

OPERATION MANUAL

SATURN ST-2200 SEMI-AUTOMATIC STRAPPING MACHINE



SERIAL NUMBER

Please refer to the serial number in all correspondence with Highlight or any Highlight Distributor. This identifies your machine and will help in our ability to quickly and efficiently respond to your needs.

Version 1.2 – March 2011

HIGHLIGHT
INDUSTRIES, INC.

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Chapter

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General System Information

SYSTEM SPECIFICATIONS

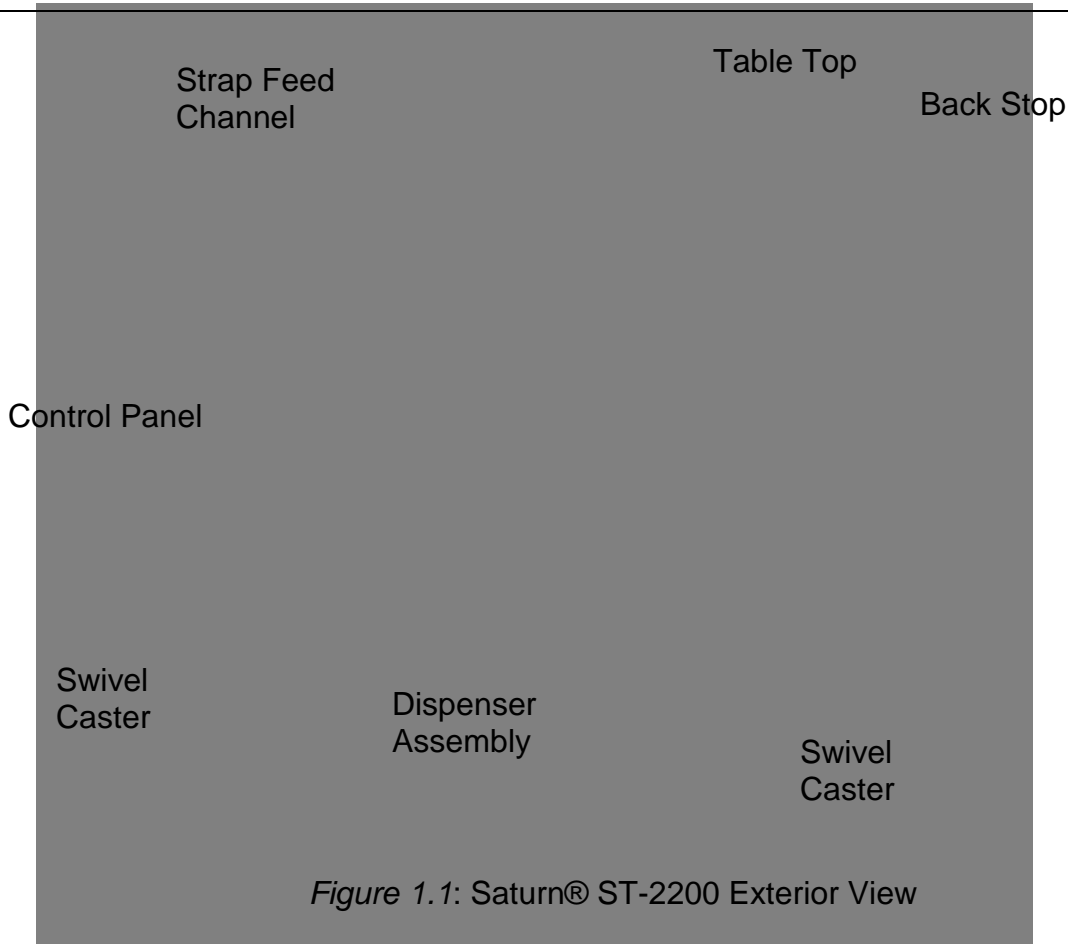
Highlight's Saturn® ST-2200 is the most advanced tabletop strapping system. The electronic strap tension control delivers precise strap pressure from as little as 5 lbs up to as much as 120 lbs. The strap is automatically tensioned, cut and heat-sealed. Another length of strap automatically feeds out for the next product to be strapped.

Dimension	31" L x 22" W
Table Height	Adjustable from 29" to 31"
Strap Width	1/4" – 5/8" or 5 – 16 mm, Adjustable
Machine Tension	Up to 125 lbs.
Net Weight	150 lbs.
Feed Velocity	> 2 ft / sec
Ambient Temperature	As low as 40 Degree F environment
Electrical Data	120 V; 60 Hz; 10 Amp

NOTE:

Check the power specification of your machine, and connect correctly.

