

# WattsRadiant™

Floor Heating & Snow Melting

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## ProMelt & SlabHeat CABLE REPAIR KIT Installation Guidelines

**Warranty Disclaimer:** This repair kit and these installation guidelines are provided by Watts Radiant to assist in repairing a Watts Radiant heating cable damaged by job site conditions. Watts Radiant does not, in any way, warranty the repair or ensure proper function of the product following the repair. Only a qualified electrician should make repairs to the Watts Radiant product. For further assistance, please contact the factory.

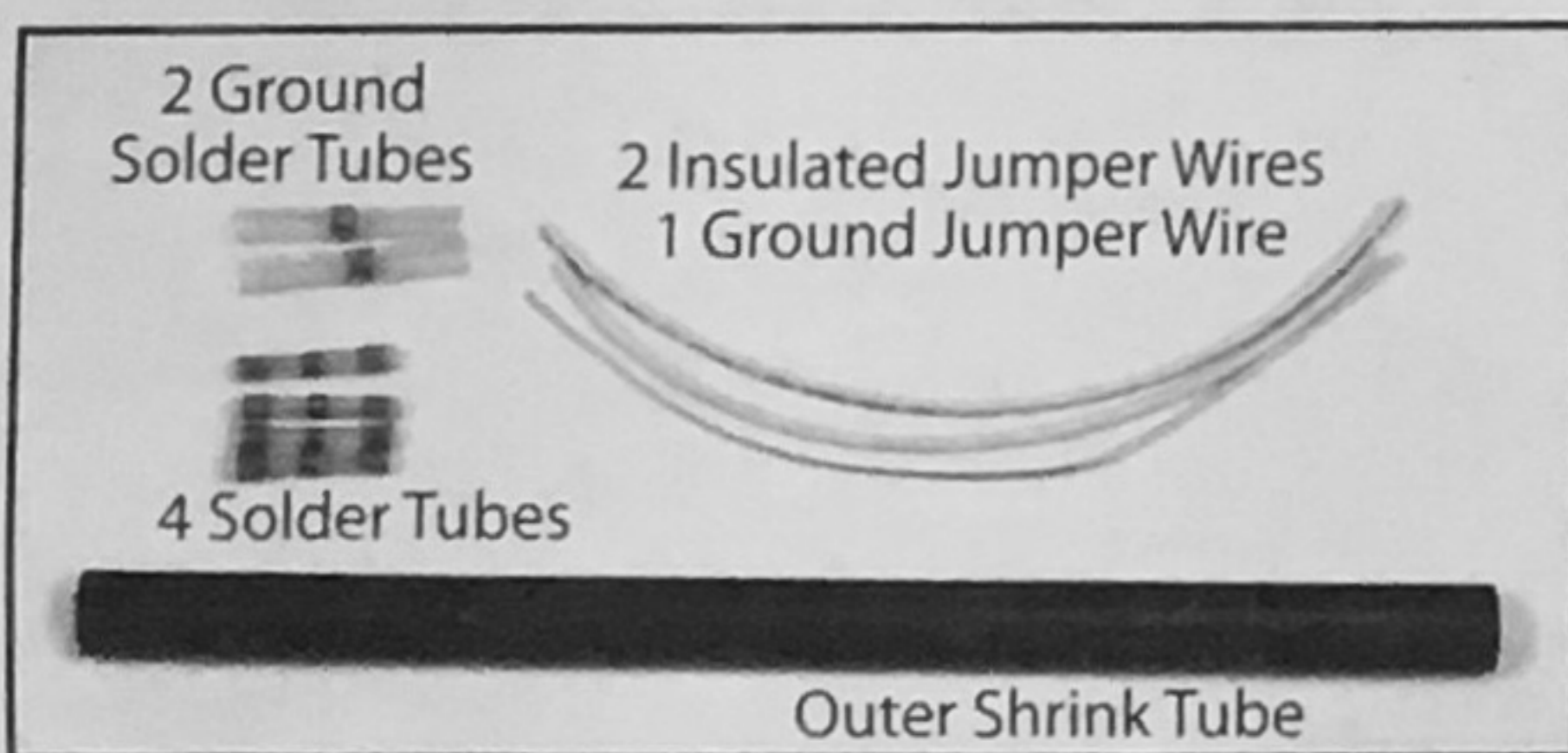
Watts Radiant does not qualify electricians or installers to do diagnostics or cable repair. It is the responsibility of the installing party or homeowner to contact a qualified person to follow these guidelines.

DO NOT USE this Repair Kit to splice different cables together, only for repair within a cable.

**WARNING:** Failure to follow these installation guidelines can result in property damage, personal injury and/or death.

### Materials and Tools Needed

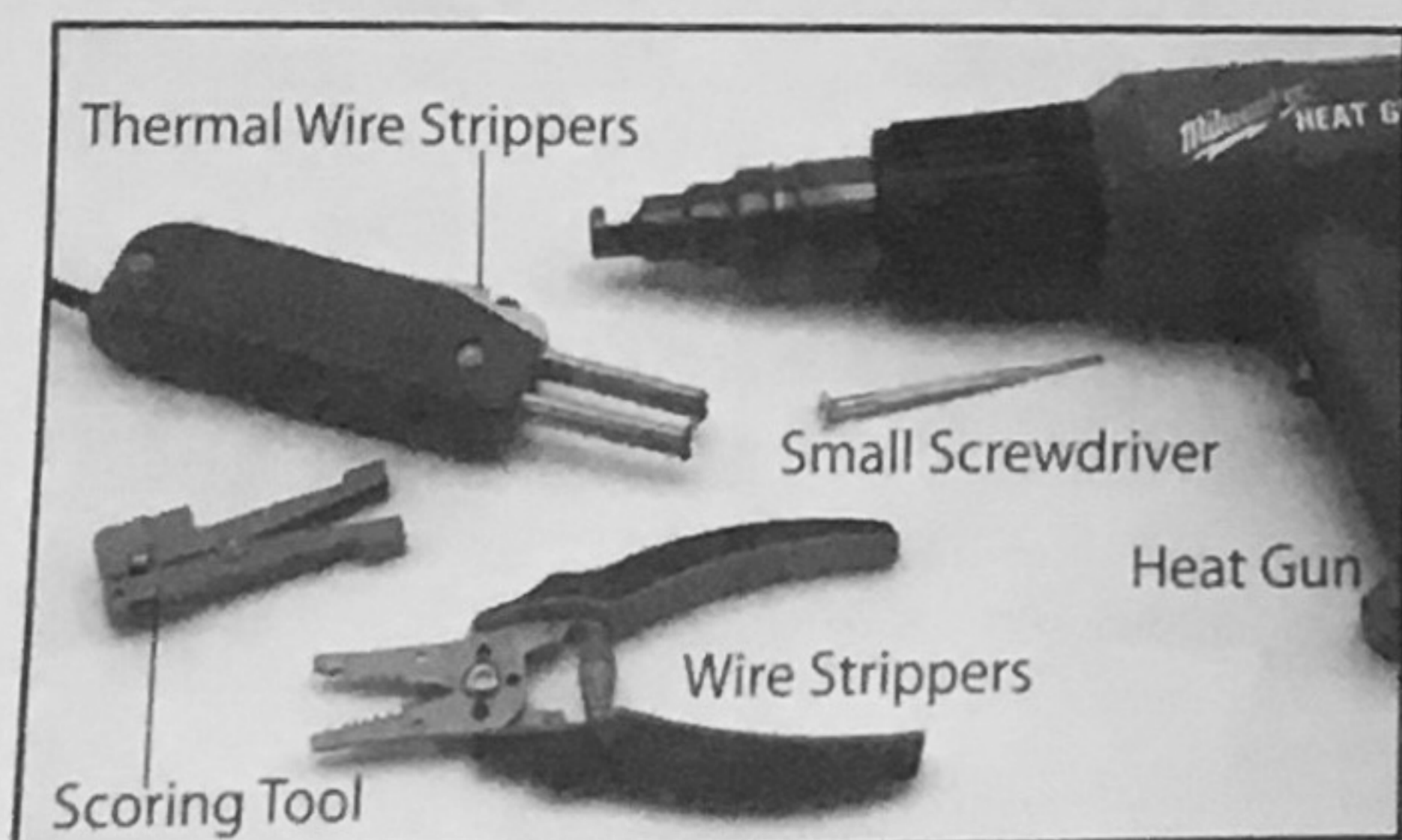
**ProMelt & SlabHeat Cable Repair Kit:**  
Manufacturer order number 81012263



This ProMelt & SlabHeat Cable Repair Kit contains components for making a repair at one location.

#### Electrical Repair Tools:

Manufacturer order number 81007201. Available for rent or purchase as a kit. NOTE: items are subject to change.



#### Heat Gun:

- Must be able to heat about 1000°F.
- Milwaukee model 8975.

#### Thermal Wire Strippers:

- For stripping the heating wires.
- Omega model TW-1.

#### Wire Strippers:

- For cutting and stripping jumpers.
- GB model GESP-55.

#### Small Screwdriver:

- For helping separate heating wire from braid shield.

#### Electrical Test Tools:

Manufacturer order number 81007187. Available for rent as a kit. NOTE: items are subject to change.



#### Digital Multimeter:

- Must measure up to 20,000 ohms.
- A.W. Sperry model DM-2000.

