

MANUAL

SPEC
EXTREME™



This instruction manual is intended to be a guide when operating the Spec Extreme Seam welder. To ensure optimal performance from your welder, please follow the recommendations and specifications precisely.

For more technical information regarding this machine call our Resolution Center 1-855-888-WELD or email service@weldmaster.com.

You can also subscribe to Miller Weldmaster Insiders to stay updated on tech tips, machine maintenance updates, and more at www.weldmaster.com/insiders.

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1.0 Introduction

The Spec Extreme Welders are designed for the in house fabrication of a wide range of flexible thermoplastics. This includes, but is not limited to, PVC, PP, PE, LDPE, urethane, geomembrane materials etc. Acrylic coated fabrics can also be welded with the addition of our Thermal Bonding Tape.

The Spec Extreme Welder uses a hot wedge as its heat source. Bonding of thermoplastics is achieved by a combination of Heat (temperature), Speed (exposure time), and Pressure (bonding force). The Spec Extreme Welder provides a smokeless and quiet operation during welding. The wedge also allows for welding of thinner products without distortion.

We suggest that you make sample welds of your material to achieve the correct settings for Heat, Speed and Pressure before you start welding your finished product. In addition, wedge alignment is critical to a quality weld. Be sure to review the wedge alignment section of this manual

The manufacturer does not approve of:

- Any other uses for these machines.
- The removal of any safety guards while in operation.
- Unauthorized modification of the machines.
- Using replacement parts that are not manufacturer-approved.

Only a properly-trained technician may operate and/or perform any routine maintenance or repairs to the machines.

NOTE: The manufacturer will not be held liable for any damage or injuries occurring from any inappropriate use of this machine.

2.0 Wedge Alignment & Adjustment

Proper alignment of the wedge is essential to achieving a quality weld of the thermoplastic material. A variety of issues relating to the bonding of the material, flow of material through the machine, and the aesthetic finish of the weld can be attributed to the proper positioning of the wedge. It is therefore crucial to understand and practice the various adjustments for wedge alignment.

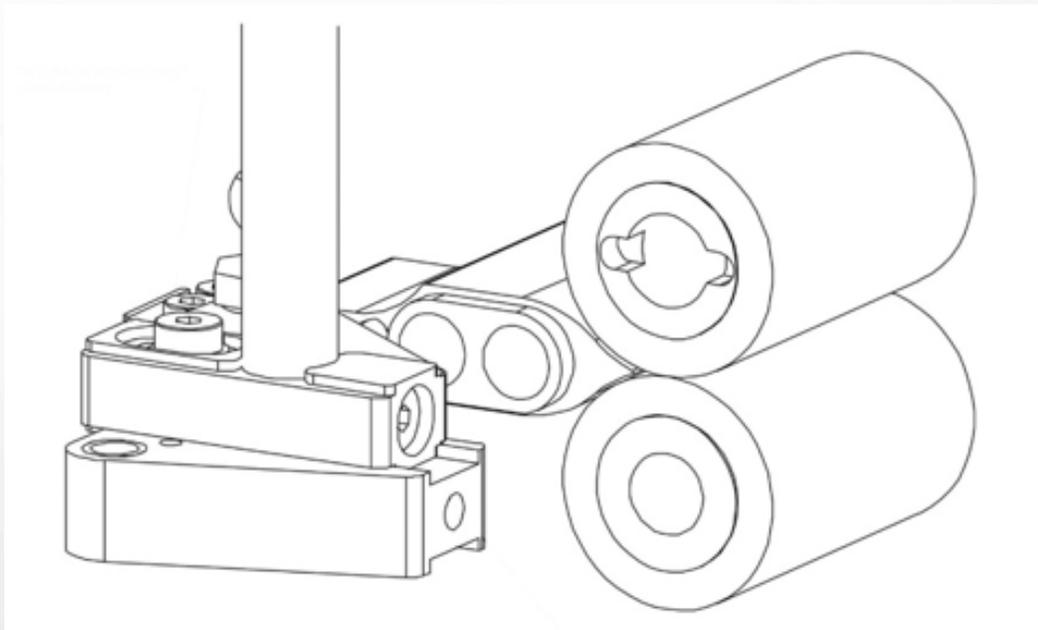
It is recommended to review the alignment of the wedge:

- On a weekly basis
- When beginning new welding projects
- Changing wedge style and sizes
- Large variance of material weight or density
- Noticeable wedge wear
- Transportation of the machine
- Change in operator of machine

There are three alignments for the Spec Wedge: vertical, angle, and horizontal. The vertical alignment refers to the up and down position of the wedge in relation to the pressure rollers. The angle alignment refers to the wedge tip position with respect to being parallel with the pressure rollers. The horizontal alignment refers to the forward or aft position between the wedge tip and the pressure rollers.

Initially the Spec Extreme Welder is aligned and tested at the factory. A visual review of the alignment should be made upon receiving the machine. In addition, sample welds should be made first to test the alignment as well as the material to be sealed before starting on an actual project.

 Begin all alignment adjustment with a cool, clean wedge.



2.0 Wedge Adjustment & Alignment (Continued)

For the vertical alignment, the proper position should be the wedge tip centered between the pressure rollers.

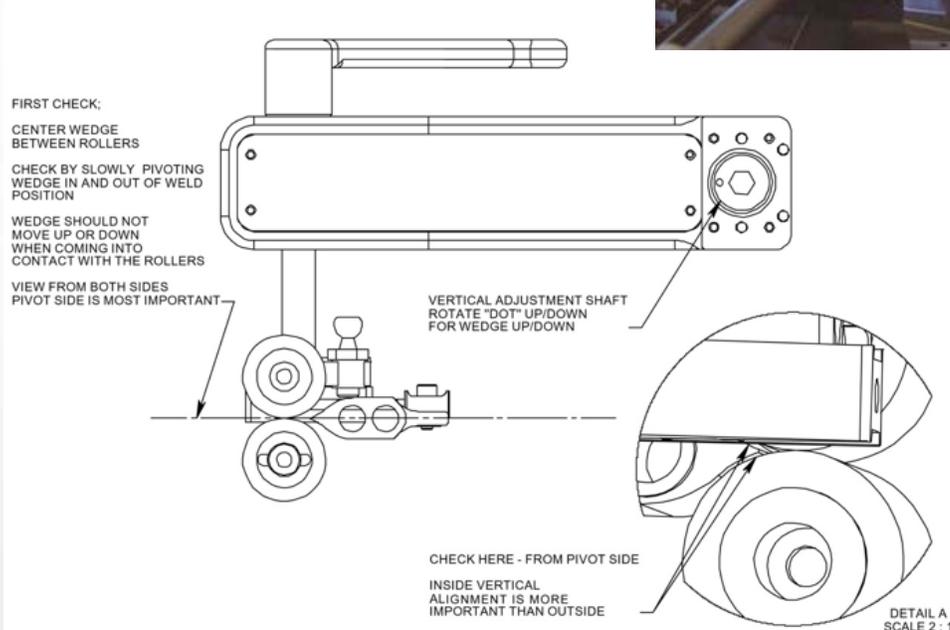
Step 1: Take a small piece of the material to be welded, fold in half, and place between the pressure rollers. Close the rollers together with the fold of material just inside the center of the roller.



Step 2: Engage the wedge lever in to the welding position. Begin by viewing the wedge tip position from the inner, pivot side. Slowly move the wedge in and out of the welding position; the wedge tip should just contact the fold of material.



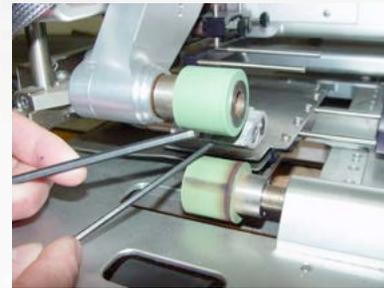
Step 3: If adjustment up or down is needed, use the 8mm hex wrench in the vertical adjustment. Turn the wrench clockwise or counterclockwise for either the up or down movement viewing from the pivot side. When adjustment is correct, view from the outer side of the wedge.



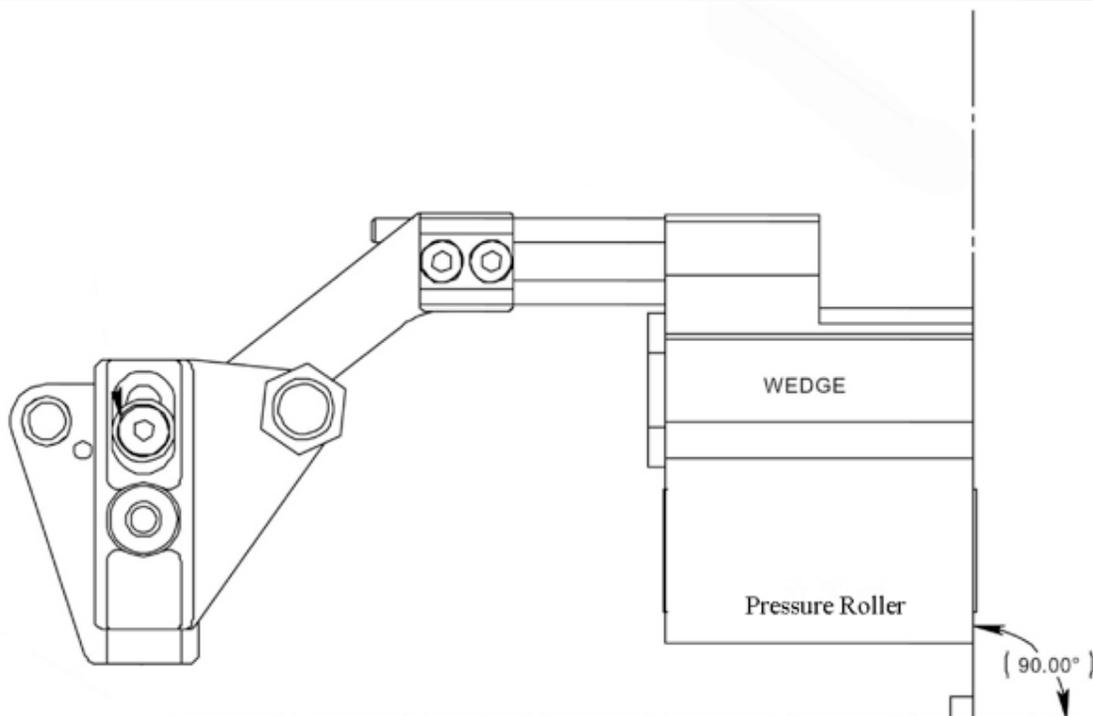
2.0 Wedge Adjustment & Alignment (Continued)

For the angle alignment, the proper position for most applications should be the tip of the wedge parallel to the pressure rollers.

Step 1: Open the pressure rollers. Turn the wedge in to the welding position. Make a comparison of the wedge tip to the bottom of the upper pressure roller. To view this, adjust your field of vision at the rear of the Spec and above the welding area so that the tip of the wedge is seen just below the bottom edge of the upper pressure roller.



Step 2: Adjust the angle of the wedge using a 4mm hex wrench in the angle adjustment screw located next to the wedge service pin in the wedge pivot housing. Viewing the position of the wedge tip, adjust if necessary. Turning the adjustment screw clockwise moves the outer edge of the wedge away from the pressure rollers. Turning the adjustment screw counterclockwise moves the outer edge of the wedge towards the pressure rollers.



2.0 Wedge Adjustment & Alignment (Continued)

For the horizontal alignment, the wedge tip and surface should just make contact with the pressure rollers.

Step 1: Lower the pressure rollers together and engage the wedge in to the welding position. View this alignment from the inside or pivot side of the wedge.

Step 2: To adjust, open the pressure rollers and place a 3mm hex wrench in the fwd/back adjustment screw located on the adjustment hub.

Step 3: With a 4mm hex wrench, just loosen the adjustment locking screw.



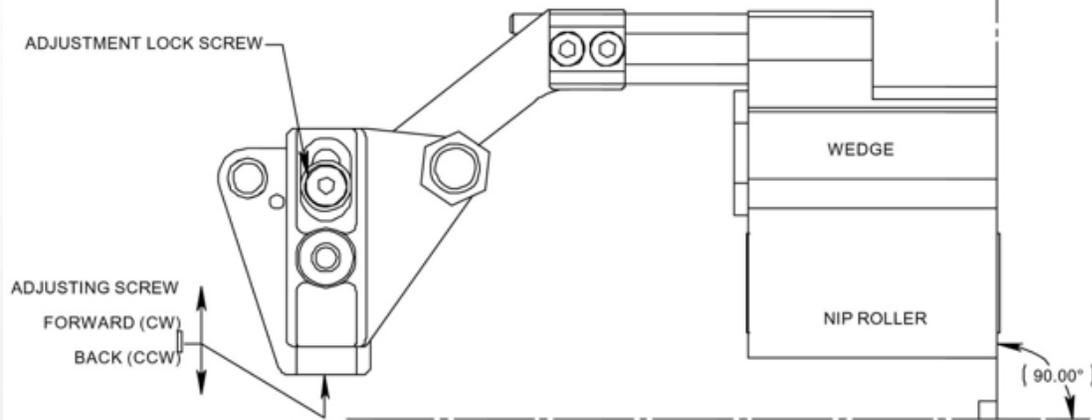
SECOND CHECK :

WEDGE CONTACTING ROLLERS AND SQUARE TO ROLLERS

- 1) PLACE WEDGE IN WELD POSITION AND OPEN ROLLERS
- 2) LOOSEN ADJUSTMENT LOCK SCREW 1/4 TURN
- 3) BACK (CCW) ADJUSTMENT SCREW ALL THE WAY OUT
- 4) TURN ADJUSTMENT SCREW IN (CW) THREE TURNS
- 5) TIGHTEN ADJUSTMENT LOCK SCREW
- 6) PIVOT WEDGE OUT OF WELD POSITION, CLOSE ROLLERS
BRING WEDGE BACK INTO "CLOSED" ROLLERS
AND OBSERVE ALIGNMENT