SYSTEM OVERVIEW PRINTS



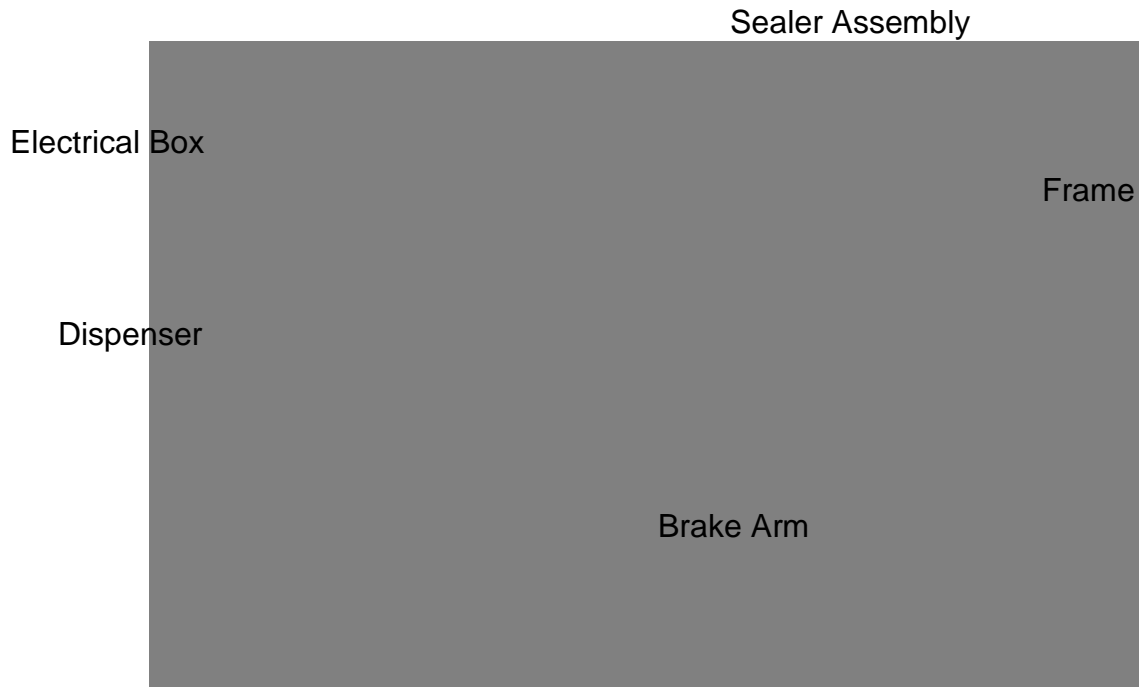


Figure 1.2: Saturn® ST-2200 Side View

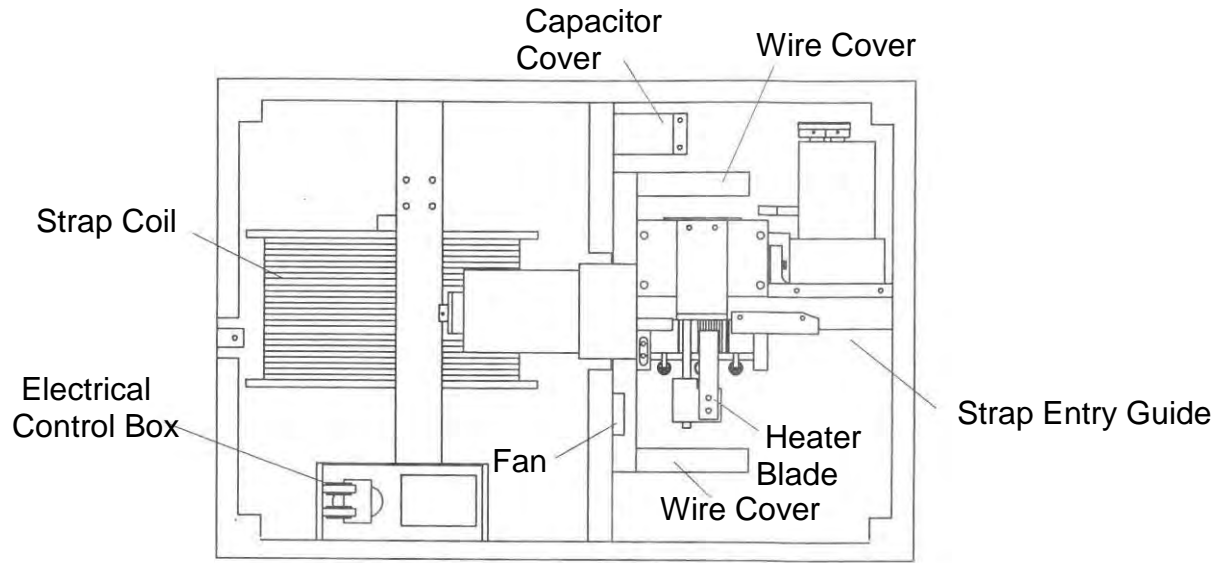


Figure 1.3: Saturn® ST-2200 Top View

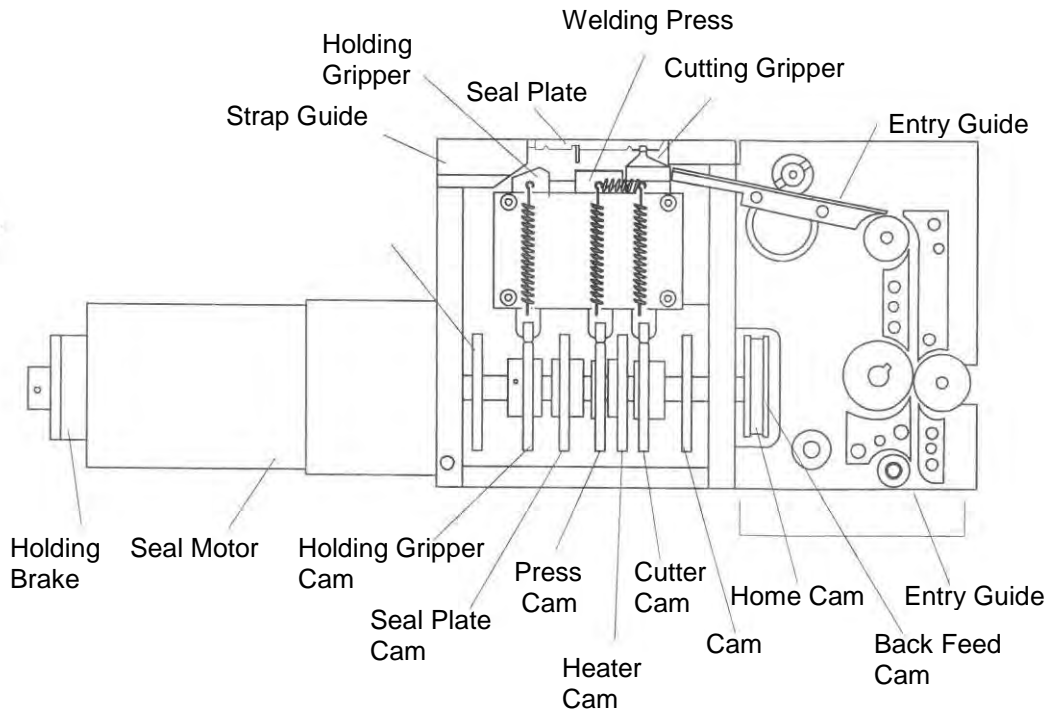


Figure 1.4: Saturn® ST-2200 Heat Sealer Assembly

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Installation Instructions

SAFETY PRECAUTIONS

- Read the *Operation Manual* before operating the machine.
- Do NOT attempt to service the machinery unless you are qualified and understand the Operations Manual.
- Do NOT use extension cords to operate the system.
- Loose clothing must NOT be worn while the machine is in operation.
- Stay clear of moving parts while the machine is in operation.
- Do NOT allow dampness or water to enter the electrical units.
- Turn OFF power to the machine when it is not in use, or it is in service.
- Do NOT touch the heater plate, as its temperature is high and can cause burns.

SEVERE PERSONAL INJURY AND/OR EQUIPMENT DAMAGE could result from failure to comply with the above.

MACHINE PLACEMENT

Inspections

