Barak

The Barak5 & Barak3 User's Guide

User's Guide Version Number: Revision V1.1 06-08

Disclaimer

Matan Digital Printers (2001) Ltd., does not accept any responsibility for any damage caused to its products by unauthorized personnel.

Environmental Policy

Customers are advised when changing consumables or any parts of the printer, care should be taken to dispose of these consumables or parts in the correct manner and according to the laws and regulations of the local authorities.

For further details regarding the disposal of parts and consumables, contact your local distributor.

Head Office
Matan Digital Printers (2001) Ltd.
14 Amal Street
Rosh Ha'Ayin 48092
Israel
Tel: (972) 3 9002720
Fax: (972) 3 9002721
Email for Customer Support: support@matanprinters.com

U.S. Office
Matan USA Inc.
90, Earhart Drive, Suite 4
Williamsville NY 14221
Tel: (1) 716 631 3770
Fax: (1) 716 631 3576
Email for customer support: support@matanusa.com

Europe Office
Matan EU, C/ Rosalia de Castro, 21, 08025, Barcelona, Spain.
Tel: (+34) 902 932825
Fax: (+34) 902 932826
Email for customer support: support.eu@matanprinters.com

Declaration of Conformity

CE

FC

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

This Class A "Industrial, Scientific and Medical Radio Frequency Generators" also meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil industriel, générateur de radio fréquences pour applications scientifiques et médicales, classe A, respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Limited Warranty

For a period specified in the contract, from the date of original purchase ("Limited Warranty Period"), Matan Digital Printers (2001) Ltd., ("Company"), will, at Company's option, either replace or repair any defective product ("Product") manufactured by Company and sold by its authorized distributor, within its jurisdiction ("Territory") to the person making a claim under this Limited Warranty, provided the original purchaser complies with the terms and conditions set forth herein below.
This Limited Warranty applies only to a person or company that demonstrates to Company's reasonable satisfaction he or it was the original purchaser of a Product purchased in new condition in the original package from an authorized distributor of Company in Territory. This Limited Warranty is not transferable or assignable.
If a claim is made within the Limited Warranty Period by the original purchaser, the Company will repair or replace a Product that, in Company's reasonable judgment after inspection, is defective in either workmanship or materials.
Company's liability is limited to repair or replacement of a defective Product. Company will not be responsible for any consequential or incidental damages or expenses of any kind or nature, regardless of the cause, even if Company has any knowledge regarding the probability of their occurrence. Without limiting the generality of this statement, Company will not be liable for injury to persons or property, loss of use of the Product, lost goodwill, lost profits, work stoppage, and impairment of or damage to other goods. If any of the following have occurred, it will void this Limited Warranty, and Company will have no liability of any kind to original purchaser if:

1. Product shows evidence it has been tampered with, or it has been subject to misuse, abuse or negligent use, or,
2. Any repair or alteration of Product was made by someone other than Company, including the distributor, except with Company's written authorization, or,
3. Product was either improperly installed, operated or used for a purpose for which it was not intended, or,
4. The original purchaser failed to provide normal maintenance, if any is required, in accordance with Company's instruction manual, or,
5. The serial numbers or other factory-installed labeling has been altered or removed.

The original purchaser should return the defective Product to Company at the address set forth below, together with proof of purchase, packed with either the original packaging or other similar packaging designed to avoid damage to Product during the course of shipment.
THIS LIMITED WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESSED OR IMPLIED. THERE ARE NO WARRANTIES AS TO THE FITNESS OF PRODUCT FOR ANY PARTICULAR PURPOSE. COMPANY DISCLAIMS ANY OTHER WARRANTY, EXPRESS OR IMPLIED, THAT PRODUCT IS MERCHANTABLE.

HOWEVER, IF COMPANY IS HELD LIABLE, WHETHER DIRECTLY OR INDIRECTLY, FOR ANY LOSS OR DAMAGE ARISING FROM UNDER THIS LIMITED WARRANTY OR OTHERWISE, REGARDLESS OF CAUSE OR ORIGIN, COMPANY'S MAXIMUM LIABILITY SHALL NOT EXCEED THE PURCHASE PRICE OF THE PRODUCT, WHICH SHALL BE COMPLETE AND EXCLUSIVE REMEDY AGAINST COMPANY.
ALTERATIONS AND ADDITIONS TO OR IN CONNECTION WITH ANY PART, HARDWARE OR SOFTWARE, OF THE SYSTEM MAY ONLY BE CARRIED OUT BY MATAN OR PURSUANT TO ITS EXPLICIT AUTHORISATION, AND NO LIABILITY WHATSOEVER SHALL BE ACCEPTED BY MATAN FOR ANY ALTERATIONS OR ADDITIOINS CARRIED OUT OTHERWISE, NOR FOR ANY EFFECT SUCH ALTERATIONS OR PROVISIONS MAY HAVE ON THE SYSTEM OR THE SUPPORT THEREOF.
No employee or representative of Company is authorized to change this warranty in any way or grant any other warranty.

Barak

Table of Contents

Table of Figures

Notations in this Manual

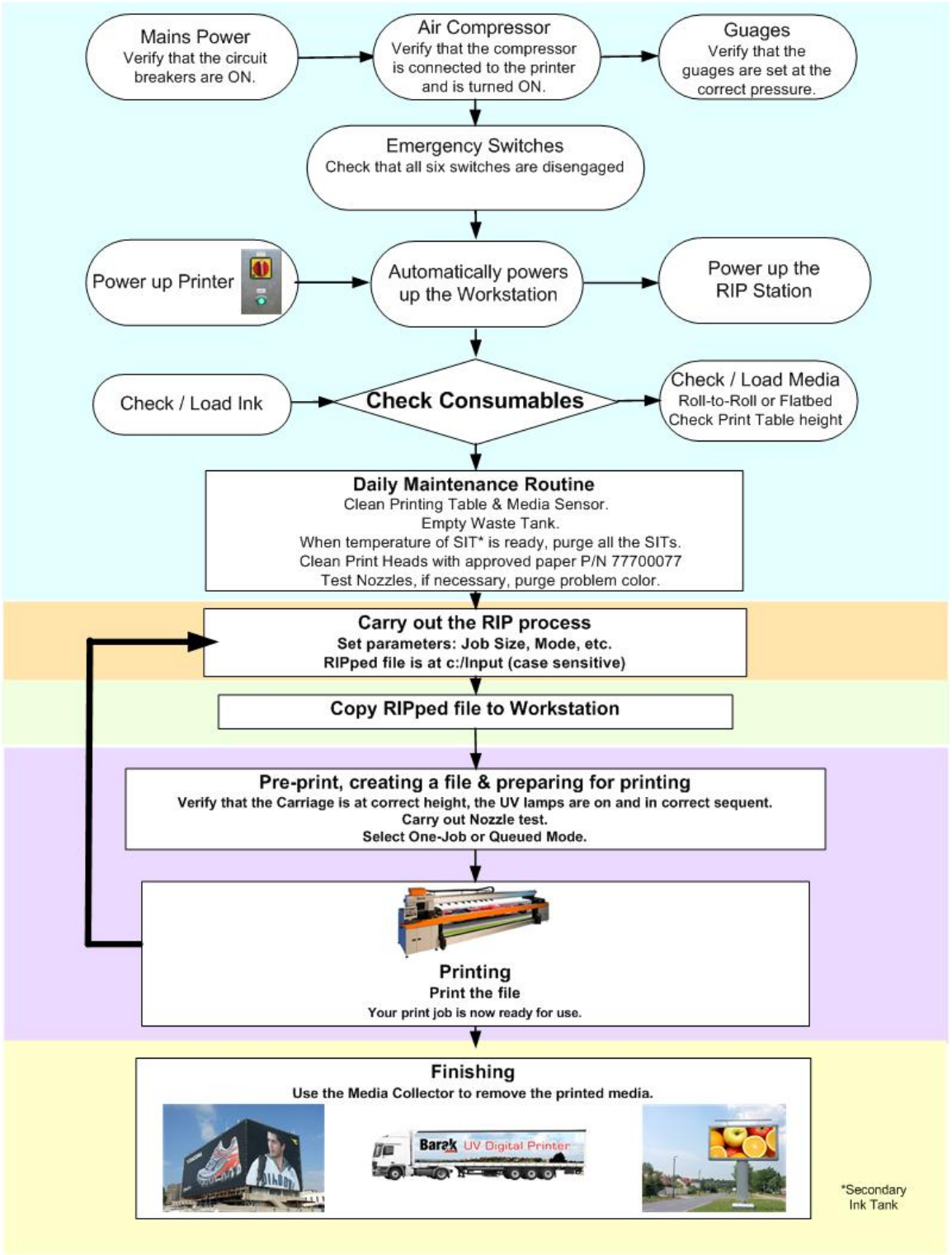
This information is important and should be noted.

Information given in this message warns of a hazard.

Information given in this message refers to the only safe method of installation or operation and must be adhered to.

1 Introduction

This document will guide you through the procedures that have to be carried out in order to print a file. The following flowchart gives you our recommended workflow for using your Barak printer.



2 Safety

This chapter provides important safety information. Make sure to read this information carefully before operating the printer!

The location of a label or a machine part is given assuming you are facing the relative side of the printer.

For example, the Pneumatic System is located behind the Pneumatic System Panel at the Front Lower Right Side of the printer, assuming you are facing the front of the printer. The Electronics System is located behind the Electronics Panel at the Rear Upper Left Side of the printer, assuming you are facing the rear of the printer.

The printers are under constant development and we reserve the right to make changes to its specification, without prior notification.

General Safety Hazards

Safety Precautions and Measures

Please refer to the Material Safety Data Sheet (MSDS) included with the ink kit, to obtain relevant safety information and data, regarding the proper use, storage and handling, and disposal of Matan inks.

Make sure to post precautionary and warning signs in several strategic locations. The following sections show examples that should be added to the signs required by your local Occupational Safety and Local Fire Ordinances.

Fire Prevention

The ink and flushing fluid should be kept in storage cabinets designed to hold flammable liquids and must be clearly labeled to comply with occupational safety regulations. The storage cabinets must meet the local fire and safety standards

You should not store more than the locally permitted amount of inks and flushing fluid in any single storage cabinet. Local fire regulations regarding the use and storage of flammable materials must be strictly observed. Make sure that the inks are stored separately from any other material.

CO_2 Fire extinguishers must be easily accessible and visible from all approaches to the Restricted Area. They must be reachable within 7.6 m (25 ft) of the Barak5/3 printer and the flammable liquids storage cabinets, or according to local fire regulations.

Eyewash Solutions

Provide Eyewash Stations complying with the local heath and safety standards. They should be located within 7.6 m (25 ft) of the printer and the flammable liquid storage cabinets.

The location of these stations should be clearly marked and easily accessible so that they can be reached quickly if needed. You can obtain these stations from companies that supply industrial safety equipment.

Accident Prevention

Both the electric power cable and air supply cable connected to the printer should be channeled inside suitable conduits. Tripping over loose wires may cause injury and/or damage to the printer.

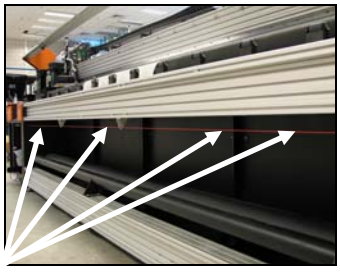
Installation Provisions

Only a qualified electrician should install the **Barak5/3** printers. The User is responsible for providing electricity supply and compressed air, according to the Product Specification Sheet.

Safety Signs

Printer Mounted Signs

The following safety signs are attached to the printer:

Label	Description
	Indicates the Mains Power Switch.
	Emergency Stop buttons. When pressed, will immediately turn off the printer.
 Emergency Stop Cord	Emergency Stop Cord
	Do not touch any electrical component or wiring while the printer is On.
	Keep your hands clear of any moving parts while the printer in On.
	Keep your hands clear of the X-Axis Motor Assembly while the printer is On.

Keep your hands clear of all the Rollers and Shafts while the printer is operating.

Keep your hands clear of all the Rollers and Shafts while the printer is operating.

	Danger of UV radiation! Keep the Hood closed while the printer is working. Before servicing the UV lamps, allow them to cool down. When servicing the lamps, wear UV goggles that conform to international standards.
	Danger of UV radiation! Keep the Hood closed while the printer is working.
	Keep your hands clear of the Hood when it is closing.
	Keep clear of the moving Carriage.
	Avoid contact between the Ink and your skin. Treat affected areas immediately.
	Avoid contact between the Ink and your eyes. Wear suitable protective goggles when handling the Inks.

	Do not operate the printer without proper site ventilation.

Signs Mounted Close to the Printer

The following information should be read carefully.

Waste Disposal

A covered fireproof container clearly labeled as hazardous waste should be placed in the production area, for disposing waste solvent and ink. The container must be electrically grounded during the transfer of liquids into or from the container. If solvent-soaked rags or absorbents are used to clean the area, they must also be disposed of in a closed fireproof container and labeled as hazardous waste.

These waste containers must be located at least 7.6 m (25 ft) from the Restricted Area (see Figure 1, page 9) Contact your local fire, health and safety agencies for information regarding the storage and disposal of waste from the printer.

The following signs should be posted around the work area:

Keep Work Area Clean

When you plan and design your site, provide convenient access to washing facilities, with suitable eye-washing equipment.

Always keep the working area clean and dust free.

Try to clean any spills as soon as they occur. Make sure to wear gloves, goggles, and long sleeves when cleaning up spilled ink. Absorb the ink in dry sand or soil and place it into a covered waste container. Move the containers at least 7.6 m (25 ft) from the Restricted Area.
Flush the affected area with water.

Fire Protection

Provide dry carbon dioxide (CO_2) fire extinguishers and install them in easily accessible locations.

First Aid

An adequate first aid kit should be provided.

Proper Ventilation and Handling of Materials

The area in which the inks are handled should be well ventilated to prevent accumulation of hazardous vapors. Use extreme care to avoid spillage, and prevent splashing of eyes or skin.

To prevent the accumulation of hazardous vapors, sufficient ventilation must be provided to exchange the air in the Production Area approximately 4 – 6 times per hour.

