

**USI**  
Inc. Since 1975

Your Source For Lamination®

*Classic*

**ARL Series Laminators  
Operation And Maintenance Manual**



*Plus*

New Addendum for 25" and 27"  
CSL Roll Laminators On Page 39.

# 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 Technical Assistance Hotline, M-F 8am-7pm EST, at 800-752-9131.



**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 receipt of your warranty registration card. 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. Warranty does not include damage due to operator error or general maintenance. When necessary, purchaser shall properly pack and return the unit to the nearest 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 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 seven major chapters, each covers a different subject heading.
- Each chapter is further broken down into parts.  
Each part contains a detailed discussion, including photographs and figures, covering either an operation or maintenance procedure for your laminator.
- Photographs and Figures are numbered on each page for quick reference.
- Please pay special attention to particular notes and caution statements. These comments alert you to information the 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. Larger models weigh 60 pounds or more.
- **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 manual reverse (or automatic if equipped) 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. If your laminator is equipped with a heat shoe guard, do not operate without this guard in place.
- **Watch out for cutter blade at rear of laminator.** Blade is extremely sharp.
- **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 drive switch OFF** before walking away or leaving the laminator unattended.
- **Before lifting or moving laminator,** turn drive switch OFF, turn heat switch OFF, unplug unit 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 it from a receptacle. 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 Technical Assistance department (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. Note: Always turn laminator off and unplug before servicing.
- **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.

# LAMINATOR INTRODUCTION

USI ARL series roll laminators are uniquely designed and engineered to be user friendly, reliable and virtually trouble free. USI's modular construction makes them easy to maintain and repair. All equipment controls are basic in design, functional and positioned for easy access.

## Location:

Tension adjusting knobs (A) are located at the right end of the supply mandrel (B) for easy access. The control panel (C) is located on the left side housing (D).

The control panel (C) contains a heater switch with an indicator light (E), a speed control knob (F) and a three position motor drive switch (G) for forward, off and reverse.

Thermometer access holes (H) on the left side housing (D) allow for easy temperature checks of either top or bottom heaters using the removable thermometer (I) provided. Heatshoe temperature adjusting ports (J) make it easy to change the temperature for using various laminating films. The feed tray (K) and paper guide (L) provide a smooth surface for feeding the machine and the heat guard (M) helps protect hands from hot surfaces. Teflon heat shoes (N) heat the laminating film to activate the adhesive. Your laminator can use a variety of thicknesses and types of laminating film, 1.3, 1.5, 3 and 5 mil medium weight films. Any width of film can be used, up to the maximum machine capacity. For film types and applications, consult your current catalog.

- A** Tension Adjusting Knobs
- B** Supply Mandrel
- C** Control Panel
- D** Left Side Housing
- E** Heater Switch
- F** Speed Control Knob
- G** Motor Drive Switch
- H** Thermometer Access Holes
- I** Thermometer
- J** Heat Adjusting Ports
- K** Feed Tray
- L** Paper Guide
- M** Heat Guard
- N** Heat Shoes
- O** Reverse Crank
- P** Footage Counter (factory installed option)



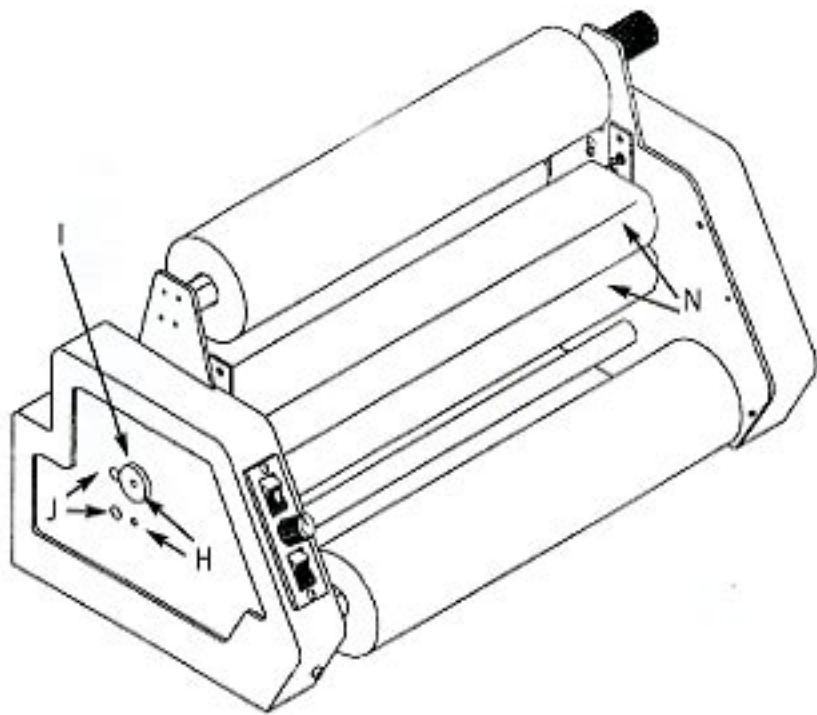


Figure 7-1

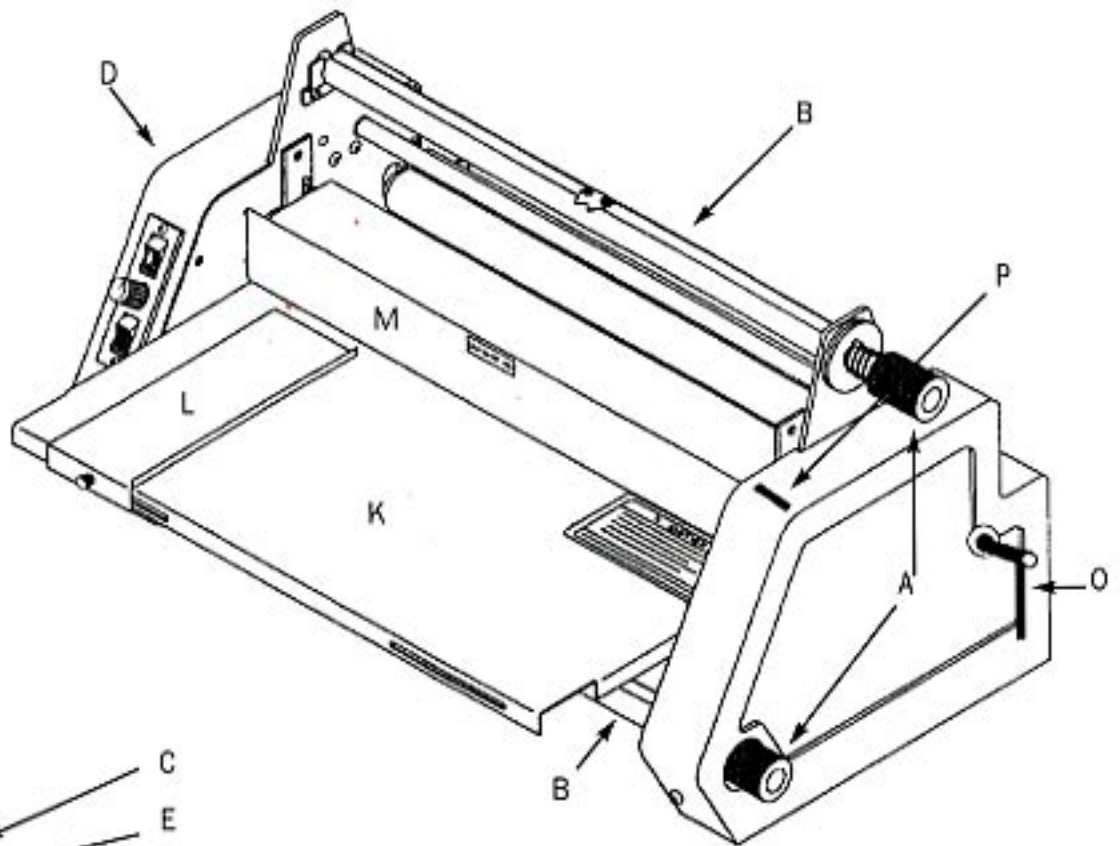


Figure 7-2

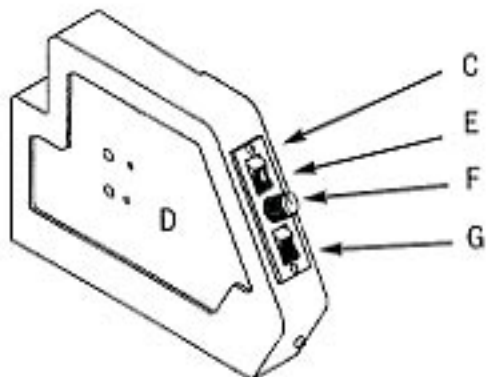


Figure 7-3

## 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. A USI laminator cabinet is an excellent choice for a work area. It can easily be moved and provide sufficient storage for film in the cabinet below.

**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.



Photo B-1

## ELECTRICAL REQUIREMENTS

All USI laminators are powered by a standard 115 volt, three prong outlet.

## ELECTRICAL SPECIFICATIONS

Model ARL12VSR	12.5 amp / 1200 watts
Model ARL18VSR	14 amp / 1700 watts
Model ARL25VSR	12.8 amp / 1536 watts
Model ARL27VSR	20 amp / 2300 watts



# UNPACKING YOUR LAMINATOR



Photo 9-1

Your laminator comes packed in **one** carton. It contains (1) laminator, (1) heat guard, (1) top supply mandrel, (1) bottom supply mandrel, (1) threading board (1) feed table/tray and this operational manual. (See diagram P.7)

First open the box and remove the top foam insert. Carefully remove the laminator from the carton by grasping the sidehousing and lifting. Do not lift by the upper idler bar. This bar can bend and cause poor laminating results.

For shipping purposes, white plastic tie straps are used to hold the power cord, heat shoes and accessories in place. These straps are 1/8" wide and should be cut and removed prior to set up.

## **Be sure to save the shipping carton . . .**

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



Photo 9-2

**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.

# LOADING FILM . . . In 4 Easy Steps!

**NOTE:** Depending on the model of your laminator, 1" or 2 1/4" core film is required. Loading film procedures vary slightly between the two, before proceeding check to see which film your laminator requires.

## STEP 1:

Select the two rolls of film that you wish to use. Both types of film should be of the same size, type and thickness. Next, take the bottom supply mandrel (labeled "Low") 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 film roll and center roll on the mandrel. See Figures 10-1 and 10-2.

