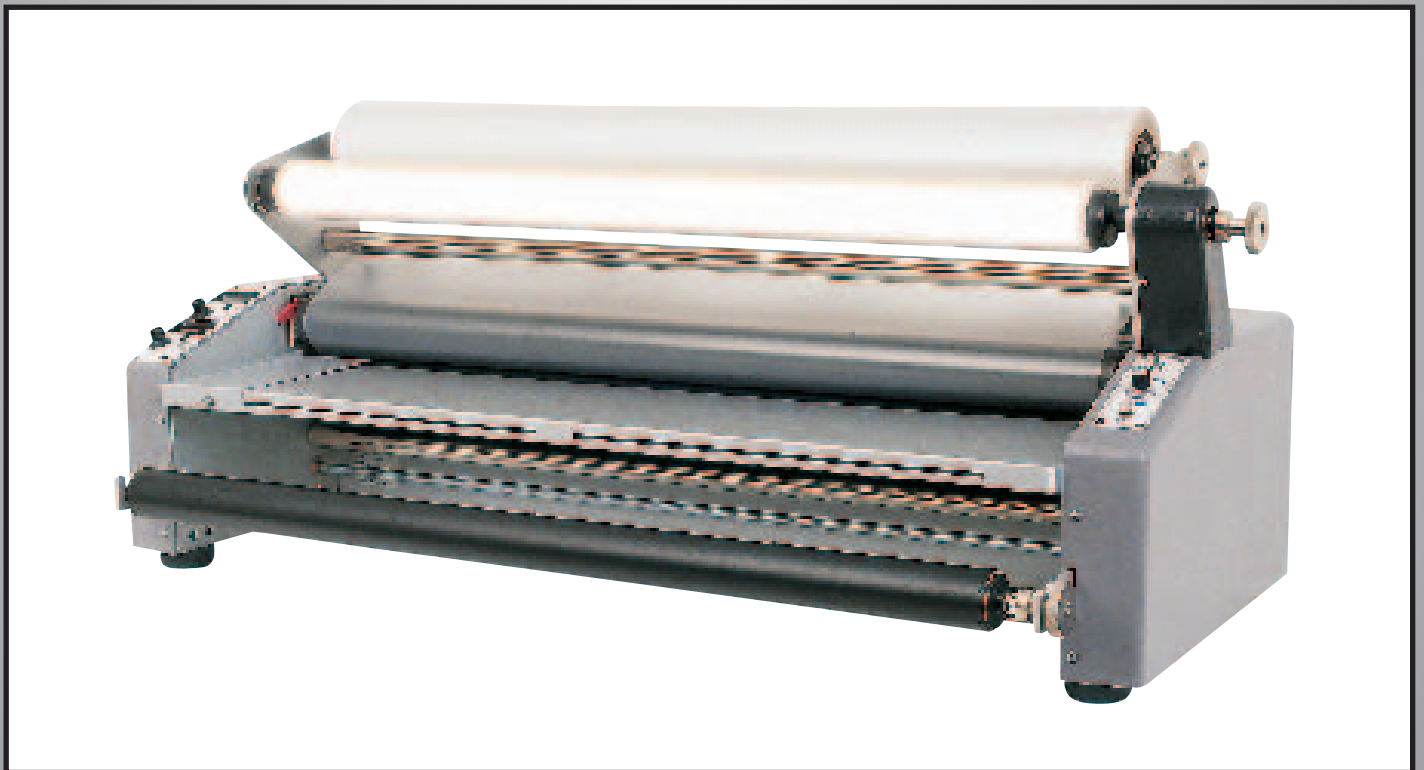


**USI**  
*Inc. Since 1975*

**WIDE  
FORMAT  
LAMINATING**



**OPERATION AND  
MAINTENANCE MANUAL**

**MRL SERIES  
ROLL LAMINATORS/MOUNTERS**

# **IMPORTANT INFORMATION**

## **PLEASE DO NOT DESTROY THE SHIPPING CARTON!**

USI urges you to store the original carton in which your laminator was shipped. Should you ever need to return your laminator to our repair and service center, it is best repacked in the original carton to avoid damage during transport. Our special foam filled carton ensures the laminator's safe transit to our service facility. Failure to use original packaging will result in a repacking fee. If you have any service inquiries, please contact USI's Support Department, M-F 8am-7pm EST, at 1-800-282-9890.

Note: You will be charged for the replacement of any parts which are damaged as a result of improper packaging.

Warranty: A Full Two Year Warranty will be issued upon the date the product has been received in by the customer. Please supply the model and serial numbers on all correspondence concerning your laminator.

## **EQUIPMENT WARRANTY**

We warrant to the original purchaser the equipment manufactured to be free from defects in material and workmanship under normal use and service. Our obligation under this warranty shall be limited to the repair or exchange of any part or parts which may prove defective under normal use and service within two years from the date of shipment and which our examination shall disclose to our satisfaction to be defective. When necessary, purchaser shall properly pack and return the unit to the USI Service Center, freight and insurance prepaid.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING THE WARRANTIES OF MERCHANT ABILITY AND FITNESS FOR USE AND OF ALL OTHER OBLIGATIONS OR LIABILITIES ON OUR PART, AND WE NEITHER ASSUME NOR AUTHORIZE ANY OTHER PERSON TO ASSUME FOR US, ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF THIS LAMINATING MACHINE OR ANY PART THEREOF WHICH HAS BEEN SUBJECT TO ACCIDENT, NEGLIGENCE, ALTERATION, ABUSE OR MISUSE. WE MAKE NO WARRANTY WHATSOEVER IN RESPECT TO ACCESSORIES OR PARTS NOT SUPPLIED BY US. THE TERM "ORIGINAL PURCHASER," AS USED IN THIS WARRANTY, SHALL BE DEEMED TO BE THE PERSON OR COMPANY WHO FIRST PUTS THE EQUIPMENT INTO SERVICE. THIS WARRANTY SHALL APPLY ONLY WITHIN THE BOUNDARIES OF THE CONTINENTAL UNITED STATES.

# **READ ME FIRST!**

## **About this manual:**

This manual contains all the information you need to properly unpack, operate and maintain your USI Laminator. Before unpacking your laminator we suggest you read and follow the manual step by step. It contains essential information about each and every facet of your laminator. Pay special attention to the work environment and safety precautions necessary for your laminating unit.

