

# CONGRATULATIONS

You have just received your new TRISEAL multi purpose laminator. No doubt you are now consumed with an overwhelming desire to rip open the packaging, set up the machine, and get to work. All we ask is that you FIGHT THE URGE! Make a cup of coffee, find a quiet corner, and then...

## **READ ME FIRST!!**

The TRISEAL is designed to give high quality results using thermal films, or cold self adhesive films. . Of course, to obtain a consistently good result, you must first understand a little about the machine.

The purposes of this manual are to:

- 1) Describe how to operate the machine and give you an understanding of the processes involved in laminating and mounting.
- 2) Know what to do when things go wrong.
- 3) To avoid prejudicing the liberal warranty we give.

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**LOADING DIAGRAMS FOR VARIOUS APPLICATIONS:  
PLEASE REFER TO COLOUR TEMPLATES AT THE  
BACK OF THE MANUAL**

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## SELECTING A POSITION FOR YOUR MACHINE

Note: When lifting or moving your Triseal, ensure you have another person present to help you with the lifting. By bending your knees and keeping your back straight, you will help to prevent excessive strain and possible injury to your back.

Ensure that your Triseal is bolted firmly to the specially designed mobile stand. The mobile stand is not designed to be used on rough surfaces, and should be moved with care.

Place the machine in a well ventilated area.

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

Keep the machine out of the path of direct draughts such as:

- Windows,
- Air Conditioners,
- Fans,
- Overhead Air Ducts

Cold areas in general.

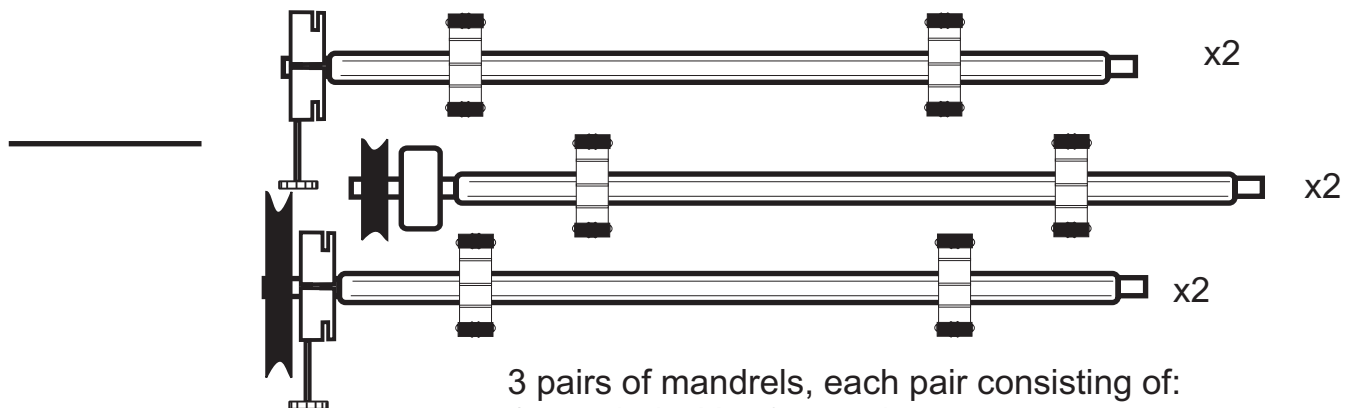
If you are using the machine with pressure sensitive applications, it is important not to use it at temperatures under approximately 20 degrees celsius (68 F)

The machine should be in a well lit area, and you should have full access to the rear of the machine. Laminated items exiting the rear rollers should be able to fall directly to the floor.

Cords from the machine should be placed so as not to be hazardous.

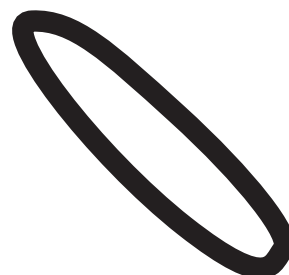
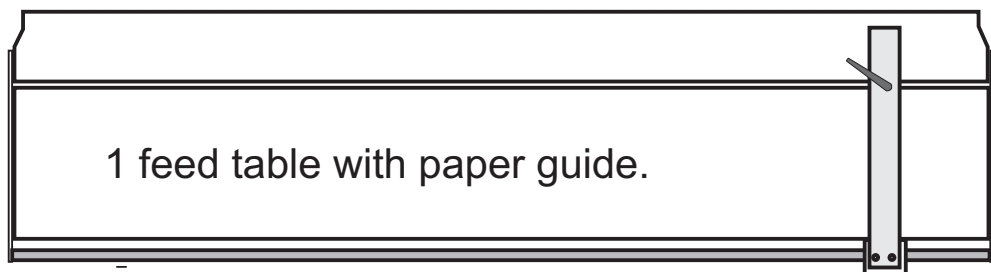
Note:- when not in use we recommend that the footswitch be placed on

# ASSEMBLING YOUR LAMINATOR

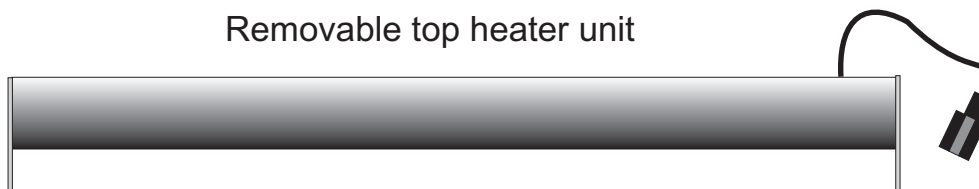


3 pairs of mandrels, each pair consisting of:  
1 mandrel with 76mm adapters  
1 mandrel with 58mm adapters

Upper and lower Belt for rewind system

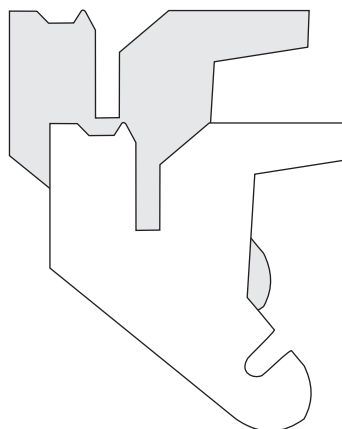
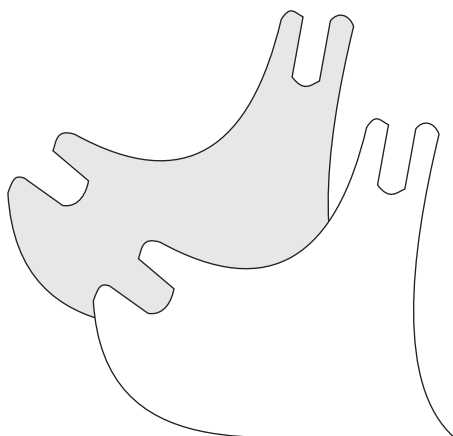