Before installation, inspect the entire machine for visual damage. If found, please report this damage to the truck line. *Highlight Industries* has taken every precaution during the packaging and loading of this equipment. However, it is **YOUR RESPONSIBILITY** to inspect for damage before installation.

Positioning of the Machine

Place your Saturn® Strapping Machine close to an area where you will be strapping your loads. Make sure that there is sufficient room to load/unload the machine and that you do not stretch the wiring cable. Remember, you will need to provide electrical service to a 120 V, 15A outlet. **DO NOT USE EXTENSION CORDS!!**

NOTE:

Check the power specification of your machine, and connect correctly.

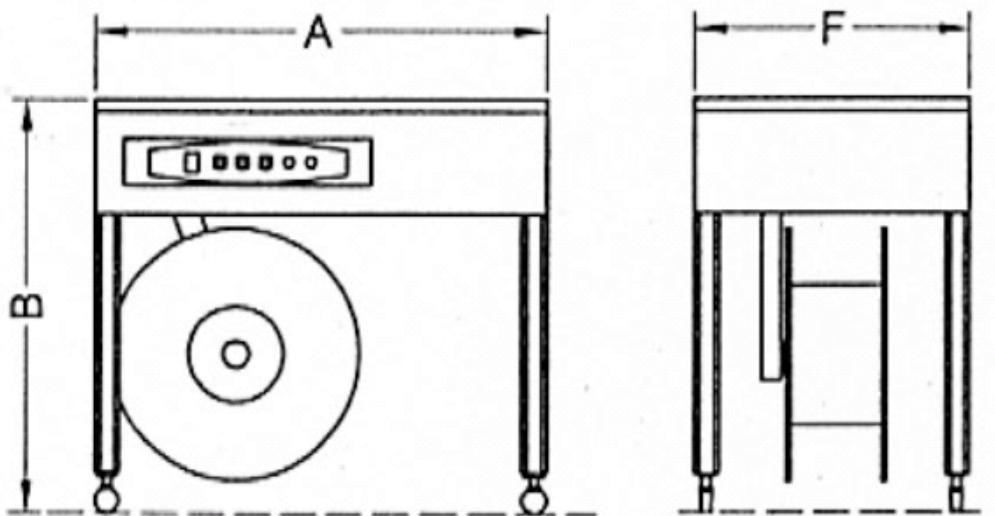


Figure 2.1: Saturn® ST-2200 Floor Clearances: A – 31", B – 29"-31", F – 22"

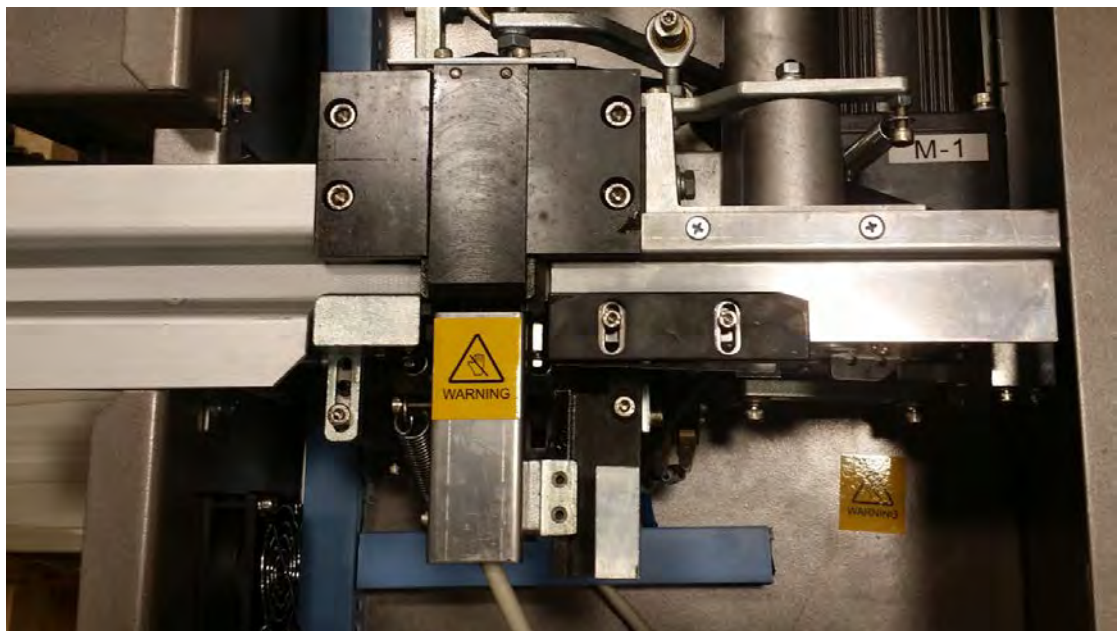
Floor Weight Bearing/Stress Tolerance

The floor must be able to bear the weight of the machine, plus the weight of the maximum load, plus a safety factor. The floor must also be able to tolerate the stress of the machine's operation.

