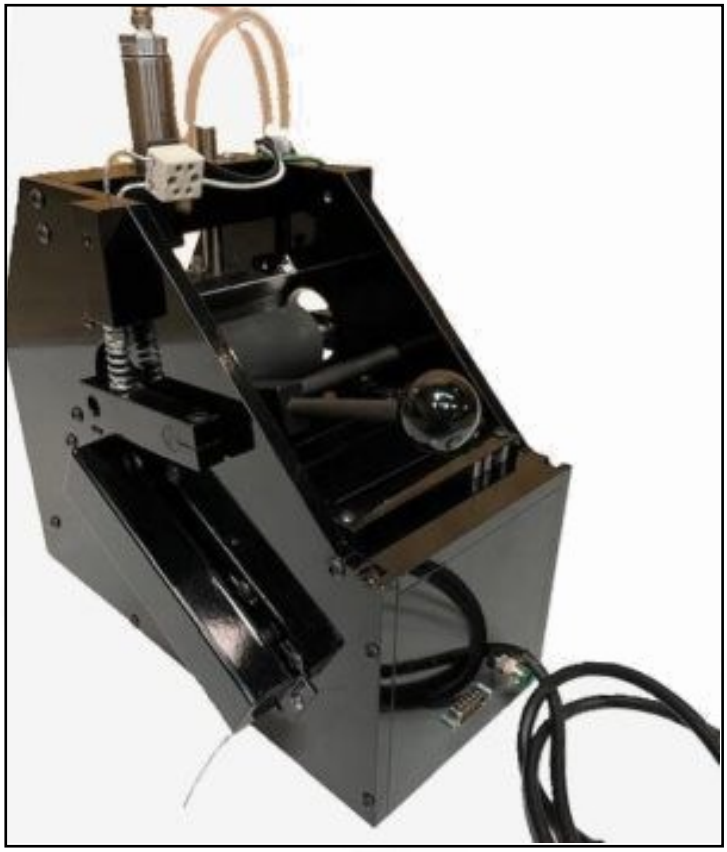
TRC INDUSTRIES

WORKHORSE STRIP CUTTERS

SINCE 1993

Service Manual for 1000 Series Strip cutters



Rev 1.2 6/14/25

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Safety Information for TRC-1000 Strip Cutters

Congratulations on the purchase of your new TRC 1000 Strip cutter. TRC Industries has been manufacturing and servicing the TRC 1000 series strip cutters since 1993. These cutters are solidly built, easy to use machines that will last a lifetime with proper care and maintenance. They are still machines however, and great care must be taken to ensure safe and satisfactory operation. The following Safety information should be read and understood before attempting to operate machine. Careless operation can lead to injury and downtime.

1. Make sure the outlet that supplies electricity to your TRC-1000 is properly wired, grounded and overload protected. We recommend checking with a qualified electrician when sizing breakers, as your individual needs may vary. The TRC 1000 series uses less than 10 amps of current.
2. The Cutter Head and Control Panel should be placed on a sturdy table free from wobble or other movement.
3. Care should be taken with loose fitting sleeves and long hair when around the cutting unit's feed rollers.
4. Unit should be disconnected from the electrical and air supply before any service work is performed.
5. Unit should be allowed to cool off for a minimum of 2 hours before any service work is performed.
6. Only qualified personnel should be allowed to perform maintenance or repairs.
7. Unit should not be operated without air regulator.
8. Material should be removed from cutting unit when not in operation. This prevents material from overheating, melting, or warping and contacting hot parts of the machine.
9. Thermostat should be turned to the OFF position when not in operation. The hot knife blade and block temperature will exceed 900 degrees F.
10. Metal tools absolutely not be used to unjam cutter or knife when unit is connected to electricity.
11. Bare wires and connections should be immediately repaired or replaced before operation continues.
12. Only factory recommended replacement parts should be used on the TRC-1000.

Specifications

Model	Weight	Dimensions	Power Requirements	Air Requirements
TRC 1000 4.5" Hot cutter	35 lbs	14" x 7" x 14"	120VAC Single Phase	Min. 40 PSIG
TRC 1000 7" Hot Cutter	40 lbs	14" x 11" x 14"	120VAC Single Phase	Min. 40 PSIG
TRC 1000 4.5" Cold Cutter	35 lbs	14" x 7" x 14"	120VAC Single Phase	Min 60 PSIG
TRC 1000 7" Cold Cutter	35 lbs	14" x 11" x 14"	120VAC Single Phase	Min 60 PSIG
TRC 1000 5" Alternating Angle Cutter	50 lbs	18" x 10" x 14"	120VAC Single Phase	Min. 40 PSIG
TRC 1000 Prepuller	25 lbs	11" x 14" x 8"	120VAC Single Phase	N/A
TRC 1000 Foot Switch Cutter	18 lbs.	12" x 8.5" x 10"	120VAC Single Phase	Min. 40PSIG
Control Panel (All)	7 lbs	10" x 14" x 6"	120VAC Single Phase	N/A

Model Identification

All the cutters in our first generation of cutting machines (spanning from 1993 until the time of this publication) are part of the "TRC 1000 Series." Model numbers beginning with the "HC" designation are Hot Cutters. Models beginning with the "CC" Designation are cold cutters. The following digits, either a "4" or a 7" identifies the machine as either a 4.5" or a 7" cutter, respectively. The next two letters, either a "CS" or "VS" identify the controller unit as either a Constant Speed or a Variable Speed controller.

Therefore, "TRC 1000 CC4-VS" would identify a 1000 Series Cold Cutter, 4.5" cutter, with a Variable Speed Controller. Similarly, "TRC 1000 HC7-CS" would identify a 1000 series Hot cutter in 7" cutting capacity with a Constant Speed Control panel.

It is worth noting that Cutter Heads can be used with either Variable Speed (VS) Controllers or Constant Speed (CS) Control Panels.

Other Identifiers that may be used include the following:

- AA – Alternating Angle Model
- ICO – Integrated Cutoff Switch Equipped Model
- HT – High Torque Model
- MA – Marking Attachment Equipped Model

TRC Industries has produced more custom machines than we can count. If you have a question about the specific model you have, or if you are interested in buying a machine second hand, give us a call and we call help walk you through what features are included.

Nomenclature

Throughout this manual we will be referring to sides of the machine as well as its parts. The diagrams below should be used as a reference to help the instructions in this manual easier to understand. We will use the terms “infeed side” and “outfeed side” as well as “motor side” throughout this manual.

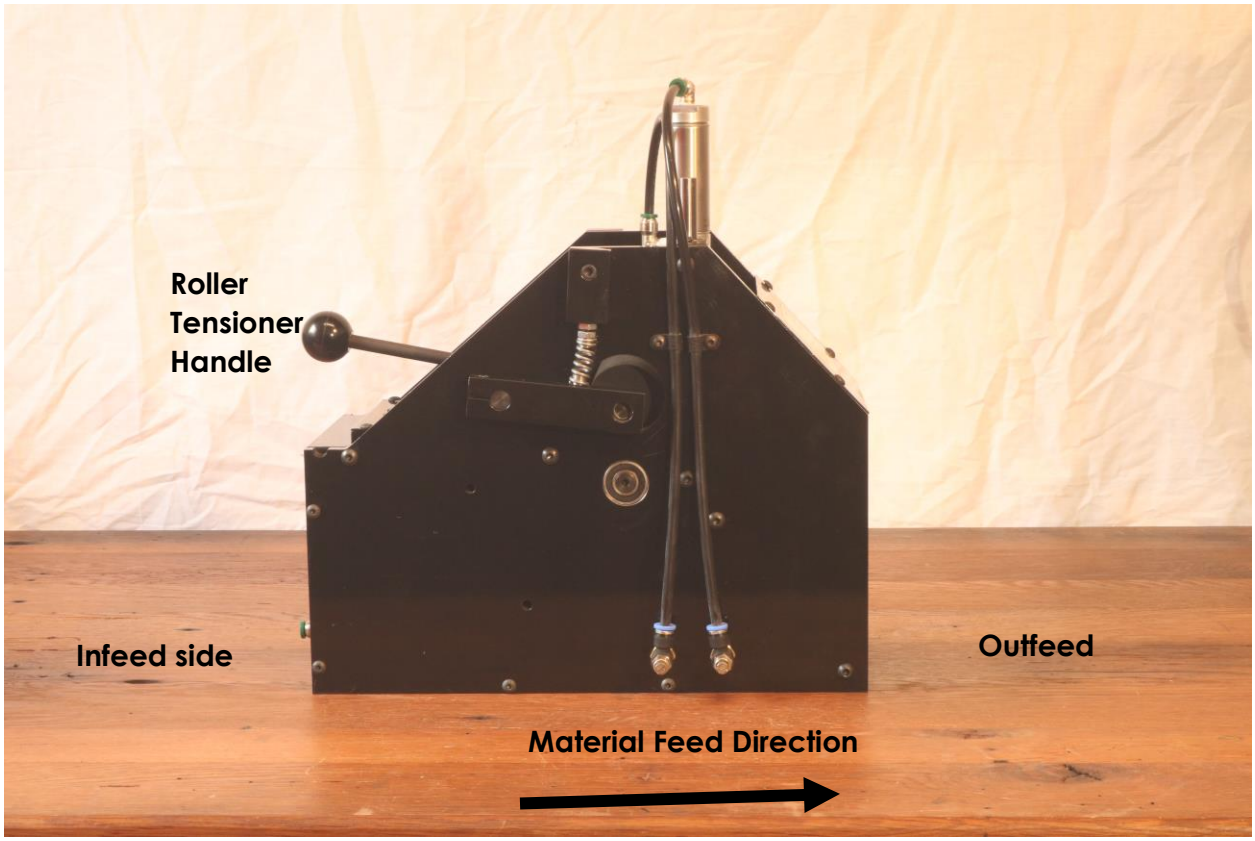


Figure 1: The side view of this cold cutter is representative of the HC4, HC7, CC4, and CC7 cutters, with some minor differences between the hot and cold cutter models. Note the side facing the reader is opposite the motor side of the cutter.

Setting Up and Using your new TRC 1000 Series Strip Cutters

Model HC4 and HC7 Setup

1. Place control panel and cutter on a flat table with the back of the control panel facing the side of the cutter. Plug the black heater cord cable from the cutter into the control panel. Next, connect the control panel to the cutter using the grey control cable. Plug the power cord into the fused power receptacle on the control panel and the other end into a standard 120V single phase receptacle.

BE SURE ALL CABLES ARE SECURELY FASTENED BEFORE TURNING ON THE POWER!

2. Connect the air regulator to the cutter head via the press to lock fittings. Set the air supply pressure at 40 PSI. If connected correctly the blade carrier should move to the up-stroke position.

3. Set the roll stand on the infeed side of the cutter and line it up with the guides. Place one plastic disk on the roll stand shaft, then feed webbing roll on to shaft so webbing rolls off the top side of the roll. Place the other plastic disk on the roll stand and put the roll holder collar lightly against the disk. tighten the thumb screw lightly. If the webbing does not turn freely, loosen the roll holder a little.

Start Up Procedures

- While the machine is cold, adjust the guide strips to fit the webbing you are using. Do not make it too tight as to cause drag on the webbing. The guide strips are there to simply funnel the material towards the rollers (figure 2).

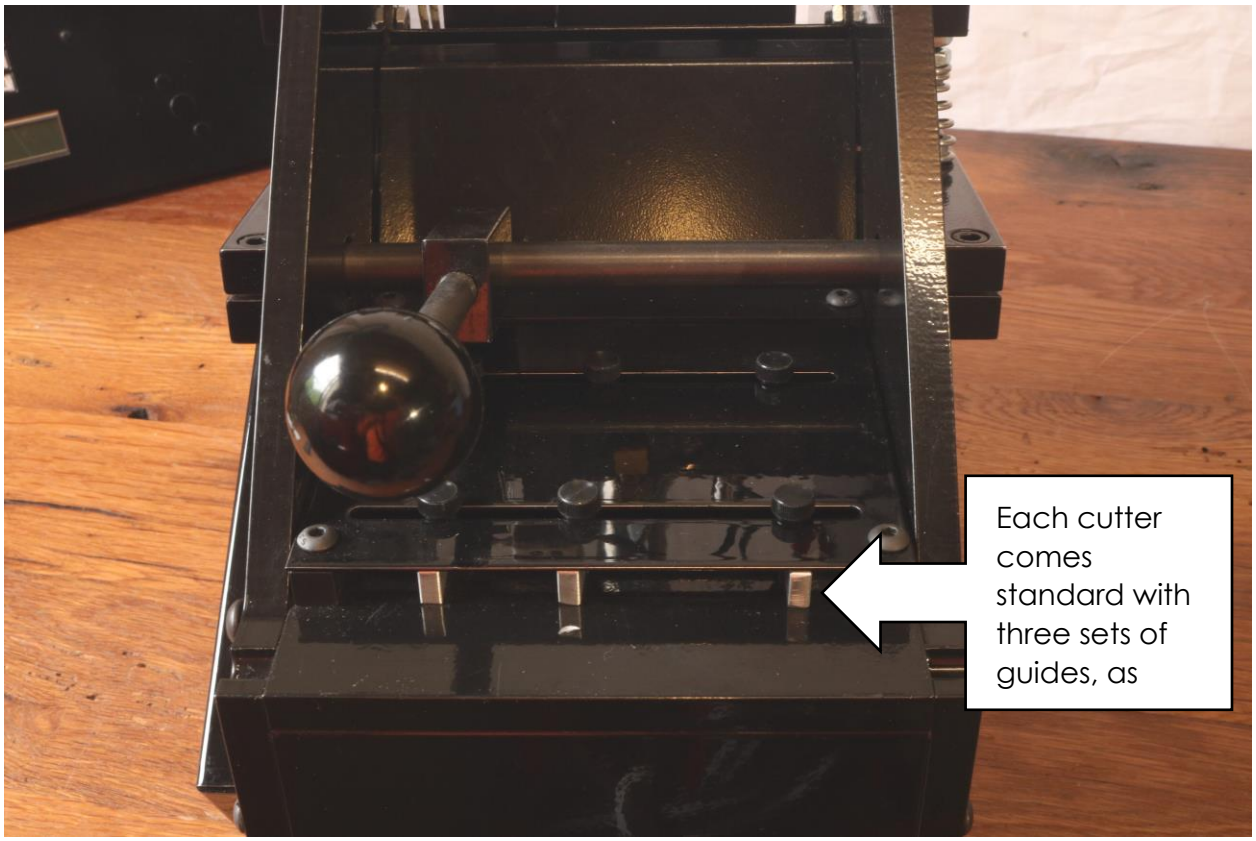


Figure 2: view from the infeed side of the machine, with feed guides visible.

- Turn master switch to the ON position.
- Set the temperature control knob to 3 and allow 10 - 15 min. for the knife to heat up. The first few times the machine is heated up, the machine may emit the smell of hot oil. This is normal.
- Feed the webbing through the guides and push it up to the feed rollers and then push the FEED JOG button on the control panel. This will take the webbing through the feed rollers. Take the webbing past the rollers an inch or so. You can also put the webbing through the rollers by pushing down on the black knob and lifting the rollers and pushing the webbing through.

Note: If your machine is equipped with the optional cutoff switch, you must feed material under the trip rod before the guides.

NEVER ALLOW THE KNIFE TO BECOME RED HOT AS THIS MAY CAUSE THE WEBBING TO CATCH ON FIRE.

Use just enough heat to cut the webbing. You will have to experiment with the webbing you are using to find the exact temperature that works best.

Keyboard Commands

FEED JOG Allows you to manually operate the feed rollers

KNIFE JOG Allows you to manually operate the knife

RE-SET Allows you to clear the machine and start a new program

STOP Allows you to stop the machine and save all data in the memory. The STOP function Also allows you to clear a data entry while programming – for example, if an incorrect value was entered for length or cut time.

ENTER Allows you to enter program data

Entering A program

Feed Rate

Figure 3

When the control panel is turned on the loading screen and version number will be displayed. The next series of prompts will be cut settings. The first prompt will be for feed rate. "FEED RATE 5-22 " (figure 3) will appear on the LCD. This will determine how fast the material will feed through the machine, in inches. While our machines can feed up to 22 inches per second, the speed required to run the machine successfully will largely be determined by the material being cut. We recommend starting somewhere in the middle and working up if necessary. Older machines may not have variable speed, in which case this prompt will be omitted. Type in the desired speed and press ENTER.

Length

Figure 4

The Next prompt will be for length(figure 4). Type in the desired length and press ENTER. For example, 15 inches will be typed in as "15". For decimal values, use the "*" key. For example, 15.5 inches would be typed as "15*5"

Cut Time

Figure 5

Next, "Cut Time?" will appear on the LCD (figure 5). This is amount of time in seconds the blade will stay in the down position for. The maximum time that most cutters can cut for is 2.4 seconds, but this varies depending on chip version. We recommend starting at 0.5 seconds an increasing as necessary. A decimal can be entered by pressing the "*" key. Cut times will vary with the thickness of the webbing and some trial and error is necessary to get the proper cut time. 1" medium weight poly pro webbing will cut in about .75 seconds or 3/4 of a second.

How Many

Figure 6

This is the number of pieces that you want to cut (figure 6). After typing in a number and BEFORE you push the **Enter** key you will want to insert the material through the feed guides, pushing it up to the feed rollers. Press and hold the FEED JOG button until material advances past the hot knife about 3". Press the KNIFE JOG button and cut off the webbing. This will give you a fresh cut to start with.

Now with the correct piece count entered in press ENTER and the machine will start cutting. When the number of pieces that were entered have been cut the machine will stop. If you wish to run the same program again just push ENTER and it will run the same program again, while maintain a running count of both program runs.

Operating Screen

Figure 7: screen during operation.

The operating screen will be displayed during operation (figure 7). The operating screen displays the following:

Top left: Programmed Part length, in inches

Top right: Programmed cut time, in seconds

Bottom: Running total of programmed parts cut so far

Stopping the Machine

To stop the machine during operation and not lose the data you have entered, push the STOP button and hold it down until the machine stops.

In the event of an emergency, simply turn the master power switch to the off position.

By using the STOP button, you will save the program and the count. To start the program again just push ENTER and it will continue with the program you had entered. When you use RESET or the master switch you will lose the program, meaning you will have to follow the prompts again and enter the desired program values in again.

When finished with machine operations, simply turn thermostat and master switch off and allow to cool. Remove material from machine to prevent material from melting.

Model CC4 and CC7 Setup

1. Place control panel and cutter on a flat table with the back of the control panel facing the side of the cutter. Next, connect the control panel to the cutter using the grey control cable. Plug the power cord into the fused power receptacle on the control panel and the other end into a standard 120V single phase receptacle.

BE SURE ALL CABLES ARE SECURELY FASTENED BEFORE TURNING ON THE POWER!

2. Connect the air regulator to the cutter head via the press to lock fittings. Set the air supply pressure at 60 PSI. If connected correctly the blade carrier should move to the up-stroke position.

3. Set the roll stand on the infeed side of the cutter and line it up with the guides. Place one plastic disk on the roll stand shaft, then feed webbing roll on to shaft so webbing rolls off the top side of the roll. Place the other plastic disk on the roll stand and put the roll holder collar lightly against the disk. tighten the thumb screw lightly. If the webbing does not turn freely, loosen the roll holder a little.

Start Up Procedures

- Adjust the guide strips to fit the webbing you are using. Do not make it too tight as to cause drag on the webbing. The guide strips are there to simply funnel the material towards the rollers.
- Turn master switch to the ON position.
- Feed the webbing through the guides and push it up to the feed rollers and then push the FEED JOG button on the control panel. This will take the webbing through the feed rollers. Take the webbing past the rollers an inch or so. You can also put the webbing through the rollers by pushing down on the black knob and lifting the rollers and pushing the webbing through.

Note: If your machine is equipped with the optional cutoff switch, you must feed material under the trip rod before the guides.

Keyboard Commands

FEED JOG Allows you to manually operate the feed rollers

KNIFE JOG Allows you to manually operate the knife

RE-SET Allows you to clear the machine and start a new program

STOP Allows you to stop the machine and save all data in the memory. The STOP function Also allows you to clear a data entry while programming – for example, if an incorrect value was entered for length or cut time.

ENTER Allows you to enter program data

Entering a Program

Feed Rate

Figure 8

When the control panel is turned on the loading screen and version number will be displayed. The next series of prompts will be cut settings. The first prompt will be for feed rate. "FEED RATE 5-22 " will appear on the LCD. This will determine how fast the material will feed through the machine, in inches. While our machines can feed up to 22 inches per second, the speed required to run the machine successfully will largely be determined by the material being cut. We recommend starting somewhere in the middle and working up if necessary. Older machines may not have variable speed, in which case this prompt will be omitted. Type in the desired speed and press ENTER.

Length

Figure 9

The Next prompt will be for length. Type in the desired length and press ENTER. For example, 15 inches will be typed in as “15”. For decimal values, use the “*” key. For example, 15.5 inches would be typed as “15*5”

Cut Time

Figure 10

Next, "Cut Time?" will appear on the LCD. This is amount of time in seconds the blade will cycle for. The maximum time that most cutters can cut for is 2.4 seconds, but this varies depending on chip version. We recommend starting at 0.5 seconds an increasing as necessary. A decimal can be entered by pressing the "*" key. Cut times will vary with the thickness of the webbing and some trial and error is necessary to get the proper cut time.

