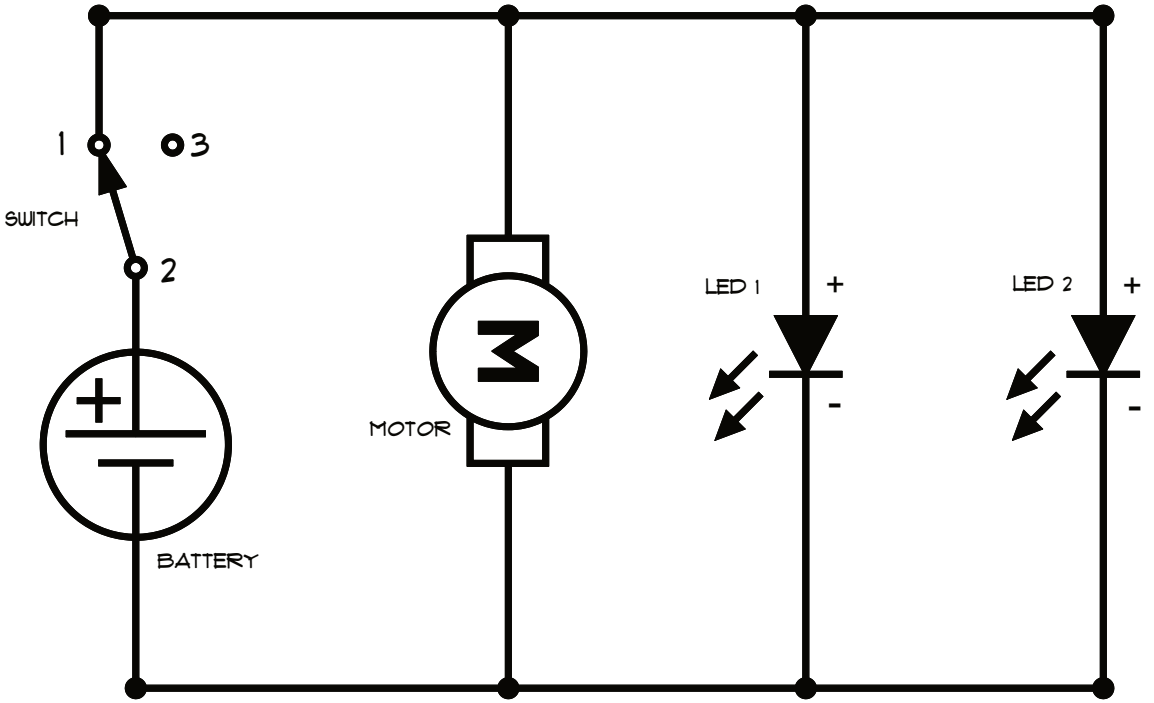
Jitterbug

Instruction Booklet

Learn to Solder Kits



JITTERBUG CIRCUIT DIAGRAM

A CIRCUIT DIAGRAM USES SYMBOLS TO REPRESENT EACH OF A CIRCUIT'S COMPONENTS AND THE CONNECTIONS BETWEEN THEM. ABOVE IS A DIAGRAM REPRESENTING YOUR JITTERBUG'S VERY SIMPLE CIRCUIT.

YOU MIGHT NOTICE THAT THE LEDS AND MOTORS ALL SHARE COMMON CONNECTIONS WITH THE OUTPUT OF THE SWITCH AND WITH THE NEGATIVE SIDE (OR *TERMINAL*) OF THE BATTERY.

THIS MEANS THE ELECTRICAL CURRENT COMING FROM THE SWITCH IS SPLIT BETWEEN ALL THREE OF THESE COMPONENTS BEFORE RETURNING TOGETHER AT THE BATTERY. COMPONENTS ARRANGED LIKE THIS ARE SAID TO BE IN **PARALLEL.**

IF INSTEAD THE CURRENT WERE TO PASS THROUGH EACH COMPONENT IN SEQUENCE, THE COMPONENTS WOULD BE IN **SERIES.**

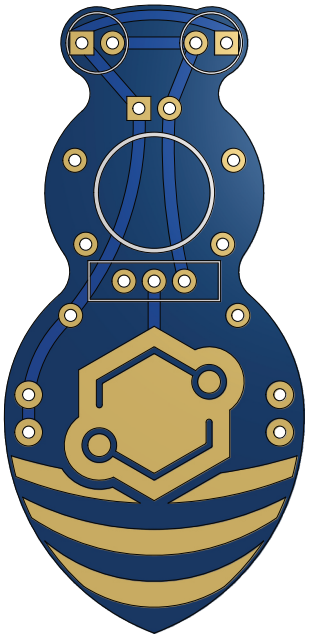
PRINTED CIRCUIT BOARD

PRINTED CIRCUIT BOARDS (SOMETIMES CALLED PCBS OR SIMPLY BOARDS) ARE THE HEART OF ELECTRONICS.

LOOKING AT YOUR PCB YOU'LL SEE THE **PADS** WHERE COMPONENTS ATTACH IN GOLD.

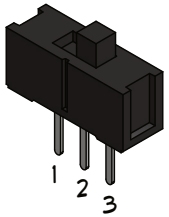
THE LINES BETWEEN THEM, CALLED **TRACES,** CONNECT THESE COMPONENTS WITH PATHS OF COPPER RUNNING THROUGH THE BOARD. THESE TRACES ARE REPRESENTED BY THE LINES YOU SEE BETWEEN COMPONENTS ON THE CIRCUIT DIAGRAM TO THE LEFT.

ON OUR BOARDS THE PADS ARE COATED WITH A VERY THIN LAYER OF REAL GOLD WHICH PROVIDES A NICE SURFACE FOR SOLDERING AND PROTECTS THE COPPER UNDERNEATH FROM CORROSION.



SWITCH

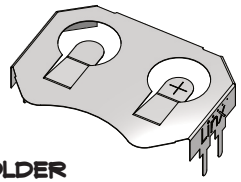
TO TURN THE JITTERBUG ON AND OFF WE USE A SLIDE SWITCH. THIS STYLE IS CALLED A SINGLE-PULL, DOUBLE THROW (SPDT) SINCE THERE IS ONE SOURCE INPUT (PIN 2) WHICH CAN CONNECT TO TWO POSSIBLE OUTPUTS: PIN 1 WHICH COMPLETES THE CIRCUIT OR PIN 3 WHICH TURNS IT OFF.



LEDS

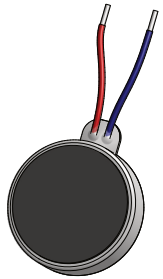
LED STANDS FOR "LIGHT EMITTING DIODE." LEDS ARE NOW USED PRETTY MUCH EVERYWHERE SOMEONE WANTS TO ADD A LITTLE LIGHT OR COLOR TO THE WORLD.

THEY ARE A TYPE OF *DIODE* WHICH IS A SORT OF ONE-WAY VALVE FOR ELECTRICITY. THIS MEANS THE DIRECTION YOU PUT IN THE LED IS VERY IMPORTANT IF YOU WANT YOUR JITTERBUG'S EYES TO LIGHT UP.



BATTERY HOLDER

THE BATTERY HOLDER IS USED TO HOLD THE BATTERY IN PLACE SO IT MAKES CONTACT WITH THE CIRCUIT ON BOTH THE POSITIVE SIDE (TO THE BATTERY HOLDER) AND THE NEGATIVE SIDE (TO THE GOLD BATTERY PAD).



VIBRATION MOTOR

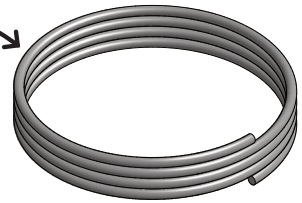
THIS IS THE SAME TYPE OF MOTOR USED IN CELLPHONES AND VIDEO GAME CONTROLLERS. INSIDE IS AN UNBALANCED WEIGHT WHICH IS SWUNG AROUND WHEN IT'S TURNED ON CAUSING THE JITTERBUG TO SKITTER AND MOVE ABOUT.

BATTERY

POWERING YOUR JITTERBUG IS A 3 VOLT, NON-RECHARGEABLE BATTERY CALLED A CR2032. THIS STYLE OF BATTERY IS KNOWN FOR IT'S EXCEPTIONALLY LONG LIFE AND IS COMMONLY USED FOR REMOTE CAR KEYS, CALCULATORS AND MOTHERBOARDS.

WIRE

THOUGH NOT PART OF THE CIRCUIT, THIS WIRE PROVIDES THE IMPORTANT FUNCTION OF GIVING YOUR JITTERBUG LEGS. THIS WIRE IS 20 GAUGE TIN-COATED COPPER WHICH IS EASY TO BEND AND CAN BE SOLDERED INTO PLACE.

