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1. INTRODUCTION

We at Pacific Laminations want to take this opportunity to thank you for selecting the **CRL40** laminator and to assure you of our continuing support.

Do not hesitate to contact Pacific Laminations or your distributor for any technical support, problem solving or general laminating advice.

The **CRL40** is designed to thermally laminate graphic materials in written, printed, copied, photographic or drawn form. The machines have been designed to produce high quality lamination with a minimum level of skill and machine control.

To ensure that you receive optimum results from your laminator and to prolong its working life please follow the installation, operation and maintenance instructions in this manual. Read the manual thoroughly before using the laminator.

Please fill out the machine warranty form at the back of the manual and return it to U.S.I. INC.

2. MACHINE SPECIFICATIONS

The following chart gives the specifications of the **CRL40** model.

	CRL40
Max. film width	40"
Speed Variable	0 - 13ft/min
Depth	24"
Length	50"
Height	15"
Net weight	154lb
Power Consumption	3000 w
Power supply	220/240 v 50/60Hz
Speed	Adjustable
Nip Pressure	Factory set
Heat setting	Adjustable
Max. film lengths	
Film gauges	1.5mil to 5mil
Maximum thickness	1/8"

3. INSTALLATION

3.1 Positioning

The laminator should be positioned on an unobstructed level surface with access to all sides, particularly at the rear of the machine for the operator to clear the laminated web exiting the machine.

The laminating process uses heat and it is important that the machine is placed in climatically stable area that is not excessively cold. Do not position the laminator in the direct path of airconditioners, cooling fans, open doors or similar areas subject to temperature fluctuations.

4. CONTROLS AND COMPONENTS

It is very important to familiarise yourself with the controls of your LAMINATOR before you begin laminating.

The following illustration will help:

4.1 Legend

- 1 Top film mandrel brake adjustment (Film tensioning)
- 2 Core grippers (obscured by top roll of film)
- 3 Upper film Mandrel shaft
- 4 Upper idler bar (obscured by top heat shoe)
- 5 Power light red
6. Speed control
- 7 Fan switch
- 8 Bottom film mandrel brake adjustment (film tensioning)
- 9 Lower idler bar (moveable easy load mechanism) (obscured by lower roll of film)
- 10 Lower film mandrel shaft
- 11 Temperature Controller
- 12 Thermostat light (red)
- 13 Reverse/Off/Forward Control
- 14 Main power switch (on rear of right hand consol)
- 15 Cooling fans (obscured by top heat shoe)



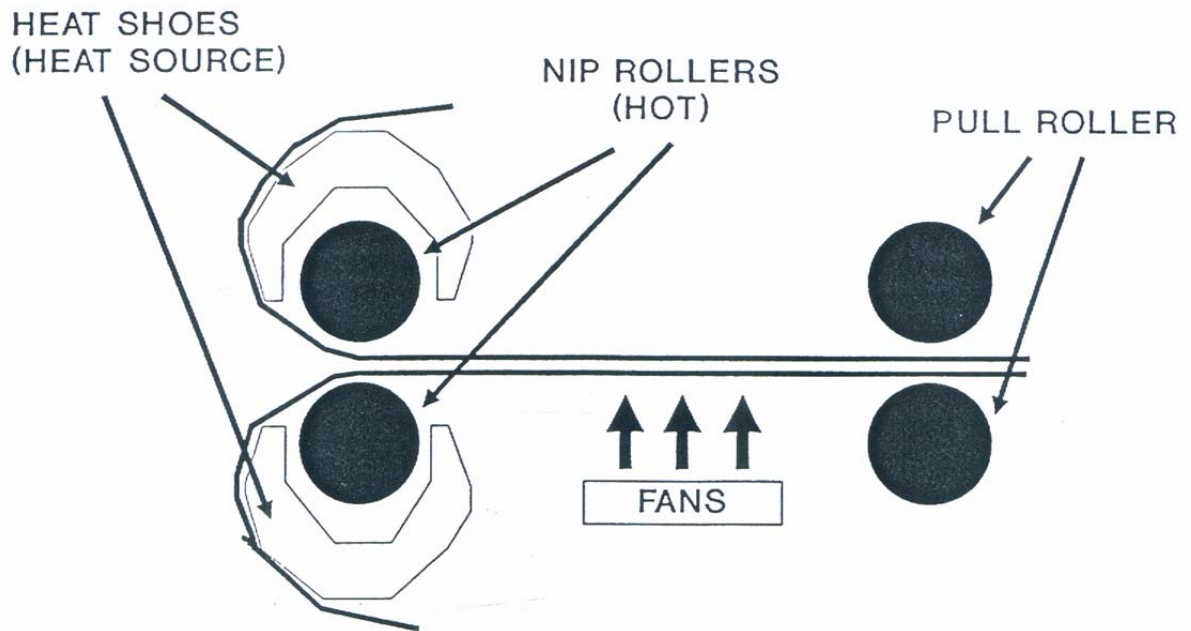
5. PRINCIPLES OF THE LAMINATION PROCESS

The lamination process uses a specialised laminating film consisting of a heat stable base film (polyester) coated with an adhesive co-polymer resin. Whilst dry to touch at room temperatures, at approx 250°F the resin softens into a very aggressive contact adhesive. Two webs of the coated film are drawn over a matching pair of hot surfaces (heat shoes) to heat activate the resin. They are passed between two heated rubber rollers under pressure to form a hot sticky sandwich of film. Two pull rollers stretch the film flat while it is being cooled by fans. Articles are fed between the two film layers as they enter the laminating nip and are encapsulated between the two film webs.

Under heat and pressure the two adhesive film layers impregnate the article's surface with molten adhesive providing a long lasting flexible airtight seal. The cooled adhesive film forms part of the strength of the laminate.

The key points affecting the quality of a lamination are the quality of the laminating film used, the heat shoe design and the quality and temperature of the heated rubber nip rollers.

Fig 5.1 THE PROCESS



6. WARM-UP (Without film)

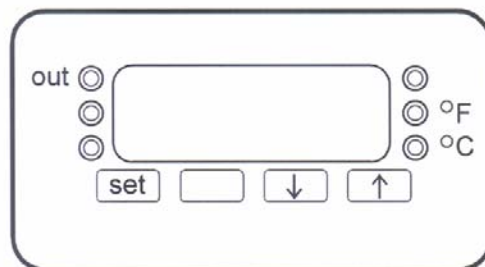
(Refer to page 15 for warm up with film loaded).

