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Soldering Tutorial

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SOLDERING GUN

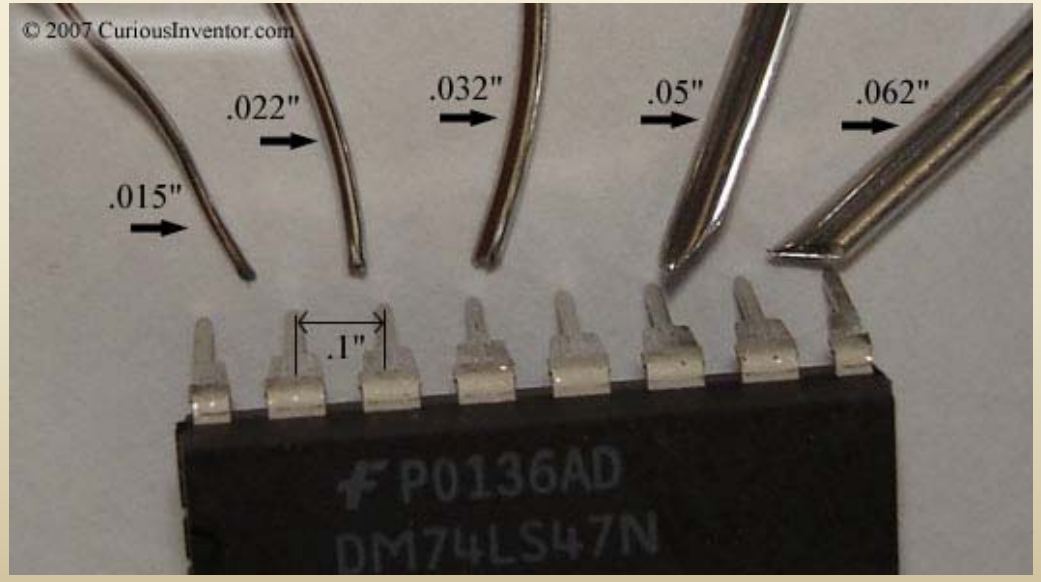
WELLER WP25 SOLDERING IRON

- Soldering Irons with removable tips are preferred
- A quality iron will help heat consistently

SOLDERING WIRE

COMPARISON OF DIAMETERS

- Diameter of wire should match the use
- The smaller the joint the smaller the wire



SOLDERING AND CORROSION

PROBLEMS WITH CORROSION

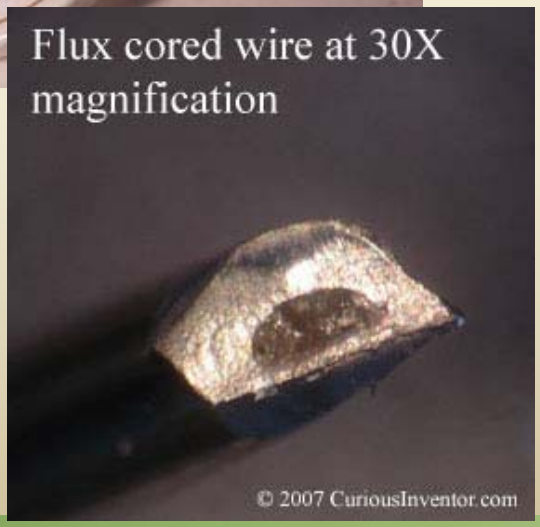
- Corroded tips will not transfer enough heat to the parts

- Corrosion in parts repels solder

SOLDERING FLUX

WHY USE FLUX?

