
GBC VOYAGER™ OPERATION & MAINTENANCE MANUAL

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Revision :
Part number : 930 - 047

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Installation Precautions



WARNING

To avoid injury to yourself or damage to the equipment, please read and understand the instructions in this manual before you attempt to install, operate or service the laminator!

1. The GBC Voyager System must only be installed by a GBC employed technician.
2. Any moving or un-installing of the equipment may also, only be done by a GBC employed technician.
3. Once the machine is installed, all cables remaining on the floor from the electrical cabinet to the machine must be covered, to avoid any accidents.

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1.0 THE MANUAL

To help you operate and maintain your laminator efficiently and safely, GBC provides this operators manual.



WARNING

To avoid injury to yourself or damage to the equipment, please read and understand the instructions in this manual before you attempt to install, operate or service the laminator!

Section 2.0 INTRODUCTION TO THE LAMINATOR

This section describes the features and benefits of the GBC VOYAGER™, lists optional equipment, and explains the purpose of each part of the laminator.

Section 3.0 SPECIFICATIONS

Provided here are the detailed specifications for the GBC Voyager.

Section 4.0 OPERATION

This section describes the controls and instruments, gives instruction for loading and threading film, and provides complete procedures for starting, operating and shutting down the laminator.

Section 5.0 Application

Detailed here are the processes for loading the sheets, setting the feed head unit, loading the film, adjusting the slitter, heating, threading, an over view of operation and shutdown.

Section 6.0 Maintenance

Provided here are details on how to keep your machine running smoothly and efficiently.

Section 7.0 Troubleshooting

This section will assist you in basic and non-basic troubleshooting in the event a problem should occur.

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1.2 DISCLAIMER

This manual has been reviewed for accuracy. The instructions and descriptions it contains were accurate for the GBC VOYAGER™ LAMINATOR at the time of this manual's production. However, succeeding manuals and laminators are subject to change without notification. Therefore, General Binding Corporation assumes no liability for damages incurred directly or indirectly from errors, omissions, or discrepancies between the laminator and this manual.

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1.3 Warranty

GBC Films Group warrants the equipment sold is free from defects in material and workmanship for a period of **one (1) year parts (excludes wear items) and 90 days labor** from the date of installation. This warranty is the only warranty made by GBC Films Group and cannot be modified or amended.

GBC Films Group's sole and exclusive liability and the customer's sole and exclusive remedy under this warranty shall be, at GBC Films Group's option, to repair or replace any such defective part or product. These remedies are only available if GBC Films Group's examination of the product discloses to GBC Films Group's satisfaction that such defects actually exist and were not caused by misuse, neglect, attempt to repair, unauthorized alteration or modification, incorrect line voltage, fire, accident, flood, or other hazard.

1.3.1 Limited Warranty

This warranty specifically does not cover damage to the laminating rollers caused by knives, razor blades, other sharp objects, failure caused by adhesives or improper use of the machine. Warranty repair or replacement does not extend the warranty beyond the initial one year period from the date of delivery.



CAUTION

Unauthorized customer alterations will void this warranty.

THE WARRANTY MADE HEREIN IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. GBC PRO-TECH WILL NOT BE LIABLE FOR PROPERTY DAMAGE OR PERSONAL INJURY (UNLESS PRIMARILY CAUSED BY ITS NEGLIGENCE), LOSS OF PROFIT OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE EQUIPMENT.

1.3.2 Exclusions to the Warranty

This warranty specifically does not cover;

1. Damage to the laminating rolls caused by knives, razor blades, other sharp objects or failure caused by adhesives.

2. Damage to the machine caused by lifting, tilting and/ or any attempt to position the machine on uneven surfaces.

3. Improper use of the machine.

4. Damage due from unqualified person(s) servicing the machine.

5. Normal wear items are not covered (Rollers, blades, etc.).

Qualified

- Any engineer that has experience with electrical and mechanical design of lamination equipment. The engineers should be fully aware of all aspects of safety with regards to lamination equipment.

- Any commissioning or service engineer must be of competent nature, trained and qualified to GBC Pro-Tech standards to fulfill that job. This person will have completed and passed the full service training course from GBC Pro-Tech.

- Any GBC Technician, GBC Specialist, and / or GBC Pro-Tech Technician that has been through the GBC Pro-Tech service training course.

2.0 INTRODUCTION TO THE LAMINATOR

Congratulations on your purchase of the GBC Film Products Voyager one-sided laminator. The Voyager operates at high speeds with polyester, polypropylene and GBC LAY-FLAT® thermal lamination films. With its high-quality performance and dependability, the Voyager offers the premier laminating capabilities required by today's printing and graphics arts industries.

2.1 FEATURES

Heated Roller

High-gloss chrome roller is given a 3 RMS micro finish for superior product quality

Range of Films

Laminator runs polyester, polypropylene and GBC Lay-Flat thermal films.

Speed

One-sided lamination at up to 130 fpm, limited by the speed of the sheet separator.

Curl Control

Built-in breaker bar assembly decurls the product.

Control Construction

Fabricated from 1/2 inch (12.70 mm) steel. The rigid, heavy-duty body improves reliability of operation.

Film Supply Shaft

Mechanical drop-lock chuck that pivots out for ease of film loading.

Warm-up Time

Warm-up is fast, taking at most 20 minutes.

Temperature Control

Controller provides easy service and accurate control of heat with ability to quickly decrease temperature setting.



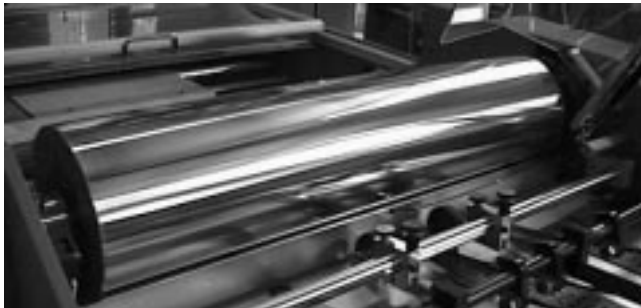
WARNING

SAFETY STOP MODE
Automatically stops and gaps the nip rollers, if anyone pushes one of the two emergency stop buttons.

2.2 COMPONENTS OF THE LAMINATOR

Laminating Rollers

The laminating rollers consist of the top, heated chrome roller and the bottom, unheated counter-pressure roller.



Leveling Feet

Eight adjustable leveling feet are provided to assure proper setup of the laminator.



Electric Eye Gap Detector

Stops the system automatically if a sheet is misfed.

