

**LED CO HD25 INDUSTRIAL
SERIES LAMINATOR
TROUBLESHOOTING
GUIDE**

LED CO HD25 INDUSTRIAL SERIES LAMINATOR PROBLEM DIAGNOSTIC CHARTS

Problem	Possible Cause	Repair Procedure	Procedure Number	Skill Level
Power indicator light does not illuminate	No power.	Check power cord.	1	*
		Check master power switch position.	2	*
		Check for wires that are disconnected, broken or shorting out.	3	*
	Master power switch failure.	Check master power switch.	4	**
		Replace master power switch.	4	***
	Power indicator light failure.	Check power indicator light	5	**
		Replace power indicator light	5	**
Laminator will not heat up, top and bottom heat controls do not illuminate with heat switch engaged	Heat switch failure	Check for wires that are disconnected, broken or shorting out.	3	*
		Check heat switch.	6	**
		Replace heat switch.	6	**
Top or bottom heat control does not	Heat control failure	Check for wires that are disconnected, broken or shorting out.	3	*
		Check heat control.	7	**
		Replace heat control.	7	**
Top or bottom heat shoe does not heat up with heat switch engaged and controls illuminated.	Heat control temperature set too low.	Raise temperature to proper setting for respective films.		*
	Cartridge heater failure.	Check for wires that are disconnected, broken or shorting out	3	*
		Check cartridge heater.	8	**
		Replace cartridge heater.	8	**
	Thermocouple (heat sensor) failure.	Check for wires that are disconnected, broken or shorting out.	3	*
		Check thermocouple.	9	**
		Replace thermocouple.	9	**

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PROBLEM DIAGNOSTIC CHARTS

Problem	Possible Cause	Repair Procedure	Procedure Number	Skill Level
Top or bottom heat shoe does not heat up with heat switch engaged and controls illuminated.	Heat relay failure	Check for wires that are disconnected, broken or shorting out.	3	*
		Check heat relay(s)	10	**
		Replace heat relay(s)	10	**
Heat control(s) upper display shows "□ □ □"	Thermocouple wires disconnected or loose.	Check thermocouple wires, plugs and receptacles.	9	*
	Thermocouple failure.	Replace thermocouple.	9	**
Laminator heat cannot be controlled.	Thermocouple failure.	Check thermocouple wires, plugs and receptacles.	9	*
		Replace thermocouple.	9	**
	Heat relay failure.	Check heat relay(s).	10	**
		Replace heat relay(s).	10	**
Laminating rollers do not operate.	No power.	Check power cord.	1	*
		Check master power switch position	2	*
		Check drive on/off switch position	11	*
		Check forward/reverse selector switch position	12	*
		Check speed control potentiometer (knob & dial) position.	13	*
	Drive motor control 3 amp fuse blown.	Check motor control 3 amp fuse.	14	*
		Replace 3 amp fuse.	14	*
	Drive switch failure.	Check drive switch.	15	*
		Replace drive switch.	15	**
	Forward/reverse selector switch failure.	Check forward/reverse selector switch.	16	**
		Replace forward/reverse selector switch.	16	**
	Drive motor control board failure.	Check drive motor control board.	17	**
		Replace drive motor control board.	17	**
	Speed dial potentiometer failure.	Check speed dial potentiometer.	18	**
		Replace speed dial potentiometer.	18	**

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Problem	Possible Cause	Repair Procedure	Procedure Number	Skill Level
Laminating rollers do not operate.	Drive motor failure.	Check drive motor.	19	**
		Replace drive motor.	19	***
	Drivetrain mechanical failure.	Check drive chains.	20	*
		Check drive sprockets.	21	*
		Replace drive motor.	19	***
No reverse drive	Forward/reverse selector switch failure.	Replace selector switch.	16	**
Laminating rollers operate intermittently, sometimes with a clunking, skipping or grinding noise.	Drivetrain failure.	Check drive chain.	20	*
		Check drive sprockets.	21	*
	Film "wrap-around".	Clear minor "wrap-around".	22	*
		Clear "wrap-around" of front laminating rolls.	23	*
		Clear "wrap-around" of rear laminating rolls	24	**
		Clear "wrap-around" by removing and cleaning or replacing rolls.	25	***
	Drive motor gear failure.	Replace drive motor.	19	***
Cooling fans do not operate.	No power	Check power cord, and main power switch position	1	*
	Fan switch failure.	Check fan switch.	26	**
		Replace fan switch.	26	**
	Fan motor failure	Check cooling fans.	27	**
		Replace fan motor(s).	28	***
The lamination has wrinkles.	Item being laminated has been folded, rolled, bent or wrinkled.	Smooth item on feed table as it is being laminated.		
	Laminating two pieces of unequal thickness side by side.	Only laminate items of the same thickness side by side.		
	Thicker material causes wrinkles on each side.	This is normal. Trim off material with wrinkles.		
	Inadequate supply roll tension.	Add tension to take wrinkles out of film before it gets past the heat shoes.		

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PROBLEM DIAGNOSTIC CHARTS

Problem	Possible Cause	Repair Procedure	Procedure Number	Skill Level
The lamination has wrinkles.		Check supply roll gripper rods.	29	*
		Check supply roll hex adaptor spring pin position	30	*
	Improper rubber roll pressure	Check rubber roll dwell line.	31	*
		Adjust rubber rolls.	32	**
		Replace rubber rolls.	25	***
The film does not adhere to the document.	Thicker documents absorb the heat.	Run at a higher temperature not to exceed 340 degrees.		
	Thin (1.5 mil) films lose heat from heat shoe to the roller nip.	Run at higher temperature increase speed slightly.		
	Thicker media, such as mounting boards, not absorbing enough heat.	Reduce speed.		
	Film between heat shoe and nip cool while idle.	Run a few inches of film before inserting sheets to be laminated.		
	Inkjet print still wet.	Let inkjet prints dry at least 2 hours.		
	Incompatible Inkjet print media and inks.	Test samples before laminating many pieces.		
Lamination has a repeating crescent shaped wrinkle or pocket (usually from the center out).	Leading edge of document contacting top or bottom web of film before the nip.	Make sure the document remains flat when feeding it into the nip.		
	Excessive laminating roll pressure.	Check rubber roll dwell line.	31	**
		Adjust rubber rolls.	32	
	Worn rollers	Check rubber roll dwell line	31	*
		Adjust rubber rolls	32	**
		Replace rubber rolls	25	**
Lamination has wavy, rippling, almost "boat wake" like appearance.	Excessive heat	Reduce heat		
	Laminating too slow causing prolonged heat exposure of document at the nip.	Increase laminating speed.		
Film shrinks as it passes over heat shoe.	Excessive supply roll tension.	Reduce supply roll tension.		