Restricted Area

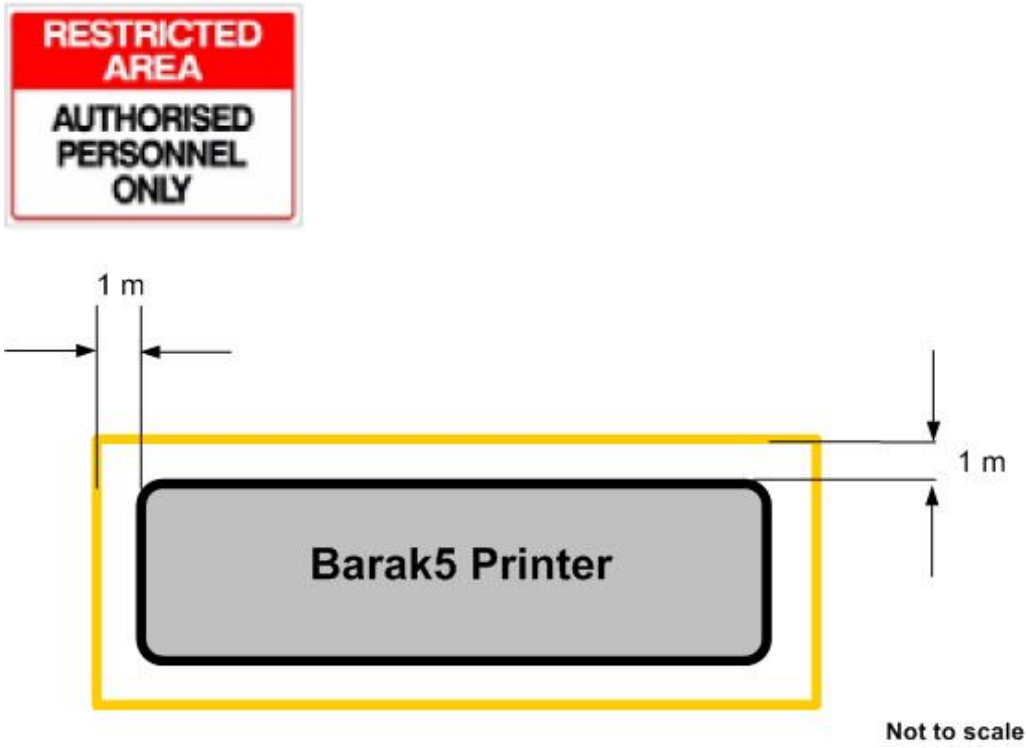


Figure 1: Restricted Area

The Restricted Area is defined as the area within 1 m (3.5 ft) from any part of the Barak5/3 printer, e.g. any of the rollers, print head carriage, printing table, etc.

When working with the optional Flatbed tables, the Restricted Area is to be extended by 1 m (3 ft) both at the front and rear of the printer.

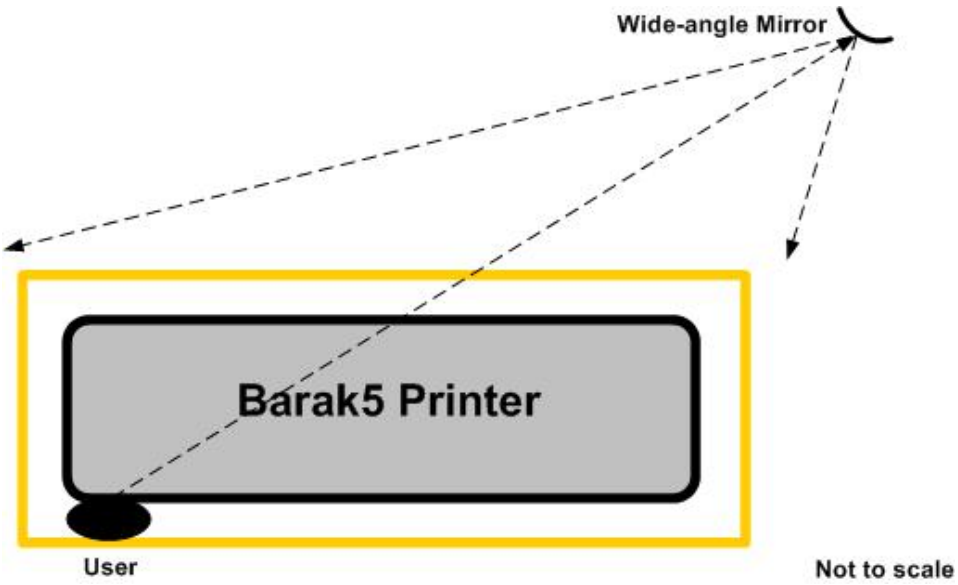
The Restricted Area is extremely hazardous when the printer is in operation and proper safety guidelines must be followed to ensure a safe work environment.

Only the machine operator and authorized personnel may access the Restricted Area.

It is mandatory that the machine operator presses one of the EMERGENCY STOP buttons as soon as he sees an unauthorised person within the restricted area.

Moving parts can cause serious injury.

Wide-angle Mirror



You must install a wide-angle mirror that will provide the operator peripheral view of the restricted area around the printer insuring that it is clear of authorized personnel prior to machine operation.

Personal Safety

Ink Handling

Please take the following into consideration when handling inks or solvents:

Do not store or handle near open flames, sparking tools or electrical discharge.

Do not drink or otherwise ingest ink, cleaning fluid or waste fluids.

Do not smoke in the vicinity.

Dispose of empty containers, ink soaked rags and waste according to relevant local and national authority procedures.

Be familiar with the relevant MSDS.

Store ink as instructed in the MSDS.

Clear spills immediately and dispose of ink soaked rags.

Do not operate machine when there is spillage in the vicinity.

Do not allow untrained personnel to handle ink, cleaning fluids or waste fluids or to enter the Restricted Area.

Keep children and animals away from the printer.

Wear multi-layer protective gloves (for example, 4H, Saranex, or Nitrile gloves) when handling cleaning fluid, inks or any waste fluids to prevent contact with skin.

Always wear protective goggles while handling ink system, cleaning fluid or waste liquid.

Wear clothing that covers all body parts to prevent ink contact with skin.

Ink can be irritating to eyes, throat and skin, and breathing its vapors can cause dizziness or other symptoms. These symptoms may not appear immediately.

Never wear contact lenses while handling inks or flushing fluid.

When using flushing fluid, make sure that the printer is completely shut down and cooled down.

Wash your hands thoroughly at the end of each work shift, before eating, smoking, or using the toilet. If ink spills on your skin, wash immediately. Remove any clothing that is contaminated with ink.

Working with Loctite

Avoid conact between Loctite and your eyes or skin.

Follow the manufacturer's safety instructions very carefully.

Working with the Barak5/3 Printer

Please take the following precautions when working with the **Barak5/3** printer in order to ensure your personal safety:

All personnel are to read and understand the User's Guide and be alerted to the potential hazards indicated by the safety labels before operating this machine.

Only a trained and authorized person is to be permitted to service and operate this machine.

Training should include instruction in operation under normal conditions and emergency situations.

Never reach into the machine for any reason unless the machine is at a complete stop.

Never leave the machine stopped in such a manner that another worker can start the machine while you are on or within the machine.

Never change or deactivate the function of electrical interlocks or other machine "shutdown" switches.

Before starting this machine, check that all persons are clear of the machine, and that the machine is free of paper scraps, wraps and jams.

There is a potential hazard of entanglement in this machine caused by items such as long hair, loose clothing, and jewelry.

Within 3 seconds of hearing the buzzer, keep at least 1 m away from the machine.

Do not approach the printing area when the print head carriage is activated.

The areas around loading and unloading points are to be kept clear of obstructions that could endanger personnel.

Under no circumstances are the safety characteristics of this equipment to be altered.

Routine inspections and corrective/preventative maintenance measures are to be conducted to ensure proper operation and safety.

As a general rule, this equipment is not to be cleaned or serviced while in operation.

Never look directly at the UV light source.
You must always wear suitable anti-UV goggles that conform to international standards.

If you are servicing the UV Lamps, allow the lamps ample time to cool down first, as contact with the hot lamps can burn the skin.

Avoid smoking, eating, or drinking within the printer's Restricted Area.

Follow the fire prevention precautionary methods described in this chapter.

Shut OFF the main power switch when servicing electrical components (AC power boxes or cables).

While the printer is operating, stand at the workstation. Do not approach the printing area, and keep hands clear of movable parts.

While the printer is operating, certified operators and Matan field service engineers only are permitted in the restricted area.

While loading and unloading heavy materials, make sure to wear steel-toed safety boots. Do not attempt to load or unload materials while the printer is operating.

Do not operate the printer while under the influence of drugs or alcohol.

Additional Safety Information

Mechanical Hazards

Cable Chain

The Cable Chain carries all cables and pipes going from the PC and chassis to the Carriage. It moves continuously during the printing process along the chassis at a speed of up to 2.2 m/sec.

Contact between the moving Carriage and a foreign object can cause an injury.

The Hood

The Hood protects the user from such dangers from the printer's front. The machine will not move unless the Hood is closed. Pressing one of the Emergency Stop buttons or pulling the Emergency Cord will stop the Carriage immediately—the flashing light and a buzzer are activated after a four second delay.

From the rear of the printer, this hazard is minimized by the flashing light and buzzer. In addition, pressing one of the Emergency Stop buttons along the rear of the printer will stop the carriage immediately. To minimize this hazard a number of warning labels listing the hit dangers are attached to the printer's back frame.

The Hood may injure a hand when closing. This hazard is minimized by:

The five seconds it takes to close (from the time of a manual activation).

By soft rubber protectors on its edge.

By a flashing light and a buzzer which are activated before the Hood starts moving.

By seven Emergency Stop Buttons and the Emergency Stop Cord, which stop the Hood movements immediately.

By a number of safety labels on the printer's front frame, warning against this hazard.

The Hood is activated manually by an operator by turning a switch on the front switch panel, which is located on the front left side of the printer. There is a safety label near the knob instructing the operator to make sure the Hood is clear or foreign objects.

The Hood contains an air pressure lock mechanism, which lifts the Hood in case the machine air pressure supply stops.

Press Roller and Shaft

There is a danger that the Press Roller and the Shaft could crush a hand while moving one roller next to another — which is their print position. This action is activated manually by the operator who turns two knobs on the rear of the left cabinet. There is a safety label near those knobs instructing the operator to make sure the rollers not obstructed.

Another potential hazard is for those rollers to pull and crush a finger when the media is manually rolled backwards and somebody places a hand on the media. To minimize this hazard, there are a number of safety labels on the machine back frame which warn against this hazard. In addition there are five Emergency Stop buttons along the machine rear. Pressing one of those buttons stops the media movements immediately.

In addition, these two hazards can be minimized by instructing the customer to draw on the floor and administer a safety zone of 1 m around the machine, as shown in Figure 1, page 9.

UV Radiation

The machine contains two UV lamps which operate while the machine prints. While the machine is idle at the Home position, the UV shutters are closed, and the UV bulbs are automatically turned off after 20 minutes of idle time.

Looking at the UV light with the naked eye is dangerous. This hazard is minimized by the Hood being equipped with transparent UV-blocking panels. In addition, the machine will print only while the Hood is closed.

The UV radiation is contained by the Hood and by opaque PVC sheets along the front and back of the printing table. There are safety labels on the UV bulb assemblies and on the printer's frame.

When working near the UV Lamps when they are switched on, you must wear suitable anti-UV goggles that conform to international standards.

Electrical Hazards

The printer's electricity input is a 3-phase 380V 32 amp VAC, connected to the main electricity panel at the printer's right side, when looking from the front of the printer.

The main electricity panel is protected by the cabinet metal door and a rigid transparent plastic panel.

Single phase voltage at the PC.

Four motor drivers (located above the main electricity panel).

The UV bulbs assembly on the Carriage.

Human contact with these AC voltages may cause electrical shock and burns. This hazard is minimized by:

Over-current and over-voltage of a circuit breaker for the main input and for each AC voltage within the machine.

By proper grounding of all electrical circuits.

By safety labels on each electrical cabinet door and close to all AC contact points.

In case of an overload, the circuit breaker triggers and switches off the printer. The machine operator is authorized to open the cabinet door in order to switch on a circuit breaker, in case it triggers. The cabinet door is locked by a special key and not by a regular handle, to prevent occasional opening of the cabinet. Only a certified Barak5/3 technician is authorized to remove the plastic cover for access to the main Electricity Panel. This can be done only after the main power is switched off.

Within the machine the AC voltages are converted to DC voltages of 5V, 24V and 48V, and distributed to various points. Human contact with these DC voltages may cause electrical shock and burns. This hazard is minimized by:

A circuit breaker for the main input and for each AC voltage within the printer.

By proper grounding of all electrical circuits.

By safety labels on each electrical cabinet door or panel.

Ink System

The ink system contains the main ink tanks, pumps, filters, manifold, secondary ink tanks, print heads and pipes.

As noted on the MSDS, the ink is a mixture of pigments, resins and additives in organic solvents. The ink EC classification is Xi:R36/38 and it can irritate the eyes and skin.

Each container of ink (and flushing fluid,) is supplied with an MSDS. This document provides important safety information and must be read carefully.

There are safety labels by the Main Ink Tanks instructing the operator to wear glasses and gloves while handling the ink. The ink is heated by

the machine to its printing point, and there is an over-temperature protection circuit for the ink.

To eliminate any inconveniences due to vapors and bad smell, the machine should be well ventilated—by changing the air at least 4 – 6 times per hour.

First Aid Procedures

When in doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

By inhalation

Remove the patient from the contaminated area into the fresh air.

If breathing is irregular or stops, administer artificial respiration.

If the person is unconscious, place them in the appropriate recovery position.

Keep the patient warm and calm rest until medical attention arrives.

By contact with the skin

Remove contaminated clothing and wash it separately with an alkaline detergent.

Throw away clothing should it be highly contaminated, in a suitable container.

Avoid concurrent exposure to sunlight or other sources of UV radiation which may increase skin sensitivity.

Wash thoroughly the affected area with plenty of cold or lukewarm water and neutral soap, or use a suitable skin cleanser.

Do not use solvents or thinners. In the case of skin reddening or rashes, call a doctor immediately.

By contact with the eyes

Remove contact lenses.

Rinse the eyes copiously by irrigation with plenty of clean, fresh water for at least 15 minutes, holding the eyelids apart, until the irritation is reduced.

Avoid concurrent exposure to sunlight or other sources of UV radiation which may increase eye sensitivity.

Call a doctor immediately.

By ingestion

If swallowed, seek immediate medical attention. Do not induce vomiting, due to the risk of aspiration. Keep the patient still.

Potential fire hazard

Use CO_2 Fire Extinguishers.

In the case of more important fires you can also use alcohol resistant foam and water spray/mist.

Do not attempt to extinguish the fire by using a direct water jet.

Specific risks

As a consequence of combustion or thermal decomposition, hazardous by-products may be produced, such as carbon monoxide, carbon dioxide, nitrogen oxides, or sulfur oxides. Exposure to combustion or decomposition products may be a hazard to health. Pyrolized acrylates act as a high irritant to the respiratory system.

