



# Dry Film Photoresist Laminator 27-22808 - A3

## INSTRUCTION MANUAL



For smaller volume production, these Hot Roll Laminators enable the user to apply Dry Film Photo-Resist and Dry Film Solder Resist sheets to a wide range of materials, such as Copper, PCB Laminates, Stainless Steel and Brass etc.

For 'one-off' or very small scale production they offer an economical alternative to the roller laminators

MEGA ELECTRONICS LTD.,

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## WARNINGS

1. This appliance connects to a 240V mains power supply. Switch off and disconnect before removing cover.
2. Avoid moving parts.
3. Keep appliance away from flammable substances.
4. Ensure that the appliance is operated in a dry, clean environment.

## CAUTIONS

Maximum thickness of material that can be laminated must not exceed 3.175 mm (1/8").



**SAFETY ALERT SYMBOL - PRECEDES EACH SAFETY MESSAGE IN THIS INSTRUCTION MANUAL. THIS SYMBOL INDICATES A POTENTIAL PERSONAL SAFETY HAZARD THAT COULD HURT YOU OR OTHERS AND ALSO CAUSE PRODUCT DAMAGE OR PROPERTY DAMAGE.**

THE FOLLOWING  
WARNING MAY BE  
FOUND ON THE  
PRODUCT



## 2 . Technical Specifications

<b>Dimensions</b>	: A3 :W580mm x L295mm x H140mm
<b>Weight</b>	: A3: 14.1 kilos
<b>Power supply</b>	: 230V/50, 60Hz
<b>Power Consumption</b>	: A3 - 1000 Watts
<b>Maximum Laminating width</b>	: A3 - 330 mm
<b>Max. Laminating Speed</b>	: 0—105 cm / min
<b>Max. Laminating Thickness</b>	: 3.175mm (1/8")
<b>Operating Temperature</b>	: 0 - 160 °C
<b>Warming-up Time</b>	: about 3 minutes
<b>Control System</b>	: Microprocessor
<b>Display System</b>	: LED
<b>Cooling System</b>	: DC Motored Fan
<b>Driving Motor</b>	: D.C. Gear Motor

### ***Regular Cleaning is easy, but essential.***

As the first sign of adhesive deposit on work, pass some plain copier paper backwards and forwards through the heated rollers, using Motor speed 3 and REV reverse alternately. This will quickly clear any adhesive build up.

**Warranty** 1 (one) year on parts.

## Contents

- Warnings & Cautions
- Technical Specifications
- Function of operation of control panel
- Control Panel Layout
- Recommended laminating temperatures & speed
- How to laminate Dry Film Photoresist.
- Fault finding

# Functions and operations of Control Panel

## A. Indicating lamp Functions

*Following indicating lamp is lit if function buttons are pressed accordingly*

**90**

TEMPERATURE

Indicate temperature

Number upon indicates "present temp", or "set temperature".

**5**

SPEED

Indicate speed

Number upon indicates "Running speed" of the rollers.

COLD

Indicate currently chosen function is cold (No- Heat)" laminating function.

MEAS

Indicate lamp "present temperatrue" of the rollers.

PREHT

Indecate currently chosen function is "Pre-Heat" function.

HOT

Indicate currently chosen function is "Hot (Heat)" Laminating function.