### **The manual is organized in the following way:**

- There are five major chapters, each covers a different subject heading.
- Each chapter is further broken down into parts.  
Each part contains a detailed discussion covering either an operation or maintenance procedure for your laminator.
- Please pay special attention to particular notes and caution statements.  
These comments alert you to information that we feel essential to operator safety and damage prevention to the laminator.

## **Copyright Information:**

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# SAFETY PRECAUTIONS

**WARNING:** Please review the following safety precautions before unpacking your new laminator.

- Use care in unpacking and lifting the laminator. Keep laminator level when lifting or moving. Laminator weighs approximately 300 pounds.
- Consider work area. A cluttered work space can lead to accidents. The laminator should be placed on a level sturdy surface. Do not attempt to operate the laminator in damp or wet environments. Do not operate electrical devices in the presence of flammable liquids, solvents or in gaseous/explosive atmospheres. Keep work area well lit. Allow sufficient access to front and back of machine. See the manual for additional work space requirements.
- Respect feed rollers. Keep hands away from feed rollers and any other moving parts. Turn drive switch OFF before attempting to clear film wrap arounds or jams. Use automatic reverse to clear film. Do not wear any loose clothing, ties, jewelry, etc., which can be caught by feed rollers and draw any body part into the machine.
- Respect heat shoes. Operating temperatures are hot enough to burn skin. If clearing a film wrap around or jam on or near heat shoes, first turn the heat switch OFF and allow laminator to cool to room temperature.
- Do not operate laminator with any panels or guards removed. Panels and guards protect operators from such moving parts as the drive chain and sprockets, roller ends, etc.
- Turn the power switch OFF before walking away or leaving the laminator unattended.
- Before lifting or moving laminator, turn power switch OFF, unplug and allow to cool to room temperature. Remove film rolls before lifting or moving machine. Film is easy to rethread, see the section in this manual.
- Keep children away. Make sure visitors are kept well back from an operating laminator.
- Do not abuse electrical cord. Never pull cord to disconnect from electrical outlet. Do not allow cord to contact heat, oil or sharp edges. Do not cut off or otherwise bypass the grounding prong on the plug.
- If an extension cord is necessary be sure it is properly rated and of the same wire gauge or smaller as the laminator cord. Capacity of the cord must prevent loss of power and overheating. Before using, inspect extension cord for any damage, including loose or exposed wires, broken fittings, damaged insulation, etc.
- If you service the laminator yourself, call USI's tech department at (1-800-282-9890) or (1-800-752-9131) for additional safety recommendations. Use only USI parts for service or replacement. Failure to use USI parts could void manufacturer's warranty.
- Use common sense. Be cautious when operating your laminator. Do not operate laminator when you are tired or your reactions are impaired in any way.
- Do not allow anyone to operate the laminator who has not received proper instruction and has not read the safety instructions.

# FIND A WORK AREA

A separate work station is required to house your USI laminator. Ample room is necessary to access the laminator from all 4 sides. If the laminator is back against a wall, the laminating film may back up and jam the equipment. Your laminator must be on a stable, level surface. A USI laminator cabinet is an excellent choice for a work area. It can easily be moved and provides sufficient storage for film in the cabinet below.



Photo 6A.  
USI's Heavy  
Duty  
Laminator  
Cart.

**WARNING:** Do not place the laminator where the heat shoes will be in the direct path of a room cooling fan, air conditioner or similar forced draft.

Tools necessary to set up your laminator include cutting shears and any adhesive tape. For future service or maintenance, an assortment of Allen wrenches, a flat head screwdriver and a Phillips head screwdriver are necessary.

## LAMINATOR SPECIFICATIONS

	42" MRL
Accepts:	41-1/4"
Weight:	300 lbs
Width:	51"
Depth:	26"
Height:	23"
Speed Variable:	15'

## POWER REQUIREMENTS

42 MRL  
220-240VAC  
Single Phase  
3 Wire  
30 amp  
6000 Watts

# UNPACKING YOUR LAMINATOR

## The shipping carton contains:

- 1 Laminator
- 1 Top Supply Mandrel
- 1 Bottom Supply Mandrel
- 1 Feed Table
- 1 Operating Handbook
- 1 Pressure Sensitive Take up Mandrel\*

\*MRL42 only.

## Be sure to save the shipping carton, it's components and it's skid...

Should your laminator ever need to be returned for service, the foam-filled carton ensures safe transit.

**CAUTION:** Laminator is extremely heavy.  
Two people will be needed to move the machine.

USI suggests using a third person to remove skid from area upon lifting of laminator.



Photo 7A.  
Cut shipping straps with cutters.



Photo 7B.  
Remove cardboard box top from laminator skid.



Photo 7C.  
Lift and place laminator on surface top.

# LOADING FILM

**NOTE:** Each laminator is test run after it is assembled. Your laminator may have a piece of test film in the rollers when you receive it. If so, before threading, remove the test film by turning the drive switch to “ON”. The test film will exit the laminator.

## Step 1:

- The laminator should be preheated before loading laminating film.
- To heat the machine, turn on the main power switch located on the left rear corner of the laminator. Next, turn on both of the heat shoe power switches located on the left control console. The LCD’s showing the temperature setting will illuminate.
- Rotate the heat control knobs until desired temperature is indicated on the LCD panel. The red heat-on lights will remain on until the machine is up to temperature, at this time the red lights will turn off and the green lights will turn on.



Photo 8A.  
Turning on the main power switch.

## Step 2:

*When the laminator is heating, the rollers should be turning to heat the rubber rollers evenly.*

- Turn the drive switch to the forward position and rotate the speed control knob until the rollers are moving slowly.
- Heat approximately 15 minutes, until the green ready light turns on.

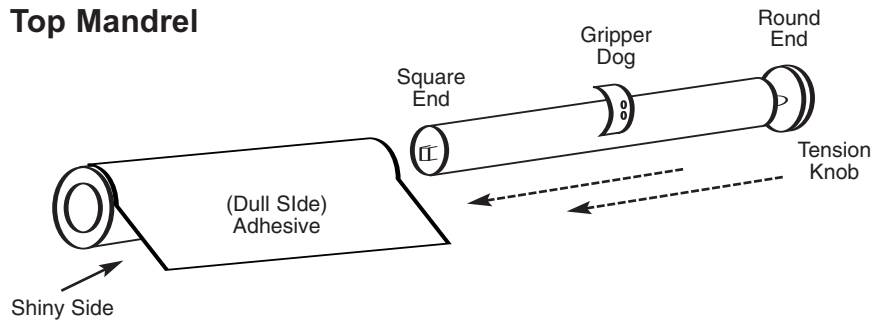
## CHOOSING FILM

Choose your laminating film. For encapsulating, both types of film should be of the same size, type and thickness.