- Flux prevents oxidation of metals
- Flux reduces the surface tension of the molten solder
- Removes corrosion from parts



KEEPING SOLDERING TIP CLEAN

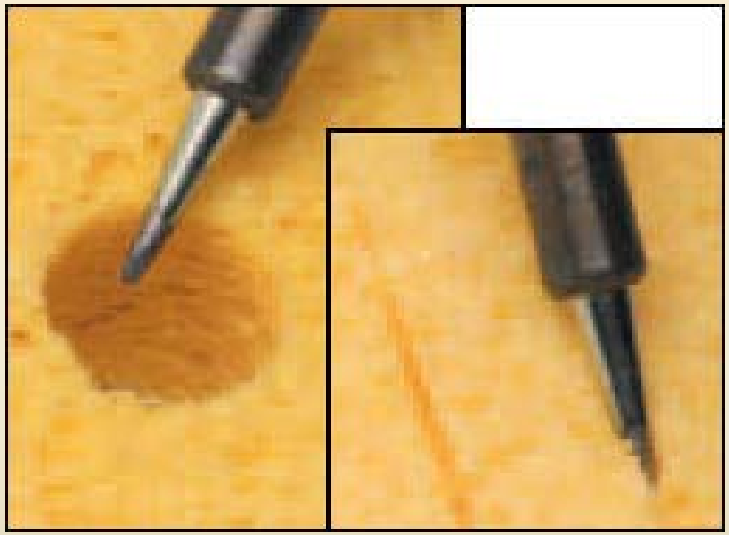
METAL SPONGE CLEANING

- Apply solder with flux to the tip
- Poke the metal sponge
- This reduces thermal shock to the tip

KEEPING SOLDERING TIP CLEAN

WET SPONGE CLEANING

- Apply flux to the soldering tip.
- Swipe the tip using the center of the cut sponge.
- Thermally shocks the soldering tip.



KEEPING SOLDERING TIP CLEAN

TIP TINNER AND CLEANER

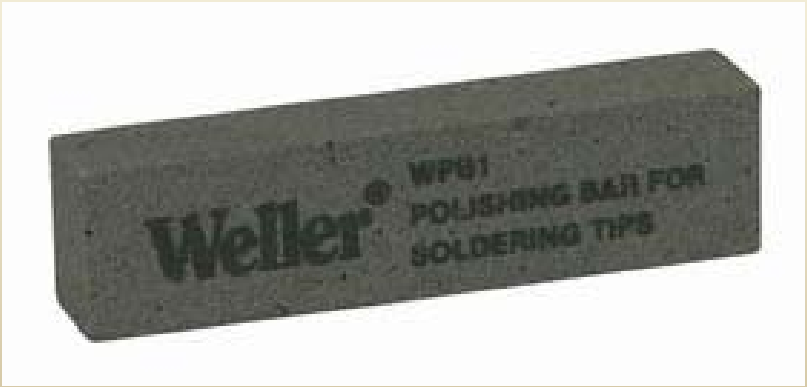
- Tip Tinner and Cleaner is a mixture of solder paste and flux

- Uses a very strong flux to clean tips

KEEPING SOLDERING TIP CLEAN

POLISHING BARS

- Only used in very damaged tips
- Is used to polish the tip removing oxides
- Abusing this technique will lower the tip life



