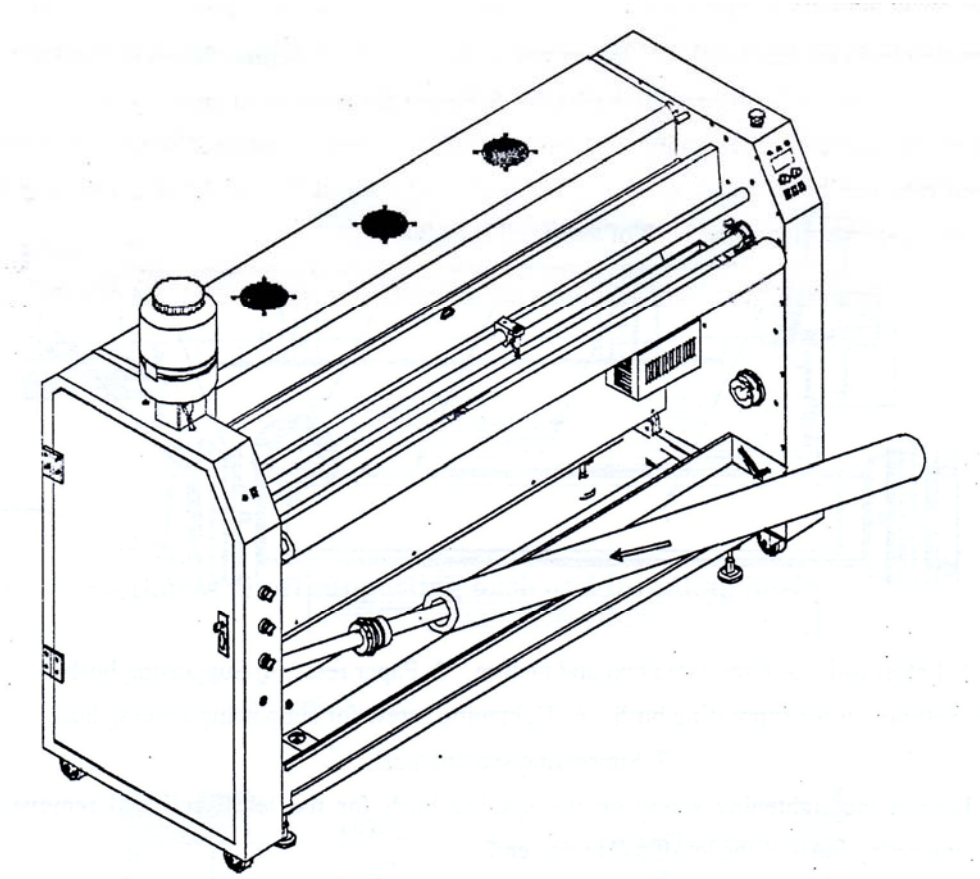
Version G3 1.00 3-2010

StarLam 1600R Liquid Laminator

Operation & Instruction Manual



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Important:
Please read and understand the operation manual completely. Follow all safety information described.

Introduction

Thank you for choosing the StarLam 1600R Liquid Laminator. The StarLam 1600R is a new generation liquid laminator designed for post fabrication liquid lamination of posters, banners, vehicle graphics and paper substrates. The StarLam 1600R used in combination with **ClearShield** liquid laminates will give you the ability to quickly and easily protect your digital output. In addition, the StarLam is CE approved to further ensure quality and durability

The StarLam 1600R utilizes air assisted oven drying to allow the application of liquid laminates in a quick and efficient process. The other main advantage of the StarLam 1600R is consistency. The liquid laminator allows a controlled wet film thickness to be applied so that square footage coverage and dried film thickness can be controlled precisely. This ensures accurate lamination with lower production cost.

The StarLam is designed for production environments where ease of use and reliability are paramount.

Attention!

To ensure the safety of the operator and avoid damaging any electrical components, please be sure to check the reliability of the earth protective ground of the power receptacle.

- **Please keep this instruction manual for reference in the future!**
- **Please follow the safety precautions and operational guide lines when operating this machine!**

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Operation Requirements

■ The machine should be used in temperature range of 15˚ C (50˚ F) - 40˚ C (104˚ F).
■ Environmental relative humidity should be 30% - 70%. Avoid using the machine in places with high temperature, humidity and dust.
■ Don't place the equipment in direct sunlight.
■ Place the machine on a flat floor and properly level it. Never set it on an irregular floor to avoid tipping over the machine, leading to personal damage or property loss..

Safety Precautions

 Ensure that the machine is properly connected to an electrical ground.

 The power cord should be connected in conformity with IEC 60245 regulations and in compliance with local electrical code requirements. The phase line should be connected to live wire with mark **L**. The neutral line shall be connected to zero line with mark **N**, and the protection conductor shall be connected to protective earth with mark **PE**.

 If an abnormal situation occurs and you need to urgently stop the machine in process press the emergency stop switch!

 This machine is equipped with a heating and drying system. When operating the heating and drying system do not place your hands or any other body part into the heating area. The heat generated can scald and burn the skin. Use caution when operating the heating and drying system of the machine.

 When operating and using the machine be careful not to block either of the three fans on top of the heater panel. This can damage the heating unit and potentially damage the heater box.

 Be careful when wearing a necktie, necklace, wristband or long hair when operating the machine. Care should be taking to bind loose clothing, secure jewelry and manage hair so as not to get rolled up and bound in the machine. Serious injuries can occur if proper precautions are not taken. Do not insert any material that is not intended for use with the machine. This can lead to unnecessary damage of the equipment.

 Raise the heating box lightly when lifting the heating box. Do not place hands onto the guide roll, racks, or side of machine to avoid hand injury.

 The left and right box doors can be removed after opening. If the doors need opening take care to lift and remove them to avoid dropping them.

 Use only water based liquid laminate. Using certain solvent based flammable liquids may increase the chance of a fire or explosion. Please use caution to select and use a liquid laminate compatible with this equipment.

 The machines power source shall be connected to a sufficient proper safety breaker with nominal current rating. Breaker operating current shall be no less than 40 Amps.

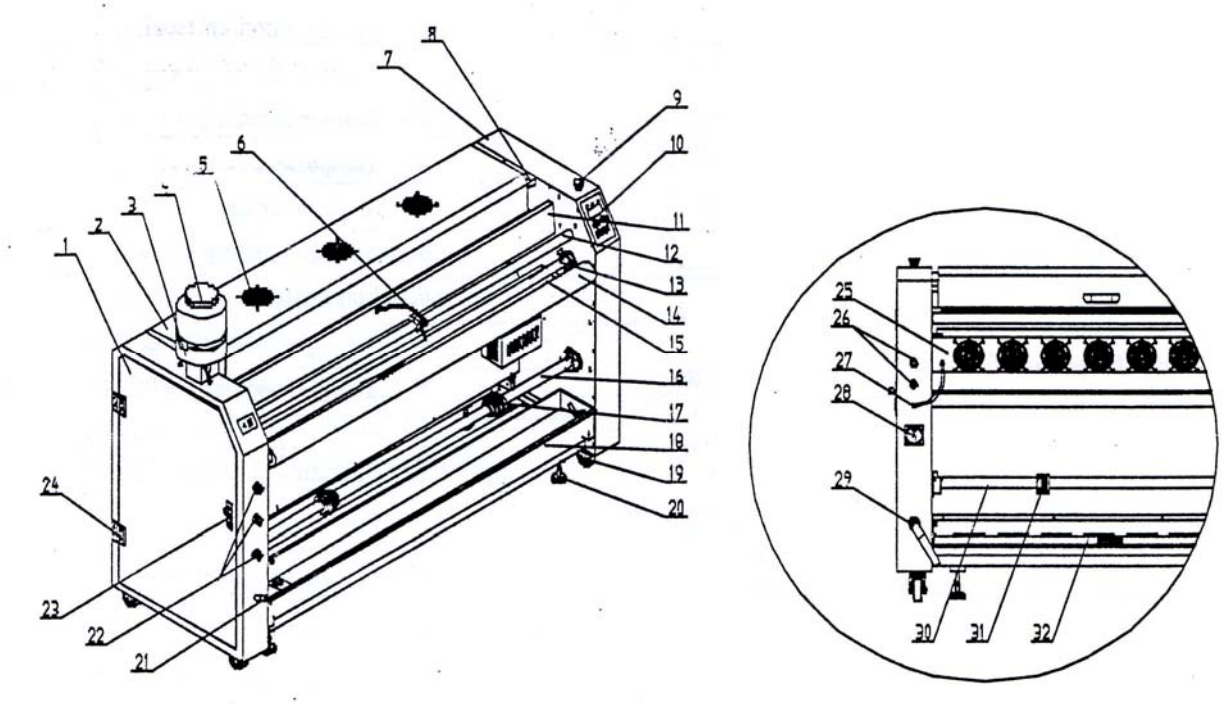
 If the laminator needs service, only authorized personnel should open the electrical boxes. A qualified professional or the manufacturer shall be asked to take responsibility for the maintenance and repair.

