DELUXE ELECTRONIC SOLDERING STATION KIT

MODEL SL-5K
MODEL SL-5K-40
MODEL SL-5K-SPL

Assembly and Instruction Manual

Elenco® Electronics, Inc.

 Revised 2010 REV-E 753112

SOLDERING STATION KIT MODELS

These instructions are for the following electronic soldering stations. The model number of the electronic soldering station that you have received, is marked on the end of the carton.

☐ **Model SL-5K** is supplied without an iron.

☐ **Model SL-5K-40** is supplied with a 40 watt soldering iron, grounded plug, Model SR-6.

☐ **Model SL-5K-SPL** is custom packaged with an iron of your choice of 25 to 60 watts, and other soldering aids. A separate packing slip of the additional items will be enclosed.

INTRODUCTION

The SL-5 series of soldering stations are quality products designed to give the professional, student and hobbyist greater control in quality soldering a broad range of soldering situations. The stations are available with variable wattage irons. The AC receptacle on the back of the station allows soldering irons of up to 300 watt. The AC receptacle also allows irons to be easily changed or replaced.

FEATURES

- Regulation of Temperature
- Non-Slip Base
- Iron Holder - Reversible, left or right side
- Stainless Steel Tray for Sponge Pad
- Sponge Pad
- Power On/Off with Indicator Light

SAFETY PRECAUTIONS

Like all electrical devices, the solder station must be handled with care. The soldering iron and tip can reach high temperatures and these simple safety rules should be followed.

- Keep children out of reach of the soldering station.
- To protect your eyes, use safety goggles.
- Keep flammable material away from the soldering iron.
- **DO NOT cool iron** by dipping it into any liquid or water.
- Always assume that the tip is hot to avoid burns.
- Work in an area that is well ventilated.
- Be careful that the hot soldering iron tip or the barrel of the iron does not come in contact with any electrical cord.
- **Do not hold solder in your mouth.** Wash your hands thoroughly after handling solder.
- Locate soldering iron in an area where you do not have to go around it or reach over it.

INTRODUCTION TO SOLDERING

Almost every electronic device today has a printed circuit board. Whether you are assembling a PC board or repairing it, you must understand the basics of working with these boards.

A poorly soldered joint can greatly affect small current flow in circuits and can cause equipment failure. You can damage a PC board or a component with too much heat or cause a cold solder joint with insufficient heat. Sloppy soldering can cause bridges between two adjacent foils preventing the circuit from functioning.

Good soldering requires practice and an understanding of soldering principles. This solder practice project will help you achieve good soldering techniques, help you to become familiar with a variety of electronic components, and provide you with dynamic results. If the circuit has been assembled and soldered properly, two LEDs will alternately flash.

Solder

There are two basic types of solder used in the electronics industry today. They are solder with lead and lead-free solder. They both do the same job of fusing electrical connections, but have slightly different melting characteristics.

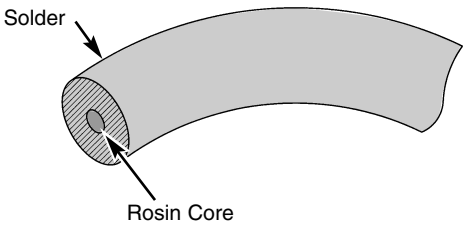


Figure 1

Lead-type solder has been the most common for years and is composed of tin and lead. The common ratios are 63/37 and 60/40. The first number is for tin and the second is lead. This solder has a melting point temperature of 360° to 370°. It is recommended that the soldering iron tip temperature be between 600°-700°F.

Lead-free solder is the solder of the future and is recommended for all future uses in soldering applications. The two common lead-free solders are LF96 and LF99. LF99 indicates the presence of 99% tin. The melting point of lead-free is 422°-440°F. It is recommended that the soldering iron tip temperature be between 700°-800°F.

Flux

Most solder contains flux in the hollow core of the solder allowing it to be applied automatically when you heat the solder. The flux will remove any oxide film on the metals soldered creating a good metal-to-metal contact. This is called “wetting the metal”. There are three types of solder fluxes: chloride, organic and rosin. In the electronics industry, only the rosin type is used. Rosin flux comes in two types, pure and active. The most reliable is the pure type, since it doesn’t cause dendrites between tracks on the PC board as the active type does. Due to the highly corrosive and moisture attracting characteristics of the chloride and organic type fluxes, they should not be used in electronics.

Surface Preparation

In order for the solder to adhere to the connection, the metals must be clean and free of nonmetallic materials. Flux in the solder can remove oxides from metal but not other materials like dirt or grease. To remove these, use a small steel brush or fine emery cloth.

Mechanical Connection

When all the surfaces are clean, the metals should have a solid mechanical connection. Wires should be tightly wrapped around each other or to the terminal. This will eliminate large gaps that create weak solder joints. Solder should not be used as a mechanical connection.

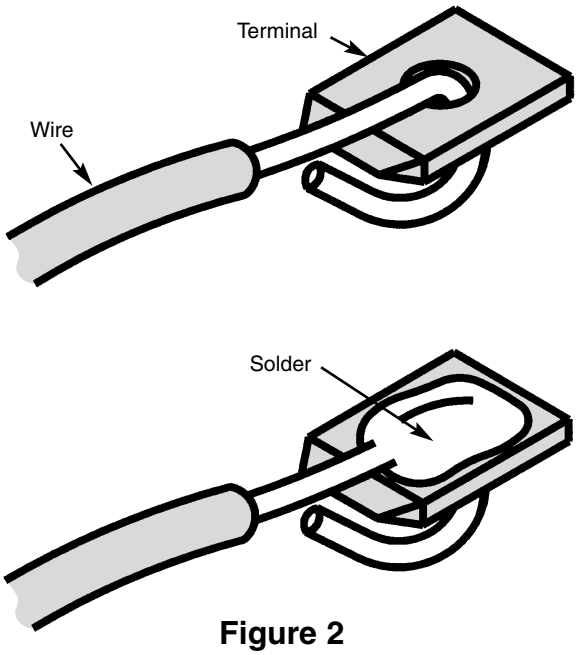


Figure 2

Types of Soldering Devices

A number of different types of soldering devices: irons, guns and stations are available today. Irons are used for light to medium work and guns are for medium to heavy-duty work. The station type can range from light to heavy-duty For working on PC boards, irons ranging from 15 to 40 watts are suitable, or a station with a range of 15 to 40 watts. If you use an iron with a higher wattage rating than 40 watt, you may damage the copper tracks on the PC board. The higher wattage irons are best suited for heavy-duty electrical jobs.

Soldering Iron Soldering Gun Soldering Station

Solder Tips

The tip is the very important part of the iron. The material that the tip is made from is an essential factor. The soldering iron tip contains four different metals as shown in Figure 3. The core consists of copper. Since the copper is a soft material, it is plated with iron. Chrome plating is used on the area where no soldering takes place to prevent oxidation. Then the tip is plated with tin, because it can be easily cleaned.

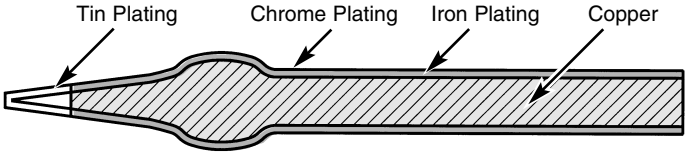
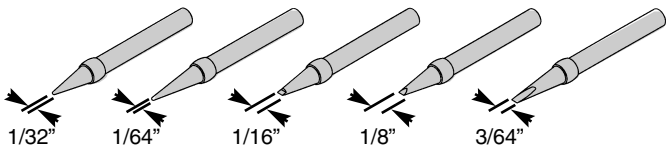


Figure 3

Today, tips are manufactured in a variety of different shapes (see figure below). The chisel shape is one of the most common. Having a choice of tip styles allows you to choose the one best suited for your soldering needs. Due to the high heat, removable tips can bond themselves to the heating element if left in place for extended periods of time. Periodic removal of the tip is therefore advisable.



Tip Cleaning

A good clean solder tip makes soldering much easier. The tip should be tinned by lightly coating it with solder to prevent it from oxidizing. The tip can become pitted (black spots) from normal use. It is important to clean the tip by wiping it with a wet sponge or rag. For tips that need a good cleaning, the tip tinner and cleaner (#TTC1) should be used. **Never use a file or abrasive material to clean the tip.** Using such methods will damage the plating and ruin the tip. Do not remove the excess solder from the tip before storing. The excess solder will prevent oxidation.

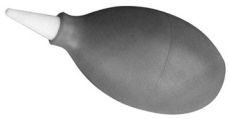
Clean Connections

Proper solder adhesion requires that the metal surface to be free of dirt and grease. The flux only removes the oxides so a brush or rag can be used to clean metal. There are contact cleaners in aerosol cans and other solvents available.

Desoldering

Great care should be taken when repairing or correcting a mistake on a PC board. The metal foil can be easily pulled up or broken from excessive heat. Use the least amount of heat as possible. You can use a desoldering tool, bulb, wick or a station. These tools will remove the solder enabling you to correct the problem.

Desoldering Pump



Bulb

Solder Wick

Desoldering Station

SOLDERING

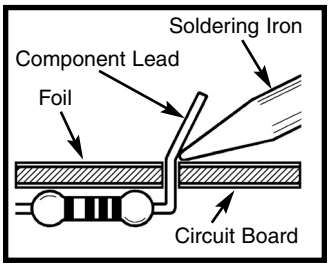
A poorly soldered joint can greatly affect small current flow in circuits and can cause equipment failure. You can damage a PC board or a component with too much heat or cause a cold solder joint with insufficient heat. Sloppy soldering can cause bridges between two adjacent foils preventing the circuit from functioning.

What Good Soldering Looks Like

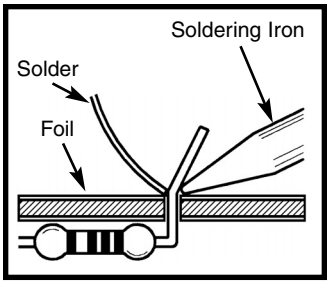
A good solder connection should be bright, shiny, smooth, and uniformly flowed over all surfaces.

Soldering a PC board

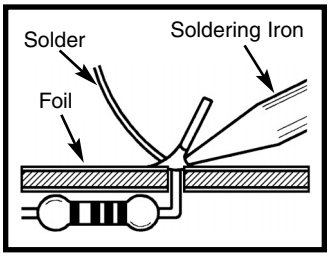
1. Solder all components from the copper foil side only. Push the soldering iron tip against both the lead and the circuit board foil.



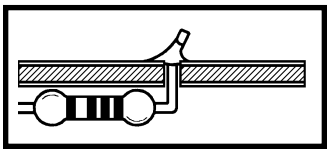
2. Apply a small amount of solder to the iron tip. This allows the heat to leave the iron and onto the foil. Immediately apply solder to the opposite side of the connection, away from the iron. Allow the heated component and the circuit foil to melt the solder.



