

# *Congratulations!*

...on your purchase of the COMPACT thermal laminator. We are sure you will find this machine easy to operate and trouble free. To obtain a high and consistent level of lamination, you must first understand a little about how the machine works, and also what to do if something goes wrong. This is why we ask you to

## PLEASE

Read the manual before you operate the machine. You will find the knowledge of how this machine operates to be of great help when you are using it.

**compact**  
LAMINATING SYSTEM

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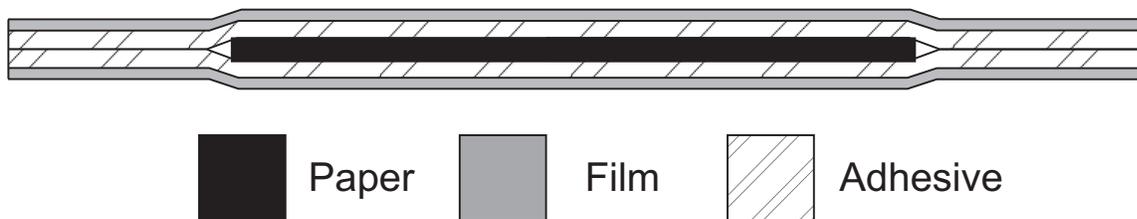
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## THE THEORY - HOW A LAMINATOR WORKS

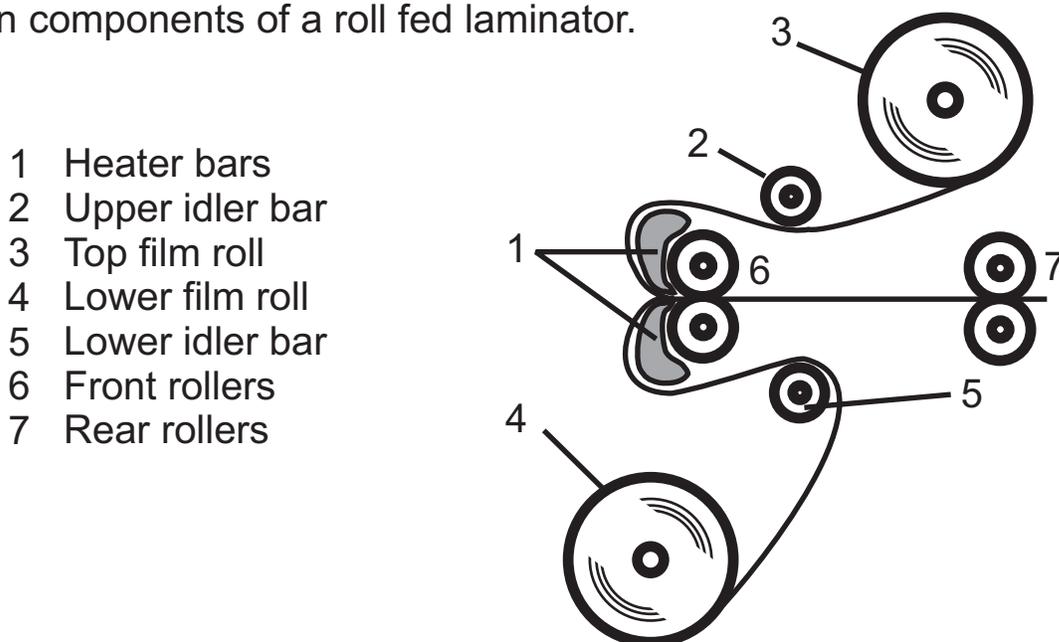
Laminating film is made from polyester, and is coated with an adhesive with a high temperature resistance. This adhesive melts and becomes extremely sticky at temperatures of around 130 degrees Celsius. This film is drawn over two heated heater bars, through a set of rollers, then stretched flat by the rear pair of rollers. The item to be laminated is fed between the two layers of film as they enter the machine.

Under heat and pressure, the layers of film form a flexible air and watertight seal, thereby greatly increasing the lifespan of the laminated item, and making it less vulnerable to moisture, tearing, creasing and general damage.

Cross section of laminated item.



Main components of a roll fed laminator.



## SELECTING A POSITION FOR YOUR MACHINE

NOTE: When lifting or moving your laminator, it is advisable to have another person to help you with the lifting. By bending your knees and keeping your back straight, you will help to prevent excessive strain and possible damage to your back.