REPEAT 1) AND 2) THEN TURN SCREW IN 1/2 TURN UNTIL WEDGE IS ALIGNED IF WEDGE IS TO FAR BACK (TOWED INTO ROLLERS) THEN BACK ADJUSTMENT SCREW OUT 3-4-TURNS AND SCREW IN 1-TURN AND BEGIN CHECKING AGAIN. IE. ALWAYS ADJUST WEDGE MOVING IT FORWARD (TOWARDS FRONT OF MACHINE)

ALWAYS REPEAT VERTICAL CHECK AFTER ADJUSTING WEDGE/ROLLER ALIGNMENT

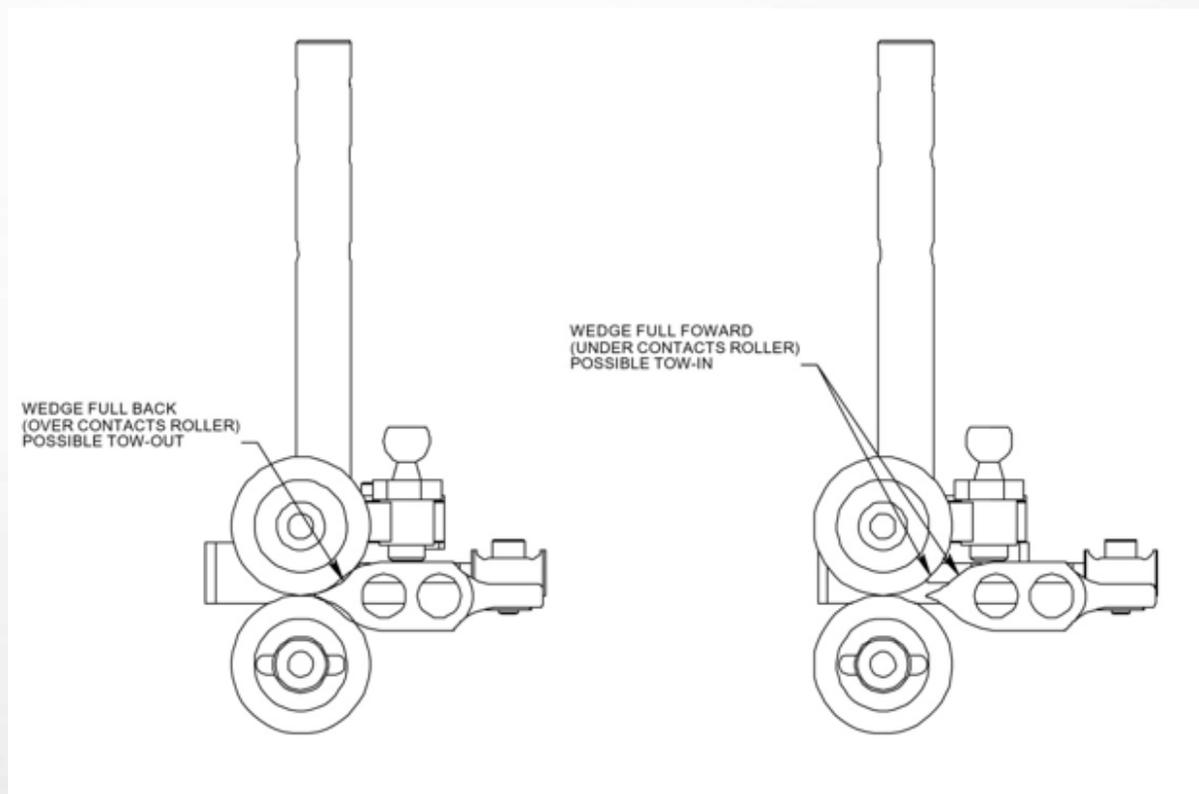
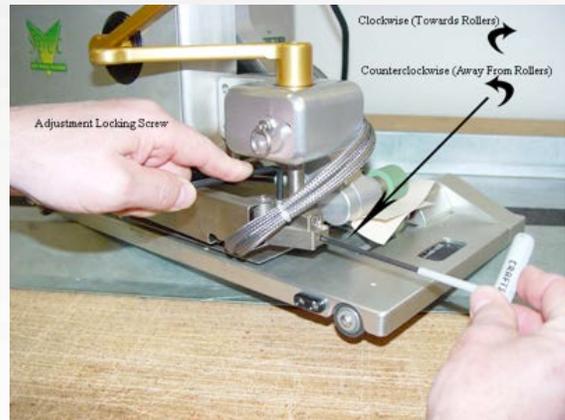


2.0 Wedge Adjustment & Alignment (Continued)

Step 4: Rotating the fwd/back adjustment screw clockwise will move the wedge tip away from the pressure rollers. Rotating counterclockwise will move the wedge tip towards the pressure rollers. When changing directions on this screw, there will be a couple of rotations on the screw that produce no movement to the wedge.

Step 5: View movement of the wedge from above. Rotate the fwd/back adjustment screw in $\frac{1}{4}$ to $\frac{1}{2}$ turns at a time, checking the new wedge position each time. When completed, retighten the adjustment locking screw. Remove the two hex wrenches.

Step 6: Swing the wedge out of the welding position, close the pressure rollers, and engage the wedge in again to the welding position. Check the alignment as in step 1. If further adjustment is necessary, repeat all steps.



2.0 Wedge Adjustment & Alignment (Continued)

A special adjustment to the angle alignment should be considered for larger wedge sizes (30mm+), thicker materials, or to help control the material during the welding process. This application involves making a slight “toe-in” angle to the outer edge of the wedge.

Step 1: Open the pressure rollers and remove the upper material guide tray.

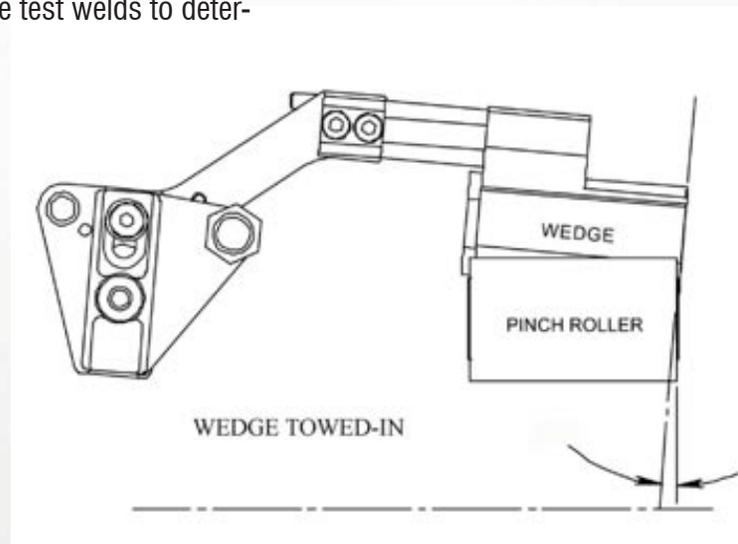
Step 2: Place a straight edge against the outside edge of the wedge. Observe the angle between the straight edge and the pressure rollers. This angle should initially be 90 degrees.



Step 3: Place a 4mm hex wrench in the angle adjustment screw located next to the wedge service pin on the wedge pivot housing.



Step 4: Turn the wrench counterclockwise so that the outside tip of the wedge makes an inward movement towards the pressure rollers. Use the straight edge against the edge of the wedge to again determine this “towed-in” angle. The exact angle needed is at your discretion; initial make a 5 degree change and then make test welds to determine the results.



3.0 Wedge Cleaning

The welding of various thermoplastics will result in burned coating residue which will accumulate on the surface of the hot wedge. Cleaning of the wedge is required daily if not several times depending on the accumulation and resulting quality of the weld. The wedge should be cleaned after heavy use, changing thermoplastic materials, or if not in use for long periods of time.

The best way to clean the surface of the wedge involves burning the residue to the point it is released from the metal surface and is easy to blow or brush off.

Step 1: With the wedge in the stowed position, turn the wedge engagement lever in slightly and loosen the wedge service bolt (or service pin) to allow the wedge engagement lever to rotate out farther than the stowed position to the service position.



Step 2: Increase the temperature of the wedge to 510 degrees. Allow sufficient time for the residue to be baked off the wedge, typically 5 to 10 minutes.



Step 3: Once the residue is loosened from the metal, blow or gently brush to eliminate. Do not scrub the metal surface as it will be scratched and worn. If residue is still present, allow more time to continue this process. When cleaned, lower temperature and rotate the wedge back in to the stowed position.



4.0 Wedge Removal and Replacement

When changing to different size seam widths, the hot wedge will need to be removed and replaced with a different wedge. In addition, if the wedge no longer heats, wedge alignment is no longer effective, or the wedge surface is worn or destroyed, the wedge must be replaced. Always work with a cool wedge with the power switched off and electrically disconnected from the power source.

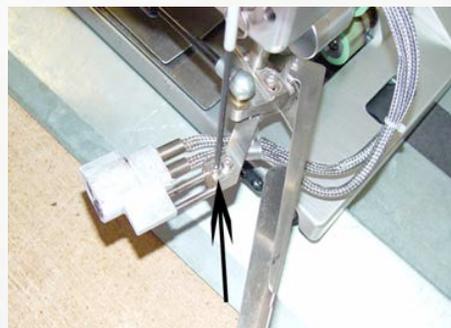
Step 1: With a cold wedge, rotate the wedge out to the service position as described in Wedge Cleaning in Chapter 3. Remove the two clamps holding the electrical wires secure to the machine using a Phillips head screwdriver. Tilt the Spec Extreme Welder on its side. One clamp is located under the arm of the wedge mount arm. The other is on the inside corner of the wedge pivot housing.



Step 3: Electrically disconnect the wedge wires from the Spec control box by unscrewing the locking ring and gently pulling the connector from the socket.



Step 4: Loosen the two locking screws for the clamping system of the wedge retaining rods to the wedge mount arm. Pull the wedge from the clamp and remove.



4.0 Wedge Removal and Replacement (Continued)

To install a new wedge:

Step 1: Position and insert the two retaining rods from the wedge into the clamping system on the wedge mount arm. Slightly tighten the two set screws to hold the wedge to the arm.



Step 2: Rotate the wedge engagement lever so the wedge is in the welding position.

Step 3: Adjust the position of the wedge side to side relative to the lower pressure roller. Most often the wedge tip will match the size of the roller. In other case the wedge tip may be smaller and should be centered in the lower pressure roller.



Step 4: Carefully rotate the wedge back out to the service position and secure the two cap screws for the clamp. Re-check the position of the wedge to the roller.

Step 5: Electrically connect the wedge wires to the Spec control box by twisting the braids near the connector so that it lines up with the socket, insert and rotate the locking ring clockwise to secure.



Step 6: Replace the two electrical wire clamps to their respective position as in #2 of the removal process.

Step 7: With the installation of a new wedge it is recommended to perform a wedge alignment, especially if the wedge removed was well worn.

5.0 Overlap Guide

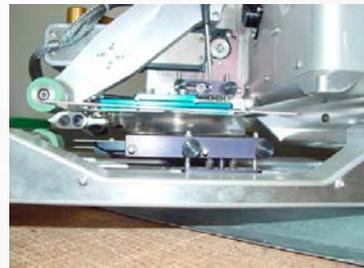
Material guides are used to properly position the material in the welding area. These upper and lower guide trays can be adjusted in three different directions to provide versatility in a variety of applications. The guide trays can be moved up and down, towards or away from the pressure rollers, and side to side. Depending on the particular application and material that is being welded, testing for different configurations may be helpful.

Step 1: Loosen the two thumb screws on each of the adjustment frames. Use a Phillips head screwdriver to turn the adjustment screw located on the top of the adjustment frame. By rotating one direction or the other, the guide tray will move up or down.



Step 2: With the wedge in the welding position, view from the side to adjust the upper material guide tray to the intended height.

Step 3: For the lower guide tray, close the pressure rollers on the cold wedge in the welding position and turn the adjustment screw to adjust to the intended height. When completed, retighten the thumb screws.



5.0 Overlap Guide (Continued)

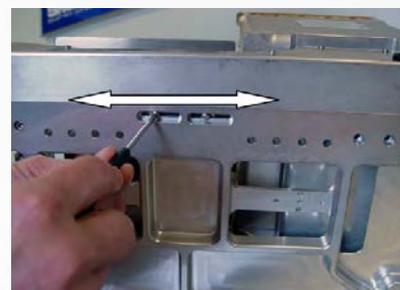
Step 1: For the upper material guide tray, use a 4mm hex wrench to loosen the cap screw which holds the adjustment frame to the guide mount.



Step 2: With the large slot in the adjustment frame, the guide tray can be placed forwards or backwards. Positioned away from the pressure rollers to allow for more preheat of the material as it approaches the welding area. Position towards the rollers where pre-heat would be minimized. When placed in the desired position, tighten the cap screw.



Step 3: For the lower material guide tray, turn the Spec Extreme Welder on its side to locate and loosen the two Phillips head screws which secure the guide mount to the base. The guide mount can be placed within the slot in the base of the Spec towards or away from the pressure rollers with similar results to that of the upper material guide tray. When placed in the desired position, tighten the two Phillips head screws.



5.0 Overlap Guide (Continued)

To adjust the upper and lower material guide trays side to side.

Step 1: With the wedge in the welding position, place a straight edge against the guiding edge of each guide tray, extend out towards the pressure rollers, and view from above the rollers to properly position.

Step 2: For the upper guide tray, loosen the two thumb screws located on the top clamp plate used to secure the guide tray to the retaining rods and slide to adjust. With the straight edge against the guide tray edge, match to the edge of the pressure roller and/or to the inside edge of the wedge.



Step 3: Removal of the upper guide may be necessary so the upper guide tray positioning set screw can be adjusted. Turn clockwise for a larger wedge size and counterclockwise for a smaller wedge size. Adjust the screw so the guide tray stops in the correct position.