#### TDR Meter (Time Domain Reflectometry):

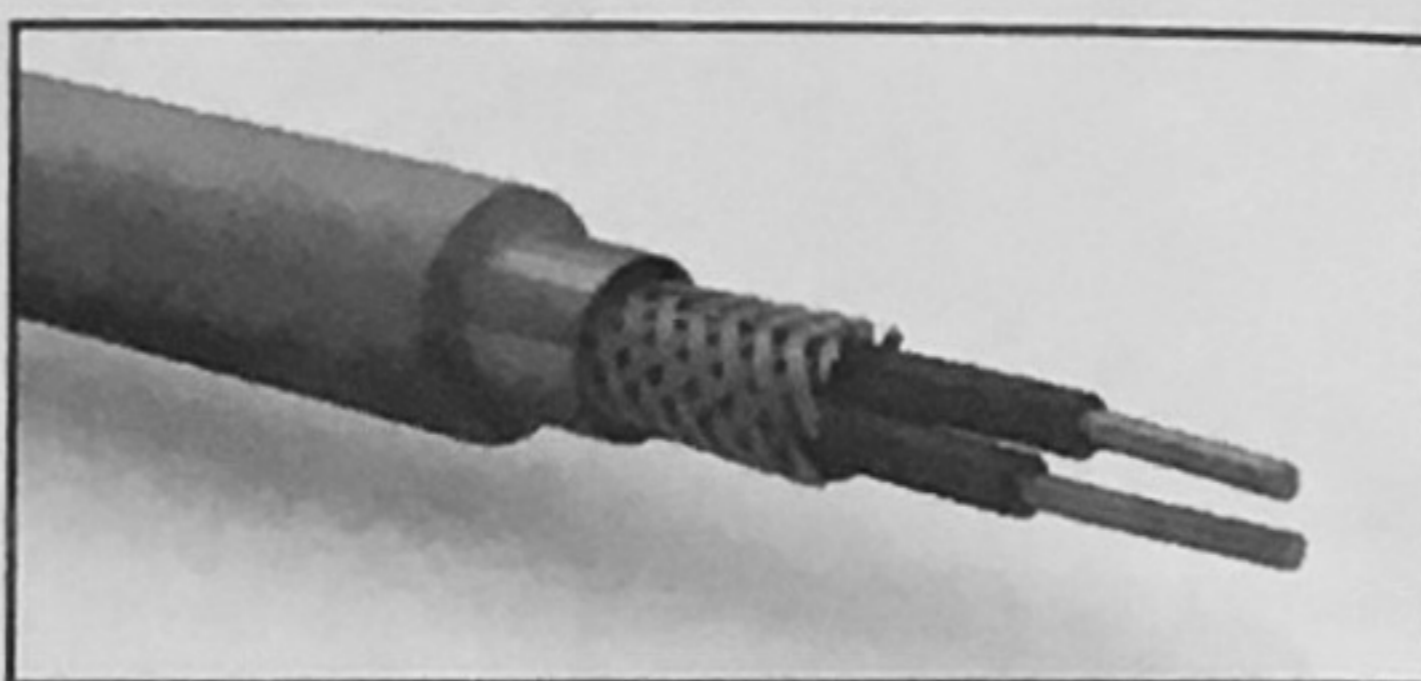
- For diagnostic testing.
- Fluke model TS-90 or TS-100 ("Cable Fault Finder")

### Part 1. Getting Started

**Step 1.1.** Make sure the power is turned OFF!

**Step 1.2.** Understand the heating cable construction.

Two insulated heating wires, covered by a tinfoiled copper braided shield, covered by a polyester/foil shield, covered by an outer jacket. Each heating wire consists of a small heating element between about 28 to 22 AWG.

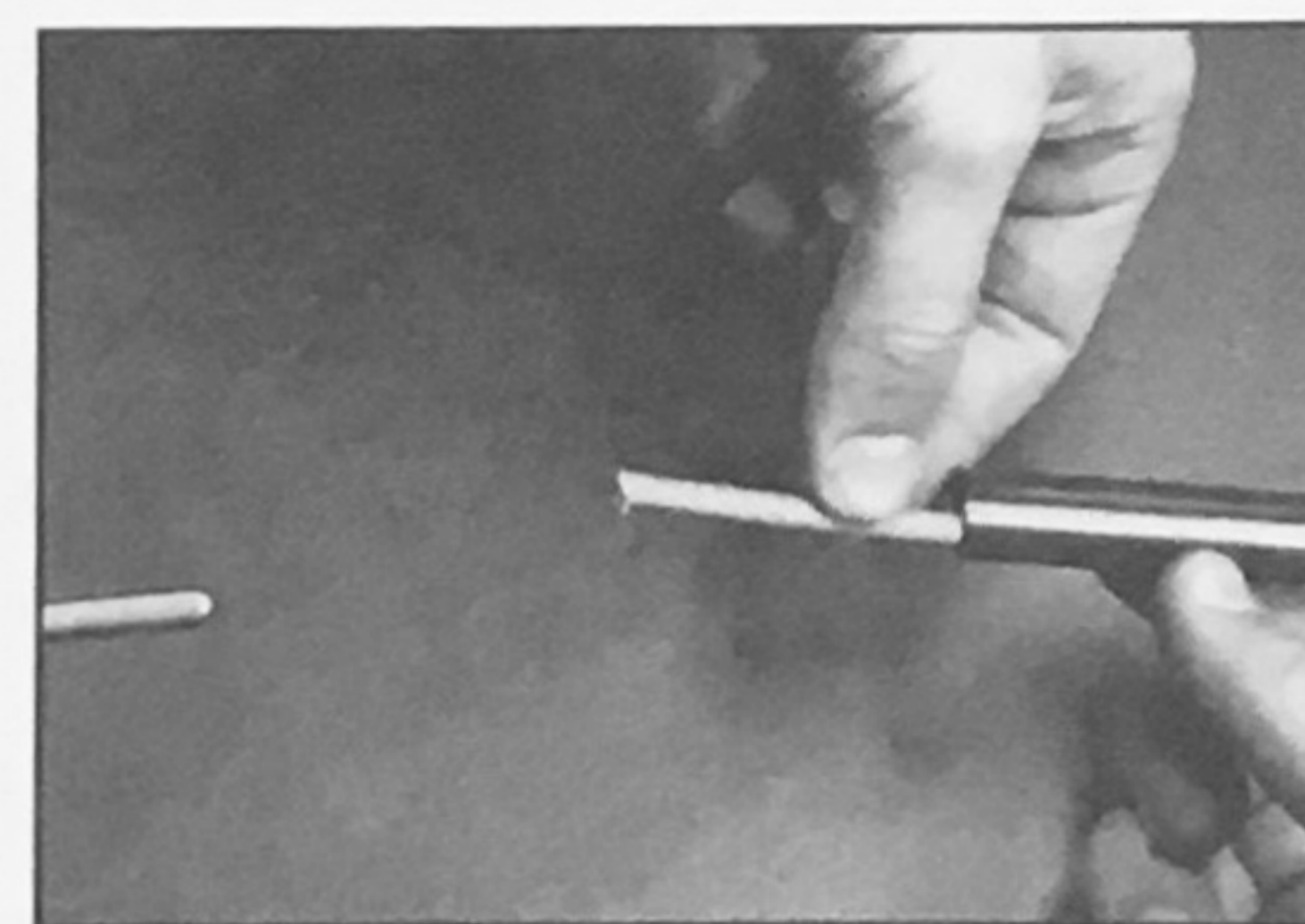


**Step 1.3.** Expose at least 12" of free cable on one side of the damage and at least 15-18" of free cable on the other side.