Fire-proof protective equipment

Depending on the magnitude of the fire, heat-proof protective clothing may be required, appropriate independent breathing apparatus, gloves, protective glasses or face masks and boots.

Other recommendations:

Cool with water the tanks, cisterns or containers close to sources of heat or fire.

Bear in mind the direction of the wind.

Do not allow fire-fighting residue to enter drains, sewers or water courses.

Personal precaution

Eliminate possible sources of ignition and when appropriate, ventilate the area.

Do not smoke.

Avoid direct contact with this product.

Avoid breathing vapors.

Environmental precautions

Avoid contamination of drains, surface or subterranean water and soil.

In the case of large-scale spills or when the product contaminates lakes, rivers or sewages, inform the appropriate authorities in accordance with local regulations.

Cleaning-up methods

Contain and mop up spills with non-combustible absorbent materials (earth, sand, vermiculite, diatomaceous earth, etc.).

Clean preferably with a detergent.

Avoid use of solvents. Keep the remains in a closed container.

Handling precautions

Comply with the local health and safety regulations.

Avoid any type of leakage or escape.

Keep the container tightly closed.

Recommendations for the prevention of fire and explosion risks

Vapors are heavier than air; they may spread along floors to a considerable distance. They can form explosive mixtures with air and are able to reach distant ignition sources and ignite up or explode. Due to its flammability, this material should only be used in areas from which all naked lights and other sources of ignition have been excluded and away from other heat or electrical sources. Do not smoke.

Storage conditions

Prevent unauthorized access to the storage areas.

Inks should be kept isolated from heat and electrical sources.

Do not smoke in the storage area.

In order to avoid leakages, the containers, after use, should be closed carefully and placed in a vertical position. Maximum storage period: 12 months.
Temperature range: 5°C – 25°C (41°F – 77°F).

Keep away from reducing agents, oxidizing agents, acids, alkalis, metals, peroxides, polymerization initiators.

3 Specifications

Printing Technology Piezo Drop-on-Demand inkjet technology Resolution: True 600 dpi., up to 1200 dpi apparent Barak5/3 200UV inks, pigmented UV curable, up to 2 years outdoor.	
Printing Technology	
Throughput **Coverage**	Barak5/3 – Up to 170 m^2/hr 180 m^2/liter (1940 ft^2/hr) Based on Matan's tesing & average consumption at a customer's site.
Media	
Handling Hybrid Media supported Max print width Max media width	Roll-to-roll Special options: External Collector, Multi-roll, Freefall. Flatbed option **Flexible**: Flexface, Mesh, Blue-back paper, Backlit paper, Self-adhesive vinyl, Tyvek coated, and uncoated media. **Rigid**: (up to 25 mm –1 in) thick: Foam PVC, Acrylic, Aluminum, Foam Board. 5 m (197 in.) or 3 m (118 in.) 5.3 m (209 in.) or 3.8 m (150 in.)
RIP	
RIP Software Supported formats	Dedicated Barak5/3 RIP EPS, PS3, TIF, PDF, PSD, JPEG, etc
Printer Dimensions	**Barak5** **Unpacked:** (H x W x D) 1.9 m x 7.6 m x 1.1 m (75 in x 299 in x 43 in.)
	Barak3 **Unpacked:** (H x W x D) 1.9 m x 5.5 m x 1.1 m (75 in x 217 x 43 in.

Weight	**Barak5** Unpacked approx.: 4500 kg (12,056 lb) Crated: approx. 5500 kg (14,750 lb) **Barak3** Unpacked approx.: 4350 kg (11654 lb) Crated: 5000 kg (14736 lb)
Operating conditions*	
Operating Temarature	20°C – 29°C (68°F – 85°F).
Humidity	50% – 80%, non-condensing.
Start-up time	Approx 5 minutes to production.
Air pressure	6 bar (87 psi), airflow of 7 liters/sec, dry clean air.
Electricty	230/50/3 phase 32Amp, 18W consumption.

*Operating the printer outside the above conditions can cause the print quality to deteriorate.

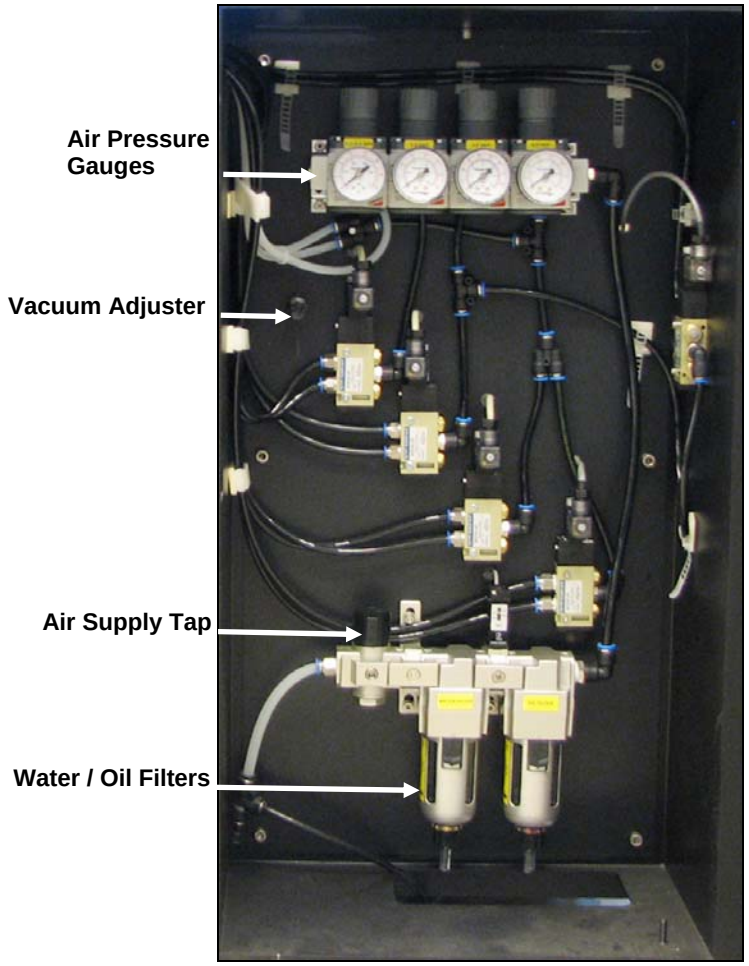
4 Preparing the Printer

Mains Power

You must carefully adhere to the following instructions.
Improper use of the power and electrical connection could endanger your life!

Check that the MAINS POWER CIRCUIT BREAKERS are ON.

Pneumatic System



Air Supply

The Air Compressor

Check that the AIR COMPRESSOR is connected to the printer and is turned ON.

The Air Pressure Gauges

Figure 2: General View of Pneumatic System

Check that the gauges are set to the pressure shown on their corresponding stickers, as in the following figure. The PNEUMATIC SYSTEM is accessible through the FRONT RIGHT ACCESS DOOR.

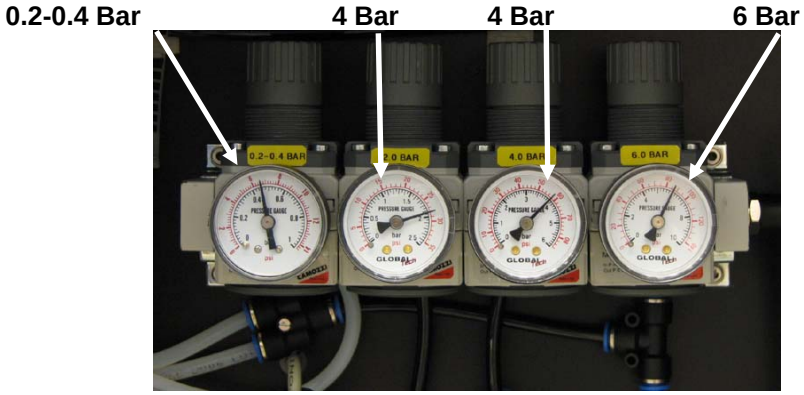


Figure 3: Pressure Gauges

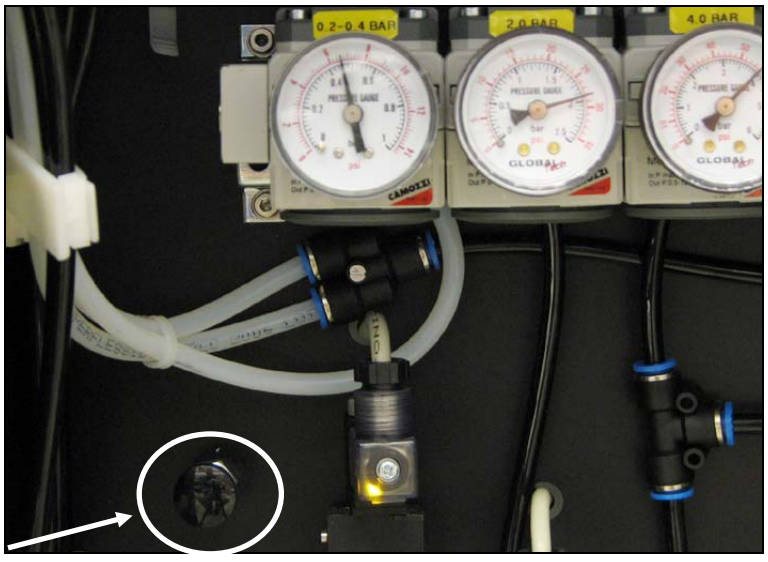
The Vacuum System

The amount of vacuum in the system is displayed on the digital VACUUM GAUGE, which is visible through the TOP CARRIAGE COVER.

Figure 4: Vacuum Gauge

1. Bring the CARRIAGE to the right side of the printer so that you can both see the VACUUM GAUGE and make the necessary adjustments if required.
2. Adjust the vacuum (displayed on the digital VACUUM GAUGE,) to between -0.8 and -1.0, by turning the knob on the VACUUM ADJUSTER, which is located below the AIR PRESSURE GAUGES.

   To increase the vacuum, turn the VACUUM ADJUSTER clockwise, and to decrease the vacuum, turn it counter clockwise.



Vacuum Adjuster

Figure 5: Vacuum Adjuster

Filter System

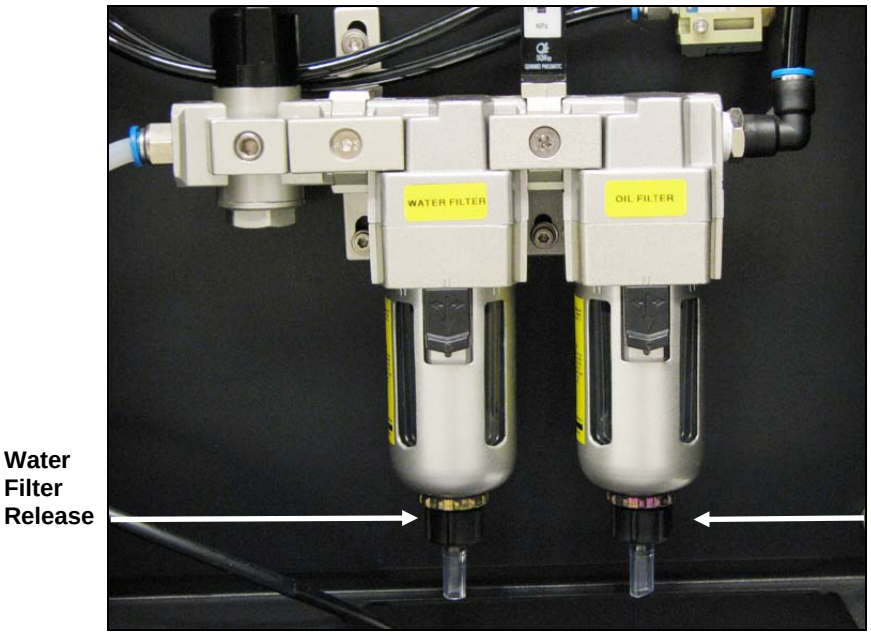


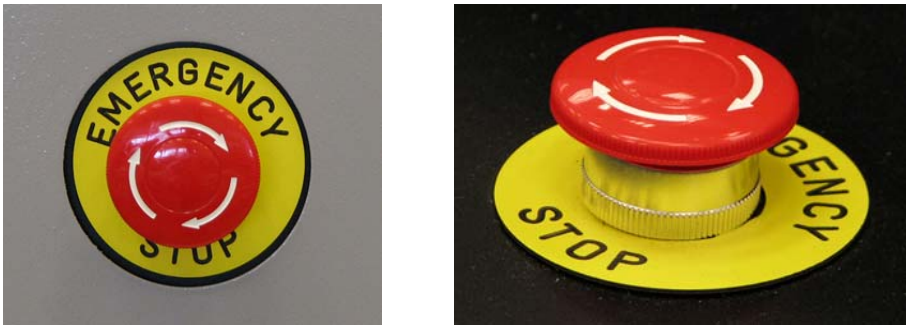
Figure 6: Water and Oil Filters

The PNEUMATIC SYSTEM includes two filters: a water filter and oil filter (Figure 6). You should drain both these filters weekly, by turning the FILTER RELEASES in a clockwise direction and then closing them when all the water and oil have been drained.

The Emergency Stop Buttons

The Barak printer is equipped with seven Emergency Stop Buttons (Figure 7), as well as an Emergency Stop Cord which is located along the front of the printer (Figure 8).

Make sure all the EMERGENCY STOP BUTTONS are pulled out, by turning them clockwise.



Rear Emergency Stop Buttons **Front Emergency Stop Buttons**

Figure 7: Emergency Stop Buttons

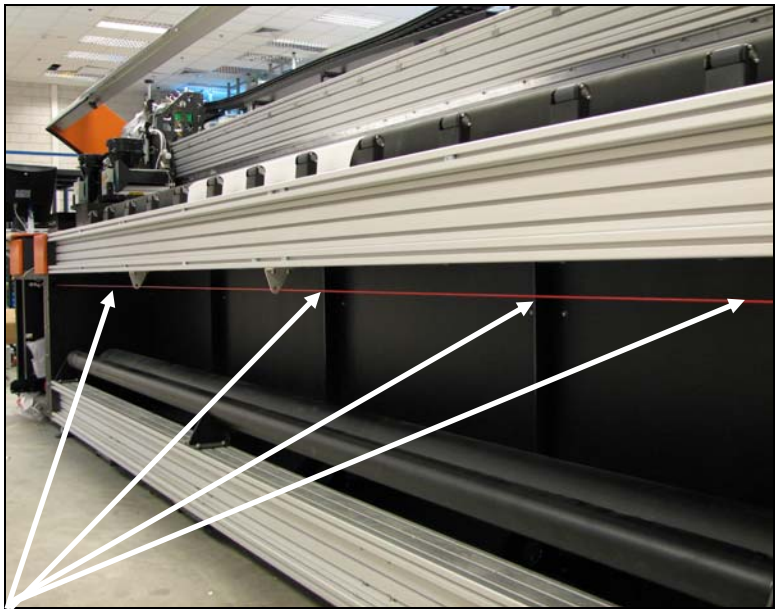


Figure 8: Emergency Stop Cord

The Printer Hood

If you accidentally open the PRINTER HOOD while the printer is working, the current file will be put into the PAUSE status and the printer will stop.