 Switch off the main power supply when performing maintenance to the equipment. When it is necessary to open the electrical apparatus box the main power supply to the machine should be shut off. This includes the main power supply line. Maintenance to the machine while in a live electrical working environment should not be allowed. Do not touch the circuit controlling part in the electrical control box.

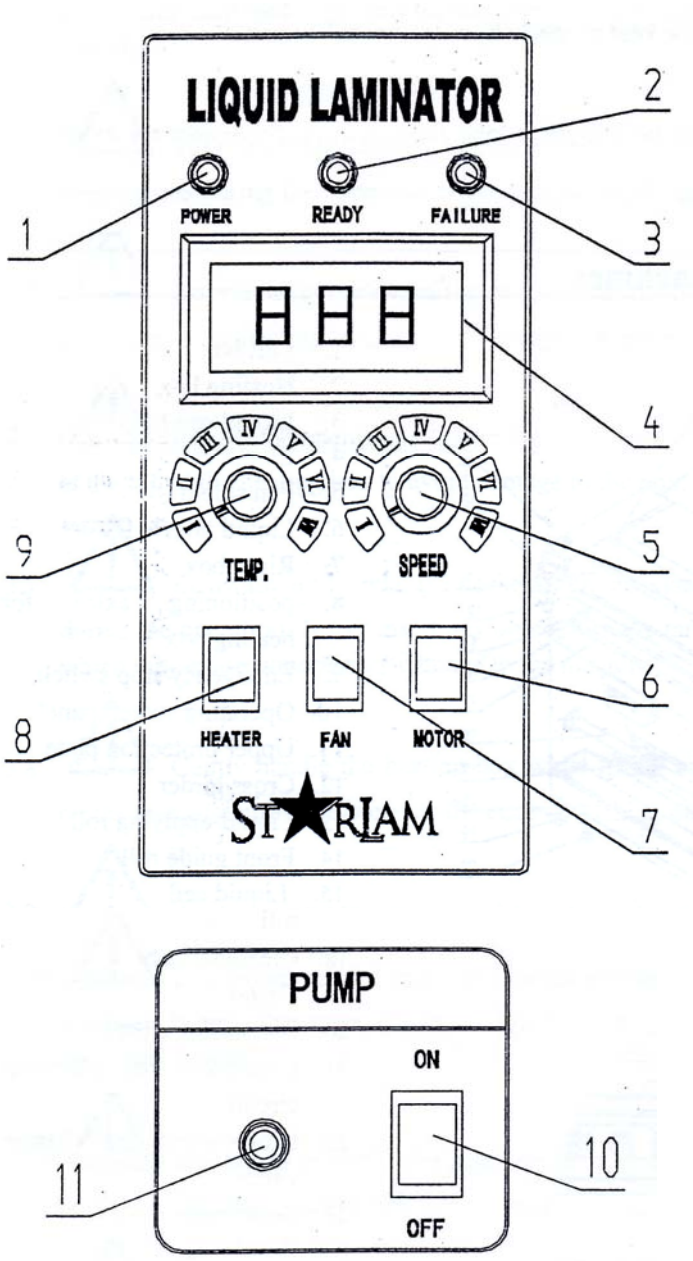
 Only authorized personnel should open the machine's electric control box. This electric control box is equipped with a key lock and key. A designated person in charge should keep the key.

 Switch off the power to the external power line when not using the machine for long periods of time.

Machine Diagram



1. Left Side Main Frame Box	8. Positioning Axles for	14. Front Guide Roll	21. Connector For Cleaning Hose.
2. Heater Box	Heating Box.	15. Laminate Drain Trough	24. Door Hinge
3. Liquid Reservoir Bottle Support	9. Emergency Stop Switch	16. Feed Roller Bar	25. Cooling Fan Bank 1
4. Liquid Reservoir Bottle	10. Operating Switch Panel	17. Roll Clutch Assembly	26. Forward Reverse Que
5. Fan Shield	11. Upper Protection Plate	18. Cleaning Trough	27. Power Supply Switch
6. Liquid Nozzle Fixture	12. Cross Girder	19. Caster	28. Hi-Amp Switch 29. Power Cord 30. Take up Roller Bar 31. Cooling Fan Bank 2
7. Right Side Main Frame Box	13. Liquid Metering Rod	20. Leveling Foot	



1. Power Light (White)	7. Fan Switch
2. Working Indicator Light (Green)	8. Temperature Adjusting Knob
3. Fault Indicator Light (Red)	9. Temperature Control Knob
4. Temperature Display Screen	10. Cleaning Pump Switch
5. Speed Adjustment Knob	11. Cleaning Pump Indicator Light
6. Motor Switch	

Technical Specifications

Maximum Laminating width	1600mm (63inches)
Maximum laminating length	300m (984 feet)
Temperature adjusting range	80-140˚C (176-284˚F)
Speed adjusting range	300-1000mm/min (11.82inches-3.28 feet/per per minute)
Input power	240 VAC rated / 208 VAC Minimum
Nominal input power	9600W @ 240VAC / 7200W @ 208 VAC
Nominal input current	40A @ 240 VAC / 36.4A @ VAC
Rated Input Frequency	60Hz
Preheating time	5 minutes
Altitude	<1000m (<3280.8 Feet)
Ambient operating temperatures	15˚ C (59˚F)- 40˚C (104˚F)
Ambient operating humidity	30% - 70%
Protection type equipment	Class I
Protection grade of control equipment	IP5X
Contour dimension (length x width x height)	2030 x 706 x 1250mm (6.6ft. x 2.3ft. x 4.1ft.)

Net weight	SL 1600R machine	256Kg (784.8 Lbs)
Weight in transport	SL 1600R machine	440Kg (970 Lbs)

▲ ***Noise of machine is rated at < 60db***

Type of fuse: R015 (Φ 10.3 x 38)

Fuse for heating box	32A x 2
Fuse for air drying fans	4A
Fuse for machine electric	2A
Fuse for transformer	1A
Fuse for heating box's fan	1A

Precautions Before Operating

■ Please read the instruction manual carefully before operating this machine.
■ Be sure that the power supply system is in compliance with the requirements of this machine before operating. Failure to do so may cause damage from abnormal heat or electrical circuit failure.
■ The width of the area to be coated shall not be more than the maximum laminating width.
■ Make sure the liquid reservoir bottle is installed in the correct position and the liquid dispensing nozzle is in the closed position.

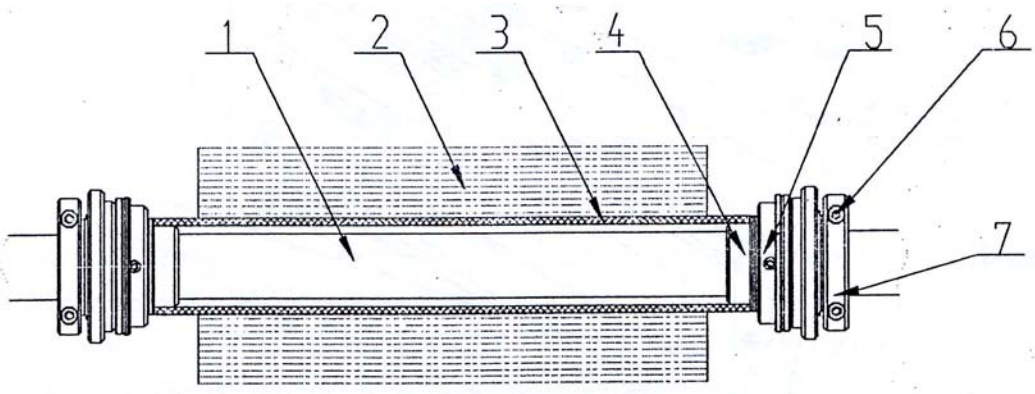
Make sure that the protective earth wire is reliably connected to the machine and to protective earth ground.

Preparation Before Operation

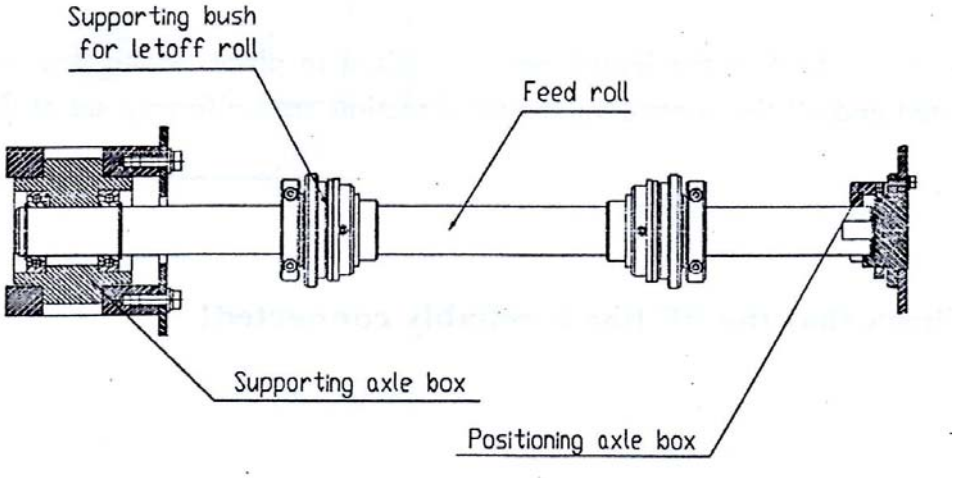
- Load liquid laminate into the liquid reservoir bottle and then screw on the reservoir cover.
- Place the liquid reservoir bottle onto the support for the bottle. Use the liquid piping to reliably connect the liquid reservoir bottle to the liquid dispensing nozzle.
- Put the rolled substrate to be coated onto the appropriate paper cylinder core.

