

# VIBRA STEAMER

EXCEL 425, 550, & 750

INSTALLATION, OPERATION & SERVICE MANUAL

MODEL: EXCEL xxx

MODEL NUMBER: XL1xxxx-09B

SERIAL NUMBER: XLxxxxx

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XL1R09B

## WARRANTY

Lind Industries, Inc warrants, to the original purchaser only, this equipment to be free from defects in material and workmanship for a period of one (1) year from the date of shipment by Lind Industries, Inc or 2080 hours of operation, whichever comes first.

Purchaser's exclusive remedy for any defect in material or workmanship will, at the option of Lind Industries, inc, be limited to the repair or replacement of equipment or parts proven to be defective under normal use, maintenance and service. All defective equipment or parts must be reported in writing to Lind Industries, inc within the warranty period. No credit will be given unless the defective part is returned to Lind Industries, inc, freight prepaid. All labor costs are the exclusive responsibility of the purchaser.

This warranty excludes the expendable parts of the equipment, such as air seal bags, pads, covers, springs, etc. This warranty also excludes parts or accessories supplied with, or as part of, this equipment which are not manufactured by Lind Industries, Inc.

These parts or accessories carry a warranty from the original manufacturer. In the event of a defect in such parts, Lind Industries, inc will attempt to enforce such warranty on behalf of the purchaser. Under no circumstances will Lind Industries, inc be liable as a result of a breach of any warranty on such parts or accessories.

This warranty is void if this equipment is damaged because of failure to install or operate this equipment in accordance with factory recommended procedures; damage caused by misuse, negligence, accident, abuse, incorrect voltages, improper maintenance or the chemical make up of the water used in the boiler; damage while in transit or if serial number plate has been altered.

This is the only warranty authorized by Lind Industries, inc with respect to this equipment and in lieu of all other warranties, expressed or implied. In no event will Lind Industries, inc be held liable for loss of time, inconvenience, lost profits, loss of use of the equipment, or any consequential damages.

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## GENERAL INFORMATION

### ABOUT THIS MANUAL

This technical manual was written with the understanding that, for the most part, its readers will come from two distinctly separate job classifications: machine operators, and maintenance/repair personnel. Though a comprehensive understanding of the entire contents would benefit both groups, our experience has shown that most readers will concentrate on those sections that they feel are relevant to their specific job responsibilities.

In order to make your search for information much easier, the following graphic identifiers have been used:

In order to emphasize information dealing with MAINTENANCE PROCEDURES, it will be separated from surrounding text by solid line borders.

FACILITATING NOTES ARE ENCLOSED IN THIN-LINE BORDERS. THEY SERVE TWO FUNCTIONS:

1. TO SERVE AS ROAD SIGNS, IDENTIFYING THE NATURE OF THE TOPIC AT HAND AND DIRECTING YOU TO RELATED INFORMATION FOUND ELSEWHERE IN THIS MANUAL.
2. TO PASS ALONG ANY INSIGHTS THAT MAY MAKE THE JOB AT HAND EASIER OR LESS LIKELY TO RESULT IN INJURY TO PERSONNEL.

Appearing at the top of each page is a header that points to the topic(s) covered in the text of that page. When the topic spans more than one page, its continuation is marked by part numbers (PART 1, PART 2, etc.).

## GENERAL INFORMATION (PART 2)

### HOW TO GET THE MOST OUT OF YOUR *VIBRA-STEAMER EXCEL*

Your *VIBRA-STEAMER EXCEL* has been manufactured and tested under strict quality control standards. Under normal use and within the boundaries of recommended maintenance procedures, it should provide you with many years of reliable service.

There are TWO PRIMARY FACTORS that will greatly influence your ability to operate your *VIBRA-STEAMER EXCEL* at peak efficiency. Both of these factors are within the control of the personnel that will be operating and maintaining the machine. They are:

1. The GARMENT HANDLING AND PREPARATION PROCEDURES that determine the condition of the garments when they reach the *VIBRA-STEAMER*. Extensive consideration is given to this topic, beginning on page 8 of this manual.
2. The RECOMMENDED MAINTENANCE PROCEDURES that are detailed throughout this manual.

Our experience in commercial laundry and dry-cleaning environments has illustrated that these two points cannot be over stressed.

Most of the user complaints that we have encountered were remedied through increased attention to one or both of these controlling factors.

## GENERAL INFORMATION (PART 3)

### FUNCTIONAL DESCRIPTION:

Your model *EXCEL VIBRA-STEAMER* is capable of finishing from 80 to 750 garments per hour; depending upon machine model, fabric type and moisture content.

Your machine has been equipped with a number of important safety features WHICH ARE NOT TO BE OVERRIDDEN OR DEFEATED IN ANY WAY.

These safety mechanisms allow your *VIBRA-STEAMER* to indicate that a problem exists. Normal operation will be terminated and cannot be resumed until corrective action is taken. Detailed information concerning interruptions in operation caused by safety systems begins on page 17.

As implied by the generic term "steam tunnel", tunnel finishers (including *VIBRA-STEAMERS*) possess internal cavities through which hangered garments pass by means of automated conveyors. This "tunnel" is functionally divided into parts: the steam chamber and the finishing chamber.

As hangered garments enter the *VIBRA-STEAMER's* steam chamber (at the machine's "entrance end") the hangers trip a microswitch which sends power to the steam solenoid, resulting in the application of live steam to the garments' surfaces as they pass the steam nozzles. As a result, the textile fibers are conditioned and lubricated by the steam.

The garments then pass through the air seal bags and into the finishing chamber where they are contacted by high-velocity heated air. This process relaxes the fabric, allowing it to return to its original state.

Finally, the garments leave the "tunnel" (at the machine's "exit end") in a wrinkle-free condition.

## STANDARD & OPTIONAL FEATURES

### STANDARD AND OPTIONAL FEATURES

Your EXCEL *VIBRA-STEAMER* contains a number of standard features that facilitate high quality garment finishing with a wide variety of fabrics and fabric blends.

You may have chosen to add one or more options to the basic model in order to increase desired production levels, reduce employee involvement in garment handling or exercise additional control over the steaming and conditioning parameters that effect finish quality.

Though some or all of the following options may not be present on your machine, many can be added through field modification. A number of "Field Conversion Kits" are available from Lind Laundry Systems.

#### **Model EXCEL 425 *VIBRA-STEAMER***

##### STANDARD features:

- 208 or 230 volt/ 3 phase/ 60 hz Electrical
- right-hand or left-hand Conveyor Feed Direction
- Variable Speed Conveyor Control
- Conveyor Chain Safety Switch
- 24" Hook Spacing
- Automatic Steam Control
- Dual Steam Gauges
- Digital Controls
- Steam Traps
- Dropped Garment Safety Switch
- Heater Door Safety Switch
- Garment Counter
- Exit End Garment Storage Rail
- All Steam Heat

##### OPTIONAL features:

- Two Steam Nozzle Pressures
- 1/2 hp Blower Motors (required in Canada)
- Steam Pressure Reducing Valve
- Water Separator
- Hood with Exhaust Fan
- Steam Chamber Exhaust Fan
- AUTOFEEDER Pneumatic Garment Feeder
- AUTOLOADER Garment Feeder
- TAKEAWAY CONVEYOR
- Special Hook Spacing
- Special Voltages
- Special Paint Colors
- Air Volume Control



## STANDARD & OPTIONAL FEATURES (PART 2)

### Model EXCEL 550 *VIBRA-STEAMER*

#### STANDARD features:

- 208 or 230 volt/ 3 phase/ 60 Hz Electrical
- right-hand or left-hand Conveyor Feed Direction
- Variable Speed Conveyor Control
- Conveyor Chain Safety Switch
- 24" Hook Spacing
- Heater Door Safety Switch
- Automatic Steam Control
- Dual Steam Gauges
- Digital Controls
- Steam Traps
- Dropped Garment Safety Switch
- Garment Counter
- Exit End Garment Storage Rail
- Steam And 9.5 kW Electric Heat

#### OPTIONAL features:

- Two Steam Nozzle Pressures
- 1/2 hp Blower Motors (required in Canada)
- Steam Pressure Reducing Valve
- Water Separator
- Hood with Exhaust Fan
- Steam Chamber Exhaust Fan
- AUTOFEEDER Pneumatic Garment Feeder
- AUTOLOADER Garment Feeder
- TAKEAWAY CONVEYOR
- Special Hook Spacing
- Special Voltages
- Special Paint Colors
- Air Volume Control

## STANDARD & OPTIONAL FEATURES (PART 3)

### Model EXCEL 750 VIBRA-STEAMER

#### STANDARD features:

- 208 or 230 volt/ 3 phase/ 4 wire/ 60 Hz Electrical
- right-hand or left-hand Conveyor Feed Direction
- Heavy Duty, Variable Speed Conveyor Control
- Conveyor Chain Safety Switch
- 24" Hook Spacing
- Heater Door Safety Switch
- Automatic Steam Control
- Dual Steam Gauges
- Digital Controls
- Steam Traps
- Garment Counter
- Dropped Garment Safety Switch
- Exit End Garment Storage Rail
- Steam And 19 kW Electric Heat

#### OPTIONAL features:

- Two Steam Nozzle Pressures
- 1/2 hp Blower Motors (required in Canada)
- Steam Pressure Reducing Valve
- Water Separator
- Hood with Exhaust Fan
- Steam Chamber Exhaust Fan
- AUTOFEEDER Pneumatic Garment Feeder
- AUTOLOADER Garment Feeder
- TAKEAWAY CONVEYOR
- Special Hook Spacing
- Special Voltages
- Special Paint Colors
- Air Volume Control

## **UNPACKING & LOCATING THE MACHINE**

### **UNPACKING AND LOCATING YOUR NEW *VIBRA-STEAMER***

#### **UNPACKING:**

Before you begin to unpack your *VIBRA-STEAMER*, pay special attention to any visible damage to the exterior of the shipping crate. Rough handling will usually leave evidence, alerting you to the possibility that damage was sustained in transit. If your machine has been damaged, notify the freight company immediately. It is your responsibility to file all damage claims with the carrier.

Your *VIBRA-STEAMER* was pre-tested at our factory, carefully crated, and shipped in good working order. However, some fasteners may have loosened in transit. Check all fittings, set screws, bolts, etc. to insure tightness.

A special steam nozzle clean-out tool is taped to the aluminum panel at the entrance end of the machine. Be sure to remove the tool and put it where it will be readily available.

#### **MACHINE LOCATION:**

#### **DO NOT USE THE GARMENT CONVEYOR AS A HANDLE TO MOVE THE MACHINE.**

If a storage rail, slick rail, or Takaway (screw) conveyor is used to receive finished garments as they emerge from the *VIBRA-STEAMER*, locate it approximately at right-angles (90°) to the adjustable garment knock-off assembly located on the conveyor at the machine's exit end [see photo, page 28].

## **GARMENT PREPARATION & HANDLING**

### **GARMENT PREPARATION AND HANDLING**

#### **GENERAL OVERVIEW:**

As previously stated, the finish quality exhibited by garments exiting the *VIBRA-STEAMER* varies directly with the attention given to conditioning procedures involved with the washing/drying or dry-cleaning process. Specifically, inadequate temperature control during processing (resulting in a condition known as "thermal shock") has the greatest negative impact upon your *VIBRA-STEAMER's* ability to deliver wrinkle-free garments.

#### **WASHING RECOMMENDATIONS**

##### **DETERGENTS & BLEACHES:**

When wet washing, load washers to only 60% of their rated capacities to promote proper washing and cool-down conditions. We do not recommend specific supplies since many full range, non-toxic detergents with various additives can be successfully used. However, we have found that one-shot blend, non-toxic detergent preparations are best as they provide more accurate control in the washroom.

Our experience has shown that it is best to avoid the use of bleach except in heavily stained loads. When chlorine bleach is used in wash loads, precautions must be taken to neutralize chlorine carryover. These bleaches can leave a residue in garments, damaging many man-made fabrics and causing "permanent press" fabrics to lose their wrinkle-resistant characteristics. Inorganic or oxygen-type bleaches appear to be safe.

##### **HEAVILY SOILED COLORED GARMENTS:**

Load the washer to approximately 60% of its dry weight, all-cotton load capacity. Wet the load to suds level with a one-half hot and one-half cold water bath. Add the detergent as recommended by manufacturing company and bring the bath to 160°F. by steam injection. If a second suds bath is needed, its temperature should equal that of the first bath (160° F.).

##### **HEAVILY SOILED WHITE GARMENTS:**

Proceed as instructed for heavily soiled colored garments with the following exceptions:

The recommended temperature for suds bath(s) is increased to 190°F. Bleach may be used in accordance with previous qualifications. If bleaching is performed at lower temperatures, observe cool-down procedures if the temperature drop between baths exceeds 15° F.

## **GARMENT PREPARATION & HANDLING (PART 2)**

### **RINSING (3 METHODS):**

1. Thermal cool-down or flood-overflow rinse with cool-down occurring in the first rinse is accomplished by introducing hot water into the rinse bath at a temperature equal to or greater than that of the hottest bath. After one minute of basket agitation, initiate the cool-down cycle. Cool the load to approximate room temperature at a rate no faster than 15° F. per minute. Drain the rinse water and continue with subsequent cold water rinses.
2. Hot rinse with cool-down in the next-to-last rinse. Observe cool-down procedures as in first rinse of method #1.
3. Step-down cooling for washers not equipped with automatic thermal controls. Operator must visually monitor thermometer on the washer. Drain approximately 1/3 to 1/2 of the free water from the washer. Close the drain and refill with a mixture of hot and cold water sufficient to reduce the load temperature by 10° to 15° F. Repeat this procedure to cool the load to approximate room temperature. The final rinse should contain full cold water.

### **FINAL RINSE AND EXTRACTION:**

The final rinse should contain cold water only. Extract the garments as long as necessary to reduce retained moisture to an economical drying level (usually, about one-half the time required for cotton garments). **PAY SPECIAL ATTENTION TO TEMPERATURE CONTROL DURING THESE CYCLES.** Our experience has shown that wrinkles characterized as "extractor wrinkles" are often "thermal-shock creases" caused by improper cooling of the loads either during washing or before extraction.