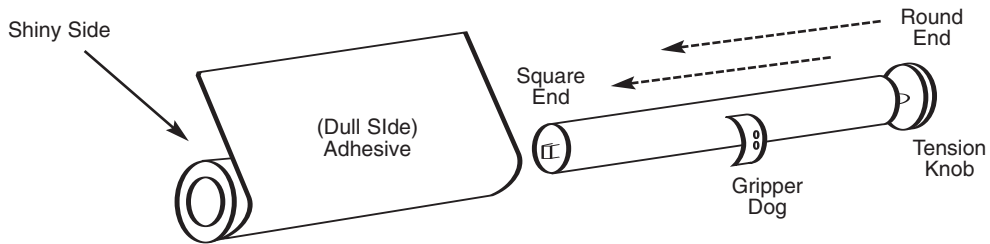
Temperature Range (F)	Film Type	Film Weight (in mils)
275°—290°	Standard	1.5, 3 and 5
230°—250°	Opti Clear®	1.3, 3, 5, 7 and 10
230°—250°	Photo Plus®	3, 5 and 10
190°—210°	DigiSeal®	1.7, 3, 5 and 10



## Top Mandrel



## Bottom Mandrel



**NOTE:** Do not apply excessive force to the ends of the mandrel (i.e. with a hammer). Force will cause damage. Film rolls must be centered on supply mandrels. If rolls are not aligned, hot adhesive will be deposited on the heat shoes and rubber rollers, necessitating a cleaning operation.

Take the bottom supply mandrel and insert it into the roll of film until the “Gripper Dog” meets the film’s cardboard core. Rotate the mandrel in the opposite direction from which the Gripper Dog points. As you rotate, apply pressure to force the mandrel into the roll of film and center it on the mandrel. See Diagram above. Place the lower mandrel on the laminator. Take the top supply mandrel and insert it into the desired roll of film and place it on the laminator as illustrated above. Follow the same steps to load the top supply mandrel. See threading diagrams on page 10.



Photo 9A.  
Inserting top supply mandrel into roll of film.

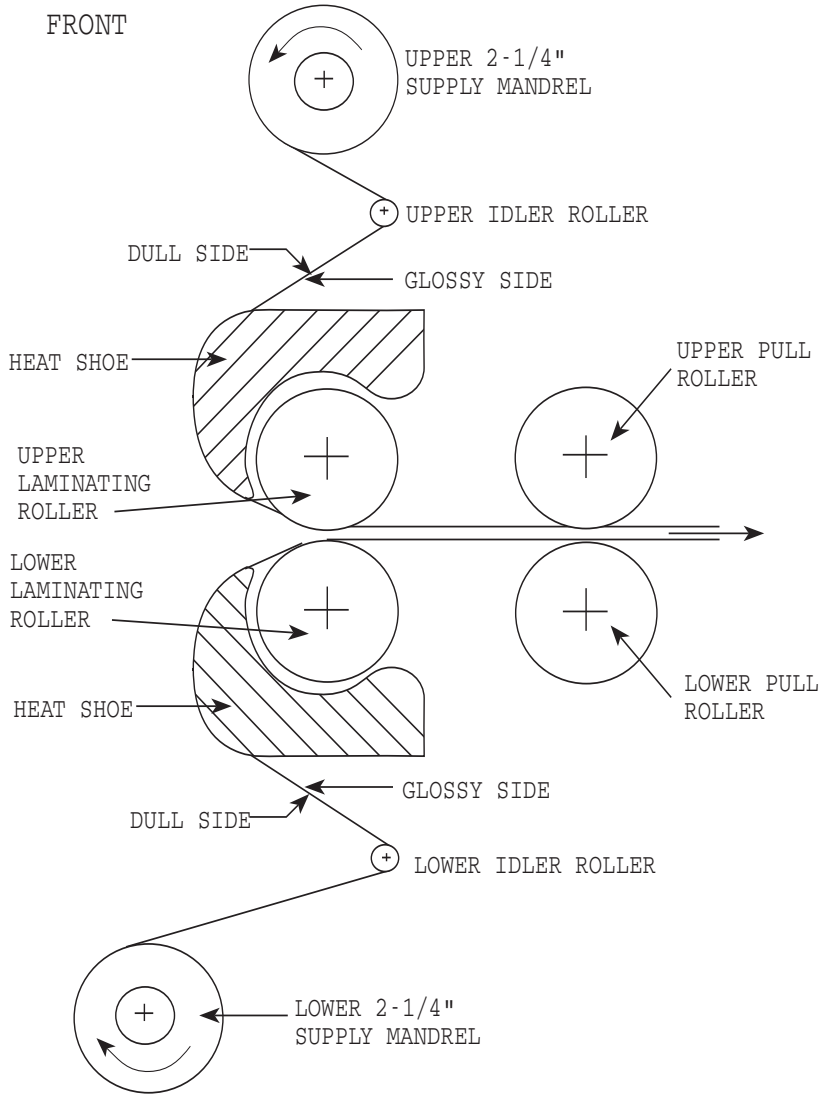
## FILM SPLICES

**NOTE:** When loading your laminating film, check for film splices. These rolls will be clearly marked. Splices are not common but are unavoidable. If you find a splice, place that film roll on the top position so the splice can be monitored carefully. When the splice is ready to come through the laminator, turn the drive off, and rotate the roll of film by hand so the film is very loose. Turn on the drive switch again and allow the splice to run through. If necessary, keep turning the roll of film to keep it slack until the splice is out.



Photo 9B.  
Place each mandrel back on laminator.

# THREADING DIAGRAM



### Step 3:

- Thread the top roll of film under the idler roller. Pull the film down so that the film's lead edge is below the lower heat shoe.
- Next thread the bottom roll of film under the lower idler bar pulling film upward until it is even with the top heat shoe and parallel side to side with the top roll of film. "Tack" it to the top film edge, this creates a film "Web".

**NOTE:** Use caution when threading film around heat shoes.



Photo 11A. Thread film around top idler.

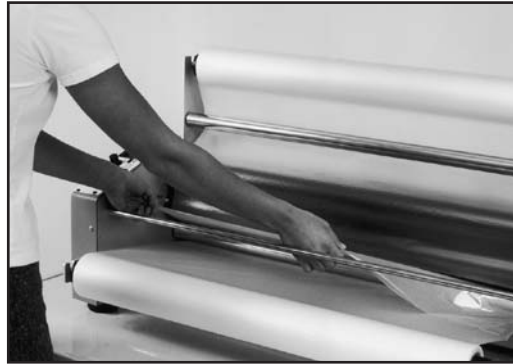


Photo 11B. Thread film around bottom idler.