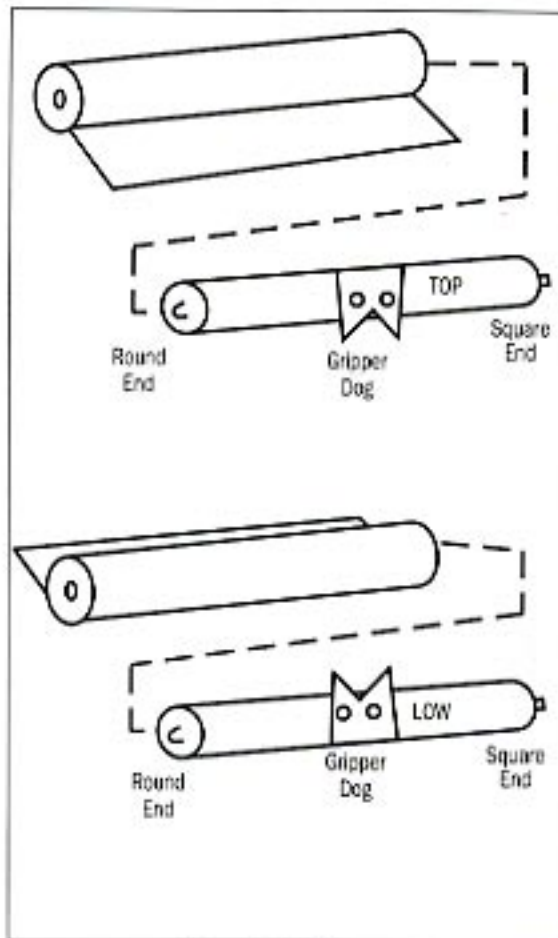


Figure 10-1 1" Core

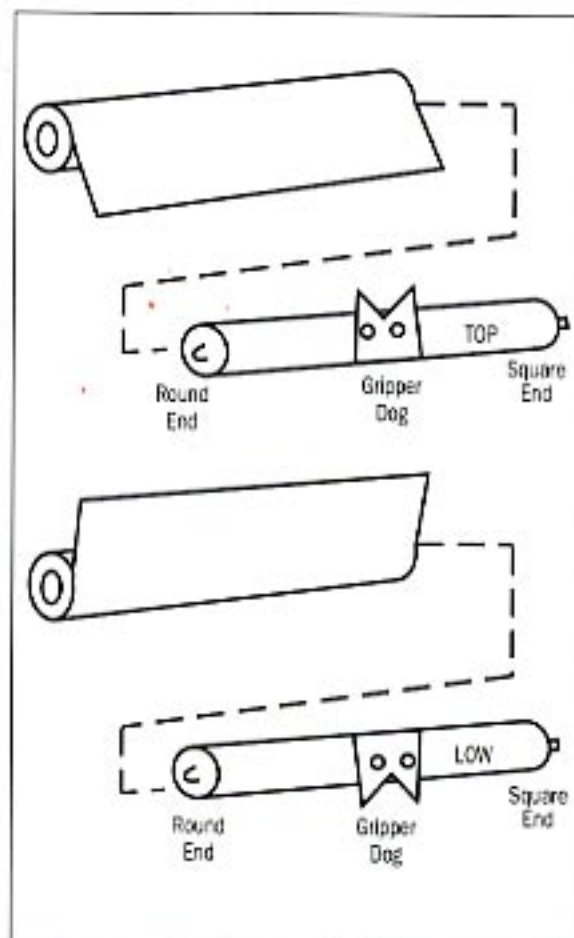


Figure 10-2 2-1/4" Core

**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 tension is very loose. Turn the drive switch on again and allow the splice to run through. If necessary, keep turning the roll of film to keep it slack until the film is out.

**CAUTION:** Do not apply excessive force to the ends of the mandrel (i.e. with a hammer). Force will cause damage.

## STEP 2:

Place the lower roll on the laminator. Insert right side first, then lower the left side into the roll bracket. Photo 11-1.

**CAUTION:** When loading the laminator, be sure the heat is turned off and the machine is cool.

Take top supply mandrel (labeled "Top") insert it in the desired roll of film, (step 1) place on laminator. Photo 11-2.



Photo 11-1



Photo 11-2

**NOTE:** 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.

## THREADING DIAGRAMS

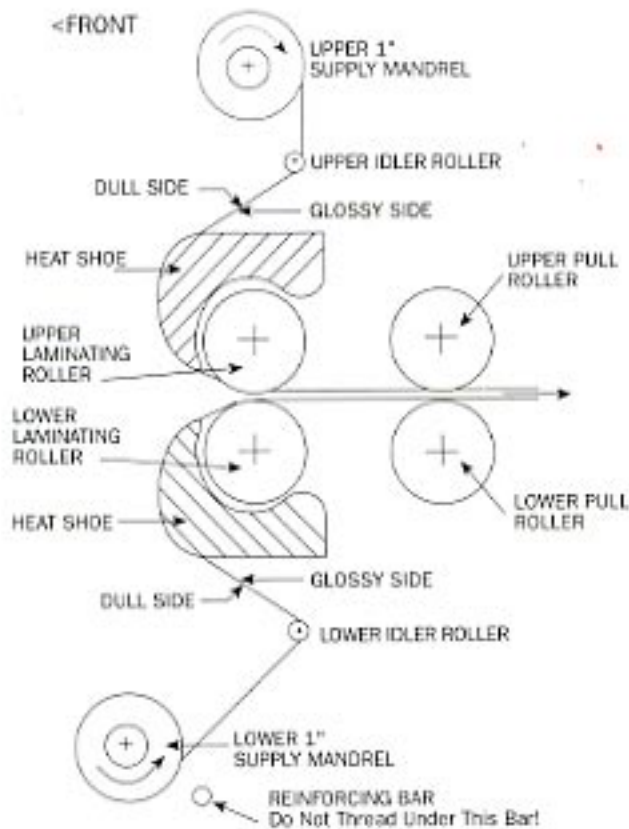


Figure 11-3  
Threading for 1" Mandrels

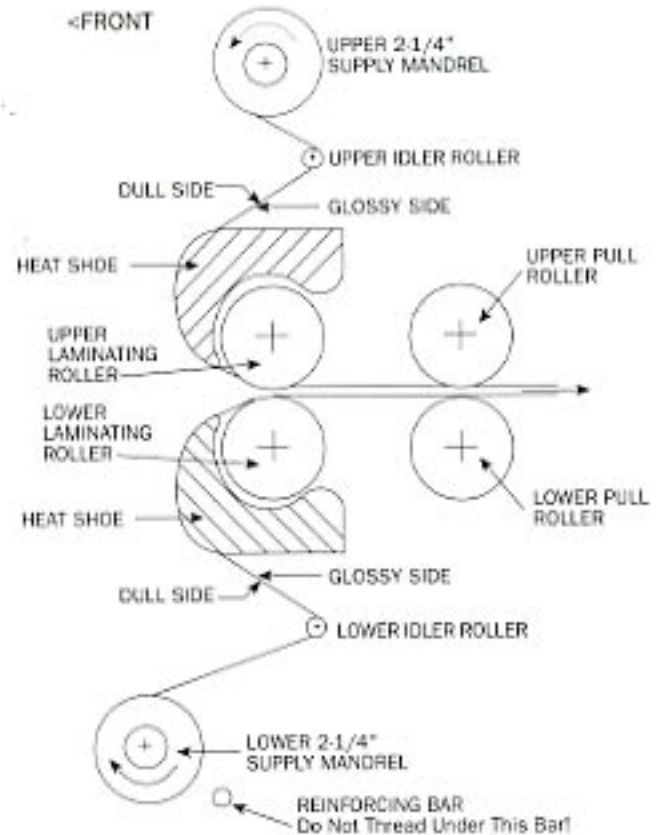


Figure 11-4  
Threading for 2-1/4" Mandrels



**STEP 3:**

Thread the top roll of film under the idler roller as shown in the threading diagrams on previous page (see Figures 11-3, 11-4). 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 (the film will overlap). Tape it to the top film edge. This creates a film "Web".

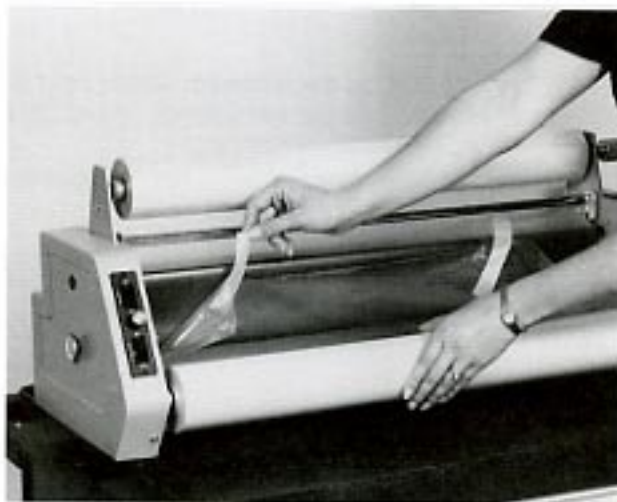


Photo 12-1: Creating Film Web

**STEP 4:**

Using Tension Adjustment knobs, loosen tension on both rolls of laminating film. Turn the speed control knob to a slow speed. Turn on the "Drive" switch and using the threading board—push the film web into the laminating rollers. This process will push the web into the pull rollers and exit. Ensure that the threading board and film exit between the rear pull rollers.



Photo 12-2: Threading board film web entering.

**NOTE:** On machines with a variable speed motor, slowly run the laminator while threading, to help maintain control.



Photo 12-3: Threading board and film web coming through the pull rollers.

Your laminator is now loaded and ready to be heated. Remove the threading board and save for your next use.

**NOTE:** If you loose your threading board or if it becomes damaged, you can make your own with a piece of poster board. Cut poster board 6" wide by the length of the laminator.

**NOTE:** Laminators with variable speed motors require slower speed to run thicker films.



Photo 12-4: Threading board and film web exiting pull rollers.

# HEAT SETTINGS

Turn the heat switch to the "ON" position. The red indicator light will illuminate and remain lit while the heat switch is in this position. Prior to laminating, allow the machine to pre-heat approximately 15 minutes in order to stabilize the temperature. Temperature settings depend on film type. The temperature is preset at the factory, but may require adjustment depending on what type of film you use.

Each USI laminator comes equipped with a removable thermometer to determine a temperature setting on upper and lower heat shoes. Insert the thermometer into the hole to the right of the thermostat access covers.



Bottom  
Photo 131



Top  
Photo 132

Set the heat range of the laminator accordingly. (See above chart based on film type.)

**NOTE:** Lighter paper stock should run in the lower part of the range, and thicker stock in the upper heat range.

TYPE	HEAT RANGE
Standard/SF	260-290°F
Opti Clear	210-245°F
Photo Plus/LM	220-250°F
DigiSeal	180-220°F



Photo 133

# ADJUSTING HEAT

**NOTE:** For ARL12VSR, see special instructions on bottom .

**Laminator must be unplugged.**

Thermoswitches (control heat shoe temperature) are accessible through holes on the left side of the laminator. To locate the heat adjustment screw on either thermoswitch, remove the access covers, then insert a small flat head screwdriver through the hole until it rests on the heat adjustment screw.

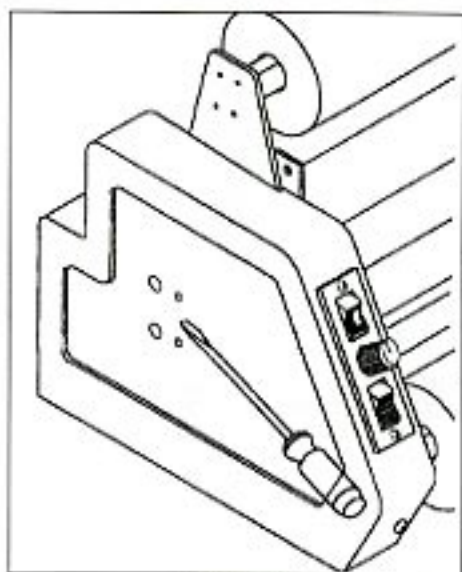


Figure 14-1

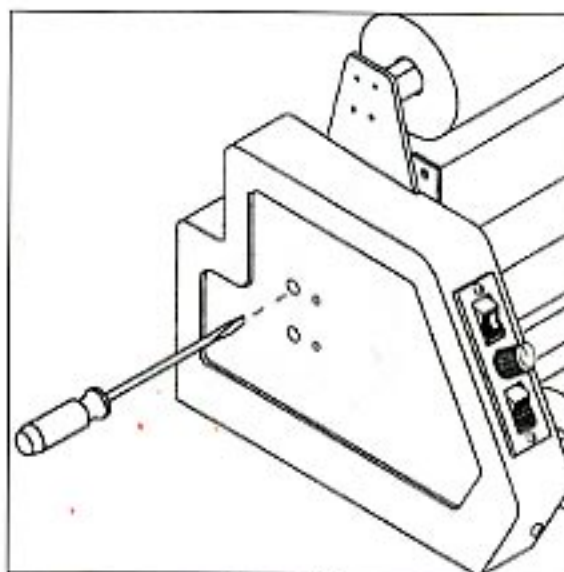


Figure 14-2

- To increase heat, turn the screw counter-clockwise.
- To decrease heat, turn the adjustment screw clockwise.