## **GARMENT PREPARATION & HANDLING (PART 3)**

### **DRYING PROCEDURES (FOR BOTH WET WASHING AND DRY CLEANING)**

Load dryer to only 40% of its rated capacity in order to promote proper drying and cool-down conditions. Only use a dryer whose temperature can be accurately controlled at levels between 135° and 165° F., as this heat level is sufficient to dry poly-cotton garments. When the garments are dry, turn the dryer heat off and continue to tumble the load until its temperature reaches 100°F. Remove the garments immediately after tumbling stops but be sure that the garments are thoroughly dried. Excessive moisture content in the garments will significantly reduce the *VIBRA-STEAMER's* production speed.

### **DRY CLEANING PROCEDURES**

Many *VIBRA-STEAMER* installations have reported a 25% reduction in garment finishing costs while achieving a 60% to 65% total pass-up on all dry-cleaned items. The remaining 35% to 40% required various degrees of touch-up work to pass inspection. On lady's wear alone, 75% pass-up rates have been achieved with 50% production increases and corresponding personnel reductions. Your *VIBRA-STEAMER's* ability to reduce your finishing work varies directly with your adherence to the following recommendations.

Run the garments through a complete machine cycle, using either a Dry-to-dry or cold transfer unit. If a formula is used in which a quantity of water is added to the dry-cleaning compound, the garments should be dried until all solvent and water are removed. Damp garments will finish more slowly and their finish quality will be inferior to fully-dried garments. Relative to finish quality, **THE MOST IMPORTANT STEP IN THE DRYCLEANING PROCESS INVOLVES CAREFUL TEMPERATURE CONTROL.** Sufficient cool-down time must be allowed at the end of the drying cycle to reduce the garments' temperature to within 15° F. of room temperature.

### **POST *VIBRA-STEAMER* HANDLING SUGGESTIONS:**

1. Process all dry-cleaned garments through your *VIBRA-STEAMER* that will tolerate heat and/or steam.
2. Place the inspection center near your *VIBRA-STEAMER's* exit end.
3. Place a small puff iron and hand iron near the inspection area to touchup the garments requiring additional hand work to pass inspection.

## CONNECTING THE UTILITIES

### UTILITY CONNECTION

DETAILED DIMENSIONAL DRAWINGS ARE PROVIDED ON PAGES 57 & 58 TO ASSIST YOU IN LOCATING THE CONNECTION POINTS FOR INCOMING ELECTRICAL POWER, INCOMING STEAM, AND OUTGOING CONDENSATE RETURN.

#### **INCOMING ELECTRICAL POWER:**

A circuit breaker or electrical disconnect box of sufficient rating is required to handle the electrical load requirements of your *VIBRA-STEAMER* (see the serial number plate near the control box for exact electrical requirements). An external device must be provided because no such internal protection exists on the *VIBRA-STEAMER*'s incoming electrical power circuitry. In most cases, the nature and type of this external protection (i.e. circuit breaker or disconnect box) is dictated by the electrical codes prevailing in your area. Check with local authorities before connecting the electrical power.

#### **INCOMING STEAM:**

*BE SURE THAT THE STEAM SUPPLY LINE IS THOROUGHLY BLOWN OUT BEFORE CONNECTING TO THE MACHINE.* A 1" diameter steam supply line must be run to your *VIBRA-STEAMER EXCEL*. Install a shut-off valve in this line so that the steam supply to the *VIBRA-STEAMER* may be shut off for servicing or maintenance without effecting the operation of surrounding equipment.

#### **OUTGOING CONDENSATE RETURN:**

A 1/2" diameter condensate return line is required. Traps are provided on the *VIBRA-STEAMER*, so no further trapping in this line is needed.

#### **OPTIONAL STEAM VENT:**

A circular, 5" diameter vent hole is provided on the top of the steam chamber. If necessary, an exhaust fan and ducting can be added to remove excess steam from the steam chamber.

## PREOPERATIONAL CHECKLIST

### PREOPERATIONAL CHECK OUT AND ADJUSTMENT

THESE PROCEDURES ARE INTENDED FOR ORIGINAL START-UP OF NEW  
*VIBRA-STEAMER* INSTALLATIONS.

Check the tightness of all working components, bolts, nuts, and screws on a daily basis for one week following original installation. Check electrical connections and tighten them if necessary. After all utilities have been connected, your *VIBRA-STEAMER* is ready for its first start-up. Follow the procedures outlined below:

1. Furnish steam to the *VIBRA-STEAMER* by opening the shut-off valve you installed in the incoming steam supply line.
2. Close the external circuit breaker or disconnect switch (determined by local electrical code), thereby providing electrical power to the machine.
3. Press the green "START" push-button switch located on the machine's control panel. [see photo, page 38]
4. Visually verify that the finishing chamber's 3 phase blower motors are rotating in the direction indicated by the arrow shown on the motors. If the rotation direction is CORRECT, proceed to step 5. If the rotation direction is NOT CORRECT, do this:
  - A. OPEN AND SAFETY TAG the external, electrical power supply disconnect switch and/or circuit breaker.
  - B. Facing the *VIBRA-STEAMER*'s control panel, locate the POWER switch. The POWER switch is a safety lock-out device which prevents access inside the control panel while the power is on. Turn the POWER switch counter-clock-wise, unlock the control panel fasteners and open the control panel. Reverse the positions of the left two wires of the incoming 3-phase power supply line where they attach to the disconnect.
  - C. Close the control panel, lock the control panel fasteners, turn the POWER switch clock wise and close the disconnect switch and/or circuit breaker that you opened in step A.
  - E. Repeat steps 3 and 4 to visually verify that the blower motor is rotating in the direction indicated by the rotation arrow.



## PREOPERATIONAL CHECKLIST (PART 2)

5. Turn the conveyor speed control adjustment knob [see photo, ages 26] to approximately 1/3 maximum speed.
6. Allow the *VIBRA-STEAMER* to preheat for approximately 10 minutes but remain alert for unusual occurrences during this initial start-up procedure.
7. Press the blue "STEAM" push-button switch located on the control panel [see photo, page 26]. The steam light will light to signify that the machine is in steaming mode.
8. Locate the steam actuator switch on the conveyor at the entrance end of the machine [see photo, page 30]. Push the actuator switch, duplicating the sequence of events that occurs each time a hanger contacts the switch. Steam will be emitted from the steam nozzles inside the steam chamber. Adjust the steam time delay relay [see photo page 28] to proper length of steaming time.
9. Hanger a few test garments and hang them on conveyor hooks (be sure that the hanger's open neck travels forward - toward the *VIBRA-STEAMER*'s entrance end). Observe the finish quality obtained and, if necessary, change the steam nozzle pressure(s) by adjusting the steam knob located on the front of the tunnel.
10. Check the read out on the digital thermostat for desired operating temperature.
11. The adjustable garment knock-off assembly [see photo, page 28] can be located at virtually any desired point on the conveyor. This allows any involved screw conveyor or slick rail system (provided by others) to be located in the most convenient position. The trailing tangs of the knock-off are made of a malleable steel that allows adjustment. Additionally, the knock-off can be vertically adjusted (by means of four set screws) to facilitate its use with a wide variety of hanger types.

This completes your *VIBRA-STEAMER*'s pre-operational checklist. The machine is now ready for normal operation.

## OPERATING PROCEDURES

### ***VIBRA-STEAMER EXCEL*** OPERATIONAL CHECKLIST

THESE PROCEDURES ARE INTENDED TO BE USED ANY TIME THE VIBRA-STEAMER IS TO BE RESTARTED FOLLOWING A PERIOD OF TIME IN WHICH THE MACHINE WAS TURNED OFF, OR WHEN BEING RESTARTED FOLLOWING AN INTERRUPTION IN SERVICE OF SUFFICIENT DURATION THAT THE TEMPERATURE CONTROL REGISTERS BELOW THE DESIRED OPERATING TEMPERATURE.

#### START-UP:

1. Close the external electrical circuit breaker and/or disconnect switch, thereby providing incoming electrical power to the *VIBRA-STEAMER*.
2. Turn the POWER switch on the control panel to "ON".
3. Open the steam shut-off valve in the incoming steam supply line to the machine, thereby providing incoming steam to the *VIBRA-STEAMER*.
4. Press the green START push-button on the control panel [see photo, page 38]. Allow the machine to warm up for approximately 10 minutes or until the temperature control reaches the desired operating temperature.
5. When the desired operating temperature is reached, press the blue STEAM push-button on the control panel [see photo, pages 38]. The steam button will illuminate.

## OPERATION & SHUT-DOWN PROCEDURES

THESE PROCEDURES ARE TO BE FOLLOWED WHENEVER THE *VIBRA-STEAMER* IS USED.

### OPERATION:

1. Before loading garments onto the conveyor, check the finishing chamber thermometer and the steam gauge to insure that settings are within the following limits:

<b>Garment Type</b>	<b>Air Temp. range</b>	<b>Steam Nozzle Pressure</b>
<b>Delicate</b>	235° to 265° F.	Approx. 15 P.S.I.
<b>Others</b>	335° to 365° F.	Approx. 25 P.S.I.

Test run a few garments to insure that the steam, heat and speed settings will deliver the finish quality sought. (Of course, test garments must be representative of the general run in fabric type, moisture content, etc.). At first, we recommend keeping a log book to record the settings used for various garment and fabric types.

2. Load the hangered garments onto the conveyor hooks with the hanger's open neck travelling forward (toward the *VIBRA-STEAMER*'s entrance end).

3. Place permanent press pants on hangers just as they would appear when ready for delivery. We recommend that flocked-type hangers be used.

4. There is no standard success formula for obtaining the best possible garment finish. The *VIBRA-STEAMER* gives you immediate and continuous control over the steam, heat, and speed parameters but each garment arrives with a set of its own variables (moisture content, fabric type, washroom treatment, etc.). Only experimentation will teach you how to achieve the best possible garment finish.

## OPERATING PROCEDURES (PART 3)

### SHUTDOWN:

THESE PROCEDURES ARE TO BE FOLLOWED WHENEVER THE *VIBRA-STEAMER* IS USED.

1. Press the red STOP pushbutton switch located on the control panel.
2. If production is to be suspended for some time, we recommend that the external electrical power circuit breaker and/or disconnect switch be opened to discontinue electrical power supply to the *VIBRA-STEAMER*.
3. Close the shut-off valve in the incoming steam supply line to the *VIBRA-STEAMER*.

## FAULT INDICATORS & SAFETY SWITCHES

### FAULT INDICATORS & SAFETY SWITCHES

A number of electrical safety switches are provided as standard equipment on your *VIBRA-STEAMER*. These switches were installed for the purpose of protecting both personnel and equipment from harm. Ultimately, the successful operation of these safety systems depends upon diligence with which they are maintained.

\*\*\*\*\*

**THE SAFETY SWITCHES ARE NOT  
TO BE OVERRIDDEN OR DEFEATED  
IN ANY WAY.**

\*\*\*\*\*

When machine operation is interrupted or prevented, it is usually due to the fact that one of the safety switches has detected an unacceptable operating condition. Normal *VIBRA-STEAMER* operation may be resumed only when this abnormal condition has been remedied.

#### **HEATER DOOR SAFETY SWITCH:**

This switch is located on the left-hand interior wall of the finishing chamber, behind the electrical/steam heater access door [see photo, page 52]. Its function is to prevent accidental machine operation while servicing is being performed.

**NOTE: THE ELECTRICAL ELEMENTS AND SURROUNDING METALLIC SURFACES BECOME EXTREMELY HOT DURING MACHINE OPERATION. WHEN SERVICING OF THIS AREA IS NECESSARY, BE CERTAIN THAT COMPONENTS ARE SUFFICIENTLY COOL TO PREVENT INJURY TO SERVICING PERSONNEL.**

#### **PRESSURE DIFFERENTIAL SWITCH: (MODELS WITH ELECTRIC HEAT ONLY)**

This switch is located in the plumbing access chamber mounted on the wall. Its function is to insure that sufficient air flow exists within the finishing chamber to continue safe machine operation. Any significant reduction of the air flow over the electrical heater elements could cause them to fail. The pressure differential switch monitors air flow by means of a capillary tube which must be kept clear of obstructions at all times.

## **FAULT INDICATORS & SAFETY SWITCHES (PART 2)**

### **FAULT INDICATORS & SAFETY SWITCHES**

#### **DROPPED GARMENT SAFETY SWITCH:**

Occasionally, a hangered garment will be knocked from a conveyor hook and fall to the floor of the *VIBRA-STEAMER*. When this happens, a steel cable senses the event and trips the dropped garment microswitch; halting machine operation. When the garment has been removed, normal operation may resume.

Operating and maintenance personnel must pay close attention to the condition and tension of the dropped garment cable. Tension must be sufficient to allow tripping of the safety switch by a single fallen garment. Tension adjustment screws are provided in the plumbing access chamber on the floor.

#### **CONVEYOR CHAIN TENSION SAFETY SWITCH:**

The conveyor, chain and drive motor are protected by a mechanically activated, electrical safety switch located on the conveyor corner at the machine's exit end. In the event of chain obstruction caused by a jammed hook or hanger, this switch will halt normal machine operation until the obstruction is cleared.

In some cases, the conveyor chain safety switch may prevent machine operation despite the absence of normal obstructions (jammed hooks, hangers, etc.). This occurrence is usually the result of one or both of these conditions:

1. The conveyor chain has become worn and has stretched beyond the adjustment limits of the safety mechanism.
2. The components of the safety mechanism are misaligned and must be adjusted.

SEE PAGE 49 FOR FURTHER INSTRUCTIONS.

## **FAULT INDICATORS & SAFETY SWITCHES (PART 3)**

### **FAULT INDICATORS & SAFETY SWITCHES**

#### **HIGH TEMP LIMIT:**

This safety is a part of the temperature control. Let the tunnel cool down and check temperature set point. If the temperature set point is correct check the operation of the contactor.

#### **MOTOR STARTER OVERLOADS:**

This safety is a part of the magnetic starter. When the starter cools down after it has been tripped it will automatically reset. If it does not reset check the motor starter heaters. If condition persists check motors.

## PREVENTATIVE MAINTENANCE

### PREVENTATIVE MAINTENANCE

THIS SECTION DESCRIBES NORMAL MAINTENANCE PROCEDURES. IF YOU ARE SEEKING INFORMATION CONCERNING A SPECIFIC MALFUNCTION, SEE THE "TROUBLE-SHOOTING AND REPAIR" SECTION BEGINNING ON PAGE 45.