Photo 11C. Creating a film web.

### Step 4:

- Loosen tension on both rolls of laminating film. Rotate both roller lifts to their full clockwise position. Be sure that the slitters are rotated up and out of the film's path. Turn on the "Drive" switch and using the threading board—push the film web into the laminating rolls. This process will push the web into the pull rolls and exit. Take extra care to ensure that the film exits between the rear rollers. Your laminator is now loaded.

**NOTE:** Slowly run the laminator while threading to help maintain control.



Photo 11D. Loosen tension for each roll of film.

- Remove the threading board and save for your next use.

**NOTE:** Create your own threading board from a piece of poster board 12" x 25".



Photo 11E. Pushing the threading board through.

# TENSION

To adjust tension for upper and lower film rolls, the laminator **must** be loaded and heated.

- Remove the feed tray.
- Loosen both tension control knobs by turning counterclockwise until there is no tension on upper or lower film roll. Film should pull freely. Turn the drive switch "ON."
- As film runs through it will appear wrinkled and bubbly. Gradually increase tension on both rolls, by turning knobs clockwise, until film is smooth on heat shoes. Once film is smooth, stop tightening knobs.
- Once the laminator is loaded, heated and tension adjusted, re-install the feed tray.



Photo 12A.  
Loosening tension.



Photo 12B.  
Clear film exiting laminator after  
correct tension is applied.

## HELPFUL HINTS

*For best results, reset tension with EACH new pair of film rolls.*

*As the film roll supply becomes low it is necessary to decrease tension on the rolls. Reset at approximately the last 1/3 to 1/4 of a roll.*

*Too little tension on the top or bottom roll causes vertical or diagonal streaks in the film as it passes over the heating shoe.*

*If the laminator's speed is set too fast when using thicker films, wrinkling and bubbling may occur.*

**WARNING:** *Excessive tension will lead to increased wear and tear on the laminator.*

# ROLLER LIFTS

The roller lifts should be set to full pressure (rotated fully clockwise) for most encapsulation laminating.

For laminating stock 1/8" or thicker, release the roller lifts by rotating counterclockwise. The lamination should be loaded and heated. Using a 12" x 25" scrap piece of the substrate stock that you will be laminating, push material through the rollers (at the same time you will be pushing the film). Stop when approximately 1" of board is protruding out in front of the heat shoes. Lock roller lifts down one quarter turn past the contact point. Note: Document should not be crushed.

To laminate, butt the substrate piece to be laminated up against the scrap piece. Turn the drive to a slow speed and push the substrate into the laminator while keeping it butted up against the scrap. The scrap and the substrate will run through. Once the pressure has been set, it does not need to be reset until the thickness of the substrate changes.



Photo 13A.  
Roller lift knob adjustments allow for lamination of thicker substrates.

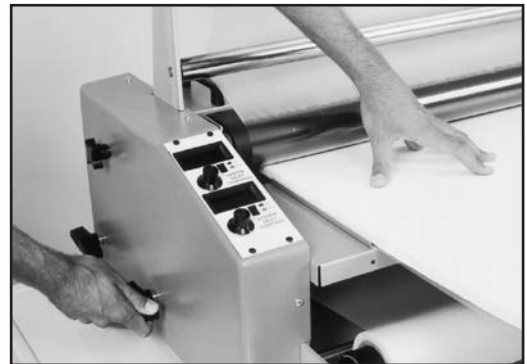


Photo 13B.  
Adjusting the roller lifts to fit specified thickness.

# LOADING & OPERATING PRESSURE SENSITIVE FILM

The MRL42" Roll Laminator/Mounter is equipped with the features necessary to allow the use of pressure sensitive (cold) film with release liners for single side lamination. The Waste Rewind will remove the release liner from the film and wind it onto an empty core, which can then be disposed.

Turn the heat controls to off and allow machine to cool if necessary when using cold films.

The pressure sensitive film must be mounted on the upper supply mandrel (3" core adapters are provided if necessary) and threaded under the idler roller. An empty film core should be mounted on the waste rewind mandrel, and the mandrel mounted onto the laminator.

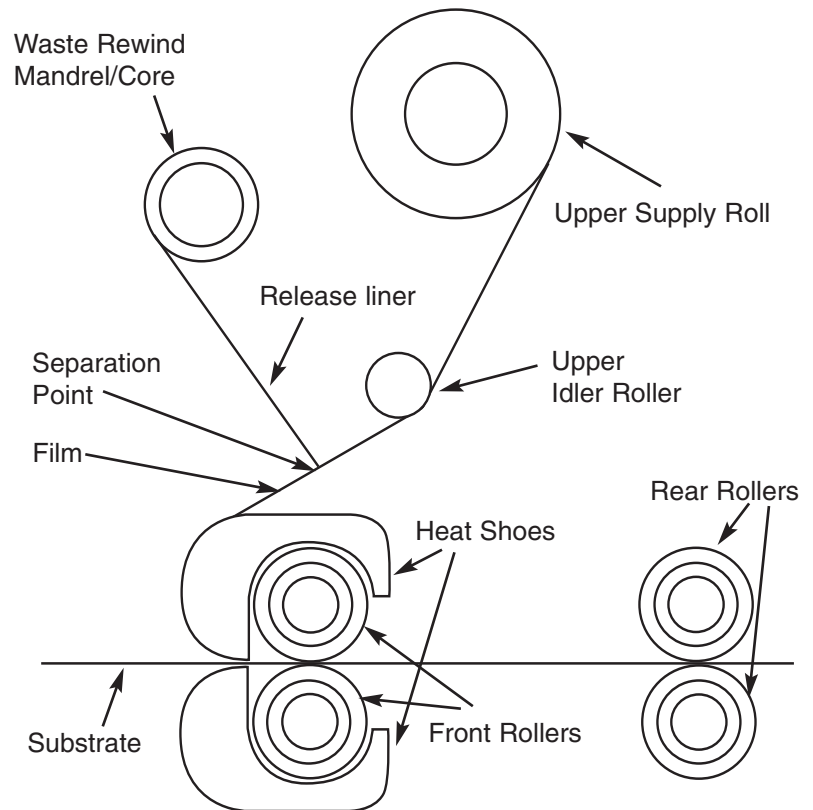
A section of scrap substrate that is at least as wide as the film in use should be started into the front rollers of the laminator.