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PROBLEM DIAGNOSTIC CHARTS

Problem	Possible Cause	Repair Procedure	Procedure Number	Skill Level
Laminated item has "oily" spot near the leading edge.	Excess adhesive is created when machine left hot and idles for a few minutes.	Run a few inches of film before inserting sheets to be laminated.		
Milky, hazy line appears after initial warm-up.	Rollers not evenly heated.	When warming up the machine, keep the rollers open and moving slowly.		
The machine squeals when laminating	Dirty heat shoes.	Clean heat shoes.		
	Excessive heat	Reduce heat		
	Excessive supply roll tension	Reduce supply roll tension		
	Coating on film.	Try different type or different brand of film		
Laminated item has pitted, irregular surface.	Adhesive build-up or dirt on rollers.	Clean the rollers.		
	Cuts or other damage to the rubber rollers.	Replace rubber rolls	25	***
General haziness or cloudiness in film after lamination.	Not enough heat.	Increase the temperature.		
Bubbles in the center of the web and/or film not sticking to center.	Excessive laminating roll pressure.	Adjust rubber rolls	32	**
	Worn rollers.	Check rubber roll dwell line.	31	*
		Adjust rubber rolls	32	**
		Replace rubber rolls.	25	***
Slitters not penetrating film web.	Slitter blades not engaged.	Engage slitter blades.		*
	Slitter blades dull	Replace slitter blades.	33	*
	Slitter assembly component failure	Check slitter assembly components.	34	*
		Adjust/replace slitter assembly component(s).	35	**
Slitter head (knife holder and blade assembly) drifts during operation.	Slitter head not secured to slitter adjustment rod.	Tighten cap head screw that secures slitter head to rod.	36	*
	Slitter head internal threads worn excessively or stripped.	Replace slitter head.	37	**
Slitter head difficult to adjust side to side.	Slitter adjustment (threaded) rod(s) excessively worn or damaged.	Replace adjustment rod(s).	38	**

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Problem	Possible Cause	Repair Procedure	Procedure Number	Skill Level
Slit edges of web have scalloped, frayed or wavy appearance.	Slitter blades dull.	Replace slitter blades.	33	*
	Web not sufficiently cooled before slitting.	Be sure to run cooling fan.		*
		Install optional upper fan assembly.	39	**
	Pull rollers excessively worn or out of adjustment.	Adjust rubber rolls.	32	**
		Replace rubber rolls.	25	***

LEDCO HD25 INDUSTRIAL SERIES LAMINATOR REPAIR PROCEDURES

1. **Check power cord.**
 - a. Power cord must be securely inserted into proper 220 VAC wall outlet. Refer to Electrical Power Supply Charts at the back of this guide for proper electrical requirements.
2. **Check master power switch position.**
 - a. Master power switch (located at the back of the machine) must be in the up, or on, position.
3. **Check for wires that are disconnected, broken, or shorting out.**
 - a. Disconnect the power cord.
 - b. Using a phillips head screw driver, loosen and remove the 8-32 x 1/4 truss head phillips screws that secure left side housing cover. Use a 3-32 allen wrench to loosen and remove the slitter adjustment knob to facilitate removal of the left side housing cover allowing total access to wiring and components within.
 - c. Visually examine all wires and connectors to and from their respective components. Use the wiring diagram included at the back of this guide for reference. Reconnect or replace wires exactly as shown in wiring diagram.
4. **Check master power switch.**
 - a. **Disconnect power cord.**
 - b. Remove left side housing cover to access electrical components and wiring within as described in 3 above.
 - c. Locate master power switch and respective wiring (location "V" in wiring diagram).
 - d. Using a multi-meter, check continuity of master power switch:
 - (1.) Place probes on respective black and white terminals of the incoming power wires.
 - (2.) Flip the switch to the "on" position. Continuity should be present at these terminals with the switch on.
 - (3.) Consequently, with the probes on the black and white terminals of the output wires, there should be continuity present at these terminals as well with the switch in the on position.
 - e. If no continuity is present at either of the check points, the master power switch has failed and should be replaced (Part # PRS287).

To Replace master power switch:

- a. **Disconnect power cord.**
 - b. Remove left side housing cover to access electrical components and wiring within as described in 3 above.
 - c. Locate master power switch and respective wiring (location "V" in wiring diagram).
 - d. Disconnect the two sets of black and white wires from the back of the switch making careful note of their locations for proper reconnection later.
 - e. Using a phillips head screwdriver, loosen and remove the two 6-32 X 1/4 round head phillips screws that secure the master power switch to the housing.
 - f. Replace failed master power switch with new, rewire exactly as shown in wiring diagram, and reassemble in exact reverse order.
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5. **Check power indicator light.**
 - a. **Disconnect power cord.**
 - b. Remove left side housing cover to access electrical components and wiring within as described in 3 above.
 - c. Locate power indicator light and respective wiring (location "O" in wiring diagram).
 - d. Visually check for any wires that are disconnected, broken, or shorting out. Reconnect or replace wires exactly as shown in wiring diagram.

***** WARNING *** WARNING *** WARNING *** WARNING *****

**EXTREME CAUTION MUST BE USED WHEN TESTING ANY MACHINERY
WHERE LIVE VOLTAGE (ESPECIALLY 220) IS PRESENT. ONLY A QUALIFIED
SERVICE TECH OR ELECTRICIAN SHOULD PERFORM SUCH TESTS.**

- e. Trace power indicator light wires to their quick-connect caps.
- f. Using a multimeter set to volts AC, place the probes inside the quick-connect caps being sure to make good contact with the wire leads within.
- g. With the machine plugged in and the main power switch on, you should get a reading of approximately 220 volts AC. If the light does not illuminate with proper voltage present, it has failed and should be replaced (Part # PRL196).

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To replace power indicator light:

- a. Disconnect power cord.
 - b. Remove left side housing cover to access electrical components and wiring within as described in 3 above.
 - c. Locate power indicator light and respective wiring(location "O" in wiring diagram).
 - d. Remove the red and black wire leads from their quick connect caps.
 - e. Remove the light and wires from the housing by gently but firmly depressing the small plastic retaining tabs on both sides of the light and pulling the light up through the housing.
 - f. Replace with new light, reassemble in exact reverse order, and rewire exactly as shown in schematic.
-

6. Check heat switch.

- a. Disconnect power cord.
- b. Remove left side housing cover to access electrical components and wiring within as described in 3 above.
- c. Locate heat switch and respective wire leads (location "A" in wiring diagram). Visually check for any wires that are disconnected, broken, or shorting out. Reconnect or replace wires exactly as shown in wiring diagram.
- d. Using a multimeter set to check continuity, place one probe on the upper wire terminal and the other probe on the lower wire terminal of the heat switch.
- e. Engage (flip up) the heat switch. You should have continuity at these terminals.
- f. If no continuity is present at these check points, the switch is faulty and should be replaced (Part# PRS 268).

Replace heat switch.

- a. Disconnect power cord.
 - b. Remove left side housing cover to access electrical components and wiring within as described in 3 above.
 - c. Locate heat switch and respective wire leads (location "A" in wiring diagram).
 - d. Using a straight blade screwdriver, loosen the two brass screws that secure the two black wire leads to the heat switch. Remove the wire leads from the switch making note of their location for proper reconnection later.
 - e. Using a small adjustable wrench, loosen and remove the thin hex nut that secures the switch and on/off plate to the face of the housing.
 - f. Remove the switch from the back of the housing,replace with new,reassemble in exact reverse order and rewire exactly as shown in schematic.
-

7. Check heat control(s).

- a. Disconnect power cord.
- b. Remove left side housing cover to access electrical components and wiring within as described in 3 above.
- c. Locate heat controls and respective wire leads (locations "B" and "C" in wiring diagram). Visually check for any wires that are disconnected, broken or shorting out. Reconnect or replace wires exactly as shown in wiring diagram.
- d. Using a multimeter set to volts AC, place one probe on #9 terminal and the other probe on #10 terminal at the back of the respective heat control.

*****WARNING***WARNING***WARNING***WARNING*****

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- e. With the machine plugged in and the main power switch and heat switch on, you should get a reading of approximately 220 volts AC at these check points. If the heat control digital display does not illuminate with proper voltage present, the control has failed and should be replaced (Part #PRH1391).

*****NOTE*****

Another reliable way to check the integrity of components is to do an outright swap of its identical partner (e.g. top for bottom heat control, top for bottom heat relay, etc.) If the problem follows the exchange, that component is almost certainly bad and should be replaced appropriately.

