



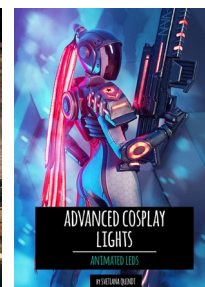
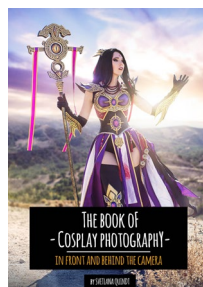
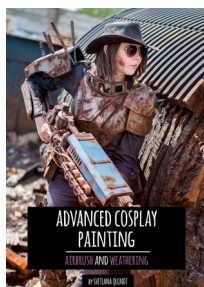
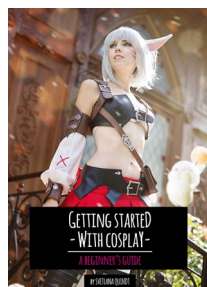
HOW TO BUILD A MINI FOG MACHINE

BY SVETLANA QUINDT

GO MAKE SOMETHING!

Please visit my website and check out my other books and patterns:

www.kamuicosplay.com



Adding fancy effects to props and costumes is clearly the cherry on top of every elaborate crafting project. Animated LED strips are already a great addition and will surely impress everyone on social media, on the convention floor, or during the craftsmanship judging of a costume competition. If you want to go even further though, creating and implementing a fog machine might be perfect for you. While they can be a little bit tricky to put together, the materials are pretty affordable, they are small enough to fit into the tiniest props and costume pieces, and can also be built with a remote control. Mini fog machines are also a great addition especially to any LED projects as they can turn a simple orange light into smoldering fire or blue LEDs into a convincing icy effect.

In this guide I will show you everything you need to make your very own mini fog machine! There's no soldering or electronics experience required at all, so don't worry if you're a beginner! And I promise you, once you've built your very first one, you'll become obsessed and will begin to squeeze fog effects into everything! At least, that's the reason why most of my own projects lately are steaming, smoldering and smoking like crazy, haha! It's just super fun!

Before we get started

While self-made mini fog machines look really cool and amazing in action, keep in mind that they are only a fun gimmick and not designed to run constantly over a longer period of time. The vaporizers I used for this guide are not designed for this kind of application, and you need to be careful to not let them run for an extended amount of time. I personally use my fog machines only for a maximum of around 2 minutes and still constantly check if they are fine. That's usually more than enough time to fill the area around you with fog anyway, but just don't expect to get a prop that smokes constantly for several hours during a long convention day. See your little fog machine instead as a fancy extra that you can turn on for photoshoots, videos or just to blow peoples minds. I mean, that's probably the reason why you are reading this guide anyway, right? After all, I used my own mini fog machines the exact same way and here you are, ready to built one yourself, eh?



ABOUT KAMUI COSPLAY

We're Svetlana and Benni but most of you know us as Kamui Cosplay. If you're into making costumes, chances are you've already stumbled upon one of our videos, tutorials or books before. We consider ourselves very lucky to be able to make our living by helping creative people like you with their crafting dreams. We're humbled by all the love you send our way and try to give back as much as we can.

Thank you for your support by buying this book! Hopefully, you will find it helpful and inspirational!

Materials and tools

Before we start, keep in mind that you have to work with sharp tools and hot tools, handle electronics, and will come in contact with potentially harmful materials. So this project might be not the best pick for unsupervised children. Also, as always, it's better to be safe than sorry. Wear protective gloves if you feel unsure and don't be afraid to ask for help. Just like always, I try to keep this guide very simple, easy to follow and especially very beginner friendly! Cosplay and crafting is for everyone and having no idea what you are doing is part of the adventure!

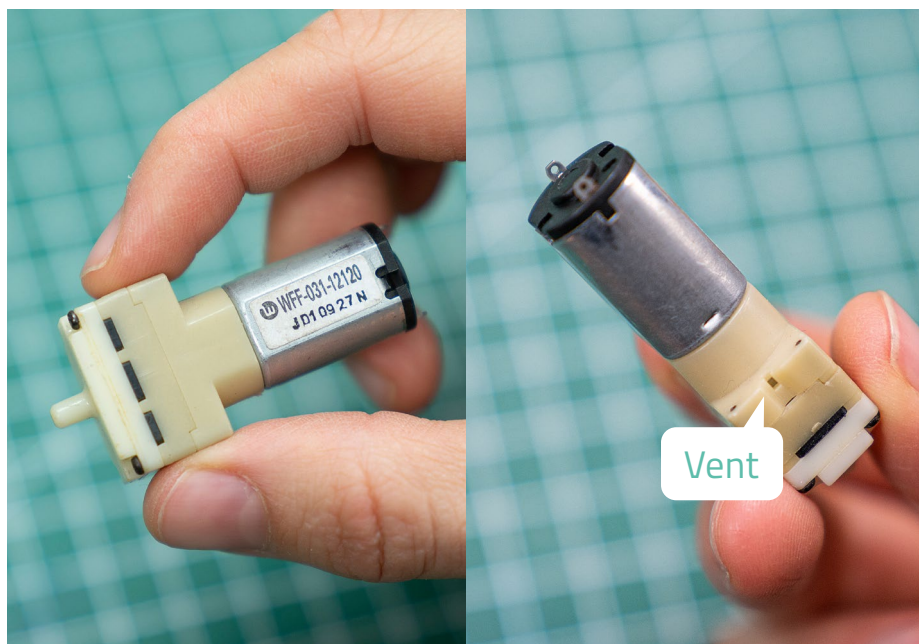
The tools and materials you'll need to build a mini fog machine are actually quite basic if you've ever worked with electronics. Still, I will mention everything required in detail and will also make sure that you are properly prepared before the real crafting fun begins:

Vaporizer

At the heart of the fog machine is a simple vaporizer which turns fog fluid or glycerin into smoke, just like the standard vape sticks that are so popular these days. Once you search for one on Amazon, Google or in a local vaping shop, you'll find plenty of variations of vaporizers and will probably get lost in the number of results.. After trying out plenty different ones myself, I stuck with the **"Kanger T2 Clearomizer"** with an 1.8 Ohm coil. The correct coil resistance (in Ohms, the unit for electrical resistance) is important here. Accidentally using a 0.6 Ohm coil once gave me many headaches since I was not able to turn the machine on - so don't miss this detail! The Kanger T2 in general is quite easy to find and doesn't require a lot of effort to turn it into a fog machine. In addition it is affordable and compact enough to fit into many different projects.

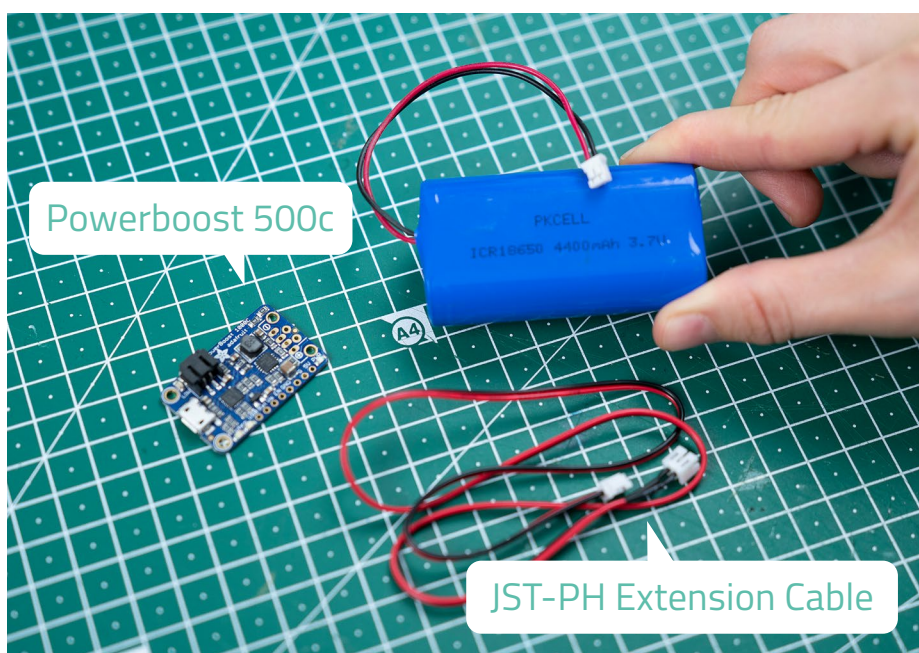
If you are not able to obtain this specific vaporizer and are looking for other similar ones, make sure to keep the position of the coils in mind. Here they are basically strings of wool (wicks) that absorb the fog fluid and turn it into fog once you pass some electricity through them. It's critical to keep them constantly soaked in fog fluid for the whole thing to work. Exposing dried out wool to high voltage only burns them to a crisp, so please be careful. The only option then would be to replace them. To avoid that, it's important to keep the position of the fog machine in your prop or costume piece in mind. These coils can be found at the top or the bottom. The Kanger T2 Clearomizer has its coils at the top for example, so I always place it upside down into my projects to keep the coils constantly soaked. More on proper positioning later.





Mini air pump

In addition, you'll need a small air pump. This one blows air through the vaporizer and "simulates" the inhalation that would result in smoke. I recommend a 3V aquarium pump with at least 0.7 liters of airflow per minute. Slightly stronger pumps with higher voltage work as well, but you might also need a stronger power supply to run them. However, in my opinion, a 3V pump creates enough smoke for most costume projects and is especially small enough to fit into PVC pipes and tiny props. Please understand that I do not provide direct product links here, since they often stop working after a short amount of time. Searching for "mini aquarium air pump 3V" on Google, Amazon or eBay should provide you with plenty of results though! You can also check your local electronics or Aquarium shops if you prefer to buy locally.



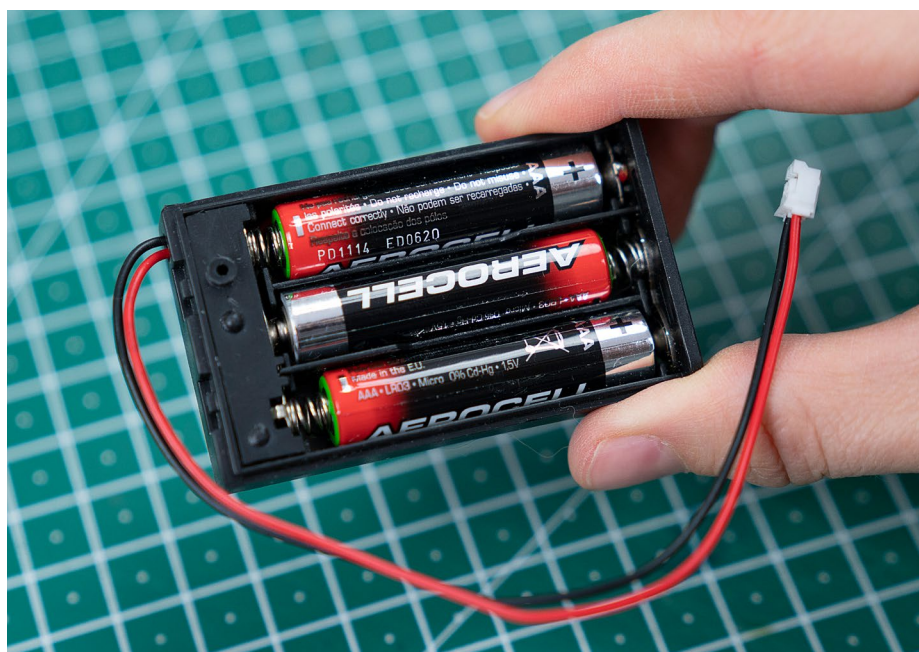
Battery

The third essential part is the power supply. Since I'm using rechargeable Lithium Ion battery packs for all of my electronic projects, I highly recommend them also for this mini fog machine build. They keep battery waste low, can be used for all kinds of builds, and are reliable and more eco-friendly since they are rechargeable. I actually haven't thrown away a single battery in all my years of cosplaying and am proud of all the waste I've prevented. I use a [4400 mAh 3.7V Lithium Ion battery](#) from Adafruit. Smaller ones work as well, but you shouldn't go under 2000 mAh. This is simply what the vaporizer needs according to the law of Ohm ($\text{Voltage} / \text{Resistance} = \text{Current}$, so in numbers: $3.7 \text{ Volt} / 1.8 \text{ Ohm} = 2.06 \text{ Ampere}$). Batteries with less than 2000 mAh can still work, but might cause problems, so I don't recommend them. The ones from Adafruit also provide an over-voltage, under-voltage and over-current protection, which is especially important for this vaporizer hack. Please keep this in mind, if you are searching for cheaper alternatives from other vendors. They all should have that protection! Once you order your Lithium Ion battery, also grab a battery charger (like a [Powerboost 500c](#)). You can also go with a regular battery pack, but they drain quite fast and obviously need to be replaced quicker. In addition you also need a [battery extension cable](#), which lets you connect circuit and power source.



SAFETY NOTE

Even though, Adafruit's Lithium Ion batteries have built in safeties (that mostly turn off the battery in an emergency), they still always should be treated with care and respect. Please don't do anything weird with them. You might want to read the [manual](#) if you want to be extra safe.