3. Allow the solder to flow around the connection. Then, remove the solder and the iron and let the connection cool. The solder should have flowed smoothly and not lump around the wire lead.

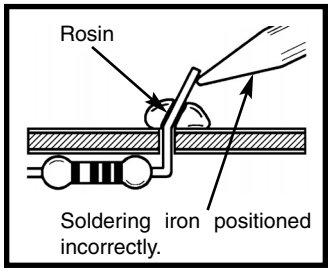


4. Here is what a good solder connection looks like.

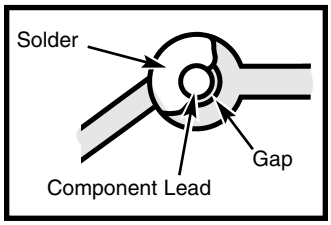


Types of Poor Soldering Connections

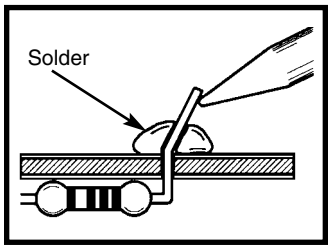
1. **Insufficient heat** - the solder will not flow onto the lead as shown.



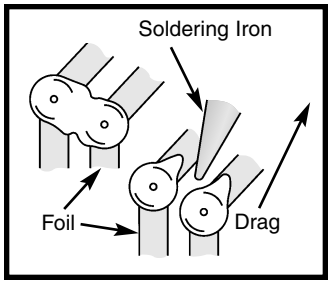
2. **Insufficient solder** - let the solder flow over the connection until it is covered. Use just enough solder to cover the connection.



3. **Excessive solder** - could make connections that you did not intend to between adjacent foil areas or terminals.



4. **Solder bridges** - occur when solder runs between circuit paths and creates a short circuit. This is usually caused by using too much solder. To correct this, simply drag your soldering iron across the solder bridge as shown.



Heat Sinking

Electronic components such as transistors, IC's, and diodes can be damaged by the heat during soldering. Heat sinking is a way of reducing the heat on the components while soldering. Dissipating the heat can be achieved by using long nose pliers, an alligator clip, or a special heat dissipating clip. The heat sink should be held on the component lead between the part and the solder joint.

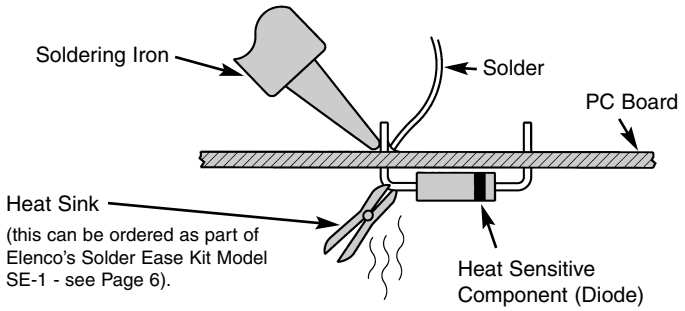


Figure 6

Soldering Surface Mount Components

1. Using tweezers, place the surface mount component on the PC board pads and secure in place with tape (see Figure 7A).

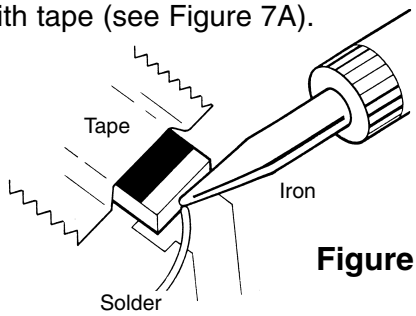


Figure 7A

2. Apply a small amount of solder to the soldering iron tip. This allows the heat to leave the iron and flow onto the foil.
3. Place the iron in contact with the PC board foil. Apply a small amount of solder simultaneously to the foil and the component and allow them to melt the solder.
4. Remove the iron and allow the solder to cool. The solder should have flowed freely and not lump up around the component.
5. Remove the tape and solder the other side of the component.

When soldering the transistors, diodes and integrated circuits, the following procedure may be used:

1. Place the component on the PC board pads and secure in place with tape.
2. Apply a small amount of solder to the soldering iron tip.
3. Place the soldering iron tip on top of the component lead to be soldered and apply solder simultaneously to the lead and the PC board foil.
4. Remove the iron and allow the solder to cool. The solder should have flowed freely and not lump up around the component.

After a component is completely soldered, each solder joint should be inspected with a magnifying glass. If the solder has not flowed smoothly, a bad solder joint is indicated. This occurs when the component and pad have not been heated sufficiently. To correct, reheat the connection and if necessary add a small amount of additional solder.

Another way to solder surface mount components is as follows:

1. Apply a small amount of solder to the soldering iron tip as shown in Figure 7B.
2. Using tweezers, hold the component on the PC board pads.
3. Apply the soldering iron simultaneously to the component and pad and allow the solder to flow around the component.
4. Remove the soldering iron and allow the connection to cool.

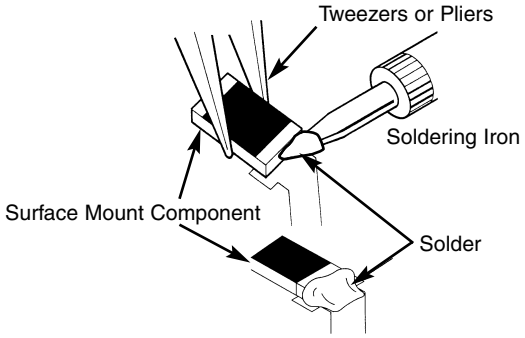


Figure 7B

CIRCUIT OPERATION

THYRISTOR

A thyristor is a controlled silicon diode which is not conductive in the reversed direction. It will only conduct in the forward direction when they are triggered by short pulse or steady voltage applied between the gate and cathode terminals (see Figure 8).

A thyristor family of semiconductors consists of several useful devices. The most commonly used are silicon-controlled rectifiers (SCR), triacs, and diacs. They can be thought of as a solid-state switch with three or more PN junctions.

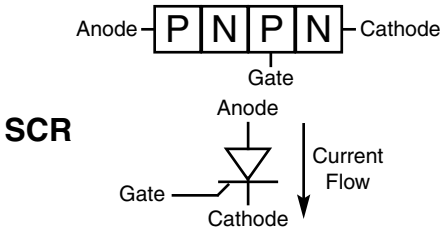


Figure 8

TRIAC

The block construction of a triac is shown in Figure 9. The triac is like two SCRs connected in parallel in the opposite direction. The construction of the triac allows it to conduct in either polarity. The triac has only one gate that can be triggered by either polarity. The main function is to control power bilaterally in an AC circuit.

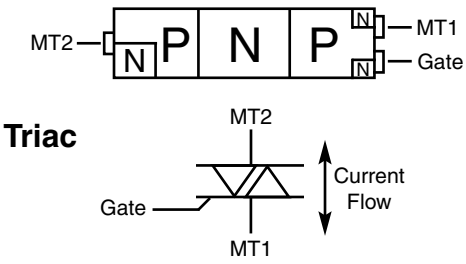


Figure 9

DIAC

The block construction of a diac or bi-directional diode is shown in Figure 10. The diac will not conduct in either direction until its "breakover voltage" (V_{BO}) is exceeded. Breakover points range from 20-36 volt. When this accrues, the device will conduct until the voltage across its terminals is below the "breakback voltage" (V_{BB}) typical 6V.

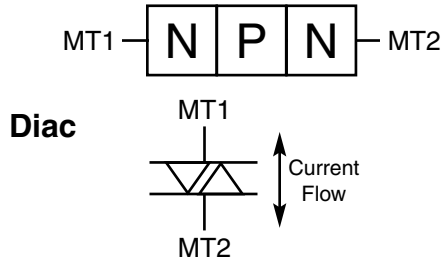


Figure 10

CIRCUIT OPERATION

The circuit in Figure 11 is a basic full-wave triac phase control circuit. The variable resistor VR1 and capacitor C1 are a single-element phase shift network. When the voltage across C1 reaches break-over voltage of the diac D3, C1 is then partially discharged by the diac into the triac gate. The triac is then triggered (turned on) and conducts for the remainder of the half-cycle. The problem with this circuit is hysteresis, or snap back effect. The circuit will not operate until the resistor VR1 is turned up to an intermediate point. As the resistance of VR1 is decreased, the voltage across the capacitor C1 increases until the diac first fires at point A, the end of the half cycle. After the gate is triggered the capacitor voltage drops suddenly to approximately half the trigger voltage, causing a different initial condition. The capacitor charges to the diac trigger voltage at point B in the next half cycle.

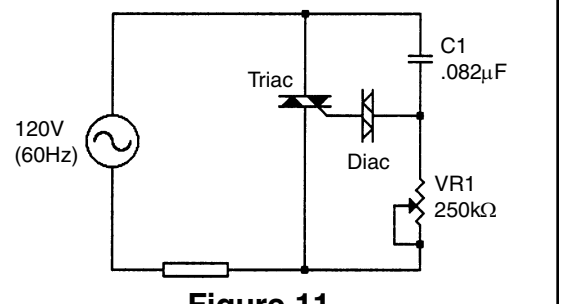
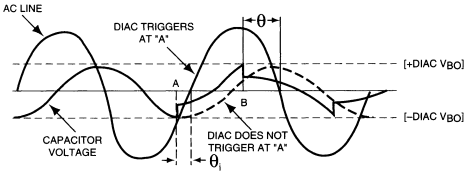


Figure 11



The addition of resistor R1 and diodes D1 and D2 in Figure 12 will eliminate the hysteresis problem. The additional parts reset the timing capacitor to the same level after each positive half cycle. This provides a uniform initial condition for the timing capacitor.

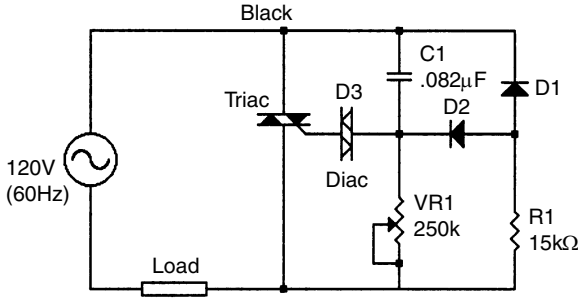


Figure 12

PARTS LIST

If you are a student, and any parts are missing or damaged, please see instructor or bookstore.
If you purchased this kit from a distributor, catalog, etc., please contact Elenco® Electronics (address/phone/e-mail is at the back of this manual) for additional assistance, if needed. **DO NOT** contact your place of purchase as they will not be able to help you.