Removable top heater unit

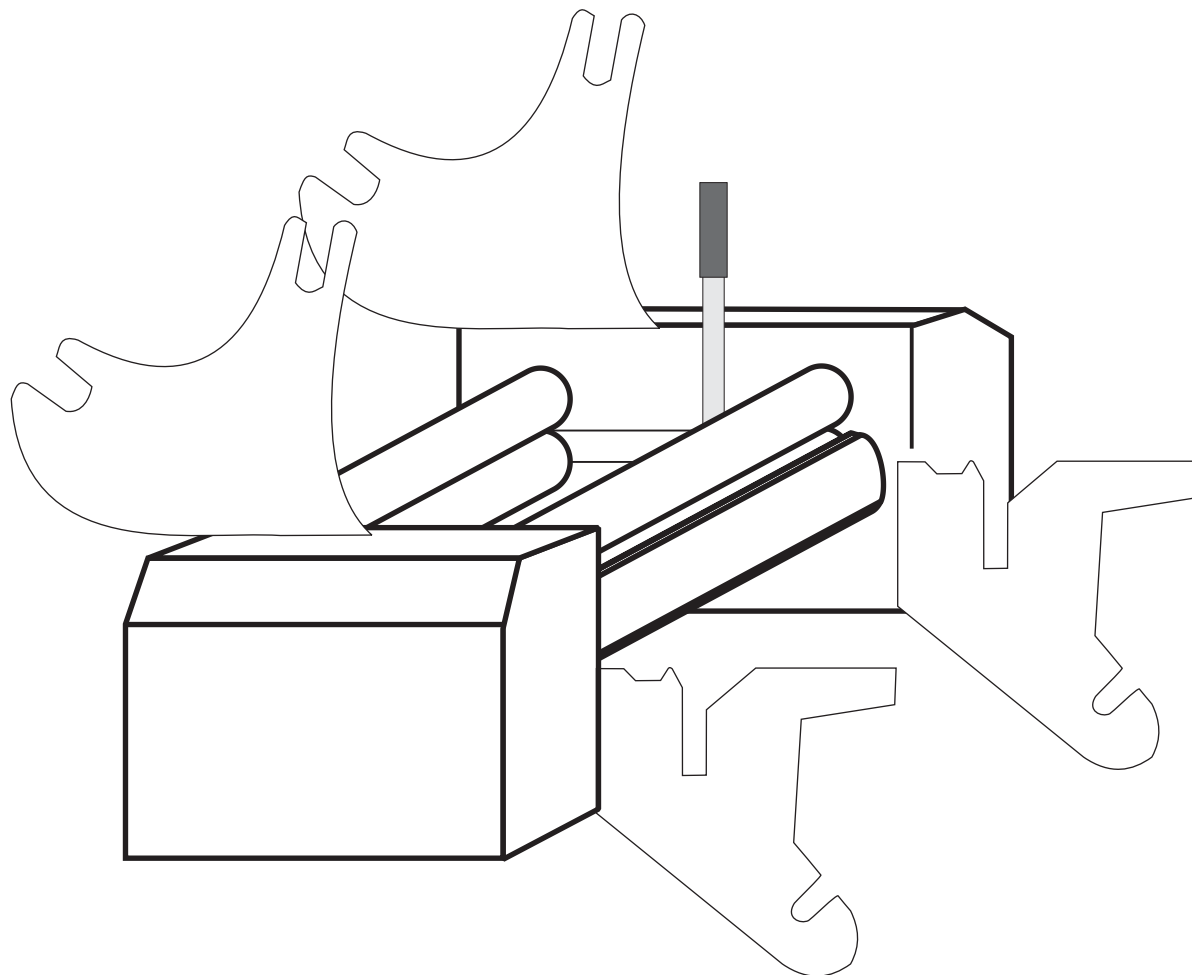


Right Upper Mandrel Bracket

Left Upper Mandrel Bracket



Assembly



Bolt the upper mandrel brackets onto the machine as shown.

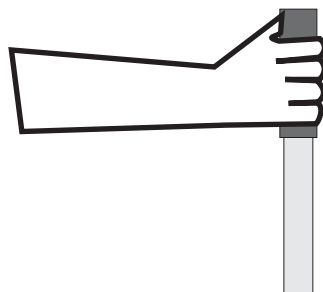
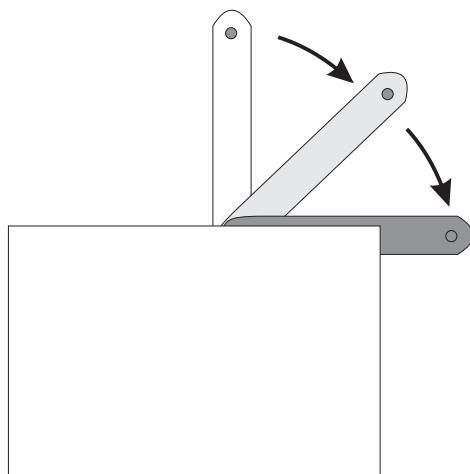
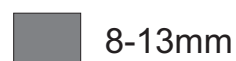
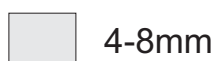
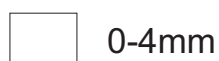
Bolt the lower mandrel brackets to the front of the machine, ensuring that the bent bracket goes to the left. Tighten all bolts with the allen key supplied.

# OPENING ROLLERS

Opening rollers allow you to pass thick card or mounting boards up to 13mm thick through the laminator. This is used when applying self adhesive film to thick items, or for board mounting.

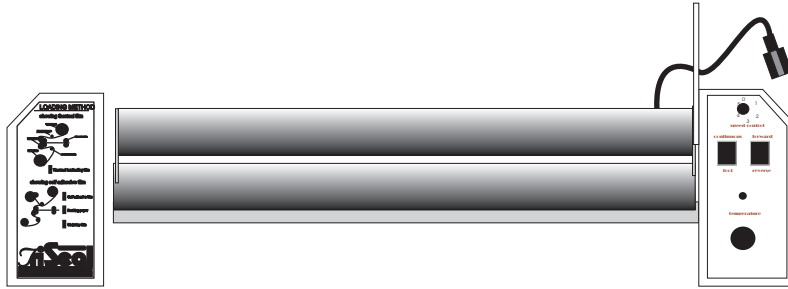
Depending upon spring tension, the rollers can sometimes be difficult to move. To open the bars properly, pull the handle on the right hand side of the machine towards you and down..

There are three steps in the opening rollers, 0-4mm, 4-8mm, 8-13mm.

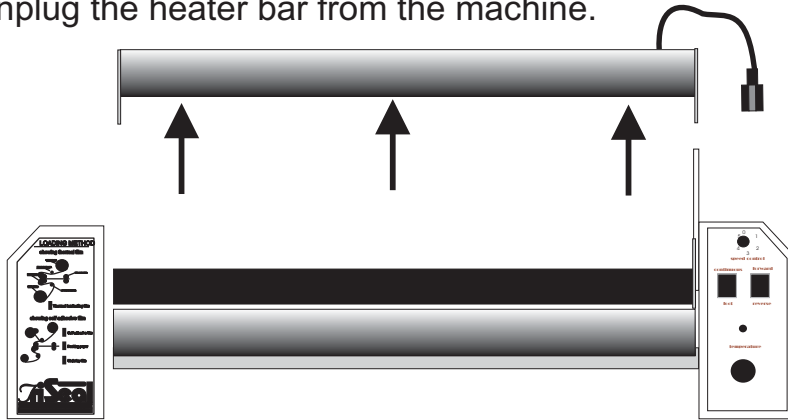


# ADDING / REMOVING THE HEATER BAR

## HEATER BAR REMOVAL

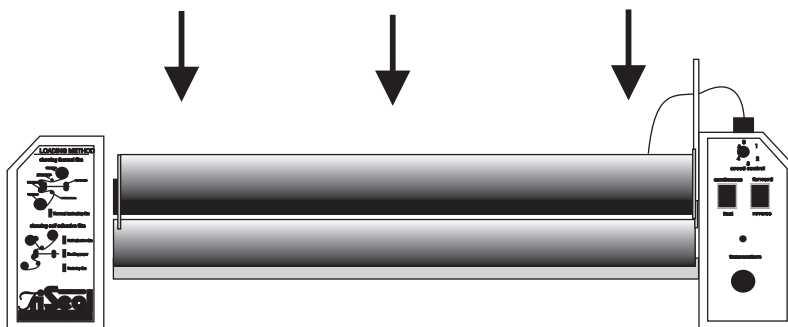


Switch the mains to 'OFF'. If the machine is hot from use you may want to let it cool down before removing the heater bar, or use gloves or cloths to protect your hands. Unplug the heater bar from the machine.



