

TWO YEAR WARRANTY

All Elenco models are guaranteed for two full years on all parts and service. For the first three months, your soldering station is covered at absolutely no charge. For the remaining 21 months, a nominal service charge is required to cover shipping and handling. Soldering iron tip not included in warranty.

When returning merchandise for repair, please include proof of purchase, a brief letter of explanation of problem, and sufficient packing material. Before returning any merchandise please call our service department at (847) 541-3800 to obtain a return merchandise authorization number (RMA).

Service Department

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Deluxe Electronic Soldering Station

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



Instruction Manual

Elenco Electronics, Inc.

SOLDER STATION MODELS

The following 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-5** is supplied without an iron.
- Model SL-5-40** is supplied with a 40 watt soldering iron, grounded plug, Model SR-6.
- Model SL-5-SPL** is custom packaged with an iron of your choice and other soldering aids.

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 40 watt soldering irons. The AC receptacle on the back of the station allows soldering irons of up to 300 watts. The AC receptacle also allows irons to be easily changed or replaced.

FEATURES

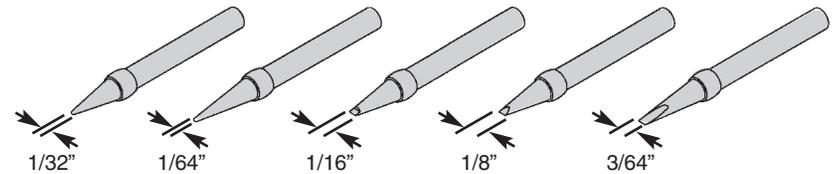
- Heavy Steel, Non-Slip Base
- Iron Holder Funnel - Reversible, left or right side
- Stainless Steel Tray for Sponge Pad
- Sponge Pad
- Power On/Off with Indicator Light



Tip Sizes

The tip sizes and shapes greatly effects the heating and heat-recovery. Today, tips are manufactured in a variety of different shapes. Having a choice of tip styles allows you to choose the one best suited for your soldering needs.

Shown below is a soldering iron tip package of 5 tip sizes (Model TIPK-1) that can be used with Elenco's soldering irons SR-2B and SR-6. Due to 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.



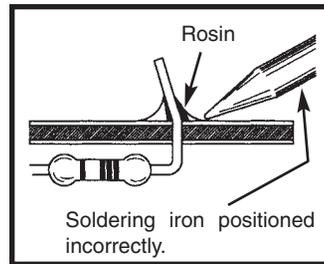
Tip Package Model TIPK-1

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

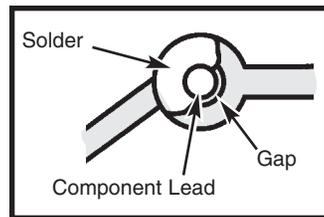
40W Soldering Iron	SR-6
Conical Tip	SR-2T2
Wedge Tip	SR-2T
Tip Kit used with SR-6 Soldering Iron.....	TIPK-1
Tip Tinner/ Cleaner	TTC-1
Desoldering Wick	SW-3
Solder 63/37 Rosin Core .032 dia. 10ft.	ST-4A
Solder Ease Kit	SE-1
Desoldering Pump	SP-2

Types of Poor Soldering Connections

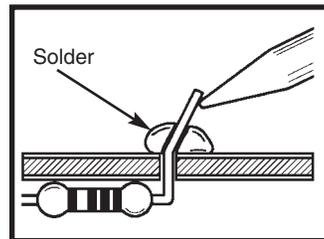
1. **Insufficient Heat** - the solder will not flow onto the lead as shown.



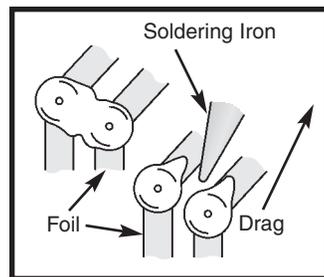
2. **Insufficient Solder** - let the solder flow over the connection until it is covered. Use just enough solder to cover the connection.