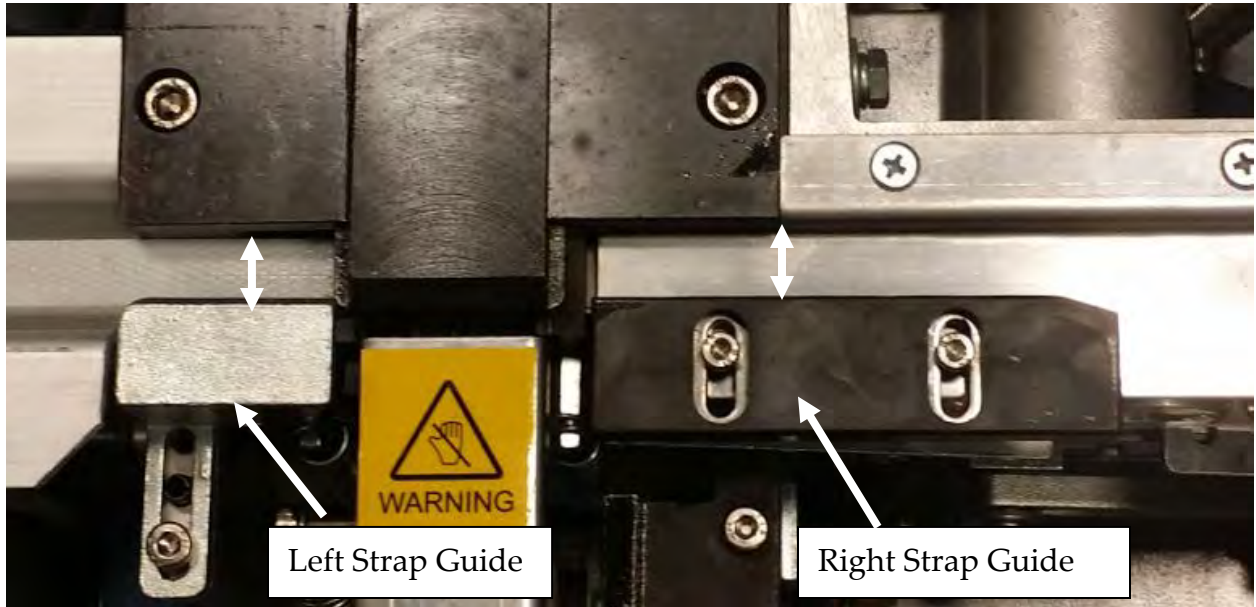
MACHINE SET-UP

It is very important to read all instructions before undertaking any of these steps. The following steps should help achieving a safe and quick machine set-up.

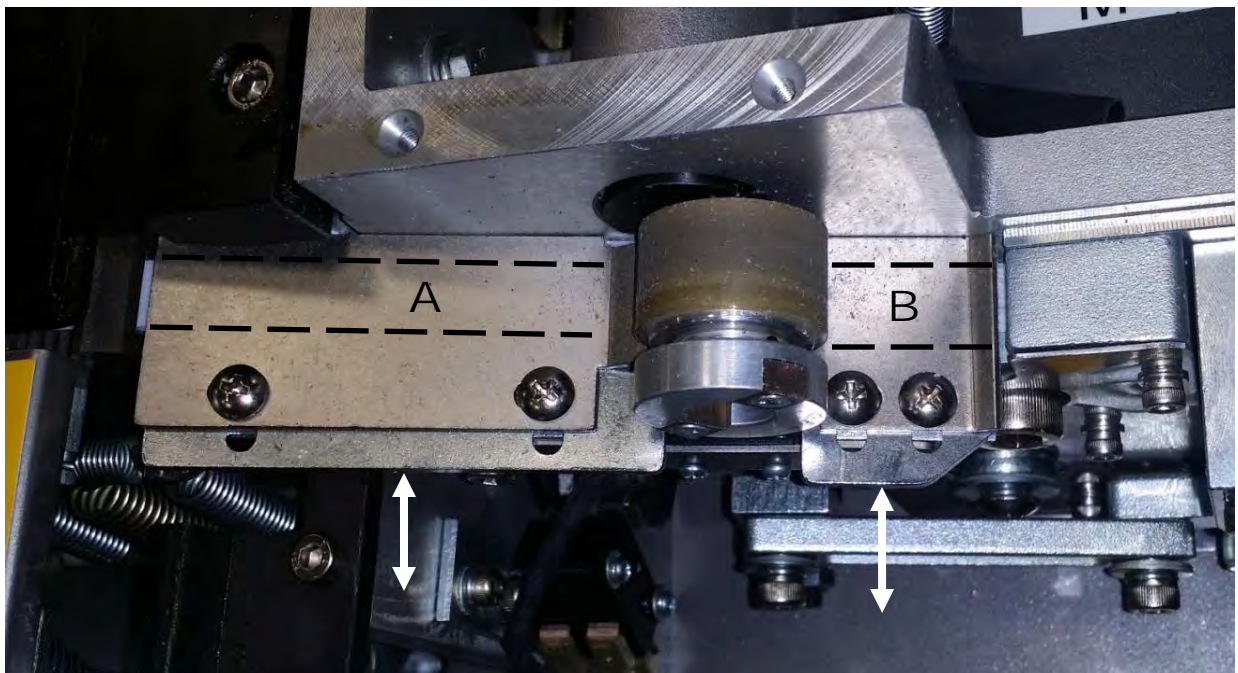
1. Your Saturn® Strapping Machine comes pre-assembled and ready for operation. Set up the machine where it will not be subject to moisture or damage to its power cord.
2. Although the Saturn® Strapping Machine is pre-assembled, the legs allow for some height adjustment. To adjust height, loosen the screws on all four legs that attach them to the machine frame. Lift machine to desired height and retighten the screws.
3. Operation may begin once strap of the proper size is loaded and the power cord is plugged into the appropriate electrical outlet. Ensure the strap guides are the proper width for the strap selected or the machine will not feed or seal properly. Adjust the guides if found to be too narrow or wide for the selected strap.
4. To adjust the machine for strap width, remove the table covers to expose the strapper mechanism.



