

Ledco Professor 27 Laminator

Instruction Manual



Provided By

MyBinding.com
When Image Matters.

READ ALL PRECAUTIONS & INSTRUCTIONS CAREFULLY
BEFORE OPERATING LAMINATOR

Setup

Instruction

Operation

Lamination

Maintenance

PROFESSOR 27

Laminator

Operation Manual

Sept 2002

IMPORTANT: Don't laminate one-of-a-kind documents unless you are sure of your laminating skills and can afford to damage or ruin the document.

Don't laminate valuable items such as stamps, baseball cards, autographs or other collectibles because the value of such items can be destroyed by lamination. Collectors generally value these kinds of items only in their original state.

Remember that you cannot laminate thermal paper, such as typical fax paper, because it is activated by heat and will turn black. Also, remove paper clips and staples because they can damage the rubber rollers. Be careful about laminating anything that will be affected by heat. For example, the colors in crayon drawings may run together or be smeared, especially if the crayon layer is heavy. Light crayon drawings may not be affected, but test an expendable sample of any item that may not laminate well.

IMPORTANT: Éviter de plastifier du papier thermosensible, comme le papier de télécopieur, puisqu'il noircira sous l'effet de la chaleur, et enlever les trombones et les agrafes qui risquent d'endommager les rouleaux de caoutchouc. Prendre certaines précautions avant de plastifier des articles susceptibles de réagir à la chaleur comme les dessins au pastel dont les couleurs baver et se mélanger, surtout si la couche de pastel est épaisse. Les pastels en couche mince peuvent ne pas réagir, mais, en cas de doute, il est préférable de faire un essai avec un échantillon perdu.

Ne pas plastifier les documents importants dont il n'existe qu'un seul exemplaire, à moins de bien maîtriser la technique de plastification.

Ne pas plastifier non plus les articles de collection comme les timbres, les cartes de baseball, les autographes ou autres, qui peuvent perdre leur valeur pour les collectionneurs s'ils ne sont plus dans leur état d'origine.

IMPORTANTE: Recuerde que no puede laminar papel térmico, tal como el papel de fax típico, ya que es activado por el calor y se tornará negro. Retire también cualquier sujetapapeles o grapa, puesto que pueden dañar los rodillos de goma. Evite laminar cosas sensibles al calor, por ejemplo, los colores de dibujos hechos en lápiz de pastel pueden no ser afectados, pero ensaye con alguna muestra descartable, en los ítemes que podrían no laminarse bien.

No lamine ningún documento único, a no ser que esté muy seguro de sus habilidades de laminador y pueda permitirse arruinar el documento.

No lamine artículos de valor, como estampillas, tarjetas de béisbol, autógrafos, u otros coleccionables, ya que su valor puede ser destruido por la laminación. En general, las coleccionistas valoran este tipo de artículo en su estado original.

TABLE OF CONTENTS

1-1 INTRODUCTION

- 1-2 Features and benefits
- 1-3 Options
- 1-4 Specifications
- 1-5 Principles of operation
- 1-6 Laminating film
- 1-7 Warranty

2-1 UNPACKING AND INVENTORY

3-1 PRODUCT ILLUSTRATIONS & NAMES OF PARTS

4-1 SAFETY PRECAUTIONS

5-1 SETUP & OPERATION

- 5-2 Threading the laminator
- 5-3 Film Threading Diagram
- 5-4 Laminating
- 5-5 Recommended temperature settings
- 5-6 Pouch / mounting board lamination
- 5-7 Preventing and solving problems

6-1 INSTRUCTIONS FOR OPTIONS

- 6-2 Footage counter
- 6-3 Roll feed attachment

7-1 MAINTENANCE

- 7-2 General cleaning
- 7-3 Cleaning the rubber rollers
- 7-4 Lubrication

1-1 INTRODUCTION

This laminator is designed to provide quality lamination of a wide range of papers and materials up to 3\16-inch thick using film up to ten mil thick. Common applications include but are not limited to maps, digital imaging, packaging, posters, instructional aids, signs, presentation materials, photographs, copies (B&W or color), prints, flyers, promotional sheets and many other items.

To assure the best performance from your new laminator, please follow the safety, installation, operation, and maintenance instructions in this manual. Read the manual before using the laminator, keep the manual with the machine, and periodically review the instructions. The manual also contains warranty and parts information.

The International “HOT” warning symbol will be placed on the appropriate areas of each laminator.

Le symbole international de mise en garde “CHALEUR EXTREME” sera apposé aux endroits appropriés des machines à plastifier thermiques.

El símbolo internacional de advertencia “CALIENTE” será fijado en los lugares apropiados, en el plastificador.

We take this opportunity to thank you for selecting the laminator and to assure you of our commitment to your satisfaction with our products.

As you unpack your new laminator, please complete the following information. Always have this information ready when calling.

Dealer Where Purchased _____

Installation Date _____

Serial # _____ (located at the back of the laminator, next to the power connector)

WARNING: High temperatures are present and care should be exercised in operating the laminator.

MISE EN GARDE: La machine à plastifier produit beaucoup de chaleur et on doit l'utiliser avec prudence.

ADVERTENCIA: El plastificador produce temperaturas muy altas; tenga cuidado al utilizarlo.

WARNING: The laminator should not be operated without the plexiglass safety shield.

MISE EN GARDE: Ne pas utiliser la machine à plastifier sans son écran protecteur en plexiglass.

ADVERTENCIA: No utilice el plastificado sin tener el protector de plexiglass en su lugar.

Ledco, Inc.
4265 North Main Street
Hemlock, NY 14466

Fax 585-367-2978
Phone 585-367-2392

1-2 FEATURES & BENEFITS

Your new laminator has several standard features that set it apart from other models.