Operation Instructions

Roll to Roll Lamination Instructions:

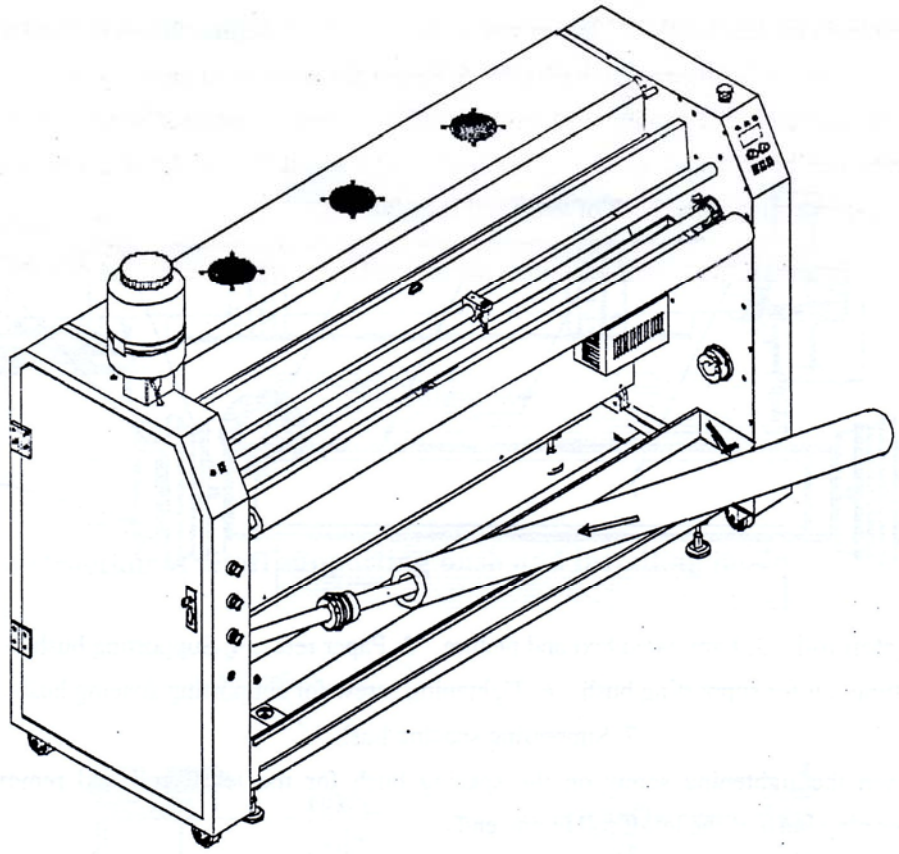


1. Core Holding Rod
2. Webbing / Rolled Media
3. Core
4. Core support Mandrel
5. Clutch discs
6. Lock Collar Tightening Bolts
7. Lock Collar

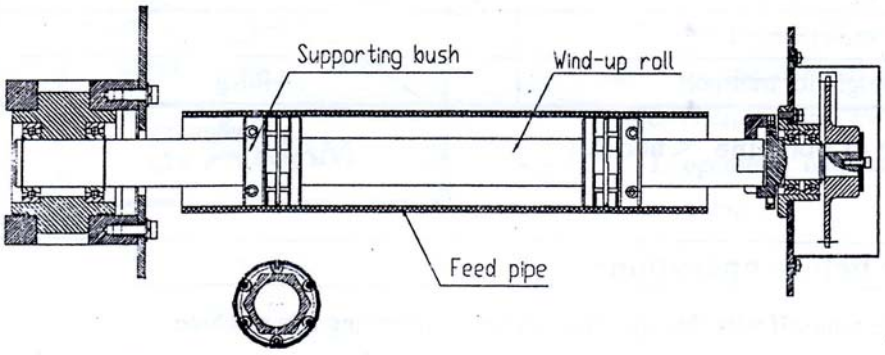


1. **Load the media on the laminator.**
    a. Rotate the jacket of the core roller that is on the same side of the machine as the main control console so that the core roller can be slightly lifted and rotated outward and away from the machine. It may be necessary to rotate the shaft collar lock into the unlocked position first.

b. Slide the printed roll of substrate to be coated onto the core holding rod. **Pay close attention to make sure the face of the material to be coated is on the outside face of the roll to be coated.** The open flap should be on the outside and facing upwards. (Please see Figure 8)



2. Repeat step 1 to load an empty take up core on the front of the machine. Rotate the core slightly once in place to lock it into position.



3. Lift the heating box assembly and gently lean it against its mainstays located on the two sides of the machine body boxes (as shown in figure 9).

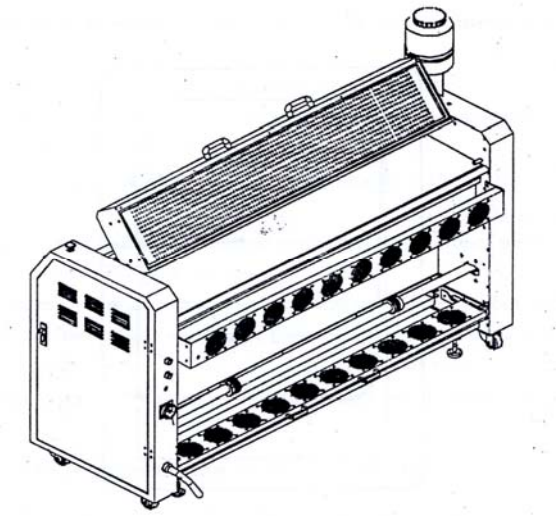


Figure 9

4. Feed the media through the laminator according to Figure 11.

    a. Leave a 1.8 meter long blank leader at the front of the printed material to be coated and a 1.5 meter long blank at the end of the printed roll media. This will ensure consistent coating of the printed area.

    b. Straighten up the material to be coated (webbing) and stretch it tightly.

    c. Use adhesive tape to stick the leading edge of the media to the empty paper core on the opposite side of the machine from the main control console.

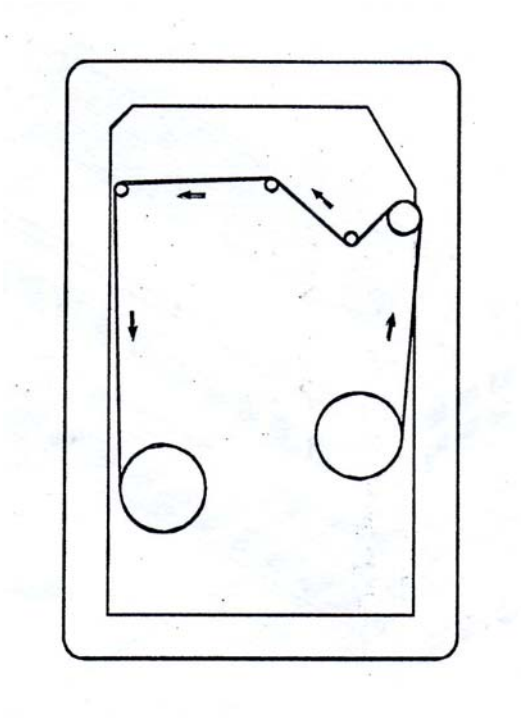


Figure 11

▲ ***To ensure even film thickness and proper coating please stretch the material tightly and evenly.***

5. The substrate must be spooled onto strait and without variance from side to side.

6. Switch the main power supply to the on position. Next, switch the machine power to the on position so that the power light illuminates. The fan in the heating box should also begin rotation.

7. Switch the power for the electric motor on so that the roll of printed media moves forward slightly. Continue this movement until the webbing is stretched evenly and tightly. Once this is achieved immediately stop the rotation of the machine.

▲ ***When the front end of the webbing moves forward the printed portion does not move pass the metering rod to avoid incompletion of the lamination run.***

8. Make sure the heating box is in the raised position. Adjust the heater setting knob on the main control console to the desired temperature position. Switch on the heating power switch. The machine will begin preheating. At this moment it is necessary to wait a few minutes for the heater to preheat.

9. Adjust the fluid control valves on the liquid reservoir bottle and the nozzle end so that liquid is injected onto the webbing (material to be coated). The nozzle should be adjusted to be in the center of the area to be coated.

10. When the heater box has reached the preset working conditions the working ready light will illuminate indicating that lamination process may begin.

