

Heat Sealer Manual



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Table of Contents

Common terms used in this manual	1-3
Safety Instructions.....	1-5
Polymer Fume Fever	1-7
Six Tips for Best Results.....	1-9
Other products and services from AFC.....	1-11
HTX SEALER	
Why use an HTX Heat Sealer.....	2-1
Wiring schematic 120V sealer	2-2
Wiring schematic 240V sealer	2-3
MODEL 23 SEALER	
Changing the temperature set point	3-2
Wiring schematic 120V sealer	3-3
Changing to 240V	3-4
Parts list	3-5
MODEL 45 SEALER	
Changing the temperature set point	4-2
Wiring schematic 120V sealer	4-3
Changing to 240V	4-4
Parts list	4-5
MODEL 96 SEALER	
Changing the temperature set point	5-2
Wiring schematic	5-3
Parts list	5-4
TACKERS	
Tackers	6-1
Patching Kit.....	6-2
Patching Kit Contents.....	6-3
Patching Instructions	6-4
Patch Lay-up	6-5
Tacker Safety.....	6-6
Problems and Solutions	6-7
Tortilla Patch Kit.....	6-9
Accessories and supplies	6-10
JOINTS AND TROUBLESHOOTING	
Making a simple overlap seal	7-1
Troubleshooting and common problems	7-3
Heat sealer and hand tacker warranty	7-5

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View instructional belt repair and heat sealing videos at www.afcvideos.com

Common Terms Used in This Manual

PTFE: Polytetrafluoroethylene is a generic term for Teflon™.

TEFLON™: is a trademark of DuPont Company. Many other companies manufacture PTFE. Only PTFE manufactured by DuPont can be called Teflon™. Most high temperature, non-stick belting is coated with PTFE. DuPont also uses the Teflon™ trademark for two other polymers (FEP and PFA).

FEP: is a clear film. It is a melt flow fluoropolymer. It can be used as the glue between two layers of PTFE in a heat sealed joint. Melt temperature of FEP is approximately 520° F (271° C).

PFA: is a melt flow fluoropolymer. Its appearance is identical to FEP. PFA can also be used as the glue between two layers of PTFE. Melt temperature is approximately 580° F (306° C).

MINERAL BOARD: is a high temperature non-asbestos white insulation board.

SILICONE CLOTH: is a silicone coated fiberglass fabric used as a disposable non-stick material. Sometimes called SRC (Silicone Release Cloth)

Safety Instructions

AFC's Heat Sealers are designed for use in an industrial environment. By nature, these heat sealers are very hot. Fortunately, the design and operation is quite simple. Safe operations are easily conducted. Please observe the following safety instructions.

- **DO NOT TOUCH THE ALUMINUM BASE.** The base of the heat sealers is at 700+°F during operations. It can inflict severe burns, even when unplugged. The base can inflict severe burns as much as one hour after the power is disconnected.
- **USE IN A WELL VENTILATED AREA.** Fumes and smoke are always present in small quantities in the area directly above the heat sealer. The operator of the heat sealer should avoid spending excessive time standing over the heat sealer. On rare occasions the operator may experience polymer fume fever. Please refer to the information sheet in the manual for more information on polymer fume fever. (See page 1-7)
- **REMOVE FLAMMABLE LIQUIDS.** Occasionally solvents, such as isopropyl alcohol, may be used to clean the Teflon™ material prior to heat sealing. All traces of solvents should be removed from the Teflon™ and from the sealing area before heat sealing commences. AFC's heat sealers are NOT approved for use in explosion proof areas.
- **STEEL TOED SHOES ARE RECOMMENDED** for everyone in the vicinity of the heat sealer operations. Gloves are also recommended.
- **ELECTRICAL GROUNDING IS PROVIDED** by the three-prong plug. Use only with grounded circuits (three-prong receptacles).
- **COOL DOWN & STORAGE.** Do not place a hot iron (unplugged or plugged in) on any flammable surface (wood, plastic, etc.), any painted surface, or any dirty surface. Doing so may cause a fire, may produce toxic fumes, and may contaminate the working surface of the iron.
- **WARM-UP BLOCK.** A piece of mineral board is provided with each heat sealer. We recommend that the heat sealer is placed on the warm-up block during warm-up and during any period of inactivity, when the iron is hot.

HTX-2 and HTX-3 units can be set down upside-down on their handles as an alternative when the warm-up block is not accessible. This will cause no harm to the unit. It does however create a serious safety risk (of burns) and is therefore discouraged.

Polymer Fume Fever

Fortunately, in the case of human exposure to heated Teflon™ resins, no lethal effects have been observed. Instead, such exposure has merely caused a temporary flu-like condition similar to metal fume fever (or “Foundry-Man’s Fever”), known for many years.

These symptoms, called “Polymer Fume Fever”, are the only adverse effects observed in humans to date. The symptoms do not ordinarily occur until about two or more hours after exposure, and pass within 36 to 48 hours, even in the absence of treatment. Observations indicate that these attacks have no lasting effect, and that the effects are not cumulative.

When such an attack occurs, it usually follows exposure to vapors evolved from the polymer at high temperatures used in resin processing operations, or from smoking cigarettes or tobacco contaminated with the polymer. Although the causative agent in the decomposition products has not been definitively identified, the particulate fraction mentioned above appears to be implicated. If such attacks occur, it is recommended that the patient be removed immediately to fresh air and that a physician be called.

- **THE ABOVE WARNING IS AN EXCERPT FROM A WARNING USED BY A MAJOR SUPPLIER OF PTFE RESINS.**
- **POLYMER FUME FEVER IS USUALLY CAUSED BY BURNING TEFLON™ (PTFE) PRODUCTS OR BY HEATING THEM UP TO 800°F OR MORE**

Six Tips for Best Results

1. **TEST STRIP** Before actually heat sealing an expansion joint, we recommend that a test strip be heat sealed. The test strip should be constructed with the same materials as the belt. The test strip should be peeled apart to ensure that good heat sealing has occurred. Bare glass should be exposed when a well-sealed test strip is pulled apart.
2. **CLEANLINESS** The heat seal iron and the mineral board should be covered with clean silicone cloth prior to heat sealing. The silicone cloth also prevents the accumulation of PFA/FEP on the bottom of the iron.
3. **TEMPERATURE** A set point of 700-725° F is recommended for most heat sealing. Different thicknesses of materials should be accommodated by varying the dwell time, keeping the same temperature. The temperature should not vary according to the thickness of material being heat sealed. Use a mineral board work surface on which to place the material being heat sealed. Note that a joint must be heated above 700°F to obtain a good joint, even though the PFA melts at 580°F
4. **TIMING** A small electronic timer or stopwatch should be used to ensure that uniform heat sealing time is used.
5. **OVERLAPPING** The 700-725° F set point allows for reheating all or part of a heat sealed joint. Most jobs require that the heat sealer be stepped across the width of the joint. Each step should overlap the previous step by ½ to 1 inch. Overlapping ensures that no area within the seam is left unsealed. Overlap area will be subject to two full heat cycles. At 700-725° F, overlapping will not damage the material.
6. **PRESSURE** Immediately upon removal of the heat sealing iron, the PFA (or FEP) is still in a melted state. It will solidify within 10-15 seconds after removal of the heat. AFC recommends applications of pressure to the joint area for those 10-15 seconds. This is a CRITICAL STEP in obtaining the strongest joint. Pressure may be applied with a cotton rag or with a roller. See our website, www.afconline.com, for rollers available from AFC.

Other Products Available From AFC

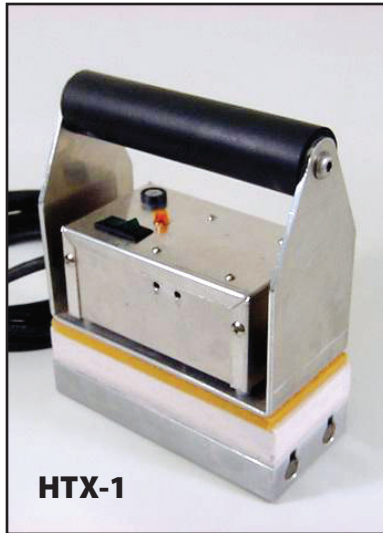
- Conveyor belts
- Full Width Clamping Fixture
- Bonding Film
- Silicone Release Cloth
- Hand Tackers
- Dot Tackers
- Custom Built Portable Sealers
- Hand Rollers
- Mineral Board, cut to size
- PTFE Fabrics with Adhesive Backing (PSA Tape)

Services Available from AFC

- Field Installation of Belts
- Heat Sealer Training
- Belt Design
- Belt Life Analysis (Failure Analysis)
- Machine Design Consulting (Relating to PTFE Belts)
- Custom Heat Sealer Design
- Specialty Fluoropolymer Fabrication
- Belt Tracking System Design and Consulting

HTX HEATERS

Why Use An HTX Heat Sealer?

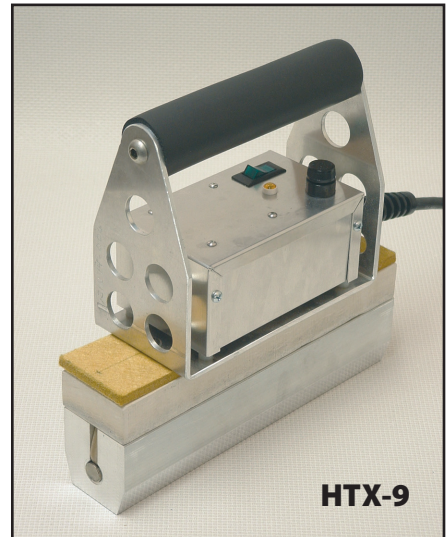


HTX heat sealers incorporate a very different design as compared to other heat sealers.

When compared to our standard units, the HTX series has been designed to be lightweight, durable and less expensive.

The HTX-9 series is intended for simple heat sealing of 1" overlap splices. The heated platen is only slightly wider (1.25" or 1.5" wide) than the seam itself. This minimizes the tendency for the belt to distort and wrinkle in the area just adjacent to the seam.

The HTX1, HTX-2 and HTX-3 sealers are designed for installation of flexible expansion joints, flue duct coupling as well as repair and installation of PTFE coated architectural structures.