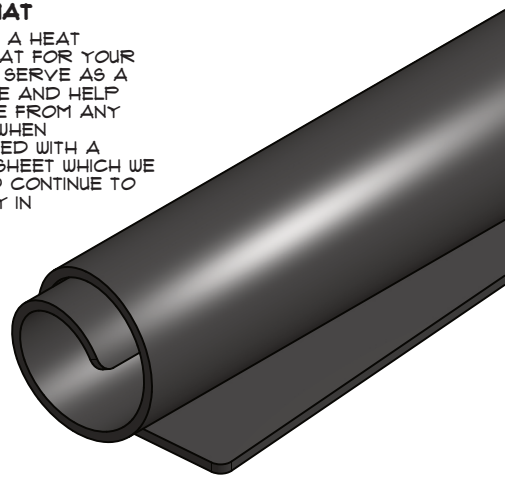


LEAD FREE SOLDER

PRONOUNCED SAW-DER (WITH A SILENT L). SOLDER IS THE GLUE THAT CONNECTS COMPONENTS TOGETHER ON A CIRCUIT BOARD. SOLDER COMES IN A VARIETY OF DIFFERENT MIXTURES, WITH DIFFERENT TYPES BEING USED FOR JEWELRY, PLUMBING AND ELECTRONICS. IN ELECTRONICS IT'S MELTED USING A SOLDERING IRON TO BOND COMPONENTS BOTH MECHANICALLY AND ELECTRICALLY.

SILICONE MAT

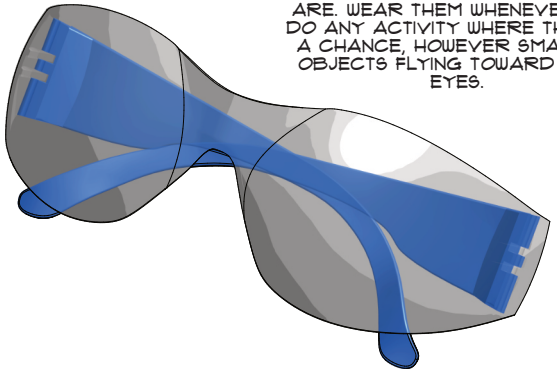
WE CUSTOM DESIGNED A HEAT RESISTANT SILICONE MAT FOR YOUR KIT. IT IS INTENDED TO SERVE AS A CLEAN WORK SURFACE AND HELP PROTECT YOUR TABLE FROM ANY INCIDENTAL DAMAGE WHEN SOLDERING. IT'S PRINTED WITH A ELECTRONICS CHEAT SHEET WHICH WE HOPE YOU ENJOY AND CONTINUE TO USE ON YOUR JOURNEY IN ELECTRONICS.

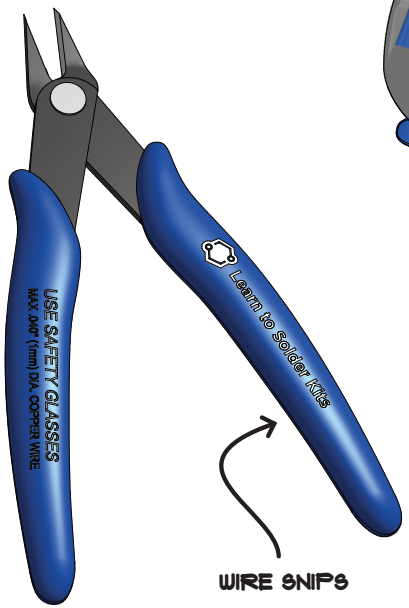


NOTE: THESE MATS SHOULD TAKE QUITE A BIT OF ABUSE. BUT, LIKE MOST OF YOUR OTHER POSSESSIONS, IF YOU WANT IT TO STAY PRISTINE, IT'S PROBABLY BETTER IF YOU DONT PURPOSELY TRY TO JAB IT WITH A HOT SOLDERING IRON.

SAFETY GLASSES

HOPEFULLY YOU KNOW WHAT THESE ARE. WEAR THEM WHENEVER YOU DO ANY ACTIVITY WHERE THERE IS A CHANCE, HOWEVER SMALL, OF OBJECTS FLYING TOWARD YOUR EYES.





WIRE SNIPS

ALSO CALLED FLUSH CUTTERS, DIKES AND DIAGONAL CUTTING PLIERS. THESE CAN BE INVALUABLE NOT JUST IN ELECTRONICS BUT IN 3D PRINTING AND MAKING ALL SORTS OF PROJECTS.

SOLDERING IRON

DESIGNED TO HEAT UP SOLDER TO IT'S MELTING POINT TO MAKE CONNECTIONS BETWEEN COMPONENTS

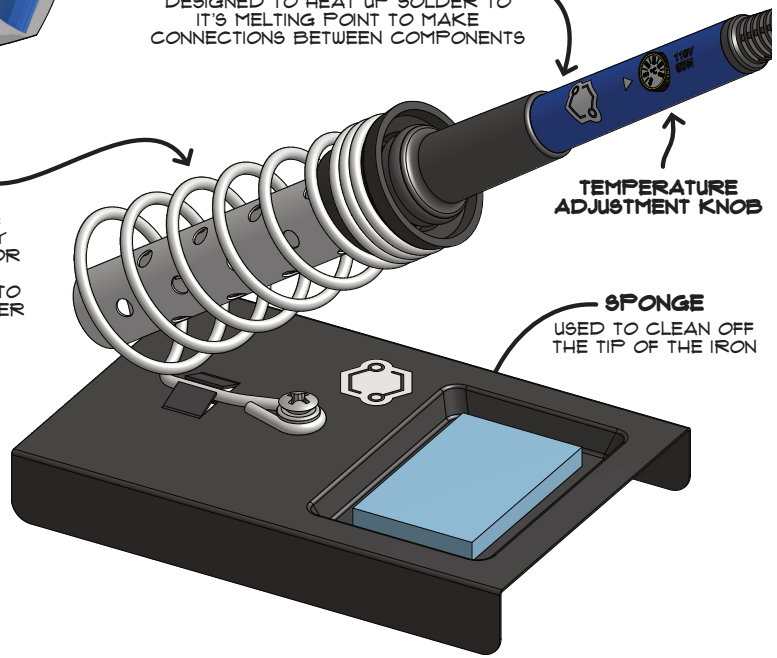
SOLDERING IRON HOLDER

YOU DON'T WANT A HOT SOLDERING IRON LAYING ON A TABLE OR IN ANY PLACE WHERE IT CAN GET BUMPED OR KNOCKED TO THE GROUND. THIS HOLDER SERVES AS A SAFE PLACE TO SET DOWN YOUR IRON BETWEEN SOLDER JOINTS.

TEMPERATURE ADJUSTMENT KNOB

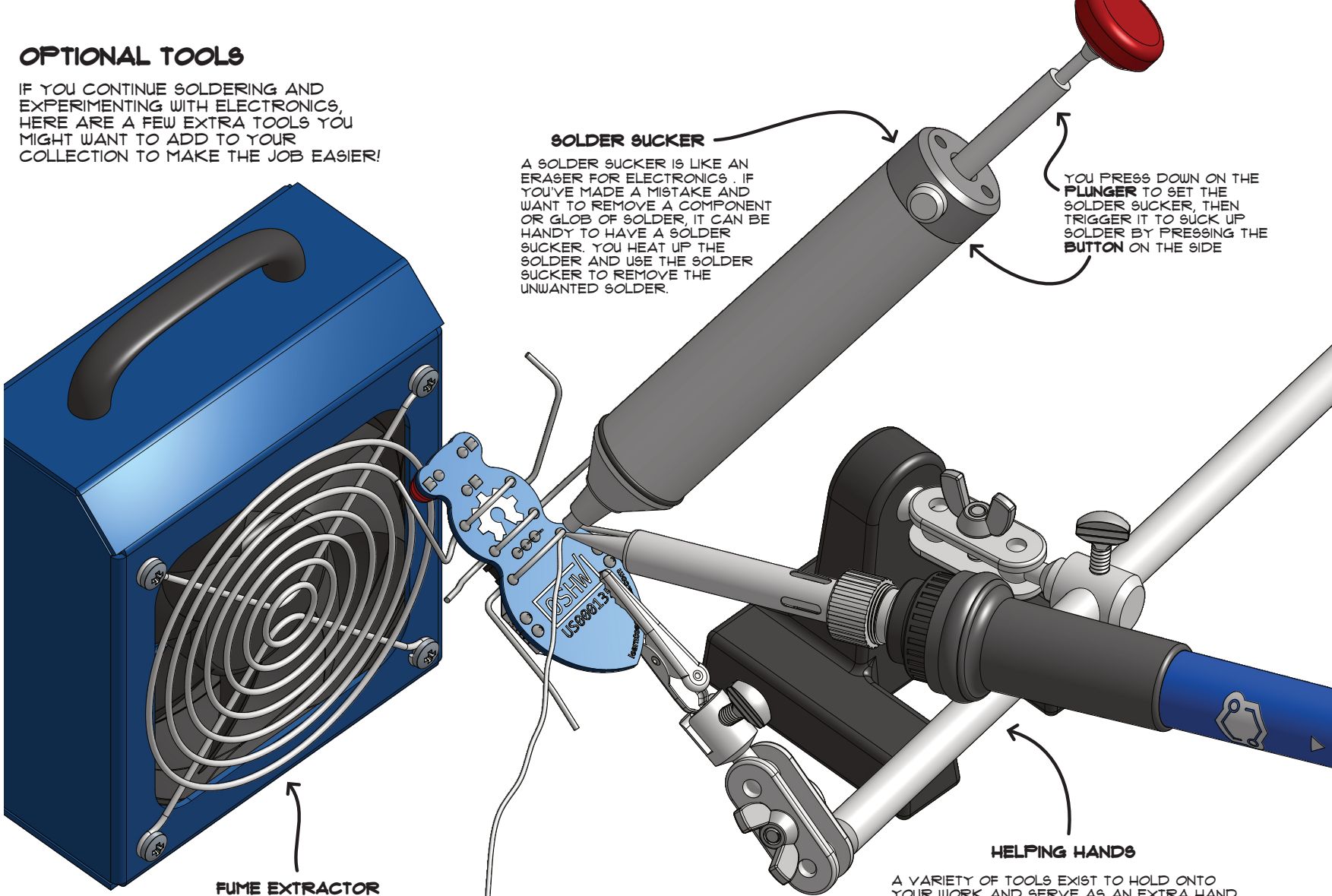
SPONGE

USED TO CLEAN OFF THE TIP OF THE IRON



OPTIONAL TOOLS

IF YOU CONTINUE SOLDERING AND EXPERIMENTING WITH ELECTRONICS, HERE ARE A FEW EXTRA TOOLS YOU MIGHT WANT TO ADD TO YOUR COLLECTION TO MAKE THE JOB EASIER!