LEDCO HD25 INDUSTRIAL SERIES LAMINATOR REPAIR PROCEDURES

33. Replace slitter blades.

- a. Disconnect power cord.
 - b. Locate slitter heads and blades therein. Visually inspect for excessive wear or damage.
 - c. Replace blades using a 3/32" allen wrench to loosen the small 10-32 allen set screw that secures the slitter blade in the slitter head.
 - d. Remove the old blade and rotate it if the second cutting edge is still good. If not, replace the blade with new (Part# PRB031). Reassemble in exact reverse order.
-

34. Check slitter assembly components.

- a. Disconnect power cord.
 - b. Open both right and left side housings as described in 3 above.
 - c. On the left side housing inspect the slitter control cable, making sure it is not broken loose or kinked.
 - d. Check the cable actuating lever and swivel to make sure they are not broken or loose.
 - e. Inspect the top and bottom actuating bars (the two 3/16" diameter bars that run the width of the machine that are engaged up and down by the cable, actuating lever and swivel) to make sure they are not broken or loose.
-

35. Adjust/replace slitter assembly component(s).

- a. Disconnect power cord.
 - b. Open both right and left side housings as described in 3 above.
 - c. The slitter control cable (Part# PRC 089) is secured to the inside of the left housing by a thin, 1/2" hex nut. Use a small adjustable wrench to tighten.
 - d. The cable runs thru the swivel (Part# H850 189.4) and is secured there by a small phillips head screw. Loosen this screw to adjust the travel of the actuating bars or when removing the control cable assembly.
 - e. The swivel is secured to the actuating lever (Part# H850 188.4) by a small phillips head screw on the back of the lever. Use a small phillips head screwdriver to loosen the set screw when adjusting or removing the swivel and/or the actuating lever. (you have to remove the actuating lever first though, see "f" below).
 - f. The slitter actuating lever in turn is secured to the bottom actuating bar (Part# H500 183.4B) by a set screw at the top edge of the lever. Use a 3/32" allen wrench to loosen when adjusting or replacing the lever and/or the bottom actuating bar.
 - g. The top actuating bar is secured to the bottom actuating bar with three 6-32 cap head allen bolts. Use a 7/64 allen wrench to loosen and remove when replacing the top actuating bar (Part# H500 183.4T).
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36. Tighten cap head screw that secures slitter head to adjusting rod.

- a. Use a 9/64" allen wrench to tighten the slitter head to the threaded adjustment rod(s) to keep the slitter head from drifting during use.
-

37. Replace slitter head.

- a. Disconnect power cord.
 - b. Open both right and left side housings as described in 3 above.
 - c. Using a 1/8" allen wrench, loosen the set screw in the shaft collars that secure the threaded adjustment rods to the right and left side panels. Pull the rods out slightly from the center support tube, making note of component placement for correct reassembly later.
 - d. You can now unscrew the slitter heads from their respective left or right adjustment rods and remove them for replacement.
 - e. Replace with new (Part# H850 186.5) and re-assemble in exact reverse order.
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38. Replace adjustment rod(s).

- a. Disconnect power cord.
- b. Open both right and left side housings as described in 3 above.
- c. Using a 1/8" allen wrench, loosen the set screw in the shaft collars that secure the threaded adjustment rods to the right and left side panels. Pull the rods out slightly from the center support tube, making note of component placement for correct reassembly later.
- d. Unscrew the slitter heads from their respective left or right adjustment rods and remove them.
- e. Pull respective rod out from the side panel and replace with new (Part# H500 182.4 Right or Left).
- f. Reassemble in exact reverse order.

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HELPFUL HINT

Years of use and the build up of junk and swarf associated with voluminous lamination can render the slip fit of the cartridge heater in the heat shoe extremely tight and stubborn to remove. We recommend spraying a release agent such as WD-40 or something similar in the barrel of the heat shoe and cartridge heater to help free up the heater and facilitate removal. Do this before pounding the living daylight out of the end of the cartridge heater and heat shoe barrel.

- i. Be sure to clean the barrel of the heat shoe before re-installing the new cartridge heater. Slide the heater into place. You can gently peen the end of the barrel to help secure the heater if needed.
- j. Reassemble all components in exact reverse order (you can use electrical tape in place of heat shrink tubing or order some tubing from Ledco, Part#PRI163), rewire exactly as denoted above and as shown in the schematic.

9. Check thermocouple(s).

- a. **Disconnect power cord.**
- b. Locate and identify the thermocouple wires, plugs, and receptacles for the top and bottom heat shoes respectively.
- c. Remove left side housing cover to access electrical components and wiring within as described in 3 above. Locate and identify the thermocouple receptacles (locations "D" and "E" in wiring diagram). Visually check for any wires that are disconnected, broken, or shorting out. Reconnect or replace wires exactly as shown in wiring diagram.
- d. Unplug thermocouple plug from respective receptacle by gently pulling out.
- e. Using a multimeter set to check continuity, place the probes on the two small plug prongs. There should be continuity at these checkpoints. If no continuity is present, the thermocouple has probably failed and should be replaced (Part#s PRH159 and PRR229).

NOTE

The thermocouple wire lead connections to the internal plug terminals "+" and "-" are crucial to insuring proper continuity of the circuit. To check these terminals use a small, straight blade screwdriver to loosen and remove the two small silver screws that secure the face of the plug to the body of the plug. Using the thermocouple plug wiring diagram at the back of this guide as reference, visually check the connections to be sure they are correct and secure. The wire leads should be securely screwed in place at the terminals. If not, re-secure the wire ends of the thermocouple leads to their respective terminals. If the plug or wires are damaged or there are parts missing, replace the plug (PRR229) and/or the wire (PRH159). Rewire and reassemble in exact reverse order of disassembly.

Replace thermocouple(s).

To replace thermocouple(s), you must first remove the respective heat shoe assemblies from the machine as described in Section 8 above.

- a. Place heat shoe assembly(s) on a level work surface. Be careful not to scratch teflon coating.
- b. Carefully slit the outermost layer of heat shrink tubing that encases both the heater wires and the thermocouple wires. Separate the two sets of wires.
- c. Locate the chrome hole plug on the back side of the heat shoe, gently pry it loose, and remove it using a small straight blade screwdriver. This will allow access to the thermocouple wire ring end inside the shoe.
- d. Using a phillips head screwdriver, loosen and remove the 8-32 x 1/4" round head phillips screw that secures the wire ring end to the interior of the shoe, replace with new thermocouple and plug assembly, reassemble in exact reverse order. Rewire exactly as shown in schematic.

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10. Check heat relay(s).
- a. Disconnect power cord.
 - b. Open left side housing door as described in 3 above.
 - c. Locate and identify heat system relays(locations "H" and "I" in wiring diagram)and respective wiring.
 - d. Visually check for any wires that are disconnected,broken,or shorting out.Reconnect or replace wires exactly as shown in wiring diagram.

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- e. Plug the machine in and turn on the master power switch.
- f. Engage(push in) the heat switch.The heat relays should make an audible clicking sound and you should see the small reset tabs on the side of the relays retract.If this is not happening,chances are the relay(s) is faulty.
- g. To thoroughly check the relay with a multimeter,start by setting your meter at volts AC and put one probe on terminal 1 and the other probe on terminal 0 of the relay. With the heat switch engaged there should be a reading of approximately 220 volts at these terminals(provided the circuitry in line before it is functioning properly).
- h. With the proper 220 volts coming into the relay,check for proper 220 volts coming out of the relay that powers the heaters by placing one probe on terminal 4 and the other probe on terminal 6 of the relay(the heater wire lead terminals).Again(with the machine plugged in,master power switch on)engage the heat switch.The relay should then engage and show 220 volts out of these terminals. If not, for certain the relay is faulty and should be replaced(Part#PRR231).

Replace heat relay(s).

- a. Follow steps a,b,c as detailed above.
- b. Disconnect all wire leads to relay making careful notes of their location(use wiring diagram for reference).
- c. Using a small straight blade screwdriver, gently pry apart the snap fit brackets that secure the relays to the base of the housing.
- d. Remove faulty relay,replace with new,reassemble in exact reverse order, and rewire exactly as shown in schematic.

NOTE: Diagnostic,repair,and replacement procedures are exactly the same for top and bottom heat relays.

