

User Manual

Image 4040

**High definition for
customizing cases**



101058-01



A DOVER COMPANY



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Congratulations to your new Imaje 4040 ink jet printer.

We have done our utmost to develop a ink jet printer that you will find easy to use and easy to maintain. It is made robust in order to provide the functionality required for demanding operations.

Please take a few minutes to read this User Manual and to get familiar with the printer, its functionality and how it operates.

Please pay special attention to the chapter describing safety and warnings.

For detailed information regarding installation and service of the Imaje 4040 we refer to the separate Technical File Manual.

Conditions

Imaje AB reserves the right to change specifications in both text and illustrations without prior notice. The contents of the publication may not be copied, either wholly or in part, without permission from Imaje AB.

Imaje AB is not responsible for any direct, indirect, specific, accidental or resultant injuries caused by a fault with the printer or software, or by an error in the accompanying documentation. In particular, Imaje AB cannot be held responsible for any program or data stored or used with Imaje's products, including the cost of recovering such programs or data.

First published: 2005

Art number: 101058-01

Version: 01

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Safety Requirements

Imaje disclaims all responsibility regarding the CE directive if the printer is used, altered or installed in any way other than described in this manual.



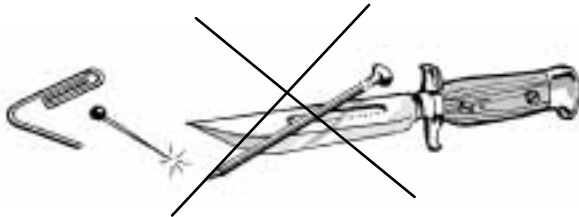
This symbol is used to indicate circumstances that may be dangerous to the user or that cause damage to the equipment.



This symbol is used to draw your attention to important information that will facilitate work or operations.

Please Note the Following Warnings:

- Never use sharp or pointed tools when cleaning or replacing the print head.



- The nozzle plate on the printer head is sensitive to handling. Contact with this surface must be minimized to prevent damage to the nozzle plate. Damage to the nozzle plate surface can cause a reduction in the performance of the print head.
- **If the XJ-500/ XJ-128 nozzle plate requires cleaning – flood the nozzle plate with the appropriate cleaner (see chapter 4 – Priming the print head). Use only Imaje authorized cleaners. Never clean the nozzle plate with tools. Never wipe the nozzle plate.**
- Never point the nozzle end of a print head at yourself or another person.
- Please read all instructions before using the printer for the first time.
- The printer should be connected to the power supply indicated on the voltage plate. If you are unsure of the type of power supply available, please contact Imaje service personnel.
- The printer should be connected to a grounded socket.

2. Safety



- The printer is equipped with a plug suitable for grounded sockets. This is a safety measure. If the plug does not fit the power socket, a qualified electrician must replace it.
- We do not recommend the use of extension cables.
- The power cable must not be subjected to pressure. Ensure that the printer is not placed anywhere where the cable can be put under pressure.
- Check that the power switch is off (in the '0' position) before connecting the power cable.
- Do not attempt to open the electronic unit or other sealed parts! The user cannot service these parts.
- Never expose the unit to high humidity or liquids.
- Ensure that the lighting at the installation site is in accordance with local regulations.
- All chemicals, even ink, may present unknown health hazards, and should be treated with caution.



Disconnect the power to the printer and call in qualified personnel under the following conditions:

- The power cable or plug is damaged or worn.
- Liquid has been spilled on the printer.
- Rain or water has leaked into the printer.
- The printer is not functioning correctly although the user has followed the instructions.
- The printer has been dropped or the casing has been damaged.
- The printer is not functioning correctly and requires service.



Certification and Approvals



The Imaje 4040 printers are certified in accordance with the requirements for CE marking.

CE = European Commission



The Imaje 4040 printers are certified in accordance with the requirements for ETL marking.

ETL = Electrical Testning Labs



The Imaje 4040 printers are certified in accordance with the requirements for the FCC.

FCC = Federal Communications Commission



CE Standards & Directives

Image 4040 printers are in accordance with the following European directives applicable to the products:

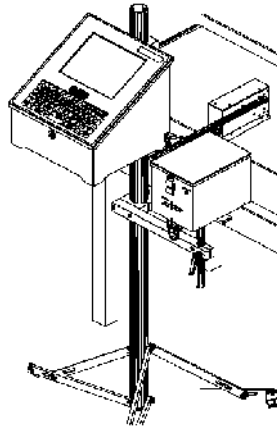
- The electromagnetic compatibility directive, EMC Directive 89/336/CEE, and its corresponding European standards.
- The Low Voltage Directive 93/68/CEE, and its corresponding European standards.
- The Machine Directive AFS 1994:48 (98/37/EC), and its corresponding European standards.
- ETL listed: Conforms to ANSI/UL STD 60950.
CERTIFIED TO CAN/CSA C22.2 STD NO.60950-00.

The above referenced product bears the CE mark.



Case coding made easy

Flexible and user friendly; Imaje 4040 facilitates personalized case marking. Imaje 4040 has one of the best cost-performance ratios on the market due to its reliability, great ease of use and simple maintenance.



Easy to install and maintain

The complete printer with its pre-pressurized ink container fits straight into your packaging line. Simplified, fast maintenance reduces downtime. Imaje 4040 is a rugged printer - always ready for demanding work. The print head module is easily exchangeable for maximum uptime.

Easy to operate

Imaje 4040 have a very powerful software program (NetJet) that allows the user to edit the message and control the printer either directly from the controller or over a network. Using NetJet controllers may be connected utilizing an Ethernet network. NetJet follows standard TCP/IP protocol. The number of controllers that may be networked is only limited by the Microsoft network.

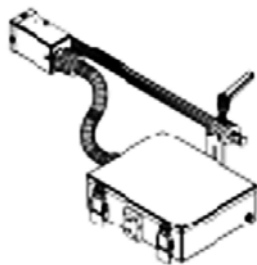
The user-friendly interface has icon menus and help text in most languages. Imaje 4040 is able printing many different characters and is easy to choose job from the menu. The display has a dimension of 800 x 600 pixels that gives you clear and trouble-free operation.

Flexible printing

Imaje 4040 impressive printing performances guarantee high quality personalization of your products for local and export markets. Imaje 4040 will have the possibility to drive up to 4 heads, with frame matching. Imaje 4040 is capable printing from the side or top of cartons. Various ink colors available for porous surfaces. You can select between a 1,5 to 17mm (128-channel print head) and 1,5 to 71mm (500-channel print head) character height.



Image 4040 (128-channel print head)

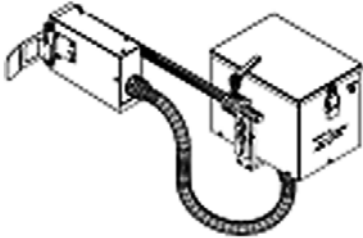


The picture shows a printout from a 17mm printer.

3. Product presentation



Image 4040 (500-channel print head)



The picture shows a printout from a 71mm printer.

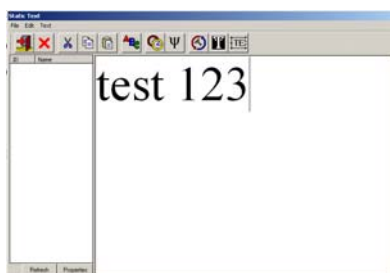
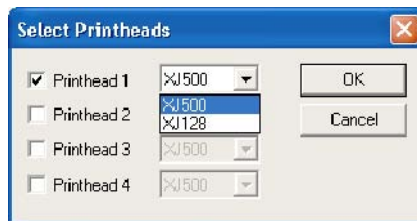
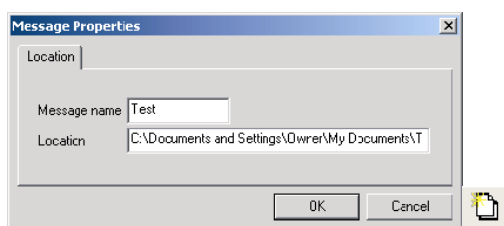


Programming Quick Start

Note! For detailed information also see Software Manual



New Message icon



Creating a New Message

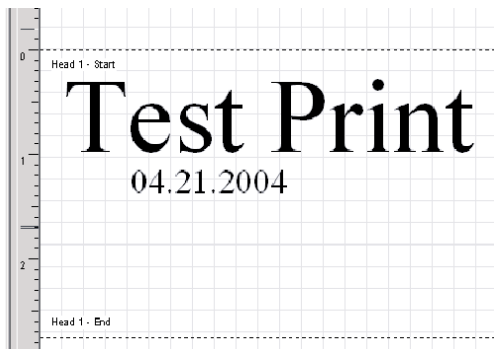
1. Open Mediator from the shortcut on the desktop “and replace with “ the NetJet Software will automatically start up when the 4040 controller is started.
2. Click on the “New Message” icon.
3. Give the message a name and click “OK”
4. Select Print head/Heads and Print head type, and then click “OK”.

Insert Text

1. Click on the “Insert Text” icon and then click on the layout.
2. In the “Static Text” window enter the text you wish to appear in the message.
3. Once you are finished entering the text, click on the “Save and Exit” icon.
4. Position the textbox between the Head decomposition lines.

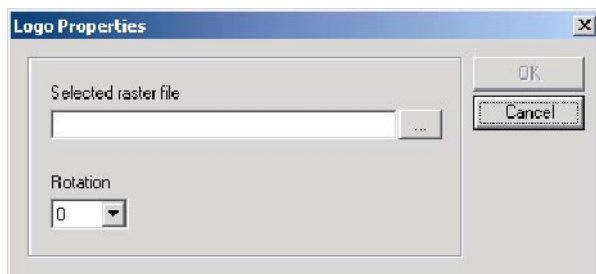


#2#####



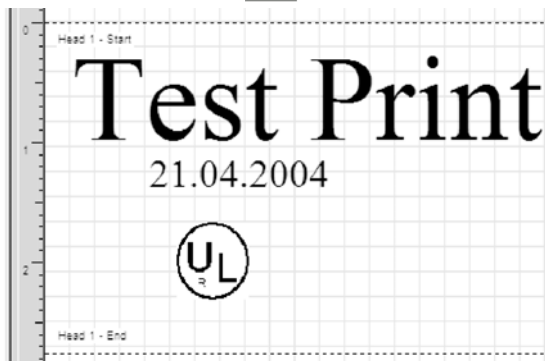
Insert Date

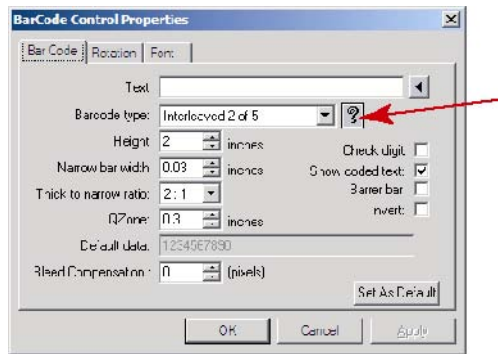
1. Click the “Insert Date” icon and then click on the layout.
2. The “Current Date” window will now show the placeholder of the date.
3. Click on the “Save and Exit” icon.
4. Position the Date between the Head decomposition lines.



Insert Logo

1. Click the “Logo” Icon. Draw a square under the date.
2. Click the browse icon and select the logo. Click “OK”.
3. Position the Logo between the Head decomposition lines.





