Roller Thermal Fuse Retrofit Instruction for 2 Series Laminators

(Excludes 44 Inch Laminators)

Read & Understand the ENTIRITY of this document <u>and</u> UNPLUG THE MACHINE <u>BEFORE</u> beginning!

Tools Needed:

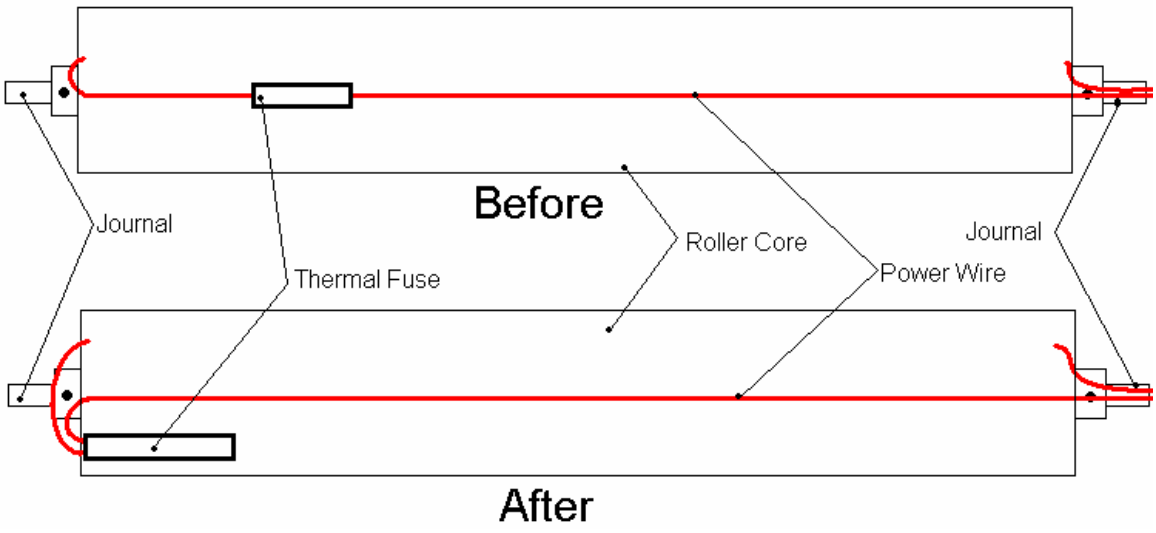
From left to right: Needle-nosed pliers, wire cutters, wire strippers, soldering iron, hook, crimping tool, and a mini torch (a butane torch lighter will suffice)

Roller Anatomy:

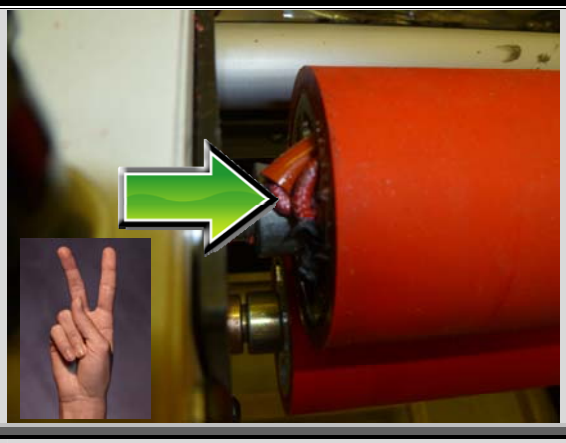
Before beginning this procedure, it is a good idea to know the basics of the roller and thermal fuse design and what we will be doing

On a typical PLS II series roller, there is a power wire connected to each side. The power wire on right hand side goes directly into the journal and out *(See*

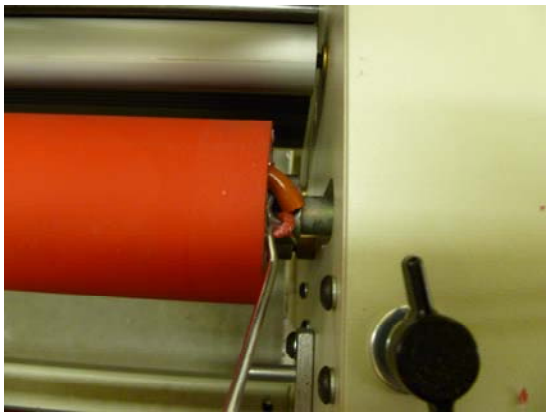
Diagram Below). The power wire on the left feeds back into the core of the roller where it connects to a thermal fuse, then out the right side and through the journal and out to the slip ring. What we will be doing is replacing the thermal fuse and adding a service loop to simplify future thermal fuse replacement. *(See diagram below)*



If your roller already has a service loop, proceed to page 14. If you are unsure, use the table below to tell if your roller already has a service loop.