Step 4: When positioned correctly, retighten the thumb screws on the clamping plate to secure. For the lower guide tray, use a 2mm hex wrench to loosen the two set screws located on the top of the adjustment frame. Slide the lower guide tray to adjust to the proper position.



Step 5: With the straight edge against the lower guide tray edge, match to the edge of the pressure roller and/or to the outside edge of the wedge. When positioned, tighten the two set screws to secure.



5.0 Overlap Guide (Continued)

Front Guides are provided for positioning of the material as it enters into the Spec Extreme Welder. These front guides can be adjusted according to the specific style and size wedge being used.

Step 1: Use a 2mm hex wrench and loosen the appropriate set screw(s) for the upper or lower material front guide.

Step 2: Position a straight edge against the edge of the previously adjusted upper and lower material guide trays and extend the straight edge beyond the front of the Spec.

Step 3: Slide the appropriate material front guide until it makes contact with the straight edge. Repeat steps 2 & 3 for the other material front guide.

Step 4: When positioned correctly, tighten the set screws to secure.



For overlap welding, enter the two sheets of material from one side and the other and insert each edge up against the guides. The lower sheet is placed in between the two plates for the lower material guide tray and against the guide edge. The upper sheet is placed in the top of the upper material guide tray and against the guide edge. Extend the overlapped material to the pressure rollers, position correctly, and lower the rollers to secure. Engage the wedge in to weld.

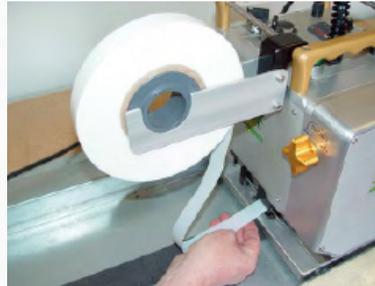
6.0 Acrylic Overlap Guide

For welding with the Thermal Bonding Tape on acrylic coated fabrics, a guiding system has been developed to position the tape correctly.

Step 1: Install the tape dispenser to the front rail on the top of the Spec. Position the dispenser to the end of the rail above the tape front guide.



Step 2: Place a roll of Thermal Bonding Tape within the dispenser and feed the tape through the tape front guide and the lower section of the Spec body.



Step 3: Remove the upper material guide tray so that the tape can be fed through tape guide located on the lower material guide. Pull the tape out and lap over the lower pressure roller. Reinstall the upper material guide tray.



To overlap weld acrylic coated materials using the Thermal Bonding Tape, enter the material from both sides of the Spec and place the edge of the material against the guides. Make sure the tape is in the correct position and not confined or twisted. Position the overlapped material and tape at the pressure rollers and lower the rollers to secure. Engage the wedge in to begin welding.

7.0 Hemming Guide

7.1 Inner Top Edge Guide

When the Spec Hem Welder is assembled at the factory, the top edge guide has been positioned correctly with the particular wedge size that is installed. If the wedge size is changed, the top edge guide will need to be adjusted when the new wedge is installed.

Step 1: Begin by removing the entire hem guide system from the Spec machine. With the wedge in the service position, remove the cap screw from the guide mount with a 4mm hex wrench. Carefully pull out and remove the entire guide system and set aside to work with.



Step 2: Loosen the two black thumb screws on the top of the outer guide and slide the two guide sections completely apart.



Step 3: Working on the inner hem guide portion, loosen the two clamping cap screws for the top edge guide using a 3mm hex wrench. One of these screws is in the front of the inner hem guide; the other is recessed in the adjustment block between the black and white thumb screws.

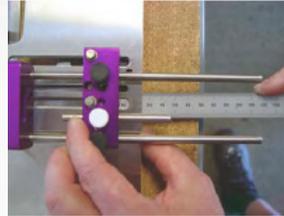


Step 4: The inner top guide edge is a narrow metal strip sandwiched between the top two plates of the inner hem guide assembly. It will slide towards or away from the edge of the inner hem guide by applying force on the front clamping cap screw and the adjustment block against the either edge of the inner hem guide.



7.1 Inner Top Edge Guide (Continued)

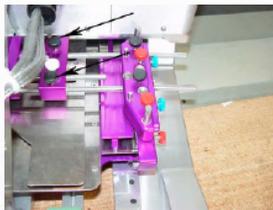
Step 5: Place a ruler within the two upper plates of the inner hem guide assembly to measure the distance from the inner top edge guide to the edge of the plates. Match this measurement with the new wedge size to be installed. Check this measurement in two places to make sure the inner top edge guide is straight.



Step 6: When completed, tighten the two clamping cap screws. Re-assemble the inner and outer sections of the hem guide, carefully re-insert the hem guide into the Spec machine, and tighten the cap screw through the guide mount to secure the hem guide to the Spec machine.



Step 7: Turn the wedge in to the welding position. Loosen the two black thumbscrews on the top of the adjustment block. Place a straight edge against the top edge guide and extend out towards the pressure rollers. Adjust the inner section of the hem guide so the straight edge (top edge guide) matches the inside edge of the wedge. The outside edge of the wedge should match the edge of the upper section of the hem guide. When positioned, retighten the black thumbscrews.



Step 8: Loosen the black thumb screws on the top of the outer guide and slide the outer guide into the inner guide until it stops. Re-tighten the black thumb screws.

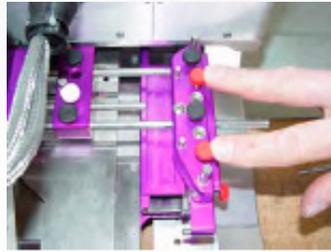


Step 9: Loosen the white thumb screw on the adjustment block and slide the outer guide set rod out until it touches the outer guide adjustment block. Re-tighten the white thumb screw.



8.0 Hem Cord Guide

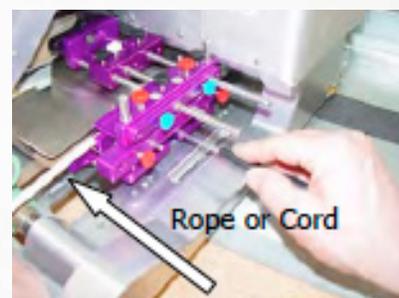
Step 1: Loosen the two red thumb screws on top of the outer guide adjustment block as well as the third red thumb screw located in the front of the hem guide underneath the lower section of the outer guide assembly.



Step 2: Looking from the side of the Spec Welder at the outer guide adjustment block, locate the Phillips head screw for adjusting the outer fold guide. It is located under the center mounting block of the outer guide.



Step 3: Use the Phillips head screwdriver to adjust the outer fold guide edge. The adjustment desired should be according to the rope or cord size. Turn clockwise for larger rope or cord size. Turn counterclockwise for a smaller rope or cord size. Use a sample of the rope or cord within the inner and outer fold guides to measure. Also allow room for the fold of material. When the inner fold guide edge is positioned correctly, tighten the three red thumb screws.



9.0 Pocket Guide

Step 1: Loosen the two black and red thumb screws on top of the outer guide adjustment block as well as the third red thumb screw located in the front of the hem guide underneath the lower section of the outer guide assembly (refer to Pg. 19, Step 1).

Step 2: Slide the outer guide completely out and re-tighten the two black thumb screws.

Step 3: Adjust the outer fold guide edge of the outer guide by sliding it into the outer guide adjustment block to create a maximum size opening in the guide tray. When positioned, re-tighten the three red thumb screws.

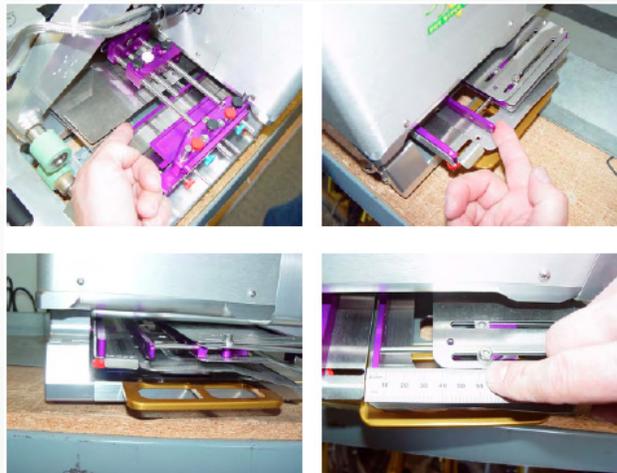


Step 4: Locate two set screws accessible through two holes located near the inside edge of the inner hem guide section. One hole is at the front of the hem guide. The other hole is just in front of the inner hem guide adjustment block. Use a 2mm hex wrench to slightly loosen these screws.



Step 5: At either end of the inside edge of the upper hem guide section, reach in and slide the inner fold guide out towards the outer guide. The distance extended will define the size pocket to be made. When the inner fold guide edge is positioned, re-tighten the two set screws.

To weld a pocket, loosen the two black thumb screws on the top of the outer guide adjustment block and slide the outer guide completely out. Folding the material over to create the pocket shape, enter the edge of material into the hem guide and against the top guide edge. Slide the material the length of the guide and out beyond the pressure rollers. Adjust and position the material at the welding area, slide the outer guide in to confine the material, and re-tighten the black thumb screws. Re-position the material again and lower the pressure rollers to secure. Engage the wedge in to begin welding. When welding, be attentive to the flow of material entering into the hem guide and the edge of the material against the top guide edge.



10.0 Flat Hem Guide

To set up for the flat hem style weld, the addition of a lever pressure arm to the hem guide as well as a change to larger pressure rollers will be made.

Step 1: Loosen the two black and red thumb screws on top of the outer guide adjustment block as well as the third red thumb screw located in the front of the hem guide underneath the lower section of the outer guide assembly (refer to Pg. 19, Step 1).

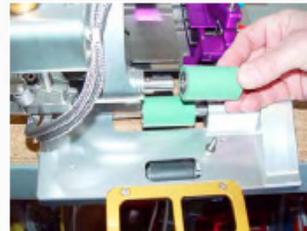
Step 2: Slide the outer guide out slightly and re-tighten the black thumb screws.



Step 3: Locate the two dowels on the inside edge of the outer guide center adjustment block. Attach the lever pressure arm to these dowels making sure there is a step down from the outer guide to the lever pressure arm. Use the screw provided to secure.



Step 4: Change the pressure rollers by removing the screw and washer from the axle shaft, sliding off the existing roller, and install the larger roller with the same screw and washer. Make sure the locking pin on the axle shaft seats in the roller.



Step 5: Note: To allow room between the lever pressure arm and the pressure rollers, use a 4mm hex wrench to loosen the hem guide adjustment mount cap screw. Slide the hem guide fully forward in the adjustment slot and re-tighten the cap screw.



Step 6: Loosen the two black thumb screws on the top of the outer guide adjustment block, slide the outer guide back in towards the inner guide section until it stops, and re-tighten the thumb screws.



10.0 Flat Hem Guide (Continued)

Step 7: Locate the outer fold guide adjustment screw (see page 20, figure 2). Using a Phillips head screwdriver, turn counter clockwise to adjust the inner fold guide edge completely out until the movement stops. This should place the outer fold guide edge against the inner fold guide edge. When positioned, tighten the three red thumb screws.



Step 8: Note: As a test, when the wedge is turned in to the welding position, pressure should be exerted by the side of the wedge against the lever pressure arm to compress the arm in slightly. This pressure is important for the melt of the thermoplastic around the fold for the flat hem finish.

To weld the flat hem, loosen the two black thumb screws on the top of the outer guide adjustment block and slide the outer guide out slightly. Folding the material over, enter the edge of the material into the hem guide and against the top guide edge. Slide the material the length of the guide and out beyond the pressure rollers. Adjust and position the material at the welding area, slide the outer guide in to confine the material and re-tighten the black thumb screws. Reposition the material again and lower the pressure rollers to secure. Engage the wedge in to begin welding. When welding, be attentive to the flow of material entering into the hem guide and the edge of the material against the top guide edge.

11.0 Acrylic Hem Guide

For welding with the Thermal Bonding Tape on acrylic coated materials, a guiding system has been developed to position the tape correctly.

Step 1: Install the tape dispenser to the front rail on the top of the Spec motor box. Position the dispenser to the end of the rail above the tape front guide.



Step 2: Place a roll of Thermal Bonding Tape within the dispenser and adjust the dispenser if necessary for the tape to clear the pressure adjustment knob.

Step 3: Feed the tape through the short portion of the tape guide then turning the tape at a right angle and feeding through the length of the tape guide path contained in the hem guide assembly.



Step 4: When the tape appears at the end of the guide, extend the tape out and over the lower pressure roller.

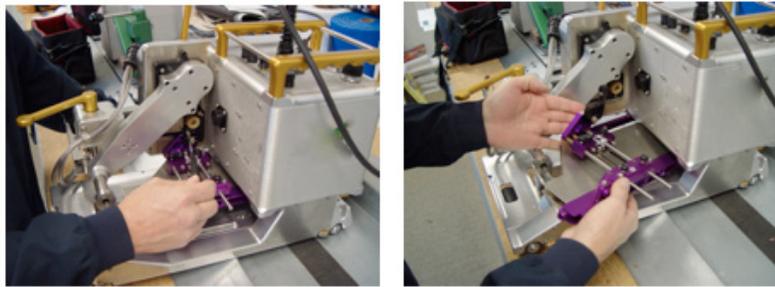


To weld acrylic coated materials using the Thermal Bonding Tape, proceed at this point with the previous instructions for performing the three hem weld styles.

