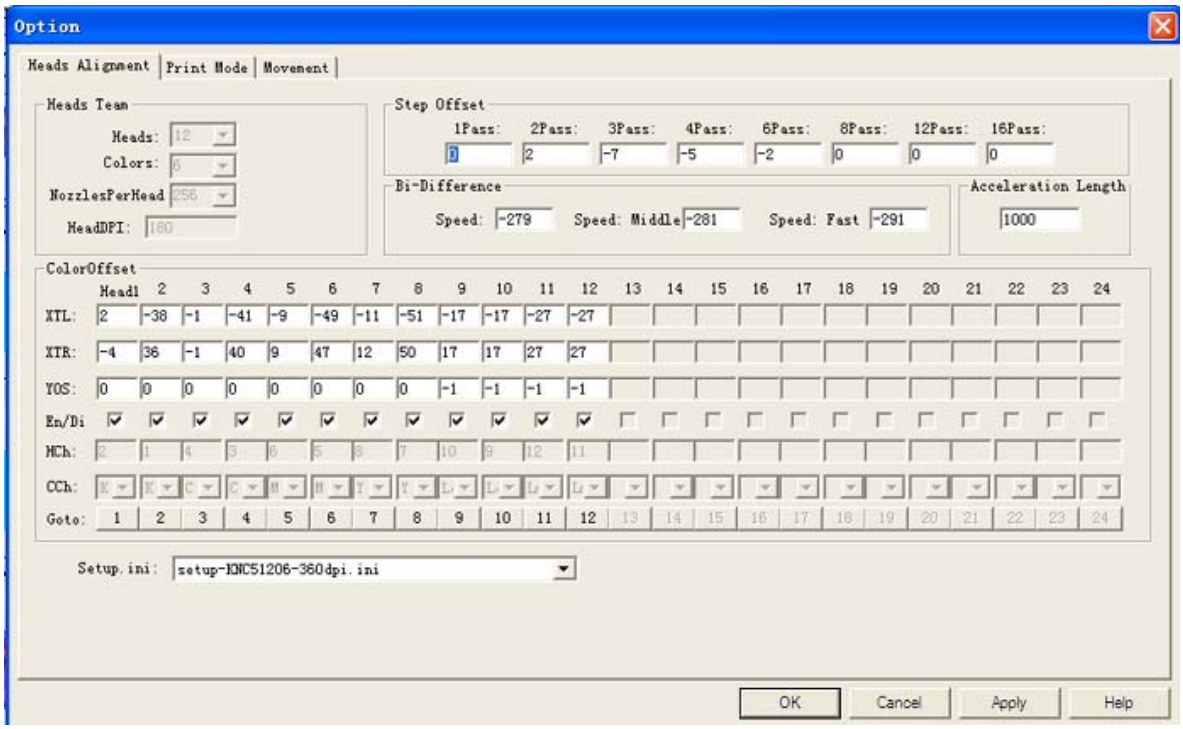
a) Print Mode



Print Mode		
	Pass	Print mode: there are 1, 2, 3, 4, 6, 8, 12, 16 passes to choose from
	X speed	Carriage speed: three speeds are available: fast, middle, and slow
	Y speed	Media feeding speed during printing. Three speeds are available: fast, middle, and slow
	Copies	Number of image to be printed
	Horizontal Mirror	For printing mirror image on both sides of the material
	Vertical Mirror	Vertical mirror printing of an image
	Smart Print	Skip white
	Edge Feather	To smooth pass line to minimize banding
	Direction of	Print to left or to right
	Uni-direction	Uni-direction or bi-direction printing
Color Bar		Anti clogging; it can be used to check the printing status; it can be set beside the image
	Enable	Open/close the color bar
	Distance	The distance between the color bar and the image (unit: 1 jet point)
	Width	Two values: separate color bar width and mixed color bar width (unit:1 jet point)

	Position	The color bar is either at the left or at the right of the page (unit: 1 jet point)
Cleaning		auto cleaning action in printing
	Enable	open/close auto cleaning
	frequency	how many movement cycles (moving back and forth) of a print head are allowed before a cleaning is needed
	times	when cleaning is done, how many times the print head completes a movement cycle?
	mode	cleaner: clean with the cleaner
	Flash freq.	Flash jetting frequency ranges from 0-15
Media		
	print position	the start printing position
	Range of Print	horizontal space of each frame of image (unit: mm)
	Vertical Space	vertical space of each frame of image (unit: mm)
	Roll 1: Starting	material's left starting position (unit: mm)
	Roll 1: width	material's width (unit: mm)
	Roll 1: margin	distance between the image and the material (unit: mm)

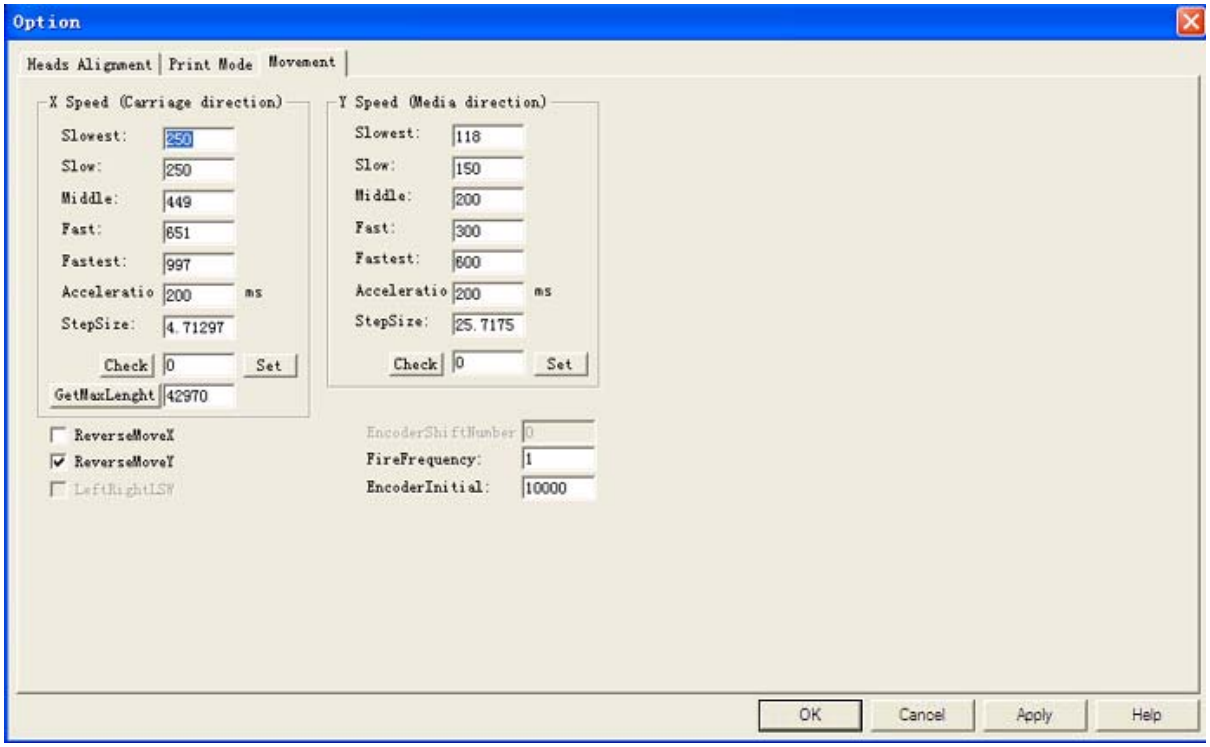
b) Print Head Alignment



Head Team		
	Heads	Number of heads, each head is treated as two heads

		from its two lines of 256 nozzles, totaling 512 each head
	Colors	4 or 6
	NozzlesPerHead	512 per head, 256 per line
	HeadDPI	360 dpi, or 180 dpi per line of nozzles
Step Offset		different pass has different offset value. (unit: 1/4 jet point)
Bi-Difference		different print speed has different bi-directional printing offset value (unit: 2 jet points)
Accelerate Length		distance for speed up and slow down when carriage passes both boarders of the print (unit:1 jet point)
Color Offset		(unit: 1 jet point)
	XTL	The offset value when printing towards left.
	XTR	The offset value when printing towards right.
	YOS	vertical offset value of each print head (cannot be negative)

c). Movement (performed by authorized technicians only)



X/Y Speed		
	Speed	five speeds are available, among which "low speed", "middle speed", and "high speed" are the 3 carriage speeds in print mode
	Acceleration	print head/material movement acceleration

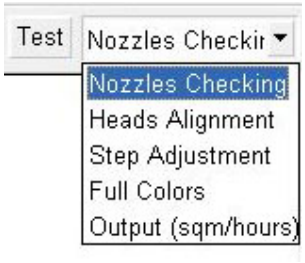
	StepSize	a parameter for motor pulse
	Check, Set	auto calculate and correct "step size" Print head's direction: Click “move", the software moves the print head 1000 mm towards the middle. The actual moving distance will be shown aside. Click "Set", correct moving distance will be calculated. Material moving direction: click "move", material will be fed in by 100mm. Use staff gauge to measure the actual distance, input the value into the input table, and click "Set", the correct step size parameter will be shown. Repeat this step if necessary
ReverseMoveX		move carriage backward
ReverseMoveY		move media backward
LeftRightLSW		reverse left and right moving distance
EncoderShift Number		box closed
FireFrequency		
EncoderInitial		initial position of raster display/magnetic display

2.2.7 Status Bar

a) POS: xxxxx/xxxx: carriage absolute and relative position.
b) PSS: xx/xx/xxxxx: how many lines have been printed/how many lines in total/printing status.
c) STS: xxxxx: on-off switch status (1/0): vacuum cleaner/left carriage limit switch/right carriage limit switch/emergency stop switch/material detection system).

2.3 Print Head Alignment

One can adjust print head offset parameters by printing the following test graph.