#### WARNING:

BEFORE BEGINNING ANY MAINTENANCE OR REPAIR PROCEDURE, TERMINATE ALL ELECTRICAL SUPPLY TO THE *VIBRA-STEAMER* AND SAFETY TAG THE EXTERNAL CIRCUIT BREAKER AND/OR DISCONNECT SWITCH.

CLOSE THE SHUT-OFF VALVE IN THE INCOMING STEAM SUPPLY LINE TO THE *VIBRA-STEAMER* BEFORE WORKING ON OR NEAR ANY STEAM LINES OR COMPONENTS. IF THE MACHINE HAS RECENTLY BEEN IN USE, ALLOW SUFFICIENT TIME FOR HEATED COMPONENTS AND LINES TO COOL BEFORE PROCEEDING.

FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY TO PERSONNEL AND/OR DAMAGE TO THE EQUIPMENT.

### REGULARLY SCHEDULED PREVENTATIVE MAINTENANCE

THE WORD "PREVENTATIVE" CANNOT BE OVEREMPHASIZED WITH REGARD TO THE MAINTENANCE PROCEDURES THAT FOLLOW. THERE IS NO SUBSTITUTE FOR A DILIGENT, CONSCIENTIOUSLY APPLIED PREVENTATIVE MAINTENANCE PROGRAM.



## PREVENTATIVE MAINTENANCE (PART 2)

### DAILY PROCEDURES :

1. A lint filter screen is located in the lower portion of the *VIBRA-STEAMER's* finishing chamber [see photo, page 39 ]. This filter limits lint accumulation on the steam heaters and/or electrical elements that heat the chamber's high-velocity air.

CLEAN THE LINT FILTER SCREEN DAILY until a normal rate of accumulation is determined. If lint build-up is light, cleaning may be performed every other day. If accumulation is heavy, clean twice daily.

FIRES, RESULTING FROM EXCESSIVE LINT BUILD-UP, ARE NOT UNCOMMON WHEN THIS CLEANING PROCEDURE IS IGNORED!

2. CHECK THE ELECTRICAL HEATER ELEMENTS AND/OR THE STEAM HEATERS DAILY [see photo, pages 40 & 41] FOR LINT ACCUMULATION. If lint is present, clean them at once.

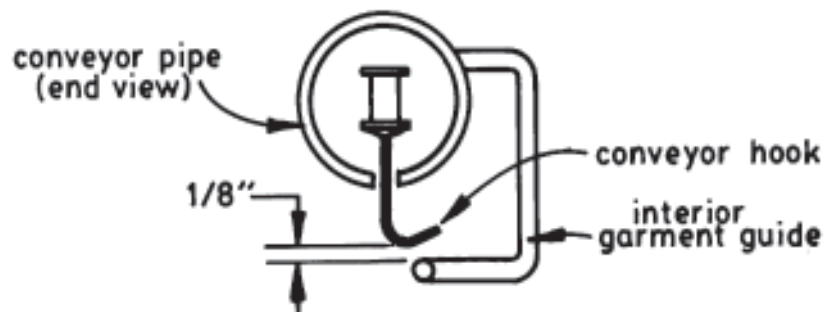
### WEEKLY PROCEDURES

1. Check for lint accumulation around electrical components and clean if necessary.
2. Check the air seal bags [see photos, page 28,29,34 & 35] for signs of undue wear or damage. Remember that the air seal bags' function is to contain the high-velocity, heated air in the finishing chamber. The condition of the bags has a direct bearing on the finish quality and energy efficiency that your Vibra-Steamer will deliver.
3. Check blower wheels for lint and clean if necessary.
4. Check bag inflation blower wheel for lint and clean if necessary.

## PREVENTATIVE MAINTENANCE (PART 4)

### MONTHLY PROCEDURES:

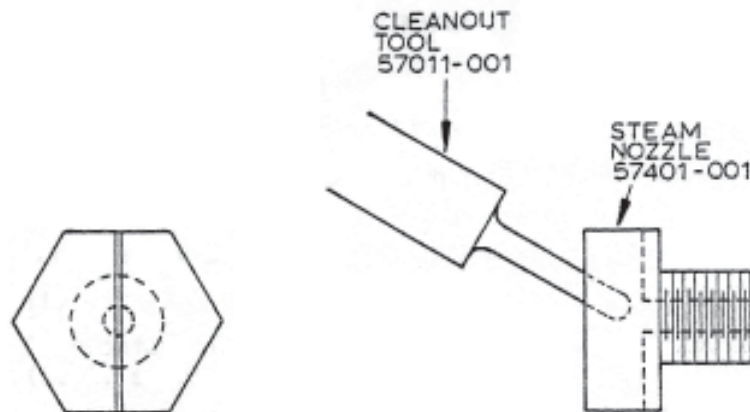
1. CHECK THE ALIGNMENT OF THE CONVEYOR PIPES to insure that conveyor hooks enter and exit the pipe slot without contacting the "V notch" in the pipe's end.
2. INSPECT THE CONVEYOR SPROCKETS. When properly adjusted, the teeth of these sprockets should sit slightly above the center line of the conveyor pipe. Adjust as necessary.
3. CHECK THE FLOW OF STEAM FROM THE NOZZLES by passing a cloth mounted on a 24" wire rod in front of the nozzles while the steam actuator switch is activated. Clean the nozzles as needed by inserting a steam nozzle clean-out tool into the involved nozzle(s).
4. VERIFY THAT THE STEAM ACTUATOR SWITCH AND COUNTER SWITCH ARE PROPERLY ALIGNED [see photo, page 30]. If the alignment is correct, each hanger will contact the bar, actuate the switch and result in immediate steam flow from the nozzles and indicate a count.
5. CHECK FOR LINT ACCUMULATION BENEATH THE AIR SEAL BAG WHEELS. Unzip the air seal bags, loosen the set screws on the lower bag wheels and lift. Clean as necessary.
6. CHECK THE ALIGNMENT OF THE INTERIOR GARMENT GUIDES. Proper adjustment is detailed in the diagram below.



## PREVENTATIVE MAINTENANCE (PART 5)

### SEMI-ANNUAL PROCEDURES:

1. CLEAN AND LUBRICATE THE BAG BLOWER FAN. [see photos on pages 38]
2. Gear Reducer is Pre-filled with food grade (H1) Klubersynth UH1-6-460 synthetic oil & Sealed housing provides maintenance-free lubed for life operation.
3. CHECK ALL ELECTRICAL WIRES AND CABLES FOR SIGNS OF WEAR OR DAMAGE. Repair or replace as required.
4. INSPECT ELECTRICAL CONTACTS ON THE DUCT HEATER CONTACTOR AND THE BLOWER MOTOR STARTER [see photo, page 28] for signs of burning or other damage. Clean or replace them as necessary.
5. CHECK THE COMMUTATOR AND BRUSHES OF THE CONVEYOR DRIVE MOTOR [see photo, page 33] for signs of wear or burning. The commutator's normal color is chocolate brown. Replace the brushes annually or when worn to 1/2 their original length.
6. REMOVE BLOWER HOUSING COVER AND BLOWER MOTOR AND WHEEL ASSEMBLY. Clean inside the wheel housing.
7. CLEAN DUST AND LINT FROM THE TOP OF THE *VIBRA-STEAMER*.



## PREVENTATIVE MAINTENANCE (PART 6)

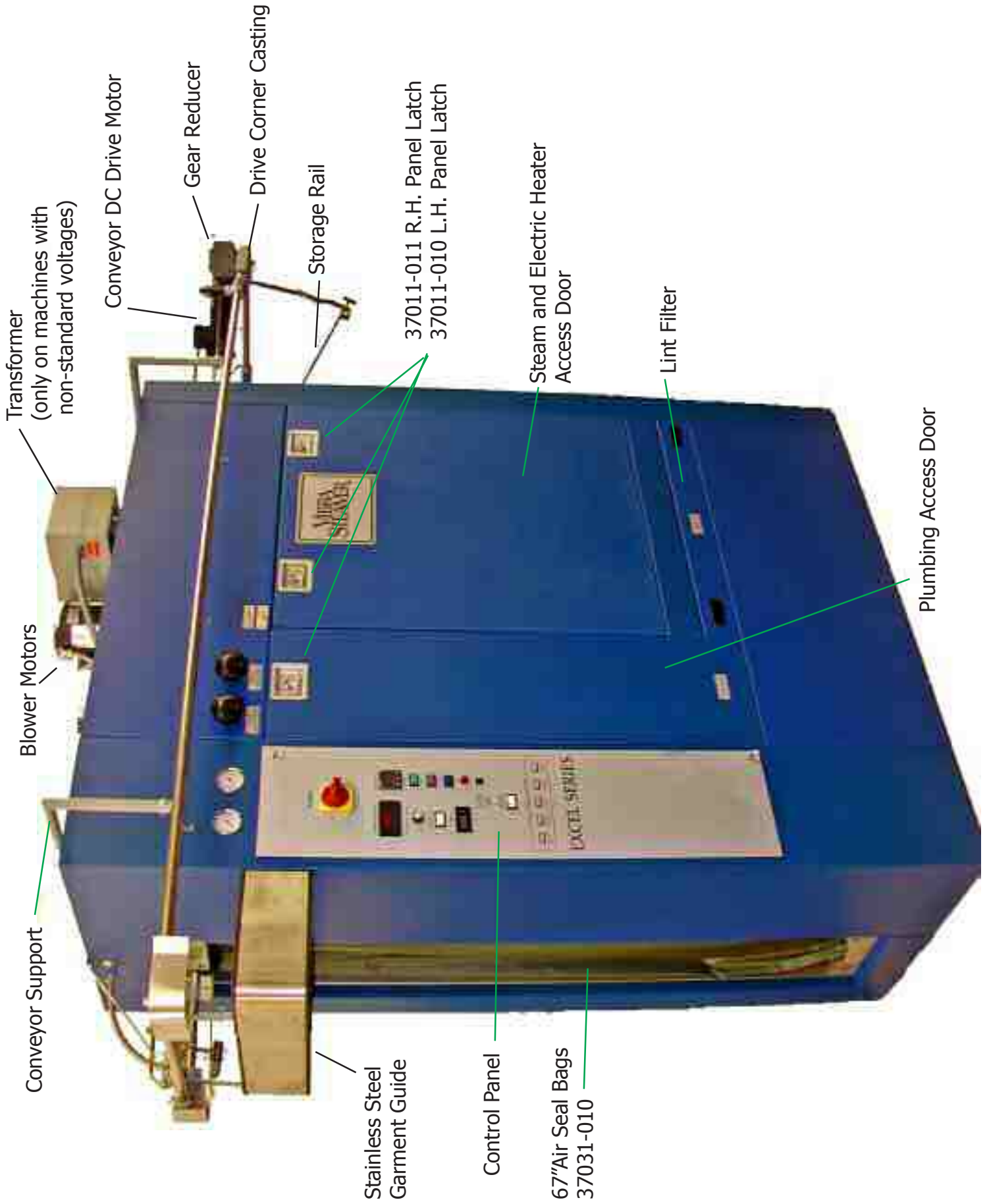
### CHAIN LUBRICATION?

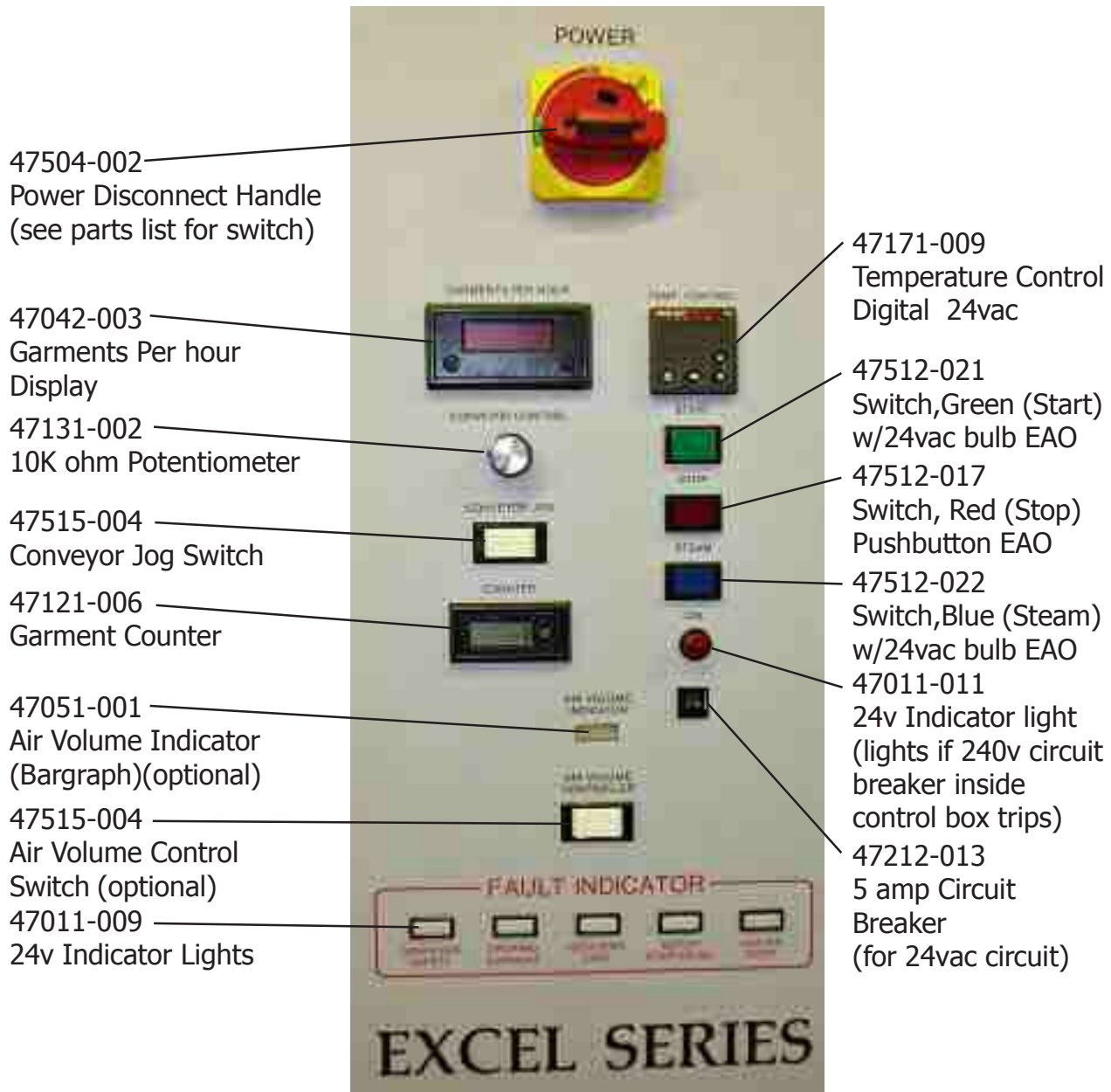
**WE DO NOT RECOMMEND LUBRICATION OF THE CONVEYOR CHAIN.**

Most lubricants tend to increase the accumulation of lint on chain components. Additionally, when the lubricant is heated (a natural consequence of *VIBRA-STEAMER* operation), it may drip onto the garments.