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



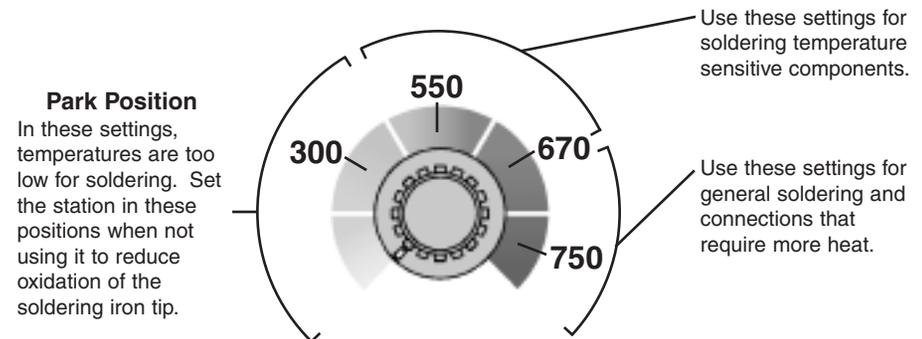
4. **Solder Bridges** - A solder bridge occurs when solder runs between circuit paths and creates a short circuit. This is usually caused by using too much solder. To correct this, simply drag your soldering iron across the solder bridge as shown.



OPERATION

- Carefully remove the SL-5 parts from the box.
- Insert the iron holder on either the right or the left side.
- Wet the sponge with preferably distilled or tap water, and then place it into the tray.
- Set the On/Off switch to the Off position and the control knob at minimum.
- Plug the soldering iron line cord into the AC receptacle on the back of the station and place the soldering iron into the iron holder funnel.
- Plug the line cord of the solder station into a 120-volt, 60Hz AC receptacle.
- Turn the power switch On and set the temperature control to maximum.
- We will now tin the tip by applying solder to the tip as **it heats up. DO IT** before the tip becomes too hot.
- Set the temperature setting to the temperature desired for soldering. If you are not going to use the iron immediately, set the temperature in the **park position**.

General Areas of Temperature Settings for 40W Iron



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.

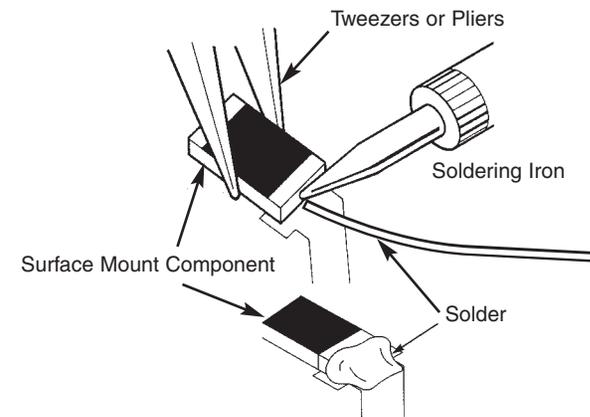
1. Keep children out of reach of the soldering station.
2. To protect your eyes, use safety goggles.
3. Keep flammable material away from the soldering iron.
4. **DO NOT cool iron** by dipping it into any liquid or water.
5. Always assume that the tip is hot to avoid burns.
6. Work in an area that is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

Soldering Surface Mount Components

Using tweezers or small long nose pliers, place the iron in contact with the PC board foil. Apply a small amount of solder simultaneously to the foil and components, allowing them to melt the solder.

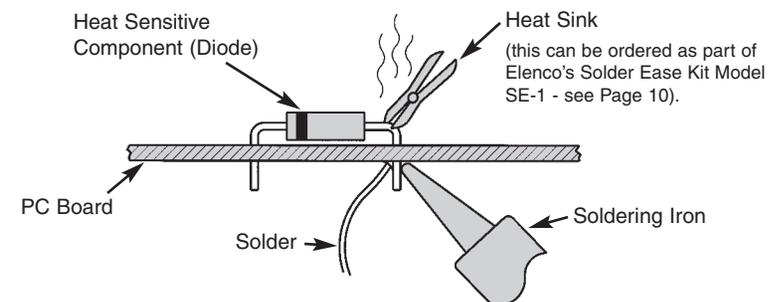
Remove the iron and allow the solder to cool. The solder should have flowed freely and not lumped around the component.

Apply the lowest heat possible while still having solder flow freely (suggested temperature setting: 625°F).



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.