5. Adjust the Left Strap Guide and the Right Strap Guide to the width of the strap plus an additional 0.060" to ensure sufficient clearance.



6. Remove the Right Strap Guide. Adjust the Left Strap Feed Roller Guide clearance (A) to the width of the strap + 0.030" and the Right Strap Feed Roller Guide clearance (B) to the width of the strap + 0.060". After the adjustments, ensure the Feed Roller rotates freely and does not contact the Guides or their covers.



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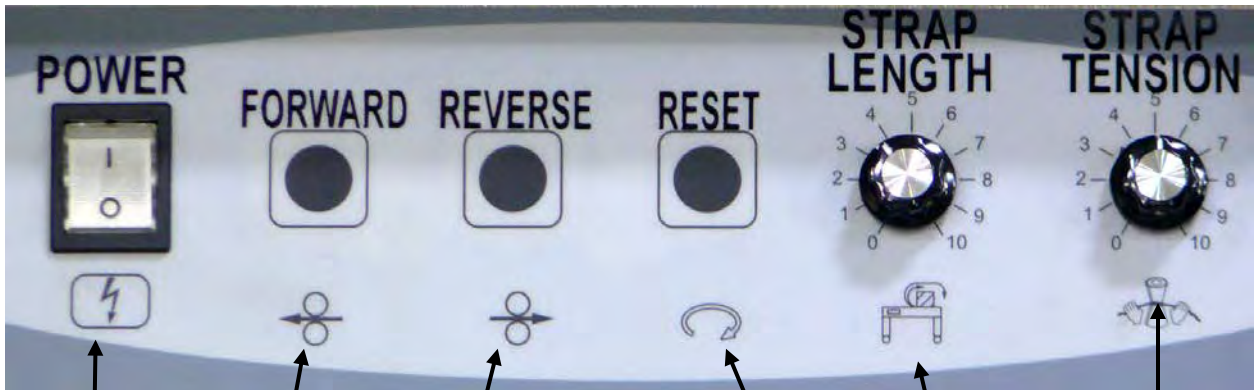
Operation Instructions

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OPERATOR PANEL



Power Switch: The light is illuminated when power is on.

Forward Button: Push this button to feed more strap from the channel.

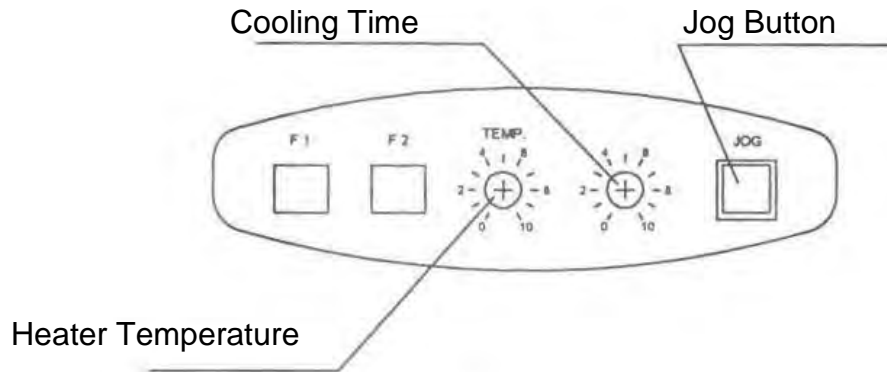
Reverse Button: Push this button to back feed the strap.

Reset Button: Push this button to cut strap free and return to home.

Strap Length Knob: Turn this knob clockwise to feed more strap after a cycle is completed.

Strap Tension Knob: To increase tension, turn this knob clockwise.

Additional Switches



Heater Temperature – Increase for heavier break strength rated straps and more frequent strap cycles. Typical setting 5-7.

Cooling Time – Increase to allow for extra cooling of new seal before tension is applied. Typical setting 2.5. Decrease if using low tension to speed strap cycles.