If chain lubrication is desired, use a dry, silicone-type lubricant.

**PARTS IDENTIFYING PHOTOGRAPHS**





CONTROL BOX DOOR  
WITH OPTIONAL AIR VOLUME CONTROL

47211-020  
Circuit Breaker  
6 amp 2 pole

47211-021  
C/B Aux Contact

Circuit Breaker used  
on machine with non-  
Standard voltage (call  
factory with machine  
serial number)



Main Disconnect  
Switch (see parts  
list)

Upper section of control box

Motor Starter  
Contactor and Over-  
load relay (see parts  
list)

47182-010  
Transformer - 24v  
100va

47183-005  
12vdc Power Supply  
(for optional Air Vol-  
ume control )

47142-017  
Time Delay Relay 0-  
60sec 24V



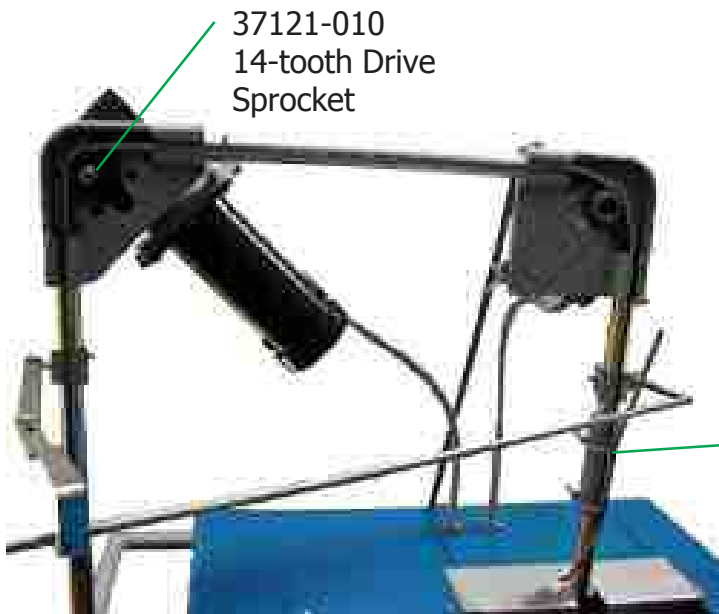
47111-011  
Contactor - 40amp  
3ph, 24vac coil

47142-020  
Relay - 3P2T 11pin  
SQ 24vac Coil

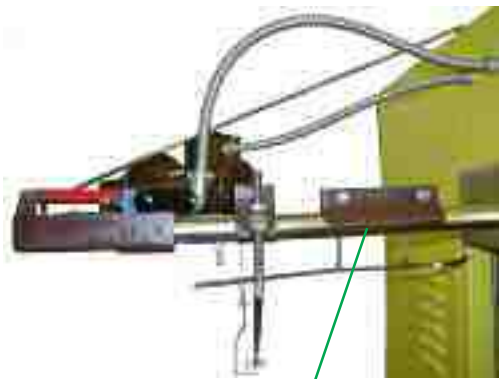
47161-018  
Conveyor DC  
Speed Control

47142-020  
Relay - 3P2T 11pin  
SQ 24vac Coil

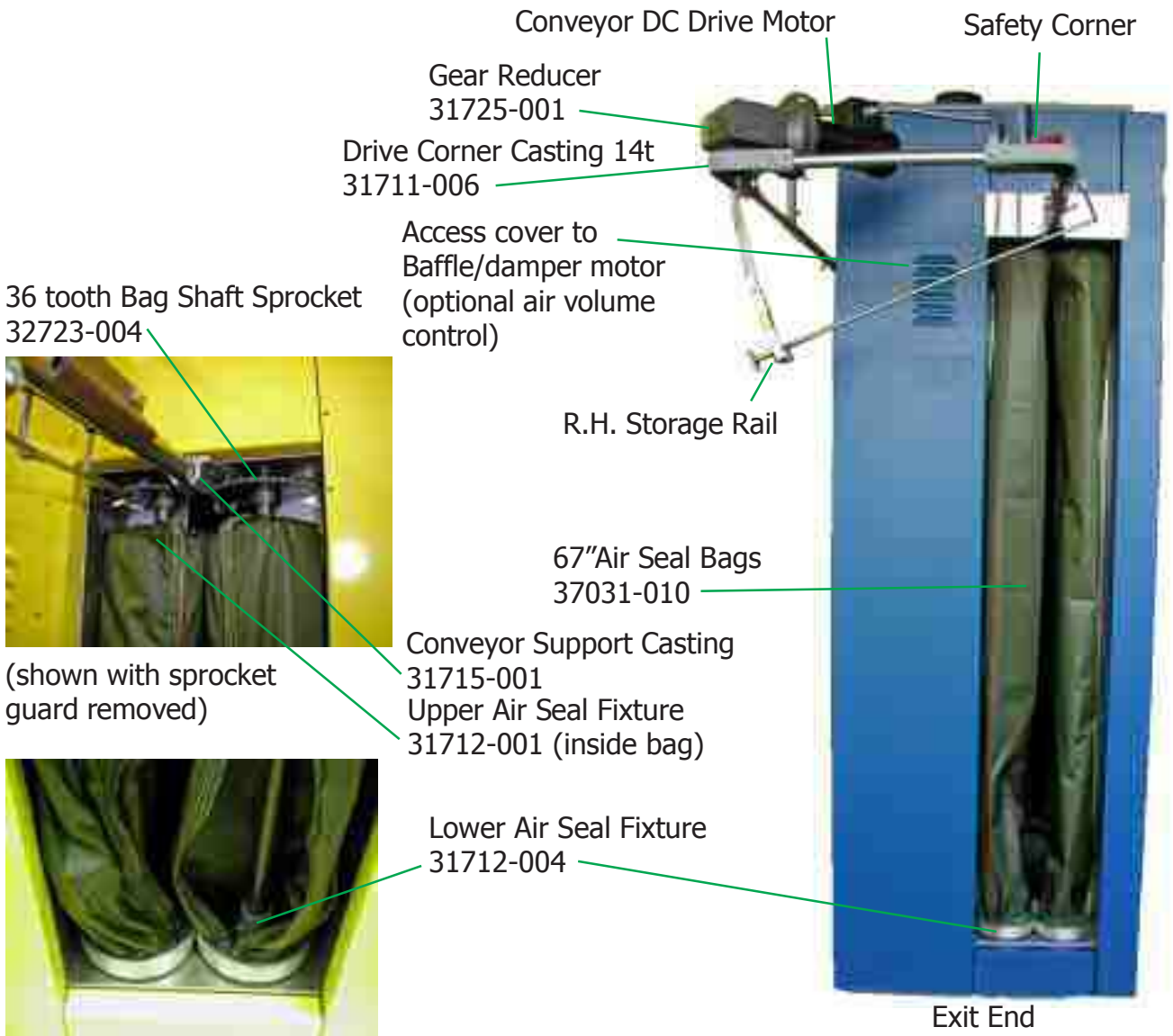
Lower section of control box



37121-010  
14-tooth Drive  
Sprocket



33337-005 R.H.(shown)  
33337-004 L.H.  
Adjustable Knock off  
Guide assembly



Conveyor DC Drive Motor

Safety Corner

Gear Reducer  
31725-001

Drive Corner Casting 14t  
31711-006

Access cover to  
Baffle/damper motor  
(optional air volume  
control)

36 tooth Bag Shaft Sprocket  
32723-004



(shown with sprocket  
guard removed)

R.H. Storage Rail

67" Air Seal Bags  
37031-010

Conveyor Support Casting  
31715-001

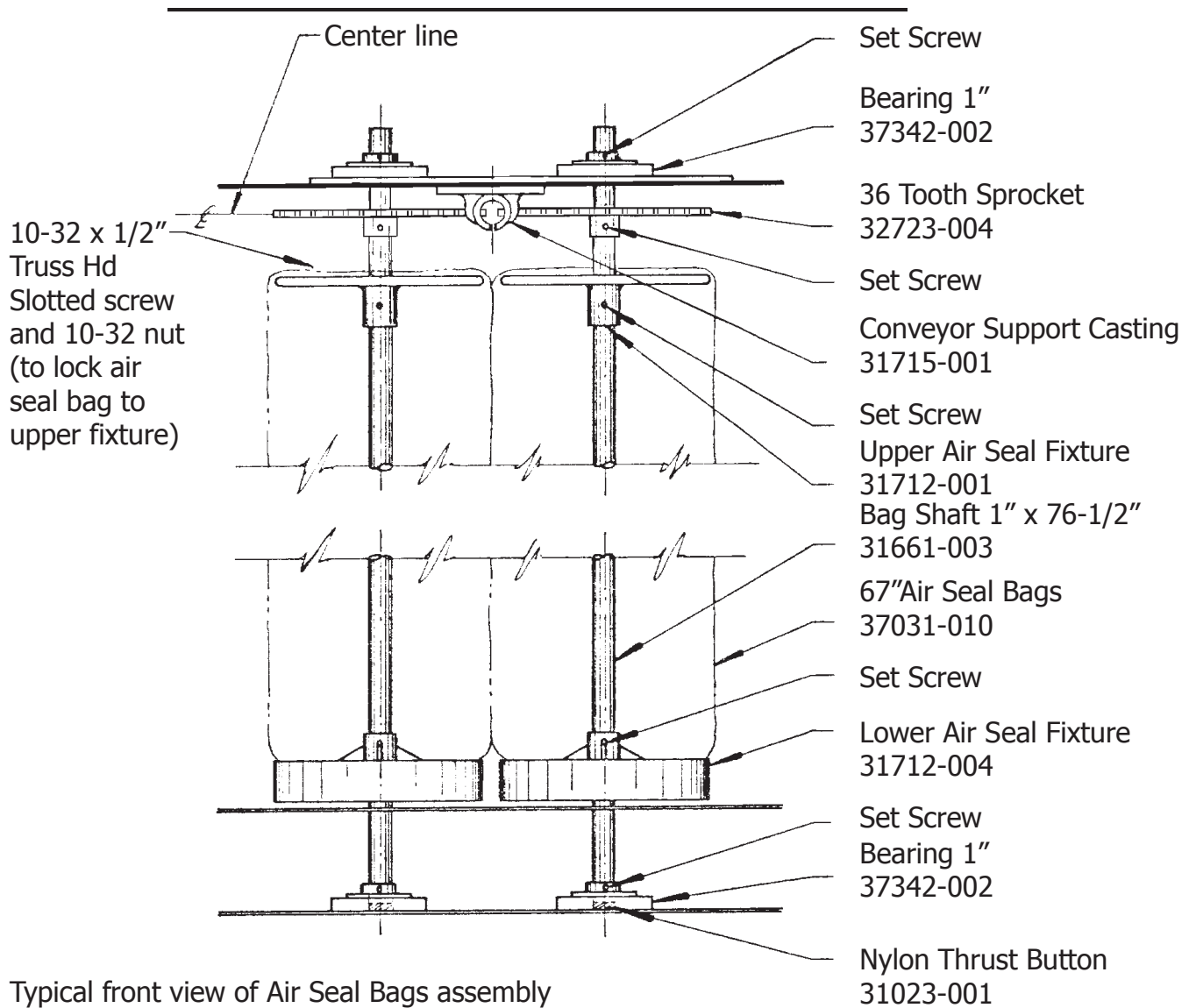
Upper Air Seal Fixture  
31712-001 (inside bag)