 Place the machine in a well ventilated area on a firm bench or on a specially designed trolley.

 Ensure the machine is out of the path of drafts, such as windows, Air conditioners, fans and overhead ducts.

 The machine should be placed in a well lit area on a table or bench which allows clear access to both the front and back.

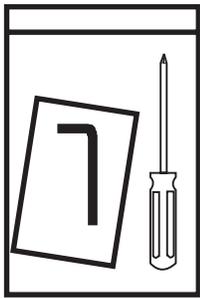
 The exiting lamination must be able to fall directly, do NOT place the machine so that the film mounts up on the bench or against a wall.

 The room temperature should be no less than 15 degrees Celsius for best results. It is best if the humidity is low, as too much humidity has adverse effects on lamination.

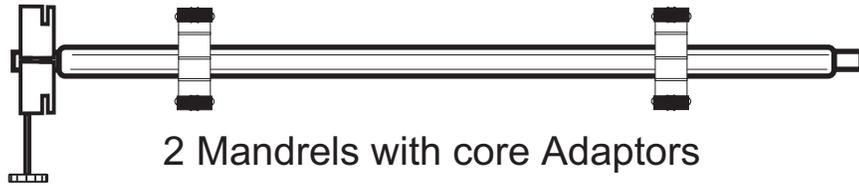
 Ensure that the power outlet is readily accessible and installed near the laminating machine.

# ASSEMBLING YOUR LAMINATOR

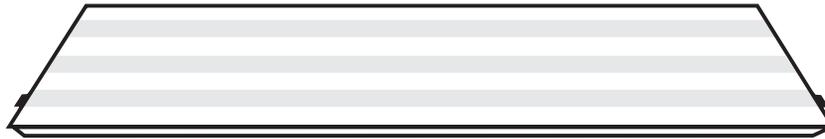
As well as the laminator, you will find:



1 Toolkit



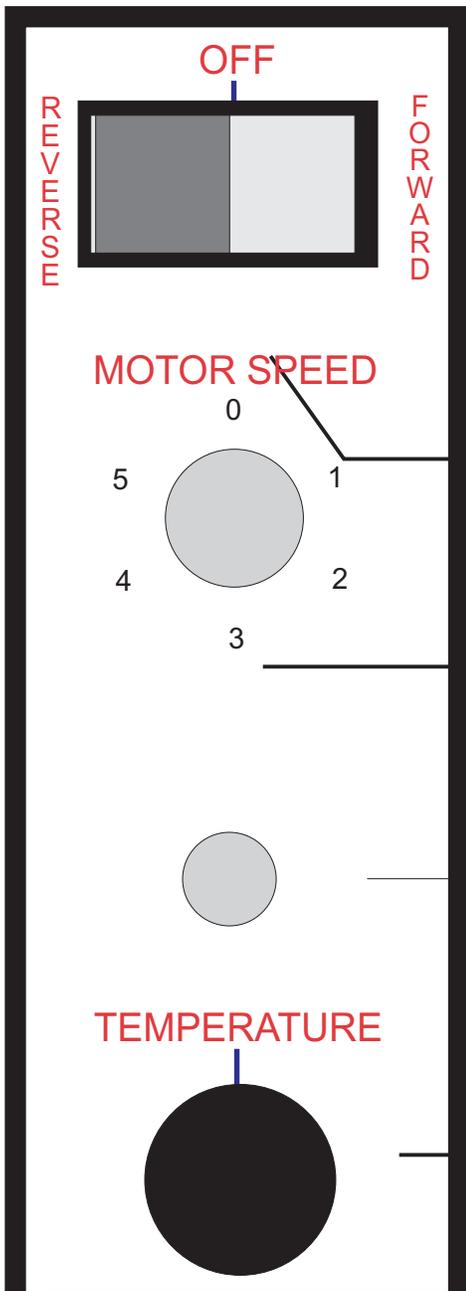
2 Mandrels with core Adaptors



1 Feed Table



1 Load plate



## COMPACT LAMINATOR CONTROLS

Motor Reverse / Forward switch.

Speed control

Temperature indicator. When lit, the machine is heating. Unlit indicates the machine has reached temperature. It is normal for this to switch on and off during operation.

Temperature control. Used for setting the machine temperature.