SOLDER SUCKER

A SOLDER SUCKER IS LIKE AN ERASER FOR ELECTRONICS . IF YOU'VE MADE A MISTAKE AND WANT TO REMOVE A COMPONENT OR GLOB OF SOLDER, IT CAN BE HANDY TO HAVE A SOLDER SUCKER. YOU HEAT UP THE SOLDER AND USE THE SOLDER SUCKER TO REMOVE THE UNWANTED SOLDER.

YOU PRESS DOWN ON THE **PLUNGER** TO SET THE SOLDER SUCKER, THEN TRIGGER IT TO SUCK UP SOLDER BY PRESSING THE **BUTTON** ON THE SIDE

FUME EXTRACTOR

ALWAYS SOLDER IN A WELL VENTILATED SPACE AND AVOID BREATHING TOO MUCH OF THE SOLDER SMOKE. IF YOU PLAN ON SOLDERING A LOT, IT'S HELPFUL TO PURCHASE A FUME EXTRACTOR. MOST OF THESE COME WITH CARBON FILTERS THAT CAN BE WASHED OR REPLACED.

HELPING HANDS

A VARIETY OF TOOLS EXIST TO HOLD ONTO YOUR WORK AND SERVE AS AN EXTRA HAND WHILE SOLDERING. THE MOST COMMON OF THESE ARE WHAT YOU SEE ABOVE, CALLED "HELPING HANDS."

OUR FAVORITE TOOLS FOR THIS THOUGH ARE MADE BY A COMPANY CALLED PANAVISE IN NEVADA.

WEAR SAFETY GLASSES

IT IS IMPORTANT TO USE CAUTION WHEN OPERATING HAND TOOLS, ESPECIALLY WHEN CLEANING OFF THE TIP OF THE SOLDERING IRON AND WHEN TRIMMING THE ENDS OFF OF COMPONENTS. BUT EVEN WHEN BEING CAREFUL, IT'S POSSIBLE FOR SMALL BITS OF COMPONENTS, OR EVEN BEADS OF SOLDER TO GO FLYING. THESE ARE NOT THINGS YOU WANT IN YOUR EYES.

MAKE SURE YOU'RE ALWAYS WEARING APPROPRIATE EYE PROTECTION WHEN WORKING WITH ELECTRONICS.

USE ADEQUATE VENTILATION

AS A GENERAL RULE, IT IS ALWAYS BEST TO AVOID BREATHING TOO MUCH OF ANYTHING THAT ISN'T AIR. WHEN SOLDERING, SOME OF THE THE FLUX INSIDE THE SOLDER (A STICKY PINE TAR MATERIAL ADDED TO HELP IT MELT) WILL TURN TO VAPOR WITH A VISIBLE STREAM OF SMOKE.

INHALING TOO MUCH OF THIS CAN CAUSE RESPIRATORY IRRITATION, OR OTHER RELATED ISSUES. IF THIS OCCURS, STOP AND MOVE TO FRESH AIR. IF YOU HAVE ANY TROUBLE BREATHING, CONSULT A DOCTOR.

IF YOU PLAN ON EXTENDED PERIODS OF SOLDERING, IT'S BEST TO SET UP OR PURCHASE A SMALL FAN WITH AN AIR FILTER TO PULL THE SOLDER SMOKE AWAY FROM YOU.

AVOID EATING OR DRINKING

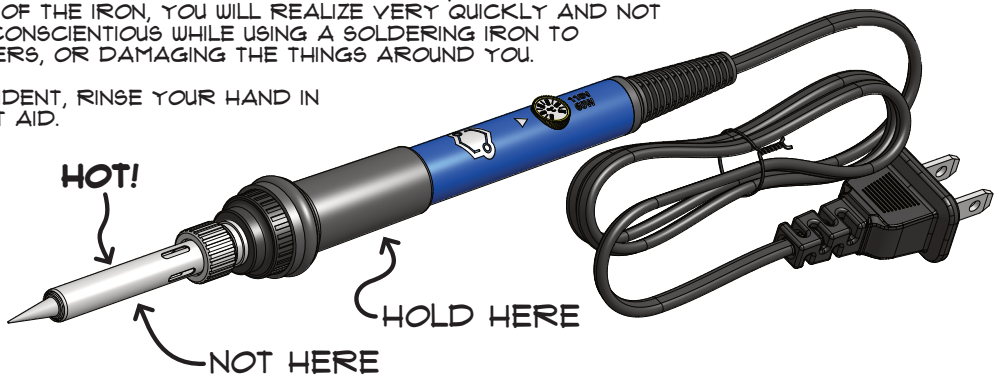
THIS KIT USES *LEAD FREE SOLDER* WHICH IS MUCH SAFER TO WORK WITH THAN LEADED. EVEN SO, IT IS ALWAYS BEST PRACTICE TO WASH YOUR HANDS AFTER DOING ANY ELECTRONICS WORK. TRY TO MAINTAIN A LAB ENVIRONMENT FREE OF FOOD OR DRINK WHICH CAN CONTAMINATE, OR BECOME CONTAMINATED BY YOUR WORK.

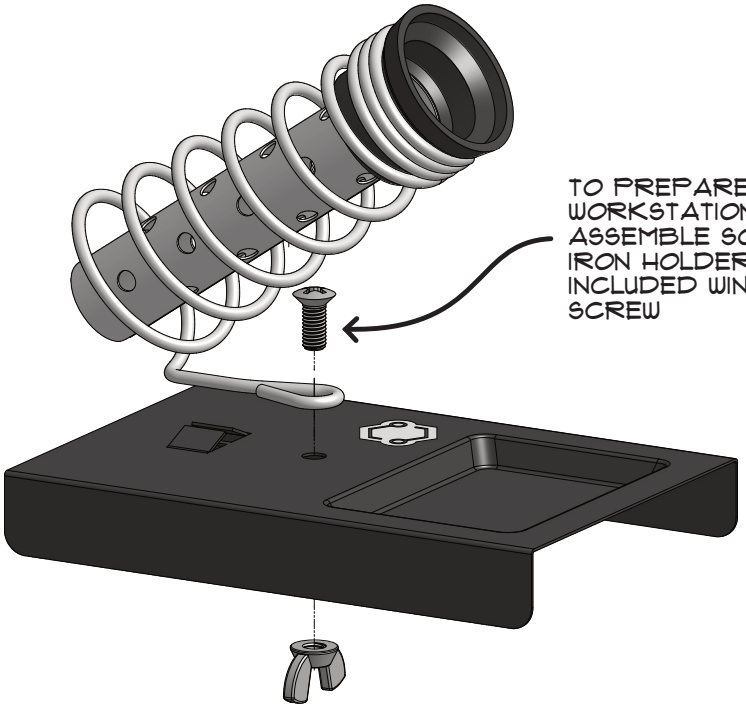
ALSO PLEASE NOTE, NO PART OF THIS KIT IS FOOD. IN CASE OF INGESTION, CALL A PHYSICIAN OR EMERGENCY NUMBER IMMEDIATELY.

HOT SURFACE

A SOLDERING IRON'S JOB IS TO HEAT UP TO SEVERAL HUNDRED DEGREES, HOT ENOUGH TO MELT METAL. IF YOU TOUCH NEAR THE TIP OF THE IRON, YOU WILL REALIZE VERY QUICKLY AND NOT WANT TO DO IT AGAIN. ALWAYS BE CONSCIENTIOUS WHILE USING A SOLDERING IRON TO AVOID HARMING YOURSELF OR OTHERS, OR DAMAGING THE THINGS AROUND YOU.

IF YOU DO BURN YOURSELF BY ACCIDENT, RINSE YOUR HAND IN COLD WATER AND ADMINISTER FIRST AID.