Lift the heater bar vertically until the brackets on the sides have cleared their mounts. When not in use the heater bar should be stored in a dry place, where it cannot fall or be knocked. Hard blows to the heater bar can cause damage to the teflon coating, or break the internal components.

## REPLACING THE HEATER BAR



Carefully place the bar back in its original position, with the Teflon coating facing outwards and the plug on the right. The metal brackets should fit firmly over the square black bearing blocks, and the whole assembly should have very little movement. Ensure that the machine is switched off and cool, and plug the heater bar in. It is important that the lower heater bar is cold before heating the machine after replacing the heater bar.

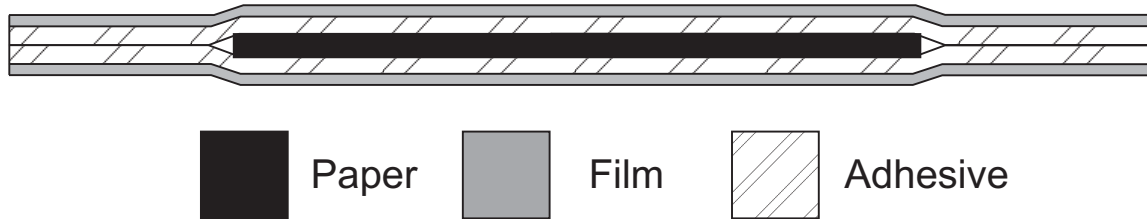
# THERMAL LAMINATION

## THE THEORY - HOW A THERMAL LAMINATOR WORKS

Thermal 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 120 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.

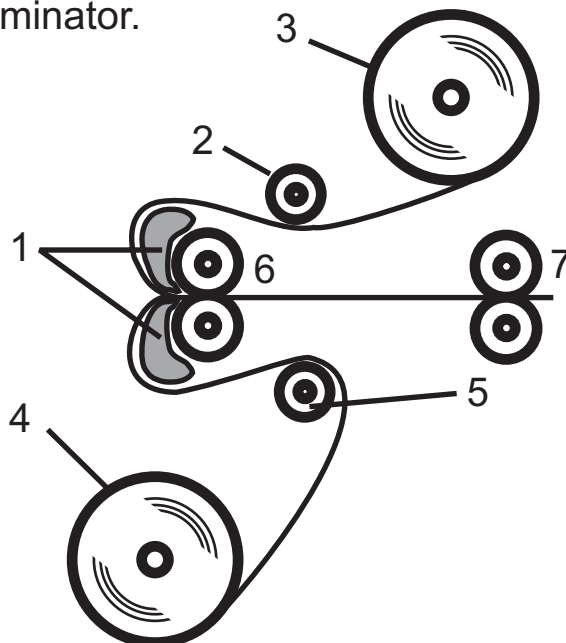
Under heat and pressure, the layers of film form a flexible air and watertight seal, thereby greatly increasing the lifespan of the laminated item, and making it less vulnerable to moisture, tearing, creasing and general damage.

Cross section of laminated item.



Main components of a roll fed laminator.

- 1 Heater bars
- 2 Upper idler bar
- 3 Top film roll
- 4 Lower film roll
- 5 Lower idler bar
- 6 Front rollers
- 7 Rear rollers

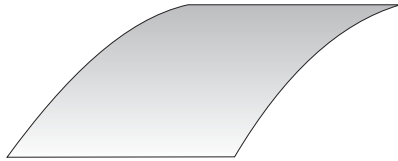


## FILM TENSION ADJUSTMENT

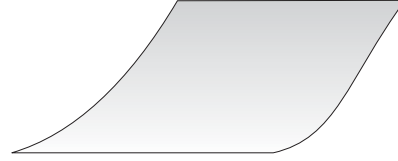
The braking arrangement on the film mandrels is variable. If ridges appear in the film, or the film has been badly wound, additional film tension may be required. To increase film tension, turn the black brake knob to the right.

The recommended amount of film tension is the minimum amount required. You must always be able to turn the film roll with one hand. **Excessive pressure can cause problems with lamination, and may eventually cause damage to the machine.**

It is important that the film tension is even to prevent film curling. Film curls in the



Film curls down :  
Increase upper tension or  
decrease lower tension



Film curls up :  
Decrease upper tension or  
Increase lower tension

## SETTING TEMPERATURE

To set the temperature, turn the black temperature control to the right until you have selected the desired temperature.. When the red lamp is illuminated, the machine is heating. When the lamp turns off with an audible `click', the machine has reached temperature. For best results, leave the machine for 20 minutes to allow the thermostat fluctuations to stabilise.

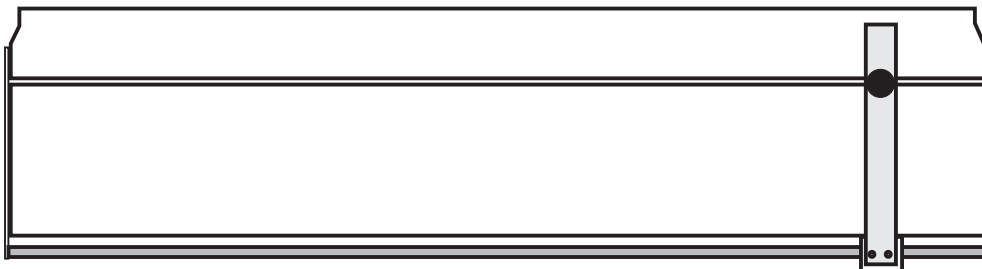
## USE OF FANS

Fans are built into the Triseal as standard. They are particularly useful when running large quantities of items through the machine. On long runs, the rear roller can heat up to a point where they will cause the laminating adhesive to melt as it exits the machine. Turning the fans on will eliminate this problem.

## ADJUSTABLE PAPER GUIDE

The adjustable paper guide is built into the feed table. It allows for accurate feeding of long items. To adjust the guide, turn the black knob on top of the guide to the left. Slide the guide to the desired position and tighten.

Sometimes in transit the paper guide can lose alignment. To readjust the guide, use a right angle to determine the correct angle. Loosen the two screws on the slide and adjust to the correct position. Re tighten the screws.



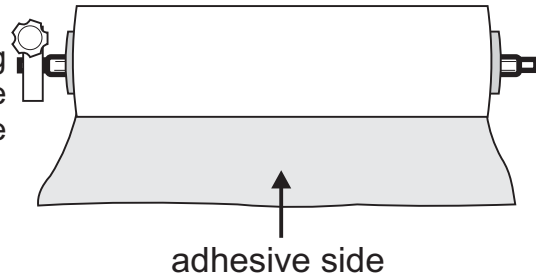
## GETTING STARTED - LOADING FILM

Position the upper heater bar and check that it is firmly in place. Plug in the heater bar and set the thermostat.

Check that the film is wound with the adhesive side in. The adhesive side is the non-shiny side. This is the most common kind of film.

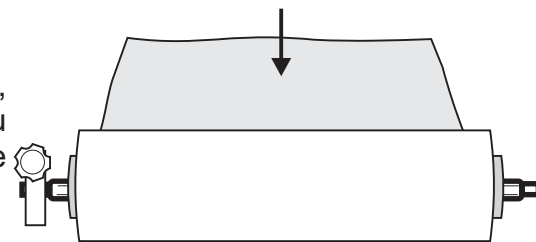
### UPPER FILM ROLL

Insert the mandrel into the film roll, ensuring that the film unwinds towards you from the bottom of the roll, and the black brake handle is on the left hand side.

