

# 1 2022 SHMRRC

## 2 Introduction

- Objectives
  - Present the equipment, materials & techniques that I use to do various soldering jobs
  - Demonstrate soldering assorted materials
  - Demonstrate surface mount soldering

## 3 Safety

- Avoid inhalation of fumes
- Wash hands
- Solder in a well ventilated room
- Wear eye protection

## 4 What Do You Need?

- Quality soldering station  
\$69.95 <https://www.mpja.com/Solder-Station-with-LED-Display-ZD-929C/productinfo/15845+TL/>

## 5 What Do You Need?

- \$12 for replacement iron <https://www.mpja.com/Solder-Station-15845-TL-ZD-929C-Replacement-Handle/productinfo/15846+TL/>

## 6 What Do You Need?

- Small butane torch  
\$12.99 <https://www.harborfreight.com/butane-micro-torch-63170.html>

## 7 What Do You Need?

- Lead based solder is still the best!  
\$67 for 2 lbs <https://a.co/d/7hOTAWN>
- Rosin core (not acid core) solder
- 60/40 is 60% tin and 40% lead – 0.031 diameter

## 8 What Do You Need?

- Cleaning pad rather than sponge  
\$6 <https://www.mpja.com/Soldering-Iron-Ball-Style-Tip-Cleaner/productinfo/34716+TL>

## 9 What Do You Need?

- Heat sinks
- I find a hot iron that goes in & out quickly does not need them

## 10 What Do You Need?

- Heat shrink tubing
- Wire holders

– Simple wire & alligator clip holder

11  **Preparing to solder**

- Heat iron to about 525 Fahrenheit (280 C) Clean & tin tip
- Clean & tin wires (if steel wire is black scrape it or don't use it)
- Use extra flux if not 100% clean
- Heat solder & wires hold till solid

12  **Desoldering**

- Solder Sucker <https://www.radioshack.com/products/45w-desoldering-iron-with-vacuum-bulb>
- Solder wick
- Stainless pointer to clear holes on board
- ChipQuik low temperature solder (135 deg)
- Heat & bang!

13  **Soldering Two Wires Together**

- Strip off insulation as needed
- Amazon about \$20 - <https://a.co/d/2HODUS8>

14  **Soldering Two Wires Together**

- Strip off insulation as needed
- Add heat shrink tubing to one lead
- Twist wires together (or align two leads)
- Solder
- Test
- Shrink tubing

15  **Soldering Resistor to LED**

- Trim leads
- Attach to holder
- Resistor to anode of LED (non-notched lead) **Note: my routine not required!**
- Solder
- Test

16  **Soldering to Through-Hole  
Circuit Board**

- Clean board with pencil eraser if tarnished
- Establish orientation of part – some care, some don't!
- Insert & dress leads
- Apply heat from bottom till it pools on lead

- Trim leads
- Check for short circuits (bridges)

17  **Soldering to Surface-Mount  
Circuit Board**

- Clean if necessary
- Establish orientation of part
- Small blob of solder to one pad
- Place & solder just that one pad
- Align as necessary
- Complete
- Look for shorts & repair if necessary

18  **Practice, Practice, Practice**

- Learn to Solder kits on Amazon & others
  
- Practice, Practice, Practice
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19  **Your Ideas?**

- Questions?

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