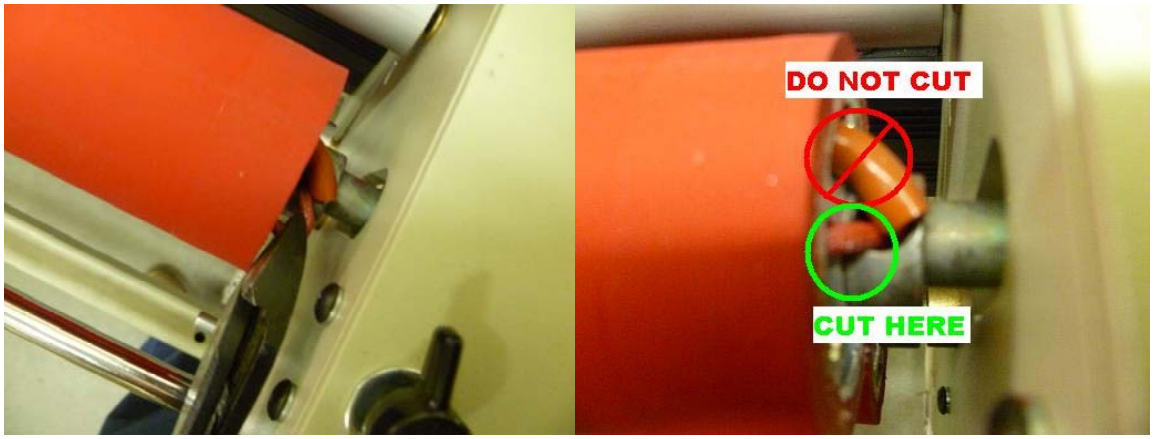
	
Service Loop Installed: Left side of roller has two power wires coming out of one web of the roller core and going into the next.	Service Loop Not Installed: Left side of roller has one power wire coming out of one web of the roller core and going into the next.

1: Identify the proper wire and remove the old thermal fuse



1a: Locate the wire on the right hand side that is **NOT** insulated by an orange silicone tube. Use a hook to pull the wire away from the left, out of the core, as much as you can before cutting, this will simplify later steps in the procedure.

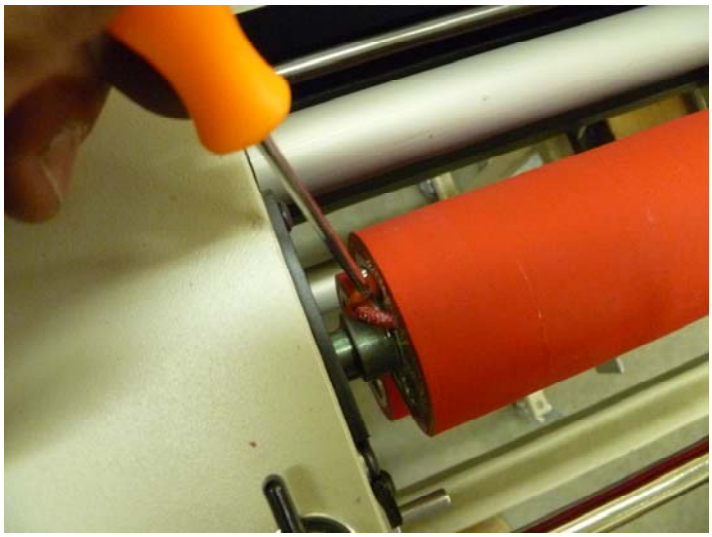
Make sure the wire you are pulling is the wire that goes through the core of the roller. You should be able to see the wire react to tension on the left when you pull it on the right!