11. Check drive on/off switch position.

- a. It should be in the "ON",or up, position.

12. Check forward/reverse selector switch position.

- a. The three position forward/reverse switch should be in the FORWARD,or up, position.

13. Check speed control potentiometer(knob and dial) position.

- a. Speed control must be set past 0 on the dial to engage motor drive.

14. Check motor control 3 amp fuse.

- a. Disconnect power cord.
- b. Remove left side housing cover to access electrical components and wiring within as described in 3 above.Locate and identify the speed control board and 3 amp fuse thereof (locations "S" and "U" in wiring diagram).Visually check for any wires that are disconnected,broken,or shorting out.Reconnect or replace wires exactly as shown in wiring diagram.
- c. Visually inspect the fuse.If a fuse appears discolored and/or the element inside is broken,it has most likely failed and should be replaced with the exact same amperage fuse.
- d. If after initial inspection you are still unsure of the status of the fuse, you can use a multimeter to check its continuity.If the fuse shows no continuity, it has failed and should be replaced with the exact same amperage fuse.

Replace motor control 3 amp fuse.

- a. Gently extract the old fuse from the fuse holder(standard) and install new one.

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15. Check drive switch.

- a. **Disconnect power cord.**
- b. Remove right side housing cover to access electrical components and wiring within as described in 3 above. However, you will need a 1/8" allen wrench to remove the rubber roll pressure knobs on the right side to facilitate removal of the right side housing cover.
- c. Locate and identify the motor drive on/off switch(location "Q" in the wiring diagram).Visually check for any wires that are disconnected,broken,or shorting out. Reconnect or replace wires exactly as shown in diagram
- d. Using a multimeter set to check continuity place one probe on the upper wire terminal and the other probe on the lower wire terminal of the motor drive on/off switch.
- e. Engage (flip up) the heat switch. You should have continuity at these terminals.
- f. If no continuity is present at these check points, the switch is faulty and should be replaced (Part#PRS 268).

Replace drive switch.

- a. **Disconnect power cord.**
 - b. Remove right side housing cover to access electrical components and wiring within as described above.
 - c. Locate motor drive on/off switch and respective wire leads(location "Q" in wiring diagram).
 - d. Using a straight blade screwdriver, loosen the two brass screws that secure the two black wire leads to the heat switch.Remove the wire leads from the switch making note of their location for proper reconnection later.
 - e. Using a small adjustable wrench,loosen and remove the thin hex nut that secures the switch and on/off plate to the face of the housing.
 - f. Remove the switch from the back of the housing,replace with new,reassemble in exact reverse order and rewire exactly as shown in schematic.
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16. Check forward/reverse selector switch.

- a. **Disconnect power cord.**
- b. Remove right side housing cover to access electrical components and wiring within as described in 3 above. However,you will need a 1/8" allen wrench to remove the rubber roll pressure knobs on the right side to facilitate removal of the right side housing cover.
- c. Locate and identify the forward/reverse selector switch(location "T" in the wiring diagram),and respective wire terminals and leads.Visually check for any wires that are disconnected,broken,or shorting out. Reconnect or replace wires exactly as shown in wiring diagram.
- d. Using a multimeter set to check continuity,place one probe on the left center terminal and the other probe on the lower left terminal at the back of the forward/reverse switch.Flip the switch up to the "forward" position.You should get continuity at these checkpoints.
- e. Consequently,with the switch still in the "forward" position,place a probe on the center right terminal and the other on the lower right terminal, you should have continuity here as well.
- f. Next,place a probe on the left center terminal and the other on the upper left terminal.Flip the switch down to the "reverse" position.You should get continuity at these checkpoints.
- g. Consequently, with the switch still in the "reverse" position,place a probe on the center right terminal and the other on the upper right terminal,you should have continuity here as well.
- h. If there is not continuity reading at any of these checkpoints,the switch has most likely failed and should be replaced (Part# PRS277).

Replace forward/reverse selector switch.

- a. **Disconnect power cord.**
- b. Remove right side housing cover to access electrical components and wiring within as described in 3 above. However,you will need a 1/8" allen wrench to remove the rubber roll pressure knobs on the right side to facilitate removal of the right side housing cover.
- c. Locate and identify the forward/reverse selector switch(location "T" in the wiring diagram),and respective wire terminals and leads.Using a straight blade screwdriver,loosen the screws that secure the wire leads to their respective terminals.Disconnect the wire leads making careful note of their positions for correct re-wiring later.
- d. Using a small adjustable wrench,loosen and remove the thin hex nut that secures the switch to the face of the housing.
- e. Remove the switch from the back of the housing,replace with new,reassemble in exact reverse order and rewire exactly as shown in schematic.

LEDCO HD25 INDUSTRIAL SERIES LAMINATOR REPAIR PROCEDURES

17. Check motor control board.

- a. Disconnect power cord.
- b. Open left side housing door as described in 3 above.
- c. Locate and identify the motor control board (location "S" in the wiring diagram), and respective wire terminals and leads. Visually check for any wires that are disconnected, broken, or shorting out. Re-connect or replace wires exactly as shown in wiring diagram.
- d. Plug the machine in and turn on the master power switch.

*****WARNING***WARNING***WARNING***WARNING*****

**EXTREME CAUTION MUST BE USED WHEN TESTING ANY MACHINERY
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SERVICE TECH OR ELECTRICIAN SHOULD PERFORM SUCH TESTS.**

- e. With your multimeter set to read Volts DC, place one probe on terminal A1 and the other probe on terminal A2 of the motor control board.
- f. Engage the motor drive on/off switch. With the speed dial potentiometer at lowest (counter-clockwise) setting, you should have 0 volts on the meter. As you turn the speed dial potentiometer slowly clockwise, you should get a gradual increase in voltage.
- g. With the speed dial potentiometer at highest (clockwise) setting, you should get between 180 to 186 volts on the meter.
- h. If no voltage is present, the motor control is faulty and should be replaced (Part# PRM 218A).
- i. If the prescribed range of voltage is present and there is still no motor drive, the drive motor may be faulty.

Replace motor control board.

- a. Follow steps 1,2,3 as detailed above.
 - b. Disconnect all wire leads to the board making careful notes of their location (use wiring diagram for reference).
 - c. Using a phillips head screwdriver, loosen and remove the 4, 8-32 truss head phillips screws that secure the motor control board to the side panel.
 - d. Remove failed board, replace with new. Reassemble in exact reverse order and rewire exactly as shown in schematic.
-

18. Check speed dial potentiometer.

- a. Disconnect power cord.
- b. Open right side housing door as described in 3 above.
- c. Locate and identify speed dial potentiometer (location "R" in wiring diagram) and respective yellow, orange, and gray wire leads.
- d. Open left side housing door as described in 3 above.
- e. Locate and identify the motor control board (location "S" in the wiring diagram), and respective wire terminals and leads. Note the gray, yellow, and orange wires that come from the speed dial potentiometer through the machine, and connect to terminals S1, S2, and S3 respectively on the motor control board.
- f. Disconnect the yellow wire and the orange wire of the speed dial from their respective terminals (S2 and S3) on the motor control board and place your multimeter probes in the quick-connect ends of these wires. Set the multimeter to read ohms resistance.
- g. With the pot set at zero (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 (turning clockwise) to wide open.
- h. At wide open you should get a resistance reading of approximately 00.0 ohms.
If the meter shows open or closed circuit, or if there is resistance but it does not change when rotating the potentiometer, the potentiometer is bad and should be replaced (ref Part# PRM218A).

LEDCO HD25 INDUSTRIAL SERIES LAMINATOR REPAIR PROCEDURES

To replace speed dial potentiometer.