Lower Air Seal Fixture  
31712-004

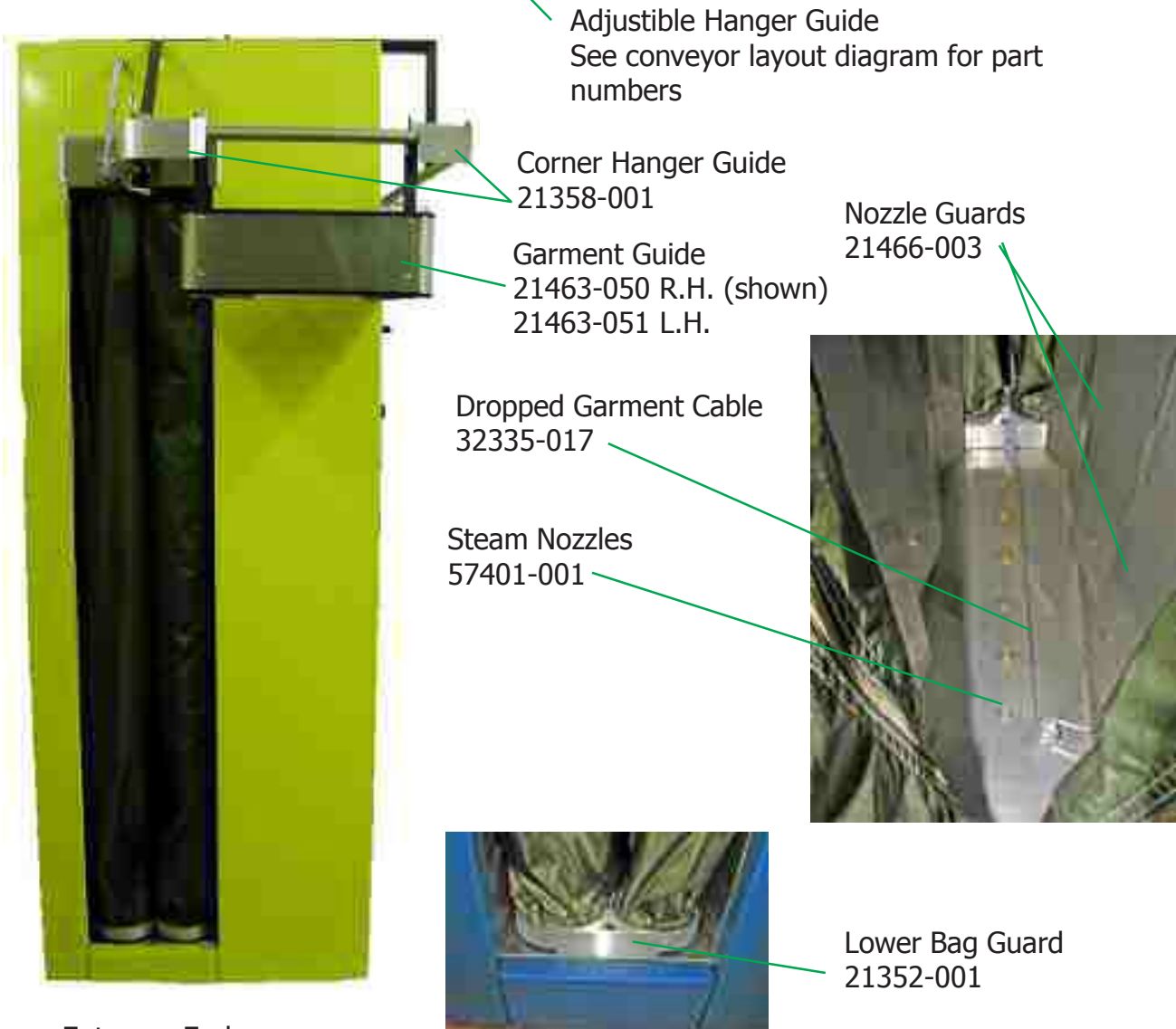
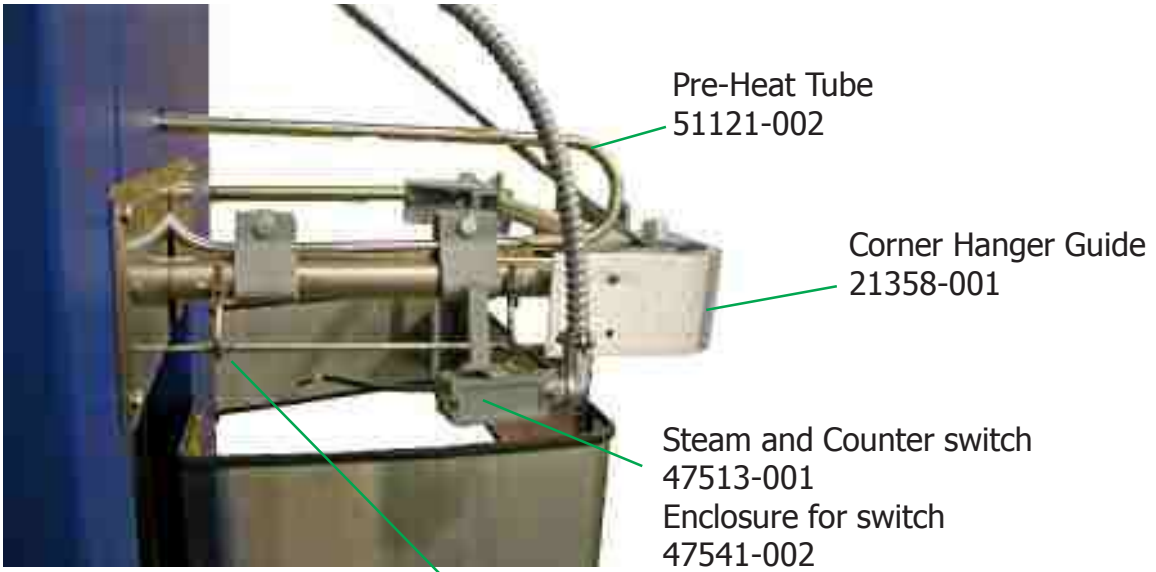
Exit End



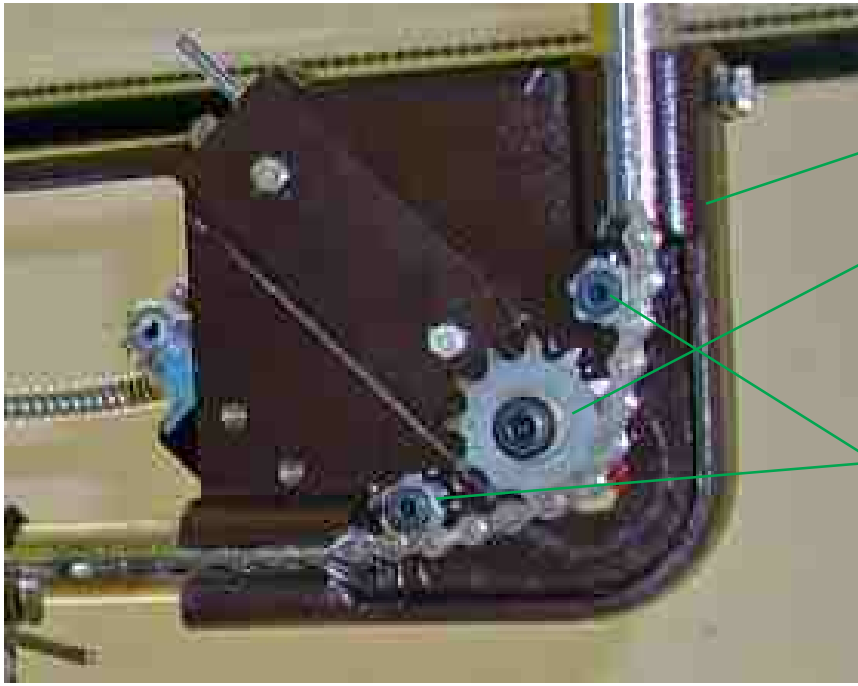


Typical front view of Air Seal Bags assembly

Snap Ring  
37151-002  
Slid into hem of air seal bag  
and snapped into lower fixture.

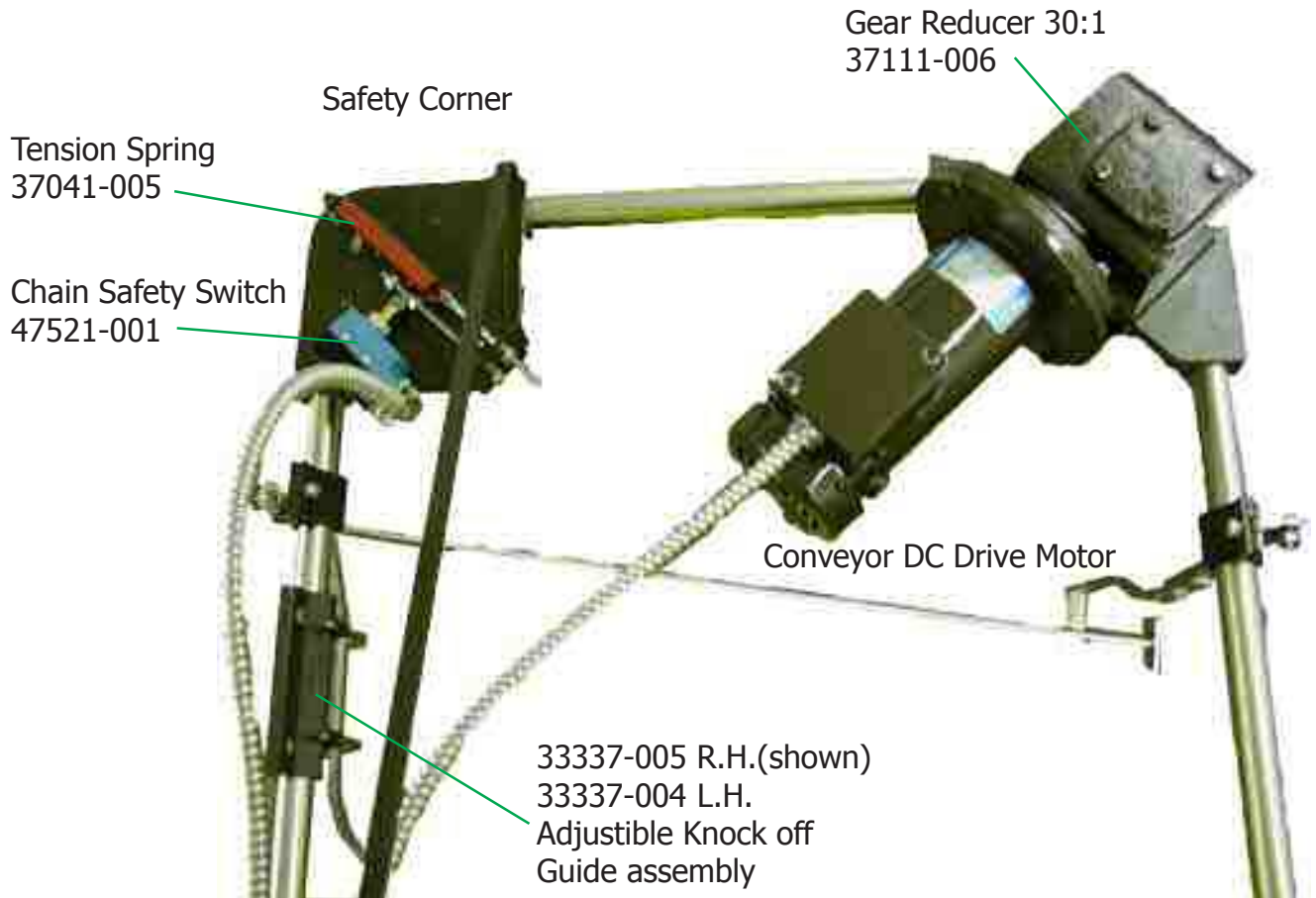


Entrance End

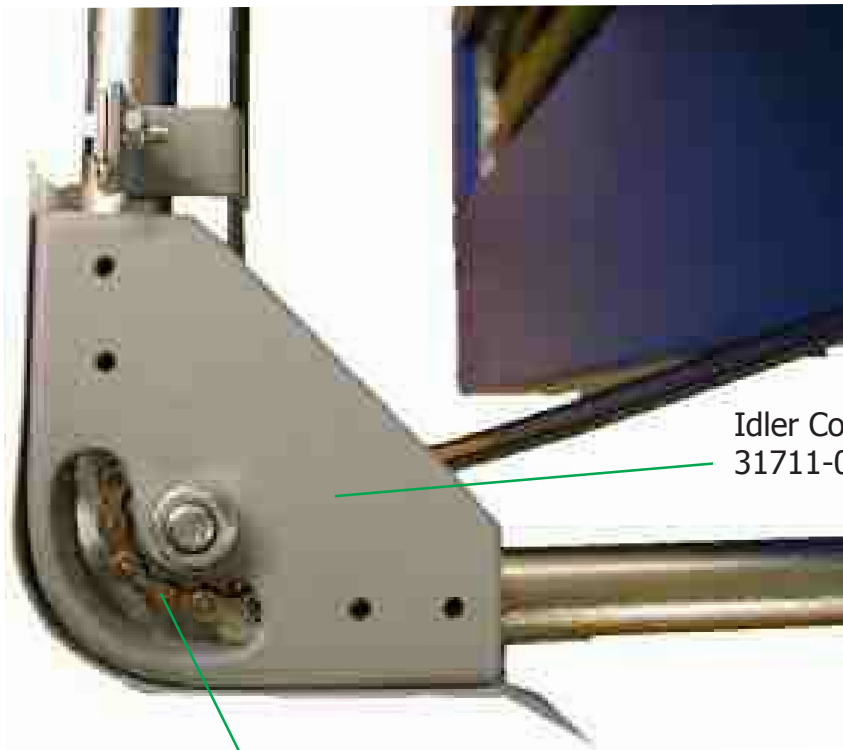


Conveyor Safety Corner assembly  
33351-001

- Safety Corner Casting  
31711-004
- 12 tooth Corner Sprocket  
37121-003
- 12 tooth Corner Sprocket with  
Shoulder Bolt  
32353-012
- 6 tooth Idler Sprocket  
32353-005
- 6 tooth Idler Sprocket with  
Shoulder Bolt  
32353-013
- Shoulder Bolt (for 12 tooth)  
37010-003
- Shoulder Bolt (for 6 tooth)  
37010-002



- Gear Reducer 30:1  
37111-006
- Safety Corner
- Tension Spring  
37041-005
- Chain Safety Switch  
47521-001
- Conveyor DC Drive Motor
- 33337-005 R.H.(shown)  
33337-004 L.H.  
Adjustable Knock off  
Guide assembly



Idler Corner Casting  
31711-001

Chain & Hook access  
(This is where you would  
disconnect a Hook Master  
link)

12 tooth Corner Sprocket  
37121-003  
12 tooth Corner Sprocket with  
Hex Head Cap Screw, Nut & Lock  
Washer  
32353-001

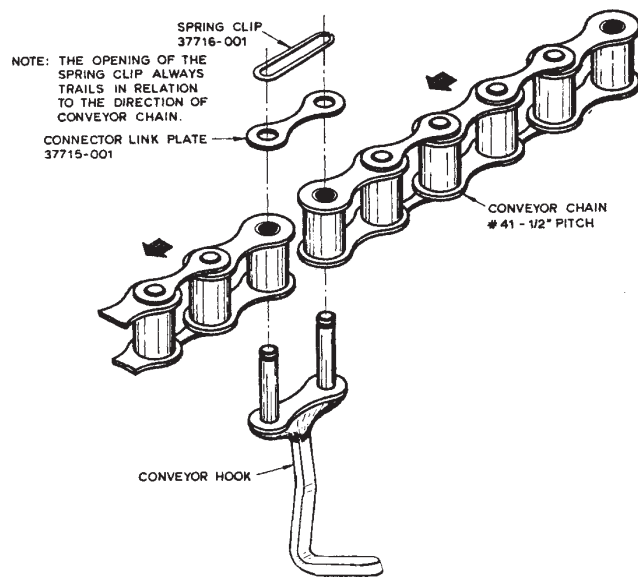


Corner Hanger Guide  
21358-001

Idler Corner Casting  
31711-001

Idler Corner

# Chain HD Hook assembly 32312-002



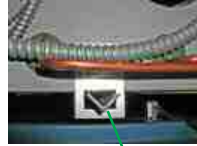


Turn T-Handle Latches to open access cover. The Heater Door Access Cover must be removed before the Plumping access cover can be removed.



Follow direction of arrows to unlatch T-Handles (they turn toward the center to unlatch)  
 It may take several turns.  
 Turn in the opposite direction to latch. Turn until tight.  
 If latch does not catch panel when tightening. Turn in direction to unlatch and try again.