**A 1/4 turn changes the heat setting by approximately 30 degrees.  
Only turn the screw 1/4 turn at a time. Adjust heat in small increments.  
Allow several minutes between adjustments for temperature to stabilize.**

**Caution:** Do not turn the heat adjusting screw all the way out counter clockwise, doing so can ruin the thermoswitch.

**ARL12VSR:** The ARL12VSR does not have internal heat adjustment screws. It has adjustment knobs located on the left side panel. Turn the knobs counter clockwise to increase heat or clockwise to decrease heat. When adjusting, turn the knob 1/4 turn and wait 5 minutes. Check the temperature and adjust as needed one 1/4 turn at a time.

**CAUTION:** On all ARL Laminators, do not turn the heat adjusting screw or knob all the way out counter clockwise. This can damage the thermoswitch, requiring a new thermoswitch.



# TENSION

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

Remove the heat guard and feed tray. Loosen both tension control knobs by turning counterclockwise until there is no tension on upper or lower film rolls.

Photos 15-1, 15-2.

Film should pull freely.

Turn the drive switch "On."

As film runs through it will appear wrinkled and bubbly, as photographed right, 15-3.

Gradually increase tension on both rolls, by turning knobs clockwise, until film is smooth on heat shoes. Once film is smooth, stop tightening knobs.

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

**NOTE:** As the film roll supply becomes low it is necessary to decrease tension on the rolls.

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

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

Once the laminator is loaded, heated, tension adjusted—install the Feed Tray and Heat Guard. Photos 15-4, 15-5.



Photo 15-1



Photo 15-2

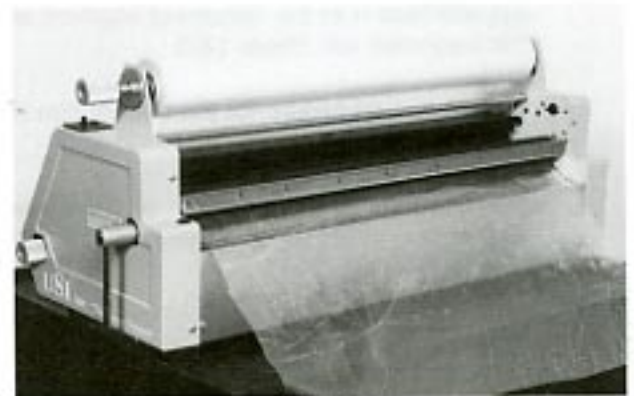


Photo 15-3



Feed Tray Photo 15-4



Heat Shoe Guard Photo 15-5

# RELOADING A NEW ROLL OF FILM ON A HOT LAMINATOR

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

Cut the film web with a blade so that approximately 5" of film extends beyond the idler bar. Photo 16-1.

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

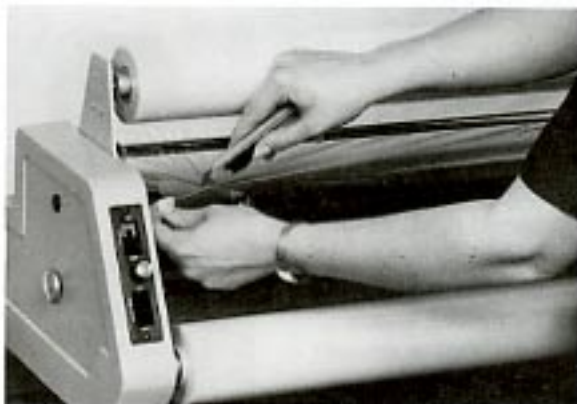


Photo 16-1

Remove the old cardboard cores and replace with new rolls of film. Photo 16-2.

Loosen the tension on the top film roll.  
Thread the new web of film around the idler bar and tape it to the remaining segment of the expended roll. Photo 16-3.

Repeat this procedure for the bottom film roll.

Run film through the laminator until the new web of film clears the pull rollers. Photo 16-4.

Readjust tension.



Photo 16-2



Photo 16-3

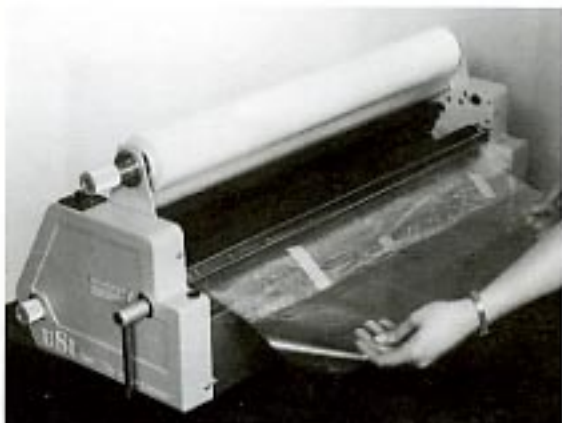


Photo 16-4

# CLEANING THE HEAT SHOES AND ROLLERS



Photo 17-1

With continuous use the heat shoes and rubber rollers 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 poly-off cleaning fluid, a coarse scrubbing pad and a mesh covered sponge, for removal of any adhesive build up.

Moisten the sponge pad with poly-off cleaning fluid and wipe down the heat shoes.



Photo 17-2

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

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

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

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

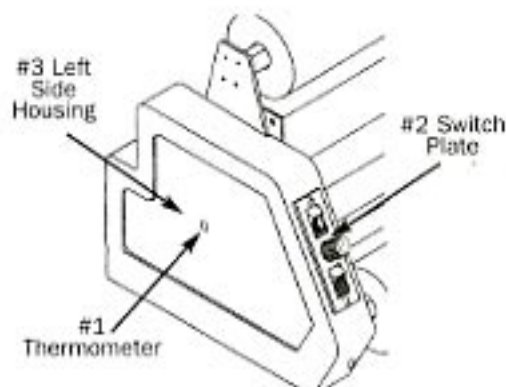


Figure 17-3

## UPPER HEAT SHOE REMOVAL INSTRUCTIONS

1. Unplug laminator and allow it to cool to room temperature.
2. Remove the thermometer, see #1, figure 17-3.
3. Remove the switch plate by unfastening two Allen screws, and speed knob.
4. On ARL12 VSR with external temperature control, remove the thermoswitch adjustment extension shaft by loosening it's Allen Head set screw and sliding the extension off of the thermoswitch adjusting screw. Never try to remove the extension shaft by rotating it counter clockwise, this will ruin the thermoswitch. See figure 17-4.
5. Remove left housing by unfastening three Phillips head screws, see #3.
6. Wiring from the heat shoe will now be exposed, see #4 on figure 18-1 on page 18.
7. Unplug the wire connectors, see #5, from the terminal block, see #6 on figure 18-1.
8. Gently lift the heat shoe and pull forward being careful not to damage the wires.

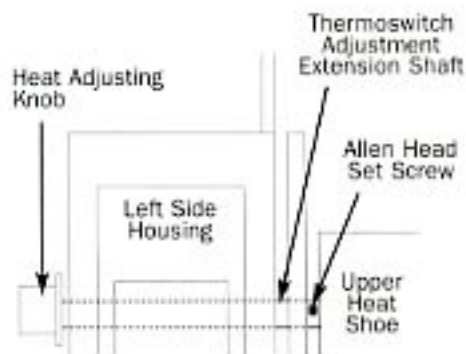


Figure 17-4



# TERMINAL BLOCK

Terminal Block (located within the left side housing.)

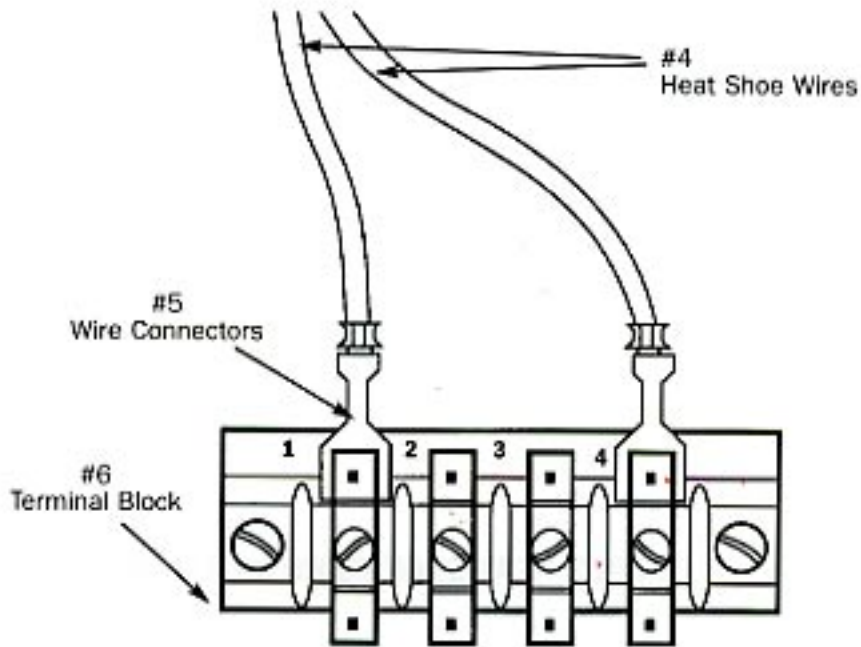


Figure 18-1

**NOTE:** For clarity, only upper heat shoe wires are shown attached to the terminal block.

# CLEANING THE RUBBER ROLLERS

**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.

Photo 19-1.

Turn the drive switch on and off to advance the rollers and clean each section at a time.

Wipe clean with the sponge pad and Poly-off solution from USI's Laminator Cleaning Kit.

Photo 19-2.



Photo 19-1

**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.



Photo 19-2

## TO REINSTALL THE HEAT SHOES

- Ensure laminator is unplugged.
- Guide heat shoe wires exiting from left end of heat shoe through the slot on the left side of frame.
- Lower the left end of the heat shoe onto it's bracket first. Next, lower the right end.
- Plug wires into terminal block as shown in Figure 18-1.
- Install the left side housing, switch plate, thermometer, and speed knob.  
(Install temperature control extensions on laminators if so equipped.)

# REMOVING THE RUBBER ROLLERS

**NOTE:** Only remove rollers if they are cut or in poor condition.

**NOTE:** The following procedure removes all 4 rollers. In certain instances, it is not necessary to remove all 4 rollers, therefore, remove as required.

## STEP 1:

Remove all film from laminator. Photo 20-1.

## STEP 2:

Unplug laminator.

## STEP 3:

Remove the side housing on both sides of the laminator.

## STEP 4:

Remove the top heat shoe, Photo 20-2.  
Refer to diagram and instructions on page 17.

## STEP 5:

Unfasten and remove the pressure adjusting screws on both sides of the laminator. Photos 20-3, 20-4.



Photo 20-1



Photo 20-2

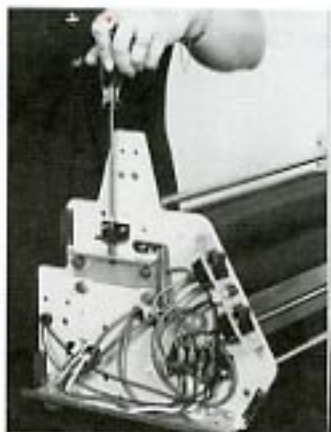


Photo 20-3

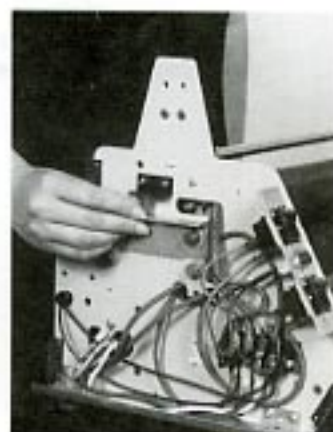


Photo 20-4

## STEP 6:

Loosen the Allen head set screws on the left and right ends of the top rubber rollers. Photo 20-5.