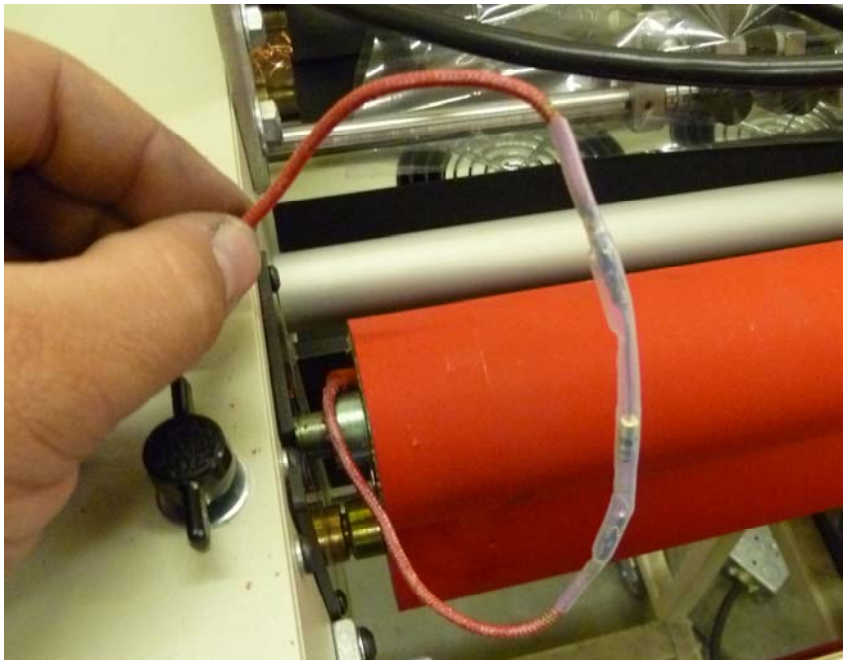
1b: After pulling the slack from the wire, cut the wire as close to the roller as possible. It is important to have this wire running through the journal; you will use it later in step 3.

CAUTION:

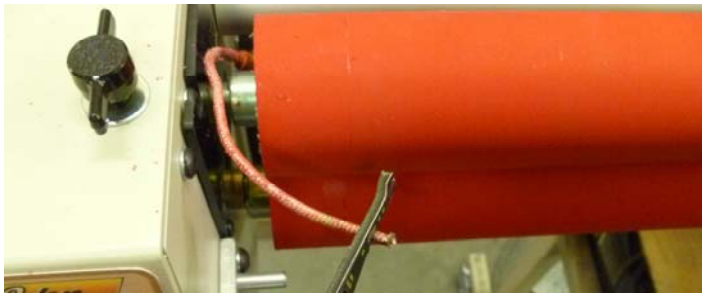
DO NOT cut the wire insulated by orange silicone tubing as this will permanently destroy the roller!



1c: Use the hook to pull the wire out from the left side.

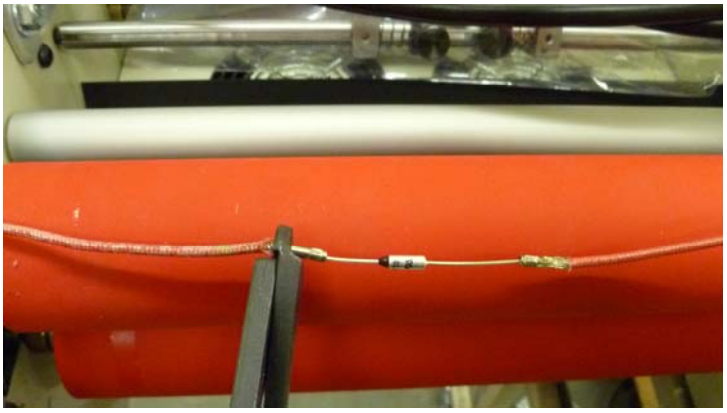


1d: Remove the old thermal fuse assembly from the circuit by cutting at, and removing, the butt connector, then discard the old assembly.



1e: Use the wire strippers to strip approximately a quarter inch of the insulation from the end of the wire.

2: Connect the new thermal fuse, add the insulating tubing, and feed the wires back through the roller.