Heating Unit

Provides heated liquid media to chrome roller with quick and easy controls, and a self-diagnostic at start-up.



Film Supply Shaft

Drop lock manual chuck, that pivots out for ease of film loading.



Emergency Stop Button

Pressing this button causes the laminating rollers to separate and all the rollers to stop.



Speed Control

Turning the knob adjusts the speed at which the rollers turn.



Nip Pressure Controls

The “On-Off” switch applies air pressure to the laminating rollers. The adjusting knob varies the pressure, and the gauge shows the air pressure.



Upper Roll Temp Controller

This unit displays the actual chrome roller temperature and also allows the operator to adjust the operating temperature of the heat roller, up or down.



FWD/REV Controls

This switch is used to reverse the roll direction for ease of cleaning and maintenance.



Main Power Switch

Switches on or off, all the power to the laminator and heating unit.



Film Slitter

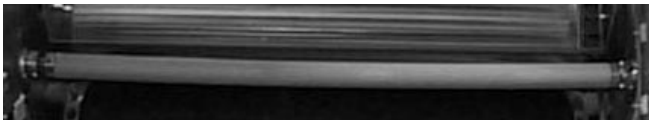
This device cuts the film on-line, to the width needed for a finished product. The unused film remains on the core for ease of disposal.

**Pull Rollers**

This pair of rollers draws the film through the laminator, maintaining the web tension across the decurl unit.

**Bow Roller**

This roller helps to remove wrinkles from the film and increases the dwell time of film on the heated chrome roller. Increased dwell time permits operation at a lower roller temperature.

**Snapping Rollers**

This pair of rollers snaps the film enabling the images to be separated after the web has been knicked.

**Breaker Bar Assembly**

This assembly decurls the laminated web as the web passes through it. The breaker bar can be rotated to produce the desired degree of break in the paper.

**Knicker Assembly**

Places a nick into the web at the set interval. This allows for the snapping rollers to separate the web.



Control panel - Laminator

This panel allows the operator to control the laminator section in a central location.



Air Pressure Regulator

This control sets the incoming air pressure.



Control panel - Heater

This panel allows the operator to control the heating section in a central location.



Control panel - Feeder

This panel allows the operator to control the feeding section in a central location.



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3.0 SPECIFICATIONS

Working Widths:	Min: 8.5 inches (215.90 mm) Max: 30 inches (762 mm)
Working Lengths:	Min: 11 inches (279.40 mm) Max: 40 inches (1,016 mm)
Core Size:	3 inch diameter (76 mm)
Maximum Film Roll Diameter:	15.5 inches (394 mm)
Maximum Speed:	130 fpm (39.6 m/min.)
Product Range:	80 lb. C2S stock to 18 pt. board maximum
Films:	1.2 mil to 1.7 mil OPP, PET, GBC LAY-FLAT ®
Rollers:	Top: Water-heated chrome roller with 3 RMS Bottom: Hyplon rubber-coated
1-Sided Slitter:	When available film is too wide, slitter can cut film to the proper size.
Safety Features:	Safety covers and Emergency stops

Electrical Requirements:

220 VAC, 3-Phase 100 AMPS

Product Warranty:

See warranty information per Sales Representative

Net Weight:

Approximately 2,700 lbs. (1,226 kg)

Shipping Weights:

Approximately 3,300 lbs. (1,498 kg)

4.0 OPERATION

Operating procedures given in this manual are presented as suggestions for the operator's consideration. An operator experienced in the art of lamination may prefer different procedures under certain conditions.

Your new GBC Voyager™ Laminator is a durable machine designed for heavy work loads. By following the procedures suggested in this manual and taking proper care of your unit, you can be assured of years of professional quality laminating.

This section will explain the controls of the laminator, the feeder and the heating unit. Any control not described within this section is done so intentionally. These controls are not for operator manipulation.



WARNING

To avoid injury to yourself or damage to the equipment, please read and understand the Operations section of this manual before attempting to operate the laminator!



WARNING

Do not wear ties, loose fit clothing or dangling jewelry while operating or servicing the laminator. These items can get caught in the nip and choke you or you can be crushed or burned.

4.1 Laminator controls

1. EMERGENCY STOP (E-STOP): When pressed, stops the machine from operation, separates the laminating rollers.

2. EMERGENCY STOP RESET: When pressed, resets the machine after an E-STOP has been pressed.

3. SHEET SIZE selector: Enables the operator to select the sheet size (Short / long).

4. KNIFE/ KNIFE & SNAP selector: Enables the operator to engage the knife only, knife and snap or neither.

5. JOG FORWARD: Engages the machine in a forward direction for the duration of the press. When a safety shield is raised, JOG FORWARD and E-STOP RESET must be pressed simultaneously.

6. JOG REVERSE: Engages the machine in a reverse direction for the duration of the press. When a safety shield is raised, JOG REVERSE and E-STOP RESET must be pressed simultaneously.

7. LAMINATOR STOP: When pressed, stops all motion to the machine.

8. LAMINATOR START: When pressed, engages all motion on the machine.

9. NIP UP/DOWN: When pressed and illuminates, the nip roller is in the up position. When pressed and the light extinguishes, the nip roller is in the down position.