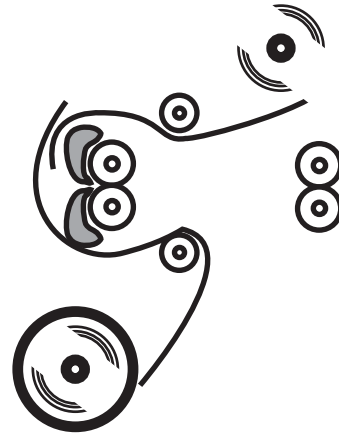


### LOWER FILM ROLL

Insert the remaining mandrel into the film roll, ensuring that the film unwinds away from you from the top of the roll, and the black brake handle is on the left hand side.



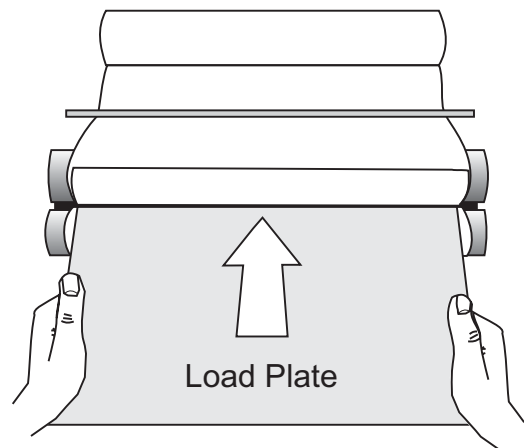
With the motor switched off (and not to foot control) draw the film from the upper roll, pulling it underneath the idler bar, and allow it to hang down over the front of the heater bars. Draw the film from the lower film roll around the lower idler bar.



Align the upper and lower film rolls so that the sides meet exactly. Incorrect alignment will leave adhesive deposits on the rollers and heater bars, and can cause damage to the rollers.

Set the thermostat at 120°C , or the temperature recommended by your film supplier and allow the machine to heat for 10 minutes. Press the film together against the heater bars, being careful not to burn yourself. The two pieces of film will stick together.

Start the motor



## GETTING STARTED - LOADING FILM

Leaving the load plate hanging from the rear of the machine, fractionally tighten the black knobs on the upper and lower mandrels. Start the motor, and observe the film as it passes over the heater bars. Creases in the film indicate the need for increased film tension. Apply tension SPARINGLY and evenly until the creases disappear.

Remember, the less tension the better.

Film tension must never be so great that the operator cannot turn the roll with one hand. Film stretching, curling, and possible machine damage are possible results of excessive tension.

Check again that the side edges of the film are aligned to prevent adhesive build up on the rollers.

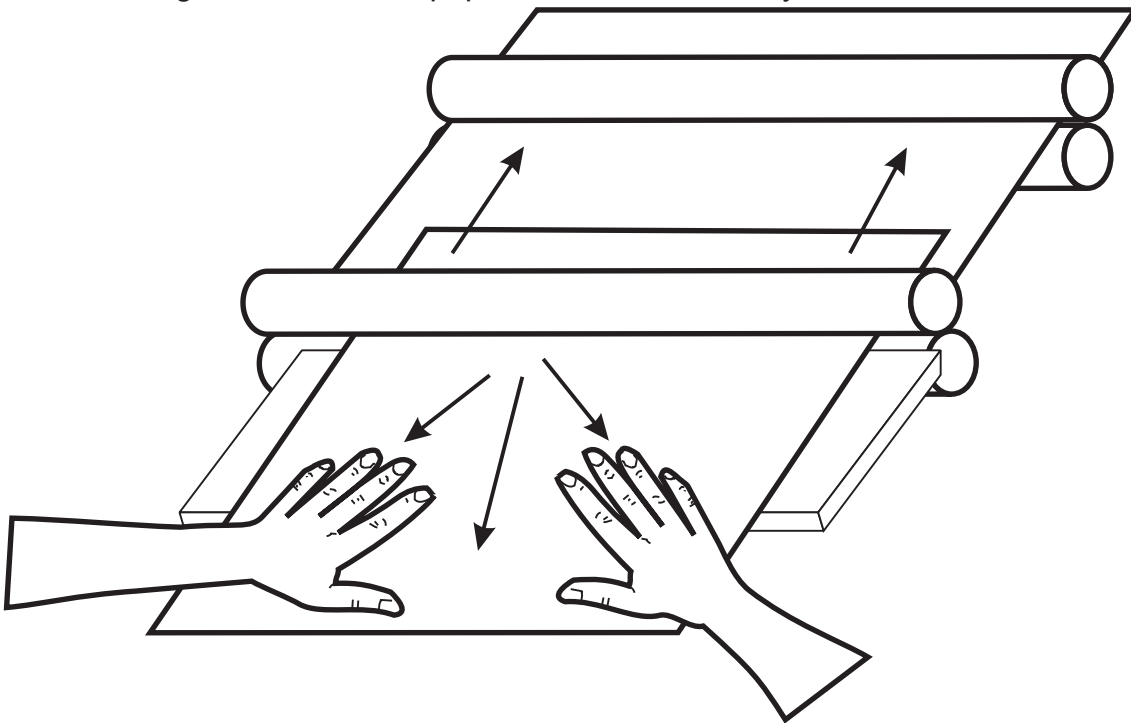
Place the feed table in position, ready for laminating.

## GETTING STARTED - FEEDING ITEMS

Turn motor to a low speed. You may also wish to turn the motor function to 'Footswitch' mode, and use the footswitch to stop and start the machine.

Lay the item flat on the feed table and slightly stretch the leading edge with your fingers. Move the item into the rollers at a speed slightly slower than that of the film.

The item will be drawn into the rollers. Maintain a slight outward and backward pressure on the item to avoid creasing, and hold item for as long as possible to prevent the trailing edge from buckling. The thinner the paper, the more necessary it is to stretch it.



Pulling back and to the side to prevent creasing of the laminated item.

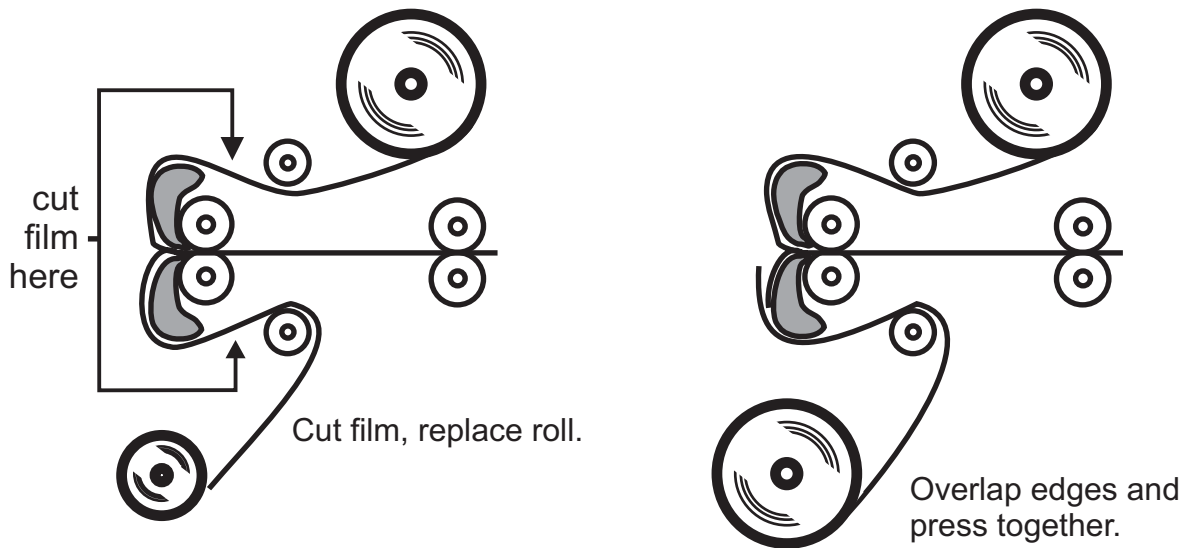
## END OF ROLL CHANGEOVER

Rolls of film are wound as closely as possible to the designated length. However, a difference of only 1% can mean a roll of film can be one or two metres longer than another. In some cases, 'END OF ROLL' stickers appear at about 3 metres from the end of each roll. It is important to check the lower roll of film occasionally to ensure there is enough film left. IF this roll runs out first, it may not always be seen until the upper film has coated the lower rollers in glue.