Insert Barcode

1. Click the "Insert Bar Code" icon and then click on the layout.

Click the "?"-icon to view a bar code required.

2. Select a Bar Code type, enter the bar code text and click "OK".
3. Position the Logo between the Head Decomposition lines.

Message height for a 500 Dot Print head. {2.8" (70mm) max}

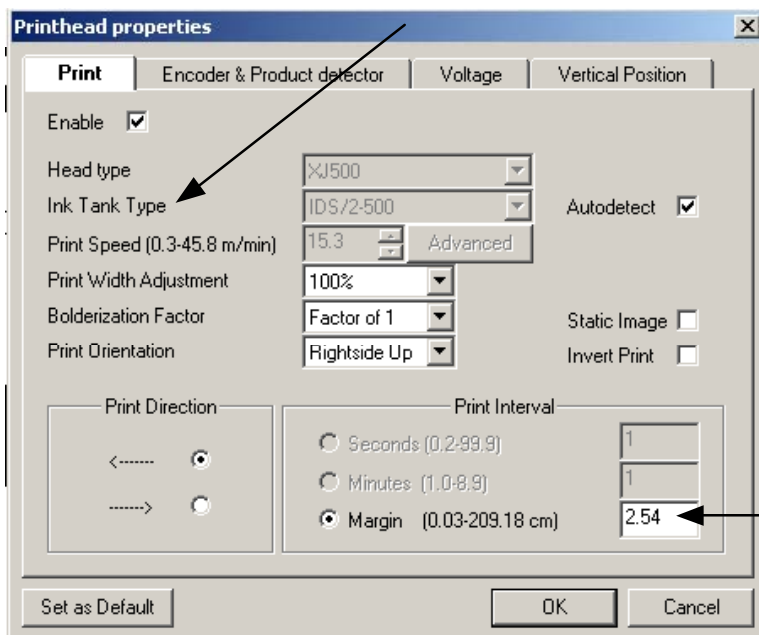
Message height for a 128 Dot Print head. {0.7" (18mm) max}

Saving and Printing

1. Click the "Save Message" icon.
 2. Click the "Enable All Print heads" icon.
- NJProcessor should be now ready to print.



Printing with NJProcessor

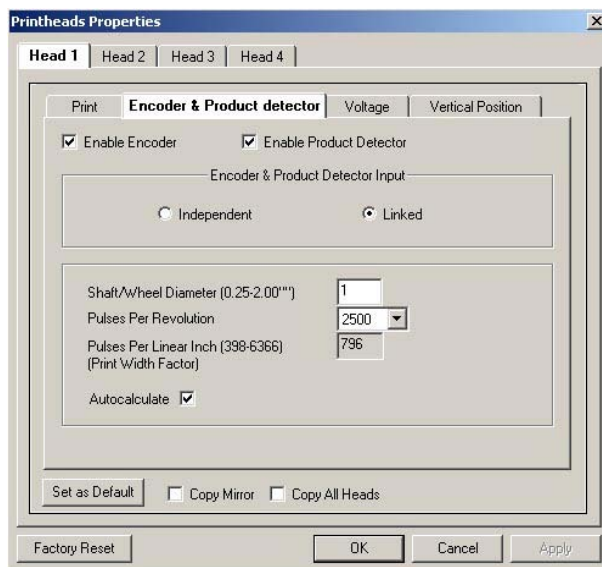


1. Click the “Print All” icon to enable the print.
2. Click the “Print heads Properties” icon.

Ink Tank Type is automatically detected when checked—if no tank detected defaults to Ink Delivery System IDS/2-500.

3. Under the “Print” tab for “Head 1”, select “Ink Tank” type and set the margin.

4. Quick Start



4. Click the “Encoder & Product Detector” tab. If you are using an Encoder and/or Product detector place a check next to the appropriate option or options and click “OK”
5. Follow steps 3 and 4 for setting up additional heads.
6. Click the “Print All” icon and run a sample product.

Re-Opening a message with NJEditor

1. Click the “Open Message” icon and find the directory path where the message is stored and click “Open”.
2. You can edit the message now or set the message to print by clicking the “Send to all heads” icon.

Re-Opening a message with NJProcessor

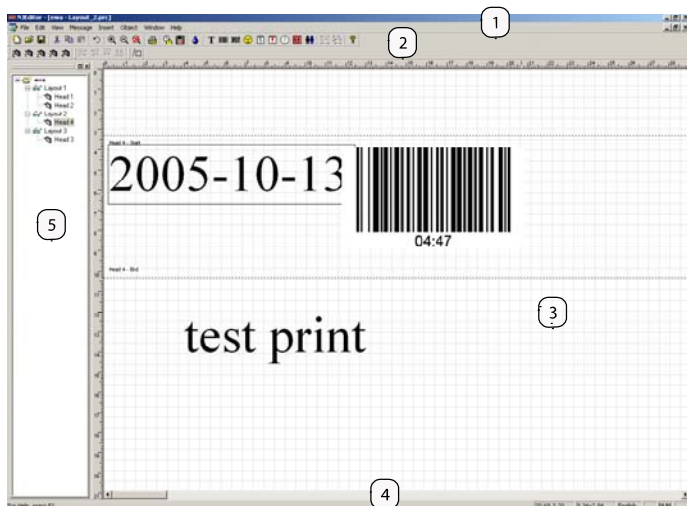
1. Click on the Computer name in the NetJet Network. In this case Imaje 4040 and choose “Open Message” from the menu. Find the directory path where the message is stored and click “Open”.
2. Click the “Print All” icon and run a sample product.

Image 4040

4. Quick Start



Main NJEditor Window-Menu Options



1. Menu Options
2. Tool Bar Area
3. Message View Window
4. Status Bar
5. Message Tree Window

“File” (Pull-down Menu) for NJEditor

“New Message”

“Open Message”

“Close Message”

“Save Message”

“Save Message as”

“Exit”





“Edit” (Pull-down Menu) for NJEditor



“Undo”



“Cut”



“Copy”



“Paste”



“Logo”

Allows for the insertion of a raster image. CLICK on this icon to insert a logo. Next click on the layout to indicate where the logo should be placed. A new window will open displaying the Logo Properties. Press Browse-icon to open a logo from a stored location. This will display the Open window; from the Open window you can search or select the desired logo. For more information / instruction refer to the Insert a logo section of this manual.





Toolbar

“Insert Shape”

Allows for insertion of a Vertical line, Horizontal line and/or a frame. This option also allows for changing the line thickness by pixels.

“Print head Properties”

Opens Print head Properties

“Dynamic Objects”

Allows for insertion and deletion as well as viewing properties of Dynamic Objects.

“Update Database”

Allows for updating a database file

“Ink Consumption”

Allows for viewing ink consumption for all heads with current message.

“Print heads”

Allows for enabling the print for the message currently opened within NJEditor. Sends message to the NJProcessor along with enabling print.



View Menu for NJEditor

The View pull down menu provides options that allow for adjustments to the main screens appearance or how the message is viewed. Many of the options in the View menu provide quick and easy short cuts that make operating the controller with the touch pad or mouse simple.

Note! This allows for enabling and disabling toolbars, adjusting view settings, head Decomposition, Cursor, and grid settings.

Options:

“General:”

Specifies if the last saved file is opened as default message and if copies of NJEditor are restricted to 1 copy running at a time.

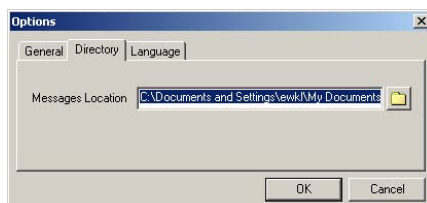
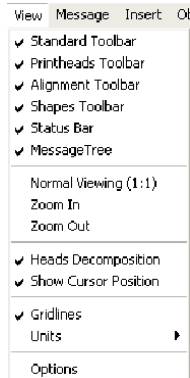
“Directory:”

Specifies the path at which all newly created messages are stored.



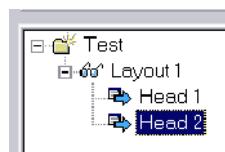
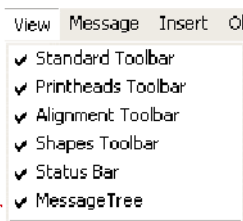
“Tool Bar”

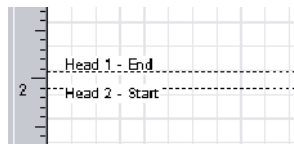
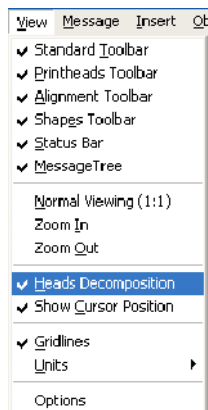
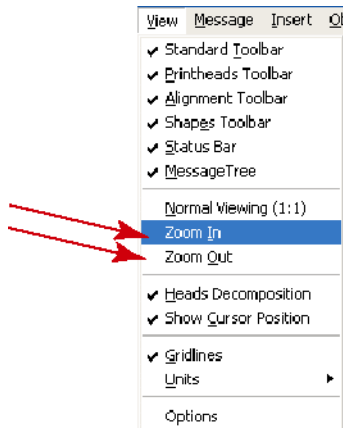
The Tool bar contains many convenient icons, allowing for easy access to commands commonly used when creating or modifying a Message



“Message Tree”

The Message Tree option when selected (enabled) will display the Message title folder and sub-components.





Normal Viewing

The Normal Viewing option when selected will return the Message window to the default zoom size.

Zoom In and Zoom Out

“Zoom In”

“Zoom Out”

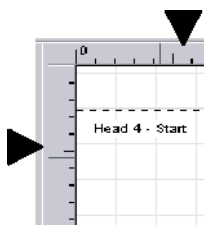
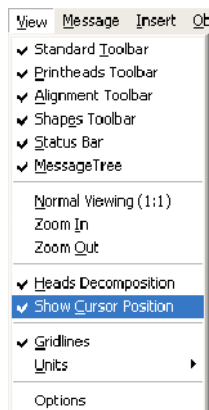
“Heads Decomposition” (Head Position)

This function is very useful when viewing multiple print heads at the same time. When selected (enabled) this option will allow you to see where one print head ends and another print head begins in the Layout window.



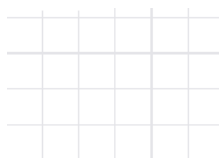
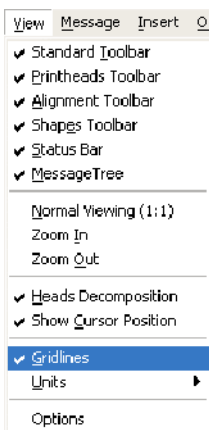
“Show Cursor Position”

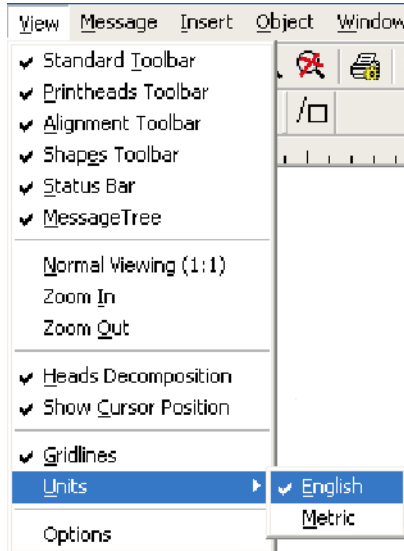
This option, when selected (enabled) will provide line markers on the horizontal and vertical rules showing the placement of the cursor.