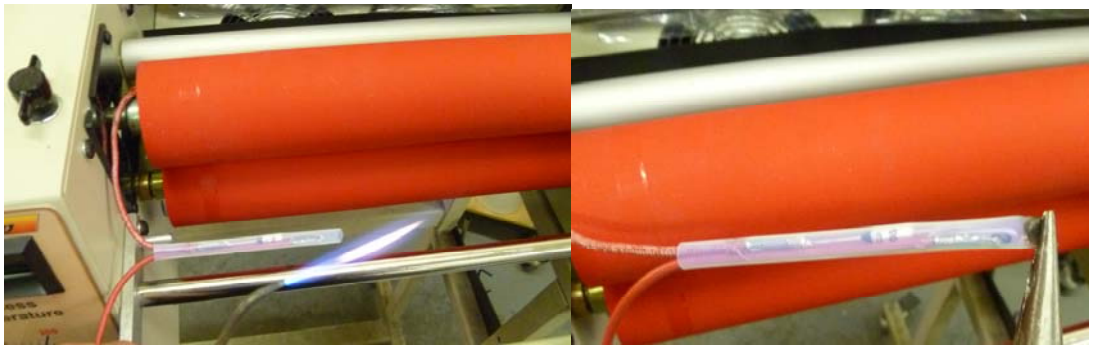
2a: Start by crimping the end of the thermal fuse with the black ceramic tip to the wire connected to the roller core, then crimping the included wire onto the other lead of the thermal fuse. The black ceramic tip of the fuse **must** face the original wire going into the roller on the left.

These crimps are very important, ensure they are well crimped. If this connection comes loose it will cause failure of both rollers. Should you choose to solder this connection, **DO NOT** solder without using heat sinks and a cold wet cloth on the thermal fuse & wires to keep from damaging the thermal fuse. **NEVER use the included high temp solder on thermal fuses!**

2b: While holding the thermal fuse, bend the lead while supporting the thermal fuse with pliers **exactly** as shown, ensure the fuse does not come into contact with the crimp or exposed leads as this will cause a short circuit.

DO NOT bend the wire near the body of the thermal fuse or on the side with the black ceramic tip!

2c: Slide the insulating tubing over the fuse assembly.



2d: Using a mini torch or butane torch lighter, heat the end of the tube with no wires coming out, then crimp it closed with a pair of needle nosed pliers.

CAUTION:

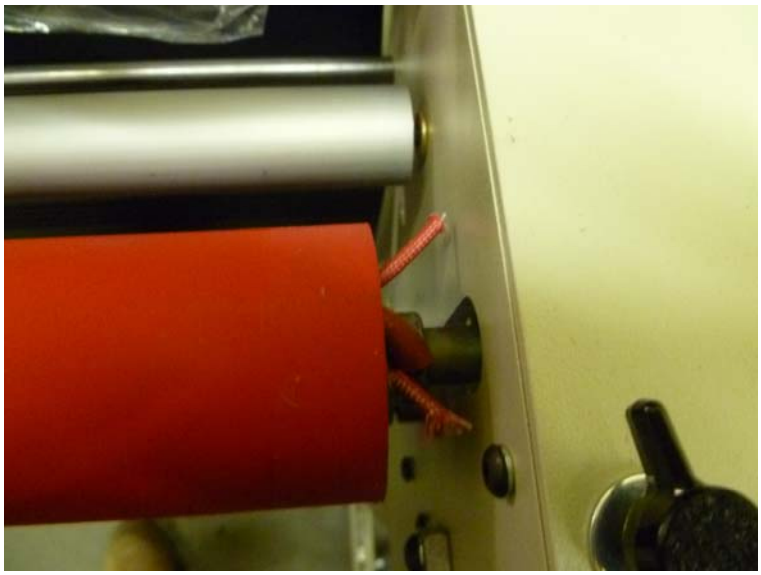
DO NOT allow the heat from the torch to contact the leads of the thermal fuse, this will cause it to fail. Angle the torch away from the open end so no heat gets into the inside & permanently damages the fuse. (As shown in image)

2e: Use the torch to CAREFULLY heat the tube on the opposite end only at the last ¼" until it closes around the wires.