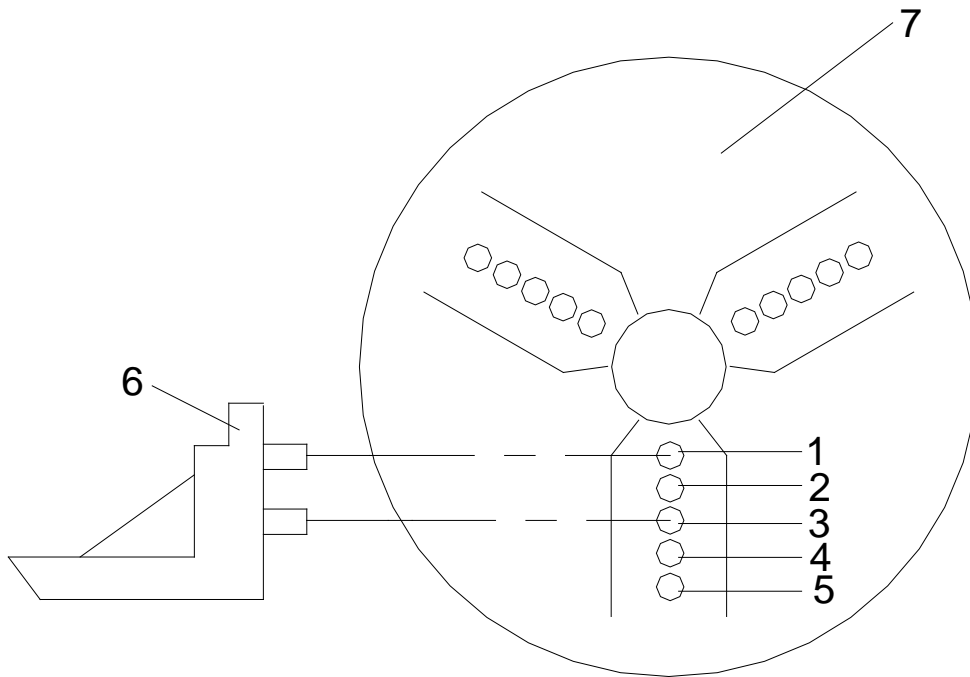
Jog Button – Used for machine maintenance, manually jogs the seal motor to cycle through gripper motions. Used to assist periodic oiling of the grippers, seal plate slides, and heater slides.

MACHINE OPERATIONS

Loading the Strap Coil

1. Adjust the reel claws if necessary according to the ID of the strap coil. The claws allow an 8", 9", and 11" ID.

1. For 8" inner coil diameter, position 2 holes on the Reel center claw (Item 6) to #1 and #3 holes of the Plastic Flange A (Item 7).
2. For 9" inner coil diameter, position 2 holes on the Reel center claw (Item 6) to #2 and #4 holes of the Plastic Flange A (Item 7).
3. For 11" mm inner coil diameter, position 2 holes on the Reel center claw (Item 6) to #3 and #5 holes of the Plastic Flange A (Item 7).



2. Note the direction the strap coil will rotate according to the arrow sticker on the side plate and set the strap coil on the claws.
3. Fit the reel side plate (2) to the center shaft.

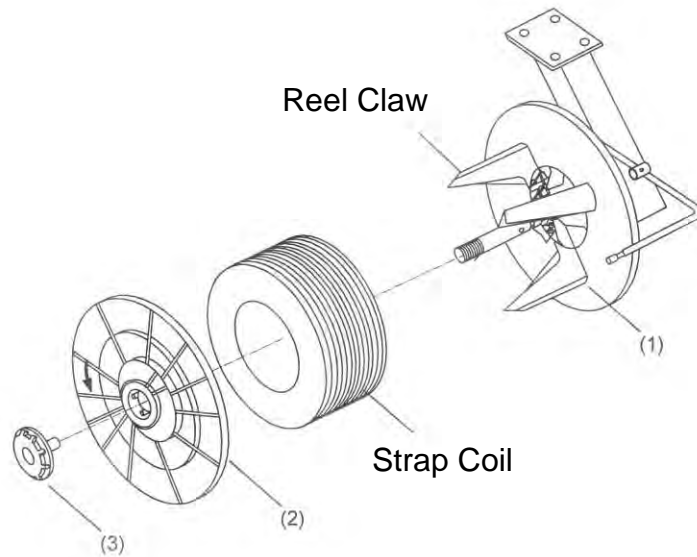


Figure 3-1: Saturn® ST-2200, Loading the Strap Coil

4. Tight the thrust nut (3) until the reel side plate (2) firmly holds the strap coil.

Threading the Strap

1. Pull about 3 feet of strap from the coil.
2. Thread the strap through the guide roller bracket (A) and the brake roller (B).

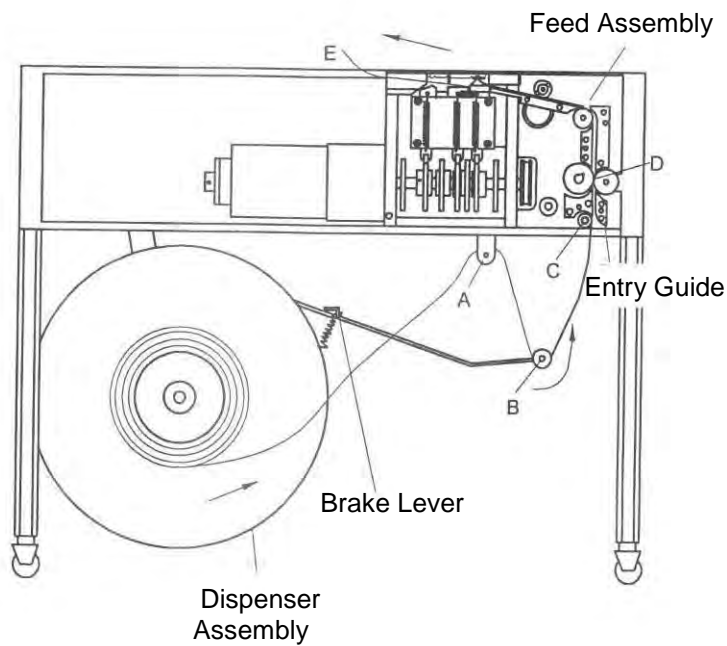


Figure 3-2: Saturn® ST-2200, Threading the Strap

3. Pull up the strap, and then insert the lead-end in the Entry Guide (C) until it contacts rollers (D).
4. Press the **FORWARD** button to feed the strap. The strap will go through the feed unit automatically, exiting under the Seal Plate at (E).