“Gridlines”

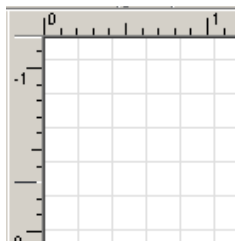
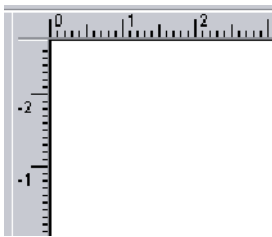
The Gridline option is helpful when lining up multiple images or determining the distance between images within a layout.





“Units” of Measure

The Units option when selected (enabled) will display horizontal and vertical measuring rulers. This function is useful to determine when a message will fit the desired target. The measurements can be displayed in both inches and metric.

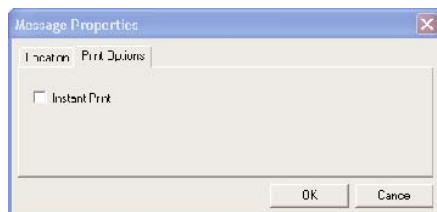




Message Menu for NJEditor

“Properties”

Provides information about where the message is stored (filed).





“Layout”

“New”

This option allows an operator to add additional layouts to a message.

“Import”

“Remove”

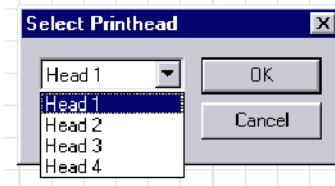
The “Remove” option will remove the selected layout from the current Message. Once you delete a layout you cannot get it back, unless your Message had been saved before the layout was removed. If the message was saved before the “Remove” was executed and you want to get the layout back, try selecting the “Exit” option under the “File” menu. When the controller asks if you want to “save message changes” say “NO”. Now click on “Open Message” and the Message with old layout should reappear.

“View”

The View option will allow you to switch the Message view from one layout to another. To switch layout view highlight the Layout you want to see.

“Properties”

The Properties option will display the Layout Properties window. Selecting a Print head from the dropdown box and clicking “OK”, the operator can view the Ink Consumption for that layout. The Ink Consumption calculator calculates ink consumption based off of the amount of pixels an entire message uses. There is no guarantee implied or intended by the ink consumption calculator. This can only be used as a guideline.



“Print head”

The Print head option provides the same menu options as the Head pop-up menu with on addition, the Insert option. For more information / instruction using these options refer to the “Print head pop-up menu” section.

“Insert”, “Remove” or “Properties”

The Select Print head window will appear. This option has been designed so that the next available print head will be displayed on the Select Print head field. If this field is blank, this is an indication that there are no more available heads on the controller.

For a head to be available it must:

- Not be currently installed in the current message.
- The hardware must be physically installed and attached to the controller.

“Remove Print head”

The Print head Remove option will allow you to remove a Print head. Removing a Print head will not delete the message (information), but will ensure that the message is not printed to the head removed. If no Print heads are installed the message will not print. Once a Print head has been removed it can be re-inserted into the current layout or into another.

“Print head Properties”

The Properties option when selected will allow you to select which type of Print head and the print position. Once the desire Print head has been selected, CLICK the “OK” button.



“Used Objects”

This option in the message menu lists all of the objects in the message. The use of these objects are dynamic objects is explained later on in the manual.

Dynamic objects will appear in the dynamic objects window. Properties of dynamic objects such as date format may be adjusted by clicking properties.

Insert Menu for NJEditor



Print head properties



Insert Dynamic Object



Update Database



Ink consumption



Text Icon



Barcode



2D Barcodes



Logos



Date



Expiration Date



Time



Counter



Shift Codes



Use this feature for Solvent Based Inks Only

Buzz

The Buzz feature is a sub-ejection pulse provided to the Print head. This pulse is a voltage high enough to break up the meniscus of ink that dries at the tip of the nozzles, but low enough to not actually eject ink.

This function is not as effective by itself with medium to fast drying inks. When using such inks the best results come from using the spit function in conjunction with the Buzz function.

Figure 1 Buzz Options

The correct voltage is 12V for Ink-80375.

Option	Value
Buzz	
Buzz Enabled	Checked
Buzz Voltage	12
Buzz Frequency	977

Spit

The spit function is used when using fast drying inks keeping the ink nozzles wet and ready to print. The spit function fires all nozzles simultaneously forming a column raster of ink. This column will fire once every (x) amount of seconds depending on the spit frequency. The spit function will not activate during a regular print cycle unless there is a break in the line or break between products that are greater than the Spit Frequency. The Spit Frequency setting is dependent upon two variables: Ambient temperature and Ink dry time.



4. Quick Start

Option	Value
Spit	
Spit Enabled	Checked
Spit Frequency	90
Number of Spit Columns	10
Spit Auto Off Enabled	Checked
Spit Auto Off	240

Example: The most common solvent based ink used is classified as medium dry time. At room temperature the Spit Frequency for medium dry ink can range from 15 to 25 seconds. If the ambient temperature is increases significantly, tip drying may occur. If tip drying occurs, decrease the Spit Frequency. For fast drying inks, the Spit Frequency default is:

80322 10 sec. 128 head only
80324 15 sec. 128 head only
80375 60 sec. 128 or 500 heads

To enable/disable the Spit feature move the cursor to the Spit Enable box and CLICK. When a ✓ check mark appears in the box the Spit feature is ON and adjustments to the setting can be made. When the box is clear the Spit feature is OFF, adjustments cannot be made and no ink will be supplied to the print head while in idle mode.

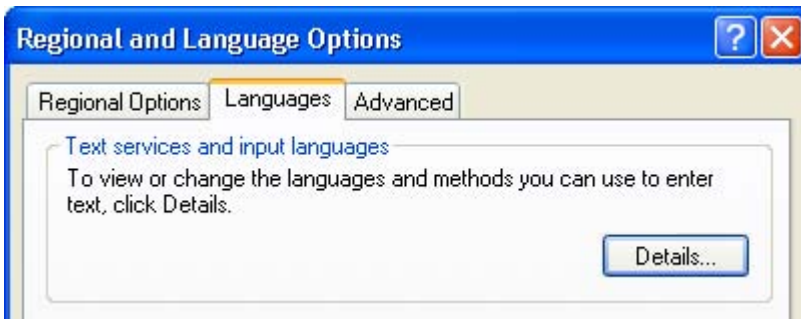


Changing the keyboard input

In some cases it may be necessary to switch to a different keyboard input other than English (United States)[default input]

In some cases it may be helpful to have a keyboard layout that looks the same as the keyboard assigned to your local language. All special characters that are on a keyboard in your local language can be set in Imaje 4040 with Microsoft XP Pro.

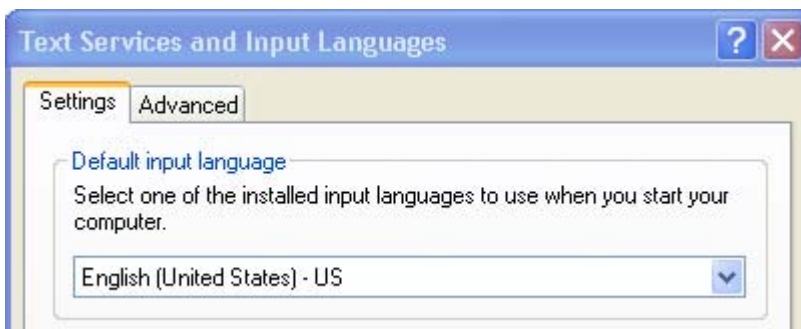
Setting keyboard input



1. In Windows XP, click on Start → Settings → Control Panel.
2. Double click on Regional and Language Options.
3. Select the Languages tab.
4. Click on the Details icon.



5. Click on Add and select your language. Click Ok when finished.
6. Use the dropdown list under Text Services and Default Languages to select the windows default input language.

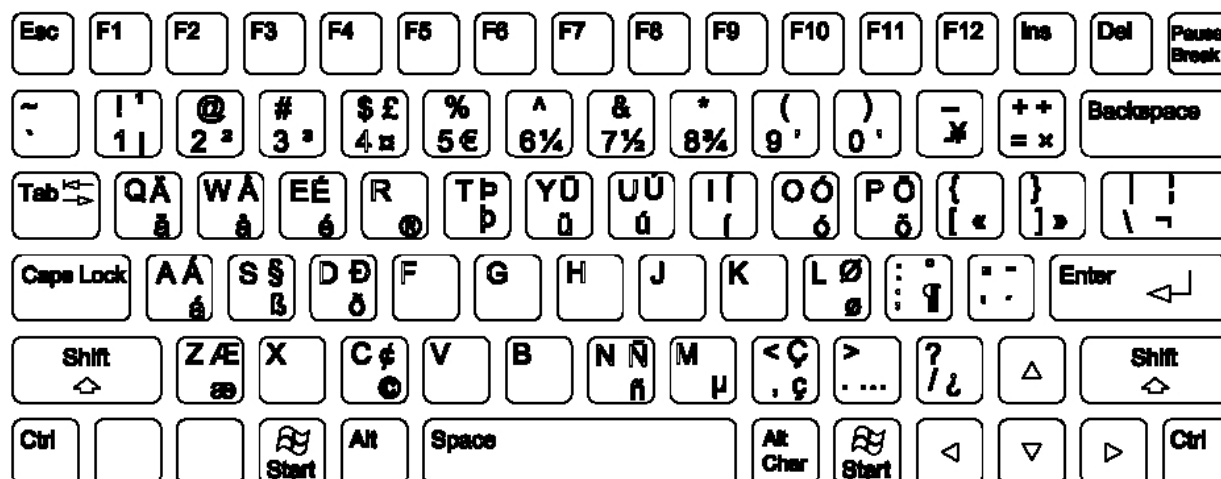


7. Once a default language is selected, Click Apply on Ok.

The Imaje 4040 will need to be shut down and restarted before the changes will take affect.