- **Variable speed** The laminator operates at any speed up to 15 feet per minute. Thicker films are generally applied better at mid-range to lower speeds, while 1.5 mil film should be applied at mid-range to higher speeds.
- **LCD temperature display** makes it easy to set and maintain the correct temperature. The indicator light inside the heat switch comes on as the machine warms up. At set temperature the indicator light turns off.
- **Simple controls** Conveniently placed switches provide a compact, reliable control pad. Icons and international symbols are used for controls and safety warnings.
- **Easy threading** Threading can be the most difficult aspect of using a laminator, so the Professor 27 has built in threading aids. Once the upper and lower webs of film have been threaded through the machine, bottom idler threading is automatic when the operator closes the feed tray into it's operating position.
- **Forced air-cooling** This allows laminating with thicker films. Without a cooling system, thicker films will warp or ripple because they are still too hot when they come out the back of the laminator. The Professor 27 has a more effective cooling system than any other machine in its class.
- **Ease of cleaning** The silicone rubber rollers of the laminator should be cleaned regularly.
- **Attached safety shield** The polycarbonate shield is clear so operators can see their work. It's fixed to the machine and placed so they'll naturally put it in the guard position before laminating.
- **Lamination pressure** The rubber rollers are spring-loaded and preset to ensure correct and even lamination pressure.
- **Supply roll tension controls** Supply roll tension is easy to adjust by simply tightening or loosening the tension control knobs on the supply roll mandrels.
- **Ease of maintenance** The Professor 27 is made to last. However, some items on a laminator do wear out. Even the high-quality silicone rubber used in the rollers will lose flexibility over time. Extensive use may wear out the rollers, or an operator may cut a roller by accident
- **Reverse can** be invaluable at times to help avoid problems or clear misfeeds.
- **Silicone rubber laminating rollers** are flexible enough to provide a good edge seal and firm enough to offer a good surface seal. A high silicone content insures a much longer average roller life.
- **Removable power cord prevents** unauthorized usage without locking away the whole machine.
- **100% Made in the U.S.A**

1-3 OPTIONS

Although the Professor 27 was designed to include all of the standard features mentioned above, there are several options available to make the Professor 27 more versatile.

- **Footage counter** This device can be reset to measure film usage in feet. Also available in a metric version.
- **Roll feed mandrel assembly** When laminating a very long item such as a banner, it is difficult to hand feed it into the laminator perfectly straight. The banner can be rolled onto an empty film core and then put onto the roll feed assembly. Laminating the longest item becomes relatively easy. The roll feed tray is especially helpful for the owners of poster printers, plotters, banner makers, and other digital output.

1-4 SPECIFICATIONS

Laminating Width	up to 27"
Speed	0-15 FPM
Laminating roll diameter	2 7/8"
Maximum film gauge	10mil
Maximum laminating thickness	3/16"
Dimensions	35L 14H 16W
Shipping dimensions	42L 18H 18W
Weight / shipping weight	93/105 lb.
Electrical	110V 1560 watts 15 amps

* specifications are subject to change without notice

1-5 PRINCIPLES OF OPERATION

The laminator operates by pulling film with a thermally activated adhesive over a heated set of laminating rollers. Film from a supply roll passes over heat rollers to activate a polyethylene adhesive layer on the film. Then, as it passes through the heated rubber rollers they apply pressure and bond the film to the item being laminated. The film's adhesive is pressed into the ink and fibers on the surface of the paper.

The strength of the lamination bond can be checked by cutting a large "X" on the surface of a laminated sample with a sharp blade. Use the tip of the blade to pry up one corner of the "X". Grab that corner and pull up the film. Ink and/or paper fibers coming up with the layer of film indicates a good adhesive bond.

If the film comes up too easily, with no ink or paper, the lamination was probably done at too low a temperature. Check the instructions that may have come with your laminating film and/or the lamination temperature chart in section 5-5.

Please note that when doing an X-test on glossy (coated) paper, a good X-test will pull up ink only. The film should not come up easily. When laminating material that is not glossy (uncoated), the paper is often more fibrous and a good X-test will yield ink and paper fibers coming up with the film.

1-6 LAMINATING FILM

Most thermal laminating film consists of two layers: a base of polyester and an adhesive layer of polyethylene. The polyester layer forms the harder outer surface of the film and does not melt at laminating temperature. It provides rigidity and protection for your laminated items. The greater the polyester content, the higher the level of protection, rigidity and luster. The polyethylene layer melts at laminating temperature and bonds the film onto the subject material under the pressure of the laminating rollers. As an X-test demonstrates, the adhesive is pressed into the paper and fills irregularities in the surface.

The proportion of polyester and polyethylene in a film is usually described with numbers. For example, a "1-2" film consists of one mil of polyester and two mils of polyethylene. The first number refers to the base layer. The second number refers to the adhesive layer. A mil is 1/1000 of an inch.

Since polyester is the more costly of the two types of plastic generally used in laminating film, a "3-2" film will cost more than a "2-3" film. Both are 5-mil films but the "3-2" version will seem a little thicker on a piece of laminated material because it will be slightly stiffer. Thermal laminating films are available in many different base/adhesive combinations. Five-mil film, for example, can be found in 1-4, 2-3, 3-2 and 4-1 combinations.

In the US laminating trade, the generally accepted practice is to describe two-sided lamination, or encapsulation, by the thickness of one layer of film. For example, "3-mil lamination" should refer to lamination with two layers of 3-mil film. If you are buying or selling laminating film or lamination services, please make sure both parties understand the film descriptions being used.

There is a huge variety of thermal laminating films available to suit many different kinds of application. Here are some of the more commonly used “special” film types or film additives:

- film with low-melt adhesives, also known as co-polymer films; these often have better clarity and are less likely to curl or ripple
- matte films to eliminate glare or to accept printing or writing; many suppliers offer films with both glossy and matte (non-glare) finishes
- film with UV inhibitors to protect colors in the laminated material from fading in sunlight
- thermal film that has a pressure-sensitive adhesive and a release liner on its outer side; for example, a poster with this material laminated on the back could easily be mounted without fasteners or tape
- high clarity films; some of these have a protective liner on the top outer surface... after a piece of material has been laminated, trimmed, packed, and shipped, the person using the material can remove the protective liner revealing a surface perfectly free of dust, scratches or abrasion
- opaque or colored films for the back side of a lamination; these can form a border for a laminated piece
- iridescent clear films for special visual effects
- permanently waterproof films for outdoor, underwater, or special applications; the most common thermal laminating films are made with water-based primers and will eventually de-laminate if continually exposed to water or weather; truly waterproof films are made with special primers

Rolls of film may be purchased in different widths. The size of the laminator is the only limitation to the width of the film rolls you can use. The Professor 27 can use 4, 12, 18, or 25 inch rolls. Make sure the upper and lower roll widths are the same, and are aligned with each other.

When installing film, always center the rolls of film on the supply roll mandrels so the core grippers engage the cardboard core

Rolls are also produced with different lengths of film on a roll (250', 500', 1000'). The Professor 27 will easily accommodate film rolls up to a 5" diameter.

We recommend 3-mil film for most common applications, including posters, signs or instructional aids. The 3-mil film provides better protection, more rigidity, and a more lustrous appearance than 1.5-mil film. Five to ten mil film is suggested for those applications that need the most protection and rigidity.

Lamination with 1.5-mil film can sometimes present problems because the film is so thin it loses heat easily. It sounds backwards, but 1.5-mil film has to be run at a higher temperature than a 3-mil film with the same adhesive. The higher temperature compensates for the faster rate of heat loss during lamination. A standard 3-mil film is applied at 280 degrees Fahrenheit, while a standard 1.5-mil film must be applied at 310 degrees F. Even when applied at 310 degrees F, a 1.5-mil film is still more likely to delaminate later.