Separate the release liner from the film for a length of about six inches, and adhere the exposed portion of the film to the substrate that has been started into the machine. Bring the end of the release liner under and up to the Waste Rewind mandrel, and tape the release liner to the spare core that has been installed over the mandrel. The Waste Rewind mandrel may be rotated by hand to assist in the start up. Slowly advance the motor of the laminator, guiding the film and substrate to the rear rollers, while insuring the release liner is firmly attached to the Waste Rewind core.

The separation point for the film and release liner should be between the idler shaft and the point where the film contacts the heat shoe. The separation point can be adjusted by the tension knob on the Waste Rewind Drive Shaft. If the separation point is past the point where the film contacts the heat shoe, tighten the tension knob slowly until the separation point approaches the idler roller. If the separation point is too close to the idler roller, then loosen the tension knob slowly until the separation moves toward the heat shoe. The tension setting should need very little adjustment once set, but should be monitored during operation.

Apply a small amount of tension to the upper supply roll if necessary to clear any wrinkles occurring on the heat shoe. Once the separation point is set, lamination is performed normally. Care should be taken to minimize the gap between successive pieces of substrate being laminated so that the adhesive from the film is in contact with the lower roller as little as possible. Cold films utilizing aggressive adhesives will stick to the laminator's rollers and potentially wrap around. It is also recommended to use supply film widths equal to or narrower than the width of the substrate being laminated.

Note: To encapsulate, run image a second time upside down.



# AUTOMATIC REVERSE FEATURE

Use the automatic reverse feature if laminating film gets wrapped around the rubber roller. Proper care and attention during operation minimizes the need for the use of the reverse feature. However if a “wrap-around” does occur follow these instructions.

**NOTE:** Excessive film wrap around will cause equipment damage.

- Remove the feed tray and cut the film web top and bottom where it wraps around the idler bars.
- Firmly grasp the film web. Be careful to stay clear of the hot heat shoes.
- Turn the speed control knob to a slow speed and depress the reverse switch. Slowly back the film out of the laminator.
- When clear, reload the laminating film.

**WARNING:** Never use a sharp object to cut laminating film on the rubber rollers. Any damage to the rollers will leave a permanent impression on the lamination and require roller replacement.

**NOTE:** To assist in removing jammed film, you can release the roller pressure. Rotate the roller lift knobs counterclockwise and remove film. Reset the pressure.



Photo 14A.  
Automatic reverse switch.



Photo 14B.  
Cut top and bottom film webs where they wrap around idler bars.



Photo 14C.  
Grasp the cut film and gently pull as the laminator runs in reverse at a very slow speed.



# MOUNTING

## **Mounting "One Step"**

It is recommended that you make initial tests and adjustments with scrap pieces of the substrate that you wish to mount to. Mounting materials greater than 1/8" thick will require an adjustment of the roller lifts. This adjustment must be made to both the laminating and pull rollers. See "Roller Lifts" on page 13. The mounting process can be achieved a number of ways: Self-Adhesive mounting boards, spray adhesives, or special purpose mounting films. Dry mount tissue and other heat activated types of foam boards cannot be used with this type of mounting process, as the exposure time to heat is insufficient to activate the adhesive.

### **To mount/laminate materials greater than 1/8" thick:**

1. Open the gap between the rollers to the approximate thickness of the substrate to be used. Turn the roller lift knobs counterclockwise to open the rollers.
2. Utilizing a 12" x 25" scrap piece of substrate, set drive to a slow speed setting and push the substrate into the rollers. Stop when approximately 1" of the substrate is protruding from the rear of the rollers.
3. Readjust roller pressure by gradually rotating each roller lift knob clockwise until the rollers are exerting a slight downward pressure on the substrate.
4. Prepare your image for mounting. If using a Self-Adhesive mounting board, pull back the release liner approximately four inches. If using a standard type of mounting board, prepare it using the appropriate adhesive. Place your graphic on the mounting substrate. At this point only adhere the leading edge of the graphic to the substrate. Do not attempt to adhere the entire image by hand, doing so may result in bubbles or creases. Hold the remaining material up, off the substrate so the graphic does not prematurely adhere to it. Leave a few inches of space between the leading edge of the graphic and the substrate.
5. Butt the desired substrate up against the scrap piece already placed in the laminator in step 2. Turn the drive on to a slow speed, and gently push the substrate into the laminator until the rollers grab and it feeds itself. If using a Self-Adhesive mounting board, grasp the release liner and pull back about 12" to 18". Allow the graphic to slowly contact the mounting board just before entering the laminating rollers. The machine will apply the mounting pressure as the substrate is run through.

## **Mounting "Two Step"**

An alternate mounting method can be accomplished by sandwiching an image between a thermal top overlamine and a pressure sensitive type backing film. This laminated image is then mounted. This method is known as "decaling".

### **Laminating:**

1. Load a roll of Pressure Sensitive Backing film on the bottom mandrel and a roll of laminate on the top mandrel. Set the roller lifts to full pressure. Thread and adjust the tension on both rolls as in "Loading Film" and "Tension".
2. Laminate the image face up as normal. The image is now ready for mounting.

### **Mounting:**

1. Remove lamination film from top and bottom mandrels. Turn off the heat and allow the machine to cool.
2. Adjust roller lifts as described in step 3 in "one step" mounting section.
3. Place the image face down and peel back about 1" of the release liner along the leading edge. Adhere this edge firmly to the leading edge of the mounting board.
4. Set the speed control to slow setting. Push the leading edge into the laminator. Momentarily turn the drive on until the board is just caught by the rollers. Stop the rollers.
5. Flip the image up onto the top mandrel. Grasp the release liner and pull back several inches. Turn the drive back on while grasping the release liner. The mounting board and the graphic will be pulled into the machine. Gradually pull away the release liner. Do not allow the release liner to enter the rollers. If it does, reverse drive and back out the mounting board far enough to release the liner. Continue until all of the release liner is removed and the mounting board exits the machine.

### **Helpful Hints:**

- Once the final pressure has been set, it does not need to be reset until the thickness of the substrate is changed.
- Roller pressure set too high may result in the substrate not feeding through the laminator. Pressure set too low may result in bubbles, wrinkles or crescent shaped marks on the lamination.
- Your mounting substrate should be several inches wider and longer than your image. This makes alignment less critical when the mounting process begins. Final trimming can be easily accomplished.
- When mounting/laminating thin foam boards, it is recommended to laminate the backside of the board as well as the front. This will counter act the tendency of the foam board to bow.