Silicone tube

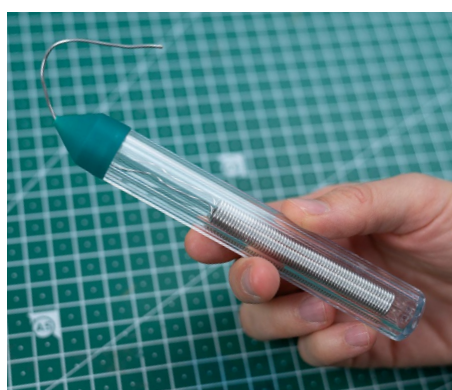
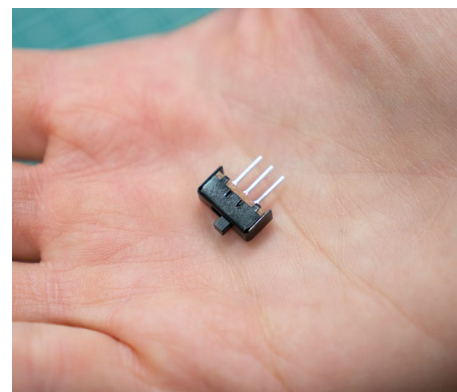
Next you also need silicone tubing, which will be necessary to connect the vaporizer with the mini air pump and also lead the fog where you want it to come out. I would recommend getting tubing with an inner diameter of 1/8" (3mm). I found mine in the aquarium section of a local hardware store, but just like always, eBay and Amazon should be a good source to find stuff like this. Search for "aquarium silicone tube" or "plastic tube" and try to find one with the right inner diameter. I actually prefer silicone, since it doesn't crease that easily and can be pulled through costume pieces without a lot of trouble. This part might require the longest search, so I hope you'll get lucky quickly!

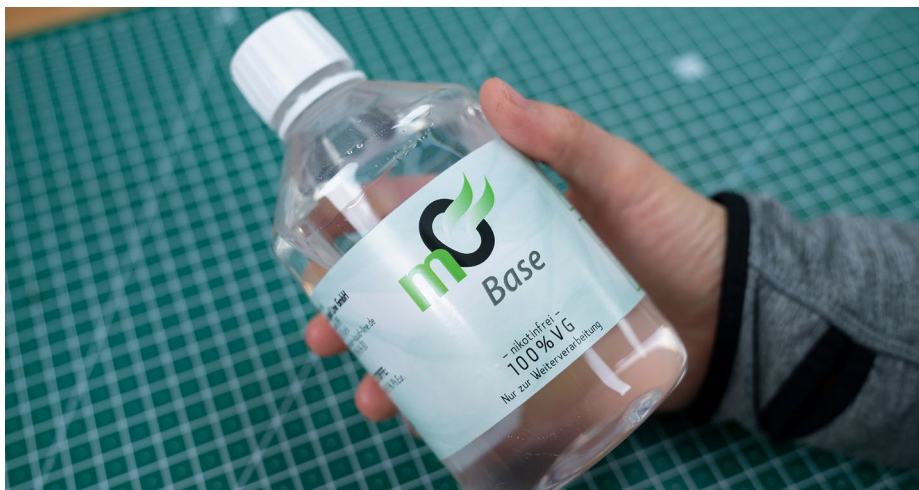


Soldering equipment

Since this project requires soldering, you also will need electronics equipment and a few additional materials. I'm using 0.14mm ribbon cables and a simple slide switch (to turn the smoke on and off) for all of my electronics.

In addition you obviously need a soldering iron. I'm using a very basic one with 45W, but it's quite comfy to hold. To strip your wires faster and generally work more comfortably, a wire stripper and a helping hands tool are great as well. I personally also prefer lead-free solder, but also have some leaded solder ready for special occasions (sometimes it works better). Like all of the above, heat-shrink tubing and electrical tape should be a part of every soldering kit as well.





Fog fluid

To create smoke, you need to fill up your vaporizer with fog fluid. I personally prefer pure vegan and non-toxic glycerin. I actually got this one from a random vaping shop in my street, but you can order it online as well. Regular non-toxic fog fluid works as well of course. Notice that you can use distilled water to thin the fog fluid a bit, but this will also reduce the resulting smoke.



Dremel & more

Finally you will also need a hot glue gun, a heat gun and a dremel with a small metal drilling tip. Hopefully most of this will already be in your cosplayer toolbox. If you've never crafted before, all of this might sound like quite an investment at first sight. However, keep in mind that you will keep using all these materials and tools for plenty of further projects, cool costumes and electronics installations. And I'm pretty sure, this won't be your last project!



Remote control additions

If you want to control your smoke remotely, you need an RF receiver (toggle type), an N-channel power MOSFET and a Keyfob 4-Button RF Remote Control. You can find all of these on Adafruit.com as well. Of course it's totally fine to shop somewhere else entirely. I'm not affiliated with Adafruit in any way, it's just where I get all of my stuff. Anyway, I hope the product links will still help you to find alternatives.

· [T4 RF Receiver](#) (toggles between on/off)

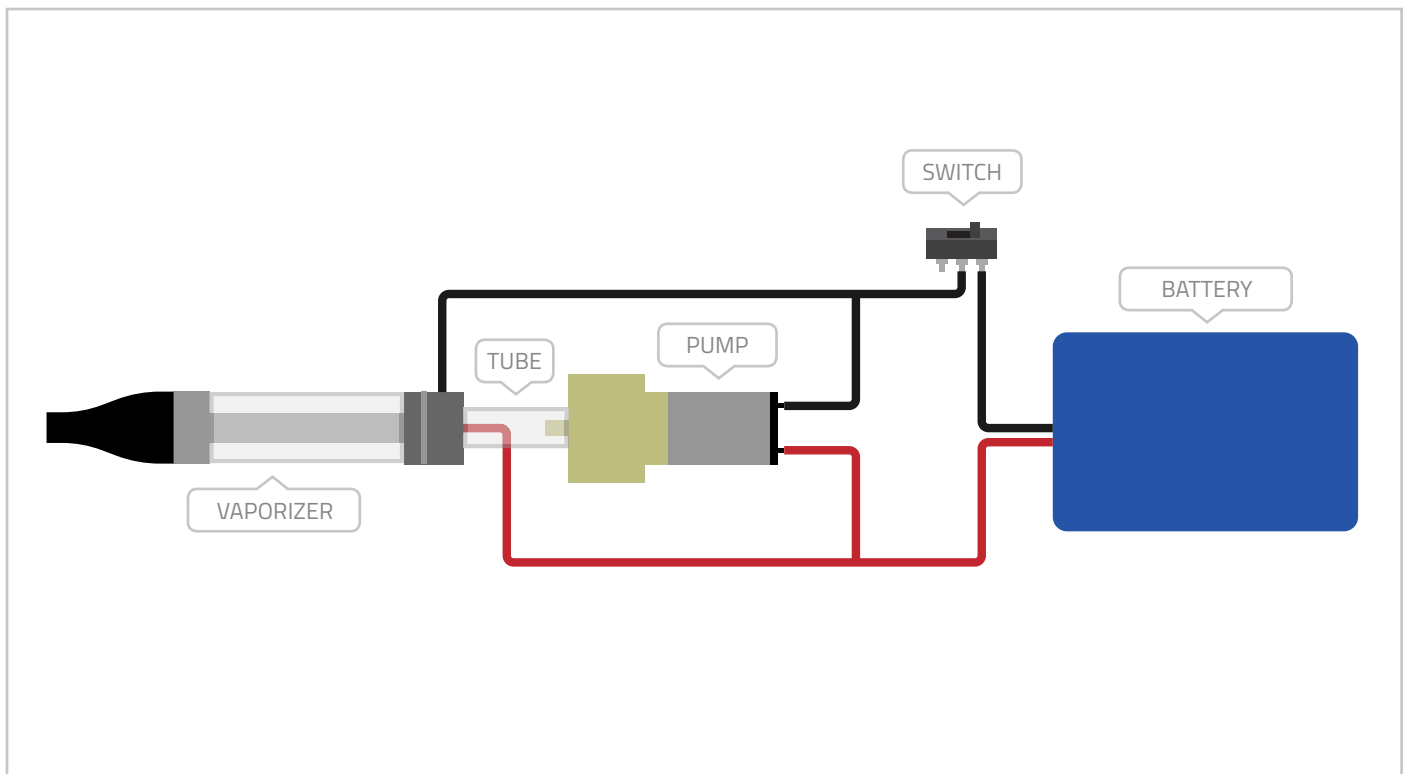
· [M4 RF Receiver](#) (only on while pressing down)

· [N-channel MOSFET \(30V / 60A\)](#)



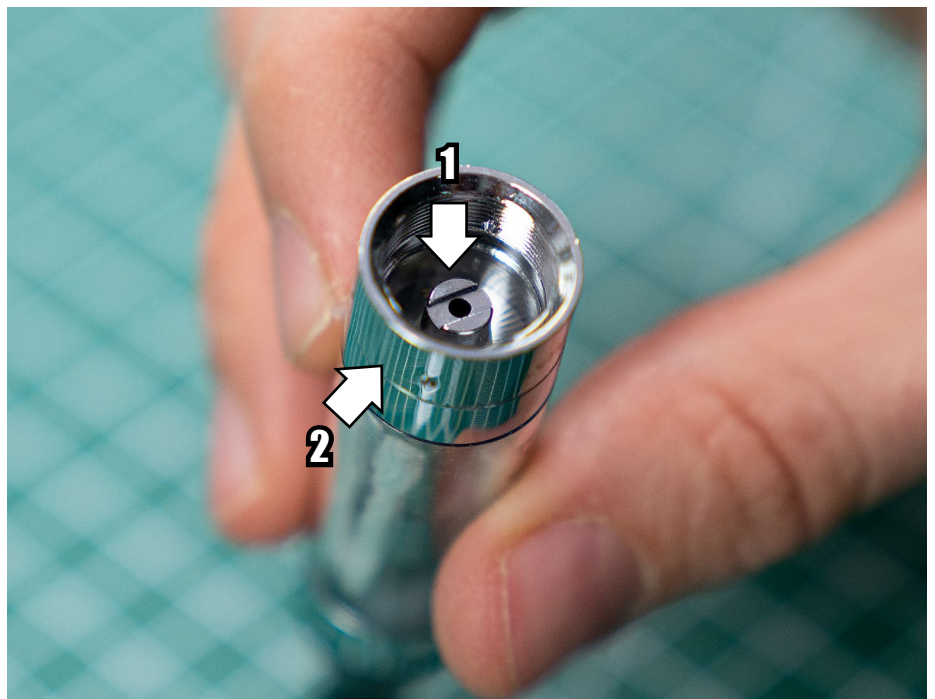
Step 1: Let's start building a fog machine!

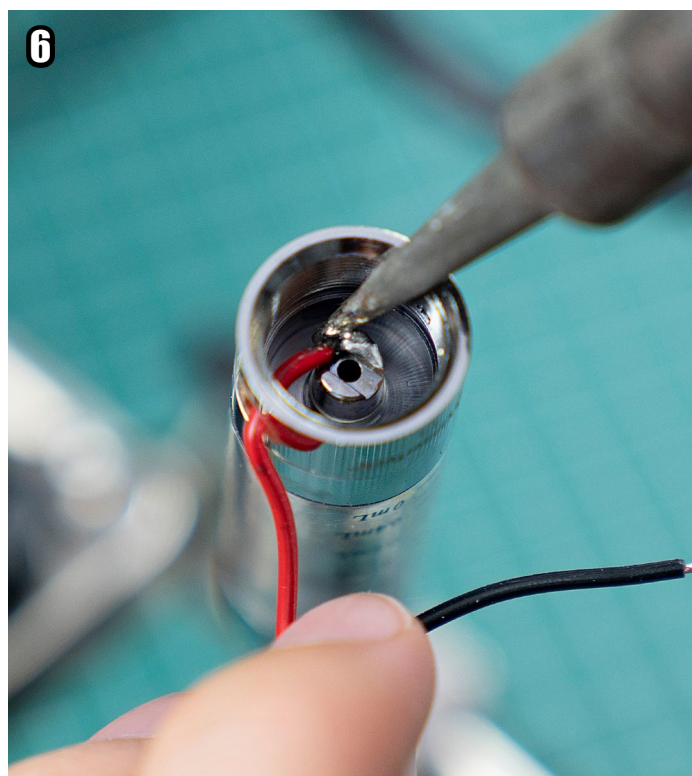
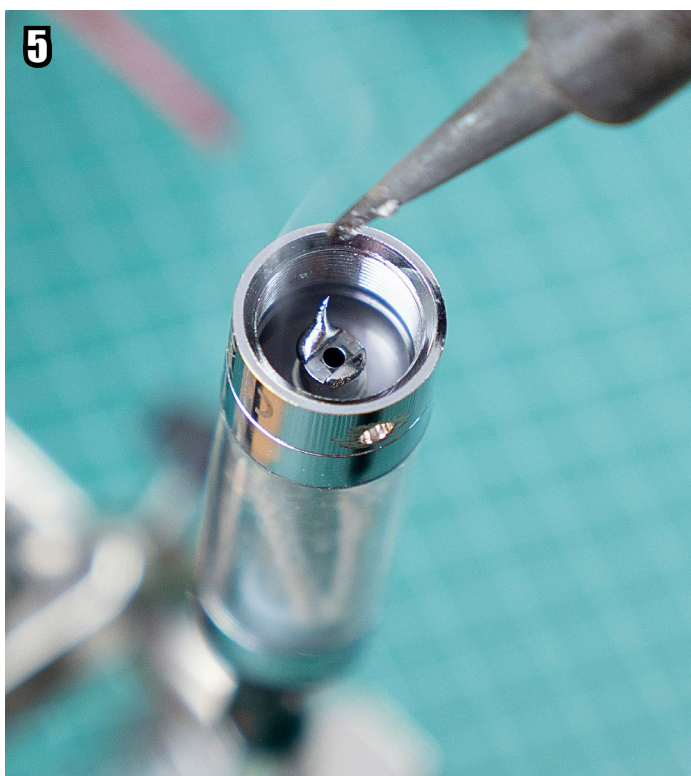
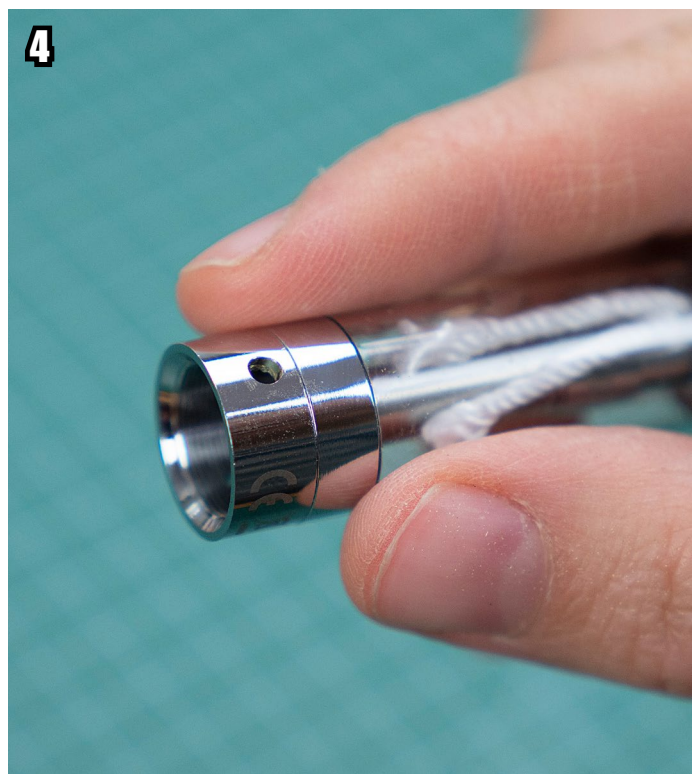
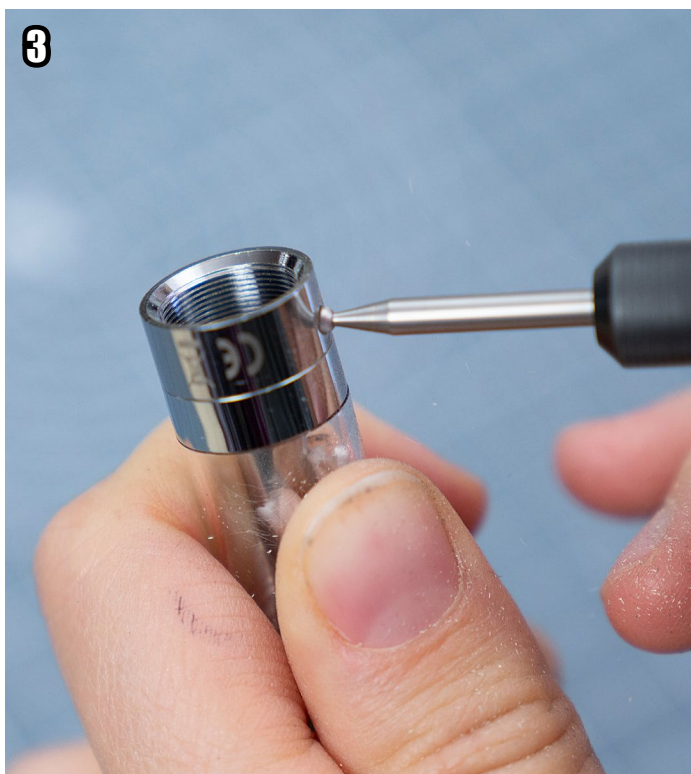
To get a good overview on what needs to be done, here is a schematic of the circuit we have to build. As you can see, it's a simple standard version and doesn't include a remote control yet. You need to attach the vaporizer to the mini air pump, combine their positive and negative wires in parallel connection and then add a switch and the Lithium Ion battery for the power supply. Doesn't look that complicated, right? Let's do it!