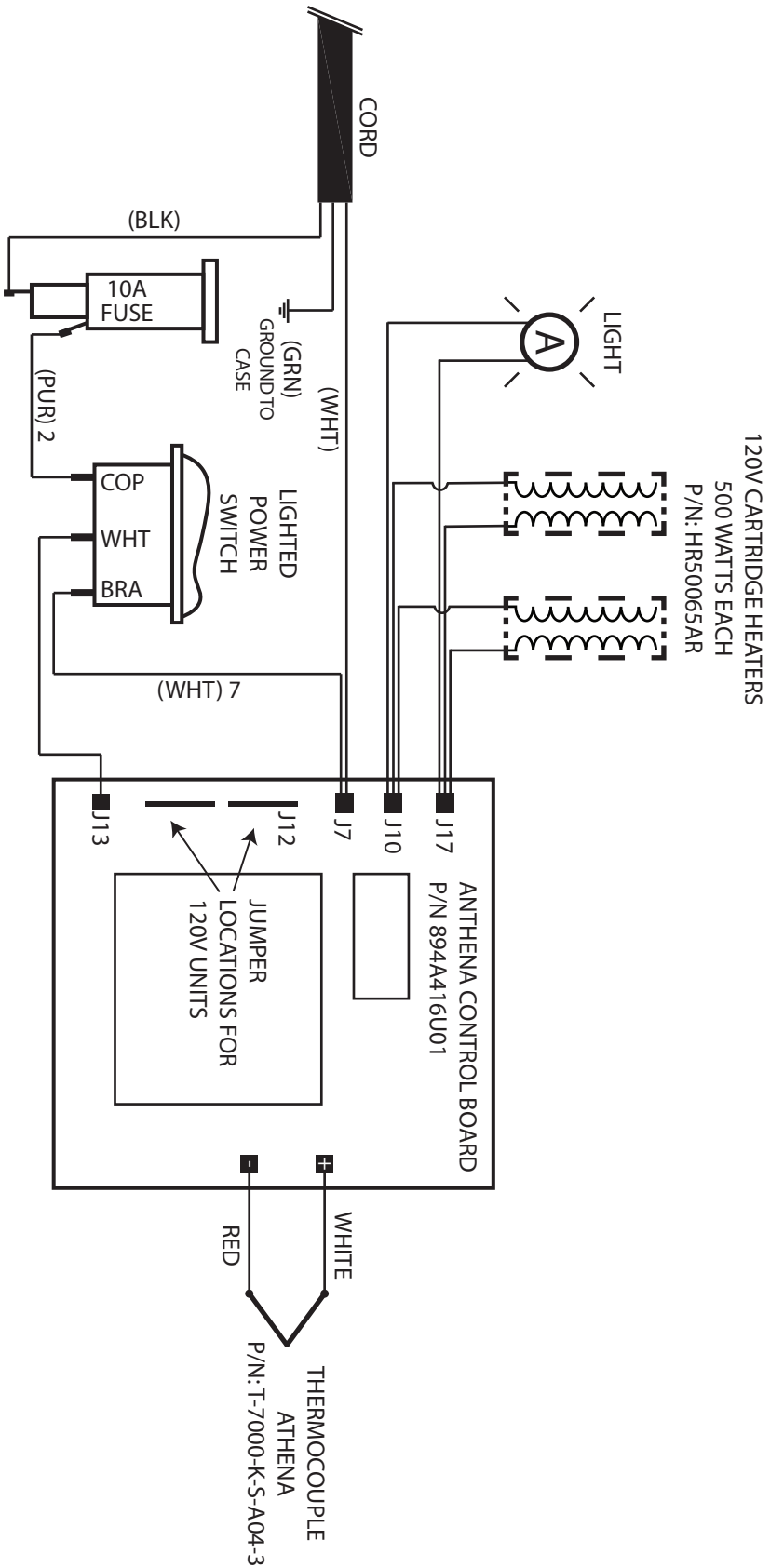
Included with every sealer is a bi-metal dial thermometer. This should be used during the warm up period every time the sealer is used. The thermometer **MUST** also be used anytime an adjustment to the temperature set point is made.

The electronics are tucked between the aluminum handles. This protects the controls from most rough handling.

Eliminating weight and eliminating some features of our "top of the line" heat sealers also reduce the price of our HTX series by almost 50% as compared to our standard units.

To view our complete line of heat sealers and service, visit our website at www.afconline.com

WIRING SCHEMATIC 120V HT HEAT SEALERS



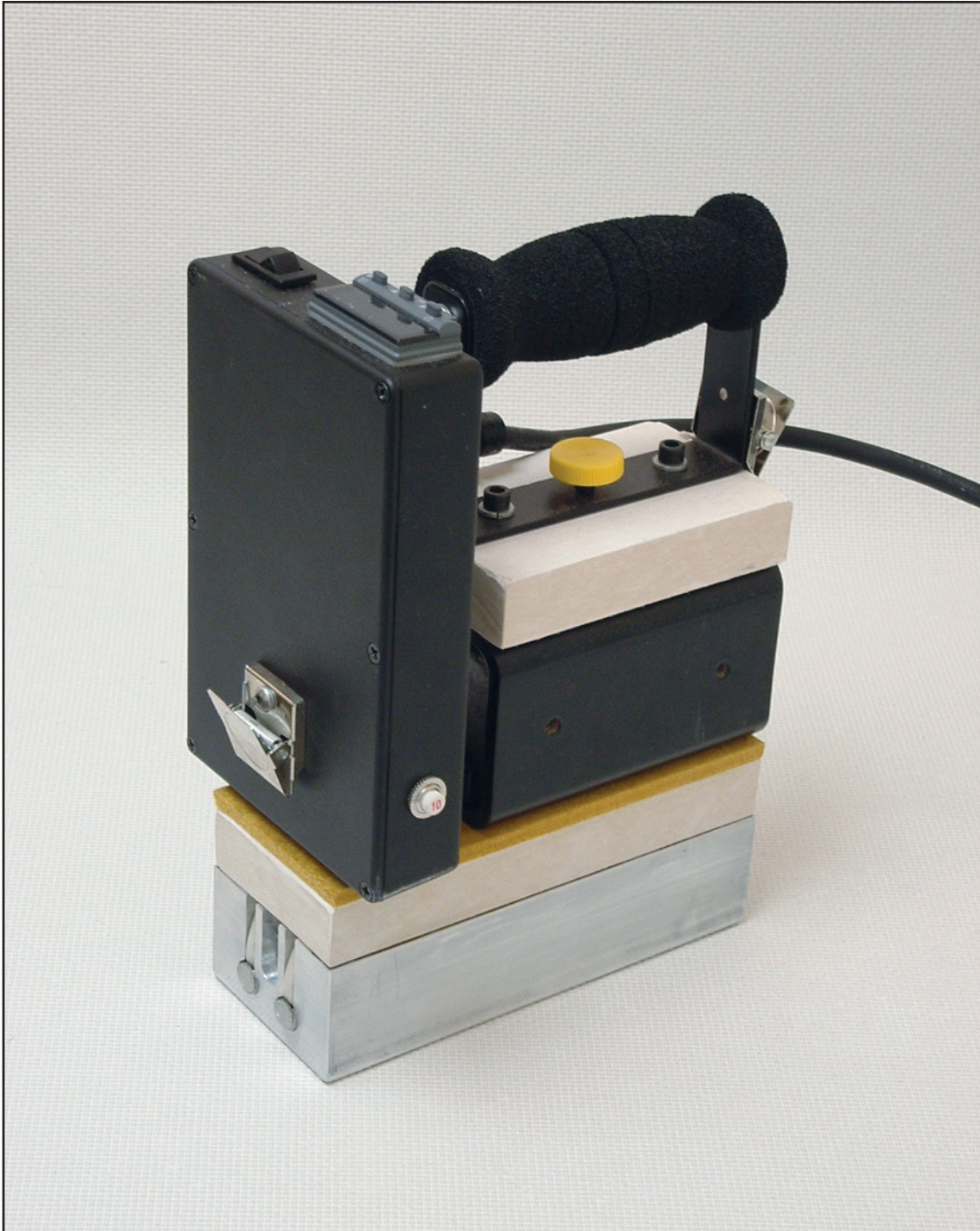


MODEL 23

SEALER

Model 23-110A

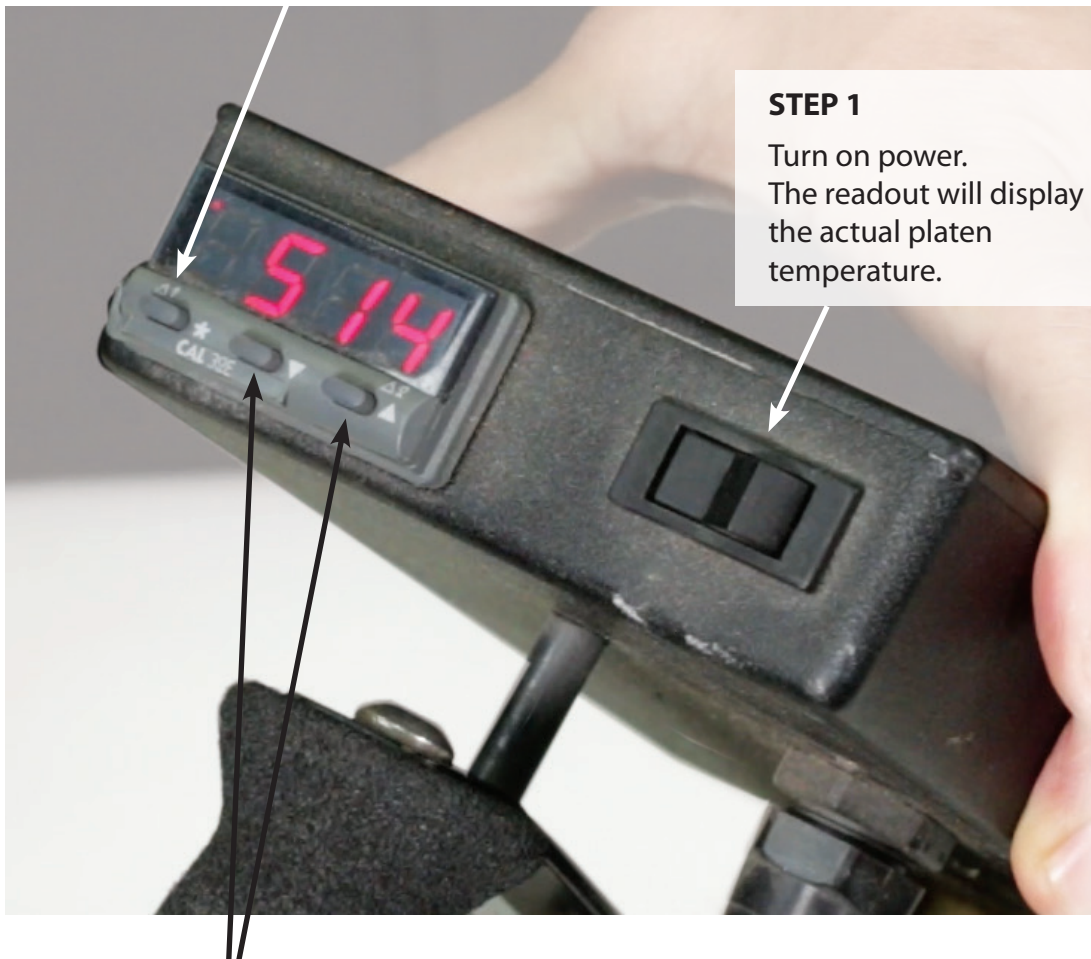
3 X 7.5 INCH, 110/120 VOLT



Changing the Temperature Set Point

STEP 2

Press and hold the * button.
Readout will display set point
value.