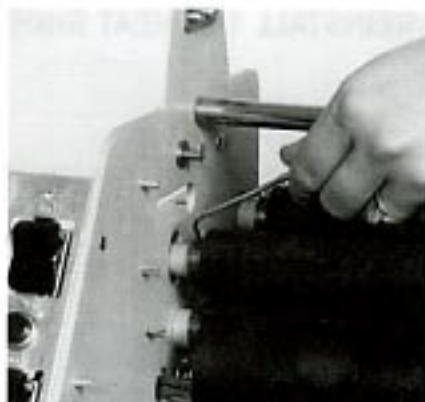


Photo 20-5



Photo 20-6



**STEP 7:**

To remove the upper roller, slide the roll shaft out of the roller and then lift the top rubber rollers from the laminator (top laminating rollers shown). Photos 20-6, 21-1.



Photo 21-1

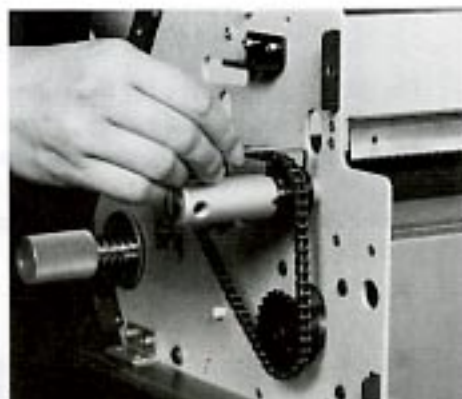


Photo 21-2

**STEP 8:**

Loosen the set screws of the lower roller sprockets. (Pull roll shown.) Photo 21-2.

**STEP 9:**

Loosen the Allen head set screws on the left and right ends of the lower rubber rollers. (Lower pull rollers shown.) Photo 21-3.

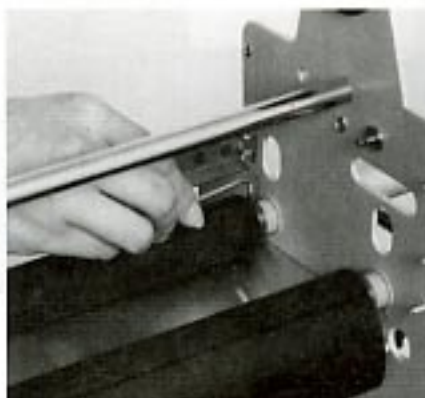


Photo 21-3



Photo 21-4

**STEP 10:**

Slide the roll shaft out of the rubber roller and the roll sprocket. (Pull roll shown.) Photo 21-4.

**NOTE:** The chain can now be removed without loosening the motor mounting screws. Photo 21-5.

**STEP 11:**

To install a new roller or replace the original roller, reverse the removal procedure. Be sure to properly reposition the sprockets and align the chain. All three sprockets should be in line with each other. Since the motor sprocket was not removed, use it as a guide for alignment of the pull roll and laminating roll sprockets.

- The pull rollers on this laminator are interchangeable with the laminating rollers. If the laminating rollers are damaged, each can be replaced by the pull rollers. If the laminating rollers are too badly damaged, they must be replaced. The condition of the laminating rollers is very important for a good lamination.
- If the chain feels too loose, it may be tightened as follows: Loosen the motor mounting screws. Push down on the motor sprocket and refasten the motor mounting screws. Photo 21-6.

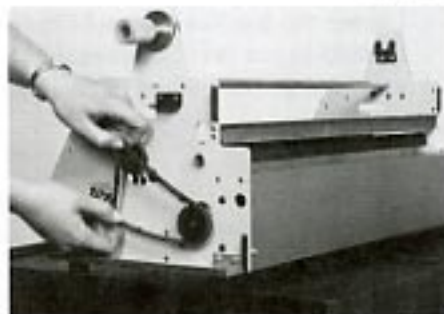


Photo 21-5

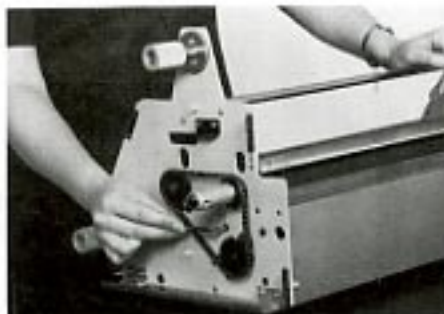


Photo 21-6

**NOTE:** Be sure to adjust the pressure on both pressure adjusting screws. 2-3 threads should show through the adjusting screw mounting bracket. On older models with Allen head pressure screws, screws should be tightened 1-1/2 to 2 threads. See page 22.

# PRESSURE

The pressure settings for the rubber rollers on USI Laminators are preset at the factory and should not require adjusting. In most cases, it is necessary to adjust pressure after the rollers have been removed for service. (Generally this is the only time an adjustment is required.)

If an adjustment is necessary, disconnect electrical power and remove both the left and right housing.

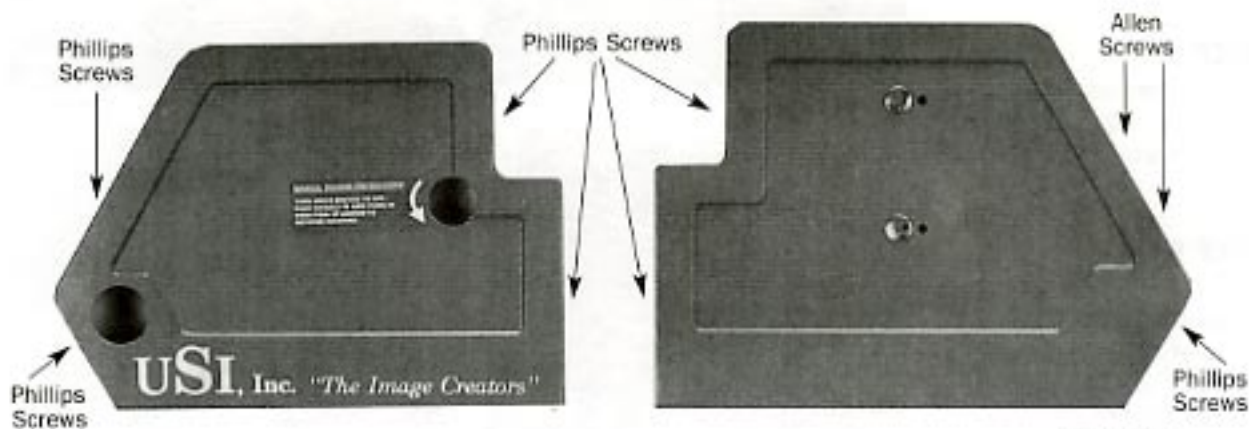


Photo 22-1

Locate the **Slotted Screw** holding **Compression Spring**. Slotted Screw and Compression Spring locations are identical on both sides of the laminator. Photo 22-2.

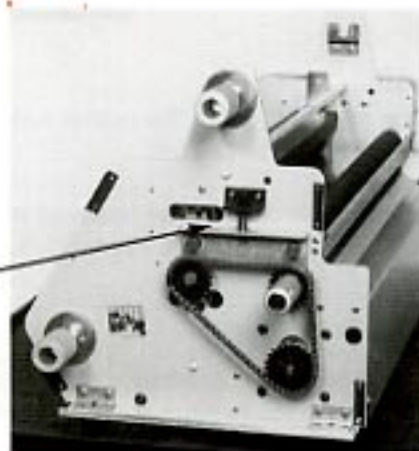


Photo 22-2

To increase pressure, turn the flat head screw clockwise. There should be 2-3 threads of the screw showing through the bottom of the bracket. Photo 22-3.

**WARNING:** It is extremely important that pressure adjustments are always made exactly the same on both sides of the laminator in order to maintain even pressure.

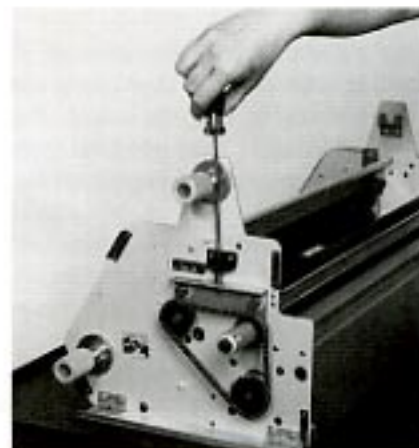


Photo 22-3

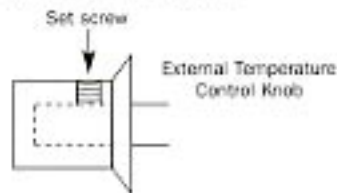


# REPLACING THE THERMOSWITCH

**NOTE:** This procedure applies to either top or bottom thermoswitches.

## STEP 1:

Unplug laminator.



## STEP 2:

Remove the left side housing. On ARL12VSR with external temperature control first loosen set screws on both heat control knobs and remove knobs before removing housing.



Photo 23-1

## STEP 3:

Unplug thermoswitch wire from terminal 1.

## STEP 4:

Cut the remaining wire that runs from the thermoswitch to the heating element. Cut at the splice that connects the thermoswitch and heater wires. On the upper heatshoe, remove the heavy black heat shrink tubing from the wires. On either top or bottom heat shoes, slide the red variflex tubing off of the thermoswitch wires. Save this for reinstallation on the new thermoswitch. Photo 23-1.

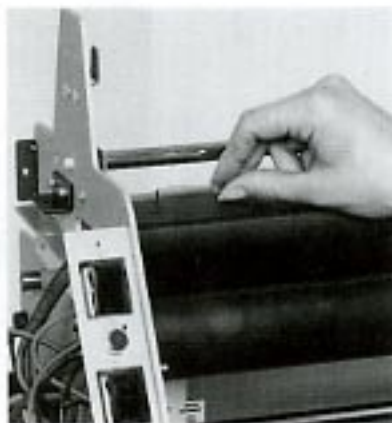


Photo 23-2

## STEP 5:

A locking set screw holds the thermoswitches in place. This screw must be loosened before the thermoswitches can be removed. Photo 23-2.

With the set screw loosened, simply slide the thermoswitch out. Photo 23-3. Be sure this locking set screw is refastened once a new thermoswitch has been installed. DO NOT over-tighten screw.

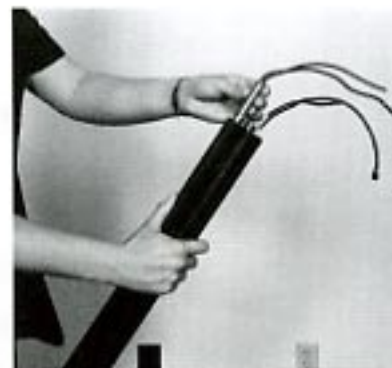


Photo 23-3

**NOTE:** Older model laminators have a top locking set screw only.

**NOTE:** The ARL12 VSR with an external temperature control has an extension shaft on the thermoswitch adjusting screw. Loosen the set screw on the extension shaft and remove the shaft from the thermoswitch adjusting screw. Install the extension shaft on the new thermoswitch's adjusting screw and tighten the set screw. Photo 23-4. On the top thermoswitch, install the extension after the thermoswitch and top heat shoe are installed.



Photo 23-4

**CAUTION:** Never attempt to remove the extension shaft by rotating it counter clockwise while it is attached to the thermoswitch. This will cause the thermoswitch adjusting screw to come undone and ruin the thermoswitch. Loosen the set screw on the extension shaft and slide the shaft off of the thermoswitch adjusting screw.

**STEP 6:** To reinstall thermoswitch, reverse the above procedure.

**NOTE:** Heating elements can also be replaced using the same procedure. Heating elements are located to the right of the thermoswitch, (refer to parts diagram). Heating elements do not have a locking set screw.