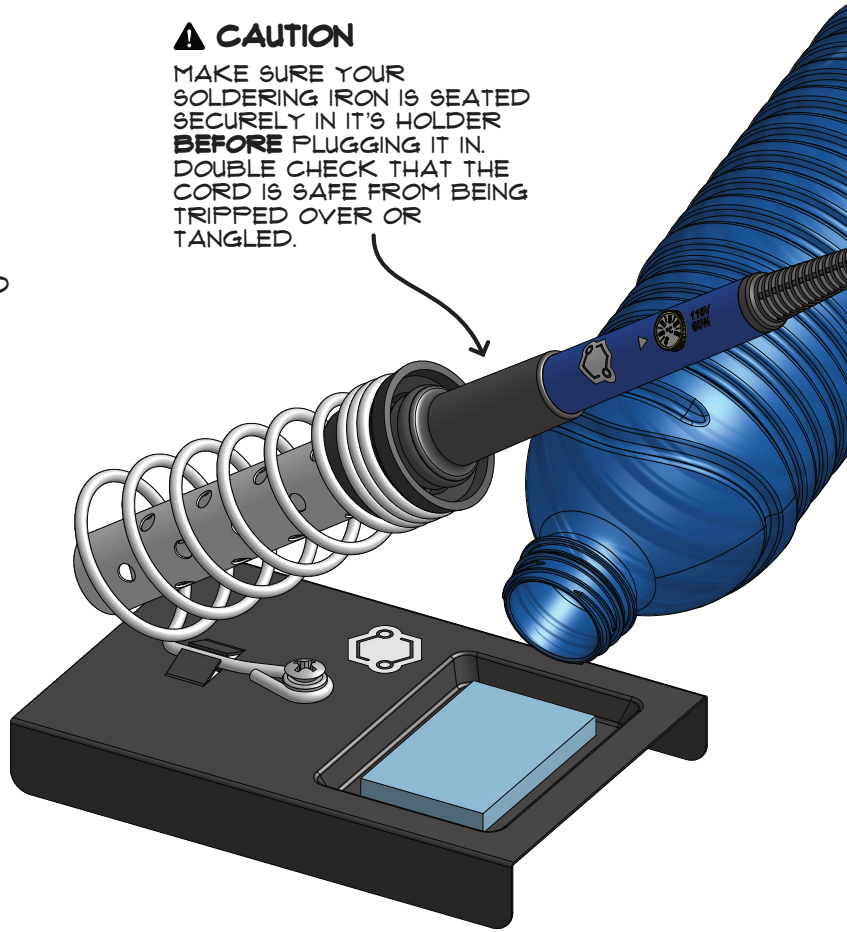




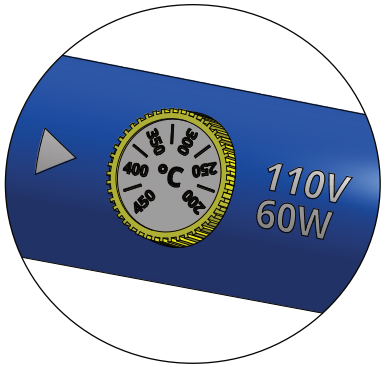
To prepare your workstation, **first** assemble soldering iron holder using included wingnut and screw

⚠ CAUTION

Make sure your soldering iron is seated securely in it's holder **before** plugging it in. Double check that the cord is safe from being tripped over or tangled.

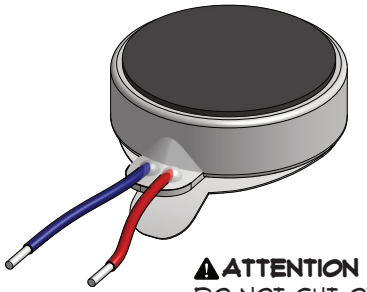


Once the soldering iron is plugged in, it may take minute or so to heat up and be ready to use. Adjust the dial to around 350° C to 400° C.



Place the blue sponge in the tray of your solder stand and hydrate with a little water it so it expands.

As you work, the solder on the tip of your iron will start to *oxidize*, becoming gunky and making it harder to solder. When this happens, you can wipe the tip off on the wet sponge and start fresh.

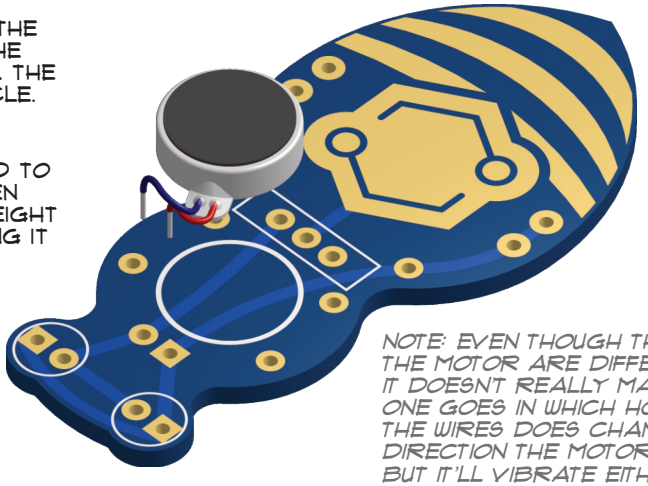


THE FIRST THING TO SOLDER IS THE VIBRATION MOTOR. PEEL OFF THE ADHESIVE BACKING, AND STICK THE MOTOR DOWN IN THE WHITE CIRCLE.

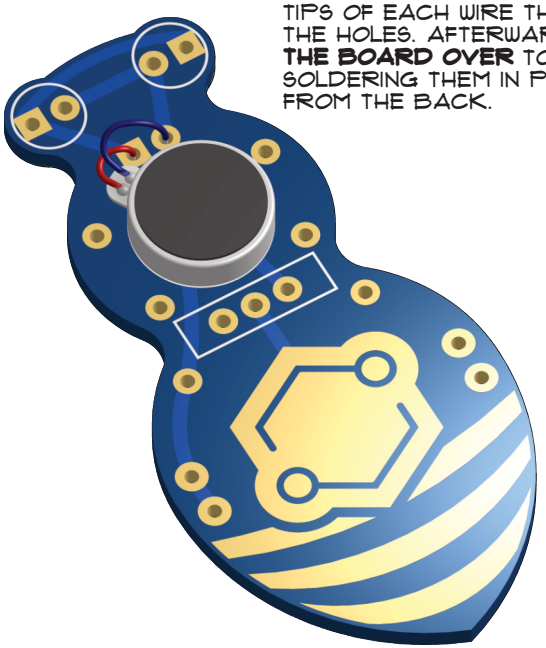
INSIDE THIS LITTLE GUY IS AN UNBALANCED WEIGHT ATTACHED TO THE AXLE OF A DC MOTOR. WHEN THE MOTOR SPINS THE LITTLE WEIGHT IS SLUNG AROUND INSIDE CAUSING IT TO VIBRATE.

⚠ATTENTION

DO NOT CUT OR STRIP WIRES. THEY ARE VERY THIN GAUGE AND EASY TO DAMAGE.



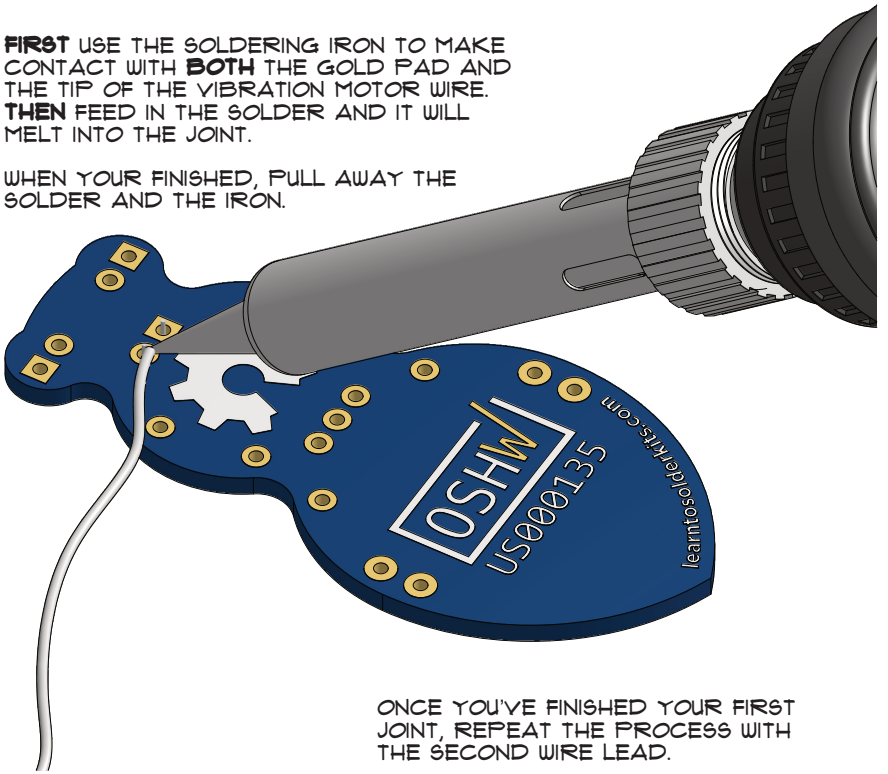
NOTE: EVEN THOUGH THE WIRES FOR THE MOTOR ARE DIFFERENT COLORS, IT DOESNT REALLY MATTER WHICH ONE GOES IN WHICH HOLE. SWITCHING THE WIRES DOES CHANGE THE DIRECTION THE MOTOR INSIDE SPINS, BUT IT'LL VIBRATE EITHER WAY.



