

TROUBLESHOOTING PREMIER 4 SERIES LAMINATORS

SECTION ONE: BASICS

Troubleshooting the PREMIER 4 laminator will be addressed in three general areas:

1. Heat
2. Drive
3. Web tension/Roll pressure and adhesion

And at three general levels:

1. Basic, end-user level (plugs, fuses, etc)
2. Intermediate or dealer level (minor adjustments, basic diagnostics)
3. Advanced or servicing dealer level (true servicing issues, mechanics, electronics, and advanced diagnostics)

*******PLEASE NOTE*******

To assure you get the best performance from your laminator, always follow the safety, installation, operation and maintenance instructions in the owners/operation manual. Read the manual before using the laminator, keep the manual with the machine, and periodically review the instructions. This troubleshooting guide is to be used after referring to the operation manual and problems still persist.

SECTION 2:TROUBLESHOOTING THE HEAT SYSTEM

When troubleshooting the heat system, problems usually fall under two descriptions; A) no heat or B) uncontrollable, runaway heat.

A.NO HEAT

1) **Basic.** Check the power cord. Make sure it is securely inserted in the wall outlet (110 vac) and the receptacle located on the back of the laminator.

Be sure to engage the heat switch to the up or "I" position as denoted by the label markings next to the switch. The switch will illuminate red when engaged, and the digital display should light up and read the actual present temperature indicating power is getting to the system. If the heat switch does not light up (and concurrently neither would the digital display), disconnect the power cord and with a phillips head screw driver remove the 11 screws from the right hand plastic housing, remove the cam shaft handle using a 1/8" allen wrench and with a small straight blade screwdriver remove the speed control knob. Then remove the housing and inspect all the wiring and connectors for any that may be loose or disconnected. Carefully reconnect any loose or disconnected wires exactly as shown in the schematics in the back of the owners/operation manual. If any wires are broken or shorted out, call your dealer, a servicing dealer/technician, the Ledco service dept, or move on to the next, intermediate level of troubleshooting.

If the wiring looks good upon initial visual inspection and the heat switch and digital display still do not illuminate upon engaging the heat switch, now examine the 1.5 amp fuse

(located to the right of the wiring terminal block) to see if the fuse has failed. If the fuse has failed (it will appear discolored and the element inside broken) replace it with a new 1.5 amp fuse (always replace **any** fuse with the same rated fuse).

The heat system should now be operational. If not, you should now consult with your dealer, a servicing dealer/technician, the Ledco service dept. or move on to the next, intermediate, trouble shooting level.

In the event of engaging the heat switch and it illuminates, but the digital display does not, visually examine the grey wire ribbon cable and connector to the display for looseness or broken wires. If the plastic harness for the wire ribbon cable is loose or disconnected from its receptacle at the back of the digital display, re-insert it into the receptacle (it will only go in one way). The display should now be operational. If not, the ribbon cable may be disconnected from the heat control circuit board located inside the machine, the ribbon cable itself could be faulty (the small grey wires could be broken or shorted out) or the digital display/temperature adjustment board may be faulty. A servicing dealer/technician or the Ledco service dept should be consulted to reconnect or replace the ribbon cable and/or replace the digital display board.

If you engage the heat switch and it does not illuminate but the digital display lights up and shows three dashes (- - -) this indicates the heat sensor is disconnected or faulty. With the power cord disconnected and the right side plastic housing removed, visually inspect the heat sensor wires and quick connectors (the thin black wires from the top heat shoe) and re-connect them if loose. If the wires and connectors seem OK and the digital display still reads the

three dashes(- - -),the heat sensor and/or the heat control board need to be tested to determine which component is faulty and needs replacement .You should now consult your dealer,a servicing dealer tech,the Ledco service dept. or move on to the next,Intermediate troubleshooting level.