How Many

Figure 11

This is the number of pieces that you want to cut. BEFORE you push enter on How many, you will want to insert the material through the feed guides, pushing it up to the feed rollers. Press and hold the FEED JOG button until material advances past the cold knife about 3". Press the KNIFE JOG button and cut off the webbing. This will give you a fresh cut to start with.

Now with the correct piece count entered in press ENTER and the machine will start cutting. When the number of pieces that were entered have been cut the machine will stop. If you wish to run the same program again just push ENTER and it will run the same program again, while maintain a running count of both program runs.

Stopping the Machine

To stop the machine during operation and not lose the data you have entered, push the STOP button and hold it down until the machine stops.

In the event of an emergency, simply turn the master power switch to the off position.

By using the STOP button, you will save the program and the count. To start the program again just push ENTER and it will continue with the program you had entered. When you use RESET or the master switch you will lose the program, meaning you will have to follow the prompts again and enter the desired program values in again.

When finished with machine operations, simply turn the master switch off.

Model HC4-FS Setup

1. Place cutter on a flat table.

2. Route footswitch to a safe comfortable place on the floor. Foot switch can be secured with carpet tape or similar double-sided tape.

3. Next hook up the air regulator to your air supply and set the pressure at 40 PSI.

4. Plug the power cord into a 120V outlet.

Start Up Procedures

1. Turn master switch to ON position

2. Set the temperature control knob to 3 and allow 10 - 15 min. for the knife to heat up.

NEVER ALLOW THE KNIFE TO BECOME RED HOT AS THIS MAY CAUSE THE WEBBING TO CATCH ON FIRE.

Use just enough heat to cut the webbing. You will have to experiment with the webbing you are using to find the exact temperature that works best.

3. Place material across cutting plate. KEEPING HANDS CLEAR OF KNIFE!

4. When material is in desired position, with HANDS CLEAR, depress footswitch until knife passes through material. Release the foot switch after blade has passed through material.

5. When you are through with the machine turn the Temperature control to OFF and switch the Master Switch OFF.

Periodic Maintenance and Repairs

Your TRC 1000 Series Strip Cutter will last a long time with proper care and maintenance. You will need a few simple tools to properly maintain and service your new TRC 1000 Series cutter.

Tools needed:

- SAE Allen wrenches. "T" handle and Ball driver styles are recommended. Sets typically sold at hardware stores with wrenches from 0.050" – 3/8" will be suitable.
- Combination end wrenches 1/4" - 9/16"
- Small and medium flathead screwdriver
- Small and medium phillips head screwdrivers
- 3/16" Hex driver for jack screws

For advanced users or those who wish to fully diagnose, test, and repair circuitry on their machine, the following will also be required:

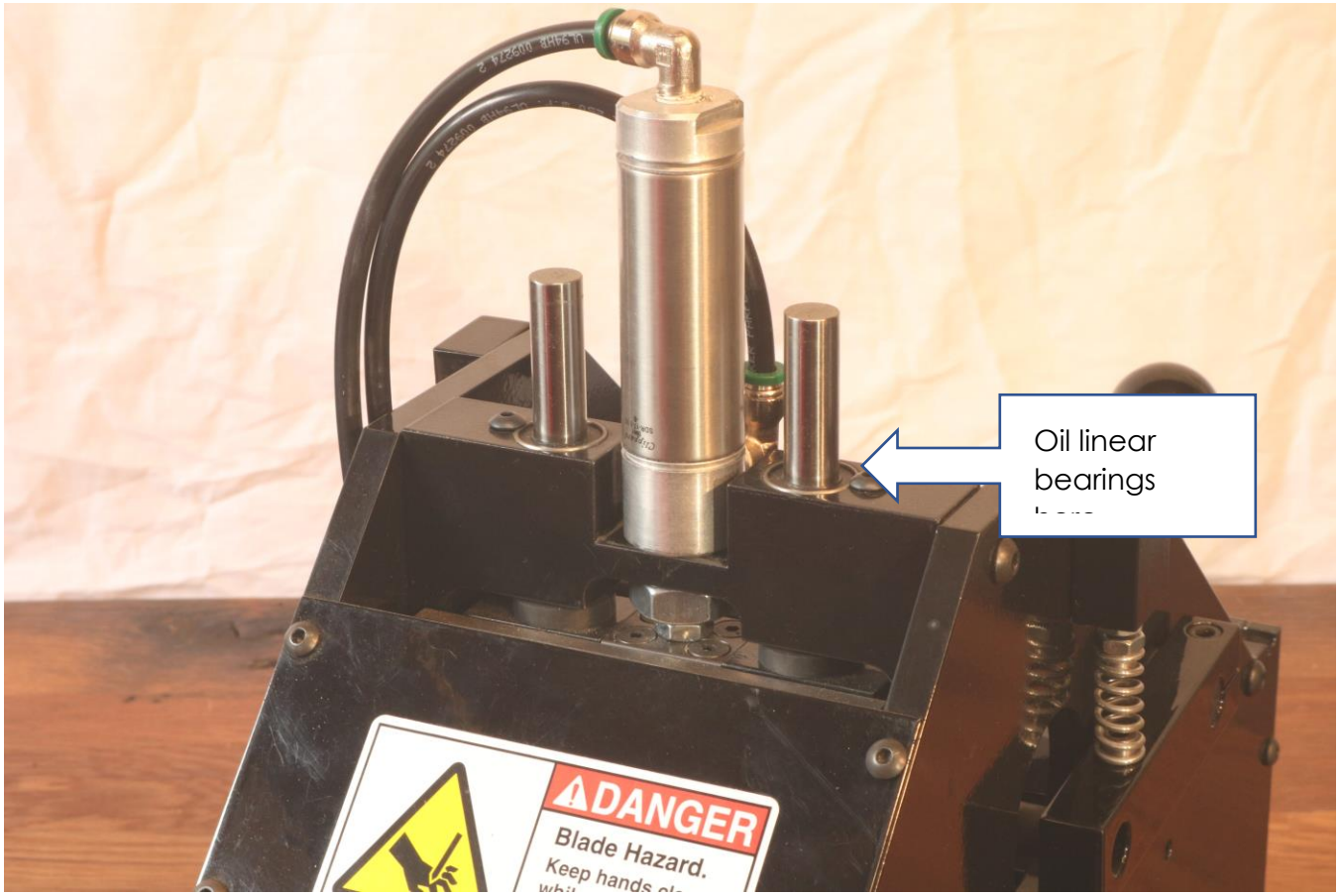
- Volt/Ohm multimeter with continuity tester
- Pencil tip style soldering iron
- rosin core solder
- Wire strippers/crimpers
- Small angle cutting wire cutters

Again, not everyone who buys a TRC Industries 1000 series cutter will need the items in the second list; those who choose to do advanced work on their machines, including circuit board repairs should only do so if familiar with circuitry, and at their own risk.

As a note, most of the TRC-1000 series strip cutters are made of aluminum. While 6061-T6 is a superb material for manufacturing rugged machines, it has its limitations. Use caution when tightening screws and bolts, to avoid stripping the threaded holes. Also, due to a chemical reaction between aluminum and steel, it is sometimes difficult to break loose screws before removing them. We advise using penetrating oil in order to remove stuck bolts before attempting to remove by force.

Simple lubrication and adjustment will prevent premature wear and tear. The following areas should be carefully maintained on a regular basis:

Linear Shafts/Bearings and Air Cylinder shafts: keep clean of dust, lint and other foreign substances. These points should also be lubricated periodically with a light weight oil, such as sewing machine oil.



Drive and Tension Rollers: Remove any melted materials stuck onto rollers (figure 12), as well as any strings or pieces of fabric wrapped around the rollers when safe to do so. Having foreign materials stuck to your rollers will cause abnormal feed lengths. Guide boxes guides should be moved periodically such that material feeds through the machine over different parts of the roller. Alternating the contact point of the roller and material will help the rollers last as long as possible and prevent wear spots from forming on the rollers.

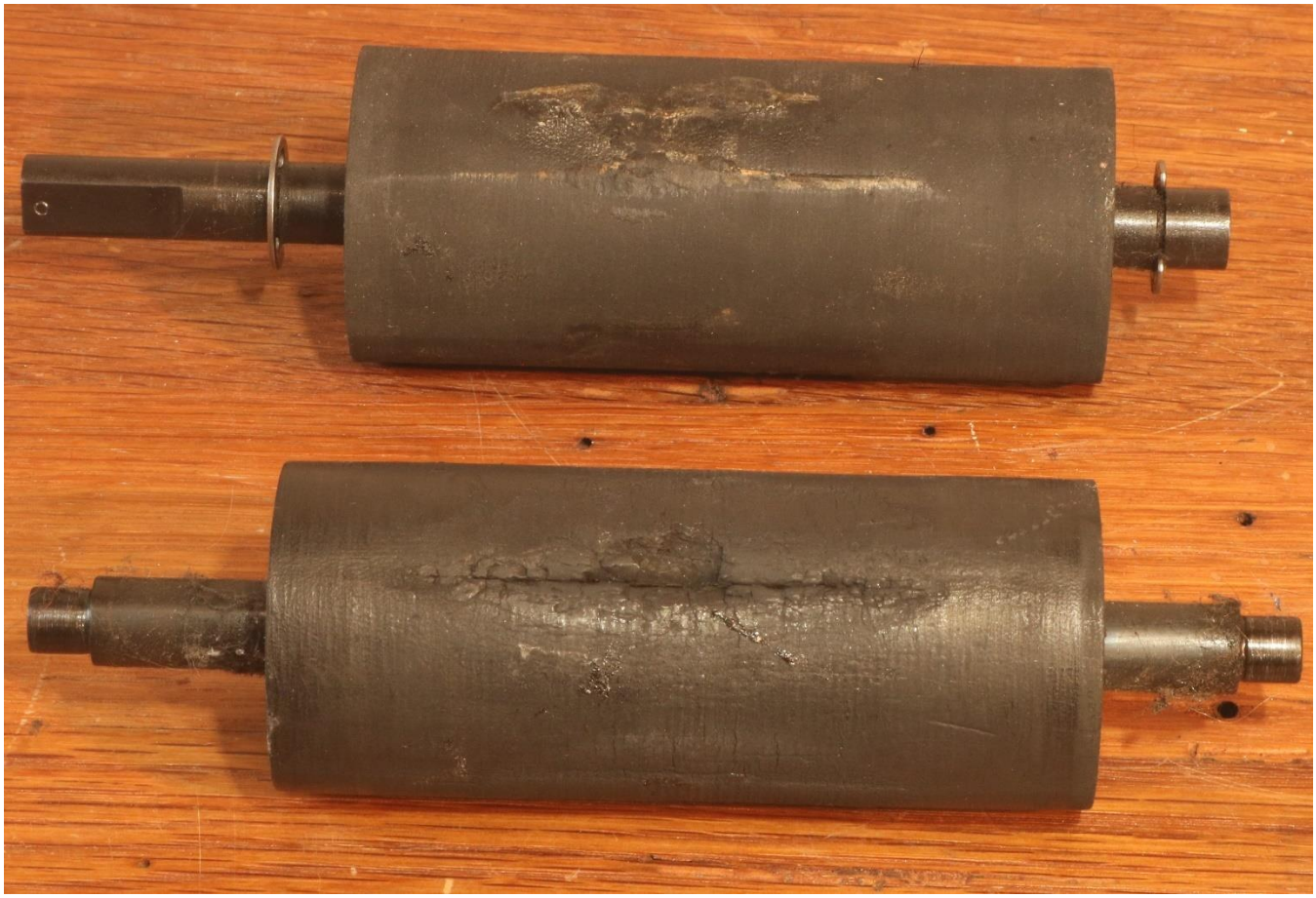


Figure 12: Rollers in poor condition. Top: melted plastic stuck onto bottom roller (part AM4-7a). Bottom: Top Roller (AM4-6a) split from heat. The heat guards on this machine were removed, and heat was left on without machine running, leaving the roller to face the heater block on this side until the rubber degraded. The top roller can be repaired; the bottom one cannot.

Springs: Depending on the model of TRC 1000 that you are operating, there will be springs to tension to top roller as well as the knife blades. Proper tension on the top roller will allow optimum grip of the material without creating excessive drag and premature bearing failure. Too little pressure will cause material slippage. Finding the right amount of pressure will likely be a matter of trial and error. Different types of material, as well as different thicknesses, may require adjustment to run correctly.

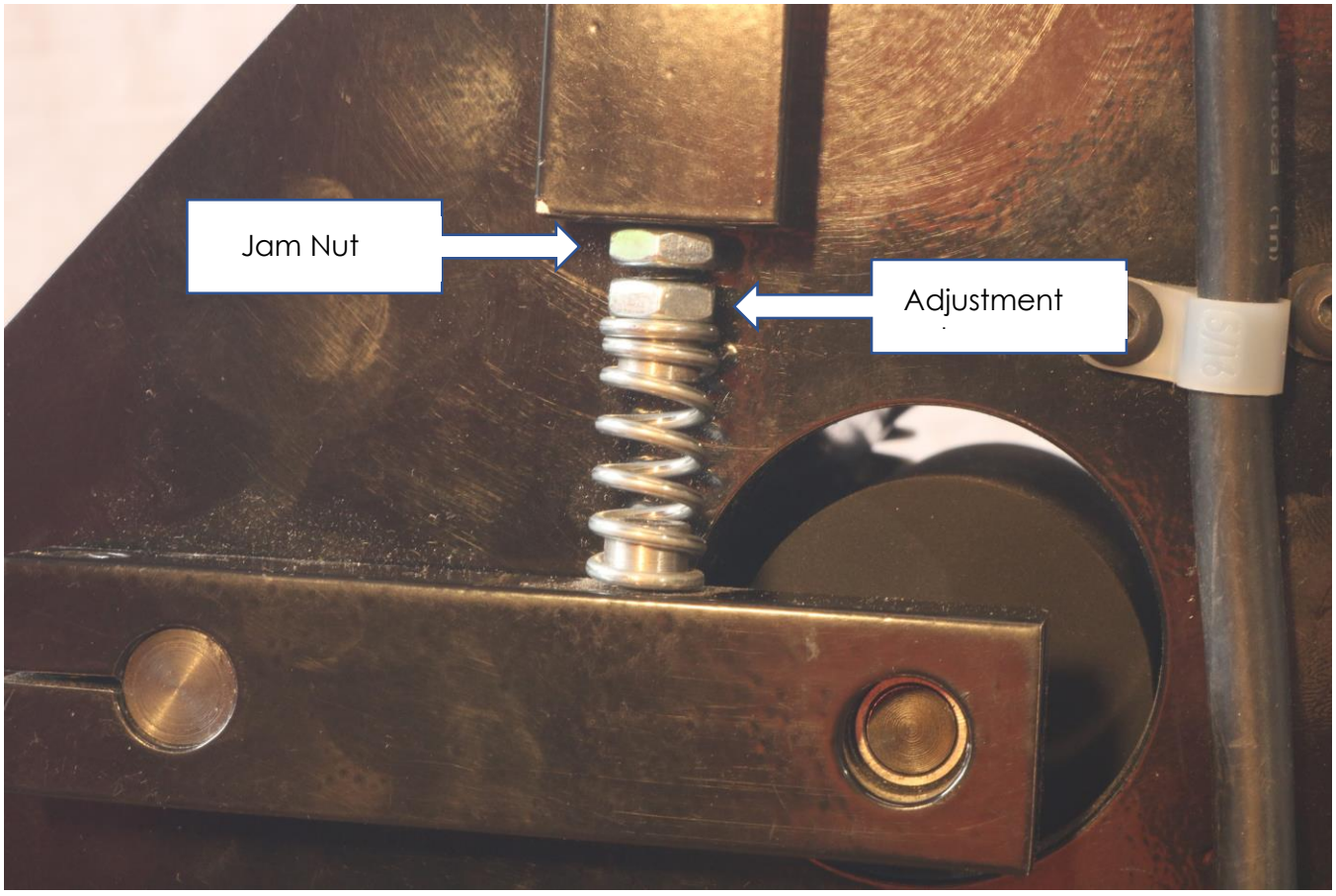


Figure 13: Side view of the roller tensioner assembly

Drive Belt and Pulleys: Periodically the drive belt cover should be removed. Underneath there are two pulleys. These should be checked to make sure the set screws that hold them in place have sufficient pressure to prevent the pulley from rotating on the shaft. The pulleys should also be in line with each other to prevent wear of the sides of the belts. The pulley guard should not contact either of the pulley or the belt.

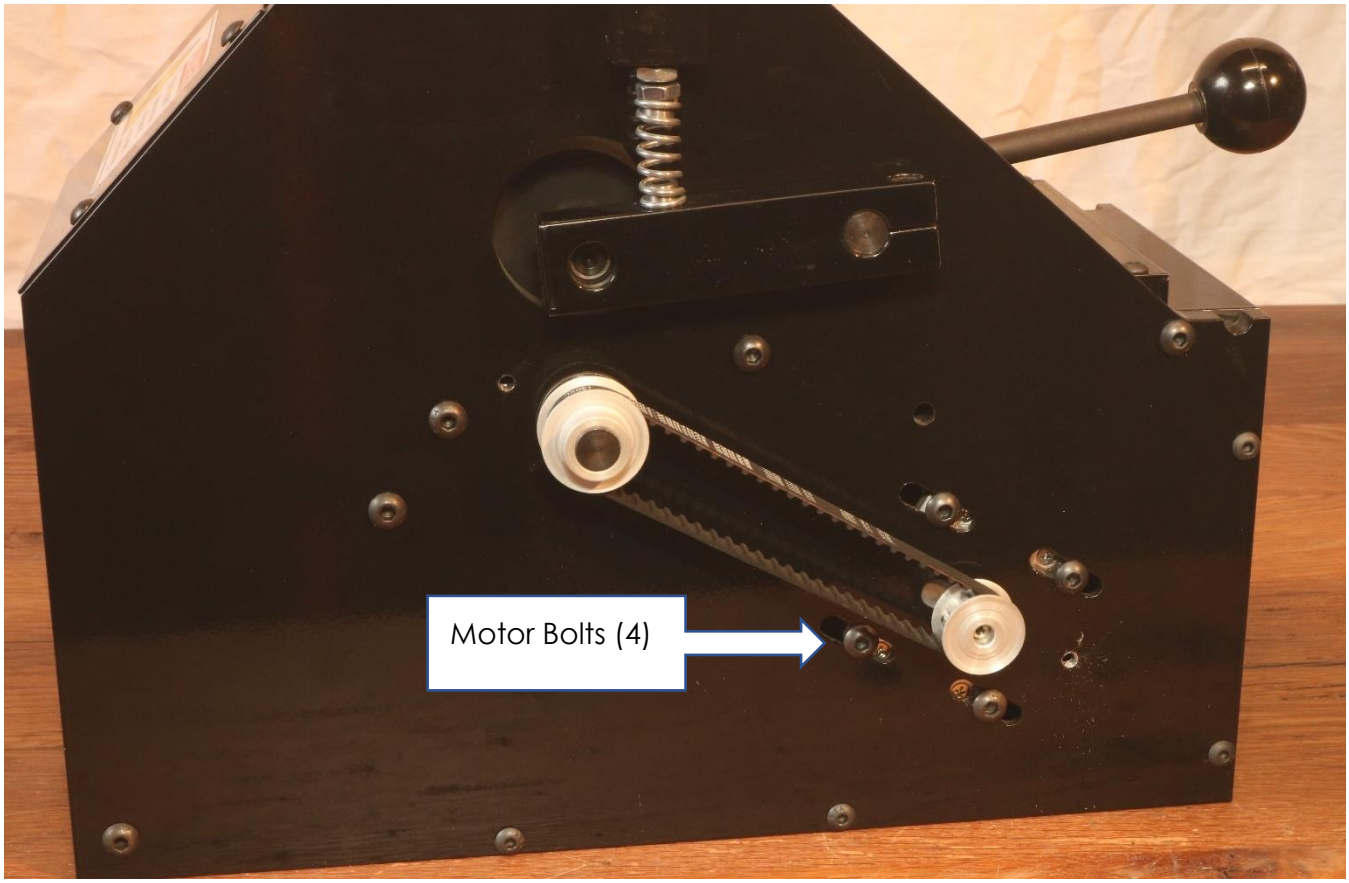


Figure 14:The pulley guard has been removed from this machine, revealing the belt, drive and roller pulleys. The four motor bolts are also visible now.

Cutting Blades and Cutting Plates

Hot Knife Cutters: The Cutting Blade (HC4-4 or HC7-4) and Groove on the Cutting Plate should be scraped clean. Periodically check all screws for loosening. On hot knife models, the Hot Knife Blade Carrier (HC4-2 or HC7-2) has slotted holes for the bolts that connect it to the heater block (HC4-3 or HC7-3). This allows for proper alignment of the Hot knife blade, so that it lands squarely in the "V" Shaped groove in the Cutting plate (HC4-5 or HC7-5). The Cutting plate can wear out over time, and accelerated wear will occur if the blade strikes the edges of the "V". This can lead to poor cut quality.

