

SAFETY

1. MECHANICAL SAFETY

The machine is fully guarded by acrylic panels, fixed panel and movable panels with an aluminum frame.

The guarding has been opened at the loading and unloading station.

If the ancillary equipment bringing the object to and away from these stations is provided by the customer, it is his responsibility to ensure suitable guarding at those stations.

Doors are provided in the guarding in order to carry out adjustments of the machine and to change screens.

The doors are interlocked with magnetic sensors which will stop the machine if opened.

The machine will restart when there is no more defect, and only after pushing the reset button.

2. ELECTRICAL SAFETY

Main disconnecting switch

The main electrical cabinet is provided with a disconnecting switch located on one of the front doors or on the side.

The handle of this switch can be locked in its "opened" position to prevent anyone from reestablishing the current in the electrical cabinet or on the machine when, for example, electrical service work is undertaken.

This disconnecting switch is an isolator. It should only be used to cut off all power from the machine and never as a mean of stopping the machine, for example, at the end of a shift.

This should be done normally by pushing all the stop buttons of the main control cabinet.

Emergency stop

In case of emergency, the machine can be instantly stopped and the power circuit can be cut off by pushing the emergency stop push buttons.

Never use these emergency stops to stop the machine in normal conditions as these emergency stops will cut the power from all elements of the machine.

The shutting of the power by an emergency stop will prevent normal cooling of the UV dryer, thus reduce the lifetime of the lamp.

In addition, after restart one must wait until the lamp has reached its full power. This procedure takes several minutes.

Before machine start up, engage the emergency stop buttons and check their proper functioning.

3. UV REACTOR SAFETY

UV radiation safety

The UV radiations can cause severe injuries (skin and retina burns) ; these burns are only felt several hours after exposure.

DO NOT ATTEMPT TO LOOK AT THE LAMPS WITHOUT WEARING EYE PROTECTION.

The design of the UV dryer utilizes light shielding enabling protection of the operator from direct radiations of the UV lamps.

DO NOT OPERATE THE UV LAMPS WITHOUT THEIR GUARDING.

The operator should, under no circumstance, be allowed to operate the machine if the light shielding is not present (guarding).

Electrical safety

The lamp arc voltage can reach high levels for the longer lamp, therefore any service work on electrical components should only be done when the main disconnect has been turned off.

Ozone safety

The medium pressure Mercury vapor lamp produces ozone.

Therefore it is important that the curing chamber is in depression, this is normally achieved by the air drawn in the chamber by the cooling turbine of the irradiator.

This air must of course be evacuated outside the workshop.

The duct leading to the outside must be connected to the outlet of the cooling turbine which external diameter is 80 mm, and must have the smallest possible number of angles, as well as the shortest possible distance (4 meters ; one curve). An other configuration without our explicit agreement will cancel the lamp lifetime guarantee.

4. SAFETY INSTRUCTIONS CONCERNING THE USE OF DUBUIT UV INKS

These inks present the enormous advantage of having no volatile solvents and therefore do not represent a risk due to the inhalation of noxious vapors during printing or drying. This is not the case with conventional inks, for which in certain cases, long and continuous exposure could cause troubles to the system.

However, the UV inks are composed of acrylic monomers which can irritate the skin and require therefore certain precautions when using them, in particular avoid all direct prolonged contact of the ink with the skin.

Any accidental ink stains should be removed as soon as possible, with soap and water, never with a solvent since this increases the penetration of monomers in the skin.

If these instructions are not followed, a sensitive person may feel some irritations. At this stage, a strong cleaning is enough to eliminate all risks of burns or dermatitis. When the ink is in contact for several hours with the skin, chemical burns may appear. These disappear after a few days.

These risks are greatly reduced by using appropriate gloves or protective creams when manipulating the inks and cleaning the screens and by strictly following the instructions indicated on the data sheet of the ink as well as on the label stuck on

each container of UV inks.

Nevertheless, using gloves may prove a bad protection, since it has appeared that due to an accidental penetration of ink (for instance, due to a hole in the glove), its stagnation reinforced by sweating enhances the penetration into the skin of irritating substances. It is sometimes preferable not to wear gloves, providing the operator does not forget to wash his hands after staining or regularly every two hours. It is indispensable to install a washing place near the work station.

It is also recommended to wear protective glasses specially when cleaning the screen. In the event of projections into the eyes, follow these indications :

- immediately : thoroughly rinse the eye with running water for 15 minutes (at least 5 to 10 minutes)
- consult a doctor as soon as possible. No permanent danger is to be feared if the eye has been well rinsed immediately after the accident.

Conclusion

To minimize the risks of injuries, we advise you to :

- strictly respect the operation instructions and to wash immediately with soap and water any UV ink in contact with the skin.
- use gloves when cleaning screens. Beware of introducing ink into the gloves and do not work with stained clothes. In effect, since the ink does not dry without a UV source, it ends up by going through the cloth and come into direct contact with the skin.
- use glasses when mixing, pouring or cleaning UV inks.

Do not forget that dirty rags and empty ink containers must be handled with care and must be placed in a waterproof bag before disposal.