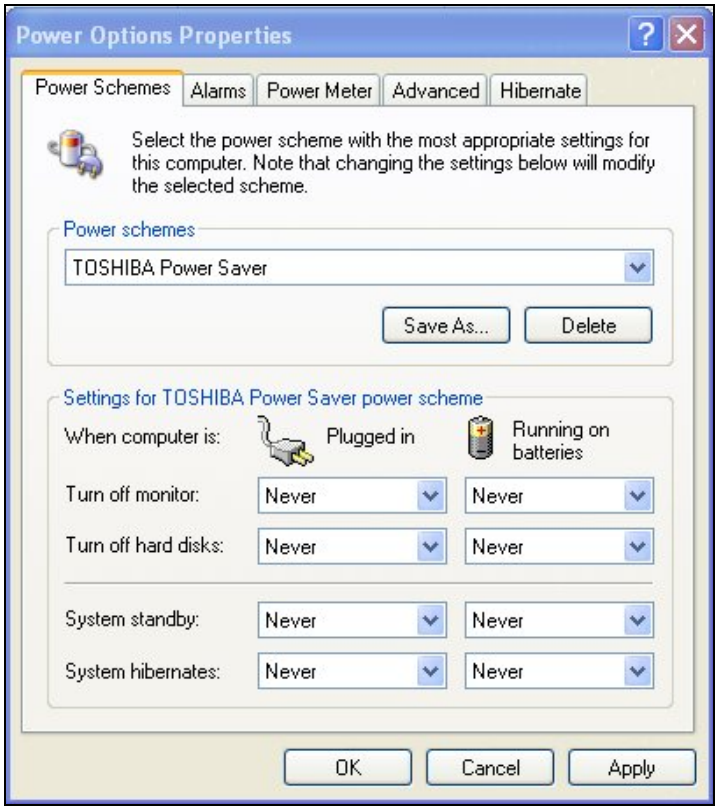
Disabling the Screensaver & Hibernate Options

You must disable the PC's Hibernate and Screensaver options.

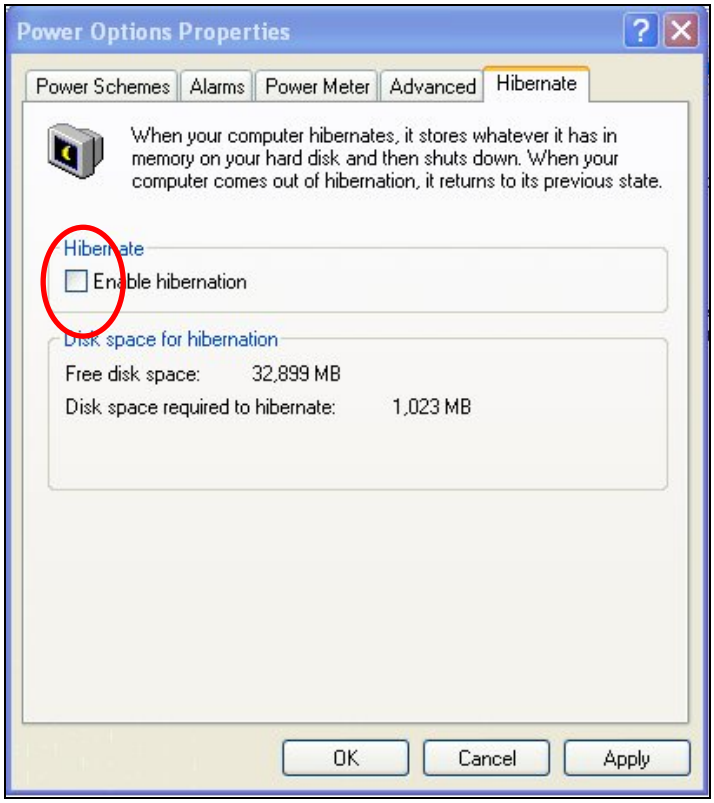
➢ **To disable the Hibernate option:**

1. From the Task Bar, click Start.
2. From the menu that appears, choose Control Panel.
3. Double-click the Power Options icon.

   The Power Options Properties dialog box appears, with the Power Schemes tab open.



4. Set all the PC's Power Saver settings to Never.
5. Open the Hibernate tab and uncheck the Hibernate option.


Power Options Properties
Power Schemes
Alarms
Power Meter
Advanced
Hibernate
When your computer hibernates, it stores whatever it has in memory on your hard disk and then shuts down. When your computer comes out of hibernation, it returns to its previous state.
Hibernate
Enable hibernation
Disk space for hibernation
Free disk space: 32,899 MB
Disk space required to hibernate: 1,023 MB
OK
Cancel
Apply

5 Powering up the RIP Station and the Printer

You must turn on the RIP STATION before you turn on the printer.

Powering up the RIP Station

Turn on the RIP STATION.

Powering up the Printer

1. Turn the MAIN SWITCH (located on the left side, at the rear of the printer,) to the ON position.

   The POWER SUPPLY INDICATOR lights up.

2. Push the green POWER-UP BUTTON.

   The printer's Workstation boots up.

   If the POWER SUPPLY INDICATOR does not light up, press the button on the printer's computer.

After the printer is powered up, the program's MAIN SCREEN appears.

Start-up Procedure

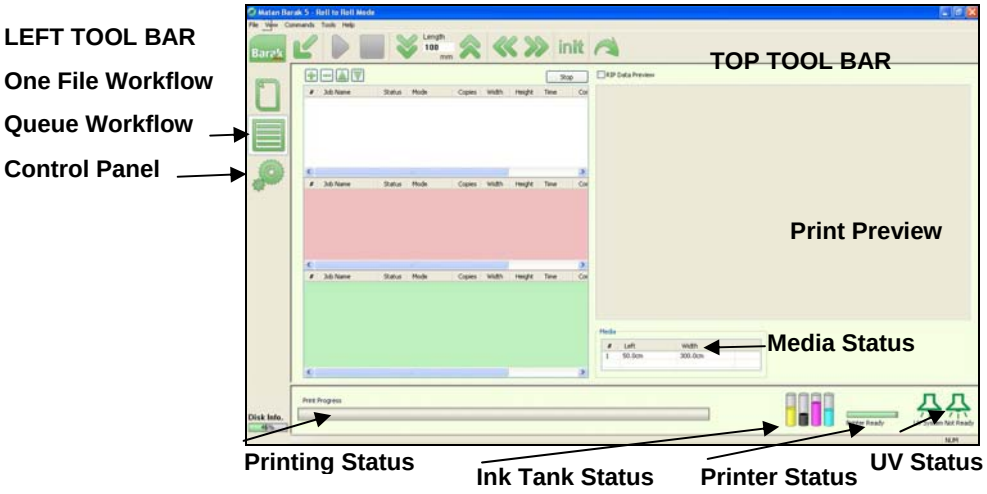
	Action			Frequency
	Check	Clean	Switch on	
Main power switch			√	Every day before starting to print
Emergency stop switches –"off"	√			
"Start" button			√	
Start SW Barak FE			√	
Perform INIT (clear objects from table)			√	
Print heads - Purge, clean & nozzle test	√	√		

Activating and Using the Program

1. From the Workstation's Desktop, click the Matan Icon 

.

   The BARAK MAIN SCREEN appears.



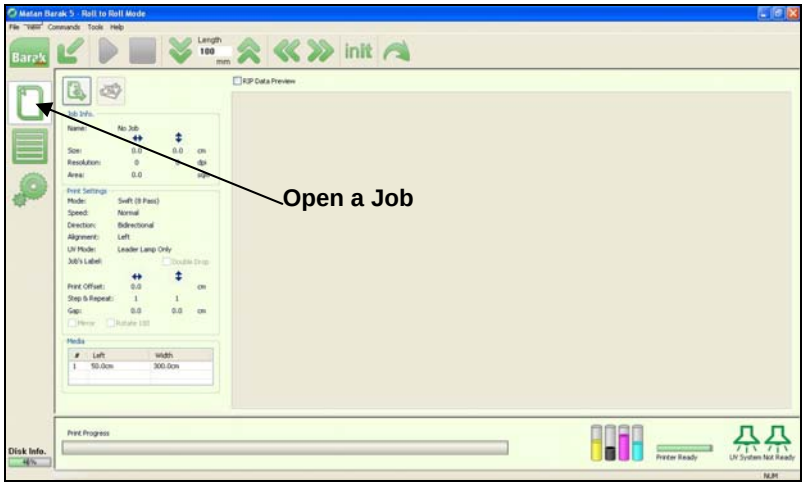
When the MAIN SCREEN appears, the INK and PRINT HEADS begin to heat up to the required temperature.

When the system is ready for printing, the PRINTER READY status bar turns green, indicating that the required temperatures have been reached. You can now purge the PRINT HEADS.

The INK TANK STATUS indicates the amount of ink present in the PRIMARY INK TANKS.

The UV lamps are also heated to their required temperatures. When this is reached, the UV STATUS will indicate UV SYSTEM READY, and the lamp icon will turn green.

2. In the LEFT TOOL BAR, click ONE FILE WORKFLOW.

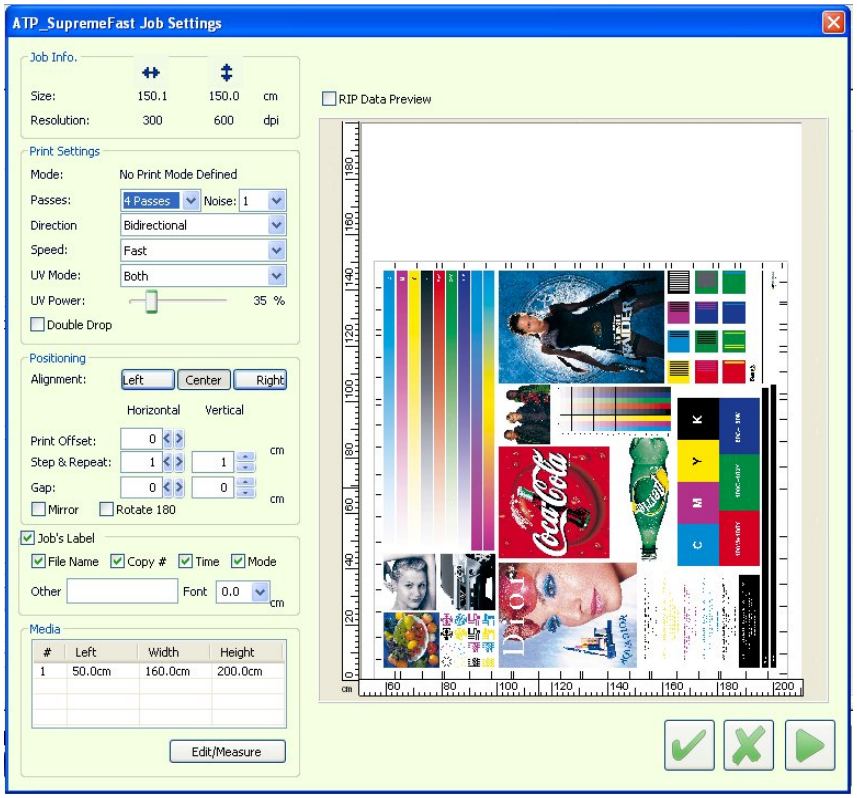


3. To open a PRINT JOB, click OPEN A JOB.

   The SELECT BARAK JOB window appears.

4. Double-click the job you want to open.

   The JOB SETTINGS dialog box appears with the selected job displayed, together with its properties.



5. Check the displayed Print Settings and if necessary, make the following changes:
    - Number of passes
    - Print direction
    - Print speed
    - Number of UV lamps to be used.
    - The UV lamps' power setting
6. Check the displayed settings for POSITIONING the file on the Media and if necessary, make the following changes:
    - Alignment
    - Print Offset
    - Step & repeat
    - Gap
7. Check the displayed settings for the JOB'S LABEL and if necessary, make the following changes for what will be displayed:
    - File Name
    - Number of the printed copy
    - Printing Time
    - Mode

8. If necessary, change the MEDIA'S QUANTITY

9. To accept the displayed settings but not print, click  .

   To print the current file, click PRINT  .

6 The RIP Procedure

This chapter gives an overview of the Barak Workflow as well as the RIP process using the Caldera application.

Caldera's full documentation is provided in PDF form on our Caldera Installation CD.

Barak's Workflow

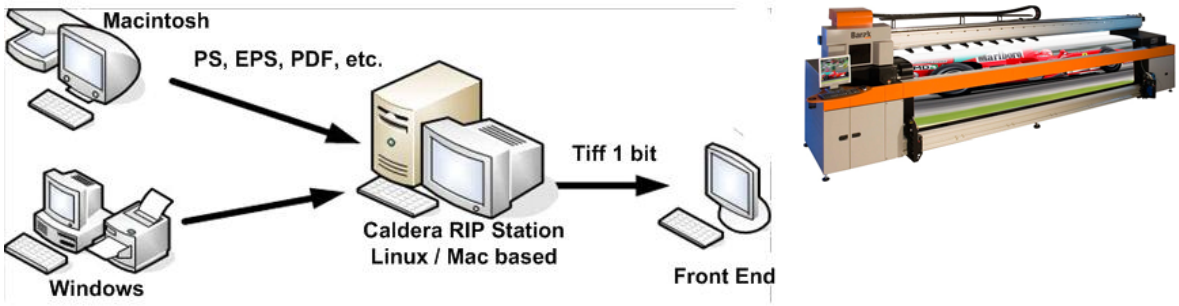
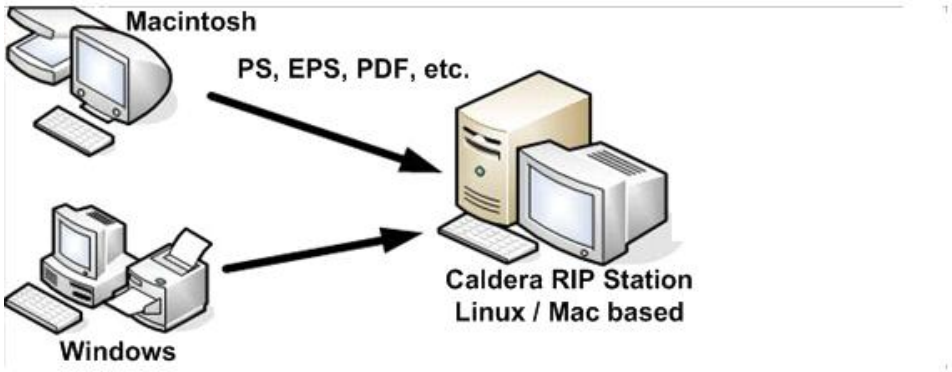


Figure 9: Barak's Workflow

Barak's workflow starts on a Mac / PC graphic application and using Caldera's GrandRIP+, converts the file.