The normal procedure at the end of a roll is as follows.

1. Stop motor, leave the thermostat at operating level
2. Cut film, leaving 10-20 cm hanging from the front rollers (be careful not to damage the heater bar or roller)
3. Load roll of film onto mandrel as described in loading section.
4. With new film roll in position, draw fresh film forward and touch it to old film, so it adheres with the heat.
5. Slacken tension on film supply mandrels, set motor at slow speed, and watch carefully to ensure that new film is drawn through both sets of rollers.

Caution : A problem that can arise is that too long a 'tail' of the finished roll may decide to buckle under heat, and wrap itself around the heated front roller. Hence, close observation of the film leaving the heater bars is called for during reloading.



## **TROUBLESHOOTING THERMAL FILM**

Material not laminating, or laminating in patches.

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

Solution: Increase heat by 5-10° and allow the machine to heat up. If this does not work, it is possible that the film is not compatible with the material.

The material may have silicone varnish or wax finish, which does not accept laminating adhesive. This is uncommon, check with your film supplier. Pressure sensitive film may be used, or thermal film with a more aggressive adhesive.

Other possibilities are:

Insufficient front roller pressure - tighten front rollers.

Rollers have a film or adhesive build up forcing the rollers apart - clean the rollers.

Very high moisture content in material - allow to dry.

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

Creases at beginning of an item.

This is caused by

- 1) Pushing the material too quickly into the machine
- 2) Holding material on the feed table near the heater bars for long periods of time, causing the edge of the material to buckle.
- 3) Not holding the material flat as it enters the rollers.

Creases at end of item

Creases at the end of an item can be caused by slightly damp paper. It is also a problem when laminating lightweight papers. Either drying out the paper, or holding back firmly as instructed will solve this problem.

**Buckling or Mottling of paper**

This indicates excessive moisture content, or excessive heat. The solutions are:

- 1) Reduce temperature slightly and/or
- 2) Increase motor speed
- 3) Dry out paper

**Not Laminating in Center**

If this occurs, **DO NOT INCREASE SPRING PRESSURE TO THE ROLLERS.** This is normally caused because the roller springs are over tightened, and the pressure at the roller ends is causing the rollers to bow in the middle. Adjust the springs as shown in the diagram on **page 21.**

## **TROUBLESHOOTING - FILM WRAP UPS**

### **Film wrap ups - Rear rollers**

If no more than two or three revolutions have occurred, put the motor into REVERSE at low speed. Pull the film strongly from the rear of the machine. As soon as the film disengages from the rear rollers, stop the motor. Select FORWARD, start up, and pull material strongly until the film is taut between front and rear rollers. Be careful not to allow too much rewind during the first operation as the film may then attach itself to the front rollers, which presents an even greater problem.

### **CAUSES OF REAR ROLLER WIND UP**

1) 'Economising' by cutting too close to rear rollers at the end of the run.

If you can't leave at least 100mm of film out the back of the machine, it pays to invest in a large bulldog clip and attach it to the end of the film. The weight ensures that the film will drop instead of winding in.

2) Film curling up or down around rollers and winding in.

Check film roll tension, ensure that it is even.

3) Sometimes, after long runs (2 hours or more) the rear rollers reach a temperature which can soften the adhesive, causing the film to adhere to the rollers.

Turn on the fans when laminating for long periods of time.

4) Lower film roll breaking or running out.

A film breakage is a very rare occurrence, and is usually caused by the heater bars being too hot for the film.

### **Film wrap ups - Front rollers**

This may be caused by:

- 1) Film breakage
- 2) Molten adhesive on rollers
- 3) Adhesive section of film put against front roller when loading
- 4) Film loaded inside out.

#### **Solution**

This is a messy business made more difficult as the rollers and heater bars need to be hot for a successful cure. If you are lucky and not too much film has wound in, follow this procedure.

- 1) Cut both upper and lower film about 75mm from feed in point.
- 2) Cut film between front and rear rollers
- 3) Cut film beyond rear rollers
- 4) Put machine in REVERSE and FOOTSWITCH mode.
- 5) Grasp material in front of heater bars, and using slow speed, try to reverse film out in one piece.
- 6) Check rollers for any remains of film or adhesive and clean off if necessary, using kerosene on a soft rag. NEVER USE ANY ABRASIVES OR SHARP TOOLS TO CLEAN THE ROLLER. DOING SO WILL CAUSE NON-WARRANTY ROLLER DAMAGE.

## Repair & Maintenance

This section is not only for clients long distances away from help when things go wrong, but also as a guide to assist sorting out the serious from the non serious problems.

### Maintenance

This machine has been designed with the minimum of parts, therefore reducing the risks of breakdowns. The only essential maintenance to be carried out on a regular basis is:

Cleaning heater bars & rollers when required.

Lubricate chains and roller shaft bearings occasionally.

### Heater Bar Cleaning

Use a piece of soft cotton cloth large enough to make into a fist sized ball. Lightly dampen with kerosene, and thoroughly clean heated Teflon coated bars to remove any trace of adhesive or film deposits from the working faces.

More stubborn deposits such as dried pieces of film may be removed using a NYLON scouring pad - DO NOT USE METAL SCOURING PADS OR SHARP INSTRUMENTS.

### Laminator Roller Cleaning.

Raise heater bar on its pivot to allow inspection of rollers, remove film from machine, and slowly rotate the rollers by running the motor.

Indications for cleaning are a build up of adhesive at edges of film, or shiny patches where adhesive has adhered to the rollers. If film has wrapped around the rollers, or the adhesive side has been in direct contact with the rollers, it is a good idea to clean them.

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.

Cleaning the front rollers should only be undertaken when rollers are at normal laminating temperature

- 1) Cut film and clear leftover from machine
- 2) Turn motor to reverse at minimum speed, and use footswitch to stop and start rotation.
- 3) Use a small, kerosene dampened wad of cotton, wipe side to side, turning rollers occasionally, until all shiny spots have gone, and no build up is evident at the edges. Use small amounts of kerosene. Do not attempt to wash the rollers as too much kerosene may cause damage.
- 4) Where pieces of film have adhered, stop motor and lift off the film with tweezers, being careful not to pinch the rollers.

DO NOT USE NYLON SCOURING PADS OR ABRASIVES ON  
ROLLERS.

# PRESSURE SENSITIVE LAMINATION

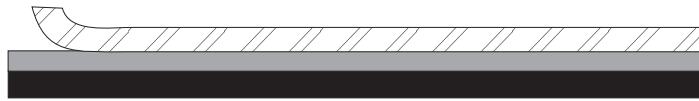
## THE THEORY - HOW PRESSURE SENSITIVE LAMINATION WORKS

Pressure Sensitive film is made from vinyl or polyester, and is coated with a strong adhesive. When pressed against material, this adhesive sticks strongly to the material.

