

CASTLE EDGEBANDING MACHINE

EQUALIZER

Operator Manual



CASTLE, INC.
PETALUMA, CA
800-282-8338
U.S. PATENT NO.
6,467,522

TABLE OF CONTENTS

Safety Notification	Page 1
Machine Inventory	Page 2
Machine Requirements	Page 2
Setting Up	Page 3
Operating Instruction	Page 9
Understanding the LOGO! PLC	Page 11
Machine Adjustments	Page 15
Definition and Description of Parts	Page 19
Maintenance	Page 21
Troubleshooting	Page 22
Warranty Information	Page 26

*DO NOT ATTEMPT TO OPERATE THIS
MACHINE UNTIL YOU HAVE READ
THIS MANUAL.*

SAFETY NOTIFICATION

WARNING: The Castle Equalizer edge banding machine was designed with operator safety as a priority. This machine was carefully prepared for shipment at our factory. Upon receipt of the machine, inspect for shipping damage. Report any damage **IMMEDIATELY** to the freight company, your Castle dealer and to Castle, Inc. **DO NOT** attempt to operate the machine if you observe any physical damage.

Contact Castle, Inc. at 800-282-8338 for instructions.

INVENTORY

You should have received the following with your Castle Equalizer:

- **Warranty Card (Please fill out & mail to Castle, Inc. to activate warranty)**
- **Equalizer Operator Manual**
- **Band Reel**
- **Three (3) Glue Hopper Extensions**
- **One (1) 2 ½ lb bag Glue Pellets – CANPLAST Brand**
***The Equalizer is sent out with CanPlast brand pellets. If you would like to use a different brand, DO NOT fill the Glue Pot with the pellets supplied!*
- **One (1) Glue Pot**
- **Two (2) Black Outrigger Beams**
- **Four (4) Outrigger Wheel Cages**
- **Glue Pot Shield with Stock Guide**
- **One (1) Power Cord**
- **One (1) 5/32 Allen Wrench**

MACHINE REQUIREMENTS

Important: Do not use an extension cord to power the Equalizer

Power: 110 VAC, 20 Amp Circuit

Air Supply: 80 PSI minimum, 150 PSI maximum

SETTING UP YOUR EQUALIZER

- Begin unpacking your machine by removing and discarding the cardboard and wood skid materials.
- Loosen the leg locknut and then the set screw on one side of the machine and raise the Equalizer to the working height of your choice. It may be easier to do this incrementally, first one side then the other.

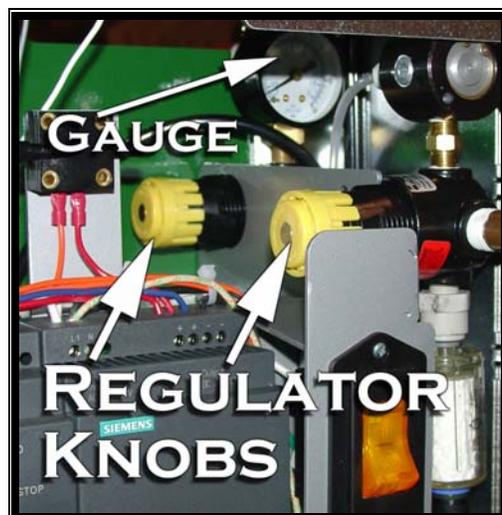


- There is a retaining bolt inside the legs so that they will not fall out during this adjustment.
- Tighten the set screw to hold the chosen height, and then set the angle by pushing the top of the machine towards the rear of the machine, and then tighten with the jamb nut.

- Mount the Wheel Cage on the Outriggers. They should be mirror images of each other, left and right.



