Specifications And Procedures For Final Lamination Of **FLATLITE®** Lamps

FLATLITE® lamps designated as 'un-laminated' or "UFL" have trimmed edges with exposed aluminum and a scribe lines which also have exposed aluminum. They must therefore be encapsulated or laminated in a final laminate.

Final lamination of the **FLATLITE®** lamp provides electrical insulation and creates a barrier for humidity and dust from getting into the lamp. The final lamination can be either indoor "DFL" or outdoor "WFL". E-Lite Standard (DFL) grade laminate is a polyester grade film with an EVA adhesive, with top and bottom thicknesses of between 5.0 mil (0.125 mm) and 10.0 mil (0.250 mm).

General Application Guidelines

- Different laminates may have different properties, which the user should be familiar with. Any laminates with EVA (Ethylene Vinyl Acetate) or PE (Polyethylene) adhesives may be used on **FLATLITE®** lamps. The EVA adhesives generally have a higher degree of moisture resistance.
- The bottom surface of the **FLATLITE®** lamp, (aluminum side) is a 2.0 mil (0.05 mm) general grade of clear polyester film.
- The top surface of the **FLATLITE®** lamp, (lighted side) is a 5.0 mil (0.125 mm) DuPont Melanex 453 polyester film, of which the exposed surface has been pretreated to promote adhesion to most printing inks. The data sheet is attached.
- When laminating the **FLATLITE®** lamp through a heated nip, do not exceed a temperature of 220°F (104° C). Use a laminating speed in the range of 2 - 3 ft/min (0.6 – 0.9 M/min) and a nip pressure in the range of 50 lbs./inch (9 Kgm/cm).
- Before laminating, clean the **FLATLITE®** lamp panel with alcohol and paper towel to remove any collected dirt, dust or fingerprints.
- Always laminate with the scribe line orientated in the machine direction (scribe line pointing front to back). Never laminate with the scribe line orientated in the transverse direction (scribe line pointing from left side to right side of machine). If the lamp cannot be laminated in the machine direction, then laminate it at an angle to the machine direction.
- Use laminate widths that are a minimum of 4 inches (10 cm) wider than the **FLATLITE®** lamps to be laminated if they are relatively short panels. Use laminate widths that are a minimum of 6 inches (15 cm) wider than the **FLATLITE®** lamps to be laminated if they are longer panels.

Below is an example of a typical set-up for laminating **FLATLITE®** lamps with polyester film-based laminates.

Typical Set-Up For Laminating **FLATLITE®** Using The ORCA III

1. Set roll temperatures to approximately 220°F (104° C).
2. Set a gap between the rubber rolls (in the closed position) to between 0.005" – 0.010" (0.125 – 0.250 mm).
3. Set the air pressure settings as follows:

Lamp Widths	Pull Roll Clutch	Pull Roll Control	Laminating Roll Control
Lamps Under 20": (50.8 cm)	30 psi (2.1 Kgm/cm^2)	60 psi (4.2 Kgm/cm^2)	60 psi (4.2 Kgm/cm^2)
Lamps Over 20": (50.8 cm)	30 psi (2.1 Kgm/cm^2)	60 psi (4.2 Kgm/cm^2)	60 psi (4.2 Kgm/cm^2)

4. Mount coils of laminate material on upper & lower spindles.
   - Laminating material cannot be spliced.
   - Do not touch the inside surface of the laminate.
5. Thread the upper and lower laminates using the web path diagramed below.
6. Adjust Upper and Lower Air Blow-Off tubes so that the vents are directed at the film as it exits the Main nip.
7. Confirm that the laminate material is taut. Adjust tension if necessary. (Note: different laminate materials require more or less tension.)
8. Position a table for panel lamps in front of the laminator with the legs adjusted so that the table is equal in height to the feed table.
9. Set up Drop Box below Pull Rolls on the rear of the laminator to accept laminated lamp.
10. When both rolls of Main nip are at the 220°F (104° C), advance machine, allow laminate to smooth out and feed **FLATLITE®** panel lamp with foil side down into the Main nip, lining up its edge to be perpendicular to the nip. (Note: IT IS VERY IMPORTANT THAT THE PANEL LAMPS ARE FED INTO THE NIP EXACTLY PERPENDICULAR TO THE NIP OR THE LAMPS WILL SKEW LEFT OR RIGHT AS THE PANEL LAMP FEEDS INTO THE NIP.) Support panel as it enters the Main nip to maintain alignment. Do not force panel into nip, it will be pulled by the machine.

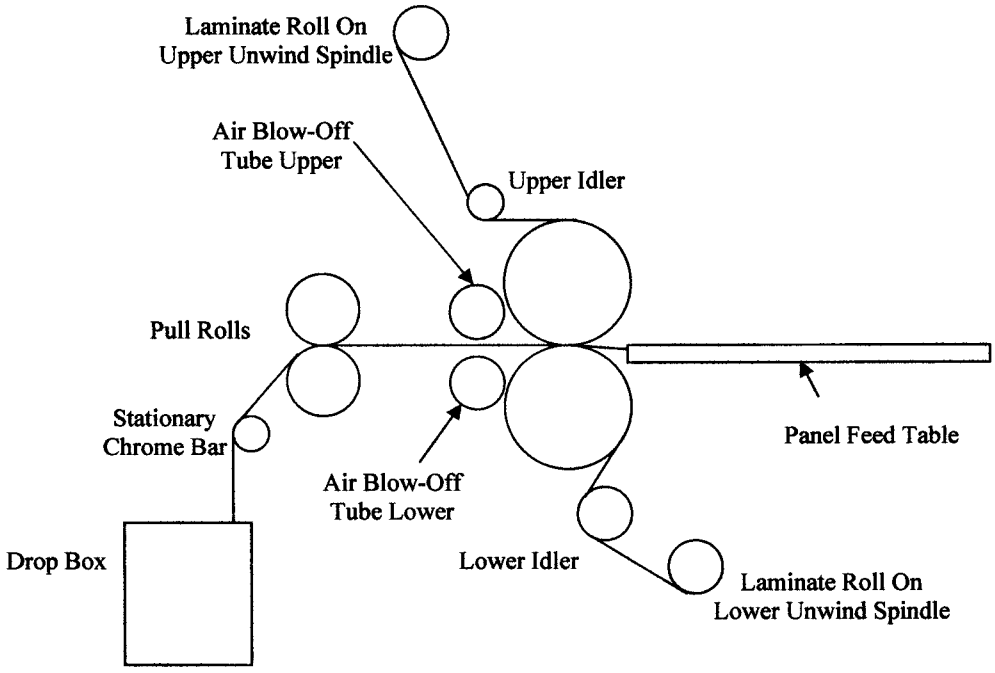

Diagram of a Typical Web Path For Laminating **FLATLITE®** Panel Lamps