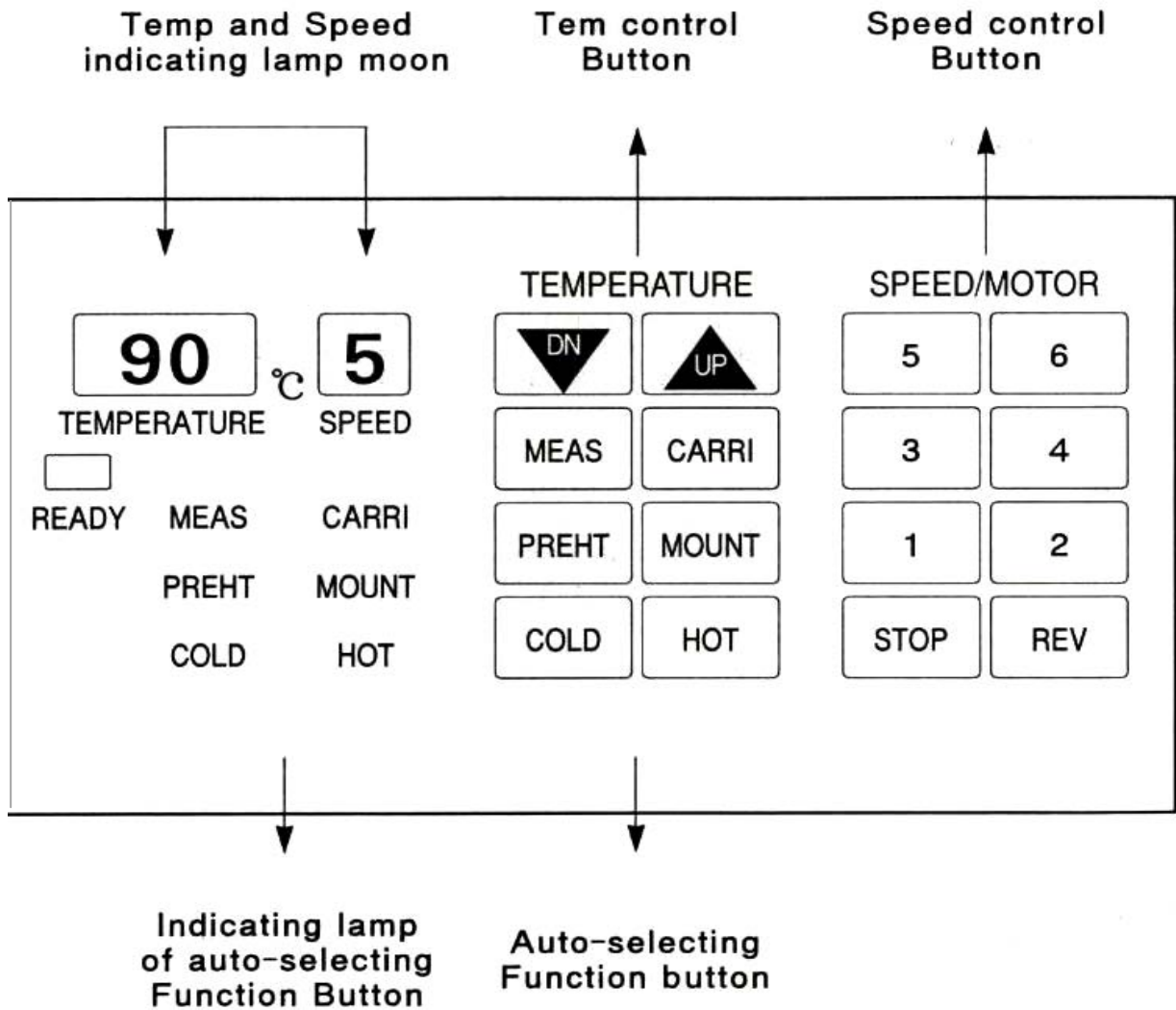
MOUNT

Indecate currently chosen function is "Mounting" function.

CARRI

Indecate currently chosen function is "Matting" function.

# Control Panel



## Auto-Selecting Function

**COLD**

Use when laminating Cold film. Temperature and speed of '0' are automatically set when selected. If present temperature is above 60°C, temperature '0' & speed '2' are selected to protect the rollers.

COLD laminating function will be automatically selected when power switch is turned 'ON'. Not used for photoresist applications

**HOT**

For laminating copper clad PCB material and thin metal (up to 0.8mm thick) set the temperature to 110°C and the speed to '2'

**MOUNT**

Use when laminating materials 1 to 3.175mm in thickness and set temperature as described in '2' above

**CARRI**

For matt laminating pouches.  
Not used for photoresist

**PREHT**

Stand-by function that can be selected for intervals during long time operation. Temperature of '80' is set automatically. If temperature of the roller is above 90°C, speed of '2' is set to protect the rollers, and once the temperature reaches 85°C, the motor stops at same time after speed is automatically set to '0'

**REV**

The rollers will operate in reverse at speed 5 once this is pressed. The '5' will blink on LCD and continuous beep will be heard. The laminated media can be removed by using this key once they are jammed / wrapped against the rollers.

**STOP**

Speed '0' will be displayed on LCD and the rollers will stop once this key is pressed.

**READY**

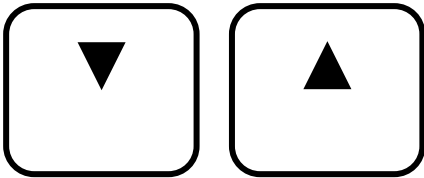
This shows whether the current temperature has reached the set temperature or under/over the set temperature.