11. Gently lower the heating box down and onto the heater door stop guides.

12. Switch on the machine cooling fans. Adjust the motor drive speed to the appropriate position. This starts the lamination process.

Upon laminating long rolled material:

- ***According to the requirements of the lamination job be sure to pay close attention to when more liquid laminate should be added to the liquid laminate reservoir.***

- ***The external diameter of the drive roller will continually increase along with the process of liquid laminating. The linear speed may also increase as the diameter of roll increases. Keep in mind to adjust the settings properly to decrease linear speed as required thus insuring optimal lamination effect.***

13. If an urgent situation arises and it is needed to stop the machine immediately simply press down on the available emergency stop button located at the top and on either side of the machine.

14. Once the liquid lamination process is finished switch off the motor speed switch, the heater power switch and cooling fan switch.

▲ ***Do not switch off the main power supply switch if it is within 5 minutes after ending the liquid lamination process. This can damage the heater if it is not allowed to cool properly after being used.***

15. Rotate the locking sleeve/jacket to the take up core roller (drive roller) so that the core holder rod can be lifted up and out of the machine gently. The coated and rolled material on the paper core can be removed at this point.

16. Immediately clean the liquid metering rod, liquid trough to avoid drying and hardening of the liquid laminate.

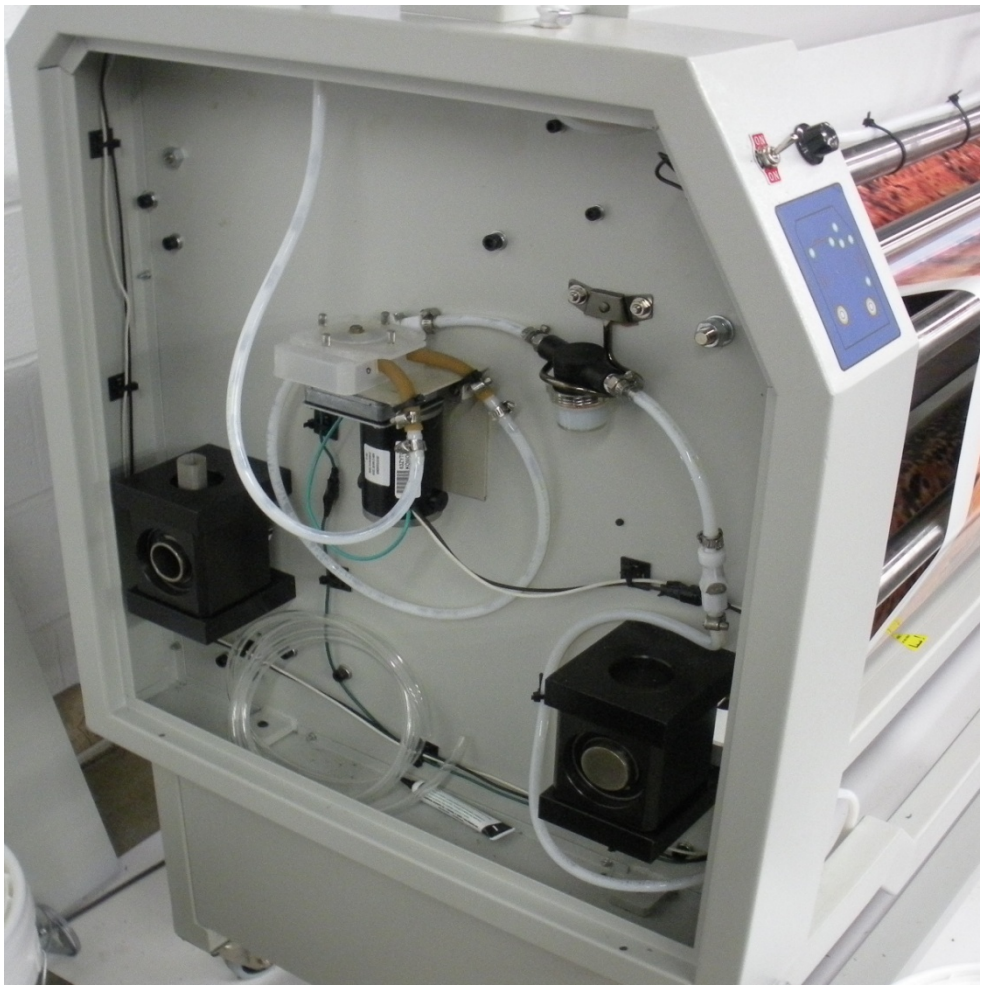
    a. Loosen the metering rod retaining bolts on both side of the liquid metering rod, and take it out and clean it immediately. For precise and perfect cleaning use a pressure washer to remove built up coating and any contaminates.

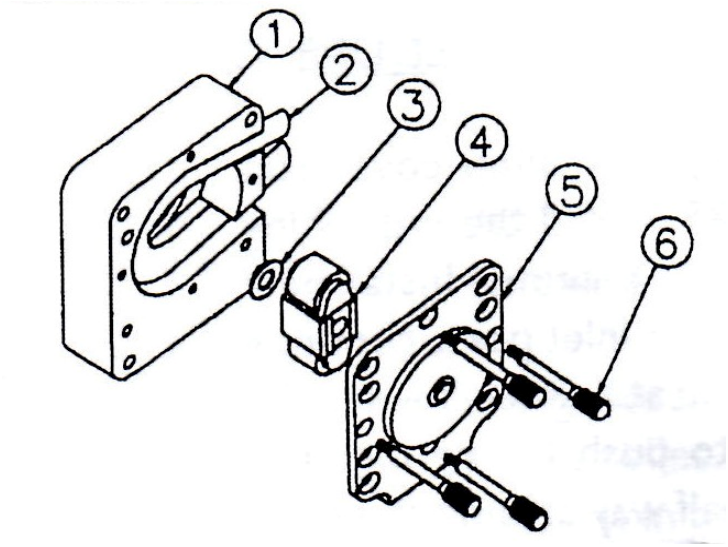
    b. Remove fixed bolts on both sides of the liquid trough (this bolt is of a special purpose during machine transportation and is not required to use again once removed.

The StarLam 1600R liquid laminator uses a peristaltic pump. A peristaltic pump is a type of positive displacement pump used for pumping a variety of fluids. The fluid is contained within a flexible tube fitted inside a circular pump casing (though linear peristaltic pumps have been made). A rotor with a number of "rollers", "shoes" or "wipers" attached to the external circumference compresses the flexible tube. As the rotor turns, the part of tube under compression closes (or "occludes") thus forcing the fluid to be pumped to move through the tube. Additionally, as the tube opens to its natural state after the passing of the cam ("restitution" or "resilience") fluid flow is induced to the pump.

The StarLam incorporates a bi-directional type peristaltic pump with a variable speed capability allowing extreme versatility with different liquids and also aids in cleaning out the laminate fluid lines. The pumping circuit allows for the fluid to remain in the fluid lines and never contact and impeller or "freezable" pump part.

The Laminate pump is in the inside of the machine opposite the main control housing.

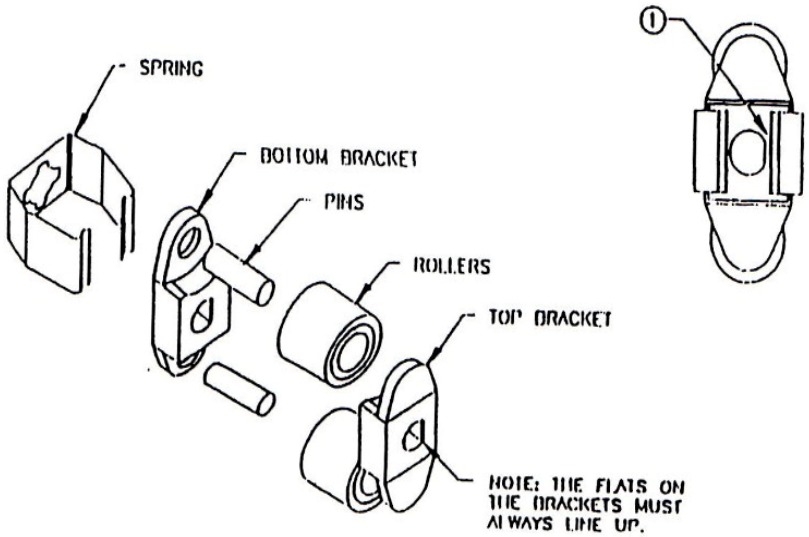




The StarLam peristaltic pump is composed of 6 main parts. The parts are as follows:

1	Pump housing
2	Pump tube
3	Plastic washer
4	Pump rollers
5	Pump cover
6	Thumb Screws

The Peristaltic pump roller assembly is as follows:



To remove the pump tube for replacement.