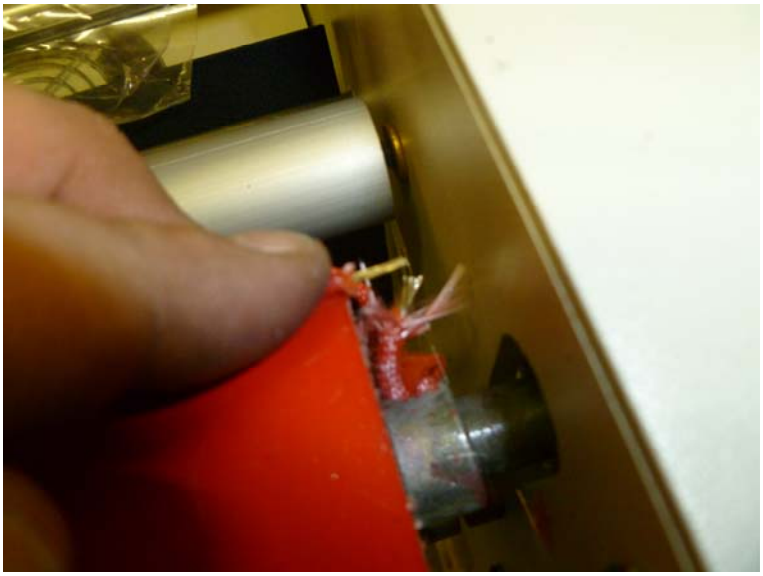
**This does not have to be an air-tight seal, only enough to ensure the tubing does not come off the thermal fuse assembly. This will require about 650˚F while the fuse will fail at just under 400˚F, DO NOT overheat the wires, use intense heat quickly.*

2f: Install the thermal fuse into the next available web of the roller core, and push it all the way in.

2g: Thread the wire from the fuse back into the same channel of the core as the other power wire (the one with the orange tubing), and push it all the way through so that it comes out the opposite end as shown below.

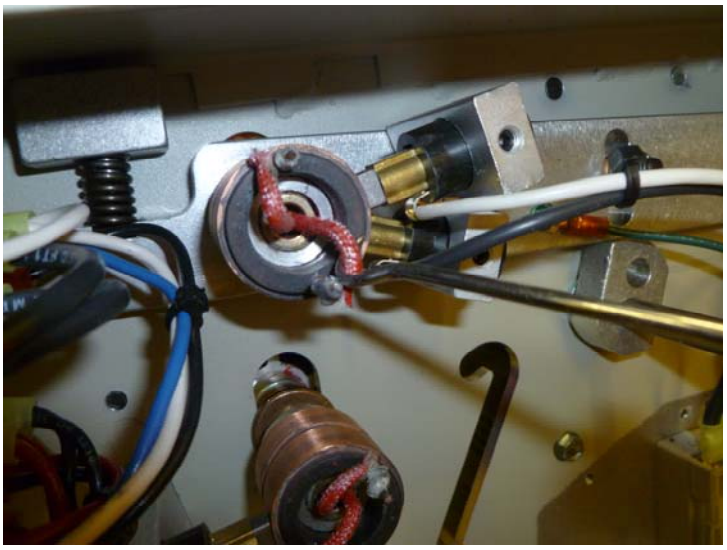


3: Thread the wire back into and through the right and through the journal and solder it to the slip ring.



3a: Strip some insulation from the old remaining wire we cut at the beginning of the procedure, then strip some insulation from the end of the new wire we just fed through the core.

3b: Solder the two wires together. BE SURE the wires are soldered well and inline with no sharp edges or loose strands to snag or tear the other wire while being pulled through. If this solder comes apart, feeding the wire through the journal will be problematic, and if a sharp edge rips the insulation from the other wire, the roller will be irreparably damaged.



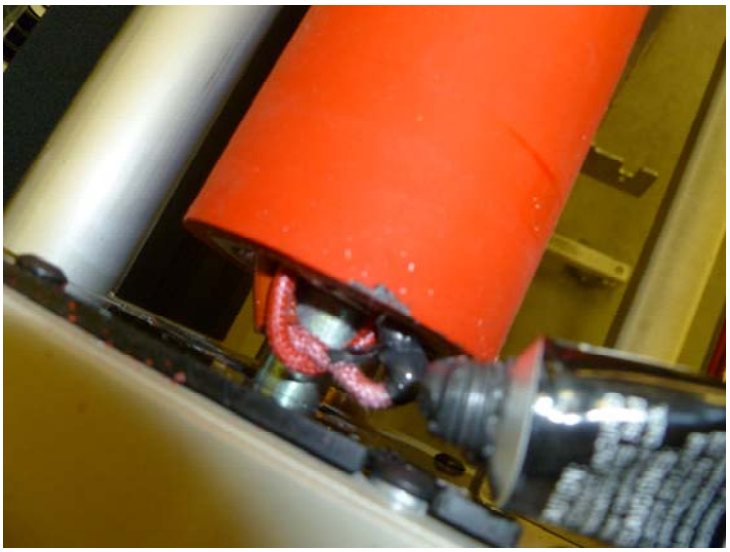
3c: Locate the correct wire on the appropriate slip ring. Wiggle the wires on the slip ring side while watching at the roller and you should be able to identify the correct wire.