The RIP procedure converts the input file into a 1-bit tiff file, which the Barak workstation manipulates and prints.

File Preparation



Caldera accepts most of the standard graphic formats such as:

ps

eps

pdf

etc.

Caldera RIP

The Caldera application converts the graphic files to a Barak Format File which comprises a folder with six files (.mjob):

Four tiff 1-bit files (xxx_c.tif, xxx_m.tif etc.)

A preview file

A Job Ticket file (XML format)

The Barak Front End

Barak's Front End manages the printing options and:

Loads files onto the system

Sets the margins and location on the Media

Sets step and repeat

Sets the UV Lamps' strength and other printing parameters.

File Manipulation Options

The following table shows the File Manipulation options.

Manipulation	Caldera	Barak
Scale, Distort, Rotate 90°	✓	✖
Rotate 180°, Mirror	✓	✓
Step, Copies	✖	✓
Tiling, Nesting	✓	✖
Color Management	✓	✖

Printing Modes and Speeds

The following table shows the various Printing Modes with their required Throughput.

Mode	Printed Pass Width (mm)	Number of Passes	Resolution DPI	Throughput (m^2/hr)
Supreme	8.1	16	600 x 600	25
Supreme Fast	8.1	16	300 x 600	40
Quality	16.25	8	600 x 600	50
Swift	16.25	8	300 x 300	85
Express 300	32.50	4	300 x 300	170
Express 150 DD	32.50	4	150 x 150	170

Printing Modes and Maximum File Size

The following table shows the various Printing Modes with their corresponding File Size.

The maximum file size per color is 4Gb, therefore the maximum file size for printing, is 16Gb.

Mode	Max. length (m) @ 1.6 m length	Max. length (m) @ 3 m length	Max. length (m) @ 5 m length	Print Area (m^2)
Supreme	30	15	9	60
Quality	30	15	9	60
Swift	130	80	50	250
Express 300	130	80	50	250
Express 150 DD	500	300	180	900

An Introduction to Caldera

Caldera is one of the top three leading wide format RIP software producers.

Caldera is based on a user-friendly graphic interface with unique drag-and-drop options.

Caldera works on both Linux and Macintosh operating systems.

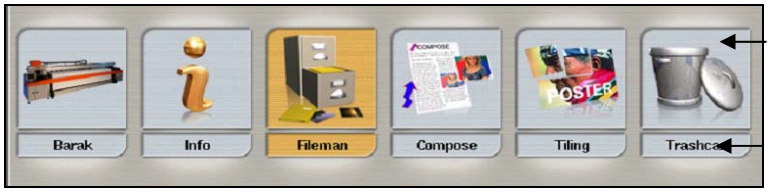
The Caldera computer should be used only for the RIP software.

Quick Start for Caldera

After opening the Caldera computer, the Caldera GrandRIP+ application automatically appears.

The Application Bar gives you access to the application's tools and the Image Bar normally contains the icon of each loaded image.

In both bars, the icons comprise two sections (as shown below).



There are three ways to access the target (file or dialog box,) via the icon:

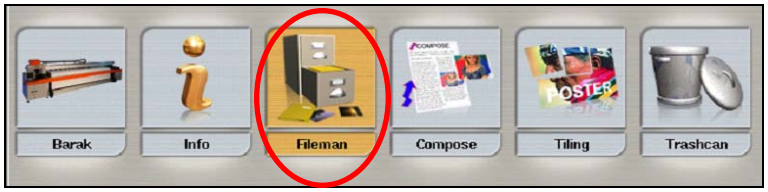
Upper Section – double-click

Lower Section – click or,

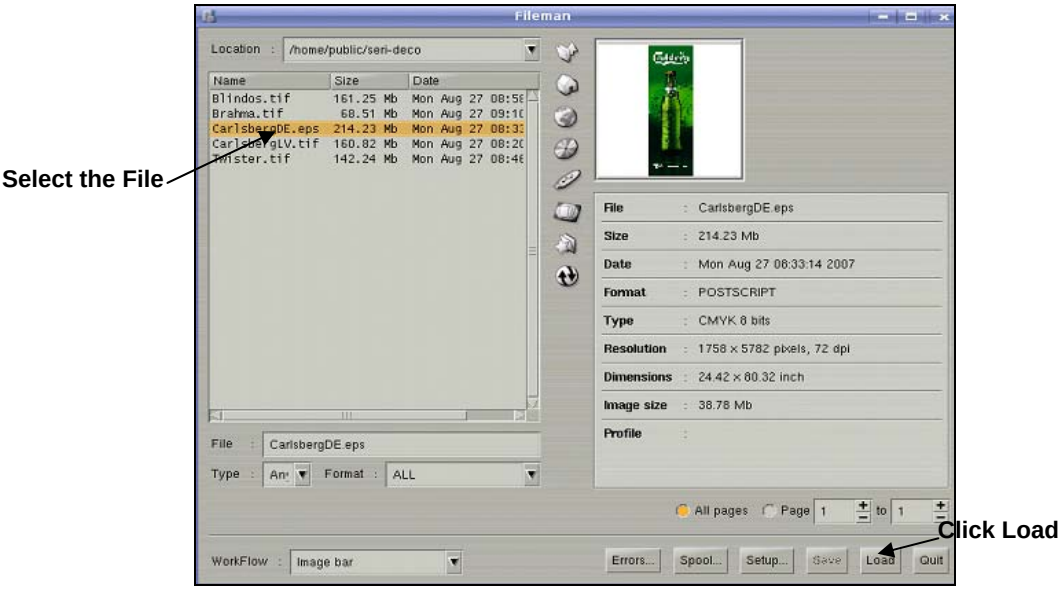
Drag and Drop the icon.

The File Manager

1. To load the required file, in the Application Bar, double-click Fileman, use the browser to locate the required file and double-click it.



An icon appears in the Images Bar (from where you send it to print,) and the Fileman dialog box appears, as shown below.



2. Select the require file and click Load.

The Preview Window

1. In the Images Bar, double-click the required image.

   The image is displayed, as shown below.

Figure 10: The Display window

The Main RIP Window

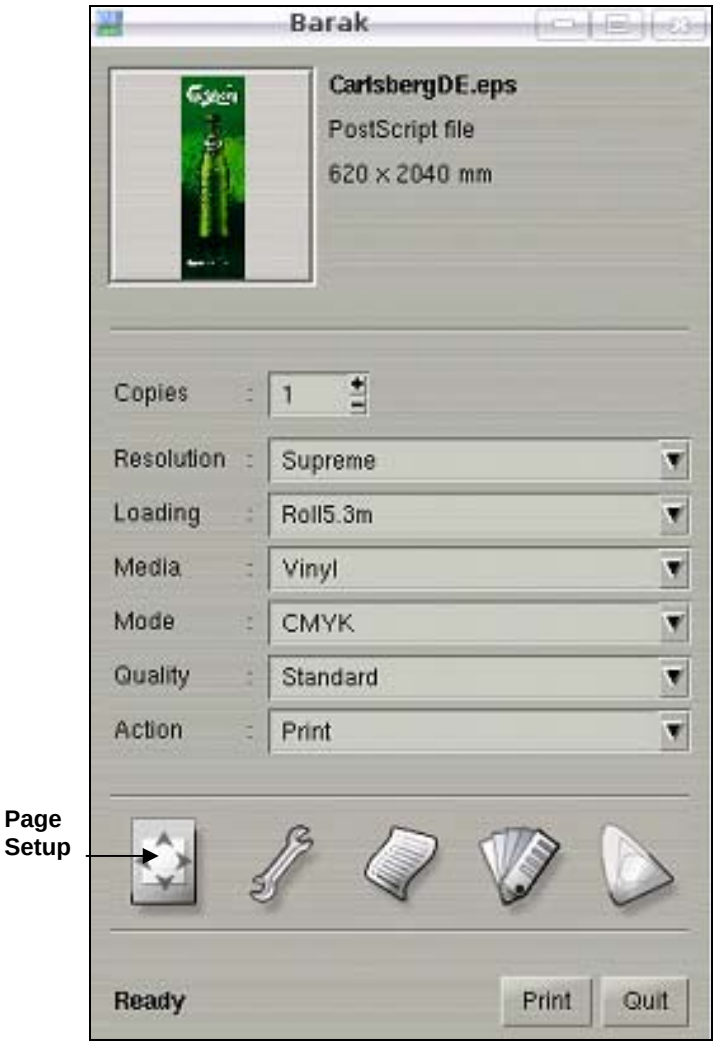


Figure 11: The Print Window

1. To print a file, access the Print Module by double-clicking Barak in the Application Bar by dragging and dropping the icon.
2. Drag and drop the required image from the Images bar to the Print Window.
3. Select the required resolution, the Media's width, and the type of Media.
4. Adjust the values in the Page Setup dialog box before printing.
5. From the Main Window, click Page Setup to enable you to adjust the page.

   The Page Setup window appears.

The Page Setup Window

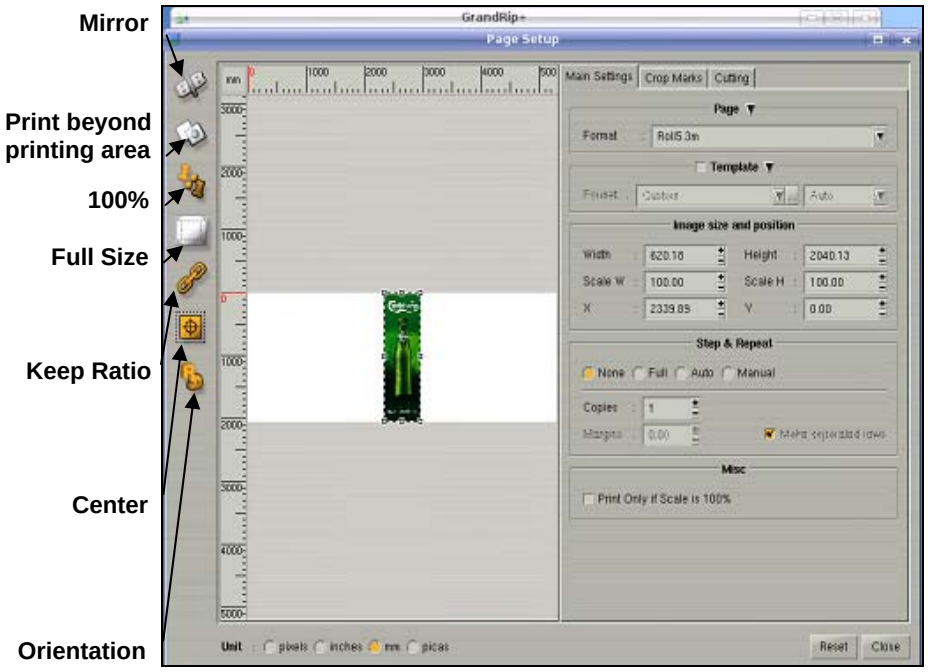


Figure 12: Page Setup window

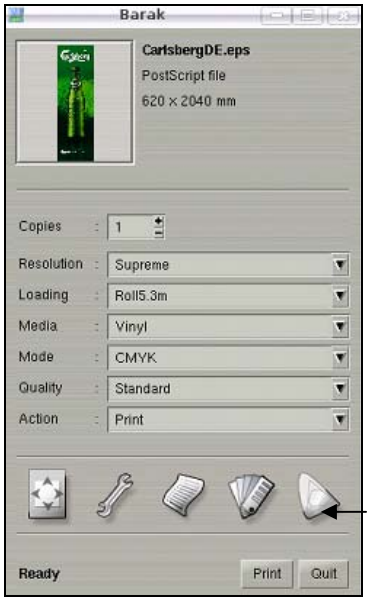
1. Select the required options from the icons on the left side of the window, as well as the three tabs, as shown in Figure 12, and click Close.

   The Application automatically sets the Media's Color Management.

   If you want, you can print the file at this stage by clicking Print in the main RIP dialog box.

   You can adjust the color settings before printing.

2. From the main RIP dialog box, click Colors.



The Colors dialog box appears.

Figure 13: The Colors Dialog Box

3. Make the required changes to the Colors' settings in the different tabs and click Close.
4. From the Main RIP dialog box, click Print.

Some Advanced Options

The Compose Window

The Compose option enables you to compose a selection of different files for printing (nesting). For this, you should use the Edition, Creation and data Entry tools.

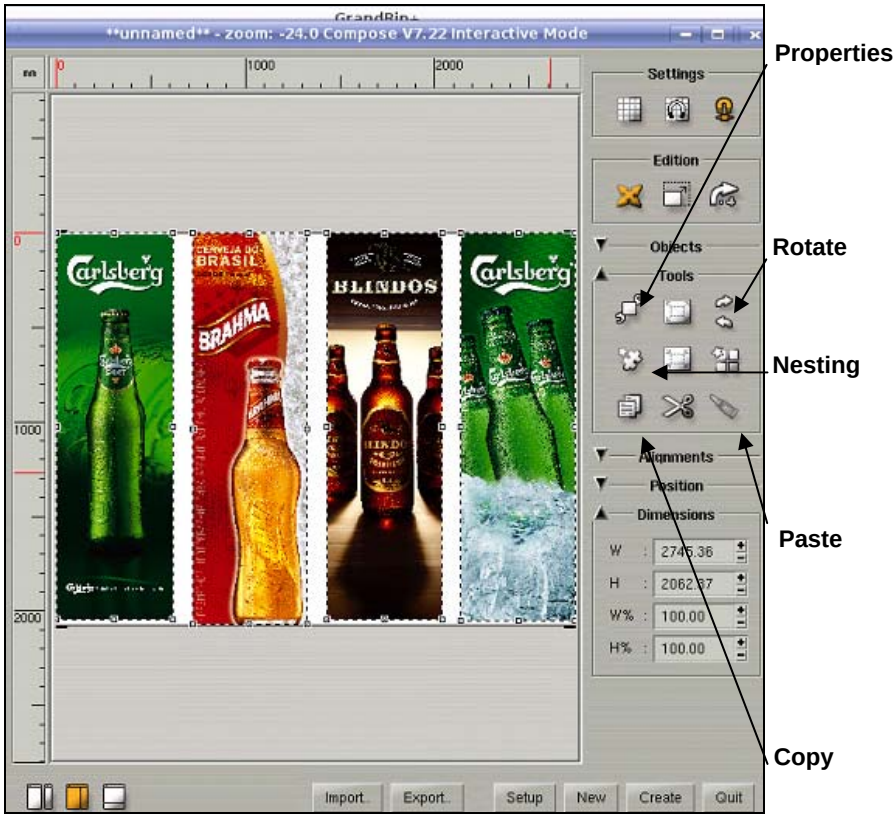


Figure 14: The Compose Dialog Box

The Tiling Window

The Tiling option enables you to create multi-tiled prints. This is ideal for applications where the posters have to be attached to 4 m x 3 m advertisement panels, as well as exhibition stands etc.