13. SHEET COUNTER: Can be selected to display total sheets or sheets per minute. Total sheets can be reset back to zero.

10. VACUUMPUMP selector: Engages or disengages the vacuum pump supplied for feeder.

14. HOUR METER: Keeps track of the total amount of operating time on your machine.

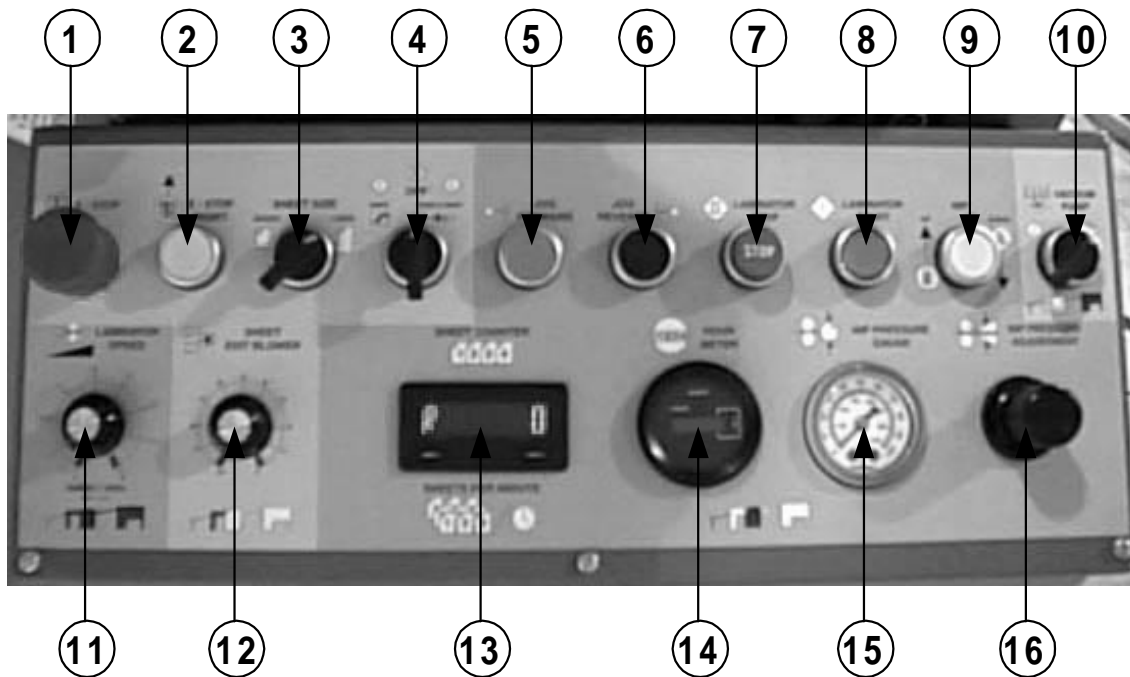
11. LAMINATOR SPEED dial: Adjusts the system speed. Automatically adjusts the feeder to compensate for the laminator speed change.

15. NIP PRESSURE GAUGE: Indicates the amount of pressure presented at the main roller nip.

12. SHEET EXIT BLOWER dial: Adjusts the amount of air flow comes out the sheet blower valve.

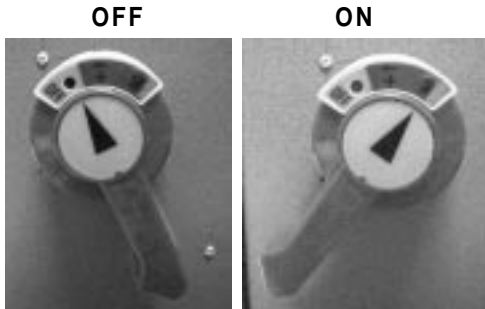
16. NIP PRESSURE ADJUST dial: Adjusts the amount of pressure presented at the main roller nip.

Figure 4.1.1 Control panel - Laminator



Other controls on the laminator

1. MAIN POWER ON/ OFF: Engages power to the machine or removes power to the machine.



2. AIR PRESSURE REGULATOR: Adjusts the amount of incoming air to the machine.



3. BOW ROLLER ADJUST: To remove film wrinkles over heat roller.



3. LAP CONTROL KNOB/ DIAL INDICATOR: Adjusts the amount of overlap per sheet. The indicator shows a reference point.



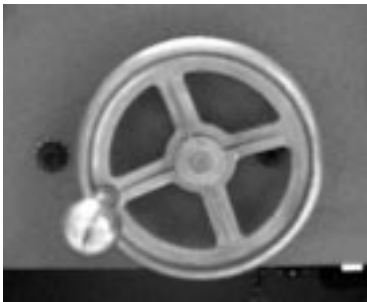
4. KNIFE TIMING ADJUST: Changes the timing of the knife when turned.



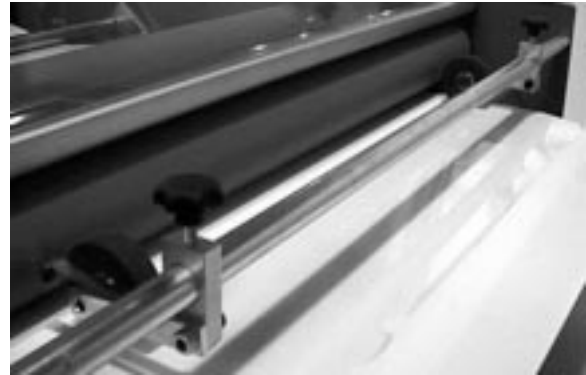
5. DECURLING ANGLE ADJUST: when turned can either add a curling angle or decrease the curling angle of the web.



6. KNIFE ADJUST: Moves the table and knife from one side to the other side when turned.



9. EXIT ROLLER : Helps pull the sheets after the snap onto the catch table.



7. PULL ROLLER NIP ADJUST: Raises or lowers the upper pull roll when turned.



10. SKEW WHEEL ROLLER: Creates lift in drive side of sheet to help snapping.



8. SNAPPING ADJUST: The right adjust dial controls the control side snapping speed and strength. The left adjust dial controls the drive side snapping speed and strength.

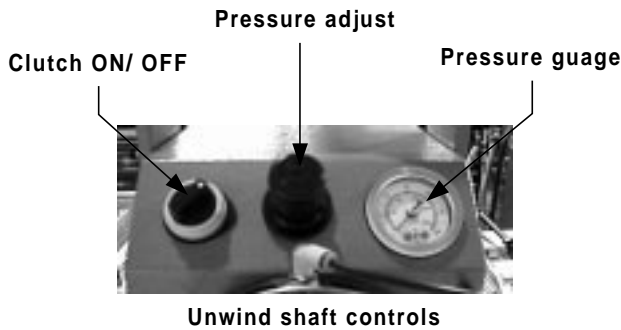


11. LATERAL FILM ADJUST: Moves the unwind shaft from one side to the other side when turned.



12. UNWIND BRAKE ON/ OFF: Engages air or disengages air to the pneumatic brake to the unwind shaft. See image below.

13. PRESSURE ADJUST: Adjusts the amount of air pressure supplied to the pneumatic brake.



14. PRESSURE GAUGE: Indicates the amount of air pressure being supplied to the pneumatic brake. See image above.

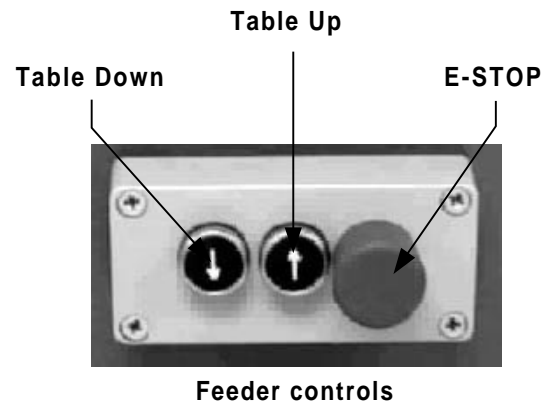
15. FILM SLITTER PRESSURE ADJUST: Adjusts the amount of pressure applied to the blade pressed against the roll of film. The closer to the roll of film the more pressure applied.