To access Air Seal bags in the center remove rear access panel



Insulation  
retainer  
Hold insula-  
tion over side  
manifolds.  
Lift up to  
remove from  
bottom clip.  
Lower to  
remove from  
top bracket.



Bag access cover

Side Steam Manifold  
52121-005  
(60" 20 nozzles)



Access to bottom manifold

To access the center air seal bag assembly. Lift cover up out of bottom clip. Swing out bottom of cover. Then slide down to remove from top clip. Do opposite to replace cover.

Bottom Steam Manifold  
52122-008  
(18" 6 nozzles)



Access to bottom manifold

57431-003 1" Y Strainer  
 Incoming Steam Connection  
 Incoming Electrical (run flex or conduit through this hole to control box.)  
 Condinsate Return Connection



Steam Chamber Vent  
 37342-002 Bearing 1"  
 31661-003 Shaft - Air Seal 1"x76-1/2"

TOP VIEW ENTRANCE END

47413-006 Blower Motor (208/230/460v 3ph)  
 Transformer (used on machines with voltage other than standard)



TOP VIEW FINISHING CHAMBER





1/2" Steam Solenoid valve 24vac  
57411-013

3/4" Water Separator  
57421-001 (optional)

Pressure Reducing Valve  
57416-001 (optional)

Pressure Differential Switch  
47522-003 (XL550,XL750)

Control Box and Plumbing Access  
(access panels removed)  
(Model XL550 with options shown)

1/2" Steam Traps  
57441-005



3/4" Water Separator  
57421-001 (optional)

Pressure Reducing Valve  
57416-001 (optional)





1/2" Steam Solenoid valve 24vac  
57411-013

Ball Valve for controlling steam heat

1/2" Steam Traps  
57441-005

Air Seal Bag Blower  
37411-019

Plumbing Access (access panel removed)  
(Model XL425 shown)

Dropped garment Cable  
32335-017

Drop garment Switch  
47521-003

Actuator (arm)  
47531-002



blower wheel (impeller) Clean weekly

Adjust plate to control bag inflation





Heater access door (XL550,XL750 shown)



Push button on latch to open

Lint Screen Lever Latch

Lint Screen Door



Lint Screen 22665-001



Electric Heater Rack  
(see parts list)  
(1 on XL550, 2 on XL750)

Steam Heater Coils  
57451-003

Heater access (XL550 with options shown)



1/4 Turn Latch

Sensor Tube for pressure  
differential switch



Electric Heater Rack  
and Heater Elements  
(see parts list)



Impellers  
(see parts list)

Air Baffle Plate (for air volume control option)  
21642-003  
Baffle Shaft 21683-001



Heater Door Safety Switch  
47521-011



Thermocouple Wire  
42112-003



Impellers  
(see parts list)



Heater Access Cover removed  
(XL425 shown)



Steam Heater Coils  
57451-003



1/4 Turn Latch

Inside Heater access door.  
(XL425 shown)



Plumbing access with insulation removed  
showing side manifolds

1/2" Steam Solenoid valve 24vac  
57411-013

1/2" Steam Traps  
57441-005

Side Steam Manifold  
52121-005  
(60" 20 nozzles)

Model XL425 Shown

## TROUBLESHOOTING & REPAIR

### TROUBLESHOOTING AND REPAIR

THE INFORMATION THAT FOLLOWS IS DESIGNED TO ASSIST YOU IN ISOLATING EQUIPMENT MALFUNCTIONS AND UNDERTAKING CORRECTIVE ACTION. FIRST, SCAN THE ITEMS APPEARING IN THE LEFT-HAND COLUMN, MARKED "SYMPTOM". WHEN YOU FIND A DESCRIPTION THAT MATCHES THE PROBLEM AT HAND, START AT THE TOP OF THE "PROBABLE CAUSE" COLUMN AND PERFORM THE "CORRECTIVE ACTION" RECOMMENDED. WORK YOUR WAY DOWNWARD THROUGH THE "PROBABLE CAUSE" - "CORRECTIVE ACTION" SETS UNTIL THE PROBLEM HAS BEEN SOLVED.

ELECTRICAL CONTROL CIRCUIT AND HIGH-VOLTAGE SCHEMATICS ARE PROVIDED AT THE END OF THIS MANUAL. BE CERTAIN THAT THE SCHEMATIC YOU USE IS INTENDED FOR THE VOLTAGE OF YOUR MACHINE.

<b>SYMPTOM</b>	<b>PROBABLE CAUSE</b>	<b>CORRECTIVE ACTION</b>
Steam stays on for incorrect length of time.	Defective steam Solenoid Valve. See photo, page 38	Repair or replace.
Steam nozzles run continually.	Steam actuator switch defective.	Repair or replace.
	Steam solenoid valve sticking in open position.	Repair or replace.
	Time Delay Relay set wrong or it is defective.	Adjust or replace.
No steam to steam nozzles.	Ball valve (s) out of adjustment.	Readjust ball valve(s). Be the steam switch on control panel is "on", steam switch is functioning, an properly adjusted.
	Solenoid valve is not opening due to defective coil.	Check coil, and replace if defective.
	Solenoid valve is not opening due to defective diaphragm.	Replace diaphragm.

## TROUBLESHOOTING & REPAIR (PART 2)

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
No steam is detected at the Vibra-Steamer but the boiler steam pressure is normal.	Shut-off valve in incoming steam supply line to the machine is closed.	Open the shut-off valve.
Vibra-Steamer shuts off while running and will not restart.	Dropped garment safety switch has been tripped by a fallen garment.	Remove the garment from the floor of the machine and restart.
	Conveyor chain tension safety switch has been tripped.	Remove the obstruction to normal chain movement. Adjust the conveyor chain tension safety mechanism. (see page 32) Adjust conveyor chain length.
	Motor Starter Overload is open (won't reset)	The overload is factory set for "automatic reset". If the machine will not restart after 10 minutes, check the motor starter overload and replace if necessary.
	Heater door safety switch is open.	Check the adjustment on the heater door safety switch. If properly adjusted, check the switch for electrical continuity and replace if necessary.
Air seal bag(s) not inflating.	Bag blower fan not running.	Check electrical circuitry to motor. (circuit breaker, power relay, etc.)
	Bag blower impeller dogged with lint.	Clean the impeller.
	Bag torn or unzipped.	Mend, replace or zip the bag.
Vibra-Steamer starts but conveyor does not operate when the "START"(GREEN) push-button switch on the control panel is pushed.	Interruption of electrical power to speed control.	Check the power supply to the speed control, and Jog relay.
	Conveyor motor or speed control are defective.	Replace the motor or speed control.
	Gear reducer is defective.	Repair or replace.

### TROUBLESHOOTING & REPAIR (PART 3)

<b>SYMPTOM</b>	<b>PROBABLE CAUSE</b>	<b>CORRECTIVE ACTION</b>
Conveyor starts, but blower motors do not operate when the "START"(GREEN) push-button switch on control panel is pushed.	Defective bower motor starter contactor.	Replace the contactor.
	Blower motor(s) defective.	Replace motor(s)
	Blower wheels (impellers) clogged with lint.)	Clean the impellers.
Vibra-Steamer operates, but temperature control will not reach desired temperature.	Steam heaters are not operating due to defective steam trap.	Clean or replace the defective steam trap.
	Defective duct heater contactor (machine with electrict boost heat)	Replace the contactor.
	Defective pressure differential switch.(electric heat)	Repair or replace.
	Defective Thermocouple Wire(for temperature control)	Repair or replace.
	Defective temperature control	replace temperature control
	Defective heater element. (electric heat)	replace the element.
	Incomming steam pressure too low.	Maintain 80 to 120 P.S.I. steam pressure.



## REPAIR PROCEDURES AIR SEAL BAG REPLACEMENT

THIS SECTION CONTAINS DETAILED INSTRUCTIONS FOR PERFORMING THE REPAIRS AND/OR ADJUSTMENTS MOST COMMONLY ENCOUNTERED BY *VIBRA-STEAMER* OWNERS.

\*\*\*\*\*

BEFORE UNDERTAKING ANY REPAIR OR MAINTENANCE PROCEDURE, DISCONNECT AND SAFETY TAG THE INCOMING ELECTRICAL POWER SUPPLY TO THE *VIBRA-STEAMER*. IF THE PROCEDURE INVOLVES CONTACT WITH STEAM LINES OR COMPONENTS: CLOSE THE SHUT-OFF VALVE IN THE STEAM SUPPLY LINE TO THE *VIBRA-STEAMER*, BLEED ALL STEAM FROM THE LINES, AND ALLOW STEAM LINES AND COMPONENTS TO COOL BEFORE BEGINNING WORK.

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BEFORE BEGINNING ANY OF THESE PROCEDURES, READ THROUGH THE INSTRUCTIONS AND BE CERTAIN THAT YOU HAVE OBTAINED ALL OF THE REPLACEMENT PARTS NECESSARY TO COMPLETE THE JOB.

## AIR SEAL BAG REMOVAL AND REPLACEMENT

REMOVE THE INTERNAL AIR SEAL BAGS AS FOLLOWS:

1. Remove the access panel located on the left side of the machine [see photo, page 34,35].
2. Remove the stainless air seal bag cover to gain access to the bags.
3. Rotate the bag to expose its zipper and open the zipper to the upper casting.
4. Pull the bag loose from the lower air seal casting (the bag is held to the casting by a bag snap ring). Remove the bag snap ring from the bag's hem.
5. Loosen the upper air seal casting's set screws and slide it down the bag shaft about 5 or 6 inches.
6. Open the zipper completely and remove the bag retainer screw on the top of the upper casting.
7. Remove the bag.

REPEAT STEPS 3 THRU 7 TO REMOVE THE OTHER INTERNAL AIR SEAL BAG, AND BOTH OF THE BAGS AT THE MACHINE'S EXIT END.

## REPAIR PROCEDURES AIR SEAL BAG REPLACEMENT (PART 2)

REPLACE THE INTERNAL AIR SEAL BAGS AS FOLLOWS:

### **Be sure to replace the innermost bag first.**

1. Slip the bag over the upper casting and locate its zipper over the flat side of the casting. Close the zipper 3 to 4 inches.
2. Replace the bag retainer screw that you removed in step 6, above.
3. Insert the bag snap ring into the bag's lower hem. Press the bag and ring into the groove on the inside of the lower air seal casting until they snap into place.
4. Slide the upper air seal casting upward on the bag shaft until the bag is pulled taut. Slide the casting 1/2" downward on the shaft to provide a little slack and tighten the set screws on the upper casting to fix its position on the shaft.
5. Close the zipper fully.
6. Replace the stainless air seal cover that you removed to gain access to the bags.
7. Replace the outer access panel.

REPEAT STEPS 1 THRU 5 TO INSTALL NEW BAGS AT THE *VIBRA-STEAMER'S* EXIT AND ENTRANCE END.

## REPAIR PROCEDURES - SOLENOID VALVE REPLACEMENT

### STEAM SOLENOID VALVE REPLACEMENT

TO REMOVE AND REPLACE THE STEAM SOLENOID VALVE:

**THIS PROCEDURE INVOLVES CONTACT WITH STEAM LINES AND COMPONENTS. BEFORE ATTEMPTING REPAIR, CLOSE THE SHUT-OFF VALVE ON THE INCOMING STEAM SUPPLY LINE TO THE *VIBRA-STEAMER*, BLEED THE STEAM LINE, AND ALLOW THE MACHINE TO COOL. DISCONNECT ELECTRICAL POWER AND SAFETY TAG.**

1. Locate the solenoid in the plumbing access chamber.  
[see photo, page 37,38].
2. Disconnect electrical wires at the junction box.
3. Loosen the couplings in the steam line and remove the solenoid.
4. Install the new solenoid valve and secure the couplings in the steam line.
5. Reattach the wires that you removed in step 2 and insulate the connections.
6. Restore electrical power and steam to the *VIBRA-STEAMER* and resume normal operation.

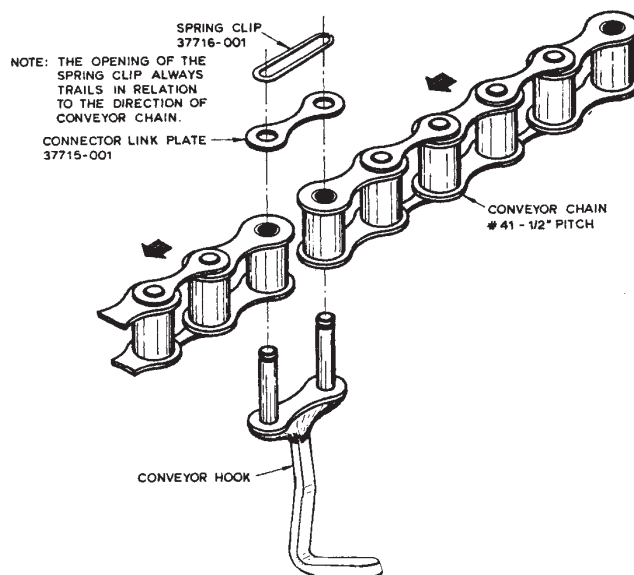
THE STEAM SOLENOID VALVE CONTAINS TWO COMPONENT PARTS WHICH MAY BE INDEPENDENTLY REPLACED. THESE PARTS (THE COIL AND THE REPAIR KIT) ARE AVAILABLE FOR PURCHASE FROM LIND INDUSTRIES, INC.

## REPAIR PROCEDURES - CONVEYOR HOOKS

### CONVEYOR HOOK REPLACEMENT

**EACH CONVEYOR HOOK IS COMPRISED OF A MASTER LINK ASSEMBLY THAT PERMITS HOOK REPLACEMENT AS FOLLOWS:**

1. Press the STOP push-button on the control panel when the defective hook is centered on a conveyor corner.
2. DISCONNECT AND SAFETY TAG THE INCOMING ELECTRICAL POWER SUPPLY to the *VIBRA-STEAMER*.
3. Remove or loosen the tension spring on the conveyor chain tension safety assembly [see photo, page 32,33].
4. Remove the retainer clip from the defective hook's master link.
5. Remove the master link with the defective hook attached.
6. Place the new master link in the chain and secure it with the retainer clip you removed in step 4. The retainer clip should be placed with its split end facing AWAY from the direction in which the chain travels.
7. Reconnect the tension spring on the conveyor chain tension safety assembly that you removed or loosened in step 3.
8. Restore electrical power to the *VIBRA-STEAMER* and resume normal machine operation.