RESISTORS

Qty.	Symbol	Description	Part #
☐ 1	R1	Resistor 15kΩ 5% 1/4W (brown-green-orange-gold)	151500
☐ 1	VR1	Potentiometer 250kΩ PC Mount	192639

CAPACITORS

Qty.	Symbol	Description	Part #
☐ 1	C1	.082μF 200V Mylar	248219

SEMICONDUCTORS

Qty.	Symbol	Description	Part #
☐ 2	D1, D2	1N4004	314004
☐ 1	TR1	Triac BTA12400B / BTA08400B	364012
☐ 1	D3	Diac DB3	365761

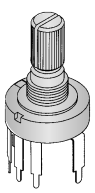
MISCELLANEOUS

Qty.	Description	Part #	Qty.	Description	Part #
☐ 1	PC Board	517003	☐ 1	Iron Holder Cap	680034
☐ 1	Switch Rocker Illuminated	541204	☐ 1	Iron Holder Clip	680035
☐ 1	Tray	610801	☐ 1	Iron Holder Screw	680036
☐ 1	Base	612205	☐ 1	Label Front	723020A
☐ 1	Sponge	620003	☐ 1	Label Bottom	723121A
☐ 1	Knob Push-on	622002	☐ 1	Label Back	723022
☐ 1	Body Plastic	623033	☐ 1	Wire 20AWG Black Topcoat 4”	813111
☐ 1	AC Receptacle	627004	☐ 1	Wire 20AWG Red Topcoat 4”	813120
☐ 1	Cable Tie	628982	☐ 1	Wire 20AWG White Topcoat 4”	813190
☐ 4	Screw M15 X 4 Phillips	642109	☐ 1	Line Cord Round 3 Wire	862107
☐ 1	Nut Pot	644010	☐ 2”	1/4” Shrink Tubing	890701
☐ 1	Washer Pot	645015	☐ 1½”	3/4” Shrink Tubing	899110
☐ 4	Rubber Feet Small	662020	☐ 1	Solder Tube Lead-Free	9LF99
☐ 1	Iron Holder Body	680033			

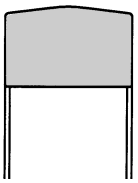
PARTS IDENTIFICATION

Resistors


Resistor

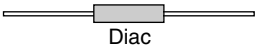

Potentiometer
PC Mount

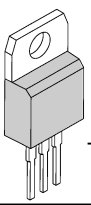
Capacitor


Mylar

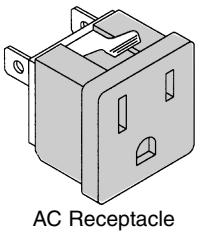
Semiconductors

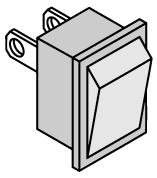

Diode

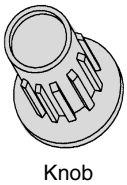

Diac


Triac

Miscellaneous


AC Receptacle


Rocker Switch


Knob

IDENTIFYING RESISTOR VALUES

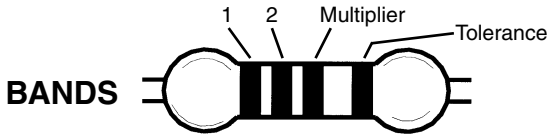
Use the following information as a guide in properly identifying the value of resistors.

BAND 1 1st Digit	
Color	Digit
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Gray	8
White	9

BAND 2 2nd Digit	
Color	Digit
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Gray	8
White	9

Multiplier	
Color	Multiplier
Black	1
Brown	10
Red	100
Orange	1,000
Yellow	10,000
Green	100,000
Blue	1,000,000
Silver	0.01
Gold	0.1

Resistance Tolerance	
Color	Tolerance
Silver	±10%
Gold	±5%
Brown	±1%
Red	±2%
Orange	±3%
Green	±.5%
Blue	±.25%
Violet	±.1%

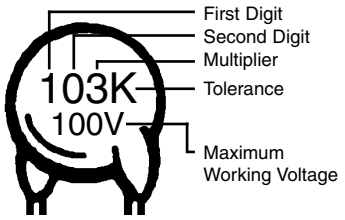


IDENTIFYING CAPACITOR VALUES

Capacitors will be identified by their capacitance value in pF (picofarads), nF (nanofarads), or μF (microfarads). Most capacitors will have their actual value printed on them. Some capacitors may have their value printed in the following manner.

The letter M indicates a tolerance of ±20%
The letter K indicates a tolerance of ±10%
The letter J indicates a tolerance of ±5%

Note: *The letter "R" may be used at times to signify a decimal point; as in 3R3 = 3.3*



The value is 10 x 1,000 = 10,000pF or .01μF 100V

Multiplier	For the No.	0	1	2	3	4	5	8	9
	Multiply By	1	10	100	1k	10k	100k	.01	0.1

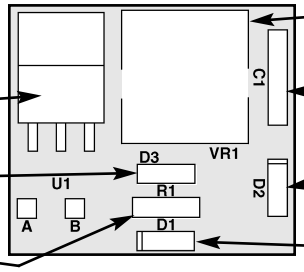
ASSEMBLE COMPONENTS TO THE PC BOARD

Care must be given to identifying the proper components and in good soldering habits. Place a check mark in the box after each step is complete.

☐ TR1 - Triac BTA12400B (see Figure A)

☐ D3 - Diac DB3

☐ R1 - 15kΩ 5% 1/4W Resistor (brown-green-orange-gold)



☐ VR1 - 250kΩ Potentiometer (see Figure B)

☐ C1 - .082μF 200V Capacitor

☐ D2 - 1N4004 Diode (see Figure C)

☐ D1 - 1N4004 Diode (see Figure C)

Figure A

Mount the triac as shown. Bend the triac 90°. Solder and cut off excess leads.

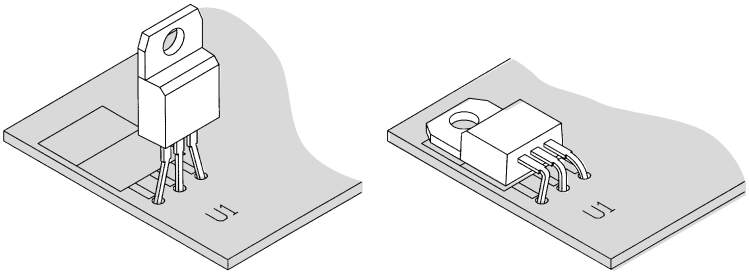


Figure B

Mount the potentiometer as shown. Solder and cut off excess leads.

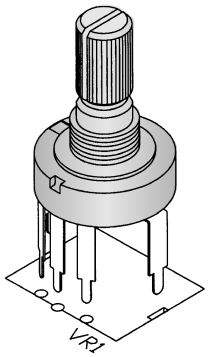
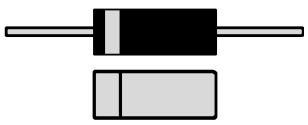


Figure C

Diodes have polarity. Mount them with the band in the correct direction, as marked on the PC board.



SWITCH ASSEMBLY

- ☐ Apply the front label to the case as shown in Figure F.
- ☐ Solder a 4" white wire to lug #3 as shown in Figure G.
- ☐ Solder a 4" black wire to lug #1 as shown in Figure G.
- ☐ Insert the switch into the opening on the front as shown in Figure H.
- ☐ Strip the insulation off the black and white line cord wires to expose 1/2" of bare wire if needed.
- ☐ Slip the 3/4" dia. shrink tubing over the line cord as shown in Figure I.
- ☐ Solder the black line cord wire to the #2 lug as shown in Figure I. Make sure the tubing is away from the soldering iron, so it will not shrink.
- ☐ Slip the shrink tubing over the wires and switch as shown in Figure J.
- ☐ Use a heat gun or hair dryer and shrink all of the tubing into place.