2)Intermediate.If the heat system 1.5 amp fuse is ok and the red heat switch(and concurrently the digital temperature display) do not illuminate when engaged,disconnect the power cord and remove the right side housing as explained previously.Examine all wires and connectors for the heat system to see if any wires are disconnected,broken or shorting out.If disconnected,re-connect exactly as shown in wiring schematic.If broken or shorted out,replace with new exactly as shown in schematic.If the heat switch(and digital display) do not illuminate when engaged and there is still no heat,with a multimeter check the continuity of the heat switch by putting your multimeter probes on terminals 5 and 6(the two innermost terminals)of the heat switch(with their two respective wire connectors disconnected) then,with the power supply disconnected,engage the heat switch.If there is no continuity reading,the switch is bad.Replace the switch(currently part # PRS311)and rewire exactly as shown in the schematic.

With the heat switch(and digital display) functional and engaged,if there is still no heat or one heat shoe heats and the other does not,using the multimeter check the continuity of the heaters by putting your multimeter probes on the wire leads of the top heater, then the bottom heater.If there is no continuity reading for the respective heater being tested,that heater is bad and should be replaced(part # PRH147)and

rewired exactly as shown in the schematic. If there is still no heat, call a servicing dealer/technician, the Ledco service dept. or continue on to the advanced trouble shooting level.

As mentioned in the previous troubleshooting level, if you have heat and no digital display read out, chances are (provided all the respective wires and connectors check out OK) the digital read out is faulty and should be replaced with a new display from part # PRH130 heat control replacement kit. Gently disconnect the plastic wire harness from its receptacle on the back of the display by depressing the small tab on the harness, then unscrew the three plastic acorn nuts from the back of the display board to remove. Reinstall the new display in the exact reverse sequence. The display should now be operational. If not, the problem lies in either the ribbon cable or the heat control and you should now consult a servicing dealer/tech, the Ledco service dept or move on to the next, Advanced, level of troubleshooting, diagnostics and repair.

3) Advanced. With all of the previously mentioned components checked and operational, if there is still no heat, and specifically no heat with a digital display showing three dashes(- - -), use a multimeter to check resistance on the (disconnected) heat sensor wires. The sensor will have an approximate resistance of 1.089 ohms at room temperature. If the sensor has no resistance (or reads open line or circuit) it is bad and should be replaced (part # PRC212S) and rewired exactly as shown in schematic. To remove the heat sensor from the heat shoe, first disconnect the top heater wires and heat sensor wires from their respective terminals. Loosen the small thumbscrews that

secure the heat shoes to the inside side panels near the feed tray. Next, using a 9/64 allen wrench, loosen and remove the two cap head screws and sleeves that secure the heat shoe through the side panel near the center of the machine. Cut the small white wire tie that secures the heater and heat sensor wires to the side panel (they are covered with black, heat shrink tubing). Now you can carefully lift out the top heat shoe/threading guide/idler assembly to gain greater access to the individual components. Using a phillips head screw driver, remove the four flat head screws (and phenolic spacers) that secure the heat shoe to the left and right heat shoe brackets. This will allow you to swing the heat shoe free to take a 5/64 allen wrench and loosen the set screw that secures the heat sensor and bullet to the inside of the heat shoe. This set screw is located in the center of the back of the heat shoe, in line with the round head phillips screws that hold the rubber roll heater in place. Extract the faulty heat sensor/bullet from the inside of the shoe and replace with new (part #'s PRC212S and 4285 061.4). Reassemble in exact reverse sequence, rewire exactly as shown in the schematic. Heat system should now be operational.

If not, the ribbon cable and heat control board are the only components left to test and/or replace. Since there is no easy way to accurately test the ribbon cable, your best bet is to just replace it. Logically this will rectify any ribbon cable-related problems. To replace the ribbon cable, and to gain total access to the heat control board for testing and/or replacement, the bottom motor cover must be removed. With both housings removed, place the machine upside down on your work bench. Using a phillips head screw

driver,remove the five self tapping screws that secure the bottom motor cover to the front motor cover.

Remove the two flat head and two round head screws that secure the bottom motor cover to the right and left hand side panels.Carefully pull back the bottom motor cover enough to gain access to the components within.You may find it necessary to disconnect the leads to the power cord receptacle and fuse holder to completely remove the bottom motor cover.Make careful note of these connections as to re-connect them correctly later.Once you have gained adequate access to the heat control board,you can now remove and replace the ribbon cable(it disconnects from the control board the same as from the digital display board explained previously).