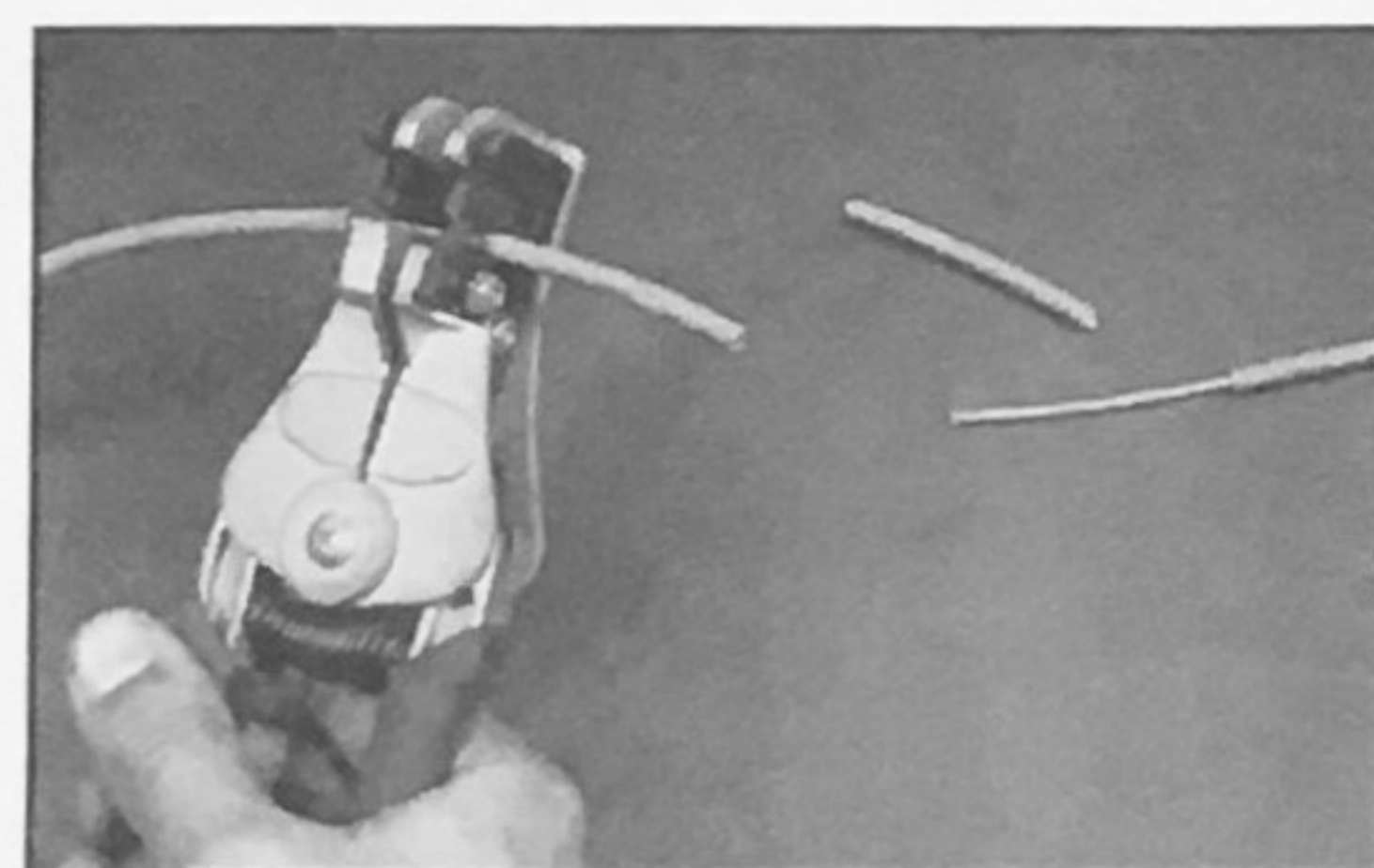
### Part 2. Installing the Repair



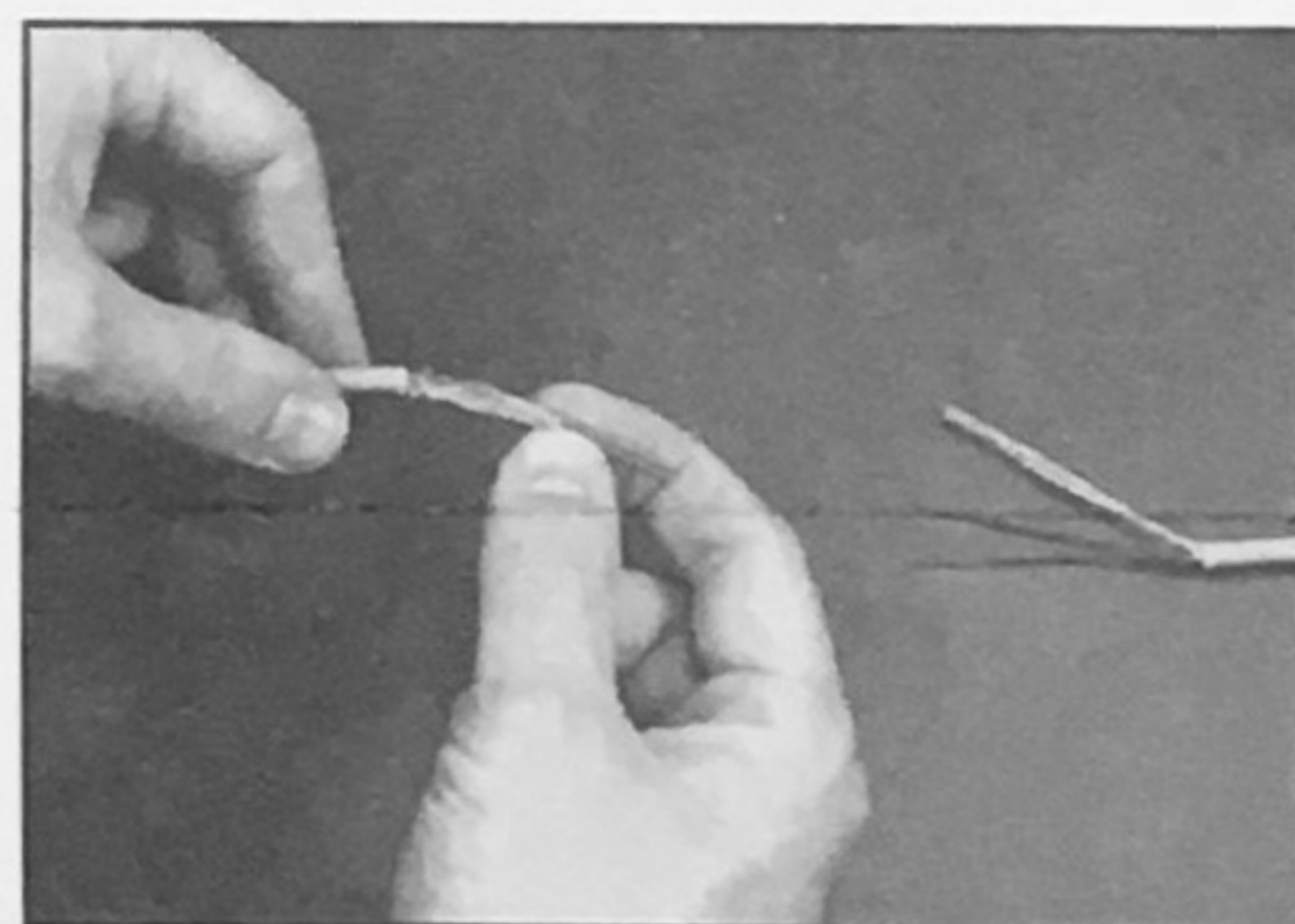
**Step 2.1.** Cut out a 2" to 3" section of the heating cable to remove the damage.



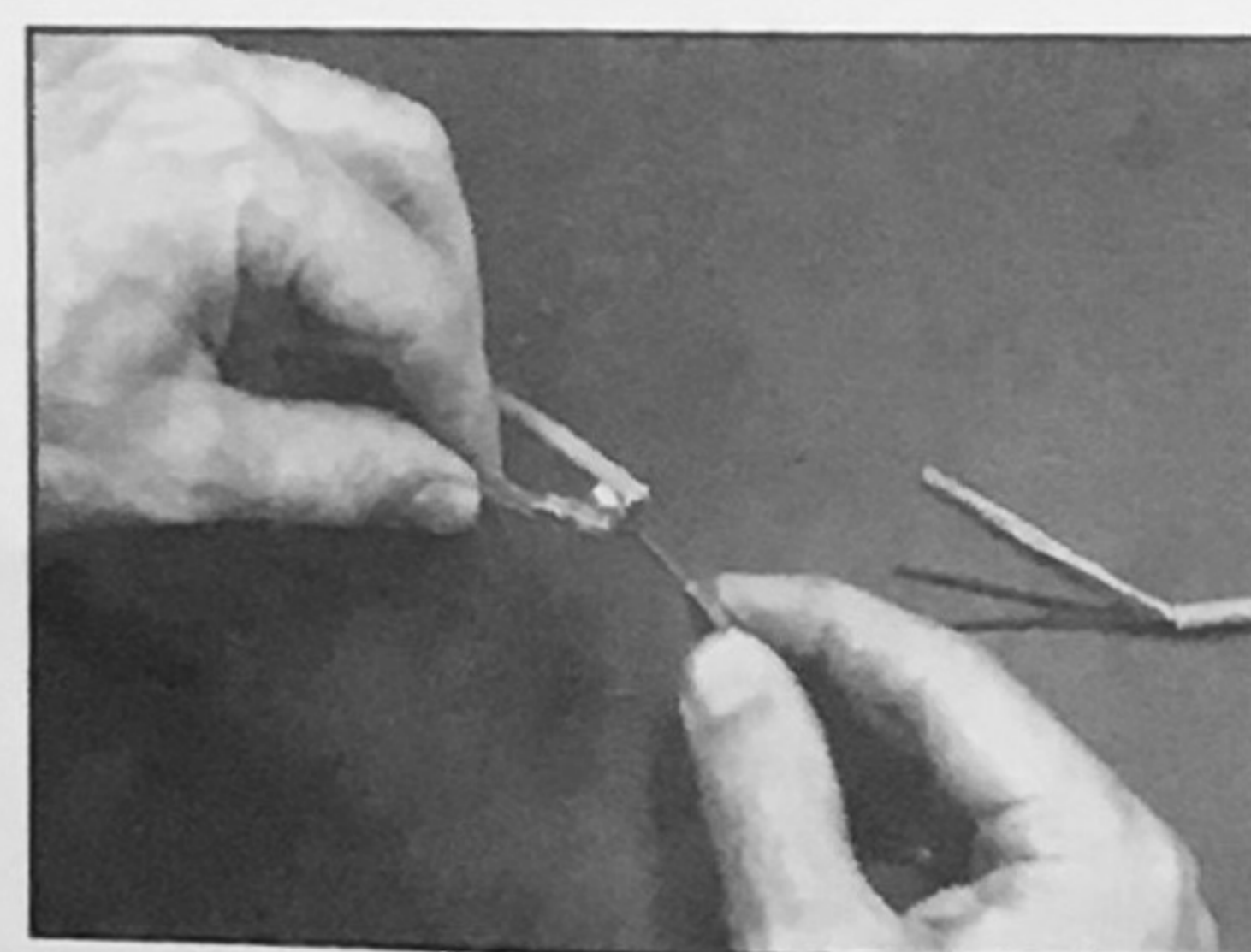
**Step 2.2.** Slide the outer shrink tube over the longer cable lead.