4.2 Feeder controls

1 TABLE UP: Raises the sheet table while pressed. When released, the sheet table stops. See image below.

2. TABLE DOWN: When pressed, starts the sheet table to lower. Press again to stop the travel of the sheet table.



3. EMERGENCY STOP: When pressed, stops the machine from operation separates the heating roller. See image above

4. BAFFLE HANDLES: Adjusts the amount of vacuum flow in the conveyer table.



5. CONTROL SIDE TABLE SHEET GUIDE

ADJUST : When turned, moves the control side table sheet guide closer or farther from the center.



7. FEEDING HEAD UNIT: This unit lifts the sheets and feeds them onto the conveyor. The two adjustments on the feeding head unit are the sheet brushes and the sheet clips.



INFORMATION

Only one handle is provided and can be used on both adjusters.

8. LATERAL FEEDING HEAD UNIT ADJUST:

Moves the feeding head unit back or forth for sheet length changes.



6. DRIVE SIDE TABLE SHEET GUIDE ADJUST

: When turned, moves the drive side table sheet guide closer or farther from the center.



9. FEEDING HEAD UNIT HEIGHT ADJUST:

Adjusts the height of the feeding head witch in turn adjusts the paper pile height to feeder gate.

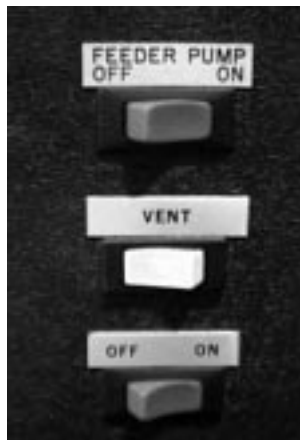


4.3 Heater unit controls

1. FLOW PUMP ON/OFF: Turns the flow pump in the heater unit on or off. Refer to **Figure 4.3.1 Switches**.

2. MANUAL AIR VENT: When presses, engages the air venting system. When released, reverts to the off position. Refer to **Figure 4.3.1 Switches**.

Figure 4.3.1 Switches



3. FEEDER PUMP ON/ OFF: Turns the system pressure pump on or off. This should be turned on first at start up. See image above. Refer to **Figure 4.3.1 Switches**.

4. FEEDER PUMP INDICATOR LIGHT: When illuminated indicates the feeder pump is on. See image below. Refer to **Figure 4.3.2 Indicators**.

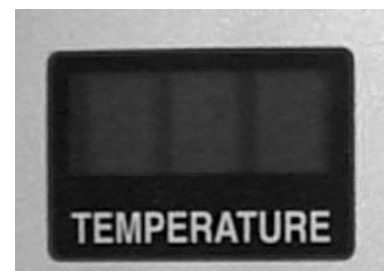
5. POWER INDICATOR LIGHT: Illuminates if power to the heater unit is supplied. Refer to **Figure 4.3.2 Indicators**.

Figure 4.3.2 Indicators



6. FLOW PUMP INDICATOR LIGHT: When illuminated indicates the flow pump is on. See image above. Refer to **Figure 4.3.2 Indicators**.

7. FLOW TEMPERATURE DISPLAY: Displays the flow temperature for delivery (Default) or return.



8. SET POINT DISPLAY: Displays the current set point value for the heater unit.

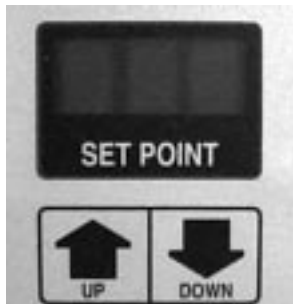


11. DELIVERY PRESSURE GAUGE: Displays the amount of pressure build up from the delivery system.



9. SET POINT UP: When pressed increases the set point value of the heater unit.

12. RETURN PRESSURE GAUGE: Displays the amount of pressure build up from the return system.






10. SET POINT DOWN: When pressed decreases the set point value of the heater unit. See image above.

13. RESERVOIR SITE GLASS: Indicates the volume of heat transfer medium in the heater unit.



INFORMATION

When using  or ,  must be pressed in conjunction.

14. RESERVOIR FILL PORT: This is where the operator would fill the reservoir with water if the reservoir site glass is at less than the half mark.



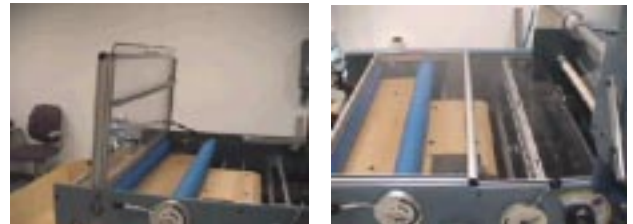
2. SAFETY SHIELD - HEAT ROLLER: This shield covers the main heat transfer roller. When the safety shield is raised, the laminator will only operate when the **E-STOP RESET** and the **FORWARD** or **REVERSE** buttons are pressed simultaneously.



3. SAFETY SHIELD - PULL ROLLERS: This shield covers the knife section as well as the pull rollers. When the safety shield is raised, the laminator will only operate when the **E-STOP RESET** and the **FORWARD** or **REVERSE** buttons are pressed simultaneously.

4.4 Safety features

1. EMERGENCY STOPS: Three exist around the Voyager laminator. Two are located on the control side of the machine and the third is located on the drive side on top of the electrical box.



4. SHIELD INTERLOCKS: Keys on the safety shields must be inserted into the interlocks for the laminator to operate in auto run mode.



5. TABLE LIMIT SWITCHES: Limits the travel of the sheet table from lowering or raising.



6. UPPER UNWIND ARM LATCH: Designed to secure the upper part of the unwind shaft arm in the raised position while loading a roll of film.



7. POWER ON/ OFF LOCK OUT: Push up on the black tab located on the handle which will allow a pad lock to secure the handle in the off position.



5.0 Application



WARNING

Do not wear ties, loose fit clothing or dangling jewelry while operating or servicing the laminator. These items can get caught in the nip and choke you or you can be crushed or burned.