Now we can test the heat control board.Disconnect all the wire leads from their respective terminals(make note of their locations to ensure proper re-connection later).Using a multi meter set to *k* ohms,put one probe on terminal T4(common) and the other probe on terminal T1(208 v).You should get a reading of approximately .910 *k* ohms at room temperature. If it shows open(infinite) or closed (no resistance) the board is faulty and should be replaced.

Next with a probe on T4 again and the other on T2(240v), you should get a reading of approximately .765 *k* ohms at room temp.Again,if it shows an open or closed reading the board is faulty and should be replaced.

With one probe still on T4 and the other on T3 you should get a reading of approximately .410 *k* ohms at room temp.If it shows open or closed,the board is faulty and should be replaced.

The next heat control board test involves putting the probes on terminals T10 and T11 (the heat sensor terminals) and checking for approximately 32.9 k ohms resistance. If it reads open or closed circuit, the board has failed and should be replaced. Note, a closed circuit reading would result in uncontrollable, runaway heat. We will address that in the next section.

Lastly, with the multimeter probes on terminals T6 and T7 and with no power to the board, there should be an open circuit reading. Once you power it up it will close the circuit (the relay) and remain closed until the temperature set point has been reached and the circuit opens again. If, with no power to the board, you get a closed circuit reading, the relay has failed and the board will have to be replaced. Incidentally this condition of a failed heat control board relay will most likely result in runaway, uncontrollable heat, which leads us to the next part of the heat system trouble shooting section....

B. UNCONTROLLABLE OR RUNAWAY HEAT

1) **Basic.** One of the most commonly asked questions is “why is the film melting when the temperature is only reading around 250 degrees?” Well, the answer may be as simple as making sure your heat control is set on “F” for fahrenheit, and not “C” for celsius. Power up the laminator and engage the red heat switch. The digital display will show the actual, present temperature. Now press and hold the small blue temperature adjustment button for five seconds. This will then show “F” or “C” on the display. Press the blue button to toggle between “F” and “C”. Set it to “F” and leave it. After five seconds the display will return to the actual present temperature. The heat control can now be adjusted

to the desired set point as described in section 5-1 of the operation manual.

If after making sure the heat control has been set for fahrenheit and uncontrollable, runaway heat persists, you should now consult your dealer, a servicing dealer tech, the Ledco service dept., or move on to the next, Intermediate, troubleshooting level.

2)Intermediate/Advanced. Disconnect the power cord and remove the the right side housing as described previously. Visually examine all wires for the heat system for disconnected, broken or shorted-out wires. Pay particular attention to the heat sensor wires. Re-connect or replace any disconnected or broken/shorted wires and rewire them exactly as shown in schematic. If symptoms persist, using a multimeter check the heat sensor wires (you will have to remove the bottom, back motor cover as instructed in the previous section to gain access to the heat control board and wiring thereof) with at least one wire disconnected from its heat board terminal. As noted before, a functional heat sensor reads 1.089 ohms resistance at room temperature, an open reading means there would be no heat and a closed reading (dead short) results in runaway, uncontrollable heat. Either open or closed readings indicate heat sensor failure and require replacement of the PRC212S heat sensor and 4285 061.4 bullet and rewiring exactly as shown in schematic.

Next, using your multimeter, check terminals T10 and T11 on the heat control board (the terminals for the heat sensor wires). As described in the previous section, you should get a reading of approximately 32.9 k ohms resistance. An open or

closed(resulting in runaway heat)reading means the control board is faulty.Replace and rewire exactly as shown in the schematic.

Finally,as explained in the last paragraph of the previous section,using a multimeter,check terminals T6 andT7 on the heat control board with their respective wires disconnected. With the multimeter probes on these terminals and no power to the board there should be an open circuit reading.Once you power it up,it will close the circuit(the relay)and remain closed until the temperature set point has been reached and the circuit opens again.If,with no power to the board,you get a closed reading(which would result in the relay staying closed under power and subsequent overheating)the board has failed and must be replaced and wired exactly as shown in the schematic.