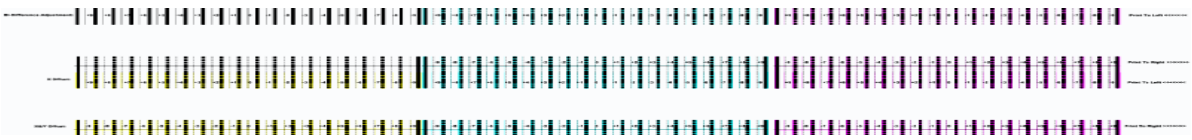


2.3.1 Print Head Status

Select “Nozzle Checking”, the above figure will be printed, showing the status of each print head.

2.3.2 Print Head Alignment

Choose “Head Alignment” from “Test” using “1 Pass”, and “Speed: Fast” to print. The following graph will be printed.



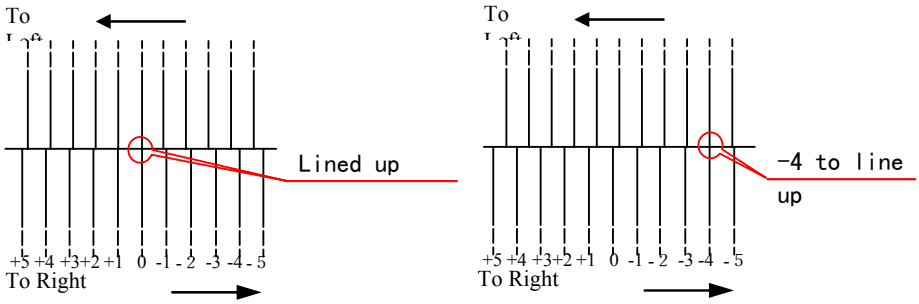
a). Bi-Direction Adjustment

Method:

Use the black “0” line to be lined up as the standard for good bi-direction adjustment.

If black “0” lines printed at left and right direction are not lined up straight, find the other two lines that lined well, input the upper number of that black line into box next to “Speed: Fast”.

Adjustment Illustration:



Bi-Directional Adjustment at other slow and middle speed can be done similarly by printing the above graph under the speed selected.

b). X-Direction Print Head Offset Adjustment

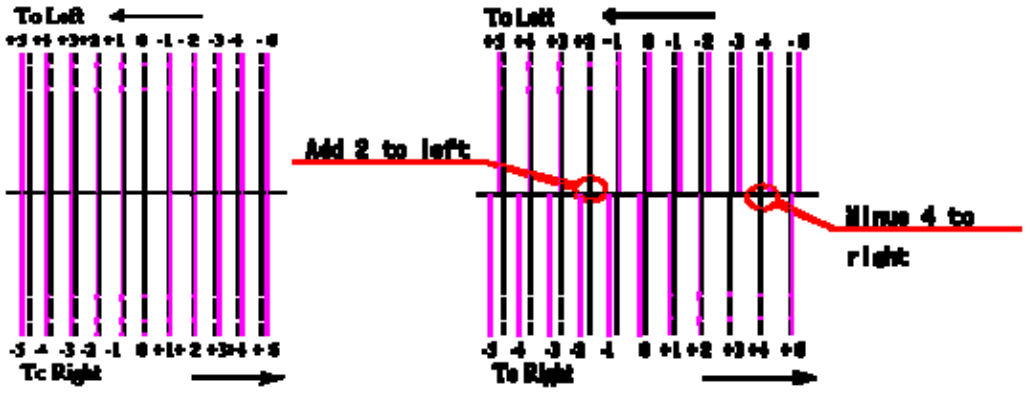
Method:

Use the first row of black print head, PH1, as the standard, try to adjust all the colors against the black color at both printing directions.

Illustration (use magenta print head as an example)

Example of good X-offset Alignment

Example of X-offset need to be adjusted. Need to input 2 for XTL and -4 for XTR



Read the number of the lines matched straight with black line in both printing directions. Add the numbers into the

left and right color offset boxes, XTL and XTR, to their original values. Note, there are 12 column of boxes for six heads configuration, with 1 and 2 stands for black head, 3 and 4 for cyan head, 5 and 6 light cyan head, 7 and 8 for magenta head, 9 and 10 for light magenta head, 11 and 12 for yellow head.

c). X&Y Print Head Offset Adjustment

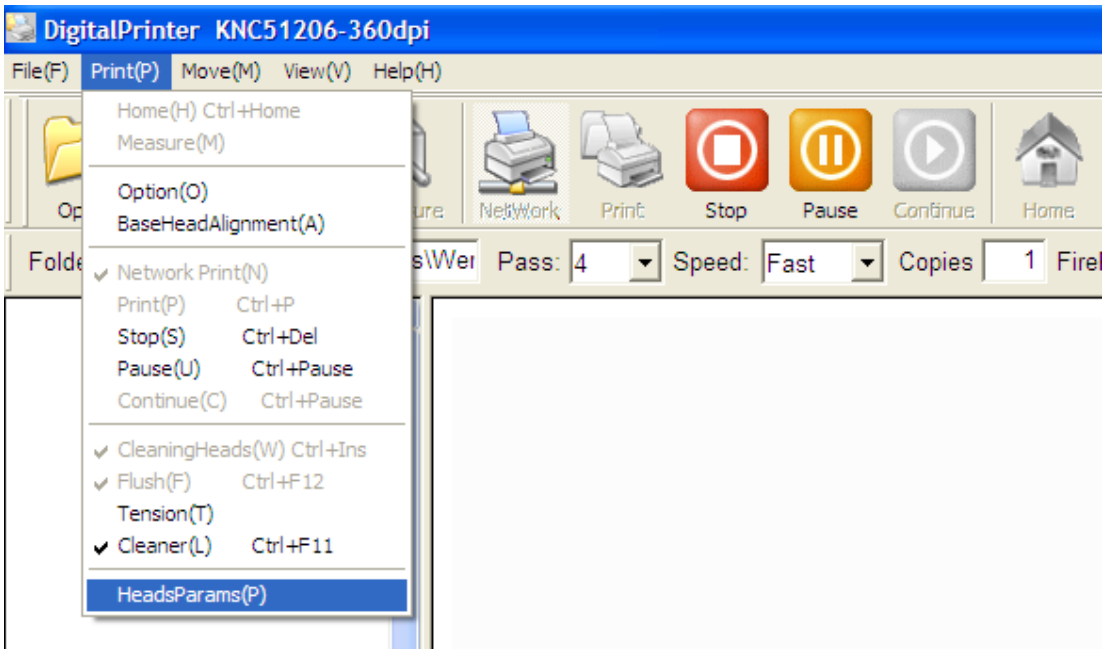
Use black as the standard. Check the horizontal line of each color that matches well with black line. Input the number of that line into the YOS box. Note put the same number into the tow boxes for the same head.

d). Step Offset Adjustment

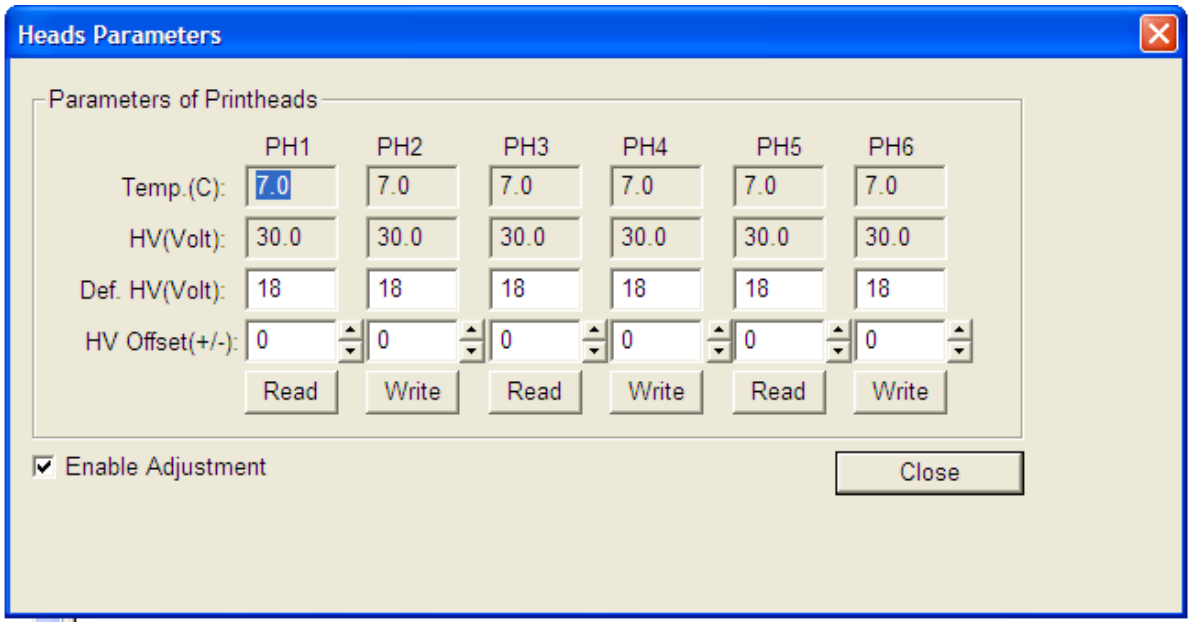
Print the above two thin lines with different PASS. Adjust step offset values and make the two lines as thin as possible.

e). Print Head Voltage Setting

Access print head voltage by selecting HeadsParams(P) as shown below from Print(P) menu.



The follow menu will show up:



Temp. (C) is print head temperature

HV(Volt) is actual print head voltage

Def. HV(Volt) is a user input print head voltage before manual or automatic adjustment. After adjustment, an actual head voltage HV (on the 2nd row of the menu) is applied to the print head.

HV Offset(+/-) is a user input adjustment for print head voltage.

To adjust print head voltage, a number can be input into HV Offset. The number can start from +/- 1-3, depending on the requirement. Click "Read" button, then the "Write" button. ePrint will read the adjustment and apply a new HV to print head.