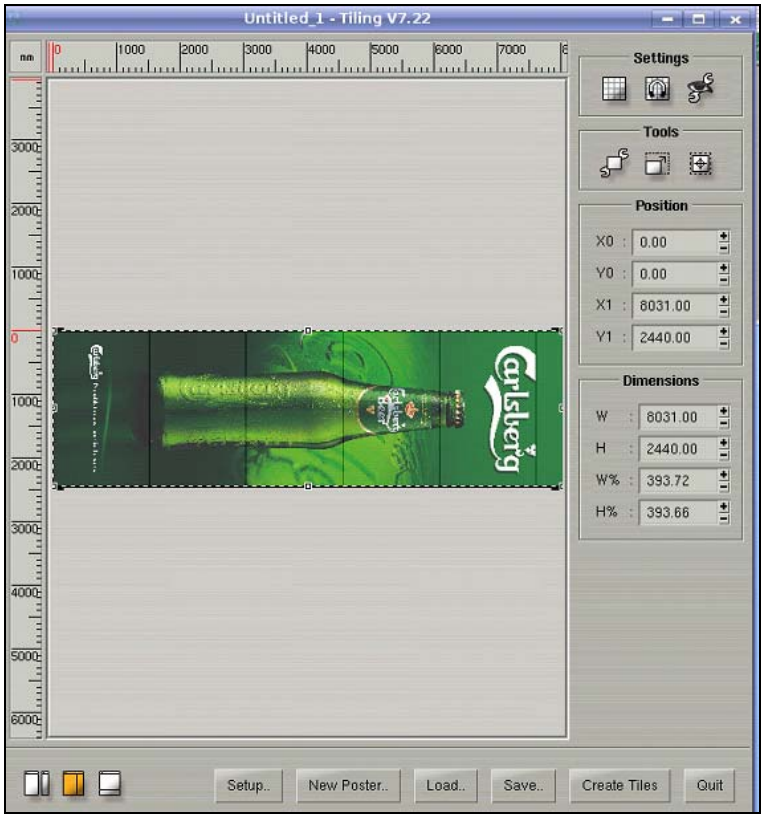


Figure 15: Tiling dialog box

1. Click Setup and define the Media size, overlap, crop marks etc.
2. Click New Poster.
3. Select the size of the poster.
4. Drag the file from the Image Bar.
5. Usually, the client will send a file saved with a ratio of 1:10. If this is the case, you should select Full Page or 1000%.
6. Create Tiles.

Shut-down Procedure

Unless there is an ***emergency***, do not use the Emergancy Stop Buttons or Cord to turn off the printer.

When turning off the printer, follow the shut-down procedure.

	Action			Frequency
	Check	**Clean**	**Switch off**	
UV Power off			√	Every day before shut-down
Purge & Clean heads		√		
Close SW & Switch off computer			√	
Wait until UV lamps cool off	√			
Main power switch			√	

7 Checking the Consumables

The Ink System

The following figure shows the Primary Ink System.

Figure 16: Ink Cabinet

The Ink

Check that there is sufficient ink in all the four Primary Ink Tanks. The order of the inks – from left to right – is as follows: Cyan, Magenta, Black and Yellow as shown in Figure 17.

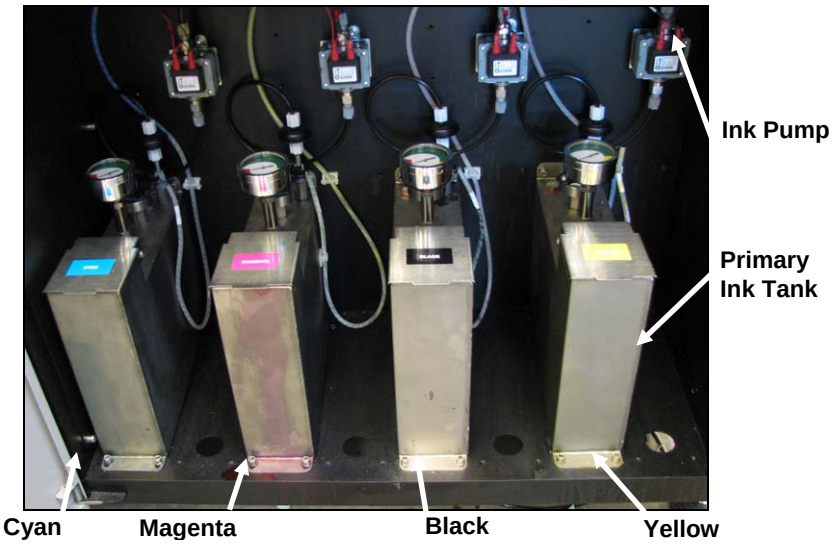


Figure 17: Primary Ink Tanks & Pumps

The Ink Pumps deliver the ink from the Primary Ink Tanks to the Secondary Ink Tanks which are located on the Carriage.

For full details of the printing procedures, see Chapter 9 in the User Guide.

Filters & Waste Ink Tank

Ink Filters

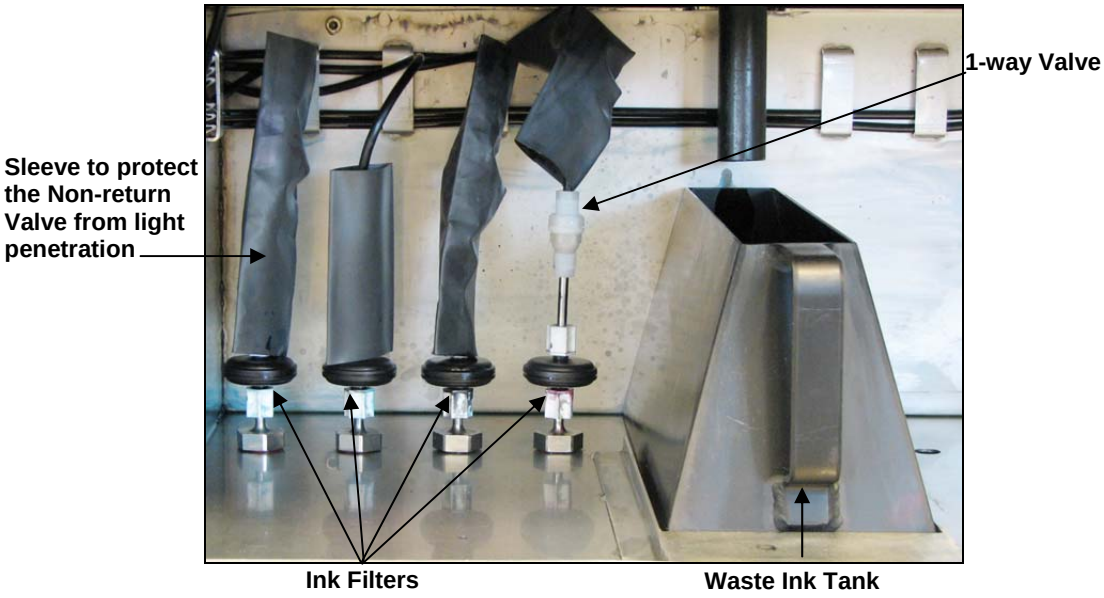


Figure 18: Ink Filters & Waste Tank

Each of the four ink systems has its own FILTER.

Ink Waste Tank

The INK WASTE TANK, shown in Figure 18, collects the waste ink from the tray located on the base of the CARRIAGE. It must be emptied every day before the printing session and before each shift.

UV Lamps

Figure 19: UV Lamp Assembly

The printer has two ULTRA VIOLET LAMP ASSEMBLIES. Each assembly is mounted on the left or right side of the Carriage.

The filters must be changed every day.

The Media

The **Barak** printer will print on the following types of Media:

Self adhesive

Mesh

Paper

Banner

Rigid Media (optional)

For rigid media you have to prepare the Flat-bed Feeder and Collector Tables.

Figure 20: Flatbed Media Collector Table

Barak will print a maximum of three Media Rolls simultaneously.

For any of the media described above, you have to make sure that the Carriage is adjusted to the correct height, according to the Media's thickness.

The Vacuum Table

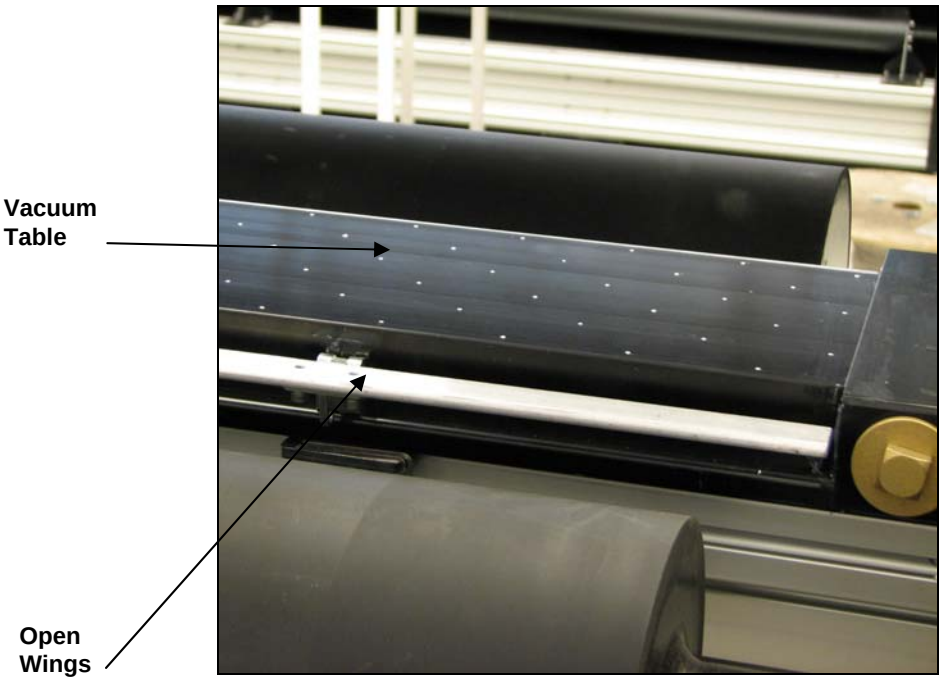


Figure 21: The Vacuum Table (with open flaps)

When the Media passes over the activated Vacuum Table, the vacuum prevents wrinkles in the Media.

The Vacuum Table should not be activated when printing on Mesh Media. The table's flaps should be closed by activating the appropriate switch. When using Mesh, the Absorbent Print Material should be placed on the table.

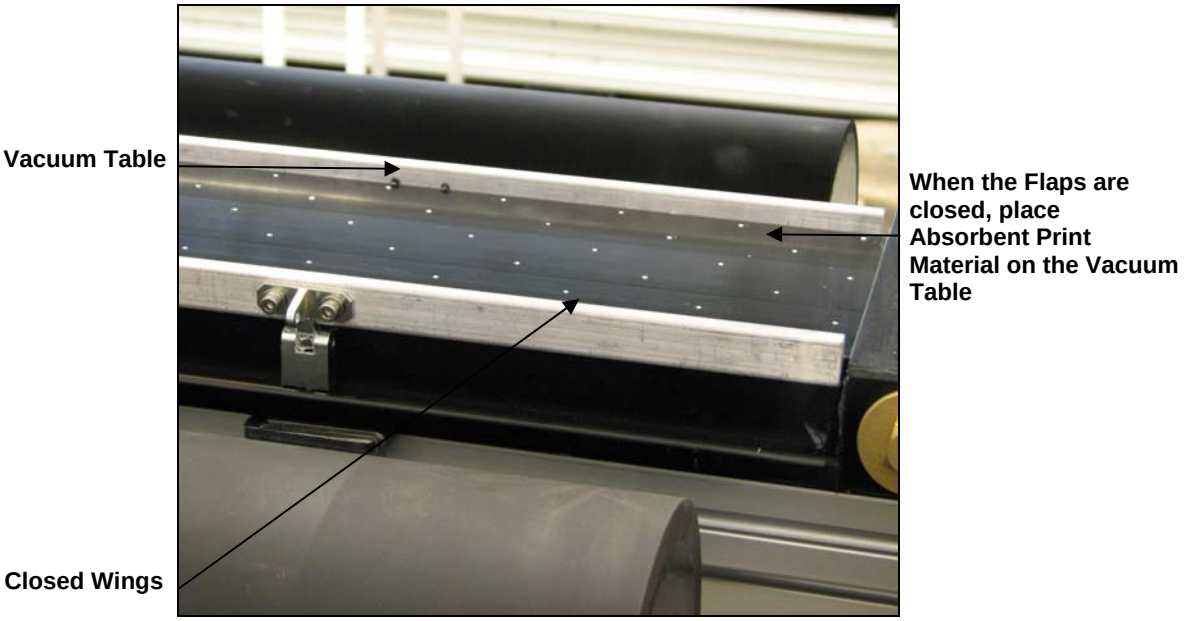


Figure 22: Vacuum Table (with closed flaps)

The level of vacuum applied to the Media is regulated by the Vacuum Regulator, according to the media you use.

Single or Multi Media printing

Width of Media (the wider the media, the lower the vacuum).

Weight of Media (the heavier the media, the lower the vacuum).

Rigid Media (use low level of vacuum).

We recommend that you experiment until you find the optimal level.