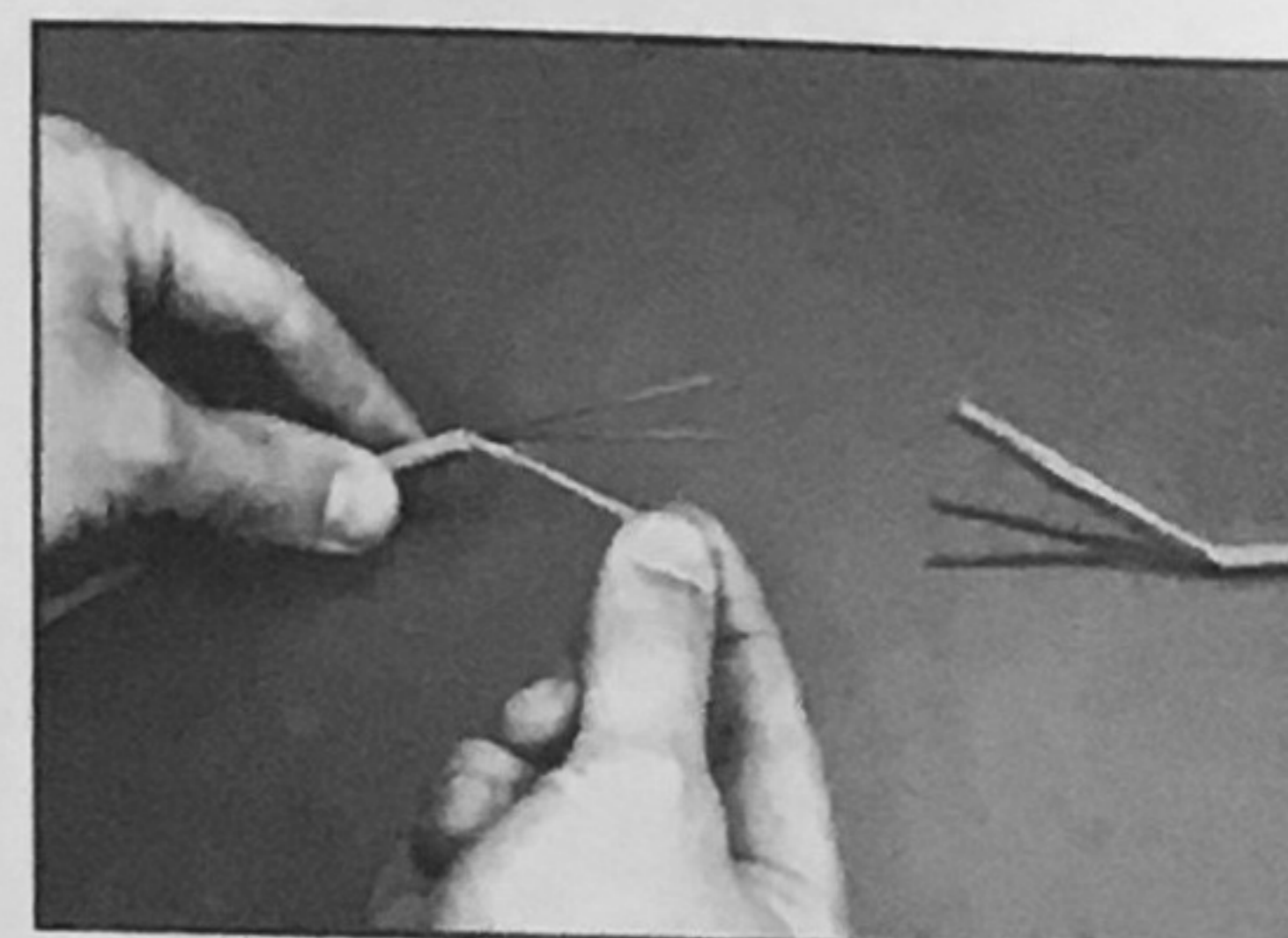
**Step 2.3.** Use a Thermal Wire Stripper to carefully melt the jacket. Remove about 2" of the jacket and foil shield from both cable leads. A 10AWG wire stripper may also be used. Be careful not to damage the braid shield underneath the jacket.



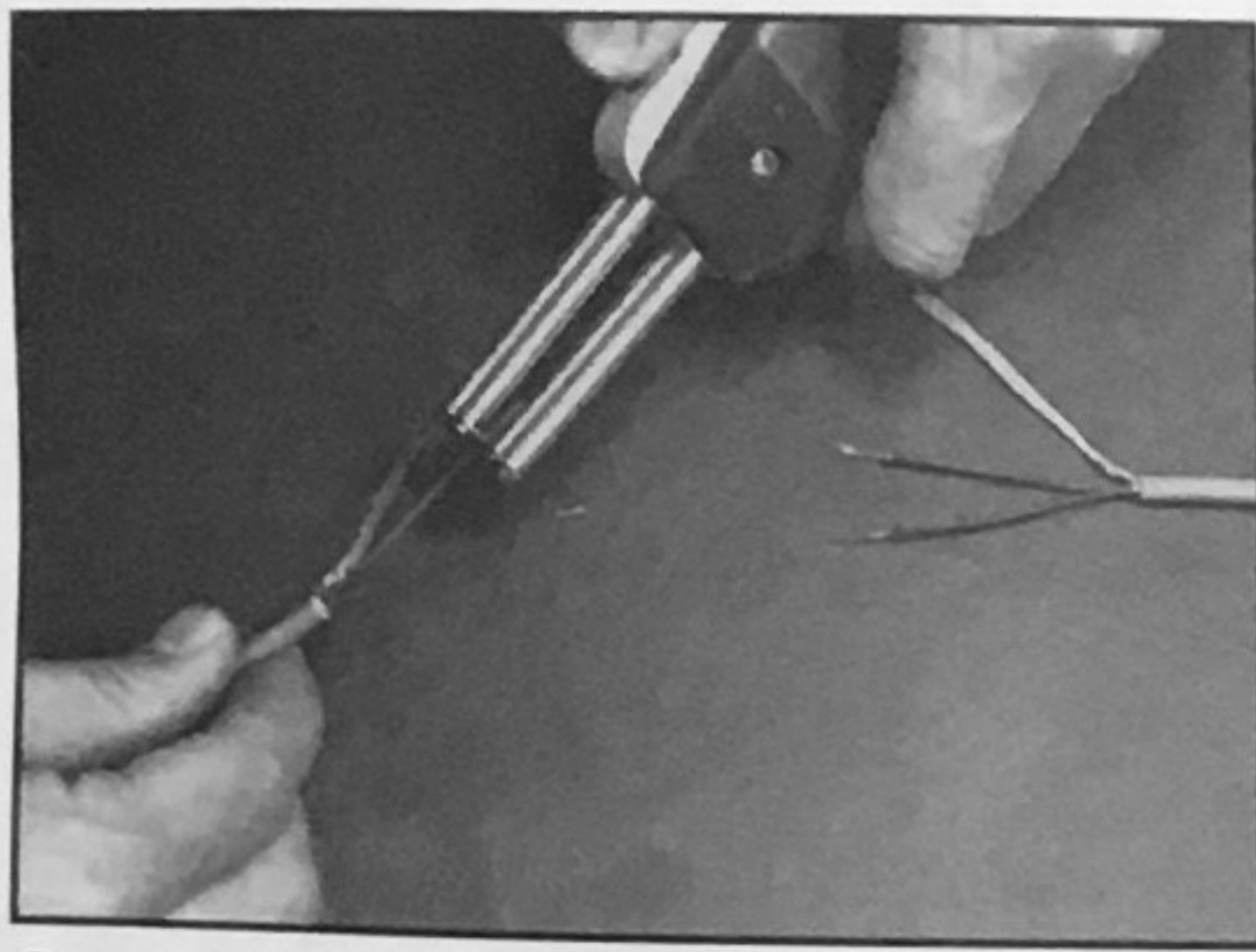
**Step 2.4.** Push the braided shield back to loosen it.



**Step 2.5.** Use a small screwdriver, or similar, to make an opening in the braid shield. Pull each wire through the braid shield.



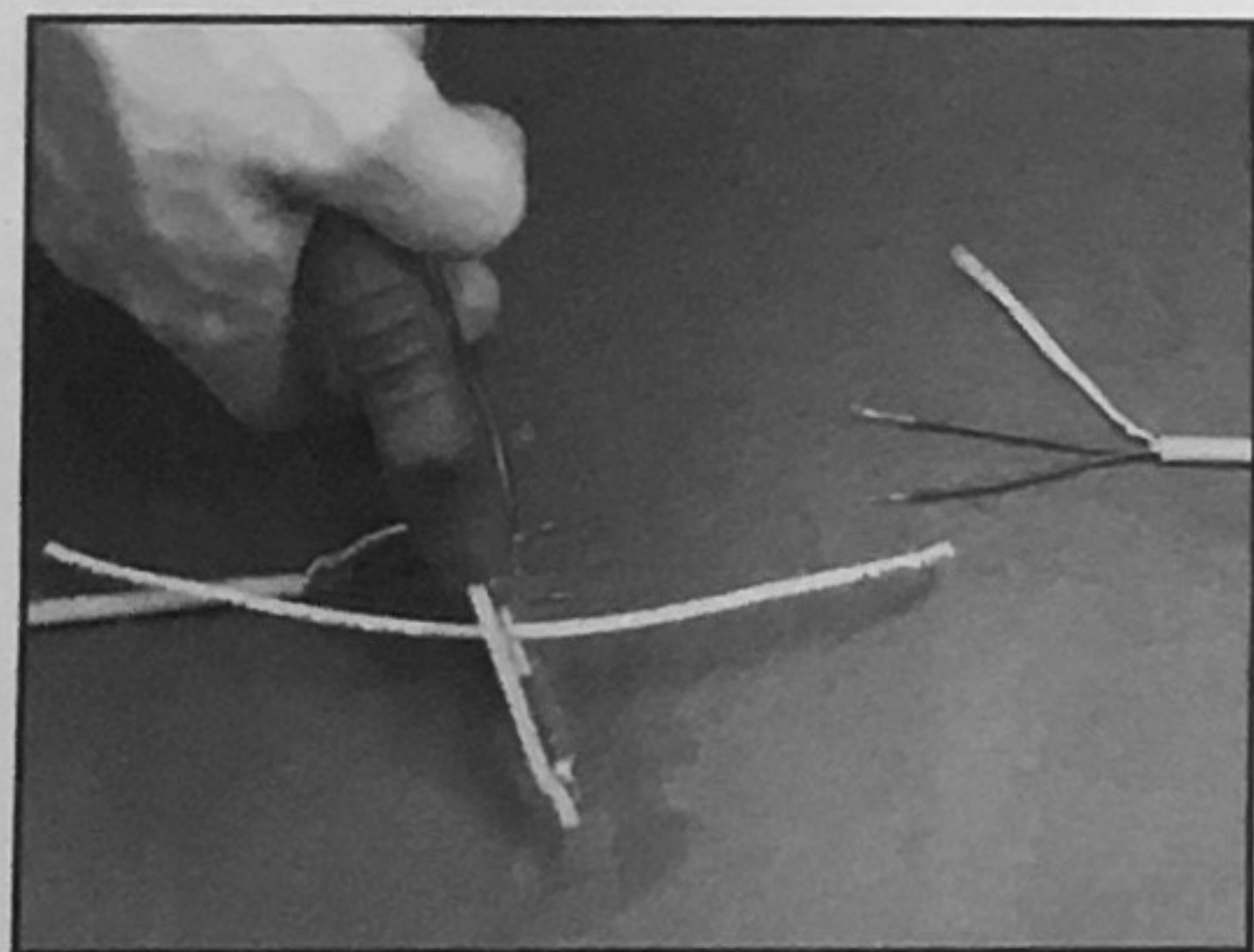
**Step 2.6.** Pull the braid shield to make into a pigtail.