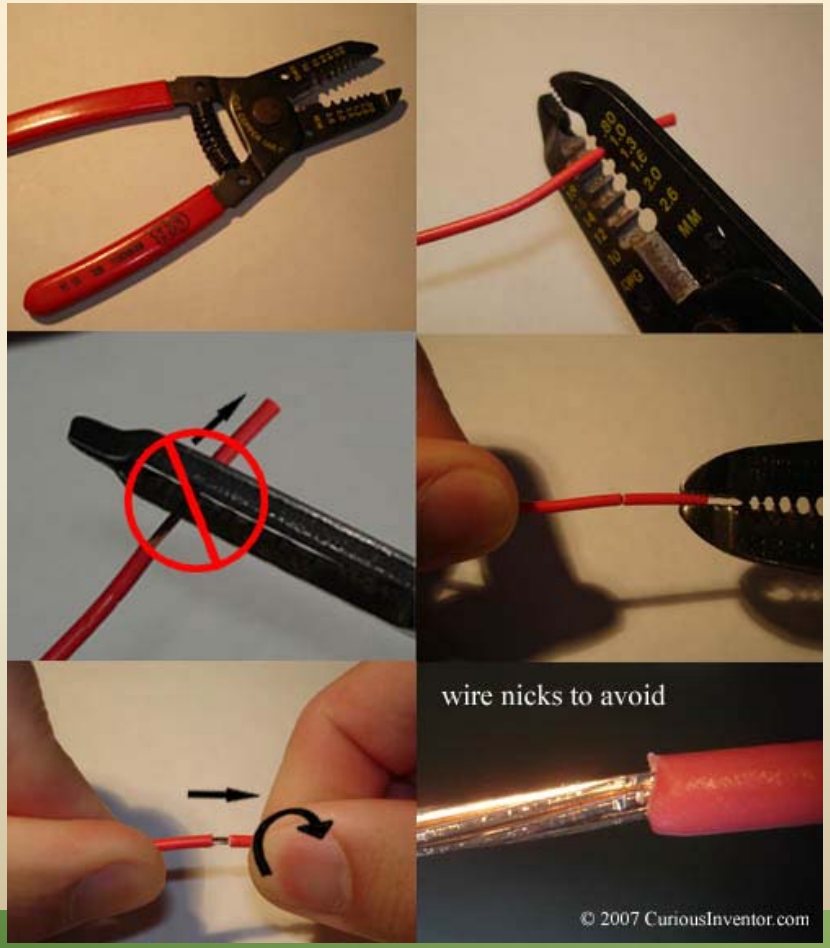
KEEPING SOLDERING TIP CLEAN

TINNING THE TIP

- Always apply a bit of solder to the tip
- This is called tinning
- This will keep the tip from oxidizing and help from heat bridges