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

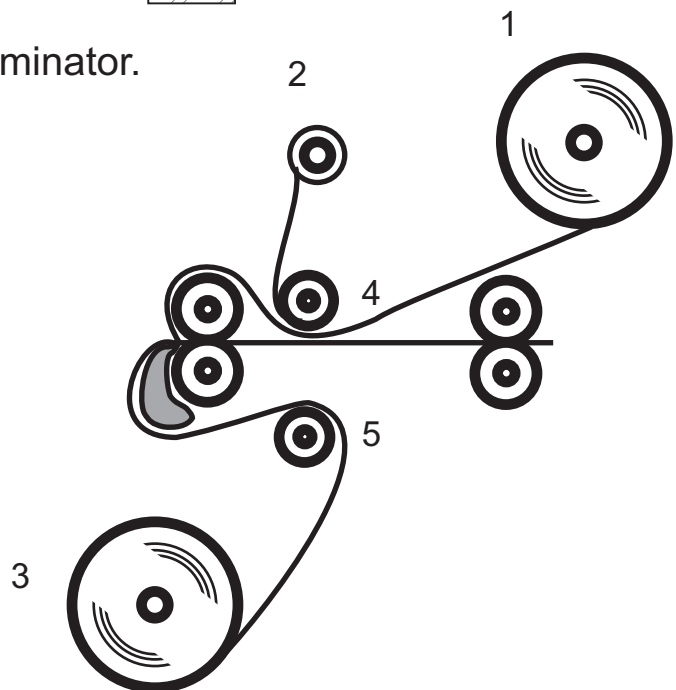
Some pressure sensitive films provide UV and graffiti protection, allowing coated items to last much longer in the sun.

Cross section of pressure sensitive film.



Main components of a roll fed laminator.

1. Double sided adhesive
2. Backing paper rewind
3. Underlay roll
4. Upper idler bar
5. Lower idler bar



# PRESSURE SENSITIVE LAMINATING

There are several main ways of using the Triseal with cold film. These are single sided laminating, double sided laminating and board mounting.

## USE OF PAPER UNDERLAY

Underlay film is used to protect the rollers from the self adhesive film if you are laminating items which are narrower than the width of the film itself. This also prevents the self adhesive film from wrapping around the rear rollers if a gap is left between items.

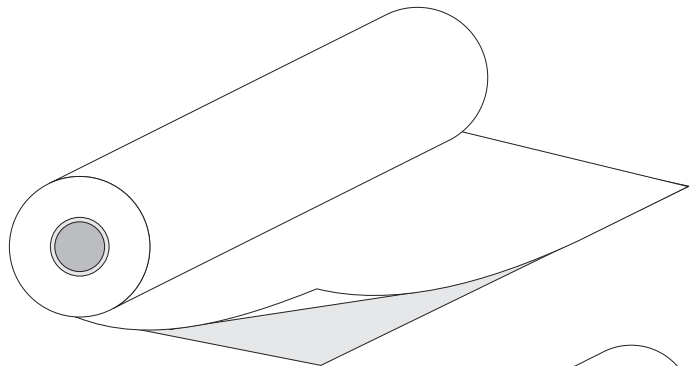
### What to use as underlay?

Use a very cheap plastic or paper, or alternatively use the release paper from a previously used roll of pressure sensitive film. Remember that the underlay paper is discarded when used. Contact your supplier for cheap supply of underlay..

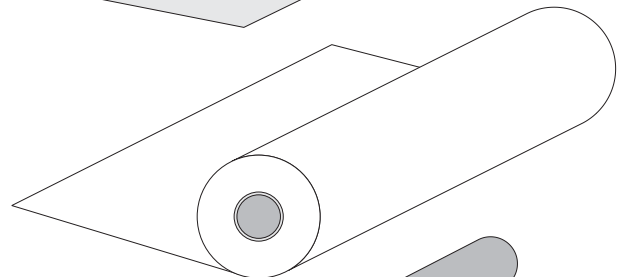
When you are laminating items which are wider than the pressure sensitive film, you may not have to use an underlay film. By overlapping the leading edges of the items you can prevent pressure sensitive film from adhering to the rollers. This, however, requires extreme care to prevent adhesive sticking to the rollers.

For single sided laminating, you will need the following.

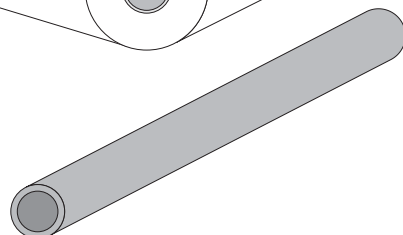
1. Pressure sensitive film



2. Underlay film



3. Cardboard core for rewind.



## LOADING THE MACHINE



Load the pressure sensitive film onto the mandrel with the large pulley. The film should spool from underneath, with the backing paper on top.



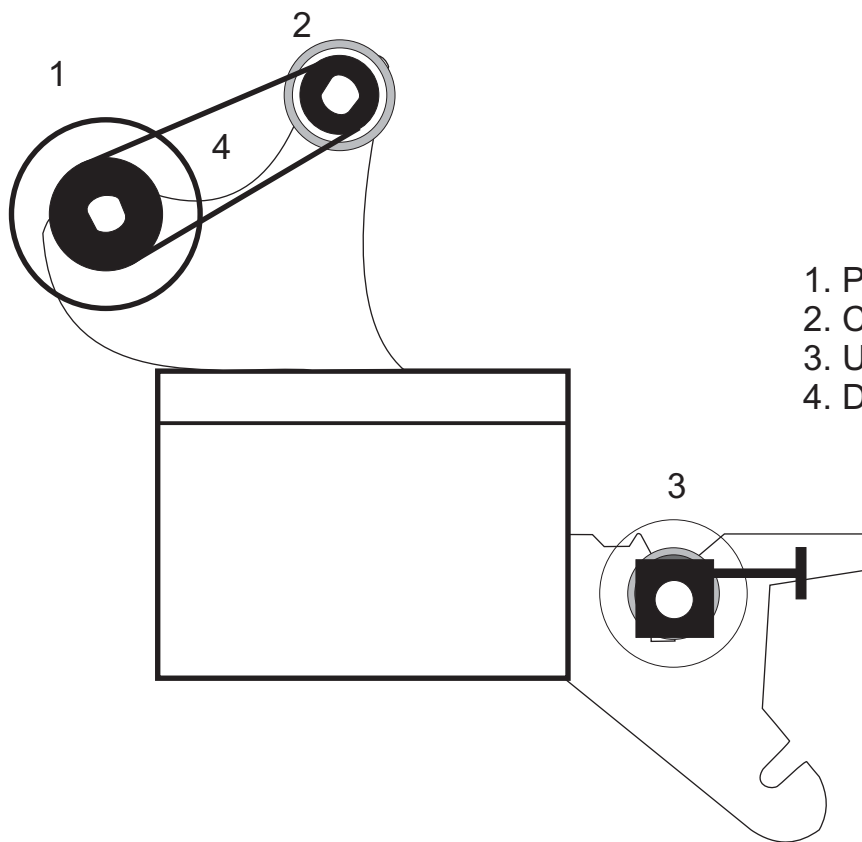
Load the underlay material onto a mandrel with a brake.



Load a cardboard core onto a mandrel with either 58mm (2 1/4") or 75mm (3") adapters.