Strapping the Package

1. Put the package on the table.
2. Wrap the strap around the package.
3. Insert the strap end into strap guide .

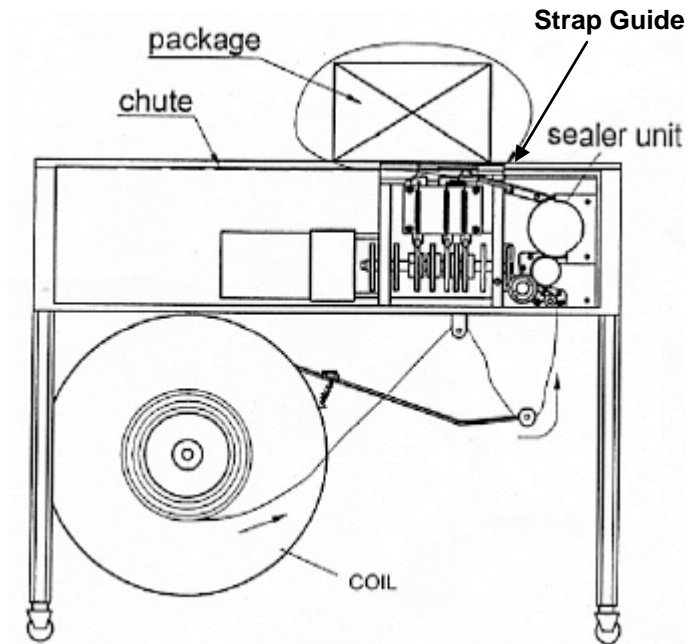


Figure 3-3: Saturn® ST-2200, Strapping the package

4. The machine automatically starts the strapping cycle the package when strap is in the correct position and contacts the micro switch under the seal plate.
5. The machine tensions the strap according to the tension dial setting. After releasing the strap, a length of strap is fed according to the strap length dial setting.

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Maintenance

PREVENTIVE MAINTENANCE

Highlight's Saturn® Strapping Machine is designed to provide long, trouble-free service. However, as with all machinery, proper attention and maintenance is the key to long component life, maximum performance, and safe operation. By spending a few minutes reading and following these preventive measures, you should reduce the downtime and prolong the life of your system.

It is important to understand that these maintenance schedules are minimum recommendations. *Highlight Industries* cannot possibly know, evaluate or advise the various trades in all schedules of periodic maintenance. Because of this, *Highlight Industries* has not undertaken such tasks. Accordingly, anyone who maintains or services a strapping machine must first satisfy himself/herself as to the schedules of preventive maintenance based on cycling operation and environmental locations.

Machine components that wear or fail should be repaired or replaced as soon as possible to prevent damage to other machine components or to your product.

NOTE:

Always turn the machine OFF and disconnect from its power source before doing any cleaning or maintenance work on the system. Failure to do so can result in severe personal injury and/or machine damage.

Cleaning

Cleaning should be done approximately once every month, more often if the environment is dusty. Dry compressed air may be used to carefully clear build-up that a vacuum will not remove. When using compressed air, always direct the debris away from mechanical and electrical components.

Drive Belts

Periodic checks of all drive belts for replacement should be made to prevent worn out or stretched belts, which will affect strap feeding.

Lubrication

Make sure the machine is clean before applying lubricants to the points shown in the figure below. Use a vacuum or compressed air to remove any debris.

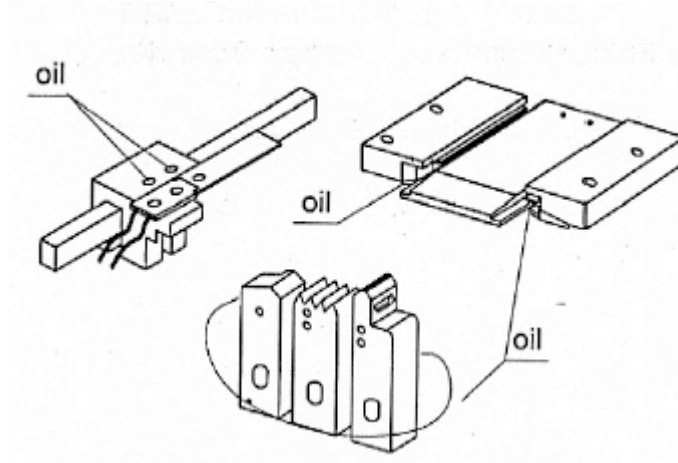


Figure 4-1: Saturn® ST-2200, Lubrication points (slide plate, heater slide, welding press, cutting gripper, and holding gripper)

Gear Reducer (Motor)

The gear units are sealed and lubricated for life. No maintenance is required.

NOTE:

The following parts should NEVER be lubricated:

- Belts and pulleys
- Roller assemblies and cams

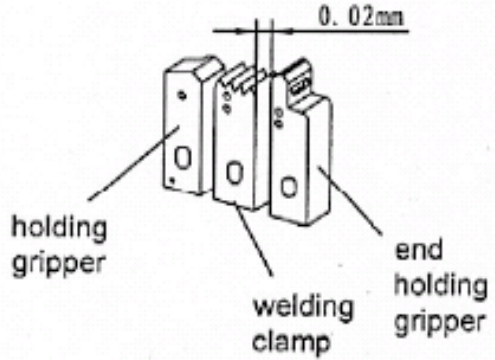
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Troubleshooting

TROUBLESHOOTING GUIDE

This troubleshooting guide is not designed to solve all system problems. Rather, it is designed to give you, the customer, a few quick checks and adjustments of the obvious, but often overlooked items to keep your downtime to a minimum. Further help is always available from Highlight's experienced Mechanical/Electrical Service Department.