# LAMINATOR LUBRICATION

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

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

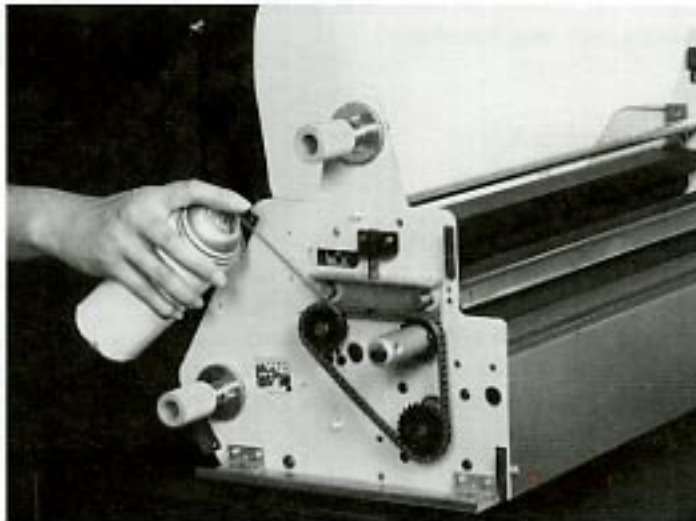


Photo 24-1

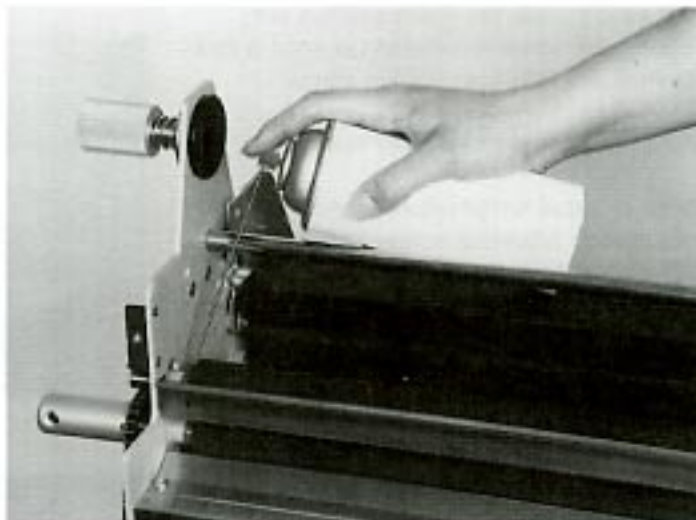


Photo 24-2

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

# CLEANING FRICTION STUDS

*If film rolls begin to shudder or squeak, cleaning of tension assembly is required.*

## **STEP 1:**

Remove the film rolls.

## **STEP 2:**

Remove the right housing cover.

## **STEP 3:**

Disassemble the friction stud by unfastening and removing the knob. Photo 25-1.



Photo 25-1

## **STEP 4:**

Remove the spring, metal washer, leather washer and the friction stud. Photo 25-2.

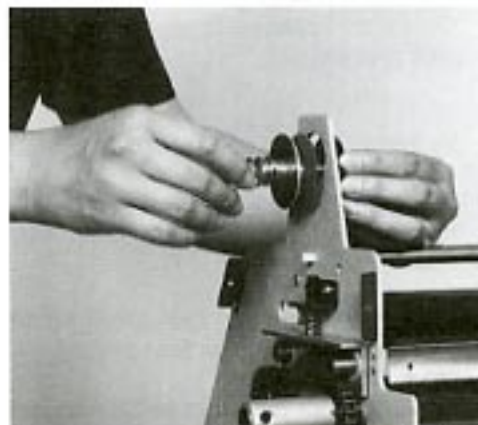


Photo 25-2

## **STEP 5:**

To clean, wipe the mounting hole free of excess dirt. Use the poly-off cleaner from the USI Laminator Cleaning Kit. Photo 25-3. (Rubbing alcohol can also be used.)

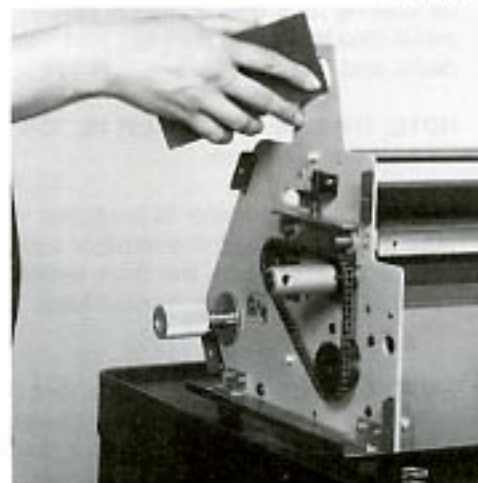


Photo 25-3

## **STEP 6:**

Clean the friction stud groove and leather washer. Use the Scotch Brite® pad from the Cleaning Kit.

## **STEP 7:**

To reassemble, reverse the procedure as noted above. Reset the tension as in Chapter I page 15.

## FOOTAGE COUNTER

Compute exact film usage per job, operator, project, client, etc. Excellent for billing or cost control. Reset it with the touch of a button.

This accessory must be factory installed. Footage Counter accessory must be ordered initially with laminator.

Note: Reads in 1/10 of a foot increments.

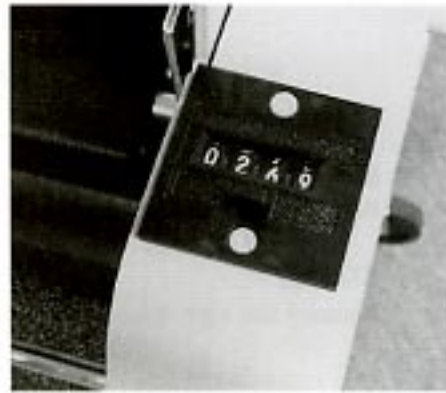


Photo 25-1

## FOOT PEDAL CONTROL

For ARL27 only.

Foot pedal keeps both hands free to better control substrate and for continuous feeding. Customer installed, it plugs into jack provided.

To Install:

a) Plug foot pedal into jack located below left end of the lower heatshoe. Photo 26-2.

b) Turn drive switch "ON". (Now control forward drive with the foot pedal.)

**NOTE:** Do not plug foot pedal into jacks located above rubber rollers—these are for cooling fans only. Plugging foot pedal into jacks can damage foot pedal and laminator.

**NOTE:** The drive switch must be "ON" for foot pedal to work.

**NOTE:** If your laminator is equipped with automatic reverse, the laminator can only be reversed with the drive switch. The foot pedal will not reverse feed rollers.

**NOTE:** On older model 27's the foot pedal jack will have a "Dummy Plug" inserted into it. This must be unplugged before plugging in the foot pedal. The "Dummy Plug" must be saved. If the foot pedal control is removed, the "Dummy Plug" must be plugged in or the drive will not work.

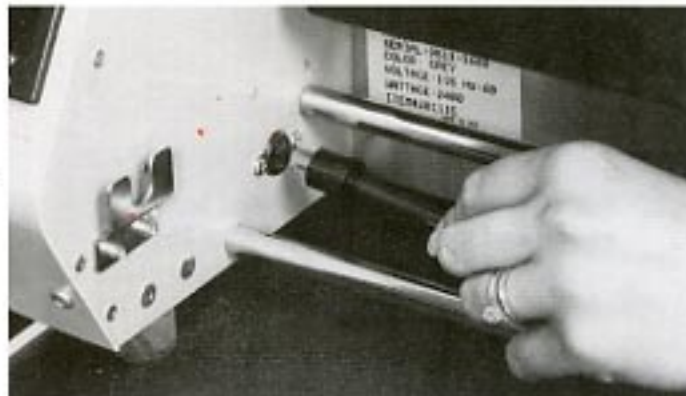


Photo 26-2



Photo 26-3



# FAN KIT

## For ARL27 only.

When laminating with 5 mil film weight or heavier, USI strongly recommends a fan kit. The fan kit includes two fans for cooling film as it exits the laminator.

**Easy installation**, simply plug into accessory jacks on laminator.



1.) Install fan bracket on each side of laminator as shown. Use existing holes and screws.

Photo 27-1



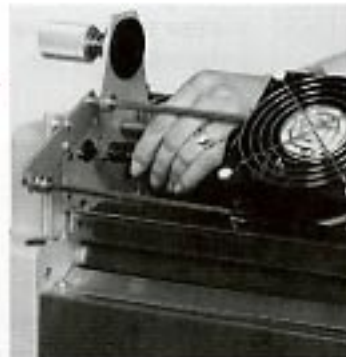
2.) Insert cross bars into brackets. Placement: Short bar—top (upper) holes. Long bar—bottom (lower) holes.

Photo 27-2



3.) Mount fans on cross bars. Each fan has slots to fit over cross bars. Install fans so that power plug on each is closest to its corresponding jack on each of the laminator's end panels.

Photo 27-3



4.) Plug cord into fan and jacks located on either end of the laminator. Right jack—right fan. Left jack—left fan. Fans will activate when drive switch is on.

Photo 27-4

# MIRROR KIT

## For ARL27 only.

It is sometimes necessary to watch your laminated item exit from the rear while hand feeding your material. USI serves this need with the use of a customer installed mirror kit. Mirror attaches to mount supplied.

Follow these easy steps for installation.

To Install:

- 1) Remove plug blank from the right rear corner of the laminator. Photo 27-5.
- 2) Thread mirror mount shaft into the mount located under the plug blank. Photo 27-6.
- 3) Clip mirror onto the shaft. Photo 27-7.
- 4) Adjust as needed.

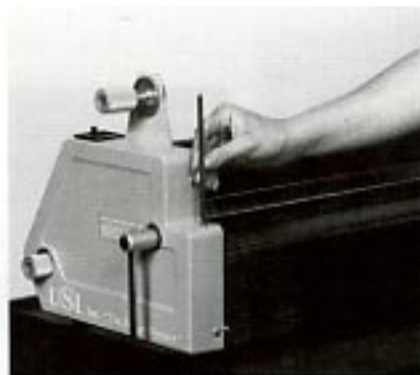


Photo 27-6

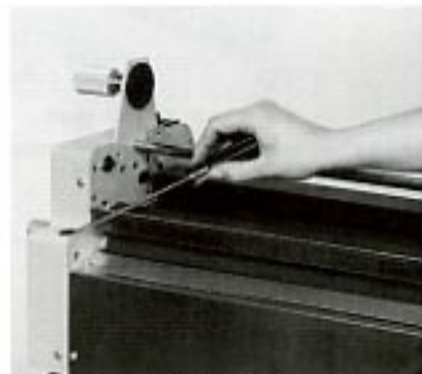


Photo 27-5

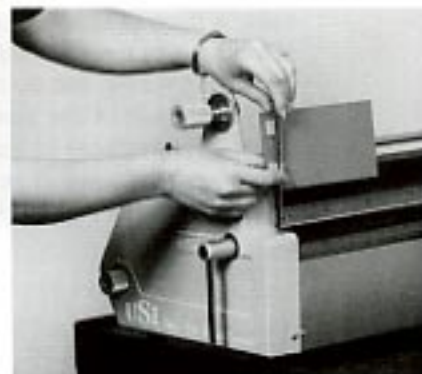


Photo 27-7

# TIGHTENING SPROCKETS

## STEP 1:

Remove the right side housing. Locate loose sprocket. Each sprocket has a 3/32" Allen set screw located along the outer edge. If the set screw loosens, it will allow the sprocket to spin on the roll shaft, causing the rollers to slip.

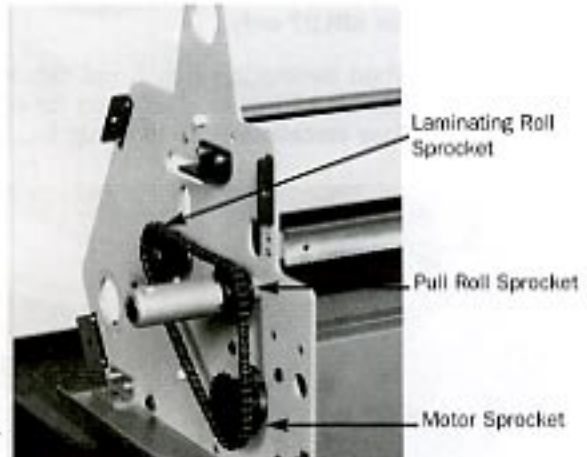


Photo 28-1

## STEP 2:

Align the set screw with the flat spot on the roll shaft. This can be accomplished by either turning the drive on and off or by using the manual crank (if equipped). Each shaft has a flat spot, causing the shaft to be D shaped. The sprocket set screw must be lined up on top of the flat spot.