Chapter III - Maintenance

3.1. Daily Maintenance

3.1.1 Before Start Up

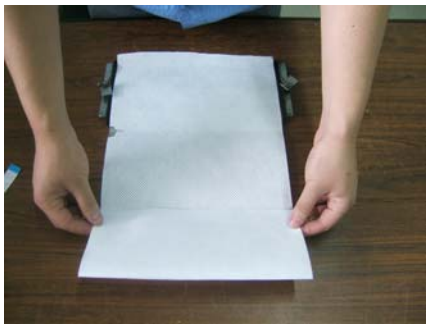
- Clean media roller and printing platform.
- Check ink bottles to make sure there is enough ink.
- Check waste ink bottle to see whether it is full. Place a new empty waste bottle if it is near full.
- Clean dust on the computer, power supply and circuit board.
- Remove print head protection plate.
- Switch on the main power supply, the computer, then the printer.
- Lift the emergence switches on both sides of the printer.
- Check whether the X and Y moving are running well. Make sure movement is of no resistance.
- Check the cleaning and lubricating status of the guide rail. Use lubricant such as motor oil to lubricate the rail.
- Add oil to the ball bearing on the guide rail. Use guide rail manufacturer designated grease gun and oil.
- Turn on HV voltage and choose "print/flash jetting" in the menu.
- Check indoor temperature (20^0C -28^0C) and moisture (40-80%).

3.1.2 During Printing

- Check print head status and clean print head by priming if necessary before printing.
- Check to make sure that there is no particle or dirt on the working platform.
- Touch the heating board to make sure that the heating temperature is in normal (Note: when the print head is moving, you are not allowed to touch the heating board).
- Listen and check whether there are irregular sounds or smell. Stop to check under that circumstance.

3.1.3 End of Day

- If printer will be used with next 2-3 days, clean the print heads by prime. Wipe clean the head plate. Turn off the printer.
- Folder a piece of non-woven cloth 3-4 time, and place it onto the print head protection plate. One could also use a piece of sponge, too.



- Place 2-3 layers of a clear food wrapping film on top of the non-woven cloth or the sponge.

- Pour or inject a small amount of Meijet branded flushing solution onto the film.

- Place the print head protection plate onto the bottom of print head plate.

- Move the carriage so that the print head protection plate sit well on the platform

- Inject Meijet brand flush solution into the plate for about 3-4 mm deep. Flush solution will go into print head through capillary force, replacing the ink inside and keeping print head from drying out

- Wrap up the film

- If the printer is not to be used for more than 3-4 days, especially when room temperature is over 30 C. The ink system must be flushed with Meijet flush solution to remove all the ink inside the ink line, ink sub tank and print head first before going through the above print head protection procedure.

3.2 Weekly Maintenance

- Clean pinch roller with a damp towel
- Add lubricant to guide rail and grease to guide rail bearing

3.3 Monthly Maintenance

- Change ink filter
- Check and fasten the screws on the transmission coupling, electric engine coupling.
- Check the fixation screws on the print head and strait guide rail. Check simultaneous timing belt. Fasten the loose ones.
- Check all the cooling fans and motors.
- Clear computer's hard drive space, scan and kill virus.
- Clean the dust on the power supply case, electricity control board and other circuit board with a clean air gun (must contain dry air)

3.4 Quarterly Maintenance

- Heating Element Test: 15 minutes after the temperature is set, measure temperatures in the pre-heating and drying system. Make sure the left, middle and right temperature is not hotter than 10 degree C set, and no obvious temperature difference should be felt when touching it by hand.

3.5 Annual Maintenance

- Inspection on horizontal level of guide rail and printing platform (contact Meijet or the dealer)
- Check the equipment thoroughly to see whether any screws are loose.

3.6 Common Knowledge about Print Head Maintenance

- Use only Meijet brand ink and flush/clean solution. Meijet ink and solution are designed and tested to be compatible with Meijet printer. Use of other ink or solution could lead to negative effect on Meijet printer

and print heads, invalidating print head warranty and printer warranty.

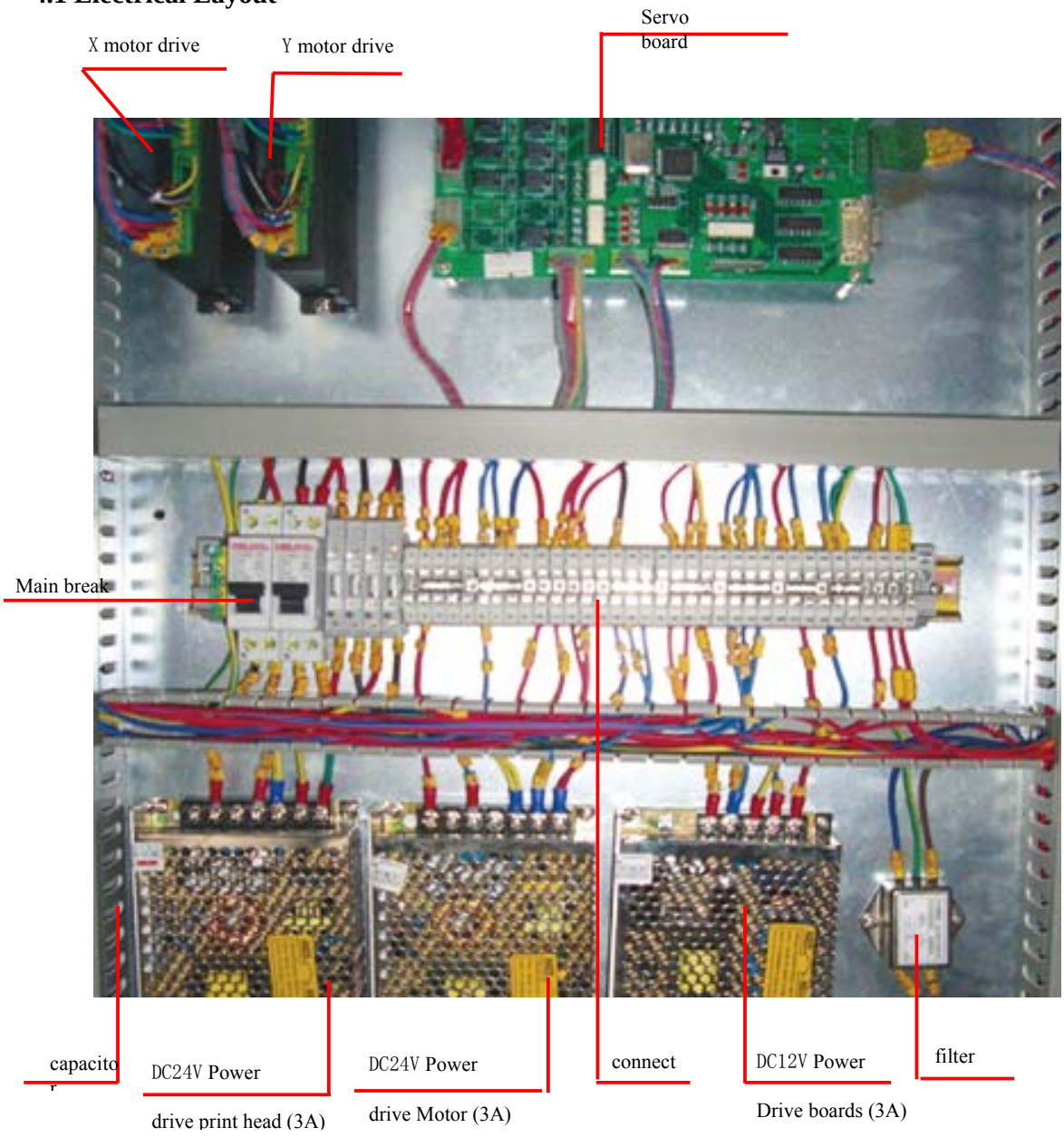
- Use only Meijet specified cleaning tool to wipe clean gently the print heads.
- Always keep the print head wet with Meijet ink or solution. Do not let print heads dry off. Always keep flash jetting on. Always make sure there is enough clean solution in the wrapping film to keep heads from drying when printer is not in use.
- When shipping print heads, always use anti-shocking package.
- When handle print heads, do not touch the print head nozzle surface.
- When priming print heads, turn HV button off.
- Make sure the print environment is clean and free from dust and static, dusty environment and static (from low humidity) could shorten print head life.

3.7 Ink Use and Maintenance

- Store the ink in cool temperature less than 25 ºC.
- Do not shake ink before use.

Chapter IV – Printer Electrical and Electronics

4.1 Electrical Layout



4.2 Electrical Components

4.2.1 DC24V Power (Drive Motor)

It is used to drive X and Y motor, provide 24 volts power for servo board, the maximum current is 10A, Input/output voltages are AC220V/DC24V.

4.2.2 DC24V Power (Drive Print Heads)

It is used to drive print heads. The maximum current is 3A, input/output voltages are AC220V/DC23-24V.