# COOLING FANS

Every MRL Roll Laminator/Mounter is factory equipped with cooling fans.

For the best laminating results the cooling fans should be used. The control for the cooling fans is located on the right control console.

The fan control has three positions: Off, On and Auto. When the auto position is selected, the fans turn on and off automatically with the drive motor.



Photo 15B  
Cooling fans.



Photo 15A.  
Cooling fans plug.

# IN LINE SLITTERS

To conveniently trim your laminated items, your laminator is equipped with in line slitters. The round knob on the left side of the laminator raises and lowers the slitters.

- To adjust where the slitters cut, first remove the laminating film from the rollers.
- Next raise the slitters to their operating position by rotating the control knob.
- Using an Allen wrench, loosen the locking screw on the slitter blocks. Slide the slitter blocks to the desired location.
- Tighten the locking screws.
- Lower the slitters to their retracted position and re-thread the laminating film. Now the slitters can be raised and lowered to use.

Additional slitters can be added.



Photo 15C.  
Using an Allen wrench, loosen the locking screw on the slitter block.



Photo 15D.  
Slide slitter block to desired location.



Photo 15E.  
Exiting lamination trimmed by slitters.

# RE-LOADING A NEW SUPPLY OF FILM ON A HOT LAMINATOR

Allow the old film to run to a point just before it pulls off the supply rolls. Turn the drive switch to "OFF."

Cut the film web with a blade so that approximately 5" of film extends beyond each idler bar.

**CAUTION:** When using a sharp object to cut film (blade or shears), avoid contact with heat shoes or rubber rollers.

- Remove the old cores and replace with new rolls of film.
- Loosen the tension on the film rolls. Thread the new web of film around the idler bar and tape it to the remaining segment of the expended roll.
- Run film through the laminator until the new web of film clears the pull rollers.



Photo 16A.  
Cut the film web, leaving approx. 5" of film extended beyond the idler bar.

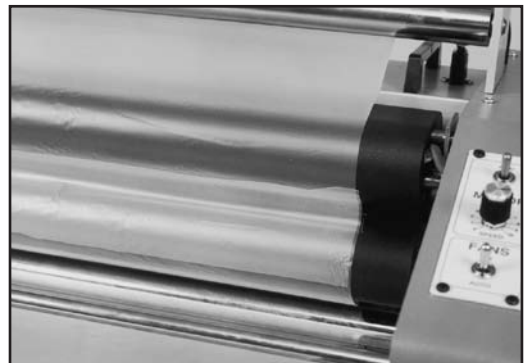


Photo 16B.  
Tape new film web to remaining segment of previous film roll.



Photo 16C.  
Run laminator until clear film exits.

# CLEANING THE HEAT SHOES

With continuous use the heat shoes may accumulate adhesive and dirt. It is recommended that you periodically inspect them for adhesive build-up.

Use USI's Laminator Cleaning Kit, which contains a foam cleaner for use on the heat shoes & rubber rollers, a coarse scrubbing pad designed for cleaning rubber rollers, and a mesh covered sponge, for removal of any adhesive buildup on the heat shoes.



**NOTE:** Be sure to clean the heat shoes only when the laminator is cool.

**CAUTION:** Teflon coated heat shoes are scratchable.

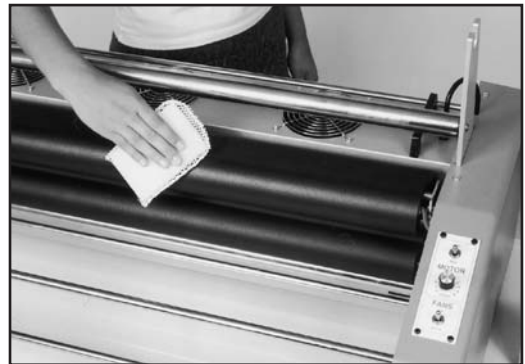


Photo 17A.



Photo 17B.

# REMOVING THE UPPER HEAT SHOE

Remove the upper heat shoe to gain access to the laminating rollers for cleaning.

- Unplug laminator and allow it to cool to room temperature.
- Remove upper cooling fans.
- Rotate front roller release knob to its full counter-clockwise position.
- Lift front of heat shoe and unhook from hangers.
- Rotate front roller release knob to its full clockwise position.
- Place towel or other padded material on feed table.
- Grab the rear of the heat shoe and rotate it over so that the heat shoe is upside-down.
- Rest heat shoe on feed table.

**CAUTION:** Use care and do not pull on or put excessive stress on heat shoe wires.

To re-install heat shoe, reverse the above procedure.



Photo 18B.  
Remove cooling fans.

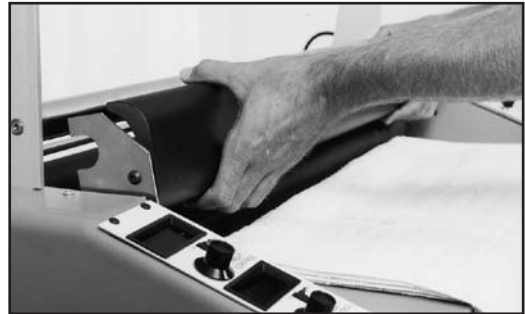


Photo 18C.  
Unhook heat shoe from hangers.



Photo 18D.  
Rest heat shoe on cushioned feed table.

# CLEANING THE RUBBER ROLLERS

Periodically inspect the rubber laminating and pull rollers for adhesive build-up.

**NOTE:** *If indentations begin to appear on the surface of finished laminations, this may indicate that cleaning of the rollers is necessary.*

- Before cleaning be sure the laminator is cool.
- Use a dry Scotch Brite® pad to remove excess adhesive from the rollers. Follow up by using the Cleaning Fluid with the mesh covered sponge pad.
- Turn the drive switch on and off to advance the rollers and clean each section at a time.  
To clean the lower rollers simply raise the roller lifts.



Photo 19A.  
Cleaning rubber rollers.

**WARNING:** *Do not use any sharp metallic objects or steel wool to clean the rubber rollers. Use of such abrasive objects can damage the rubber surface of the rollers. USI strongly recommends the Laminator Cleaning Kit for all of your cleaning needs.*

## LAMINATOR LUBRICATION

Oil the drive chain every six months with a light weight oil.

To avoid binding of the laminating and pull rollers, periodically oil the bronze bushings. Bushings are located at the end of each roller.

**NOTE:** *Any type of light oil (example: WD40) can be used for the above purposes. Use sparingly.*



Photo 19B.