- a. Follow steps "a" thru "e" as detailed above.
 - b. Disconnect the gray, yellow and orange wires of the potentiometer from their respective terminals on the motor control board.
 - c. Tilt the machine on its back and support with a small length of 2 x 4.
 - d. Using a phillips head screwdriver, loosen and remove the six 8/32 self tapping machine screws that secure the bottom motor cover to their small mounting (Tinnerman) brackets. Remove bottom motor cover.
 - e. Carefully cut the plastic wire ties that secure the various wires to the fan motor housing and gently pull the gray, yellow, and orange speed dial potentiometer wires through the 7/8" access holes (and plastic bushings) through the left, then the right side panel. You will need to clip a number of wire ties to facilitate removal of respective wires and related components.
 - f. Using a small straight blade screwdriver, loosen the small screw that secures the speed dial knob to the shaft of the potentiometer and remove the knob.
 - g. Using a small adjustable wrench, loosen and remove the retaining nut that secures the potentiometer to the face of the housing.
 - h. Remove failed potentiometer and wires, replace with new, pre-wired potentiometer. Reassemble in exact reverse order and rewire exactly as shown in the schematic.
-

19. Check drive motor.

- a. Disconnect power cord.
- b. Remove right side housing cover to access electrical components and wiring within as described in 3 above. However, you will need a 1/8" allen wrench to remove the rubber roll pressure knobs on the right side to facilitate removal of the right side housing cover.
- c. Locate and identify the forward/reverse selector switch (location "T" in the wiring diagram), and respective wire terminals and leads. Visually check for any wires that are disconnected, broken or shorting out. Pay particular attention to the two center leads and wires that are connected to the red and black motor wire leads at their white plastic cap connectors. Reconnect or replace wires exactly as shown in wiring diagram.

***** WARNING***WARNING***WARNING***WARNING*****

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- d. Plug the machine in, turn on the master power switch.
- e. With your multimeter set to read Volts DC, place one probe on the right, center terminal and the other probe on the left, center terminal of the forward/reverse selector switch.
- f. With the forward/reverse selector switch set to forward and the speed potentiometer set at 0, engage the motor drive on/off switch.
- g. With the potentiometer set a 0 there should be a boltage reading of near 0. As you rotate the speed dial clockwise, the voltage will gradually increase to the maximum of 180 volts.
If the prescribed range of voltage ios present and there is still no motor drive, the drive motor has failed and should be replaced (Part#PRM 2000).

Replace drive motor.

- a. Disconnect power cord.
- b. Remove right side housing cover to access electrical components and wiring within as described in 3 above. However, you will need a 1/8" allen wrench to remove the rubber roll pressure knobs on the right side to facilitate removal of the right side housing cover.
- c. Locate and identify the forward/reverse selector switch (location "T" in the wiring diagram), and respective wire terminals and leads. Using wire cutters, clip the two center lead wires that are connected to the red and black motor wire leads at their white plastic cap connectors.
- d. Tilt the machine on its back and support with a small length of 2 x 4.
- e. Using a phillips head screwdriver, loosen and remove the six 8/32 self tapping machine screws that secure the bottom cover to their small mounting (Tinnerman) brackets at the bottom of the machine. Remove the bottom motor cover.
- f. Go back to the inside of the right side housing. Locate and identify the four 1/4 28 button head allen bolts that secure the drive motor to the side panel. Loosen these with a 5/32 allen wrench. This will allow you to slide the drive motor up and down, tightening and loosening the upper, inner chain tension.
- g. Locate and identify the bottom (outer) chain idler tension block and sprocket. Using a 1/2 " wrench loosen the nuts that secure it to the side panel. Use the chain and sprocket routing diagram at the back of this guide as a fereference. The idler block allows you to tension the outer, lower chain.

LEDco HD25 INDUSTRIAL SERIES LAMINATOR REPAIR PROCEDURES

- h. With the motor mounting bolts and the lower idler block loose, you can now remove the two 25B36 motor sprockets (Part#PRS236) using a 1/8" allen wrench to loosen the set screws that secure the sprockets to the motor shaft. If you still do not have enough chain slack to remove the sprockets (pull up on the motor and move the lower idler block to the left to get as much slack as you can) remove the top, left idler sprocket using a 3/16 allen wrench to allow maximum chain slack to facilitate the removal of the motor sprockets.
- i. Remove the motor sprockets making careful note of the half moon shaped woodruff keys that help secure the sprockets to the shaft. You can now remove the four motor mounting bolts (as denoted in "f" above) and remove the drive motor extracting it from the inside, bottom of the machine.
- j. Replace with new drive motor (Part# PRM 2000) reassemble in exact reverse order paying particular attention to sprocket placement and chain tension (again use the chain and sprocket routing diagram at the back of this guide as reference). Rewire the motor exactly as shown in schematic.

NOTE: When re-installing drive motor sprockets, make sure they are in line with the other respective sprockets, parallel to the side panel. Also, make final chain tension adjustments with the rubber rolls in the down and locked position, with an allowance of 3/16" to 1/4" play in the drive chains.

20. Check drive chains.

- a. **Disconnect power cord.**
 - b. Open right side housing door as described in 3 above.
 - c. Visually inspect the upper and lower drive chains. Use the chain and sprocket routing diagram at the back of this guide for reference.
 - d. If a connecting link is missing or damaged, replace the connecting link (Part# PRC 084).
 - e. If a drive chain is damaged, replace with proper length drive chain(Part # PRC083.1). You can remove and install chains using the procedures described in "19" above or totally disconnect chains at their connecting links and reconnecting new chain in similar fashion.
-

21. Check drive sprockets.

- a. **Disconnect power cord.**
 - b. Open right side housing doors as described in 3 above.
 - c. Visually inspect the drive sprockets as well as the idler sprockets. Use the chain and sprocket routing diagram at the back of this guide for reference.
- If a sprocket is not tight on its shaft:**
- a. Check drive sprockets to be sure they have the small, half moon shaped woodruff key in place. If the key is missing or damaged, replace with new (Part# M161KEY for the motor sprockets, Part# PRX347 all other sprockets).
 - b. With the woodruff key properly in place, align the sprocket and drive chain 1 and 5/16" from the side panel for the outer, lower chain. Align the inner, upper chain and respective sprockets 1" from the side panel
 - c. Tighten drive sprockets to their respective shafts with a 1/8" allen wrench.
 - d. Tighten any loose idler sprocket mounting, shoulder bolts using a 3/16" allen wrench.
- If a sprocket is broken or excessively worn, it must be replaced:**
- a. Remove the chain at the connecting link.
 - b. Remove the sprocket (and respective woodruff keys) and replace with new.
 - c. Align and reassemble in exact reverse order. Refer to previous section for alignment and tension adjustments.
-

22. Clear minor "wrap-around".

- a. Visually check all four rolls for any film "wrap-around" or foreign objects.
- b. Carefully remove foreign objects.
- c. If a "wrap-around" occurs while the laminator is cold, open the rolls, reverse the direction of the rubber rolls, permitting the laminator to release the film from the rolls.
- d. If a "wrap-around" occurs while the laminator is hot:
WARNING: Be very careful not to touch the heat shoes when the machine is hot.
 - (1.) Leave the heat on so that the adhesive does not harden.
 - (2.) Remove the feed tray.
 - (3.) Cut the film on the top and bottom, just in front of the idler bars.
 - (4.) Loosen the film from the heat shoes and grip the two loose ends, holding them together.
 - (5.) Open the rolls
 - (6.) Turn the selector switch to the reverse position and slowly allow the laminator to back out the film that is wrapped around the rolls. Pull the film off the roller.

LEDCO HD25 INDUSTRIAL SERIES LAMINATOR REPAIR PROCEDURES

23. Clear "wrap-around" of front laminating rolls.

- Swing away top heat shoe to gain greater access to top front rubber roller.
- Remove feed tray.
- Using a 1/8" allen wrench, remove the 1/4 x 3/8 shoulder bolts that secure the bottom heat shoe brackets to the side panels.
- Swing away the bottom heat shoe (without necessarily disconnecting it) to gain greater access to bottom front roller.
- Open the rolls.
- Create a loose end of film and use reverse to unwind "wrap-around".