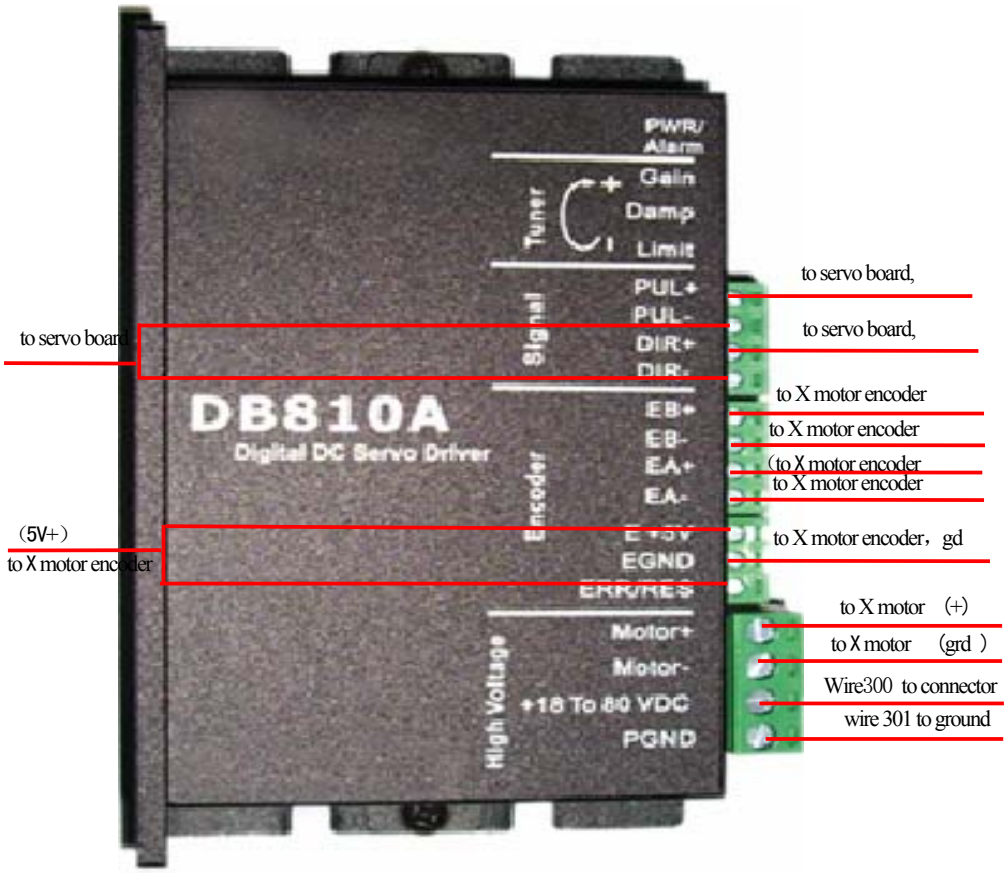
4.2.3 DC12V Power (Drive Electronic Boards)

It is used to drive print head board, 12 V power for servo board. The maximum current is 3A, Input/output voltages are AC220V/DC12V.

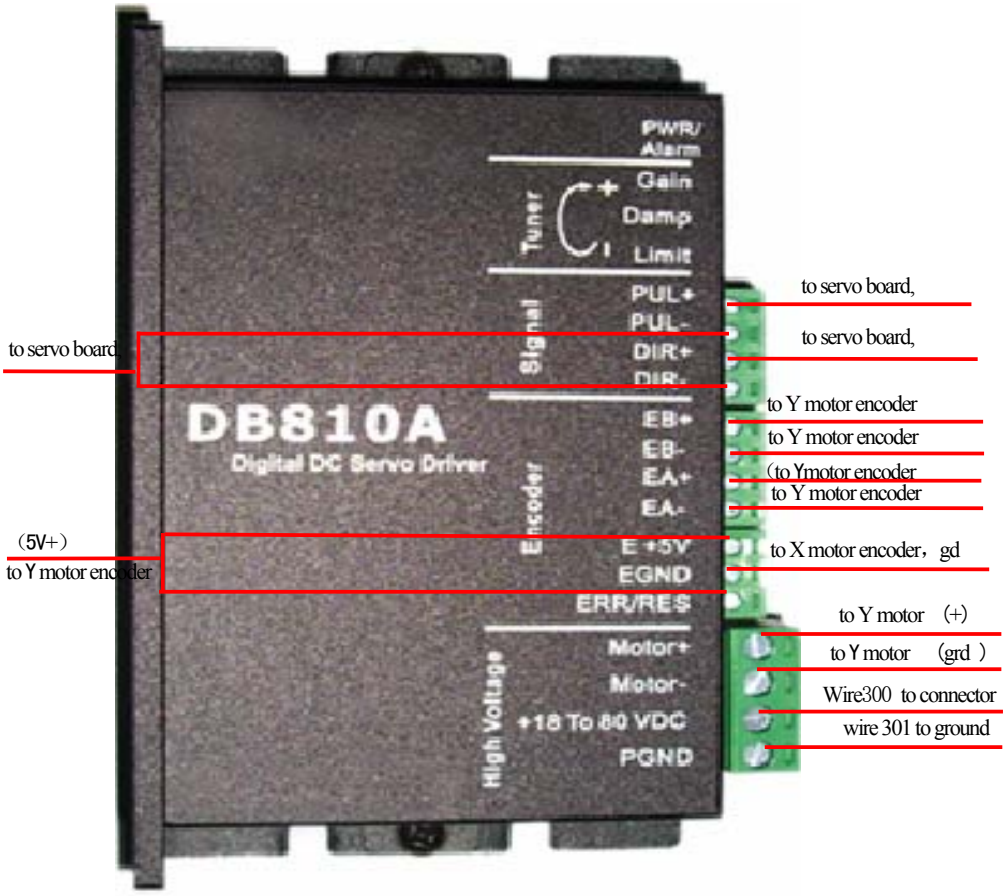
4.2.4 X and Y Motor Drive

The motion control of servo board on the X and Y motors are done by emitting clock signals toward these two X and Y motor drives. The two motor drives transfer the signals to the encoder of the two motors, controlling the motion of the X and Y motors. Its input/output voltages are DC24V/DC24V.

X motor drive



Y motor drive



4.2.5 Capacitor

It is the start-up capacitor for media take-up motor. It is connected to the media feeding motor start-up wiring.

4.2.6 Filter

It is used to filter the input AC220V current to remove abnormal electrical wave. It then passes the filtered electrical current to the other power sources.

4.2.7 Main Break

It is used to protect the printer from leaking and short-cut of electricity. It also serves as the main switch.

4.2.8 Break

It is used to protect the electrical components when there is an electrical short or the media feeding motor is stuck.

4.3 Electronic Boards

4.3.1 Electronic Boards Handling

It is important, when handle electronic boards, only tough the edge of the boards. Do not tough the surface of the boards. When cleaning the boards, do not use a plastic brush. Only use dry air.

4.3.2 Electronic Boards Installation

Boards must be installed on the specified frames. Do not allow metal object to be in contact with the boards to avoid shorting

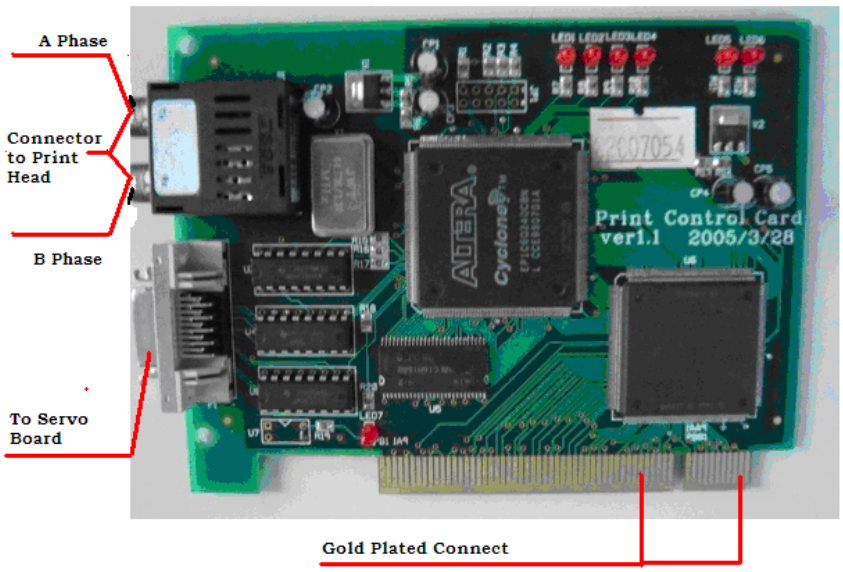
When install PCI board, make sure the gold connect is clean. It must be fixed onto the computer using the specified frame to prevent it getting loose during printing.

Before taking off the boards, the power must be switched off first. Power on while taking the boards out could damage the boards.

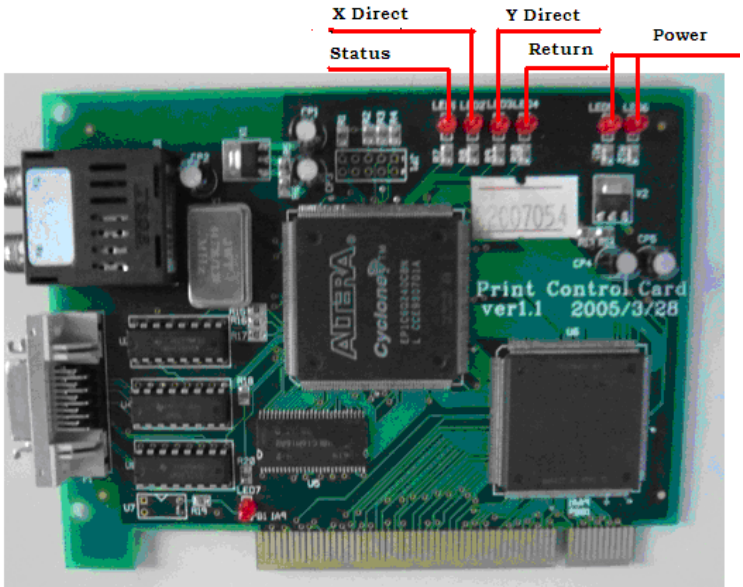
4.3.3 PCI Board

PCI board transfers the processed image data to print head board and servo board.