Inserting special characters with controller keyboard



Obtaining characters on a key

Alt Char: Use this key to type the lower right character of each key. *Ex. while holding the Alt Char and pressing the 8 keys would type 3/4.*

Alt Char + Right Shift: Use both these keys together to type the upper right character of each key. *Ex. while holding down Alt Char + Right Shift and pressing the A key would type Á.*

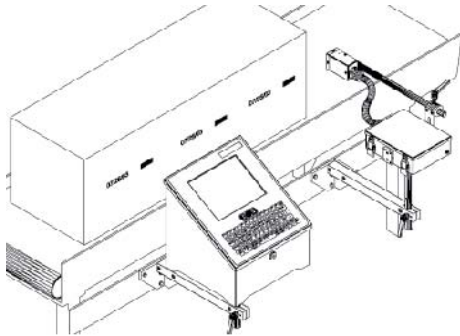
Examples

Pressing with shift: \$
 Pressing with no shift: 4
 Press right shift key and Alt-Char: £
 Press Alt-Char key: ¤





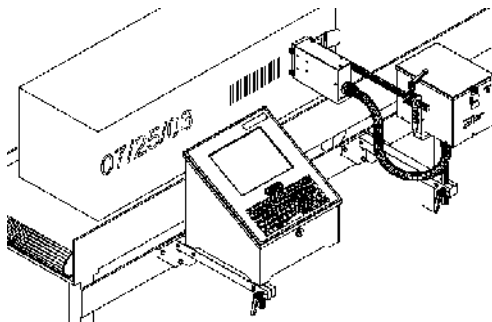
Installation



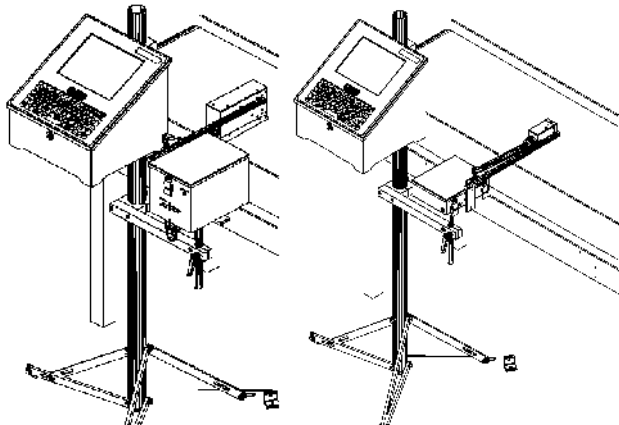
There are several mounting options available for the Imaje 4040 Ink Jet Systems.

Basic Configurations

Imaje4040/XJ128, conveyor mounted
(Single Print head)

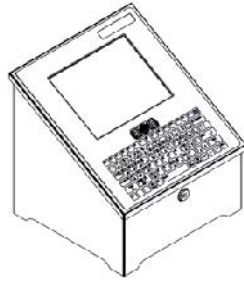


Imaje 4040/XJ500, conveyor mounted.
(Single Print head)



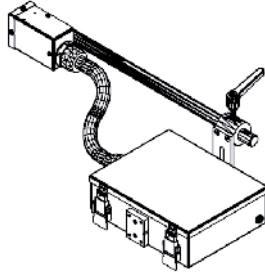
Imaje4040/XJ128, Floor Stand mounted.
(One Print head)

Imaje 4040/XJ500, Floor Stand mounted.
(One Print head).

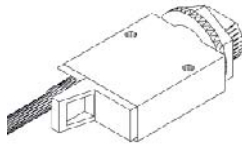


Identifying the basic components

Controller



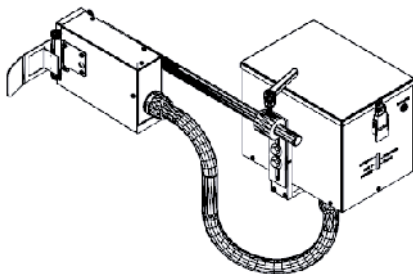
Print Module, XJ128



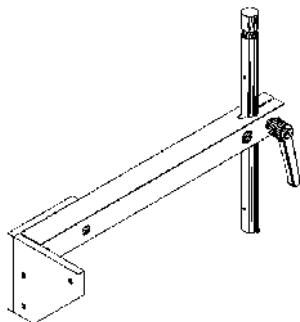
Product Detector (Photocell)



Cable, Controller to Print Module

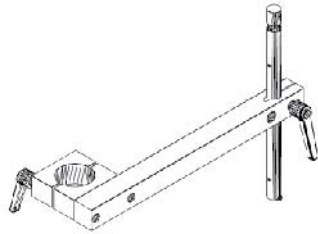


Print Module, XJ500

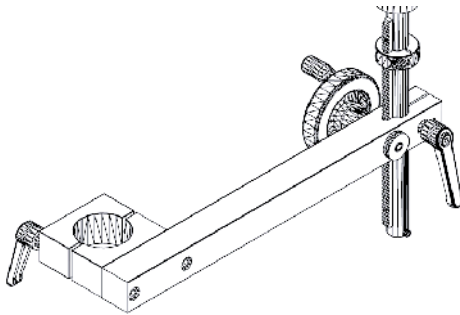


Mounting Bracket, Print Module to Conveyor

5. Ink Jet System Set Up



Mounting Bracket, Print Module to Floor Stand



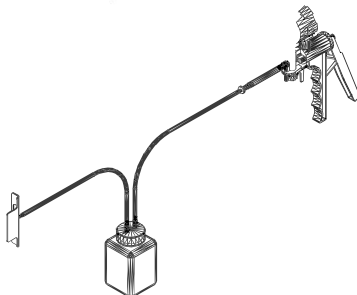
Mounting Bracket, Print Module to Floor Stand with Height Adjuster



Encoder



Floor Stand



Vacuum Primer

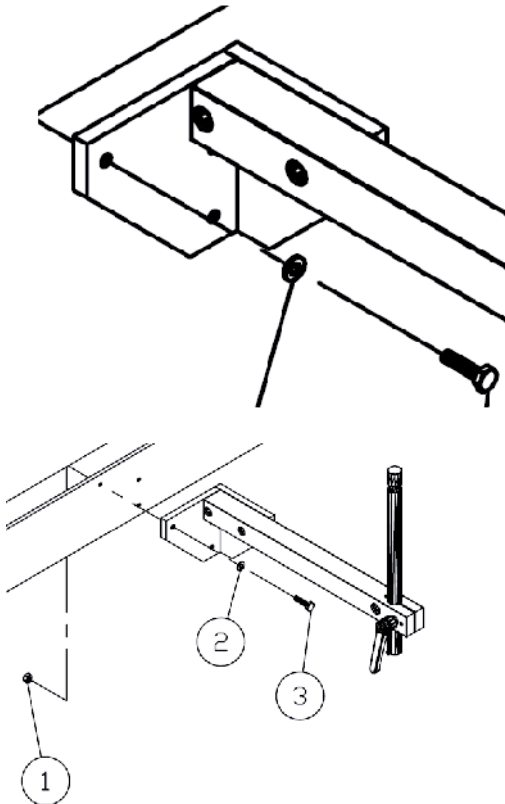


Mounting the Components

Once you have identified your components, install them according to the following instructions.

Installing Conveyor Mounting Brackets

1. Drill three holes into the side of the conveyor to match the hole pattern of the bracket. Use at least a 5/16" drill as a clearance hole or a 9/32" drill to tap 1/4-20 threads into the conveyor.
2. Align bracket with holes and attach screws.
3. Assemble brackets as shown.
4. Mount the Print Module to the upright shaft. See below



Item	Quantity	Description
1	3	1/4 -20 Hex Nut
2	3	1/4" Lock Washer
3	3	1/4 -20 x 1" Hex Head cap screw

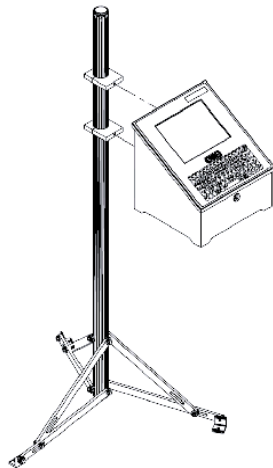


Installing Floor Stand Mounting Brackets

Attach the mounting bracket.

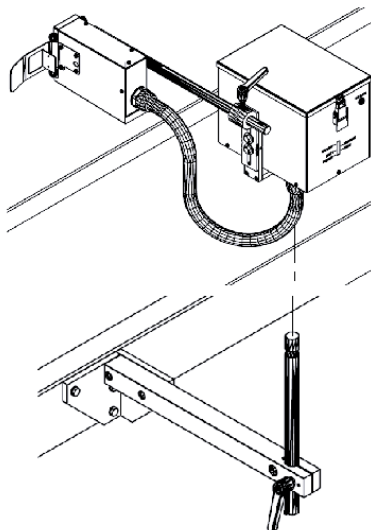


Attach the Controller to the floor stand.



Mounting the Print Module

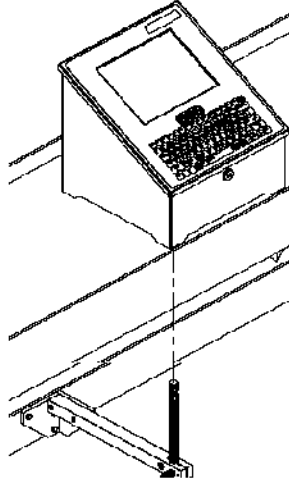
Attach the Print Module





Mounting the Controller

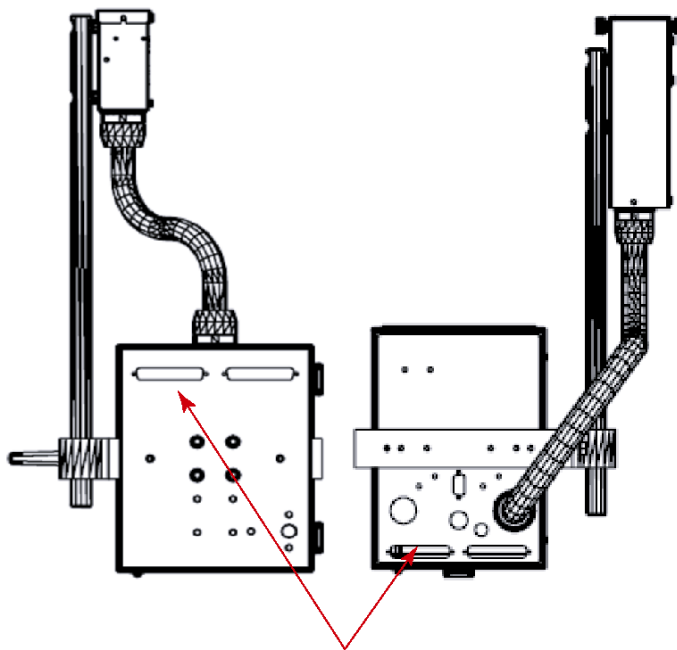
Attach the Controller



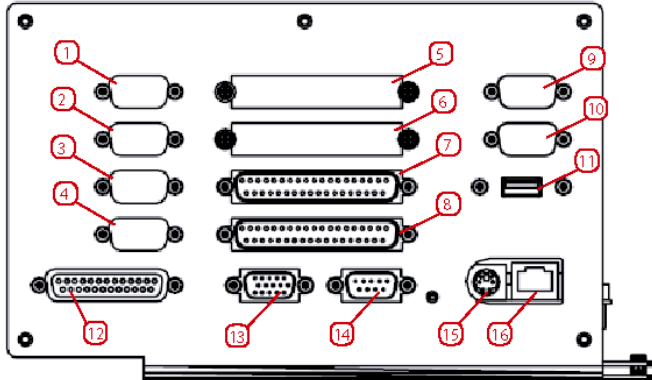
Connecting the Printer Cable

Connect cable to port labeled “Head 1”. The port labeled “Head 2” is for dual configuration. Other end of the cable connects to controller.

Print Modules, XJ128 and XJ500 Connectivity.