Connecting the vaporizer

The first step is to attach a positive and negative connection to the vaporizer. They are usually screwed onto a battery pack, but instead of that we will need to solder on some wires here. Before we can do this though, a few slight adjustments are necessary. The red plus connection needs to go at the middle of the little cylinder inside the vaporizer **[1]** and the black minus connection wire has to be attached to the metal body outside **[2]**.

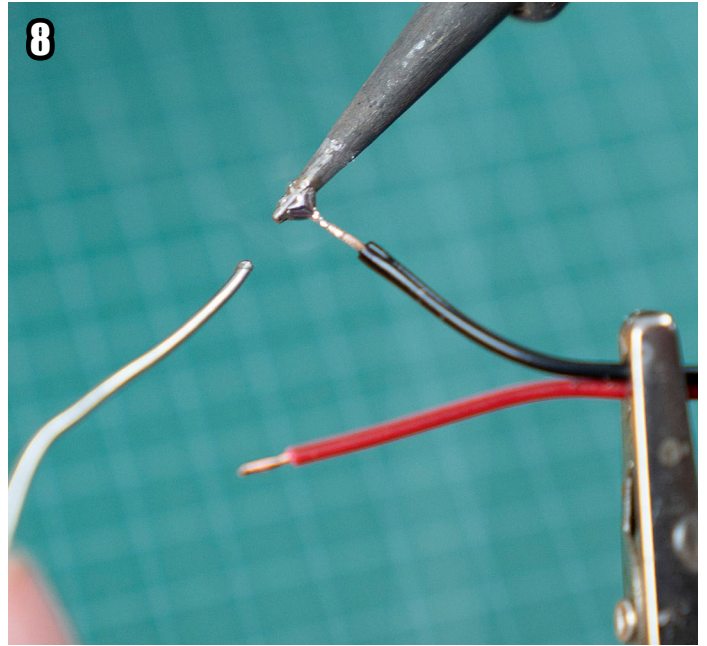
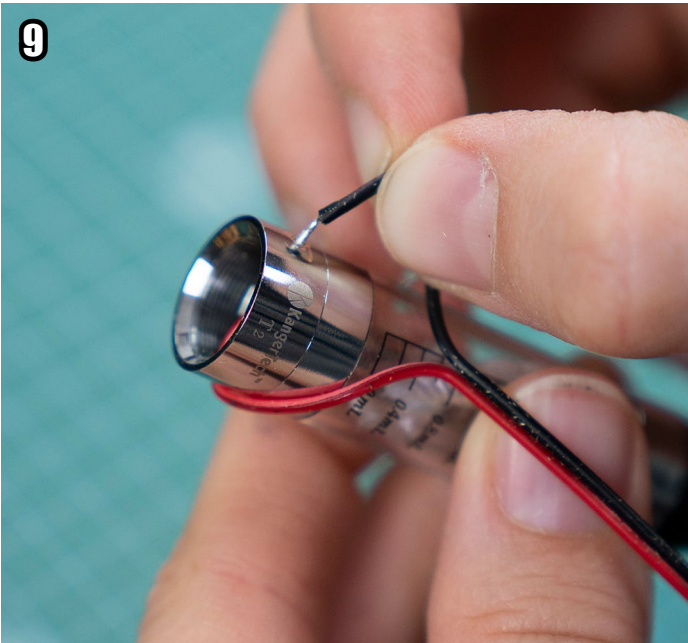
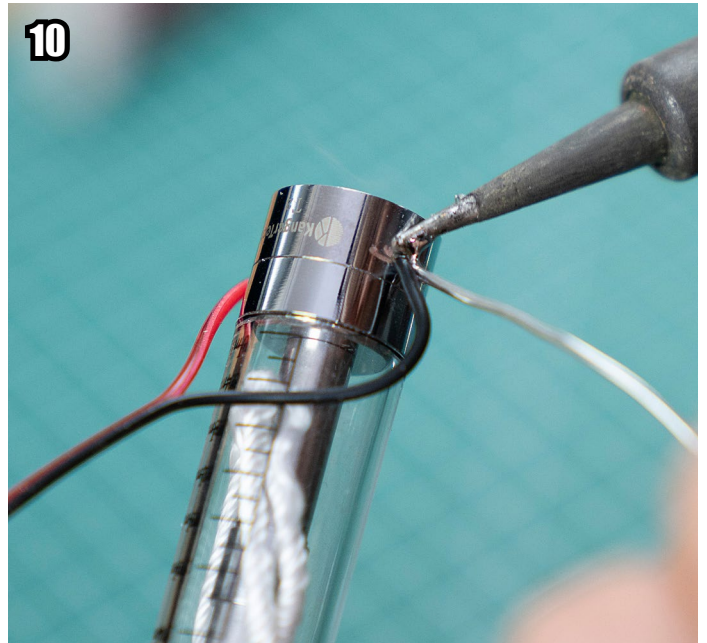




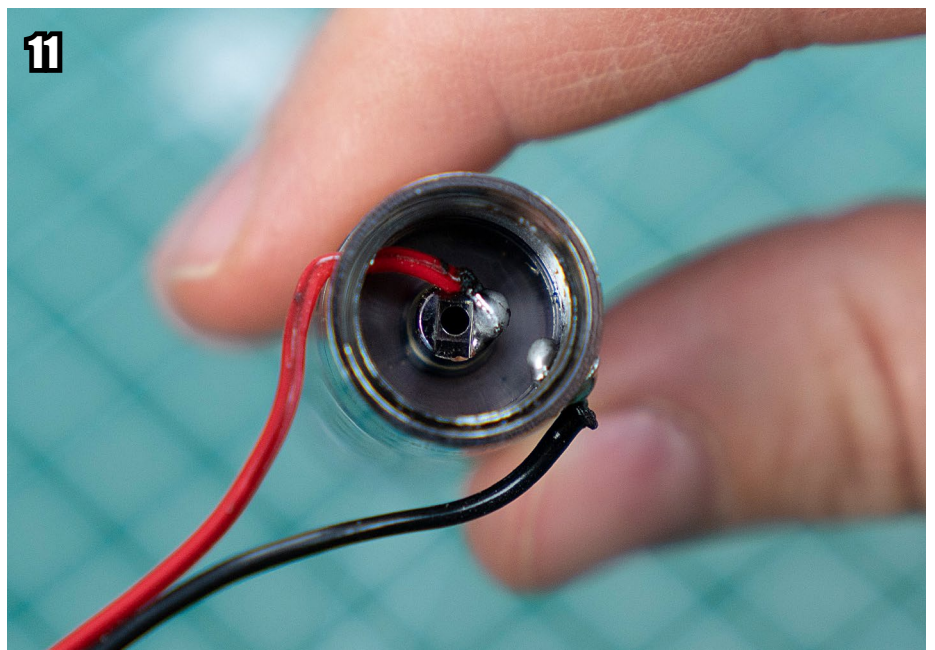
To reach the inner cylinder, you'll need to enlarge one of the little holes at the side of the vaporizer first. I used a dremel and a little, round metal milling tip for this job. You only need to enlarge the hole just enough so that your red wire fits through it. Please wear safety goggles while doing this. I began here at the center of the already excising hole and just kept on pushing my drilling tip against the metal side **[3-4]**.

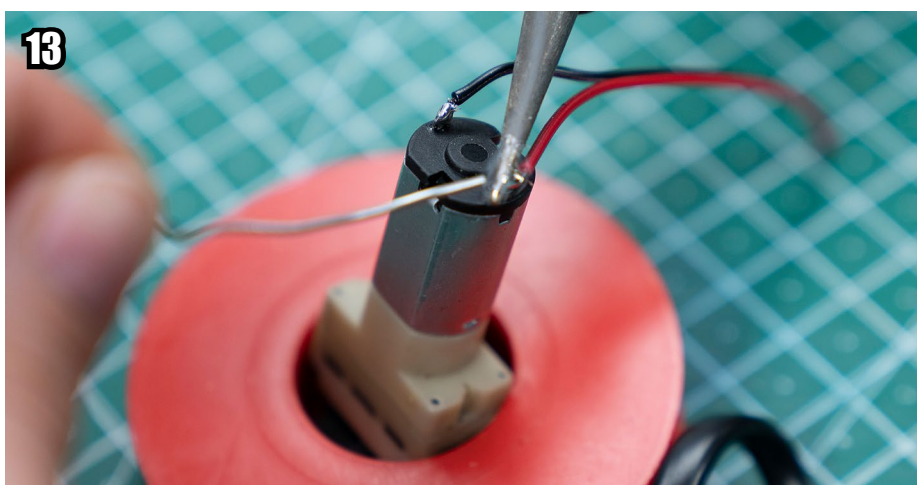
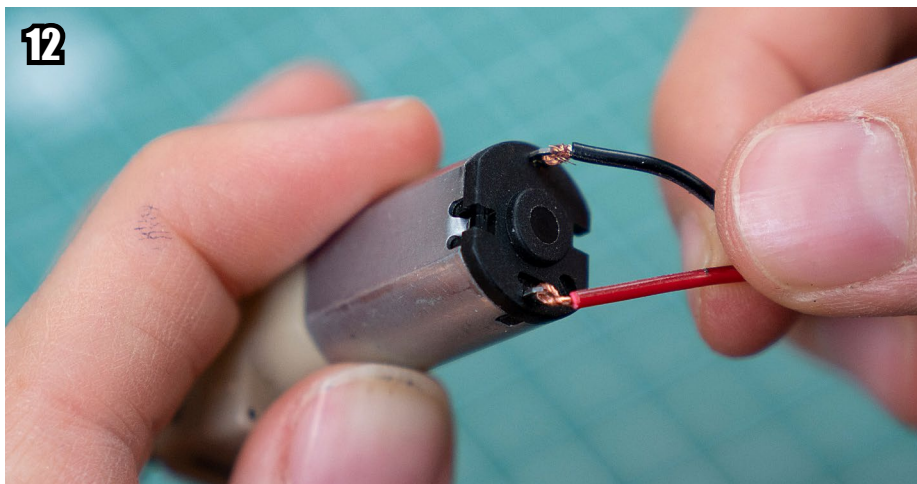
Once done, roughen up the surface of the inner cylinder a bit and add then some solder on top **[5]**. If you have trouble with lead-free solder sticking, you might want to try solder with lead and increase the temperature of your soldering iron a bit. I usually work with 25W, but also had to switch to 45W here. After you were successfully able to add some solder to the cylinder, strip a red wire and pull it through the

enlarged hole. It's not properly visible here, but I attached my vaporizer to my helping hands to do this. You might ask for some other helping hands from friends or family, if you don't have one though. Now heat up the already attached solder on the cylinder in the middle and place the stripped end of your wire **[6]**. This step might be a little bit challenging, so don't worry if it doesn't work out on the first try.