♦ Wiring



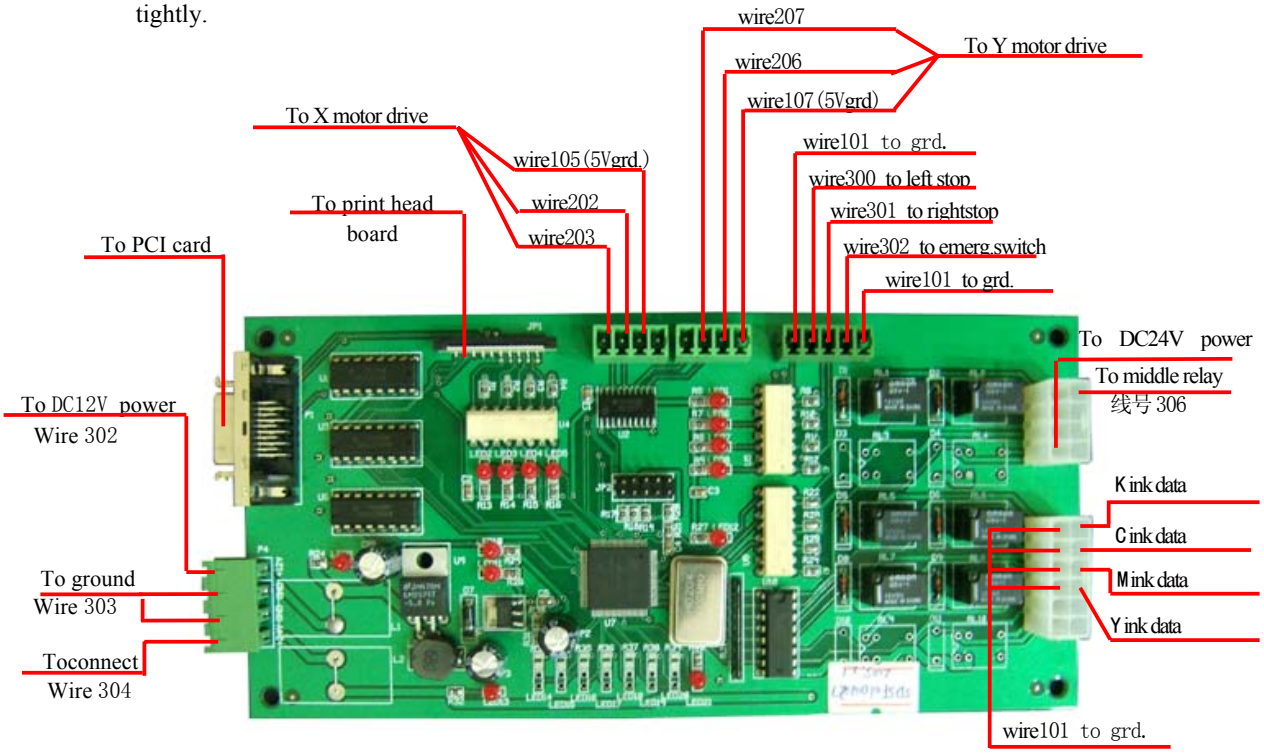
♦ Lights



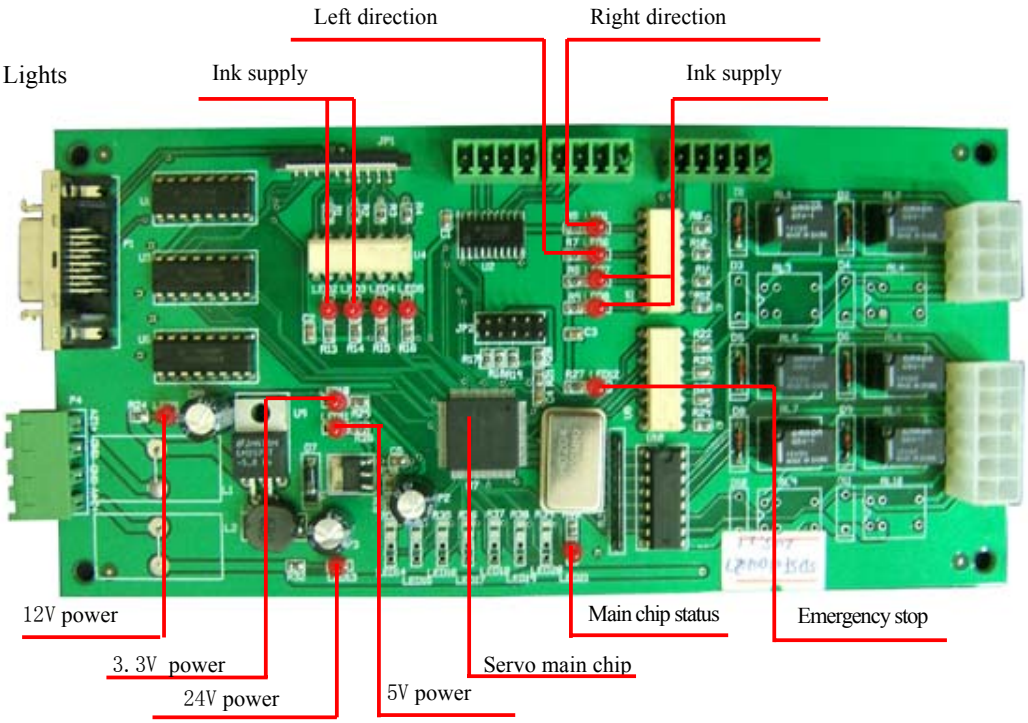
- Status Light show the PCI card working properly
- X direction light would be on when carriage moves to left or right.
- Y direction light would be on when media feeding forward or backward
- Power light indicates power on or off
- Return light would flash when E-print start, indicting E-print is working properly.

4.3.4 Servo Board

- Servo board mainly controls the carriage X-direction movement, media Y direction movement, ink pump, and print head clean via vacuum priming.
- When there is abnormal motion, servo board and the wire to PCI card need to be checked. Observe all the lights on the boards and check all the connection on the boards.
- When there is abnormal ink supply, observe the ink data light and check the ink pump wire being plugged tightly.



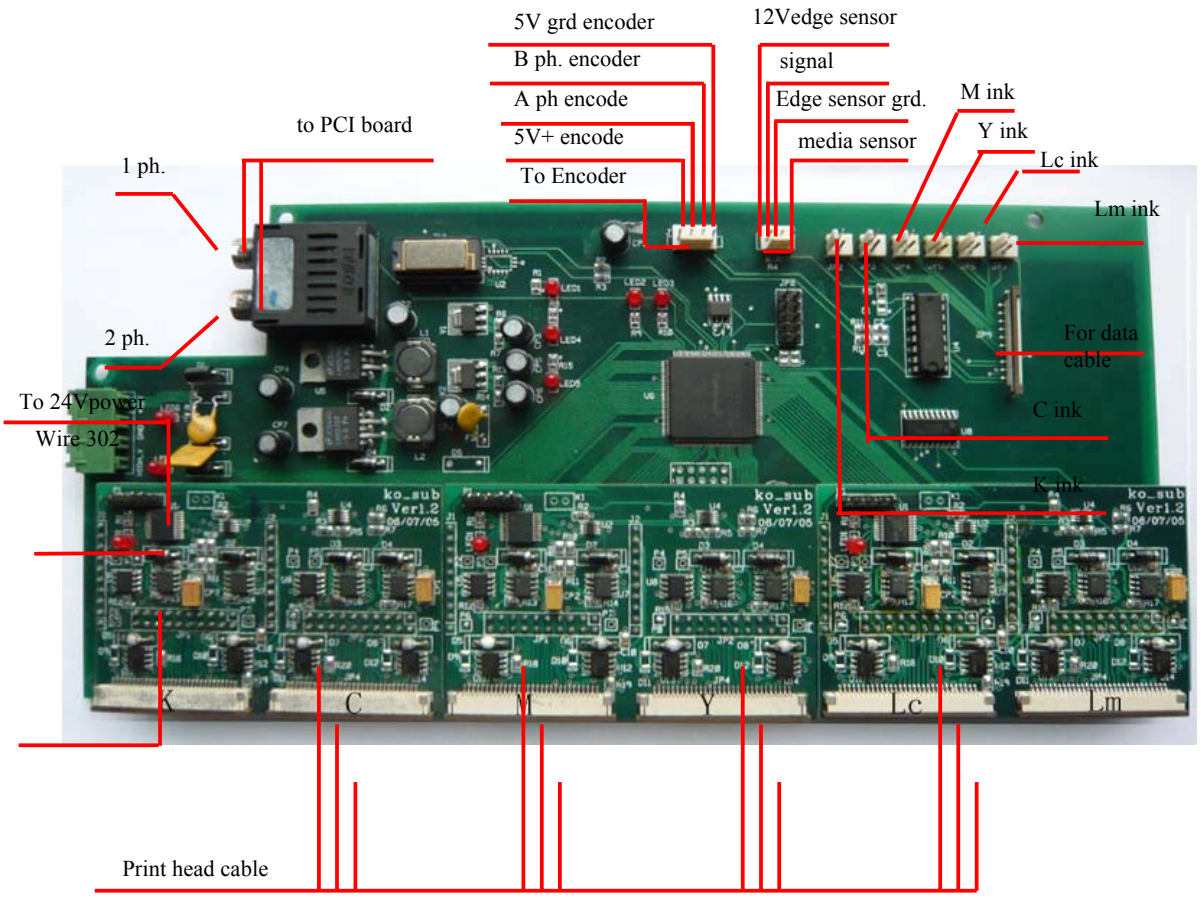
◆ Lights



- Main chip light: on indicating successful installation of the main chip program
- 24V、12V、5V、3.3V power light: indicating the power supply status;

  Note：24Vis the motor power, 5V is the switch power，3.3V is the servo board main chip power。
- Ink supply lights: on indicating ink being supplied by ink pump.
- Left direction light: on when carriage moving to left direction
- Right direction light: on when carriage moving to right direction
- Emergency stop light: on when emergency stop switch is pushed down

4.3.4 Print Head Board (Carriage Board)



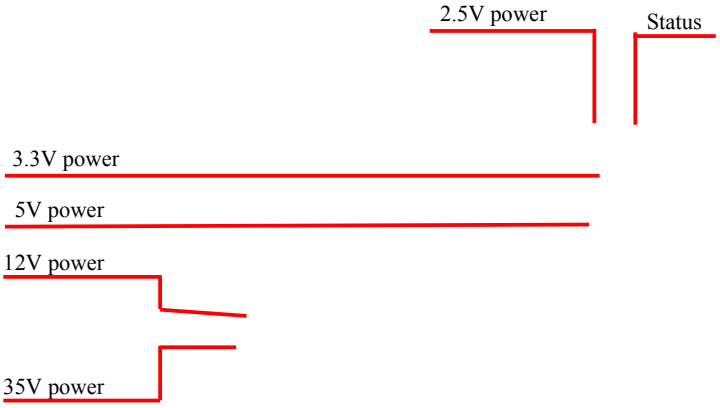
- Carriage board transfers the signal detected from encoder back to PCI board. It also transfers the signals from PCI board to print heads, controlling print heads firing and their precise position. It receives the ink level signal then relays it to the servo board, controlling ink pump status through servo board.
- When a color is observed not print right, carriage board needs to be checked. One could exchange the print head wire, the print head drive chip with a color not having a problem to identify the cause of the problem. One also needs to observe the lights on the board and the optical fiber line.