Photo 19C.

# TROUBLE SHOOTING

## **COMMON EXAMPLES OF PROBLEM LAMINATING . . . and their causes.**

### **A. FILM NOT BONDING TO SUBSTRATE OR TO ITSELF AT SEALED EDGES**

Causes:

1. The heat (on either or both heat shoes) is set too low.
2. Film tension is too tight.
3. Film is threaded incorrectly.
4. The pressure setting is not correct.

### **B. WRINKLES OR IRREGULAR WAVES RUNNING ACROSS THE LAMINATED WEB (PERPENDICULAR TO THE EDGE)**

Causes:

1. The heat set is too high.
2. Not enough tension on the supply mandrels. (Large, irregular waves).
3. Too much tension on the supply mandrels. (Small, fine wrinkles known as the “orange peel” effect).
4. The rubber laminating rollers are not clean.
5. The pressure adjustment for the laminating and pull rollers is out of adjustment.

### **C. STRETCH LINES RUNNING WITH WEB (PARALLEL TO THE EDGE)**

Causes:

1. Too much tension on the supply mandrels.
2. The heat is set too high on either or both heat shoes.
3. The heat shoes or rollers are not clean.

### **D. BLISTERS ON SURFACE OF SUBJECT OR ALONG EDGE OF SUBJECT**

Causes:

1. The heat is set too high on either or both heat shoes.
2. Excessive moisture in the paper being laminated. (If inks are not dry, this may also cause blisters).  
For high moisture content substrates, use USI's low temperature films with a bonding temperature of 185°—190°. For best results, allow the prints to dry fully.
3. The rubber laminating rollers are not clean, or are damaged.
4. The rollers are not in full press position (rotated fully clockwise.)

### **E. CURLING OF THE FINISHED LAMINATION**

Causes:

1. Unbalanced tension on the supply rolls. Too much tension on the top supply roll will cause the web to curl up. Too much tension on the bottom roll will cause a downward curl in the web.
2. Film has been threaded incorrectly.
3. Heat is unbalanced in the top or bottom heat shoes. If the subject curls up, there is too much heat in the top shoe. If it curls down, there is too much heat on the bottom shoe.

### **F. WRINKLING AROUND EDGE OF LAMINATED ITEM**

Causes:

1. Item to be laminated is too thick.

Possible Solutions:

- a. Loosen tension
- b. Use thicker film
- c. Flush cut item

### **G. BOTTOM RUBBER ROLLERS TURN BUT TOP RUBBER ROLLERS DO NOT**

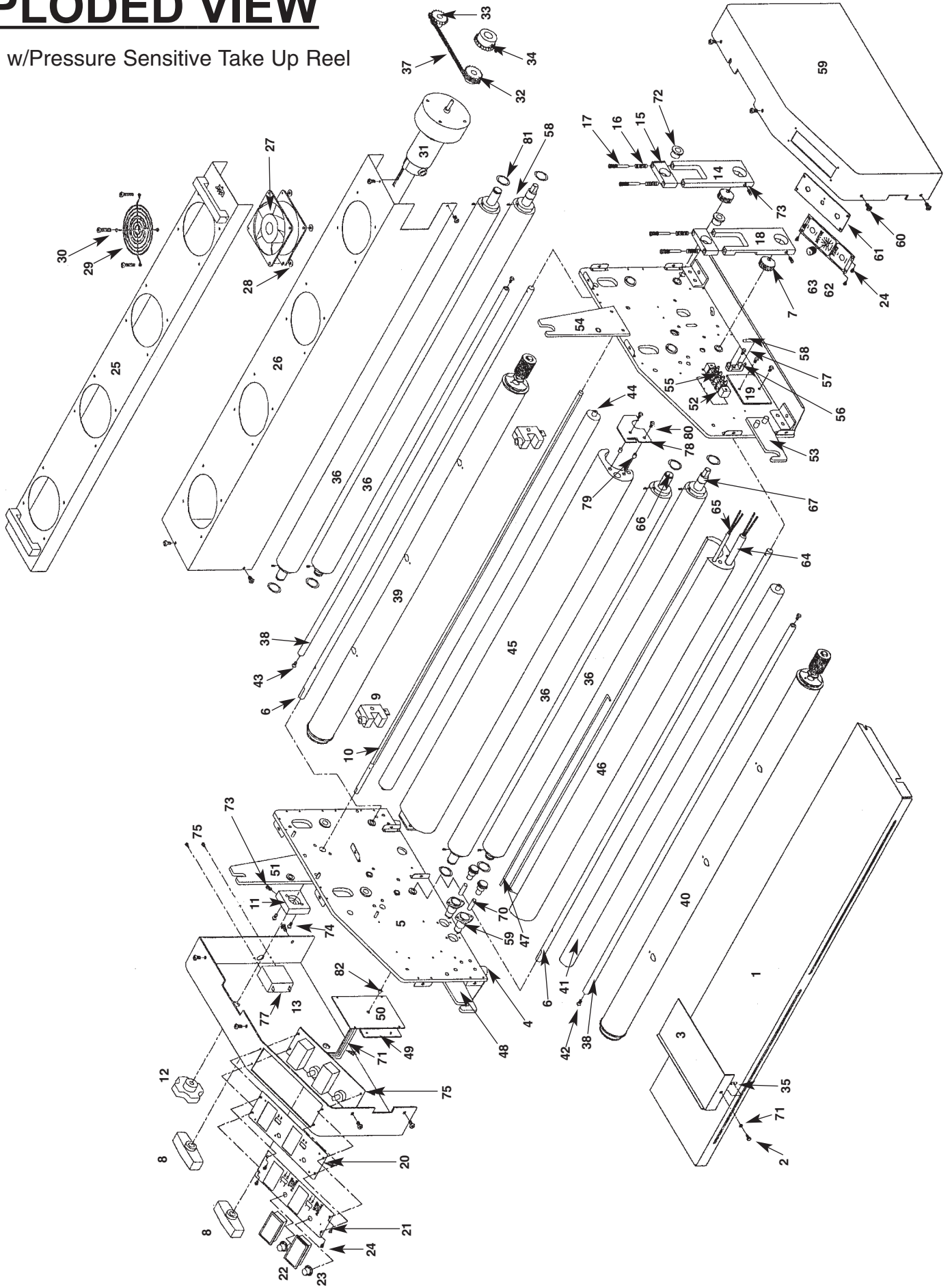
1. The tension is too tight.
2. Film has not been threaded correctly.
3. Film was loaded backwards. (Adhesive against heaters)
4. Not enough roller pressure.