WARNING

The laminator will only operate if all E-STOPS are unlatched, safety shields are in the fully closed position and the E-STOP RESET is not flashing.

Before you begin laminating, check all safety devices and controls for proper operation.

Read the Over view to obtain a better understanding of the Voyager before proceeding.

5.1 Loading the sheets

The first thing to do is switch on electrical power at the Main Power Switch. Turn on the compressed air supply and check the supplied pressure at the Air Pressure Regulator. You need a minimum of 100 psi (700 kp).

To load the sheets, take the following steps:

- a. Lower the table.



- b. Adjust the table sheet guides apart enough to accommodate the sheet size to be loaded.



c. Slide the feeding head unit to safe position.



f. Load the sheets onto the sheet table.



d. Fold the top sheet in half and place on sheet table.



g. While raising the table, adjust the feed head to rear of the pile.



e. Adjust the left and right table sheet guides so the crease of the folded sheet aligns with the center table sheet guide.



INFORMATION

The electric eye will stop the table at the right height when pressing table up

5.2 Feeding head unit

At this point you should have loaded sheets onto the table. Making adjustments to the feeding head unit are quick and easy if the steps are followed precisely.

To adjust the feed head, take the following steps:

a. Slide the feeding head unit forward toward the sheet stack.



b. Stop when the sheet stack tabs make slight contact with the back of the sheets.



c. Press laminator start.



INFORMATION

Do not turn the VACUUM PUMP on.
You only want the feeding head unit to move, not feed sheets.

d. Set laminator speed to 15.



e. Use the feeding height adjust to set the feeding head unit height.



f. Set the height of the feeding head unit so the pile height is about 1/8 inch below the feeder gate.



h. Adjust the two sheet brushes for slight pressure on the sheet stack.

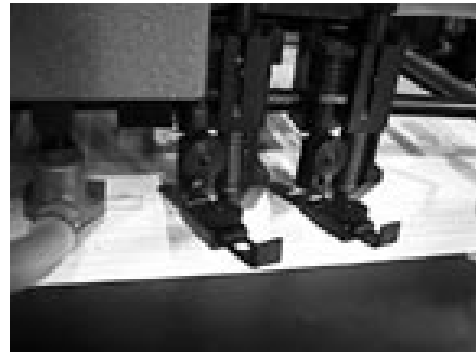


CAUTION

Do not allow the suction cups to jam down into the sheet stack!

i. Adjust the four sheet clips for slight pressure on the sheet stack.

g. Press laminator stop.



5.3 Loading the film



CAUTION

Ensure the roll of laminate is loaded properly on the unwind shaft. Exposed adhesive should be facing away from the heated roller.

When the film roll is properly positioned on the laminator, the film extends beyond the cut lines. Both edges of the film should lie on the un-printed margins of the sheet. Film will never extend beyond the edge of the sheet because any film exposed to either laminating roller will leave melted adhesive stuck on the roller.

The rollers must be kept free of adhesive at all times during the laminating process!

GBC Film Group recommends that sheets be printed with more than 1/4 inch (6 mm) of un-printed margin at the edges to avoid several possible problems.



WARNING

Always use safe and proper lifting practices when lifting heavy objects. You can become seriously injured or crushed.

Slight shifts of film position can happen during a lamination run. These shifts can cause problems, if adequate un-printed margins were not allowed for at the edges of the sheet. If the film has been started very near the edge of the sheet to cover the cut lines, it may shift enough to cause adhesive to stick to the rollers. On the right side, applying film too close to the edge of the sheet can interfere with proper operation of a separator. Also, if the right edge of the film is sticking to ink instead of paper, operation of a snapping roller may not be satisfactory.

The film roll (or the portion of a slit roll that will be used) should be mounted onto the film shaft. Position the product being laminated to obtain the desired margin at the edge of the sheets.

To position the film roll, take the following steps:



CAUTION

Before threading begins, ensure the heat transfer roller is not too hot for the film being used.

- a. Start the laminator, feed a sheet forward to the nip point.

b. Lift the upper unwind arm and secure with the latch.



f. Place the unwind arm back into its saddle and lower the upper unwind arm.



c. Swing the unwind arm out enough for you and another person to load the roll of film. Refer to image above.

d. Remove the one core end and the core gripper.

f. To correctly position the left edge of the film, measure the distance from the left-hand inner face of the laminator to the edge of the sheet.



WARNING

Always use safe and proper lifting practices when lifting heavy objects. You can become seriously injured or crushed.



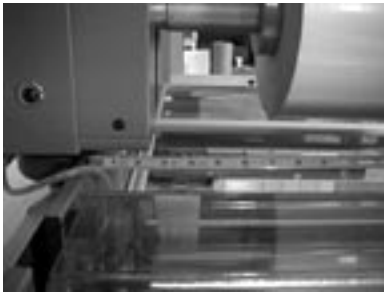
e. Slide the roll of film on the unwind shaft with regards to the laminate used. (poly in or poly out)



CAUTION

If the edge of the film is set in too far from either edge of the sheet, the sheet may be damaged due to insufficient mechanical support from the film.

g. Measure the same distance for the roll of laminate.



5.4 Adjusting the slitter



WARNING

Caution should always be exercised
adjusting the film slitter.
Sharp blade can cut you!



INFORMATION

If not exactly centered, lateral film
adjustment can be made during the
webbing process.

For application where the film is too wide, slitter
is provided to cut the film to the correct width as it
is pulled off the film roll.

To position the slitter, take the following steps:



INFORMATION

If the edge of the film is adhered to ink
a oppose to paper, the snapping quality
may be less than acceptable.

a. Determine the distance from the left-hand inner face
of the laminator to the point on the sheet where you
want the drive side edge of the film to lie.



b. Loosen the set screws in the two collars of the slitter.



You can vary the distance the slitter blade sticks out of the blade holding block. To change the amount of the blade protruding from the block, simply loosen the set screws, slide the blade out or in, and tighten the set screw.

The blade holding block generally should be at a right angle with the slitter frame, however, you can vary the angle at which the blade meets the roll. To change the blade angle, loosen the set screw, pivot the block to desired angle, and tighten the set screws.

You can vary the pressure on the blade by swinging the cylindrical weight toward the slitter support bar (to decrease pressure) or away from the bar (to increase pressure).

c. Slide the Slitter to the location that will let it cut through your marked point.