- Remove the Band Reel from the shipping position. Use the Allen wrench provided to remove the collar from the shaft. Put the long end of the shaft into the cutout location in the front bottom center of the machine. It should go all the way through to the rear cutout. Place the collar on the shaft protruding through the back of the machine and tighten.
- Check the action of the Band Reel by grasping the Spokes of the Tape Reel and the Spool Cover and rotate them back and forth in opposite directions.
- Install air supply at the rear of the machine, making sure that the machine is receiving a minimum of 80 PSI from the compressor. The gauge inside the machine **DOES NOT** reflect the PSI coming into the machine.
- The Regulator closest to the front of the machine sets how much air is sent through the pressure sensing tube. The gauge next to it should read between 5 and 15 PSI. The Regulator closest to the Rear Door of the machine should be set at six full turns to the right after being completely off (all the way to the left). Both of these Regulators are set at the factory and should **NOT BE CHANGED**.
CHANGING THESE REGULATOR SETTINGS WILL VOID YOUR WARRANTY!!



- Remove your Glue Pot by first loosening the Start Knob directly beneath the Glue Pot on the under side of the machine.



- With the Glue Pot out of the machine, add Glue Pellets directly to the pot until the Transfer Wheel Axle is covered. ***The Equalizer is sent out with CanPlast brand pellets. If you would like to use a different brand, DO NOT fill the Glue Pot with the pellets supplied!*
- This addition of Glue Pellets outside the machine is only done when starting with a completely emptied Pot. The auto-fill mechanism will work for this, but it's slower this particular start-up procedure.
- Unwrap the Glue Pot Shield with the Castle logo on it (found inside machine). The Glue Pot Shield sits on the yellow Mechanical Channel with the tabs on the rear of the shield fitting into the Positioning Holes.



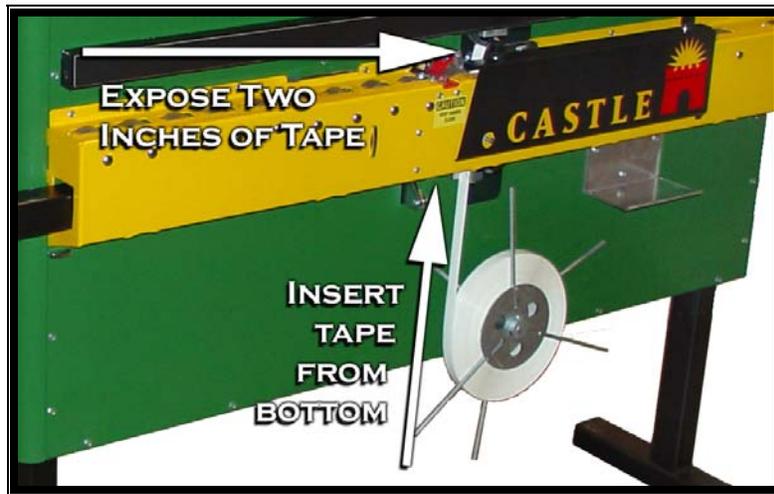


- The Stock Guide goes on top of the Glue Pot Shield and is held in place by the two Tri-Arm Knobs. The Stock Guide should be mounted so that the Laminate faces IN, towards the machine. The Stock Guide and Glue Pot Shield come from the factory already assembled.
- To install the banding onto the Band Reel begin by removing the outer cover. Place the roll of banding over the Expansion Fingers so that the tape hangs down, ready to travel in a CLOCKWISE direction.



- Replace the outer cover and tighten the Lever.
- Working the Spokes in opposite directions will expand the Reel and center the tape roll.

- Push the tape into the Band Guide until you have more than a couple of inches exposed above the Glue Pot.



- The Band Guide is located just left of the Glue Pot. The banding travels up through the Band Guide from front to back.



- The width can be adjusted with the panhead screw on the front of the Mechanical Channel. Tighten lightly until you feel a slight increase in drag on the tape. At this point the screw should be backed off **one quarter** of a turn.



- Adjusting the machine for different thicknesses of tape can be done with the screw directly behind the tape and above the work surface. Loosen the screw and slide the plate right or left to adjust the amount of drag, so the tape stays in position without falling.