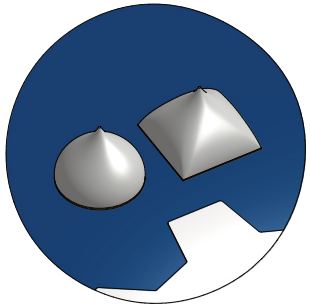
FEED THE EXPOSED METAL TIPS OF EACH WIRE THROUGH THE HOLES. AFTERWARDS, **FLIP THE BOARD OVER** TO BEGIN SOLDERING THEM IN PLACE FROM THE BACK.

FIRST USE THE SOLDERING IRON TO MAKE CONTACT WITH **BOTH** THE GOLD PAD AND THE TIP OF THE VIBRATION MOTOR WIRE. **THEN** FEED IN THE SOLDER AND IT WILL MELT INTO THE JOINT.

WHEN YOUR FINISHED, PULL AWAY THE SOLDER AND THE IRON.



ONCE YOU'VE FINISHED YOUR FIRST JOINT, REPEAT THE PROCESS WITH THE SECOND WIRE LEAD.



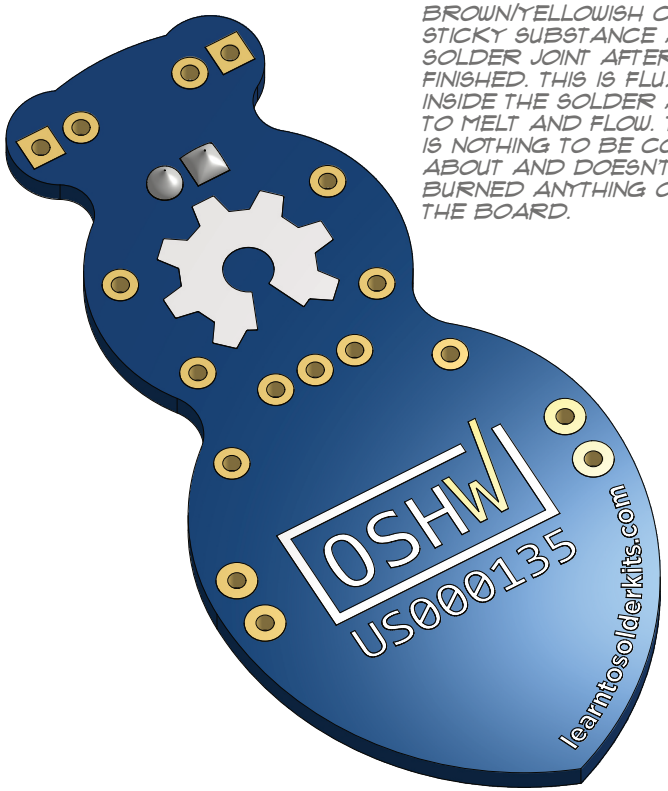
GOOD SOLDER JOINT

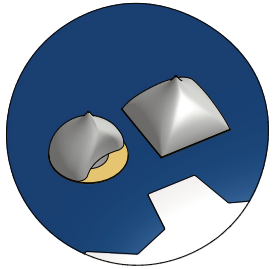
THE PERFECT SOLDER JOINT SHOULD BE SOMEWHAT SHINY, COVER THE WHOLE PAD AND BE SHAPED LIKE A HERSHEY'S KISS.

ALL GOOD SOLDER JOINTS TEND TO LOOK ALIKE, EACH IMPERFECT SOLDER JOINT TENDS TO BE FLAWED IN ITS OWN WAY.

THERE ARE A FEW DIFFERENT THINGS TO LOOK OUT FOR.

NOTE: YOU MAY NOTICE A SLIGHT BROWN/YELLOWISH COLORED, STICKY SUBSTANCE AROUND YOUR SOLDER JOINT AFTER YOU HAVE FINISHED. THIS IS FLUX THAT'S INSIDE THE SOLDER AND HELPS IT TO MELT AND FLOW. THIS RESIDUE IS NOTHING TO BE CONCERNED ABOUT AND DOESNT MEAN YOU'VE BURNED ANYTHING OR DAMAGED THE BOARD.





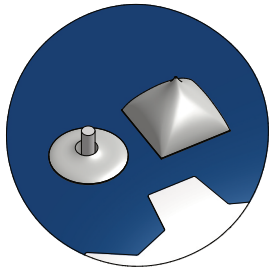
TOO LITTLE SOLDER

IF YOU DIDN'T ADD ENOUGH SOLDER, OR THERE WASN'T ENOUGH HEAT ON THE PAD FOR THE SOLDER TO FLOW PROPERLY, THEN YOUR JOINT MAY LOOK LIKE ONE OF THESE.

OFTEN A SOLDER JOINT LIKE THIS WILL STILL WORK. BUT IT ALSO MIGHT NOT BE A SOLID ENOUGH CONNECTION FOR THE CIRCUIT TO OPERATE..

IF YOU STILL SEE ANY OF THE GOLD, OR IF THE SOLDER JOINT APPEARS FLAT, IT'S AN EASY FIX.

JUST TRY AGAIN! TAP YOUR SOLDERING IRON ON THE JOINT AND ADD A LITTLE BIT MORE SOLDER.

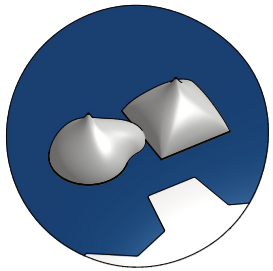


TOO MUCH SOLDER

IF YOU'VE USED TOO MUCH SOLDER, YOUR JOINT MIGHT LOOK LIKE THIS. OR IT MIGHT LOOK BLOBBY AND UNEVEN IN IT'S OWN UNIQUE WAY.

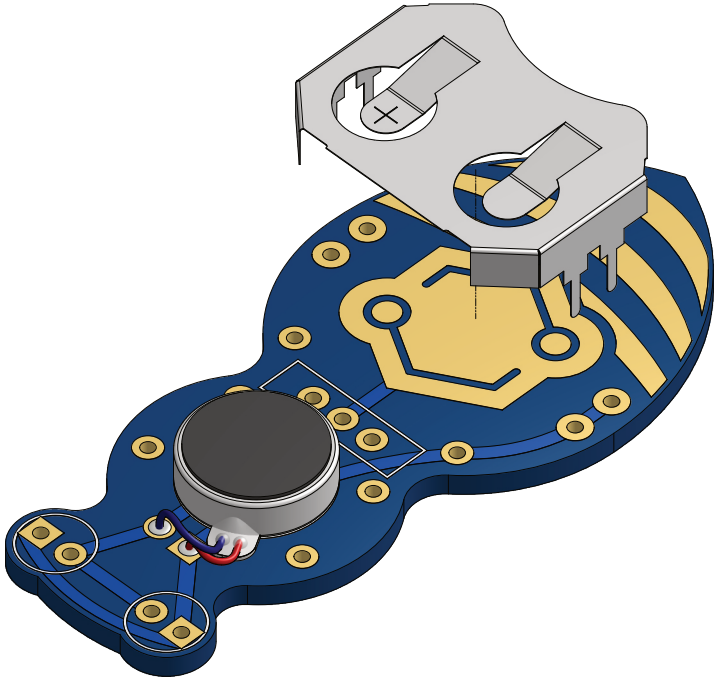
THE RISK OF A JOINT LIKE THIS IS THAT THE SOLDER MIGHT CREATE A BRIDGE OR "SHORT CIRCUIT" BETWEEN TWO SPOTS ON THE BOARD THAT WOULDN'T OTHERWISE BE CONNECTED.

THIS WILL CAUSE THE ELECTRICITY TO TAKE A DIFFERENT ROUTE THAN INTENDED FOLLOWING THE PATH OF LEAST RESISTANCE. THIS CAN CREATE ALL SORTS OF PROBLEMS FOR A CIRCUIT SOMETIMES ALLOWING SENSITIVE COMPONENTS OR TRACES TO GET FRIED WHEN THE CIRCUIT IS POWERED ON.



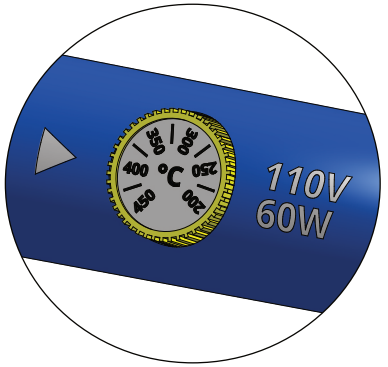
MOST OF THE TIME YOU CAN JUST ADD HEAT WITH YOUR SOLDERING IRON TO REFLOW THE JOINTS AND THEY WILL SEPARATE. IF YOU CLEAN THE SOLDER TIP AHEAD OF TIME IT WILL ALSO PICK UP SOME OF THE EXCESS SOLDER.

IF AVAILABLE, YOU CAN ALSO TRY A SOLDER SUCKER TO REMOVE THE SOLDER AND TRY AGAIN.



If you are having any trouble getting a good looking joint, try adjusting the temperature of your soldering iron.

