

# **MAKROLAM<sup>®</sup>**

## **2R - 1650 (65")**

### **Pressure sensitive laminator**



# **Assembly & Operators Manual**

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Rollers : As rollers are the most important part of the machine, damage caused by misuse or unsuitable objects being passed through the rollers is not covered by warranty.



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## Technical Specifications

Voltage : 110 / 240 V 5 Amp

Boxed dimensions - 225cm x 73cm x 70cm

Weight: 250kg

# Assembling the mobile stand.



Parts :  
2 trolley legs with locking wheels  
2 wide horizontal bars  
1 narrow horizontal bar  
1 spanner  
10 hex head bolts  
2 socket cap bolts

Step 1  
Using the spanner provided, bolt both wide horizontal bars into one trolley leg. This will require 4 bolts. Do not tighten the bolts yet.



Step 2  
Repeat with the opposite side leg. Ensure the locking wheels are both on the same side. This will require 4 bolts



Step 3  
Bolt the narrow horizontal bar as shown below. Now ensure that all the bolts are tight.



## IMPORTANT

On top of each side of the stand is a hole for the securing bolts. These line up with securing holes underneath the laminator.

Once the laminator is on the stand and aligned with the holes, firmly bolt it to the stand as shown. It is important to do this before the machine is moved on the stand.

This stand is not designed for use on rough or angled surfaces, and should be moved by two people at all times. Lock the castors when in use.



# Setup

## Positioning

The laminator should be positioned so that full access is available to the front and back of the machine. There should be plenty of light. A low dust area is best, as dust will show up on laminated items.

For best results, see your film suppliers recommendations. Laminating in a controlled environment will provide better and more reliable results.

## Lower mandrel brackets

You will need to attach the lower mandrel brackets as shown. A spanner is provided for this task. Ensure all the bolts are firmly tightened

Left  
hand  
side



Right  
hand  
side



# Safety

Ensure you have enough people to assist lifting the laminator from its crate.

Never lift the Makrolam by the rollers or idler bars.

Always lift from the base of the machine.

Always secure the machine to the stand with the securing bolts.

When moving the machine, have two people to push the mobile stand.

Do not move the machine across very rough or sloping surfaces.

Do not leave power cords where people may trip on them.

Be careful of loose items such as ties, jewellery and long hair near the rollers.

Keep hands and fingers clear of the rollers when running.

Keep the work area clean to avoid the risk of tripping.

# Controls



Makrolam control panel

### Emergency Stop

Pressing either emergency stop button causes the machine to instantly stop. To reactivate the machine, first twist the button which has been pressed counter clockwise until it pops up. Then, press the 'on' switch.

### Motor Speed

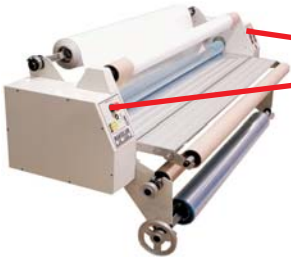
Controls the speed of throughput. Generally a lower speed is recommended for best results. When turned to '0', the motor turns off.

### Continuous / Footswitch

When in continuous mode, the machine will run whenever the speed control is set to greater than '0'. In footswitch mode, the machine will only run when the footswitch pedal is depressed. This allows you to have both hands free for operation of the laminator. The machine can be switched to either mode while operating.

### Forward / Reverse

This switch changes the motor direction. **WARNING**, the motor must always be stopped before changing direction.



## Positions of emergency stop

## Opening rollers

The Makrolam has a roller opening system that allows items up to 20mm to pass through the rollers. This is operated with a simple lever system. For normal operation, the lever must be all the way down as shown below. For mounting, select the appropriate step for the thickness of the item to pass through the rollers.



Rollers closed



Rollers fully open

### Roller opening steps

- 1 - 1-3mm
- 2 - 3-6mm
- 3 - 5-9mm
- 4 - 9-12mm
- 5 - 12-15mm
- 6 - 15-20mm

# Mandrels

Mandrels are the bars which serve a variety of purposes on a laminator. They may have film loaded onto them, or be used in removing release paper from a self adhesive film. The Makrolam comes with 5 mandrels. Each is fitted with 75mm (3") core adapters. Both supply mandrels have brakes fitted, while the lower mandrels have pulleys and brakes fitted.