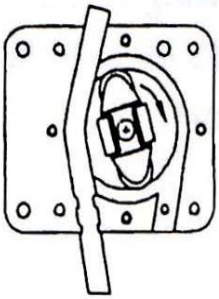


FIG. 1

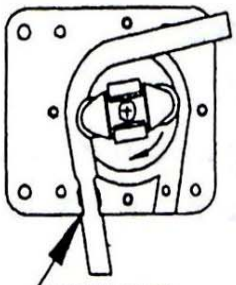


FIG. 2

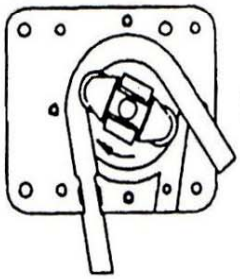


FIG. 3

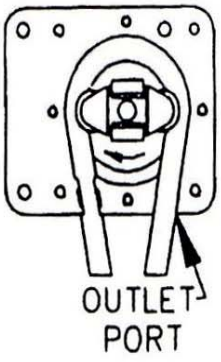
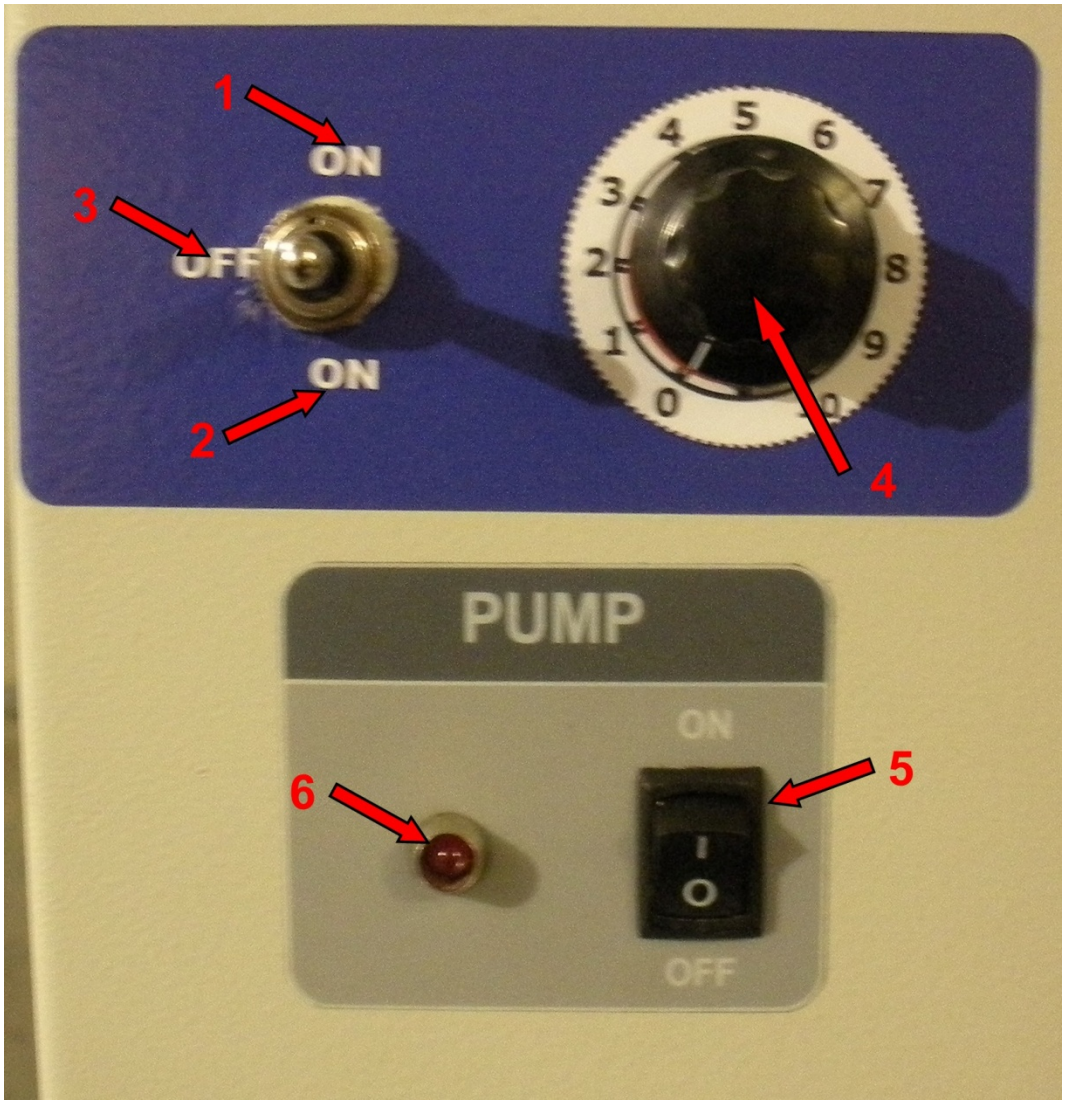


FIG. 4

1. Disconnect power to the pump.
2. Disconnect the suction and discharge tubing from the pump tubing.
3. Remove four thumb screws and pump cover.
4. Pull out old pump tubing and discard.
5. Clean roller race, removing any particles that could damage tubing.
6. Use one thumb screw to temporarily anchor the housing to the case. Connect power and run at slowest speed until roller bracket assembly is in position as shown in figure 1.
7. Push new tubing into inlet port, anchoring tubing in grippers. If using a 9" piece of tube, 1 1/2" should be extended outside of inlet port. (figure 2)
8. Continue to run at slowest speed carefully feeding tube into race as the rollers turn.(Figure3) (KEEP FINGERS AWAY FROM ROLLERS.)
9. Insert tubing into outlet port (figure 4) and replace cover.



1	Pump Switch Forward
2	Pump Switch Reverse
3	Pump Switch Off
4	Pump Speed Control
5	Cleaning Pump On/Off Switch
6	Cleaning Pump Power Indicator Lamp

Laminate Pump Operation:

1. Make sure the laminate reservoir bottle valve is in the shut (off) position. Fill the Laminate reservoir bottle with fresh liquid laminate.

2. After the substrate/webbing is properly fastened onto the rollers of the machine, open the main laminate reservoir valve to the "on" position and then open the dispensing valve to the "on" position.

3. Let the laminate run down and along the front side of the metering rod. Let the laminate run off the sides of the substrate/webbing and into the laminate reclaiming trough. Start the machine motor to begin the lamination process.
(The heater should already be preheated and lowered when the lamination process is started. The cooling fans should be on as well.)

4. Once the laminate reclaiming trough has enough laminate that has pooled in the trough and covered the drain spout and filter open the drain valve to the "on" position then turn the peristaltic pump on by flipping the laminate pump power switch to the up position (Position 1 in the diagram).

5. Turn the pump speed control knob (Diagram point 4) to the 20-25% position. The laminate should start moving through the fluid lines. The clear filter should fill up with laminate. When you see the clear fluid line going up to the laminate reservoir bottle then the laminate has completed the circuit and is recycling properly.
(The laminate recycling pump can be left on during the lamination process of the machine)

Cleaning the Laminate Pump:

1. Drain the laminate from the drain trough into the laminate storage container. Shut off the laminate trough drain valve and fill the trough with water until the drain filter screen is completely covered up to the top of the filter handle. (follow trough draining instructions)

2. Disconnect the laminate jug from the machine using the quick connects. Lift the laminate jug out of the reservoir holder. Unscrew the cap and pour the remaining liquid laminate into the laminate storage container.
3. Replace the laminate reservoir bottle into the stand and re-connect the proper quick disconnects.

4. Make sure the laminate reservoir bottle and main dispensing valve are shut off. Fill the laminate reservoir with warm tap water.

5. Open the drain valve to the laminate trough, Open the main dispensing valve, and the open the laminate reservoir valve.

6. Start the laminate pump and set the speed to about 50%. Let the water cycle through the system for a few minutes.

7. Stop the laminate pump after cycling plenty of water through the laminate lines.

8. Let all the water from the laminate reservoir drain into the laminate trough.

9. Drain all the water out of the laminate trough. (follow trough draining instructions)

Trough Draining Instructions:

1. Make sure the laminate trough valve is switched to the "off" or "closed" position.

2. Open up the side access panel where the pump and fluid lines are located. Locate the laminate drain trough hose and quick connect fittings. This should be the hose coming through the side of the machine close to the filter housing.

3. Disconnect the quick connects, and connect the supplied short drain hose to the female quick connect. Place the open end into a container or five gallon bucket.

4. Once the container is in place and the hose is hanging into it then open the laminate trough drain valve.

5. Let the trough drain completely.

Preparation of machine before use:

1. Use 4 gallons of room temperature or warm water to fill the wash trough on the bottom of the machine.

2. Hook up the cleaning hose to the wash hose connector on the machine. (Should be located on the front of the machine just under the three valve switches)

3. Prime the wash hose by switching on the wash pump motor until a steady stream of water is emitted at the end of the hose. Be sure to point the cleaning hose into the wash trough. Once the hose is primed drape the hose so that the end is hanging over the wash trough to avoid leaking water onto the floor.