Try to avoid removing the slitter blade from a cut once you have been slitting. If you must adjust or withdraw the blade and then resume slitting, move the slitter slightly in toward the middle of the sheet. Trying to put the blade back exactly where you were slitting before, usually produces very thin slivers of film (“angel hair”) that cause problems with the laminator and the product.

d. Slide the collars so they are snug against the slitter frame and tighten the set screws.

Adjust the slitter blade and pressure on the blade, so that the blade cuts the film cleanly and the wheel that rides on the roll does not wrinkle or mark the film. If the film roll has imperfections, you may need more pressure and/or more blade extension.



WARNING

To avoid injury when the slitter is not in use, move the blade completely inside the holder and secure in place.






5.5 Heating

The heat is supplied by a 24 kw water heater, which transfers heat to its very smooth outer surface for optimum heat transfer to the film. The heat has a self-contained controller which maintains a very precise temperature. With 24,000 watts of heating power, the system heats very rapidly and remains at +/- 5 °F (+/- 2 °C) of set temperature at full speed with the full range of paper stocks and sizes. The closed-loop water heat system provides both large amounts of available heat at the nip, yet prevents large temperature swings up or down from the set.

The temperature control unit is easy to use, and performs a self-diagnostic during start-up.



INFORMATION

When using		or		,
	must be pressed in conjunction.			

There are a few rules of thumb that you may use as a starting point in selecting the roller temperature.

a. For polypropylene films, the temperature will be in the range of 200 to 220 °F (90 to 104 °C).

b. For polyester films, the temperature will be in the range of 240 to 260 °F (115 to 127 °C).

c. For GBC LAY-FLAT Films, the starting point temperature will be between 240 to 280 °F (115 to 138 °C).

Thicker paper, darker colors and higher speed of operation result in a need for higher temperatures.

At the upper end of their usable temperature ranges, films tend to get soft and “neck” (get narrower because of stretching). in extreme cases become wrinkly. Polypropylene is especially likely to suffer these distortions.

When shutting the system down for the day, bring temperature of closed-loop system down to at least 180 °F before removing power to the unit.

Cooling is accomplished by domestic water and a heat exchanger, which allows instant change over of films that require lower temperatures. Cooling for shutdown is only a matter of minutes.



WARNING

Touching the heat roller during operation or soon after shutdown can result in severe burns !

5.6 Threading

Before you thread the film around the heat roller, confirm that the roller is not too hot for your film and the nip pressure and film tension are at reasonable settings for beginning your lamination.

GBC Films Group recommends that you use the following procedure to thread the film through the laminator. Threading may be done in other ways, but this method keeps the film from wrapping around a pull roller, and it is especially appropriate if one person alone must start the operation.

To thread the laminator, take the following steps:

- a. Switch on power at the Main Power Switch.



- b. Set the temperature for the heat roller.



WARNING

Caution should always be exercised when using the laminator with the safety shields raised. You can be seriously HURT or INJURED!

- c. When the heat roller has become hot enough to laminate the film, raise the heat roller safety shield.



CAUTION

CAUTION! Heat roller is HOT !

d. Guide the film under the bow roller and allow the film to hang about half way over the heat roller.



i. Engage the unwind shaft clutch.



j. Set the unwind brake pressure to 5 p.s.i. (Refer to image above) just enough to hold the film in place.

e. Adhere one sheet to the activated film on the heat roller.



k. Turn VACUUM PUMP to “ON”



f. Guide the free end of the sheet into the main nip rollers.



l. Press LAMINATOR START.



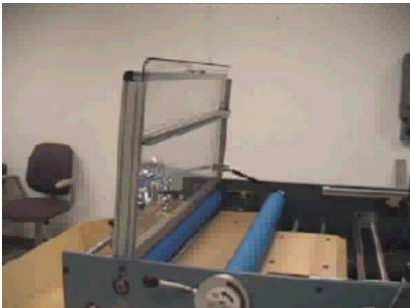
m. Press LAMINATOR STOP when the sheet reaches the transport wheel.



p. Press and hold the E-STOP RESET while pressing NIP then press JOG FORWARD until about 4 feet of web has passed through the main roller nip.



n. Raise the pull roller safety shield



q. Guide the web through the decurling bar.



o. Close the main roller safety shield.

r. Guide the web through the pull rollers.



INFORMATION

The E-STOP RESET must be pressed and held in step " p ".

s. Guide the web through the snapping rollers.



w. Press LAMINATOR START.



t. Pull the web taunt and lower the pull roller.



x. Turn KNIFE & SNAP to “ KNIFE ” position.



y. Adjust the knife cutting position so that the cut is at the edge of the top sheet overlap.

u. Turn the knife adjust wheel so that approximately 1/2 in. of the blade is over the web.



z. Turn KNIFE & SNAP to “ KNIFE & SNAP ” position.



v. Close the pull roller safety shield.

5.7 Over view

An over view is provided to explain how certain adjustments are determined and to give you, the operator, a more insightful view of an adjustment.

Nip pressure

Many factors affect the choice of the nip pressure. Factors you should consider may include: kinds of material in film and paper stock, thickness of adhesive, paper grain length and grain direction, as well as thickness and size of sheet. Laminating thick sheets may call for high pressure to minimize “tenting” at the end of the sheet. Paper will not tolerate as much nip pressure after it has been exposed to high humidity.

If you are using material like foam board or corrugated board, that must be protected from crushing, you can apply just enough air pressure to overcome the resistance of the springs and bring the chrome roller into contact with the sheets.

Film tension

Several factors may affect the choice of film tension. These factors include the speed of operation, size of the film roll, and use of the slitter.

There are various ways of adjusting the film tension.

1. First adjust the bow to smooth the film out across the bow roller as much as possible, prior to applying the brake tension.
2. Apply film tension by turning the air pressure adjusting knob on the control panel. Wrinkles in the film will give a “waterfall” -like appearance to the film near the point where it meets the chrome roller.
3. By slowly turning the adjusting knob, adjust tension so the “waterfall” extends no more than halfway around the chrome roller.

Breaker bar

Because the action of the brake at the Film Supply Shaft stretches the film before it is applied, the tension in the film tends to bow the laminated product upward. To counteract the bowing tendency, the laminator “breaks” the paper. That is, while the laminated sheets are still hot, they are pulled over the edge of a breaker bar to stretch the film more and impart a downward curl to the product. Thick sheets may not require breaking.

Pull rollers

The Pull Rollers, located after the knicking section of the laminator, run slightly faster than the laminating rollers, to keep the web tight as it goes over the breaker bar. During any laminating operation, the pull rollers are applied by rotating the lever attached to the lower pull roller.