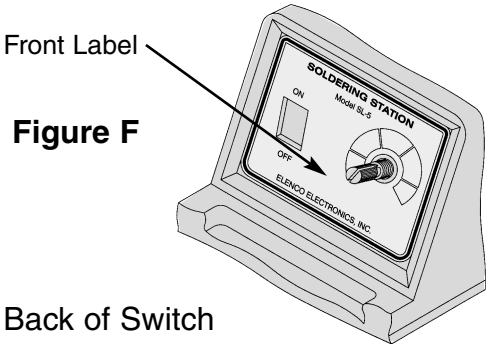


Figure F

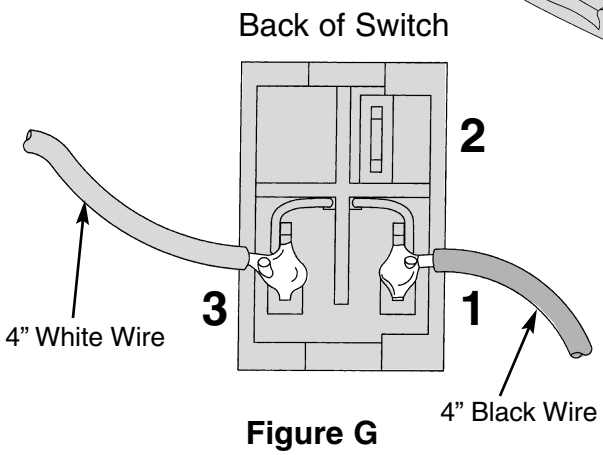


Figure G

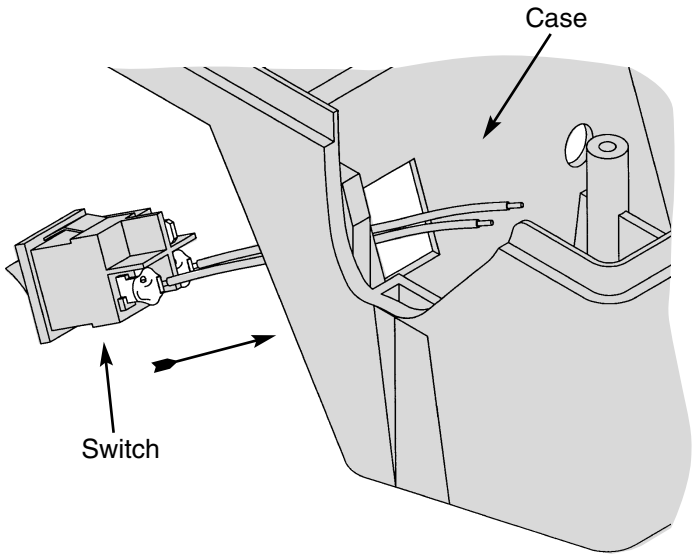


Figure H

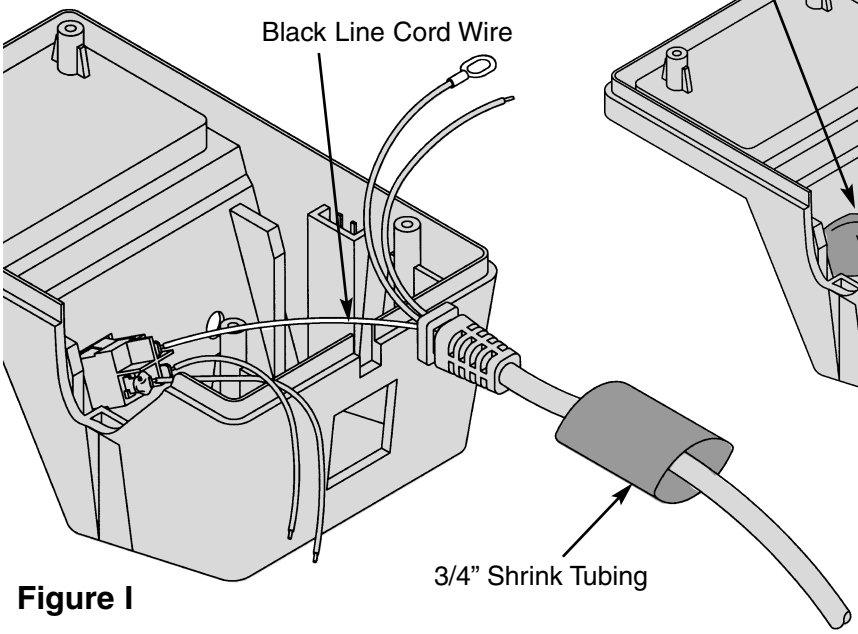


Figure I

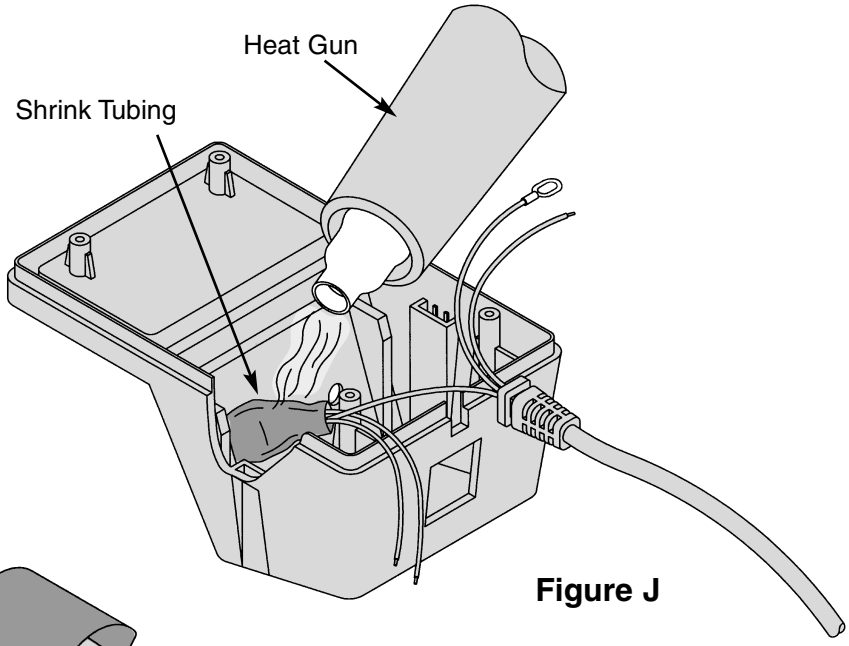


Figure J

AC RECEPTACLE ASSEMBLY

- ☐ Cut the 2”, 1/4" dia. shrink tubing into two 1” pieces.
- ☐ Determine which type of AC receptacle you received in your kit (type A or B). Solder a 4” red wire to lug #2 as shown in Figure K.
- ☐ Snap the AC receptacle into the opening on the back as shown in Figure L.
- ☐ Insert the line cord strain relief into the case as shown in Figure L.
- ☐ Slide one piece of the 1/4” dia. tubing over the white line cord wire and attach the wire to lug #1 as shown in Figure M. **Do not solder it yet.**
- ☐ Insert a 4” white wire from the switch through the tubing with the white wire and attach it to lug #1 (see Figure M).
- ☐ Solder both white wires to lug #1. Now slide the shrink tubing over the connection and shrink it into place (see Figure M).
- ☐ Slide the other 1/4” tubing over the red wire soldered on the AC receptacle. Shrink the tubing over the connection (see Figure M).

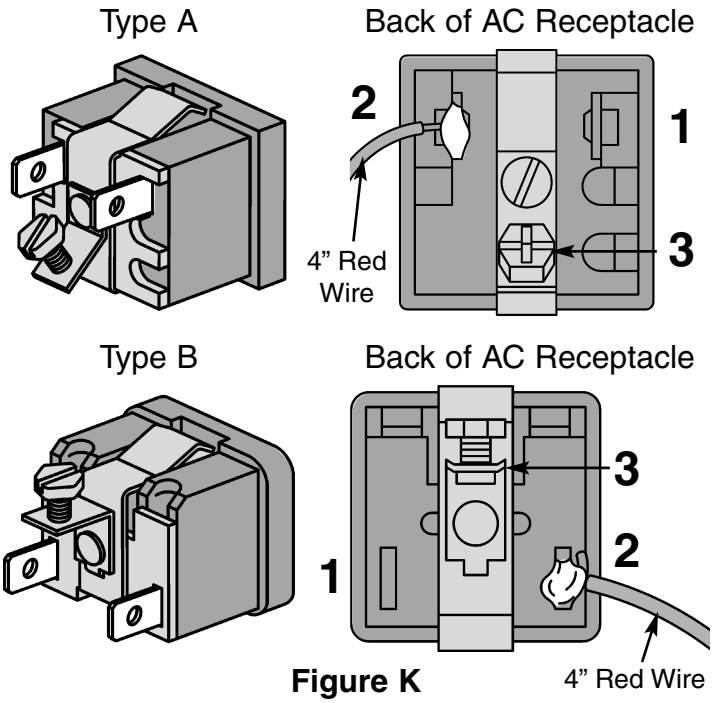


Figure K

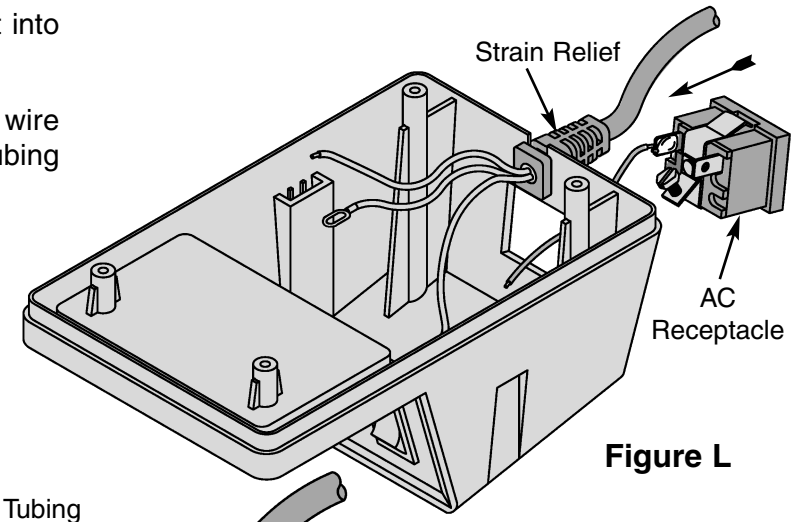


Figure L

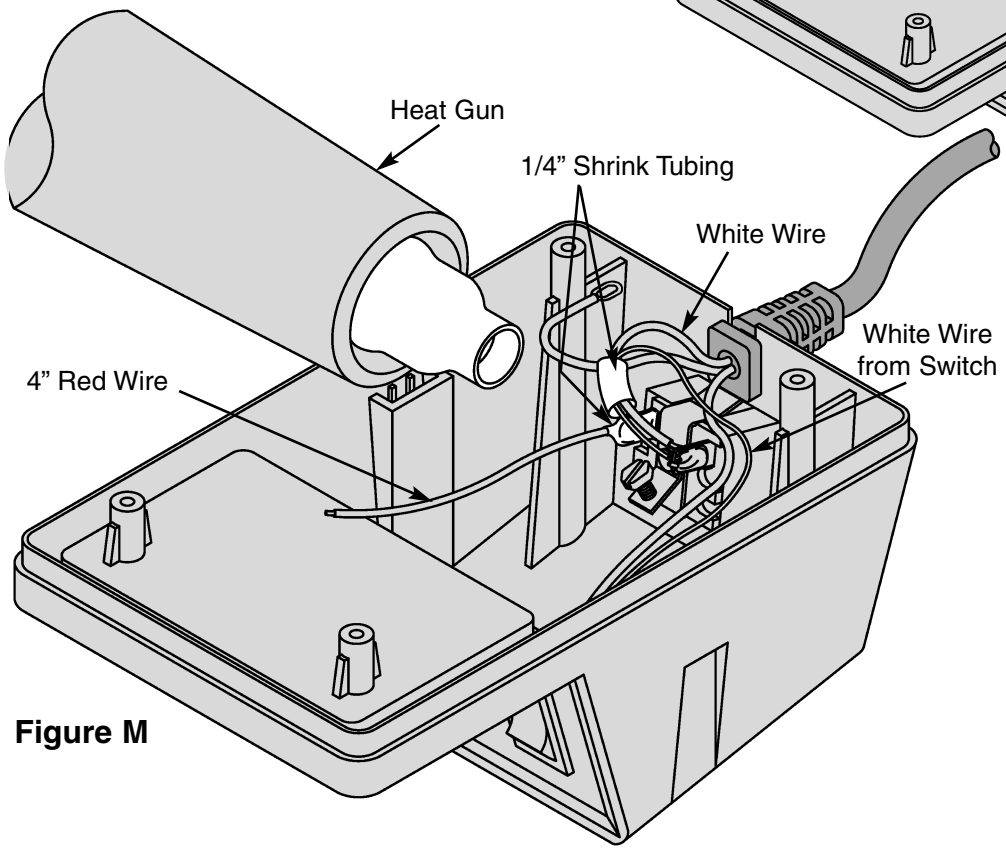


Figure M

SOLDERING WIRES TO THE PC BOARD (see Figure N)

☐ Solder the black wire from the switch to point A on the PC Board.

☐ Solder the red wire from the AC receptacle to point B on the PC Board.

☐ Remove the ground screw on the AC receptacle. Place the lug on the green wire from the line cord under the screw and tighten it.