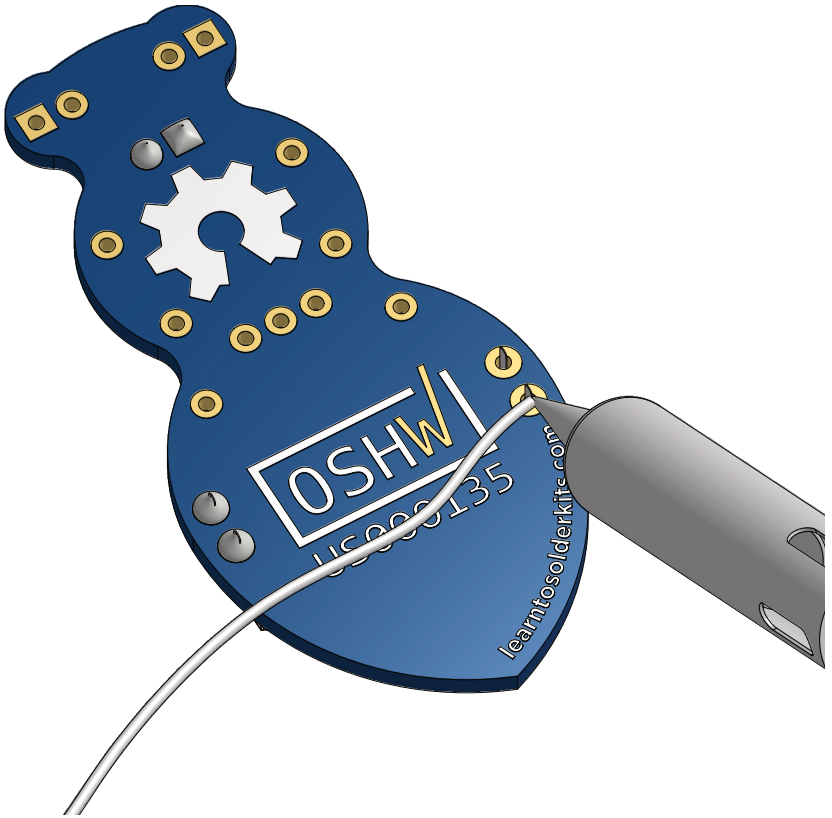
Your solder should go from solid to liquid, then back to solid again when you remove the heat. If there is any sort of gummy in-between, it's a sign the iron may be set too low.



The next part to solder into place is the battery holder.

The metal of the battery holder will contact the top (positive side) of the battery, connecting it to the circuit.

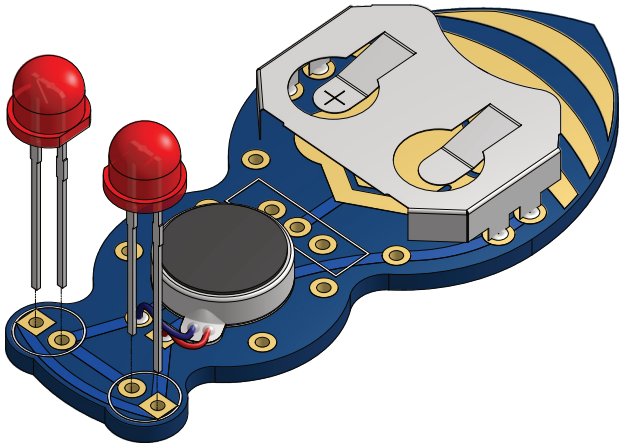
The bottom of the battery (negative side) will contact the large gold pad (Learn to Solder kit's logo).



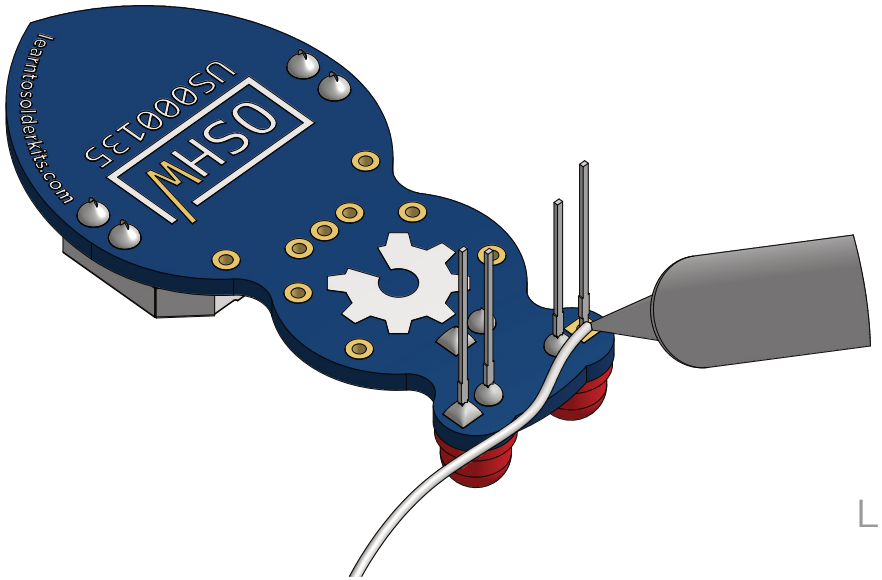
⚠ Attention

Make sure the battery holder is oriented as shown above before you solder it in. Otherwise the battery won't be able to slide in from the tail of your Jitterbug.

Insert LEDs with the **long lead** (the positive side or *anode*) of each LED going into the **square holes** on the board.



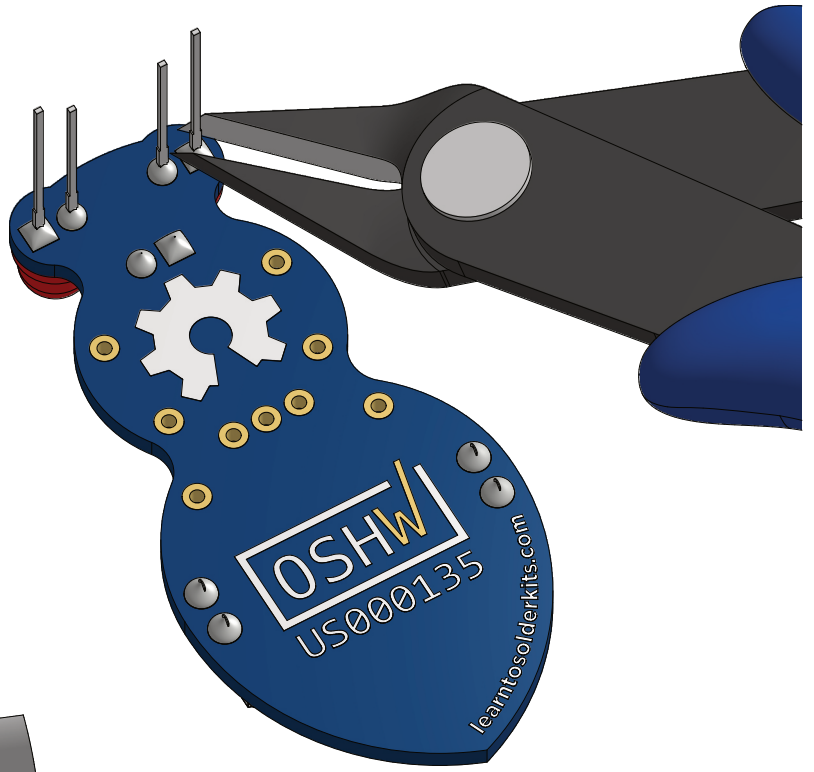
Note: LEDs are *diodes*. They operate as a sort of one-way valve for electricity. If they are put in backwards the electrical current won't pass through and your LEDs won't light up.



Trim up the LED legs just above the solder joint.

⚠Caution

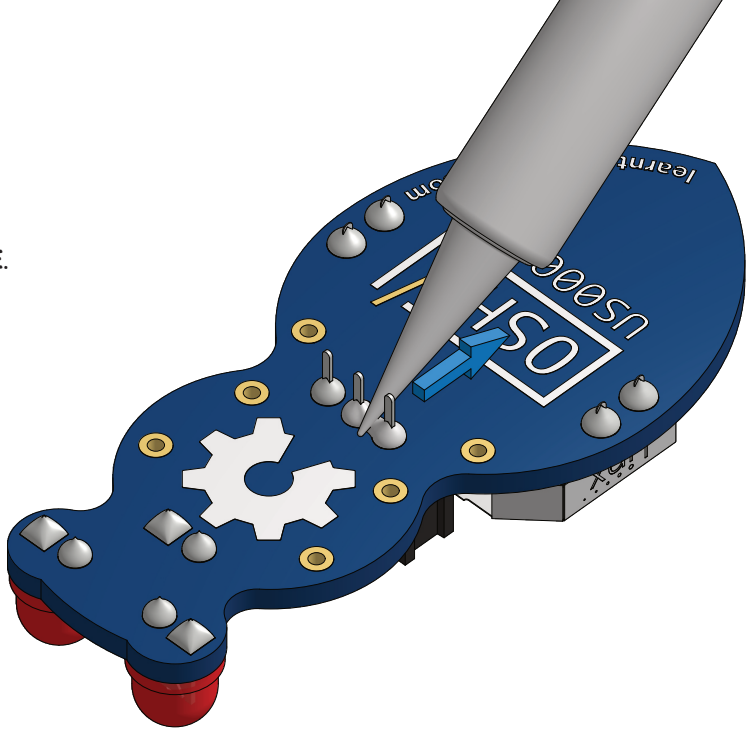
These leads have a tendency to go flying when you trim them. To avoid a hazard, hold onto the end of each lead as they are being snipped and *wear safety glasses*.