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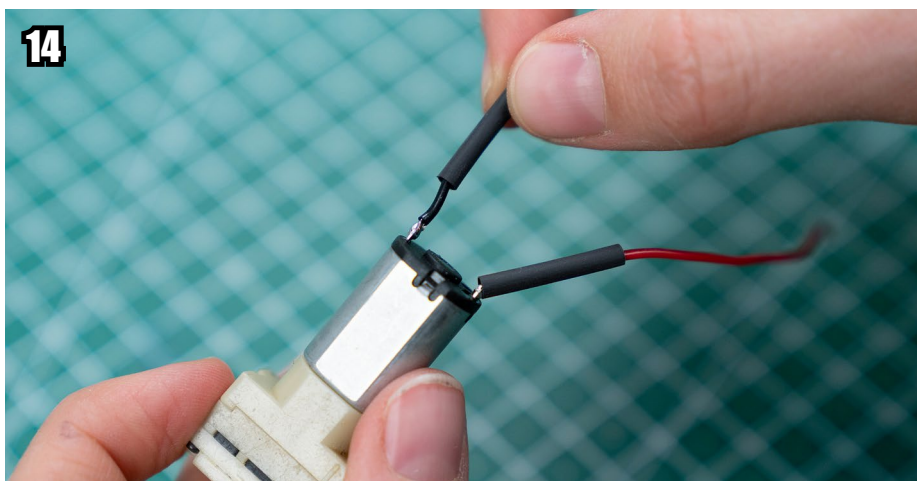
Now the tricky part is actually connecting the negative wire to the outside of the vaporizer. Since the metal here is actually galvanized, it's necessary to use your dremel to roughen up the surface here as well. Get rid of the top, galvanized layer **[7]** and cover the tip of your wire with solder to stiffen it up **[8]**. Then pull it through the hole **[9]**, bend it so it gets stuck on the inside and add plenty of solder from both sides to the top of the wire **[10]**. The result isn't pretty, but works out. I hope image **[11]** helps you get a good view on how your own soldering work should look like.

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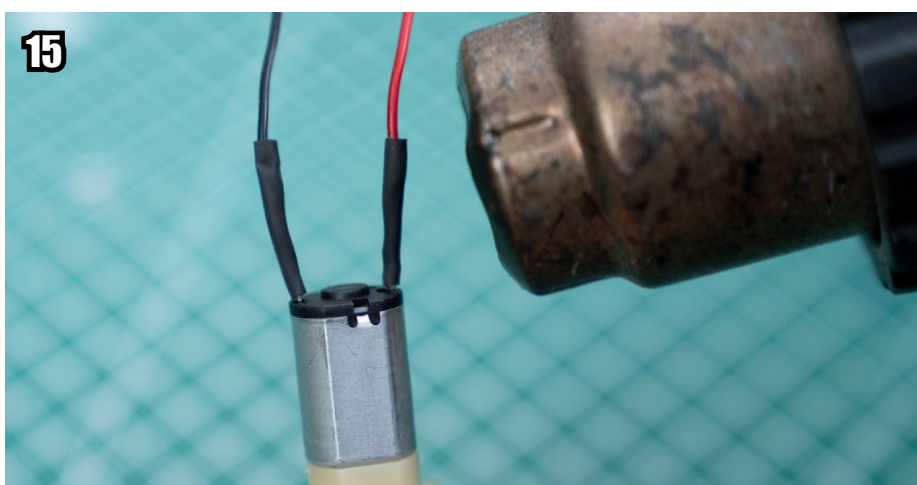


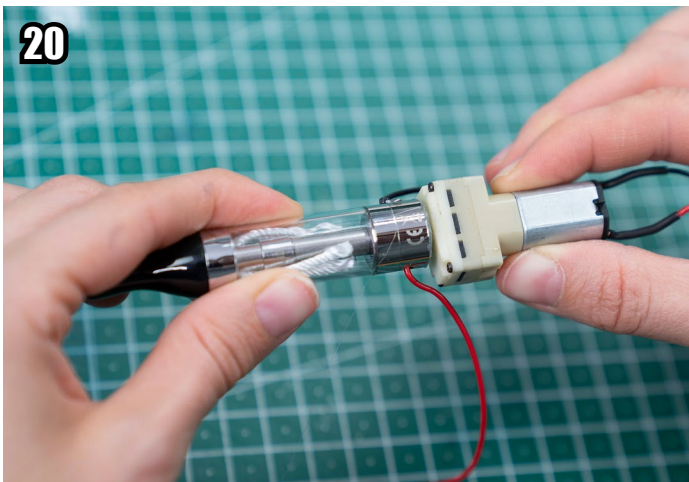
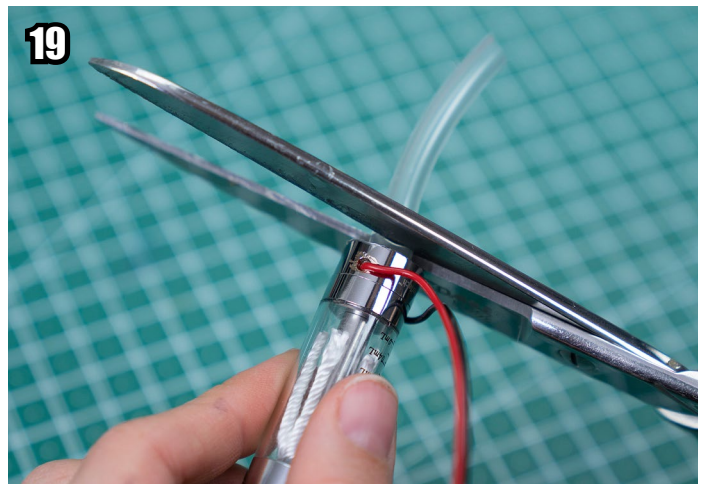
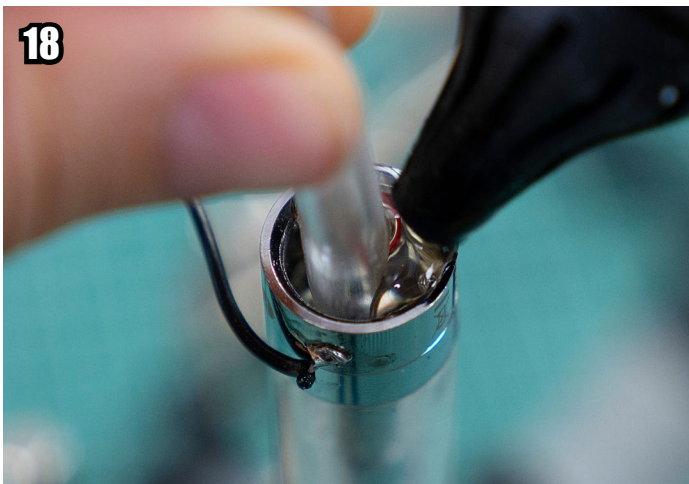
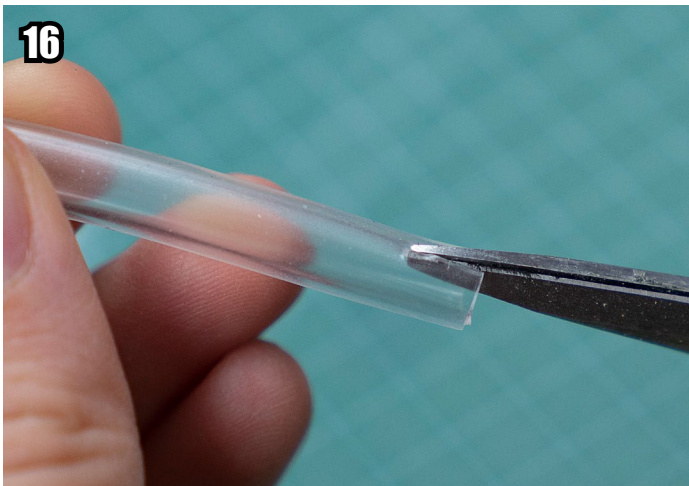
Connecting the pump

So far so good! Next the air pump needs some power as well. On the back you should find a little plus symbol (here goes the red wire or plus pole) that tells you how to wire up the pump. Strip your wire ends and pull them through the little loops on the back of the pump **[12]**. Now connect the cables with a bit of solder **[13]**, pull them apart, place some heat-shrink tubing over them **[14]**, and finally use heat to seal your connections **[15]**. I grab my crafting heat gun for this step but a regular lighter works as well of course.



Now the pump is ready to be connected!



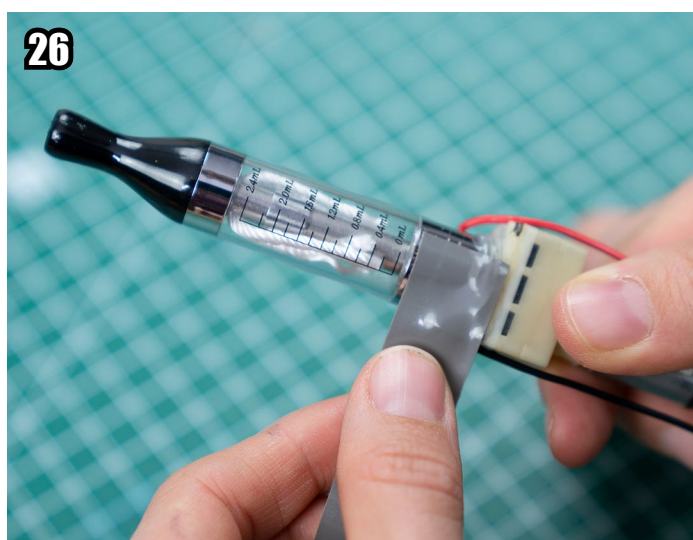
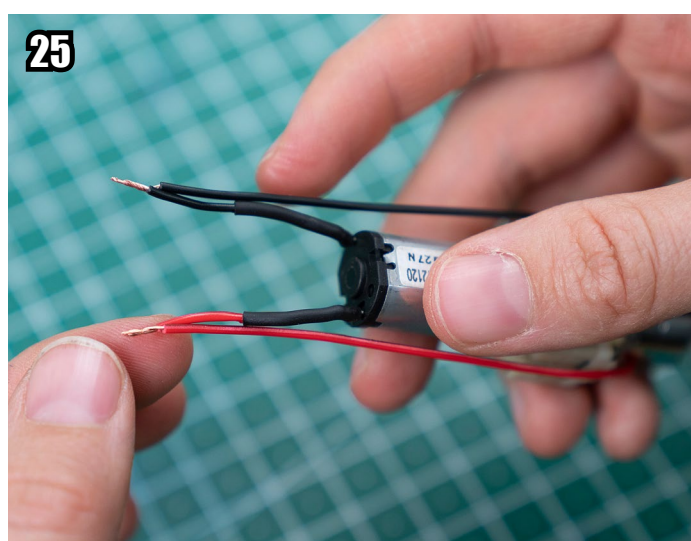
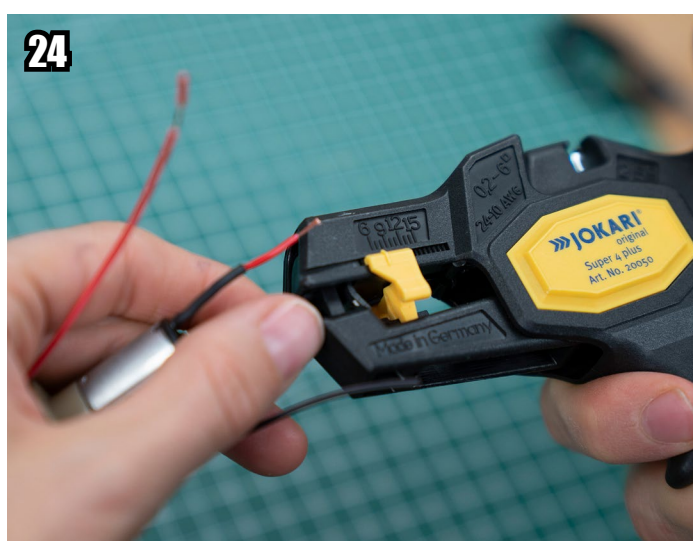
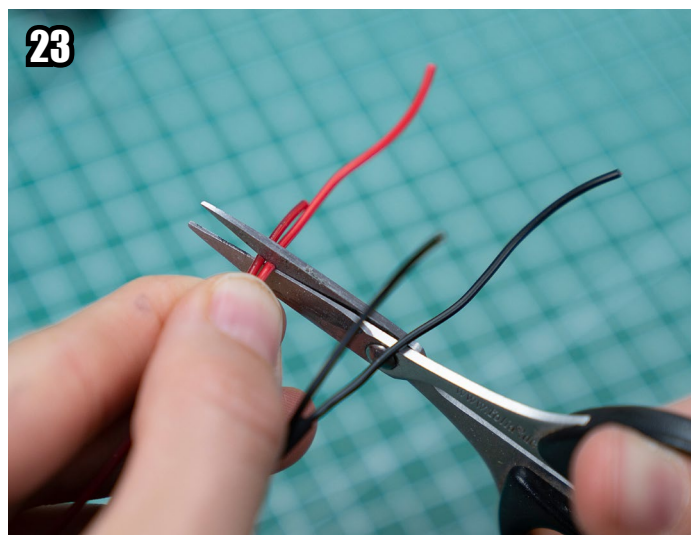
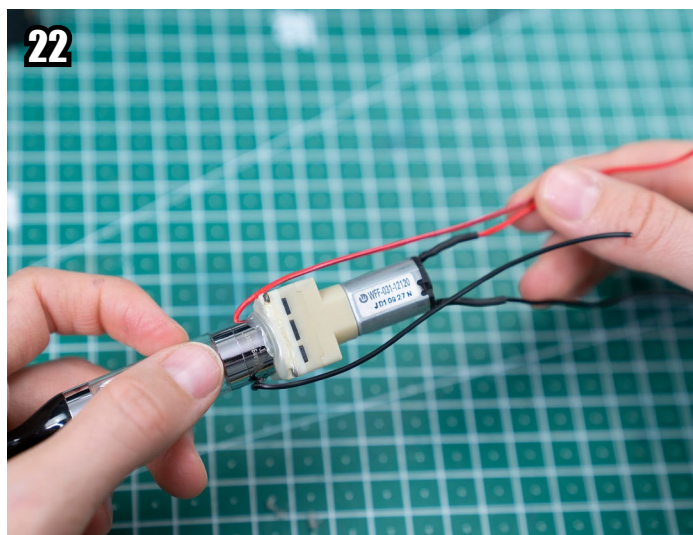


The next step is a bit more tricky again. Cut off approximately 3 cm of silicone tubing, make a little cut at one end **[16]** and place it carefully over the cylinder on the inside at the end of the vaporizer. The cut should go straight over the red wire **[17]**. This way the tubing doesn't get stuck and should be able to reach the bottom of the vaporizer. Now fill everything with hot glue up to the metal edge **[18]**. The goal here is, to create a completely airtight passage from the vaporizer to the air

pump through the silicone tube. If necessary, move it a little bit and add more hot glue. Once the glue becomes solid, shorten the silicone tubing **[19]** and take a look inside. You should still be able to see the little hole the air will go through later.