No Display - When temperature is lower than the Set value

Display ON - When temperature reached the Set value

Display BLINKS - When temperature is higher than the Set Value

## Temperature Control



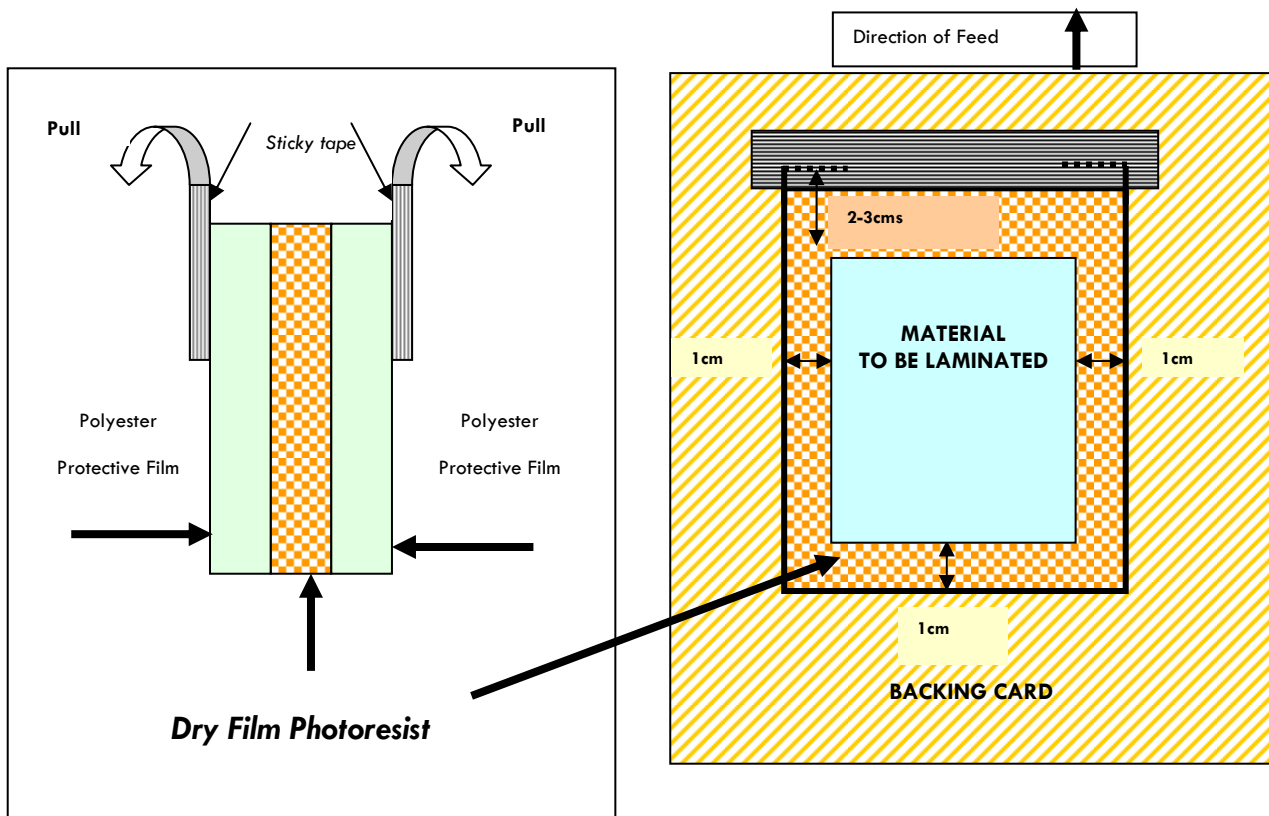
Use for increasing or decreasing temperature manually. The temperature can be increased or decreased by units of 1°C when these keys are pressed. Temperature can be adjusted manually between 0°C – 160°C, and cannot be set below or above the range



Current temperature of roller is displayed while this 'MEAS' key is pressed. It is displayed for 3 seconds and then disappears

## How to laminate the Dry Film Photoresist

1. Cut a piece of dry film from the sheet or roll provided so that it is about 4cms longer and 1 to 2cms wider than the material to be laminated
2. Cut a piece of 200gsm paper or thin card so that it is bigger than the film
3. Using two pieces of adhesive tape e.g. Sellotape or masking tape, place a piece of tape on either side of one corner of the film, so that they stick to the film, but **not** to each other. Then pull the two pieces of tape away from each other and one of the polyester protective films will come away.  
(see figure 1 below).
4. The material to be laminated must be completely clean. PCB laminates should be mechanically scrubbed clean with a Scotbrite pad or 900-009 Polyfix block. Other metals should be cleaned by immersing in 500-172-1 1320 Acid Cleaner for 2 – 3 minutes. This is **absolutely essential** to achieve a good bond of dry film.
5. Remove the film completely, as well as the tape and having placed the material to be laminated in the centre of the thick paper or card, lay the film over the material with the side where the protective film has been removed being placed in contact with the material. Then making sure that the dry film is flat on the card at the side which will enter the laminator first, tape this to the card (see figure 2 below).