12.0 Keder Guide

When the Spec Keder Machine is assembled at the factory, the top and bottom edge guides have been positioned correctly for the width of material and PVC cord that is being ordered with the machine. If changing to different width material, PVC cord, and/or different style keder (single or double fold), the top and bottom edge guides will need to be adjusted. To adjust:

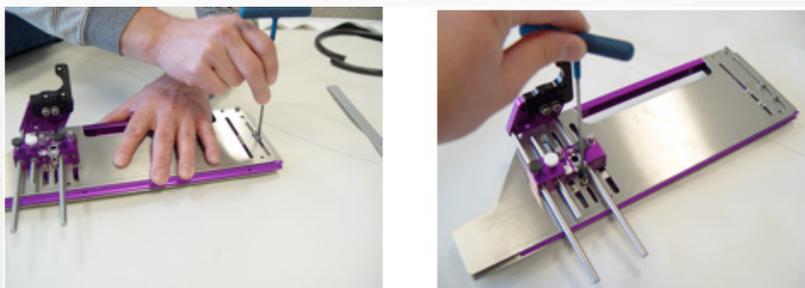
Step 1: Begin by removing the entire keder guide system from the Spec machine. With the wedge in the service position, remove the two Phillips head screws from the guide mount and side of the machine. Carefully pull out and remove the entire guide system and set aside to work with.



Step 2: Loosen the two black thumb screws on the top of the outer cord channel guide and slide the two guide sections completely apart.

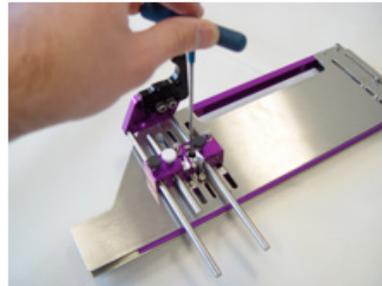
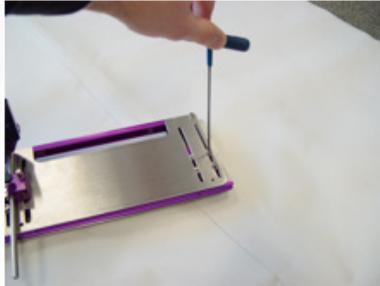


Step 3: Working on the inner Keder guide section, loosen the two clamping cap screws for the top edge guide using a 3mm hex wrench. One of these screws is near the front of the guide; the other is just in front of the adjustment block.

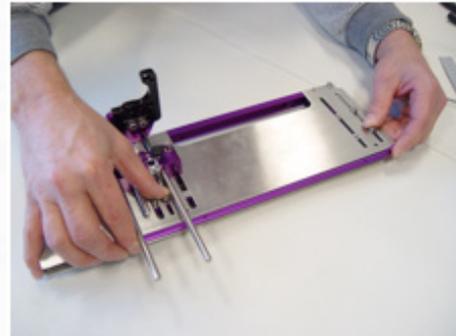


12.0 Keder Guide

Step 4: Follow the same procedure as step 3 to loosen the two clamping cap screws directly behind the ones completed in step 3. This will loosen the bottom edge guide. One of these screws is recessed in the adjustment block between the black and white thumb screws.



Step 5: The inner top guide edge is a narrow metal strip sandwiched between the top two plates of the inner keder guide assembly. It will slide towards or away from the edge of the inner keder guide by applying force on the front clamping cap screws and pushing or pulling in either direction against either edge of the inner keder guide.

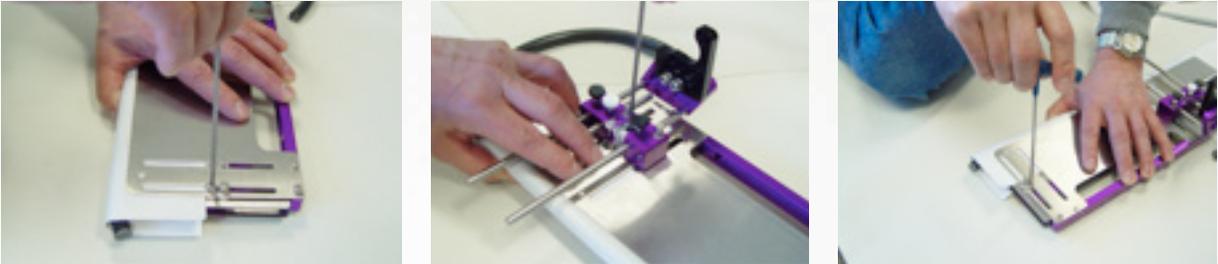


Step 6: For a double flap keder, insert a sample of the proper width of material as well as the proper diameter PVC cord to be completed. Adjust the inner top guide edge to touch the top edge of material. Slide the bottom edge guide up against the top edge guide and check for the lower edge of material touching the bottom guide edge.

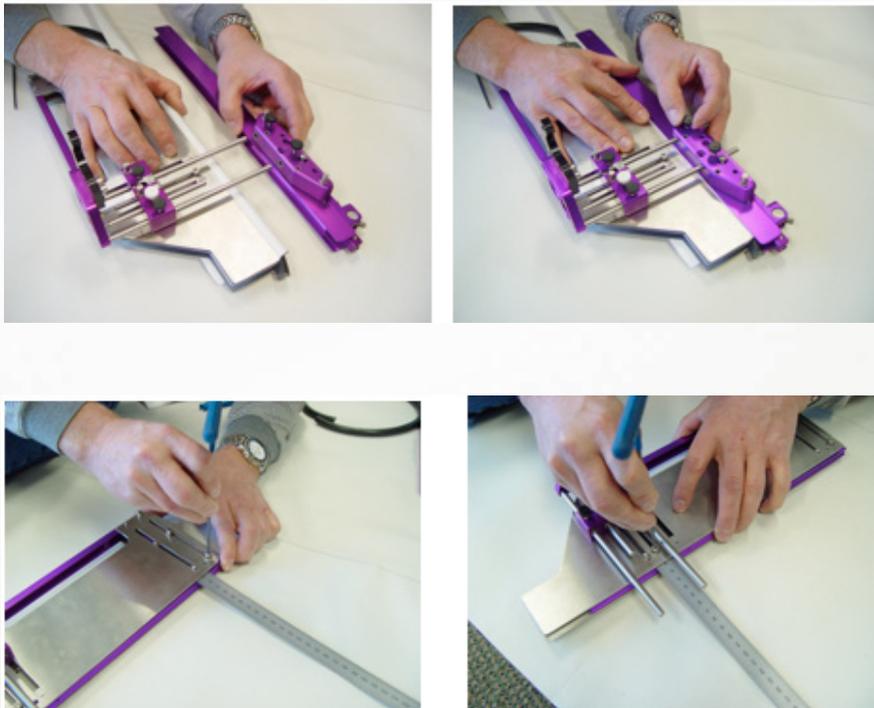


12.0 Keder Guide (Continued)

Step 7: When completed, hold both the material and cord in position while tightening the two sets of clamping cap screws.

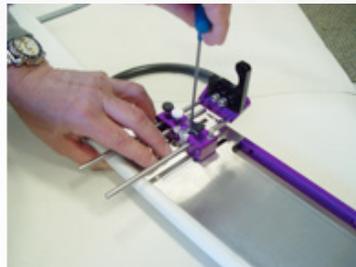
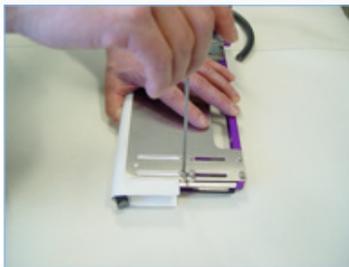


Step 8: For a single flap keder, slide the top material guide edge fully forward. If needed, use a ruler to measure the distance between the top material guide edge and the edge of the inner keder guide section. This should be near 10mm in distance. When completed, tighten the two clamping cap screws.



12.0 Keder Guide (Continued)

Step 9: As with the double flap described in step 6, insert a sample of the proper width of material as well as the proper diameter PVC cord to be completed. Place the top edge of material against the top material guide edge just completed in step 8. Slide the bottom edge guide up against the lower edge of material. When completed, tighten the lower material guide edge clamping cap screws.

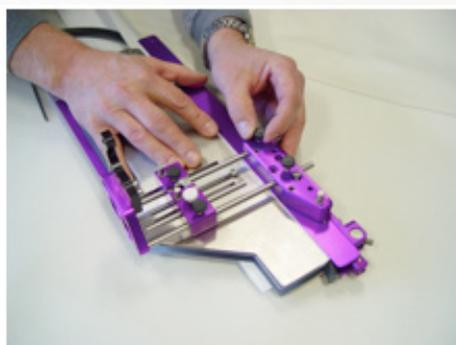


Step 10: Re-assemble the inner and outer sections of the keder guide system tightening the black thumb screws to secure.

Double Flap Keder



Single Flap Keder



12.0 Keder Guide (Continued)

Step 11: Carefully re-insert the hem guide into the Spec machine, properly line up the dowel pins, and re-insert & tighten the Phillips head screws through the guide mount to secure the keder guide system to the Spec machine.



Step 12: Turn the wedge in to the welding position. Loosen the two black thumbscrews on the top of the adjustment block. Place a straight edge against the side of the wedge and slide the inner keder guide section out to match the straight edge. When positioned, retighten the black thumbscrews.



Step 13: Check to make sure the wedge moves cleanly from the welding position to the stow position and back. If it scrapes within the inner keder guide section, loosen the two set screws on the side of the adjustment block and use a Phillips head screwdriver on the screw within the adjustment block to raise or lower the guide section.



Step 14: Check the alignment of the outer keder guide section. If it needs centering to the inner section, loosen the two set screws on the side of the guide mounting block and use a Phillips head screwdriver on the screw within the mounting block to raise or lower the outer guide.



13.0 Keder Framework

A special framework has been designed to hold the Spec Keder Machine and deliver the PVC material and cord. This framework comes partially disassembled and will need to be completed. Depending on the shipping configuration, the framework may be pictured in one of the various breakdowns below. Locate the appropriate breakdown of your shipment below and complete the necessary assembly.

Step 1: Removing the framework from the packing box(es), layout the various sections on the floor to separate. It is possible to have 2, 3, or 4 different sections.

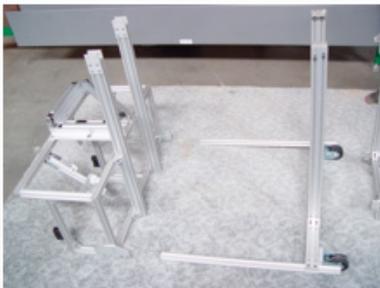


13.0 Keder Framework Continued

Step 2: The first assembly may be the lower base support pieces to the front leg and roller support. Place the support pieces into the angle connection and tighten the screws. Completed should look like the picture below.



Step 3: Lay the completed front leg support section on its side and position the material delivery section of the framework in a similar manner. The legs should fit up and into the brackets attached to the material delivery section. Tighten screws on both legs.



13.0 Keder Framework Continued

Step 4: Place the completed front section of the framework upright with the roller wheels on the ground. Upright the machine support section of the framework on its roller wheels. The two sections can now be joined. Tighten all screws associated with these two sections.



Step 5: As a completed assembly, the Keder Delivery System framework should look like the picture below.



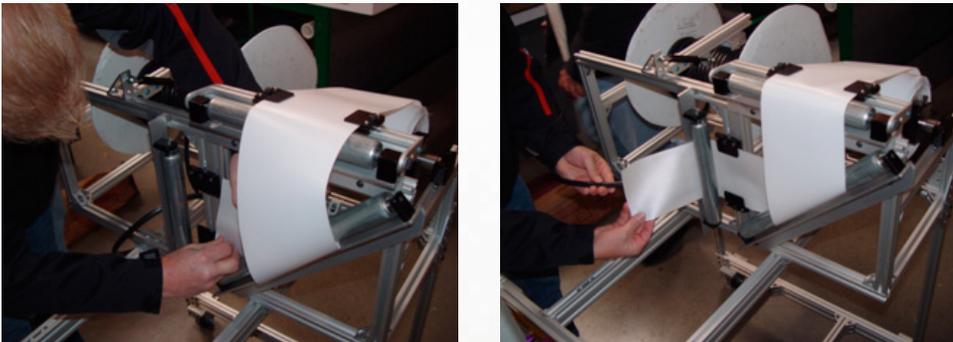
13.1 Keder Material & Cord Set Up

The Spec Keder Machine is designed to accept a variety of different width PVC coated material as well as various diameter PVC cord for the production of finished keder. Please refer to the appendix with our chart of both double and single flap style keder to determine the necessary material and cord to purchase. With these products, the following is a description of the preparation needed to set-up the Spec Keder Machine for production.

Step 1: Slide the spool of PVC cord through the longer of the two roller shafts located at the end of the framework for the delivery system. Position the spool correctly on the shaft and use the end clamps to secure. The cord should now be thread through the hole and extended out towards the Spec Keder machine. Follow the same procedure for installing the roll of material.



Step 2: Feed the material through the upper retaining blocks and over the horizontal roller. Adjust the retaining blocks if necessary to secure and direct the material. Turn the material around the diagonal roller and feed through the lower retaining blocks. Again adjust the lower retaining blocks if necessary. Finally feed the material around the vertical roller and extend out towards the Spec Keder Machine.



13.1 Keder Material & Cord Set-up

Step 3: Fold the material and begin to feed the lower fold into the lower guide opening of the keder guide system. Fold over the upper portion of the material and enter this into the upper guide opening of the keder guide system. Carefully slide the material through the guide system until it is out beyond the welding area.



Step 4: Feed the cord within the fold of material and slide through the keder guide system. Bring the end of the cord out from the material at the welding area.

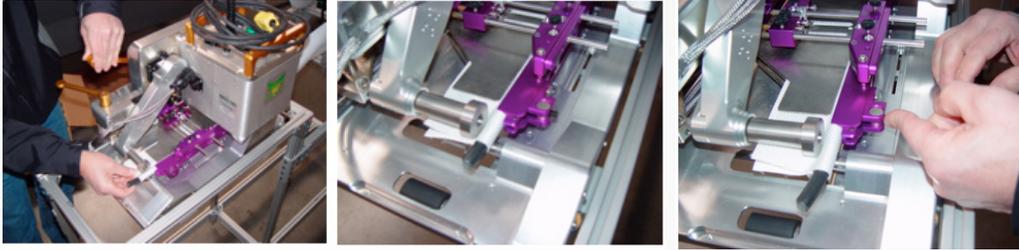


Step 5: Push the threaded lever on the side of the outer guide section inward to release the pressure lever arm. Carefully slide the outer guide in towards the inner guide section and position the material and cord correctly within the guide system. Tighten the two black thumb-screws on the outer guide when complete.