## REPAIR PROCEDURES - CONVEYOR CHAIN TENSION SAFETY ASSY. CONVEYOR CHAIN TENSION SAFETY ASSY REPAIR AND ADJUSTMENT

THE LENGTH OF THE CONVEYOR CHAIN WILL INCREASE AS ITS COMPONENT PARTS BECOME WORN. THE CONVEYOR CHAIN TENSION SAFETY CHANISM MONITORS CHAIN TENSION AND ALLOWS MACHINE OPERATION WHEN THIS TENSION IS WITHIN ALLOWABLE LIMITS. SINCE THE SAFETY MECHANISM MAKES NO DISTINCTION BETWEEN CHAIN THAT IS TOO LOOSE AND CHAIN THAT IS TOO TIGHT, AN INTERRUPTION IN SERVICE WILL RESULT IF THE CHAIN BECOMES EXCESSIVELY LOOSE.

THIS SITUATION MAY BE REMEDIED BY ONE OF THE FOLLOWING METHODS:

1. REMOVING CHAIN LINKS TO RETURN THE CHAIN TO ITS ORIGINAL LENGTH.
2. INSTALLING A NEW CHAIN.
3. ADJUSTING THE CHAIN TENSION SAFETY MECHANISM.

THE FOLLOWING INSTRUCTIONS ARE INVOLVED WITH ADJUSTMENTS TO THE CHAIN TENSION SAFETY MECHANISM: [see photos, page 31]

1. THE SAFETY MICROSWITCH is activated by either of two nuts that are spaced 1/2" apart on a threaded rod. THE SPACING BETWEEN THESE NUTS NEED NOT BE ALTERED, but their relative positions on the rod may be adjusted. Under normal operating conditions with a fully loaded conveyor, the microswitch's roller-sensor should be located at the midpoint between these two nuts.

2. CHAIN TENSION is maintained by a spring-loaded, sliding sprocket assembly. When the chain stretches, the tension spring recoils and trips the safety microswitch, halting machine operation (the spring EXTENDS when normal chain tension is altered by an obstruction, but the effect is the same: the microswitch trips and the machine shuts down).

NOTE: As adjustments are made to this assembly, one consideration remains most important. NO ADJUSTMENTS MAY BE MADE WHICH WILL COMPROMISE THE FUNCTIONALITY OF THE SAFETY ASSEMBLY. This consideration is most important when adjustments threaten to limit the "inward" and "outward" play in the sliding sprocket assembly. UNDER NO CIRCUMSTANCES, ARE ADJUSTMENTS ALLOWED WHICH WILL RESULT IN LESS THAN 1/4" INWARD AND OUTWARD PLAY IN THE SLIDING SPROCKET.

Following any adjustments to this assembly, test the functioning of the mechanism before resuming normal machine operation. Testing may be accomplished by manually holding back on a hook while the conveyor is operating. This pressure should be sufficient to trip the microswitch; halting conveyor operation.

## REPLACEMENT PARTS INDEX

WHEN ORDERING REPLACEMENT PARTS, PAY CAREFUL ATTENTION TO THE PART NUMBER LISTED IN THIS INDEX AND BE CERTAIN THAT IT IS ACCURATELY RELAYED TO THE LIND EMPLOYEE WHO WILL PROCESS YOUR ORDER. IT IS ADVISABLE THAT YOU ALSO PROVIDE ALL THE INFORMATION THAT APPEARS ON THE **SERIAL NUMBER PLATE** OF YOUR MACHINE (LOCATED IN THE CONTROL BOX). THIS INFORMATION CAN SUPPLY VALUABLE CROSS-REFERENCING ASSISTANCE THAT WILL MAKE IT MUCH EASIER FOR US TO PROMPTLY AND EFFICIENTLY SUPPLY THE PARTS YOU NEED.

### ELECTRICAL COMPONENTS

(located in CONTROL BOX - see photos, pages 26-27)

PART #	DESCRIPTION
47212-013	5 Amp Circuit Breaker
47212-015	10 Amp Circuit Breaker
47512-021	Push-button "Start" Switch
47512-017	Push-button "Stop" Switch
47512-022	Push-button "Steam" Switch
47013-003	Push-Button Indicator Lamp 24vac
47512-020	Maintained Contact Switch
47512-019	Momentary Contact Switch
47011-009	Fault Indicator Light 24vac
47121-006	Garment Counter
47171-006	Temperature Controller 24v
42112-003	Thermocouple Wire
47161-018	Conveyor Speed Control
47131-009	Potentiometer for Speed Control
47042-003	Garment Per Hour Display 220v
47515-004	"Conveyor Jog" And "Air Volume" Rocker Switch
47592-003	"POWER" Disconnect Switch 40amp
47522-003	Pressure Differential Switch
47111-011	Contactors for Duct Heater
47032-007	Starter Contactor 24v for Blower Motors
47034-023	2 - 3.2 amp Overload Relay
47034-024	4 - 6.3 amp Overload Relay
47034-027	1.25 - 2 amp Overload Relay
47182-010	Transformer 24 VAC 100VA
47182-008	Transformer 600/550/440/380 - 230 VAC
47142-017	Time Delay Relay - for Steam
47322-010	Relay Socket 11 Pin Square
47322-011	Relay Socket 11 Pin Octal
47142-019	Control Circuit Relay 1P2T
47142-020	Conveyor Jog Relay 3P2T

## REPLACEMENT PARTS INDEX (PART 2)

### ELECTRICAL COMPONENTS (located on CONVEYOR)

PART #	DESCRIPTION
47513-001	Steam & Counter Microswitch [see photo, page 30]
47541-002	Microswitch Enclosure (for switch above)
47494-005	Conveyor Drive Motor [see photo, page 31]
47521-001	Conveyor Chain Safety Microswitch [see photo, page 31]

### ELECTRICAL COMPONENTS (various locations)

PART #	DESCRIPTION
47521-011	Heater Door Safety Switch [see photo, page 40]
47531-009	Actuator for Heater Door Safety Switch
47521-003	Dropped Garment Microswitch
47531-002	Actuator for Dropped Garment Microswitch
37411-016	Air Seal Bag Blower with Front Air Bags 265cfm 230v
37411-012	Air Seal Bag Blower without Front Air Bags 140cfm 230v
37411-015	Blower, Steam Chamber Exhaust 495cfm 230v
47412-004	Motor 1/2 hp 220v, Exhaust Hood
57411-013	Steam Solenoid Valve 1/2" 24v [see photo, page 38]
47191-009	Solenoid Coil 24v(for 57411-013 valve above)

### DUCT HEATER AND ELEMENT COMPONENTS (located behind DUCT HEATER DOOR see photo, page 40)

PART #	DESCRIPTION
47714-001	9.5 kW Rack and Element Assembly (208v)
47714-002	9.5 kW Rack and Element Assembly (230v)
47714-003	9.5 kW Rack and Element Assembly (380v)
47714-004	9.5 kW Rack and Element Assembly (415v)
47714-005	9.5 kW Rack and Element Assembly (460v)
47726-001	Element (3.167 kW / 208v)
47726-002	Element (3.167 kW / 230v)
47726-003	Element (3.167 kW / 380v)
47726-004	Element (3.167 kW / 415v)
47726-005	Element (3.167 kW / 460v)
47354-001	Male Ceramic Insulator
47354-002	Female Ceramic Insulator
47740-001	Element Termination Set (includes male & female insulators and fasteners)
47354-004	Grommet-type Ceramic Insulator

## REPLACEMENT PARTS INDEX (PART 3)

### CONVEYOR COMPONENTS

PART #	DESCRIPTION
37121-010	14-Tooth Drive Sprocket
37121-003	12-Tooth Corner Sprocket
32353-001	12-Tooth Corner Sprocket with Hex-Head Cap Screw
32353-012	12-Tooth Corner Sprocket with Shoulder Bolt
37010-003	Shoulder Bolt (for 12-tooth sprkt. above)
32353-005	6-Tooth Idler Sprocket
32353-013	6-Tooth Sprocket with Shoulder Bolt
37010-002	Shoulder Bolt (for 6-tooth sprkt. above)
31711-004	Safety Corner Casting [see photo, page 31]
31711-001	Idler Corner Casting [see photo, page 32]
31711-006	Drive Corner Casting
31715-001	Conveyor Support Casting (Full)
37041-005	Safety Corner Tension Spring [see photo, page 31]
33337-004	Adjustable Garment Knock-Off Assy. L.H.
32626-002	Guide for L.H. Adjustable Garment Knock-Off
33337-005	Adjustable Garment Knock-Off Assy. R.H.
32626-001	Guide for R.H. Adjustable Garment Knock-Off
37111-006	Gear Reducer 30:1 [see photo, page 31]
21358-001	Corner Hanger Guide
32324-101	Entrance Conveyor Pipe with Bags 14-1/2"
32324-102	Steam Chamber Conveyor Pipe with Bags 23-3/8"
31323-102	Exit Conveyor Pipe 19-3/4"
32324-009	Interior Finishing Chamber Conveyor Pipe w/Guide 24-1/8"
32323-102	Left-Hand Conveyor Pipe Entrance End 10-1/2"
31323-103	Left-Hand Conveyor Pipe Exit End 7-7/8"
32323-150	Return Side Conveyor Pipe 97-1/2"
32323-101	Right-Hand Conveyor Pipe Entrance End 20-1/2"
31323-101	Right-Hand Conveyor Pipe Exit End 17-7/8"
51121-002	Conveyor Pre-Heat Tube
21463-051	Left-Hand Conveyor Stainless Steel Garment Guide
21463-050	Right-Hand Conveyor Stainless Steel Garment Guide



## REPLACEMENT PARTS INDEX (PART 4)

### CONVEYOR CHAIN COMPONENTS

PART #	DESCRIPTION
32314-024	Complete Left-Hand Conveyor Chain with 24" Hook Spacing
32314-124	Complete Right-Hand Conveyor Chain with 24" Hook Spacing
32314-018	Complete Left-Hand Conveyor Chain with 18" Hook Spacing
32314-118	Complete Right-Hand Conveyor Chain with 18" Hook Spacing
37714-001	Master Link Assembly (coupler)
37712-002	Master Link Assembly (offset)
32312-002	Heavy Duty Hook Assembly (incl. Connector, & Clip)

### FINISHING CHAMBER BLOWER COMPONENTS

PART #	DESCRIPTION
47413-006	Blower Motor 1/3HP (208-460v/50-60hz/3ph)
47413-005	Blower Motor 1/3HP (115v/50-60hz/1ph)
47412-001	Blower Motor 1/2HP (115v/1ph)
47412-002	Blower Motor 1/2HP (208/220/440v/3ph)
47412-005	Blower Motor 1/2HP (575v/3ph)
37431-003	Blower Impeller
31741-001	Blower Impeller .625"bore (for 575v 1/2hp)
22651-002	Inlet Faring (part of blower housing)

### STEAM SYSTEM COMPONENTS

PART #	DESCRIPTION
57412-003	1/2" Ball Valve [see photo, page 37]
57421-001	3/4" Steam Separator (optional equipment)
57431-003	1" Y-Strainer 100 mesh (optional equipment)
57463-001	60lb. Steam (manifold) Pressure Gauge
57462-003	160lb. (incoming) Steam Pressure Gauge
57416-001	Pressure Regulator Valve 3/4"
57473-001	Repair Kit (3 diaphragms & Gasket)(for 57416-001 PRV above)
57411-011	1/2" Steam Solenoid Valve 24v [see photo, page 37]
57471-013	Repair Kit (for 57411-011 Solenoid valve above)
47191-009	Solenoid Coil 24v (for 57411011 valve)
57451-003	Steam Heater [see photo, page 36]
57401-001	Steam Nozzle
57011-001	Cleanout Tool (for nozzle above)
52122-008	Lower Steam Manifold (18" 6 Nozzles)
52121-005	Upper Steam Manifold (60" 20 Nozzles)
57441-003	1/2" Steam Trap [see photo, page 37]
57472-004	Repair Kit (for 57441-003 steam trap above)
47503-003	Steam Manifold Pressure Adjustment Knob

## REPLACEMENT PARTS INDEX (PART 5)

### AIR SEAL COMPONENTS

PART #	DESCRIPTION
37031-010	67" Air Seal Bag [see photo, page 30]
31712-004	Lower Casting
31712-001	Upper Casting
31661-003	Bag Shaft
37342-002	Bag Shaft Bearing
37151-002	Bag Snap Rings
31023-001	Nylatron Friction Pad
31868-001	Bearing Mounting Plate
32723-004	36Tooth Bag Shaft Sprocket

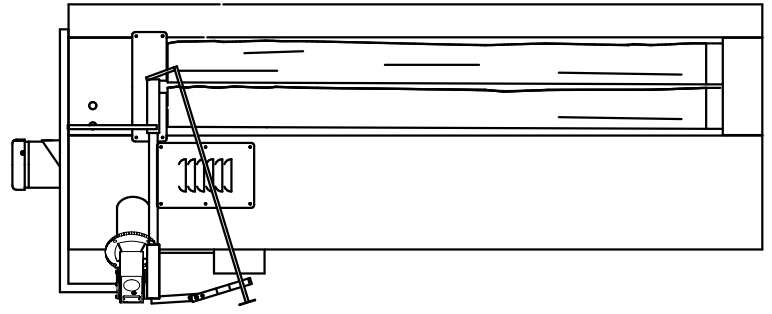
### MISCELLANEOUS COMPONENTS

PART #	DESCRIPTION
32335-017	Dropped Garment Cable
22665-001	Lint Filter Screen (less cover)
22142-004	Lint Filter Screen Cover
37011-009	Lint Filter Latch
37011-011	Exterior Door Latch Assembly R.H.
37011-010	Exterior Door Latch Assembly L.H.
21353-016	Rear Sprocket Guard
21353-017	Entrance Sprocket Guard
32682-013	Slide Assembly R.H. Storage Rail
32682-017	Storage Rail R.H. Assembly
32682-014	Slide Assembly L.H. Storage Rail
32682-018	Storage Rail L.H. Assembly