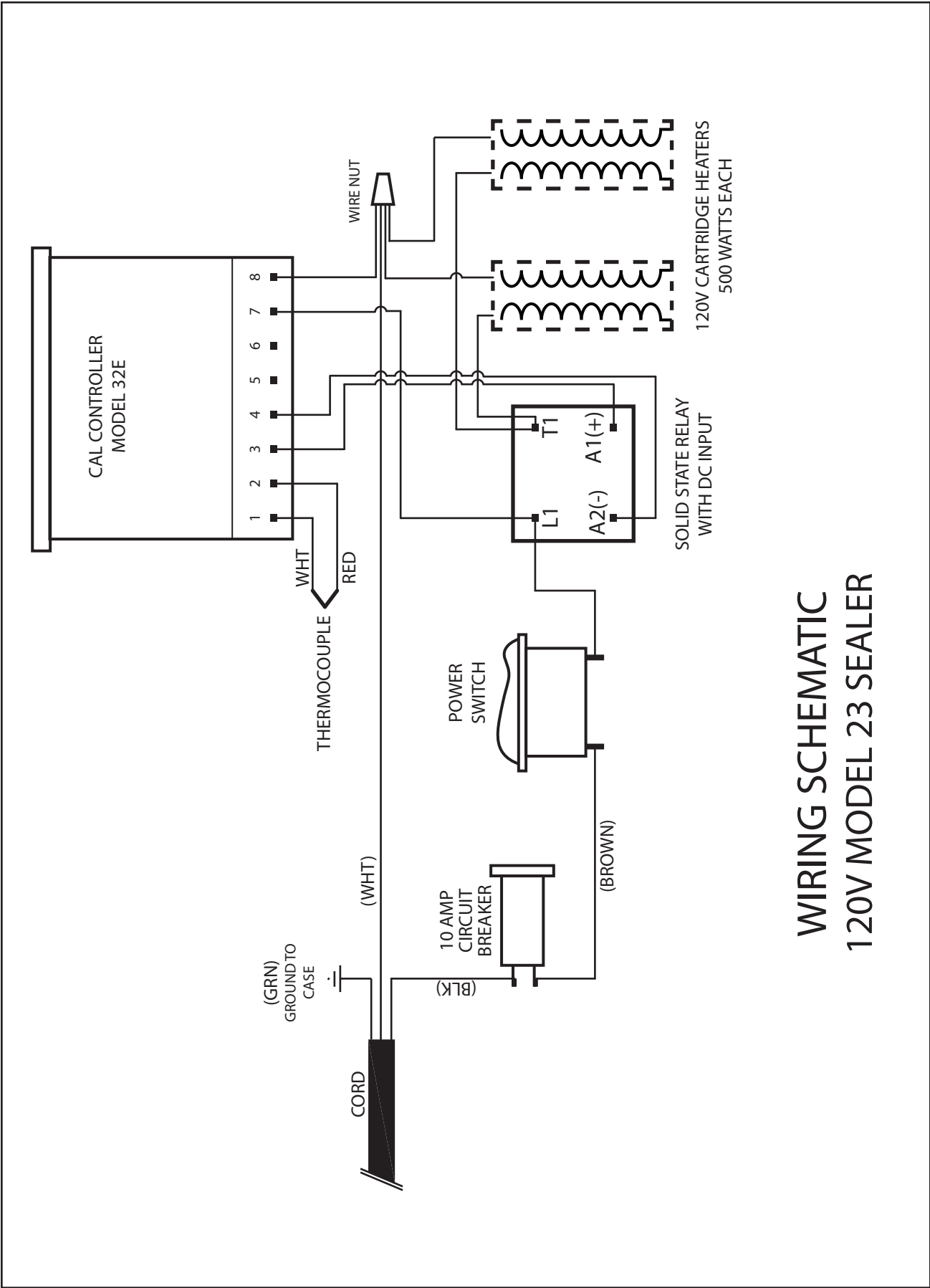
STEP 1

Turn on power.
The readout will display
the actual platen
temperature.

STEP 3

Continue to hold the * button while adjusting set
point using ▲ and ▼ buttons.

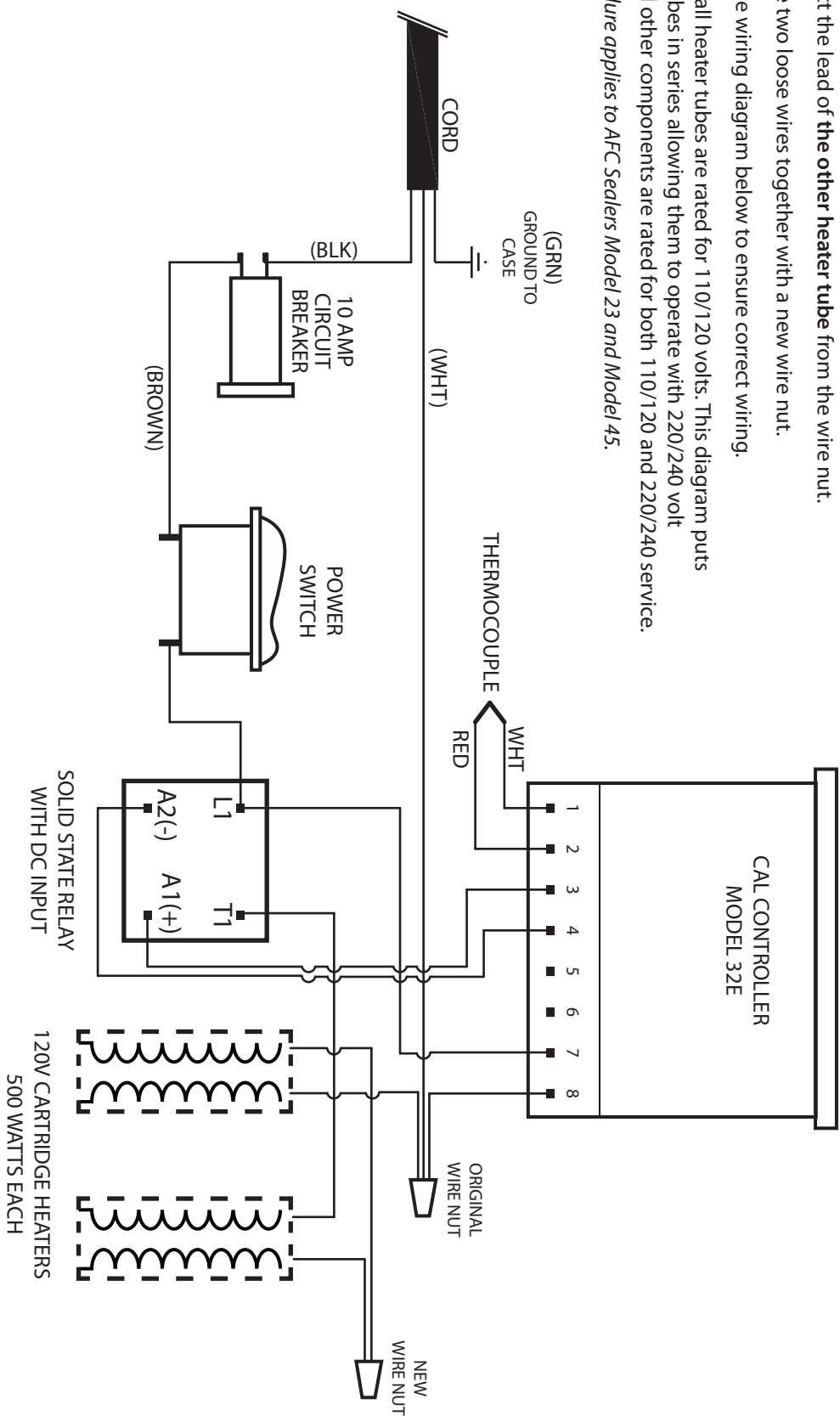
Release * button when done. The display will return
to showing the actual temperature of the platen.



WIRING SCHEMATIC
120V MODEL 23 SEALER

To change the voltage from 110/120 to 220/240

1. Remove plug from power cord and replace with a 220 volt plug (with a grounding prong). Note that the amperage will drop by half for 220 volt service.
2. Disconnect one of the heater tube leads from terminal T1 on the relay.
3. Disconnect the lead of **the other heater tube** from the wire nut.
4. Attach the two loose wires together with a new wire nut.
5. Consult the wiring diagram below to ensure correct wiring.
6. Note that all heater tubes are rated for 110/120 volts. This diagram puts the two tubes in series allowing them to operate with 220/240 volt service. All other components are rated for both 110/120 and 220/240 service. *This procedure applies to AFC Sealeders Model 23 and Model 45.*



Changing voltage from 110/120V to 220/240V
(Model 23 and Model 45 Heaters)

Parts List For Model 23 Heat Sealer

Heater Block.....	HRM-1007
Control Box	HRM-6002
Painted Weight 2X4.....	HRM-9004
Machined Marinite Block (3X7.5)	HRM-3013
Machined Marinite Block (3X5).....	HRM-3016
Handle Bracket.....	HRM-7001
Handle Core	HRM-7002
Handle Foam	HRM-7003
Square Tubing.....	HRM-7012
Propel (Die Cut)	HRM-1058
Right Angle Bracket	HRM-5001
X" Grommets.....	HRM-7014
Acco Clips	HRM-7016
Stand Offs	HRM-7020
Thumb Knobs.....	HRM-7017
Screws For Thumb Knobs.....	HRM-7018
Heater Cartiridge	HRM-1030
Thermocouple	HRM-8001
Tempetature Controller	HRM-6004
Strain Relief	HRM-8003
Nut For Strain Relief	HRM-8004
Circuit Breaker (LoAmp)	HRM-8011
Rocker Switch.....	HRM-8005
Solid State Relay.....	HRM-8007
Power Cord.....	HRM-8009