Photo 28-2



Photo 28-3

Lower laminating roll shaft.

Lower pull roll shaft for laminators without manual reverse.



Photo 28-4

Lower pull roll shaft for laminators with manual reverse.

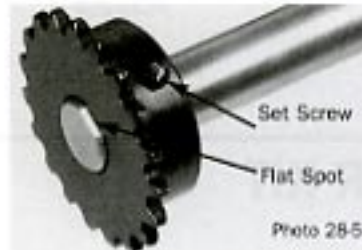


Photo 28-5

## STEP 3:

Using a 3/32" Allen wrench, remove the set screw. Clean the set screw and apply a drop of Loctite® or similar compound to the threads. Insert set screw, but do not tighten. Align the teeth of the sprocket with the teeth (or outerface) of the other two sprockets (the drive chain must travel in a straight line). Tighten the set screw.

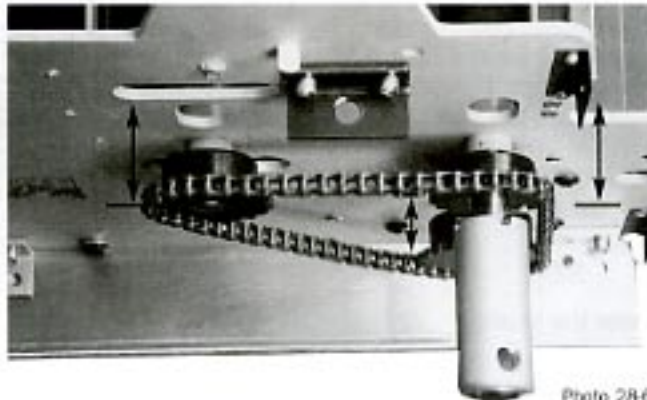


Photo 28-6

## STEP 4:

Reinstall the right side housing.

# TROUBLE SHOOTING

## COMMON EXAMPLES OF POOR LAMINATING . . . and their causes.

### A. FILM NOT BONDING TO SUBJECT 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. Bottom roll of 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 - "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 heating 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).
3. The rubber laminating rollers are not clean, or are damaged.

### 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. Bottom roll of 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.
4. Fans are required for 5 mil & thicker films to achieve a flat product.

### F. WRINKLING AROUND EDGE OF LAMINATED ITEM

#### Causes:

1. Item to be laminated is too thick.  
Possible Solutions:
  - a. Loosen tension
  - b. Use film with thicker adhesive layer
  - c. Flush cut item



# TROUBLE SHOOTING

## COMMON EXAMPLES OF POOR LAMINATING . . . and their causes.

### **G. HEAT DOES NOT WORK AND RED INDICATOR LIGHT DOES NOT ILLUMINATE**

1. Check wiring of the laminator. Refer to wiring diagram on page 19.
2. Replace heat switch and switch wires. **NOTE:** Switch should not be replaced without also replacing switch wires.

### **H. 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)

### **I. BOTTOM ROLLERS DO NOT TURN (BOTH OR INDIVIDUAL)**

1. Be sure drive chain has not fallen off.
2. Be sure sprocket set screws are securely fastened.
3. Be sure roller set screws are securely fastened.

### **J. DRIVE DOES NOT WORK - ROLLERS DO NOT WORK AND NO MOTOR SOUND**

1. Check drive switch and wiring. Refer to wiring diagram on page 21.
2. On machines with variable speed motor, rotate speed knob clockwise.  
If knob is turned down all the way counter-clockwise, drive may not work.

# THREADING DIAGRAM FOR 1" MANDRELS

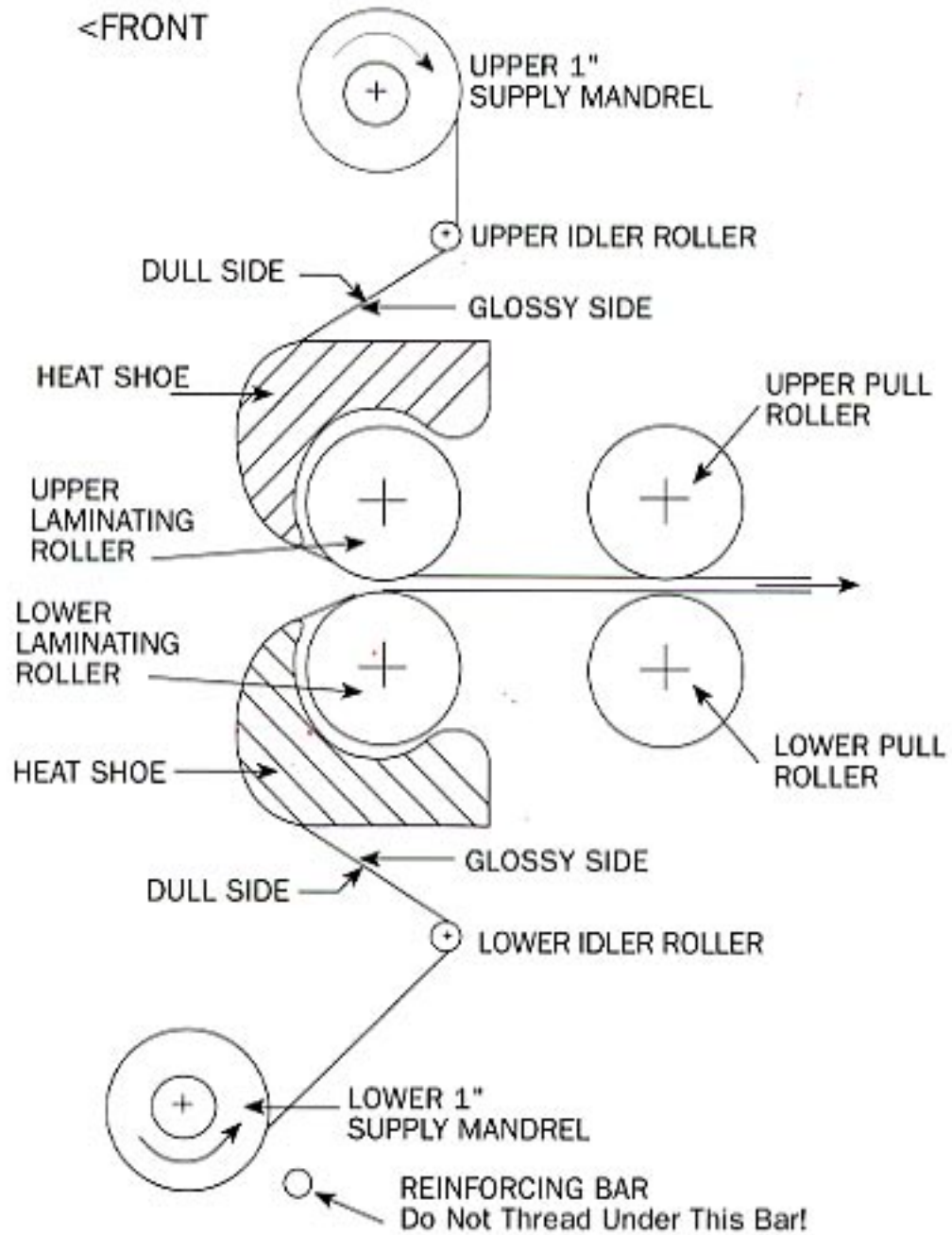


Figure 31-1

# THREADING DIAGRAM FOR 2-1/4" MANDRELS

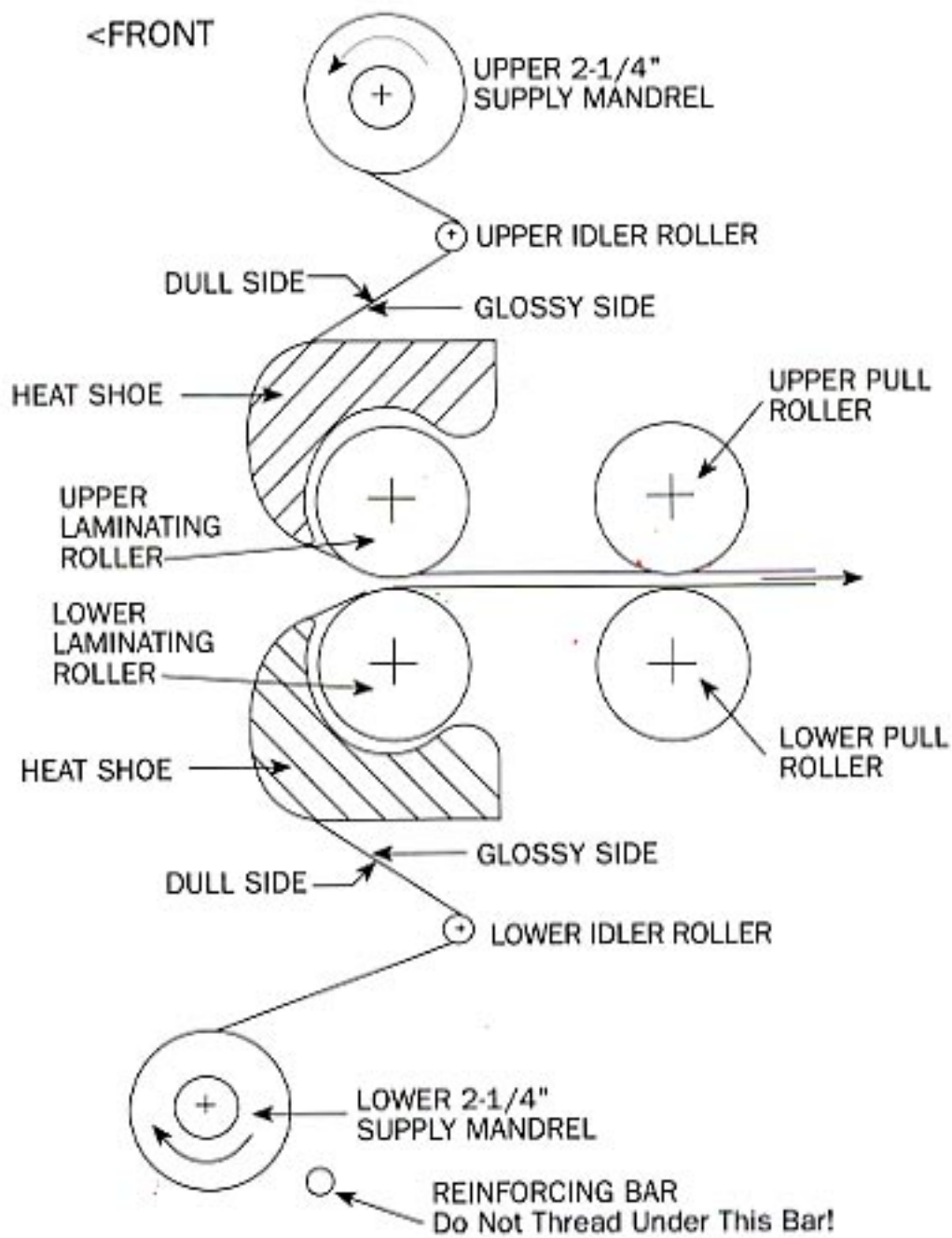
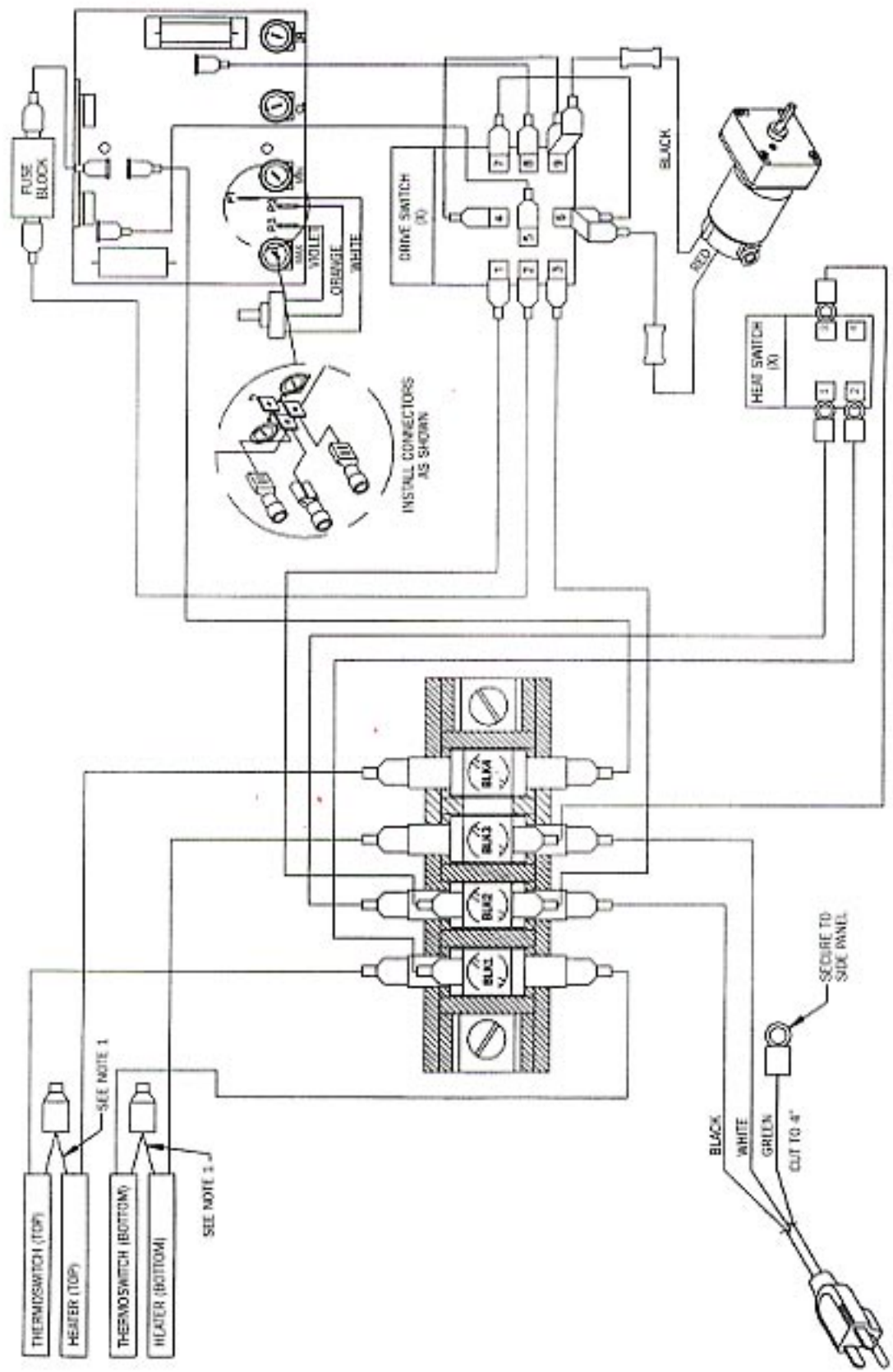