# LOADING FILM

It is important to have the same type of film on the top and bottom, as different grades of film will adhere at different temperatures, and it is also important to use film that is the same width to avoid getting adhesive on the rollers.

Load the two rolls of film onto the mandrels, making sure the adhesive is facing in the correct direction (See diagram)



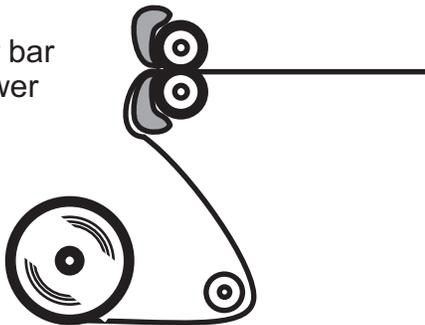
Upper roll of film.



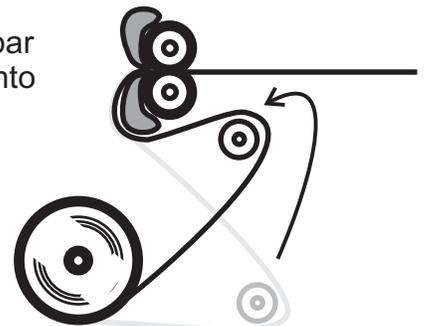
Lower roll of film.

The lower idler bar is designed to move for ease of loading. When loading, the idler bar should be in the lower position. After the film has been pulled around the idler bar, you should move it upwards until it locks into the upper position.

The idler bar in the lower 'loading' position.



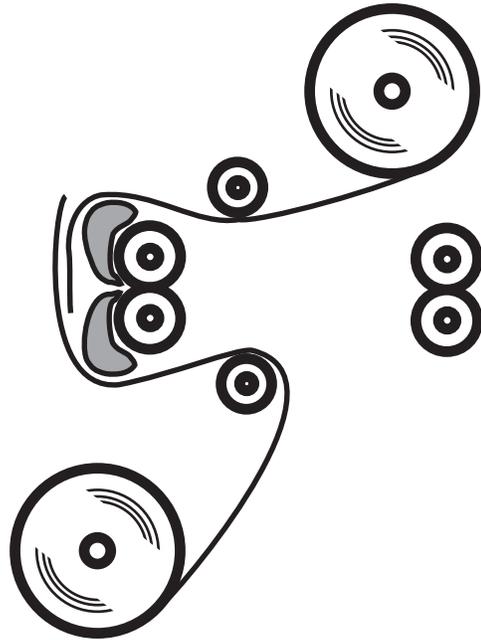
Lower idler bar is lifted up into operational position.



Load mandrels with the film into their respective mandrel brackets.

## LOADING THE FILM (Continued)

Draw the film from the top roll forward, under the idler bar, and allow it to hang down over the front of the heater bars. Now draw the film from the lower roll around behind the lower idler bar, then up and over the heater bars so it overlaps the film from the upper roll, as shown.



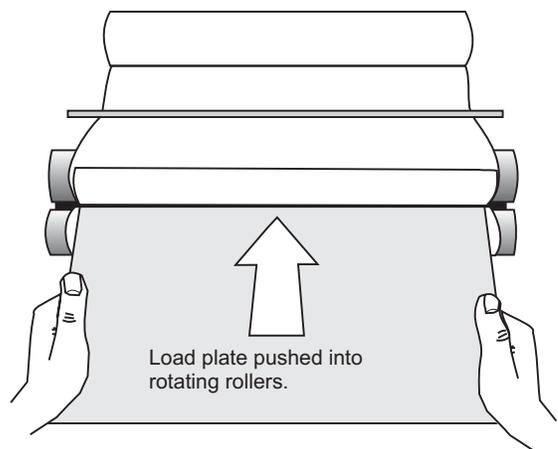
Now turn on the machine and allow it to reach the temperature set, and set the motor to 'FORWARD'.

Take the load plate and press it against the film and into the front rollers. If the rollers are rotating in the correct direction, the load plate will be drawn into the machine, taking the film with it. When the load plate has exited the rear rollers, switch off the motor, and allow the laminator to reach the set temperature.

Heat up time should be around 10 minutes.

While waiting for the laminator to heat up, you may place the feed table onto the lower mandrel brackets.

If all has gone well, you should now be prepared to begin laminating.