4. Make sure the material to be coated is cored and fastened into the machine as previously described in the manual.

Valve Functions:

To Perform:	Lamination	Siphon from Drum with Peristaltic Pump	Cleaning the Liquid Laminate Circuit of the Machine
Valve 1 Position	Laminating	Laminating	Laminating
Valve 2 Position	Laminating	Cleaning	Laminating
Valve 3 Position	Laminating	Cleaning	Laminating

Lamination Procedure:

1. Make sure all three Valves are switched to the laminating position. (insert Picture)

2. Open the fluid reservoir valve.

3. Open the fluid dispensing valve.

4. Once the laminate has filled up the area in front of the metering rod and starts running off both sides of the media lower the heater, switch on the drying fans and then start the drive motor at the 2.5 position. Once the media begins to coat and move adjust the speed to the 3 position as the heater reaches 100 deg. Celsius.

5. Once the laminate reclaiming tray begins to fill up some start the peristaltic laminate pump.

a. Start the laminate pump by switching the toggle switch up to the on position.

b. Turn the pump speed control knob so that it clicks on and adjust it to the 20% or 1/4 position.

c. It is ideal to have the pump recycle the liquid without entirely draining the reclaiming trough. (Running the laminate reclaiming trough dry will cause the filter screen to dry out and clog)

Siphon from Drum with Peristaltic Pump:

1. Make sure the fluid reservoir valve is in the "off" position.

2. Switch the top valve to the laminating position. Switch the bottom two remaining valves to the cleaning position.

3. Hook the siphoning hose to the inlet connector on the inside bottom left of the machine (when facing the cleaning trough) just behind the cleaning trough.

4. Connect the other end of the siphoning hose to the siphoning drum connector in the drum and loosen the other drum bung so air can ventilate through into the drum.

5. Turn the laminating power switch to the up (forward) position. Adjust the pump to the desired speed using the rotary knob (Speed Controller).

6. Switch the rotary knob (Speed Controller) to the "off" position once the fluid reservoir is filled to just under the fluid inlet port.

Troubleshooting

Problem	Possible cause and remedy
● Power light does not turn on.	● Be sure that the main power supply switches are switched on ● Check internal Breakers to make sure they are not tripped.
● The working indicator light does not illuminate even after heating for some time.	● The light shows that the machine is increasing in temperature. Be patient and wait for awhile, and it should illuminate. ● If the working indicator light does not illuminate after a long time then the system is in failure. Stop immediately and have the machine repaired before use.
● Surface of the webbing crumples.	● Temperature is too high. Need to decrease temperature. ● Speed is too slow. Need to increase speed.
● Surface of the coated substrate is not dry.	● Temperature is too low. Need to increase the temperature. ● Speed is too high. Need to decrease speed. ●Heater is not on. ●Too much liquid has leaked to the other side of the coating rod
● Coated material is not drying or is not dried uniformly.	● Rolled substrate may have not been stretched tightly. Need to enhance the damping of the material roll in the front part of the machine. ● Rolled substrate has not been stretched evenly. Stretch again tightly and evenly according to the above said steps.
● I am in the middle of a long run and I have figured out my roll is not stretched evenly. What can I do to save my job run with the machine in motion?	●You can try tensioning the clutches tighter.
● I have clear streaking going in the same direction as the wires on my metering rod.	● If all the environmental requirements of the machine are being met then the liquid laminate may be too high in viscosity. Reduce the liquid laminate as per its instructions to get the required viscosity to run on the machine.
● I am getting an uneven coating result in just certain areas of the job. The areas seem to be a pattern or repetitious with some sort of symmetry to it.	● The metering rod has built up material in the grooves and on the surface. Clean the Metering rod very well with appropriate cleaner and if necessary use a pressure washer with water. ● The Metering rod is improperly tightened down. Check tightening clamps and adjust as necessary.
● The coated job feels dry coming out of the machine, but when I go to unroll the coated roll I hear a slight peeling sound as it unrolls.	● The material was coated at slightly too high of speed. Reduce for same lamination combination in the future. ●Material was coated at slightly too low of a temperature. Increase the temperature for same coating combination in the future.

● Sections in the middle and sides of the material being coated seem to be rubbed off in spots. The coating can be seen going on as a wet film but does not come out that way when coming out of the heater.	● It is possible the heater box support tabs have been damaged. Replace or repair box supports before using machine again. ● The heater box heat trap flap may be bent or damaged. Replace or repair part as necessary before using machine again.
● The material being coated seems to coat with a jerky motion somewhat resembles a chattering motion.	● Reduce some of the clutch friction to the core rod where the material is being pulled from. (Core rod on same side as main control console). ●Apply some graphite powder to the clutches where the core Contacts the clutch assembly.
● Fluid flow from the main dispensing valve has Started coming out slower. The fluid doesn't seem to Keep the laminating area supplied.	● One of the fluid connectors is blocked. Remove connector And force water the opposite way through the connector or replace connector. ● Fluid valve is blocked and needs to be cleaned. ● Fluid reservoir bottle needs to be refilled. Not enough Head pressure.
● Fluid Reservoir bottle is full but liquid is barely dispensing out of fluid valve or has dropped out completely.	● Fluid reservoir needs to thoroughly cleaned and scrubbed to remove dried laminate from the walls of the jug. ● Flush Fluid connectors in the opposite of flow direction to remove dried laminate chunks.
● Machine heater temperature cannot be controlled or adjusted.	● Solid State Heater relay has gone bad and needs to be Replaced. Contact Clearstar.
● Liquid seems to run mostly to one side of the coating rod and barely saturates the other side.	● Machine needs to be leveled properly.
● Metering rod is not rotating properly.	● Rod is not seated correctly in the holding cradle. ● Rod is not tightened down sufficiently to allow proper friction between media and rod.
● Heater is not getting hot enough when turned up.	● Insure that the machine is getting the required voltage and amperage.
● Machine is coating but motion is jerky or Chattering.	● Too much tension is on the clutches holding the feed core. ● A small amount of graphite powder lubricant needs to be used On the clutches where the discs rub against each other and Where the core goes onto the clutches.
●	●
●	●
●	●
●	●
●	●

Warranty

WARRANTY COVER AND CONDITIONS

This is a limited 12-month warranty please read carefully. This warranty gives you specific rights. Where products is sold by a reseller ("System Supplier") as principal, the reseller has no authority from Clearstar LP to give any additional warranty or guarantee on Clearstar LP's behalf except as contained or referred to in this document. All items carry warranty activated at time of invoice/purchase notification to the invoiced *Original Recipient Purchaser of the New Equipment*

a. Clearstar LP warrants to the original consumer purchaser that each new StarLam 1600R Liquid Laminator which proves defective in materials or workmanship within the applicable warranty period will be repaired or, at our option, replaced without charge.

b. The applicable warranty period for new equipment shall be one year (parts), six months (labor) from date of purchase.

c. This warranty only extends to and is enforceable by the original recipient purchaser of the equipment, and only for the amount of time specified as the period of the warranty (Section B), which the product must remain in the possession of the *Original Recipient Purchaser of the New Equipment*.

> "*Original Recipient Purchaser of the New Equipment*" is defined as the person or entity that first purchased the product covered by this warranty other than for distributional and resale purposes. This warranty is null and void and does not apply if it is found at any time the equipment has not been used for its intended purpose.
>
> "Reseller" is defined as a "System Supplier" or "Distributor". A "Reseller" is also defined as any individual, entity, or company that purchases and then re-sells the "New Equipment" to another individual, entity, or company whether or not for profit or for gain. Any shell company that processes or facilitates the sale or distribution of the new equipment shall be considered a "Reseller".
>
> "Entity" is defined as any person, company, corporation, organization, shell company, or trade broker that engages in the reselling or distribution of the new equipment.

It is the "Original Recipient Purchaser of the New Equipment's" responsibility to ensure that the equipment is connected to a UPS or similar circuit protector where power failures are common. Damage caused by power failure to a system, peripherals, or structure is excluded from warranty. This warranty is void if an incorrect power supply is attached to the unit that does not comply with the product specifications. Clearstar LP will not cover under warranty any item that has been connected to a power supply other than that supplied, mishandled, returned inadequately packed and/or otherwise interfered with by unauthorized personnel. The removal of any serial numbers will void the warranty. Clearstar LP will not repair under warranty, damaged caused by operation outside of designed working and storage environments, power surges, fluctuations and interference, and external peripheral devices. Clearstar LP accepts no additional liability pursuant to this warranty for the cost of traveling, insurance or transportation of the product or parts to and from the service agent or reseller (system supplier). These costs are not

included in this warranty. This warranty does not cover parts that have been installed by person(s) that are not registered Clearstar LP Dealer Installer(s).