- Plug in the machine.
- To test, begin by making sure the machine is warmed up and in Run Mode (see page 10 for Mode definitions). The light should be on solid. Expose the tape to the point where it is JUST at the bottom of the Guide Rail. Roll a test board across the Glue Pot, and all the way to the last roller. As you pass the Guillotine, it should cut the banding off.
- The bond is best after the glue has had time to cool.
- If you pull the tape off it should try to take the wood with it.

OPERATING INSTRUCTIONS

IMPORTANT NOTE:

DO NOT MIX GLUE PELLET BRANDS!
MOST DO NOT MIX WELL WITH OTHERS!

***The Equalizer is sent out with CanPlast brand pellets. If you would like to use a different brand, DO NOT fill the Glue Pot with the pellets supplied!*

BEFORE RUNNING THE MACHINE:

- Begin by dumping a small amount of glue pellets into Glue Magazine. Do not fill the Magazine past halfway full. This will ease the process of color changing later, and also prevents the pellets from getting jammed at the base of the Magazine.
- Remove the Glue Pot and fill it with pellets up to the top of the Wheel Axle. This is done by loosening the Star Knob underneath the Glue Pot until the Glue Pot Clamp raises up off of the Pot.



- Install the Glue Pot making sure that the red gasket is well sealed with the tube.
- With the machine set-up, turn on the power. The light should begin to strobe regularly.
- The machine will come out of Warm-up Mode (see page 10) after 18 minutes. The light will change to solid when it is ready. After the machine comes out of warm-up, the Transfer Wheel can be rotated a half turn to ensure that fresh glue is ready for application. At that point you can begin running boards. Use **CAUTION** when turning the Transfer Wheel because it will be very hot.

WHEN RUNNING BOARDS BE SURE THAT:

- The board is sitting flat on the Roller Wheels with the backside flush against the Guide Rails.
- While pushing down with enough pressure to push the Glue Pot down, run the board through the machine right to left. The pressure required will be met by the weight of a larger board, but a smaller board may require additional downward pressure.
- To ensure a complete application of glue to the board make sure to run the board out to the end of the machine. Constant pressure needs to be maintained on the board as it is run.

UNDERSTANDING THE LOGO! PLC

WARM-UP MODE

Definition:

- The *Warm-up Cycle* runs for approximately 18 minutes. It is signaled by a 1 second interval blinking strobe and a non-functional Guillotine. Once the *Warm-up Cycle* is complete the Strobe will go solid and the Guillotine will become operational.

HOW TO start Warm-Up Mode:

- Make sure the Glue Pot is installed and filled.
- Plug in the Equalizer and turn it on.
- The *Warm-Up* screen displays on the LOGO! module. This Screen will have a timer that counts up the time remaining until operating temperature is reached.

Guidelines:

- **Do not attempt** temperature adjustment while in the *Warm-up Cycle*
- **Do not attempt** to apply glue while in the *Warm-up Cycle*
- The Light will blink faster the last 5 minutes of the *Warm-up Cycle*

RUN MODE

Definition:

- The *Run Mode* of the Equalizer is entered when the appropriate glue temperature is reached. At this point the Strobe goes solid and the Guillotine is operational.

HOW TO start the *Run Mode*:

- The only way to get the Equalizer into Run Mode is to go through the Warm-Up cycle.

Guidelines:

- Temperature will be automatically maintained as long as the Equalizer remains in use and in *Run Mode*.
- Glue levels will be automatically maintained as long as the Equalizer remains in use and in *Run Mode*.
- The temperature can be adjusted using the LOGO! interface through the back door of the Equalizer.
- The Equalizer will enter *Rest Mode* if it remains unused for more than 18 minutes.

REST MODE

Definition:

- The Equalizer will enter *Rest Mode* if it remains un-cycled for more than 18 minutes when it is in *Run Mode*. While the Equalizer is in *Rest Mode*, the glue will be maintained at a slightly lower temperature than when in *Run Mode* and the light will blink a ½ second on and a ½ second off.