- (a) Connect machine to a single phase power source.
- (b) Check that the Forward/Reverse control is in the OFF position.
- (c) Switch 'ON' main power switch.
- (d) The red "power" light should glow.
- (e) Dial the thermostat (heater) knob to 270°F.
- (f) Providing there is no excessive adhesive residue on the roller (see i below) the rollers may be rotated after 10 minutes warm-up.
- (g) To ensure elimination of cold spot (refer page 16) the rollers should be allowed to rotate for a further 10 minutes.
- (h) Reduce the temperature to 250° - 270°F, the normal laminating temperature.

The machine is now ready to load film


Full warm-up time usually takes 20-25 minutes depending on the climatic conditions. While the heat shoes may reach operating temperature quite quickly (indicated by red light) good lamination requires evenly heated rubber surfaces on the nip rollers and these take longer to warm-up. Patience and good roller rotation will ensure an even heat soak of the rollers giving optimum laminating results.

Temperature Controller



How to set the working setpoint

If you have to modify the working setpoint value:

- press **set**
- press **↑** or **↓** within 4 s 
- press **set**

In normal circumstances temperature setpoint is all that will need to be changed.

7. LOADING LAMFILM

The first steps in this process are to remove the remnants of the old roll of film (See Section 9.9, Page 18) and if necessary, to clean the nip rollers (See Section 10.1, Page 22). Also see page 8a for USI colour code. (Note: Stickers already on the machine)

- 7.1 The laminating film has a dull side and a shiny side. The dull side is the adhesive and extreme care must be taken not to lay this side against the heat shoes or a lengthy cleaning process will be required.
- 7.2 When loading laminating film with dull side out. Film should come off the top of the roll.
- 7.3 Check your roll of film for the occasional splice. While unusual they are unavoidable and if you find one, place that roll on the top position (see Section 12.2, Page 24). Slide your roll of film onto the supply mandrel. As it is rotated, the roll should lock. The film position on the top mandrel should unroll from top **towards** the operator. The film on the bottom mandrel should unroll from top **away** from the operator.
- 7.4 Remove the feed table to facilitate film loading.
- 7.5 Release the tension control on top and bottom mandrels so as the film unwinds freely. Position the mandrels loaded with film in the mandrel supports.
- 7.6 Pull the film from the top mandrel and thread it under the top idler bar, draping the web over the front of the top heater bar. It is a good habit to fold back 25 mm (1 inch) of the film onto itself (adhesive to adhesive) at this point, to ensure the film does not curl back towards the heat and touch or stick to the heat shoe. (See Fig 7.1).

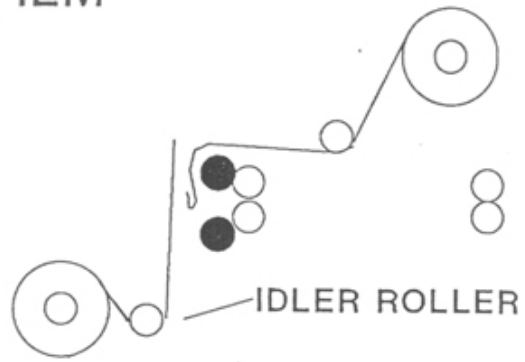
CAUTION :

An excessive fold-back of more than 50 mm (2 inches) could foul during threading.

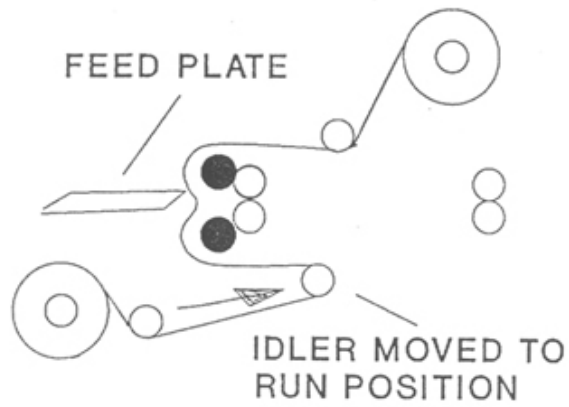
Fig 7.1 POSITIONING TOP WEB



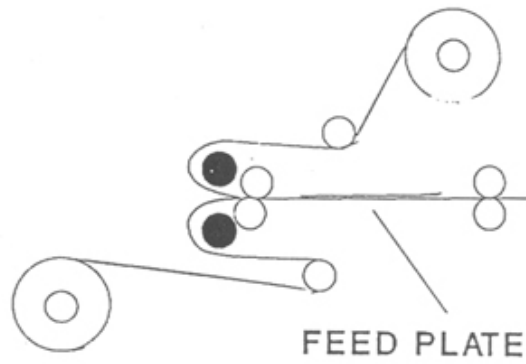
1. LOAD FILM



2. ENGAGE IDLER



3. RUN



ATTENTION!

If You Own A USI Roll Laminator, You Need To Upgrade Your Machine Now!

USI is now Color Coding all of it's Roll Film and Roll Laminators. We are the only company to offer this unique, trouble free system that will revolutionize the way roll film is loaded. Once you have upgraded your machine, loading your film will be the *easiest* step in the laminating process!

Here's how it works:

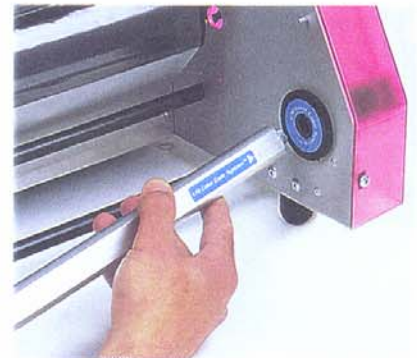
Separate the **Red** and **Blue** high tack adhesive labels (provided by USI) so that you have a **Red rectangle and circle** and a **Blue rectangle and circle**. Facing your USI Roll Laminator from the operator's side, place the **Red rectangle** on the upper mandrel with the arrow pointing to your right. (If you have a 1" core mandrel it is recommended to place the adhesive label on the flat side). Next place your **Red circle** on the upper right mandrel friction stud. (Or in the upper right mandrel cradle area). See photo.