Figure 15: top view of two cutting plates, a new one on the left, and a used one with a badly worn groove on the right.

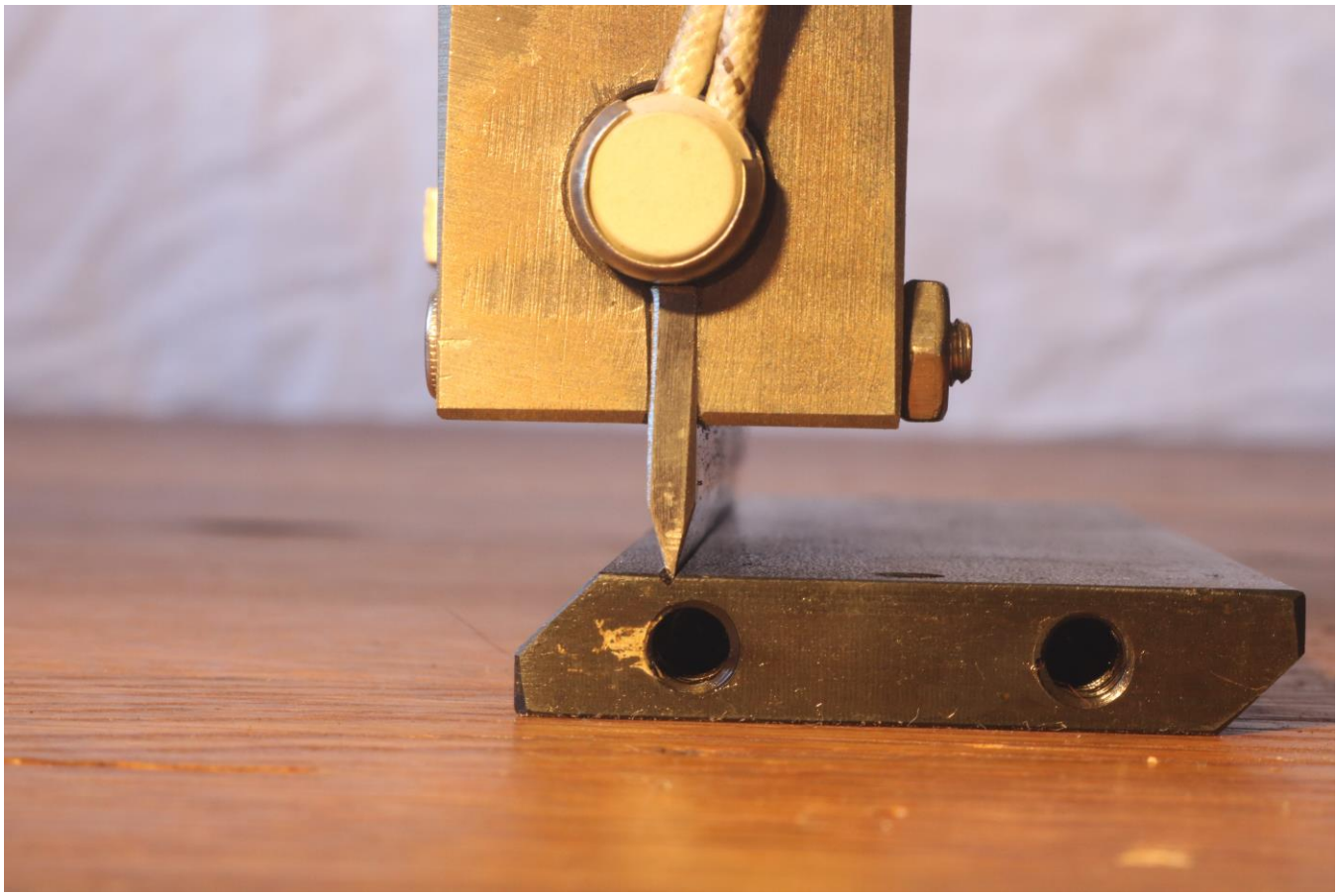


Figure 16: Hot cutter blade assembly removed from machine for better visualization of proper blade alignment in blade groove. Note it is possible to install this plate upside down; only one side (the top) has a blade groove, so make sure to install correctly.

Hot Knife Blade Adjustment

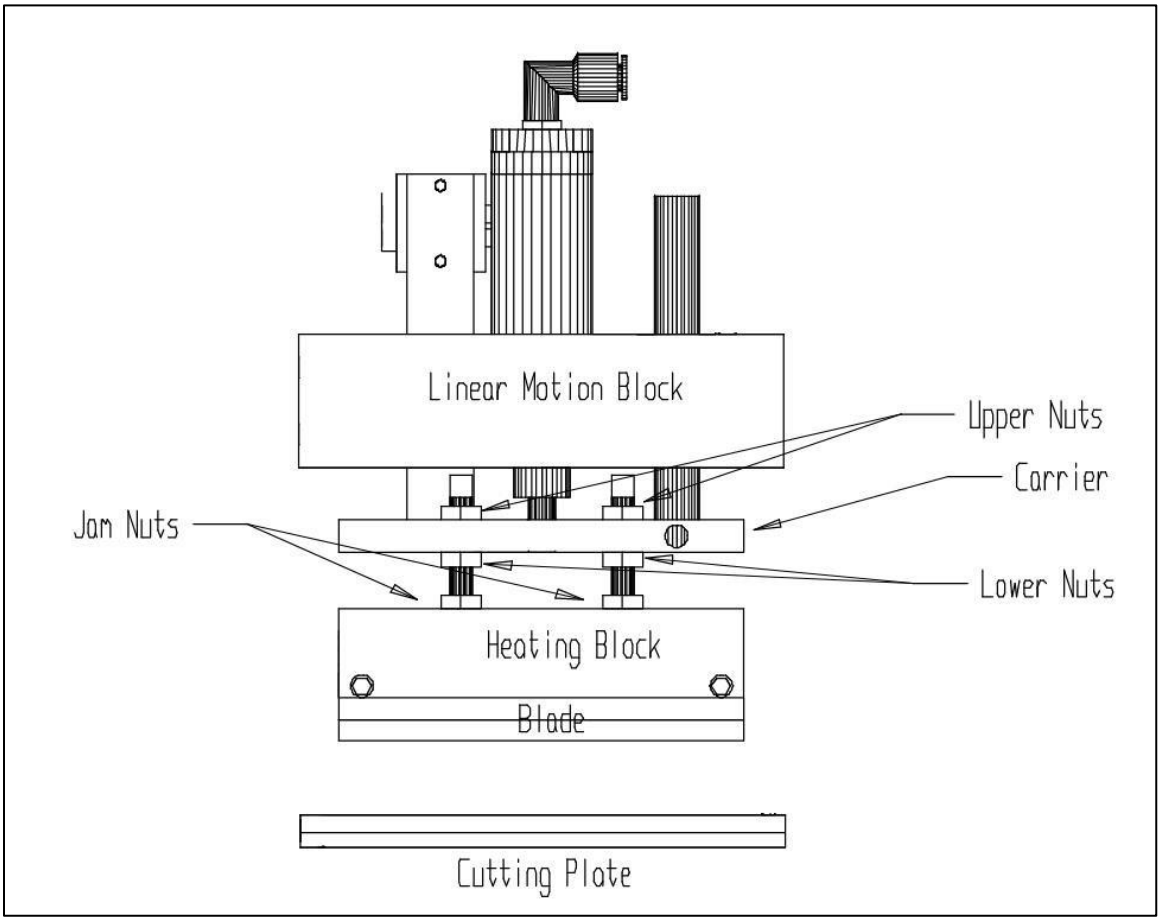


Figure 17: An outfeed side view of the hot knife assembly, with parts labeled

Hot knife blades should be checked often for proper alignment. Misalignment will cause damage to the blade and cutting plate and result in poor cut quality. Hot knife blades should be adjusted only after the machine has been allowed to cool down to prevent contact with hot surfaces. Once heater block is cool to the touch, remove air and disconnect controller from power.

To adjust for misalignment:

- Lower blade and heater block assembly so that it rests on the cutting plate
- Determine which side of the blade is lowest
- Loosen the upper nuts
- Raise the lower nut of the low side so that it is level with the higher side. Make sure the knife blade edge is seated firmly in the cutting plate groove from end to end.
- Partially tighten the upper nuts. Raise and lower the assembly, looking closely at the blade to see that it seats well in the cutting slot and that one side is not making contact before the other.

- Repeat the process of loosening the top nut and adjusting the bottom nut on the low side until the knife blade rests evenly in the cutting plate groove. If the blade is unable to rest evenly in the groove, follow the section titled "Heating Element replacement" to swing the hot knife blade assembly out. This will allow for easy visual inspection to determine if the heating block or knife is warped. While uncommon, this can be caused by overtightening of the set screw and subsequent damage to the heating element, resulting in uneven heating and block warpage. Warped blocks will need to be replaced, as it will be impossible to remove and replace heating elements.
- Once satisfactory blade alignment has been achieved, tighten upper and lower nuts, as well as any others that may have been loosened.

The carrier on these cutters has slots milled in them to allow for vertical adjustment. While rare, it is possible that enough misalignment is present to require the linear motion block to need adjusted to allow for correct blade alignment. To do this, loosen the bolts on either side of the linear motion block so that the entire assembly can be tilted to correct blade misalignment. This problem is encountered mostly after removal of side plates to replace drive roller.

Cold Knife Cutters:

The TRC 1000 series cold cutter features durable A2 steel blades, ground to a fine apex on precision grinding machines. These blades can dull, and should be sent back to TRC Industries for sharpening. Attempting to sharpen the front of the bevel as one would with a typical knife blade will result in a secondary bevel and poor cut quality. This also may cause the blades to be impossible to resharpen. For this reason, it is recommended that blades in need of sharpening be sent back to TRC Industries.

The alignment of these blades is also very important. The Top Blade (CC4-3 and CC7-3) should not be parallel to the bottom blade (CC7-3 and CC7-5); See the section below on blade adjustment. Aside from making sure the edges are sharp, blades should be coated in a light coat of oil, such as sewing machine oil or WD-40 to prevent corrosion. The holes for the Top Blade Shoulder Bolt (CC-6) should be kept free of debris or dirt, and should be kept lightly oiled as well to allow for adjustment during operation. These blades can pivot slightly and move along the length of the shoulder bolt shaft. Because the top blade can move on the shoulder bolts, it is important that springs be checked periodically.

The top blade springs (CC-7) should also be replaced periodically as they wear out. Springs of different compression rates may be used to adjust tension on the top blade, although heavier springs may cause premature wear.

Cold Cutter Blade Adjustment

Cold cutter blade adjustment is critical and sometimes tricky. Some experimenting is required to get satisfactory results for different types of materials and prevent premature blade dulling.

We recommend the use of Loctite on all screws on the knife assembly to prevent the air cylinder, shoulder bolts, and other fasteners from coming loose.

Use the adjusting screws in the top blade carrier to tilt blade in or out.

Tilting the top left corner of the blade out, will pull the trailing edge of the blade in. Only slight adjustments are required to make a noticeable difference.

Too much angle adjustment can cause premature blade wear.

Too little angle will cause the top blade to ride over the material, with no cut being made.

Replacing an air cylinder

- Remove air lines and unplug machine from any sources of power. If machine is still hot from use, allow to cool sufficiently to prevent contact with hot parts.
- Remove guard plate
- Remove air hoses at air cylinder
- Remove lower elbows (AM-13C) from air cylinder with a wrench
- Loosen jam nut at blade carrier
- Remove air cylinder mounting nut
- Unscrew air cylinder shaft from blade carrier and remove.
- Screw new air cylinder shaft into blade carrier and tighten jam nut.
- NOTE: During installation of shaft into blade carrier be careful not to nick shaft as this will ruin the air cylinder seal.
- Align bottom port of air cylinder towards back of machine and tighten air cylinder mounting nut. You should be able to see the threaded port where the new AM-13C elbow will fit in, and it should be aligned with the blade carrier hole.
- Re-install elbow fittings.
- Insert air hoses into elbow.
- Manually cycle blade to check for proper operation and alignment with no air supply to machine.
- Re-install guard plate
- Re-install air supply line, turn on air, and check for leaks

Adjusting the Air Valve

Both hot and cold cutters are equipped with an air valve to power the air cylinder. Air valve adjustment can prevent the knife from slamming up or down. This is especially important for TRC 1000 hot knife models, as the knife slamming against the cutting plate (HC4-5) will can cause wear to the alignment groove as well as premature rounding of the blade edge.

- Disconnect cutter from control panel. Allow hot parts of the machine to cool to prevent contact with hot surfaces.
- Using the top roller tensioner handle, tilt the machine 90 degrees (figure 17), up onto the outfeed side of the machine to gain access to air valve. The air valve is located just right of stepper motor. It may be helpful to loosen the top two button head bolts that hold the base plate in, so the plate can hinge open.

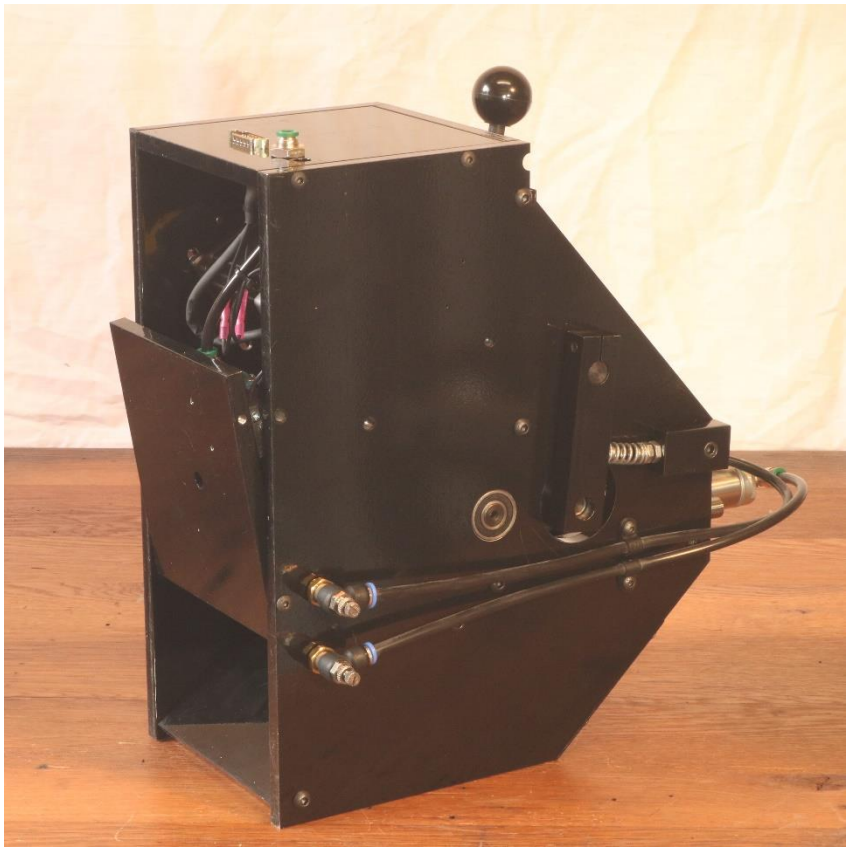


Figure 18: Machine set upright on the outfeed side to access air valve.

- Using a long thin flat blade screwdriver turn each screw (figure 18) clockwise (in) until lightly seated, and then counter clockwise (out) approx. 1 1/2 - 2 turns. This is the factory setting for TRC 1000 machines.

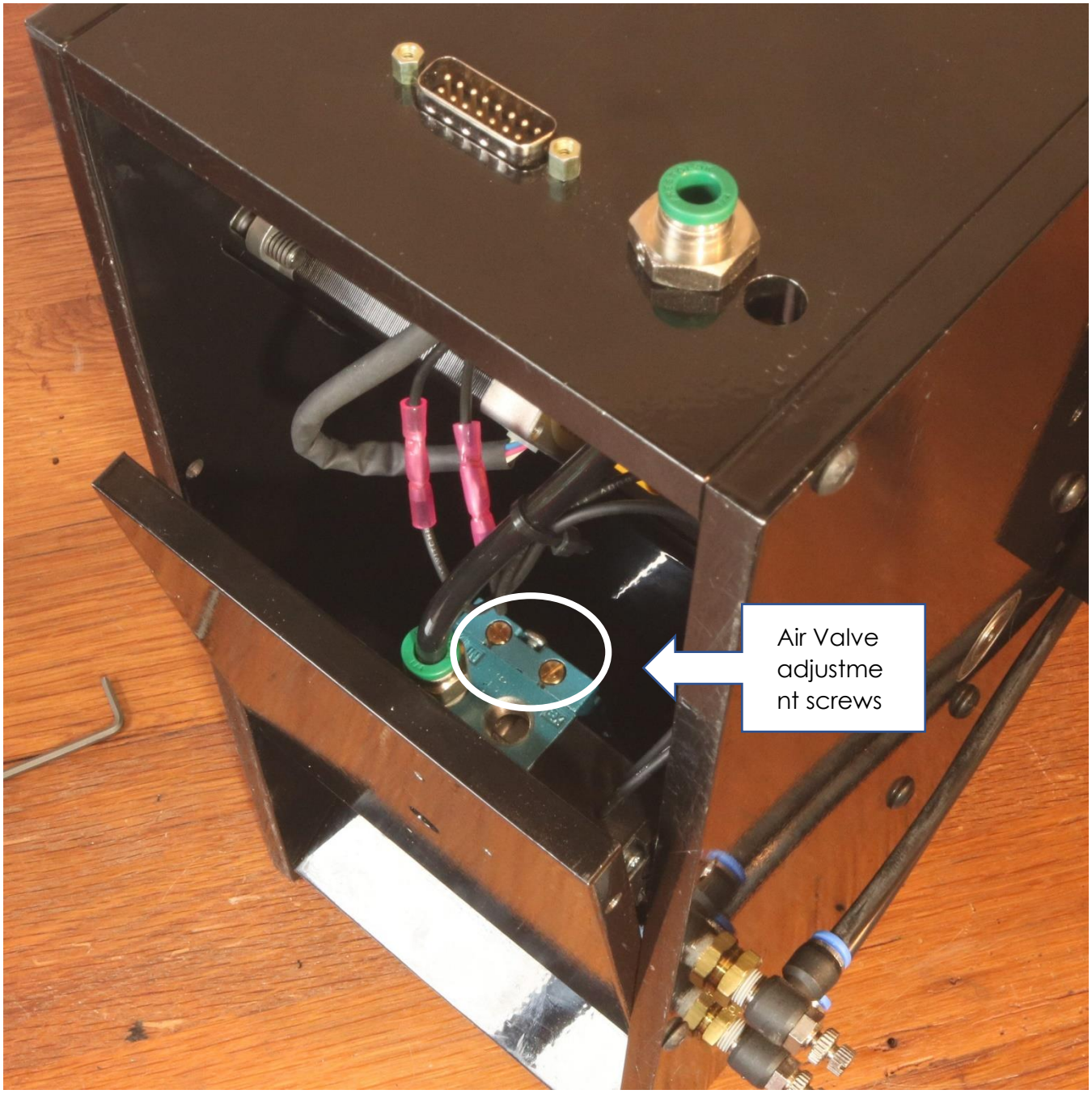


Figure 19: top view of machine from figure 17. The base plate has been hinged open for better access to the air valve. The two brass adjustment screws are visible. Note this particular machine is a cold cutter.

- Some adjustment to close the set screws on the air valve may be necessary, depending on air pressure. Blades should not slam up or down. Ideally the blade makes a smooth down stroke followed by a smooth return.
- The screw on the left side of the air valve is for cylinder retraction (up). The screw on the right is for cylinder extension (down).

Feed Roller Replacement

Worn rollers can affect machine accuracy and feeding of material. Top rollers on all TRC 1000 series cutters can be resurfaced several times by contacting TRC Industries. Bottom rollers cannot be resurfaced, because their diameter and the precise movement of the stepper motors create accurate material lengths. On older machines (Pre-2000 or so) removal of the side plate is required to access and replace the top roller. Newer cutters benefit from a larger hole in the side plate, allowing the rollers to be removed after the spring arm has been removed. For removal of the top roller alone on these newer machines, see the next section, titled "Top Roller Replacement". For all older machines, follow the steps below. To determine if new rollers are needed, rollers can be inspected by shining a flashlight through the outfeed side and looking through the infeed side at the gap between the two rollers. If large gaps from wear appear, it is probably time for new or resurfaced rollers.