Figure 32-1



# ARL12, ARL18, ARL25 WIRING DIAGRAM

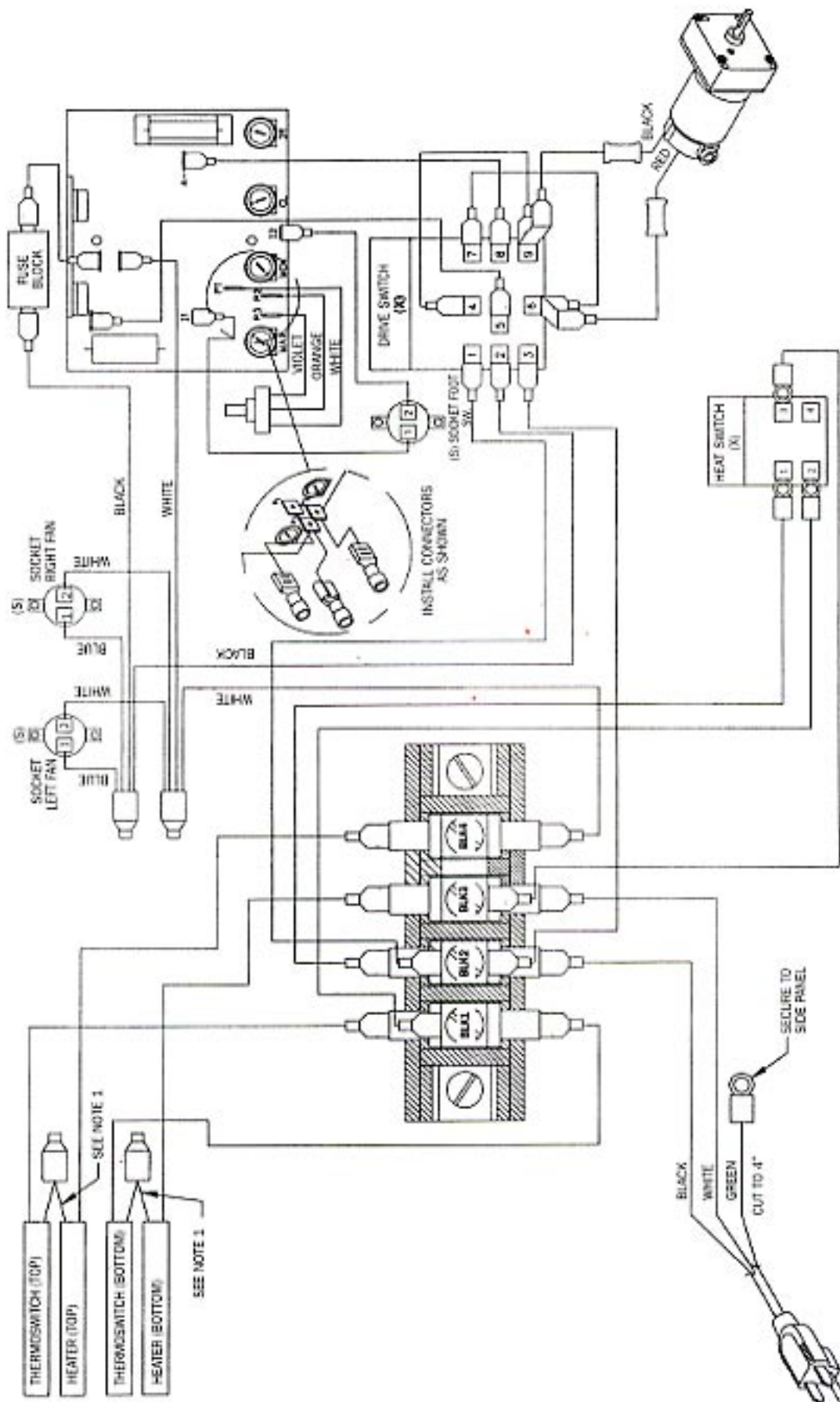


**NOTES:**

1. Cut to match length of thermoswitch wire.
2. (X) indicates top rear.
3. (5) indicates connections to be soldered.

Figure 33-1

# ARL27 WIRING DIAGRAM



**NOTES:**

1. Cut to match length of thermostat wire.
2. (X) Indicates top rear.
3. (S) Indicates connections to be soldered.

Figure 3-4-1

# EXPLODED VIEW

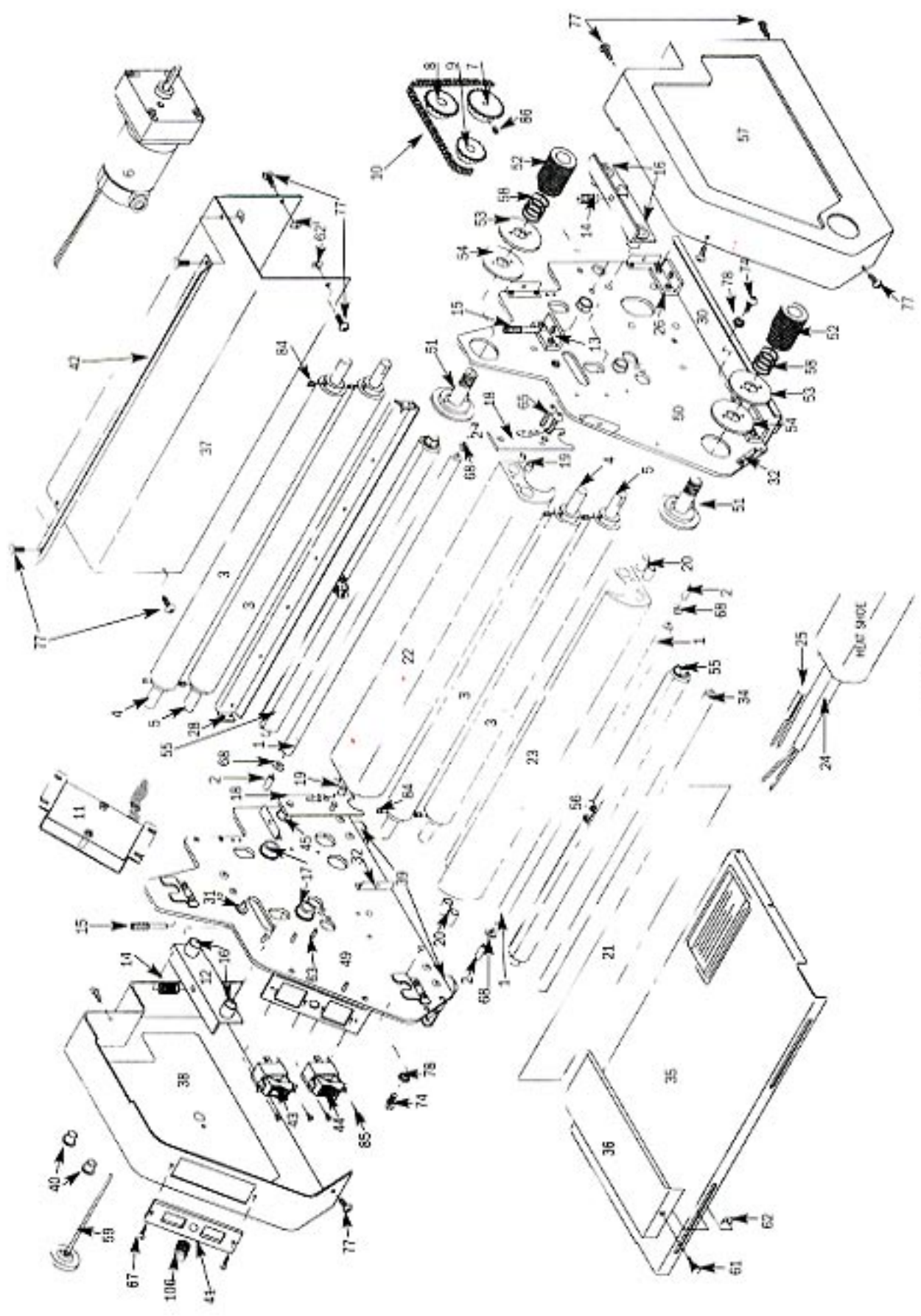


Figure 35-1



# PARTS LIST FOR VARIABLE SPEED LAMINATORS

	ARL 12 VSR ARL 18 VSR	ARL 25 VSR ARL 27 VSR	DESCRIPTION
1	12-013B	27-013B	IDLER ROLLER
2	12-014	27-014	IDLER ROLLER DOWEL PIN
3	12-100C	27-100C	RUBBER ROLLER AND TUBING
4	12-101B	27-101B	UPPER ROLLER SHAFT
5	12-102B	27-102B	LOWER ROLLER SHAFT
6	12-300PVSR	27-300PVSR	MOTOR -VSR
7	12-301P	27-301P	SPROCKET, MOTOR
8	12-303P	27-303P	SPROCKET, PULL ROLL
9	12-302P	27-302P	SPROCKET, LAMINATING ROLL
10	12-304PA	27-304PA	DRIVE CHAIN
11	12-N020	27-N020	MOTOR CONTROL, 115V
12	12-400B	27-400B	PLATE-PRESSURE ADJUSTMENT
13	12-401B	27-401B	BRACKET-PRESSURE ADJUSTMENT
14	12-402P	27-402P	SPRING-PRESSURE ADJUSTMENT
15	12-403B	27-403B	SCREW-PRESSURE ADJUSTMENT
16	12-404B	27-404B	UPPER ROLL BUSHING
17	12-405B	27-405B	LOWER ROLL BUSHING
18	12-505B	27-505B	HEATSHOE MTG. BRACKET
19	12-507B	27-507B	SPACER, UPPER HEATSHOE
20	12-508P	27-508P	SPACER, LOWER HEATSHOE
21	12-512B	27-512B	HEATGUARD
22	12-515C	27-515C	UPPER HEATSHOE
23	12-516C	27-516C	LOWER HEATSHOE
24	12-517P	27-517P	HEATER 115V
25	12-518P	27-518P	THERMOSWITCH
26	12-602B	27-602B	BASE CHANNEL BRACKET
27	12-603B	27-603B	LEFT SUPPLY ROLL SUPPORT
28	12-605B	27-605B	CUT-OFF MOUNTING BRACKET W/KNIFE
29	N/A	N/A	CUT-OFF KNIFE SEE ITEM 28
30	12-607C	27-607C	BASE CHANNEL
31	12-608P	27-608P	HEATSHOE HANGER
32	12-609P	27-609P	TINNERMAN BRACKET
33	12-610C	27-610C	SWITCH MOUNTING BRACKET
34	N/A	27-616B	REINFORCING BAR
35	12-900C	27-900C	FEED TABLE W/LEFT FEED GUIDE
36	12-701C	27-701C	LEFT FEED GUIDE
37	12-702C	27-702C	MOTOR HOUSING

# PARTS LIST FOR VARIABLE SPEED LAMINATORS

	ARL 12 VSR ARL 18 VSR	ARL 25 VSR ARL 27	DESCRIPTION
38	12-703B	27-703B	LEFTSIDE HOUSING,GRAY
39	12-708P	27-708P	RUBBER FEET
40	12-707P	27-707P	PLASTIC PLUG
41	12-711CVSR	27-711CVSR	SWITCH PLATE
42	12-715C	27-715C	LOWER PLASTIC DEFL.
43	12-800PL	27-800PL	HEAT SWITCH LIGHTED
44	12-800PVSR	27-800PVSR	DRIVE SWITCH
45	12-19F	27-19F	WIRE PROTECTIVE BUSHING
49	12-900D	27-900D	LEFTSIDE PANEL, SPECIFY PANEL ONLY OR COMPLETE ASSEMBLY
50	12-901D	27-901D	RIGHTSIDE PANEL, SPECIFY PANEL ONLY OR COMPLETE ASSEMBLY
51	12-902B	27-902B	FRICTION STUD
52	12-903B	27-903B	ADJ. KNOB
53	12-906B	27-906B	FRICTION DISK
54	12-905B	27-905B	LEATHER WASHER
55	12-907B	27-907B	SUPPLY ROLL SHAFT, SPECIFY TOP OR BOTTOM, 2-1/4 CORE FOR 12VSR
56	12-911A	27-911A	*GRIPPER DOG*
57	12-908BAR	27-908BAR	RIGHTSIDE HOUSING AR, GRAY
58	12-910P	27-910P	SUPPLY ROLL SPRING
59	12-915P	27-915P	THERMOMETER
61	603-S	603-S	8-32X3/8 SCREW FOR FEED GUIDE
62	9N	9N	TINNERMAN NUT
63	7R	7R	1/8X1/2 ROLL PIN
65	228S	228S	10-32X3/4 BUTTON CAP SCREW
67	235S	235S	6-32X1/2 BUTTON CAP SCREW
68	014AW	014AW	.26X.56X.02 NYLON WASHER
74	236S	236S	1/4-20X3/8 BUTTON CAP SCREW
77	214S	214S	10X1/2 TYPE B PHIL. PAN SCREW
78	N/A	N/A	1/4 WASHER FOR REINFORCING BAR
84	N010	N010	10-32X1/4 ALLEN SCREW
85	N011	N011	3-48X3/16 SLOTTED SCREW
86	N012	N012	10-32X3/8 ALLEN SCREW
106	12-N021	27-N021	SPEED CONTROL KNOB

# PARTS LIST FOR VARIABLE SPEED LAMINATORS

## PARTS NOT SHOWN IN DIAGRAM

ARL 12 VSR ARL 12 VSR	ARL 25 VSR ARL 27	DESCRIPTION
12-805P	27-805P	STRAIN RELIEF BUSHING
12-806P	27-806P	POWER CORD
12-819P	27-819P	TERMINAL BLOCK
12-819P	27-817P	TERMINAL BLOCK MARKER
107S	107S	8-32x3/16 ALLEN SET SCREW
16S	16S	10-32x1/4 CAP SCREW
412S	412S	8-32x5/8 PAN HEAD SCREW
4W	4W	#8 STAR WASHER
1V	1V	RIVET GSMD425
3V	3V	RIVET GSMD435
29W	29W	#6 WASHER
7V	7V	RIVET GSMD445
14V	14V	RIVET SD 64BS
11S	11S	10-32x5/8 SOCKET CAP SCREW
40BS	40BS	6-32x3/8 PAN HEAD SCREW
16V	16V	RIVET SD 66BS
236S	236S	8-32x1/4 PHILLIPS SCREW