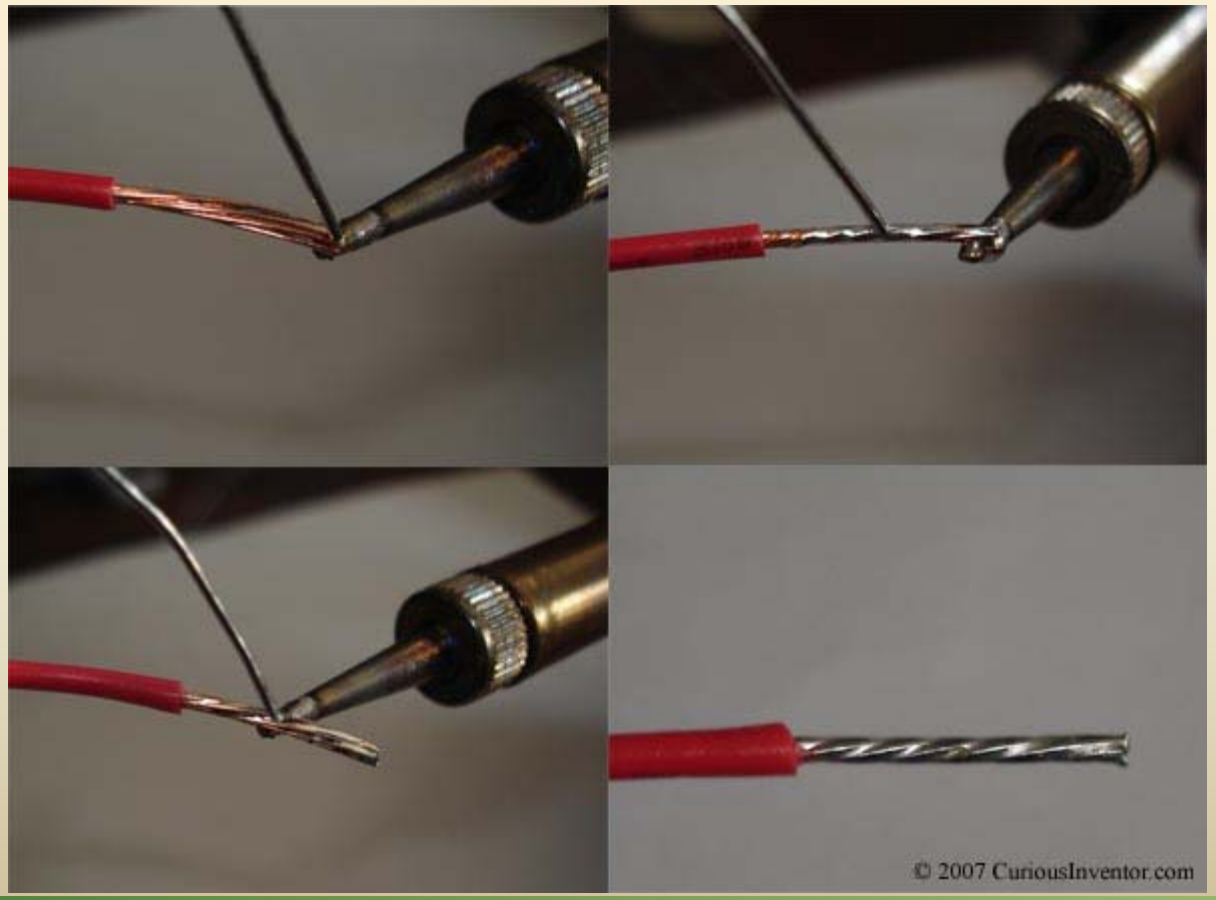
PREPARING WIRES

Step 1: CORRECT CABLE STRIPPING



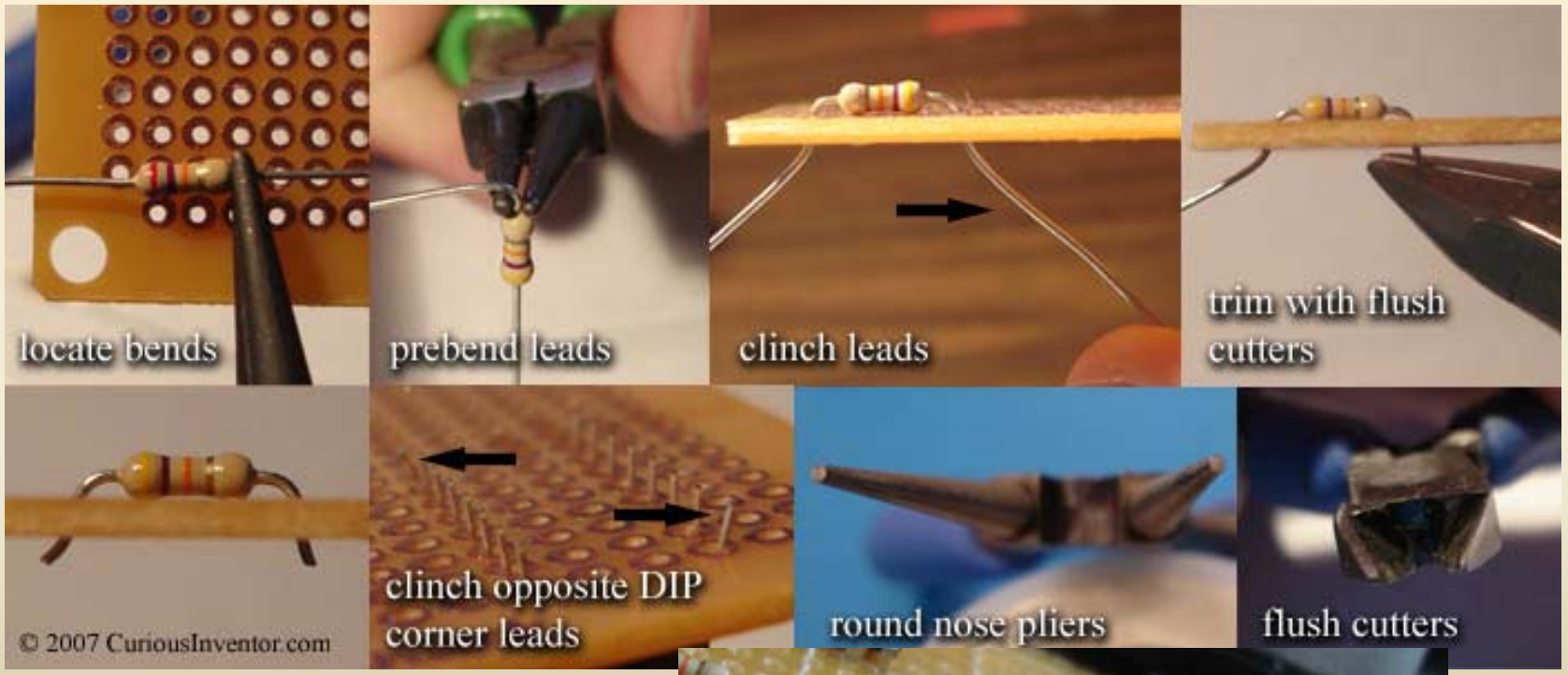
PREPARING WIRES

Step 2: WIRE TINNING



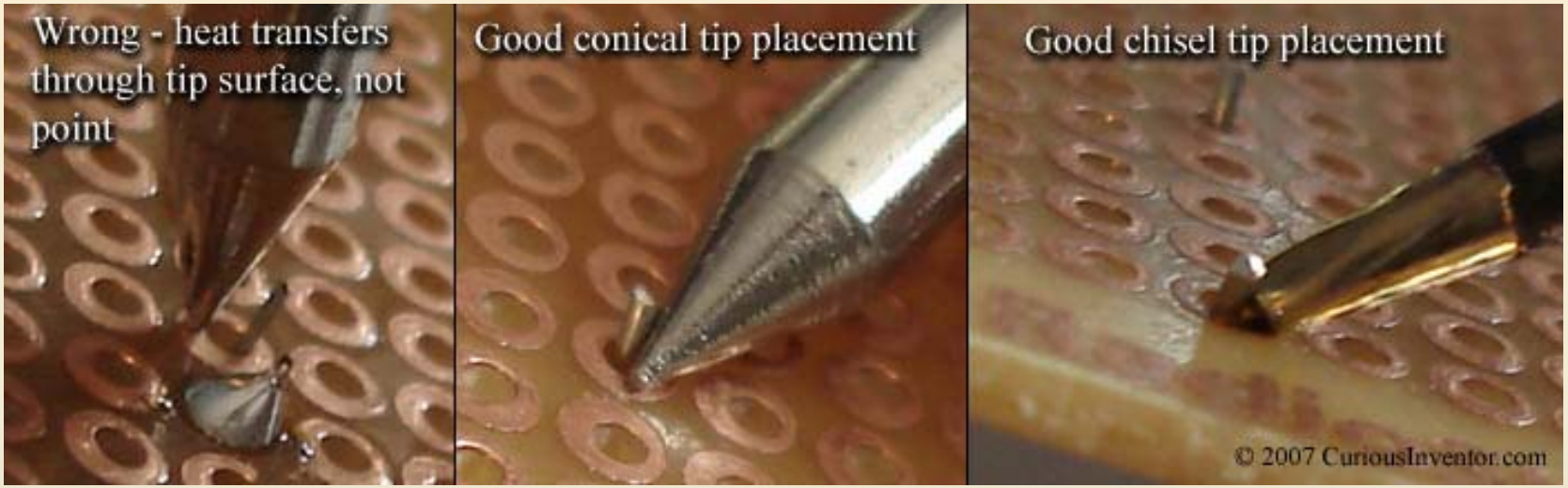
SOLDERING THROUGH HOLE

Step 1: COMPONENT PREPARATION



SOLDERING THROUGH HOLE