- Disconnect power and air. Allow hot surfaces to cool to prevent contact with hot surfaces.
- Remove pulley guard and guard plates
- Loosen motor bolts
- With the motor bolts loosened, pull the motor gently towards the outfeed side of the machine. The drive belt should be loose enough now to remove it.
- Each aluminum pulley will have two set screws that affix it to its shaft. Loosen these with an Allen wrench and remove the pulley from the drive roller shaft
- Remove each of the spring arm blocks (HC-3 or CC-3).
- Loosen spring arm bolt and remove spring arm from motor side (AM-1R)
- Remove all screws securing side plate to center plates. There are between 12 and 14 depending on the model of cutter.
- Separate side plate from the cutter chassis, being careful not to pull the cable from the motor to the DB-15 connector at the infeed side of the machine. Do not pull out any of the wires.
- With the motor side plate of the machine off, now is a good time to test the top and bottom roller bearings. Spin the roller and rotate the bearings, listening for abnormal or rough sounding bearings. Spinning the bearings by hand, feel for rough patches or spots. Bearings should be smooth and roll without catching.
- Both rollers can be removed by pulling them out of the bearings that are holding them in place on the opposite side plate. Replace desired rollers. Make sure the new drive roller is replaced with the long end of the shaft sticking out the motor side, or you'll have to repeat the process to get the shaft stuck out the correct end.
- Re-assemble in reverse. Barely tighten all bolts to allow for proper plate alignment, and then hand tighten all side plate bolts. Check for free roller operation after tightening the side plate bolts.
- After the machine is back together, the spring arms bolts should both be loosened. Using one hand, press down on the top roller gently so the top and bottom roller make good contact. Tighten the spring arm bolts with the other hand. This will make sure the two rollers are parallel to each other. This can be verified by shining a flashlight through the outfeed side and looking through the infeed side at the gap between the two rollers. There should be very little gap, and if any, it should be even across the roller.

Top Roller Replacement

On newer models, (from 2000 and up or so) the side plates have large enough holes to allow for top rollers to be removed from machines without having to take off a side plate. For older machines without this feature, the steps above in the section titled "Feed Roller Replacement" will have to be followed. For newer models:

- Disconnect power and air. Allow hot surfaces to cool to prevent contact with hot surfaces.
- Start on the right or left side of the machine (it doesn't matter which side) and loosen the bolts clamping the AM1 Spring Arm to the lift shaft (AM4-9 or AM7-9). Loosen the spring arm bolts on both sides and remove Spring Blocks (CC-3 or HC-3) to release spring pressure on the rollers.
- With the Spring Arm bolts loosened on one side, work the spring arm until it comes off the machine. Gently prying may be needed.
- With the Spring Arm removed, the top roller can be pulled horizontally out the side of the machine.

  Top rollers can be resurfaced many times. To have your top roller resurfaced, contact TRC Industries.

- The new or resurfaced top roller can be put inserted back into the machine through the side plate hole. Make sure the roller shaft engages the bearing in the Spring Arm opposite the side plate hole the roller was removed from.
- Replace the Spring Arm, making sure to engage the shaft in the bearing correctly.
- Replace the Spring Block by pressing the spring (AM-2) onto the Spring arm stud with the Spring block stud engaging the opposite side of the spring. With the spring aligned, press the Spring Block down until the bolt hole in the Spring block is aligned with the bolt hole in the Side Plate. This may take two hands and some patience.
- With the Spring (AM-2) and Spring block in place asserting force on the Spring Arm, check the rollers to make sure they are making good contact. It may be necessary to add pressure to the top roller to make good contact. Tighten the bolt clamping the Spring Arm to the Lift Shaft.

Spring Tension Adjustment

Spring tension adjustment is required periodically. As different materials are used, and as springs wear out adjustment will be needed. Too much spring tension can lead to premature roller wear. Too little pressure will lead to inaccurate or inconsistent material length or material slippage.

- Loosen jam nut with a wrench.

- Turn the adjustment nut to either increase or decrease the amount of threaded bolt protruding from the spring block. The more bolt that is protruding, the more compressed the spring will be, resulting in higher load on the rollers.
- Test the machine to verify adequate roller pressure. Once roller pressure is determined to be sufficient, tighten the jam nut against the spring block, locking the adjustment in place.

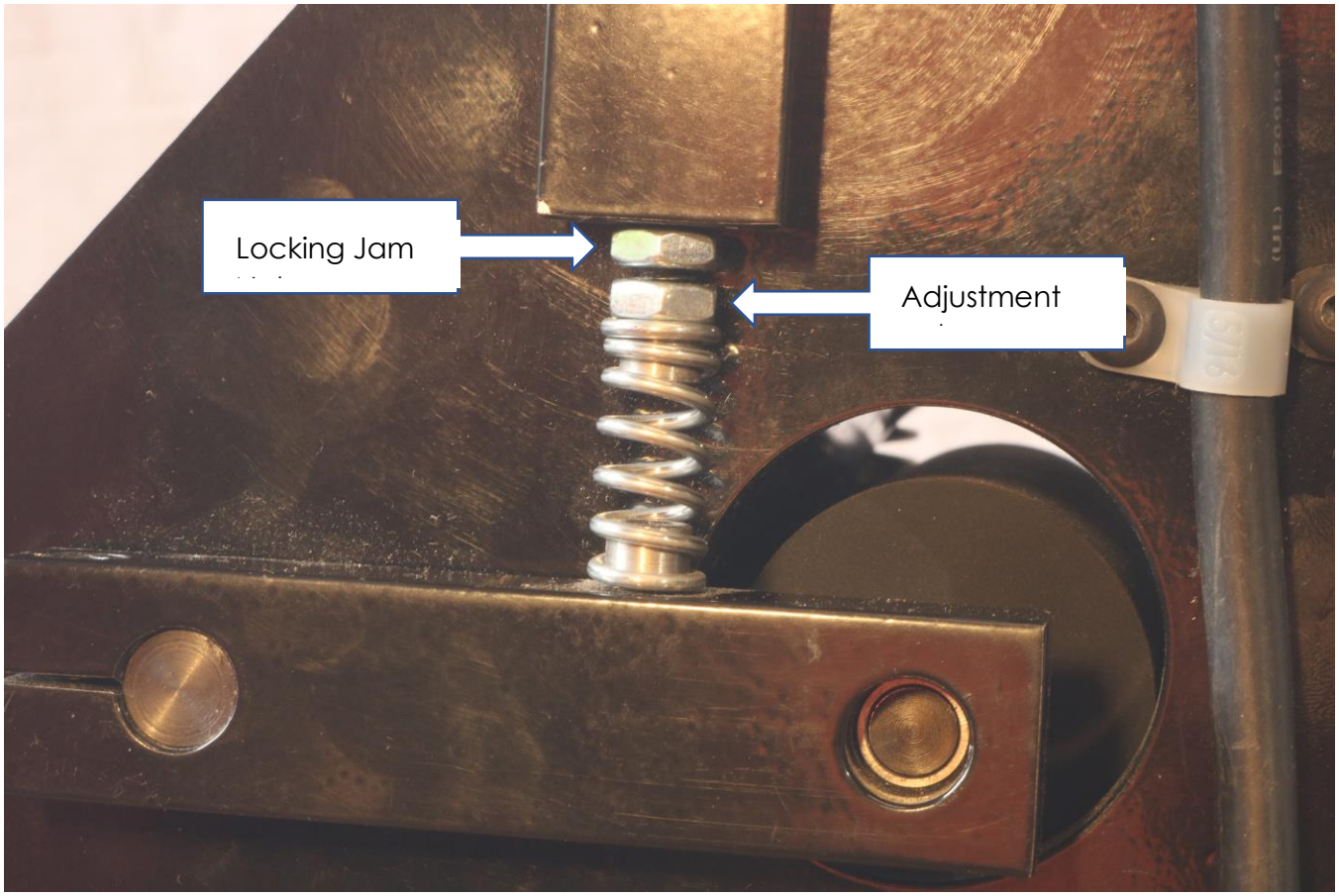


Figure 20: Parts of the Spring Tension Adjustment

Drive Belt adjustment

- Disconnect the machine from power.
- Remove the two screws securing pulley guard, and remove the pulley guard. Inspect the inside of the guard for signs of contact with the pulleys.
- Loosen the four bolts securing motor. Do not remove the bolts, simply loosen them to allow the motor to move freely back and forth in its milled slots.

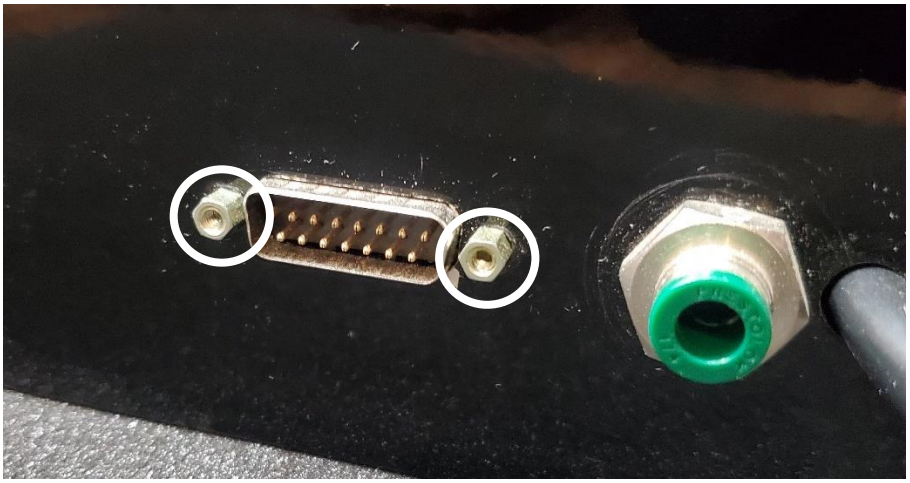
- With the motor now applying no tension to the belt, remove the belt. Check pulleys for signs of wear or damage. Damage to the pulley guard can cause damage to the pulleys, and this can cause damage to the belt. Make sure pulleys are aligned as well to prevent damage to the sides of the pulley. Check to make sure motor shaft is not contacting the side plate slot as well.
- With the belt off and pulleys exposed, check to make sure the pulleys are fixed tightly to their shafts, via two set screws per pulley.
- Feed the belt back over the pulleys, pulling the motor back to allow for the belt to slip over the drive pulley. With belt over both pulleys, apply pressure to the motor to create belt tension. Belt should be tight, but not stretched.
- Holding tension on the belt, tighten the four bolts affixing the motor to the side plate.
- It is now possible to apply power to the machine and test the roller jog function. Care must be taken to keep hands and fingers out of the belt line! Belts should not slip during operation, and pulleys should not slip on the roller or motor shaft. If slip is detected, the pulleys will need to have shaft set screws tightened.
- Once satisfactory, the guard should be reattached.

Drive Motor Replacement

Drive motors should last years if spring tension is adequate but not excessive. Replacement drive motors can be purchased from TRC Industries wired and ready to install.

To replace a drive motor:

- Disconnect the machine from power. Allow machine to cool if necessary to avoid contact with hot parts.
- On the infeed side of the machine, remove the two jack screws on either side of the DB15 connection, circled in the photo below. This may require tilting the machine up on the outfeed side of the machine to access the inside of the machine, as some of these connectors use jack screws as well as a nut.



- With the jack screws removed, push the DB15 connector back into the body of the machine.

- Remove the two screws securing pulley guard, and remove the pulley guard. Inspect the inside of the guard for signs of contact with the pulleys.
- Loosen the four bolts securing motor. Do not remove the bolts, simply loosen them to allow the motor to move freely back and forth in its milled slots.
- Using an Allen wrench, loosen the pulley set screws on the drive pulley. Slide the motor towards the outfeed end of the machine, allowing the belt to slip off the pulley. With the drive belt out of the way, remove the pulley from the motor drive shaft
- With the drive pulley and motor bolts removed, the motor can be now be pulled from the machine. Depending on the model, there will either be two or four wires still connecting the DB15 connector to the machine. These wires will be for the air valve and the cutoff switch (depending on model).
- Using a pair of wire cutters, cut the wires going to the air valve. It is recommended to do this between the wire splice and air valve, as close to the splice as possible.
- If your machine is equipped with a cutoff switch, the terminals connecting to the cutoff switch will be spade terminals and can simply be removed by pulling on the connectors at the switch.
- The new motor assembly will be shipped with a new DB15 connector and harness. It will have splices ready to crimp to the air valve wires. The air valve is Alternating Current, so wire orientation is not important. We recommend installing the DB 15 connector first using the jack screws and nuts. Reinstall spade terminals to cutoff switch if so equipped. Cutoff switches have three terminals: Common, normally open, and normally closed. The wires should be connected to common and normally open. These are the bottom two terminal connections.
- After connecting the air valve wires, insert the new motor into the machine body. The shaft of the motor will be ready to accept the drive pulley. Leave the four motor bolts slightly loose.
- Tighten the pulley set screws and secure with a drop of blue Loc-Tite or other thread locker. Do not overtighten.
- With the pulley installed, slide the motor back towards the outfeed end. Loop the drive belt over the pulleys. Slide the motor towards the infeed end to tension the belt, and tighten the four motor bolts.
- Replace the pulley guard. The new motor is now ready for use.

Thermostat, heater cord and heating element testing

- Turn power to machine off.
- Insert AC volt meter into heater cord outlet on back of control panel. Turn power on.
- Rotate thermostat from zero (off) to 10 (full power). You should read an output equivalent or close to that of the nominal input voltage. In most U.S. Locations, this will be around 120 Volts AC on the meter.
- Rotate thermostat back towards zero (off) position until it clicks again, you should read 0 Volts AC on the meter.
- If no voltage is present at outlet during the above test, check for voltage to thermostat. If voltage is present then the thermostat is bad.

- Performing the above test at the terminal block on cutting head with heater cord plugged into control panel will aid in determining the condition of the heater cord.
- If voltages are correct at these points and machine doesn't heat up then the heating element is bad. Heating elements can be tested for resistance and continuity.

Heating Element Replacement

Heating elements will last a long time if installed correctly. Improper installation can result in decreased element life, damage to side panels of machine, and potential electrical short and/or damage to circuit board.

- Disconnect power and air to machine. Allow machine to cool down sufficiently to avoid contact with hot machine parts.
- Remove the four outfeed side guard plate screws and guard plate.
- Using a flat blade screw driver, disconnect heating element from terminal block. 7" hot cutters will have two heater elements; these will both need disconnected in the same manner.
- Remove the bottom screw securing the Linear Motion Block, on each side of the machine.
- Loosen the top screw securing the Linear Motion Block, on each side of the machine.
- Pivot Knife Assembly upwards toward the front of the machine and tighten one of the screws to temporarily hold it in place. It may be necessary to loosen the other Side Plate screws in order to move the knife assembly.

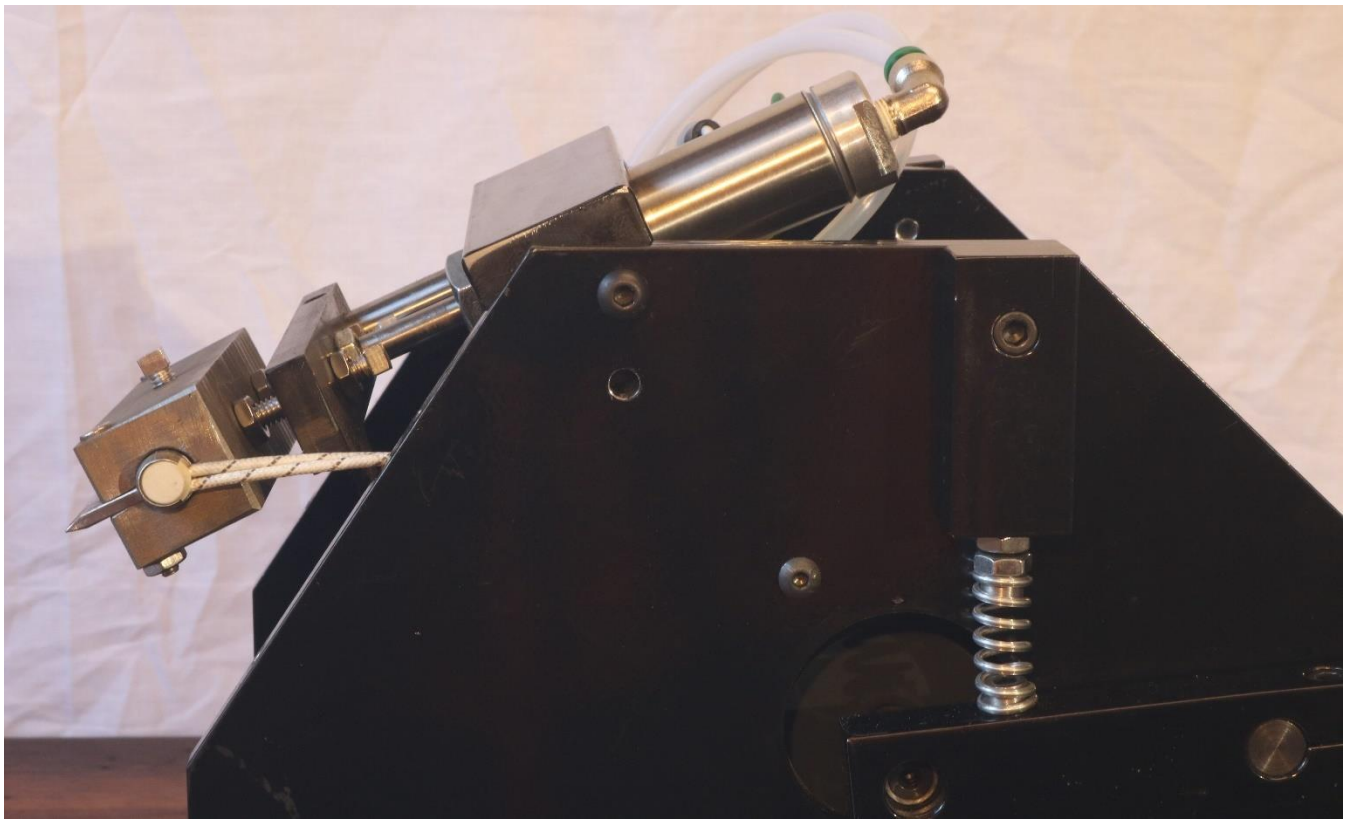


Figure 21: The bottom bolts on the linear motion block have been removed, and the top ones loosened. This allows the entire assembly to be rotated to access the heater element.

- Loosen Set screw(s) on side of the Heating Block and remove Heating Element. It may be necessary to drive the Heating Element out of the Heating Block. If so, you should remove the knife assembly from machine and support the heating block while driving out the element. Be careful not to disturb the Blade and Linear Motion Alignment.
- Coat new Heating Element(s) with Watslube or similar heat transfer compound(optional). Slide Heating Element(s) into Heating Block and secure Set Screw(s), ensuring the element is centered in the heater block (for HC4 models) and with heater ends pushed in up to the wires on HC7 models. Lead wires should be pointed up toward the terminal block connection.
- Set screws should be hand tightened only! Over tightening of these screws is the single most common cause of element failure.
- Bend the leads of the Heating Element(s) toward Terminal Block at 90-degree angle
- Return Linear Motion Block to its original position; aligning the Knife Blade with the "V" groove in the Cutting Plate. Replace and tighten all screws on Side pate(s).
- Trim and insert Heating Element leads into Terminal Block, inserting the two leads into their own slots on the terminal block. Orientation of the leads does not matter. Be sure that leads do not rub on anything throughout the travel of Knife (figure 22).

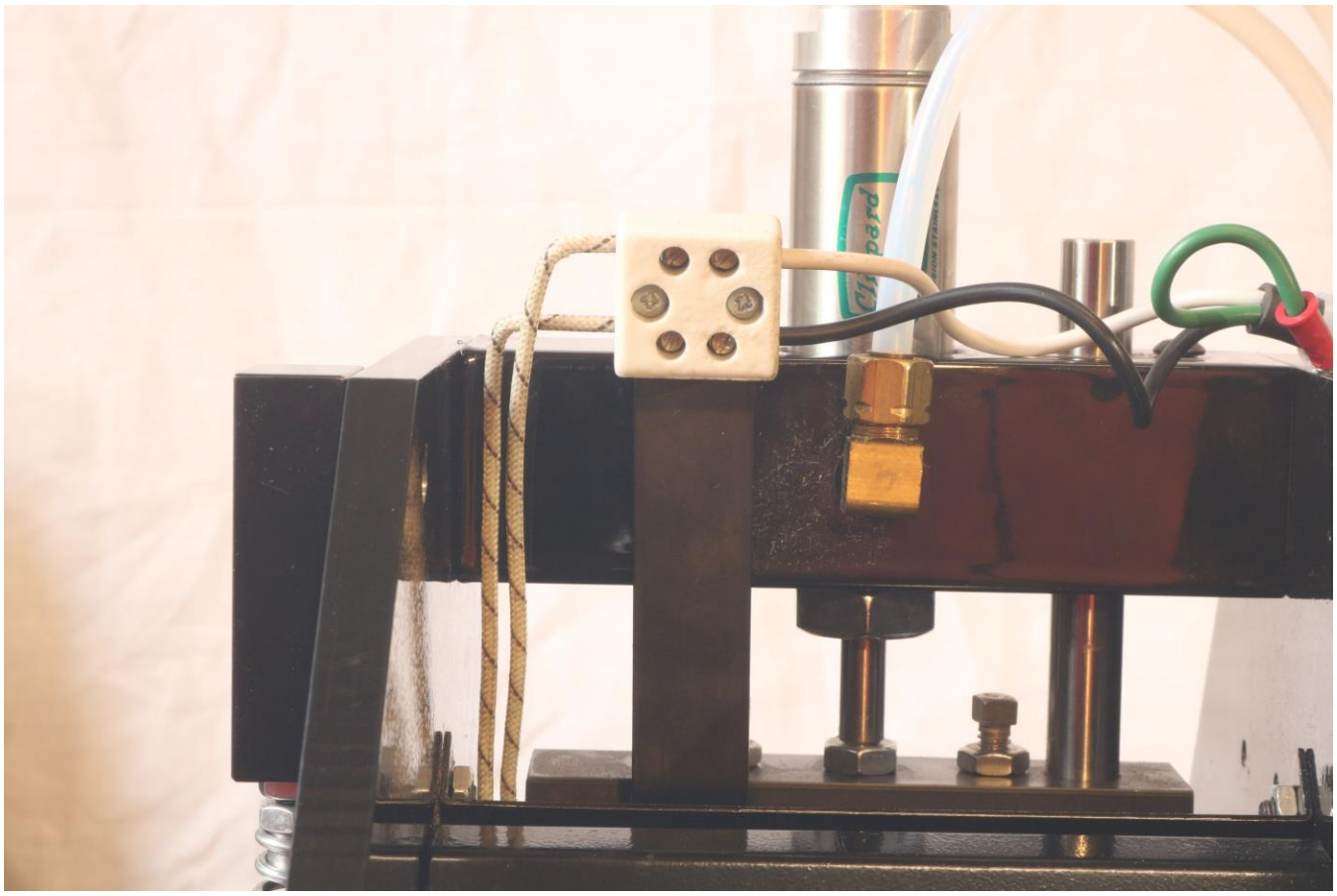


Figure 22: Correct heater element installation. Note the heater element wires do not make contact with the side plate of the machine. If the wires are allowed to contact the side plate, the insulation will rub off and cause a short. This short will damage cause serious damage to control panel!