Following that, grab your pre-soldered mini air pump and put its little hose into the cut off silicone tube **[20]**. The gap between the vaporizer and air pump should be really tight and the

plus and minus wires on the same side. Now add more hot glue all around (careful with your fingers, OUCH!) and close the gap between both parts **[21]**.



Now that you are done, you should have four wires hanging off your construction [22]. Shorten them to the same length and strip their ends [23-24]. The next part is to connect them with a slide switch and the power supply. Before you actually start soldering though, check out the schematic again to make sure you've set everything up properly.. As you can see, you need to twirl both plus and both minus poles together

[25] and then attach a wire that leads to the switch and the connection plug for the power supply.

Before we do that though, it's a good idea to seal everything we've accomplished so far with electrical tape. We really don't want any air to escape here. Begin by wrapping tape around the vaporizer [26] and ensure you cover the soldered

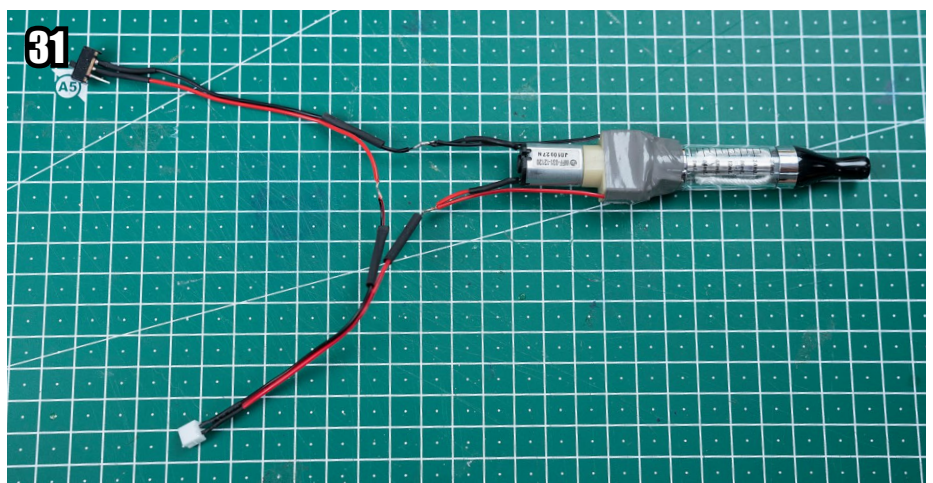
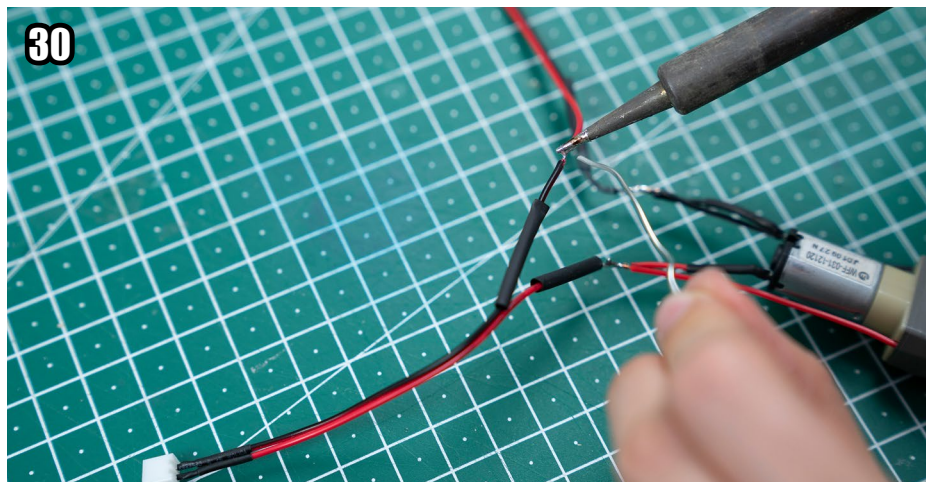
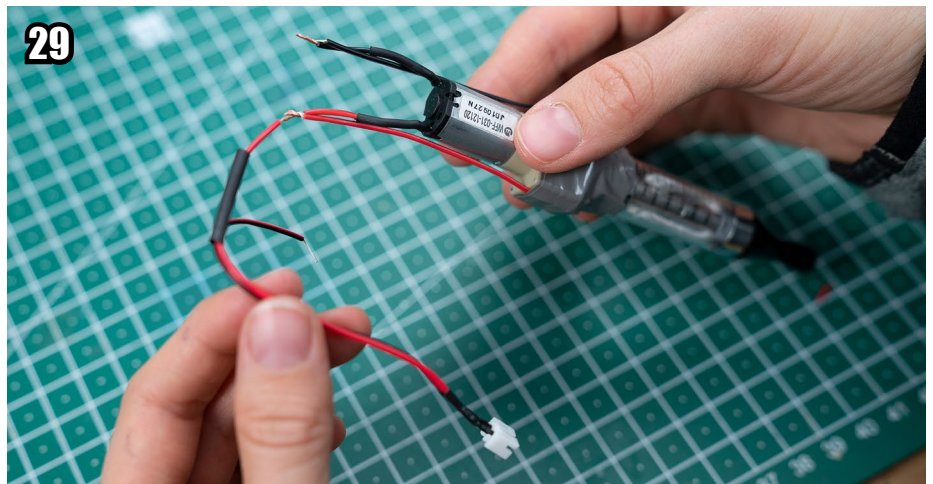
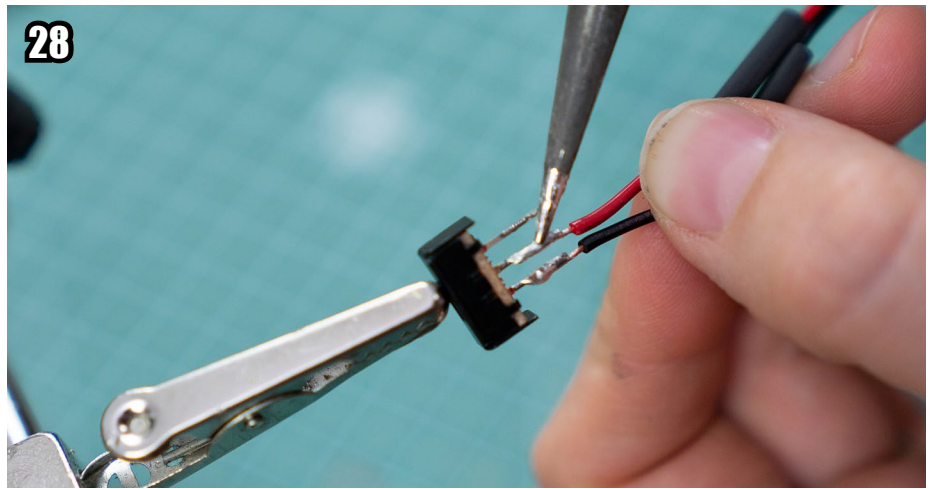
points properly. Then add more tape over the hot glued area, and then finally cover the remainder of the large section of the air pump [27]. Just make sure to keep the tiny air holes open at the bottom, so the pump can keep on sucking air to the inside. They can be a little bit difficult to find. I prefer to use electrical tape for this, since it's slightly elastic which helps sealing everything as tight as possible.

Adding the power supply

Next let's prepare the switch. Add one wire to the outer pin and one to the middle pin **[28]** just like in the circuit plan. It actually doesn't matter which wire you attach where as long as one goes to the middle. Also don't forget to slide on heat shrink tubing and pull it over your connections once you're done with soldering. I often forget that and then create a mess with electrical tape, so don't be a dummy like me!

Almost there now! The final step is to attach the switch as well as the connection plug for the battery to the connection cable ends of the fog machine **[29-30]**. Just follow the schematic to make sure you connect the right ones. And don't forget your heat shrink tubing here as well. I also highly recommend not to seal the soldering joints with the tubing until the very end **[31]**. Even though I'm experienced in soldering and electronics, I still mess up things because there are just too many wires, I can't read my messy hand-drawn schematics, or it's simply too late in the evening and my brain is mushy potato mash.

First, we would need to do a test and check if the circuit actually works and only then seal the joints. It's easier to fix errors if the tubing is not shrunk yet. Before we do that however, there is one more thing we need to do.



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It might be super tempting to plug in your power supply and test your circuit right away. At this point it's very important though to fill up the vaporizer with fluid first and give the coils some time to soak up the liquid. To do so, just unscrew the cap at the top and carefully fill with the glycerin until the tank is completely full **[32]**. If it's too viscous for your taste, you can mix it with 20% of distilled water to dilute it a little bit, but pure glycerin gives you the best smoke effect in my opinion.

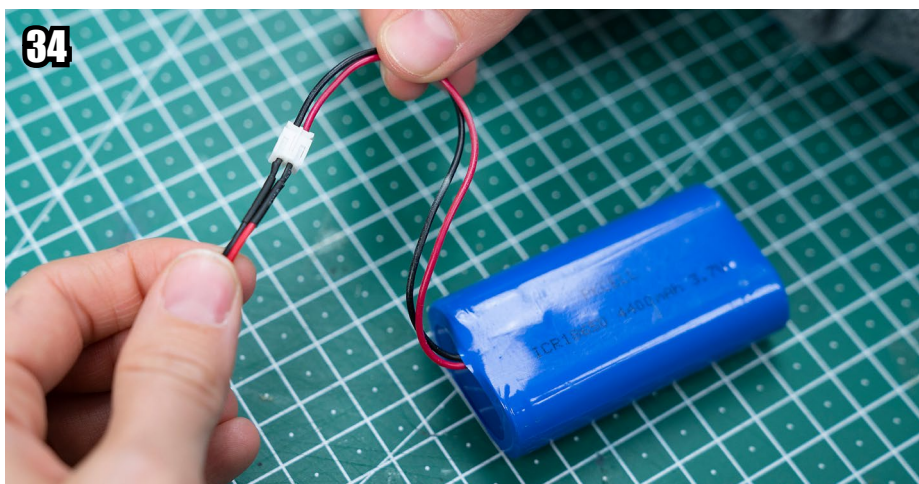
Now wait for at least 30 minutes (or even an hour if you want to be sure) to let the wool in the coil get completely soaked. They become almost invisible at this point **[33]**. As I mentioned earlier, it's important that they are constantly wet, especially when you want to turn on the vaporizer the very first time. So, take a crafting break, walk your doggo, cat or rabbit or watch a new episode of your favorite show.

Now that you've waited long enough, go ahead and connect **[34]**, turn on your switch and enjoy your brand new mini smoke machine creating some fancy smoke **[35]**!

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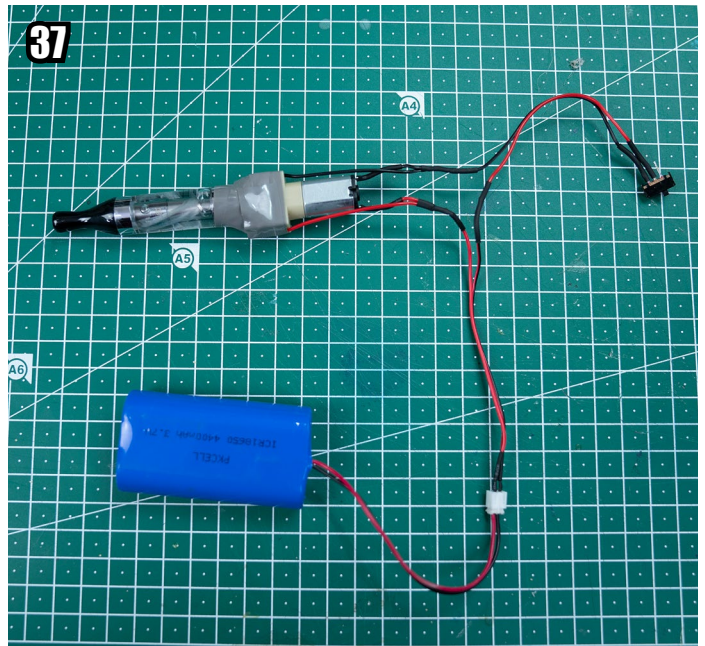
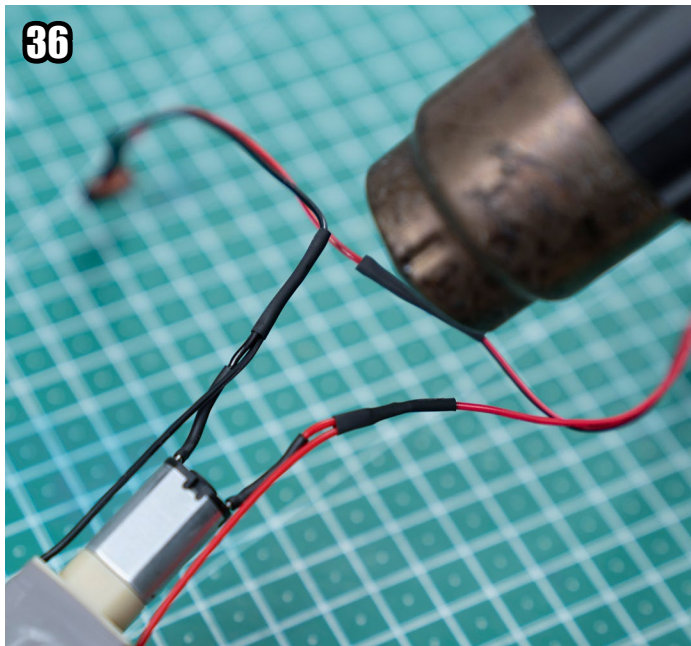


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SAFETY NOTE

Even if you are using glycerin labeled as non-toxic, do your tests and run your fog machine only in a well ventilated area. I usually open my windows and work in my quite large workshop. This stuff could still be harmful, so protect your lungs!