SOLDERING

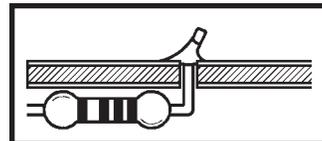
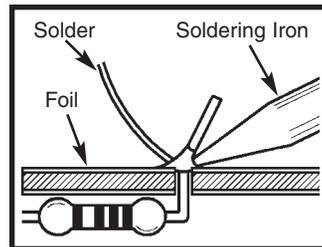
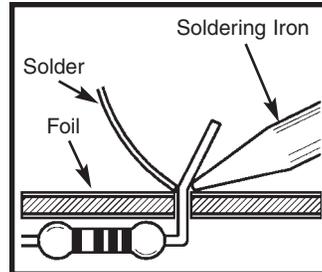
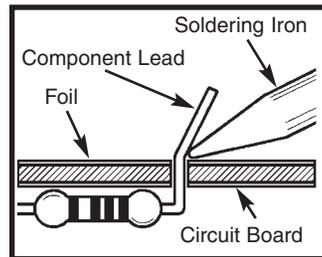
A poorly soldered joint can greatly effect small current flow in circuits and can cause equipment failure. You can damage a PC board or a component with too much heat or cause a cold solder joint with insufficient heat. Sloppy soldering can cause bridges between two adjacent foils preventing the circuit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

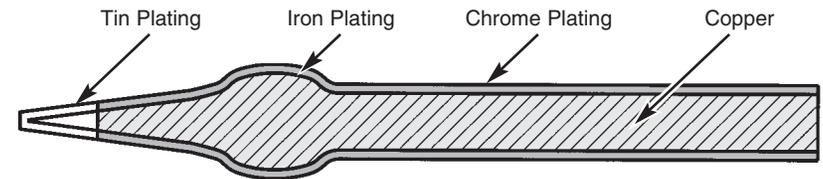


SOLDERING IRONS

Iron wattage varies from 15 to over 100 watts. For working on PC boards, irons ranging from 15 to 40 watts is suitable. If a heavy-duty soldering iron is required, a 60 watt iron should be considered. If you use an iron with a higher wattage rating than 40 watts, you may damage the copper tracks on the PC board. The higher wattage irons are best suited for heavy-duty electrical connections.

Soldering Iron Tip

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



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.

INTRODUCTION TO SOLDERING

Almost every electronic device today has a printed circuit (PC) 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 effect 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. Solder (a tin-lead fusible alloy) is use to form a metallic union or joint between two metals.

For best results, the soldering iron should be at least 100°F above the melting point of solder (361°F). Generally, a minimum temperature of 650°F is desirable for printed circuit boards, while higher temperatures are needed for proper soldering to heavier terminals.

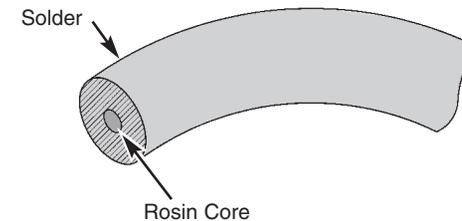
Listed below are some basic steps that should be followed to make good solder joints.

1. Make sure that the part that is to be soldered is clean.
2. Where possible, make good mechanical connections.
3. Use quality 63/37 or 60/40 rosin core solder. NEVER USE ACID CORE SOLDER OR FLUX.
4. Apply heat to the base material or wires so that they become hot enough to melt the solder.
5. Slide the soldering iron away from the joint to leave a neat joint.
6. After removing iron, do not move joint.
7. On temperature sensitive components such as transistors, diodes, and IC's, avoid too much heat. Use a heat sink to dissipate heat away from the component.

Solder

Solder is a fusible alloy composed of tin and lead. Some solder may contain small amounts of other material for use in special purposes to enhance its characteristics. Solder has a melting temperature around 361° to 370°, making it ideal for forming a metallic joint between two metals.

Solder is identified by the ratio of tin-to-lead. The most common ratios are 63/37 and 60/40. Solder with a greater tin content melts at a lower temperature, takes less time to harden, and generally makes it easier to do a good soldering job. The ratio of tin is a main factor in the strength of the solder joint. Solder with a greater tin content has a greater holding ability under stress. Rosin core solders (.031" diameter) are ideal for use in soldering electronic circuits.



Surface Preparation

In order for the solder to adhere to the connection, the metals must be clean and free of non-metallic 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.