Snap rollers

The action of the Snap Rollers is controlled by two flow control valves at the rear of the machine. By limiting the amount of airflow, the speed of the roller closing can be controlled. Limit the amount of air flow for the roller to close, and snap the sheets, with the operator side closing slightly ahead of the drive side.

If the sheet wrinkles going into the nip, decrease the nip pressure.

When you must adjust the nip pressure, remember that this adjustment can change the amount of under lap.

Dog-earing at the breaker bar indicates that the amount of under lap needs to be reduced.

Skew wheel assemblies

This assembly consist of 2 Exit rollers on the operator's side. Pull the web out straight and one angle roller assembly on drive side. Skew the web to the right, causing the side to bow upward. This bow is controlled by the amount of angle and pressure (which are adjustable) that is applied by the skew wheel.

Check often during the lamination operation to see whether film tension is correct. Too much tension can cause curl or necking. As the film rolls get smaller, the tension needs adjustments to keep getting the same results. Changing speed of operation may require a change in tension.

If the tension was set without slitting, applying the slitter will probably result in the need to adjust the tension.

The amount of web bow should be just high enough to allow sheet separation by snap rollers. This bow allows a flatter left to right closing of the snap roller - giving a cleaner separated edge to the sheet.

Heat from the laminated web warms the breaker bar assembly. After the assembly has warmed up, you may need to adjust the breaker bar to obtain the best break.

Adjustments during a run

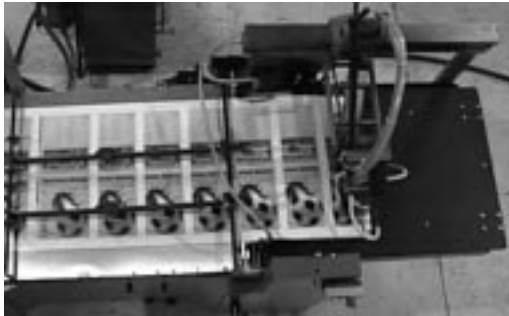
When you are increasing both roller temperature and nip pressure from slow starting, alternately increase one and then the other to keep from setting either temperature or pressure higher than necessary.

The tendency of the web to curl is affected by laminating temperature and film tension, therefore adjustments in those machine settings may result in a need to adjust the breaker bar. Another factor that affects curling, is moisture in the sheet.

Top web views

Top web views are provided so that you may receive a visual image of the completed web outline. The web views are separated into three views; Feeder, Laminator, and Exit.

Feeder



Laminator



Exit



5.8 Shutting down

At the end of the run, take the following steps:

- a. Press LAMINATOR STOP.
- b. Raise the pull roller.
- c. Separate the main rollers.
- d. Cool heater to 180 °F.
- e. Turn MAIN POWER to “OFF”.
- f. Turn off the compressed air at the Air Pressure Regulator.

Taking air pressure off the laminating rollers when they are not in use, prevents the development of a flat spot on the counter-pressure roller. With no pressure in the pneumatic cylinders, gravity holds the rollers apart.

6.0 Maintenance

This section provides instructions for proper cleaning, inspection and lubrication of the equipment.



WARNING

To avoid injury to yourself or damage to the equipment, please read and understand the instructions in this manual before you attempt to install, operate or service the laminator!

6.1 Daily Cleaning

- The Laminating Rollers must be kept free of adhesive throughout the laminating process.
- Clean the Chrome Roller with a soft rag and mineral spirits, preferably while the roller is still warm.
- A Chrome Roller that has recently been in use may still be hot enough to burn you.

- Clean the Counter-Pressure Roller with a soft rag and mineral spirits. If this cleaning leaves adhesive on the roller, use a plastic scouring pad, like Scotch-Brite, to remove the adhesive.
- To prevent damage to roller surfaces, never use metal tools or abrasive cleaners to clean either of the Laminating Rollers.

6.2 Periodical Maintenance

- Lightly grease gears, chain, and idler sprockets every 160 hours.
- Oil all bushings every 160 hours.
- To prevent rust, a light film of WD40 should be applied to all bare metal parts as necessary.
- Lubricate all rollers at the grease fittings on the bearings every 480 hours.
- In some cases, guards may have to be removed. Be sure to replace them when maintenance has been completed.

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7.0 TROUBLESHOOTING

An outline of the diagnosis and correction of problems that may occur during laminator operation. This section also suggests ways to prevent problems and increase efficiency.

To avoid injury to yourself or damage to equipment, please read and understand the instructions in this manual before you attempt to install, operate, or service the laminator!



WARNING

To avoid injury to yourself or damage to the equipment, please read and understand the instructions in this manual before you attempt to install, operate or service the laminator!

Refer to **Chart 7.1 Troubleshooting** starting on page 1-44.



WARNING

Any procedure requiring the removal of a cabinet cover or guard should be performed by a qualified technician only.

The word qualified is defined as;

Qualified ;

- Any engineer that has experience with electrical and mechanical design of lamination equipment. The engineers should be fully aware of all aspects of safety with regards to lamination equipment.


- Any commissioning or service engineer must be of competent nature, trained and qualified to GBC Films Group standards to fulfill that job. This person will have completed and passed the full service training course from GBC Films Group.



- Any GBC Technician, GBC Specialist, and / or GBC Films Group Technician that has been through the GBC Pro-Tech service training course.

An important feature of the Titan 165/ 110 laminator are the safety latches and the interlocks. The front safety shield (**Figure 1.2.1**) and the feed table (**Figure 1.2.2**) are both equipped with safety latches. When a safety latch is not in the locked position, the motor is disabled.


Chart 7.1 Troubleshooting chart


Trouble	Cause / Action
<p>1. Table will not automatically compensate in run mode.</p>	<ul style="list-style-type: none"> a. Top of paper stack is breaking light beam b. Raise the light sending stick.
<p>2. Feed head will not pick up or advance sheets.</p>	<ul style="list-style-type: none"> a. Spring clips, brushes not allowing suction cups to lift, reducing amount of grip b. Blower air on foot needs to be increased by opening valve, air must slightly lift leading edge of sheet. c. Vent hole on air pump is plugged, reducing the vacuum - clean it. d. Check for disconnected or broken air lines e. Missing or cracked suction cups f. Rear pile height is uneven
<p>3. Lap Varying</p>	<ul style="list-style-type: none"> a. Vacuum on feed table needs to be adjusted up or down. b. Upper infeed wheels not properly adjusted to head stop. Adjust them so that the infeed wheels contact lower infeed wheels when the head stops are flush within feed tray. Wheels must spin with little contact. c. Sheet paddles allowing paper to hop over head-stops or causing the sheets to stop at head-stops before the wheels come lower. d. Loose drive chains - check and tighten. e. Worn or broken drive train parts on the feeder or on the laminator - Replace. f. Ensure feed table hold down wheels are on the sheets being stopped by gates.