5. Ink Jet System Set Up



1. Encoder Port 2
2. Photocell Port 2
3. Encoder Port 1
4. Photocell Port 1
5. Printhead Port 4
6. Printhead Port 3
7. Printhead Port 2
8. Printhead Port 1

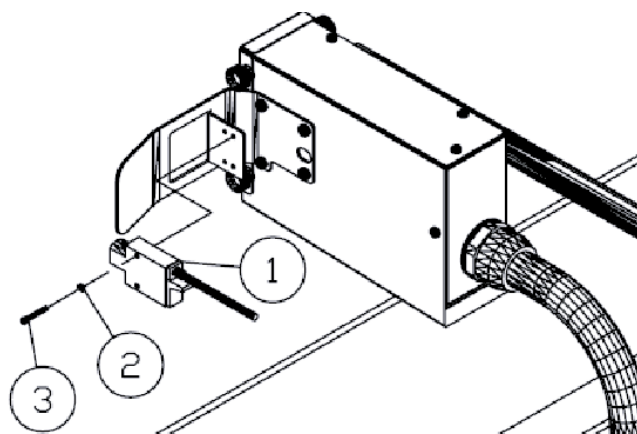
Connections on Controller

The controller is a Windows XP Professional based industrial computer.

The Controller is configurable with up to four print head ports. In addition up to two photocell and encoder ports may be installed. Single print head Controllers are fitted standard with only one Photocell and Encoder port. Controllers fitted with more than one Print head are fitted with two Photocell and Encoder ports. The signals may be linked together or used independently between pairs of Print heads. The USB port may be used for attaching external devices such as storage media, a USB mouse, keyboard, scanner, etc. The Video port may be used to attach an external monitor or projector for training or troubleshooting.

9. COM 2, RS232
10. COM2, RS422, RS485
11. USB-Port
12. Parallel Port
13. Video Port
14. COM1 RS-232 Serial
15. PS-2, Keyboard, Mouse port
16. LAN Network (Ethernet)

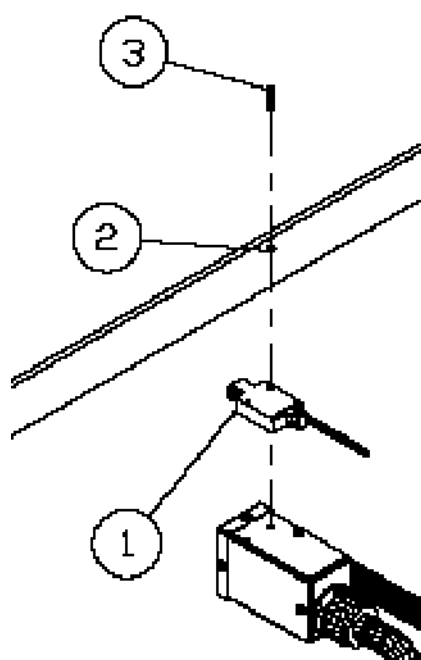
5. Ink Jet System Set Up



Installing the Product Detector (Photocell)

Using the hardware supplied, mount the photocell as shown to the Product Guide, which is mounted to the side of the print head. Note, the Product Guide may be mounted to either side of the print head, depending on the product travel direction.

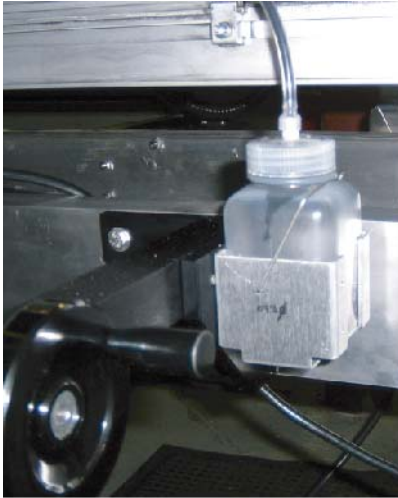
Item	Quantity	Description
1	1	Photo Cell
2	2	#4 Lock Washer
3	2	4-40 x 3/4" SHC Screw



Using the hardware provided, attach the photocell to the print head. A product guide may also be used with the XJ128 print head. Other photocell mounting options are available depending on application.

Item	Quantity	Description
1	1	Photo Cell
2	2	#4 Lock Washer
3	2	4-40 x 5/8" SHC Screw

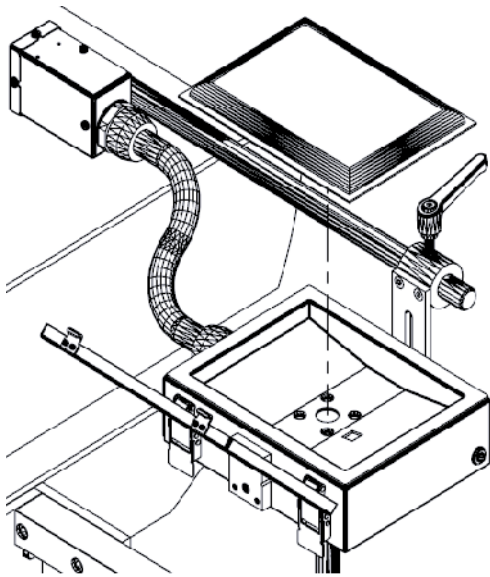
5. Ink Jet System Set Up



Installing the Ink Waste Container

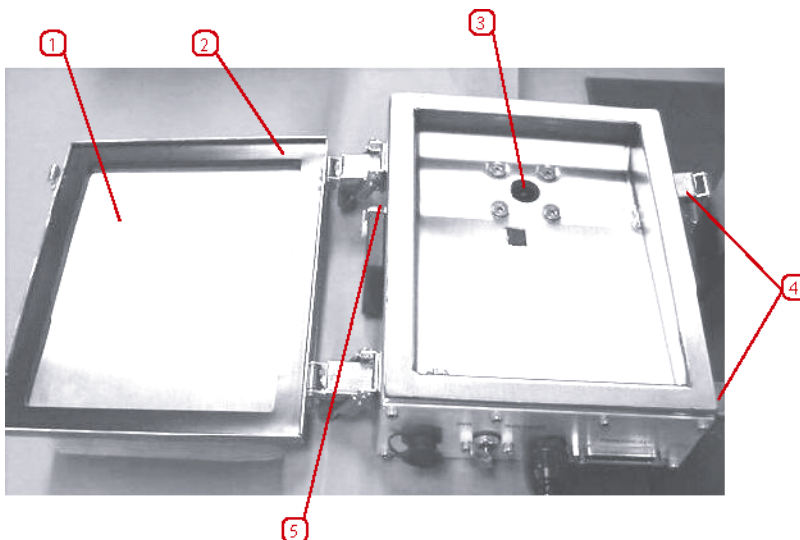
1. Attach the ink waste bottle to the mounting bracket using the hardware provided.
2. Connect the tubing provided to the bottom of the print head by pressing it over the barbed fitting.
3. Connect the other end of the tube to the bottle by turning the Luer fitting in a clockwise direction until tight.



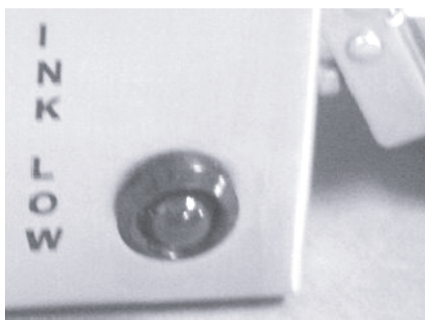


Installing the 500ml Ink Bag

The installation of a 500ml ink bag into the Ink Delivery System portion of the Print Module.

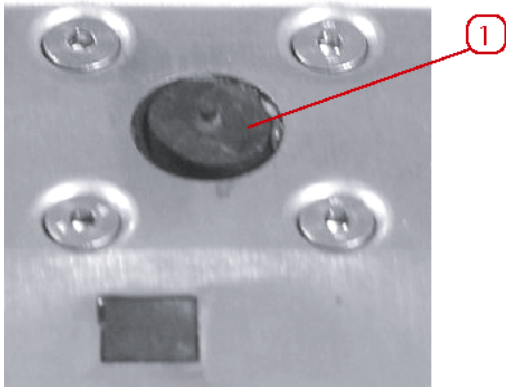


1. Ink Tank Cover.
2. Rubber Door Seal.
3. Insert Ink Bag Septum here.
4. These door latches swing down allowing the ink tank door to be opened.
5. Attach the priming bulb here.

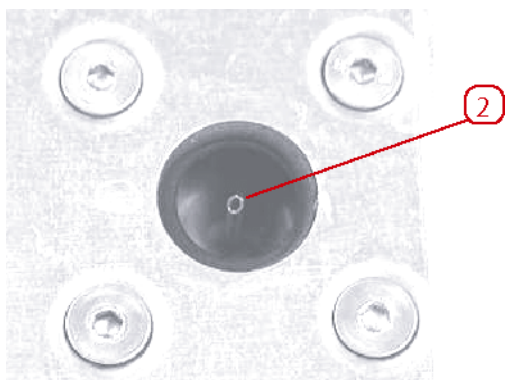


The Ink Low light will flash and the Controller will flash an ink low message on the screen when the ink level is low.

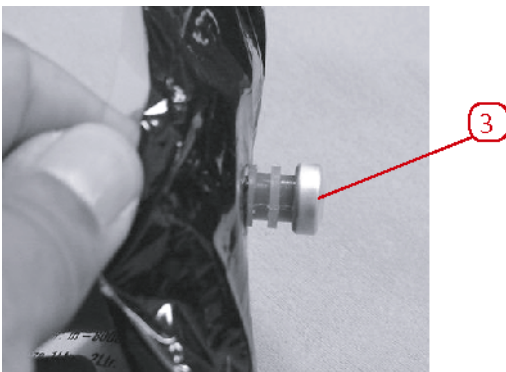
5. Ink Jet System Set Up



6. Before installing the ink bag remove the rubber stopper located in the ink tank intake hole (initial installation only).

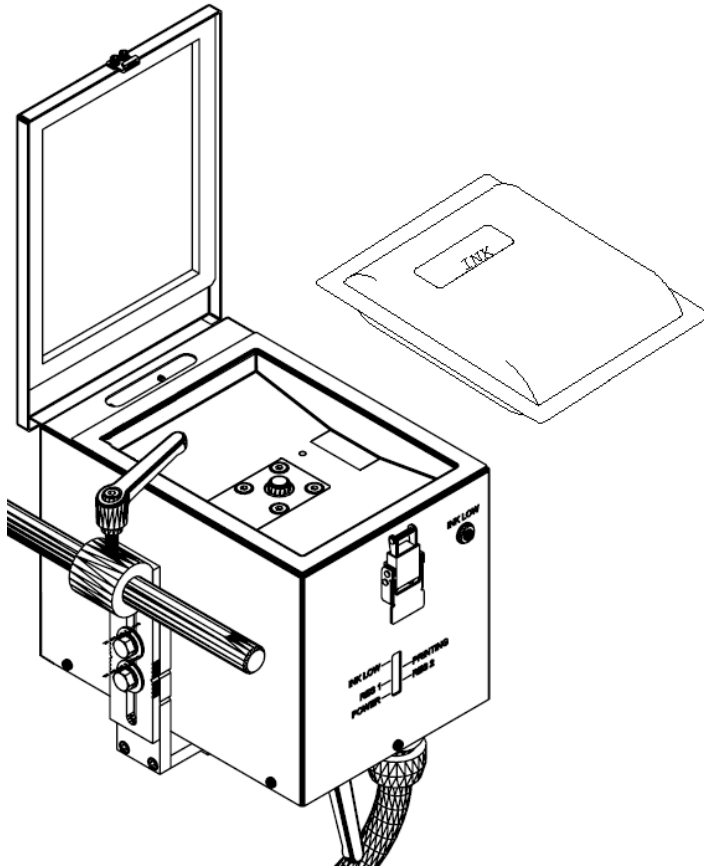


7. Notice the small metal tube in the center of the intake hole. This tube will puncture hole the rubber seal in the ink bag septum allowing ink to flow in the print head.