NOTE: It may be necessary to remove the chain and sprockets from the drive side to allow unrestricted rotation of the rolls. See 19, 20 and 21 above for procedures.

24. Clear "wrap-around" of rear laminating rolls.

- Open the rolls.
- Create a free end of film and manually pull film off rollers.
Remove the chain and sprockets (see 27 and 28 above) to allow unrestricted rotation of the rolls.

NOTE: It may be necessary to remove the chain and sprockets from the drive side to allow unrestricted rotation of the rolls. See 19, 20 and 21 above for procedures.

25. Clear "wrap-around" by removing and cleaning or replacing rolls.

To remove the rubber rollers:

- Disconnect power cord.**
 - Put the rubber rolls in the down, but not locked position.
 - Open both right and left side housing doors as described in 3 above.
 - Remove drive chains, and rubber roll sprockets from the right side (see 19, 20 and 21 above).
 - Remove the 4 shaft stop collars (use a 1/8" allen wrench) from the lift side rubber roll journal ends.
 - Remove top heat shoe as described in section 8 above.
 - Using a 1/8" allen wrench, remove the 1/4 x 3/8 shoulder bolts that secure the bottom heat shoe brackets to the side panels and lower the shoe away from the front, bottom rubber roller.
 - Remove both sets of front and rear connecting (pressure) plate assemblies. There is no need to loosen or remove the pressure adjustment bolts or springs.
 - Remove the roller bearings from both bottom rubber rollers. They are press fit into the side panels, gently tap with a plastic or rubber mallet from the inside out to dislodge.
 - You can now remove the rollers by lifting them up and sliding them out thru the large "keyholes" in the side panels. When removing the top rubber rolls be sure to keep track of the machined, brass shoulder bushings on the journals and their positions for proper reassembly later.
 - If the "wrap-around" prevents the roll from fitting through the opening, some of the film must be removed **being very careful not to damage the rolls.**
 - After the rolls are removed, remove any remaining film and clean the rolls thoroughly.
 - If rolls are damaged, they must be replaced (Part# H500-040.4).
- Reassemble in exact reverse order of disassembly. Use the chain and sprocket routing diagrams at the back of this guide as a reference.
-

26. Check fan switch.

- Disconnect power cord.**
- Remove right side housing cover to access electrical components and wiring within as described in 3 above.
- Locate and identify the fan switch and wire leads (location "M" in wiring diagram).
- Using a multimeter set to check continuity, place one probe on the upper wire terminal and the other probe on the lower wire terminal.
- There should be continuity at these checkpoints when engaging the switch. Disengaging the switch should break continuity.
- If this check yields negative results, the switch has failed and should be replaced (Part# PRS 268).

LEDCO HD25 INDUSTRIAL SERIES LAMINATOR REPAIR PROCEDURES

To replace fan switch:

- a. **Disconnect power cord.**
 - b. Remove right side housing cover to access electrical components and wiring within as described in 3 above.
 - c. Locate fan switch and respective wire leads (location "M" in wiring diagram).
 - d. Using a straight blade screwdriver, loosen the two brass screws that secure the two black wire leads to the heat switch. Remove the wire leads from the switch making note of their location for proper reconnection later.
 - e. Using a small adjustable wrench, loosen and remove the thin hex nut that secures the switch and on/off plate to the face of the housing.
 - f. Remove the switch from the back of the housing, replace with new, reassemble in exact reverse order and rewire exactly as shown in schematic.
-

27. Check fan motor.

- a. **Disconnect power cord.**
- b. Tilt the machine on its back and support with a small length of 2 x 4.
- c. Using a phillips head screwdriver, loosen and remove the six 8/32 self tapping machine screws that secure the bottom motor cover to their small mounting (Tinnerman) brackets at the bottom of the machine. Remove the bottom motor cover to gain access to the fan motor and respective wire leads.
- d. Visually check for any wires that are disconnected, broken or shorting out. Re-connect or replace wires exactly as shown in wiring diagram.
- e. Locate the fan motor and respective wire leads, tracing the leads to the two white plastic cap connectors that secure the fan motor wires to their subsequent wiring path.

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- f. Using a multimeter set to volts AC, place the probes inside the cap connectors being sure to make good contact with the wire leads within.
 - g. With the machine plugged in, the main power switch on, and the fan switch engaged, you should get a reading of approximately 220 volts AC. If the fan does not function with proper voltage present, it has failed and should be replaced (Part# PRF 219).
-

28. Replace fan motor.

- a. **Disconnect power cord.**
- b. Tilt the machine on its back and support with a small length of 2 x 4.
- c. Using a phillips head screwdriver, loosen and remove the six 8/32 self tapping machine screws that secure the bottom motor cover to their small mounting (Tinnerman) brackets at the bottom of the machine. Remove the bottom motor cover to gain access to the fan motor and respective wire leads.
- d. Locate the fan motor and respective wire leads, tracing the leads to the two white plastic cap connectors that secure the fan motor wires to their subsequent wiring path.
- e. Disconnect the fan motor wire leads from their respective cap connectors using wire cutters. Make careful note of all wire locations for correct rewiring later.
- f. Using a phillips head screwdriver, loosen and remove the two 1/4-20 trusshead screws that secures the fan motor and mounting bracket to the two stand-offs at the underside of the top motor cover. Remove the fan motor, fan and mounting bracket from the machine.
- g. Remove the fan blades from the fan motor shaft using a "3/32" allen wrench.
- h. Loosen and remove the two 8-32 nuts that secure the fan motor to the mounting bracket.
- i. Replace with new fan motor, reassemble in exact reverse order and rewire exactly as shown in schematic.

LEDCO HD25 INDUSTRIAL SERIES LAMINATOR REPAIR PROCEDURES

29. Check supply roll gripper rods.

- a. Check to see if the three supply roll gripper rods that run the width of the supply rolls are not bent, damaged or overly loose.
- b. If damaged or missing, replace it (Part# H500-021.4).
- c. Occasionally the cardboard cores of the laminating films run slightly larger than 3" resulting in the roll of film slipping on the supply roll, not getting enough tension and resulting in wrinkles in the finished lamination. To alleviate this, try wrapping some masking tape around intermittent sections of the gripper rods (therebyslightl

30. Check supply roll hex adaptor spring pin.

- a. The supply roll hex adaptor, located to the inside of the tension knob and spring, is held in place on just one end of each respective supply roll by a split drive pin. This pin is located inside a small, milled slot.
- b. This pin should never be all the way to the right or left of the inside of this slot as you will have no remaining range of tension adjustment from one side to the other.
- c. The best technique for initial supply roll tension setting is to loosen the tension knobs so they are just touching the tension springs, making note to keep the hex adaptor drive pin fairly centered in its' slot, then three to four hand turns of tension on one side then the same amount of turns on the other side.
- d. If the hex adaptor spring pin is sheared or missing, it will have to be replaced (drive the remainder of the sheared pin out with a center punch and replace with new 1/8 x 3/4" split drive pin).

31. Check rubber roll dwell line.

- a. Create a "dwell line". The "dwell line" is the imprint the front laminating rolls leave in the web of a threaded and heated laminating machine after being stationary for 90 seconds.
- b. Thread the laminator with a good quality film.
- c. Warm up the laminator.
- d. After the laminator is warm, run a short length of film and stop the drive motor for at least 90 seconds.
- e. Advance the film 12 to 15 inches and look at the impression the laminating rollers left on the film.
- f. This impression, "dwell line" should be two parallel lines running the full width of the film measuring approximately 1/4" to 5/16" in width.
 - (1.) If the dwell line is very narrow, the rubber roll pressure may not be great enough to grip and pull the film taut, resulting in wrinkles in the web that can't be corrected with supply roll tension.
 - (2.) If the dwell line is over 3/8" wide, there may be too much pressure resulting in shifting of the film towards the path of least resistance, adding wrinkling in the area with less pressure.
 - (3.) If the dwell line is narrow on one side and much wider on the other, the roll pressure is not adjusted correctly, contributing to wrinkling problems.
 - (4.) If the dwell line has an hour glass appearance (wide on both ends and much narrower in the middle), there is either too much pressure on both ends or the rubber rolls are worn excessively.