MODEL 45

SEALER

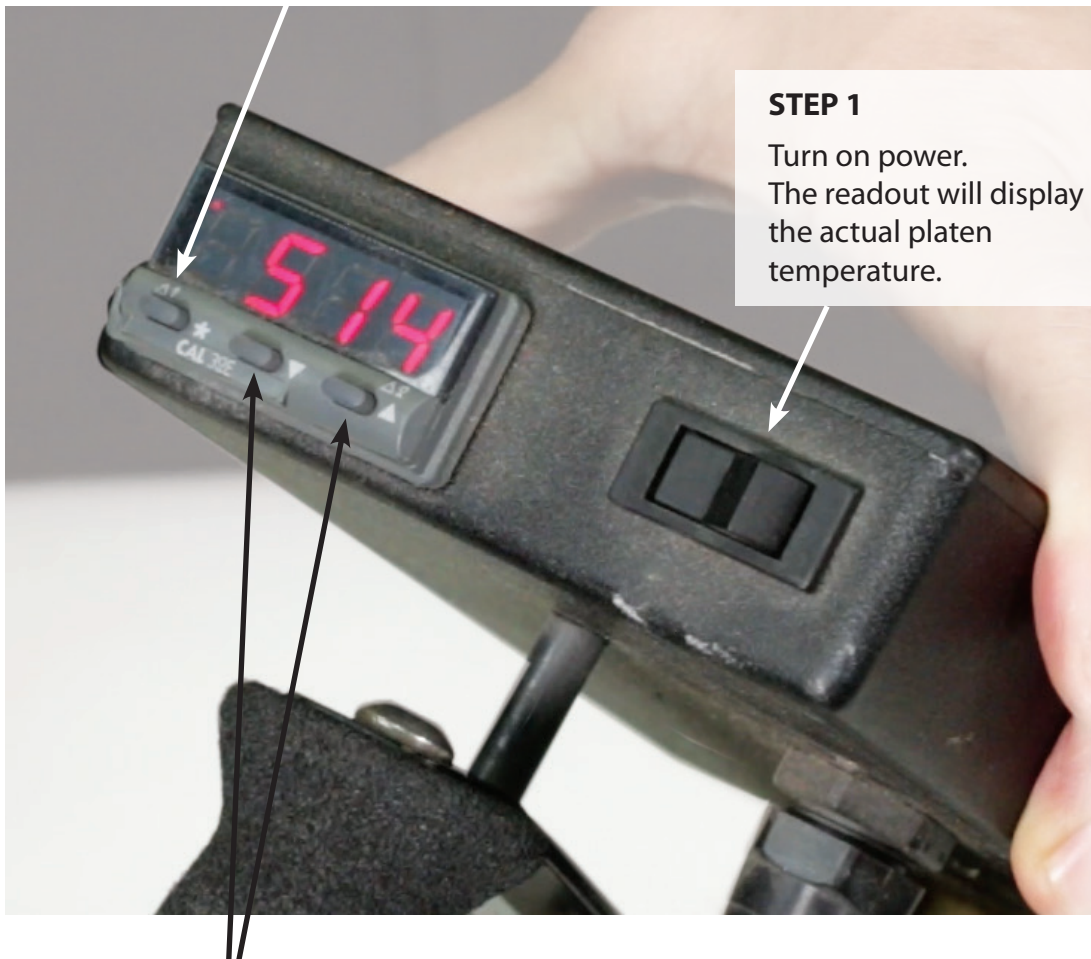
Model H-S45-3X14.5X2-U1 (120 Volt)
Model H-S45-3X14.5X2-U2 (240 Volt)



Changing the Temperature Set Point

STEP 2

Press and hold the * button.
Readout will display set point
value.



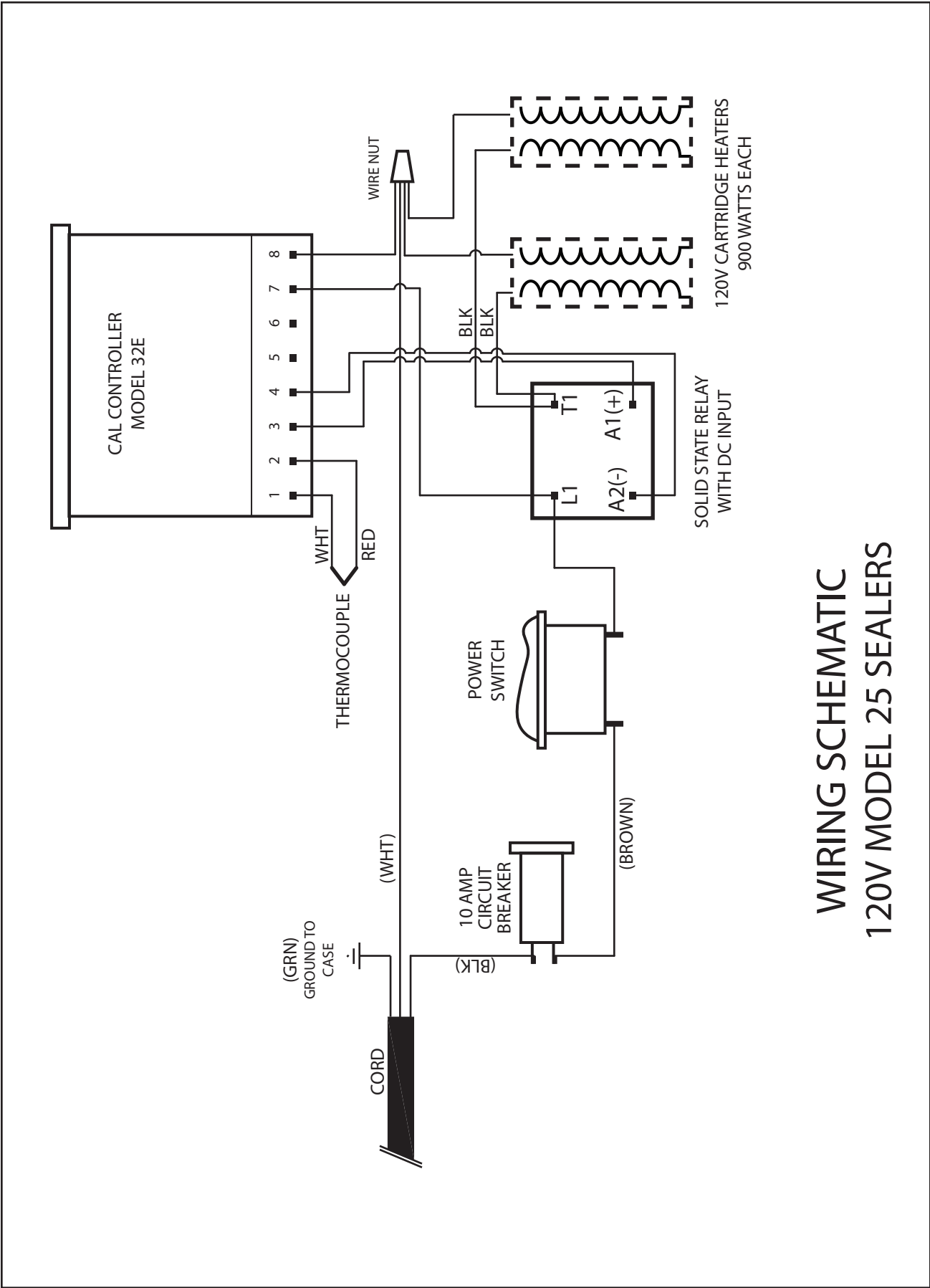
STEP 1

Turn on power.
The readout will display
the actual platen
temperature.

STEP 3

Continue to hold the * button while adjusting set
point using ▲ and ▼ buttons.

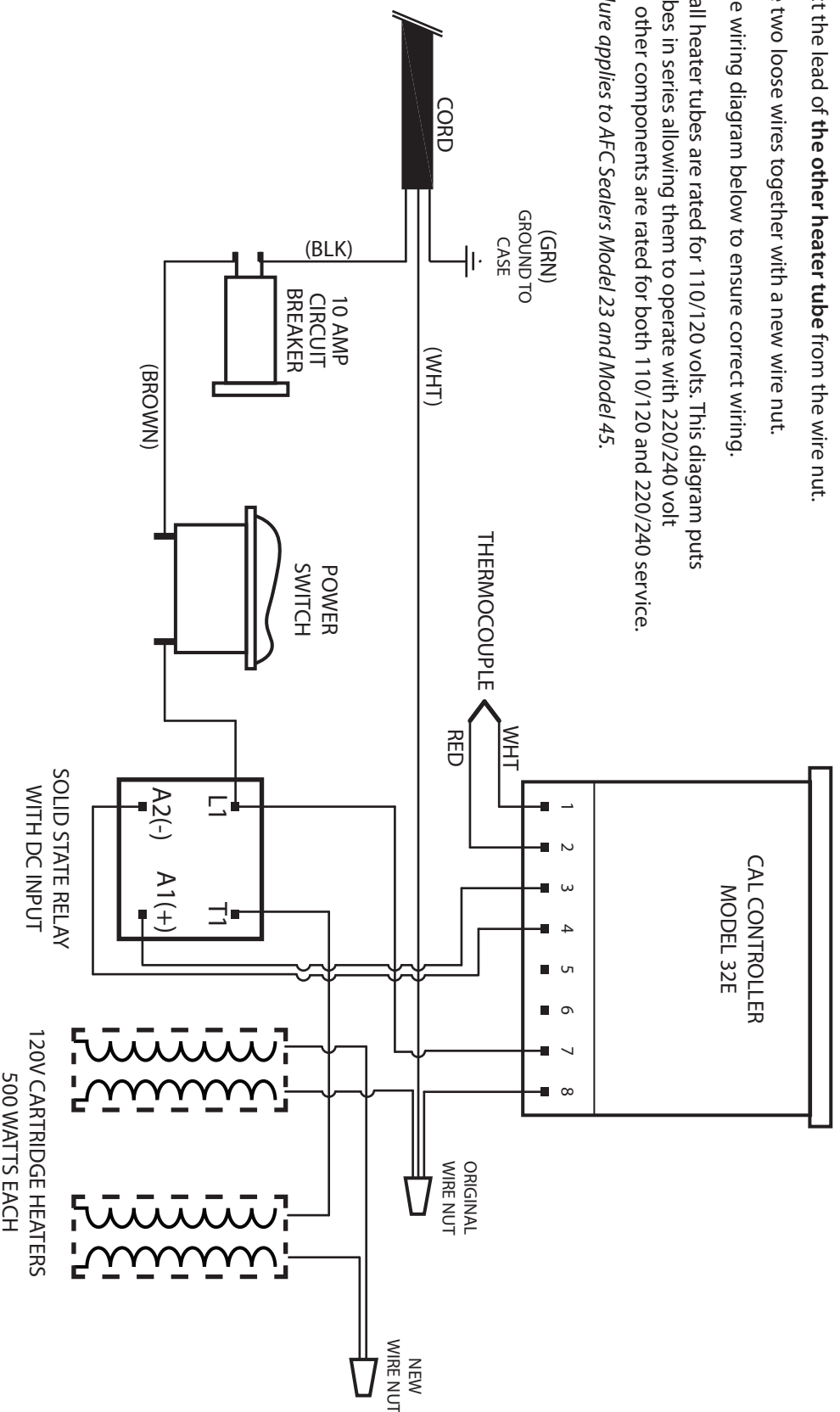
Release * button when done. The display will return
to showing the actual temperature of the platen.