Equipment Covered: StarLam LP technology architecture ONLY – this warranty does not cover alterations made to the machine by unauthorized personnel.
Operating Environment: The New Equipment should be operated in a relatively clean dust free environment to ensure optimal performance, as dust grime and moisture can contribute to breakdowns that may not be covered under this warranty.
Geographical Coverage: United States qualified distributors within the States and Territories of the United states of America. All other territories must be expressed and approved, and signed in writing in order to be valid.
Warranty Response: Your system supplier or distributor should be responsible for return of hardware, parts, and equipment. Proof of purchased will be required. Contact Clearstar LP Monday through Friday (excluding public holidays) between the hours of 8am to 5 pm. (EST).
Unauthorized Persons: No unauthorized person should endeavor to repair or modify the system. For all modifications or upgrades please contact your system/equipment supplier to ensure that your warranty remains intact. All requests for warranty assistance should be directed to Clearstar LP. Failure to do so will void the warranty.
Not Warranty works: Should Clearstar LP be called upon under the warranty and the fault found to be not the new equipment or its parts, you will be invoiced for the cost associated with such works.
SUMMARY OF WARRANTY EXCLUSIONS
We shall not be liable under this warranty for:

1. Loss or damage caused by fire, explosion, direct lightening, power surge and the like, storm, tempest, flood water damage, rainwater, earthquake, accident, impact, burglary, theft or attempts thereof, malicious damage.
2. Loss of use of your equipment or other consequential loss, damage or consequential liability of any description.
3. Damage or liability arising out of a willful act or your willful negligence.
4. Damage caused by the fair wear and tear, accidental and malicious damage or misuse, or attachment of unauthorized additional components is excluded from the warranty.
5. Gradual deterioration, including corrosion, or other ongoing effects caused by environmental conditions.
6. Loss or damage caused by interference by another party and/or attempted remote alterations by any means.

Maintenance

After using the StarLam 1600R the machine must be cleaned immediately, otherwise the liquid laminate will solidify which is not beneficial. Before cleaning always switch off the power coming into the machine.

1. Remove the metering rod and clean the laminate off the surface.
2. Take away the liquid trough. If there is waste liquid left after laminating pour back the waste liquid into a liquid container. Clean the laminate off the surface and clean after filling up with water.
3. Soak and clean with a brush the remaining laminate left in the trough.
4. Clean the front and back guide rolls.
5. After air-drying, all parts should be reinstalled into their original position.

▲In order to protect this machine do not expose it to the weather. When storing the machine for a long time, switch off power supply for the external line and cover it with machine cover.

After Sale Service

Thank you for your faith with our company's product. As our client, you will obtain our company's sincere technical service and support. When you need us just contact your equipment supplier or contact Clearstar LP directly.

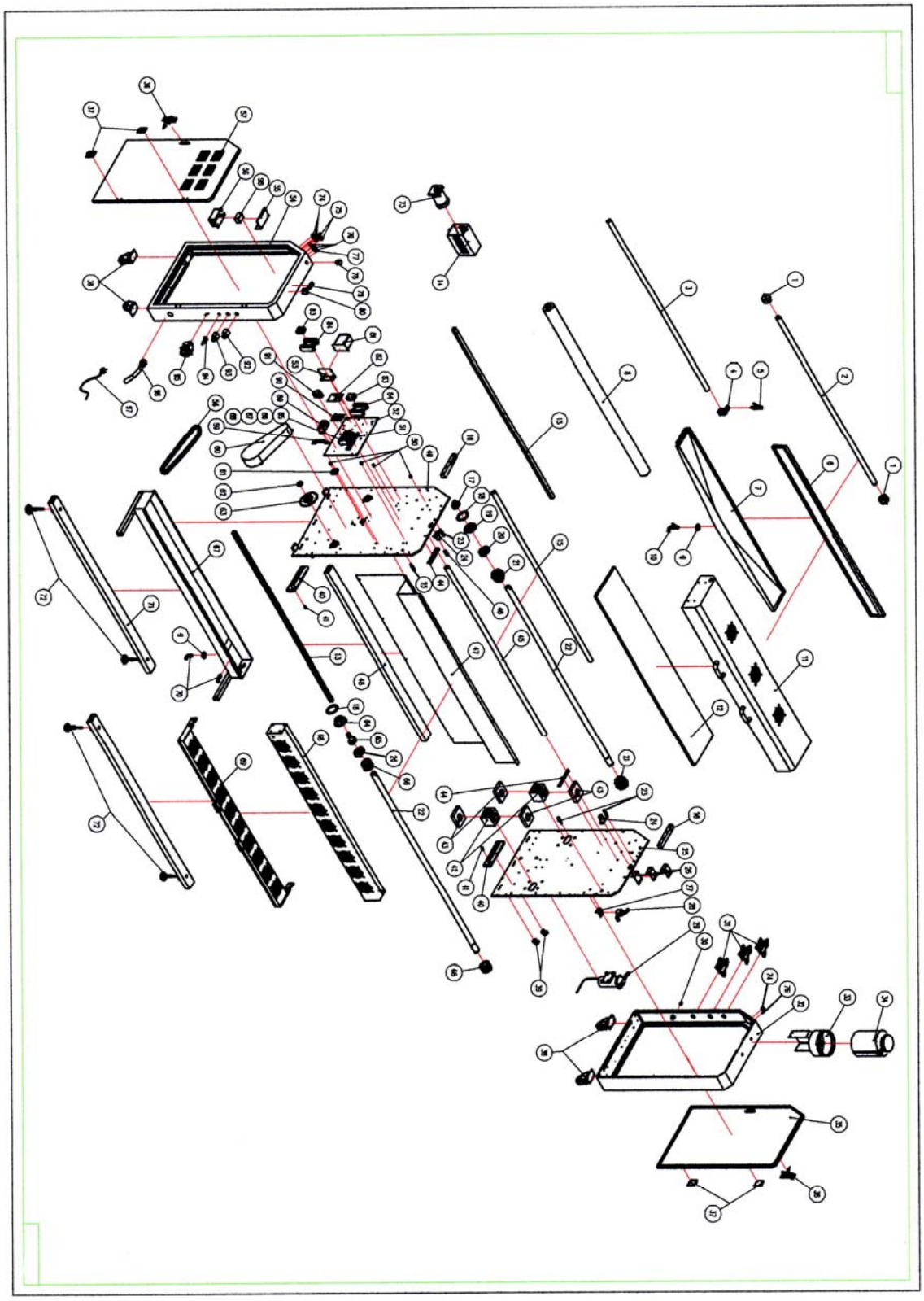
If you have any questions please call our reseller agents, distributors or contact us directly through our customer service or sales department.

The products of our company are subject to change without prior notice.

Clearstar LP
P.O. Box 390
North Charleston, SC 29423
1-888-253-2778
Fax# 1-843-886-3701
V# 1-843-886-0094
www.clearstarcorp.com

Appendixes

Appendix A1



Appendix A2

Drawing No.	Part Description	Clearstar Part No.
1	Metering Rod Cradle	PLAM2001
2	#25 Metering Rod	PLAM2002
3	Nozzle Support Rod	PLAM2003
4	Fluid Nozzle Holder	PLAM2004
5	Fluid Dispensing Nozzle	PLAM2005
6	Heat Deflection Shield	PLAM2006
7	Laminate Drain Trough	PLAM2007
8	Large Tension Roller	PLAM2008
9	Drain Filter Screen	PLAM2009
10	Stainless Steel Ball Valve	PLAM2010
11	9600W Heater Box Unit	PLAM2011
12	Discontinued-Omitted	Discontinued Part
13	Heat Shield Support Bracket	PLAM2012
14	Motor Cover	PLAM2014
15	Idle Roller 1	PLAM2015
16	Drain Trough Bracket	PLAM2016
17	Core support Mandrel	PLAM2017
18	Flange Adjustment Pads	PLAM2018
19	Core Support Bar Holder	PLAM2019
20	Locking Collar Cover	PLAM2020
21	Clutched Core Support	PLAM2021
22	Core Support Bar	PLAM2022
23	Heater Box Support Pegs	PLAM2023
24	Heater Box Hang Sleeve	PLAM2024
25	Right Support Plate	PLAM2025
26	Selector Valve Bracket	PLAM2026
27	Filter Mounting Bracket	PLAM2027
28	Laminate Filter	PLAM2028
29	Washing Pump	PLAM2029
30	Female Quick Connect	PLAM2030
31	2 way selector Valve	PLAM2031
32	Main Frame Box Right	PLAM2032
33	Laminate Bottle Stand	PLAM2033
34	Laminate Reservoir Bottle	PLAM2034
35	Right Frame Box Door	PLAM2035
36	Door Lock Assembly	PLAM2036
37	Door Hinge Assembly	PLAM2037
38	Rolling Wheels	PLAM2038
39	Swivel Hose Connectors	PLAM2039
40	Fan Assembly Track R.S.	PLAM2040