Repeat this process using the **Blue adhesive labels** on the lower mandrel and friction stud.

That's it, you're done!

When your next order of USI roll laminating film arrives, simply match the **Red core** (on the film) to the **Red labels** on your laminator and the **Blue** to the **Blue** and you're ready to roll!



If it's not color code, it's too hard to load!

Have a question? Please feel free to call the experts toll free!
The USI Technical Support Team is at your service.

800-752-9131

- 7.7 The bottom idler bar should be in the "load" position i.e. nearest the roll of film. Thread the bottom film web under the bottom idler bar and, pulling it towards you, align it with the top film web and place it against the top film surface, which should now be tacky so that they bond together. (See Fig 7.2).



Fig 7.2 POSITIONING BOTTOM WEB

HINT :

Having threaded the bottom film web, hold it away from the top web. Visually align the two webs, adjusting the bottom web by small sideways movements until you are satisfied it is as accurate as you can achieve. (See Fig.7.3).

Fig 7.3 ALIGNING FILM



If the webs are not accurately aligned, the exposed adhesive will build up on the roller unnecessarily and require more regular cleaning.

- 7.8 It is essential that the bottom (moveable) idler bar is locked into the run position. With both hands on each end of the idler bar push it gently towards the back of the machine until it locks into place.
- 7.9 Replace feed table and place feed plate in position. (See Fig.7.4)

Fig 7.4 POSITIONING FEED PLATE



- 7.10 Select "Forward".
- 7.11 Place metal feed plate onto feed tray and push it against the film webs and between the front nip rollers. After an initial resistance, the rollers should carry the plate through the machine and clear the rear back rollers. Ensure it clears the back rollers cleanly, cut it from the film web and remove the film from the feed tray.
- 7.12 There can be a tendency, especially for thinner gauge films or with imbalanced tensions, for the finished laminate web to back up as it exits the laminator to a degree that it is grabbed by the revolving back rollers and becomes wrapped around them. To minimise the occurrence of wrap-around make sure the laminated web can't double back into the back rollers by pulling it away as it emerges. To **STOP** the motor, switch to STOP position.
- 7.13 Assess the operation. Satisfy yourself that the film webs have not fouled during thread-through. (See Section 9.1, Wrap-arounds, Page 21). Re-start the forward movement and gradually tighten the brake control on the film mandrels (clockwise). Only enough brake is required to ensure that the web of film smooths out and lays flat on the second half of the heat shoes during lamination, the first half of the heat shoe should normally have wrinkling or tunnels evident. (See Figs 7.5, 7.6, 7.7). It is always good practice to operate with the minimum film tension required to flatten the film. Top and bottom film tension must be even. An imbalance between top and bottom film tensions will result in curl in the final laminate. Upwards curl (as it exits the rear pull rollers) indicates too much tension on the top film roll and vice versa with downwards curl (See Section 9.2, Page 16). Excessive overall tension can result in narrowing of the film (See Section 14.7, Page 29).

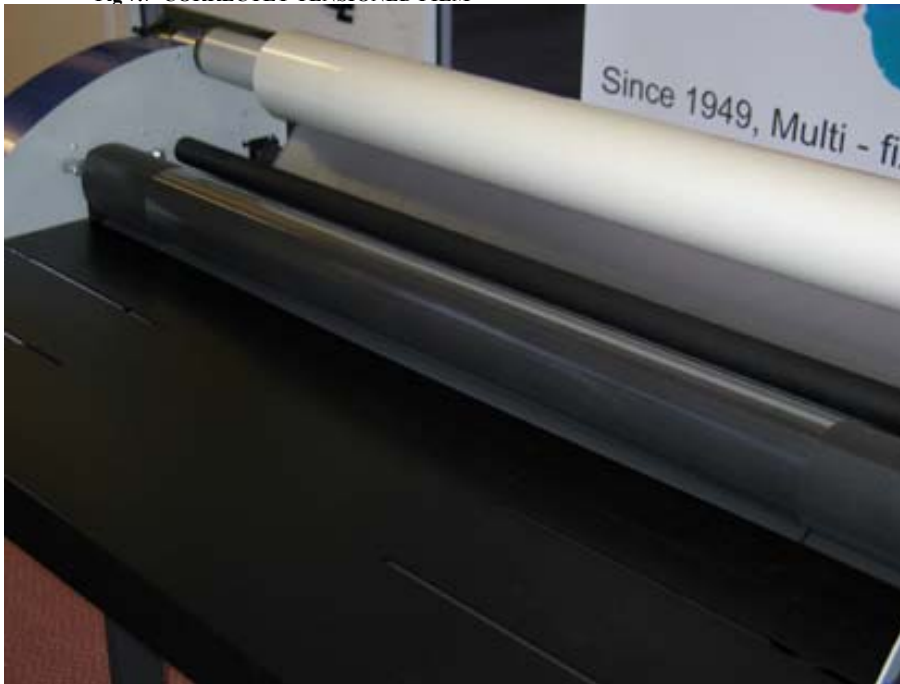
Fig 7.5 UNTENSIONED FILM



Fig 7.6 TENSIONING FILM



Fig 7.7 CORRECTLY TENSIONED FILM



CAUTION :

Do not over-compensate when turning the brake knob. Allow the film to find its natural drag/path. This could take 3 feet through the machine, depending on the accuracy of your original alignment, etc.

7.14 Turn the fans on, you are now ready to Laminate.

Testing the Lamination

Before feeding through work for the first time, it is advisable to test laminate a piece of waste paper/card, preferably black which shows faults more clearly. Lightly cut a cross in the film and try and peel the film. If it does not peel cleanly it is a good lamination.

By cutting the laminated plastic that is now hanging from the back of the machine, you can judge if you have too much curl, caused by excessive or imbalanced brake tension (as explained in Section 7.13).

7.15 Film Loading Checklist

After understanding all the detailed information on the film loading procedure we have detailed below an abbreviated check list of the sequence of events. Only use this after you have thoroughly read and understood the detailed procedures.