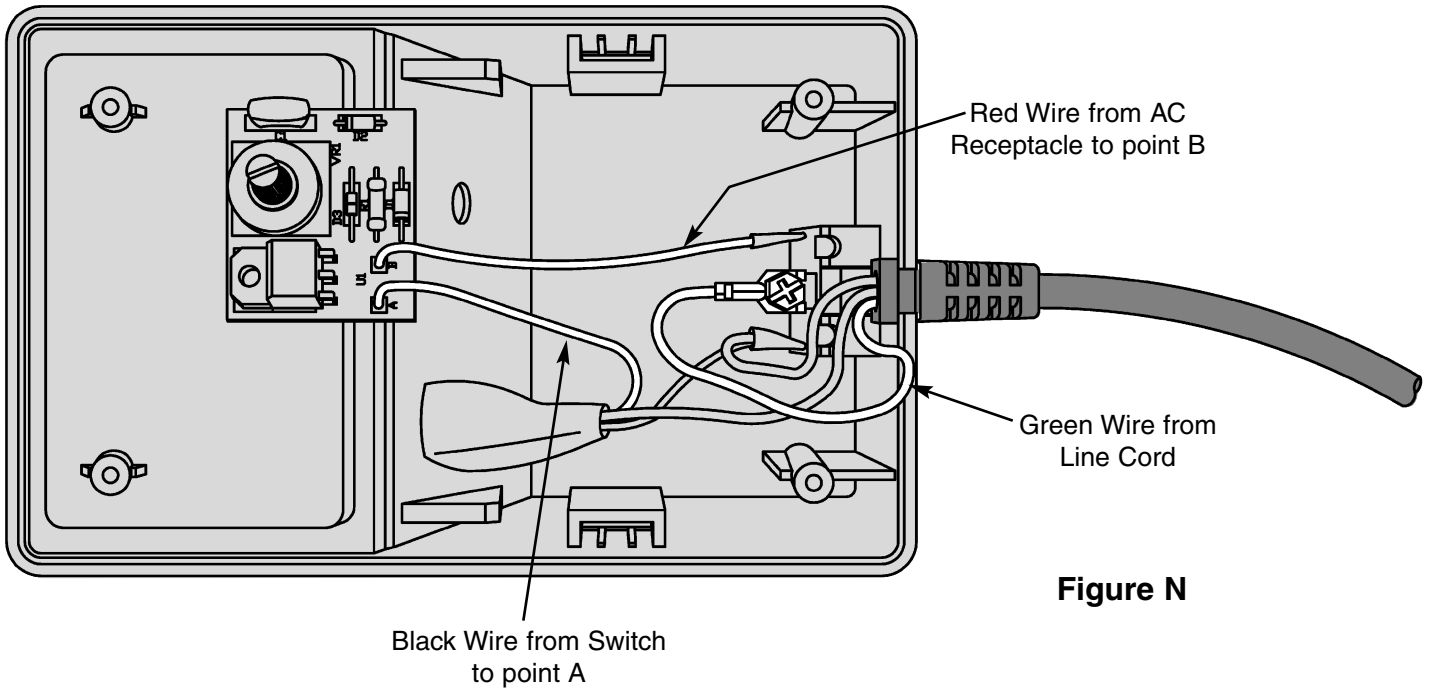


Figure N

TESTING (see Figure O)

If you do not have a multimeter continue to page 12.

Check wiring if your readings are different.

☐ Set the power switch to the off position. Use a multimeter and measure the resistance as listed:

1. Pin 1 to pin 2 Infinite
2. Pin 1 to pin 3 Infinite
3. Pin 2 to pin 3 Infinite

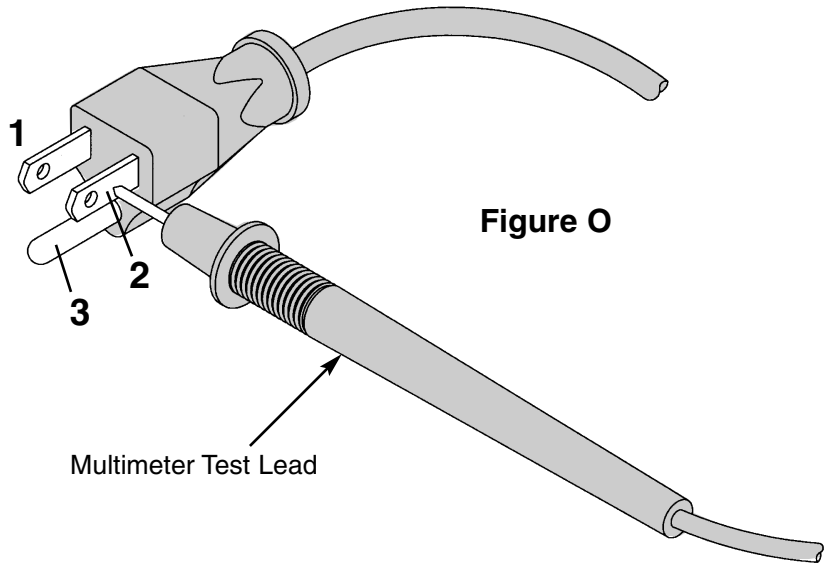


Figure O

Check your wiring if your readings are different.

☐ Measure the resistance from pin #1 of the plug to pin 1 of SCR on the PC board as shown in Figure P.

Switch set to OFF	Infinite
Switch set to ON	less than 1Ω

☐ Measure the resistance from pin 2 of SCR on the PC Board to pin #2 (Hot Side) of the AC receptacle as shown in Figure Q. It should be less than 1Ω.

☐ Measure the resistance from pin #2 of the plug to pin #1 (Neutral side) of the AC receptacle as shown in Figure R. It should be less than 1Ω.

☐ Measure the resistance from pin #3 of the plug to pin #3 (GND) of the AC receptacle as shown in Figure S. It should be less than 1Ω.