◆ Lights

Status light: flashing under normal working condition; if not flashing, something could be wrong.

35V, 12V, 5V, 3.3V, 2.5V power source light: indicating the power supply status of each power source.

35V is print head voltage; 12V is electronic board voltage; 5V is the switch voltage; 3.3V and 2.5V are the chip voltages on this board.



4.4 Electrical Inspection

4.4.1 Measure the inlet power wire

Tools required: multi-meter. Range: AC220 +/- 10v

Turn on all the air-break switches. Measure with the multi-meter the voltage of the power supply. It should be within the range of 220 +/- 22v

4.4.2 Measure the insulation resistance

Tools required: meg-ohm meter. It should be no less than 2 MΩ

Turn on all the power switches. Measure the insulation resistance between ground rod (printer frame) and inlet power wire L and N with 500M meg-ohm meter. The printer's insulation resistance should be more than 2mΩ (500vdc)

4.4.3 Measure ground resistance

Tools required: multi-meter. The voltage should be less than 1 Ω.

While the multi-meter is switched to 200 ohm, the resistance voltage between PE connector and the ground should

be less than 1 Ω.

4.4.4 Measure inlet power wire

Leakage current shunted to ground should be less than 3.5 mA

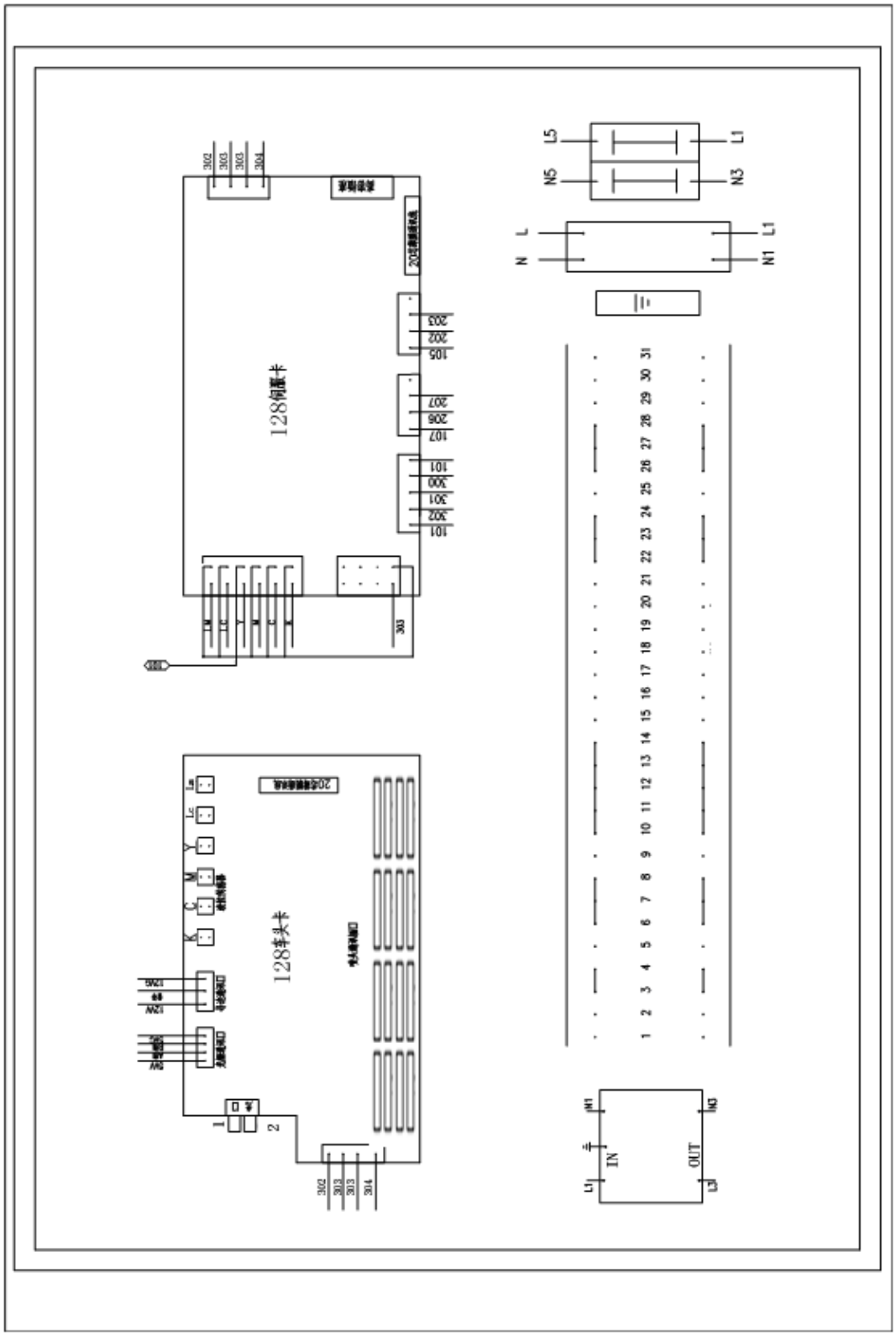
4.4.5 Measure direct current

Measure DC12V, DC24V, DC24V (for print heads) respectively as shown in the wiring diagram.

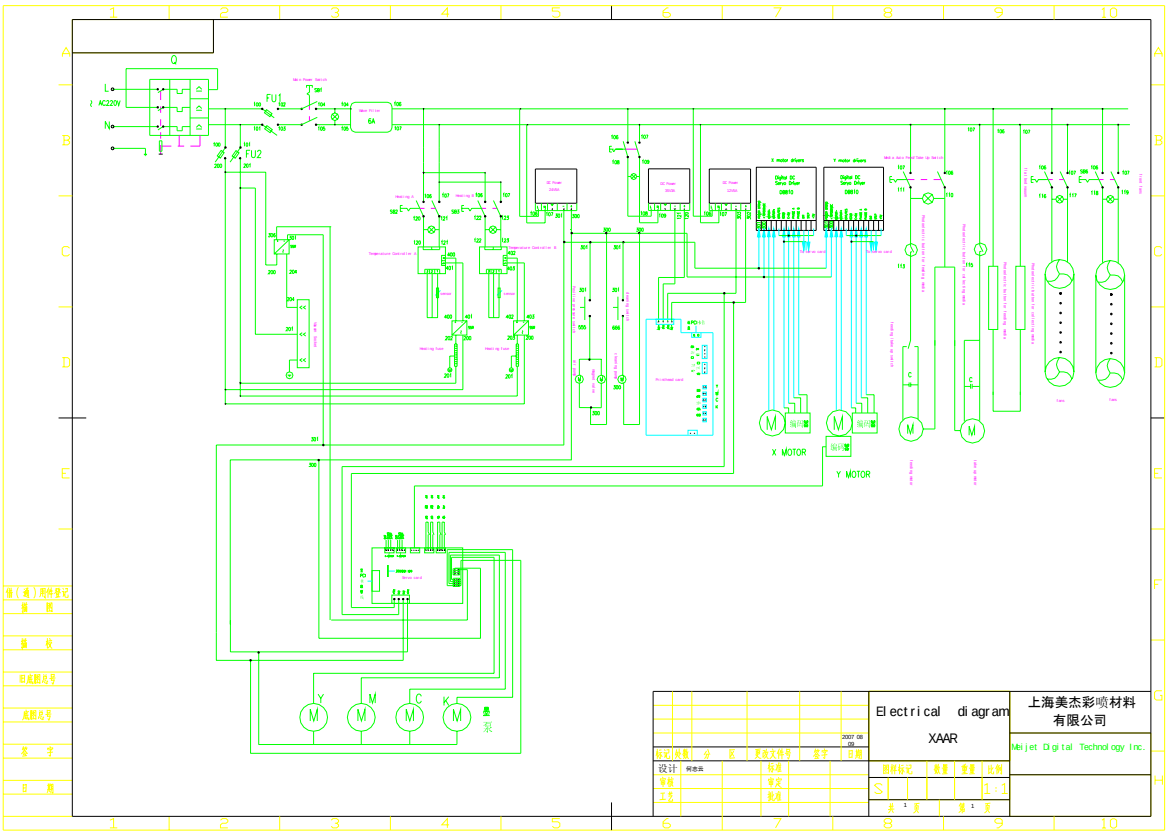
- Remove the power plug for the servo board and print head board, and then switch on main power and HV power. Measure DC voltage +12V and 24V power supply with multi-meter. +12V should be adjusted to +12V +/- 0.2V, and 24V should be adjusted to 24V +/- 0.2V
- Switch off power. Plug servo board into the socket. Turn on the power and check whether ink pumps and its controls are working properly.
- Turn on HV (head voltage) power. Measure the voltage of power plug for print head board (the voltage of 12V should be within 12 +/- 0.2V, and 24V should be within 24 +/- 0.2V)