- Remove remnant film
- Clean nip rollers
- Release brakes
- Remove feed tray
- Load top film roll
- Thread under top idler bar
- Lay on heat shoe with 1" fold back
- Place bottom idler bar in "load" position
- Load bottom film roll
- Check alignment with top roll
- Thread under idler bar and lay on the top film web
- Push idler bar into "run" position
- Replace feed tray
- Start machine and push feed plate into nip
- Ensure feed plate and film exits the machine cleanly
- Stop machine and cut off feed plate
- Remove feed tray
- Start machine and tension top and bottom film webs
- Check for balanced tensions (curl)
- Check film alignment
- Replace feed tray
- Do a test laminate

8. WARM-UP WITH LAMFILM ALREADY LOADED

- 8.1 The normal method of warming up the machine will be with film loaded.
- (a) Check that the "Forward/Reverse" knob is in the stop position.
 - (b) Turn on the main switch key (red power light should glow).
 - (c) Dial the thermostat (heater) knob to the warm up temperature of 270°F.
 - (d) Wait at least 15 minutes.
 - (e) Switch to "forward" and rotate rollers approximately one half turn.
 - (f) Leave for another 10-15 minutes. This is to allow the rollers to heat evenly around their circumference and prevent cold spots.
 - (g) Reduce to the operating temperature of 250° - 270°F and commence laminating.
 - (h) Check that the machine is warmed up with a test laminate (preferably a dark colour).

A quick way to shorten the warm-up period and to eliminate cold spots is to run the machine with just the film webs passing through the machine. The passage of hot film accelerates the heating of the laminating rollers. While not recommended due to the loss of expensive film it may be useful in urgent situations.

CAUTION :

Good quality lamination can only be achieved by thorough and even heating of the rubber nip rollers. This requires plenty of warm-up time to ensure an even heat soak into the rubber. Trying to rush the warm-up process will jeopardise both the adhesion and appearance of the final product.

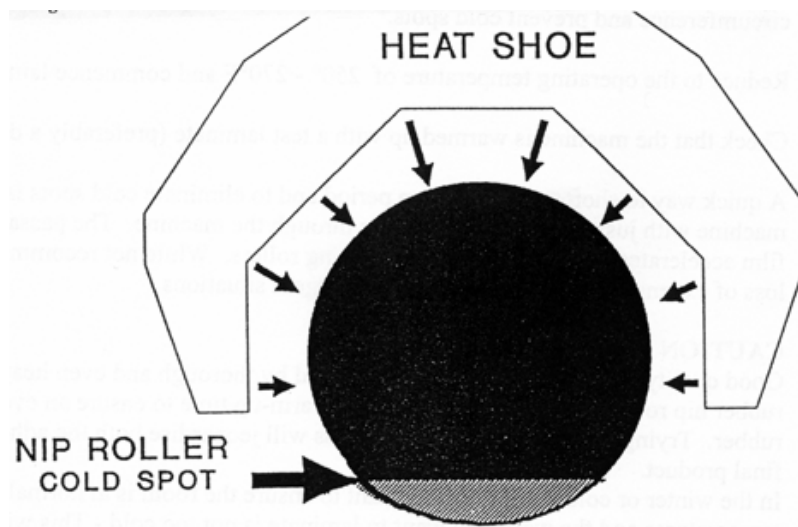
In the winter or cold areas it is important to ensure the room is at normal working temperatures and the work you want to laminate is not too cold - This will ensure your laminating is well stuck.

9. LAMINATING

9.1 Cold Spots

Good laminating film resins activate at around 212°F and to produce adequate bond, they need to be laminated with hot nip rollers. The rubber nip rollers are heated by exposure to radiant heat from the surrounding heat shoes. As the nip rollers gather less heat in their area of contact with each other, roller rotation during the warm-up process is essential to ensure even heating. After the initial warm-up a colder spot may be present at this point where the laminating rollers touch. This is because the rubber rollers insulate themselves from the heat source at this contact point (See Fig 9.1). Symptoms of a cold spot are a thin, milky horizontal line repeating regularly on the laminated item. The cold spot on the laminating rollers has insufficient heat to provide the same level of adhesion as the hotter areas of the laminating rollers.

Fig 9.1 COLD SPOTS



Cold spots are usually a result of laminating before the full warm-up period procedure is finished. To overcome cold spots allow a longer warm-up time and rotate the rollers more frequently.

A quick way to shorten the warm-up period and to eliminate cold spots is to run the machine with just the film webs passing through the machine. The passage of hot film accelerates the heating of the laminating rollers. While not recommended due to the loss of expensive film it may be useful in urgent situations.

9.2 Curl

An imbalance in roll brake tensions is the cause of laminate curl. The solution is to identify which roll of film has the higher brake tension. Cut a 200 mm strip of laminated film of the back of the machine, and by holding it in a vertical position will clearly indicate even the slightest curl.

Upwards curl (as it exits the laminator) indicates higher tension on the top film roll, downwards curl indicates higher tension on the bottom position.

To overcome the curl adjust the film tensions. Always try to release the brake on the film position with the higher tension, providing the film passing over the second half of the heat shoe can be kept wrinkle free. Alternatively slightly increase the tension on the other roll of film.

While most laminated items are generally flat the inherent tensions within film will not always allow a perfectly flat result.

9.3 Feeding Techniques

Ensure the article to be laminated is flat and free of curl or creases (See Section 12.1, De-curling, Page 24). Lay the article flat on the feed table and with your fingers slightly stretch it to the sides to flatten out any creases or curl on the leading edge. Move the article towards the laminating nip at approximately the same speed at which the film is passing over the heat shoes - not any faster. Forcing the items into the laminator results in insufficient heat on the leading edge of the item and may result in poor lamination of the front edge, especially the front corners (See Sections 14.4, Page 28).

Once the nip "catches" the item it will be drawn forward by the rollers. Retain a slight outward and firm backward pressure on each edge of the item to avoid any creasing. Large lightweight posters may require substantial pressure. Hold the item for as long as possible to prevent the trailing edge from buckling.

Fig 9.2 CORRECT FEEDING TECHNIQUE



CAUTION :

Always keep your fingers clear of the laminating nip, ensure that no loose clothing e.g. ties come close to the laminating nip.

9.4 Side By Side Lamination

When wide lamfilm is loaded you may wish to laminate items side by side. Very useful for small numbers of odd sized items. This is not a recommended practice as it is wasteful of expensive film. The best utilisation of film will always be achieved by using narrower film and feeding items accurately one up. One up feeding substantially reduces the time taken in trimming.