13.1 Keder Material & Cord Set-up Continued

Step 6: Position the material and cord again within the keder guide system and pinch the material tight around the cord. Lower the lever for the pressure rollers so that a tight fit is accomplished between the material wrapped around the cord. Pull the threaded lever counter-clockwise to move the pressure lever arm out and lock it against the fold of material and cord.



Step 7: The following are pictures from various angles of the material set-up.



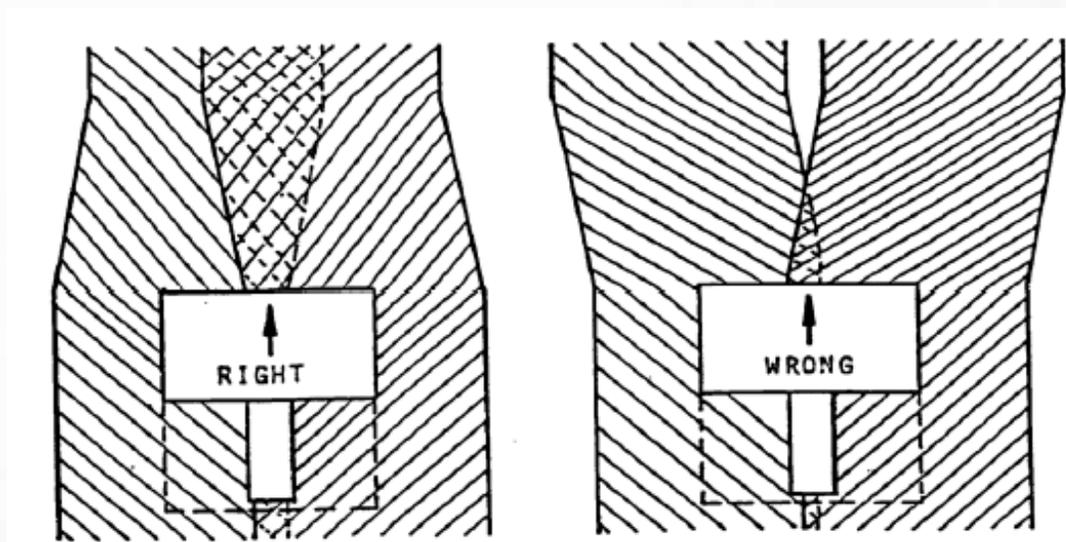
Step 8: When the material, cord, keder guide system, and proper temperature, speed, and pressure of the Spec Welder are properly positioned, swing the wedge lever arm in to make several test strips of welded keder. Adjust any or all segments of the material set-up to make changes for a smooth running output of keder.



14.0 Material Set-up

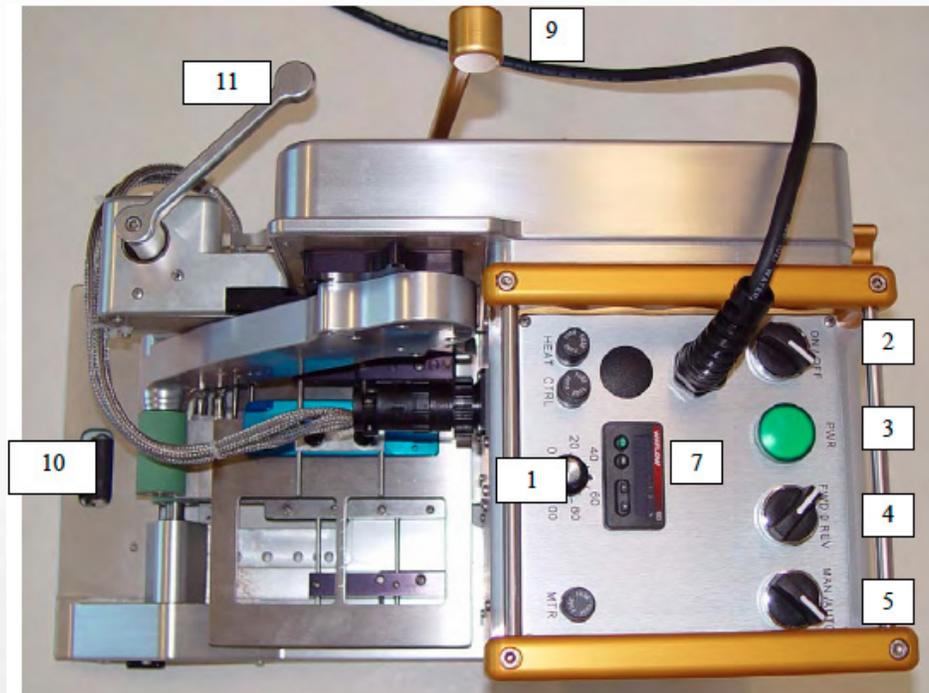
Material should be laid out as flat as possible, either on the floor or table depending on how you set up your fabrication area. With most material and especially thinner goods, it is preferred to pull out the wrinkles or pull taunt. The use of sheet metal in or next to the machine on the table, allows for the use of magnets to position and hold the material. Taping material taunt is a good practice.

To perform overlap welds, always overlap material more than the final weld width. Example: With a 1 1/2" weld width, overlap the end of material or run 2 to 2 1/2". The machine will push the material to the desired overlap. If the material is not overlapped or positioned properly, the machine will not make the desired overlap weld. See example below.



15.0 Operating Instructions

1. Turn the Power Switch #2 on. The Green Power Light #3 will go on with a one second delay. The Green light will remain on as an indicator that you have power to the heaters.
2. Temperature Controller #7 will come on with a 1-2 second delay after Green Power Light goes on. Units are set in Celsius at the factory. Press the up or down button until you reach your desired temperature. Heat up time is only one to two minutes. Do not adjust heat over 510 degrees C. For sample welds, set controller to 400 degrees C. This may not be your final setting.
3. Set For/Rev Switch #4 to Forward position. This indicates direction of machine and drive /pressure roller movement.
4. Set Man/Auto Switch #5 to Auto position. This will engage or start Drive/Pressure rollers when wedge is moved into welding position.
5. Swing Drive Wheel Assembly #10 under bottom Pressure Roller. This will make the machine move automatically. With Drive Wheel Assembly out, the machine can be used in a stationary mode.
6. #1 is the Speed Control. It is adjustable from 0-30 feet per minute. Normal setting will be in the 30 to 60% range, for 12-30 mil goods.
7. Insert material into the machine with proper guides installed and close Pressure Wheel Handle #9.
9. Swing Wedge Engagement Handle #11 in toward the machine, this will automatically start forward motion of the Spec and engage wedge with material.
10. Adjust speed control up or down until you can verify you are getting a proper weld.

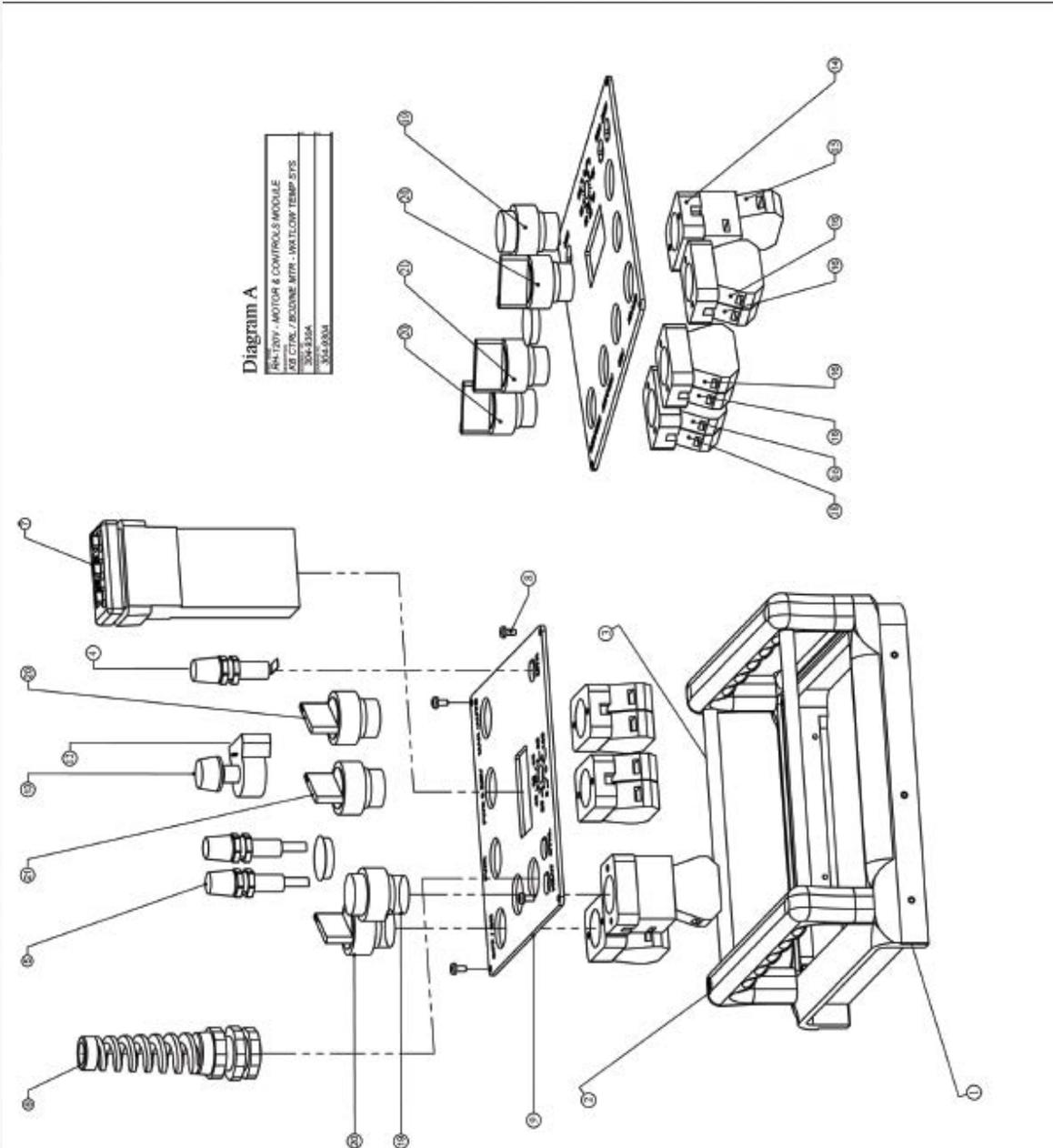


16.0 Motor Controls

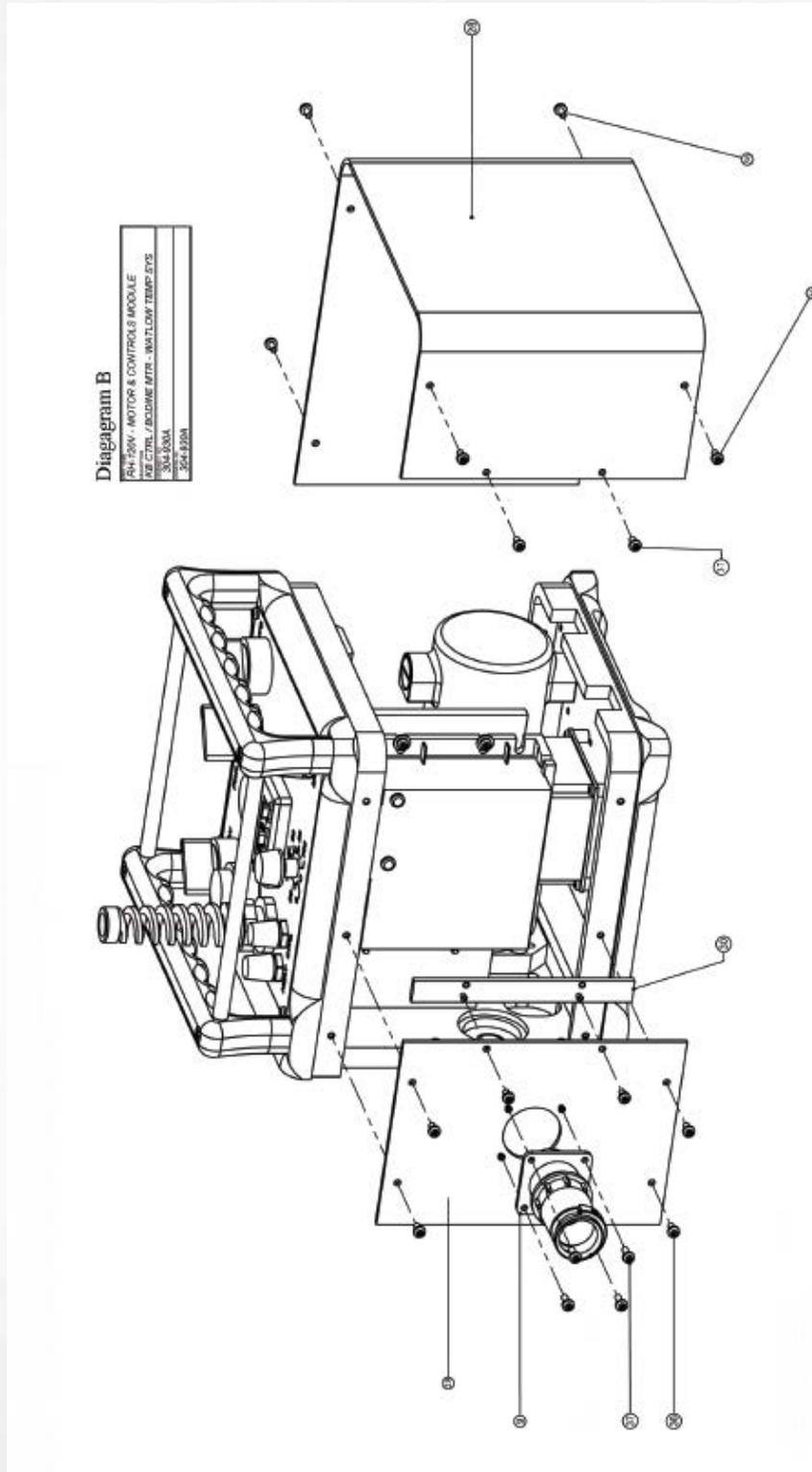
16.1 RH-120v- Motor & Controls Module-Diagram A&B