WIRING SCHEMATIC
120V MODEL 25 SEALERS

To change the voltage from 110/120 to 220/240

1. Remove plug from power cord and replace with a 220 volt plug (with a grounding prong). Note that the amperage will drop by half for 220 volt service.
2. Disconnect one of the heater tube leads from terminal T1 on the relay.
3. Disconnect the lead of the **other** heater tube from the wire nut.
4. Attach the two loose wires together with a new wire nut.
5. Consult the wiring diagram below to ensure correct wiring.
6. Note that all heater tubes are rated for 110/120 volts. This diagram puts the two tubes in series allowing them to operate with 220/240 volt service. All other components are rated for both 110/120 and 220/240 service. *This procedure applies to AFC Sealers Model 23 and Model 45.*



Changing voltage from 110/120V to 220/240V (Model 23 and Model 45 Heaters)

Parts List For Model 45 Heat Sealer

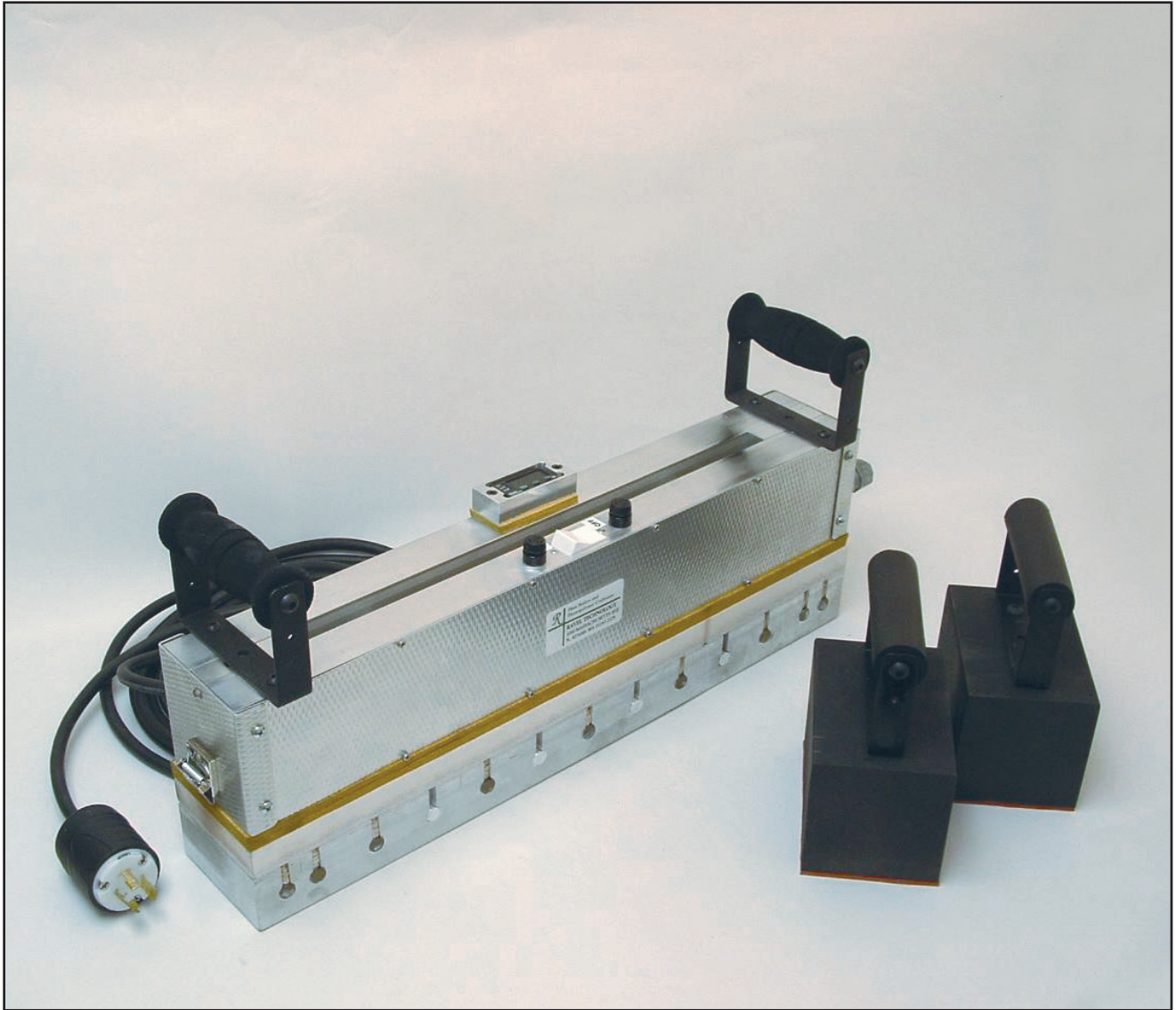
Heater Block.....	HRM-1003
Control Box	HRM-6002
Painted Weight 2X8.....	HRM-9002
Machined Marinite Block (3X14.5).....	HRM-3014
Machined Marinite Block (3X12)	HRM-3012
Handle Bracket.....	HRM-7001
Handle Core	HRM-7002
Handle Foam	HRM-7003
Square Tubing.....	HRM-7013
Propel (Die Cut)	HRM-1057
Right Angle Bracket	HRM-5001
Spring Plate.....	HRM-5002
W' Grommets.....	HRM-7014
Acco Clips	HRM-7016
Stand Offs	HRM-7020
Thumb Knobs.....	HRM-7017
Screws For Thumb Knobs.....	HRM-7018
Heater Cartiridge	HRM-1031
Thermocouple	HRM-8001
Tempetature Controller	HRM-6004
Strain Relief	HRM-8003
Nut For Strain Relief	HRM-8004
Circuit Breaker (20Amp)	HRM-8012
Rocker Switch.....	HRM-8005
Solid State Relay	HRM-8007
Power Cord.....	HRM-8009

MODEL 96

SEALER

Model 96-220

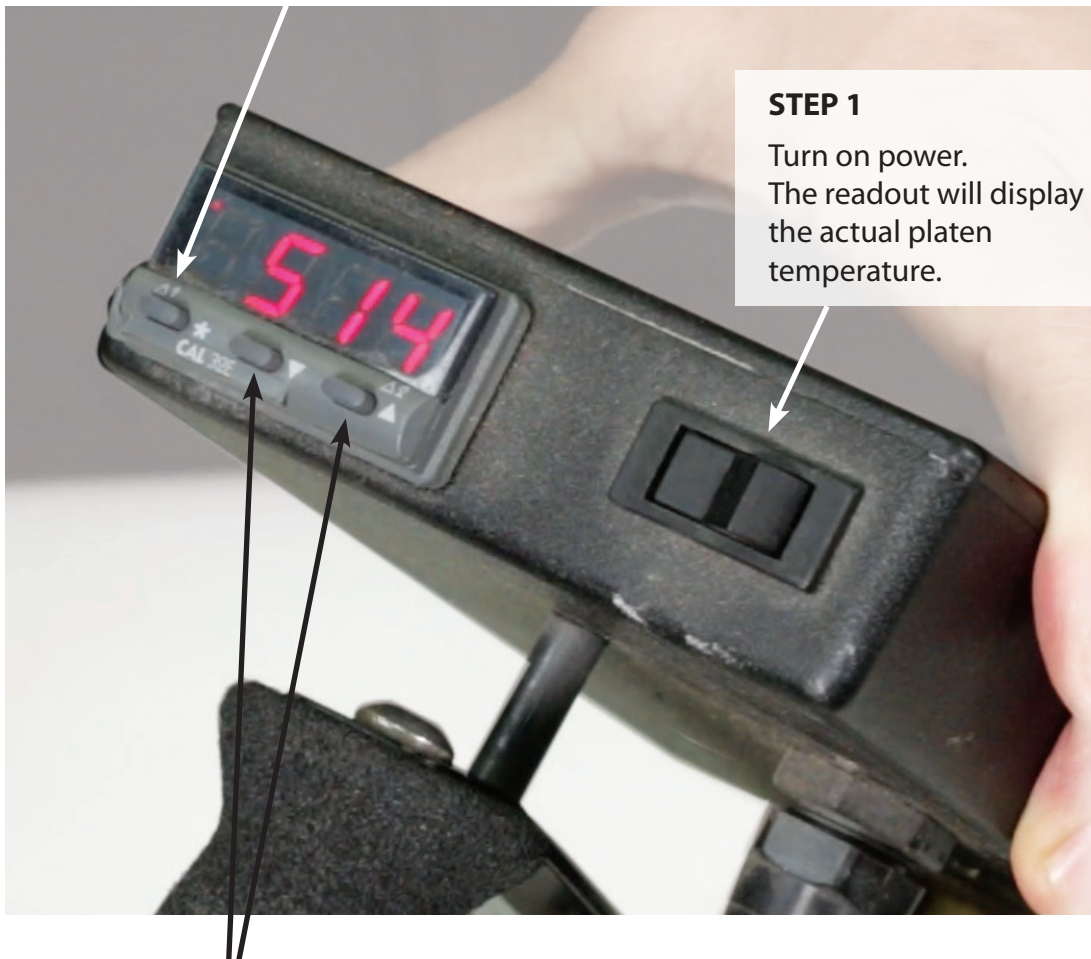
4 X 24 Inch, 220 Volts, 1 Phase, 50/60 HZ



Changing the Temperature Set Point

STEP 2

Press and hold the * button.
Readout will display set point
value.