If everything works, move the slide switch again to turn everything off, disconnect the battery and finally seal the soldering joints with heat-shrink tubing [36].

It might take a bit of time before the vaporizer is heated up properly and able to produce the full amount of smoke. Also make sure, that your Lithium Ion battery is completely charged up, since this might also reduce the amount of fog created otherwise. Different vaporizer builds could bubble at the beginning which makes it necessary to carefully clean them with paper towel from the inside first.

Keep in mind that these vaporizer hacks are sneaky little goblins though! They may have issues and do weird things, it requires some experimentation to build one that behaves nicely. The build I introduced to you here is actually quite reliable and I had far more trouble with other vaporizers and air pumps than with this one.. Therefore I hope your first build will be successful and will be an amazing addition to your costumes and props [37-38].

I'm sure that your second and third version will turn out even better, cleaner and more reliable!

Anyway, I hope you had fun building your very first smoke machine!

If you want a little more visual guidance, you can also check out my YouTube video.

Fog machine video tutorial:
<https://youtu.be/uDISX8MMLak>



EXAMPLE

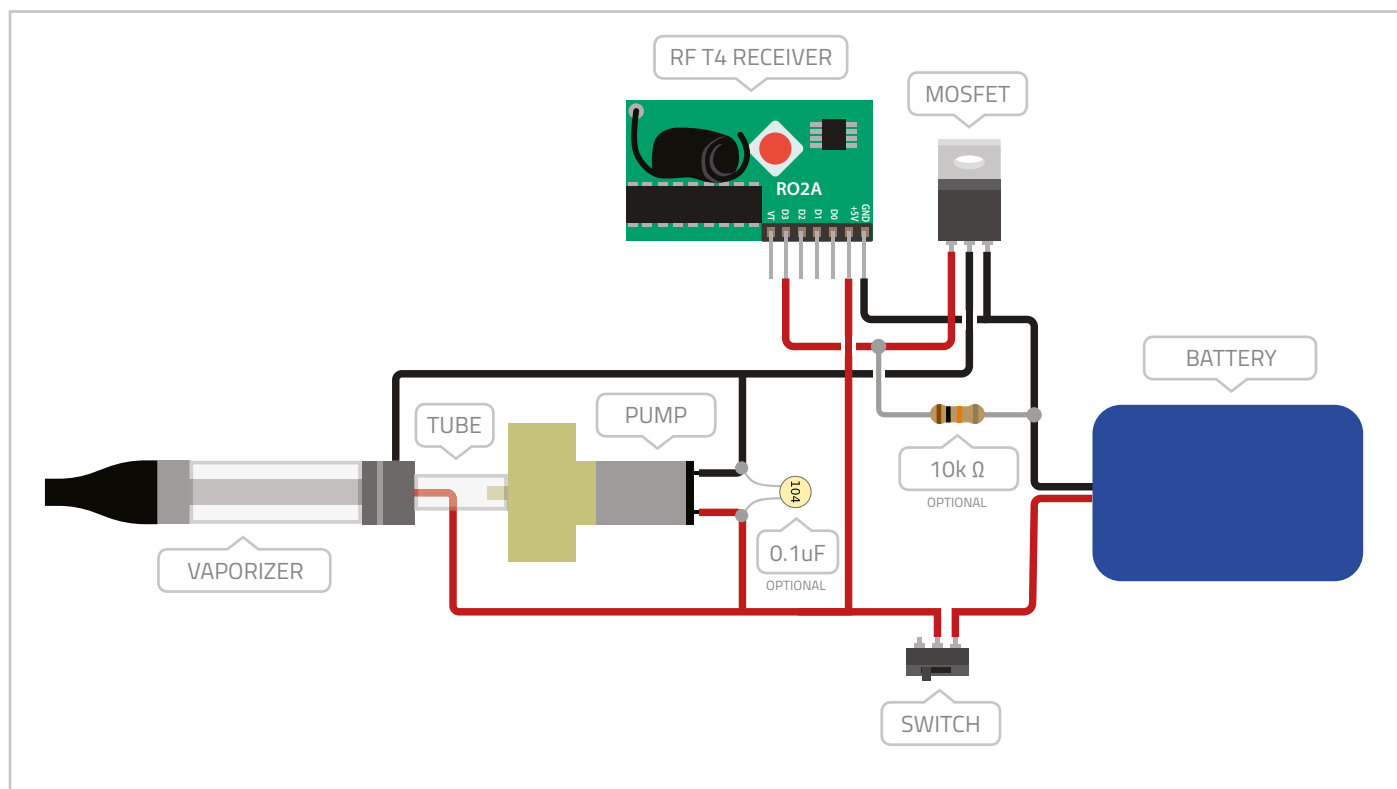
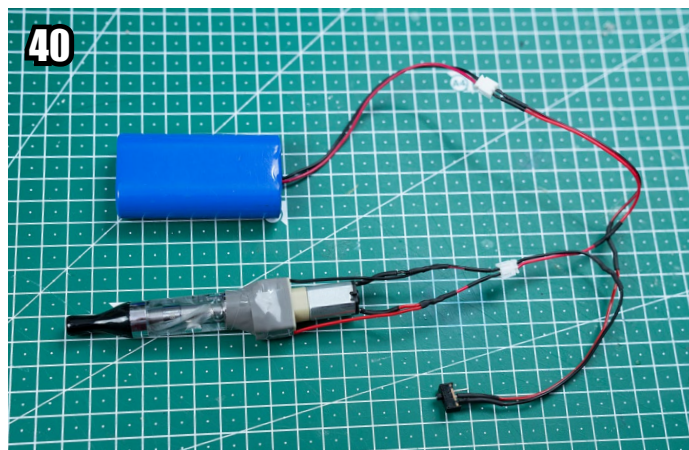
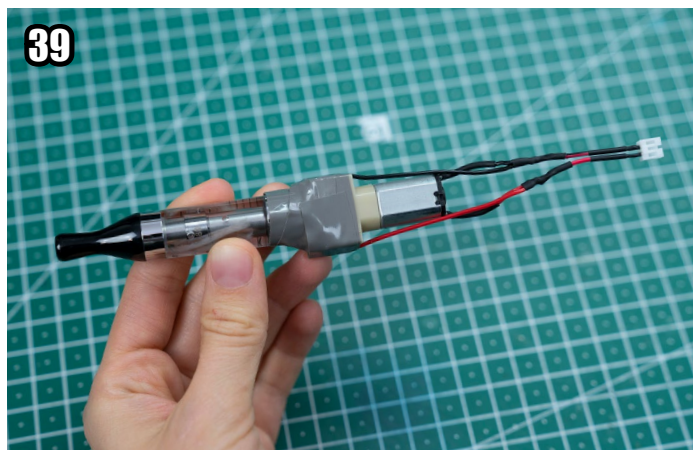
Bolvar's Hammer from World of Warcraft not only has plenty of LED strips built in, but also a smoke machine. This one was placed inside the weapon's core and silicone tubes lead the smoke directly to the skulls on the sides. Whilst the smoke only came out of the mouth, it still created a pretty impressive effect. However, since the fog machine was hidden deep inside the weapon and I wasn't able to check the amount of fog fluid left regularly, I had to be considerate on how long I was using the fog here.

Check out my YouTube video for more info:

<https://youtu.be/iloCsCRPBnY>

Step 2: Remote controls

Now let's turn this up a notch and turn this baby smoke machine into a remote controlled version. I'll admit though, I'm a little bit too lazy to create a completely new fog machine just for this step, so I hope you won't mind if I keep on working on the one we already built, right?



So, let's do some adjustments and add an adapter. For this, we have to get rid of the whole direct connection attached to the fog machine's body. Just cut the two connections where the positive and negative of the pump and vaporizer meet. Instead, we'll add a connection plug just as we already used for the battery [39].

You can obviously still add the switch and battery holder to the other side of the connection plug. This way you can still use the old set up just like before! Clever, right [40]?

Next however, we need to solder the circuit for the remote control together. The schematic for that

already looks a little bit more complicated than before, but I'm sure it's still doable for you. As always, I tried to keep it simple and easy to follow and I hope, it will help you find the right wires to connect.

First I soldered on wires to the receiver and the MOSFET. As you can see, the receiver has three connections, one for plus (+5V), one for minus (GND) and one for the data signal to turn the circuit on and off **[41]**. The data wire can be placed on any pin from D0 to D3. Just keep in mind, that D0 is the D button on your remote control. D1 is then C, D2 is B and D3 is then A. It might also be helpful to pick a different colored wire for the data channel, but I am personally fine with standard red and black. In addition, I also prepared the MOSFET and picked the same color (red), that would actually go to the data pin of the receiver **[42]**. Check out the product data sheet on Adafruit if you are getting confused about which pin needs which connection, but just do it the same as my photos and you should be fine. Believe me, I still get confused all the time and so I always have plenty of tabs with schematics, blueprints and product data sheets open in my browser.

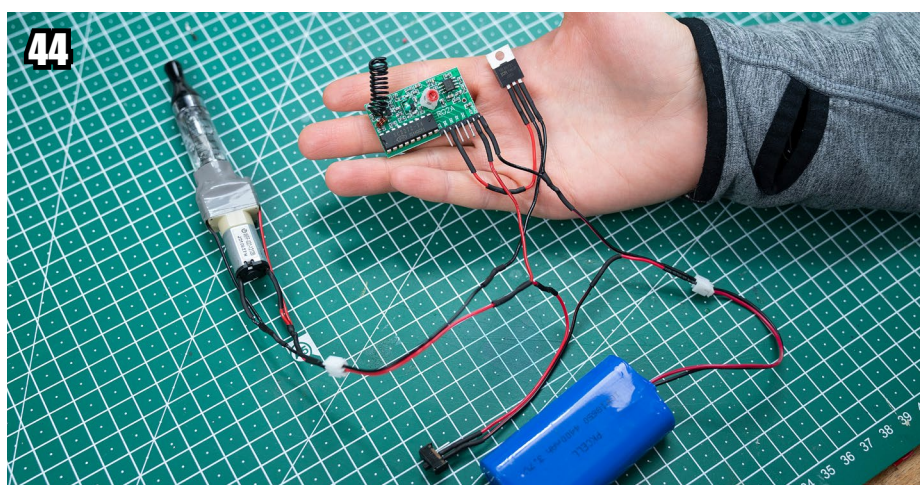
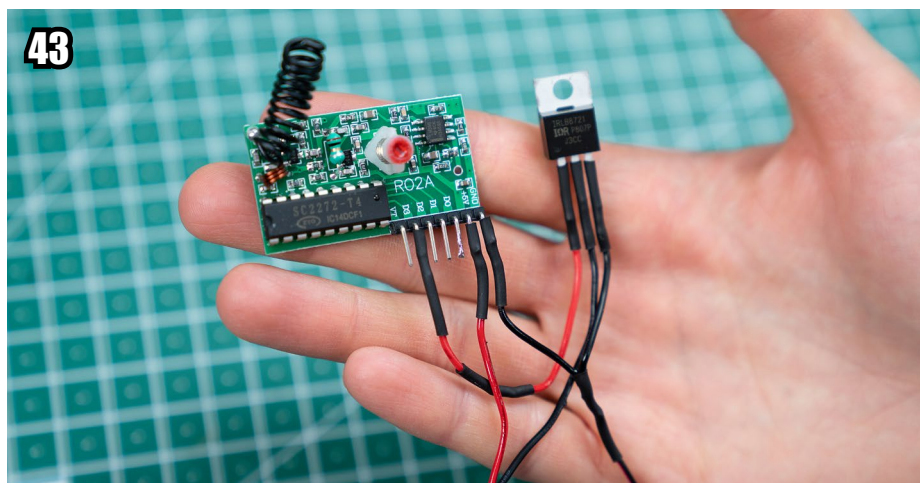
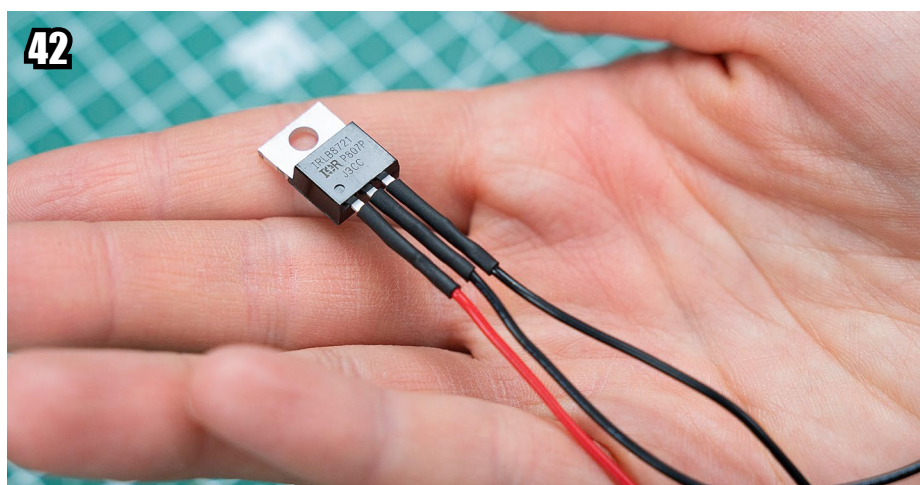
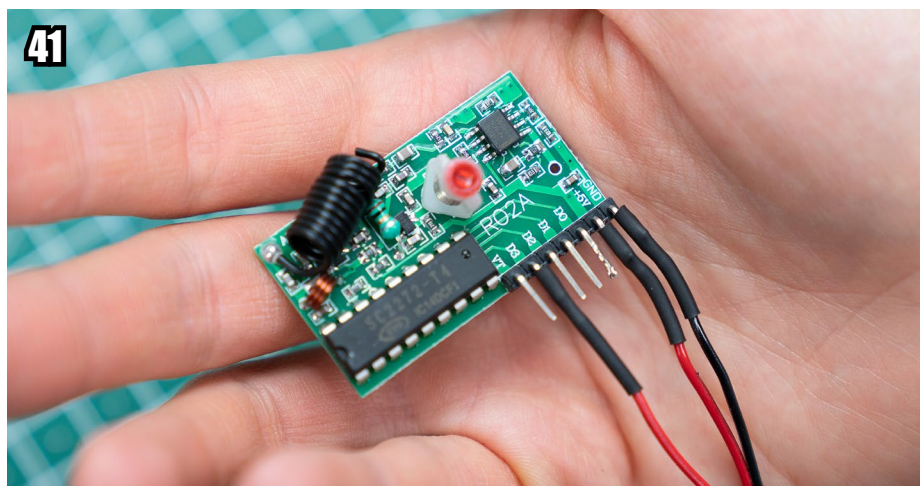
Afterwards, I connected all wires according to my circuit schematic. It might be chaotic at the beginning, but once you begin to join parts together and solder wires on, you'll figure it out quickly. As always, don't forget the heat-shrink tubing and don't pull it over the soldering joints just yet **[43]**. Almost done!

