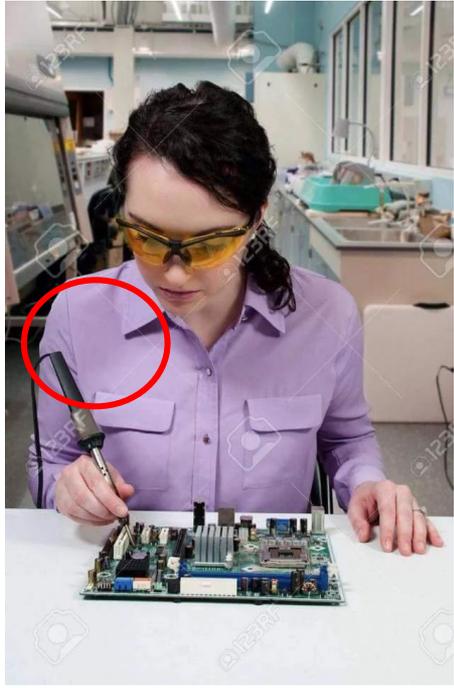
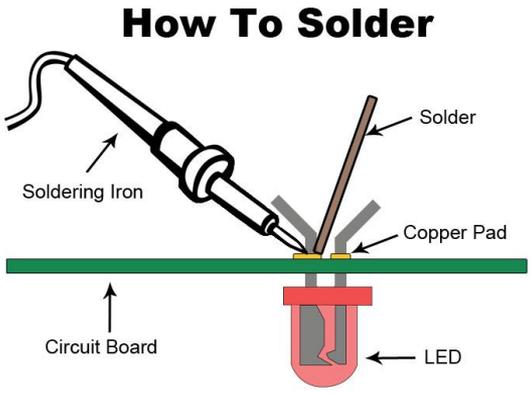


How to Solder

Agenda

- What is solder
- What is flux and what does it do
- Soldering Safety
- What makes a good solder joint
- Remove / cleaning flux off
- Unsoldering
- Soldering Irons



How to Solder - What Solder

Good option for hobbyist

- 60% tin, 40% lead (SN60PB40) rosin core
- Diameter 0.8mm

Lead Free

- Rosin Core, no clean flux also available
- Diameter 0.8
- Common alloys
 - SN100C, SnCuNiGe (prefired)
 - SnAGCu - tin, silver copper
 - SnCu - tin, copper

3mm solder is for plumbing



Lead Free Rosin Core Solder

CHICAGO ELECTRIC Lead-Free Rosin Core Solder ♥ Add to List

★★★★★ (1043) [Write a Review](#) [Shop All CHICAGO ELECTRIC](#)

\$429
Compare to HARRIS 327788 at \$9.24 **Save 54%**

Non-toxic rosin core solder makes clean solder joints [Read More](#)

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Tin / Lead Solder

SCHNEIDER 0.8mm Electrical Solder ♥ Add to List

★★★★★ (201) [Write a Review](#) [Shop All SCHNEIDER](#)

\$1999
Compare to HARRIS 331856 at \$55.51 **Save 64%**

Easy-to-use 0.8mm leaded solder provides better solder flow and adhesion. Formulated especially for electrical repair. [Read More](#)

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How to Solder - What is Solder Flux

- Its an Acid to Remove Surface Oxidation
- Flux is in Rosin Core solder. No real need to apply additional flux in most cases

flux is a chemical agent essential for creating strong, reliable connections by cleaning away metal oxides, which block the solder from forming a proper bond. It enhances "wetting," allowing liquid solder to flow and bond effectively with the surfaces. Flux also prevents re-oxidation during the high-heat process, ensuring optimal electrical and mechanical connections. It is available in forms such as liquid, paste, or core-filled wire, and is used before and during soldering

Rosin-based flux,

- Slightly acidic, to dissolve built-up gunk and oxidation.
- Due to its acidic nature, this flux must be cleaned off the PCB after assembly to prevent it from corroding the board over time.
- Clean up - isopropyl alcohol.
- Different levels of Rosin based flux
 - RMA (rosin mildly activated) and RA (rosin activated).