If the item being laminated is fairly thick, it will pull heat from the film.. This will lower the temperature of the 1.5-mil film and prevent it from sticking properly. When laminating thick items with standard 1.5-mil film, it may be necessary to raise the temperature to 330 or 340 degrees. Do not use any higher temperature for any film than is needed to get an acceptable degree of adhesion, as measured by an X-test. Remember there are low-temperature films which should run at much lower temperatures than those cited in this example. (see the chart on film operating temperatures.)

Rolls of film are sometimes spliced. Most film suppliers will mark a splice with colored tape. This way, you can see the splice as a “dash” of color on either end of the roll. If you spot a spliced roll in advance, you can put it on the top supply roll mandrel in order to see the splice coming more easily and avoid putting material under the splice. Or you could put it on the bottom roll if you plan to be laminating items that will never be seen from the back side.

1-7 WARRANTY

This laminator is guaranteed against defects in material and workmanship for a period of two years after date of shipment. Defective parts will be replaced without cost within the warranty period, provided the laminator has not been abused, altered or operated contrary to instructions. Ledco, Inc. shall not be liable for any alternations or repairs except those made with its written consent.

This obligation under warranty shall not extend to the following:

- The adjustment or replacement of parts which are the normal responsibility of the owner. For example, rubber rollers, scratched or chipped paint, loose fasteners (screws, nuts, etc.), or other items that show wear under normal use; i.e. "normal wear parts."
- Normal operating adjustments to heat, speed, tension, etc.
- Parts that are not manufactured by Ledco, Inc. If the individual manufacturer warrants these items, their warranty is, in turn, passed on to the original purchaser of the laminator. Ledco, Inc. does not incur any obligation or liability as a result of the warranties that are the sole responsibility of the appropriate individual manufacturer.

Any laminator that proves defective during the warranty period may be returned to Ledco, Inc. unless it is decided that the necessary repairs can be made during a service call. Notice of the defect should be submitted in writing or by phone to Ledco before any steps are taken to repair or return the machine. Phone: 585-367-2392 Fax: 585-367-2978

If the machine is returned, the following should accompany it.

- Customer name, address and phone number
- Written particulars regarding the malfunction
- Date of installation
- Serial number of the machine.
- **All returns must have a return authorization number on the outside of the shipping container.** Send all returned equipment freight PREPAID to:
Ledco, Inc., 4265 North Main Street, Hemlock, NY 14466

If your machine needs servicing after the warranty has expired, please contact your dealer. Ledco, Inc. does offer technical support if your dealer is unable to assist.

This warranty is expressly in lieu of all other warranties expressed or implied, including the warranties of Merchantability and Fitness For Use and of all other obligation or liabilities of Ledco, Inc., and said company neither assumes nor authorizes any other person to assume it for any other obligation or liability in connection with the sale of this laminator except as provided for above.

Further, this warranty will not apply to any machine or part thereof which has been damaged as a result of an accident or as a result of the abuse, misuse, or neglect of the machine. The warranty is also void if the laminator has been altered or repaired by any other than an authorized repair facility or dealer.

If you have any questions about this warranty, contact:

Ledco: tel: 585-367-2392 • fax: 585-367-2978



2-1 UNPACKING AND INVENTORY

Except for the supply roll mandrels the laminator is assembled at the factory. Upon arrival, inspect the unit immediately and thoroughly using the packing list that accompanies the shipment. Please follow these steps to correct any problem with your shipment. Ledco, Inc. cannot accept any responsibility for damage or loss unless you notify us within ten days of receipt of shipment and follow these procedures:

BREAKAGE OR DAMAGE: It is imperative that any shipping damage is reported and a claim is filed with the delivering carrier immediately upon receipt of damaged shipment. The procedure for reporting damage depends on the method of shipment. **Please note damage on bill of lading.**

FREIGHT, EXPRESS, or TRUCK DELIVERY: According to the contract terms and conditions of the carrier, the responsibility of the shipper ends at the time and place of shipment. The carrier then assumes full responsibility for the shipment.

1. Notify Ledco **IMMEDIATELY**.
2. Hold damaged goods with container and packing for inspection by the examining agent. Ledco will arrange the inspection.
3. **DO NOT RETURN ANY GOODS TO LEDCO PRIOR TO AUTHORIZATION BY LEDCO.**
4. Submit a copy of the inspector's report to Ledco. Ledco will file the claim with the carrier. Ledco will replace your machinery if necessary. You will be credited for the damaged machinery when the claim is processed.

SHORTAGE:

1. Check the packing list notations. The apparent shortage may have been marked as an intentional short-shipped (back-ordered) item.
2. Reinspect the container and packing material, particularly for smaller items.
3. Make certain that unauthorized personnel prior to complete unpacking did not remove the item and inventory.
4. Call us and send immediate written notification of the shortage.

INCORRECT SHIPMENT:

1. If the material you receive does not correspond with your order, notify Ledco immediately. Include the order number and item(s).
2. Hold item(s) until return instructions are received.

RETURNS: DO NOT RETURN DAMAGED OR INCORRECT ITEMS UNTIL YOU HAVE RECEIVED SHIPPING INSTRUCTIONS AND AN AUTHORIZATION NUMBER FROM LEDCO.

3-1 PRODUCT ILLUSTRATIONS & NAMES OF PARTS

The photos below and on the following pages identify major components and operating controls. Refer to them as you study the installation, operating and maintenance procedures described in this manual.

4-1 SAFETY PRECAUTIONS:

DANGER

1. High temperatures are present and care should be exercised in operating and maintaining the laminator. Even after the machine has been turned off it will remain hot for an extended period of time. Contact with hot surfaces may cause burns.

MISE EN GARDE! Etant donné les températures élevées produites par cette machine à plastifier, on doit user de prudence lors de son utilisation et de son entretien. Même une fois l'alimentation électrique coupée, la machine demeure chaude longtemps. Éviter tout contact avec les surfaces chaudes, qui peuvent causer des brûlures.

PELIGRO! Hay temperaturas altas aquí y debe tenerse cuidado durante la operación y el mantenimiento del plastificador. Aún después de haber sido desconectado, el plastificador permanecerá caliente durante un período prolongado. El contacto con las superficies calientes puede causar quemaduras.

2. Always make sure the power cord is not placed under the laminator where it might get overheated from proximity to the bottom heat shoe.

On doit éviter que le cordon d'alimentation ne passe sous la machine et soit exposé à la chaleur élevée produite par le sabot chauffant inférieur.