HOW TO start *Rest Mode*:

- *Rest Mode* will be automatically engaged only after the Equalizer remains un-cycled for more than 18 minutes when in *Run Mode*.

Guidelines:

- Do not attempt to apply glue while the Equalizer is in *Rest Mode*.
- Do not attempt temperature adjustment while in *Rest Mode*.
- To “wake up” the Equalizer, simply depress the Guillotine Actuator and wait for the Strobe to stop blinking.
- The glue should take less than 10 minutes to warm up from *Rest Mode*.

SLEEP MODE

Definition:

- The Equalizer will enter *Sleep Mode* if it remains un-cycled for more than 18 minutes when it is in *Rest Mode*. While the Equalizer is in *Sleep Mode* it is essentially powered down completely. The light will be off and the glue heater will be off, but it will enter the *Warm-Up Mode* if the Guillotine Actuator is depressed just once.

HOW TO start *Sleep Mode*:

- *Sleep Mode* will be automatically engaged only after the Equalizer remains un-cycled for more than 18 minutes when in *Rest Mode*.

Guidelines:

- Do not attempt to apply glue while the Equalizer is in *Sleep Mode*.
- Do not attempt temperature adjustment while the Equalizer is in *Sleep Mode*.
- To “wake up” the Equalizer, simply depress the Guillotine Actuator and wait for the Strobe to stop blinking.
- The glue can take about 18 minutes to warm up from *Sleep Mode*.

TEMPERATURE SETTING

Definition:

- The Equalizer has 10 temperature settings, 10 being the hottest and 1 the coldest. The machine is factory set for a temperature level of 5.

HOW TO change the Temperature:

- Turn on the machine and allow it to go into *Run Mode*.
- During the *Warm-Up Mode*, the Screen will display the countdown timer.
- Once the Running Temperature has been reached the Run Screen will appear.
- To navigate from the Run Screen to the Temperature Set Screen press ESC + UP arrow or ESC + DOWN arrow.
- This will adjust the operating temperature by 1 level.

Guidelines:

- Once you have found the temperature setting that works best for you, it is unlikely that you will have to adjust it very often.
- Once a change to the temperature has been made, allow the glue 10 to 15 minutes to reach the new temperature, then run a test board before changing the temperature again.

GLUE-FEED FAULT

Definition:

- If the machine tests the level of the glue six times in a row without being cycled, then when the glue cycle is tested a seventh time it will put the machine into a *Hold*. The message displayed on the interface readout is "*Glue Feed Fault*". This Hold can also occur if no Glue Pot is in place or if it is damaged or misaligned.

HOW TO clear the *Hold*:

- Check the status of the Glue Pot.
- If it is low, simply depress the guillotine actuator to let the machine continue feeding glue
- If the Glue Pot is full or overflowing then make sure that the Glue Pot Clamp is tight and all the hoses in the Control Box are connected and tight.

Guidelines:

- This fail-safe feature is included so that the machine doesn't over fill the Glue Pot.
- This condition is normal if the Glue Pot is especially low.

GUILLOTINE LOCK-OUT

Definition

- The Guillotine can be set to NOT automatically cut the banding. This setting is built in to allow the use of Vertical Grade Laminate.

HOW TO Lock-out the Guillotine:

- From the Run Screen press ESC + RIGHT arrow and hold for 2 seconds

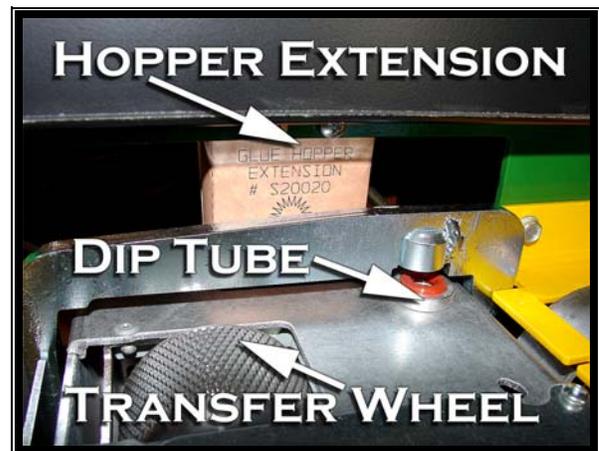
Guidelines:

- The Guillotine Lock-out can be toggled On and Off as need by following the above instructions.