No-clean flux is a rosin flux with minimal activation

Water-soluble flux employs synthetic resins to achieve a good middle-ground between no-clean flux and type R flux



How to Solder - Soldering Safety

- Solder in a well ventilated area
- Use a fume extractor or small fan to pull solder fumes away from you
- Don't breath in the fumes
- Wear safety glasses
- Wash hands after handling solder
- Never eat and drink in the soldering area
- Keep the soldering iron on its stand when not in use,
- Keep flammable materials away from the work area



 **WEP 948DQ-I Fume Extractor Tool with Double Filtering, Helping Hands, Adjustable Tilt Angle, Fenders for Soldering Station, Soldering Iron with 6 Filtration Adsorbent**

[Visit the WEP Store](#)
4.4 ★★★★★ (144)
Amazon's Choice

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Lowest price in 30 days

-36% \$31⁹⁹
List Price: \$49.99

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Style: **948DQ-I**



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USB Powered

4.0 ★★★★★ (65)

\$14⁹⁹

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How to Solder - Basic Soldering Steps

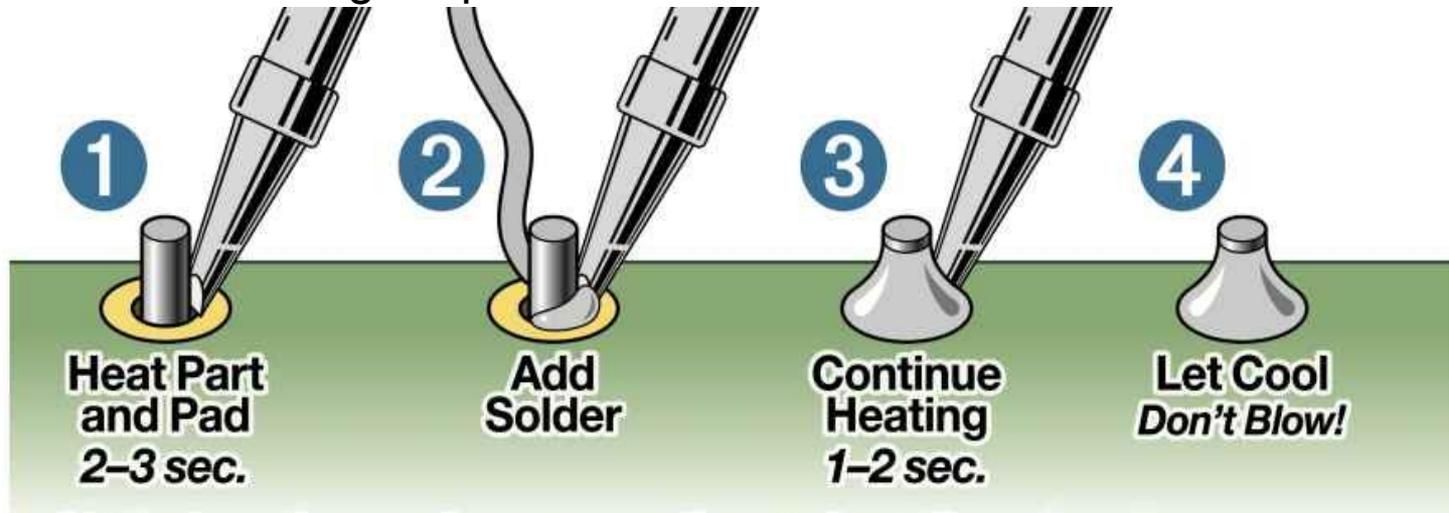
1. Put your safety glasses on and have good ventilation
2. Clean the soldering tip - wipe on wet sponge to remove contaminants
3. Tin soldering tip - to prevent tip oxidation and improve heat transfer to part
4. Apply soldering tip to part at joint - keep the time you apply heat to the minimum to prevent damage / melting of un intended components
5. Apply solder to the soldering iron / part joint intersection, just enough solder
6. Let solder flow, just enough
7. Remove solder tip
8. Let cool / don't disturb
9. Clean as needed - isopropyl alcohol, tooth brush, paper towel

Two key points

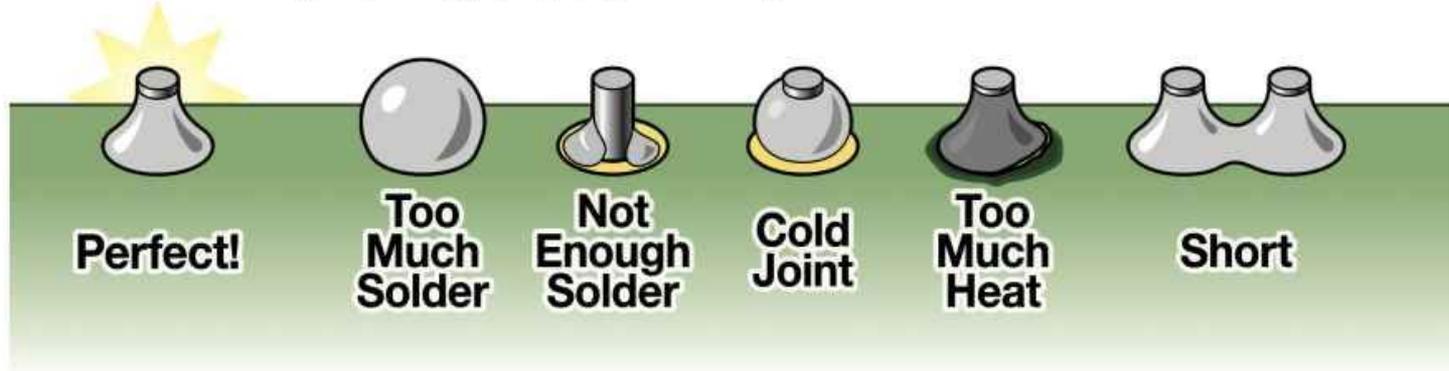
- Don't over heat the parts by leaving the soldering iron on too long
- Don't over solder. This is a case where more is worse and just enough is key