*Any questions as to the terms,procedures or references used in this guide,please call the Ledco service dept. @ 800-937-9697

SECTION 3:TROUBLESHOOTING THE DRIVE SYSTEM

When troubleshooting the drive system,problems usually fall under two descriptions;A)no drive,or B) intermittent drive accompanied by strange clunking/ skipping or grinding sounds.

A)NO DRIVE

1)**Basic.**Make sure the power cord is plugged in securely to an appropriate power outlet,and completely inserted into the receptacle at the back of the laminator.

Flip the switch labeled Forward/Reverse to the upper “I”,

forward position. It should turn the drive motor on. If not, disconnect the power cord and using a small straight blade screwdriver, gently pop out the spring loaded fuse holder and fuse from the rear of the machine next to the power cord receptacle. Visually examine the $\frac{3}{4}$ amp fuse to see if the fuse has failed. If the fuse has failed it will look discolored and the element inside broken. Replace with a new $\frac{3}{4}$ amp fuse (**always** replace fuses with **exactly** the same rated fuse). The drive system should now be operational.

If the drive motor sounds like it is operational and there is still no drive (make sure the rubber rollers are in the down, engaged position using the cam shaft knob), disconnect the power the cord and remove the left hand plastic housing in the same manner as the right side as described in the previous section. Visually check the drive chain to make sure it is secure. If the chain is not connected, reconnect the chain at the connecting link. If the connecting link is missing or damaged, call your dealer or Ledco for a replacement link (part # PRC 084), reconnect and re-install the chain, and the drive system should be operational.

Next, move on to visually checking all sprockets to make sure they are tight to their respective shafts. If loose, use a $\frac{1}{8}$ " allen wrench to tighten the set screws in the sprockets, making sure the set screw tightens on the flat surface of its respective shaft. Also be sure the sprockets are positioned for proper chain alignment ($\frac{13}{16}$ " from the side panel to the center of the chain.) With the chain properly connected and the sprockets securely tightened to their shafts, the drive system should now be operational. If not, you should now consult with your dealer, a servicing dealer/technician, the

Ledco service dept.,or move on to the next,Intermediate, troubleshooting level.

2)**Intermediate.**Disconnect the power cord and remove the right side housing per previous instructions.Using a multimeter,check the continuity of Forward/Reverse drive switch by first identifying the row of three terminals closest to you,putting the probes on the middle(common) terminal and the lower terminal,and engaging the switch to the forward position.If there is no continuity,the the switch is bad and should be replaced(part # PRS 005)and rewired exactly as shown in the schematic.Similarly,putting the probes on the center terminal and upper terminal of the heat switch and manually engaging the reverse jog,no continuity indicates switch failure.Replace and rewire per the schematic.The drive system should now be operational.

If the drive system is still non-operational,you should now check the speed dial potentiometer located directly above the digital heat display on the right side housing.First visually check for any disconnected or broken wires coming from the back of the potentiometer to any of it's subsequent connections.Re-connect or replace and rewire as shown in the schematic.Now,using a multimeter,put the probes on the grey and brown leads from the potentiometer respectively. With the pot set at zero on the dial (all the way counter clockwise)you should get a resistance reading of approximately 10.00 k ohms,gradually decreasing in resistance as you increase the speed dial(turn clockwise) to wide open.At the wide open setting,you should get a resistance reading of close to 00.0 ohms.If your meter shows an open or closed circuit or if there is resistance but

does not change when rotating the potentiometer, the potentiometer is faulty and should be replaced and rewired per the schematic. When requesting a replacement, contact the Ledco service dept and refer to the potentiometer for part # PRM219 motor speed control. The motor drive should then be restored. If not, you should now consult a servicing dealer/technician, the Ledco service dept. or proceed to the next, Advanced, troubleshooting level.