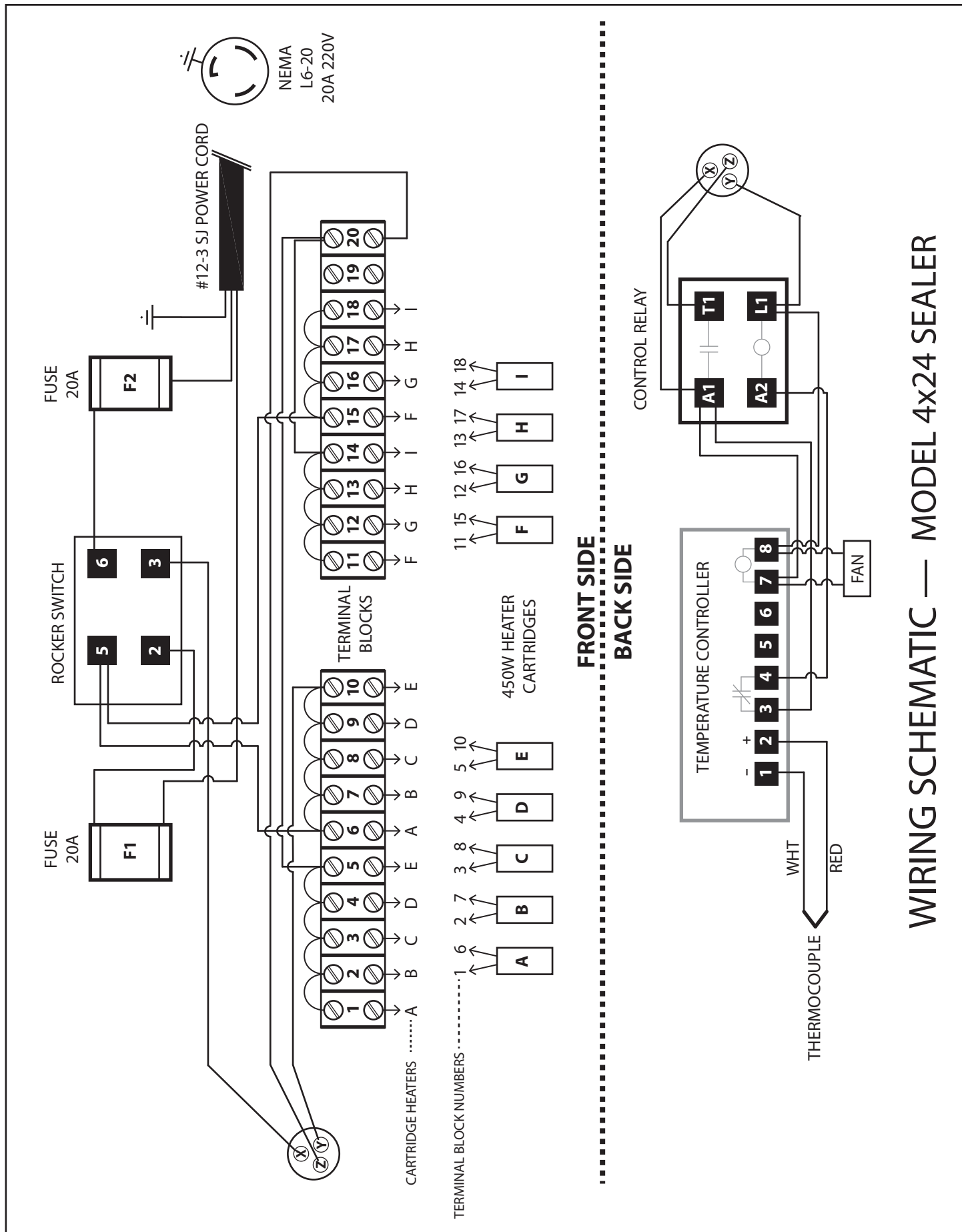
STEP 1

Turn on power.
The readout will display
the actual platen
temperature.

STEP 3

Continue to hold the * button while adjusting set
point using ▲ and ▼ buttons.

Release * button when done. The display will return
to showing the actual temperature of the platen.



Parts List for Model H-S96 Heat Sealer 4X24x2-U2

Heater Block.....	HRM-1017
Machined Marinite Block	HRM-3018
Pyropelsheet 4X24	HRM-1063
Handle Bracket.....	HRM-7001
Handle Core	HRM-7002
Foam Handle	HRM-7003
Front Channel	HRM-6006
Back Channel.....	HRM-6005
Front Cover.....	HRM-5003
Back Cover.....	HRM-5004
Right Side Cover	HRM-5005
Left Side Cover	HRM-5006
Mount Plate For Temp. Controller	HRM-6003
Pyropel For Temp Controller.....	HRM-1064
Spacer Blocks.....	HRM-7019
L.d. Plate	HRM-5009
Fan.....	HRM-7023
Finger Guard.....	HRM-7024
Thermocouple	HRM-8001
Heater Cartridge	HRM-1018
Temp Controller.....	HRM-6004
Strain Relief/ Nut.....	HRM-8004 /HRM-8005
Power Switch.....	HRM-7022
Fuse Holder / Fuse	HRM-7025 / HRM-7026
Soiled State Relay	HRM-8007
Power Plug	HRM-8013
Power Cord.....	HRM-8008
Terminal Strip	HRM-7021
Steel Weights/ With Handles	HRM-9006

Tackers

Tackers



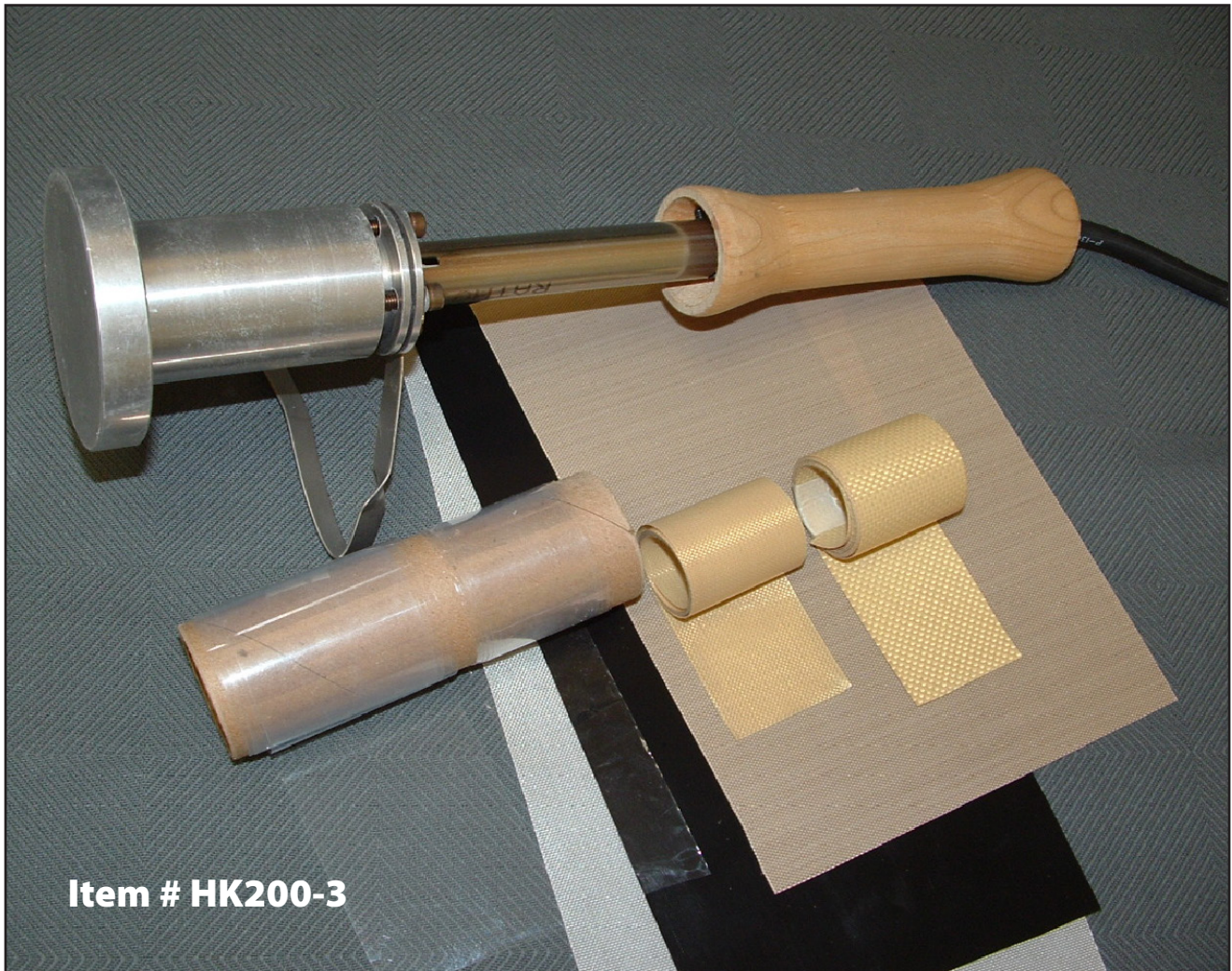
Tacker Features

- Corrosion-resistant aluminum head
- Built-in stand
- Vermont Hardwood handle provides thermal and electrical insulations
- Power cord is 13 ft. long and has a 3 prong grounded plug
- Wattage is designed to reach, but not exceed proper sealing temperature for Teflon™ (Fluoropolymers), without the need for a temperature controller.
- Various metals and sizes are available for tackers. Consult AFC for more information.

IMPORTANT

Always place the iron in the position shown above during warm-up and idle periods. This will prevent the tackler handle from getting too hot.

Patching Kit



AFC's Repair Kit is designed specifically for repairing Fluoropolymer materials such as:

- Teflon™ Coated Fabrics and Fabric Structures
- Teflon™ Coated Conveyor Belts
- Fluoropolymer Film Materials

The tacker (repair iron) is designed to achieve Teflon™ sealing temperatures without the need for a temperature controller.

This kit includes an assortment of patching materials. The type of material used will depend upon the type of defect being patched. The contents of the kit are listed on the next page.