32. Adjust rubber rolls.

- a. Disconnect power cord.
- b. Open both right and left side housing as described in 3 above.
- c. Locate the connecting, pressure plate assemblies, springs and 1/4-20 x 3 1/2" socket head pressure bolts therein.
- d. Gently remove the eight, chrome hole plugs on the top of the right and left housings to allow access to the pressure bolts with a 3/16" allen wrench.
- e. With the rolls in the "down but not locked" position, loosen (turn counter clockwise) the pressure bolts so the bottom shoulder of the socket head is just barely touching the top of the pressure spring.
- f. With the bottom shoulder of the socket head just barely touching the top of the pressure spring, tighten (turn clockwise) the pressure bolt one complete turn.
- g. Repeat this procedure for all eight pressure bolts to return the pressure settings to factory specs.

LEDCO HD25 INDUSTRIAL SERIES LAMINATOR REPAIR PROCEDURES

Replace heat control(s).

- a. **Disconnect power cord.**
 - b. Remove left side housing cover to access electrical components and wiring within as described in 3 above.
 - c. Locate heat control(s) and respective wire leads (locations "B" and/or "C" in wiring diagram).
 - d. Using a small phillips head screwdriver, loosen the small phillips head screw that secures the thin plastic terminal guard on the back of the heat control. Rotate the guard out of the way to gain access to terminals.
 - e. Using the same screwdriver, loosen the terminal screws and remove all wire leads from their respective terminals making very careful note of their locations for proper rewiring later.
 - f. Gently but firmly lift the heat control out from the front of the housing by pulling apart the two plastic tabs of the white plastic mounting bracket that secures the control to the housing.
 - g. Replace with new control, reassemble in exact reverse order, and rewire exactly as shown in schematic.
-

8. Check cartridge heaters.

- a. **Disconnect power cord.**
- b. Locate and identify the cartridge heater wires, twist-lock plugs, and receptacles for the top and bottom heat shoes respectively.
- c. Remove left side housing cover to access electrical components and wiring within as described in 3 above. Locate and identify the heat shoe receptacles (locations "F" and "G" in wiring diagram). Visually check for any wires that are disconnected, broken, or shorting out. Reconnect or replace wires exactly as shown in wiring diagram.
- d. Unplug heatshoe plug from respective receptacle by giving it a half turn counter-clockwise and gently pulling out.
- e. Using a multimeter set to check continuity, place the probes on the two outer plug prongs. There should be continuity at these checkpoints. If no continuity is present, the cartridge heater has probably failed and should be replaced (Part#PRH148).

NOTE

The cartridge heater wire lead connections to the internal plug terminals "X" and "Y" are crucial to insuring proper continuity of the circuit. To check these terminals use a small, straight blade screwdriver to loosen the strain relief bracket at the base of the twist-lock plug, then loosen and remove the two small silver screws that secure the face of the plug to the barrel of the plug. Gently pull back the barrel of the plug to expose and access the "X" and "Y" terminals at the back of the face of the plug. The respective cartridge heater wire leads should be securely screwed in place at the terminals. If not, re-secure the spade terminal ends of the heater wire leads to the respective terminals. If the plug has been damaged or there are parts missing replace the plug (Part#PRR221), rewire and reassemble in exact reverse order of disassembly.

Replace cartridge heater(s).

To replace cartridge heaters, you must first remove the respective heat shoe assemblies from the machine.

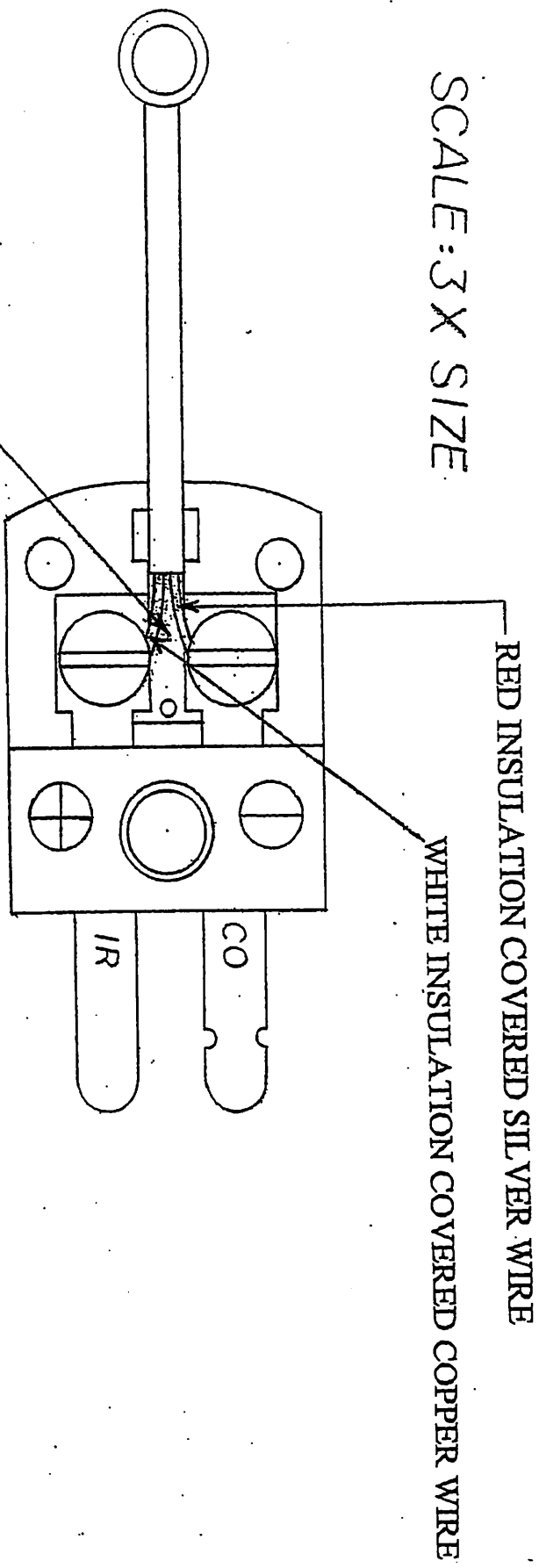
- a. **Disconnect power cord.**
- b. To remove top heat shoe assembly, first unplug the heat shoe, plug and thermo-couple plug from their respective receptacles in the left side panels. Remove the top shoe by sliding it up and off the retaining shoulder bolts on both side panels, and out of the machine.
- c. To remove the bottom heat shoe, loosen and remove the two bottom heat shoe mounting shoulder bolts using a 1/8" allen wrench. Gently lift the heat shoe out and away from the machine taking care to guide the plug ends through the relatively tight space at the left side of the front rubber roller ends.
- d. Place heat shoe assembly(s) on a level work surface. Be careful not to scratch teflon coating.
- e. Using a 5/32 allen wrench, loosen and remove the 1/4 20 x 1" round head allen bolts that secure the heat shoe brackets and spacers to the heat shoe. Pay particular attention to their positions and locations for proper reassembly later.
- f. Carefully slit the outermost layer of heat shrink tubing that encases both the heater wires and the thermocouple wires. Separate the two sets of wires.
- g. Remove twist lock plug from cartridge heater wires as denoted above.
- h. As the cartridge heater is a fairly snug slip fit in the heat shoe, it is not recommended that you just yank on the wire end of the cartridge heater to remove it from the shoe. Instead, we suggest taking a length of 1/2" dowel and a rubber or plastic mallet to gently tap the non-wired end of the cartridge heater to expose a usable length of heater cartridge to firmly grasp and pull out and free from the shoe.