8. When inserting the ink bag septum into position ensure that the septum is clicks into place.

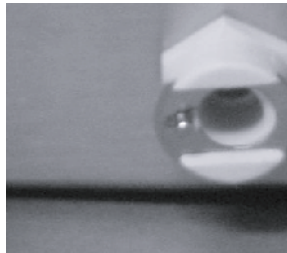




Replacing the Ink Bag:

When the **Ink Low** light begins flashing, several hours of printing time may remain prior to bag replacement. (The exact time depends upon how quickly ink is being used).

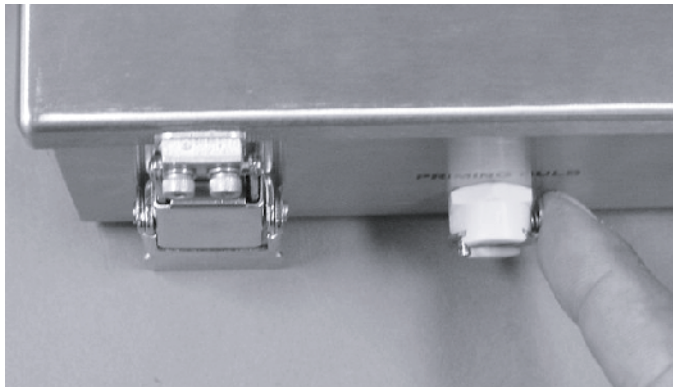
Position the ink bag inside the ink tank. Press on the bag at a location over the septum until the bag is firmly seated on the needle inside the ink tank. Close and clamp the tank lid.



Connecting The Hand Priming Pump

The Priming Pump is a hand held device that is used to force ink into and through the print head removing air from ink lines and the print head. The pump has an air valve which when tightened will allow the system to build up pressure when the pump is squeezed. The air pressure presses on the ink bag causing the ink to flow into the print head and push out any existing air bubbles or dried ink. When the valve is loosened the pressure is released and manual ink flow is stopped.

Note! The air pressure valve on the primer pump should be in the release position during normal operation so that the system operates under static pressure.



The connection for the priming pump is located on the side of the ink tank both for the Bulk and the Disposable tanks. To ensure a proper fit press the Release button, this button is spring-loaded and is used to lock the priming pump into place.



When removing the hand held priming pump Simply squeeze the release button and the prime pump tube will easily detach.

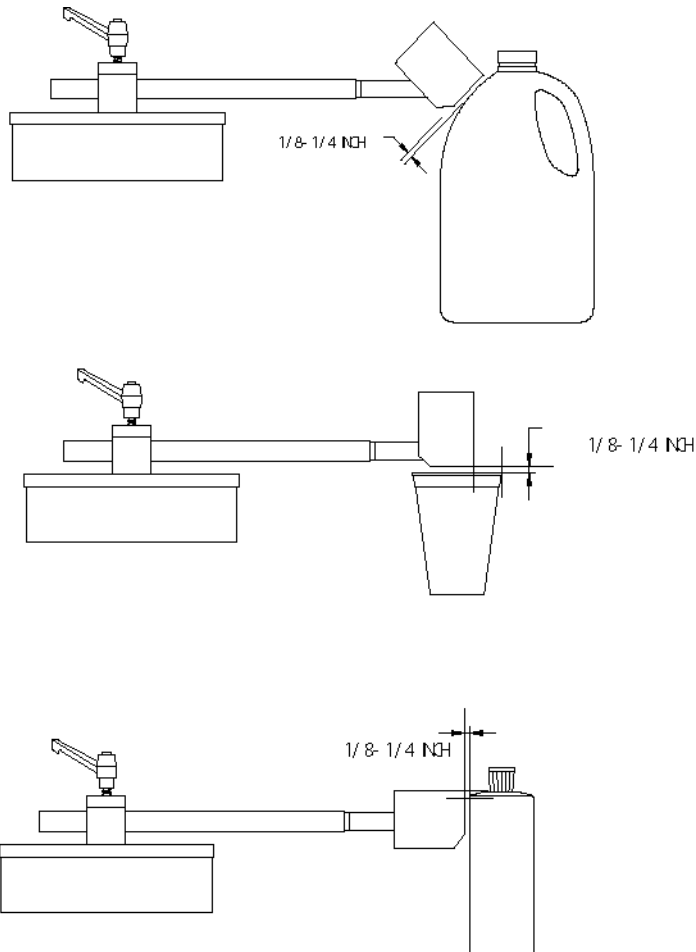


Installation Notes



Levelling Ink Delivery System

After mounting the ink delivery system be certain it is level. Place a level in the center of the ink delivery system, check both front to back and side to side. Level tolerance can be ± 10 degrees side-to-side and ± 5 degrees front to back.



Throw Distance Recommendations

The distance between the print head and the printing surface is limited. For maximum code quality the print head should be located as close to the surface as possible and maximum of $\frac{1}{4}$ " (=5mm).

However, it is recommended you take precautions to avoid damaging the print head. Position the print head the maximum allowable distance from the product surface to avoid inappropriate conditions. Try to insure that product surface to be marked is clean and dry. Be sure there are no moisture, no product overflow, no contamination and no possibility of contact between the print head (nozzle plate) and the product. It may be necessary to adjust or modify the conveyor rails to avoid contact with the print head. Avoid conditions where spillage or splashing is imminent. In extreme conditions it may be necessary to move the print head away from the printing surface to avoid print head damage. As the distance increases the code quality will degrade. It may be necessary to accept a lower quality image to avoid problems.



Priming



Quick Priming

Note!: Once the print head has been initially primed an occasional quick prime 2-3 pumps is necessary to clear a nozzle. To perform this quick prime, it is not necessary to remove the nozzle protector plate. Simply prime the head and let the ink drip through the gap in the bottom of the head shroud into a wipe or container.



Priming the Print head, XJ128

1. Loosen screws holding nozzle protector plate.
2. Remove the nozzle protector plate.
3. With print head exposed, prepare to prime the print head for the first time.



5. Ink Jet System Set Up



4. Close the air valve on the priming pump by rotating clockwise.

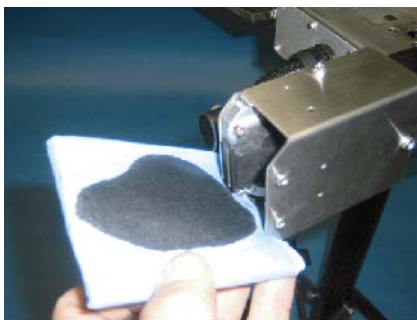


5. Pump the priming pump continuously for 10 seconds.

6. Be sure to turn the air valve back counter clockwise to release the pressure when finished priming.



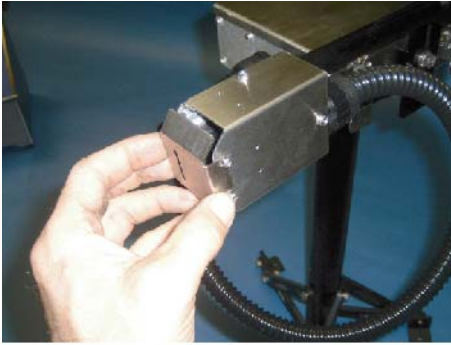
7. Hold a Lint Free wipe up to the nozzles while priming.



8. Gently blot the excess ink away from the face of the print head using only factory-approved lint free wipes.

*Never wipe or rub the nozzle plate. Only blot. Never touch the nozzle plate with anything other than factory approved wipes.

5. Ink Jet System Set Up



9. Re-attach the nozzle protector plate.

10. Press the nozzle cover flush up against the nozzles and tighten the screws.

11. Another method is to prim into a container, then blot the excess ink away.



5. Ink Jet System Set Up

Priming the Print head, XJ500

Daily Start Up:

Turn on the power to the printer. Squeeze the priming bulb **1 or 2 times** and release the pressure. Start printing.

Daily Shut Down:

Turn off the system and walk away, DO NOT FLUSH WITH CLEANER, Ink should be left in the print head.

Priming the print head:

Should an occasional clog or blockage occur it may be necessary to clean the print head nozzle plate. (*It may be necessary to remove the front print head cover.*) Using a squeeze bottle (Cleaning Kit), available from your dealer, and gently rinse the nozzle plate with manufacture recommended solvent. This will remove any ink build up or debris.



Immediately squeeze the priming bulb **3 or 4 times** then vent to relieve pressure to the ink reservoirs. Press a lint free towel moistened with solvent against the print head and blot, **do not wipe**. (*Wiping can damage the nozzles.*) Use the lint free towel to gently blot the head to remove any excess ink.

Flushing the print head:

Flushing the print head regularly with cleaner is unnecessary. The print head manufacturer recommends that ink be left in the print head at all times. This action will not clog or damage the print head if not left for long periods of time exceeding months.



5. Ink Jet System Set Up

Procedures for cleaning a XJ-500 Print Head

A print head can be cleaned more thoroughly using a XJ-500 flush kit.

(1) Remove the nozzle plate. (2) Remove the entire print head shell. Do not remove the print head. (3) Fill the cleaning syringe with approved solvent. (4) Attach the cleaning syringe to one of the four ink inlet ports on the back of the print head. (5) Flush a small amount solvent through the print head.

CAUTION

Use only factory solvent or cleaner, and factory towels to clean the nozzle plate. Occasionally applying solvent to the nozzle plate is recommended. Do not blot the nozzle plate with a dry towel. This can scratch and/ or cause irreparable damage the print head.



Before priming the print head, the internal air tubes must be connected by attaching the two Luer fittings inside.

Important: These fittings must be disconnected and re-capped prior to reshipping or removing from line and laying on side or upside down.

Open the Ink System and lift ink tray.



Air tubes disconnected.



Air tubes fittings connected.



Air tubes caps stored in supplied bag.



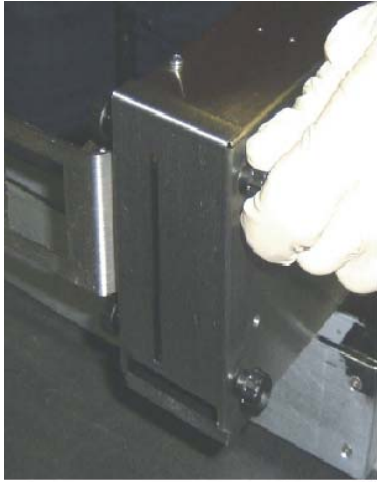
First time Priming

Vacuum Priming the Print head

Before operating the system you must remove all air from the ink lines and print head. This can be accomplished by a combination of two methods. For maximum print quality vacuum priming may be necessary.

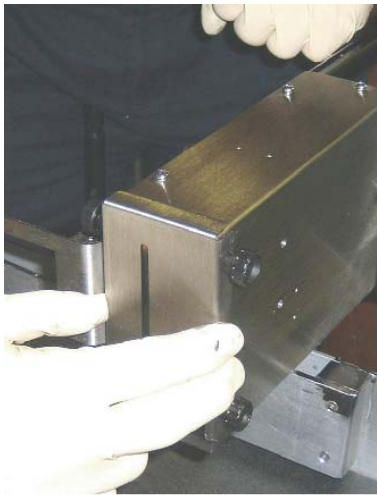
Vacuum - A cap is fitted over the nozzle plate. A vacuum is applied for a short time drawing out any excess air. Vacuum purging is highly effective at removing air from the print head. Recommended when doing an initial installation, or when ink lines have been detached.