## LOADING THE FILM (Continued)

Alternative start up procedure.

When the laminator is already loaded, startup is a simple procedure. First, turn the thermostat to the operational temperature. **DO NOT** start the motor. After approximately 10-15 minutes the machine should be ready to run.

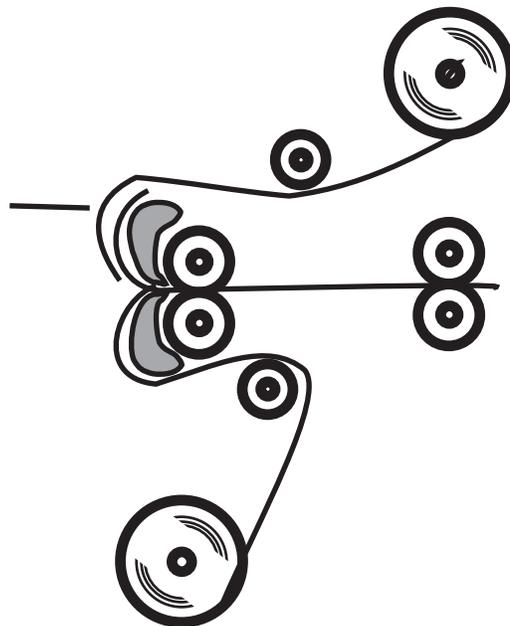
Caution must be taken to ensure the machine is hot when starting, as any glue on the rollers can lead to pieces of rubber from the rollers being torn off. This can be avoided by using the two strips of yellow silicone paper which are between the rollers when the machine arrives.

### CHANGING FILM ROLLS

When the film is about to run out during lamination there is a simple way to reload.

1. Stop the machine before the film runs out.
2. If the **UPPER ROLL** is running out, cut the film from the old core, leaving the film draped over the upper heater. Positioning film carefully, bring new film forward so that it rests on and adheres to the hot tacky adhesive of the previous film, on the heater bar.
3. If the **BOTTOM ROLL** runs out, firstly, remove the feed table. The process for loading the bottom roll of film is almost the same as for the top roll. Remember to lower the idler bar before reloading. Attach film to the film on the upper heat shoe.

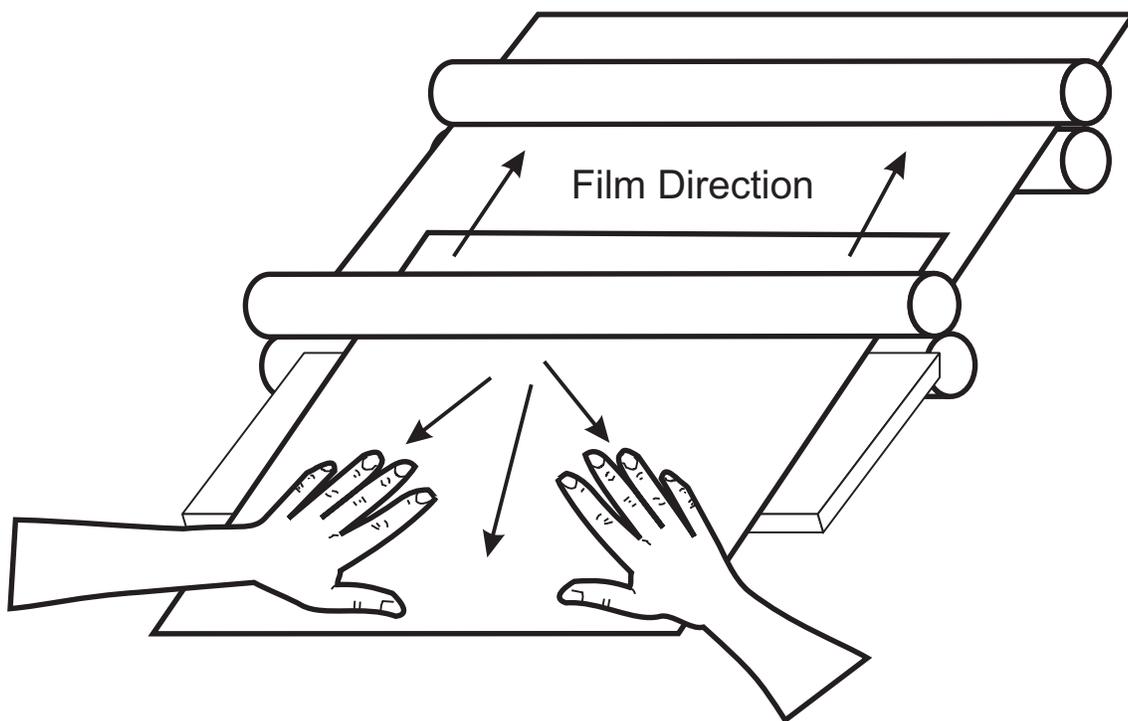
New film is adhered to the old film, so it is pulled through the rollers.