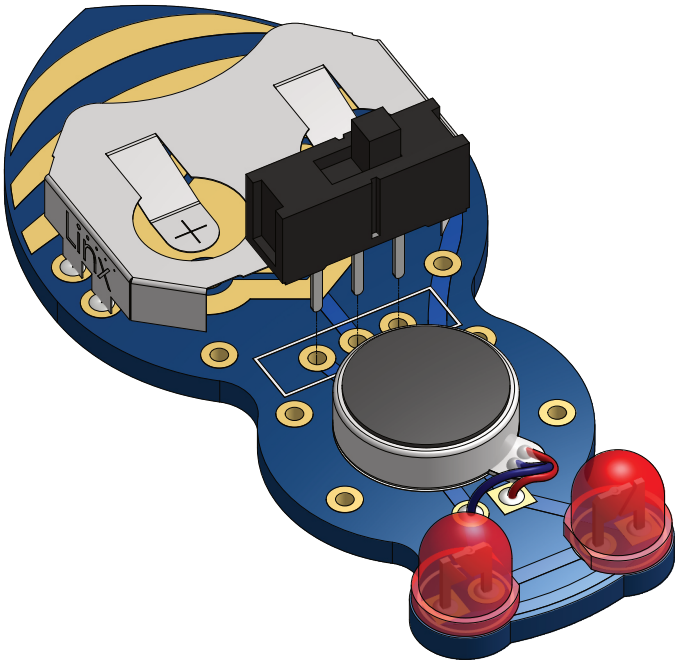


THE FINAL *ELECTRICAL* COMPONENT TO THE CIRCUIT TO SOLDER IS THE SWITCH.

THE PADS FOR THE SWITCH ARE A TINY BIT CLOSER TOGETHER THAN THE OTHER COMPONENTS AND A LITTLE EASIER TO BRIDGE.

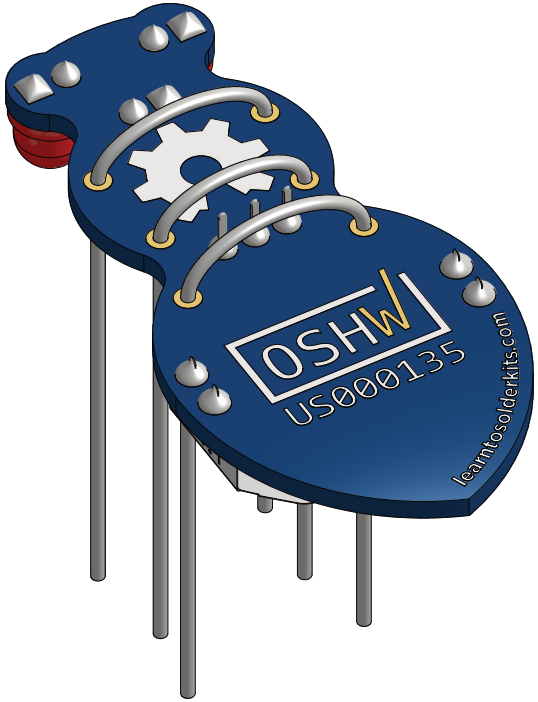
IF THIS HAPPENED TO THE SWITCH (OR ANY OTHER COMPONENTS) TRY CLEANING OFF THE TIP OF THE IRON AND THEN SLIDING IT BETWEEN THE BRIDGED JOINTS TO REFLOW THE SOLDER AND SEPARATE THEM.





AFTER THE SWITCH IS IN, IF YOU WANT, YOU CAN TEMPORARILY SLIDE THE BATTERY IN TO TEST THE CIRCUIT. IF EVERYTHING IS SOLDERED CORRECTLY, WHEN YOU FLIP THE SWITCH, YOUR JITTERBUG'S EYES SHOULD LIGHT UP!

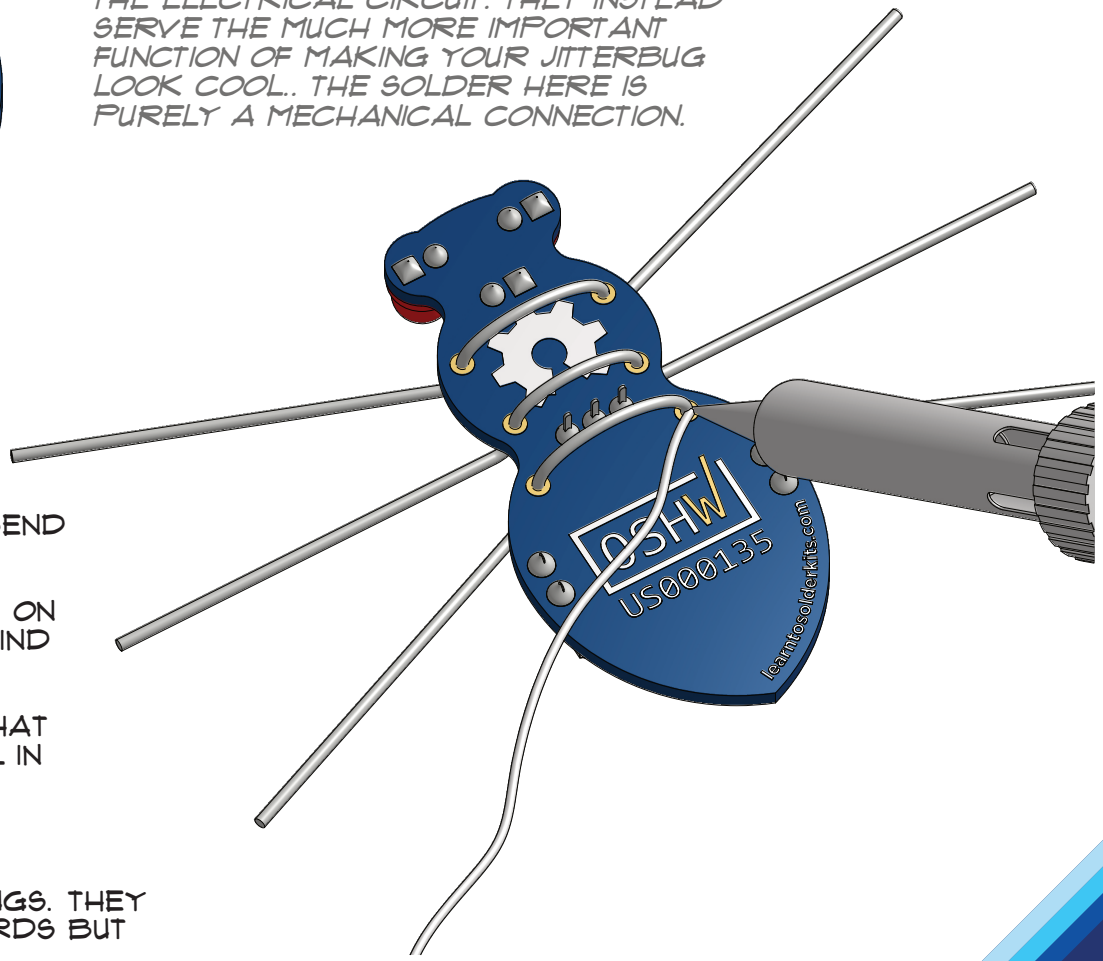
IF YOU DO THIS, BE SURE TO REMOVE THE BATTERY AGAIN BEFORE MOVING ON TO THE NEXT STEP. IT'S NEVER A GOOD IDEA TO SOLDER ON A CIRCUIT THAT'S CONNECTED TO POWER.



Next, take your coil of wire and cut it into 3 equal pieces; these will become your jitterbugs legs.

Create a loop with each, slide them into the board, then solder.

Note: these legs are not part of the electrical circuit. They instead serve the much more important function of making your jitterbug look cool.. The solder here is purely a mechanical connection.