How to Solder - Basic Soldering Steps

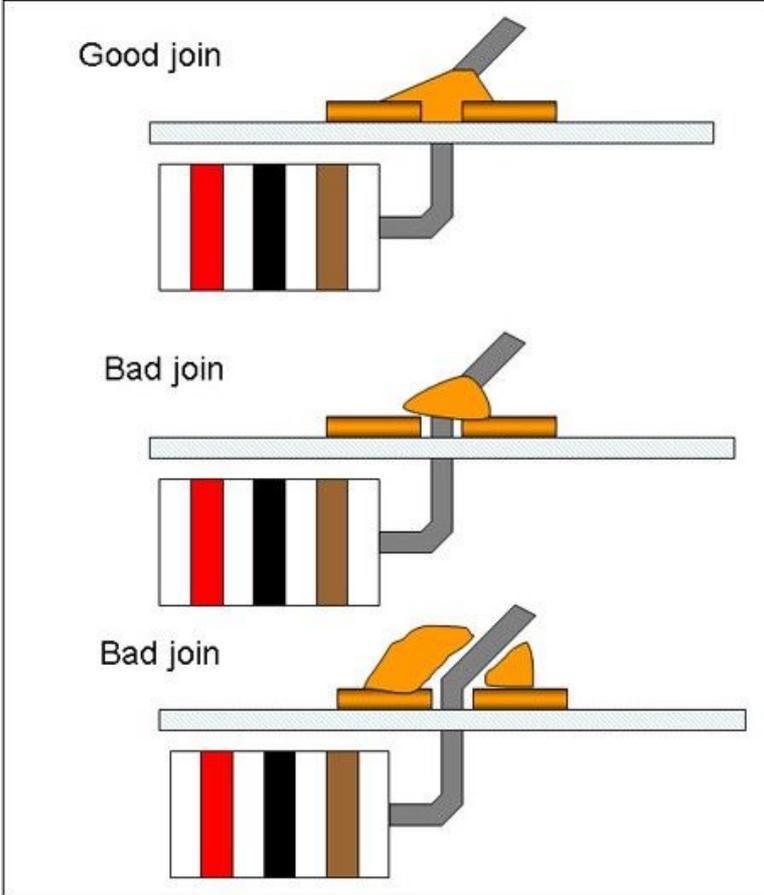
Types Of PCB Soldering



At start, and every few connections: clean tip of iron on damp sponge, apply thin layer of solder



How to Solder - Basic Soldering Steps and flux removal



How to Solder - Soldering Wires Together

- Helping hands to hold wires, be creative
- Apply heat shrink to alligator clips to help prevent sharp teeth from penetrating hot soft insulation
- There is more thermal mass in wiring, it can take more time to heat up / melt solder.
- Apply solder to the joint between the solder tip and wire to improve heat transfer to wire.
- Move soldering along wire to improve flow of solder across wiring connection



Two key points

- Don't over heat the parts by leaving the soldering iron on too long
- Don't over solder. This is a case where more is worse and just enough is key



How to Solder - Un-soldering Using Solder Wick



How to Solder - Un-soldering Using Solder Sucker / Desoldering Pump



How to Solder - Unsoldering Using Desoldering Station



How to Solder - Helping Hands - Harbor Freight Options

- Very helpful

PITTSBURGH Helping Hands

★★★★★ (1798) [Write a Review](#) [Shop All PITTSBURGH](#)

♥ Add to List

\$5⁹⁹



Hold and magnify your work at any angle [Read More](#)

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We stand behind every PITTSBURGH hand tool purchase with a lifetime guarantee.

