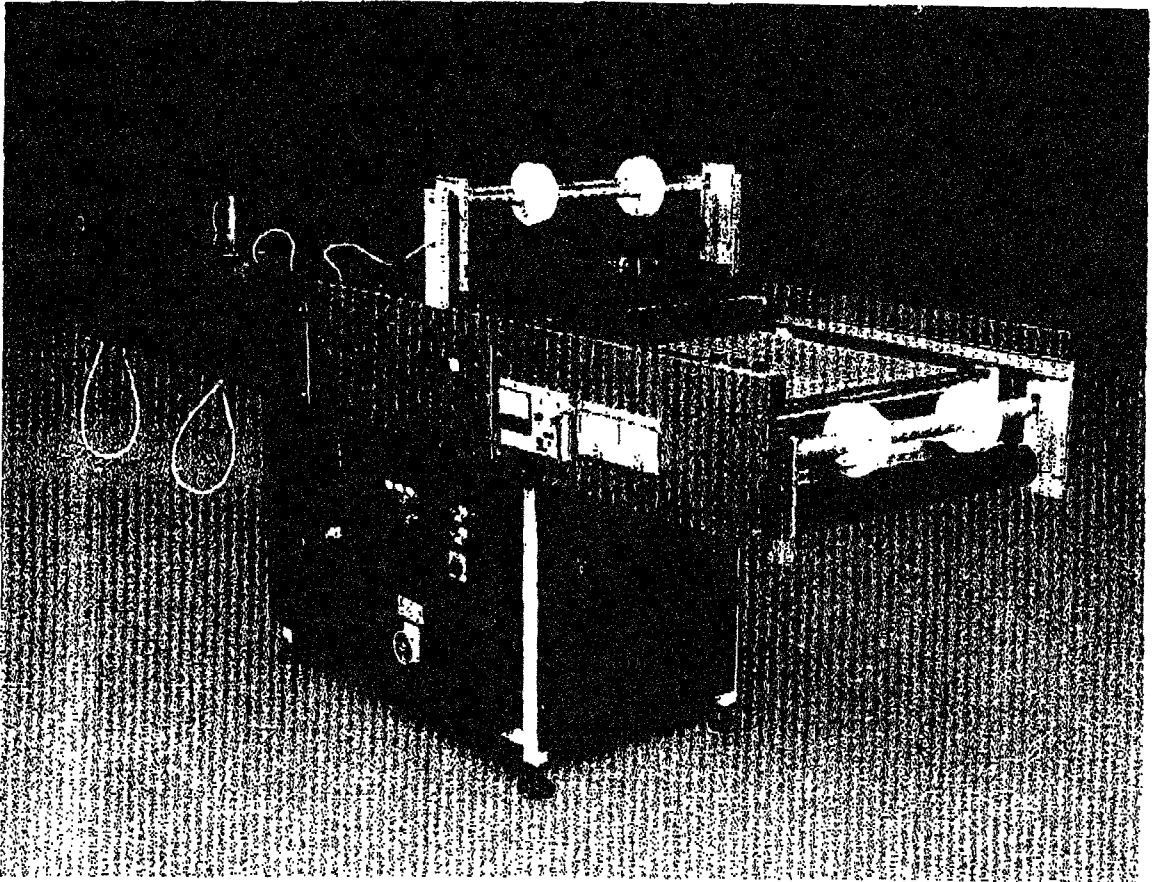


VACREL[®]
DRY FILM SOLDER MASK

Solder Mask Vacuum Laminator Model 100 & Model 130



Instruction Manual

DU PONT
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I. INTRODUCTION

A. GENERAL

Du Pont's VACREL® Solder Mask Vacuum Laminator, Models 100 and 130 (SMVL-100 and 130), are designed to laminate VACREL® Dry Film Solder Mask to one or both sides of printed circuit boards. The unique design of the Laminator provides automatic cycling to pull the film and circuit board(s) into the heated vacuum chamber where lamination occurs. Board heating and air evacuation time in the chamber are also part of the automatic cycle to provide consistent lamination with no voids or air entrapment.

The vacuum chamber consists of heated upper and lower platens which seal together after the board enters the chamber. Each platen is under vacuum pressure at various times during the cycle.

The upper platen of the vacuum chamber has a silicone rubber diaphragm which is drawn down onto the film and circuit board by vacuum to apply lamination pressure. The same size upper platen is used regardless of the size of the lower platen.

SMVL-100 upper platen: 21-1/4-in. long by 24-in. wide

SMVL-130 upper platen: 30-in. long by 24-in. wide

Interchangeable lower platens of various sizes are available to accommodate various circuit board sizes and to minimize film waste. One or several boards may be laminated in one cycle, depending on board size, platen size, and film width.

NOTE: Although included in the purchase price of the SMVL-100/130, the Laminators are shipped **WITHOUT** a lower platen installed. The customer must specify the lower platen size required when ordering the Laminator. The platen will be shipped with the SMVL, but in a separate crate attached to the top of the main Laminator crate. Additional lower platens can be ordered as needed.

SMVL-100 lower platens are stocked in lengths of 12-in., 15-in., 18-in., and 21-1/4-in. Other lengths in 1-inch increments between 12 and 21 inches can be specially ordered. All platens are 24 inches wide.