# LAMINATING

## Feeding Material

1. Set the motor control to `forward'.
2. Lay the item to be laminated flat on the feed table. Using your fingertips, stretch the material sideways to pull out any creases, move the item into the front rollers, at a speed slower than that of the film travel.
3. The item will be slowly drawn forward by the rollers. Maintain a slight outward and backward pressure on the item to prevent creasing. Hold the item as long as possible to prevent buckling. This is most important for thin items, whereas a fairly thick item, such as light card, may not need to be held.



Pull back on the item in the direction of the arrows

# FILM TENSION ADJUSTMENT

Film tension should never be a difficult matter. The best amount of film tension is as little as needed to acquire a good result. Additional braking force is required if the film is badly wound, or if longitudinal ridges appear in the film. When increasing the film tension, turn the brake knob a quarter turn and ensure that the lower film tension is adjusted by the same amount.

DO NOT overtighten the film. At all times it should be possible to easily turn the film roll with one hand. Loosen the brakes when changing film rolls.

## TESTING FOR EVEN FILM TENSION.

By cutting a semi-circle shape into a piece of laminated film, it is easy to tell how even the film tension is.



Semi-circle cut into film

A diagram showing a horizontal line representing a film edge. The right end of the line is curved upwards, indicating the film is curling up.

Curls up:  
Increase lower pressure  
or decrease upper pressure

A diagram showing a horizontal line representing a film edge. The right end of the line is curved downwards, indicating the film is curling down.

Curls down:  
Increase upper pressure  
or decrease lower pressure

# TROUBLESHOOTING

## ***Material not laminating, or laminating in patches.***

This problem normally occurs due to lack of heat and will usually show up in the first few items.

Solution : Increase temperature by 5°, wait until machine has heated, and test. If this does not work, it is possible that:

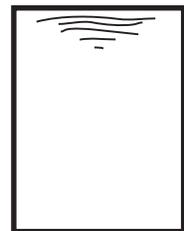
- The film adhesive is not compatible with the material
- The material may have silicone varnish finish which does not accept laminating adhesive. This is very rare. Check with your film supplier.
- Insufficient roller pressure, tighten front rollers.
- Rollers have a film or adhesive build up forcing the rollers apart. Clean the rollers(refer p.15).
- Very high moisture content in the material to be laminated. Allow to dry.

## ***Creases or wrinkling of paper while laminating***

- *Creases at beginning of an item*

This is caused by

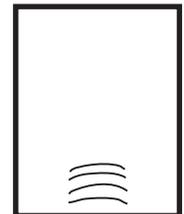
- a) Pushing the material too quickly into the machine
- b) Holding material on feed table near heater bars for a long time, causing the edge of the material to bubble
- c) Not feeding the material flat.



- *Creases at end of item*

An arc shaped crease at the end can occur in some papers. Hold paper with firmer back tension.

This normally occurs with lightweight and/or damp paper.



- Buckling or mottling of paper

This generally indicates excessive moisture content.

It occurs most commonly in black or very dark items.

The solutions are:

- a) Reduce temperature slightly, and/or
- b) dry out paper

Black or very dark items

Dark / Black / dense inks vary greatly in their formulation but commonly have evaporative solvents or moisture trapped in the drying powders sprayed onto the surface during printing in order to prevent the items sticking to one another.

This works very well for the printer. However, when you apply heat to the products the residual moisture may evaporate, and cause a swathe of grey 'watermarks' to appear.

Alternatively, the solvents may be held captive in the drying powder, (sometimes you can actually feel the roughness of the surface), or the drying may have been very effective and absorbed moisture from the air, which is expelled at high temperatures.

Additionally, these types of posters are susceptible to showing up uneven light and dark patches across the width.