3) Advanced. After all previous checkpoints have been confirmed and there is still no drive, the motor control board and/or the drive motor now must be checked. Disconnect the power cord and remove the right side plastic housing. Locate the drive forward/reverse switch. Trace the two center terminal lead wires from the switch to their respective connectors to the black and red drive motor lead wires. Place your multimeter probes inside the connectors, set at volts DC. Now connect the power cord to the laminator and engage the forward drive switch. With the potentiometer at the lowest setting, you should get between 0 to 10 volts on the meter. With the potentiometer set at its highest, 100%, you should get between 90 to 96 volts. If no voltage is present, and you have already checked the switch and potentiometer for integrity, the motor control board (part # PRM219) is faulty and should be replaced. If the prescribed range of voltage is present and there is still no motor drive, the drive motor (part # PRM220) is faulty and *it* should be replaced.

To replace these parts you must remove the bottom motor cover to gain access to the motor control board and the motor as described in SECTION 2, A-3

Once gaining access to the motor compartment, visually check all components and wiring for loose connections, broken or shorted wires, etc. Replace and/or rewire exactly as shown in the schematic.

To replace the motor control, first gently disconnect the plastic wiring harness from its terminals, making note of its positioning on the terminals for proper reconnection later. Using a small phillips head screwdriver and a small adjustable wrench, remove the two 6-32 x 3/8 screws and nuts that secure the board to the front motor cover. Replace the faulty board with new, secure it in place with the screws and nuts, re-connect the plastic wiring harness (and any other wiring that needs to be re-connected) and re-assemble the bottom motor cover. The drive system should now be operational.

To replace the drive motor, using a 1/8" allen wrench, loosen the set screws in the motor sprocket (part # PRS253A), the pull roll sprocket (PRS249), and the laminating roll sprocket (PRS251). Carefully remove the sprockets and drive chain making note of their order and positions for exact re-installation later. Now disconnect the two motor wire leads from their quick-connects. Using a phillips head screwdriver, remove the two bottom motor mounting screws (10-32 x 1/2" FHMS), then using a 1/8" allen wrench, remove the two top motor mounting screws (10-32 x 1/2" button head cap screws). Carefully remove the faulty motor and replace with new. Secure with mounting screws, reconnect the wire leads, re-install the sprockets (in the **exact** order and position as removed), re-assemble the motor cover (reconnecting any other wiring before hand). The drive system should now be operational.

If the drive system is still not operational, the unit should now be used as a boat anchor.

****Remember when re-assembling the components of the laminator after servicing or repair, it is imperative that you do so in the exact reverse sequence as you disassembled the unit. This is especially true of the sprocket placement and positioning (the rear, pull roll sprocket will always have one less tooth than the front, laminating roll sprocket to create a slight overdrive that keeps the laminating film flat and taut as it passes from the front rolls, over the cooling fan, thru the back rolls and out the rear of the machine. With the sprocket order reversed, the film will exhibit a crumpled, accordion like appearance).

B) INTERMITTENT DRIVE (sometimes accompanied by a clunking or skipping/grinding noise)

1) **Basic.** Disconnect power cord and remove left hand plastic housing as described previously. Visually check chain, sprockets and gears for integrity. Replace any broken or missing chain components (see SECTION 3, A-1). Tighten any loose sprockets or replace them if any teeth are broken or excessively worn (see SECTION 3, A-3). Also visually inspect the 4 rubber roll gears (part # PRG131) and replace any that are broken or excessively worn (refer to the disassembly instructions in previous section level 3 to remove the sprockets, then using clip ring pliers remove and replace faulty rubber roll gears). You may prefer to call your dealer, a servicing dealer/tech or the Ledco service dept to assist.

If, after making sure that chain, sprockets and gears are secure and functioning correctly, there is still intermittent

drive and or a clunking/grinding noise,visually inspect the rubber rollers for any film wrap around or any other foreign objects caught in the rolls or any other part of the drive system.Carefully remove foreign object(s) and/or correct the wrap around by referring to section 5-6,Preventing and Solving Problems,and section 7-4 Cleaning The Rubber Rollers,in your owners operators manual.If intermittent or noisy drive persists,call your dealer,a servicing dealer/ technician,the Ledco service dept. or proceed to the next,Intermediate,trouble shooting level.