- Reconnect Air Hoses and check for proper knife operation.
- Test Unit to for proper heating.
- Replace Guard Plate before operating machine.

Integrated Cutoff Switch Installation Instructions

The Integrated Cutoff Switch is designed to stop the machine when material supply is exhausted. This feature can be purchased on any new TRC 1000 series machine, or added on to any existing 1000 series machine.

The add on kit includes:

- (1) micro switch
- (2) mounting screws
- (1) 1/4" pivot rod
- (1) 3/16" trip rod
- (2) side arms

- (2) Plastic Spacers
- (1) Trip Lever
- (5) 6-32 set screws
- (2) connection wires with spade connectors
- (1) section of heat shrink tubing for the DB-15 Connection
- (2) zip ties

- Disconnect machine from power and allow to cool to prevent contact with hot machine parts.
- Disconnect air supply to prevent unwanted machine movement
- Remove guide plate by loosening side plate bolts. Most machines will have four of these bolts.
- Stand machine up on outfeed side.
- Remove jack screws and nuts from DB-15 connector.
- Cut off zip tie and heat shrunk insulator from connector - be careful not to cut wires!
- Solder supplied wires to pins 5 and 12 of connector, taking care not to solder bridge any connections.
- Re-install heat shrink tubing. Heat the top portion first (closest to connector) and secure with zip tie. Heat shrink lower part and trim.
- Re-install DB-15 connector in back plate and secure with jack screws and nuts.
- Re-orient the machine so it is sitting in its normal configuration with bottom plate down. Looking at the infeed side, through the hole where the guide plate was, two small 6-32 threaded holes will be visible on the right inside plate of the machine. These are the holes for the 6-32 bolts that will hold the micro switch on the right-side plate. The switch should be installed with switch lever facing up and tip pointing to the front of the machine.
- Install supplied wires to bottom 2 spade lugs of trip switch.
- Locate the holes for the ¼" pivot shaft (figure 23). These holes may need to be reamed to clean out residue or paint. Verify fit before attempting next step.

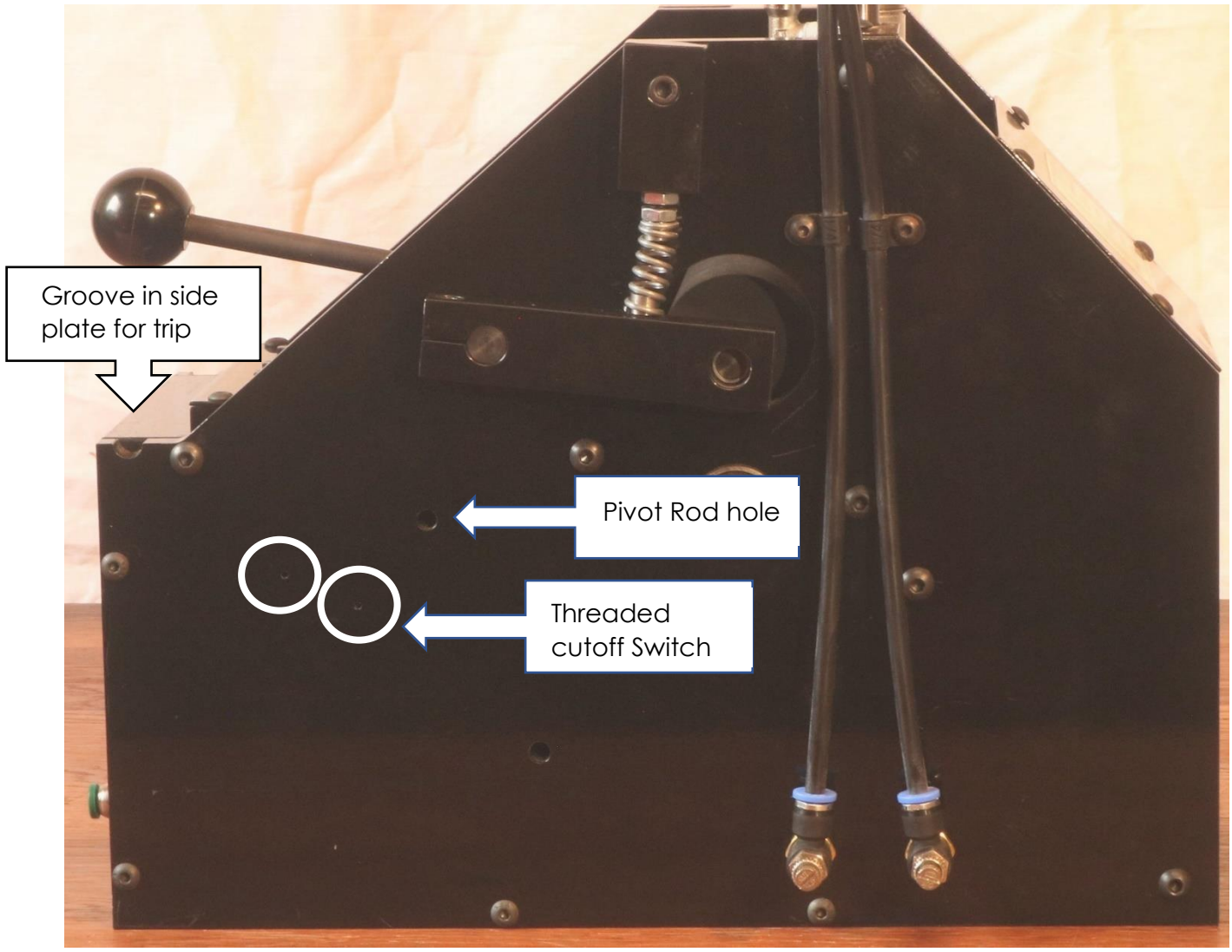


Figure 23: Pivot rod switch visible here, as well as threaded holes for the switch itself. Note this machine has the guide plate installed with groove facing down.

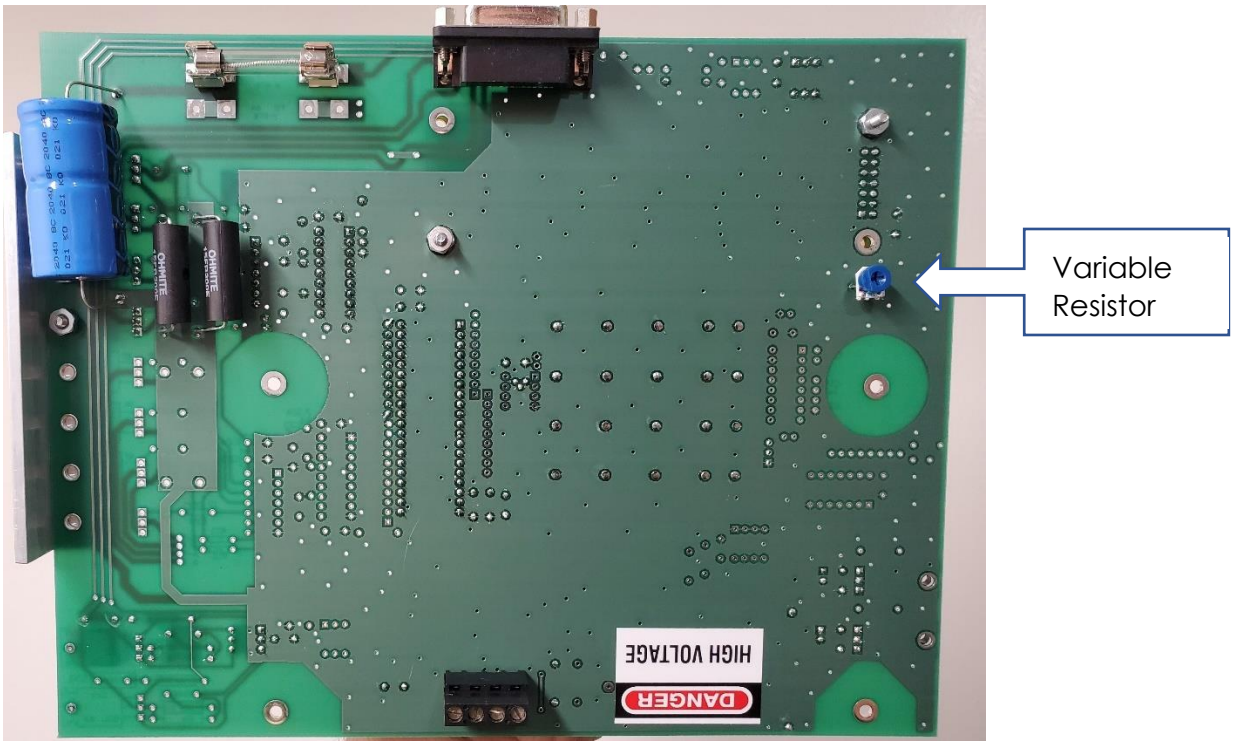
- Feed the 1/4" pivot shaft through either side plate. With the shaft protruding through the side plate and into the machine, install trip lever arm onto the pivot shaft. Continue feeding the pivot rod through the opposite side plate, centering the rod in the machine and having equal amounts of pivot rod protruding out the sides of the machine.
- Install one plastic spacer over end of the pivot shaft. Install one side arm on that side of the shaft tighten set screw.
- Locate and install the 3/16" trip rod into the side arm installed in the last step. Tighten set screw to secure.
- With these two rods and side arm installed, the trip lever can be located correctly on the ¼" pivot shaft. Move the trip arm over the switch and set to actuate micro switch when trip rod is resting in notches of side plates. Be sure to leave a small gap between side plate and trip lever. Tighten the set screw to secure it.
- Install remaining plastic spacer and side arm, tighten set screws and checking for free movement of arm up and down. Check for switch operation and correct switch actuation. Insert a section of material to be cut under the trip rod. When the material is

removed, the assembly should move so the trip rod falls down into the notches on the side plates, actuating the switch. Some adjustment may be necessary to get this to work correctly.

- Machines that were purchased without cutoff switch will have the guide plate installed with the trip rod groove facing down. After installation of the Cutoff Switch, the guide plate should be re-installed with the groove facing up to accommodate the trip rod. This grove will align with the groves on the side plates.
- Tighten all loosened screws.
- Using a multimeter, check that the control cable has pins 5 and 12 connected through to each end.
- Re-apply power and test cutting unit for proper operation. Unit should stop when trip rod is down. An "OUT OF MATERIAL" message will appear when cutoff switch is activated. To continue cutting, replenish machine with material.
- Be sure to remove any remaining partial sections of material from machine before resuming cutting operations. Use the feed jog once material is inserted into the rollers to advance material past the cutter blade. Perform the cut jog function to set the first cut.
- Press enter key to resume operation.
- The piece count will continue wherever the machine left off before running out of material.

Adjusting LCD Contrast

The LCD Screen on the Circuit Board can be adjusted via the variable resistor, shown in the photo below.



- Begin by removing power to the control panel and disconnecting from cutter head.

- Remove control panel screws
- Open lid of control panel. Inside you will see the underside of the circuit board (pictured above).
- A variable resistor, shown in the photo, can be turned with a screwdriver. Turn about a quarter turn clockwise.
- Replace the lid of the panel. Reconnect to power.
- Compare the legibility and contrast of the screen to how it was before adjustment. If the screen has become too dark, disconnect from power and adjust variable resistor a quarter turn the other direction. Reconnect power and check display again.
- Repeat the procedure until the desired LCD contrast is achieved and the screen is legible, making sure to disconnect power each time before opening lid of control panel.

Control Panel Calibration

Control panels come with a calibration feature that can be used to dial in cut length accuracy. It is recommended to check the following items before changing calibration factor:

- Pulleys are not slipping
- Correct tension is set on feed rollers
- Material is not slipping

If all of these things have been checked and are in good order, but machine still creates pieces that are not the correct cut length, adjustments can be made via one of the two methods below.

Calibration Method 1

- Turn the power switch to the on position
- Hold down the ***** key, and continue holding through the start screens until "Steps/in" appears
- The default calibration factor for these machines is 4300. That is 43.00 steps per inch
- If your material is cutting short, increase the number by typing in a value more than 4300. Since there are 43 steps per inch, each increment is very small. For example, 4350 will only yield a small increase over 4300, depending on the overall length of the piece being cut. There will be some trial and error involved to achieve the correct part length.

Calibration Method 2

- Turn the machine on. Allow machine to heat up if using a hot cutter.
- Enter the appropriate values for cut length, cut time, and speed. When the last prompt asks for "How Many", enter the value "1", and press enter to start cycle. Entering only one piece puts the machine in calibration mode.
- Measure the piece that was cut. The controller is ready to receive input now. If the piece is too short, press the "1" key. If the part is too long, press "2".
- This will change the current calibration factor by .05. For example, from a default setting of 4300 the new calibration factor will be 4305 if adding to the calibration factor, and 4295 if subtracting from the calibration factor. This is a small increment and may not be

noticed, depending on the length of cut. The new calibration factor will flash on the screen momentarily.
- To cut another piece, simply press enter. Repeat the process until the desired calibration factor is achieved.

Note: If using method 2, the calibration factor can be changed by many increments at once. For example, if the part cut was too short, the "1" key can be pressed as many times as desired to increase the calibration factor before making another cut.

Once the desired calibration factor has been determined for the part being cut, it is recommended to note this factor. Older TRC 1000 machines were not equipped with nonvolatile memory; therefore, once the machine is powered off, the calibration factor will reset. If the calibration factor was noted, it can be reprogrammed upon starting the machine. Newer circuit boards (Version 2.4 and up) can have nonvolatile memory added so calibration factors will be saved even after the machine is shut off, and will resume at the last programmed calibration factor once powered up again.

Replacing Main Fuse

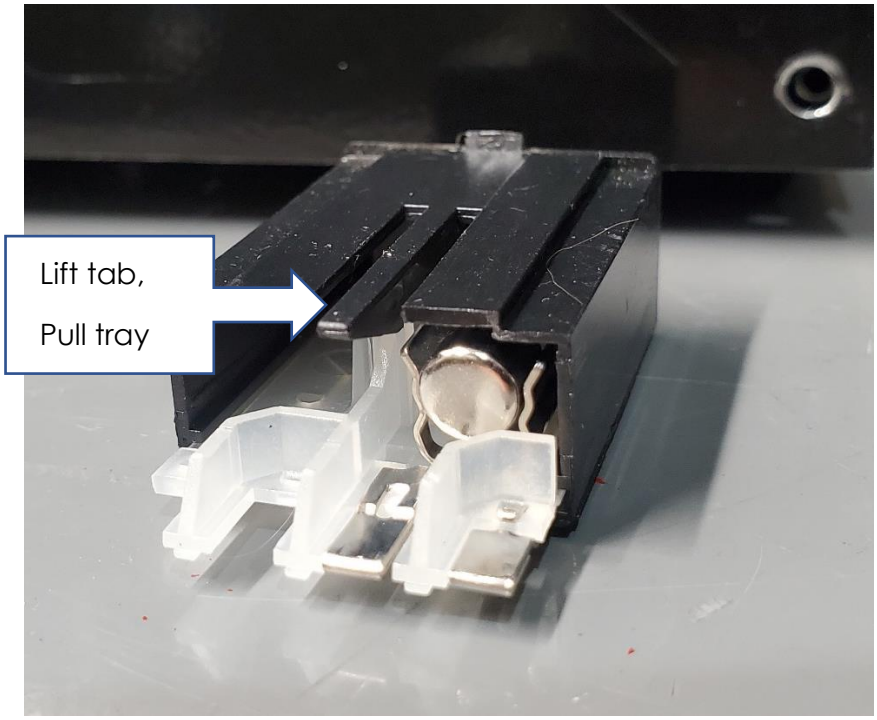
On standard cutters there are two fuses. One of these fuses is located on the back of the control panel, and one of these fuses is on the circuit board. Depending on the age of the control panel, there will be one of two different types of fuse holders.

Type 1

The first and most common type has the main fuse located in a tray under the power receptacle.

Figure 24: Location of fuse tray under power receptacle.

It can be accessed by prying the tray open with a small flat blade screwdriver. The two-part tray will come out. To separate the two parts of the inner tray, lift up on the black clip, shown in the photo below, and pull out on the inner section of the tray.



With the inner section of the fuse tray removed, the fuse is now accessible. The fuse can be tested for continuity while in tray. A small screwdriver can be used to pry the fuse out. Note that fuses may appear intact, so a continuity test is the only way to determine if the fuse is operational. There should only be one fuse in the tray. Most machines with this tray type use an 8 amp slow blow fuse. These are not typically found in automotive or hardware stores anymore. This type us used because it can accept some small variation in voltage without blowing immediately.

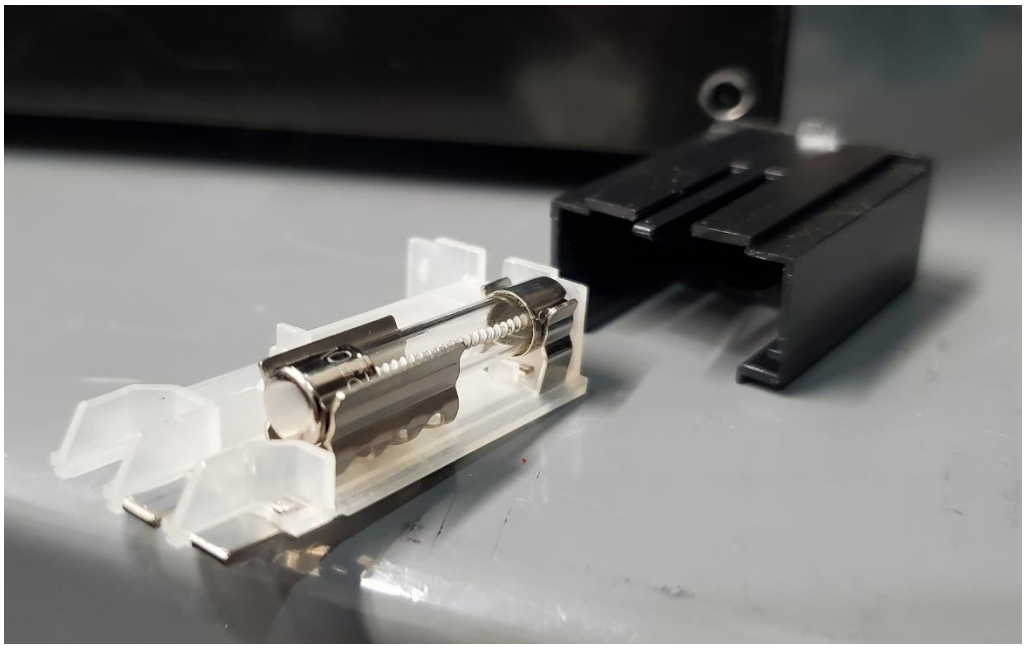


Figure 25: Inner Tray removed from outer tray, exposing fuse.

Once fuse has been replaced, install inner tray in outer tray, and then insert entire tray assembly back into receptacle.

Type 2

The second type of fuse is a panel mount or surface mount fuse. Depending on the age, the fuse may have a knob that turns to reveal a fuse tray, or an inner tray accessible by using a flat blade screw driver.

Before sending your machine in for repairs, it is recommended that this fuse be checked.