Load the pressure sensitive film on the rear of the upper mandrel bracket. Load the cardboard core on the front upper slot, and the underlay on the lower bracket.

Stretch the drive belt between the front and rear pulleys.

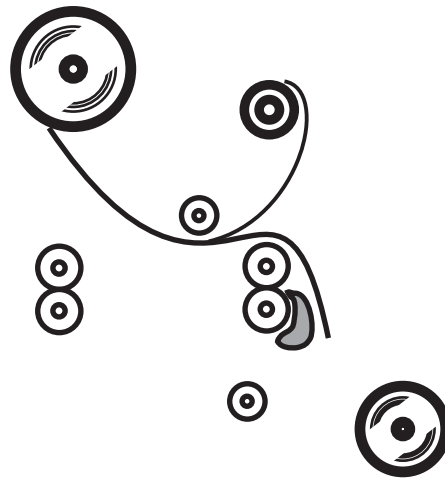


1. Pressure Sensitive Film
2. Cardboard core for rewind
3. Underlay film.
4. Drive belt

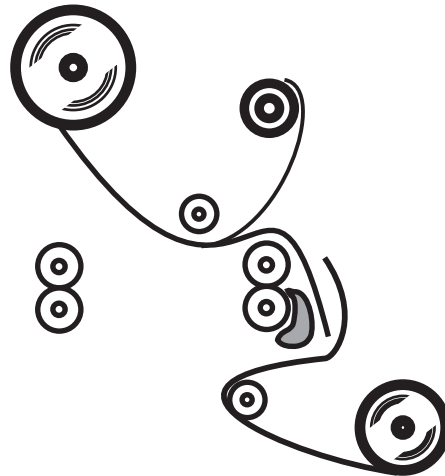
Front of machine  
→

1. Loosen the brake tension on the upper and lower rolls by turning the brake knob to the left until the roll of film is loose. Pull the pressure sensitive from the roll, passing over the upper idler bar. Separate the backing paper from the film, and bring it over the front of the cardboard core. Secure it to the core using tape or staples.

Allow the pressure sensitive film to drape

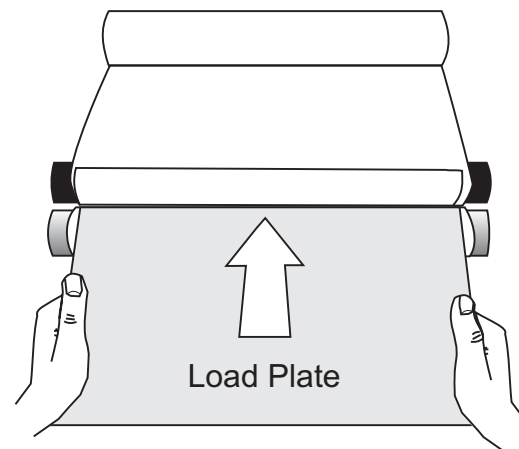


2. Pull the underlay film from underneath, passing behind the lower idler bar, and around to the front of the heater bars. Press the underlay against the exposed adhesive surface.



3. Set the machine to a low speed, and push the load plate between the rollers. Both self adhesive and underlay will be pushed into the rollers, and the load plate will carry both layers through the front and rear rollers.

Once the load plate has exited, you may stop the machine.



## GETTING STARTED - LOADING FILM

Leaving the load plate hanging from the rear of the machine, fractionally tighten the black knobs on the pressure sensitive film and underlay. Start the motor, and observe the film as it passes through the rollers. Creases in the film indicate the need for increased film tension. Apply tension SPARINGLY and evenly until the creases disappear.

Remember, the less tension the better.

Film tension must never be so great that the operator cannot turn the roll with one hand. Film stretching, curling, and possible machine damage are possible results of excessive tension. With pressure sensitive film you do not normally need any tension at all. If you have excessive tension the film may shrink back once the item is laminated.

Check that the side edges of the film are aligned to prevent adhesive build up on the rollers.

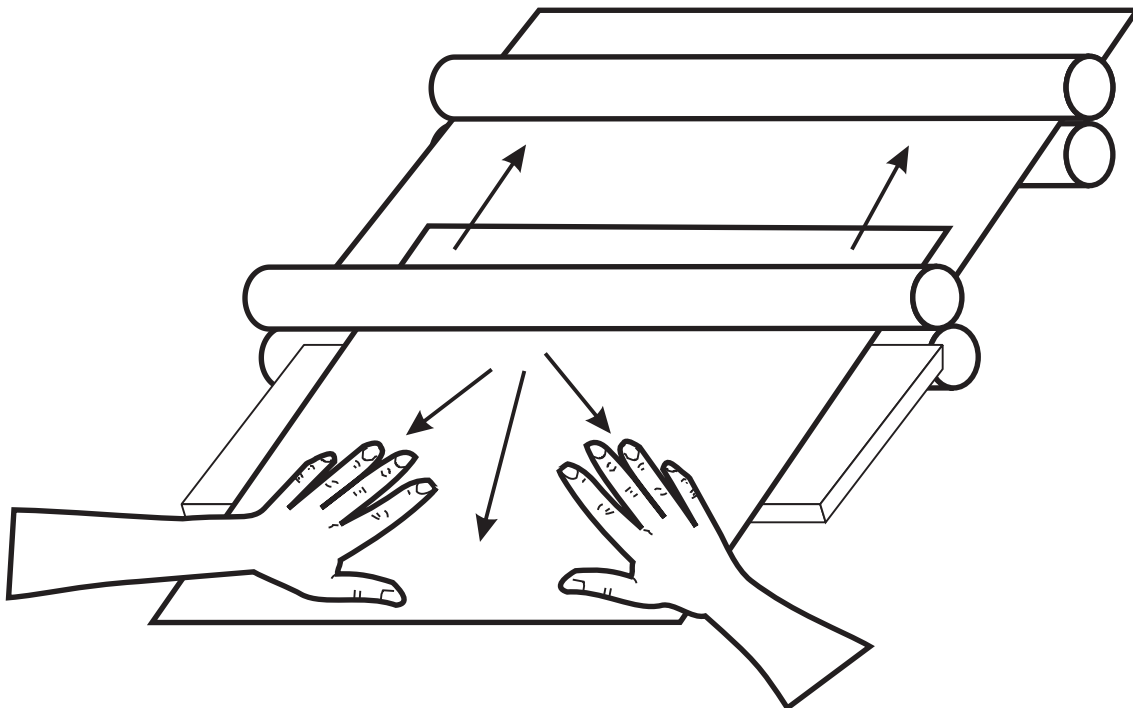
Place the feed table in position, ready for laminating.

## GETTING STARTED - FEEDING ITEMS

Turn motor to a low speed. You may also wish to turn the motor function to 'Footswitch' mode, and use the footswitch to stop and start the machine.

Lay the item flat on the feed table and slightly stretch the leading edge with your fingers. The side you want covered must be facing upwards. Move the item into the rollers until it has entered the rollers flat and straight. Using a slow machine speed, press the foot pedal and allow the item to be drawn into the rollers.

Retain a slight outward and backward pressure on the item to avoid creasing, and hold item for as long as possible to prevent the rear end buckling.



Pulling back and to the side to prevent creasing of the laminated item.

## LAMINATING LONG ITEMS

When laminating a long item, it is advisable to use the paper guide to ensure that the item is aligned properly. If an item is put into the machine incorrectly it may be damaged, or may not be properly laminated.

If you need to laminate a very long item, you will find that winding it onto a discarded cardboard core which is then held on the feed table with the item unwinding into the rollers gives a very even result. This technique also allows excellent control over the back tension of the item.