MACHINE ADJUSTMENTS

REMOVE OR REPLACE THE GLUE POT

- Release the tension on the Glue Pot Clamp by loosening the Star Knob found under the Glue Pot.



- With the Clamp released, use a pair of pliers to grab the lip of the Glue Pot. Pull it out and place it on the Galvanized Shelf.



- Reverse this procedure to install the Glue Pot, making sure it is installed all the way back onto the rear of the Hot Plate. Fill the empty Glue Pot with glue pellets to the top of the Transfer Wheel Axle prior to installation.

GLUE COLOR CHANGING INSTRUCTIONS

- Place a bucket or box under the Equalizer at the Magazine, and pull the Magazine Gate out about 2 inches or until it stops. The glue pellets will drop out of the bottom of the machine.



- Make sure to change the Glue Pot (refer to above instructions on how to change the Glue Pot), and allow time for warm-up.

CHANGING THE HOPPER EXTENSION

- To change the Hopper Extension, remove the Glue Pot (following the above instructions) and place it on the Galvanized Shelf.
- Loosen the lower Philips head screws in the Hopper and slide the old Hopper Extension off.
- Put a new Hopper Extension on so that the Castle logo is visible from the front of the machine.
- Place the Glue Pot back into position, align the Hopper Extension with the hole in the top of the Glue Pot, and retighten the screw.

ADJUSTING THE BAND GUIDE

The Band Guides can be adjusted for both tape thickness and tape width.

- Locate the Philips head bolt to the left of the Glue Transfer Wheel that goes through the Main Panel. This is where the adjustment takes place.



- Adjust it so that there is a slight drag when the tape is pulled through it.

- Adjust for the width of the tape with the screw on the front of the Mechanical Channel. It has a spring under its head.



- This should also be adjusted until the tape has a slight drag. The spring keeps the adjustment from changing with use.

LEVELING THE OUTRIGGER WHEELS

Each Outrigger Wheel can be independently leveled.

- Loosen the two bolts that hold the Wheel Cage to the Arm
- Loosen these to the point that the Wheel Cage moves in its mountings, but has enough resistance to stay in place when repositioned.
- Repeat these steps with each of the Wheels on that particular Arm until they are all slightly loose.
- Place a level (or any true flat surface that is long enough), across the Rollers in the main body and outward over the Outrigger Wheels.
- In this way each Wheel can be positioned to “just touch” the leveling surface.

DESCRIPTION OF PARTS



Glue Pot:

Found in the middle of the yellow Mechanical Channel. The main part is the Glue Transfer Wheel located in the top of the Glue Pot. It applies glue as the board is pushed through the machine.



Guillotine:

Cuts the banding after a board is passed through and glued. Pushing the white Delrin plate above the Guillotine will also activate it.



Glue Magazine:

Where the glue pellets are loaded and stored for transfer into the Glue Pot. To change pellet colors, pull on the Glue Magazine Gate located near the top of the yellow Mechanical Channel. The pellets will drop out of the bottom of the machine (near the indicator) on the bottom edge of the machine.

****NOTE: Do not fill past halfway.**



Band Reel:

Used to hold and help feed the roll of banding that will be applied to the work.



Hopper Extension:

A special brown paper is formed to fit the bottom of the aluminum chute to better guide glue pellets to the Glue Pot. Three extra Hopper Extensions are located on the Band Reel when the machine is shipped.