Should you choose to run two up it may often be difficult to achieve a satisfactory side seal between the two items. Thicker items in particular will not seal in the middle area as the laminating rollers are unable to exert sufficient down-pressure between the two items. The limitation of the machine must be considered and it is sometimes necessary to change to a small film width and run the items one across.

9.5 **Thick Stock**

Your laminator is designed to laminate items up to 1/8" in thickness, processing any item heavier than this may damage the gearbox (and void your warranty).

The thickness of the item to be laminated has a major effect on the integrity of the bond. Thicker items soak up essential temperature from the laminating nip and if the nip is not thoroughly heated will affect the bond strength.

Always laminate some thinner items before starting on thicker items. In severe situations (winter temperatures) try to warm the items to be laminated with a fan heater.

Edge seals are difficult to achieve on thicker items as the nip rollers are unable to achieve sufficient down pressure around the edges. Presentation to the client "cut clean" to the edge is accepted as normal. Learn to identify the weight of stock where edge seal is not practical so that it can be discussed with your client before laminating.

9.6 **Fan Control**

The fans provide cooling to allow the hot resin to "set" before exiting the machine and avoiding waves when using "soft" gauge films (this can become more pronounced on continuous run quantities).

9.7 **Temperature Settings**

Your laminator should be set at 270°F during the warm up process to accelerate heat absorption by the nip rollers.

ONCE WARMED UP THE NORMAL OPERATING TEMPERATURE IS 250°F

This is the recommended laminating temperature for all 76 micron film.

Do not increase heat excessively (i.e. beyond 270°F) or it may produce a rippled surface or bubbling as moisture is released from the paper substrate that is being laminated.

You will only ever need to raise the laminating temperature when laminating 38 micron film (See 11.2, Film Gauges, Page 23).

CAUTION :

Do not run your laminator at 280°F or above. You run the risk of degrading the laminating rollers. They will harden and crack with prolonged exposure to high laminating temperatures. They are very expensive to replace.

9.8 **Closing Down**

Laminating film may be left in the machine until next required.

- (a) Switch to "STOP".
- (b) Turn off mains.

It is a good practice to occasionally remove film when closing down to facilitate cleaning procedures.

9.9 **Film Removal**

The following procedure should be used when removing film remnants when you reach the end of a supply roll.

CAUTION :

Do not run the film remnants through the machine, always reverse film out of the machine.

It is very difficult to cut remnant film webs in such a way that both film ends match. If the unmatched webs are run through the machine the tails will coat the laminating rollers with adhesive and require lengthy cleaning.

- (a) Switch to "STOP".
- (b) Cut the laminated film that is hanging out of the back of the machine, close to the rear rollers.
- (c) Cut top and bottom webs close to the idler bars, ensuring you do not scratch the heat shoes. (See Figs 9.2 and 9.3).

Fig 9.2 CUTTING TOP WEB



Fig 9.3 CUTTING BOTTOM WEB



- (e) Switch to "Reverse"
- (d) Holding the loose web firmly, reverse the film out of the machine, assisting its path by pulling towards you. (See Fig 9.4).

Fig 9.4 REVERSING FILM OUT



9.10 Preventing Wrap-Around

When laminating with massive imbalance in film tension or with thinner gauge films, there can be a tendency for the finished laminate web to wind back up as it exits the rear pull rollers. This may happen to the degree that it could curl over and back onto itself and wrap around the rear pull rollers. To minimise the occurrence of wrap-around make sure the laminated web does not curl back on itself, especially when tensioning newly loaded film.

If a wrap-around does occur, you can easily correct it by reversing the direction of the rubber rollers, permitting the laminator to release the plastic from the rolls.

- (a) Remove the feed tray.
- (b) Cut the plastic web on the top and bottom just in front of the idler bars.
- (c) Disengage the plastic from the heat shoes and grip the two loose ends firmly together.
- (d) Turn the motor control switch to reverse.
- (e) Pull the plastic film firmly as it exits the nip rollers ensuring that it does not wrap-around the front nip rollers.

CAUTION :

Never use a knife or other sharp object to cut the plastic film with a wrap around. Any damage to the expensive silicone rubber rollers will leave a permanent impression on your lamination.

10. CLEANING

10.1 Cleaning The Nip Rollers

With the machine at full laminating temperature and with no film through the machine. Rotate the rollers in reverse to avoid fingers or rags being dragged into the nip. Use a kerosene-soaked cloth, to rub the adhesive build-up line until it evaporates. In severe cases a plastic scouring pad can be used.

DO NOT use excessive amounts of kerosene or leave the rollers too wet.

DO NOT use metal scouring pads or abrasives.

DO NOT pick at the adhesive or use any sharp objects near the rollers.

DO be patient. Any cuts or holes in the laminating rollers will show up as marks on your laminated work and can only be rectified by replacing the rollers.

CAUTION :

Under no circumstances use Alcohol, Petrol or detergents.

Fig 10.1 CLEANING THE NIP ROLLERS



10.2 Heat Shoes

Use a soft rag and kerosene. Clean while at laminating temperature.

11. MANUFACTURER'S RECOMMENDATIONS

11.1 Film Types

This machine has been specifically designed to run the low temperature co-polymer films.

WARNING :

It is strongly advised that lower quality monomer (Regular) grades of laminating films are not used. The excessive temperatures, high tensions and pressures these low quality films require to produce a result will produce excessive wear and tear on your laminator.

11.2 Film Gauges

Your CRL40 has been engineered to use 1.5, 3 and 5 mil film.

Lighter gauges i.e. 1.5mil require greater heat input as their lighter bulk does not retain heat well between the heat shoe and the laminating rollers. This requires evenly heated nip rollers to compensate. They are very sensitive to temperature fluctuations and cold climatic conditions especially when starting from cold. For best results use the following precautions:

- Allow a much longer warm up period.
- Lift temperature to 270 - 280°F.

11.3 Stock Weight

Minimum weight of stock to be comfortably laminated is 50lb, lighter stock weights may be laminated successfully but may begin to crease or exhibit "cockling" along the trailing edge. Maximum recommended laminating gauge is 1/8", laminating heavier stock weights may cause the nip rollers to come in contact with the heat shoes and upset the pressure settings of the laminating rollers or damage the gearbox. Do not attempt to alter the factory set pressure settings.