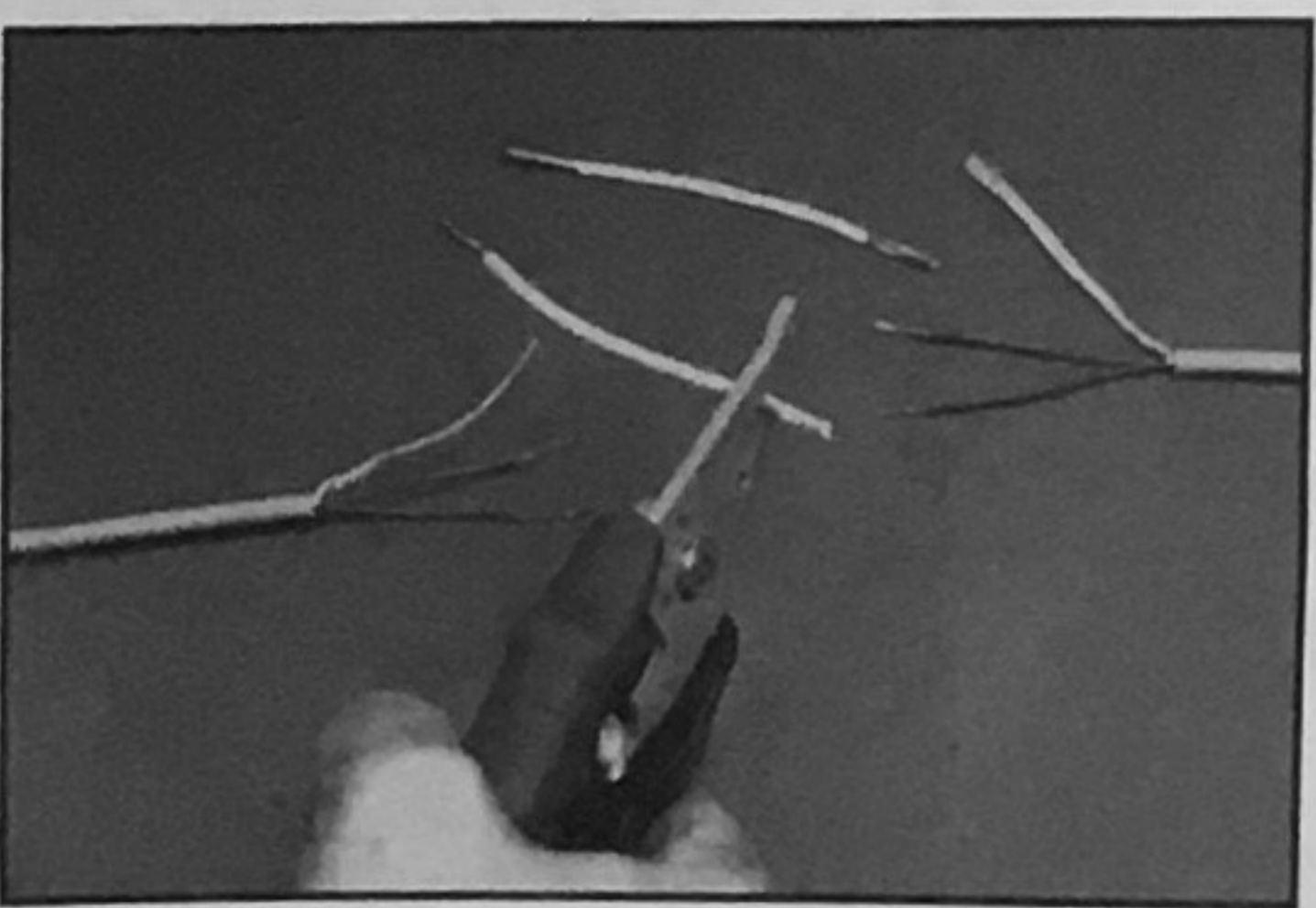
**Step 2.7.** Use thermal wire strippers to remove 1/2" of the insulation from the heating wires.



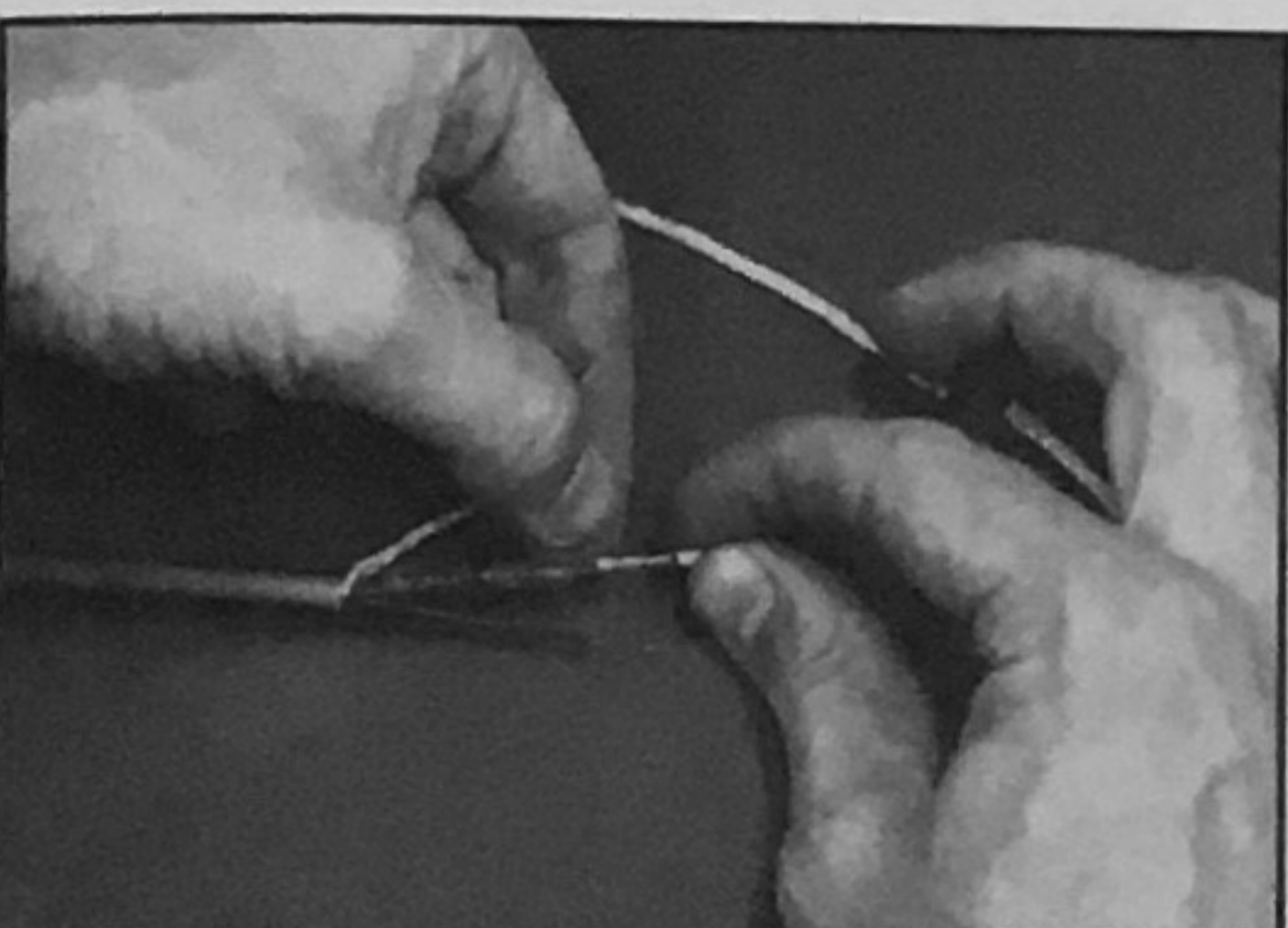
**Step 2.8.** Use a digital multimeter and a TDR to test from this location. Check for any additional cable damage by "looking" down the cable in both directions. For assistance in using these test instruments, consult the instructions that came with them or contact Watts Radiant.