3d: CAREFULLY pull the wire all the way through while pushing from the roller end of the journal.

3e: De-solder and remove the old wire end from the slip ring.

3f: Cut the new wire about two inches from the slip ring, then strip off about ¾" of insulation from the end.

3g: Coil the bare wire around the lead of the slip ring, then solder using the supplied flux and solder.



3h: The final step is to slightly remove the newly installed thermal fuse and add a small amount of RTV silicone to the wires, then push it back in, this will seal the fuse to ensure it does not work its way out of the roller core. Be sure to clean up any excess RTV silicone.

4: Testing

After the thermal fuses have been replaced you **MUST** follow this procedure in this order.

Use caution; you can burn yourself easily on the laminating rollers!
It is advisable to use leather gloves for a preliminary heat check of the rollers.

4a: Turn all switches off on the machine. Turn the temperature control to the minimum setting.

4b: Make sure that you will have 3 uninterrupted minutes to complete this procedure. If at any time you are interrupted, unplug the machine and start over. Do not leave the laminator plugged in for more than 3 minutes.

DO NOT leave the machine unattended without unplugging it!

4c: Plug the laminator in and immediately turn on the machine, make sure the laminator operates, if it does not operate, unplug the machine and replace the 20 amp main fuse, If your fuse is blown, you will likely need to replace your relay.

4d: Make sure that a somewhat accurate temperature is displayed. If not, you will need to unplug your machine and then troubleshoot the temperature sensing brushes and related circuit.

4e: While feeling both bottom and top rollers, watch the temperature display and make sure that it does not gain temperature and that the rollers are not heating over 120° F or so. If they do, **unplug the machine** and contact technical support.

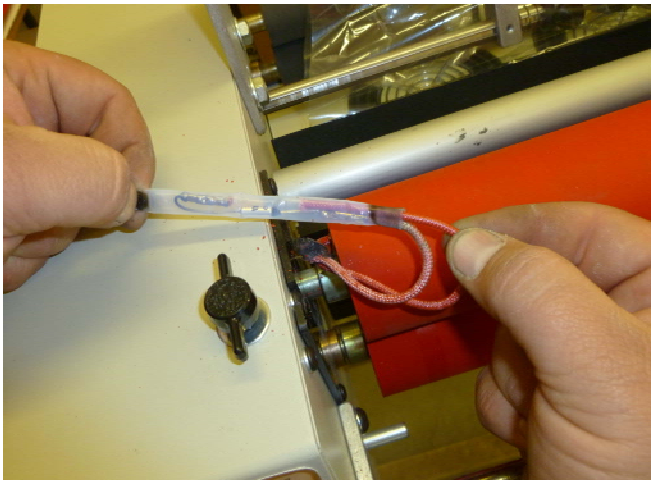
4f: Turn the temperature control to 200 degrees and feel the rollers to make sure they are warming equally (don't burn yourself). If they are warming, watch the machine until it is heated to this temperature. Make sure that it stops heating near the correct setting, if not, **unplug the machine**.

If at any time the laminator does anything unusual or continues to heat when it should not immediately unplug the machine and contact tech support