4.5 Electrical Maps

4.5.1 Electrical Map for Electronics Boards



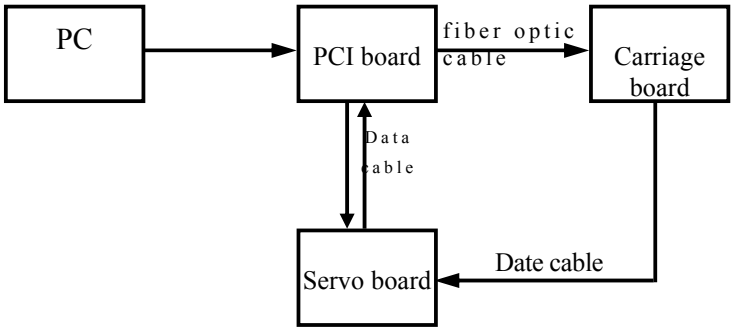
4.5.2 Electrical Component Wiring Map

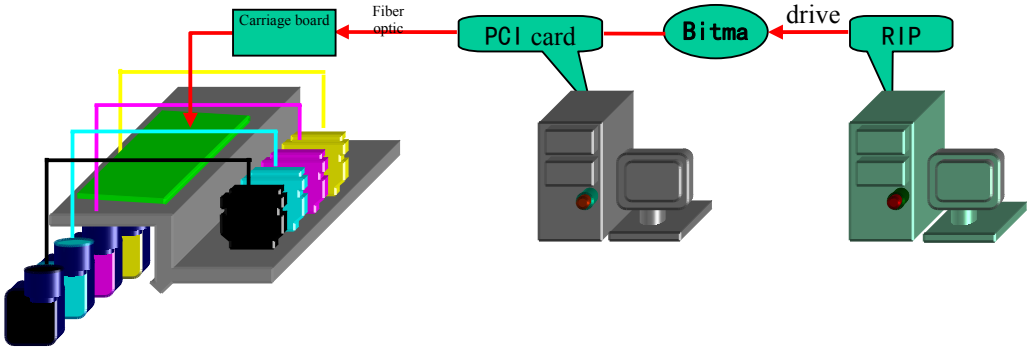


Chapter V – Technology Guide

5.1 Image Processing

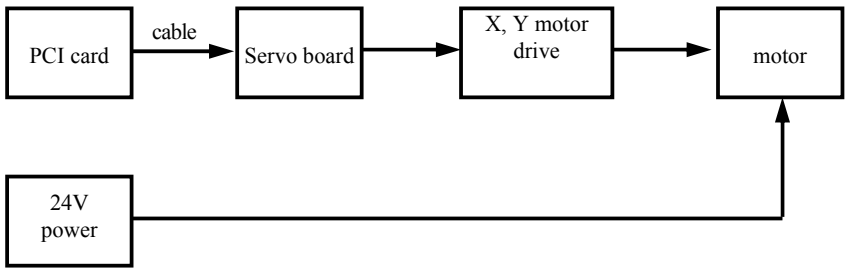
Image processing is done by computer, image data transfer, print head control. Components involved include PCI board, carriage board, encoder strip, encoder, encoder reader.



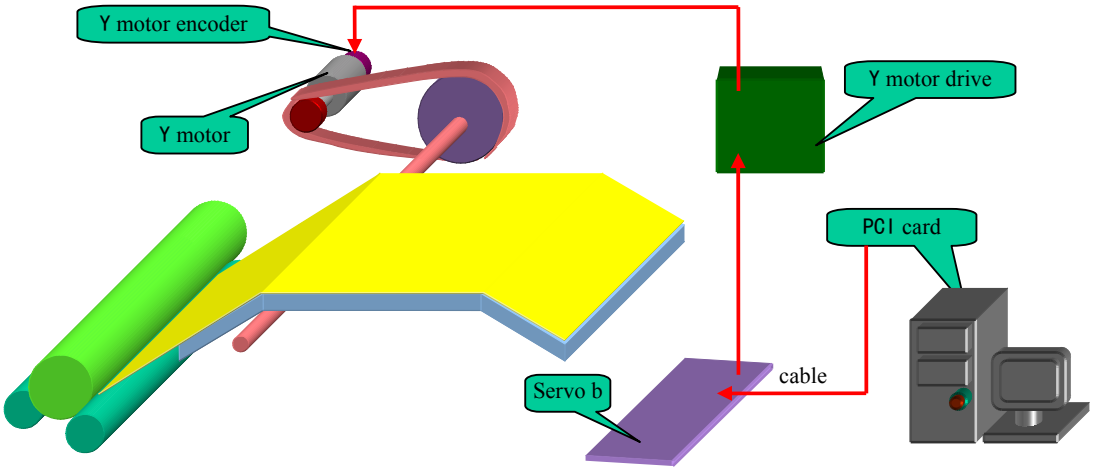


5.2 Motion Control

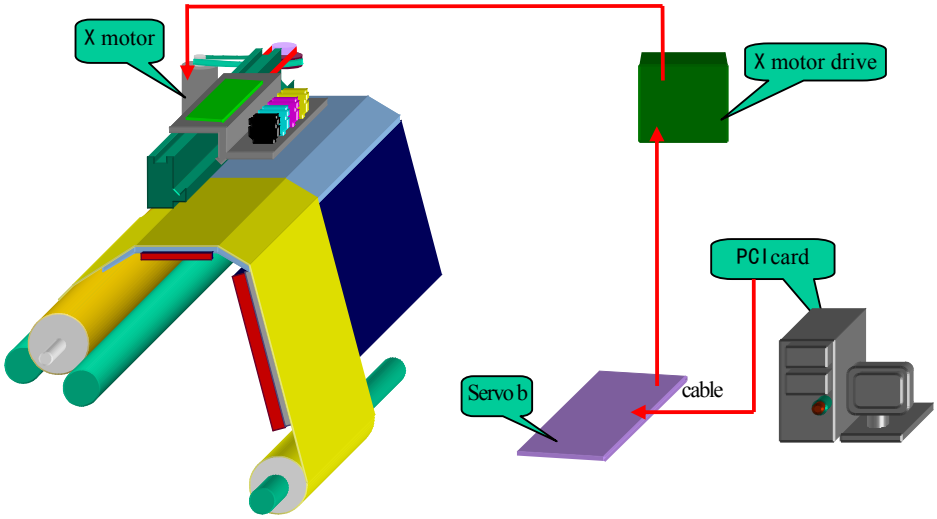
Motion control is completed by computer, servo board, X and Y servo control systems. It relates to X direction carriage movement and Y direction media feeding. It involves servo board, X motor drive, Y motor drive, X motor encoder, Y motor encoder, X motor, Y motor, and several data cables.



- Y media feeding

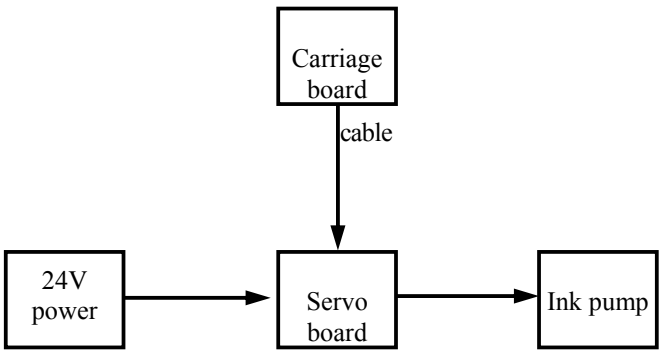


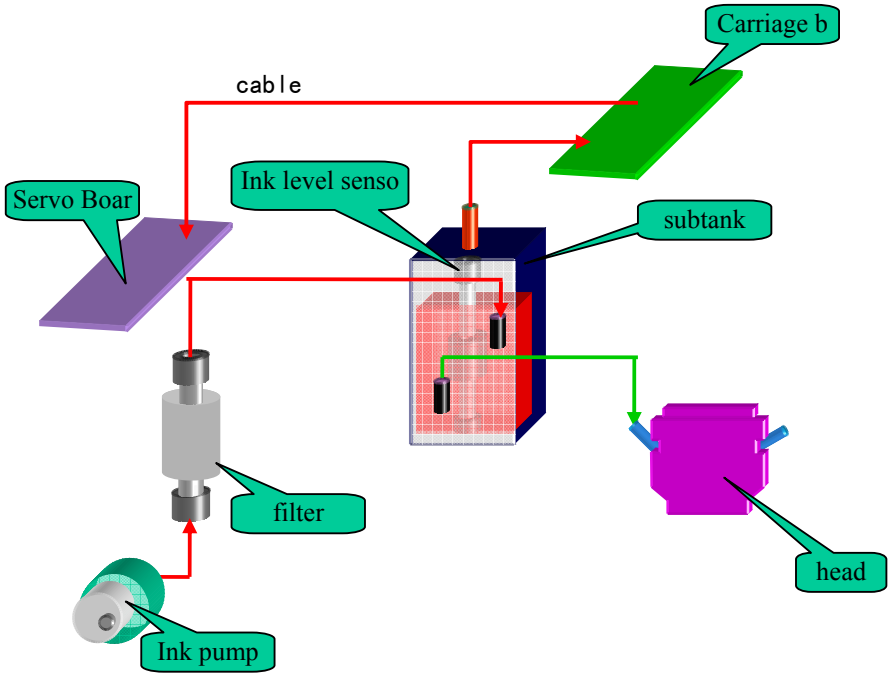
◆ X direction carriage movement



5.3 Ink Supply

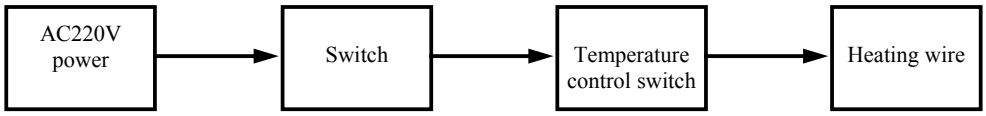
Ink supply system is made of servo board, ink bottle, ink pump, filter, ink sub-tank, ink line, ink level sensor, etc.





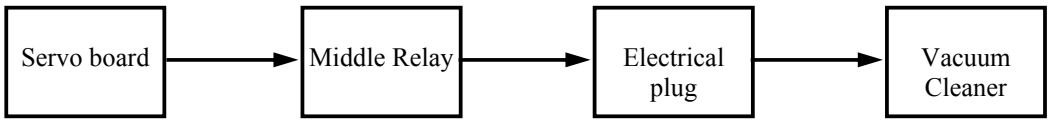
5.4 Heating

Heating control system is made of power source, power switch, temperature control switch, and heating wire.