2)**Intermediate.**If a film wrap around is so severe that it can't be cleared using the reverse jog method described in section 5-8 of the owners manual,and is still causing intermittent,clunking drive,it may be necessary remove the chain,sprockets and gears from the drive side to allow unrestricted rotation of the rolls.See SECTION 3,A-3 for procedure.You should now be able to create a loose end of film with which to pull free the entire wrap around.If you need better access to the bottom,rear pull roller,remove the bottom motor cover as instructed in SECTION 2,A-3.To gain greater access to the bottom,front laminating roll,use a 5/32 allen wrench to remove the cap head screws that secure the bottom heat shoe through the side panels.You can then swing the bottom heat shoe away(or disconnect the heater leads from the terminal block and totally remove the heat shoe)for better access.

You should now be able to free up the wrap around, reassemble all the components and resume operation of the laminator.However,if the wrap around is a big melted mess,

and you cannot clear it using these methods, or if the rubber roll(s) has been damaged or rendered unusable, the roll(s) should be removed and replaced. You should now consult your servicing dealer/tech, the Ledco service dept or move on to the next, Advanced level of troubleshooting/repair.

3) Advanced. To remove the rubber rolls (part # 0500-040.4) and manually free them of wrapped or melted film, or replace them if they are damaged or unusable, you must first remove the drive chain, sprocket and rubber roll gears as described at length previously. Next, using a 1/8" allen wrench loosen and remove the two 1/2" shaft collars securing the top front and rear rollers on the right hand side. Next, using a 3/16 allen wrench loosen and remove the pressure bolts and orange pressure springs (part # LC25 031.4) from the bottom bearing supports (part # 4285 028.4) and top bearing supports (part # 4285 030.4B). Now, using a 9/64" allen wrench and a phillips head screwdriver, remove the cap head screws and button head phillips screws and stainless steel spacers that hold the top bearing support cam spring support bar and roller bearing assemblies in place. You can now slide these top assemblies off the ends of their respective shafts allowing you to remove the top, front laminating roller and the top, rear pull roller. Then using a phillips head screw driver, remove the flat head phillips screws that secure the bottom bearing supports to the side panels and slide them off their respective shaft ends. All four rubber rollers can now be removed and replaced or exchanged as needed, and reassembled in precisely the reverse sequence of dis-assembly. The drive system should now operate smoothly with no clunking or excessive noises.

*****IMPORTANT NOTE*****

When re-installing the rubber roll pressure springs,the optimal measurement setting for the springs is 31/32”

If after meeting all of the afore mentioned sequential troubleshooting criteria,a grinding noise persists,chances are the drive motor gearbox has failed.As the gearbox is an integral part of the drive motor itself(part # PRM220),the drive motor should then be removed(see SECTION 3,A-3) replaced,and rewired exactly as shown in the schematic. The drive system should now be perfectly functional.

SECTION 4:TROUBLESHOOTING WEB TENSION

(wrinkling,waviness)**ROLL PRESSURE**(steering, uncontrollable wrinkling),**AND ADHESION**(peeling,not sticking)**PROBLEMS**

1) **Basic.**The majority of web(film)tension or wrinkling problems and adhesion problems are covered in the owners manual.Please refer to section 5-8,Preventing and Solving Problems,for answers to basic questions concerning wrinkling and non-adhesion.