Asegúrese que el cordón eléctrico nunca esté debajo del plastificador, donde podría ser recalentado debido a la proximidad de la zapata calefactora inferior.

DANGER

3. The safety shield must remain attached to the machine and in position any time there is power to the machine. You may tip the safety shield up while loading the film. Always make sure the rollers are NOT turning when the safety shield is flipped up.

MISE EN GARDE! L'écran de sécurité doit être monté sur la machine en tout temps quand elle est sous tension. On peut relever l'écran pour charger la pellicule. Toujours s'assurer que les rouleaux ne tournent PAS avant de relever l'écran.

PELIGRO! La pantalla protectora debe quedar fija a la máquina y puesta de manera que la máquina siempre reciba energía. Puede levantar la pantalla protectora mientras carga la película. Asegúrese de que los rodillos NO estén funcionando cuando se saca la pantalla protectora.

DANGER

4. Never operate the laminator with neckties, jewelry, or loose clothing. Tie back long hair. These items can be caught and be pulled in by the laminator causing serious injury.

MISE EN GARDE! Attacher les cheveux longs et ne jamais porter de cravate, de bijoux ou de vêtements amples quand on utilise la machine à plastifier, qui risquerait de les entraîner et de causer ainsi des blessures graves.

PELIGRO! Nunca opere el laminador usando corbatas, joyas o ropa holgada. Amárrese el pelo largo. Estos objetos se pueden enredar en el laminador y causar un daño serio.

5-1 SETUP & OPERATION

With the laminator on an unobstructed, level surface, perform the following checkout before threading the machine with film.

WARNING: Make sure the power cord is clear of the underside of the machine prior to operation to avoid overheating the cord.

MISE EN GARDE: S'assurer que le cordon d'alimentation ne passe pas sous la machine, ce qui l'exposerait à la chaleur élevée produite par le sabot inférieur.

ADVERTENCIA: Antes de operar la máquina, asegúrese que el cordón eléctrico no está debajo de la misma, para evitar el recalentamiento del cordón.

1. Remove all packing straps, rubber bands, tape, and plastic ties from the machine. Remove the protective paper from the safety shield.
2. Make sure the heat, fan and drive switches are off before you plug in the machine. The "fan" and "heat" switches are labeled accordingly. "0" indicates the off position. The drive switch positions for "forward" and "reverse" are labeled. The reverse position is momentary and will turn itself off when released. The speed control is directly above the temperature indicator and is labeled with a hare and a tortoise.
3. Plug the machine into a working outlet of at least 15 amps. Plugging in the machine does not power on any control unless a switch has been left on. Plug in the machine and turn on the heat. The heat indicator lamp in the heat switch will come on. It will stay on until the machine has reached set temperature.

Adjust the heat controls.

To raise temperature:

- Press red button once to display set point value screen
- Press red button again to raise set point value
- Hold red button to raise set point value rapidly
- Wait five seconds for actual temperature to be displayed

To lower temperature:

- Press red button once to access set point value screen
- Press blue button to lower set point value
- Hold blue button to decrease set point rapidly
- Wait five seconds for actual temperature to be displayed

To switch from Fahrenheit to Celsius:

- Hold blue button for five seconds
- Use red button to change from degrees F to degrees C
- Wait five seconds for actual temperature to display

4. Always leave the rollers open when you turn off the machine. Close the rollers when you are going to thread the machine.
5. Once the heat is turned on, it will stay on until the switch is manually turned off. There is no automatic shutoff on this machine, except in the case of a blown fuse.
6. When the laminator has reached the set temperature, press the forward drive switch on. The pull rollers and the laminating rollers should rotate. Insert the white threading card into the nip (laminating) rollers. Let the threading card pass through the laminating rollers and then the pull rollers, exiting at the rear of the laminator.
7. Press the stop switch.
8. Turn the fan OFF.
9. Turn the heat OFF and unplug the machine.

PLEASE NOTE:

10. The fans should be turned on for any laminating with 3-mil or thicker film. The Professor 27 is made to run film up to 10-mils thick. Speed must be reduced with thicker film to insure adequate heating and cooling of the film. The machine's cooling capacity can be exceeded before its heating capacity.
11. Top speed on the Professor 27 is about 15 feet per minute. When the indicator line on the speed control is pointing straight up, that's half speed, or about seven feet per minute.

Five feet per minute is a typical speed for running 3-mil or 5-mil film, although either can be run faster or slower. Thin film (1.5 or 1.7-mil) can be run from five to ten feet per minute, and should not be run slowly. Thicker films (7 or 10-mil) should be run at two or three feet per minute. Remember turn on the fans while laminating with 3-mil and thicker films.

5-2 THREADING the LAMINATOR

1. Although this machine can be threaded cold, most operators feel it's easier to thread while it is warming up or already hot. The Professor 27 was designed to allow the operator to safely and easily thread the laminator while it is hot
2. Remove the supply roll mandrels. The supply roll mandrels are now ready to accept loading of the film rolls, wound with the polyester (shiny) side out. The tension control knobs should be positioned on the right
3. Slide a roll of film onto the top supply roll mandrel. Make sure the dull side of the film is facing up and the shiny side is facing the heat rollers during the threading.
4. With the roll of laminate centered on the mandrel, place it in the top bracket. Place the left side of the shaft in its slot first, then place the right side of the shaft in its slot, turning it as needed to align the hexagon bushings with their respective slot(s).
5. Review the threading diagram. Run the film from the top mandrel under the idler bar and drape it across the top heat roller. **Remember, the shiny side of the film must always go against the roller.** The dull (adhesive) side must face away from the roller. With the top roll of film centered on the mandrel and the shiny side facing down and draped over the top heat roller, you are now ready to load the bottom supply roll mandrel.
6. Load the bottom roll of film onto the mandrel in the same manner as the top roll. Remember, the shiny side of the film must always go against the roller. The dull (adhesive) side must face away from the roller. Make sure the two rolls are aligned with each other before going to the next step. Now drape the film from the bottom roll against the film from the top roll on the top roller. If the laminator is hot, the exposed adhesive on the top web will hold the bottom web and make it easy to stick the two webs together. If you are threading the machine while it is cold, use tape to stick the bottom web against the top web.
7. With both rolls threaded and installed in their respective brackets, unwind the top and bottom supply rolls about a half-turn each. This will provide enough slack in the web to allow the feed tray to close easily. Remember, the bottom idler bar is attached to the feed tray. If there's no slack in the web, the feed tray will be difficult to close.
8. Swing the feed tray into its closed position.
9. Swing the safety shield down into the laminating position. Lock the swing away top cover into position using the lock lever located in the center of the cover on. NOTE: the swing away feedtray is held in its closed position by the upper swing away cover. The feedtray must be closed before the top cover or the laminator will not function properly. Once the top cover is properly locked, close the laminating rollers with the large knob on the right side of the unit. With the film draped over the two heat rollers, push one edge of the threading card into the roller nip.