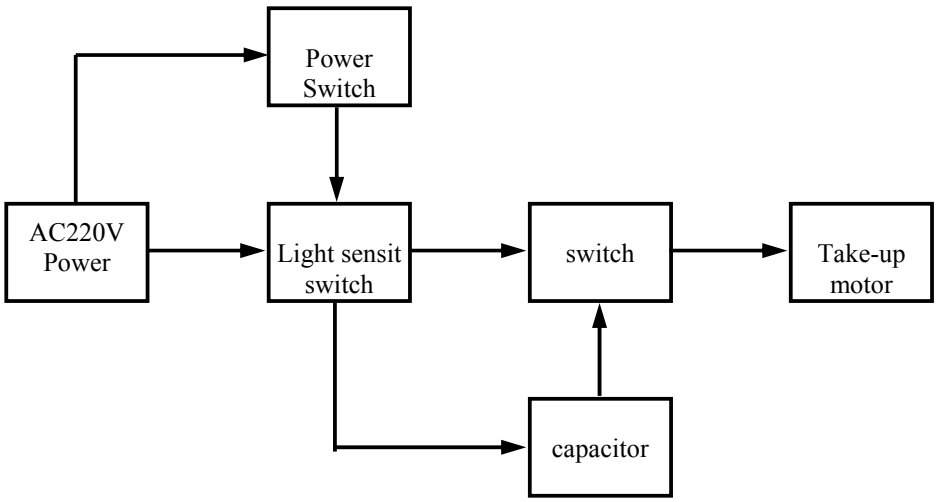
5.5 Print Head Cleaning

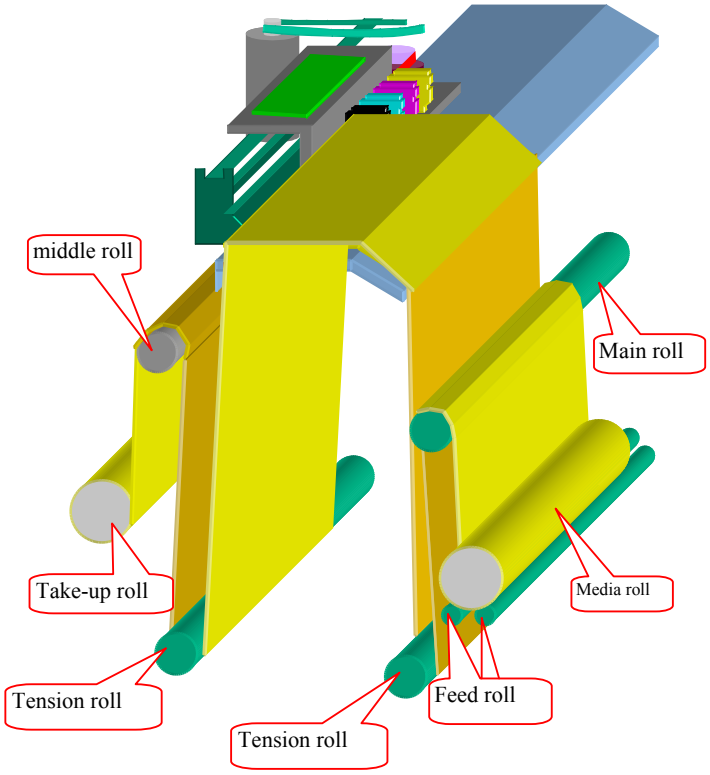
Print head cleaning (priming) system is made of power source, servo board, and vacuum cleaner.



5.6 Media Feeding and Take-up

Media feeding and take-up system is made of power source, power switch, light sensitive switch, and Y-motor.


Power Switch
AC220V Power
Light sensit switch
switch
Take-up motor
capacitor


middle roll
Main roll
Take-up roll
Media roll
Tension roll
Feed roll
Tension roll

Chapter VI – Trouble Shooting

6.1 Print Head Not Firing Properly

Symptom	Analysis of causes	Examination method	Remedying method	Notes
Ink can't be normally jetted from the single print head (from damaged print head)	Protective membrane on the print head is broken or fall off	Examine the color of the surface of the nozzle hole. If it appears white, then it indicates that the membrane has fallen off	Replace print head	Normally some narrow ink traces are printed on the image
	Print head is clogged with the printing ink	Use a syringe to inject the cleaning solution into the print head. If the ink can't flow out of the hole, then hole has been clogged with the printing ink	Replace print head	
	Circuit inside the print head is damaged	Check whether removed or plugged in print head converting card with power on	Replace print head	If dust and the printing ink are found on the circuit board, use the no-water alcohol to clean and dry
		Check whether the liquid is left on the signal socket and the short circuit is caused		
		Check whether dust and printing ink left on the circuit board. After a long period, dust and ink will accumulate on the circuit board, when met with the humid air, they will lead to short circuit.		
	Print head is out of service due to the wear and tear.	Check the service life	Replace print head	
Ink can't be normally jetted from the single print head (not caused by the damaged print head)	Voltage of the print head is below 15V	Use multi-meter to examine and measure the voltage of the print head	Adjust the voltage to a higher value	The voltage should be adjusted to be 20 V or so.

	Damaged print head	switch the data line of the print head with other head (note: keep the line on the patching board of the print head unchanged) If the ink is still not jetted, then it can be understood that print head goes wrong	Replace print head	
	Damaged data cable or print head converting board	Swap the data cable of with other head (note: keep the cable on print head converting board also changed) If the ink is still not jetted, then it can be understood that signal cable or the converting board of the print head goes wrong. Please reconfirm the breakdown.	Replace the data cable or the converting board of the print head	
	Data cable of the print head isn't well connected	Check whether the data cable is firmly plugged	Get the data cable firmly plugged	
	Damaged ink-supplying system	Examine the ink line and the whole ink-supplying system and check whether there is lack of ink or leakage of ink line	Repair the ink-supplying system	
	Damaged PCI card	If the reasons mentioned above are excluded, the likely cause is the damage of the PCI card.	Replace PCI card	
No ink is jetted from any print head	Power problems	Examine the voltage 12V, 24 V (DC) on the carriage board	Repair or change power source	12V: 11.75V-12.25V 24V: 23.2V-25V
	Damaged carriage board or PCI card		Replace carriage board or PCI card	
	Damaged flat data cable	Check POS number to see whether it changes during printing	Replace flat data cable	
	Encoder is broken or not well connected	Check encoder connection	Reinstall or replace encoder	

	Optical fiber is broken or not well connected	Check optical fiber	Reconnect or replace the optical fiber	
	Damaged servo board causing no ink supplied to subtank	Check servo board	Replace servo board	
Ink Starvation	Temperature is too low	Check temperature	Increase room temperature	The temperature should be kept within the range of 18°C-28°C
	The voltage of the print head is abnormal.	Use multi-meter to measure voltage of each print head	Adjust the voltage accordingly	Adjust the voltage to about 20V ten minutes before starting the machine
	Print head not good	Check whether print head is clogged or not.	Service or replace print head	
	Ink is poor quality or gone bad	If the reasons above are excluded, the probable reason is the poor quality of the ink	Change ink	Use Meijet brand ink and solvent

6.2 Media Feeding or Take-up Not Working Well

Symptom	Analysis of causes	Examination method	Remedying method	Notes
Media not allowed to be loaded	Photoelectric switch cannot detect media		Replace the photoelectric switch	
	Media-feeding motor is broken or not well connected		Replace media feeding motor or reconnect the wire	
Media wrinkles in the feeding process	Media is not properly loaded	Check whether the edge of media is parallel to the edge of left side board	Re-load the media roll	
	Media pinch roller is not parallel to media feeding roller		Fine tune the position of the main beam	

	The uneven pressure applied by each pinch roller	Pull a small material placed under pinch roller to check whether each pull force is equal	Adjust the pressure of pinch roller	

6.3 Carriage Movement Not Right

Symptom	Analysis of causes	Examination method	Remedying method	Notes
Carriage not moving or part of the software not functioning properly, such as bi-direction printing becoming uni-direction printing	PCI card is broken		Replace PCI card	
	The wires of servo board isn't well connected or damaged	Check the wires and the connection of the servo board	Replace or reconnect the wires	
	Servo board is broken		Replace the servo board	
	Motor drive is broken or not well connected	Replace or swap X with Y motor drive	Replace or swap X with Y motor drive	
	motor is broken or wire is not well connected		Replace motor or reconnect wire	
No printing or printing not properly, such as bi-direction printing becoming uni-direction printing	encoder and encode strip is broken	Check on E-print POS number to see whether it changes or not	Clean or replace encoder and encoder strip	
	Encoder doesn't align with encoder strip	Check to see any scratch on encode strip	Adjust the angle of encoder to make it align with encode strip	
	X-motor is broken or overloaded		Replace X motor and check media roll loading	

6.4 Ink Supply Problems

Symptom	Analysis of causes	Examination method	Remedying method	Notes
Ink cannot be supplied	Ink level sensor broken		Replace ink level sensor	
	Ink sensor wire not well connected	check whether the wire	Replace or reconnect the wire	
	Servo board broken		Replace servo board	
	Ink pump broken	Check ink pump	Replace ink pump	
	Ink filter clogged		Replace ink filter	
Non-stop ink supply	Servo board broken		Replace the service card	
	Short circuit of signal		Reconnect wire	

	Ink level sensor broken		Replace ink level sensor	

6.5 Image Process Problems

Symptom	Analysis of causes	Examination method	Remedying method	Notes
Test bar and image are printed abnormally	There is something wrong with encoder strip or encoder		Replace encoder strip or encoder	
	The optical fiber is not connected well		Hook up with optical fiber again	
	Motor drive can't work		Replace motor drive	
	PCI card is broken		Replace PCI card	