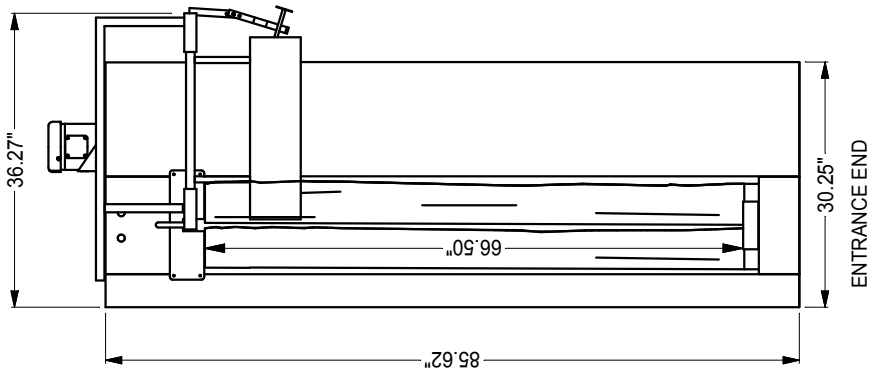
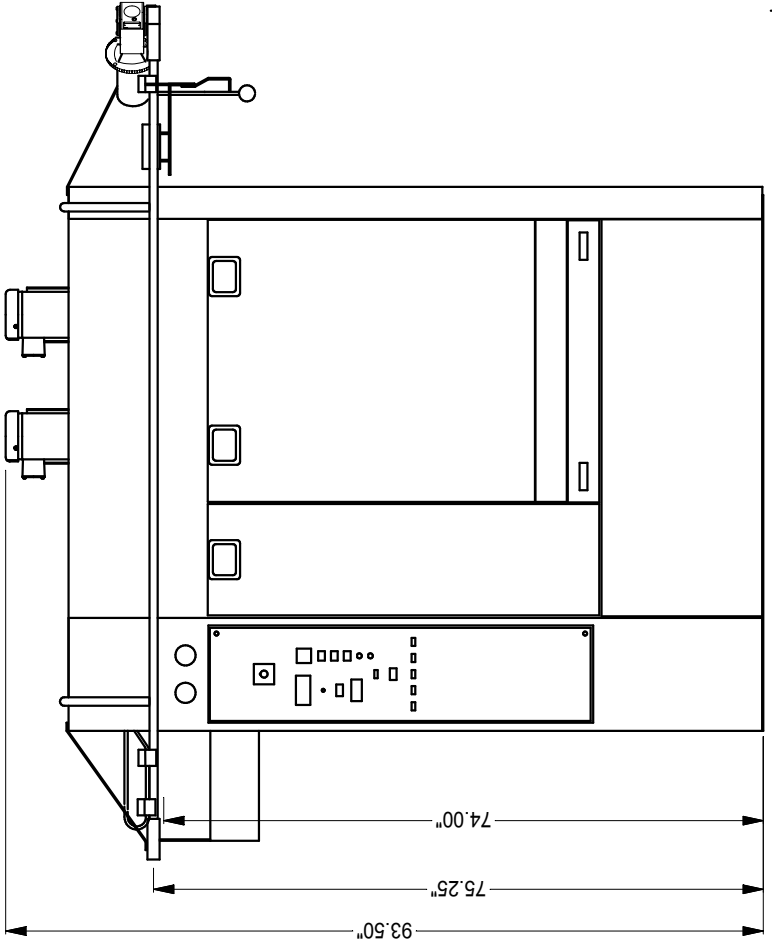
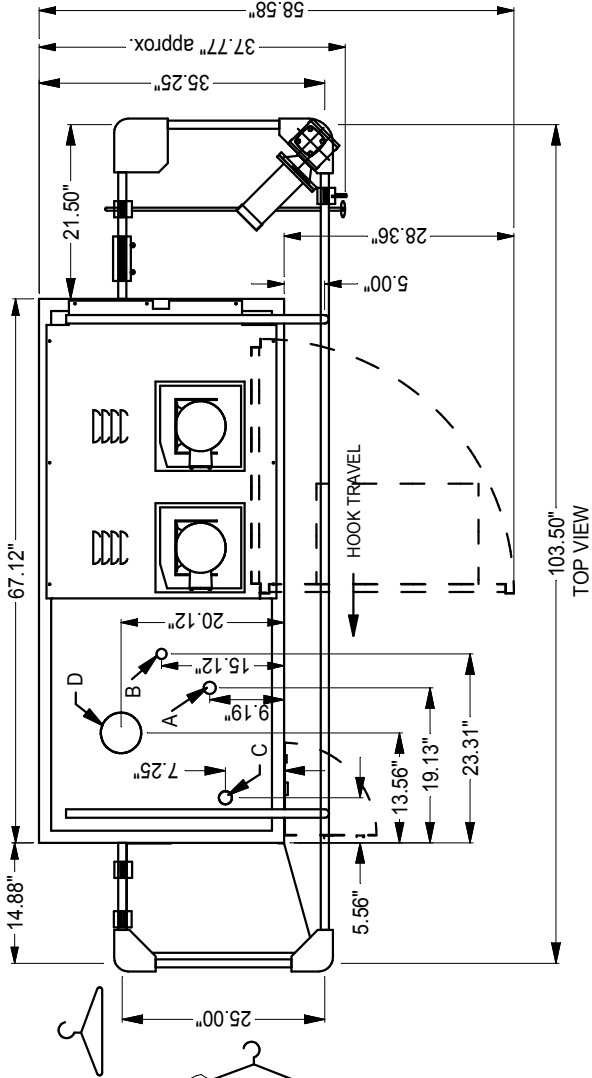
### AIR VOLUME INDICATOR

PART #	DESCRIPTION
21642-003	Baffle Plate
21683-001	Baffle Shaft
37343-013	Baffle Shaft Bushing
47490-003	Gearmotor 24v
47131-009	Potentiometer
47051-001	Air Volume Indicator(Bargraph Board)
47183-001	12 Volt Power Supply

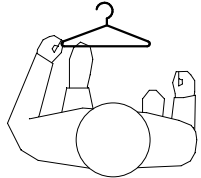
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		DRAWING# 15116-003		page 1 of 1	
TOLERANCES ARE DECIMAL FRACTIONAL ANGULAR		<b>Lind Industries, Inc.</b>			
SCALE = NONE					
DRAWN BY RBH		DATE 3/1/10		Vibra-Steamer XL425, 550, & 750 Right Hand - Dimensional Drawing	
CKD		REVISED			
SYM	REVISION	DATE	APVD	NEXT ASSY.	DISCRIPTION



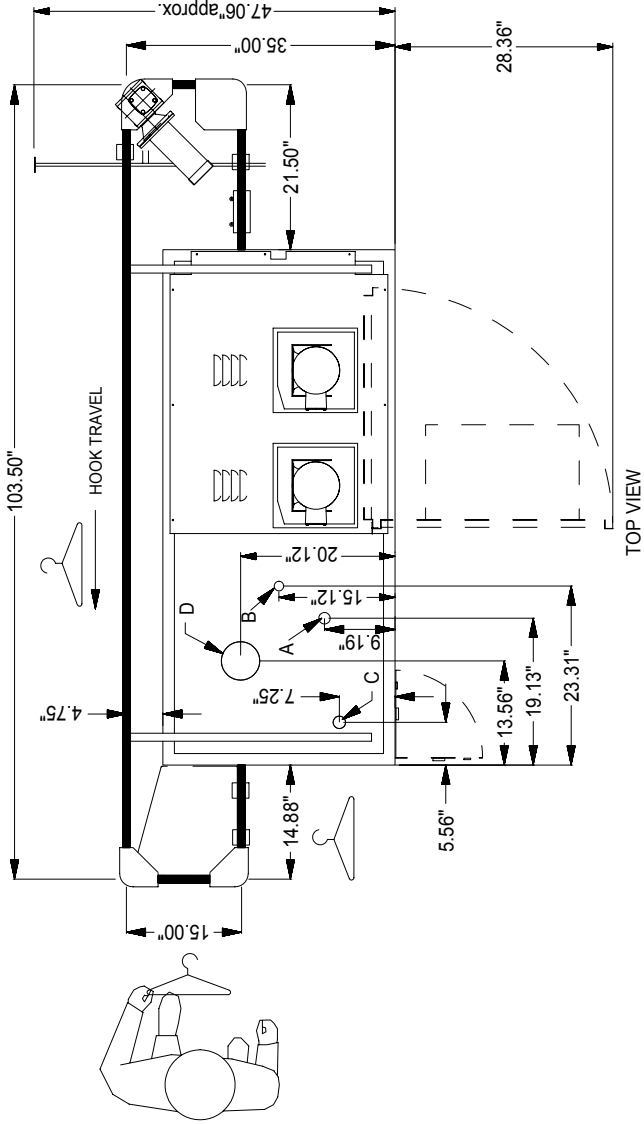
EXIT END



- A INCOMING STEAM CONNECTION  
1" pipe connection 88.5" up from floor.  
Usage is 12 B.P.H. at 100 to 125 PSI
- B CONDENSATE RETURN CONNECTION  
.5" pipe connection 89.5" up from floor.
- C ELECTRICAL CONNECTION
- D VENT CONNECTION  
5" connection. Use of vent is optional.



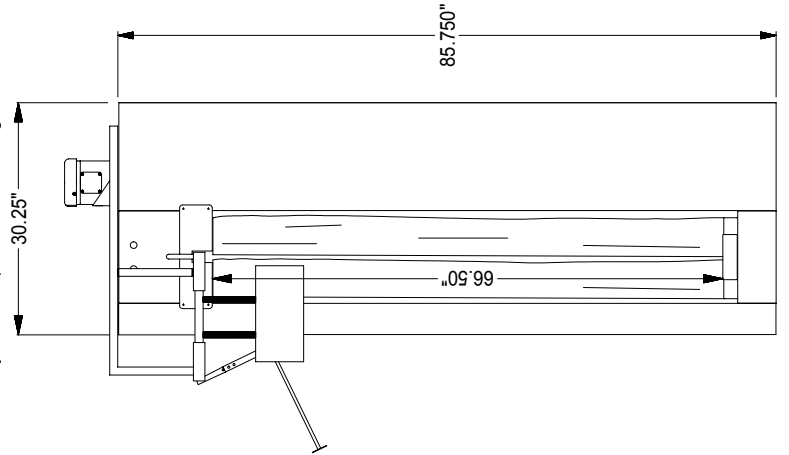
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		DRAWING#	15116-003	page 1 of 1
TOLERANCES ARE DECIMAL FRACTIONAL ANGULAR		<b>Lind Industries, Inc.</b>		
SCALE = NONE				
DRAWN CKD REVISED	BY RBH	DATE 3/1/10	Vibra-Steamer XL425, 550, & 750 Left hand - Dimensional Drawing	
SYM	REVISION	DATE		
				DISCRIPTION



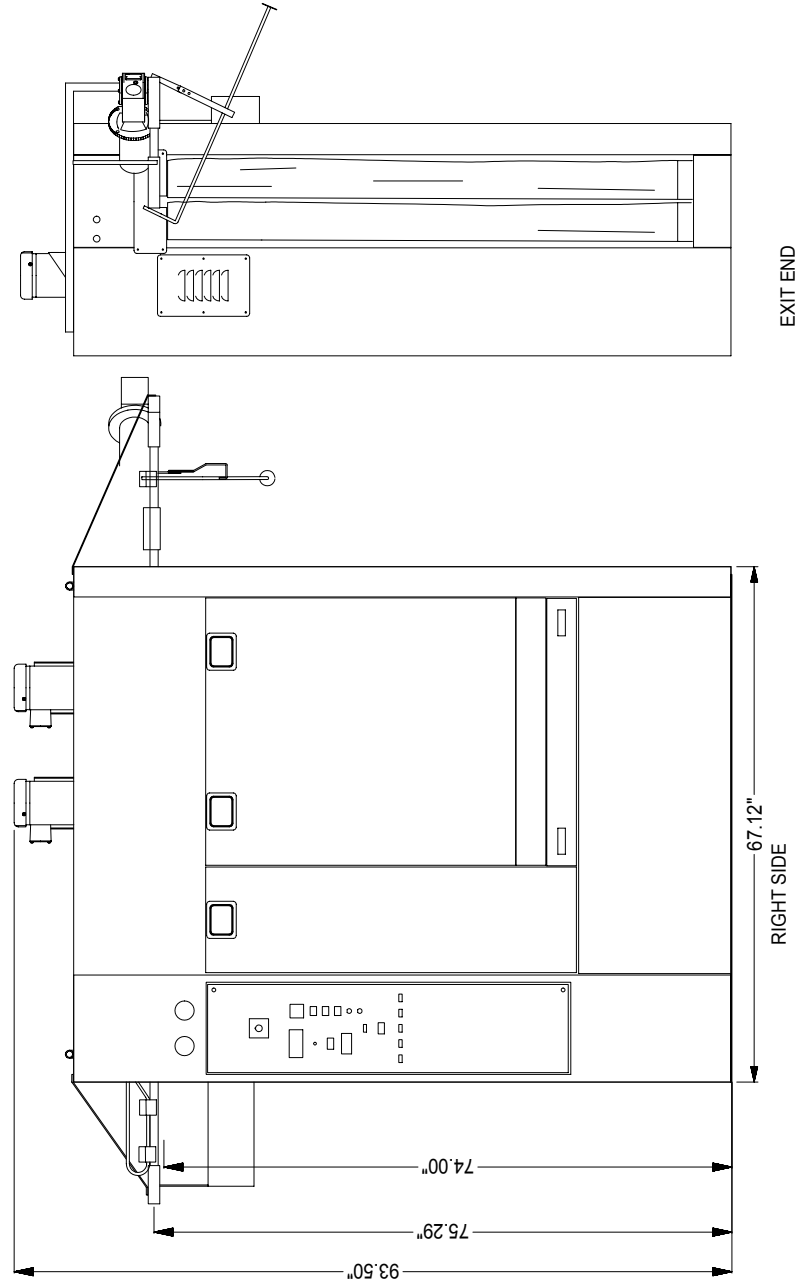
**Left Hand**

- A INCOMING STEAM CONNECTION  
1" pipe connection 88.5" up from floor.  
Usage is 12 B.H.P. at 100 to 125 PSI
- B CONDENSATE RETURN CONNECTION  
.5" pipe connection 89.5" up from floor.
- C ELECTRICAL CONNECTION
- D VENT CONNECTION  
5" connection. Use of vent is optional.

Note: Machine breaks down to minimum width of 30.375" by removing external conveyor, control panel and mounting brackets.



ENTRANCE END



RIGHT SIDE

EXIT END