Push the forward drive switch. If the film and the card are in the nip (the point where the laminating rollers meet) the film and the threading card will start into the laminator and will pass through both sets of rubber rollers. When the threading card has cleared the back of the machine, press the STOP switch.

DANGER! The safety shield must be in position over the upper heat shoe whenever the rollers are turning or machine is heating. The laminator is designed to be run with operator directly in front and facing the control panel, not at an angle or from the side.

MISE IN GARDE! L'écran de sécurité doit recouvrir la plaque chauffante supérieure lorsque les rouleaux tournent or que la machine est en train de chauffer le materiau. La machine a plastifier est concue pour que l'opérateur se place directement en face du tableau de commande et non en biais par rapport a celui-ci, ou sur le cote.

PELIGRO! La pantalla protectora debe estar puesta sobre la placa termica superior cada vez que giren los rodillos o se caliente la maquina. El laminador esta disenado para que el operador lo haga funcionar directamente por delante mirando el panel de control, no en una esquina o desde u un costado.

5-3 FILM THREADING DIAGRAM

5-4 LAMINATING

1. If the machine is not already on and warmed up, first make sure the power cord is attached and plugged in. Set the temperature and turn on the machine and the heat.
2. The laminator will be ready to operate in about 30 minutes.

WARNING: Never permit the temperature to exceed 310° Fahrenheit while film is threaded and the laminator is not running. The film could disintegrate and require cleaning and rethreading of the machine. When it is necessary to laminate at temperatures in excess of 310°— such as for poster board when using 1.5 mil film — pull some excess film off the film supply rolls to provide slack so the film is not tight against the heat shoes while the machine is heating. This will keep the film from melting when the laminator is not advancing film.

3. Check and balance the supply roll tension on both rolls. Start by loosening both knobs until there is no pressure on the springs. Tighten each knob until it just begins to press on its spring. For a preliminary adjustment, put three or four turns of tension on each knob.
4. Once the machine has come up to temperature, you are ready to make final adjustments of the supply roll tension. With the heat ON, the rollers CLOSED, and the safety shield DOWN, push the FORWARD button. If using 3-mil or thicker film, also turn on the fans.

Watch the film as it passes over the heat rollers. If there is some waviness in the film at the leading edge of both rollers, supply roll tension is perfect. The leading edge would be the top of the top roller and the bottom of the bottom roller, the edges that first contact the film. If there is no waviness in the film at all, there is too much supply roll tension. Loosen both knobs a small amount and check again.

If the waviness or wrinkling extends into the laminating nip, tension needs to be increased. Always keep the amount of tension the same on both rolls. Waviness, which extends across 10 to 30 percent of the rollers, indicates acceptable supply roll tension.

5. When starting the machine to begin lamination, let at least 10 inches of film go through the rollers before inserting the items to be laminated. This takes out slack in the film and removes the cooler strip of film that forms just in front of the nip when the laminator is hot but film is not being advanced. This also removes any areas of film with excess adhesive that may have pooled just beneath the heated rollers.

Examine the film coming out the back of the machine. If bubbles or wrinkles appear in the film, this means there is not enough tension to draw the film tight and smooth over the heat rollers. Turn the tension control knobs clockwise to increase the tension.

If the film is stretching, and gets narrower as it goes across the rollers, supply roll tension is much too high, and the temperature setting may also be too high for that film.

Film that is 1.5-mil thickness requires very little tension.

REMEMBER TO TURN BOTH THE TOP AND BOTTOM TENSION CONTROL KNOBS THE SAME AMOUNT TO KEEP TENSION THE SAME ON TOP AND BOTTOM ROLLS. If the film curls up or down after it leaves the machine, read the above section on supply roll tension again and readjust the supply roll tension on both rolls.

If the tension appears balanced, but you notice waves or ripples toward the center of the web of film as it comes out the back, the temperature may be too high or the lamination speed may be too high for that film. These waves in the film are called "heat wrinkles". These heat wrinkles are formed when the film has not cooled enough before coming out the back of the machine. For the best results, the film should be cooled below melt temperature while it is pulled tight and perfectly flat between the laminating rollers and the pull rollers. If it gets out the back of the machine while still at or above melt temperature, heat wrinkles can form. The major reason for fans on a laminator is to cool the film, not to cool the machine.

5-5 RECOMMENDED TEMPERATURE SETTINGS

Your laminator is set at approximately 240 degrees Fahrenheit at the factory. This is the recommended temperature setting for low-temperature 3-mil film. If you are laminating with a different thickness of film, refer to the following table for recommended temperature settings.

Your first source of information about recommended film application temperatures and operating characteristics should be your film suppliers. If you do not know the source of your film, or if the supplier cannot provide the information, please use the following table as a guide.

FILM MELT TEMPERATURE CHART (ALL FAHRENHEIT)

FILM TYPE	FILM THICKNESS		
	1.5-1.8-mil	3 mil	5-10 mil
Monopolymer	310°-320°	280°-290°	270°-280°
Low-temp (copolymer)	300°-310°	220°-270°	220°-260°
Ultra-low temperature	230°-280°	180°-270°	180°-260°

Several important notes about this chart:

1. Your film vendor must have the primary responsibility for providing information about the film that you are using.
2. This chart is to serve as a general guide when better data is not available.
3. If your film vendor cannot provide this and other information about the film you are using, it may be difficult to achieve good results.
4. When laminating heavy posters or other thick items with 1.5 to 1.8 mil films, some additional heat may be required to get a permanent bond. Never exceed 340 degrees.
5. While offset printed materials may be laminated at the lower ends of the above ranges, inkjet and other output from digital printers may require the upper end of the range in order to get a good bond.
6. See 1-6 LAMINATING FILM for more information.

Cooling Fan:

The cooling fan on the Professor 27 is used during lamination with 3-mil, 5-mil, 7-mil, and 10-mil film. The fan cools the plastic as it leaves the laminating rollers and before it enters the pull rollers. As mentioned earlier, the fan prevents heat wrinkling and helps insure lamination that is smooth and flat. The pull rollers on a Professor 27 turn a little faster than the laminating rollers, insuring that the film is perfectly flat while it is being cooled.

NOTE: It is possible that variances from recommended temperature settings may be necessary due to material thickness, ambient temperature, humidity or the quality or thickness of the material being laminated.