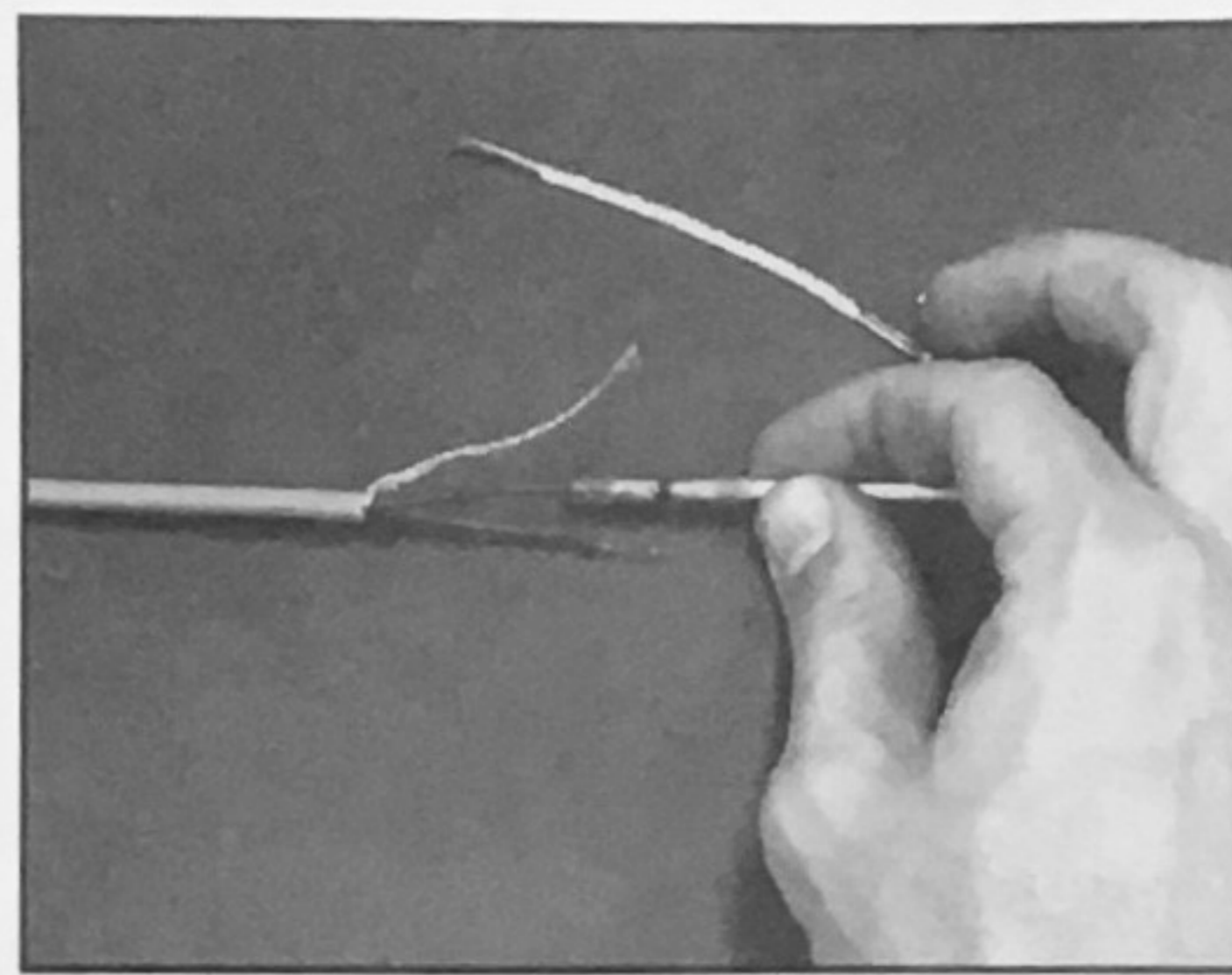
**Step 2.9.** Cut the insulated jumper wires shorter, if necessary, so that they overlap the stripped ends of the heating wires.



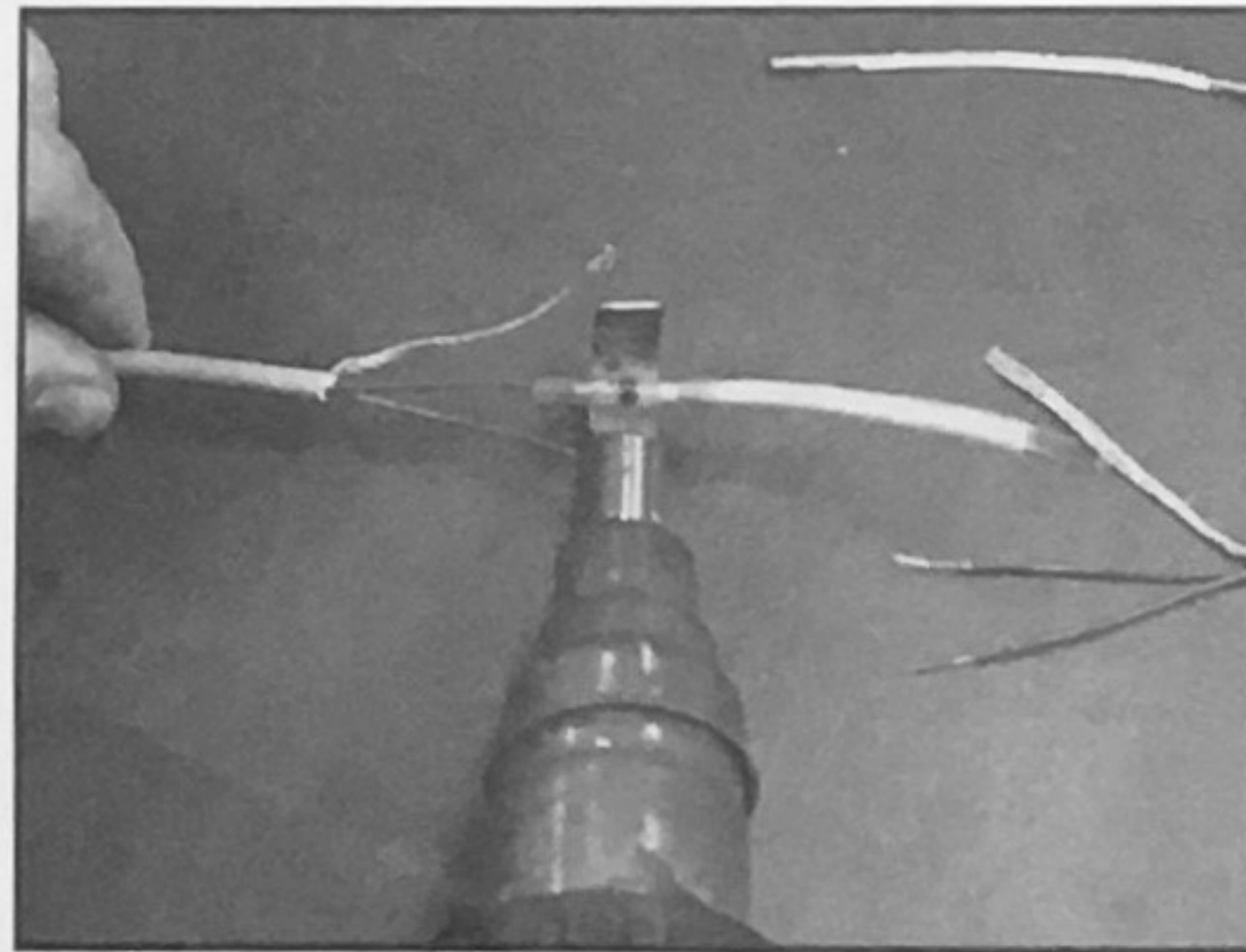
**Step 2.10.** Remove 1/2" of the insulation from both ends of the jumper wires.