Drawing #	Part Description	Clearstar Part No.
41	R.S. Fan Track Screw	PLAM2041
42	Core Rod Support Hinge	PLAM2042
43	Core Rod Hinge Plates	PLAM2043
44	Laminate Trough Mount	PLAM2044
45	Idle Roller 2	PLAM2045
46	Bushing	PLAM2046
47	Heat Shield	PLAM2047
48	Mid Main Support Bracket	PLAM2048
49	Left Support Plate	PLAM2049
50	Support Plate Bolts	PLAM2050
51	DIN Rail	PLAM2051
52	Control Board	PLAM2052
53	Safety Relay Bracket	PLAM2053
54	Main Frame Box Left	PLAM2054
55	DC Transformer Bracket	PLAM2055
56	DC Transformer Cover	PLAM2056
57	Left Frame Box Door	PLAM2057
58	Drive Chain	PLAM2058
59	Grounding Bus Bar	PLAM2059
60	Drive Chain Cover	PLAM2060
61	Drive Motor Sprocket	PLAM2061
62	Sprocket Retaining Bolt	PLAM2062
63	Rod Drive Sprocket	PLAM2063
64	C.S.R. Drive Shaft Collar	PLAM2064
65	C.S.R. Drive Shaft	PLAM2065
66	Take Up Core Mandrel	PLAM2066
67	Rod Wash Trough	PLAM2067
68	Top Fan Assembly	PLAM2068
69	Bottom Fan Assembly	PLAM2069
70	Push to Connect Elbows	PLAM2070
71	Main Support Bracket	PLAM2071
72	Main Support Bracket	PLAM2072
73	Drive Motor	PLAM2073
74	Control Switches	PLAM2074
75	Control Knobs	PLAM2075
76	LEDs	PLAM2076
77	Main Display Board	PLAM2077
78	Emergency Stop Switch	PLAM2078
79	Small Wire Terminal Strip	PLAM2079
80	Drive Motor Capacitor	PLAM2080

Drawing #	Part Description	Clearstar Part No.
81	Safety Relay System	PLAM2081
82	Heater Control IC Board	PLAM2082
83	40A Solid State Relay	PLAM2083
84	SSR Heat Sink	PLAM2084
85	DIN Magnetic Breaker	PLAM2085
86	DIN Magnetic Breaker	PLAM2086
87	DIN Magnetic Breaker	PLAM2087
88	DIN Magnetic Breaker	PLAM2088
89	Wire Terminal Strip	PLAM2089
90	Drive Control IC Board	PLAM2090
91	Small AC Transformer	PLAM2091
92	Reverse Motor Switch	PLAM2092
93	Forward Motor Switch	PLAM2093
94	Fan Power Connector	PLAM2094
95	Main Power Switch	PLAM2095
96	Main Power Cable	PLAM2096
97	Fan Power Cable	PLAM2097
98	Wash Pump Transformer	PLAM2098
99	PTC Swivel LP Elbow	
100	PTC Plastic 1/4" Connector	
101	PTC Plastic Swivel Elbow	
102		
103		
104		
105	1/4" ID Fluid Tubing	
106	6.5mm ID Rigid Fluid Tube	
107	Peristaltic Pump Assembly	
108	T - strainer filter assembly	
109	40x36 mesh Filter Screen	
110	T-Strainer Bowl Seal	
111	3/8" ID Fluid Tubing	
112	SS 1/4" - 1/4" connector	
113	SS 3/8" - 1/4" connector	
114	Nylon 1/4" - 1/4" connector	
115	Female Valved 1/4" Coupler	
116	Female Panel 1/4" Coupler	
117	Male Valved 1/4" Coupler	
118	Male 1/4" Coupler	
119	Male Valved 3/8" Coupler	

Drawing #	Part Description	Clearstar Part No.
120	Female Panel 3/8" Coupler	
121	Male 3/8" Coupler	
122		
123		
124	Coating Rod #18 Mayer	
125	Coating Rod #25 Mayer	
126	Coating Rod #32 Mayer	
127		
128		
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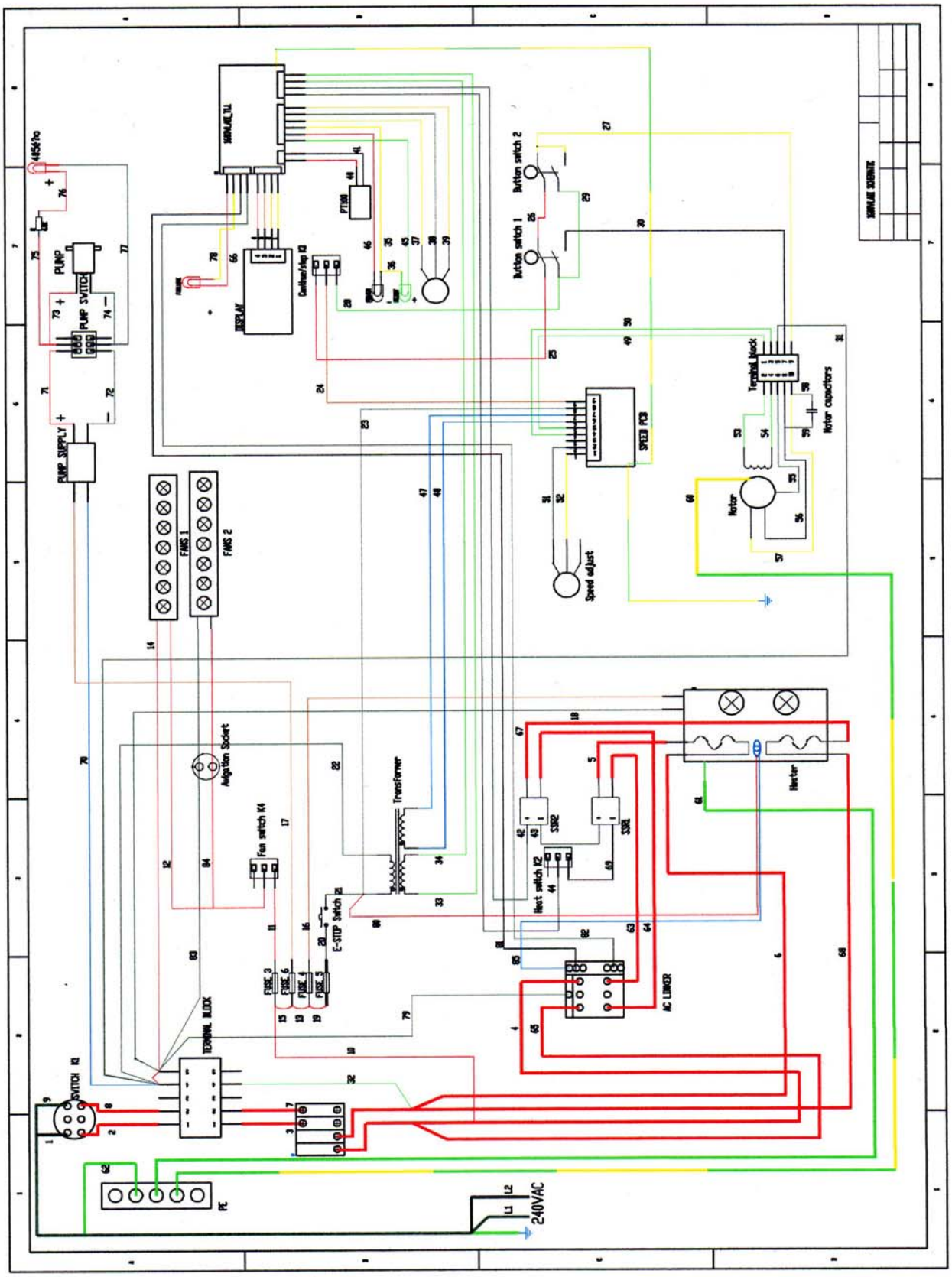
137		
138		

Appendix A3


PUMP
PUMP SWITCH
PUMP SUPPLY
FANS 1
FANS 2
Button switch 2
Button switch 1
SPEED PCB
Speed adjust
Motor
Motor capacitors
Terminal block
Heater
Transformer
Ignition Socket
Fan switch K4
E-STOP Switch
Heat switch K2
SSR1
SSR2
FUSE 3
FUSE 6
FUSE 4
FUSE 5
TERMINAL BLOCK
AC LINKER
240VAC
PE

Appendix A4

Tips and Tricks for the StarLam 1600R G3

Start -up Check List

1. Make sure machine power is on.
2. Make sure substrate is properly tensioned to take up core. Pull tension and tape in the center first then pull tension on each side and tape. Substrate should be tight and not loose and sagging. Use the Que (green) button to pull tension on the substrate and hold it after taping.
3. Make sure heater is in the raised position. Turn heater on and let it preheat to at least 100 Deg. Celsius.
4. Open fluid flow valve so that liquid laminate is dispensed onto substrate. Wait until the laminate is flowing off the sides of the substrate.
5. Start motor at the #2 speed.
6. Lower Heater.
7. Switch cooling fans on.

Let machine run until job is coated.

Clean-Up and Shut Down Check List

1. Shut off the fluid feed valve.
2. Stop the machine before the vinyl spools off of the feed roll. There should be approximately 2 to 3 wraps still on the core (1.5 meters total from the metering rod to the end of the substrate).
3. Using a foam brush push all the remaining laminate off the substrate and into the reclaiming trough.
4. Loosen the fastening screws that hold the metering rod in place and remove the metering rod.
5. Place the metering rod into the cleaning trough and rotate it a few times to wet the rod.
6.