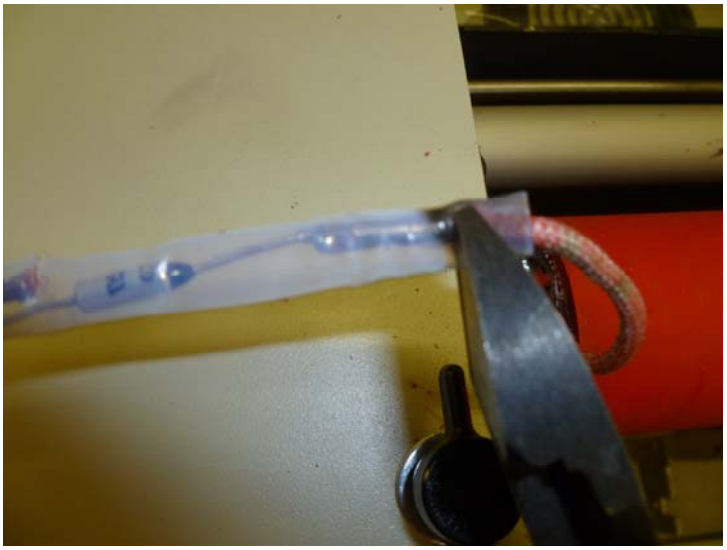
5: If Your Roller Already Has a Service Loop:

5a: Remove the thermal fuse assembly and service loop from the left side of the roller

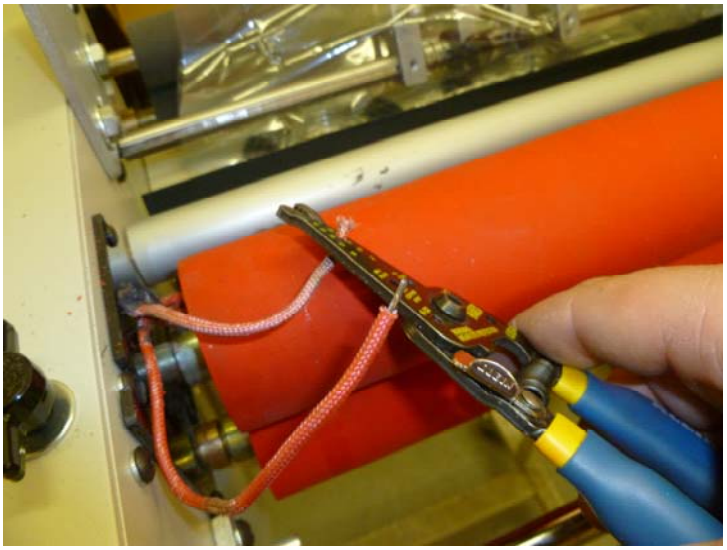
5b: Clip the power wire through the insulating sleeve at the butt connector.



5c: Pull the power wire from the sleeve.



5d: Remove the thermal fuse assembly by cutting the remaining power wire at the butt connector and sliding the power wire out. Discard the old thermal fuse assembly.



5e: Strip about ¼″ insulation from the ends of both power wires

5f: Crimp the end with the black ceramic tip of the thermal fuse assembly onto the power wire that connects to the roller core with the orange silicone tubing.

5g: Crimp the other end of the thermal fuse assembly to the power wire that travels through the roller core.

These crimps are very important, ensure they are well crimped. If this connection comes loose it can cause catastrophic failure of both rollers. Also, should you choose to solder this connection, **DO NOT** solder without using heat sinks and a cold wet cloth on the thermal fuse & wires to keep the thermal fuse from tripping.

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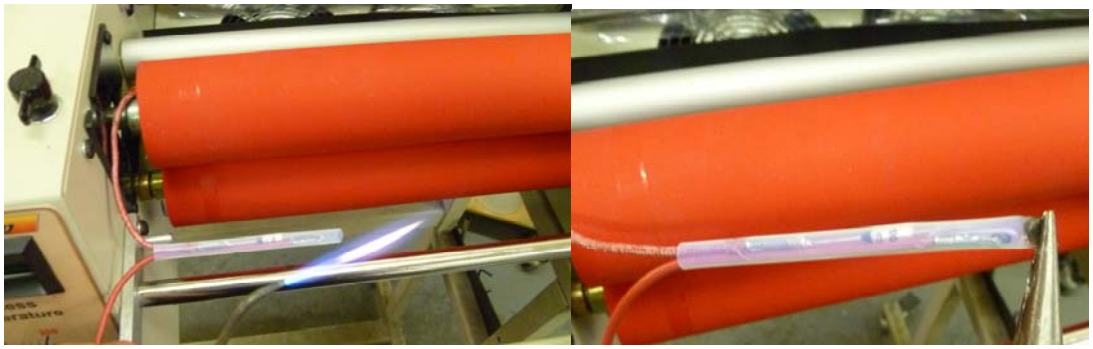

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