Replacing Circuit Board Fuse for Drive Rollers

The second fuse on the TRC 1000 series strip cutters is on the circuit board. This fuse (or set of fuses, in the case of the TRC 1000 Alternating Angle Cutter) is mounted directly to the board and can only be accessed by opening the control panel. Whether they are on top of or on the underside of the board depends on the version. To replace newer, bottom of circuit board fuses:

- Disconnect control panel power, and disconnect control panel from cutter head.
- Remove the panel screws located around the lower perimeter of the control panel.
- Open the lid of the control panel. The lid may need to be propped up on it side next to the controller lower housing.
- The fuse will be visible on the bottom part of the board, as seen in the photo below:

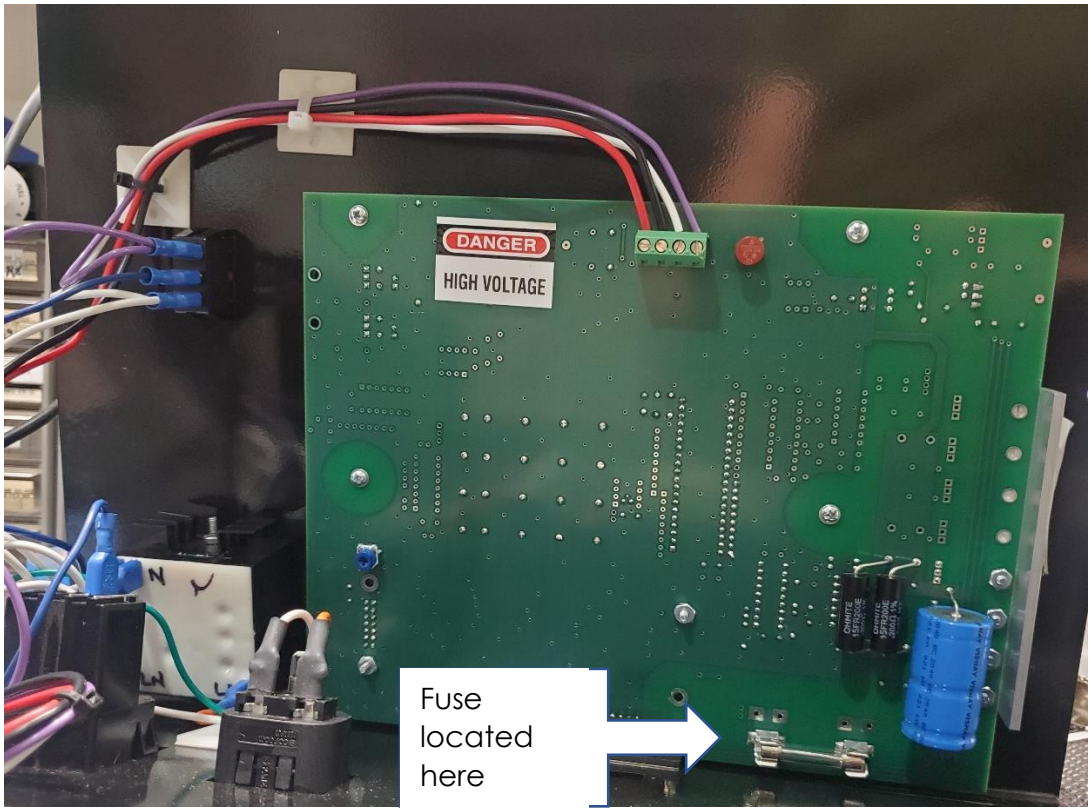


Figure 26: View of control panel with lid open, revealing bottom of circuit board.

- Using a pair of pliers or flat blade screwdriver, the fuse can be removed and inspected. On newer boards this is a 6.25 amp slow blow fuse. DO NOT use 8A fuses on the circuit board, as this can lead to excessive heat and board damage.
- Replace the lid and screws.
- Connect to power and test. If fuse blows, consult troubleshooting section at the end of this manual.

To change older style front circuit board mounted fuses:

- Disconnect control panel power, and disconnect control panel from cutter head.
- Locate the DB15 connector at the back of the control panel. There are two jack screws holding this connector in place. Loosen and remove them.
- Remove the panel screws located around the lower perimeter of the control panel.
- Open the lid of the control panel. The lid may need to be propped up on it side next to the controller lower housing.
- There are four wires from the main wiring harness connecting to the circuit board. They are red, black, white and purple. Loosen the connections for these wires at the board terminal block, and pull the wires free.
- There are four screws securing the circuit board to the lid of the control panel. Locate them and loosen them. Be careful when removing them that the circuit board does not fall out.

- With the board removed, turn it over so the side with keypad and LCD (front of board) is visible. The fuse will be visible on the front. Location will vary with board version.
- Replace fuses and reinsert board into the control panel lid. Board should be reinserted by feeding the DB15 connector in first, then making sure the keyboard keys fit into the controller lid. This is critical. Align screw holes on board with lugs on lid and loosely tighten screws.
- Reinsert the DB15 connector jack screws, taking care not to overtighten.
- Tighten the four board screws.
- Reinsert wires into terminal block. The correct wiring should be indicated on the top of the board, but generally wires are in this order: red, black, white, purple.
- With circuit board secured to lid, replace lid assembly on the control panel housing.
- Replace housing screws. Connect to power and turn on. If fuse blows, consult troubleshooting guide at the end of this manual.

Troubleshooting

While repairing circuit boards and other electronics yourself can be very rewarding, saving both time and money, there are inherent risks involved. These risks include the risk of electrocution, fire, burns, and damage to equipment. If you are uncomfortable or unsure of your ability to successfully work on your TRC 1000, please contact us to schedule repairs. We will be happy to fix your machine, or at least help you rule out any easy to fix issues (fuse replacements and the like) before you send in for repairs.

For those who are comfortable working on modern electronics, the troubleshooting guide below will help you resolve most common problems.

Controller Troubleshooting

Symptom	Possible Cause	Possible Solution
No Display – Power Switch lamp lights up	1. LCD Contrast out of Adjustment 2. Bad LCD or Driver 3. Bad Transformer/bridge rectifier/voltage regulator	1. Adjust Contrast. See Section titled "Adjusting LCD Contrast". 2. Replace LCD Driver, then LCD if Driver alone does not fix 3. Check for feed jog operation. If Feed Jog works, transformer and Rectifier are working. If still not working, contact TRC Industries for repair
No Display – Power switch lamp does not light up	1. Tripped breaker	1. Check breaker for receptacle

	2. Cord unplugged/not plugged in all the way 3. Blown fuse at cord receptacle	2. Make sure plug connected securely 3. Check receptacle fuse. See section titled "Replacing Main Fuse" for instructions
LCD Display completely dark	1. LCD Contrast out of Adjustment 2. Bad LCD or Driver	1. Adjust Contrast. See Section titled "Adjusting LCD Contrast". 2. Replace LCD Driver, then replace LCD if Driver alone does not fix
Control Program Resets unexpectedly	1. LCD Bezel grounding to control panel 2. Faulty circuit board connections 3. Bad EEPROM 4. Older Circuit boards need capacitor Modification or capacitor replaced.	1. Contact TRC Industries for repairs. 2. Check to make sure circuit board power connections are secure 3. Carefully remove EEPROM 40 pin chip. Replace chip and reassemble controller to verify EEPROM chip reset. If unsuccessful, contact TRC Industries for repair 4. Contact TRC Industries for repair
Control Panel accepts information but will not run or continue a program	1. Optional cutoff switch faulty. 2. Optional cutoff switch staying closed or out of adjustment 3. Material not routed correctly underneath the cutoff switch trip rod. 4. Pins 5 and 12 shorted in control cable. 5. Bad circuit board chip	1. Test cutoff switch with a multimeter. If bad, replace. See section titled "Integrated Cutoff Switch Installation Instructions" for cutoff switch replacement. 2. See section titled "Integrated Cutoff Switch Installation Instructions" for cutoff switch adjustment

		3. Route material underneath cutoff trip lever 4. Replace control cable 5. Remove circuit board 40 Pin chip and replace
Circuit board fuses for feed rollers keep blowing	1. Older program chip that needs to be updated 2. Excessive load being pulled by rollers 3. Feed rollers jammed 4. Excessive spring pressure 5. Intermittent short in control cable or connector 6. Shorted motor windings 7. Shorted FET on drive board	1. Contact TRC Industries to obtain a newer chip version 2. Re-configure material on infeed side to create less drag 3. Check to see if material is wound around rollers or otherwise causing jam. Clear any jams 4. Reduce spring pressure. Spring pressure adjustment can be found in "Spring Tension Adjustment" section. 5. Check control cable for damage, and make sure it is plugged in and connector screws tightened 6. Replace motor 7. Contact TRC Industries to replace FET driver
Main fuse in power receptacle blows as soon as power plug connected	1. Heating element shorted out 2. CB-C10 capacitor shorted. 3. Shorted transformer wiring 4. Shorted bridge rectifier 5. Power switch wired incorrectly.	1. Disconnect heater cord from control panel. If fuse does not blow when power re-connected, there is a problem with the heater circuit. Check heating element and connections.

		2. Disconnect power wires from circuit board. Check that the large CB-C10 capacitor is not making contact with the pins on the underside of the circuit board, causing a short. Re-apply power to check for successful insulation 3. Replace transformer 4. Replace bridge rectifier 5. Contact TRC Industries to determine correct wiring for your particular model
Cutter Troubleshooting		
Inconsistent length	1. Material wandering back and forth on rollers 2. Material hanging up on guide strips or guide box 3. Material curved 4. Rollers worn 5. Too little spring tension on top roller	1. Adjust feed guides to more closely guide material into rollers 2. Check guide box for burrs or misaligned guides and adjust as necessary 3. Straighten material as best as possible and try cutting again 4. Check rollers for wear, and if possible, adjust material to feed through different section of rollers without wear. Rollers can be sent back to TRC Industries for re-grinding 5. See "Spring Tension Adjustment" section to adjust roller tension

Length of material is consistently short	1. Material is stretchy 2. Drive belt or pulley slippage 3. Roll holder too tight 4. Incorrect calibration factor	1. Material may need to be run through prepuller or tensioner plates to feed correctly. Contact TRC Industries for options 2. Remove pulley side cover and check pulley set screws are tightened 3. Loosen roll stand holder collar so material rotates freely as it unwinds, but not free enough to cause backlash 4. Check calibration factor and adjust as necessary. See "Control Panel Calibration" section
Erratic feed roller operation or intermittent reversal	1. Bad control cable or loose connection 2. Blown FET or drive board 3. Bad motor 4. Loose pulleys 5. Worn Drive belt 6. Older circuit board/program needs updated	1. Check control cable for damage and continuity. Make sure connections are secured with cable screws 2. Contact TRC Industries for replacement FET 3. Contact TRC Industries for replacement motor. See section titled "Drive Motor Replacement." 4. Remove side cover of pulleys and make sure pulley set screws are tightened. See Section titled "Drive Belt Adjustment" for instructions.
No feed roller motion	1. Loose pulleys 2. Broken belt or belt off pulleys	1. Remove side cover of pulleys and make sure pulley set

	3. Blown circuit board fuse 4. Bad control cable or connections 5. Blown FET on driver board 6. Bad Motor	screws are tightened. See Section "Drive Belt Adjustment" for instructions. 2. Remove side cover of pulleys to check belt is properly fed over pulleys. 3. See section "Replacing Circuit board fuse for Drive Rollers" 4. Check cable for damage and continuity with a multimeter. 5. Contact TRC Industries for repair 6. Refer to "Drive Motor Replacement" Section
Hot knife does not get hot	1. Heater element bad 2. Faulty terminal block connections 3. Bad thermostat	1. Check heater element with multimeter for continuity and resistance 2. Check terminal block wire connections to make sure they are solidly connected 3. Replace thermostat
Knife does not jog or move	1. Gummed up shafts or linear bushing 2. No air pressure to knife air cylinder 3. Bad air cylinder 4. Air valve needs adjusted 5. Bad triac or driver on circuit board 6. Blown fuse on circuit board	1. Use wire brush and solvent to clean linear shaft. Use sewing machine oil or similar to re-lubricate busing and shaft 2. Check air connections for leaks, and regulator for correct pressure 3. Replace air cylinder 4. Refer to "Adjusting the Air Valve" section for correct

		adjustment of air valve. 5. Contact TRC Industries for repairs 6. See section "Replacing Circuit board fuse for Drive Rollers" and attempt to operate machine again
Hot Knife does not cut all the way through material	1. Dwell time to short 2. Temperature too low 3. Hot knife blade not aligned with groove in cutting plate 4. Material not hot cuttable 5. Not enough air pressure or volume	1. Increase dwell time in small increments (.2 seconds) until desired cut is achieved 2. Increase thermostat temperature until desired cut is achieved 3. Align hot knife blade correctly, via procedure found in "Hot Knife Blade Adjustment" Section 4. Contact TRC Industries for more cutting options 5. Check regulator for minimum of 40 PSIG. Check air connections for leaks

Checking for Electrical problems

Unplug power cord, heater cord, and control cable from the back of the control panel. Open Control panel by removing the case screws and lifting the top up and back. Visually check for loose wires or connections as well as burned spots or components.

Voltage checks with Power to panel

Extreme caution should be taken when working with live circuits. Carelessness or negligence can result in serious injury or even death. Only trained and qualified personnel should attempt working on energized circuitry. Whenever possible, de-energize machine before working on it.

The red and black wires are DC voltage. Purple, white, orange and blue are AC voltage. Green is ground and transformer secondary AC voltage. Voltage should be tested at the circuit board terminal.

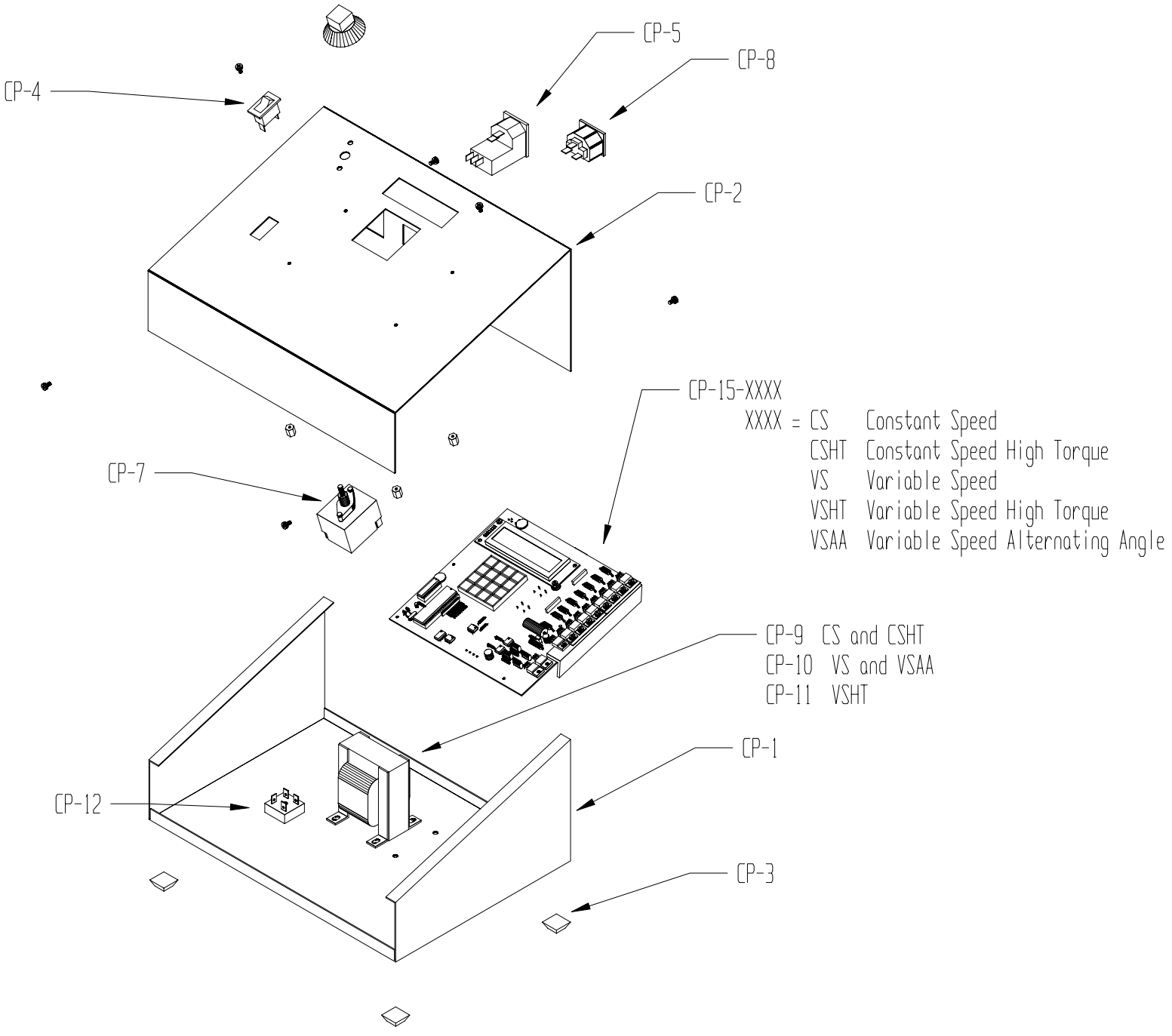
Circuit board removal

- Unplug the control panel from both the cutter head and from power. DO NOT ATTEMPT TO REMOVE CIRCUIT BOARD WHILE ENERGIZED!
- Remove the two jack screws on the back of the case by the DB-15 connector.
- Remove case screws
- With the case screws removed, the top half of the control panel will separate from the bottom. The top half can be tilted back or tilted up on its side so it is out of the way
- Loosen the 4 terminal strip screws. Loosen each of the terminal screws with a small flat blade screwdriver.
- Remove the four wires (red, black, white and purple)
- Remove the 4 screws securing the board to the bottom of the panel top.
- Lift circuit board out, terminal block side first. Handle with care.

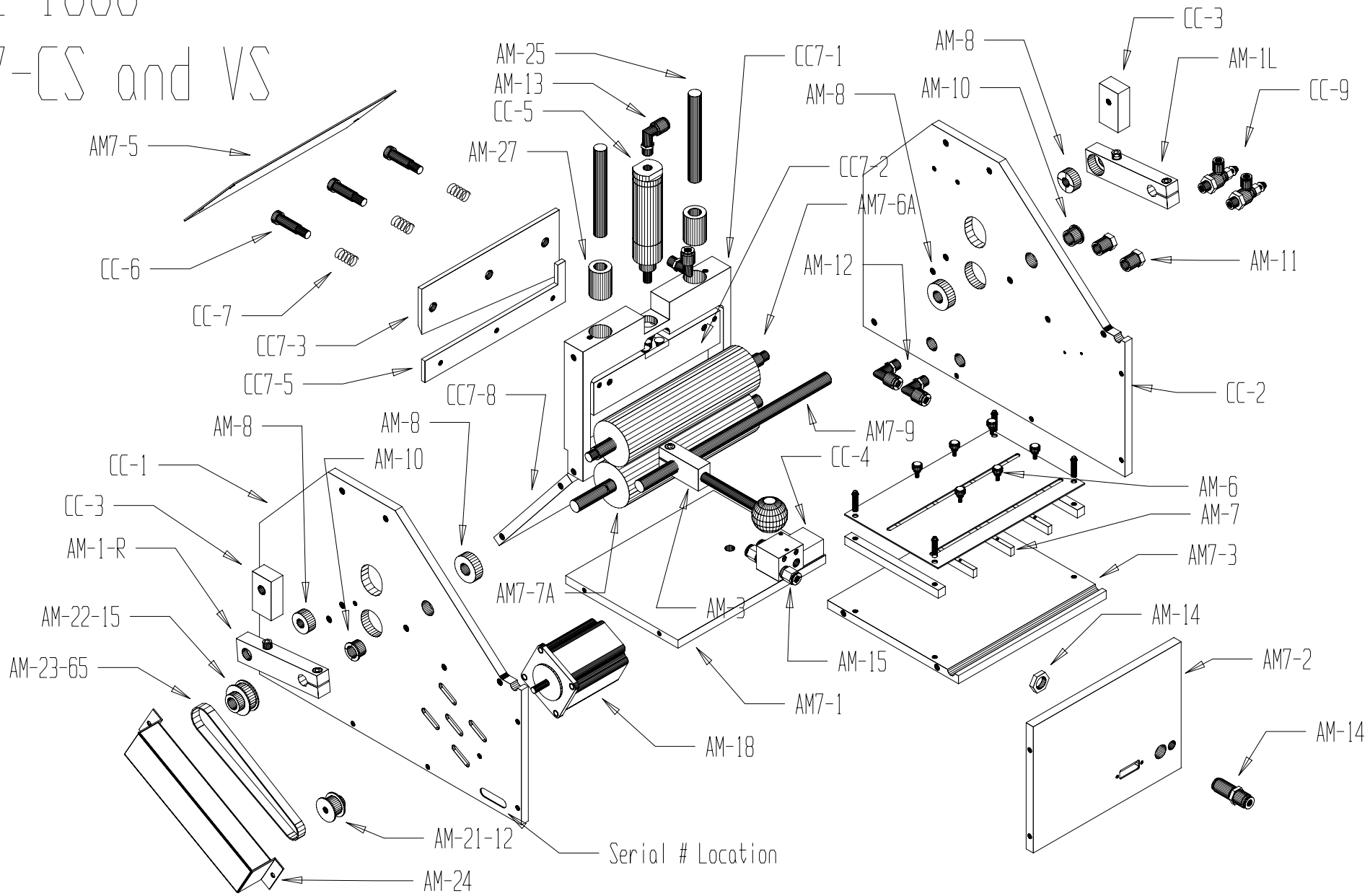
Note: Be careful not to scrape the circuit board with any sharp or pointed objects, such as a screwdriver.