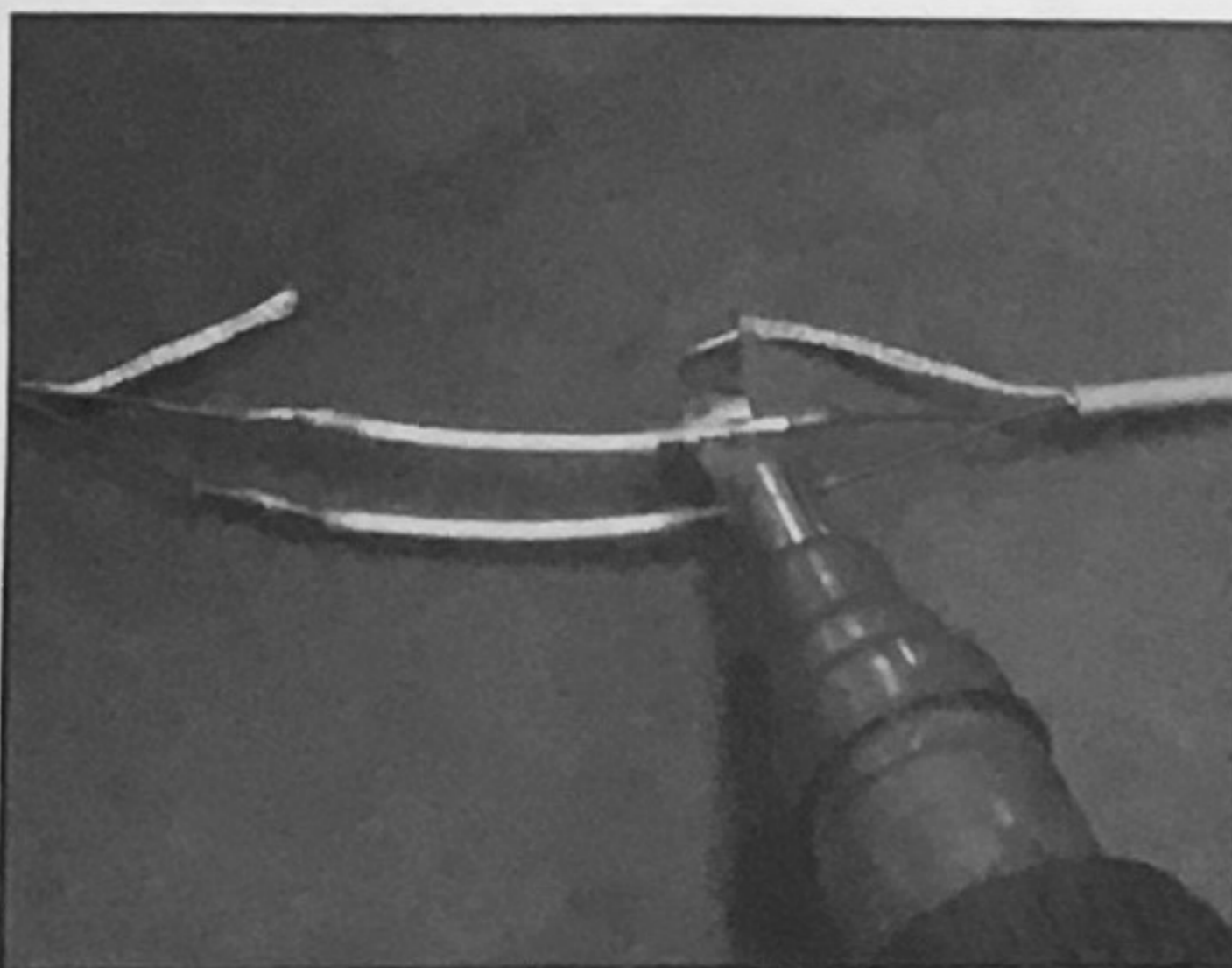
**Step 2.11.** Slide a solder tube over a heating wire. Place the heating wire and jumper alongside each other. Lightly twist their stripped ends together to help join them in a "Western Union splice" technique.



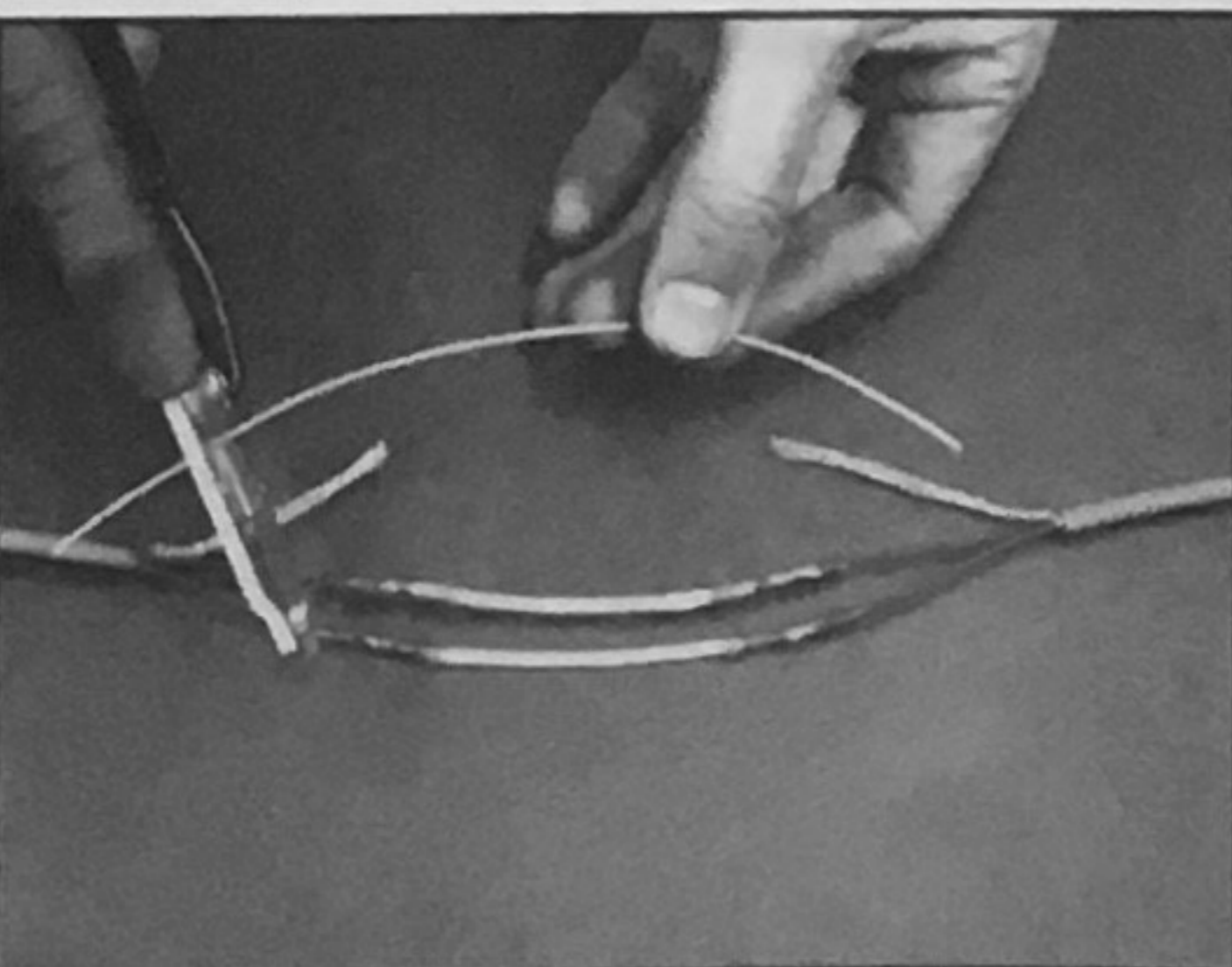
**Step 2.12.** Center the solder tube over the twisted connection. Make sure the stripped wires are fully between the **gray** adhesive bands at the ends of the solder tube. If this is not done, the wires may pull out or water may enter this connection causing failure.



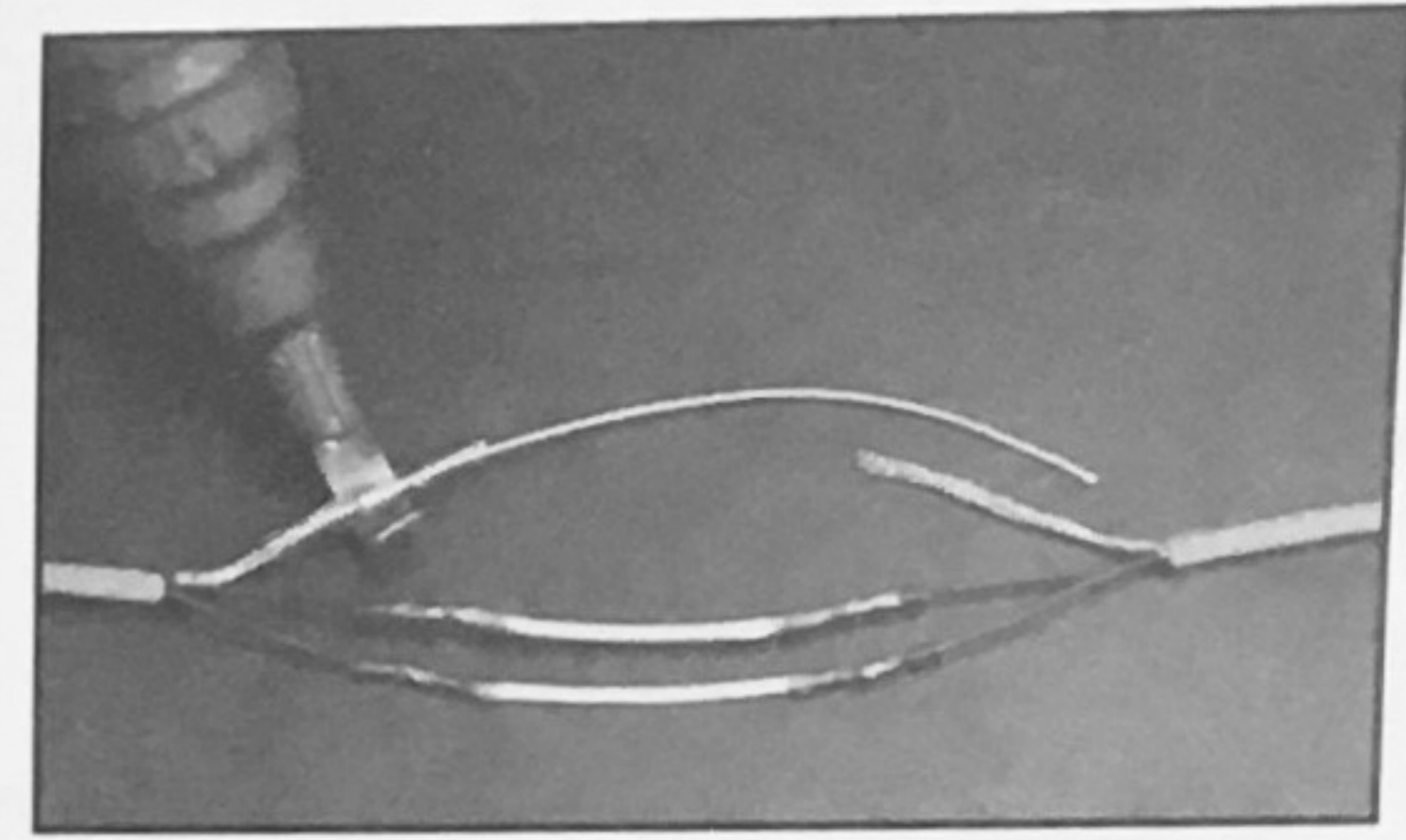
**Step 2.13.** Use a heat gun to carefully heat the solder ring (a red flux helps indicate this ring). Heat until the solder **completely** melts into the wires. If the solder is not completely melted, this connection will fail. Move the heat gun back and forth to continue heating the tube, shrinking it and melting the gray adhesive bands at the ends of the tube. Do not over heat the tube or the insulation on the wires, causing damage. Allow this solder tube to cool for about 1 minute.