Step 2: HEAT THE JOINT

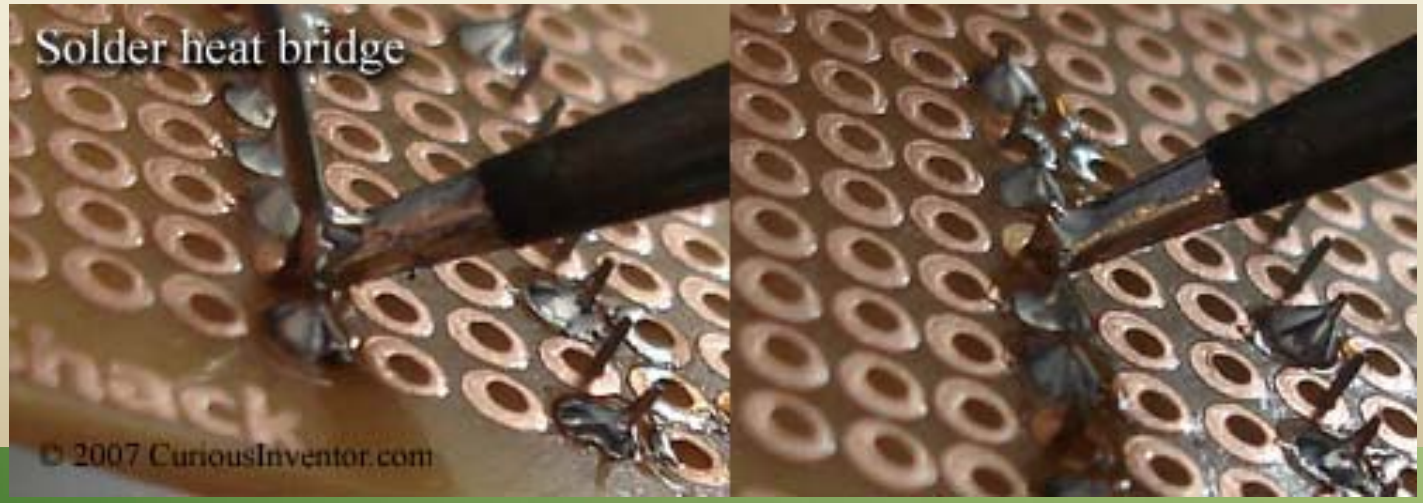


- Place the iron tip so that it touches both the component lead and pad

SOLDERING THROUGH HOLE

Step 3: MAKE HEAT BRIDGE

- Add a small amount of solder between the tip and the work