Trouble	Possible Cause	Solution
Machine does not start	The Power Switch is not on.	Turn on the Power Switch.
	Power cord is defective or not functioning.	Check the power cord, and replace as necessary.
	Fuse blown.	Check and replace the fuse.
Machine does not cut the strap	The welding press is worn out, or the cutting surface of the welding press is dull.	Inspect the welding clamp and replace as necessary.
	Clearance between the welding clamp and the end holding gripper is too large.	Replace the spring. Adjust so that the clearance does not exceed 0.02 mm. 
Poor strap weld	Hot knife temperature is set too high or too low.	Adjust the hot knife temperature.
	The cooling time is too low for tension setting.	Increase cooling time setting.
	Tension too high for strap to handle.	Select the proper break strength for the tension required.
	The press spring is broken.	Check the press spring, and replace as necessary.

	Fan motor is not working, possibly because of build-up dust on the fan or poor contact of the connector.	Inspect the fan motor, and replace as necessary.
Strap pulls from sealing unit before sealing and cutting cycle.	The holding/cutting gripper is worn.	Check the holding/cutting gripper, and replace as necessary.
	Strap broke from too high of tension for break strength rating.	Select a heavier strap.
The machine does not start after the strap is inserted to the chute.	The start switch is not getting triggered, or is malfunctioning.	Check the position of the switch and alignment of the strap to ensure it is presented at the correct angle to contact the switch. Adjust or replace the strap actuator lever.
The strap is not fed after the strapping cycle.	Strap is twisted around the reel.	Check the strap on the reel, and correct its position.
	The strap became caught under the package on a previously applied strap.	Realign the strap in the strap feed channel after removing the package from the table top.

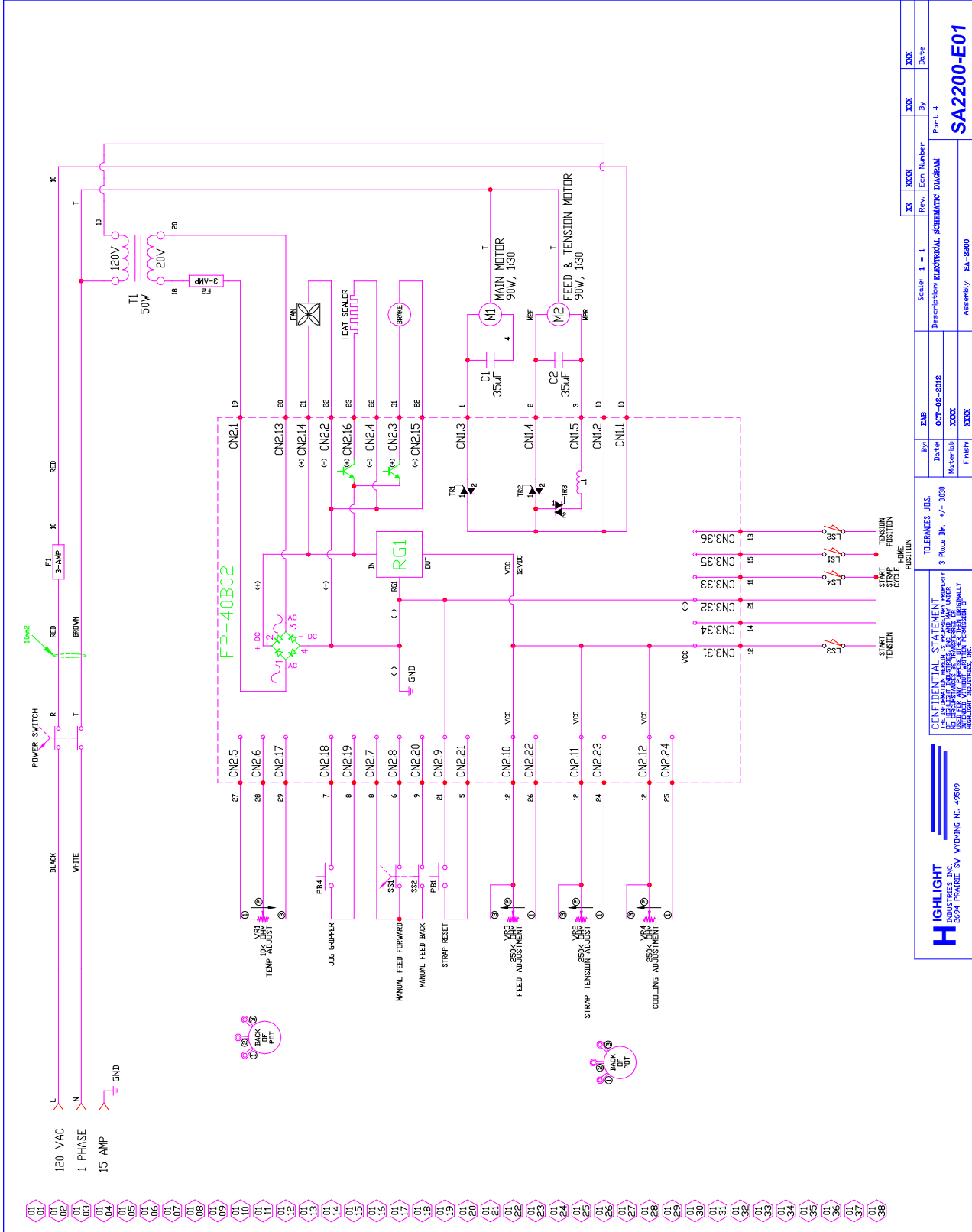
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Electrical References



Scale	1 = 1	Rev.	XXX	Rev. Ec	XXX	By	XXX	Date	XXX
Description	SATURN ST-2200 SEMI AUTOMATIC STRAPPING MACHINE SCHEMATIC DIAGRAM								
Part #	SA2200-E01								
Assembly	SA-2200								
By:	RAB	Base:	00P-02-2012	Material:	XXXX	Finish:	XXXX		
TOLERANCES UNLESS SPECIFIED	3 Place Dim. +/- 0.03								

- 01 01
- 01 02
- 01 03
- 01 04
- 01 05
- 01 06
- 01 07
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Mechanical References

Chapter

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Notes