LEDco HD25 INDUSTRIAL SERIES LAMINATOR REPAIR PROCEDURES

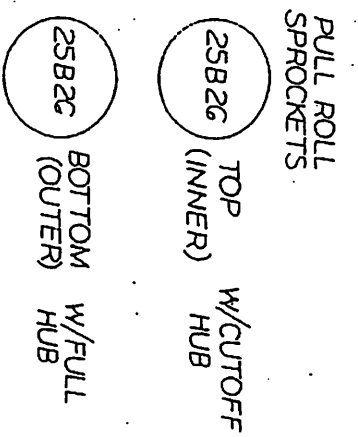
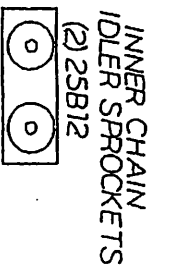
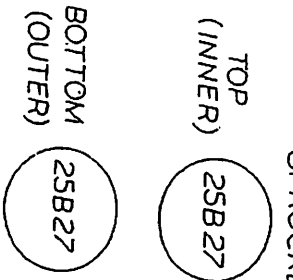
39. **Install optional upper fan assembly.**
- a. As all current HD25 laminators come equipped with the top fan assembly mounting bar (Part# H500 152.4) all that needs to be done to install the top fan option is to mount and wire the power receptacle (Part# PRR 221) in its allotted hole in the side panel.
 - b. Locate the receptacle hole in the upper left side panel covered by a black hole plug. Remove the hole plug. Gently pry it loose with a small straight blade screwdriver.
 - c. Install the power receptacle, with terminals to the inside of the housing. Secure the receptacle with the two 6-32 screws provided (use the heat shoe heater receptacles as examples for mounting).
 - d. **Disconnect power cord.**
 - e. Open left side housings as described in 3 above.
 - f. Locate the white, black, and green wires for the upper fan assembly receptacle.
 - g. Remove the white wire caps from these wires and replace them with spade terminals using wire cutters and crimpers.
 - h. Using a straight blade screwdriver secure the green wire to the center terminal of the receptacle, the white wire to terminal "Y", and the black wire to terminal "X".
 - i. Reassemble housing cover and knobs, mount fan assembly to mounting bar, plug fan assembly into the receptacle.
 - j. Plug machine in, turn on main power switch, and engage fan switch to activate main cooling fan and upper fan assembly simultaneously.
-

THERMOCOUPLE PLUG WIRING DIAGRAM

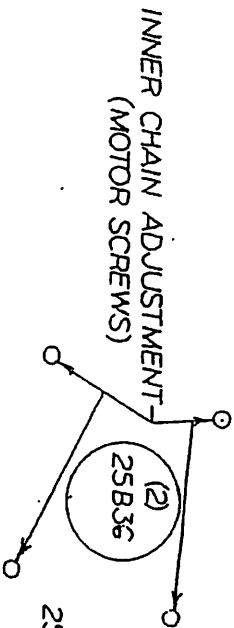
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LAMINATE ROLL SPROCKETS

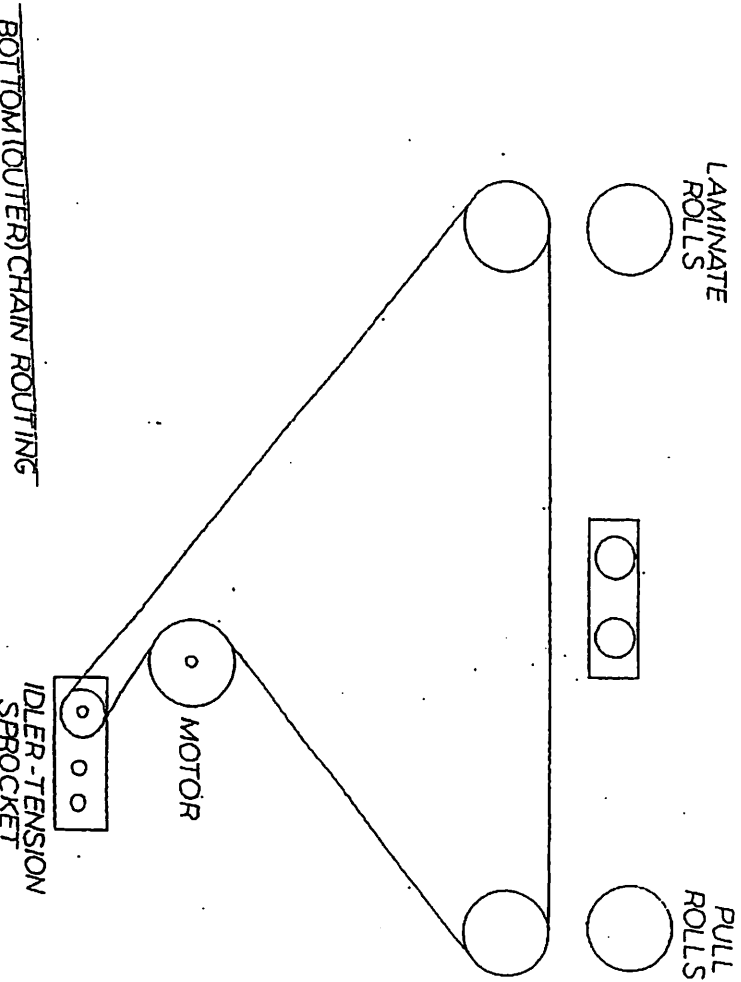
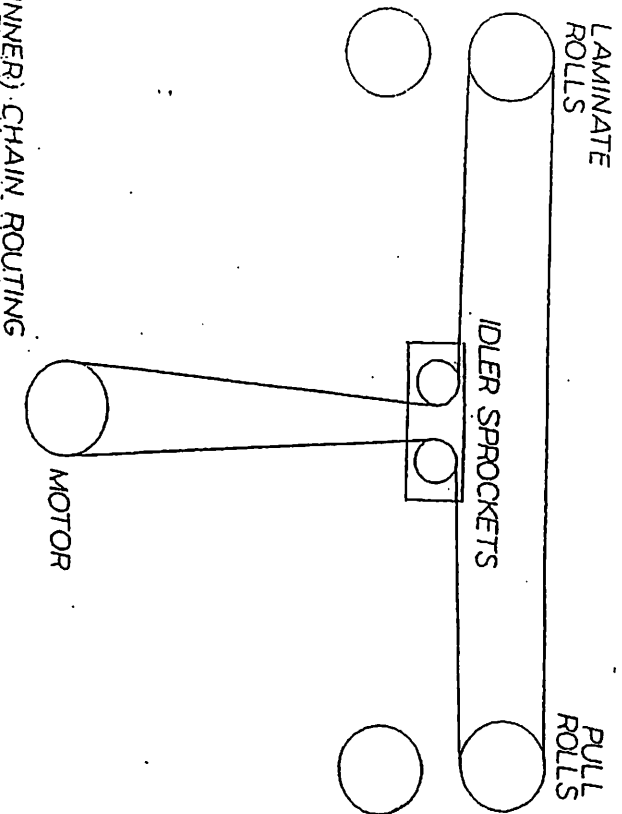


LOOSE
TIGHTEN



LOOSE
TIGHTEN

SPROCKET LOCATIONS



CHROMALOX FUNC. BUTTON PARAMETER READOUTS AND VALUES

- SP = WHATEVER TEMP YOU'VE SET
- Pb = 4.0
- ti = 4.0
- td = 1.00
- lp = 0
- C = 20
- C2 = 10
- rC = 1.00
- OLP = 0
- rL = 0
- rh = 400
- OLH = 100
- tOL = Inf