12. LAMINATING TIPS

12.1 De-Curling

The sheet to be laminated needs to be generally flat and wrinkle free. Many items to be laminated are supplied to you in a rolled up form, this can cause feeding difficulty if the leading edge curls up leading into the laminating nip. These items need to be "de-curved" before laminating by rolling them in the reverse direction and storing them in this position for a short period of time.

12.2 Laminating Film Join Splices

It is inevitable that a small proportion of film will contain a join spliced with red heat resistant tape. These join splices, while undesirable, are unavoidable and must be considered a normal laminating event. Every roll with a join splice contains a warning label.

If you receive a roll of film that contains a join splice, place it on the top film position so you can watch for the spliced section during operation. When it appears, apply slack on the supply roll to minimise the tension, and stop feeding items until the splice passes through the laminating rollers. This procedure will prevent tearing of the roll and spoiling the item being laminated.

As an extra precaution the machine can be stripped just before a join and the splice cut out and the web re-adhered to the original web still in the machine.

13. FAULT FINDING

13.1 Poor Film Adhesion

Problem: Material not laminating or laminating in patches.

Nearly all instances of poor lamination adhesion is due to a lack of heat or pressure at the laminating nip.

Possible Cause

Lack of heat in the nip roller due to insufficient warm up period and/or lack of nip roller rotation during warm-up. Remember that while the heat shoes reach operating temperature quickly (10 minutes) successful lamination requires the nip rollers to be thoroughly heated (a slower process).

Possible Solution

Ensure the laminator was warmed up at 270°F and is laminating at the operating temperature of 250° - 270°F. If a lower temperature was used repeat the warm up procedure.

Possible Solution

Leave the laminator for a further 10-15 minutes rotating the nip rollers half a turn after 5 minutes. Laminating too early will give "cold spots", repeating bands of delamination mirroring the colder section of the nip roller (see Section 9.1, Cold Spots, Page 14).

Possible Solution

Cold stock, particularly heavy card, can draw essential heat away from the laminating nip. Warm the stock or start laminating thinner items first until the machine is fully warmed up.

Possible Cause

Lack of nip roller pressure (extremely rare).

Possible Solution

The rollers may be forced apart with excess adhesive residue or scraps of film or paper wound around the front rollers. Inspect and if necessary clean rollers.

Possible Solution

The factory nip roller setting may have been disturbed and will require a service visit to adjust. This is a most unlikely cause and all other possible causes should be investigated thoroughly.

Possible Cause

The nature or the condition of the article to be laminated may be inconsistent with the lamination process.

Possible Solution

High moisture content in the material (symptoms - steam bubbles) may require conditioning in a dry warm environment.

Possible Solution

A silicone or varnish coating on the materials surface may resist lamination - try another article of a similar size/weight.

13.2 Curl

Problem: Laminated articles have excessive upwards or downwards curl.

Curl problems are the result of imbalanced film tensions.

Possible Solution

Adjust film tensions to achieve a flatter result (see Section 9.2, Curl, Page 14)

13.3 Lack of Edge Seal Down

Lack of edge seal is the result of insufficient down pressure from the nip rollers.

Possible Solution

The article being laminated is too thick to achieve a satisfactory seal (See Section 9.5, Thick stock, Page 15).

Possible Solution

Side by side lamination of any heavy article may prevent satisfactory seal down in the area between the sheets. Mount narrow film and run one up (See Section 9.4, Side by Side lamination, Page 15).

13.4 Creasing

Problem: Creasing of the laminated article.

Creasing of laminated articles usually occurs with large posters (particularly light weights) and often relates to poor feeding technique.

Possible Solution

Creasing beginning at the centre of the front edge and running longitudinally through the centre of the poster usually indicates that the item has been held on the feed table close to the heat shoes for a short period of time. The radiant heat from the heat shoes will dry out the leading edge of the poster and cause it to buckle on entry. Do not delay your feeding - he who delays is lost.

Possible Solution

Arc shaped creasing occurring at the leading edge usually indicates that the poster has been forced into the nip. Try to develop the knack of feeding the article into the nip a little slower than the film moves (See Section 9.3, Feeding Techniques, Page 15).

13.5 Longitudinal Wrinkling of Film

Problem: The film, rather than the poster, is wrinkling in the direction of the film path. This fault usually indicates that there is insufficient tension on the laminating film.

Possible Solution

Tighten brake knob on the appropriate film mandrel and ensure that the film passing over the heat shoe is wrinkle free as it leaves the lower section. Caution do not over tension the film.

Possible Solution

Check that you have the correct thread path for the films i.e. ensure that the film passes under each idler bar and in particular ensure that the lower idler bar is in the "run" position.

Possible Solution

Check heat shoes for any resin build up or surface contamination that may be effecting the smooth flow of film over their surface. Any contamination may snag the film and cause fluctuating tension entering the nip. Clean the heat shoe when hot.

Possible Solution

Ensure that the rolls of film are firmly locked onto the core grippers on the film mandrels. Test by winding brake on hard and seeing whether the film is firmly locked onto the core grippers. If the film is not firmly "caught" on the grippers, remove the film and inspect the grippers. The spring position may need adjustment with a screwdriver. Remember to release the brake afterwards.

13.6 Film Sweating

Problem: Film sitting on the heat shoe begins to "sweat" with dribblets of molten resin running down the face of the film. Most common on the lower film web and may deposit on the lower idler bar.

Film once heated and then left to cool, then reheated again, breaks down the key bond between the outer plastic and inner and causes the resin to run.

Possible Solution

Remove film after use and clean machine.

13.7 Film Shrinkage

Problem: Film shrinks or narrows from its original width during lamination.

Excess tension and/or heat, especially with 1.5mil films.

Possible Solution

Reduce film tensions and if necessary reduce temperatures.

13.8 Undulations in Laminate

Problem: The finished lamination has a "wave" effect (undulations).

Possible Solution

This effect is caused through heat transfer to the rear pull rollers and the laminate not being "set" when it leaves the machine. Usually evident when laminating long runs with no fan. Ensure the fans are on and feel the rear pull rollers - if they are hot cease laminating and let them cool down.

13.9 Film Wrapped Around Rollers (Wrap Around)

Problem: Film has become wrapped around the rear pull rollers.

Usually occurs when loading film with imbalanced tension settings or with 38 micron films.