Band Guide:

These stainless steel guides ensure that the tape stays centered on the board. They are adjustable for both thickness and width. The thickness is adjusted with the Philips head bolt to the left of the Transfer Wheel as it goes through the main Front Panel. The width is adjusted with the Phillips head screw pictured.



Outriggers:

Should be used when longer panels are being banded. They are simply inserted until they run into the stop bolts inside the Mechanical Channel. When not in use, the Outriggers can be stored on the legs of the Equalizer.



Sprung Wheels:

Four of the iron wheels after the Glue Transfer Wheel are spring loaded to help seal the edges of the banding in place. When using the Equalizer, hold the panels down firmly to insure that the wheels are compressed to provide a finished edge on the banding.

MAINTENANCE

WARNING! *Electrical Hazard: Do not attempt to service any Control Box components. Contact a Castle, Inc. service technician for proper service information.*

MACHINE

- The amount of use on the Glue Pot will determine how often it needs to be cleaned out. A considerable amount of burned glue in the Pot is a good sign that your Pot requires cleaning.
- Contact your Castle dealer or Castle, Inc to find Pot Cleaner.
- You should periodically check that the Glue Pot and the four Sprung Wheels have good spring action.
- The Hopper Extensions will need to be replaced periodically due to glue build-up.
- If any problems develop in cutting the banding, check the Guillotine Blade for sharpness.

TROUBLESHOOTING

BAND DISPENSER IS TOO STIFF

- The screws may have become too tight. The lock washers should be slightly compressed, but not fully flattened. Locate and adjust as appropriate.
- The Finger Slides may have become dry. Try lubing them with silicone grease or dry white graphite. Do not use liquid oil as it may drip onto the tape.

GLUE POT FAILING TO FILL EVEN THOUGH FILL CYCLE IS ACTIVATING REPEATEDLY

- The Glue Magazine may have become packed and should be dumped and refilled, or tapped with the heel of your hand to settle the glue into whatever air spaces may have developed. To prevent this, make sure that the Glue Magazine isn't filled over halfway to the top.
- Check the air pressure and confirm that there is a minimum of 80 PSI coming from the compressor.
- Check that the Glue Hopper has not become packed. Castle recommends that the Hopper be changed periodically because they will gum up after prolonged exposure to glue fumes.
- In the Magazine, check the position of the Shooter Tube above the Shooter Nozzle. The proper gap is one half an inch.
- Check the Shooter Tube for kinks.

GLUE POT FAILING TO FILL AND NO FILL CYCLE ACTIVATED

- Check the air supply.
- Confirm that the glue is melted.
- Check the small black and white Control Tubes for kinks and blockages.

GLUE POT IS OVERFILLING

- Check for leaks in the Control Hoses.
- Check the small black and white Control Tubes for kinks and blockages.

GLUE POT HAS NO HEAT

- Do not attempt to service the controls without guidance. Contact Castle, Inc. before undertaking any troubleshooting of the Control Box. Attempting to service controls without authorization will void your warranty.
- The Sensor may have failed. Check the wires to the Temperature Sensor, being careful to notice any broken wires.

GLUE TEMPERATURE IS TOO LOW - POOR BONDING STRENGTH AND IT STRINGS OUT DURING APPLICATION

- Adjust the temperature control up by ONE number, allow 10 minutes for temperature to stabilize, and then test.
- Check Glue Pot for burned glue residue on the bottom of the pot. If excessive residue is found then clean pot with Glue Pot Cleaner.
- Check the bottom outside of the Glue Pot and the Hot Plate for glue residue. Clean if necessary.

GLUE TEMPERATURE IS TOO HIGH - GLUE POT IS SMOKING

- Adjust temperature control down by ONE number, allow 10 minutes for temperature to stabilize, and then test.