Pressurizing - Positive pressure is applied to the ink supply. The ink delivery system is fitted with a hand pump to provide a simple method for purging. This method is used when a partial de-prime has occurred.



Remove the Nozzle Cover

1. Loosen the four thumbscrews holding the nozzle cover.



2. Gently remove the cover.



3. Once the Nozzle Cover is removed, remove the rubber nozzle seal from the inside of the cover. Keep this seal in a safe place in the event that the equipment ever needs to be shipped again.



Vacuum Priming the XJ500 Head

The vacuum priming operation should be performed during installation or after maintenance requiring print head exchange or if the tubing is disconnected. The vacuum pump is necessary to remove trapped air bubbles from tubing and inside the print head. To use the vacuum pump follow step one on the previous page. For care of the vacuum take the following precautions.

When connecting the vacuum:

1. Make sure that the ink jar is empty before you start.
2. Ensure that the ink jar is screwed on tightly to ink jar cover. This will prevent ink spills and leaking during the vacuum process.
3. During the vacuum process pay special attention to the ink jar, to ensure that the jar does not over fill. Although the ink jar is transparent when it begins to receive ink products it's transparency will diminish and seeing through the jar will become difficult. It may be necessary to remove the jar from the jar holder to how full the jar is. Failure in properly monitoring ink levels in the ink jar will result in being sucked into the pump and spraying out.
4. After you have finished the vacuum process empty the ink jar. It is a good idea to wrap the cap in an absorbent cloth to absorb any excess ink product and prevent spills.
5. Use a spray cleaner like Formula 409 or the flushing solution used with the ink that you are using to keep the vacuum pump clean.

5. Ink Jet System Set Up



Vacuumping

Place the vacuum cap over the print head. There is a slot along the side of the print head. The tab on the vacuum cap should be inserted into the slot. This must be done carefully to create a vacuum. Hold the vacuum cap firmly assuring that the rubber gasket is sealed to the face of the print head.

Squeeze the hand pump rapidly for 20 to 30 seconds. Both air and ink will be pulled through the print head into a collection jar. When performing this procedure the ink jet system might indicate WARNING Low Ink. This is OK.

Caution: Recommended vacuum pressure is 700 m/bar, do not exceed 900 m/bar.

Remove the vacuum cap. After performing the vacuum priming procedure proceed to the pressure priming function.



Pressure Priming the XJ500 Print head

Occasionally debris may settle on the outside of the nozzles or a small air bubble may trap in one or more of the nozzles. The appearance will be as if there are lines through the print. To recover those nozzles, simply do a pressure prime instead of a vacuum prime. If the symptoms recur then vacuum prime the head again.



1. Squeezing the priming pump 3 times to pressure prime the print head.
2. Be sure to turn the air valve back counter clockwise to release the pressure when finished priming.
3. Perform a test print.
4. If the lines remain, repeat.

There is no need to catch the ink or to wipe the head when printing horizontally. The print head will catch the excess ink into it's own reservoir.



Results of pressure priming the print head. Ink purges out of the nozzles and flows down the nozzle face into a containment area in the bottom of the print head housing. The waste ink will drain into the ink waste container. If after priming, there is excess ink on the face of the print head cover, it may be wiped of using a lint free wipe so that the excess ink does not smear onto the box.



Disposing of ink waste



1. Release bottle restraint by pushing down.



2. Remove Bottle from holder.



3. Remove cap from bottle by turning counter clockwise.

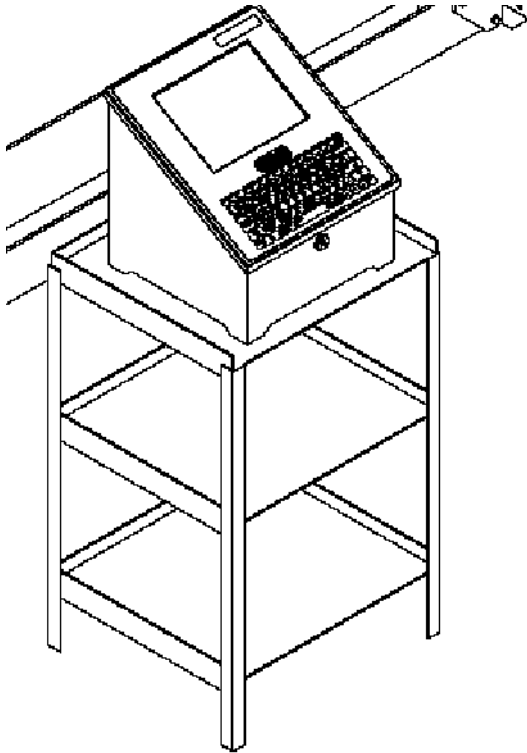


4. Empty the contents. Then reverse this process to re-assemble.

The waste bottle will hold approximately 250ml of fluid; therefore disposal is not frequently necessary.



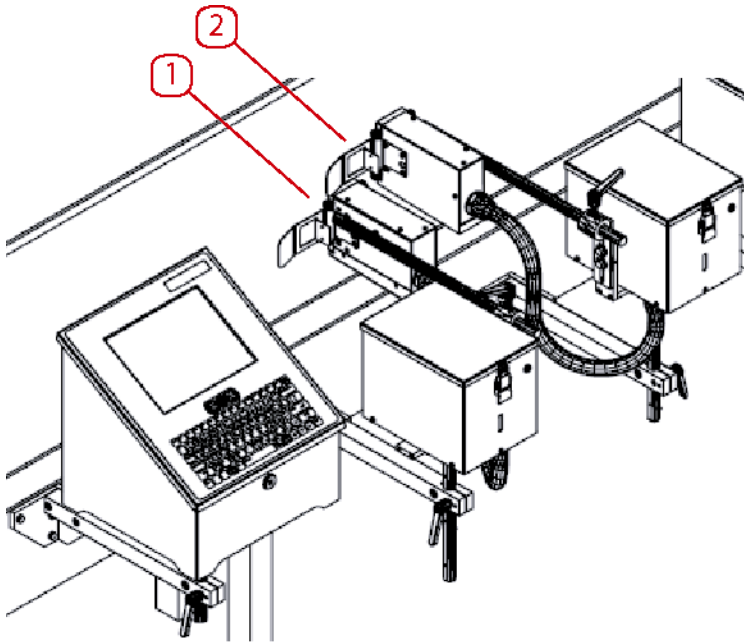
Additional Mounting Options for the Image 4040 Printers



Controller mounted to a cart. The rubber feet on the bottom of the controller allows the user to set the controller onto a table or a cart instead of using mounting brackets.



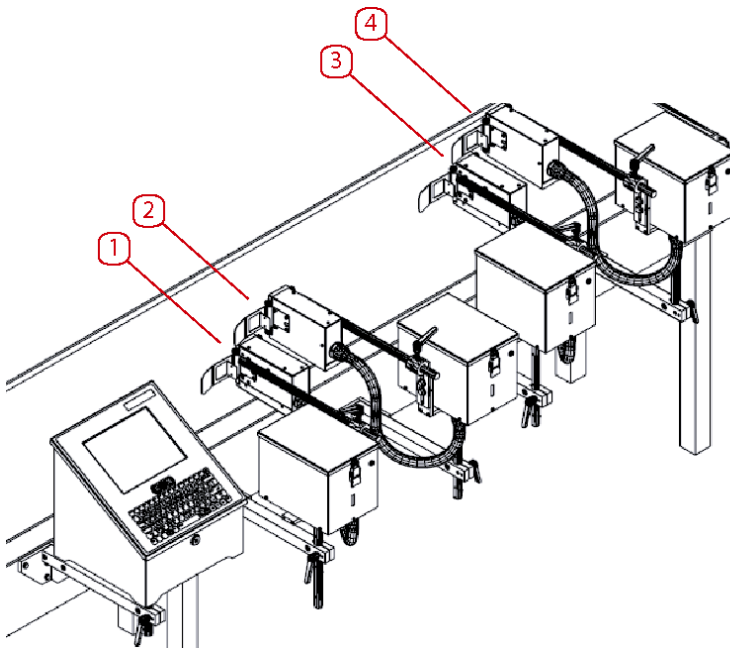
Installing Multiple Print heads



Dual XJ500 Print heads

It is best to mount the print heads as close together as possible.

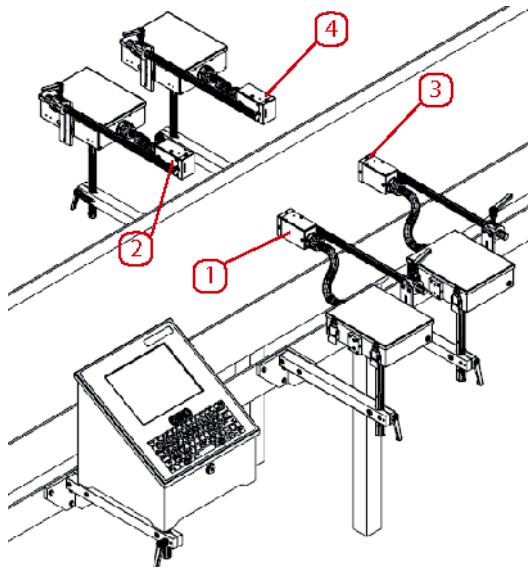
1. Head 1
2. Head 2



Quad XJ500 Print heads

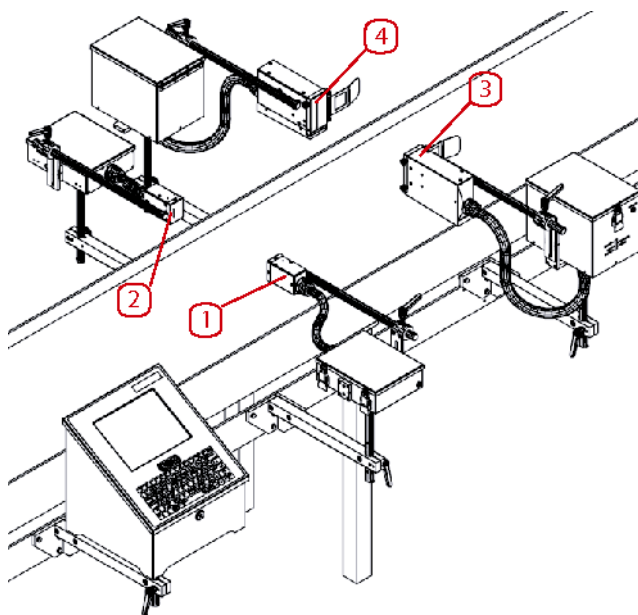
Photocells in this set up. Each photocell should be mounted to the leading print head (Head 1 and Head 3).