**PLEASE NOTE:** The dimensions shown are as a guide only and are not absolute

Select the temperature and speed required, typically 110°C and Speed 2 for Photoresist. Press the 'Mount' button for materials 1mm—3.175mm thick.



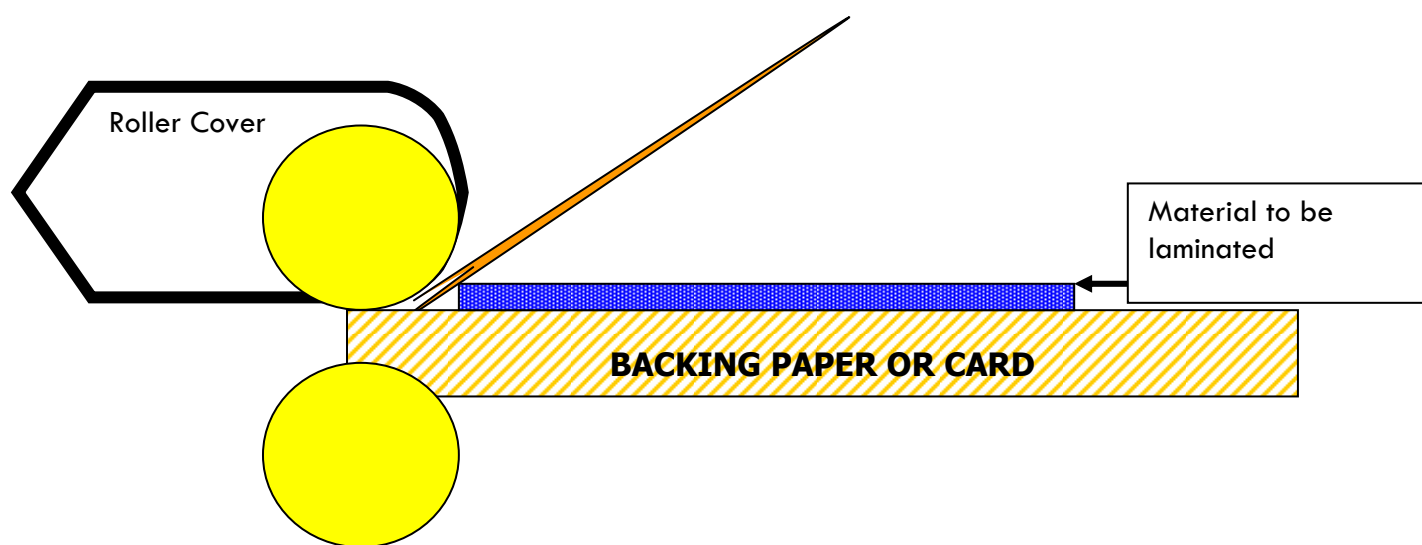
And making sure that the operating temperature has been reached by pressing the button.



Feed the card squarely into the middle of the rollers and hold the back edge of the dry film with both hands up against the edge of the plastic front edge of the roller cover firmly to ensure film is kept tensioned as it is going through the Laminator.