KIT CONTENTS

Item Name	Description	Recommended Use
Tacker Model T-200-3	High temperature tool for fluoropolymers (PTFE, Teflon™, FEP, PFA, etc.) 3" round aluminum sealing surface	Patching of fluoropolymers coated fabrics and belts
Mineral Board	1" thick, non-asbestos, high temperature insulating board	Placed underneath the product being repaired. Insulates from heat loss and helps to obtain strong bonds
Silicone Release Cloth	Reusable, prevents the tacker from sticking to bonding film	Use on top of every patch during sealing. Remove after the patch is cool (1 to 5 minutes)
20-03 Non-Bondable (.003" thick)	Teflon™ Coated Fiberglass. Must be used with a bonding film. See below for details	Use to reinforce and repair holes, tears, and weak spots in the belt. Good up to 520 °F
20-06 Bondable (.006" thick)	Patch Material. Teflon™ Coated Fiberglass with bondable coating on one side. Does not require a separate bonding film	Use to reinforce and repair holes, tears, and weak spots in the belt. Good up to 520 °F
20-10 Non-Bondable (.010" thick)	Patch Material. Teflon™ Coated Fiberglass, non-bondable coating. Must use a bonding film. See section 5 for details.	Similar to 20-03, but thicker and stronger. Use for heavier belts and areas where a thicker patch can be tolerated.
500-07 Non-Bondable (.007" thick)	Patch Material. Teflon™ Coated Kevlar fabric. Must use an FEP bonding film.	Use where tear strength and flexibility are needed.
Bonding Film 1 Mil (.001" thick) 3 Mil (.003" thick)	Use to bond patch materials to the product being patched. Do not use for applications at 520 °F and higher. Not necessary for self-bonding materials, such as 20-06 (bondable)	Not suitable by itself as a patch material. Used to bond Teflon™ coated materials, such as 20-03, 20-10 and 500-07 (All in this kit).

PATCHING INSTRUCTIONS

1. Clean the area to be patched. A contaminated patch area will prevent good bonding. The cleaning method will vary depending upon the type of contamination present. If the material is too heavily contaminated, try the other face
 - a. **SAFETY NOTE:** Most contaminants will be burned (oxidized) at Teflon™ sealing temperatures (700°F to 800°F). AFC has no way to predict what gases or fumes could be produced by burning contaminated. Consult with the manufacturer of the product whose residue is causing contamination for more information.
2. MAKE SURE YOU USE IN A WELL VENTILATED AREA
 - b. Teflon™ coated materials are very resistant to chemicals. Cleaning agents may include solvents, water-based detergents, and commercial cleaners. Abrasive cleaners and abrasive cleaning pads should be used with caution. Teflon™ is easily abraded. Be careful not to abrade the belt outside the area of the patch. Scrub brushes can also be used with caution.
3. Allow the Tacker to warm-up for 20 minutes prior to patching
4. Select a patch material and cut to size. Circular patches under 2.5" diameter work best with this tool. Larger patches will require multiple hits with the tacker.
5. Be sure that a bonding layer is present and that the bonding layer contacts the surface being patched
6. Place the mineral board, the product being patched, and the patching materials, as shown on page 6–5.
7. Apply the tacker to the patch area. The time required will vary, but is usually under 1 minute.
8. Remove the tacker, leaving the silicone release cloth in place. Apply pressure by rolling with an AFC Roller, or patting firmly with a thick cotton cloth (must be 100% cotton). A silicone rubber pressure roller is available from AFC for this purpose. Keep the silicone release cloth in place during the pressure cycle. Any movement at all may result in a rough patch.
9. Allow to cool for 1 to 5 minutes, then remove the silicone release cloth.
10. Inspect the patch with special attention to the edges. If the patch is well-sealed, the product being patched is ready for use immediately.
11. If the patch is partially sealed, re-apply the tacker (and release cloth) to the unsealed area.
12. If the patch is still not sealed, go to the Troubleshooting Section for remedial actions.

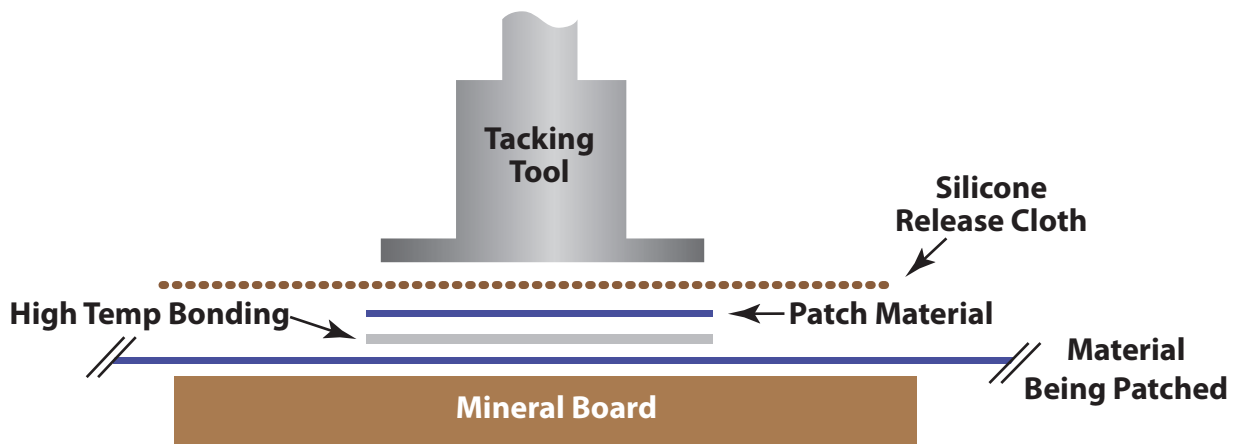
PATCH LAY-UP

For materials that require a separate bonding layer

Materials in this kit that require a separate bonding film include:

1. TCGF 10 Mil
2. TCK 5 Mil
3. TCK 10 Mil

Lay-up as shown



TACKER SAFETY

- The tacker will inflict severe burns if touched. Do not touch **ANY** metal tacker parts while plugged in.
- The tacker can inflict burns up to 1 hour after being unplugged. Do not leave unattended while cooling.
- Sealing temperatures can ignite many materials such as wood, plastics, and paper. Keep these materials away from the tacker.
- Always rest the hot iron on its built-in stand during warm-up, hot idle, and cool down periods.
- Do not use when flammable liquids are present.
- If a solvent or water was used to clean the patch area, allow solvent to dry thoroughly before patching.
- Use in a well-ventilated area. Note that the silicone release cloth will smoke when first used. This is normal.
- Contamination of the product being patched may produce fumes when heated to Teflon™ Sealing Temperatures. Consult with the manufacturer of the product being conveyed to determine if dangerous fumes may result from burning that product. Note that contamination from food products rarely results in dangerous fumes when heated.
- **POLYMER FUME FEVER.** Fluoropolymer materials, when heated to over 800°F, may produce fumes that can cause polymer fume fever. This is a temporary condition that closely resembles the flu. The symptoms will disappear within 24 hours with no known long term effects. **TO AVOID THIS ILLNESS:**
 1. Use in a well-ventilated area
 2. Do not use if the iron is over 850 °F
 3. See page 1–7 for more information on Polymer Fume Fever

PROBLEMS AND SOLUTIONS

PROBLEM	CAUSE	SOLUTIONS
Poor Seal	Contaminated seal area suspected	<p>Do a test patch on new material. If it does not seal, contamination is not the problem</p> <p>Use a more aggressive cleaning technique</p> <p>Apply tacker to the patch area before patching to vaporize water, oil, etc.</p> <p>Apply the patch to the other side (face) of the product being patched</p>
Poor Seal	Rough surface suspected	<p>Use a thicker bonding film</p> <p>Use an AFC roller to apply pressure after the tacker is removed</p>
Poor Seal	<p>Bonding Film did not melt,</p> <p>Not Enough Heat suspected</p>	<p>Use a longer seal time</p> <p>Use a longer warm-up time</p> <p>Mineral Board not used underneath</p> <p>Tacker is not hot enough. Check with dial thermometer (included)</p> <p>Power supply voltage is too low</p> <p>Bonding film is not FEP or PFA. Try Film from a different source</p>
Poor Seal	Uneven pressure suspected	<p>Check flatness of the mineral board. Flip board over if warped</p> <p>Check thickness of patch area. If a step (thickness change) is present, use 2 or more hits to seal</p> <p>Apply more downward manual pressure</p>

PROBLEM	CAUSE	SOLUTIONS
Poor Seal	Bonding film suspected	<p>Use thicker bonding film</p> <p>Check to be sure the film is FEP or PFA</p> <p>If patch material is one side bondable and is upside down, turn it over</p> <p>Material has no bondable coating and a separate bonding film was not used. Add bonding film</p> <p>Patch material has an insufficient amount of bondable coating. Add a layer of FEP film.</p>
Poor Seal Around the Edges	Unknown cause	<p>Uneven pressure (see paragraph above)</p> <p>Patch is too big. Use multiple hits.</p> <p>Bonding film does not extend beyond edge of patch. Cut the bonding film larger</p> <p>Material being patched is heavily textured. Use more bonding film and apply pressure with a roller</p>
Patch is not Smooth	Unknown cause	<p>Pressure not applied correctly after removing the tacker. Try patting more firmly, or rolling with a roller from AFC. Silicone cloth is moving due to pressure application technique. Try a different pressure technique.</p> <p>Wrong patch material used. Try a different material from the kit.</p>
Kit does not contain any patch material that works		<p>Use a scrap piece of the item being patched as the patch. The FEP in the kit can be used to obtain a bond.</p> <p>Call AFC for more material options.</p>

TORTILLA PATCH KIT

AFC's Tortilla Belt Patch Kit contains everything need to repair Tortilla Belts. Included is a lightweight sealing iron with a 3-inch diameter sealing head with a temperature gauge, a variety of patching materials, a set of high temperature gloves, a set of cleaning grit cloth pieces, and an instruction manual.

This product is recommended for applying small patches to PTFE coated materials. This tool is not recommended for heat sealing full width seams.