# EXPLODED VIEW

MRL 42 w/Pressure Sensitive Take Up Reel



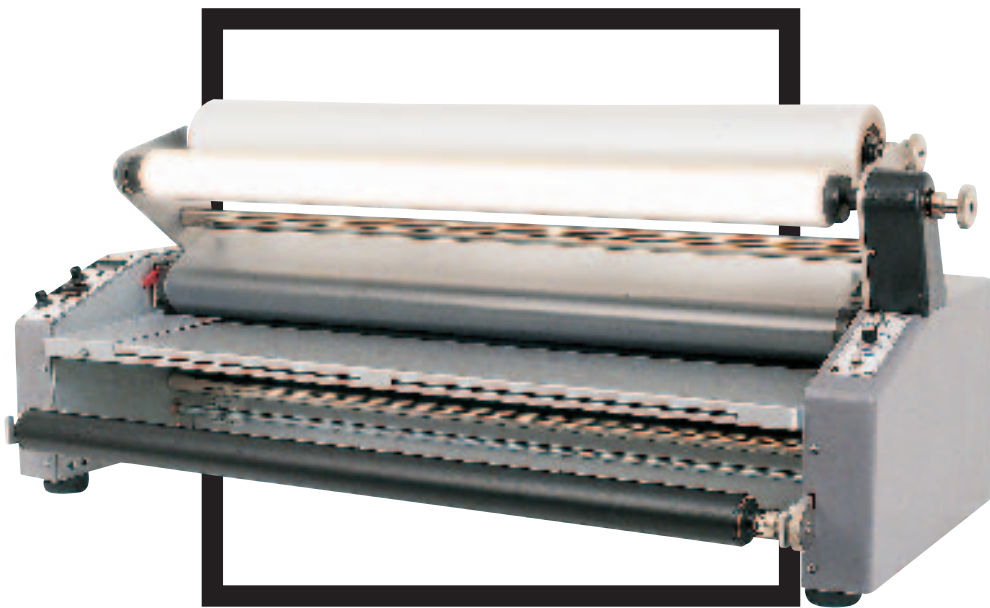


# PARTS LIST

- 1 Feed Table
- 2 Screw, 8-32 x 3/8
- 3 Feed Guide
- 4 Rubber Foot
- 5 Left Side Panel
- 6 Camshaft
- 7 Cam
- 8 Roller Lift Knob
- 9 Blade Holder Block
- 10 Slitter Bar
- 11 Slitter Mounting Block
- 12 Slitter Knob
- 13 Left Side Cover
- 14 Lower Connector
- 15 Upper Connecting Plate
- 16 Pressure Spring
- 17 Screw 1/4-20 x 1-1/4
- 18 Lower Connector, Front Right
- 19 Motor Control 240v
- 20 Display Board Bracket
- 21 Display Label
- 22 Bezel/Filter Assembly
- 23 Knob, Black Cap
- 24 Screw #8 x 1/2 Pan Head
- 25 Fan Mount
- 26 Motor Housing
- 27 Fan 105CFM, 220VAC
- 28 Nut, 6-32 Hex
- 29 Fan Guards Boxer
- 30 Screw, 6-32 x 7/8 Phillips Pan Head
- 31 Motor, KMG, 32 RPM 90v
- 32 Sprocket, 25B20 1/2"
- 33 Sprocket, 25B19 1/2"
- 34 Sprocket, 25B23 5/16"
- 35 Tinnerman Nut #8-32
- 36 Roller
- 37 Chain
- 38 Reinforcing Bar
- 39 Upper Supply Roll SA
- 40 Lower Supply Roll SA
- 41 Lower Idler Roll 1.25"
- 42 Screw, 1/4-20 x 3/4 Button Head
- 43 Screw, 1/4-20 x 5/8 Flat Head Hex
- 44 Upper Idler Roll 1.25"
- 45 Upper Heat Shoe SA
- 46 Lower Heat Shoe SA
- 47 Industrial Thermocouple
- 48 Supply Roller Support, Lower Left
- 49 Heat Sink
- 50 Display Board
- 51 Supply Roll Support, Upper Left
- 52 Terminal Block Marker
- 53 Supply Roll Support, Lower Right
- 54 Supply Roll Support, Upper Right
- 55 Terminal Block
- 56 Fuse Holder
- 57 Screw, #6-32x3/8 Phil Pn Hd
- 58 Fuse, 4A/250v SLO BLO
- 59 Right Side Cover
- 60 10 x 3/8 Pan Phil
- 61 Switch Mounting Bracket
- 62 Switch Label
- 63 Knob - AV
- 64 Heater, 1200W, 240v
- 65 Thermal Cutoff
- 66 Upper Roll Shaft
- 67 Lower Roll Shaft
- 68 Screw, 10-32 x 3/8 Set
- 69 Fuse Holder, Panel Mount
- 70 Fuse 30 AMP @ 250v
- 71 Washer, 3/16 x 1/2 x 1/16 Thick
- 72 Bushing, 3/8 x 1/2 Flange
- 73 Ball Plunger Screw
- 74 Screw, 10-32 x 1 Button Head
- 75 Screw, 6-32 x 3/8 Button Head
- 76 Display Board
- 77 Switch 30A, 250v, DPST, On/Off
- 78 Heat Shoe Mounting Bracket
- 79 Spacer 1/4 x 1/2
- 80 Screw, 1/4-20 x 1 BH Hex
- 81 Clip, Retaining Ring
- 82 Spacer/Support, PC, 1/4
- 83 PS Waste Rewind Mandrel, SA (42" Only)
- 84 PS Waste Rewind Shaft (42" Only)
- 85 Top D-Slot Friction Plate (42" Only)
- 86 Leather Washer 1-114-W (42" Only)
- 87 Sprocket 25B30 1/2, 1/4-20 (42" Only)
- 88 Chain, PS Waste Rewind (42" Only)
- 89 Compression Spring 7912197 (42" Only)
- 90 PS Waste Rewind Cover, Industrial (42" Only)
- 91 Knurled Nut (42" Only)
- 92 Sprocket 25B30 5/8 (42" Only)
- 93 Bushing 1/2 x 5/8 x 5/8 (42" Only)

**Note:** When ordering parts, specify the following:  
Item #  
Part Description  
Machine Model Number  
Machine Serial Number

# WIDE FORMAT LAMINATING



**MRL SERIES ROLL  
LAMINATORS/MOUNTERS**

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