Possible Solution

See Section 9.10, Wrap Arouns, Page 21.

13.10 Film Squeal

Problem: High pitched squeal is emitted when laminating.

Excessive tension and/or heat will cause the film to drag across the teflon coated heat shoes emitting a high pitched squeal.

Possible Solution

Reducing tension and/or heat will reduce this problem but some rolls of film may emit more noise than others.

MACHINE WARRANTY

CRL40

Warranty Conditions

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.

IN ORDER FOR THIS WARRANTY TO BECOME EFFECTIVE :

1. Fill in all of the details on the tear off portion of this sheet and file your copy in a safe place.
2. Return the tear off section to **U.S.I. INC, 98 Fort Path Road, Madison, CT06443** within one calendar month of purchase.

ACTION TO BE TAKEN IF THE EQUIPMENT IS FAULTY :

1. Contact the distributor from whom you purchased the machine.
2. Quote the details contained on your portion of the warranty sheet.

THIS WARRANTY BECOMES INVALID UNDER THE FOLLOWING CONDITIONS :

1. When the equipment has not been operated in accordance with instructions for use, or has been subject to neglect, or to damage through fire, flood, or accident.
2. When the suppliers recommended supply items such as **U.S.I. film** has not been used.
3. When the equipment has been modified, repaired or otherwise interfered with by a person other than the distributor's authorised service representative.
4. When the warranty sheet has not been correctly completed and returned to **U.S.I. INC** within one month of original purchase.