Schematic #	Part #	Description
DIAGRAM A		
1	SW304110A	Motor and Control Housing Frame Top
2	SW102262	Handle 2 Hole/Top Mount
3	SW1833105	Prec Ground Shaft 8 H7/G6 185.50L
4	393050R	Fuse Holder
5	393050	Fuse Holder Straight Angle
6	310173	Flex Fitting
7	310136SD	Watlow Controller, Dual Display
8	SW17103008	M3x.50x8.00 Pan HDPM Screw
9	SW304111B	Controls Mount Panel
11	SW1712001	Finishing Plug-Nylon-Locking Unvent
12	SW99979	Black Pot Control Knob
13	310110A	Speed Control Potentiometer
14	309999	Light Module Mounting Collar
15	309998	110V Green LED Light Module
16	310010A	Speed Control Potentiometer
18	310010B	Knob Dial Kit
19	310006N	Green Pilot Light Head
20	310002	2-Pos Switch Throw
21	310005	Base W/2 Normally Open Contacts
DIAGRAM B		
9	SW1804407	AMP CPC Circular Connector
28	SW304147A	2 Piece Motor Housing Main Cover
29	SW304148A	2 Piece Motor Housing Back Cover
30	SW304149	Motor Hsg Cover – 2 Pc Connector
36	SW17103008	M3x.50x8.00 Pan HDPM Screw
37	SW17103006	M3x.50x6.00 Pan HDPM Screw

16.1 RH-120v- Motor & Controls Module-Diagram A&B (Continued)

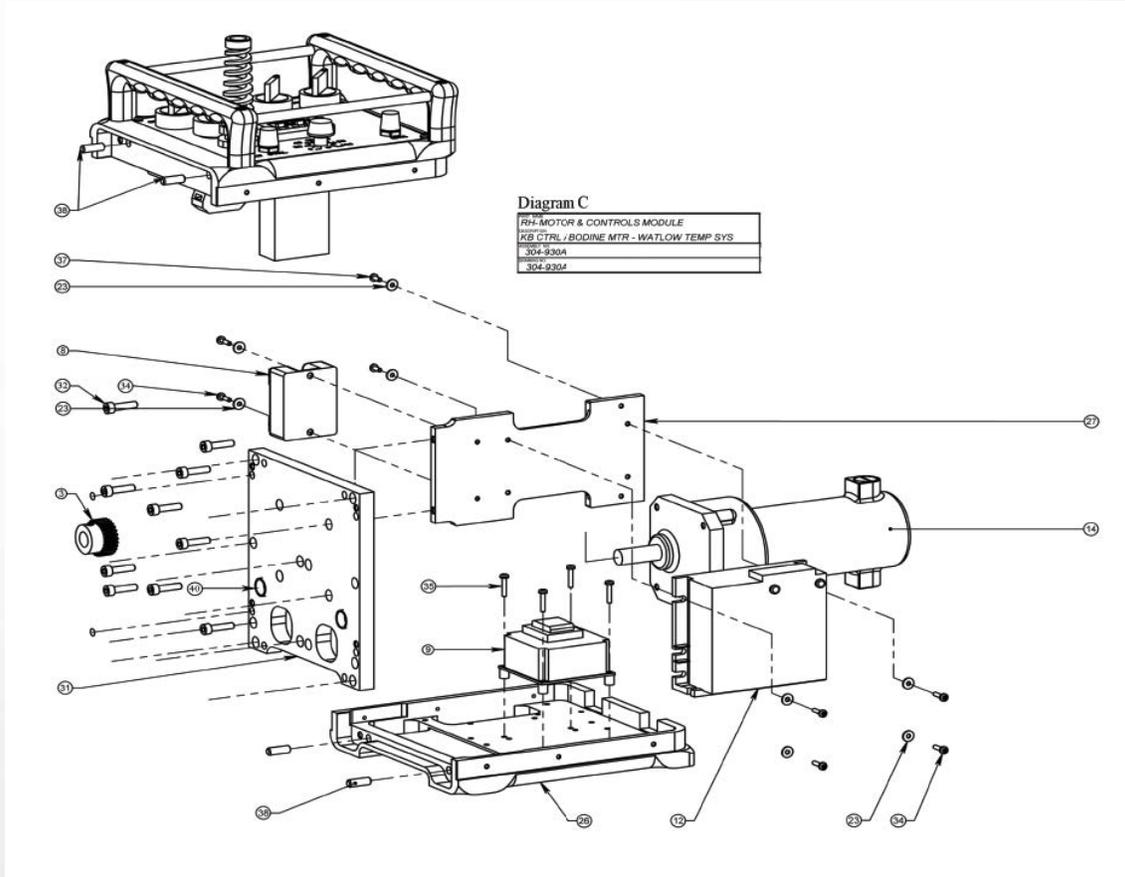


16.1 RH-120v- Motor & Controls Module-Diagram A&B (Continued)



16.2 RH Motor & Controls Module – Diagram C

Schematic #	Part #	Description
3	SW1802610	Gear 1M Pitch/28T/20 P Angle
8	310162	Solid State Relay
9	310164	120VAC Limit Controller
9	310165	230VAC Limit Controller
12	310109	120/230VAC Motor Controller
14	310129	Bodine Gear Motor
23	SW2870002	Washer 3mm Fender
26	SW304112A	Motor & Controls Housing Frame Bottom
27	SW304123A	Carrier Mtr Ctrl SS Relay Filter
31	SW304117A	Motor & Controls Housing Mount Panel
32	SW11105020	Socket Head Cap Screw M5x.80x20.00
34	SW17103012	M3x.50x12.00 Pan HDPM Screw
35	SW17103016	M3x.50x16.00 Pan HDPM Screw
37	SW17103008	M3x.50x8.00 Pan HDPM Screw
38	SW1832625	Ansi Ground Dowel Pin M6.0x18 SS
40	SW1605314	Bushing Type Brg .500IDx.594ODx.25L

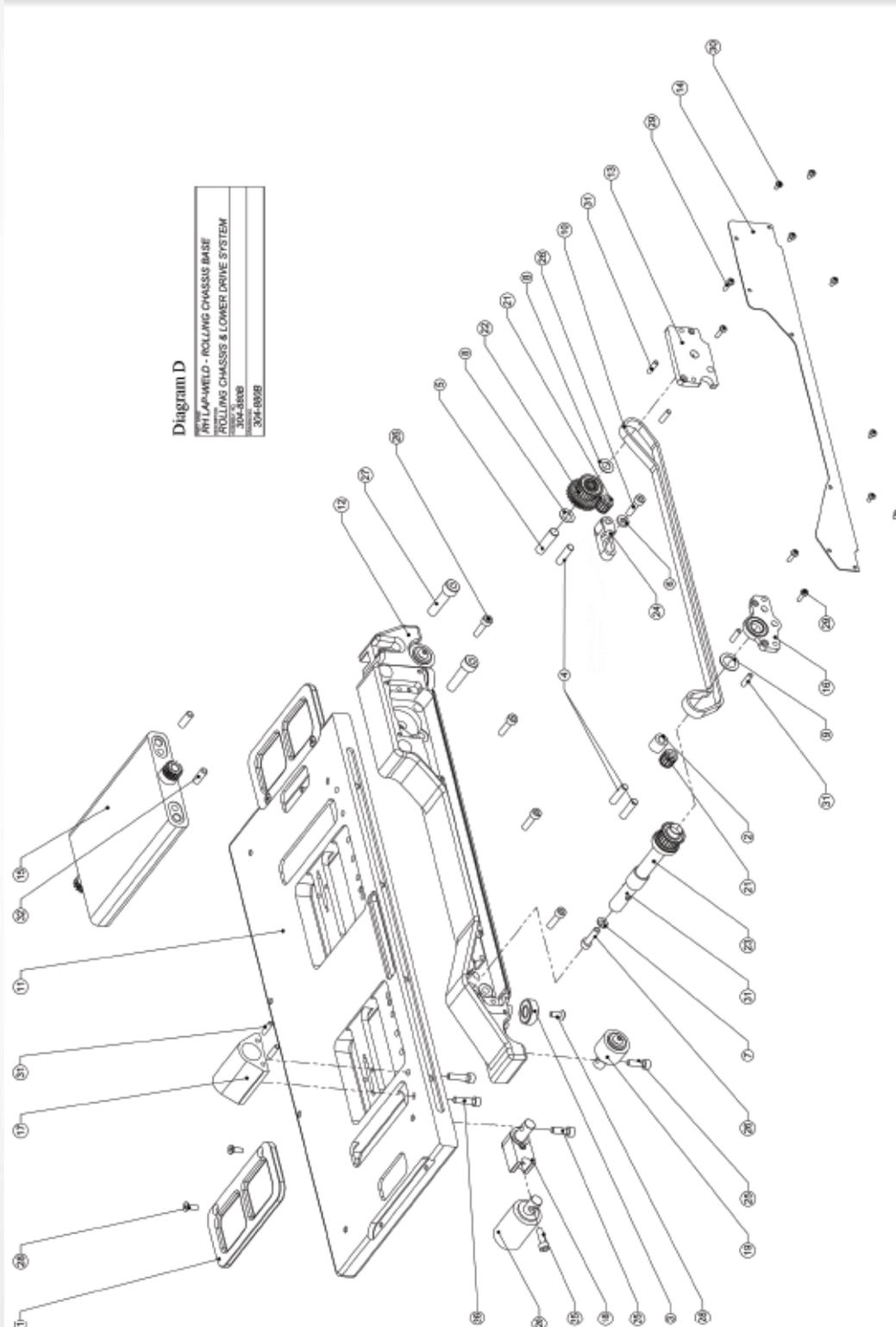


17.0 Schematics

17.1 RH Lap Weld Rolling Chassis Base-Diagram D

Schematic #	Part #	Description
1	SW102271	Lift Handle
2	SW1500108	Flat Belt Idle Pulley
3	SW1602103	Steel Ball Bearing #608 8mm Shaft
4	SW1832101	Precision Ground Shaft 6 H7/g6 24 LG
5	SW1833106	Precision Ground Shaft 8 H7/g6 157 LG
6	SW2870303	Thick Washer M5
7	SW2870408	Belleville M Precision SS 17-4 PH
8	SW2870604	Shim Washer M8
9	SW2870615	Shim Washer M12
10	SW304003 For Overlap	Lower Pinch Drive Belt – Toothed
10	SW304005 For Hem	Lower Pinch Drive Belt – Toothed
11	SW304101B	Chassis Base Lap/Hem Rev B
12	SW304106B For Overlap	RH Lap Lower Drive Housing
12	SW304107B For Hem	RH Lap Lower Drive Housing
13	SW304155A For Overlap	Lap Lower Pinch Drive Carrier Plate
13	SW304156A For Hem	Lap Lower Pinch Drive Carrier Plate
14	SW304167B For Overlap	R/L Lap Lower Drive Housing Cover
14	SW304168A For Hem	R/L Lap Lower Drive Housing Cover
15	SWS304920C	Lap Hem Chassis Base Connector
16	SWS304979A	Lower Roller Axle Carrier
17	SWS304987A	Lower Axle Housing and Bearings
18	SWS310801	Travel Wheel Arm
19	SWS310863	Wheel Mounted on Axle
20	SWS310881	Caster Wheel M27 x M40WD on Axle
21	SWS314801	Idler Pulley 2 Flg Bearing
22	SWS314812C	Gear & Pulley Drive Cluster
23	SWS314841C	Standard Lower Roller Drive Shaft
24	SWS314991A	M9 GT3 Belt Tensioner
25	SW11105016	Socket Head Cap Screw M5 x .80 x 16
26	SW11105020	Socket Head Cap Screw M5 x .80 x 20
27	SW11108035	Socket Head Cap Screw M8 x 1.25 x 35
28	SW14104012	Phillips Flat Head Machine Screw M4 x 7 x 12
29	SW17103012	Pan Head Phillips Machine Screw M3 x 50 x 12
30	SW17103006	Pan Head Phillips Machine Screw M3 x 50 x 6
31	SW1831625	Dowel Pin M4 x 16
32	SW1832625	Dowel Pin M6 x 18