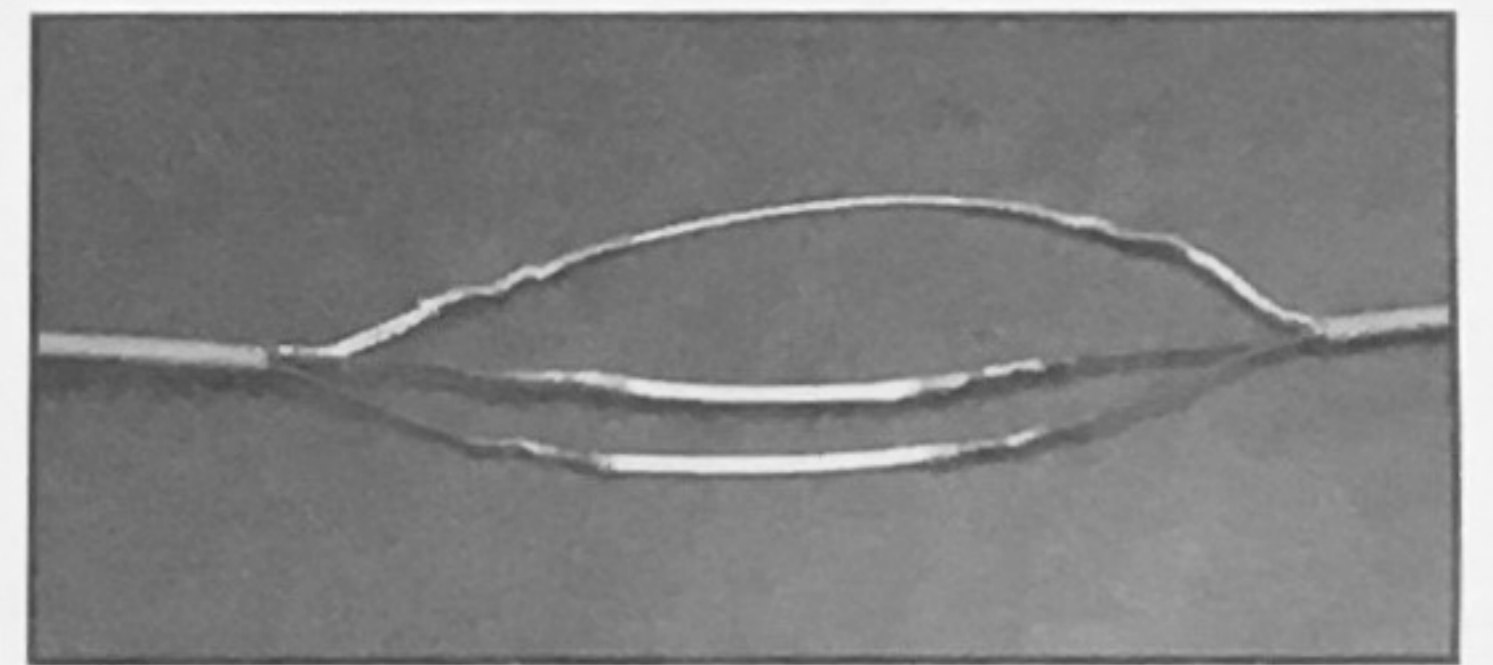
**Step 2.14.** Complete the other connections in the same way, repeating Steps 2.10 through 2.12.



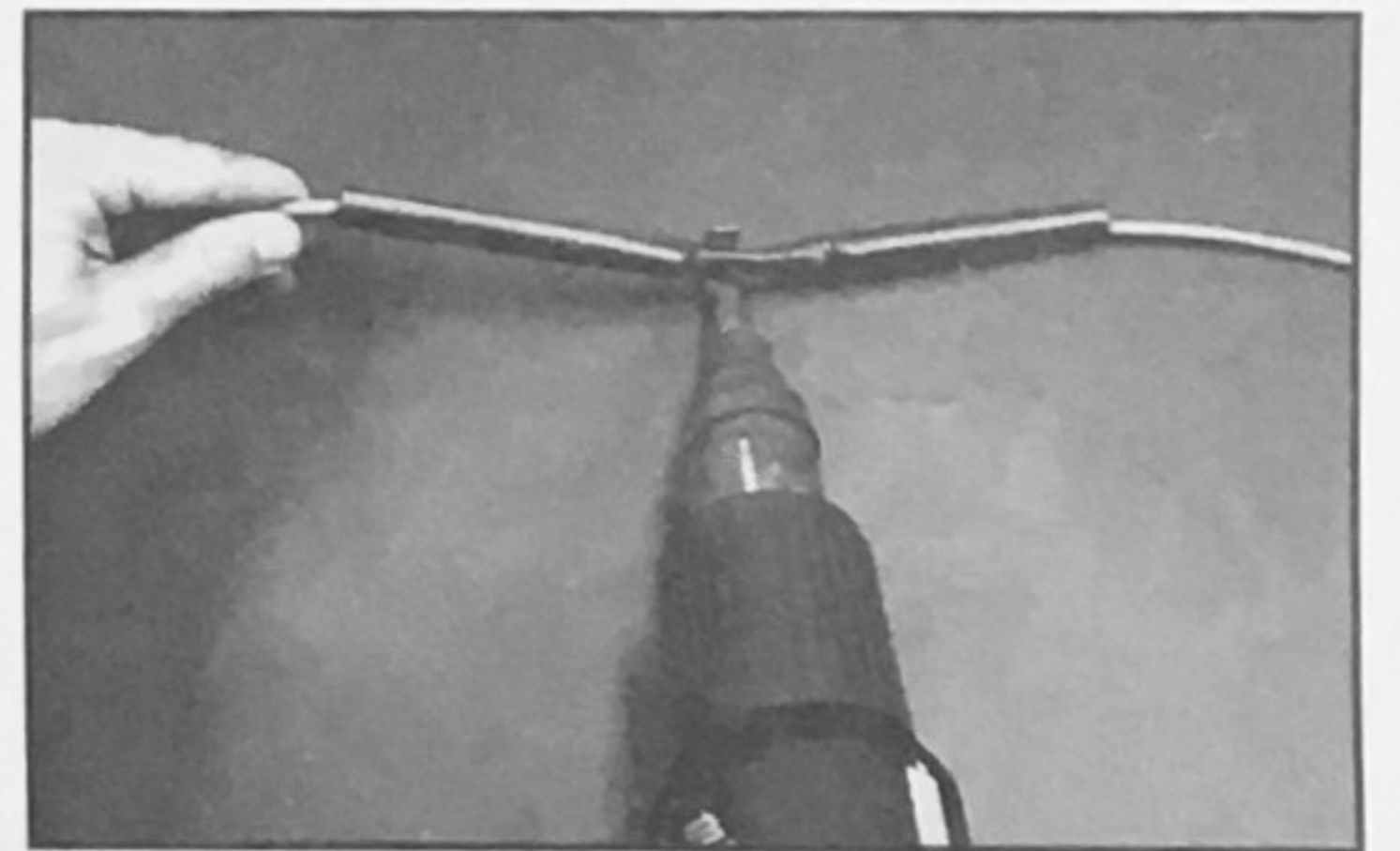
**Step 2.15.** Cut a bare jumper wire shorter, if necessary, so that it overlaps the braid shield pigtails by at least 1/2" on each end.



**Step 2.16.** Twist the jumper wire and braid shield pigtail together. Center a ground solder tube over this connection. Use a heat gun to carefully heat the solder ring. Heat until the solder **completely** melts into the wires. Move the heat gun back and forth to continue heating the tube, shrinking it.



**Step 2.17.** Complete the other end connection in the same way.



**Step 2.18.** Slide the outer shrink tube over the entire connection, centering it. Use a heat gun to shrink the tube, beginning near the middle, moving back and forth until it is fully shrunk down. Do not over heat the tube or the heating cable jacket, causing damage. Allow to cool.

### Part 3. Testing the Repair

After completing the repair:

**Step 3.1.** Gently tug on the connection to make sure it does not pull apart and the outer shrink tube is sealed onto the heating cable.

**Step 3.2.** Use a digital multimeter to verify the resistance between the power lead wires now falls within the range specified for this cable, and very high resistance ("OL" on many meters) is measured to the ground wire in the power leads.

**Step 3.3.** Use a GFCI or "Megger" to verify the cable insulation is good. If possible, properly connect the cable power leads to the power source with the rated voltage (see the nameplate label on the power leads) with a GFCI breaker, and energize the cable for a few minutes (IMPORTANT! Make sure the heating cable is fully unrolled. Coiled or crossing heating cables may quickly overheat and cause damage.)