GUILLOTINE STICKING

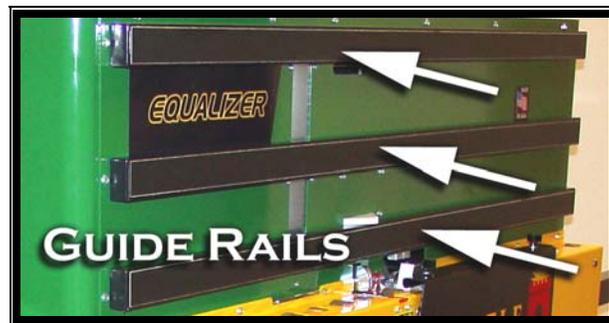
- The Pivot may be too tight. Locate and loosen the Pivot Screw slightly, allowing for some free play.
- Cutting Wheel has become gummed up. Rotate the Wheel to a clean spot. The Wheel should be loose enough to turn by hand. The Wheel will need to be cleaned.
- Cutting Blade may be chipped. If this is the case the blade needs to be replaced.

TRANSFER WHEEL HAS A DRY LINE

- The Glue Pot may have become contaminated. While the Glue Pot is hot, remove the top, dump the liquid glue, and scrape out any foreign matter along the bottom of the Pot.
- The Glue Pot may need to be cleaned.

TAPE EDGES NOT CENTERED ENOUGH ON BOARD EDGE

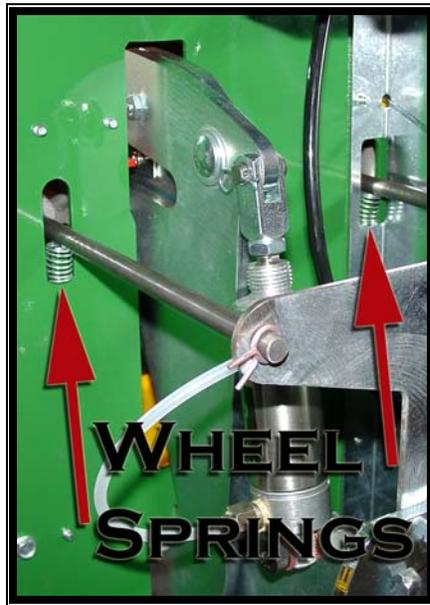
- The machine is factory set to place the tape closest to the edge of the board that is facing **IN** from the machine when running the board. This means that a larger amount of excess tape will be sticking over the edge of the board that is facing **OUT** when running the board. This excess exists to accommodate thicker stock, and when thinner stock is run it is simply cut off.



TAPE EDGES NOT EVEN

- The Sprung Wheel Rollers may not be working evenly. It is possible that the springs may have fallen out. Look in from the back of the machine and confirm that they are all in place.





- The Band Guide may not be set properly for the width of tape you are attempting to use. Check and reset the Band Guide.
- Check the Glue Pot to make sure that it is squarely set into machine.
- Check Stock Guide to ensure that it is aligned properly.
- When running the board, make sure it is fully flush against the Guide Rails and that pressure is being applied constantly while running the board.

WARRANTY INFORMATION

Castle, Inc. uses only the highest quality materials available for the construction of our machines. Your Equalizer edgebanding machine is warranted for one full year from the date of purchase against workmanship or material defects under normal use and service. We are not responsible for negligence, misuse or accidents. We suggest that any and all machine maintenance or repair be discussed with an authorized Castle Representative prior to any disassembly. We will gladly answer any questions you may have prior to any part removal.

Castle, at its sole discretion, may either repair or replace machines that are found to be defective. This shall be the End User's sole remedy under this warranty. **Castle will not, under any circumstances, be liable to the End User for consequential, incidental, special or exemplary damages, or for loss of profits, revenue or use. Further, Castle disclaims any warranty, expressed or implied, as to the merchantability or fitness of a Castle product for any particular purpose.**

For Technical Assistance, Parts & Tooling:

Call 800-282-8338, Monday through Friday, 8:00am - 4:00pm, Pacific Time
Fax: 707-765-0953