Always laminate these items at the end of a run, and without hesitation feed the item into the rollers. It is best to reduce the temperature slightly for dark items.

# Mechanical Problems

## Film Wrap Ups - Rear Rollers

If no more than two or three revolutions have occurred, stop the laminator, then turn the motor direction to reverse. As soon as the film disengages from the rear of the machine, stop the motor. Select forward, and pull the film strongly from the rollers. Be careful to make sure that while rewinding the film does not attach itself to the front rollers.

Causes of a rear roller wind up.

Economising by cutting too close to the rear rollers after laminating.

Solution: If you can't leave more than 100mm lead out the back of a machine, then it pays to invest in a king size bulldog clip and hang it on the film. The weight ensures the film will not wind in.

Film curling up or down and winding around the rollers.

Solution: Check to see if film is curling up or down. (See page 10)

## Film sticking to rollers

Sometimes after a long run the rear rollers may heat up to the point where they melt adhesive. If the film rolls are not aligned then the glue may stick, pulling the film around the rollers.

Machine too close to wall causing film build up at rear of machine.

Move machine away from wall

## Causes of a front roller wind up

- 1) Film break on loading.
- 2) Molten adhesive on rollers when loading
- 3) Film loaded inside out (adhesive against rollers)

Solution: This is a messy problem and is made more difficult as the machine must be heated before you can fix the problem. If the amount of film which has wound through the rollers is small, follow this procedure.

- 1) Cut both upper and lower film 75mm from feed in point.
- 2) Cut film between front and rear rollers
- 3) Cut film beyond rear rollers
- 4) Put machine into reverse.
- 5) Grasp material in front of heat shoes, and try to reverse film out of front rollers.
- 6) Check rollers for any film or adhesive residue and clean off if necessary (see roller cleaning instructions)

If this failed to resolve your problem:

- 1) Turn temperature to 120C and wait 5 minutes.
- 2) Turn off thermostat - cut film as described above.
- 3) Use a pair of long nosed pliers to lift film. While it is hot it can be easily removed. Use reverse motor function to lift film off.

NOTE - A metallic or other abrasive scouring pad should NEVER be used to clean rollers, and DO NOT EVER THINK OF USING A KNIFE.

## NOISES

A certain amount of sound is to be expected from the machine, but certainly not a loud or intrusive sound. However, you may hear one of the following sounds.

- 1) A very loud high pitched sound. This is caused by adhesive finding its way onto either the top or bottom heat shoe. This can be simply overcome by cleaning the heat shoe. (refer to the cleaning section)
- 2) A much thinner squeal which comes and goes and is probably a bearing gone dry. Solution : Lubricate bearing.

# MAINTENANCE

The COMPACT has been designed with a minimum of parts, and for trouble free use to reduce the risk of breakdowns. The only essential maintenance to be done on a regular basis is to clean the heater bars and front rollers when adhesive builds up on them, and to lubricate the chain and roller bearings.

## Heat Shoe Cleaning

Heat the machine to operational temperature.

Use a piece of cotton cloth large enough to make into a fist sized ball, lightly dampen with kerosene and thoroughly clean heat shoes to remove all traces of adhesive or film deposits.

A stubborn deposit such as a dried piece of film may be approached with a nylon scouring pad. **NEVER USE METAL SCOURING PADS OR SHARP INSTRUMENTS (SUCH AS KNIVES)**

## Laminator Roller Cleaning.

Indications for cleaning are a build up of adhesive at edges of film travel, or shiny patches where film has curled over during loading or when a roll has run out.

In order to prevent damage to rollers and costly replacement, do not use sharp or pointed instruments to clean rollers or remove film. Under NO circumstances use petrol, alcohol or detergents to clean rollers.

Cleaning the front rollers may only be undertaken while the machine is at operational temperature.

1. Cut film and clear leftover from machine.
2. As soon as the visible face of the roller is clean, reverse the rollers slightly to allow access to another part of the roller.
3. Use small amounts of kerosene on a cloth. Do not attempt to 'wash' rollers, as large amounts of kerosene may cause damage. Work from side to side on the rollers until all shining spots have gone and no adhesive build up is evident at the edges.
4. Where pieces of film have adhered, stop the rollers and lift off the film with a pair of tweezers, taking care not to pinch the rubber.

Written by Emseal Pty Ltd

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