The pulleys should always be at the left hand side of the machine.

Full descriptions of the mandrels functions are below.



**Mandrels and their positions on the Makrolam.**

## 1. Upper supply mandrel

Film is loaded onto this mandrel, and is then placed at the upper rearmost mandrel brackets. The brake must be at the left hand side of the machine.

## 2. Lower supply mandrel (holds film or underlay)

The lower supply mandrel has the same function as the top supply mandrel, but has a large pulley which is used for removing release paper during double sided lamination.

## 3. Lower rewind mandrel

This mandrel is only used during double sided lamination. It comes with a cardboard core, and used with the rewind belt it will assist in removal of release paper.

## 4. Upper rewind mandrel

This mandrel is used for removing release paper from pressure sensitive film. It slots into the rewind drive situated on the top of the machine. See the 'Film Loading' section for more details.

## 5. Unwind mandrel

This mandrel is useful when laminating very long items. Roll the long item around the core, and then place the loaded mandrel on the brackets at the front of the feed table. The long item can then be fed directly into the rollers from this mandrel.

# Caring for your laminator

Do not leave hard items on the feed table, if they are pulled into the rollers they will cause extensive damage to the rollers.

Do not cut against the rollers. Any sharp instrument should be used with extreme caution, as the rubber rollers are easily damaged with knives.

Laminate only flat and even items.

If dirty, rollers may be cleaned with a small amount of Kerosene on a soft cloth. Do not use a scouring pad or abrasive cleaners. Do not soak the rollers with kerosene.

Do not use excessive brake pressure - you should be able to turn the rolls with one hand.



Never cut against the rollers.

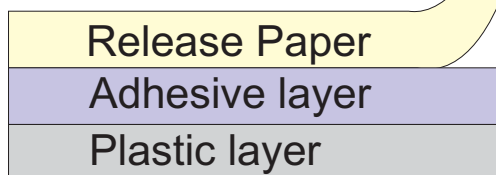
# Pressure sensitive laminating

## The theory - Pressure sensitive film

Cold or Pressure Sensitive laminating involves using a self adhesive film, usually with a release paper. This has the advantage of being able to stick to difficult to laminate items, such as some inkjet prints or similar media.

Laminating with pressure sensitive film involves removing the protective layer of release paper from the film, and then pressing the adhesive layers firmly to the item being laminated. This firmly bonds the film to the surface of the item, resulting in lasting protection.

Most laminating done with pressure sensitive laminates is single sided, as the cost of double sided lamination is expensive.



**This illustrates how a cross section of pressure sensitive film would appear.**



**Release paper peeled back to reveal adhesive.**

## The theory - Underlay paper

Underlay is the term used to describe an inexpensive paper material which feeds into the machine below the laminated item. Its sole purpose is to prevent the adhesive on the pressure sensitive film coming into contact with the rubber rollers during single sided laminating.

Cheap paper or plastic of most types can be used. It should be wider than the pressure sensitive film, and not easily stretched. When the laminated item is trimmed flush to the edges, the underlay will fall off and can be discarded.

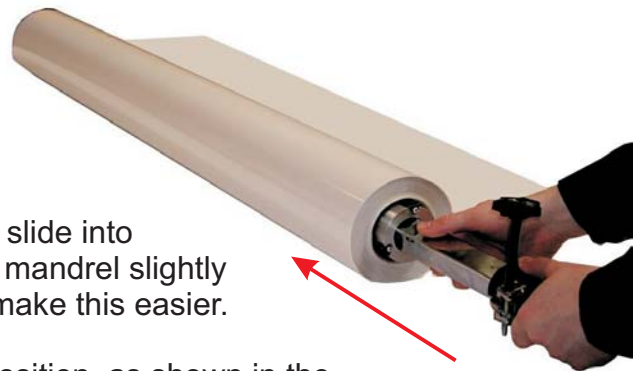
# Loading the Makrolam

## Step 1

Load the film onto the upper supply mandrel as shown. The film side is against the table, with the release paper facing upwards.

The core adapters on the mandrel are designed to slide into the roll, but grip when the core turns. Rotating the mandrel slightly left and right as you slide it into the core can help make this easier.