## LAMINATING WITH PRESSURE SENSITIVE & THERMAL FILM

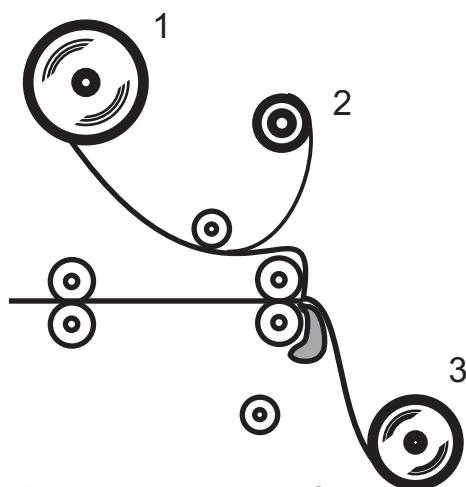
Using thermal film on the underneath of an item can be used if the item needs total encapsulation to protect it. This can be more economical than using pressure sensitive film on both sides of the item.

If you wish to laminate with pressure sensitive film on the top and thermal film on the rear of the item, simply use a thermal film in place of the underlay. The lower heater bar must be heated, the temperature is set as described in the Thermal Laminating section of this manual.

Before commencing lamination, it is highly recommended that you run a test piece through the machine to ensure that the machine is at operational temperature. Always run the cooling fans when using this process.

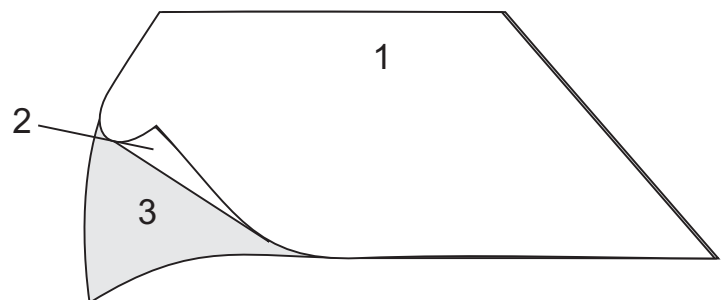
## MAKING SELF ADHESIVE POSTERS AND LABELS

Instead of using an underlay film, load a double sided adhesive tape. DO NOT pass the double sided tape around the idler bar.



1. Pressure sensitive film
2. Rewind core
3. Double sided film

Self adhesive poster



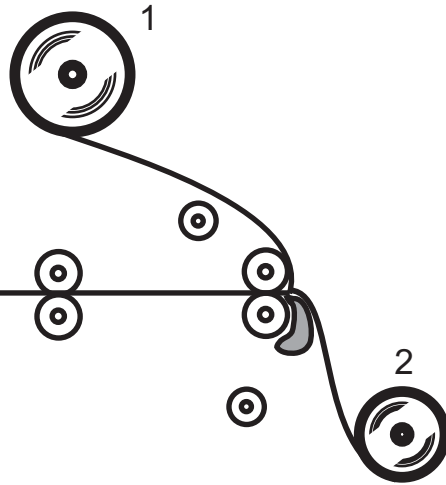
1. Laminated Item
2. Self adhesive side
3. Backing Paper

# BOARD MOUNTING

There are several different methods used for board mounting. the simplest method is as follows.

## PREPARING THE BOARD

Load the upper film roll with a double sided tape. This tape should not need to use the rewind function of the Triseal. Ensure when the tape is loaded that the sticky side is facing you, away from the rollers. Do not pass the adhesive underneath the idler bar.



1. Double sided adhesive
2. Underlay film.

Depending on the thickness of the board, open the rollers as described on page 4 of this manual. Push the board into the rollers and allow it to be pulled in. The board may need some force behind it before it enters the rollers, depending upon thickness.

As soon as the board has passed through the front rollers, raise the roller opening bar, closing the rollers. If this is not done, the film may wrap around the rollers. Once the board has exited the rear rollers, you may cut the film, and trim the adhesive to the edges.

You now have prepared a self adhesive mounting board, which may be used immediately or stored for later use.

# BOARD MOUNTING

## MOUNTING THE ITEM

Laminate the item using thermal or pressure sensitive film.

Ensure that the area which is coated in double sided adhesive is not much greater than the item. 5mm of adhesive showing on each side is the maximum.

Lay the item down flat on the board, and align at least one edge. Keep the item in position with weights, pins or clips.

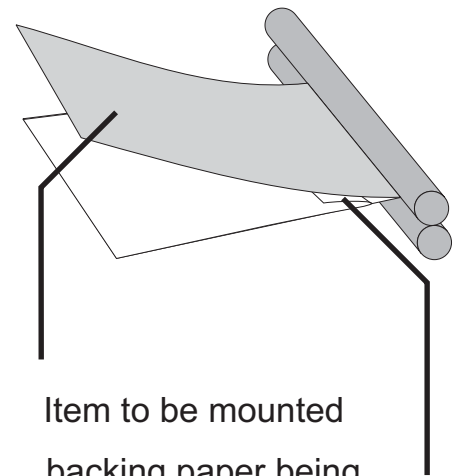
Peel the leading edge of the backing paper back (approx. 10cm), and press down the item to make sure it adheres properly.

Open the rollers to the correct position, and push the leading edge into the rollers. As the board is drawn into the machine, pull the backing paper from the board as illustrated.

A video is available showing this process. Please contact your supplier for details.

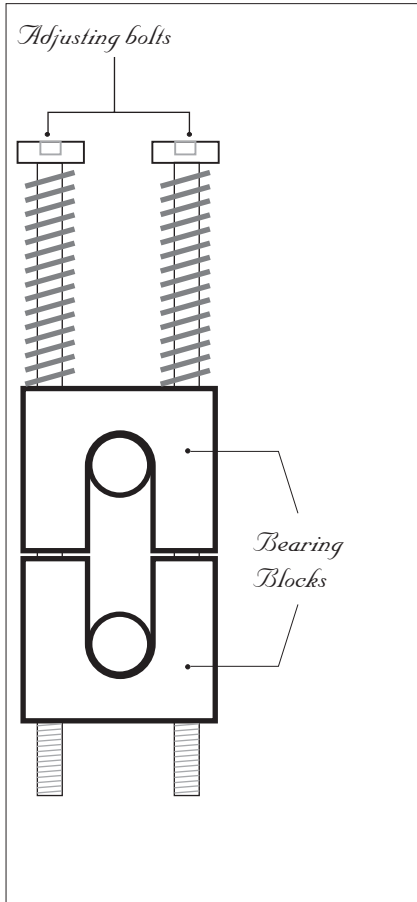
If the backing paper is caught in the rollers, don't panic, simply reverse the rollers until the backing paper is free, and proceed with mounting.

**To ensure even coverage on mounting boards which are 9mm and above, it may be necessary to release the tension off the front 4 springs completely. Please ensure that tension is returned to the correct position before continuing normal laminating.**



Item to be mounted  
backing paper being  
peeled back, revealing  
adhesive surface.

# Adjusting Roller pressure



A technical diagram of the roller assembly, similar to the one on the left, but with the adjusting bolts turned clockwise. The top of the tension springs is now in contact with the top of the bearing blocks.

To reset springs to factory settings :

Adjust the bolts so that they are just touching the top of the tension springs, without applying any pressure.

Turn all front bolts 1 full turn.

Turn all rear bolts 1 full 2 full turns.

To tighten : turn bolts clockwise.

To loosen : turn bolts counterclockwise.

DUE TO DIFFERENT THICKNESSES AND OTHER VARIABLES THIS IS ONLY AN APPROXIMATION AND FURTHER FINE TUNING MAY BE REQUIRED.

Written by Emseal Pty Ltd

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