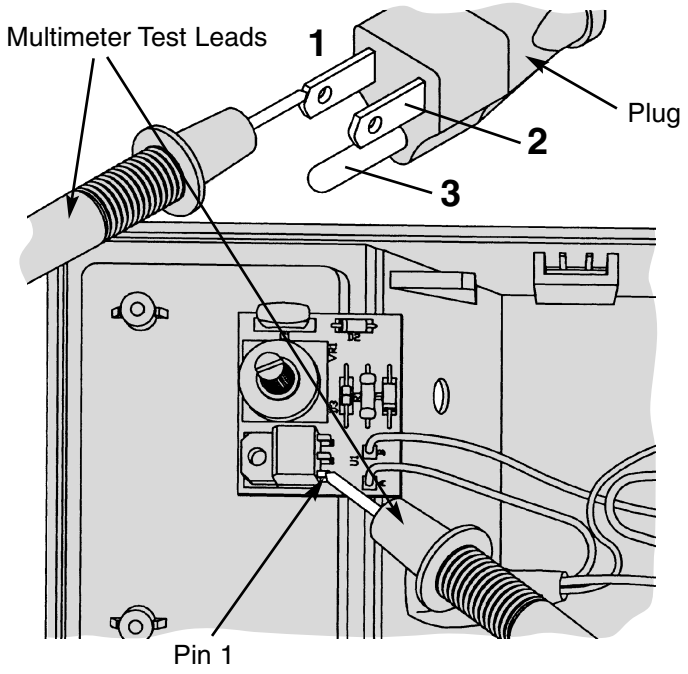


Figure P

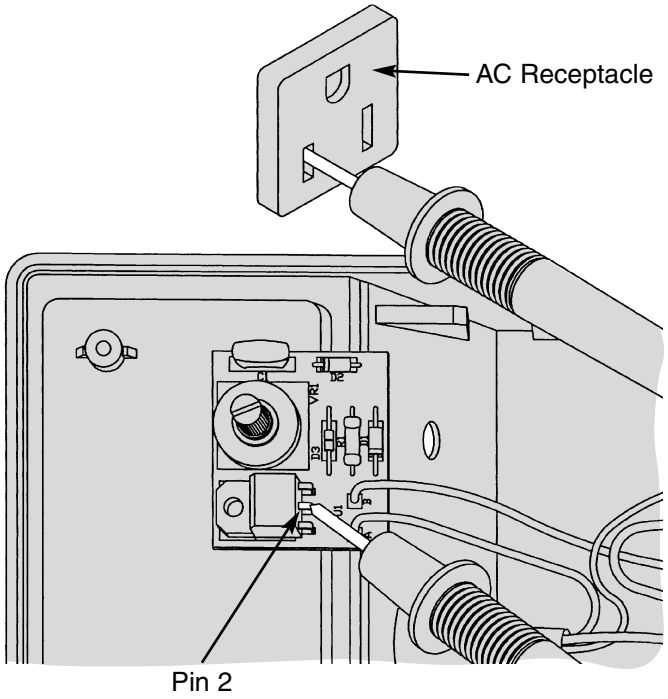


Figure Q

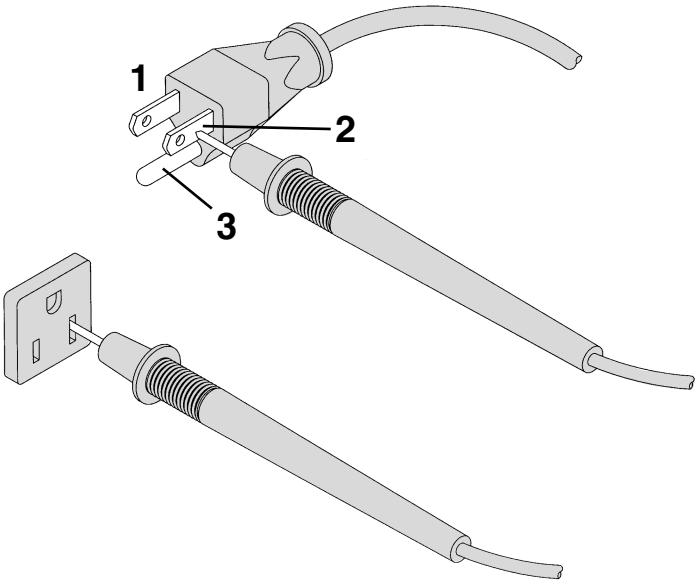


Figure R

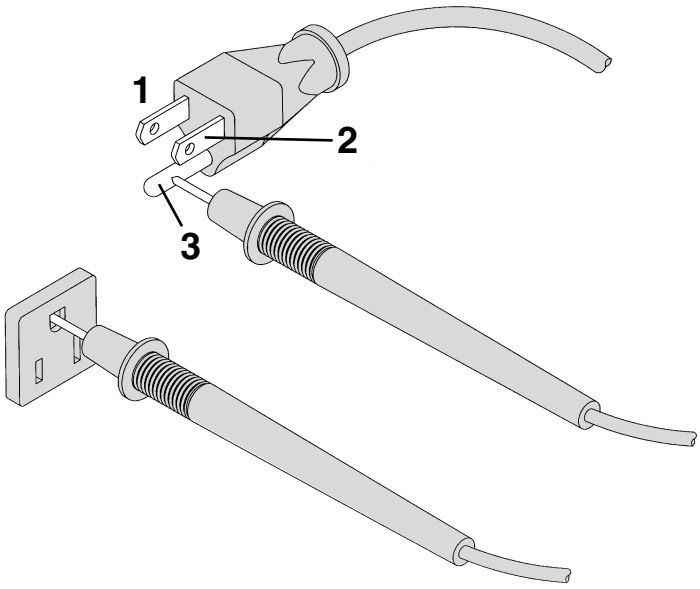


Figure S

MOUNTING PC BOARD TO CASE

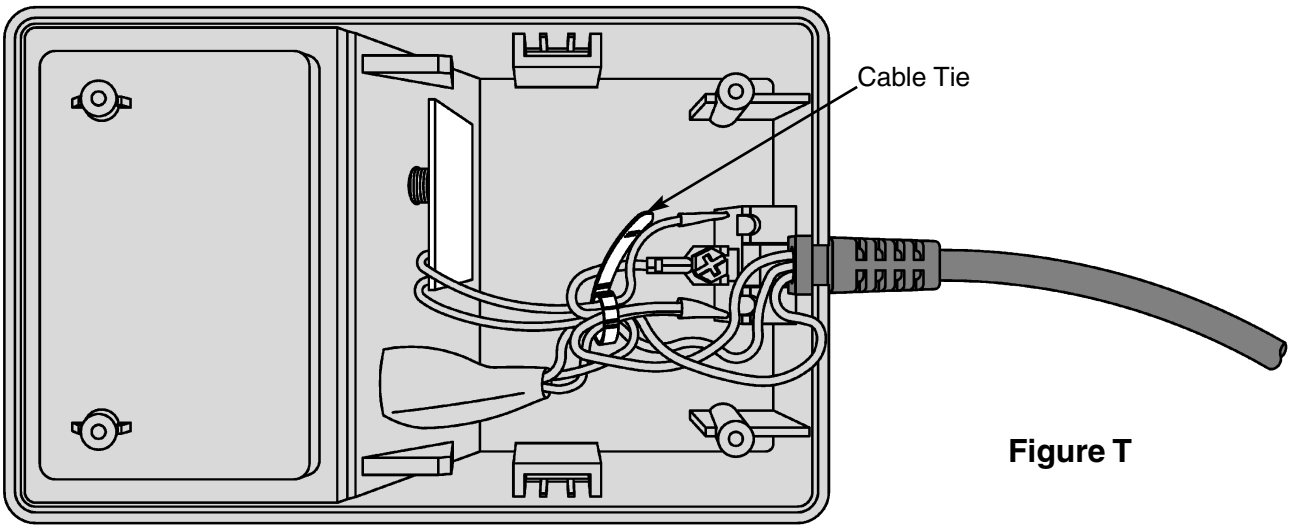


Figure T

☐ Insert the PC board into the case and then secure the PC board to the case with a washer and nut (see Figure U).

☐ Use the cable tie to secure the wires as shown in Figure T.

☐ Turn the pot fully counter-clockwise and push on the knob in the position shown in Figure V.

☐ Install the tray by pushing down on it until it is flush with the case (see Figure U).

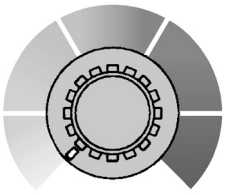


Figure V

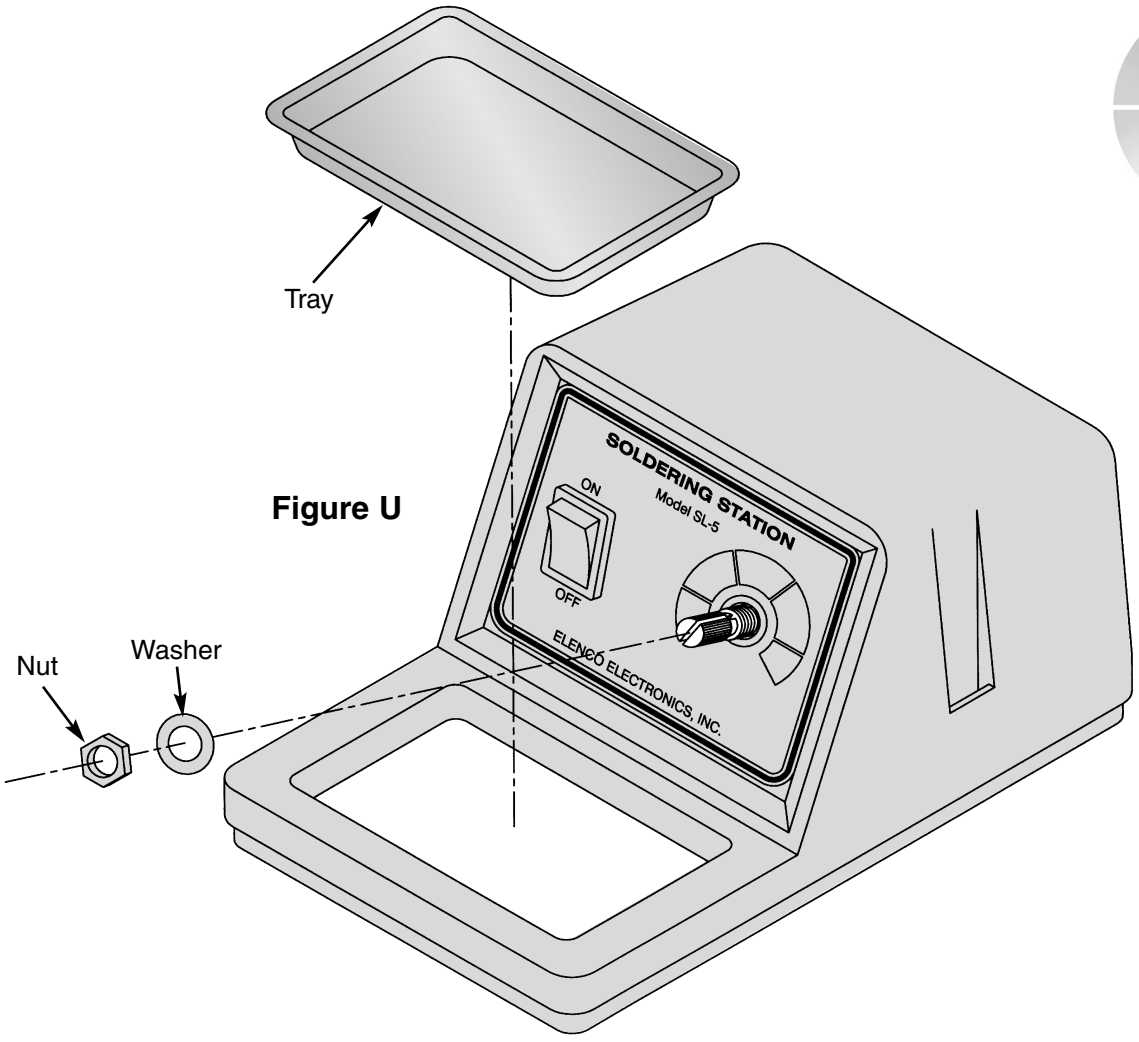


Figure U

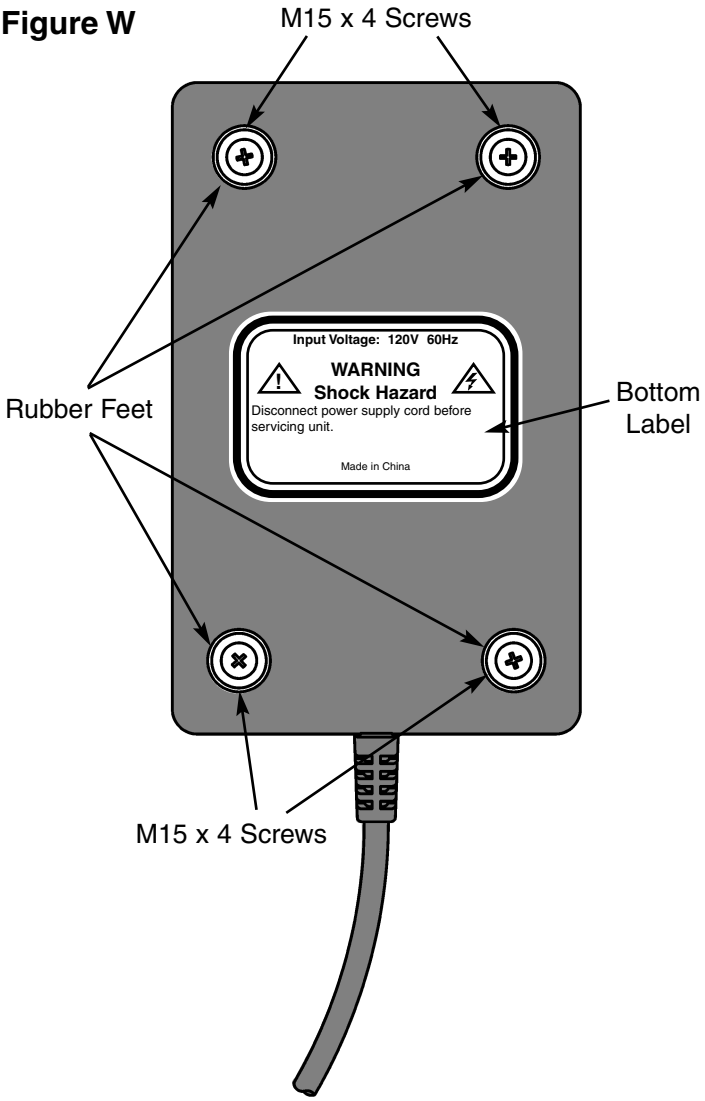
FINAL ASSEMBLY

☐ Attach the base to the chassis with four M15 X 4 screws and rubber feet (see Figure W).

☐ Apply the bottom label as shown.

☐ Apply the back label as shown in Figure X.