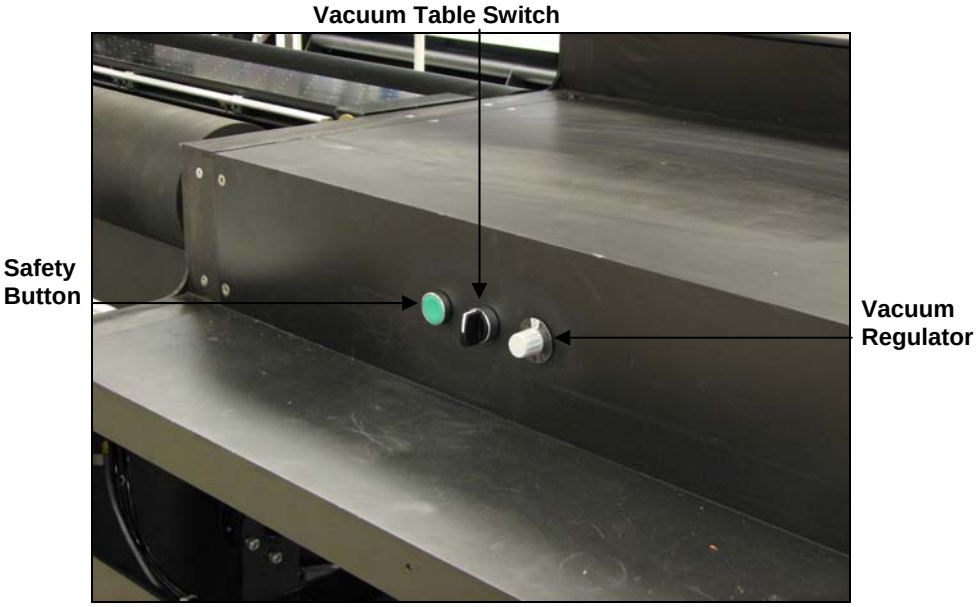


Figure 23: The Vacuum Table Controls

The Vacuum Table height can only be adjusted by an authorised Matan Technician.

The printer must not be activated when the Vacuum Table's Flaps are closed.

Adjusting the Carriage Height

Incorrect adjustment of the Print Table height, can cause damage to the Print Heads.

Figure 24: Print Table Height Gauge

The height of the Print Table has to be adjusted according to the Media on which you are printing.

When the Print Table Height Gauge is set at '0' (zero), the carriage is 2mm above the Media.

When you print on a 5m banner on mesh that is 1 – 1.5mm thick, you have to set the Print Table Height Gauge, you have to set the gauge at 1 – 2.

On rigid materials, you should set the exact thickness of the Media, on the gauge. Therefore, with a thick Media (Kappa,) that is 5mm thick, you should set the gauge at 5mm.

You adjust the gauge using the Allen T #5 that is supplied with the tool kit.

Access to the adjusting screw is via the Upper Carriage Cover, as shown below.

Access to the Print Table Height Adjuster (with Allen T #5)

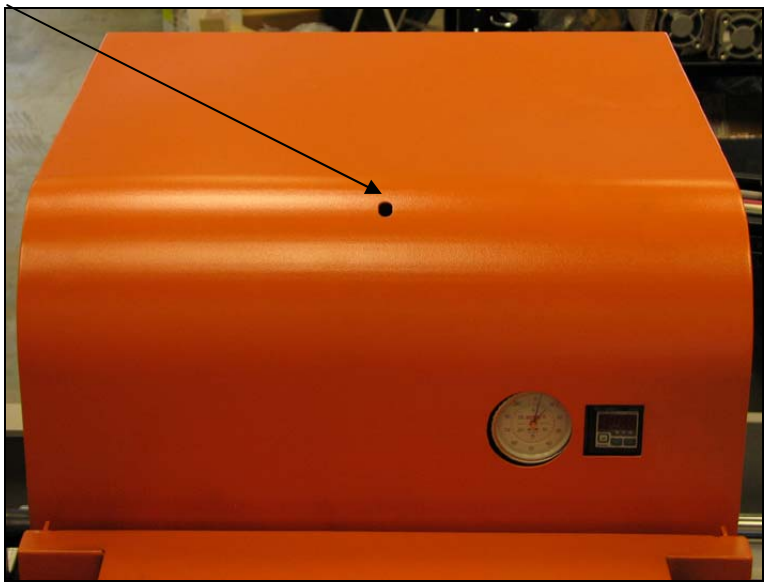


Figure 25: Upper Carriage Cover

Access for the Print Table Height Adjuster

Figure 26: Adjusting the height of the Print Table

If the Print Table Height Gauge is set at '2', there is no gap between the table and the base of the Carriage. An increase of two units on the gauge, increases the gap by 2mm. So that if the gauge is now set at '4', there is a gap between the table and the base of the Carriage of 2mm.

The Media Path

Up to 5m Roll-to-Roll

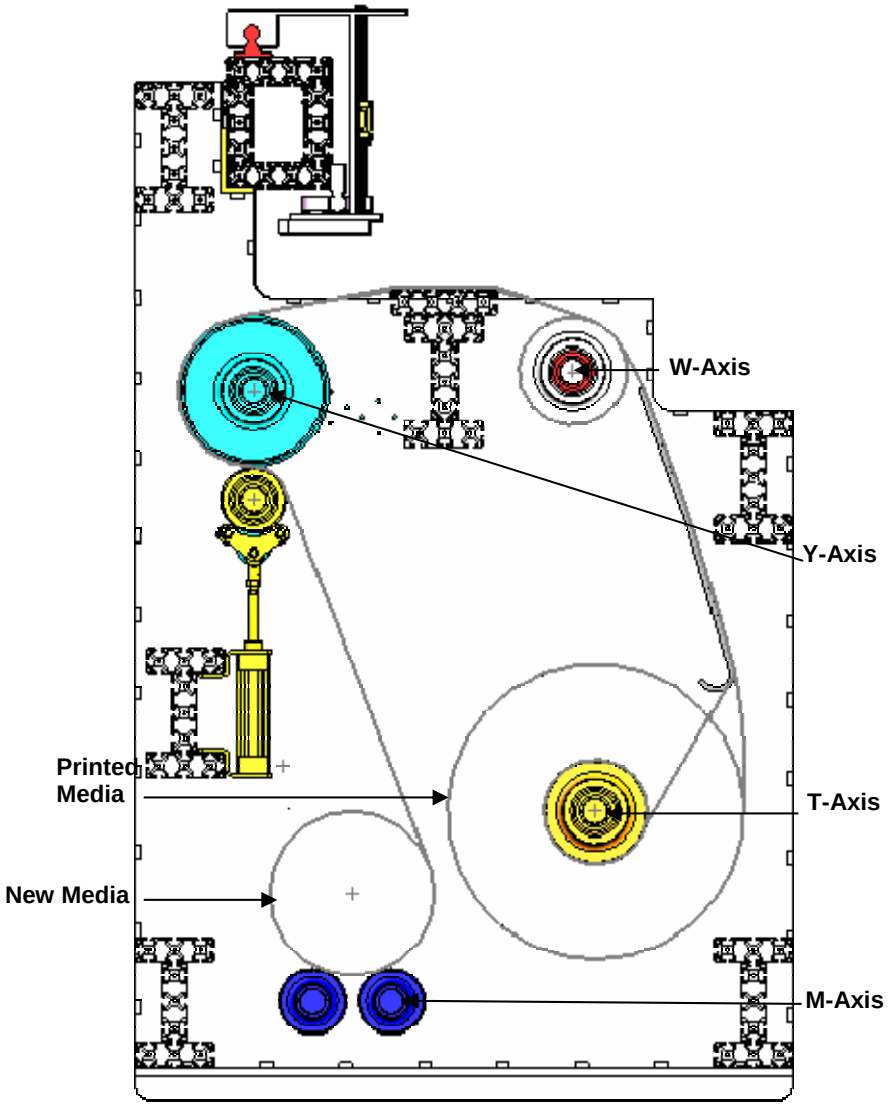


Figure 27: Media flow for up to 5m Roll-to-Roll

Up to 3m Free-flow

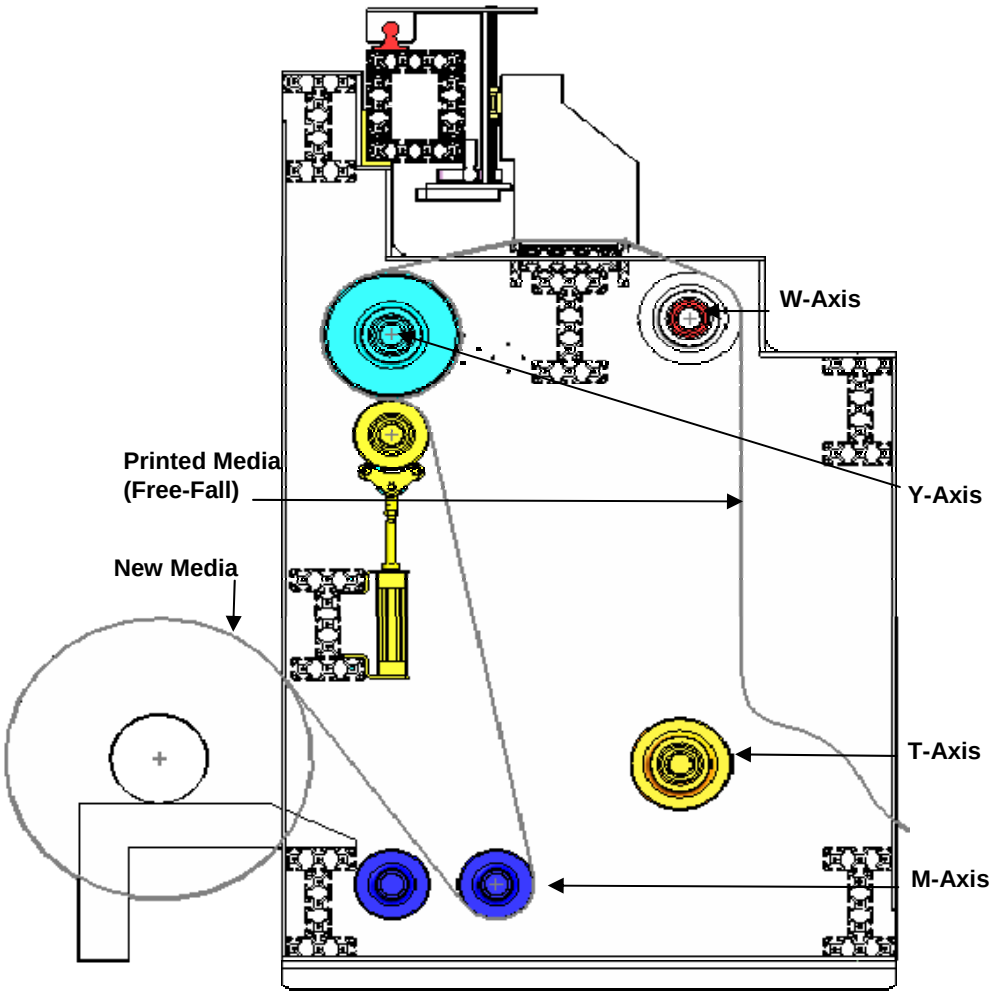


Figure 28: Media flow for up to 3m Free-Fall

Flat Bed

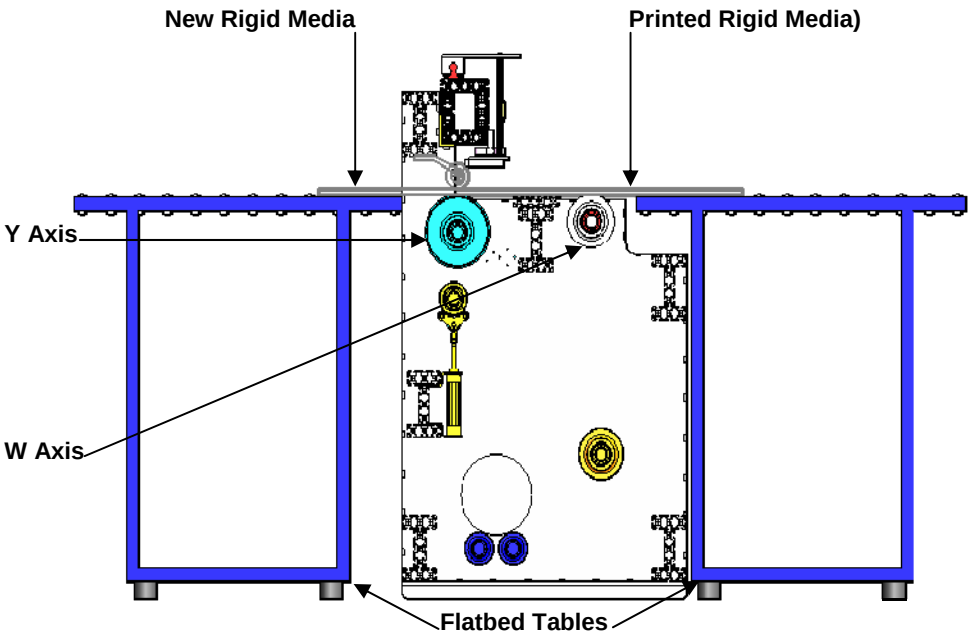


Figure 29: Media flow for Rigid Media (Flat Bed)

8 General

Front Control Panel

Figure 30: Front Control Panel

The Front Control Panel is located at the front of the printer, just behind the Workstation. It comprises the following three switches:

Flatbed: To activate the Flatbed Collector (optional).

Freefall: To enable the printed material to fall freely and not onto a collector.

Hood: To raise or lower the printer's Hood.

Rear Control Panel

Figure 31: Rear Control Panel

The Rear Control Panel is located at the rear of the printer, above the Ink Cabinet. It comprises the following two switches:

Shaft: To activate the Shaft – for loading media or the optional Flatbed printing.

Press: To press on the media to apply tension.

9 Unloading the Media

➢ **To unload the printed media:**

1. Open the Hood.
2. From the front of the printer, cut the printed media as required.

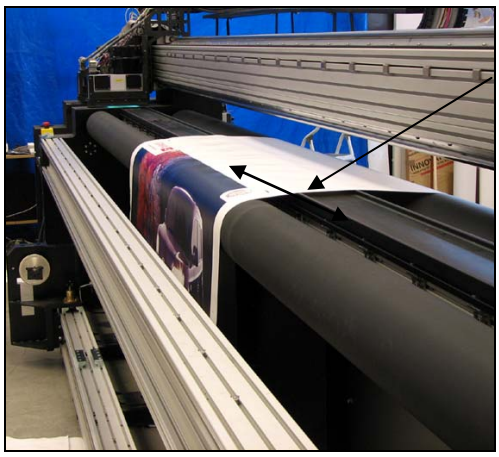


Figure 32: Cutting the printed Media

3. From the rear of the printer, lower the Press Roller and remove the media.

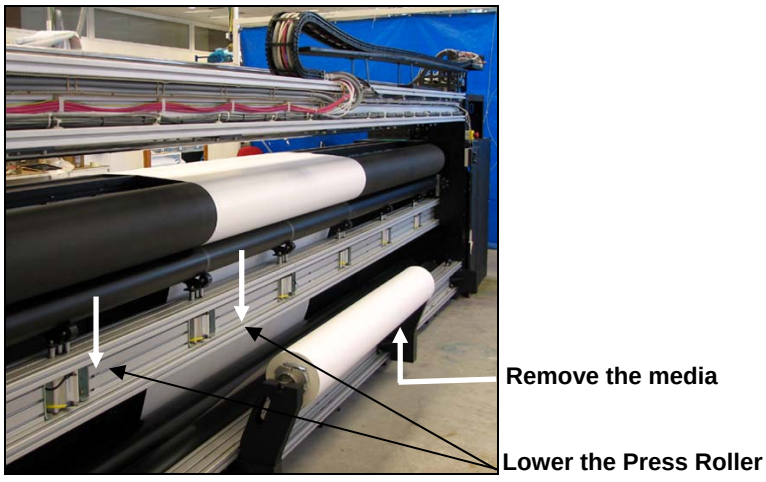


Figure 33: Unloading the Media

10 Maintenance

You must carry out the following maintenance procedure at regular intervals:

Proper Operation & maintenance is crucial to the operation of the machine.