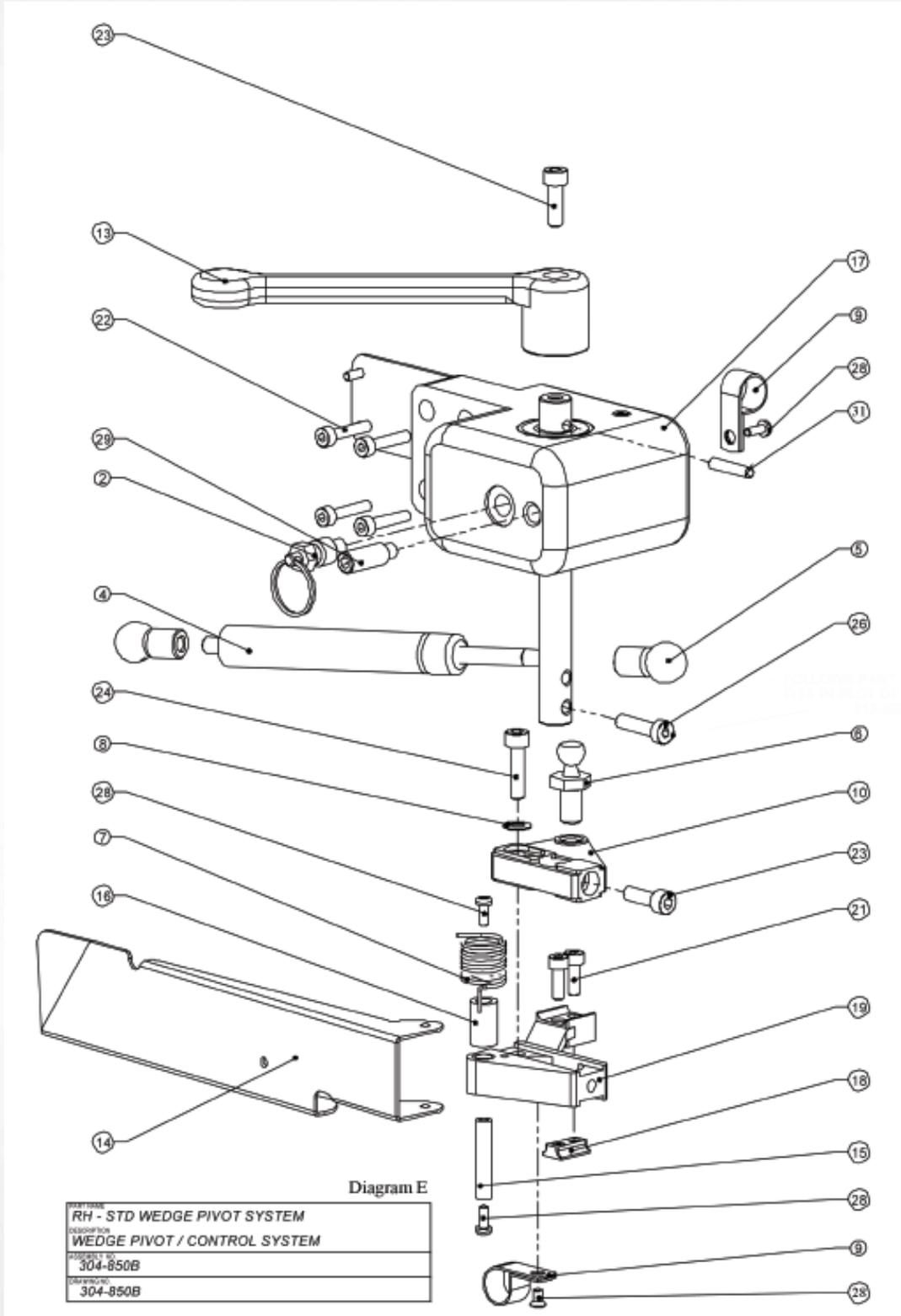
17.1 RH Lap Weld Rolling Chassis Base-Diagram D



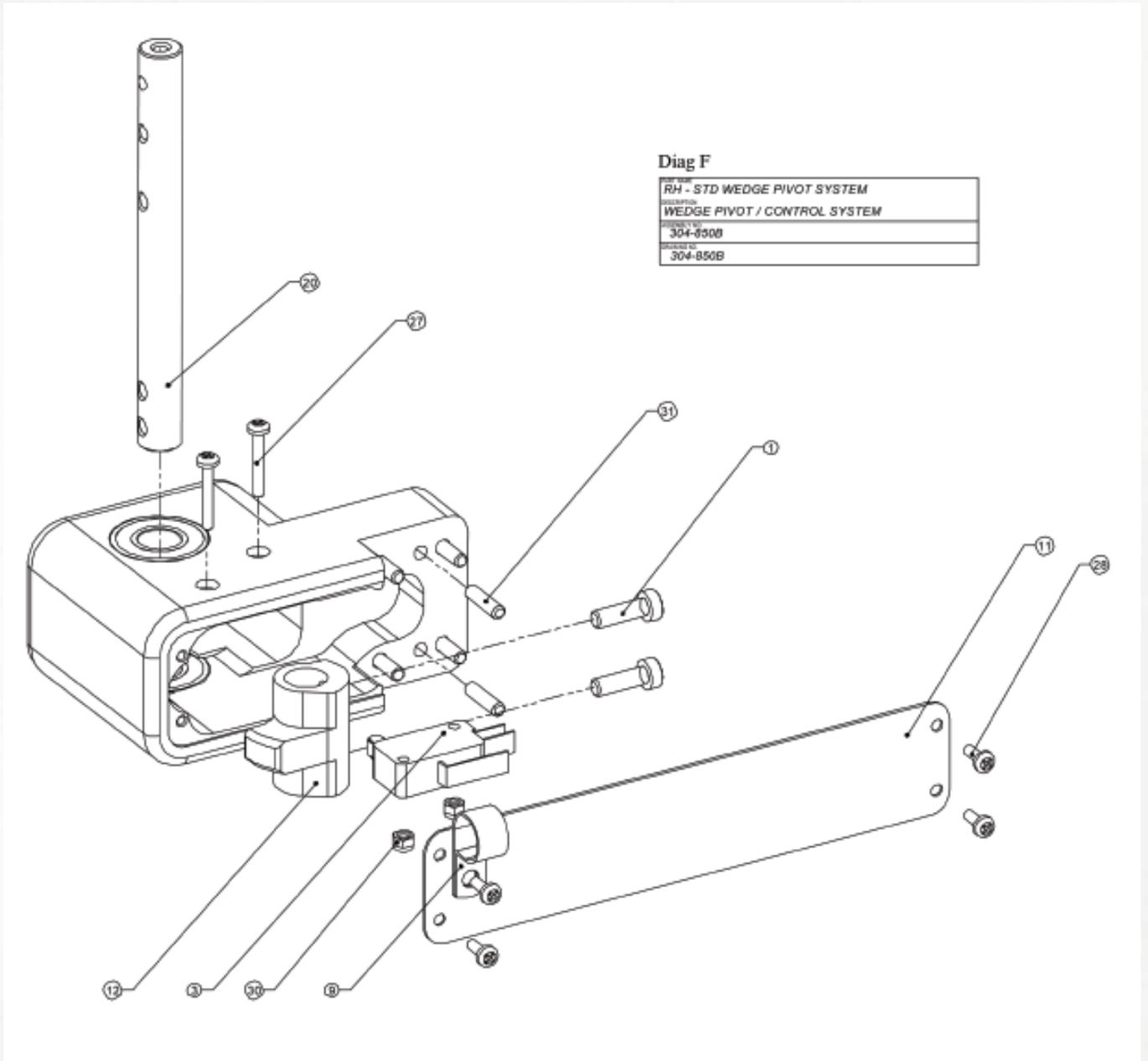
17.2 Wedge Pivot Housing-Diagram E&F

Schematic #	Part #	Description
1	SW11105016	Socket Head Cap Screw M5 x .80 x 16
2	SW1802120	Hand Retractable Spring Plunger
3	SW1804002	Miniature Snap Switch
4	SW1808201	Gas Spring 30 lb Force
5	392056	10mm Ball Metal End Fitting M6
6	SW1808402	M10 Ball Stud M8 x 1.25
7	SW1808781	Torsional Spring
8	SW2870408	Belleville M Precision – SS 17-4 PH
9	SW2902101	¼" Pipe Strap
10	SW304132A	Standard Wedge Pivot Arm
11	SW304136A	Wedge Pivot Housing Right Cover
12	SW304138B	Wedge Pivot Adjuster Cam
13	SW304144A	Wedge Operation Handle
14	SW304169A	Wedge Guard
15	SW304174A	Wedge Guard Pivot Shaft
16	Misc	3/8 OD x 5/8 Length Nylon Tubing
17	SWS304986	Wedge Pivot Housing and Bearings
18	SW312611	Standard Wedge Rod Clamp
19	SWS312952	Wedge Mount Arm Assembly
20	SW314321A	Wedge Pivot Shaft
21	SW11104012	Socket Head Cap Screw M4 x .70 x 12
22	SW11104020	Socket Head Cap Screw M4 x .70 x 20
23	SW11105016	Socket Head Cap Screw M5 x .80 x 16
24	SW11105020	Socket Head Cap Screw M5 x .80 x 20
25	SW17103006	M3 x .50 x 6 Pan HDPM Screw
26	SW15105020	M5 x .80 x 20 SS Low Head Soc Cap
27	SW17103020	M3 x .50 x 20 Pan Head Phillips Machine Screw
28	SW17103008	M3 x .50 x 8 Pan Head Phillips Machine Screw
29	SW33108020	M8 x 20 Dog Point Set Screw
30	SW1832626	Hex Head Nut – Nylock 3m
31	SW1831625	ANSI Ground Dowel Pin M4 x 16 SS
32	392058	Safety Clip

17.2 Wedge Pivot Housing-Diagram E



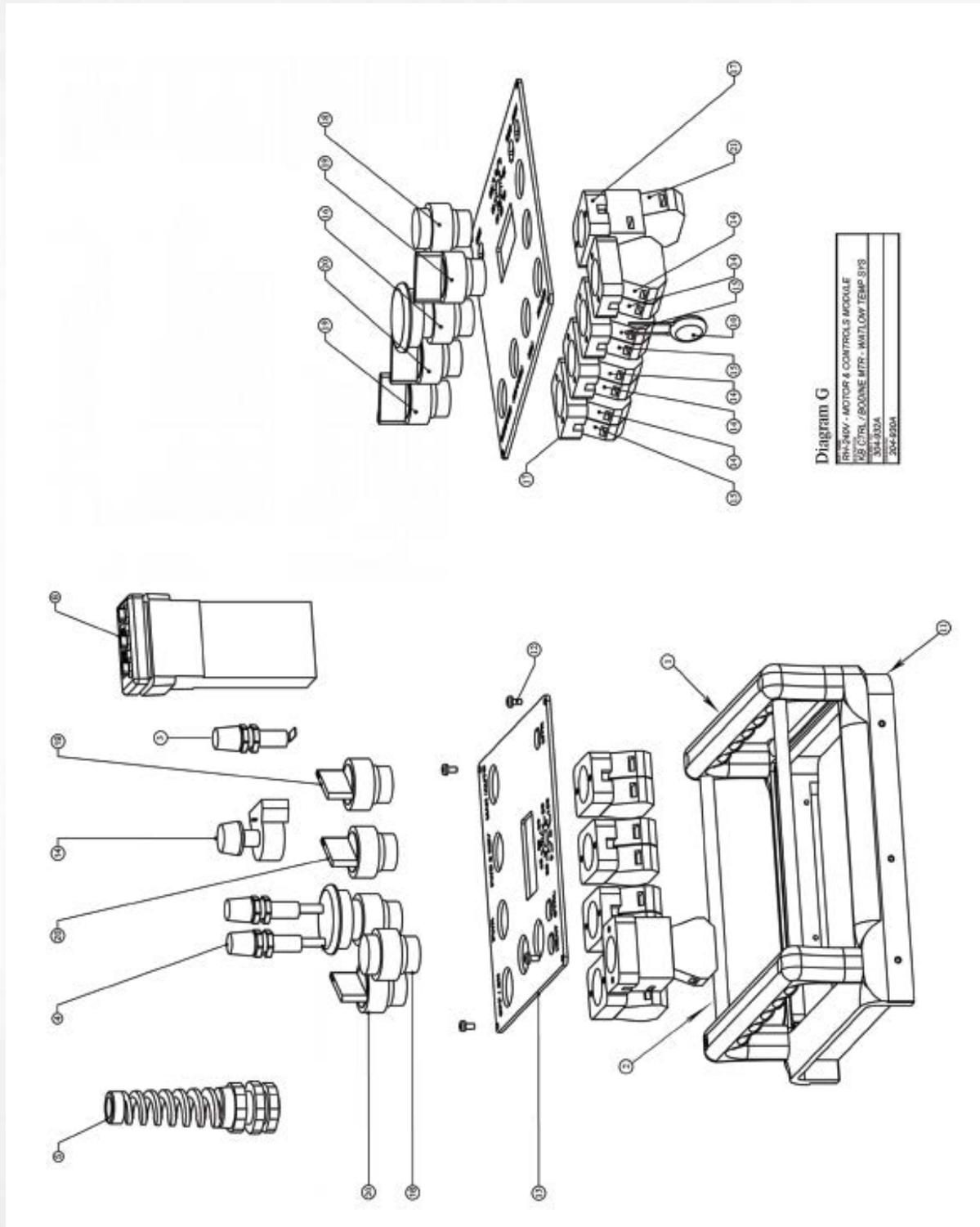
17.2 Wedge Pivot Housing-Diagram F



17.3 RH-240V Motor & Controls Module-Diagram G

Schematic #	Part #	Description
1	SW102262	Handle 2 Hole/Top Mount
2	SW1833105	Precision Ground Shaft 8 H7/g6 185.50L
3	393050R	Fuse Holder ¼" Right Angle 3AG Fuse
4	393050	Fuse Holder ¼" Straight Angle
5	310173	Flex Fitting ½" NPT Black Connector
6	310136SD	Watlow 1/32 Din Control
10	SW1804211Z	ZNR Transient/Surge Absorber
11	SW304110A	Motor & Control Housing Frame Top
12	SW17103008	M3 x .50 x .00 Pan HDPM Screw
13	SW304111B	Controls Mount Panel
14	310010A	N O Contact w/o Base
15	310010B	N C Contact w/o Base
16	310197	Push Pull E-Stop
17	309999	Light Module Mounting Collar
18	310006N	Green Pilot Light Head
19	310002	2 Position Throw Switch
20	310004	3 Position Throw Switch
21	309997	240 V Green LED Light Module