YOUR RECORD

Model: _____ Serial #: _____

Dealer's Name: _____

Address: _____

Date of Purchase: _____ *Cut here* _____

SUPPLIERS COPY

Model: _____ Serial #: _____

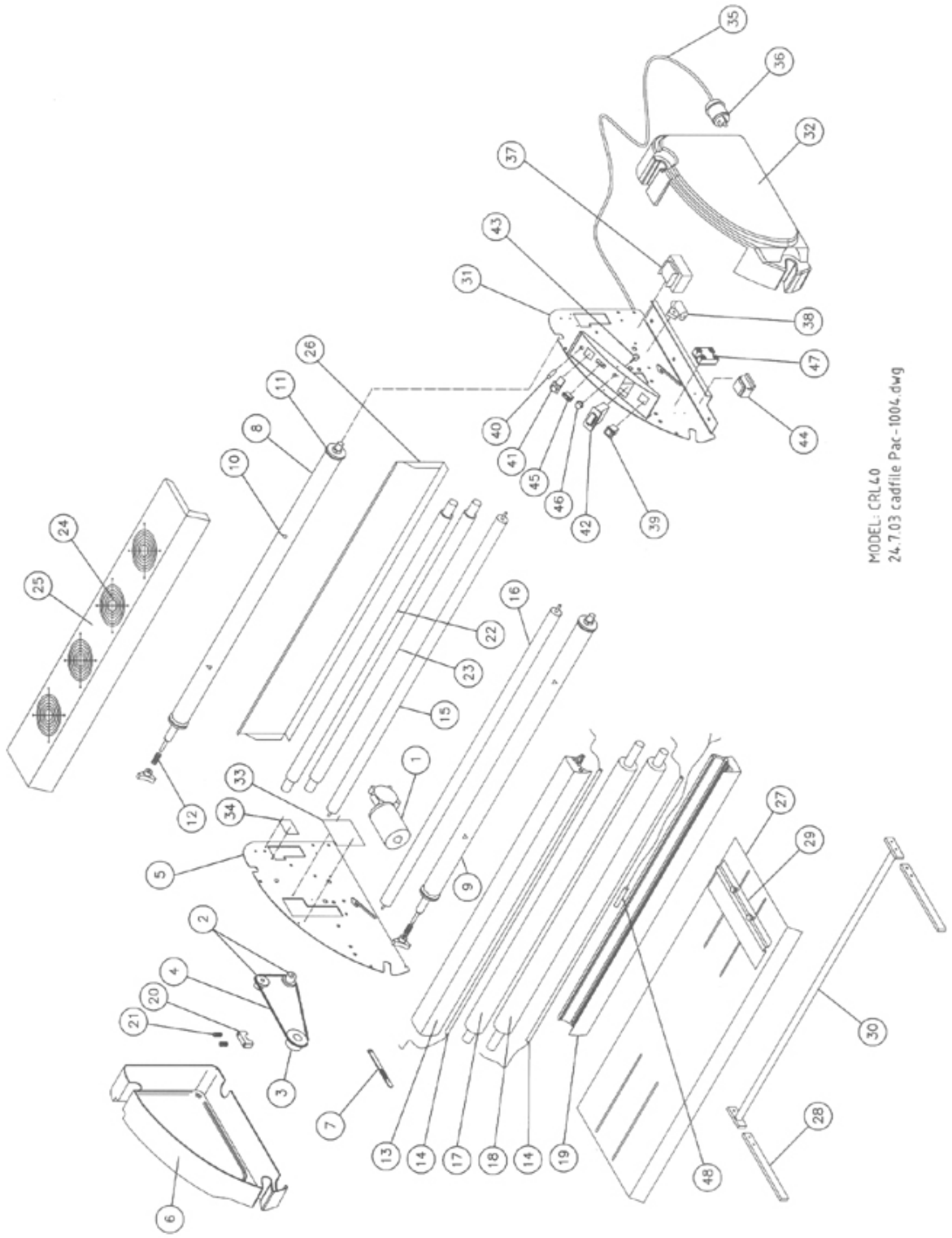
Purchaser's Name: _____

Address: _____

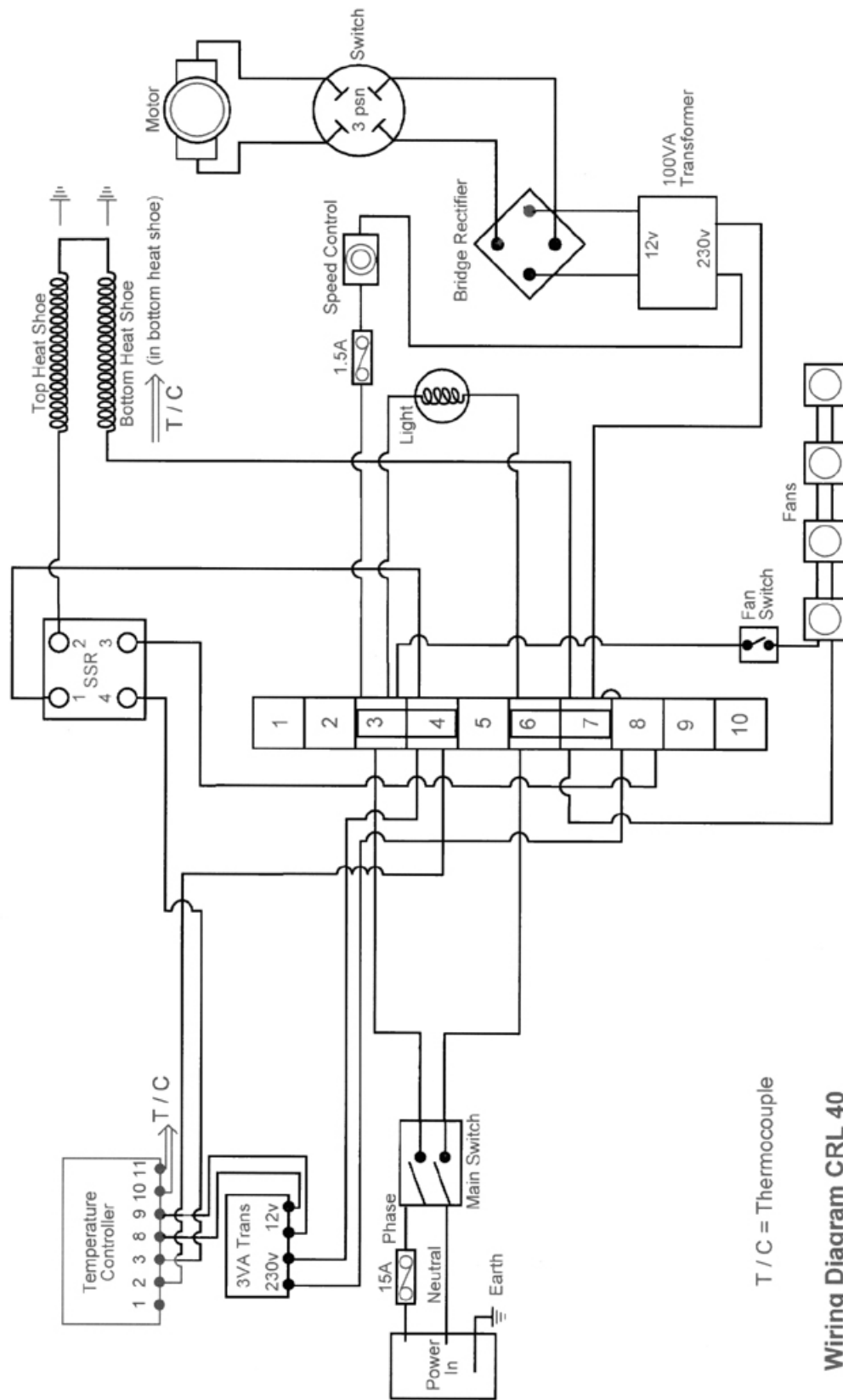
Purchased from: _____
(Distributor's name)

Date of installation: _____

CRL40 EXPLODED VIEW PARTS LIST			
ITEM	DESCRIPTION	QTY	PART NO.
1	12 V DC MOTOR	1	M010122
2	12 TOOTH 3/8 BS SIMPLEX SPROCKET	2	S010053
3	20 TOOTH 3/8 BS SIMPLEX SPROCKET	1	S010051
4	CHAIN 3/8 BS SIMPLEX	1	S010050
5	LEFT HAND CONSOLE PLATE	1	C010701
6	LEFT HAND CONSOLE SIDE COVER	1	C010703
7	TOP HEATSHOE BRACKET LH & RH	2	C010703
8	TOP MANDREL	1	S121731
9	BOTTOM MANDREL	1	S121731
10	MANDREL CORE GRIPPER	4	
11	MANDREL BRAKE PAD	4	S010039
12	MANDREL BRAKE SPRING	2	S010189
13	TOP HEATSHOE	1	H010006
14	ELEMENT TOP AND BOTTOM HEATSHOES	2	E010118
15	TOP IDLER ASSY	1	S120121
16	BOTTOM IDLER-ASSY	1	S120121
17	TOP FRONT ROLLER 054 X 1030 PARALLEL	1	R121731
18	BOTTOM FRONT ROLLER 054 X 1030 CROWN	1	R121732
19	BOTTOM HEATSHOE	1	H010006
20	BEARING BLOCK	8	S010066
21	ROLL PRESSURE SPRING	8	S010019
22	TOP REAR ROLLER 035 X 1030	1	R121733
23	BOTTOM REAR ROLLER 035 X 1030	1	R121734
24	FAN	4	E010114
25	FAN SECTION	1	C010731
26	REAR PANEL	1	C010732
27	FEED TRAY	1	C010733
28	FEED TRAY SUPPORT BRACKET	2	S000003
29	EDGE GUIDE	1	C010706
30	TIE BAR	1	S010117
31	RIGHT HAND CONSOLE PLATE	1	C010702
32	RIGHT HAND CONSOLE SIDE COVER	1	C010704
33	FRONT COVER PLATE	2	C010707
34	REAR COVER PLATE	2	C010705
35	POWER LEAD	1	E000018
36	PLUG	1	E010044
37	TRANSFORMER 100va 230/12	1	E010080
38	BRIDGE RECTIFIER & CAPACITOR	1	E020001
39	MAIN POWER SWITCH	1	E010110
40	POWER ON LIGHT	1	E010116
41	SPEED CONTROL	1	E010092
42	TEMPURATURE CONTROLLER	1	
43	3 POSITION SWITCH (REVERSE/OFF/FORWARD)	1	E010001
44	TRANSFORMER 3va 230/12	1	E010147
45	FAN SWITCH	1	E010117
46	3 POSITION SWITCH KNOB	1	E010136
47	SOLID STATE RELAY	1	E010150
48	THERMOCUPLE	1	
Item number, description, part number and quantity.			



MODEL: CRL40
 24.7.03 cadfile Pac-1004.dwg



T / C = Thermocouple

Wiring Diagram CRL 40