- Heat transfers much faster through liquid solder than through a dry contact surface



SOLDERING THROUGH HOLE

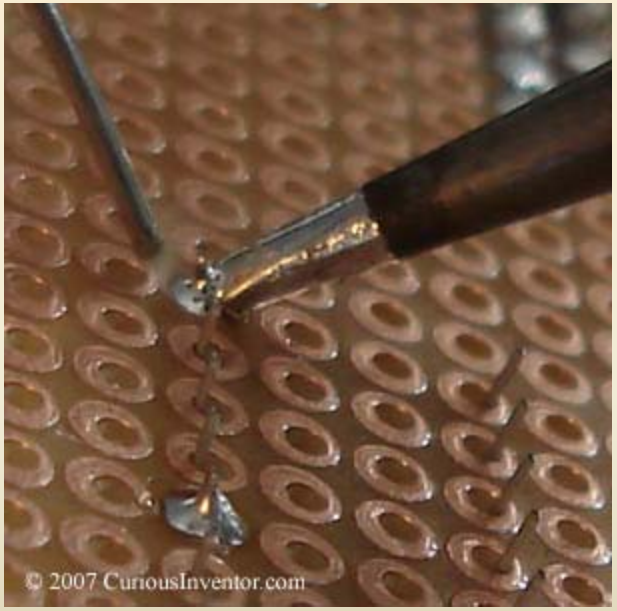
Step 4: APPLY SOLDER TO OPPOSITE SIDE

- Apply solder to the parts, *not* the iron
- Solder will run towards the heat source
- This helps correct bonding with all the parts to solder