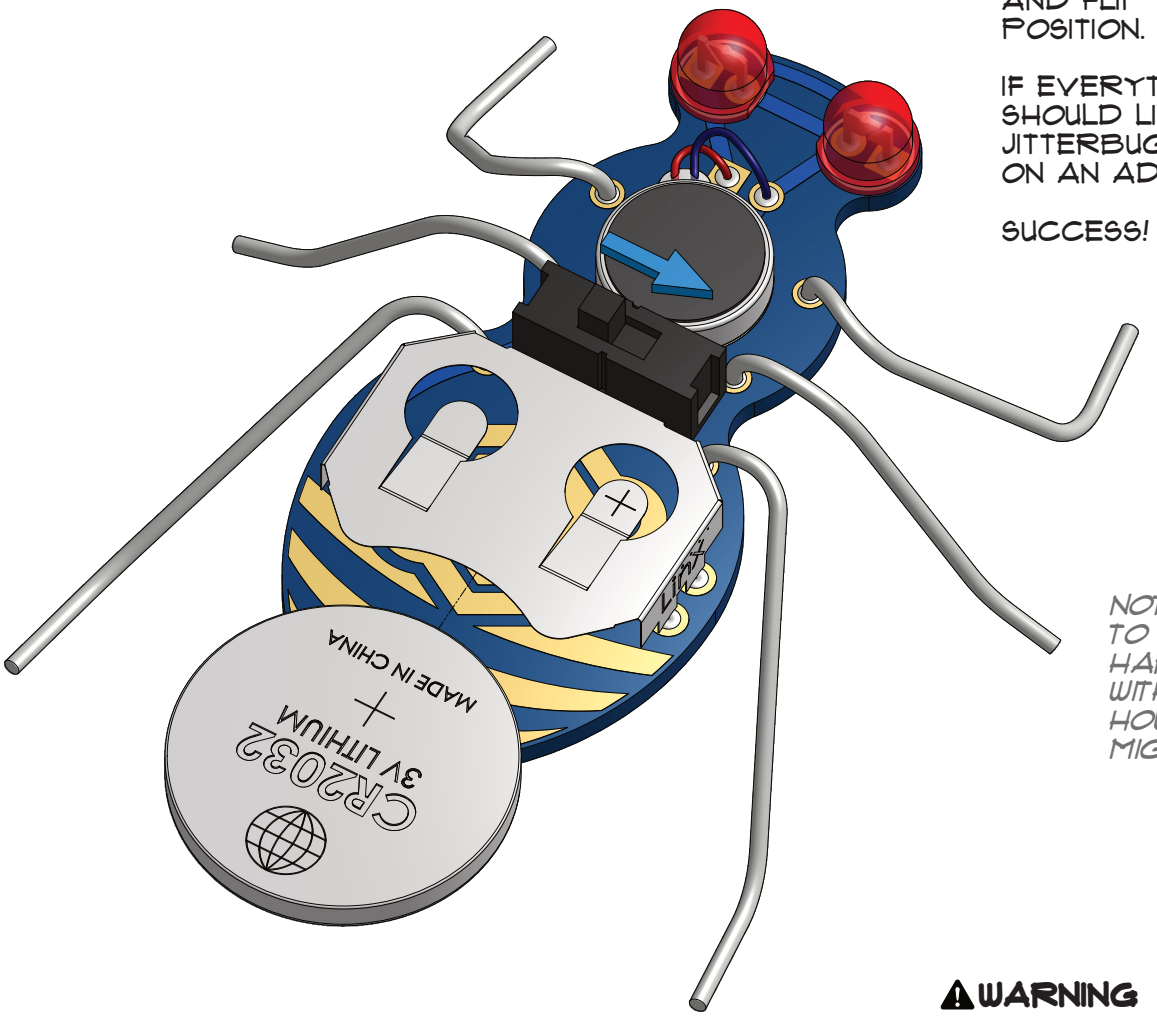


After the legs are in, you can bend them and trim them any way you want, whether it's meticulously shaped to look like the picture on the box or it's standing on it's hind legs ready for a fight.

However you do it, it is a **fact** that everyone's jitterbug is beautiful in it's own way.

⚠Warning

Do not body shame any jitterbugs. They have very resilient circuit boards but very sensitive souls.



THE LAST STEP IS TO SLIDE IN THE BATTERY (THE SIDE WITH THE + SIGN UP) AND FLIP THE SWITCH INTO THE ON POSITION.

IF EVERYTHING IS RIGHT, THE EYES SHOULD LIGHT UP WITH LIFE AND YOUR JITTERBUG WILL BEGIN TO SKITTER AWAY ON AN ADVENTURE.

SUCCESS!

NOTE: YOUR JITTERBUG WILL TEND TO MOVE BEST ON A SMOOTH, HARD SURFACE. EXPERIMENTING WITH IT'S LEGS OFTEN CHANGES HOW IT MOVES AND HOW FAST IT MIGHT GO.

⚠WARNING

BEFORE CLEANING UP YOUR STATION, BE SURE TO ALLOW YOUR SOLDERING IRON SUFFICIENT TIME TO COOL DOWN.

"WAIT! IT DOESN'T WORK"

DON'T PANIC. NOBODY HAS EVER LEARNED ELECTRONICS (OR ANY OTHER PRACTICAL ART) WITHOUT PLENTY OF THINGS GOING WRONG. YOU'RE NOT ALONE.

HERE ARE SOME QUICK DEBUGGING STEPS TO WORK THROUGH:

DOES NOTHING TURN ON?

DOUBLE CHECK YOUR SOLDER CONNECTIONS AT THE LEDS AND THE MOTOR. ELECTRICITY IS LAZY. IF THERE IS SOLDER BRIDGED ACROSS CONNECTIONS AT ONE OF THESE POINTS, THEN THE ELECTRICAL CURRENT WILL TAKE THE SHORTEST WAY HOME BACK TO THE BATTERY THROUGH THAT SOLDER BRIDGE. THIS MEANS NONE (OR BASICALLY NONE) OF THE ELECTRONS WILL BOTHER GOING THROUGH THE MOTOR OR LEDS AND NOTHING WILL LIGHT UP OR BUZZ. — TAKE A LOOK AT PAGE 11 FOR HOW TO QUICKLY FIX A BRIDGED SOLDER JOINT

IF NOTHING APPEARS BRIDGED, THEN TAKE A CLOSER LOOK AT THE SWITCH AND BATTERY HOLDER. NO GOLD SHOULD BE SHOWING. IF THEY'RE NOT SOLDERED IN FULLY, THE VOLTAGE FROM THE BATTERY MIGHT NOT ACTUALLY BE MAKING IT TO THE COMPONENTS. — REMOVE THE BATTERY AND TOUCH UP THE SOLDER JOINT

DO ONE OR BOTH OF THE LEDS NOT LIGHT UP?

IT COULD BE THAT THEY WERE PUT IN BACKWARDS. A QUICK WAY TO TEST THIS IS TO TAKE OUT THE BATTERY, FLIP IT OVER AND REINSERT IT. THIS WILL FLIP THE DIRECTION OF THE CURRENT FOR THE *WHOLE* CIRCUIT. IF THE PROBLEM LED OR LEDS LIGHT UP NOW, THEY WERE PUT IN BACKWARDS. OTHERWISE, THEY'RE PROBABLY JUST NOT SOLDERED IN ALL THE WAY AND NEED A QUICK TOUCH UP.

IS YOUR CIRCUIT ALWAYS ON, NO MATTER HOW THE SWITCH IS FLIPPED?

THIS LIKELY MEANS YOU HAVE A SOLDER BRIDGE AT THE SWITCH. RATHER THAN NEEDING TO GO THROUGH THE SWITCH, THE ELECTRONS CAN JUST TAKE THE PATH AROUND - IMAGINE THE SWITCH IS A LOCKED GATE AND THE SOLDER BRIDGE IS A BIG GAP IN THE FENCE NEXT TO IT. — TO FIX THIS TAKE A LOOK AT PAGE 11 FOR HOW TO TOUCH UP THE BRIDGED SOLDER JOINT

DO THE EYES LIGHT UP BUT YOUR JITTERBUG REFUSES TO JITTER?

THIS USUALLY MEANS THE MOTOR IS NOT FULLY CONNECTED TO THE CIRCUIT. THIS COULD BE FOR A FEW DIFFERENT REASONS:

(1) ONE OF THE WIRES DIDN'T GET SOLDERED IN ALL THE WAY — REMOVE THE BATTERY AND TOUCH UP THE SOLDER JOINT

(2) YOU TRIED TO SOLDER TO THE *INSULATION* INSTEAD OF THE ACTUAL METAL OF THE WIRE. SINCE INSULATION IS THERE TO *PREVENT* ELECTRICAL FLOW, ALL THAT SOLDERING TO THE INSULATION DOES IS MELT STUFF. — TRY TO TOUCH UP THE JOINT SO THE METAL END OF THE WIRE CONNECTS TO THE CIRCUIT

(3) ONE OF THE MOTOR WIRES IS TORN, DAMAGED OR RIPPED OUT. THESE WIRES ARE PRETTY DELICATE. YOU'LL LIKELY NEED A NEW VIBRATION MOTOR IF YOU WANT THIS CIRCUIT TO WORK. PLEASE CONTACT US AND WE'LL HELP YOU OUT.

CAN'T FIGURE IT OUT? NEED MORE HELP?

TAKE A PICTURE, SEND US AN EMAIL AND WE'LL BE HAPPY TO TAKE A LOOK AND TRY AND FIGURE OUT WHAT WENT WRONG AND GET YOUR JITTERBUG JITTERING!

HELLO@LEARNTOSOLDERKITS.COM

We hope building this kit has brought you excitement and joy and maybe opened up new possibilities.

For more projects to build, check out our website at:

learntosolderkits.com

If you're feeling inspired and in need of more, check out some of the things we love and explore a new world.

Getting Started in Electronics by Forrest M. Mims III

This and his other books feature friendly hand drawn diagrams, beautifully simple explanations of electronics concepts plus dozens of circuits to play around with and build yourself. More than one generation of engineers owes a debt to Forrest Mims and this book for sparking their excitement in electronics.

Make: Magazine

Make publishes books and a monthly magazine showcasing endless projects guaranteed to spark your excitement. If you ever get the chance, attend one of the Maker Faires they host all around the world. You won't regret it.

Instructables instructables.com

Here you'll find thousands of projects built by amateur inventors, makers, tinkerers and engineers covering electronics, 3D printing, crafting, gardening, woodworking, cooking, and more.

Learn to Solder Kits

Designs for all packaging, instructions and silicone reference mat, along with the 3D models used in their creation, were produced by Andy Colborn for Learn to Solder Kits, LLC.

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