How to Solder - Soldering Irons

- A 40w soldering iron will work for most electronic PCB components and wiring.
- Higher wattage recommended for heavy wiring and large components



Weller 40W Digital Soldering Station - WLC100 Black

★★★★☆ 6,512

2 offers from \$60⁸⁰
Purchased Sep 2021



Elenco SL5-K40 Build your own Solder Station Kit with 40-watt Iron

32SL5K40
\$44.99
Shipping calculated at checkout.

Pay in 2 interest-free installments of \$22.50 with [shop Pay](#)
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A solder station in kit form using a 40 watt soldering iron that is included to build the station. The 40 watt soldering iron then becomes part of the station. This unit includes a holder funnel for the iron, sponge pad for cleaning the tip and an on/off switch with indicator light.

How to Solder - Soldering Equipment - Amazon

Results

Check each product page for other buying options.



Best Seller

[+1 other color/pattern](#)

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YIHUA 926 III 60W Digital Display Soldering Iron Station Kit w 2 Helping Hands, 6 Extra Iron Tips, Lead-Free Solder, Solder Sucker, S/...

4.4 ★★★★★ (6.4K)
2K+ bought in past month

Save 20%

\$39⁹⁹ List Price: \$49.99
Exclusive Prime price

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FREE delivery **Overnight 4 AM - 8 AM**

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YIHUA 939D+ Digital Soldering Station, 75W Equivalent with Precision Heat Control (392°F to 896°F) and Built-in Transformer. ES...

4.5 ★★★★★ (3.8K)
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WEP 882D Soldering Iron Station 2-IN-1 SMD Hot Air Rework Station with 2 Spools of Solder Wire, 5 Soldering Tips, 3 Hot Air Nozzles,...

4.5 ★★★★★ (1.1K)
800+ bought in past month

\$54⁹⁹ List Price: \$59.99
Exclusive Prime price

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Sponsored

WEP 927-IV Soldering Station Kit High-Power 110W with 3 Preset Channels, Sleep Mode, LED Magnifier, 5 Extra Iron Tips, Tip Cleaner, 2...

4.5 ★★★★★ (1.3K)
1K+ bought in past month

\$51⁹⁹ List Price: \$59.99
Exclusive Prime price

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Sponsored

WEP 926LED V3 Soldering Station 130W MAX Soldering Iron Kit with Solder Wire, 5 Soldering Tips, Tweezers, Solder Sucker, Tip Clean...

4.5 ★★★★★ (242)
900+ bought in past month

Save 25%

\$29⁹⁹ Typical price: \$39.99
Exclusive Prime price

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How to Solder -Soldering Equipment - Harbor Freight Options

- 100 Watt Soldering Gun Kit for Heavy Wiring



CHICAGO ELECTRIC
30 Watt Lightweight
Soldering Iron

★★★★☆ (2589)

INSTANT SAVINGS
\$4⁹⁹
Was \$5.99
Save 16%



CHICAGO ELECTRIC
100 Watt Soldering Gun Kit

★★★★☆ (1243)

\$27⁹⁹

INSIDE TRACK CLUB
Member Deal Expires 10/2
\$19⁹⁹ **Save 28%**



SCHNEIDER
5 to 50 Watt Soldering
Station

★★★★☆ (293)

\$47⁹⁹



SCHNEIDER
80 Watt Soldering Station

★★★★☆ (52)

\$119⁹⁹

Backup Slides

Power off Timer



What Solder



- 60% tin, 40% lead (SN60PB40)
- Rosin Core
- Diameter 0.8mm



- Lead Free
- Rosin Core, no clean flux also available
- Diameter 0.8
- Common alloys
 - SN100C, SnCuNiGe (prefired)
 - SnAGCu - tin, silver copper
 - SnCu - tin, copper

BEFORE SOLDERING

KNOW YOUR SOLDER TYPE

	<p><u>Lead Free and Rosin Flux Free</u></p> <p>These are on a Green reel.</p> <p>There will be <u>NO</u> hazard symbols or other colours on the reel.</p> <p>This is a non-hazardous material.</p>
	<p><u>Lead Free with Rosin Flux</u></p> <p>These are usually (but not always) on a Red or Black reel.</p> <p>The rosin flux is a Hazardous substance.</p> <p>Caution! This solder type is sometimes on a Green reel with a Hazard symbol and/or a Red marking on the label.</p>
	<p><u>Lead with Rosin Flux</u></p> <p>This is usually on a Red or White reel.</p> <p>The lead solder and rosin flux are <u>both</u> Hazardous substances.</p> <p>The use of lead solder is strictly controlled by regulation and University policy. If you are not trained and permitted to use this product, DO NOT USE IT.</p> <p>FOR DISPOSAL OF LEAD SOLDER REELS PLEASE CONTACT:</p>