Figure W



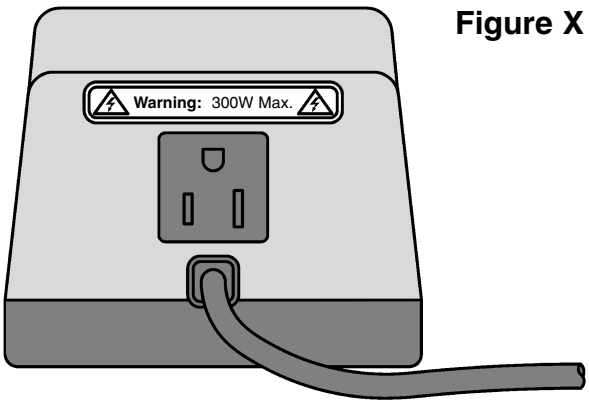
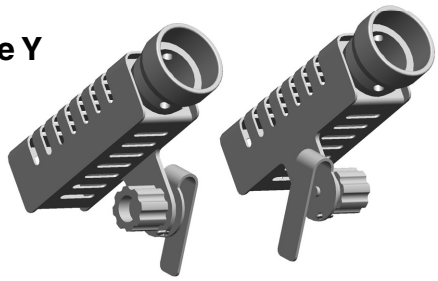
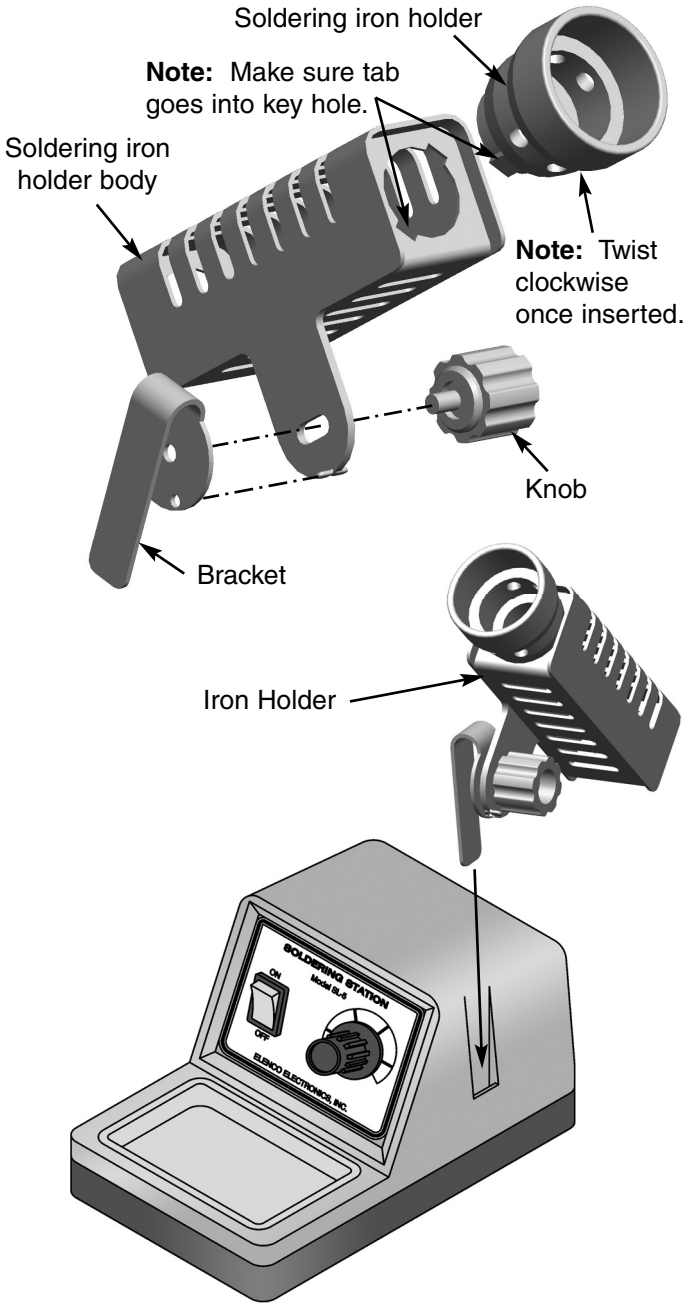


Figure X

☐ Assemble the iron holder as shown in Figure Y below. Insert the iron holder into the slot on either the right or the left side as shown in Figure Y. Set the power switch to the OFF position.

Figure Y





VOLTAGE TEST

If you do not have a multimeter continue to the OPERATION Section.

☐ Place the iron into the holder. Plug your soldering iron cord into the AC receptacle on the back. Adjust it for a 1/4" gap so you can measure the AC voltage, as shown in Figure Z.

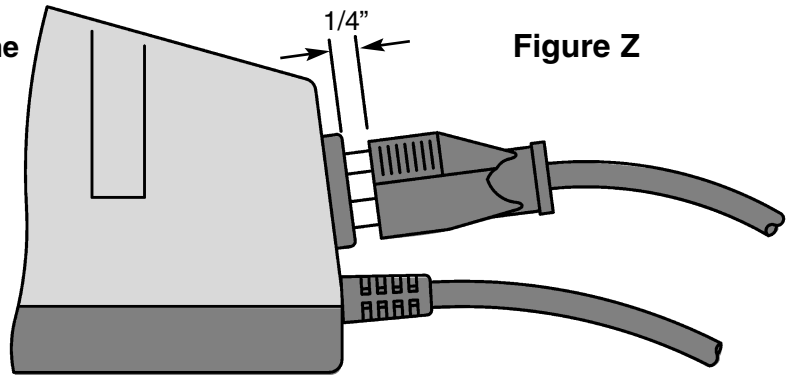


Figure Z

☐ Set the temperature control to minimum and plug the SL-5 AC cord into an outlet. Turn the power switch to ON and the switch should illuminate. Measure the voltage across the soldering iron plug as shown in Figure AA. Rotate the temperature control knob clockwise and measure the AC voltage. Range 25 $\frac{+25}{-23.5}$ — 120V.

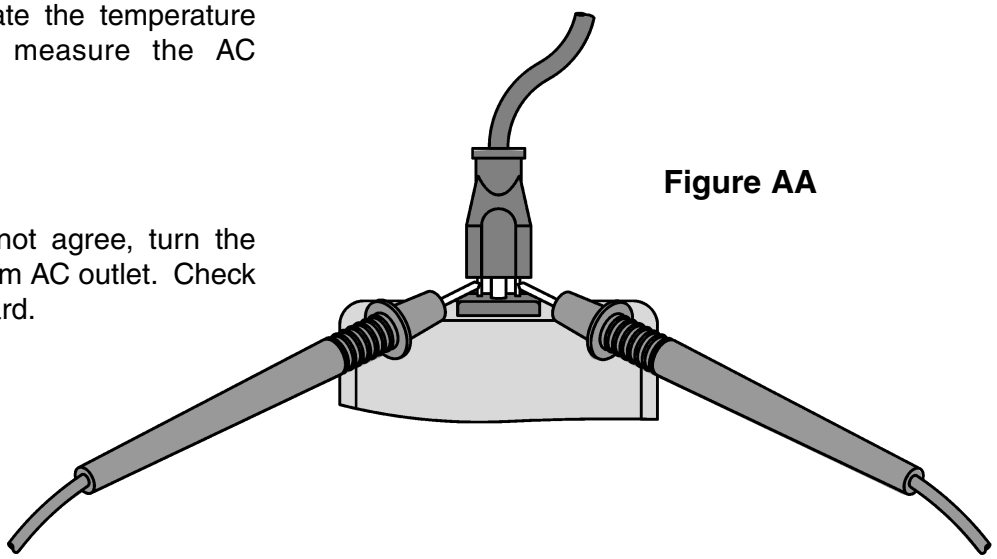


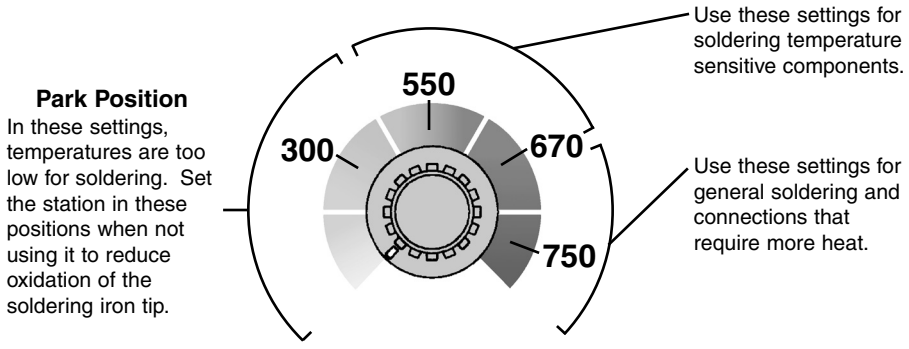
Figure AA

☐ If the measured voltages do not agree, turn the power switch off and unplug from AC outlet. Check the wiring and parts on PC board.

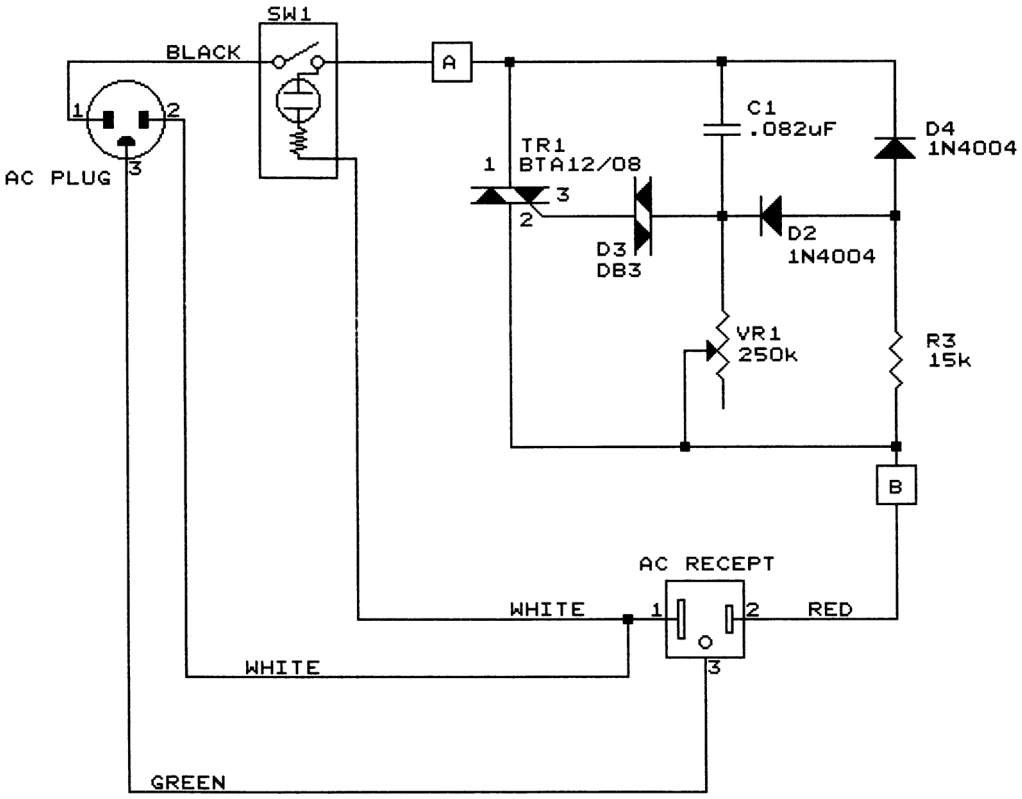
OPERATION

Wet the sponge with preferably distilled or tap water, and then place it into the tray. Plug the soldering iron line cord into the AC receptacle on the back, and then insert it into the holder. Make sure the On/Off switch is set to the Off position and the control knob at minimum. Plug the line cord of the SL-5 into a 120VAC receptacle. Turn the power switch On and the switch should illuminate. Set the temperature control knob midway. Allow the iron to heat up for a few minutes. Now set it to the desired temperature. See the chart for relative temperatures. Using the lowest power setting will protect sensitive devices.

General Areas of Temperature Settings (SR-6 40W iron only)

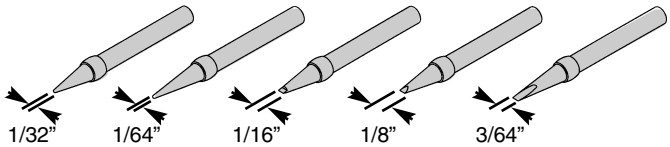


SCHEMATIC DIAGRAM



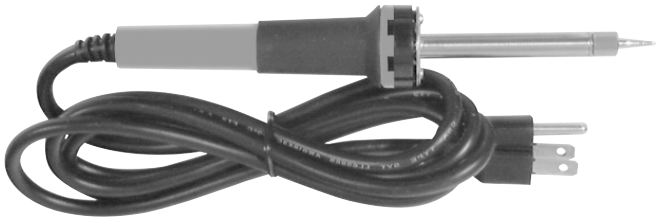
TIP SIZES

The tip sizes and shapes greatly effects the heating and heat-recovery. Today, tips are manufactured in a variety of different shapes (see figure below). The SR-6 comes with a conical shape, (#SR-2BT2) one of the most common. Having a choice of tip styles allows you to choose the one best suited for your soldering needs. Due to the high heat, removable tips can bond themselves to the heating element if left in place for extended periods. Periodic removal of the tip is therefore advisable.