1. Head 1
2. Head 2
3. Head 3
4. Head 4

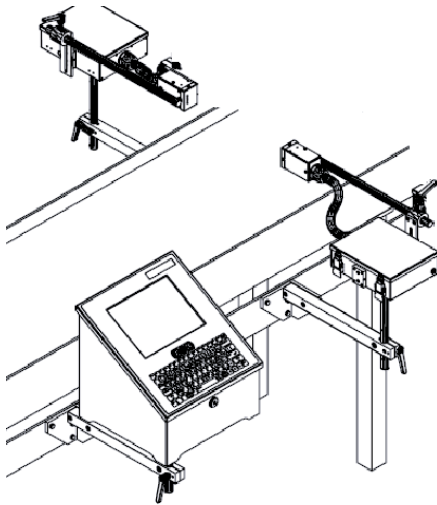


Quad XJ128 Print heads

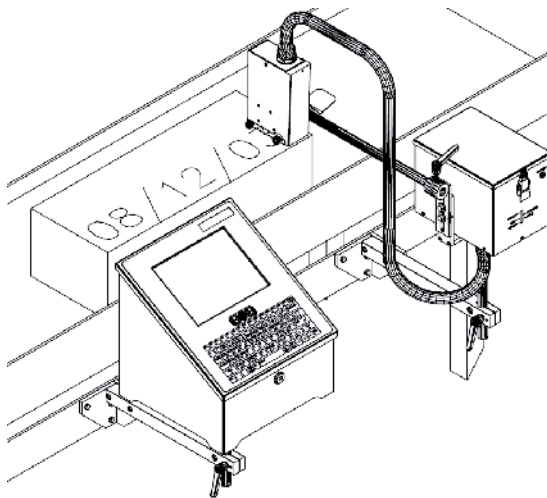
Make sure to connect the Print head Cables according to the print head layout in this figure. The software is set up to obey this configuration.



Quad Controller, 2 XJ128 and 2 XJ500 Print heads



Dual Head XJ128



Downward Printing using the XJ500 Print head

Shows an XJ500 Print head set up to print in the downward direction.



Adjusting the XJ128 Print head for different printing angles



Angled Printing (45°)



Vertical Printing (180°)



Horizontal Printing (90°)

1. Using a hex wrench, loosen the screw holding the print head so that the print head may be rotated.
2. Rotate the print head to the desired print angle aligning nozzle plate parallel to substrate.



Adjusting the XJ500 Print head for different printing angles



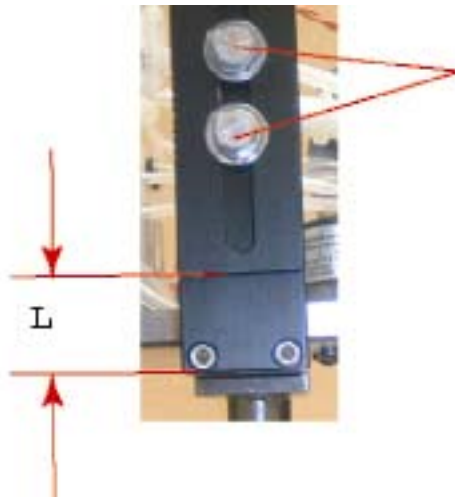
Loosen mounting screws.



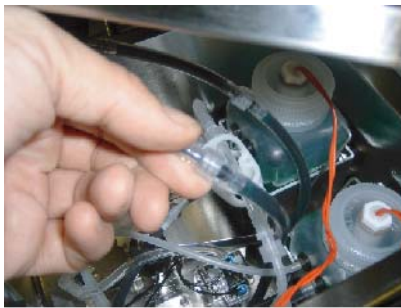
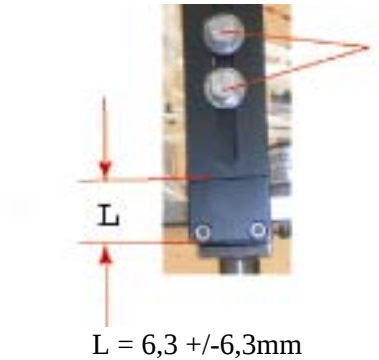
Rotate print head and re-tighten screws.

Side printing dimensions

Using a wrench, loosen both bolts holding the print head arm. Lower the arm from the side-printing dimension shown at left to the down printing dimension shown below.



$$L = 28,6 \pm 6,35\text{mm}$$



Down printing dimensions

Caution!

This height adjustment should only be made according to this manual. NEVER use this bracket to adjust the print head to the target for locating the print on the target. To adjust the print head to the target, always adjust the complete print module. The print head must keep this height relationship to the Ink Delivery System (IDS).

Remove ink bag, lift ink tray and disconnect the two-luer fittings to remove the ink tray.

Remove all of the screws around the perimeter of the Ink Delivery System (IDS) and remove the entire cover

Once the cover is removed, the two ink reservoirs need to be leveled to each other. You will notice that they are staggered.

5. Ink Jet System Set Up



Remove two screws from the bottom of Ink Delivery System (IDS).



Remove all four screws from the reservoir on the right (These will be re-used on the reservoir on the left).



Insert left reservoir bottle back into place and insert four screws from the right reservoir bottle.

Re-install the Ink Delivery System (IDS) cover, re-install the ink tray, re-prime the print head and start printing.



6. Technical Specifications (Hardware)

General Description

The Imaje 4040 is a high-resolution ink jet printing system. This ink jet printer utilizes state of the art Impulse Piezo print head technology capable of utilizing a wide variety of inks to print onto a wide variety of media at very high resolution.

Controller

Pentium class processor based PC-104 industrial computer. Running the Windows XP operating system.

Print head Expansion:

Up to four print heads per controller. Field expandable, add a print head driver card in 10 minutes. No need to send into factory or pay for a technician's visit. Mix and match print head types with easy "plug and play" technology.

User Interface:

10.4" TFT Color flat panel display with 800x600 resolution.
Integrated, rubberized, waterproof industrial mouse.
Industrial membrane QWERTY keyboard.
WYSIWYG (what you see is what you get) software. See Software specifications.

Input/Output (I/O):

Print head Ports: 4
Product Detector Port: 2. *Can be used independently or linked together.*
Encoder Port: 2. *Can be used independently or linked together.*
Serial Ports : 1-RS232, 1-RS232, 422, 485 (Configurable)
Parallel Port : 1
USB Port: 1 **Allows easy upload of messages created off line, database files, graphics or software updates via any type of USB device. And with Windows XP technology there are no worries about drivers.*
Ethernet (LAN) Port: 1 (10/100 base T). *For networking using Net-Jet™ software.*
PS2 Port: 1. *For use with external keyboard, PS2 Wedge scanner, etc.*
Video Port: 1. *For use with external monitor.*

Processor:

Via-Eden Pentium class 400MHZ standard. Faster Processors may be available if necessary.

Memory:

Operating Memory: 256mb PC100 D-RAM
Image Memory: 8MB, *capable of printing an image up to 500 nozzles tall at 360 DPI up to 8 feet in length.*

Storage:

20GB Hard drive (minimum) *Message storage is virtually unlimited.*

Electrical Requirements:

120VAC/60HZ, 240VAC/50HZ



6. Technical Specifications (Hardware)

Environmental Ratings:

Operating temperature 0-50 °C to 90% RH, non-condensing

Cabinet Construction:

Stainless Steel, splash proof design features gasket seal protection.

Print heads:

XJ128-200:

- Nozzle Count: 128 nozzles (all points addressable).
- Horizontal Resolution: 200 DPI.
- Vertical Resolution: 185 DPI, Capable of printing razor sharp graphics and reliable bar codes.
- Print Speed: 712 mm/s (140 Feet per minute, FPM) at 200 DPI. Print speeds up to 1270 mm/s (250 FPM) may be achieved by reducing horizontal resolution. (Barcode printing not recommended over 712 mm/s (140 FPM)).
- Maximum Print Height: 17mm (0.7 inches).
- Ink: Oil or solvent based.
- Throw distance: Optimal-1mm, Maximum-5mm.
- Shock resistance: Since the Xaar print heads were originally designed for desktop and wide area format printers; they are designed to be able to be moved very rapidly. Thus, these print heads are extremely robust, tolerate shock and resist depriming far better than most other industrial print heads such as Trident print heads.
- Operating temperature: 7°C (45 degrees F) to 41°C (105 degrees F).
- Dimensions: Print head only: *See illustration*. Print head Enclosure: *See illustration*.

XJ500-180

- Nozzle Count: 500 nozzles (all points addressable).
- Horizontal Resolution: 200 DPI.
- Vertical Resolution: 180 DPI, Capable of printing razor sharp graphics and reliable bar codes.
- Print Speed: 712 mm/s (140 Feet per minute, FPM) at 200 DPI. Print speeds up to 1270 mm/s (250 FPM) may be achieved by reducing horizontal resolution. (Barcode printing not recommended over 712mm/s (140 FPM)).
- Maximum Print Height: 70mm (2.8 inches).
- Ink: Oil or solvent based.
- Throw distance: Optimal-1mm, Maximum-5mm.
- Shock resistance: Since the Xaar print heads were originally designed for desktop and wide area format printers; they are designed to be able to be moved very rapidly. Thus, these print heads are extremely robust, tolerate shock and resist depriming far better than most other industrial print heads.
- Operating temperature: 7°C (45 degrees F) to 41°C (105 degrees F).



6. Technical Specifications (Hardware)

Ink Delivery System:

- The Ink Delivery System, IDS-128 ink delivery system utilizes a 500ml disposable bag in box ink cartridge. This Ink Delivery System (IDS) is currently used in conjunction with the XJ128 print heads. It is made of Stainless Steel and chemically inert materials to be compatible with solvent and oil based inks. Using this Ink Delivery System (IDS), the XJ128 may be set up to print at almost any angle.
- Flashing red Ink Low LED.
- The IDS2-500 ink delivery system utilizes a 500ml disposable bag in box ink cartridge.
- Flashing red Ink Low LED.

Print Module:

The Print Module consists of the print head, ink delivery system and print head bracket assemble as one assembly, ready to install. This is available in several variations.

Inks

INKS FOR IMAGE 4040		PRINT HEADS	
OIL BASED INKS		XJ128	XJ500
INOK90019-GC	INK-OILBASE-BLACK (1x0,5L)	YES	YES
INOB90019-GC	INK-OILBASE-BLUE (1X0,5L)	YES	YES
INOR90019-GC	INK-OILBASE-RED (1X0,5L)	YES	YES
OIL BASED FLUSH			
INOF90009-AD	FLUSH-OILBASE-CLEAR (1x1L)	YES	YES
SOLVENT BASED INKS			
INSK80375-BC-3	INK-SOLV-BLACK-SLOW (3x0,5L)	YES	YES
INSK80324-BC-3	INK-SOLV-BLACK-MED-XJ128(3x0,5L)	YES	NO
SOLVENT BASED FLUSH			
INSF30003-BC-3	FLUSH-SOLV BASE-CLEAR (3x0,5L)	YES	YES
INSF30003-AQ	FLUSH-SOLV BASE-CLEAR (1x1L)	YES	YES

SOLVENT BASED CONSUMABLES FOR IMAGE 4040		PRINT HEADS	
SOLVENT BASED INKS		XJ128	XJ500
INSK80375-BC-3	INK-SOLV-BLACK-SLOW (3x0,5L)	YES	YES
INSK80324-BC-3	INK-SOLV-BLACK-MED-XJ128(3x0,5L)	YES	NO
SOLVENT BASED FLUSH			
INSF30003-BC-3	FLUSH-SOLV BASE-CLEAR (3x0,5L)	YES	YES
INSF30003-AQ	FLUSH-SOLV BASE-CLEAR (1x1L)	YES	YES

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English version



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