Now load this mandrel onto the top rear mandrel position, as shown in the 'mandrels' section of this manual.



Slide mandrel into core

## Step 2

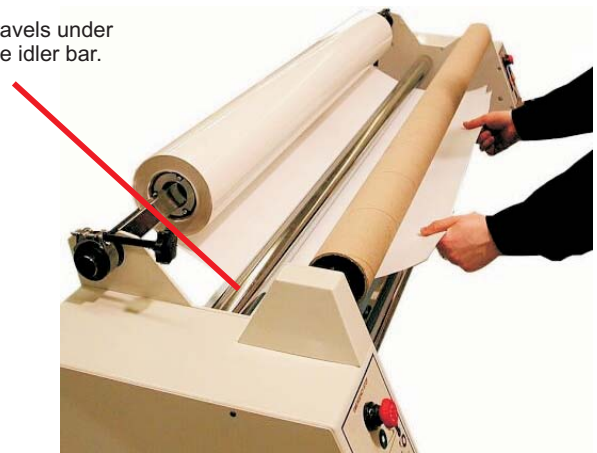
Take the rewind mandrel, with cardboard core, and load it onto the machine as shown. The rewind drive turret has a metal rotor which the mandrel slots into.



## Step 3

Pull the film from the supply roll forward, passing under the chrome idler bar. It should now be lying across the top roller, with the release paper facing upwards and the laminate lying against the roller.

Film travels under chrome idler bar.



## Step 3

Separate the release paper from the film, and attach it to the core. You can use adhesive tape or a stapler.

The exposed film should be lying on the top roller, with the adhesive facing towards you,

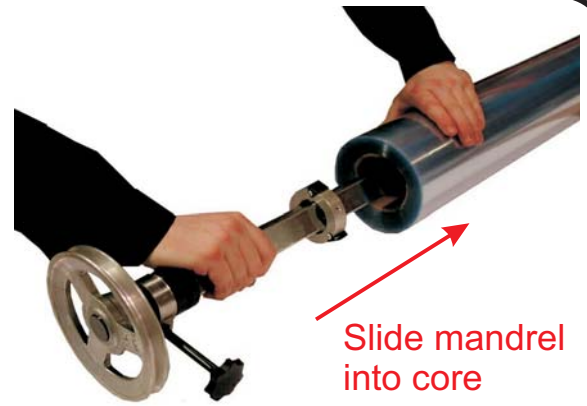


# Loading the Makrolam (continued)

## Step 4

Insert the lower supply mandrel into the roll of underlay. It should make no difference which way around the film is facing when loaded.

In this example a cheap recyclable plastic is being used as underlay.



## Step 5

Pull the underlay around the lower chrome idler bar, and then bring it up so that it comes in contact with the exposed adhesive. Underlay does not always need to pass behind the lower idler bar.

Press the underlay to the adhesive so that they are both stuck firmly together.

Check the brakes on both rolls, they should only be lightly applied so that the rolls can be easily turned with one hand.



## Step 6

Set the motor to a low speed setting, and 'footswitch' mode if you prefer this.

Take the plastic load plate, and push it between the rollers as you run the motor at a low speed. The film and underlay will both be pulled through the laminator, and pass out the back.

Remove the load plate from the film, and slowly run the film until it pulls straight.