SMVL-130 lower platens are available on a special order basis only. Platen lengths are 18 to 30 inches in 2-inch increments. The sizes normally used are 26 and 30 inches. All platens are 24 inches wide.

NOTE: SMVL-100 and SMVL-130 lower platens are not interchangeable.

SMVL-100 and 130 Operational Features:

- A pneumatically-operated film advance mechanism pulls the film and board into the Laminator and withdraws the previously laminated board(s) from the vacuum chamber.
- A selector switch on the control panel (S/N 341-141 and up) permits either automatic or operator-action recycling.
- A built-in cycle timer controls all machine functions throughout the cycle. The operator simply places the boards on the feed table and pushes the Start button.
- A vacuum interlock system monitors vacuum during each cycle and prevents the start of another cycle if vacuum levels are too low for adequate lamination.
- A built-in vacuum gauge on the side of the unit provides easy system monitoring during routine operation and troubleshooting (S/N 341-141 and Up).
- Large temperature gauges are located on the side of the unit for easy monitoring of the chamber temperatures. Thermistors in each platen provide accurate input to the temperature controllers and gauges.
- Over-temperature sensors in each platen cut off power to the heaters in the event of a heater circuit malfunction.

B. SAFETY

1. Laminator Safety Features

- a. Emergency Stop Switches. Located on top of the Laminator side rail at the entrance and exit ends of the unit.
- b. Enclosed Controls. All electrical, vacuum, and pneumatic controls are enclosed within the Laminator panels for operator safety. Exposed compressed air lines are shielded in metal braid.
- c. Insulated Panels. The top cover of the unit is insulated from the heat of the vacuum chamber to avoid operator contact with hot surfaces.

2. Safety Instructions

In addition to a complete outline of safety precautions and procedures in Section VII, important safety recommendations are interspersed throughout this manual.

A **WARNING** and instructions in boldface type emphasize potential personal safety hazards.

A **CAUTION!** refers to potential equipment damage.

A **NOTE** conveys special information or emphasizes a particular instruction.

C. SPECIFICATIONS

1. Crated Dimensions

L x W x H 2985 x 1086 x 1791 mm
 (117.5 x 42.75 x 70.5 in.)

2. Shipping Weight

Laminator - 639 kg (1409 lb.)
Lower Platen - 35 kg (78 lb.)
Gross Weight - 674 kg (1487 lb.)

3. Actual Dimensions

L x W x H 3215 x 925 x 1330 mm
 (126.5 x 36 x 52 in.)

4. Actual Weight 474 kg (1045 lb.)

5. Feed/Exit Table Height 940 mm (37 in.)

6. Electrical - U.S.A.

230 VAC \pm 15%, 3 ϕ , 50/60 Hz,
20 amps/line
Other Export Options Available

7. Compressed Air

1.7 m³/hr. at 414 kPa [4.0 bar]
(1 cfm at 60 psi)

8. Exhaust Air (Vacuum Pump)

Only negative pressure required to avoid restricting air flow from pump.

9. Vacuum

Built-in Vacuum Pump

10. Maximum Panel Size

SMVL-100: 540 x 610 x 5 mm thick*
 (21-1/4 x 24 x 0.200 in.)

SMVL-130: 762 x 610 x 5 mm thick*
 (30 x 24 x 0.200 in.)

*Includes circuit height and any board warpage.

11. Throughput Rate One to three cycles per minute. (Panels per cycle depends on sizes of panels and lower platen.)

12. Recommended Work Space One meter (3 ft.) On All Sides.

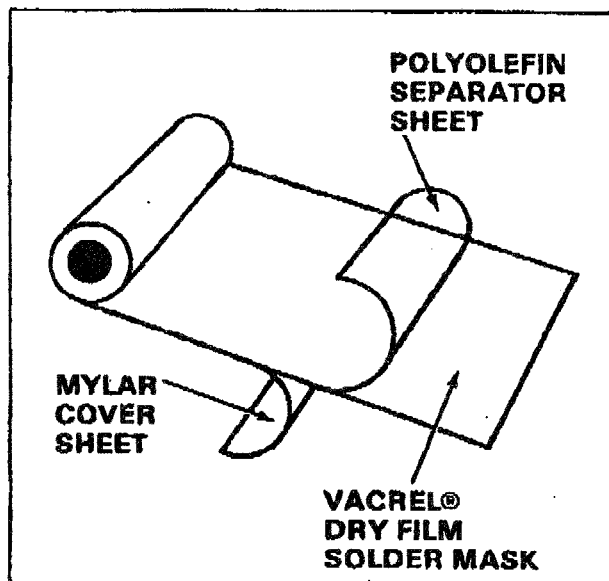


Figure I-1. VACREL Film Structure

D. VACREL® DRY FILM SOLDER MASK

VACREL® Dry Film Solder Mask is sandwiched between a layer of polyolefin and a layer of MYLAR® polyester film (Figure I-1). The protective polyolefin is

removed as VACREL is laminated to the circuit board. The MYLAR cover sheet protects the solder mask from contamination and damage during lamination and exposure, and is peeled off just before development.