Customers are advised when changing consumables or any parts of the printer, care should be taken to dispose of these consumables or parts in the correct manner and according to the laws and regulations of the local authorities.

For further details regarding the disposal of parts and consumables, contact your local distributor.

Unless there is an ***emergency***, do not use the Emergency Stop Buttons or Cord to turn off the printer.

When turning off the printer, follow the shut-down procedure.

Printer Operation

Before each job	Perform nozzle test. Adjust block carriage high according to substrate and mode.
Before Mesh print	Put absorbing kit on the table.
After Mesh print	Remove the absorbing kit and clean table if necessary.
Vacuum level (–0.8 –1.0)	Check and adjust if necessary.
Ink tank	Check the ink level, fill if needed.

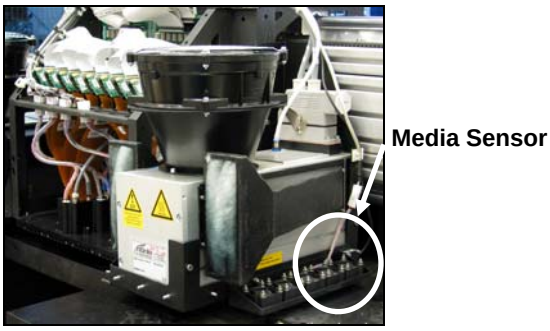
Daily Maintenance

Customers are advised when changing consumables or any parts of the printer, care should be taken to dispose of these consumables or parts in the correct manner and according to the laws and regulations of the local authorities.

For further details regarding the disposal of parts and consumables, contact your local distributor.

Media Sensor

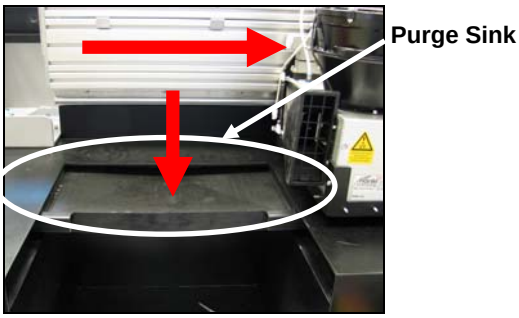
Clean the sensor using clean paper with alcohol on a daily basis or whenever you sense that there is an error in the Media measuring process.



Purge Sink

Clean the cured ink on the sink, using a scraper.

Manually move the Carriage and pull the Sink toward you.



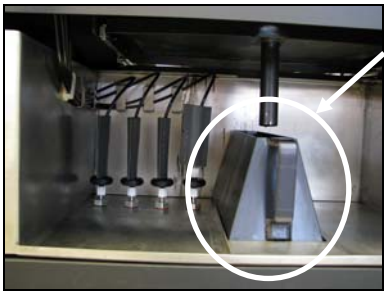
Around the Printer

Keep area free of foreign objects and dirt.

Make sure that only the operater attends to the printer's maintenance and is allowed inside the saftey area as described in the Safety section.

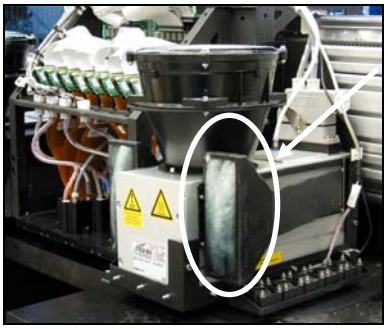
Waste Tank

Set up a regular schedule of emptying the Waste Tank.



UV Filters

When you have a daily heavy print load, replace the UV Filters on a daily basis. If your print load is not heavy, then you need to replace the filters when they become discolored.



Vacuum Table

Clean surface with a cloth and alcohol (and when required, clear blocked holes with a needle).

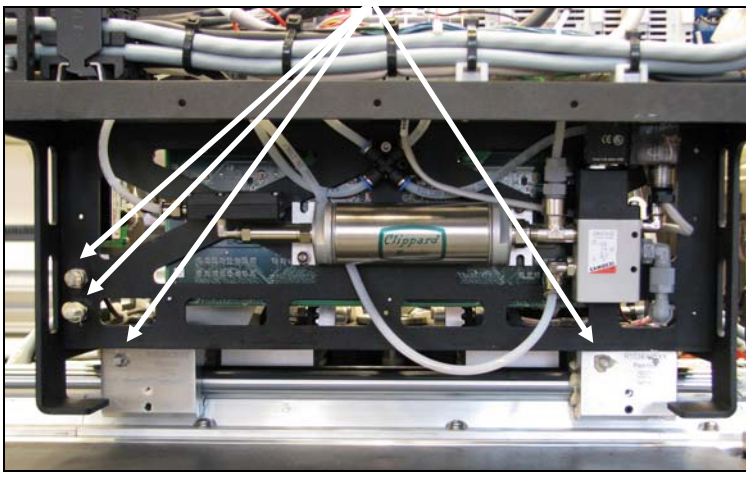
Weekly Maintenance

Lubricate Carriage Bearings

Lubricate the four carriage bearings with approved grease.

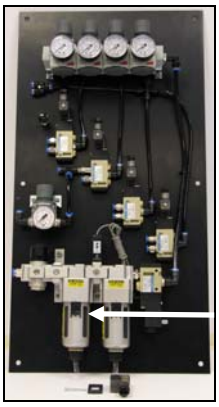
Make sure you do not over-grease the bearings.

Grease Nipples



Water Filter

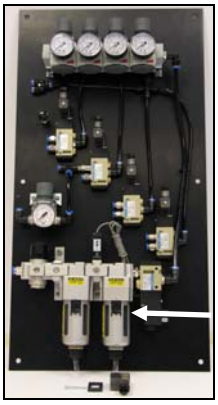
Empty the filter by opening the tap, and draining out the water into a suitable container.



Water Filter

Oil Filter

Empty the filter by opening the tap, and draining out the waste oil into a suitable container.



Clean Free Fall Rollers

Use alcohol and an absorbant cloth to clean both rollers.

Make sure that the customer has cleaned the rollers and has removed all the deposits.

Monthly Maintenance

Clean rubber roll Y & T Rollers

Use alcohol and an absorbant cloth to clean both rollers.

Make sure that the customer has cleaned the rollers and has removed all the deposits.

Clean Metal Rollers

Use alcohol and an absorbant cloth to clean the rollers. Make sure that the customer has cleaned the rollers and has removed all the deposits.

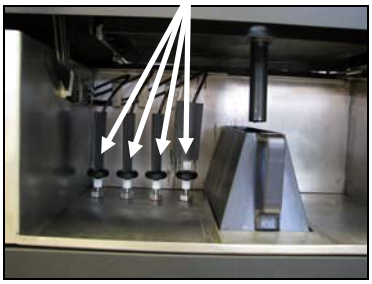
Quarterly Maintenance

Ink Filters and Pumps

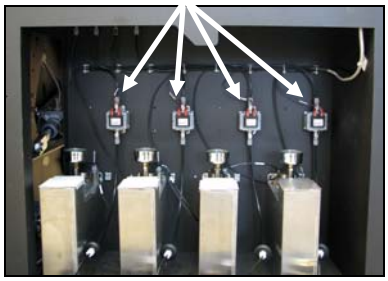
Replace Ink Filters and Pumps.

Make sure that the customer changes the Ink Filters and pumps every three months – if necessary, instruct him how to carry out this task.

Ink Filters



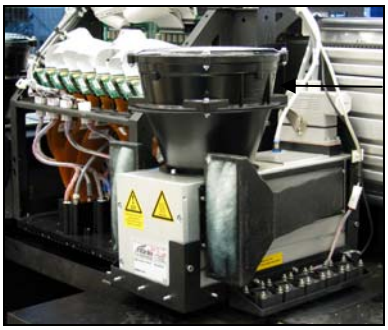
Ink Pumps



UV bulb – 1000 hours

Replace UV bulb every 1,000 hours, or when the printed surface is not curing. After you increased uv bulb to max

Depending on the customer's technical level, either talk him through the process (remotely) or pay him a visit and show him how to carry out the replacement.



Housing for the UV Lamp

11 Troubleshooting

Pneumatics

Event	Reason	Solution
No vacuum	The vacuum supply is not within the required settings.	Set the Vacuum to 0.8 – 1.0
	The non-return valve may be faulty.	Check the non-return valve and if necessary, replace it.

For any other questions connected with the Pneumatics System, please contact support.eu@matanprinters.com

Print Heads

Event	Reason	Solution
Purge is activated but no ink comes out.	No ink in SIT.	Check that there is sufficient ink in the SIT.
	Insufficient air pressure.	Check that the air pressure is set at 0.2 – 0.3 Bar.
Ink is leaking from the Print Head.	An 'O' ring might be out of place.	Replace the old 'O' ring and make sure that it is intalled in the right place.

For any other questions connected with the Print Heads, please contact support.eu@matanprinters.com

UV System

Event	Reason	Solution
The UV System shuts down with no error message.	The UV Filters have not been replaced daily.	Replace the UV Filters on a daily basis.
	Insufficient air is getting to the system and it gets overheated.	
The UV lamps are not working.	The PLC Filter is not working.	Check the PLC, and if necessary, activate it.
	The brake system in the PDU is not working.	Check the brake system, and if necessary, activate it.
	The UV Panel is not working.	Check, and if necessary, activate the UV Panel.

For any other questions connected with the UV System, please contact support.eu@matanprinters.com

Printing

Event	Reason	Solution
Color degradation over a number of passes. Only occurs when working in Quick and Fast modes.	"Superposition"	Use Leader + Preheat Mode. Use a more "printer friendly" media. Adjust the Left / Right and Y Advance parameters. Adjust the Print Heads position as accurately as possible. Reduce the number of passes.
Overspray	A 'spray' of ink appears around the edges of a sharp image because either the carriage is not set at the correct height, or the environemental conditions are not acording to the Secifications.	Check that the carriage height is approximatley 2 – 2.5 mm above the Media. Check that the ambient temperature and humidity are as recommended in the Specifications. Check that the Ink is at the same temperature as shown in the software. If it is not, check that the secondary ink heaters are receiving 48v.
Missing lines of print.	Lost Nozzles Blocked Nozzles.	Check the following and adjust according to the Specifications if necessary. Humidity Room Temperature Ink Temperature Vacuum Setting (± 0.8 – 1 bar) Carry out a Purge. Check for a Vacuum leak and ighten all nipples. Carry out a Purge.

Barak prints with matt and gloss stripes on the surface of the Media.	Gloss banding: Incorrect settings.	In the Power Settings window, check that the Power Factor has not reached 200%. If it has, replace the UV Lamp. Check that the printer is set to Print with Trail.
Barak prints light and heavy printing passes.	Banding: Incorrect settings.	Check the following and adjust according to the Specifications if necessary. Humidity Room Temperature Ink Temperature Vacuum Setting (± 0.8 – 1 bar) Carry out a Purge. Check for a Vacuum leak and ighten all nipples. Carry out a Purge. Check that the Noise Option is set to #3.
The printing is coudly only in the vertical plane.	Vertical Banding: Incorrect settings	Check that the Noise Option is set to #3.

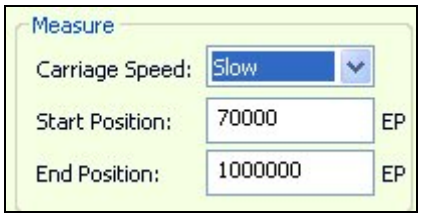
For any other questions connected with the Printing System, please contact support.eu@matanprinters.com

The Ink System

Event	Reason	Solution
Error Message: No Ink in "C", "Y", "M", or "K"	The Main Ink Tank is empty.	Fill the Main Ink Tanks with ink as necessary.
	The Ink Pump is not working.	Click OK and check if the pump is vibrating.
	There is no 24VAC to the pump.	Using a multimeter, check that there is 24VAC to the pump.
	The Machine PLC's Machine LED is on.	Reset the Machine PLC by switching it to STOP and then to RUN again.
	The 1st or 2nd Filter is blocked.	Repace the relevant filter.
	The Float inside the SIT is stuck on the Empty position.	Empty the SIT. Disassemble it, check the Float and if necessary, replace it.
A leakage of ink at the rear of the printer, on the shelf above the Main Ink Tanks.	The Waste Ink Tank has not been emptied regularly enough.	Empty the Waste Ink Tank every 2 – 3 days.

For any other questions connected with the Ink System, please contact support.eu@matanprinters.com

The Front End Software (Matan)

Event	Reason	Solution
When upgrading the printer from Ver. 1.3.0.2 to Ver. 2.0.3, the Carriage only travels 3 m.	In the Measure Media group box of the Engineer Printer Parameters dialog box, the settings were for the Barak3 printer.	Adjust the settings as shown below. 

For any other questions connected with the Frnt End Software, please contact support.eu@matanprinters.com

Mechanics

Event	Reason	Solution
After tightening the Hood Piston Sensor, it was still loose.	The screw was not tightened properly.	Retighten the screw and make sure it holds the Sensor.

For any other questions connected with the Mechanics System, please contact support.eu@matanprinters.com

12 Glossary

Word / Term / Acronym	Meaning
ANSI	American National Standards Institute
Banding	Barak prints light and heavy printing passes.
Banding – gloss	Barak prints with matt and gloss stripes on the surface of the Media.
Banding – vertical	The printing is coudly only in the vertical plane.
BCC	Block Control Card
EP	Encode Pulse
ES	Emergency Stop
PCI	Peripheral Component Interconnect
PPI	Pulse Per Inch
RIP	Remote Imaging Protocol
SIT	Secondary Ink Tank

Date Created	Created by	Approved by
October 2007	Frank Taylor	Ronen Shalil
April 2008 revised	Frank Taylor	Ronen Shalil
June 2008 revised	Frank Taylor	Ronen Shalil