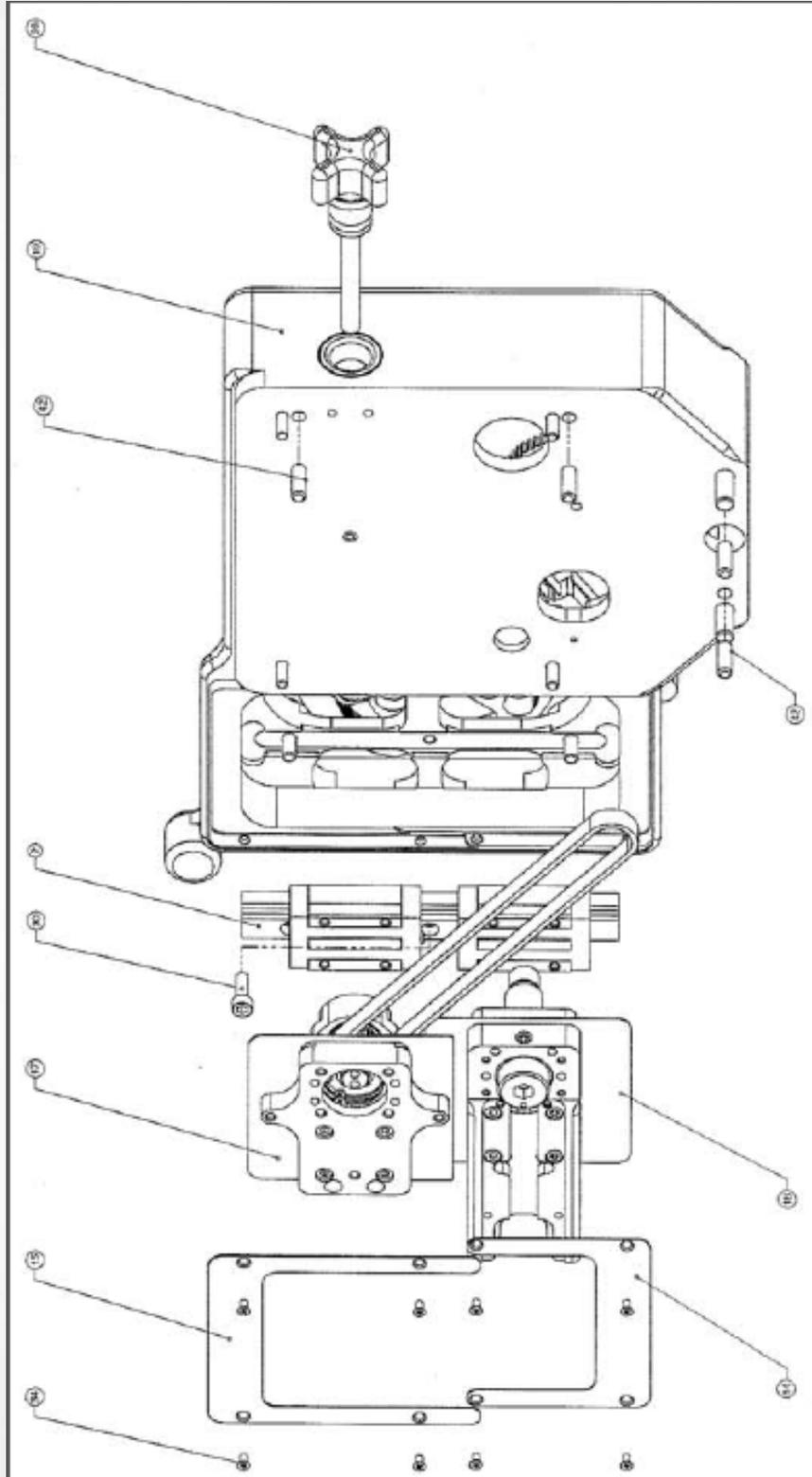
17.3 RH-240V Motor & Controls Module-Diagram G



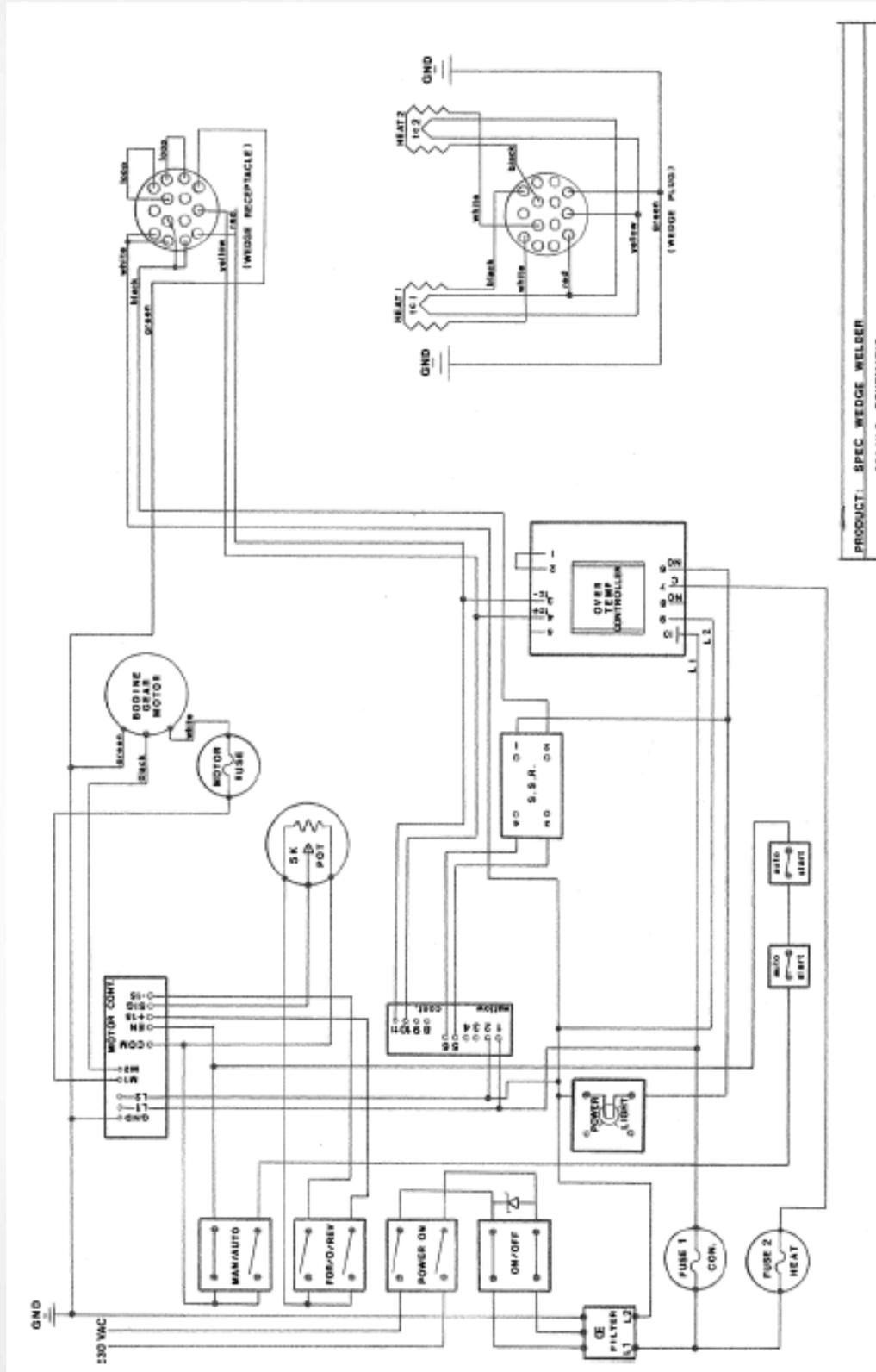
17.4 Chassis Backbone & Control

Schematic #	Description	Part #
1	Socket Head Cap Screw	SW11106025
2	INA/KUVE 15ES-Rail & Block(s)	SW1638601
3	Mini Snap-Acting Switch-Roller	SW1804002
4	Gas Spring .25 Rod x 2.00 S x 7.5	SW1802014
5	Gas Spring Rod end for M10 Ball	392056
6	M10 Ball Stud - M8 x 1.25 Thread	SW1808402
7	Metric Large OD Zinc Plate 5.3IDx15ODx1.2	SW2870004
8	Metric Large OD Zinc Plate 6.4IDx18ODx1.6	SW2870005
9	Metric Shim Washer DIN 988/M8	SW2870604
10	Wave Spring/Washer	SW2871001
11	Metric Extretaining-Ring	SW2900105
12	LAP Chassis Backbone Cover	SW304105B
13	Upper Roller Operator Handle	SW304143B
14	Lower Lin-Brng Cover Retainer Plate	SW304162
15	Upper Lin Brng Cover Retainer Plate	SW304165
16	Pressure Adjuster Block	SW304179A
17	Upper Arm Lin Brng Mount	SWS304860C
18	Wedge Pivot Syst Lin-mount	SWS304870B
19	RH Lap Chassis Backbone	SWS304950A
20	Pressure Indicator	SWS304982
21	Upper Primary Drive Link Arm	SWS304983A
22	Lower Primary Gear Carrier	SWS304984
23	Upper Primary Gear Cluster Rocker Arm	SWS304985A
24	Ext. Spring and Spring Rod End	SWS304988
25	Lin-Syst Operator Cam and Bearings	SWS304990A
26	Knob & Adjustment Screw	SWS304993
27	Gear & Pulley Drive Cluster	SWS314812C
28	Gear & Pulley Drive Cluster	SWS314813A
29	Gear & Pulley Drive Cluster	SWS314829A
30	Socket Head Cap Screw M5x.80x16	SW1105016
31	Socket Head Cap Screw M5x.80x20	SW1105020
32	Socket Head Cap Screw M8x1.25x35	SW1108030
33	Flat Head Socket Cap Screw	SW12105010
34	Phillips Flat Head Machine Screw	SW13103006
35	Button Head Cap Screw	SW16105012
36	Pan Head Phillips Machine Screw M3x.50x12	SW17103012
37	Pan Head Phillips Machine Screw M3x.50x16	SW17103016
38	Pan Head Phillips Machine Screw M3x.50x8	SW17103008
39	Dowel Pin M4x12	SW1831624
40	Dowel Pin M4x24	SW1831626
41	Dowel Pin M4x28	SW1831627
42	Dowel Pin M6x18	SW1832625
43	Socket Head Shoulder Screw	SW1832023

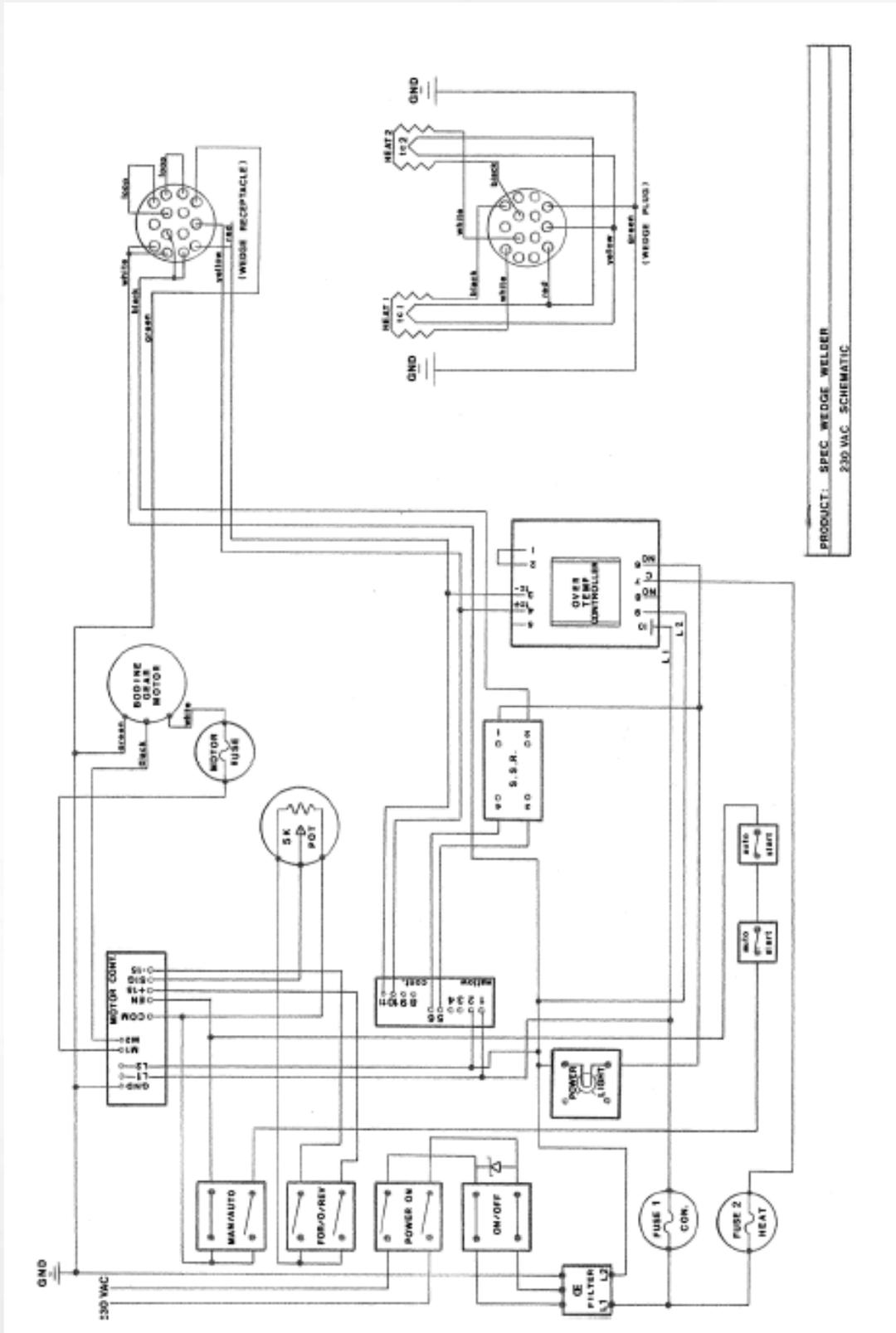
17.4 Chassis Backbone & Control



18.0 Wiring Diagram 220V



18.0 Wiring Diagram 220V



18.0 Wiring Diagram 220V