Please note the wide range of temperatures listed, especially for heavier films. This does not mean any film that thick can be run anywhere within the given range. There are “standard” or high-temperature and “low-melt” or low-temperature versions of all film thickness. Some low-melt films work at lower temperatures than others do. It is important you buy your film from a vendor who can tell you the following additional information about any film you choose:

- the thickness
- the clarity
- suggested melt-temperature range
- polyester/polyethylene content
- how well the adhesive will stick to the kinds of images you’ll be protecting and enhancing

Temperatures may exceed 310° when laminating poster board or other thick items with 1.5 mil film on a continuous basis, but when the machine is stopped, turn the heat off if the setting is in excess of 310°. **Never set the heat above 350° with film in the laminator. Temperatures over 300° are not needed except with 1.5 mil film. Film that is 3 mil or thicker is generally run at 280° or less.**

5-6 LAMINATING WITH POUCH MOUNTING BOARDS

1. Set roller temperature to 350 degrees fahrenheit.
2. Open roll gap control handle (Large black knob on righthand side of laminator) by turning clockwise until it stops completely.
3. Switch speed selector switch (Black toggle switch on control panel) to pouch laminating position.
4. Turn speed control potentiometer knob (Small black round knob on front of control panel) up to maximum speed.
5. Assemble item to be laminated into the mounting pouch as per supplied directions.
6. Insert sealed edge into heated roller nip and press firmly until you feel the rollers “grab” the mounting pouch.
7. After the mounting pouch passes completely through the laminator, retrieve it as it exits and lay it flat to allow it to cool for a few minutes.
8. To resume normal film web lamination, turn speed control potentiometer to minimum speed (Fully counter-clockwise), switch speed selector switch to variable speed position and close roll gap control handle. Re-thread laminator as described previously.

5-7 PREVENTING AND SOLVING PROBLEMS

PLEASE READ THIS SECTION BEFORE YOU HAVE A PROBLEM.

PROBLEM: Wrinkling of the material as it goes into the laminating rollers. This problem usually occurs when laminating an item that has been folded, rolled, bent or wrinkled.

SOLUTION: Make sure the leading edge of the item being laminated is laying flat and is inserted parallel to the laminating rollers.

It is sometimes essential to smooth out an item as it passes over the feed table and through the rollers to ensure an even lamination without wrinkles. Smooth from the center of the item, back toward the trailing edges. Once the item starts to feed, you may also pull back and to the sides on the corners of the trailing edge.

If material has been rolled up, take the curl out of it on a table edge before laminating. If some curl remains, it may be helpful to insert the item with the curl down so the leading edge is pressed against the feed tray until just before the nip.

PROBLEM: Wrinkling of the film around the material being laminated.

SOLUTION: This is normal and inevitable on any laminator, especially with thicker material. These wrinkles will be trimmed away with the scrap, so they do not affect appearance. Because the rollers are being held apart by the paper or cardboard, they cannot pull equally on the plastic around the paper. This creates wrinkles that tend to look like the bow waves of a boat, radiating out through the clear part of the web from the sheet of material.

PROBLEM: When two pieces of material are laminated side by side, the plastic adheres to one piece but not the other.

SOLUTION: To get maximum efficiency from the film rolls, you can feed several items into the laminator side by side. However, wrinkling can occur if these items are of unequal thickness, because the laminating rollers are lifted off the thinner items by the thicker items. When laminating items side by side, it is important to arrange them so that the thickness is the same.

PROBLEM: Wrinkling of the plastic on a laminated piece of material.

SOLUTIONS: Make sure you have enough supply roll tension to take the wrinkles out of the film before it gets past the heat shoes (see 5-4 LAMINATING).

Make sure the film is threaded properly (see 5-2 THREADING the LAMINATOR).

PROBLEM: Film gets wrapped around the pull rollers.

SOLUTION: While threading a laminator when the rollers are cold, the loose ends of the unlaminated web are particularly susceptible to “wrap-around” on the rear rollers. To minimize this possibility, pull the threading card after it emerges from the pull rollers until the film clears the exit table. Open the rollers. Let the threading card hang from the back of the machine until the machine is warmed up. Then close the rollers and run some film until a laminated web has started to emerge from the pull rollers. Stop the web and trim the film from the back of the unit.

If “wrap-around” does occur while the laminator is cold, you can easily correct it by reversing the direction of the rubber rolls, permitting the laminator to release the film from the rolls.

PROBLEM: Film gets wrapped around the laminating rollers while the machine is hot.

SOLUTION: Leave the heat on so that the adhesive does not harden, and follow the following steps.

WARNING: Be very careful not to touch the heat rollers when the machine is hot.

MISE EN GARDE: *Ne pas toucher les sabots chauffants lorsque la machine est chaude.*

ADVERTENCIA: *No toque las zapatas calefactoras cuando la máquina está caliente.*

1. Remove the feed tray.
2. Cut the film on the top and bottom, just in front of the idler bars.
3. Loosen the film from the heat rollers and grip the two loose ends, holding them together.
4. Turn the drive switch to the reverse position.
5. Turn on the drive at a very low speed and allow the laminator to back out the film that is wrapped around the rolls. Pull the film off the roller.

WARNING: Keeping the machine in reverse may cause a reverse wrap-around if the film is not getting pulled off the roller. You may need to pull on the film with a lot of force while stopping and starting the drive.

MISE EN GARDE: *Si l'on appuie trop longtemps sur l'interrupteur de marche arrière, le film risque de s'enrouler dans l'autre sens. Appuyer par à-coups sur l'interrupteur et vérifier le résultat chaque fois.*

ADVERTENCIA: *Apretar mucho tiempo el interruptor de marcha atrás puede causar bobinado inverso. Apriételo brevemente, luego suéltelo y observe el resultado. Apriételo nuevamente si se requiere más marcha atrás. Pare si nota que el plástico hala hacia atrás, volviendo sobre los rodillos.*

WARNING: Do not try to cut the plastic off the roller with a knife or other sharp instrument. You will end up cutting the rubber rollers and turn an inconvenience into a major repair bill not covered by warranty.

MISE EN GARGE: *Ne jamais tenter de dégager un film enroulé en le coupant avec une lame tranchante. Vous entaillerez le caoutchouc des rouleaux, ce qui occasionnera des frais majeurs de réparation qui ne sont pas couverts par la garantie.*

ADVERTENCIA: *No intente separar el plástico del rodillo cortando con un cuchillo u otro instrumento filoso. Terminará cortando los rodillos de goma y convertirá una incomodidad en una cuenta de reparaciones mayor, que no esta cubierta por la garantía.*

If this method does not work let the machine fully cool. Remove the heat shoes and cut the wrap-around off the roller with a small pair of scissors, working the point and the cutting edges away from the rubber to avoid damaging the roller. Then clean the rollers per the instructions in the manual.