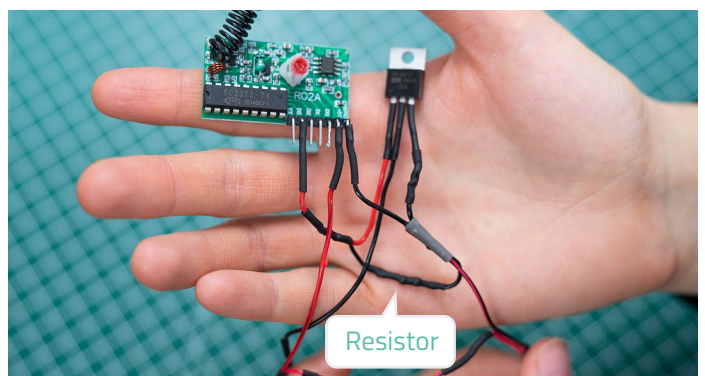
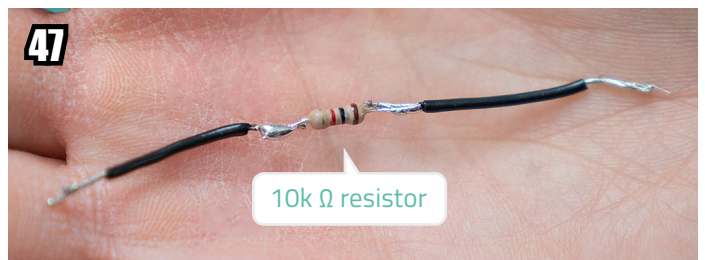
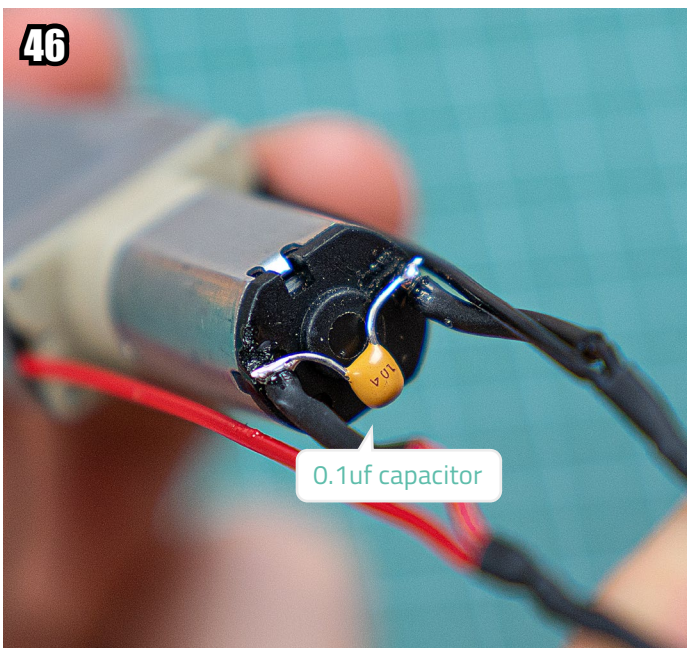
Finally, attach the connection plugs for the fog machine as well as the Lithium Ion battery **[44]**. It might help to mark your connection plugs with electrical tape (or different colors) so you don't confuse the connections.

Once you are done, plug everything together, attach the battery and the fog machine, and do your first test by pressing on the right button (depending on the pin you choose on your receiver) and see if smoke is actually coming out **[45 next page]**.

During your tests you might notice that turning on the machine usually works very reliably, but turning it off again seems to be a bit spotty. This happens due to the high power drain of the fog machine, so the receiver sometimes doesn't get enough juice to work reliably anymore.

Therefore I added an extra emergency off switch in the schematic, just in case. Best to place this one so its easily reachable in your costume or prop and use it if you have trouble turning off the fog machine again.





In the schematic you'll find a [0.1uF capacitor](#) and a [10k Ohm resistor](#), that I marked as "optional". Sadly, like I said, the remote control is not *super* reliable. Turning off the fog machine especially with a greater distance might become tricky. I had to get really close with my remote control to turn it off again. The capacitor and resistor can remedy this behavior, so feel free to add those if you want to improve the performance [46-47].

An even better solution for you might be to use a [RF M4 Receiver](#) instead. To get some smoke here, you constantly have to press down the button on the remote, so you need to have one hand free or a friend, who helps you operate the fog machine.

I personally almost always go with the very first version that I've shown you and just use a slide

switch. It's important for me though to show you a few different solutions so you can find something that fits your needs!

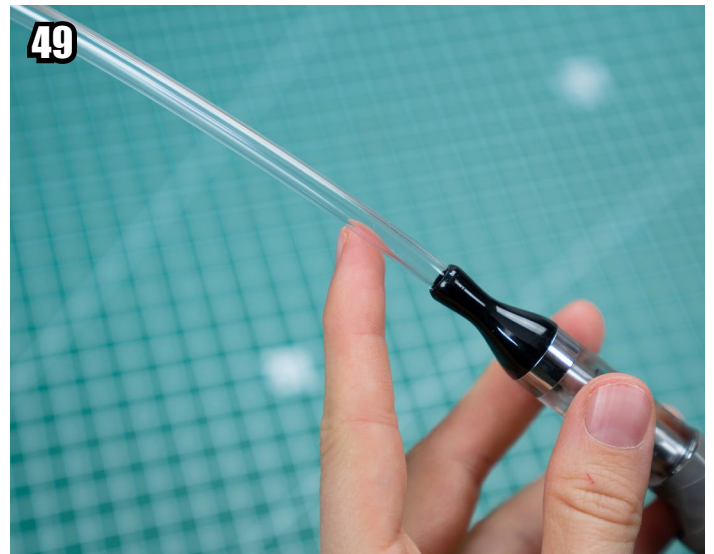
Anyway! Now you are able to remotely control your smoke machine! Have fun!

Well, now the crafting part is pretty much done,
the fun can begin!

In this part I want to show you different ways to
build your smoke machine into your costumes and
props, that turns a simple vaporizer hack into an
amazing effect which makes your creations even
more awesome!

Step 3: Silicone tubing

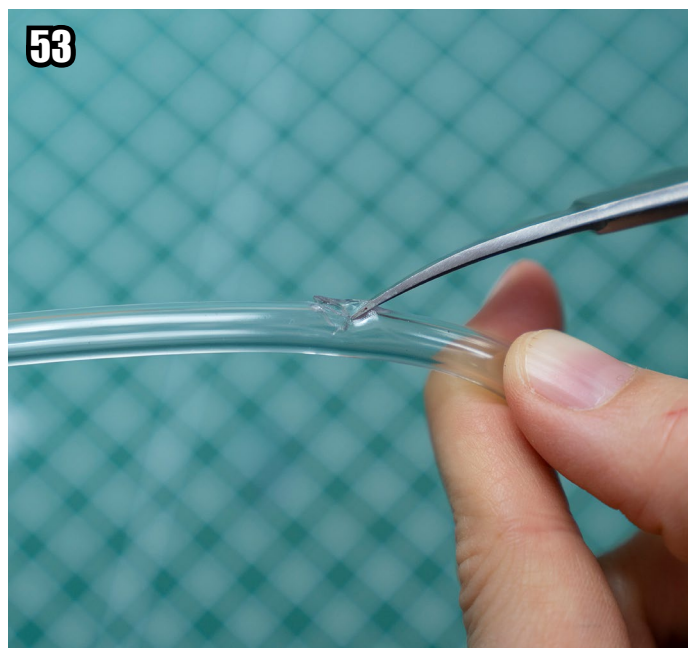
While you can now directly place your fog machine anywhere you desire, you might want to consider a more elegant solution by using additional silicone tubing. This way you can direct the flow of your fog even into the tiniest and most far away parts of your costume or prop. This is especially helpful, if there is not enough space to hide the smoke machine and the battery. You know, place the fog machine to one end, but have the fog come out the other end! In addition, you can split the flow and guide your smoke into different sections of your costume with a single smoke machine!



All you need for that is your silicone tube, a pair of scissors and electrical tape. To get started, just stick your hose into mouthpiece of the vaporizer **[48]**. My 3mm tube is a little bit tight, so I cut the end at an angle and then squeezed it in **[49]**. Once you've managed this part, wrap the connection with a good amount of electrical tape to make sure it won't slip out anymore **[50]**.

As always, this needs to be really secure and airtight. In addition, don't use too much tape, since you will need to remove it to refill the vaporizer with fog fluid eventually. I just used two 5cm long strips and it was enough. Finally, just place the tube to wherever you want smoke coming out of your prop or costume **[51]**!

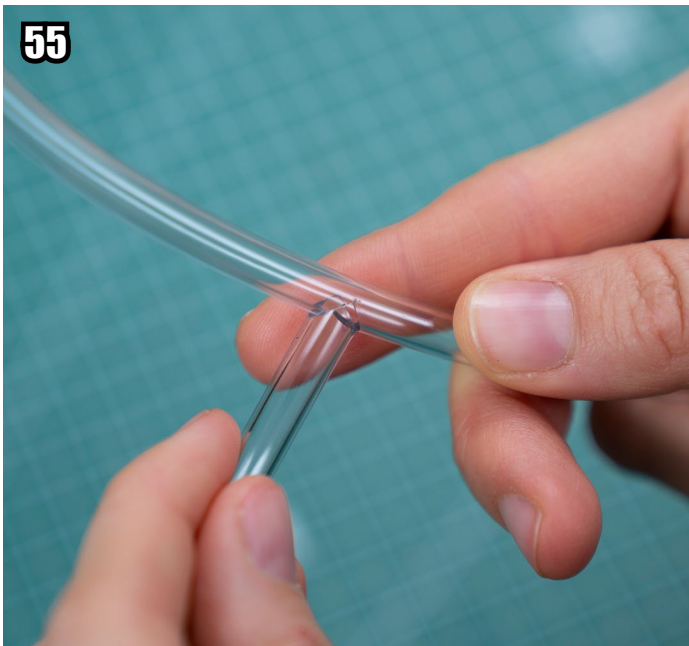
I highly recommend keeping the tube long at the beginning and only then shorten it once you have decided on where the end needs to be placed. Exciting, right???



Now, if you actually want to spread your smoke over several areas, you can get quite creative here as well. An option would be just to tape off the end of the tubing [52], but cut in holes along the silicone [53]. I used my trusty electrical tape for the end and added some strips for an airtight seal. You might also want to experiment with your holes

a little bit (I know you read that with a dirty mind, didn't you?). In general, most fog actually comes out of the first hole and only a bit from the last one. In general though, once you're done taping and cutting, fog will be all around your prop anyway. Doing that however, you can spread the effect easily over large areas and avoid large

amounts of fog coming out of a single tube. This might just look more natural or can be a great opportunity to add smoke throughout a large prop or costume piece [54].