If,after consulting the owners manual,wrinkling problems persist,visually examine the supply roll assembly(part # 0500-002.5 top and bottom).Check to see if the brass supply roll dog located in the center of the supply roll is missing or loose.If missing,replace it(part # 0285-015.4),call your dealer or Ledco for the part.If its loose,using a phillips head screwdriver,tighten the 6-32x3/16 round head screw that secures the dog to the mandrel.If wrinkling persists,visually check the hex adaptor(part # 0285-023.4)at the end

opposite the black supply roll knob on the supply roll assemblies. The small spring pin that holds the hex adaptor in place may have sheared, making it impossible to get any tension on the supply roll mandrel. If so, it's best just to call your dealer or Ledco and replace the whole supply roll assembly. Tension adjustment will then be restored and wrinkling eliminated. If after following these troubleshooting tips and following the basic procedures spelled out in the owners operation manual you are still experiencing excessive wrinkling (especially if more pronounced on one side or the other), the problem may be more rubber roll pressure related and you should now contact your dealer, a servicing dealer/technician, the Ledco service dept. or move onto the next, Intermediate, troubleshooting level.

Waviness in a laminated piece is usually a symptom of too much heat, running the prints too slow or not using the cooling fans. As the operation manual points out, the cooling fans should be used when laminating any film over 1.5 mil thick. Simply engage the fan switch before running the print through the laminator. If the fan switch doesn't light up or if one or more of the fans fails to rotate upon engaging the switch, consult your dealer to check the switch and/or the fans and wiring thereof. Or you can proceed to the next, Intermediate troubleshooting level.

2) Intermediate. When troubleshooting excessive wrinkling and/or steering problems, uneven or inadequate rubber roll pressure may be the culprit. In order to determine this, one must become familiar with the "dwell line". The dwell line is the imprint, or footprint, that the two front, laminating rubber rollers leave in the web of threaded and heated laminating film. To measure a dwell line, thread the laminator with some

good quality film and bring it up to optimal operating temperature(consult the owners manual or your film supplier for this).Once up to temperature,run off a short length of film then stop the drive,letting the rolls set idle on the film for at least 90 seconds.Now advance the film 8 to12 inches and look for the impression the laminating rollers left in the film.It will be two lines running parallel the full width of the film, measuring approximately $\frac{3}{16}$ to $\frac{1}{4}$ inch in width.If the dwell line is much wider on one side than the other,this means the rubber roll pressure is not adjusted correctly,contributing to wrinkling problems.With a very narrow or thin dwell line the rubber roll pressure may not be great enough to grip and pull the film taut ,resulting in wrinkles in the web that won't clear regardless of how much supply roll tension you use. Conversely,a wider,thicker(over $\frac{1}{4}$ inch)dwell line indicates too much supply roll pressure resulting in steering or shifting of the web towards the path of least resistance,adding to the wrinkling in the area with less pressure.If the dwell line has an hour glass appearance(wider,thicker on both ends and much thinner,narrower in the middle)there is too much rubber roll pressure on both ends or the rubber rolls are worn excessively.

In any of these situations,the rubber roll pressure needs to be adjusted properly as noted in Section 3,B-3.In brief review,*the optimal measurement setting for the rubber roll pressure springs is $\frac{31}{32}$ "*.This will bring you back to factory specs and alleviate any wrinkling or steering problems associated with improper rubber roll pressure.

To troubleshoot the fan system(responsible for proper cooling of the lamination and alleviation of excessive waviness)first check the fan switch.If it does not illuminate

when engaged,remove the right side plastic housing and check the wire connectors to the switch for any loose or broken wires.Re-connect or replace and rewire as shown in the schematic.Next,using a multimeter check the continuity of the switch(disconnect the power cord first) by putting your probes on the the two inner most switch terminals and engaging the switch..If there is no continuity present,the switch is faulty and should be replaced(part # PRS310) and rewired as shown in the schematic.The fan system should now be operational.If not,consult a servicing dealer/tech,the Ledco service dept or proceed to the next,Advanced, troubleshooting level.

3)**Advanced.**If,after following the sequential troubleshooting guidelines,excessive wrinkling persists (especially with an hour glass shaped dwell line resulting in center wrinkling),the rubber rolls may be excessively worn, damaged or faulty and need to be replaced.Please follow the dis-assembly removal ,replacement and re-assembly instructions in the advanced level of Section 3 for successful rubber roll replacement. Lamination should then be smooth and wrinkle free.