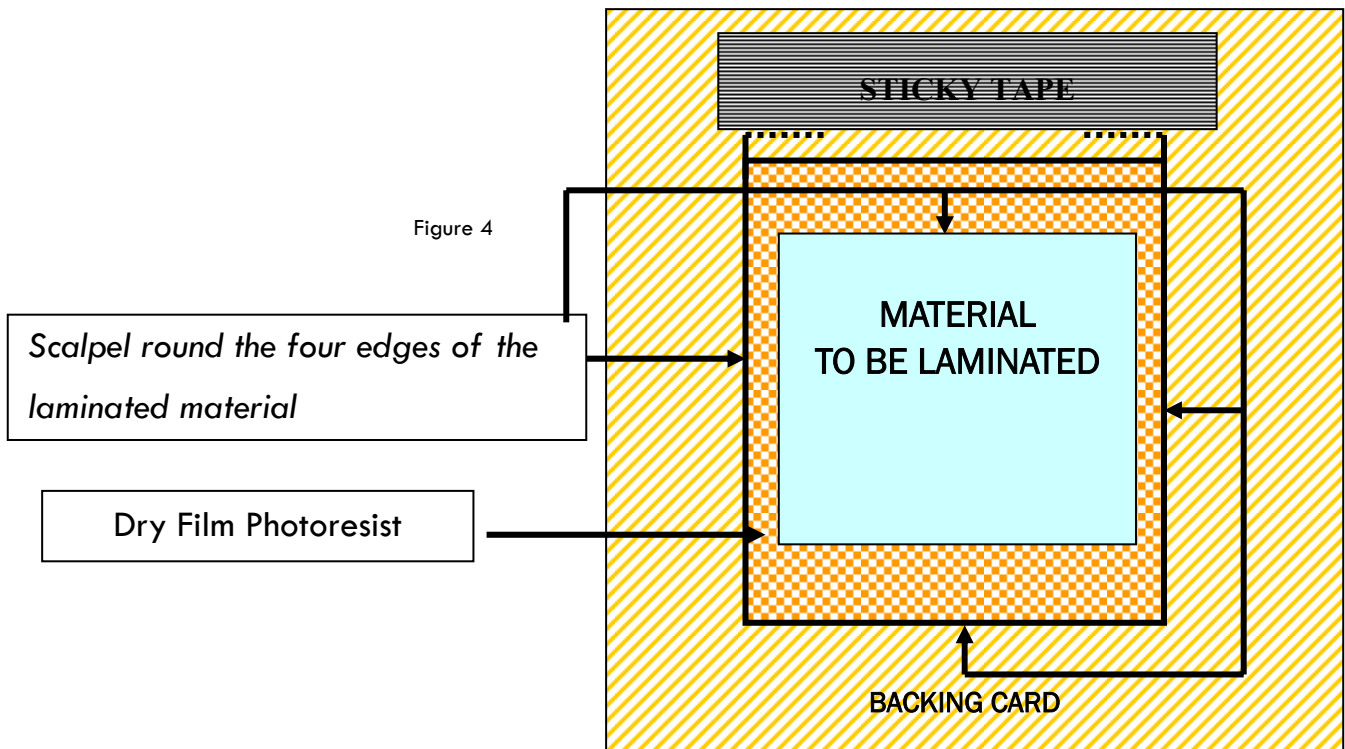
Figure 3

Dry Film to be held in both hands as card and material being laminated pass through the roller



Do not hold the film too tightly – just firm enough to keep smooth  
and to stop creasing

6. When the material has exited the laminator, leave it to cool for 2 to 3 minutes in a dark environment, and then taking a sharp scalpel, cut round the edge of the material that has been laminated and remove the material from the carrier sheet (see figure 4 below)




7.

For double sided lamination, turn the material over and repeat steps 1 to 6

**N.B.** The material to be laminated must be completely clean. PCB laminates should be mechanically scrubbed clean with a Scotbrite pad or 900-009 Polyfix block. Other metals should be cleaned by immersing in 500-172-1 1320 Acid Cleaner for 2 – 3 minutes. This is **absolutely essential** to achieve a good bond of dry film.

*Your plate is now ready for processing as follows:-*

1. Place the plate in the AY321 Vacuum Exposure Unit with the artwork right, reading, emulsion down on top of the plate using a positive, if you wish to protect the background material and etch out letters etc. Alternatively a negative for PCB work or raised etching on brass, stainless steel, etc.
2. Set the exposure time for 10 – 20 seconds, Press the  button and automatic exposure cycle will commence.
3. When exposure is complete, remove the plate which will show all exposed areas as Blue against a Green background.
4. Remove the top protective film and place the plate in the Developer tank, which should be set at 35 – 40°C. Developing time should take about 2 – 3 minutes, but is usually determined when you can see all the unwanted resist has been removed. When this is the case, place the plate back into the Developer for a further 20 – 30 seconds, then remove and spray rinse.
5. The plate can now be placed into the etching machine (in it's wet state), if only a small amount of etching is required. For deep etching or where the panel is in the etchant for some time e.g. with Stainless Steel it is best to leave the laminated board overnight before exposing & developing. This can then be placed in the etching machine in its wet state.
6. After the plate has been etched, remove it and wash it.
7. Place it in the resist stripping tank set at 45°C – 50°C, until all the resist has been stripped off, normally between 2 – 3 minutes.
8. Remove the plate spray wash and dry.

### **FAULT FINDING**

Resist coming away after exposure or in developer.

- a) Surface of plate not cleaned properly.
- b) Laminator not up to temperature
- c) Exposure too short.
- d) Too long in developer or developer too hot
- e) Artwork not black / dense enough



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