ITEM NAME	DESCRIPTION	RECOMMENDED USE
Tacker Model T-200-3 (optional)	High temperature tool for fluoropolymers (PTFE, Teflon™, FEP, PFA, etc.) 3" round aluminum sealing surface	Patching of fluoropolymers coated fabrics and belts
66-04 Non-Bondable (3" diameter) (.004" thick)	Teflon™ Coated Fiberglass, (6 pcs) Must be used with a bonding film. See below for details	Use to reinforce and repair holes, tears, and weak spots in the belt. Good up to 520°F
66-04 Non-Bondable (2" diameter) (.004" thick)	Teflon™ Coated Fiberglass, (6 pcs) Must be used with a bonding film. See below for details	Use to reinforce and repair holes, tears, and weak spots in the belt. Good up to 520°F
PFA Bonding Film (.002" thick) (2" & 3" diameter)	Use to bond patch materials to the product being patched. Do not use for applications at 520°F and higher. (6 pcs each)	Not suitable by itself as a patch material. Used to bond Teflon™ coated materials.
400 Grit Cloth Emery	Soft-Grit Abrasive Cloth	Use to clean the belt before patching. This grit does not cause damage to the belt.
Hot Mill Heat Gloves	Gloves	Hand protection while working with hot metals.
Instructions	Instructions	Contains instructions on how to perform belt patching.

ACCESSORIES & SUPPLIES

ITEM DESCRIPTION	PART #	SIZE	PRICE
Mineral board, 1" thick	HA-MINERALBOARD	Cut to customer's specified size	40¢ per in. ²
FEP bonding film, 1 mil (.001")		Sheet 0.5 ft ²	\$2.00
FEP bonding film, 1 mil (.001")		Roll, 1" x 100 ft	\$10.00
FEP bonding film, 5 mil (.005")		Sheet 0.5 ft ²	\$4.00
FEP bonding film, 5 mil (.005")		Roll, 1" x 100 ft	\$41.60
Silicone Release Cloth, 5 mil (.005")		Sheet 0.5 ft ²	\$3.00
Silicone Release Cloth, 8 mil (.008")		Roll, 3" x 18 yds	\$48.00
Silicone Rubber covered Roller, 2" wide	HA-SRROLLER	2" wide	\$75.00
TCGF 4 mil (.004"), Bondable		Sheet 0.5 ft ²	\$2.00
TCGF 4 mil (.004"), Bondable		Roll, 1" x 18 yds	\$18.00
TCGF 10 mil (.010"), Not Bondable		Sheet 0.5 ft ²	\$3.00
TCGF 10 mil (.010"), Not Bondable		Roll, 1" x 18 yds	\$20.00
500-07, Not Bondable, Teflon™ Coated Kevlar Fabric, 5 mil (.005")		Sheet 0.5 ft ²	\$3.00
500-07, Not Bondable, Teflon™ Coated Kevlar Fabric, 5 mil (.005")		Roll, 1" x 18 yds	\$15.00
2-Ply Teflon™ Film, 6 mil (.006"), Bondable on one side		Sheet 0.5 ft ²	\$4.00
2-Ply Teflon™ Film, 6 mil (.006"), Bondable on one side		Roll, 1" x 18 yds	\$31.50
Thermometer, Bi metal with dial		1000 °F Max	\$20.00
Tackers with other shapes and sizes (head size)			Consult AFC

- Other widths of repair materials are available. Price shown is for 1" wide. Multiple by width in inches to calculate the price of other widths.
- Other patch materials and other thicknesses are available. Consult AFC for details.
- Any of the materials in this kit are available in larger quantities. Consult AFC for pricing.
- TCGF is PTFE coated glass fabric.

Joints and Troubleshooting

Making a Simple Overlap Seam

Step #1

Cut and square the ends of the belt. The belt length should be increased by one inch to accommodate the overlap.

Step #2

Lay up the joint as shown in diagram 1. (Page 7-2)

Step #3

Place the heat seal iron on top of the joint as shown in diagram 1. (Page 7-2)

Step #4

Step the heat sealer back and forth, starting in the middle, until the entire joint has been sealed.

Note #1

Sealing time for each step will vary according to the thickness of the material. We recommend the following seal times as a start point. Actual seal times should be established by making a practice joint.

Material Thickness	Sealing Time
.005" or less	1 minute
.005" to .010"	1-1/2 minutes
Greater than .010" to .020"	2 minutes
Over .020"	3 minutes

Note #2

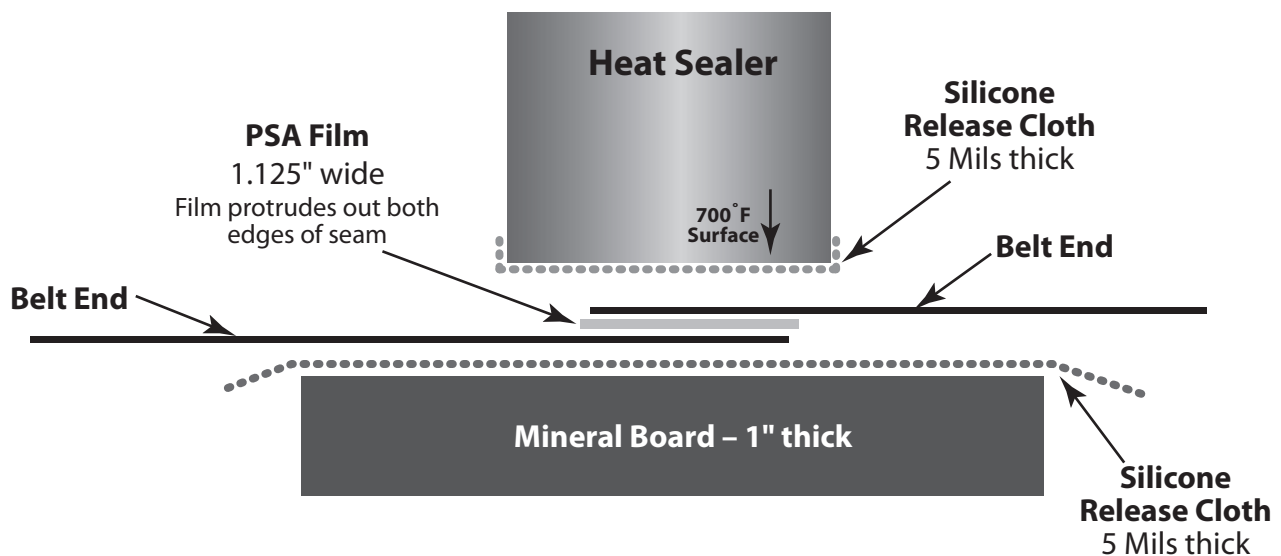
Proper PFA film thickness selection is important. Smooth belts of any thickness can be effectively sealed with .002" thick (2 mil) .005" film. Open mesh belts, textured belts, or very heavy belts may require .005" PFA film. Multiple layers made of 2 mil film may be substituted for a single 5 mil film.

Video Instructions

Go to www.afcvideos.com to see a 5 minute on how to make a simple overlap seam.

Diagram 1

How to Make a Simple 1" Wide Overlap Seam



View instructional belt repair videos at www.afcvideos.com

Troubleshooting and Common Problems

1. Heat seal came apart (delaminated) immediately upon removal of the iron.

POSSIBLE CAUSES:

- PFA (or FEP) film not used
- Mineral board not used
- Dwell time too short
- Temperature too low
- Malfunction of cartridge heater
- Malfunction of temperature controller
- Belt surfaces contaminated (oily)
- Silicone release cloth not used

2. Seam too stiff. Possible causes and solutions:

- PFA / FEP film too thick
- Overlap splice used (try a butt splice)
- Made with excessively thick backing material (use a thinner one)
- 90° splice used (try a diagonal splice)

3. Seam area became misaligned during heat sealing. Possible causes and solutions:

- Seam area inadequately secured to the mineral board
- Tack the belt (to itself) and the heat sealer at intervals before making the final heat seal

4. Seam area doesn't lay flat when heat seal iron is removed.

Bubbling, warping, and wrinkling are all caused by thermal contraction of the seam when the heat is removed. Several techniques can be used to improve the flatness of the seam.

- Wipe the seam area with a dry cotton cloth immediately following the removal of the heat iron
- Use a cold iron to provide pressure during the cooling cycle. An old home iron with cord cut off can be used for this purpose
- Tension the entire width of the belt prior to beginning the heat seal. Remove the tension only after seam area has cooled.

5. Belt sticks or fails prematurely due to exposed fiberglass on the cut end of the belt. Solutions:

- Seal the seam area with a Teflon™ cover film, available from AFC
- Coat the raw ends with liquid Teflon™. Heat with heat sealer to dry and fuse the coating.

6. Belt tears at the edge of the seam. This is usually caused by an excessively stiff seam in combination with small conveyor rollers. Solution:

- Use a more flexible seam
- Switch to a diagonal seam
- Increase machine roller size
- Use a more flexible belting material

View instructional belt repair videos at www.afcvideos.com



Heat Sealer and Hand-Tacker Warranty

Dear Valued Customer,

Congratulations on your purchase of an AFC sealing tool. Advanced Flexible Composites is a leader in plastics solutions with a history of success in a variety of industries. All of our products are produced in accordance with good manufacturing practices with attention to quality of materials and workmanship.

Warranty:

AFC fully warrants the fabrication and craftsmanship of each Heat Sealer and Hand-Tacker and offers a limited warranty—parts and labor—on each Heat Sealer and Hand-Tacker for 90 days. We will ship, with each order, Heat Sealer/Hand-Tacker care instructions. ***Proper Care and Cleaning is the Owner's Responsibility.*** See your care instructions for full details.

This warranty covers:

- Defects in the workmanship including missing or broken components.
- Failure to reach operating temperatures due to materials or workmanship.

This warranty does not cover:

- Damage caused by mishandling and not following care and handling instructions.
- Damage caused by use in applications other than those for which tools were intended.
- Damage caused by improper cleaning and storage.

Precautions:

- Never use as a striking tool.
- Never submerge in water.
- Heat sealers should be put on mineral board during warm up and idle times.
- Tackers should be placed horizontally on the built-in stand (standing tacker vertically during idle times will cause the handle to get too hot to hold).
- Do not clean or lubricate with solvents, oils, wax or cooking sprays.
- Do not allow cord to become frayed.
- Do not drop.

Filing a warranty claim:

To file a warranty claim you must call AFC Sales at 800.658.3938 for an RMA number under which to return the sealer. The following information will be required to file a warranty claim. No warranty or RMA will be considered or provided without this information.

- Date of purchase
- Product ID/tracking number
- Full description of claim
- Company/user name, location, telephone number and contact information

AFC will provide an authorization to return the goods for inspection. The return authorization will include an RMA number and a UPS Return Label for the return of the defective goods. This will occur within one business day.

The sealing tool will be returned directly to AFC's Bennington, Vermont, location for evaluation and inspection. AFC will evaluate all returns within 72 hours of being received at AFC. Defective sealing tools under warranty will be either repaired or replaced within 5 business days.

Thank you for your business.