PROBLEM: Not noticing that the rolls of film are almost used up (one roll of film always runs out before the other.)

WARNING: If the film is run through the laminator without being matched to an opposing film, the adhesive exposed to the rubber rollers will stick to the laminating rollers and create a world-class wraparound. This type of wraparound is difficult to clear because the film adheres to the roller and to itself for the entire length of the accumulated film on the roller. It's best to clear this right away, before the adhesive hardens. Follow the steps above to clear.

MISE EN GARDE: *S'il n'y a qu'un film dans la machine, le coté adhésif, qui se trouvera contre le rouleau de plastification, y adhèrera, ce qui provoquera un enroulement "monstre: très difficile à défaire puisque le film adhère d'abord au rouleau, puis à lui-meme a mesure qu'il s'enroule. Il faut agir rapidement avant que la colle durcisse. Procéder de la facon indiquée ci-dessus pour régler le problème.*

ADVERTENCIA: *Si el plástico de uno de los rollos de abastecimiento pasa por el plastificador sin ser igualado por una película de plástico del rollo opuesto, el adhesivo expuesto a los rodillos de goma adherirá a los rodillos de laminación y causará un bucle monumental. Este tipo de bucle es muy difícil de deshacer porque el plástico adhiere tanto al rodillo como a si mismo, a lo largo de toda la longitud de la película de plástico acumulada sobre el rodillo. Es mejor deshacerlo inmediatamente, antes de que endurezca el adhesivo. Siga los pasos indicados más arriba para lograrlo.*

SOLUTION: To avoid this problem, stop the laminator before either roll runs out, cut the webs of film, and remove the two near-empty rolls of film and then rethread new rolls. When putting film on a laminator, always use two rolls of matched length and width.

Experienced users may leave the pieces of film remaining over the rollers to help thread the new film. When the machine is warm, the ends of the new rolls can be easily tacked to the already threaded pieces because the adhesive layer facing outwards will be sticky. Be careful not to burn yourself on the heat rollers.

PROBLEM: Film is not properly adhered or starts to come off sometime after lamination.

SOLUTION: Unless there is something wrong with the film, this problem comes from film being run at too low a temperature. Check the heat setting on the laminator. If the film is not sticking to the item, it is likely that more heat is required.

If you are running thicker films, you may have the problem if you try to go too fast. In this case, the thicker film may not have enough time on the heat rollers to reach its adhesive melt temperature. Thicker films may be run at low speeds with no problem.

When laminating posters or other thicker material with 1.5 mil film, the paper itself can absorb enough of the heat from the film to drop the adhesive below its melt temperature. The film may start to come off immediately or it may start to fall off after a few days. The solution here is to run the work at a higher temperature. About 320° to 340 °F will usually do the job.

PROBLEM: A laminated item comes out with a large “oily” spot on or near the leading edge.

SOLUTION: It’s not oil that causes this effect, but excess adhesive. When a machine is left heated but idle for a few minutes or longer, the adhesive from the film over the rollers can form droplets if material is put in immediately. This excess adhesive saturates an area of paper, creating what looks like an oily spot. The solution is to just let a few inches of film through the laminator before introducing your workpiece.

Anytime you are laminating unfamiliar or costly items; it is a good idea to start with an expendable sample or test piece. Laminating a test piece first gives you an indication of the results you’ll get and also takes care of any pooled adhesive.

PROBLEM: A milky, hazy line about an inch wide appears periodically across the width of the web immediately after initial warm-up.

SOLUTION: The rollers are not evenly heated, and the cold side of the rollers is preventing the adhesive from melting. When warming up the machine, keep the rollers open and keep the forward drive on at low speed.

PROBLEM: The laminated material seems to have a pitted surface or irregular surface that does not match the texture of the paper being coated.

SOLUTION: This is usually caused by adhesive build-up or dirt on the rubber rollers, but may be caused by any matter stuck to the rollers, such as a piece of paper. Inspect the rubber rollers and if they need cleaning refer to the owner's manual.

Cuts or other damage to the rubber rollers, especially the laminating rollers, can also cause irregularities in the surface of the film. The pull rollers are identical to the laminating rollers and could be substituted if still in good condition.

PROBLEM: The film shrinks as it passed over the heat roller is known as “necking” in the laminating trade.

SOLUTION: Reduce the heat and/or the supply roll tension. The film is not shrinking so much as it is being stretched by excess heat and tension, causing the web to get narrower as it is pulled over the shoes.

PROBLEM: No power is getting to the laminator.

SOLUTION: Make sure there is power at the electrical outlet being used, and make sure both ends of the power cord are firmly engaged. There are fuses inside the laminator, but dead outlets and loose power cord connections are the most common causes of this problem.

PROBLEM: Wavy or rippled sections in the laminate, especially toward the center of the web.

SOLUTION: These “heat wrinkles” are caused by excess temperature and/or speed for the film being used. Slow down the motor and/or use a lower appropriate temperature for that particular film.

PROBLEM: General haziness or cloudiness in the film after lamination.

SOLUTION: Increase the temperature. That cloudiness is a function of incomplete adhesion. On a variable speed machine loaded with thicker film, it may be that the film is being run too fast and is not getting enough time on the heat shoes.

PROBLEM: Bubbles in the center of the web and/or film not sticking to the center of an item.

SOLUTION: This problem can be caused by excessive laminating roll pressure. Putting too much pressure on the laminating rollers actually decreases pressure in the center of the web.

The other likely cause of this symptom is worn rollers. For example, if hundreds of thousands of 18-inch wide sheets are laminated on a 38-inch machine, the center of the rollers can get worn down more than the ends of the rollers. In this situation, the laminating rollers should be replaced. The rollers worn in this way are not suitable for use as pull rollers.

For problems not listed here, contact your Ledco Dealer. If the Dealer doesn’t know the answer, please ask the dealer to contact Ledco and get back to you.

You are also welcome to contact us directly with any problem at 585-367-2392. Because of the potential volume of support calls, we do encourage the use of the dealer network as much as possible.

6-1 INSTRUCTIONS FOR OPTIONS

Although the Professor 27 was designed to include all of the standard features previously mentioned, there are several options available to make the Professor 27 more versatile.

6-2 FOOTAGE COUNTER

Measures film usage in feet, also available in a metric version.

To measure the use of film with the footage counter:

1. Set the wheel of the counter against the roll of film.
2. Press the reset button located next to the digital read out.
3. The counter will continue to measure the number of feet of film used unless the wheel is lifted off the roll of film.

6-3 ROLL FEED

When laminating very long items such as banners it is just about impossible to feed it in perfectly straight by hand. With the roll feed mandrel, laminating the longest item becomes relatively easy. The roll feed mandrel is especially helpful for the owners of poster printers, plotters, banner makers and other digital output devices.