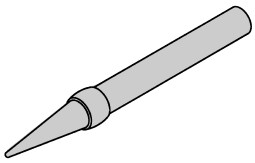


Tip Package Model TIPK-1

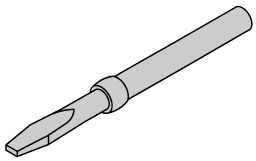
Replacements and Optional Solder Aids for SL-5 Series Solder Station



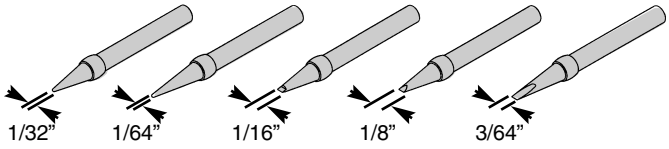
Model SR-6
40W Soldering Iron



Model SR-2BT2
Conical Tip



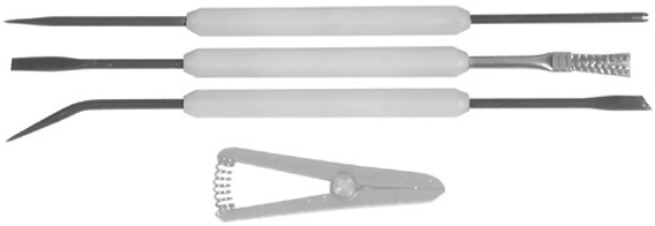
Model SR-2BT
Wedge Tip



Model TIPK-1
Tip Kit used with SR-6 & SR-7 Soldering Irons

Model TTC-1
Tip Tinner/Cleaner

Model SW-3
Desoldering Wick



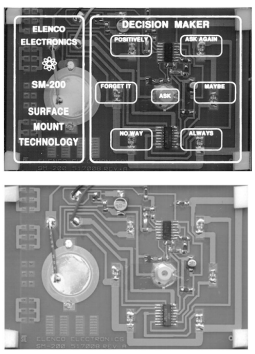
Model SE-1
Solder Ease Kit

Model LF-99
Lead-Free Solder Rosin Core .032 dia. 5ft.

Model SP-4
Desoldering Pump

Model SP-1A
Solder Practice Kit

Model SM-200K
Surface Mount Technology Kit



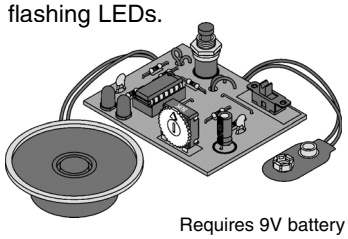
Model SP-3B
Solder Practice Kit

EDUCATION KITS

Complete with PC Board and Instruction Book

Space War Gun
K-10

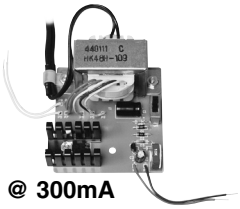
Rapid fire or single shot with 2 flashing LEDs.



Requires 9V battery

0-15V Power Supply
K-11

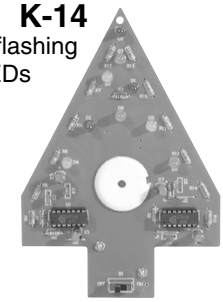
A low-cost way to supply voltage to electronic games, etc.



0-15VDC @ 300mA

Christmas Tree
K-14

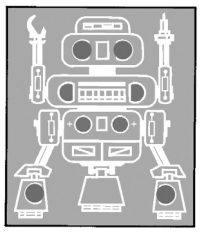
Produces flashing colored LEDs and three popular Christmas melodies.



Requires 9V battery

LED Robot Blinker
K-17

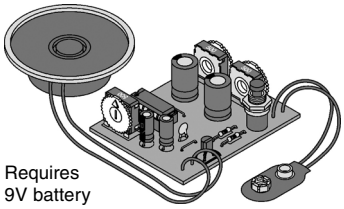
You'll have fun displaying the PC board robot. Learn about free-running oscillators.



Requires 9V battery

Digital Bird
K-19

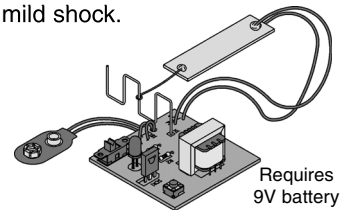
You probably have never heard a bird sing this way before.



Requires 9V battery

Nerve Tester
K-20

Test your ability to remain calm. Indicates failure by a lit LED or mild shock.



Requires 9V battery

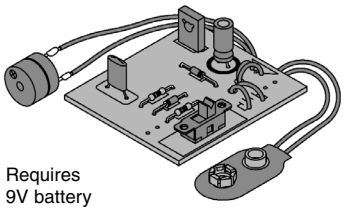
Yap Box
K-22A

This kit is a hit at parties. Makes 6 exciting sounds.

Requires 9V battery

Burglar Alarm
K-23

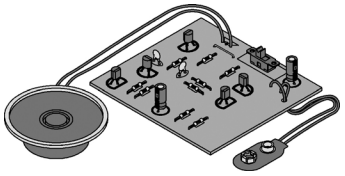
Alarm for your car, house, room, or closet.



Requires 9V battery

Whooper Alarm
K-24

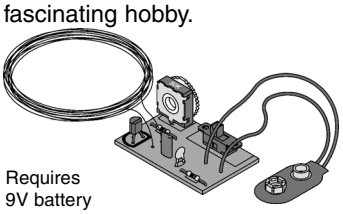
Can be used as a sounder or siren.



Requires 9V battery

Metal Detector
K-26

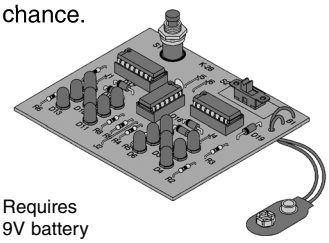
Find new money and old treasure. Get started in this fascinating hobby.



Requires 9V battery

Pocket Dice
K-28

To be used with any game of chance.



Requires 9V battery

FM Microphone
AK-710/K-30

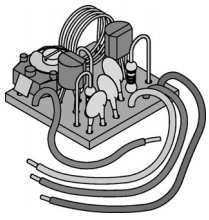
Learn about microphones, audio amplifiers, and RF oscillators. Range up to 100 feet.

Requires 2 "AA" batteries

Training course incl.

Telephone Bug
K-35

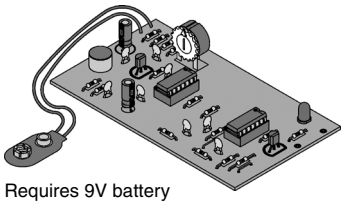
Our bug is only the size of a quarter, yet transmits both sides of a telephone conversation to any FM radio.



No batteries required!

Sound Activated Switch
K-36

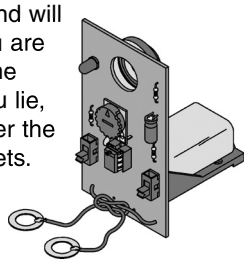
Clap and the light comes on . . . clap again and it goes off.



Requires 9V battery

Lie Detector
K-44

The sound will tell if you are lying. The more you lie, the louder the sound gets.



Requires 9V battery

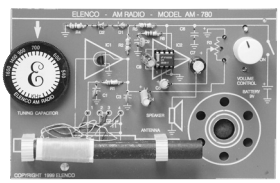
Motion Detector
AK-510

Use as a sentry, message minder, burglar alarm, or a room detector.

Requires 9V battery

Two IC AM Radio
AM-780K

New design - easy-to-build, complete radio on a single PC board. Requires 9V battery.



Transistor Tester
DT-100K

Test in-circuit transistors and diodes.

Requires 9V battery

Telephone Line Analyzer
TWT-1K

A telephone line analyzer kit that tests active phone lines with RJ-11 or RJ-45 modular jacks.

Variable Power Supply
XP-720K

Three fully regulated supplies: 1.5-15V @ 1A, –1.5 to –15V @ 1A or (3-30V @ 1A) and 5V @ 3A.

QUIZ

1. The solder supplied in this ki is comprised of what two materials?
   - ☐ A. Gold and copper
   - ☐ B. Tin and copper
   - ☐ C. Zinc and copper
   - ☐ D. Lead and aluminum

2. What type of flux should be used in electronics?
   - ☐ A. Chloride
   - ☐ B. Organic
   - ☐ C. Rosin
   - ☐ D. Corrosive

3. When working on PC boards, what wattage range of iron is ideal?
   - ☐ A. 15-40 watts
   - ☐ B. 50-100 watts
   - ☐ C. 1-10 watts
   - ☐ D. 100-200 watts

4. Tinning the soldering tip will prevent it from . . .
   - ☐ A. heating.
   - ☐ B. melting.
   - ☐ C. soldering.
   - ☐ D. oxidizing.

5. Proper solder adhesion requires that the metal surface to be . . .
   - ☐ A. solder free.
   - ☐ B. clean.
   - ☐ C. greasy.
   - ☐ D. cold.

6. Solder wick is used to . . .
   - ☐ A. remove solder.
   - ☐ B. solder in small parts.
   - ☐ C. cleaning the soldering iron tip.
   - ☐ D. removing flux.

7. A cold solder joint is caused by . . .
   - ☐ A. a solder bridge.
   - ☐ B. using 60/40 solder.
   - ☐ C. insufficient heat.
   - ☐ D. acid core solder.

8. When two adjacent foils accidentally touch, it is called . . .
   - ☐ A. a jumper.
   - ☐ B. a blob.
   - ☐ C. a solder hole.
   - ☐ D. a solder bridge.

9. What ratio has the greatest amount of tin?
   - ☐ A. 20/80
   - ☐ B. 40/60
   - ☐ C. 50/50
   - ☐ D. 60/40

10. A good solder connection should be . . .
    - ☐ A. dull and rough.
    - ☐ B. shiny, bright and smooth.
    - ☐ C. lumped around the connection.
    - ☐ D. soldered on one side of the connection.

Answers: 1. B, 2. C, 3. A, 4. D, 5. B, 6. A, 7. C, 8. D, 9. D, 10. B

Elenco® Electronics, Inc.
150 Carpenter Avenue • Wheeling, IL 60090
Phone: (847) 541-3800 • Fax: (847) 520-0085
Web site: www.elenco.com • e-mail: elenco@elenco.com