Control cable test

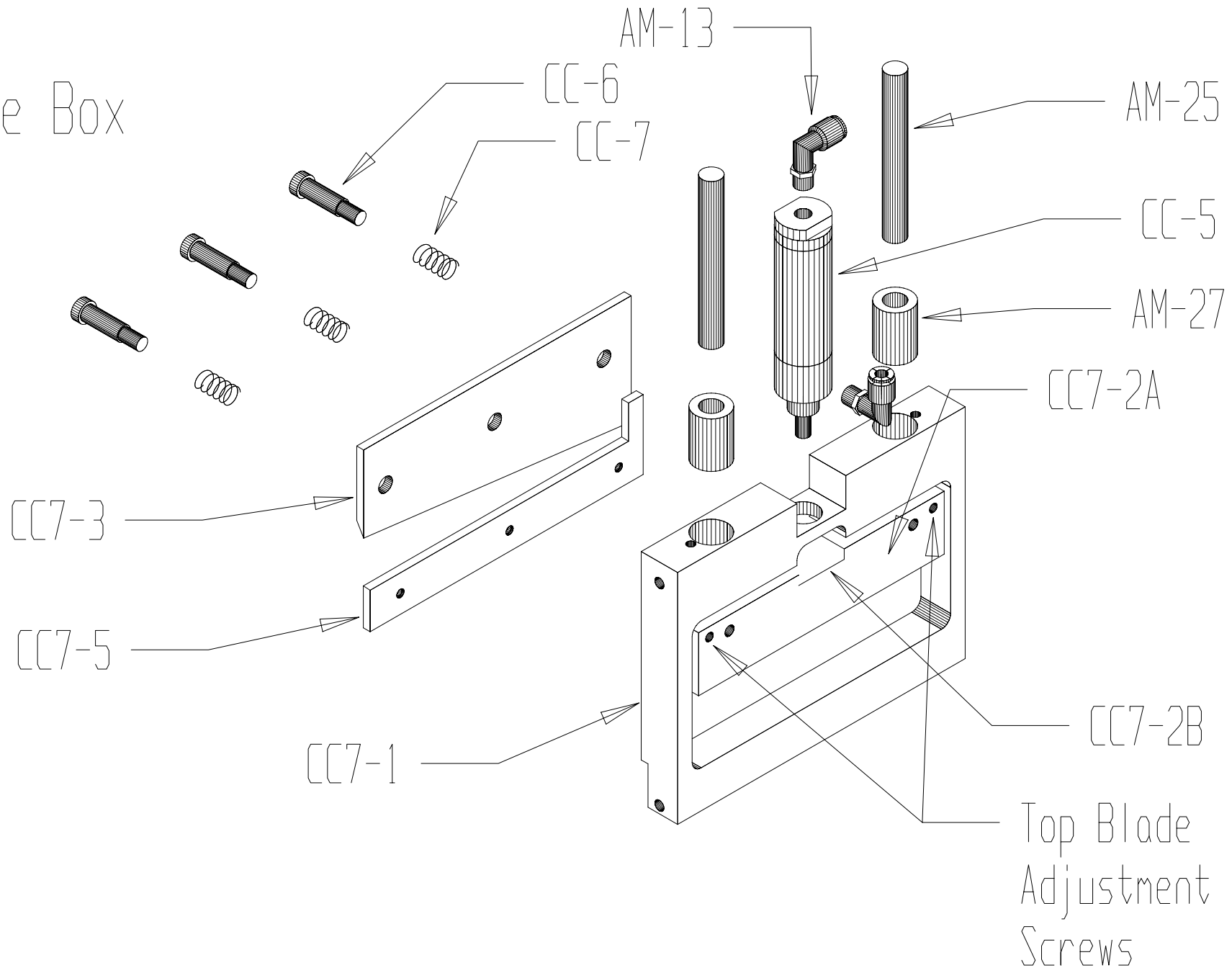
The cutter head depends on clear, uninterrupted signal from the controller in order to work. Damage to cable ends can cause poor connection, leading to many problems. If after troubleshooting the cause of a problem is still not evident, it is worth checking the continuity between corresponding pin numbers of the cable. It may also be worth checking for shorts between pins.


CP-5
CP-8
CP-4
CP-2
CP-15-XXXX
XXXX = CS Constant Speed
CSHT Constant Speed High Torque
VS Variable Speed
VSHT Variable Speed High Torque
VSAA Variable Speed Alternating Angle
CP-7
CP-9 CS and CSHT
CP-10 VS and VSAA
CP-11 VSHT
CP-1
CP-12
CP-3

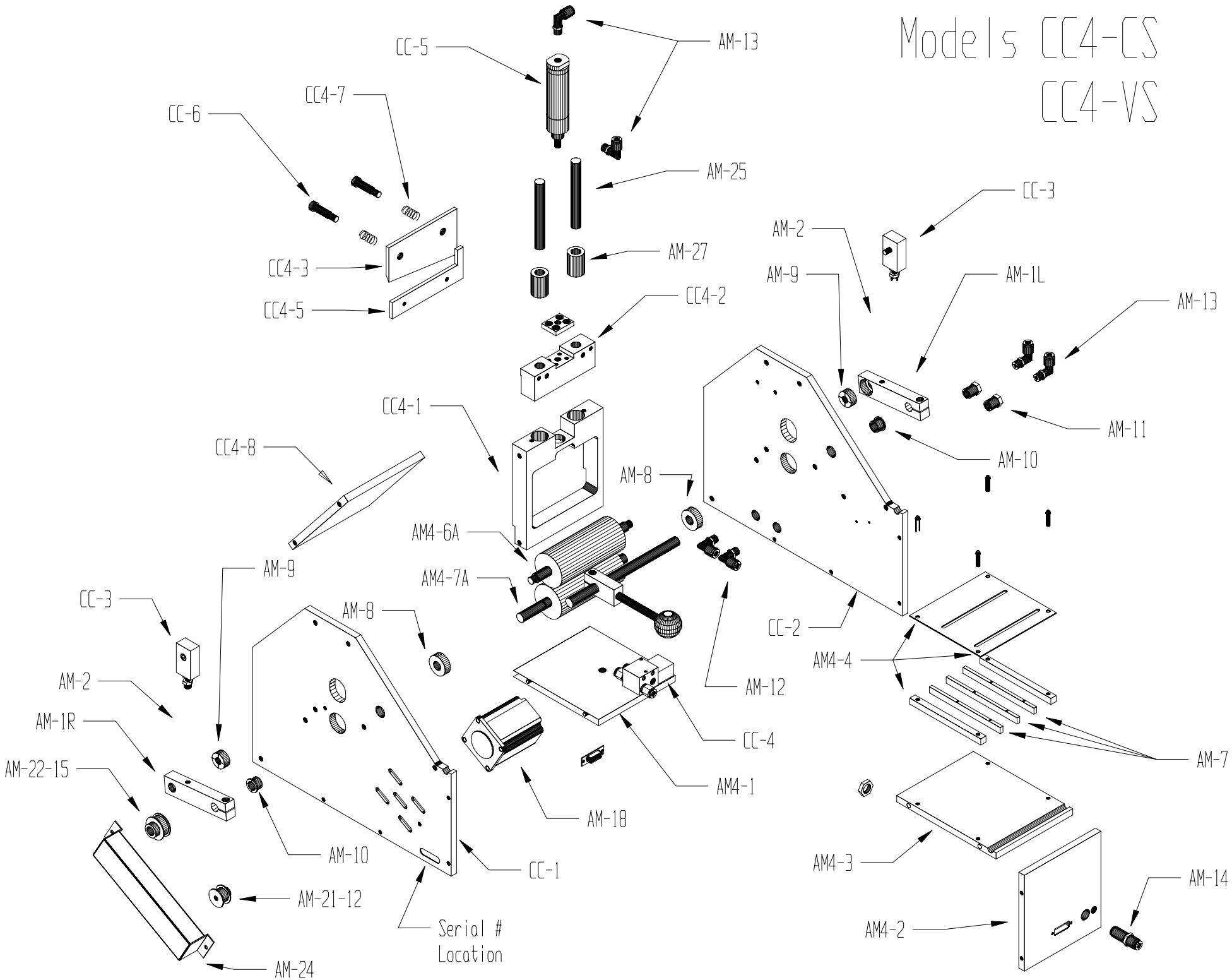
TRC 1000
CC7-CS and VS



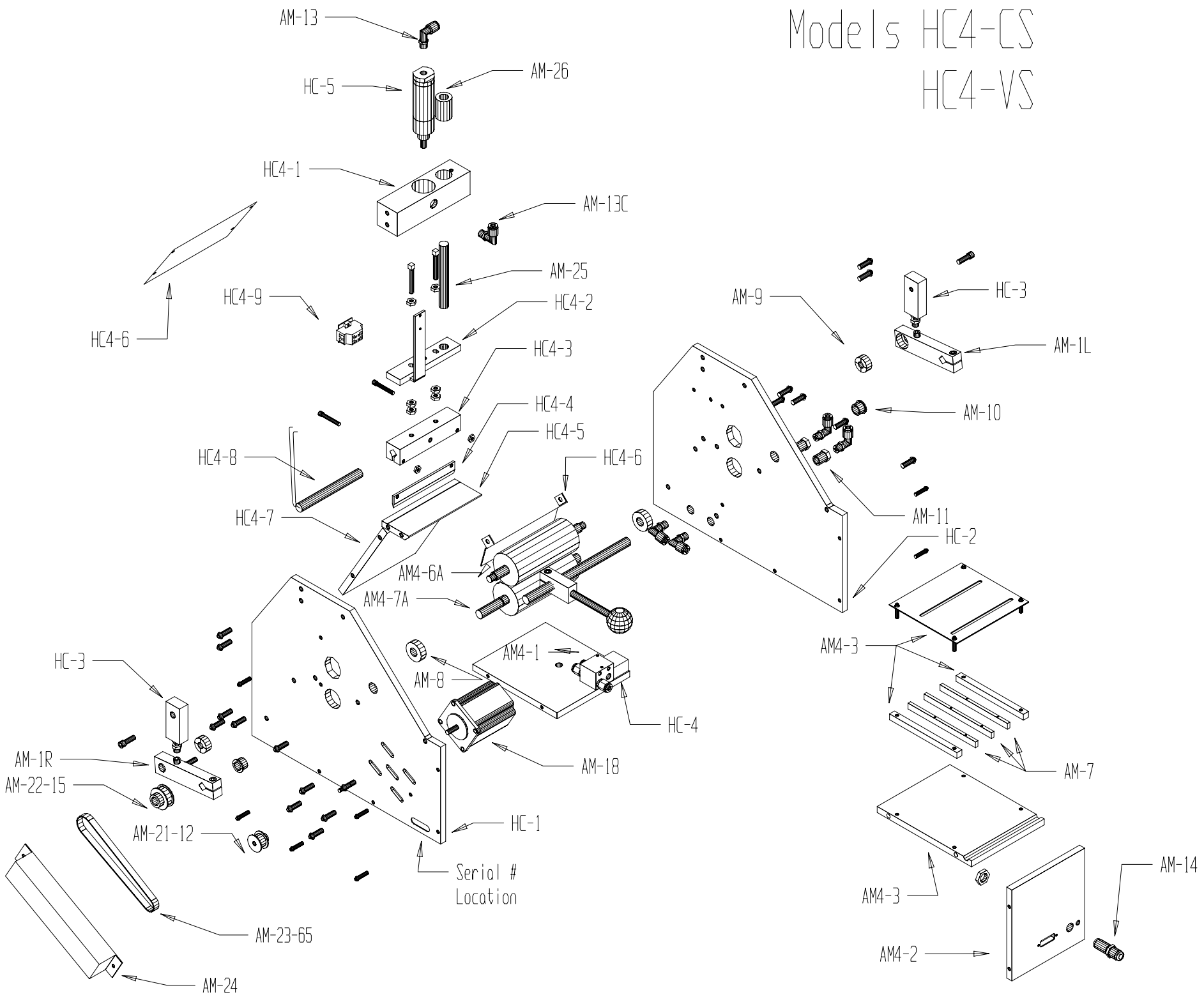
TRC 1000
CC7 Knife Box



Models CC4-CS
CC4-VS



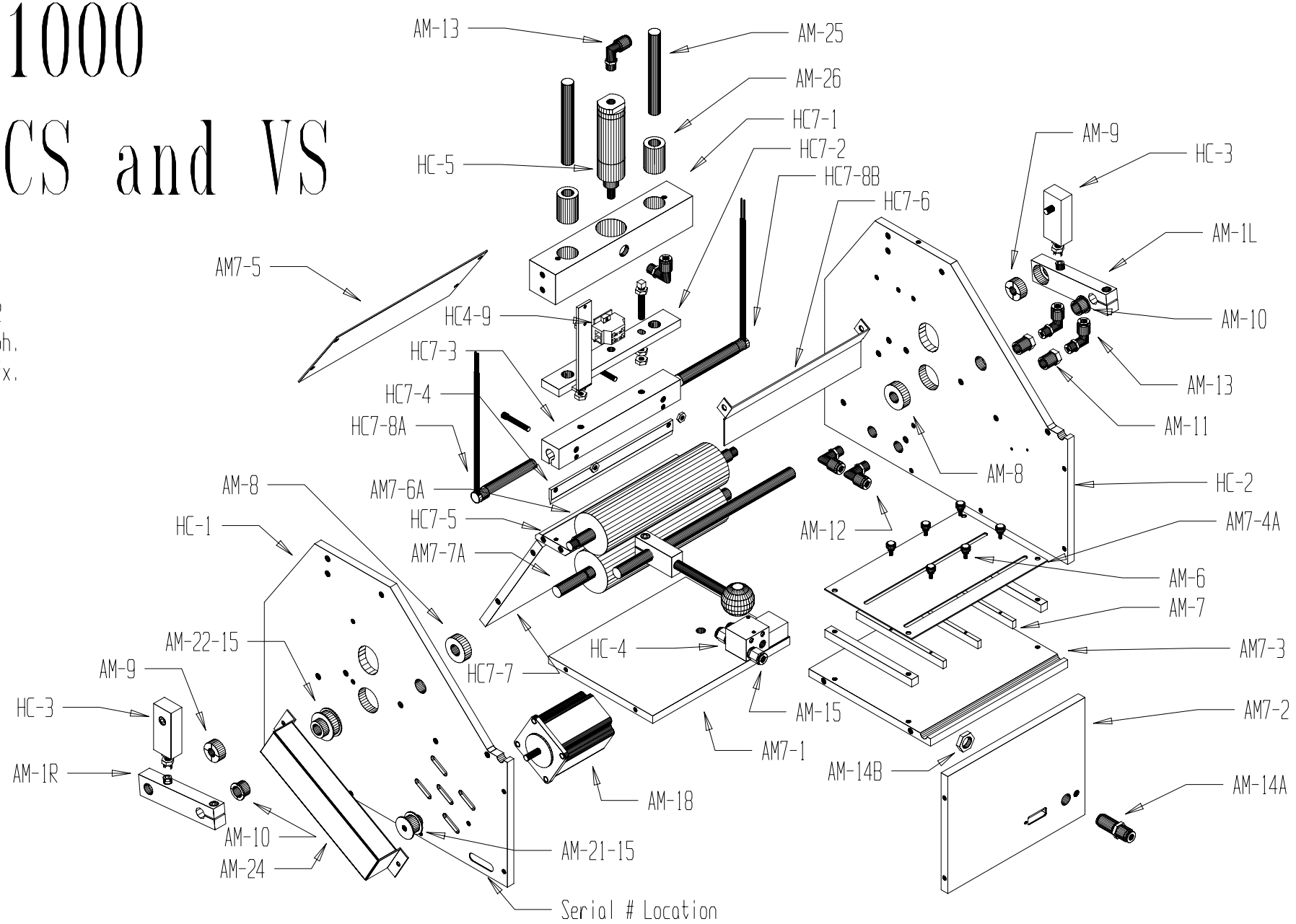
Models HC4-CS
HC4-VS



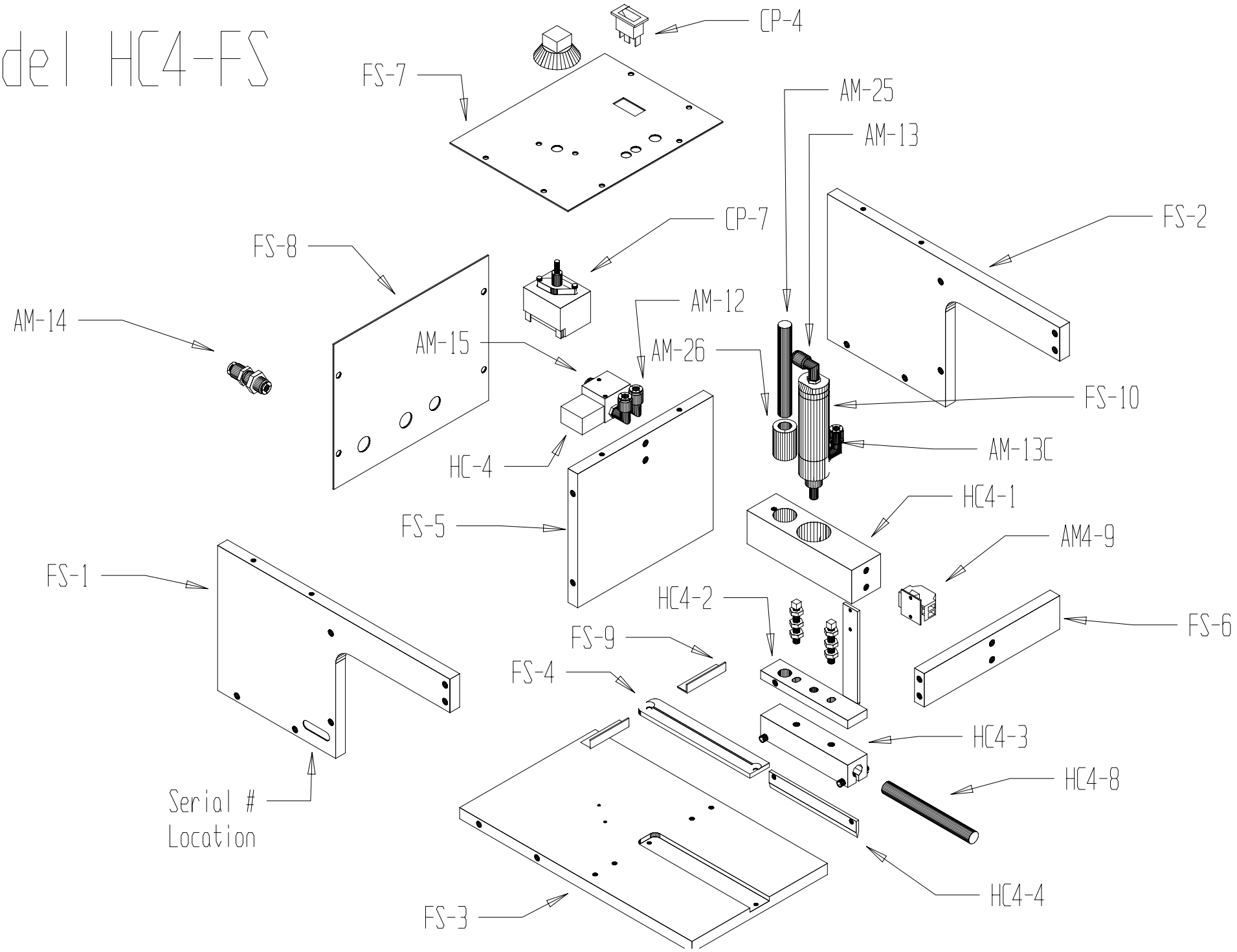
TRC 1000

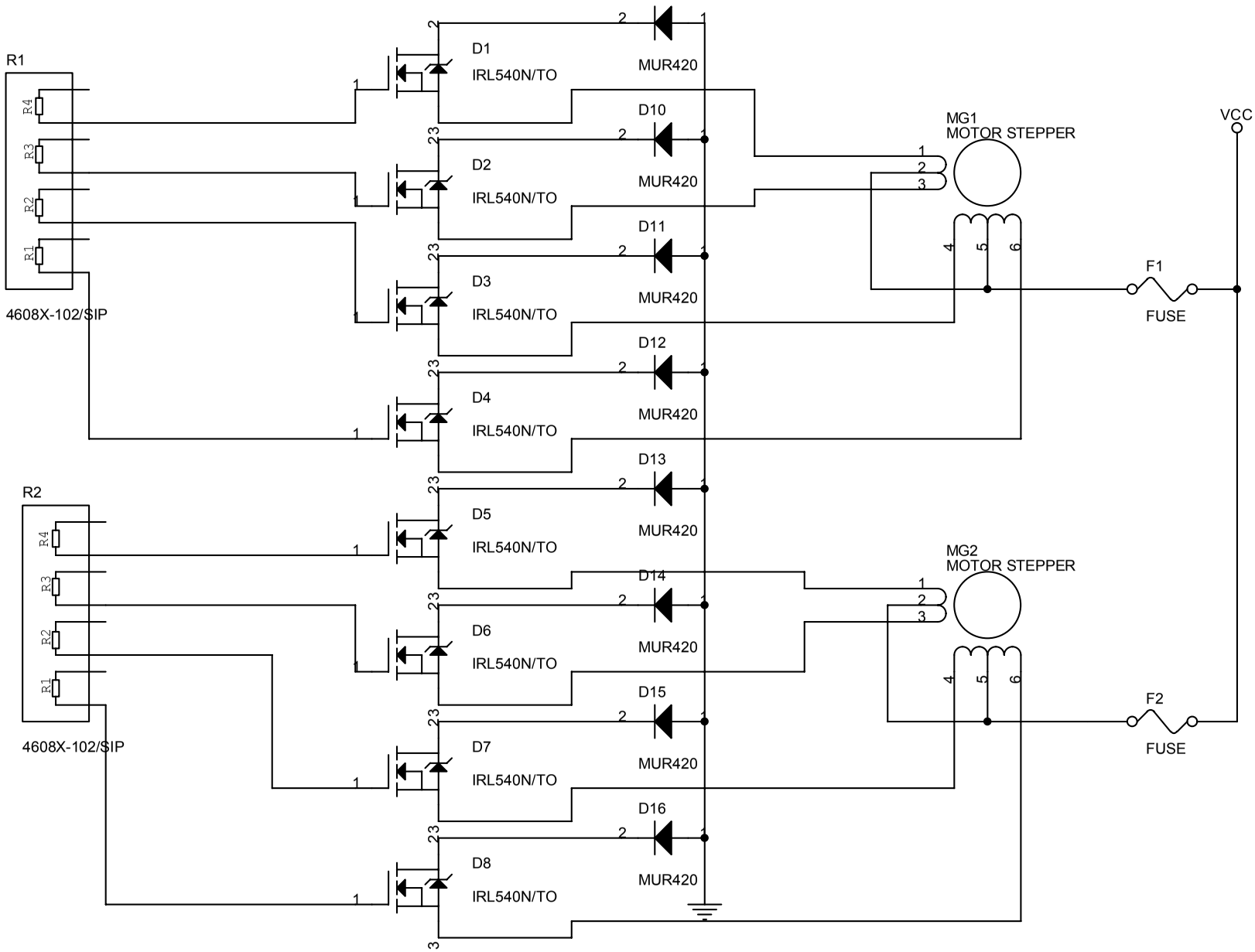
HC7-CS and VS

TRC Industries
P.O. Box 485
830 E. Hickory
Nevada, MO 64772
(417) 667-4477 ph.
(417) 667-4039 fx.