<p style="text-align: center;">Trouble</p>	<p style="text-align: center;">Cause / Action</p>
<p>4. Film is wrinkling</p>	<p>a. Bow roller is out of adjustment</p> <p>b. Brake tension is too loose</p> <p>c. Chrome roller is dirty</p> <p>d. Heat is to high</p> <p>e. Extremely poor film quality</p>
<p>5. Film Quality & Adhesion</p>	<div style="text-align: center;">  <p>WARNING</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">A heat roller that has recently been in use may still be hot enough to burn you!</p> </div> <p>a. Heat is not properly set for film type</p> <p style="padding-left: 40px;">Too High - film melts, stretches, bubbles</p> <p style="padding-left: 40px;">Too Low - silvering, milky, no adhesion</p> <p>b. Bow Roller is not adjusted correctly, allowing an air pocket between film and roller</p> <p>c. Film has absorbed moisture or is aged</p> <p>d. Dyne level too low for product</p> <p>e. Dirty or damaged heat or nip rollers</p>

Trouble	Cause / Action
<p>6. Product Wrinkling in Nip</p>	<div style="text-align: center;">  <p>CAUTION</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>In some cases, guards may have to be removed. Ensure the guards replaced when problem has been resolved.</p> </div> <ul style="list-style-type: none"> a. Sheets no feeding into nip smoothly b. Sheets have absorbed too much moisture c. Job is running too fast to dry out moisture content of the sheets d. Pressure not set properly for type of sheet e. Sheet weight is below paper specifications for machine f. Heat is set too high. g. Uneven ink coverage from left to right of sheet h. Worn or damaged nip roller i. Worn or damaged heat roller <div style="text-align: center; margin-top: 20px;">  <p>INFORMATION</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Changing grain direction of sheets may remove wrinkles.</p> </div>

Trouble	Cause / Action
<p>7. Product Curling End to End or Side to Side</p>	<ul style="list-style-type: none"> a. Heat setting too high b. Film brake tension too high c. Decurl bar angle is too low d. Draw roller tension is uneven side to side e. Roller bearing worn or broken at heat, draw or snap roller f. Worn draw roller or guide cylinder g. Snap roller closing not adjusted properly
<p>8. Knife Not Working or Working Erratically</p>	<ul style="list-style-type: none"> a. Air pressure is too low; incoming air must not drop below 100 psi. b. Broken or damaged air line c. Dirt, water or oil in pneumatic system d. Maladjusted cushioning valve or flow control unit e. Worn or broken knife mechanism f. Prox. switch or Read switch not properly adjusted or aligned.
<p>9. Knife Function OK but Missing the Lap</p>	<ul style="list-style-type: none"> a. Film too close to edge side of sheet b. Knife adjust not properly set for higher speed - advance the setting c. Guide Pin/Knife spacing not properly set for type of paper d. Knife position of edge of web needs e. Lap setting too high or too low

Trouble	Cause / Action
<p>10. Snap Rollers Activating but Not Separating or Partially Separating</p>	<ul style="list-style-type: none"> a. Snap adjusting valves (flow controls) not properly adjusted. b. Skew wheel applying too much or too little bow to the web c. Exit roller is not applying enough draw pressure to the left side of the web d. Insufficient nip pressure applied at laminating process e. Insufficient nip pressure applied at nip or draw roller f. Knicking knife not cutting film at lap or cutting into paper after knicking lap. This condition can happen is lap varies greatly. g. Full bleed of ink and / or coating of sheets h. Worn snap roller, exit roller or skew wheel i. Poor adhesion j. Poor film quality
<p>11. Electrical Malfunctions Component Not Functioning</p>	<div style="text-align: center;">  <p>ELECTRICAL SHOCK</p> </div> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Electrical troubleshooting should be left to qualified technicians! Electrical shock hazard!</p> </div> <ul style="list-style-type: none"> a. Fuse or circuit breaker blown b. Disconnected wire c. Component opened electrical d. Push reset button

Trouble	Cause / Action
<p>12. Pneumatic Malfunctions</p>	<div style="text-align: center;">  <p>WARNING</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Air pressure up to 100 psi and above may be applied to the machine. Troubleshooting should be left to qualified technicians!</p> </div> <p>Most pneumatic problems are caused by water or oil present in the system. This type of liquid contamination causes impaired air flow, sticking or internal air components, and premature wear of not only pneumatics, but excessive wear of the components that they operate.</p>
<p>Heat Malfunctions</p> <p>13. Power Applied, but Will Not Run</p>	<ul style="list-style-type: none"> a. Low water level in tank b. Thermo-safety switch open or activated c. Motor overload switch needs resetting d. Blown fuses e. Booster pump motor burn out f. Unit needs power phasing
<p>14. Low Water Pressure From Booster Pump</p>	<ul style="list-style-type: none"> a. Venting valve stuck open b. Pressure regulating valve misadjusted c. Pump rotating in wrong direction d. Water leak e. Worn booster pump

Trouble	Cause / Action
<p>16. Booster Pump Functions but Circulating Pump does not</p>	<ul style="list-style-type: none"> a. Booster pump not producing enough pressure b. Controller not turned on or a no power condition c. Blown fuse. d. Circulating pump breaker inside has popped
<p>17. Temperature Shows a Certain Number but will not Reach Set Point</p>	<ul style="list-style-type: none"> a. Cooling valve is stuck open b. Heat Element is stuck open c. Controller malfunction d. Temperature Probe malfunction
<p>18. Temperature Takes a Long</p>	<ul style="list-style-type: none"> a. Heating element burn out- will not hold temperature while running b. Venting valve is stuck open- steam coming out of tank vent after reaching set point c. Malfunctioning controller or temp. probe d. Relief valve from heat exchange is leaking water; always come out of drain
<p>19. Temperature Delay Jumping Up & Down in Temperature</p>	<ul style="list-style-type: none"> a. Malfunctioning probe b. Malfunctioning controller c. Closed-loop system needs venting
<p>20. Water Leaks in Closed-Loop System</p>	<ul style="list-style-type: none"> a. Repair all leaks by tightening or replacing seals, gaskets and components as necessary.