SOLDERING THROUGH HOLE

Step 5: WAITING FOR SOLDER TO BOND

- After applying enough solder remove the soldering wire
- Wait 2 to 3 seconds
- Remove soldering gun quickly to avoid pulling the solder



WHAT IS ENOUGH SOLDERING?

JUST ENOUGH TO COVER THE PADS AND LEAD

WHAT ARE BAD JOINTS?

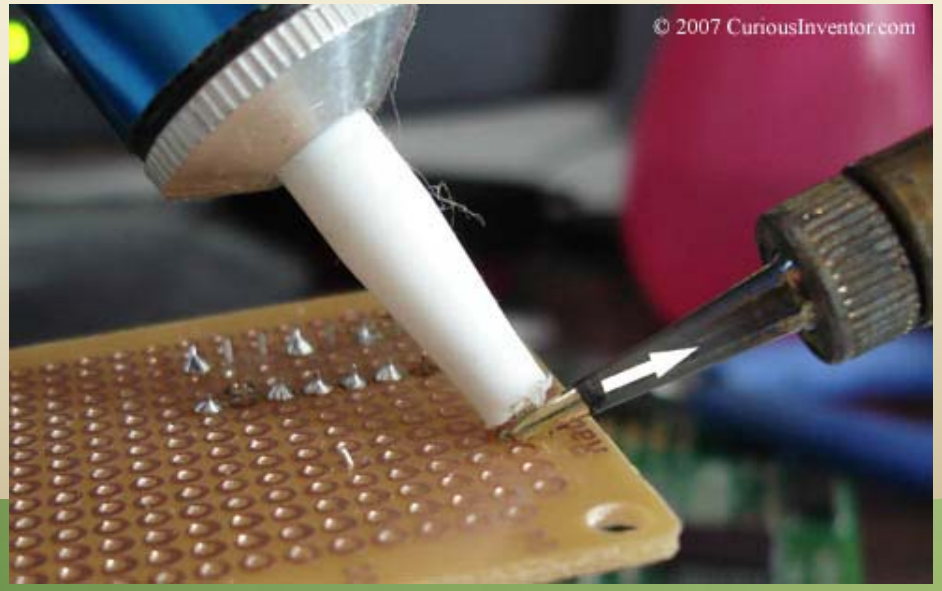
SOLDERING THROUGH HOLE

Step 6: CLEANING IF NECESSARY

- Flux is sometimes extremely corrosive and will corrode the circuits in the long term