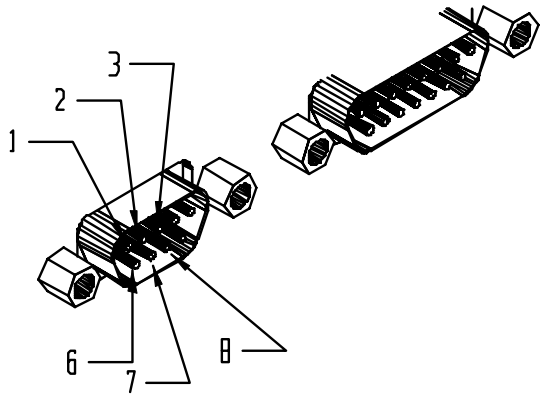
Model HC4-FS


CP-4
FS-7
AM-25
AM-13
FS-2
CP-7
FS-8
AM-12
AM-14
AM-15
AM-26
FS-10
AM-13C
HC-4
HC4-1
FS-5
AM4-9
FS-1
HC4-2
FS-6
FS-9
FS-4
HC4-3
HC4-8
Serial #
Location
HC4-4
FS-3


R1
R4
R3
R2
R1
4608X-102/SIP
D1
IRL540N/TO
D2
IRL540N/TO
D3
IRL540N/TO
D4
IRL540N/TO
D10
MUR420
D11
MUR420
D12
MUR420
D13
MUR420
D14
MUR420
D15
MUR420
D16
MUR420
MG1
MOTOR STEPPER
VCC
F1
FUSE
R2
R4
R3
R2
R1
4608X-102/SIP
D5
IRL540N/TO
D6
IRL540N/TO
D7
IRL540N/TO
D8
IRL540N/TO
MG2
MOTOR STEPPER
F2
FUSE

Control cable test

The cutter head depends on clear, uninterrupted signal from the controller in order to work. Damage to cable ends can cause poor connection, leading to many problems. If after troubleshooting the cause of a problem is still not evident, it is worth checking the continuity between corresponding pin numbers of the cable. It may also be worth checking for shorts between pins.



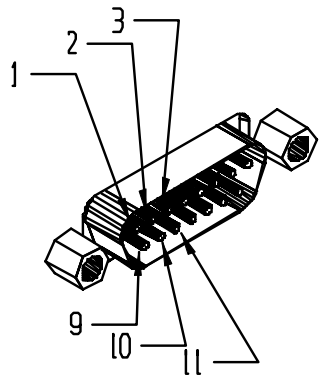
To the left is a drawing showing the pin numbers and locations.

Using a digital ohm meter set on the lowest resistance range, measure between pins;

1 and 3 = 1.2 ohms
2 and 3 = 1.2 ohms
1 and 2 = 2.3 ohms

6 and 8 = 1.2 ohms
7 and 8 = 1.2 ohms
6 and 7 = 2.3 ohms

Readings may be slightly higher or lower depending on your meter calibration.
A reading of 0 ohms indicates that the winding in shorted. A reading of infinity indicates the winding is open. In either case the motor is no good and must be replaced.
Operation of a defective motor can lead to burned out transitors on the drive board.



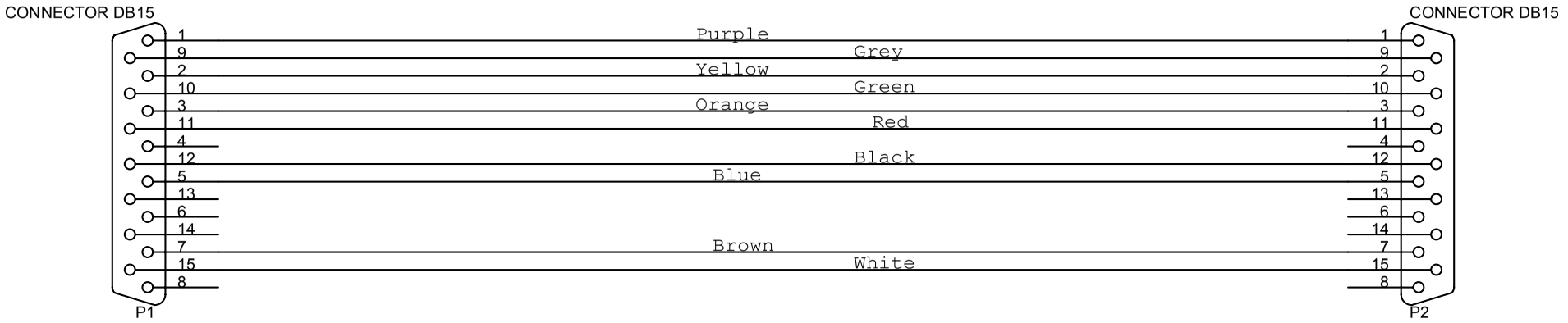
To the left is a drawing showing the pin numbers and locations.

Using a digital ohm meter set on the lowest resistance range, measure between pins;

1 and 3 = 1.2 ohms
2 and 3 = 1.2 ohms
1 and 2 = 2.3 ohms

9 and 11 = 1.2 ohms
10 and 11 = 1.2 ohms
9 and 10 = 2.3 ohms

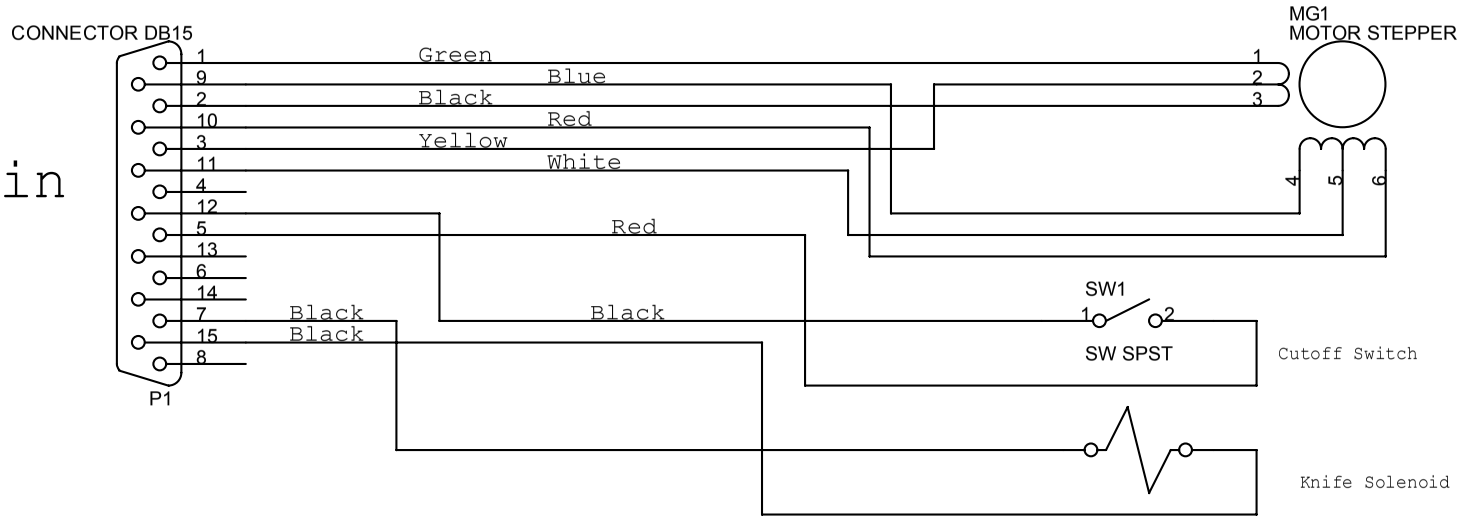
Readings may be slightly higher or lower depending on your meter calibration.
A reading of 0 ohms indicates that the winding in shorted. A reading of infinity indicates the winding is open. In either case the motor is no good and must be replaced.
Operation of a defective motor can lead to burned out transitors on the drive board.



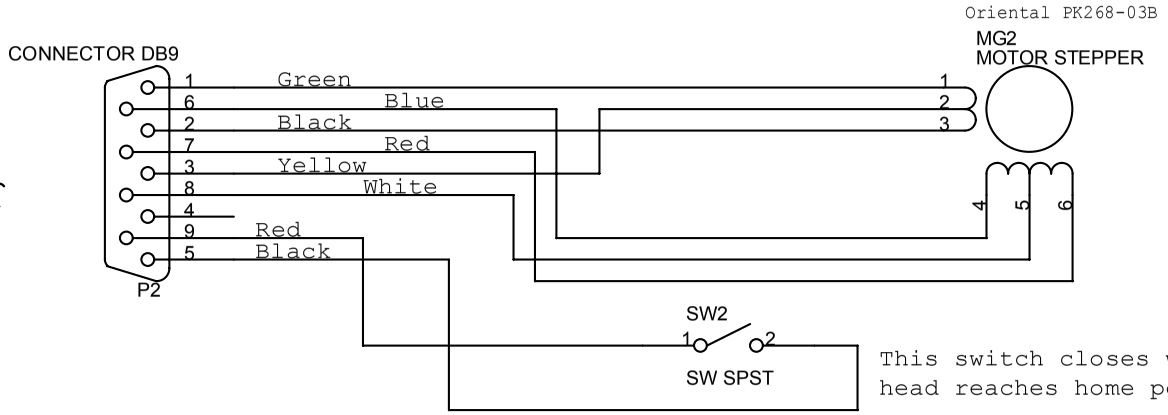
TRC 1000 Control Cable

Alternating Angle Cable

TRC 1000 Main Feed Motor



TRC 1000 Angle Motor

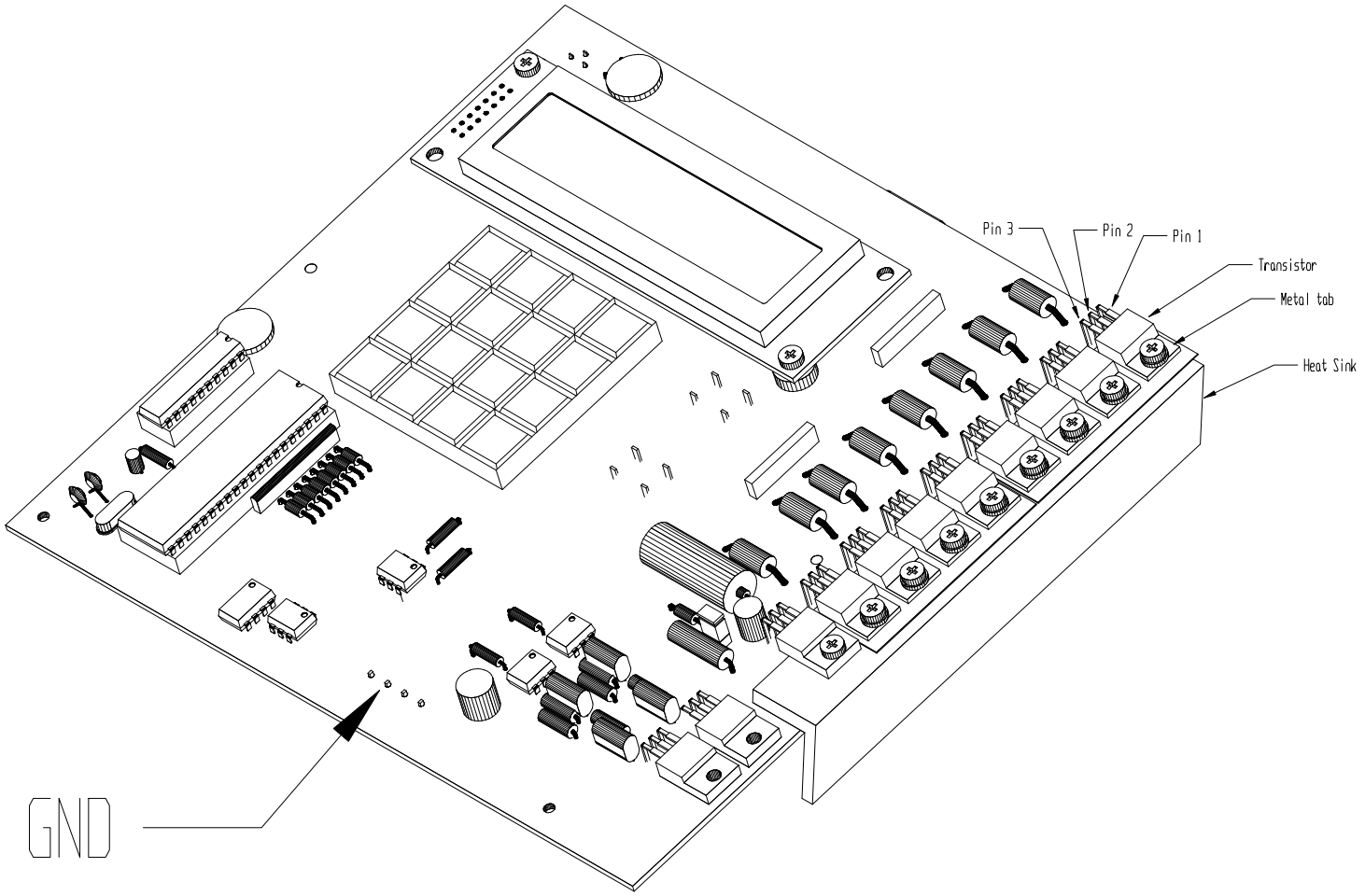


Drive Transistor Test

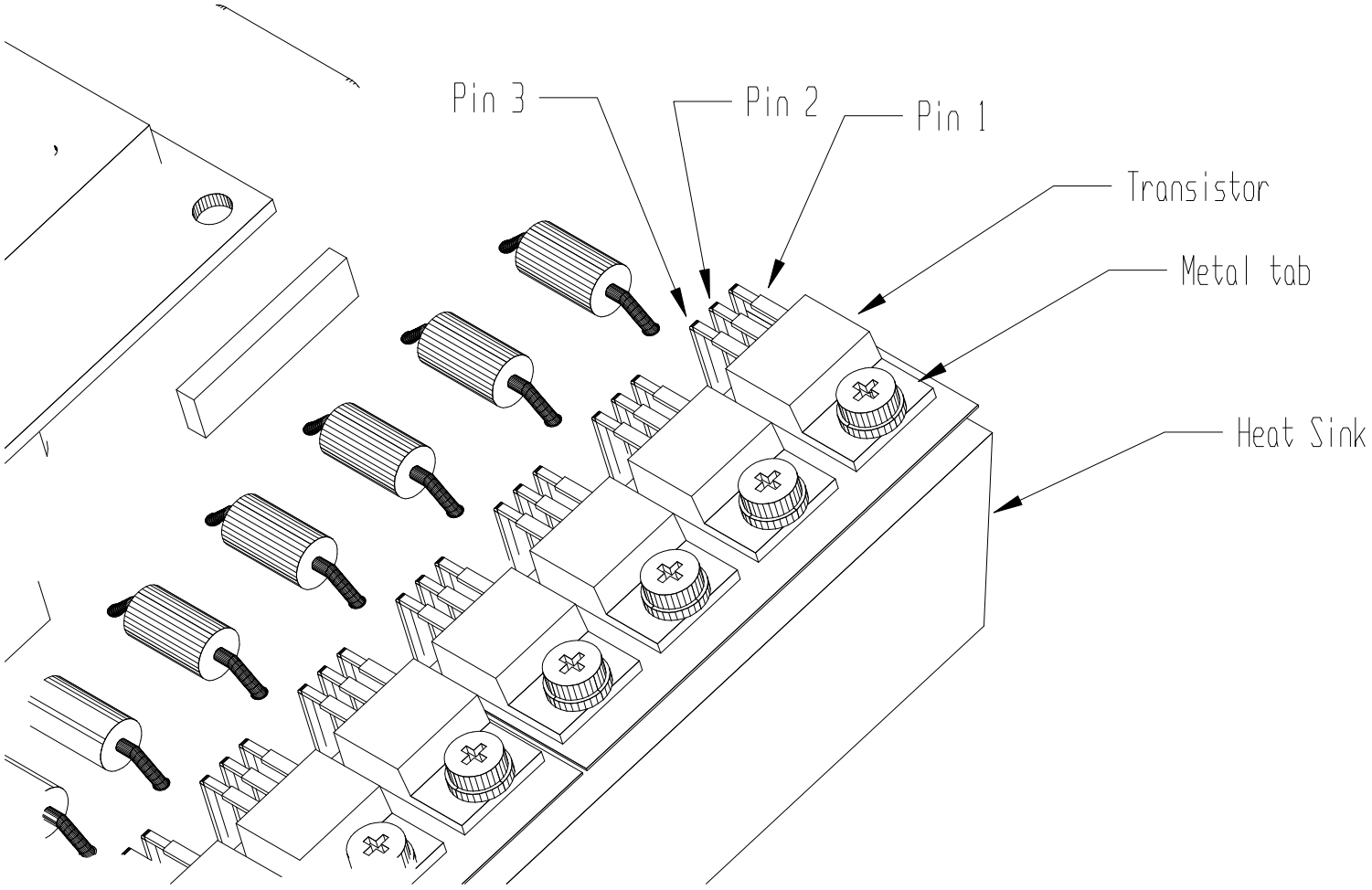
Test each of the transistors Q1-Q4 or Q1-Q8. The plastic screw insulator is usually a good indicator that the transistor is shorted if it is melted. The screws that secure the transistors to the heat sink should be fairly tight. The insulating strip underneath of the transistors should not have any holes in it besides the screw hole.

Pins	Condition
1 & 2	Open
2 & 3	Open
1 & 3	Open
2 & Metal Tab	Closed
3 & GND	Closed

Open equals infinite resistance
Closed equals zero resistance



Drive Transistor Test



Acknowledgements

TRC Industries is a family owned business, now on its second generation of owners. While we have done our best to include any information that we felt was relevant in this manual, the simple fact is it would be impossible to make an entirely comprehensive manual covering our TRC 1000 series straight cutters. Over the last 29 years, TRC has made countless changes and improvements to 1000 series lineup. If the answers you are looking for are not to be found in this manual, give us a call or send us an email and we will do our best to help you.

We appreciate your business, and look forward to serving your cutting needs in the future.

We would like to thank Ray Foster for his service and dedication to TRC Industries, and for passing on much of the knowledge that never made it to pen and paper. We couldn't have done it without you.