To further troubleshoot and/or repair the fans,you have to remove the back,bottom motor cover as explained earlier in SECTION 2,A-3.Visually inspect all wires and connectors for the 3 fan motors,replace or rewire as needed per schematic. Next using a multimeter set at Volts AC,follow the black and white wires that come from the terminal block to the first white wire cap connection for the fans.Power up the machine and insert the probes into the first cap connector, checking for 110 Vac,then the second wire cap connector checking for the same.If proper voltage is evident through

the entire circuit, and one or more of the fan motors fails to engage, that fan motor(s) has failed and should be replaced and rewired per the schematic. To replace a fan motor(s), first disconnect the initial wire cap connection from the black and white wire leads from the terminal block. Using a phillips head screwdriver, remove the four round head phillips screws that secure the fan mounting bracket to the right and left side panels. Carefully remove the entire fan motor/fan bracket assembly. Remove the fan in question by loosening and removing the two 8-32 nuts that secure the fan motor to the bracket (slide off the press on fan blade first). Replace, re-secure and rewire per the schematic. Any excess waviness in the lamination due to faulty cooling fan performance should now be rectified.

As noted in the first part of this section, adhesion problems (non-adhesion, peeling away or cloudy, haziness in the film), are addressed in the owners manual Section 5-6, Preventing and Solving Problems. Generally, unless there is something wrong with the laminating film, poor adhesion, non-adhesion, peeling away of the film sometime after lamination and cloudy, hazy laminated film is a result of the film being run at too low a temperature or too fast a laminating speed (generally, you will be laminating between 3/8 and 1/2 settings on the speed dial for most laminating jobs, a little slower for poster boards, heavier papers and thicker mil films). Check the heat setting on the laminator. (See recommended temperature settings section 5-5 in the manual or consult your film supplier for optimal temperature settings). If the film is not sticking to the item, it is likely that more heat is required. This is especially true when laminating poster

board, construction paper or thicker materials with thinner films such as 1.5 mil. Thicker materials can absorb enough heat from the film to drop the adhesive in the film to below melt temperature. The film may start to come off immediately or at some time after laminating. The solution here is to run the work at a higher temperature (between 320 and 340 degrees, however, you should never exceed 350 degrees) and perhaps a little slower on the speed dial to ensure the heat is activating the thin layer of adhesive on a 1.5 mil film. Also when laminating ink jet, laser jet and/or other digital prints, certain ink and paper combinations can cause problematic adhesion. Always allow at least 2 hrs curing time for inks to dry and set (even more for heavy coverage areas) before laminating and, as always, run a few expendable sample pieces to be sure the actual pieces can be laminated successfully. Any questions regarding ink/paper laminating compatibility should be directed to your supplier, your dealer or the Ledco service/tech support dept.

In summation, given your machine is operating at optimal performance levels after consulting your owners/operators manual, this troubleshooting guide, your dealer, servicing dealer/tech and or the Ledco service/tech dept, any non-adhesion problems are likely to be media related and the appropriate parties (suppliers, manufactures) should be notified.

SECTION 5: Conclusion

We hope that this troubleshooting guide (in conjunction with the owners/operators manual) will serve you well in identifying, diagnosing and rectifying any problem you may have with the Ledco PREMIER 4 Laminator. If you have any

questions pertaining to any part of this guide, please call our toll free service lines at **800-937-9697, 800-937-9293** or e-mail us at **LEDCO@ledcoinc.com**

THANK YOU AND HAPPY LAMINATING

LEDCO PREMIER 4 SERIES LAMINATOR QUICK REFERENCE TABLE FOR MOST FREQUENTLY ASKED QUESTIONS

- 1."Why won't the laminator heat up?"... page 1
- 2."Why won't the laminator stop heating?"...page 2
- 3."Why is there no drive ?"...page 2
- 4."Why does it make a clunking/grinding sound when I laminate?"...page 3
- 5."Now that I have wrapped copious amounts of film around the rollers,how do I fix it?"...page 3
- 6."Why does the laminator wrinkle the paper?"...page 3
- 7."Why won't the film stick to the paper?"...page 4