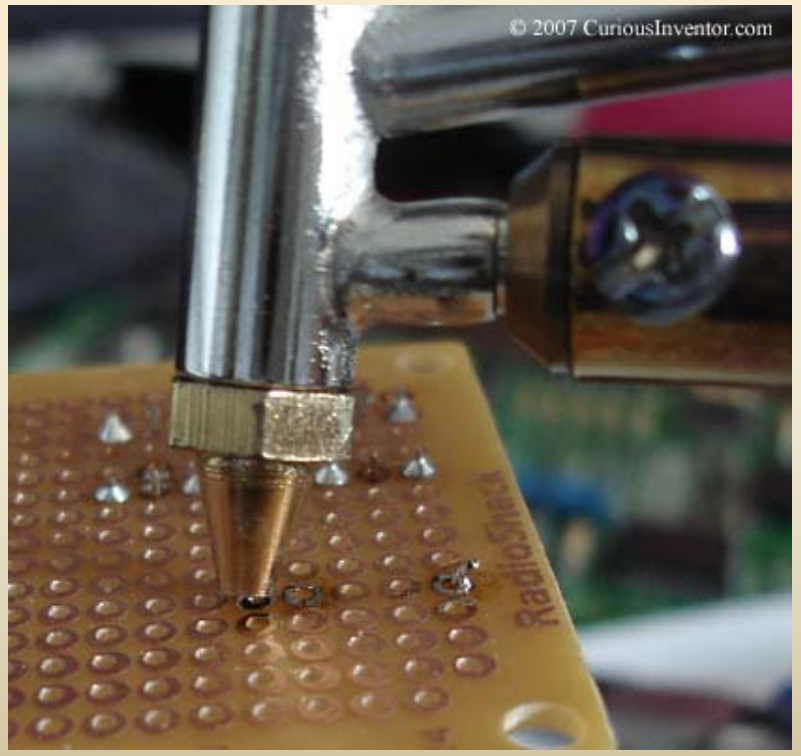
DESOLDERING WITH SOLDER SUCKER

- Heat solder with soldering iron
- Remove iron and put the solder sucker on top and press the button
- Multiple Iterations are often required



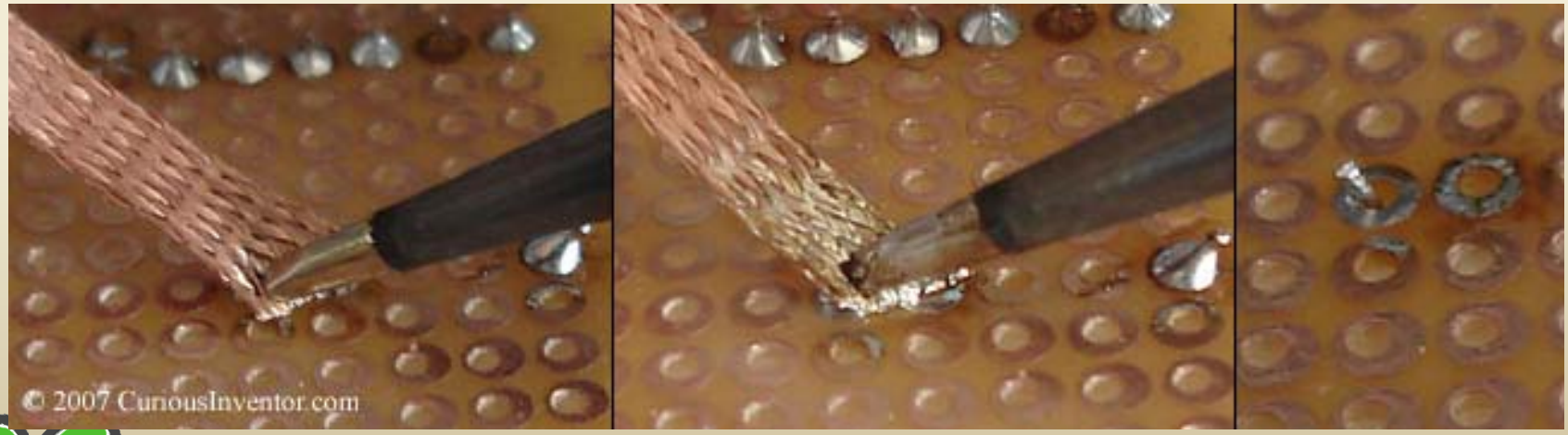
DESOLDERING WITH A DESOLDERING IRON

- Heat solder with soldering iron
- When the solder is liquid, activate the pump
- Repeat if necessary



DESOLDERING WITH SOLDERING WICK

- Apply flux to soldering wick
- Put wick over joint
- Put soldering iron over wick
- Wick uses capillary action to pull solder into the braid



QUESTIONS

http://www.curiousinventor.com/guides/How_To_Solder