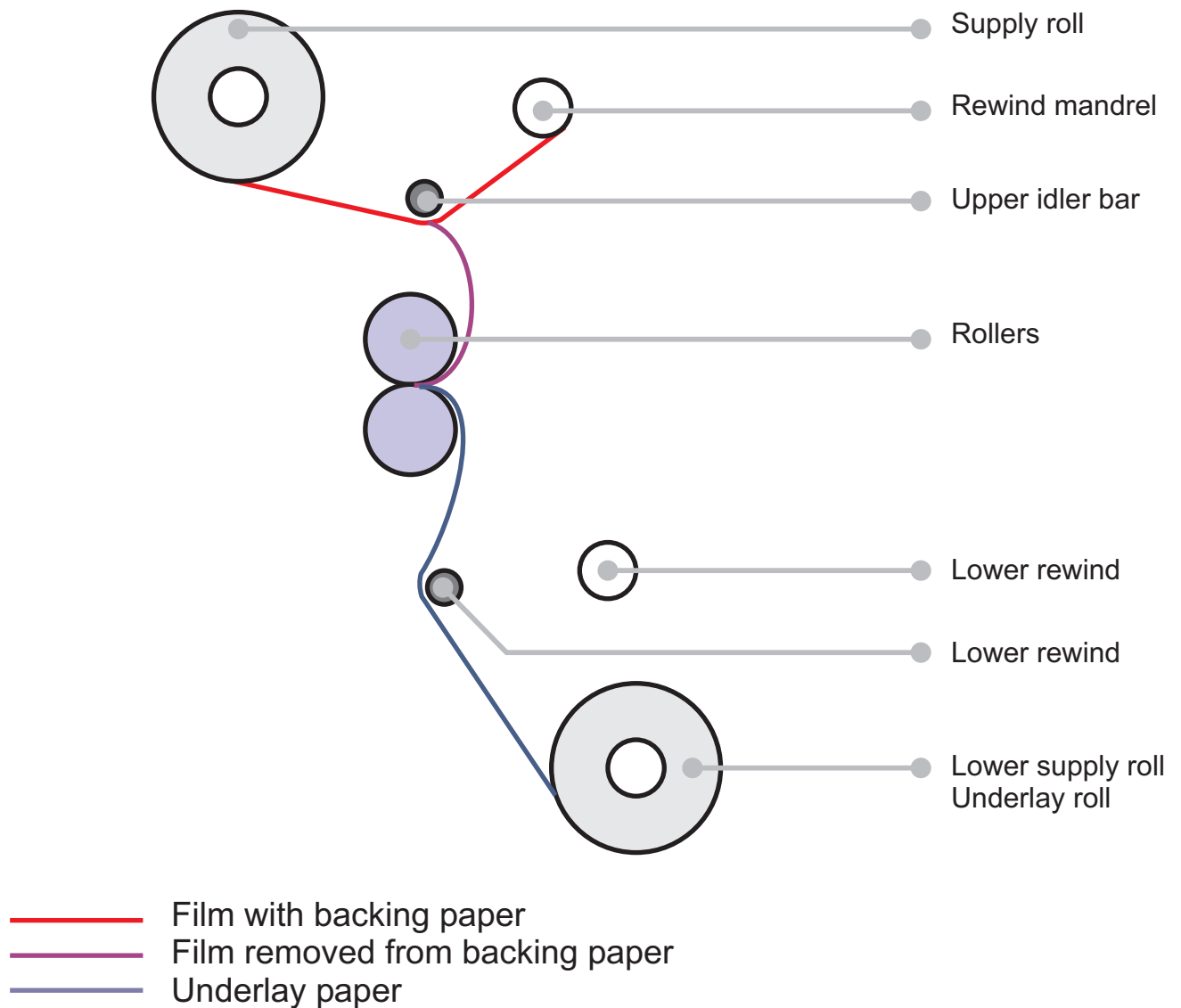
Position the feed table on the front of the machine so it is securely placed.



Push the load plate into the turning rollers.

# Loading the Makrolam (continued)

## Loading Diagram



This loading diagram shows a side view of the rollers and mandrels, and gives a clear view of the path for the film to take.

# Adjusting roller pressure

Roller pressure should need adjustment rarely, if ever.

If the laminate is pulling to one side as it enters the machine, you may need to decrease that side's roller pressure. If it is loose in the center, the roller pressure on both ends may be too high. If it is loose on the sides, the roller pressure may be too low.

The Makrolam 2R 1650 is correctly set when shipped from the factory. In the event that you need to increase or decrease the roller pressure, please take the following steps.

1. Disconnect the laminator from the power supply. Ensure that the machine is unplugged.
2. Remove the side case covers.
3. Using a spanner, adjust the roller pressure spring as shown below.. You will not need to change the spring setting by much.

## Important Note

It is important to note that too much roller pressure can cause just as many problems as too little roller pressure.

If the laminator is not laminating properly in the center, you may have too much roller pressure, even though it seems that more pressure would help.

Excessive pressure may cause damage to the rollers over time, and extra stress on the motor.

It is best to make small adjustments, checking the quality of the result after each adjustment until it is perfect.