To laminate with the roll feed :

1. Roll up the item on an empty laminating film roll core making sure it's not telescoped. This insures it is rolled up perfectly straight.
2. Place the core on the roll feed mandrel. It doesn't matter if the image is face up or not, since both sides of the item will get the same lamination. With the tension knob adjust for a moderate amount of unwind tension. Make sure that as the item unwinds, the direction of unwind allows the gripper on the mandrel to dig into the core and not slip on the core.
3. Feed the leading edge of the item under the feed assembly idler bar into the nip rollers just as if you were feeding an individual sheet. If you have enough blank paper ahead of the image portion of the item, cut the leading edge to a blunt point. This makes it easier to feed the item in without wrinkling.

An optional technique is to feed a sheet of scrap paper into the nip as a leader. Stop the leader when there is about two or three inches remaining outside the safety shield. Place the banner edge on the edge of the leader and tape it securely. Then start to laminate.

7-1 MAINTENANCE

There are no user-serviceable parts inside the machine. Please refer internal maintenance to qualified personnel.

DANGER: Always use extreme caution when performing maintenance on your machine! Always make sure the machine is unplugged and that there is NO power to the machine when working on or cleaning any part of the unit.

Use extreme caution to avoid Hot Surfaces which may remain hot for a period of time even if there is NO POWER to your machine.

Use extreme caution to avoid pinch points at the nip of rubber rollers.

NEVER have rubber rollers turning while performing maintenance to your machine.

NEVER wear loose clothing, ties or jewelry (which may become entangled in gears or rubber rollers) while operating or performing maintenance on your machine.

MISE EN GARDE: *La prudence est de mise lorsque l'on effectue l'entretien de cette machine.*

S'assurer que le cordon d'alimentation est débranché et que la machine est mise hors tension avant de toucher à des pièces internes.

Prendre garde aux surfaces chaudes. Ces surfaces demeurent chaudes longtemps après que le courant a été coupé.

Tenir les doigts et les objets loin des rouleaux de caoutchouc. Ne jamais faire tourner les rouleaux pendant l'entretien de la machine.

Ne jamais porter de vêtements amples, de cravate ou de bijoux, etc. (ces articles peuvent être happés par les engrenages ou les rouleaux de caoutchouc).

PELIGRO: *Sea extremadamente cuidadoso siempre que realice tareas de mantenimiento en su máquina.*

Asegúrese siempre que la máquina está desenchufada y que no hay NINGUNA energía aplicada a la máquina, mientras esté trabajando con partes internas de la máquina.

Sea extremadamente cuidadoso en evitar superficies calientes, que pueden permanecer calientes durante cierto tiempo, aún después de estar cortada la corriente.

Tenga sumo cuidado en evitar puntos de constricción en las pasadas de los rodillos de goma. Nunca tenga los rodillos de goma en movimiento mientras realiza trabajos de mantenimiento en su máquina.

Nunca vista ropa suelta, corbata o joyas (que pueden ser atrapadas por engranajes o rodillos de goma) mientras está realizando trabajos de mantenimiento en la máquina.

7-2 GENERAL CLEANING

Cleaning the laminator daily or weekly will help prevent dirt or adhesive build-up on the rubber rollers and heat shoes and will improve the performance of the unit.

7-3 CLEANING THE RUBBER ROLLERS

Both the laminating rollers and the pull rollers need regular cleaning. Collectively these are referred to as the rubber rollers. To clean the laminating rollers:

1. **TURN OFF and UNPLUG THE MACHINE.**
2. Use the REVERSE switch to slightly reposition the laminating rollers so that you can clean the entire surface on each roller by sections. The REVERSE switch is a momentary switch. The rollers will stop as soon as you take your finger off the button. Don't try to clean the rollers while they are turning. Never operate the rollers with your hands near the nip.

WARNING: NEVER CLEAN THE ROLLERS WHILE THEY ARE TURNING. The rollers may catch your fingers and cause injury, or they may catch your cleaning materials and damage the laminator. **UNPLUG THE POWER CORD WHILE CLEANING THE ROLLERS OR PERFORMING OTHER MAINTENANCE ON THE MACHINE. TURN THE ROLLERS BY HAND.**

MISE EN GARGE: Ne jamais nettoyer les rouleaux pendant qu'ils tournent afin d'éviter de se blesser et d'empêcher que le produit de nettoyage n'endommage l'intérieur de la machine. Débrancher le cordon d'alimentation avant le nettoyage ou tout autre travail d'entretien. Nettoyer d'abord la partie apparente des rouleaux, puis, à l'aide de la commande de marche arrière, les faire tourner de façon à pouvoir en nettoyer toute la surface. Faire tourner les rouleaux le plus lentement possible pour qu'il soit facile de les immobiliser à l'endroit voulu. Ne pas approcher les mains ou les vêtements des rouleaux en rotation. Débrancher à nouveau la machine avant de poursuivre le nettoyage.

AVERTENCIA: Nunca limpie los rodillos de goma mientras estén girando. Al estar girando, los rodillos pueden atrapar sus dedos y lastimarlos, o pueden atrapar sus artículos para limpieza y danar el plastificador. Desenchufe el cordón eléctrico mientras está limpiando los rodillos, o realizando otras tareas de mantenimiento en la máquina. Gire los rodillos por mano. Limpie una sección de los rodillos, luego enchufe la máquina y use el botón de marcha atrás para girar los rodillos y limpiar la sección siguiente. Establezca una velocidad muy baja, para controlar la rotación más fácilmente. Mantenga las manos y la

ropa alejadas de los rodillos mientras están girando. Desenchufe la máquina otra vez antes de continuar con la limpieza.

Clean the rubber rollers with a mildly abrasive cleaning pad such as a white Scotch Brite (Trademark of 3M) pad which may be purchased in the household section of your grocery store (the green pads are too abrasive). Use “COOL CLEAN” to clean the rollers (available through your local LEDCO dealer). Rub firmly but do not scrub the rollers vigorously as this might mar the surface. Do not use sharp metal objects or steel wool as these will also mar the rollers.

The pull rollers should also be cleaned in the same manner. **TURN OFF and UNPLUG THE MACHINE** and turn the rollers by hand. The pull rollers are easier to clean because they are more accessible, and because they should not have any adhesive on them. Be sure to reposition and secure the upper heat shoe before beginning to laminate.

7-4 LUBRICATION

Drive Chain

The drive gears should receive a light coating of lithium grease after each 500 hours of operation. The drive gears are located inside the left hand machine enclosure. **Always disconnect power before removing this enclosure cover plate and do not operate the machine until it has been properly reinstalled.**