225S	225S	10-32x3/4 SCREW
D001	D001	DECAL (HOT AREA)
D002	D002	DECAL (TENSION)
N/A	27-N029	JONES SOCKET, FAN OR FOOTSWITCH



# USI 25" & 27" Classroom Roll Laminator Manual Addendum

Congratulations on your recent purchase of USI Series II Classroom Roll Laminator (CSL).

The attached operations manual will provide you with detailed instruction as well as step by step diagrams on how your new laminator perform and operates. **Please note the following changes and additions** to the manual.

## Laminator Introduction:

The Series II Classroom does not feature 1" supply mandrels as shown. The CSL has 2-1/4" Mandrels. See page 10 for 2-1/4" film loading procedure. The speed control knob featured, is not included with the Series II Classroom Roll Laminator.

## Removing Rubber Rollers:

**Caution!** The front and rear rollers ARE NOT interchangeable. The black rollers go in the front and the gray rollers go in the rear. The rollers will be damaged if they are not in the proper locations.

## Replacing The Thermostat:

**Note!** The Thermostat on the Series II CSL is located in the upper heat shoe.

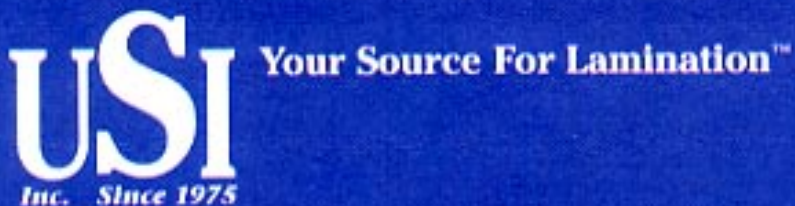
**Step 2:** Remove the switch plate, thermometer and left side housing.

**Step 4:** Cut the remaining that runs from the thermostat to the upper and lower heating elements. Cut the splice that connects the thermostat and the heater wires.

## Parts List For 25" & 27" Series II Classroom Roll Laminators

CSL 25"	CSL 27"		CSL 25"	CSL 27"	
1 CL25-900C	CL27900C	Feed Table With Left Guide	31 CL25-808BMR	CL27-808BMR	Right Side Housing
2 603S	603S	8-32 x 3/8" Thumbscrews for Feed Guide	32 CL25-903B	CL27-903B	Tension Knob
3 CL25-701C	CL27-701C	Left Feed Guide	33 CL25-910P	CL27-910P	Supply Roll Spring
4 CL25-708P	CL27-708P	Rubber Feet	34 CL25-906B	CL27-906B	Friction Disk
5 CL25-600D	CL27-600D	Left Side Panel, Complete	35 CL25-905B	CL27-905B	Leather Washer
6 229W	229W	1/4" Lock Washer	36 CL25-601D	CL27-601D	Right Side Panel, Complete
7 236S	236S	1/4 20 By 5/8" BHS	37 CL25-902B	CL27-902B	Friction Stud
8 CL25-100C	CL27-100C	Laminating Roller, Black	38 CL25-515C	CL27-515C	Upper Heat Shoe
9 CL25-102BMR	CL27-102BMR	Lower Reverse Shaft	39 CL25-505BC	CL27-505BC	Heat Shoe Bracket
10 CL25-802P	CL27-802P	Red Indicator Light	40 228SC	228SC	10-32 x 1" Screw, Upper Shoe
11 CL25-915P	CL27-915P	Thermometer	41 CL25-509P	CL27-509P	Spacer, Upper Heat Shoe
12 CL25-707P	CL27-707P	Plug, 1/2" Black	42 CL25-508P	CL27-508P	Spacer, Lower Heat Shoe
13 CL25-803D	CL27-803D	Left Side Housing	43 CL25-516C	CL27-516C	Lower Heat Shoe
14 CL25-403B	CL27-403B	Screw, Pressure Adjustment	44 CL25-014	CL27-014	Dowel Pin
15 CL25-402P	CL27-402P	Spring, Pressure Adjustment	45 CL25-014AW	CL27-014AW	Idler Washer
16 CL25-500B	CL27-500B	Pressure Adjustment Plate	46 CL25-013B	CL27-013B	Idler Bar
17 CL25-404B	CL27-404B	Upper Roller Bushing	47 CL25-616B	CL27-616B	Reinforcing Bar
18 CL25-907BLX	CL27-907BLX	2-1/4" Supply Mandrel (Specify Upper or Lower)	48 CL25-512B	CL27-512B	Heat Guard
19 CL25-610C	CL27-610C	Switch Mounting Bracket	49 CL25-405B	CL27-405B	Lower Roller Bushing
20 CL25-200C	CL27-200C	Pole Roller, Gray	50 9N	9N	Tinnerman Nut
21 214S	214S	#10 x 1/2" Phillips Head Screw	51 CL25-617P	CL27-617P	Heater, 500W
22 CL25-711CS	CL27-711CS	Switch Plate	52 CL25-518P	CL27-518P	Thermostat
23 CL25-702C	CL27-702C	Motor Housing	53 CL25-8700P	CL27-800P	RockerSwitch
24 CL25-101B	CL27-101B	Upper Roller Shaft	54 N010	N010	10-32 x 1/4" Allen Set Screw
25 CL25-102B	CL27-102B	Lower Front Roller Shaft	55 CL25-605B	CL27-605B	Rear Roller Guard
26 CL25-300P	CL27-300P	Motor, 115V	56 16S	16S	10-32 x 1-1/4" Screw, Lower Shoe
27 CL25-304PAC	CL27-304PAC	Drive Chain, 21"	57 N018	N018	Reverse Handle
28 CL25-303P	CL27-303P	Pole Roller Sprocket	58 N015	N015	Reverse Cylinder
29 CL25-302P	CL27-302P	Laminating Roller Sprocket	59 N016	N016	Reverse Spring
30 CL25-301P	CL27-301P	Motor Sprocket	60 N014	N014	Reverse Screw 10-32 x 1/2"





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