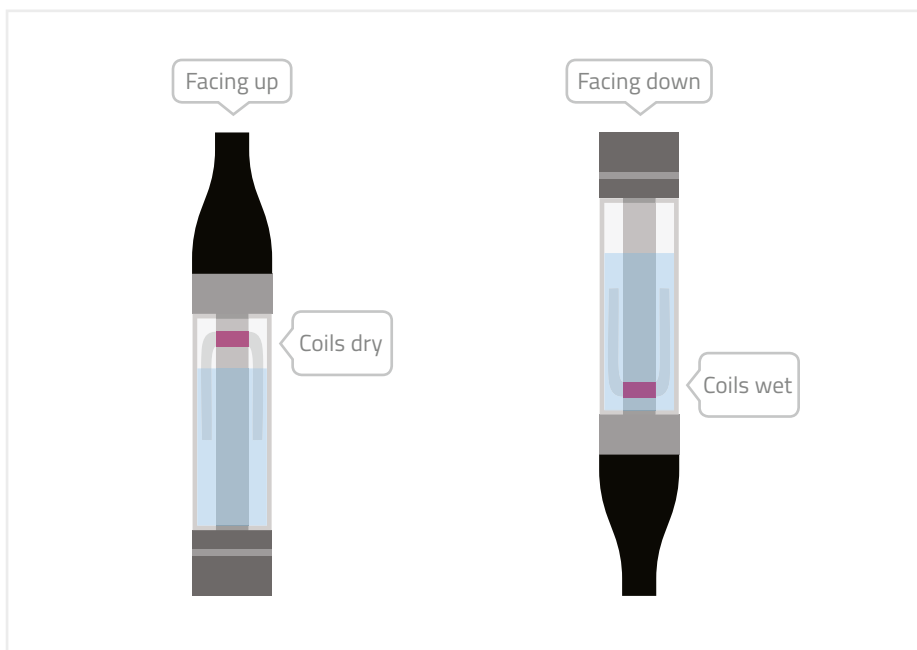


You can also share your smoke evenly with two ends of tubing. To do so, fold your tubing in half and cut out a small opening. The result should be a little square shaped hole. Now, grab a second piece and cut off its end so it fits perfectly into the square shaped hole **[55]**. Next, put both parts together and cover the whole area with electrical tape until it is airtight **[56]**. The tape is a little bit flexible, so you should be able to make really tight and give the connection a good amount of stability. Next, if you squeeze the middle part into the smoke machine, you'll get two ends of tubing with fancy smoke coming out **[57]**!

I'm pretty sure, at this point your brain is already exploding with potential ideas to include smoke into your project. Combine and adjust these techniques any way you want and just be creative! It's super simple and fun and I'm sure you'll be able to create something awesome with it!

I 'll admit though, that this solution is more a solution for... let's say "sloppy crafters" – like me! Filling up the tank with more fog fluid actually becomes a little bit tricky with a taped on silicone tube at the end. You have to screw off the

mouthpiece and need to get rid of the tubing to do so – at least if your fog machine is firmly installed in your costume piece. So don't forget your electrical tape in case you want to bring your smoldering build to a con! Or, just keep the issue in mind and figure out a way to make refilling easier for you! At the end, even a completely filled up tank won't last forever!



Proper handling



I also would like to go into a little bit more in detail on how to treat your mini fog machine properly to make sure it has a long life.

As mentioned in the beginning, it's important *how* you place your fog machine: Upside down, straight up or sideways. Keep the position of the coils, the amount of fog fluid and gravity in mind. Using the Kanger T2 with its coils at the top, I always make sure to place my fog machine upside down. This way the fog liquid runs to the bottom and constantly covers the coils, even if there might not much liquid left in the tank. If you position it straight up though, even a full tank might be not enough to keep the coils soaked for a long time.

You might also want to experiment with other vaporizers to position your fog machine another way. Just keep in mind, that all of them are built a little differently. I had trouble with wiring them up properly, to connecting them with the air pump and even issues with filling up the liquid fast and easy. So take your time to play with various models and don't be discouraged if you don't find the right one on the first try. I actually ordered 3 different vaporizers until I settled on my favorite.

Remember, don't run your vaporizers for too long. I did a test and let mine run for 3 minutes non stop. The tank was completely filled up, the vaporizer was upside down with coils constantly soaked and I always kept an eye on the whole thing. Still, the metal got really hot and I was actually worried that the hot glue inside it would start melting again. Even though special hot glue with a higher melting point would help here, it was still a bit too dangerous for my taste. After a while the coils wouldn't be able to soak up the liquid as fast as they would burn it, at which point it *would* become a problem.

So, rule number one: Always to make sure your coils are soaked! Rule number two: Fill up the tank often, and rule number three: Never let the smoke machine run for too long.

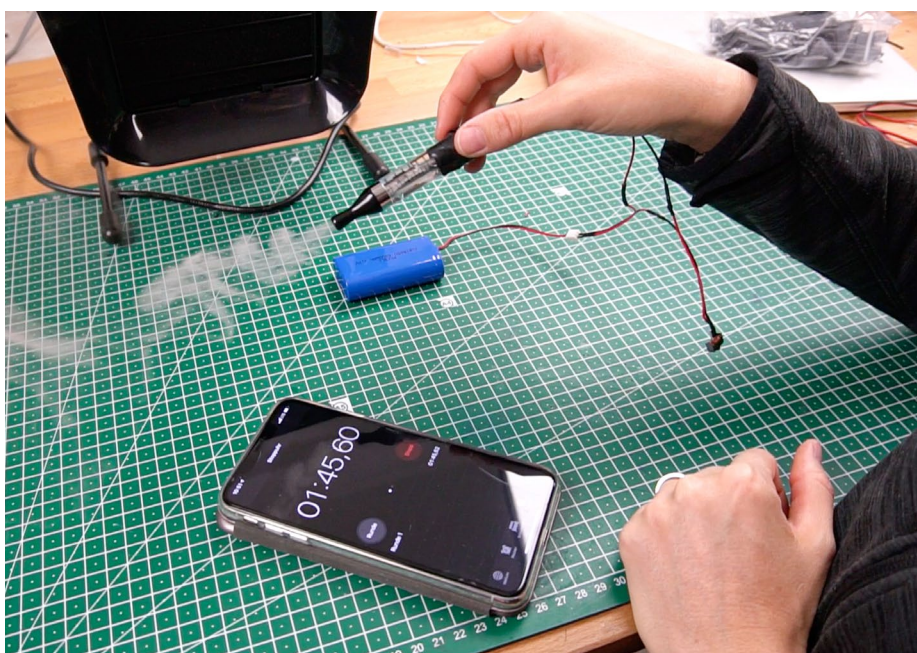
One minute is usually fine, even two minutes if you are careful. If your smoke gets thinner though, your machine starts making weird bubbling sounds, or your smoke begins smelling a little bit ... burnt, instantly turn the machine off. Your costume won't explode and your house won't burn down, but better safe than sorry.

If you prefer to get something longer lasting, you might want to check out the pre-assembled smoke machine from these amazing makers:

• [Spoonmakes CosClouds](#)

• [Waynes Workshop Costronica Smoke](#)

• [Mamike Mini Smokemachine](#)

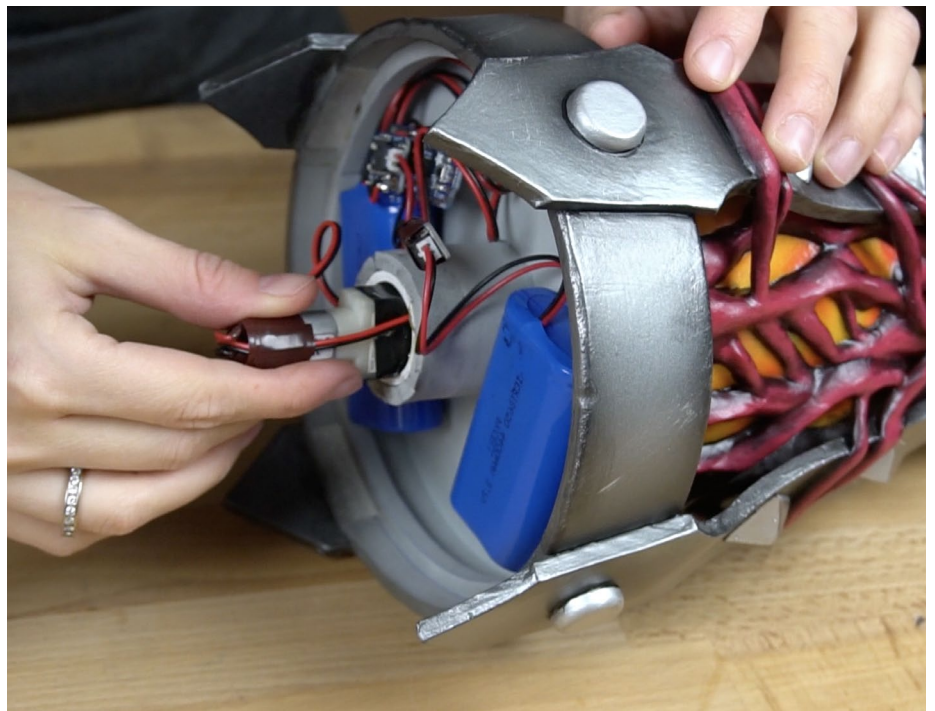
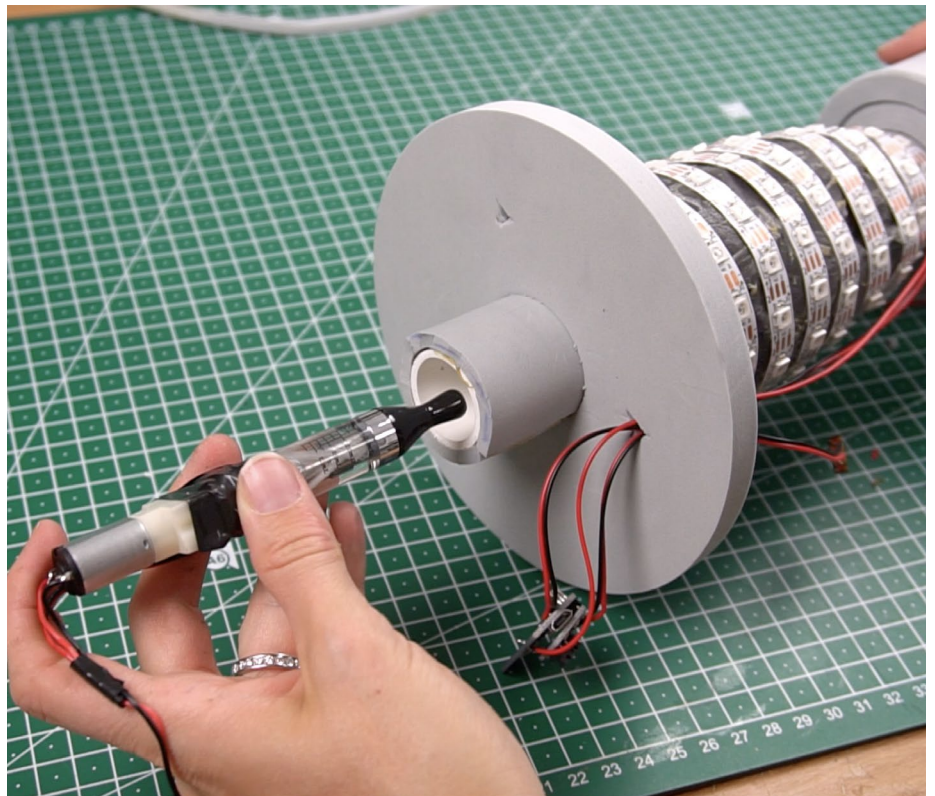
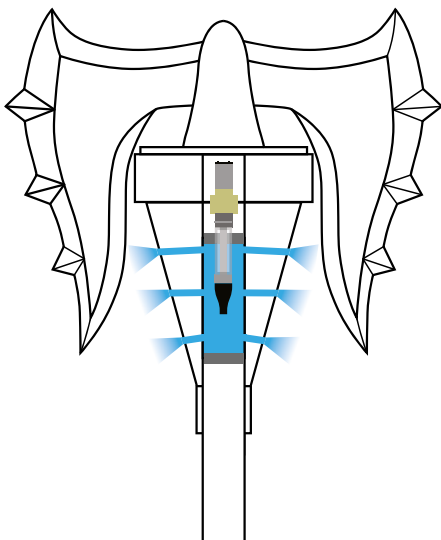


Hiding in props and costumes

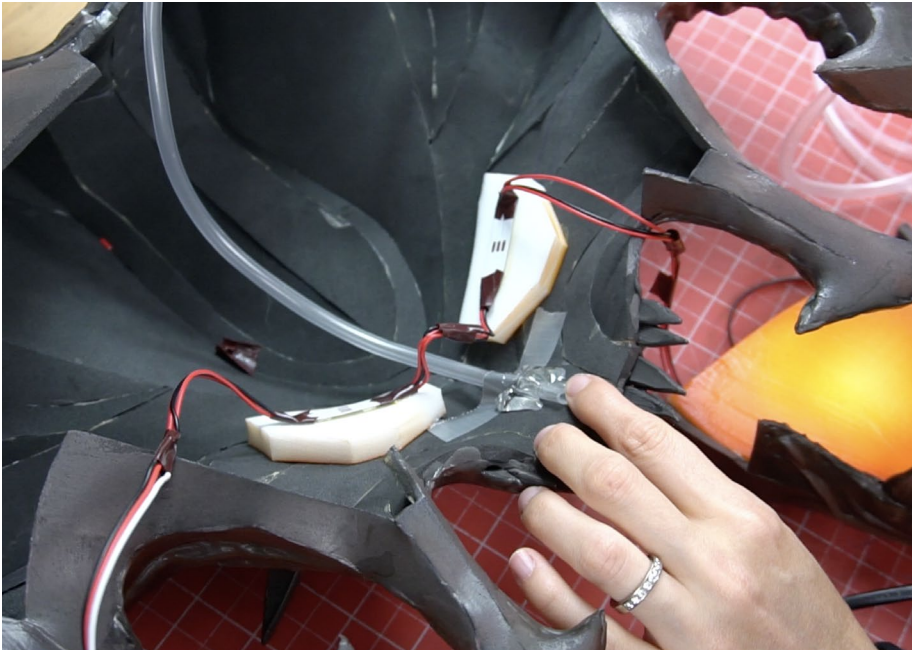
So, last but not least, comes probably the most important part: Installing your fancy brand new fog machine into a costume! I personally prefer to place it so it's easy to reach, refill and to recharge. In addition, after installing my very first fog machine permanently, I decided to make any additional ones removable. So after the costume was done, filmed and I got the necessary photos, I could take it out and use it my next project! This saves money and time! I actually do the same with most of my electronics.

My very first project with the permanently built in fog machine was a mace I created for my Demonic Brigitte costume. It was supposed to have a "burning core" with red veins running over it. The whole mace was actually made completely out of EVA foam, foam clay and with a PVC pipe at its core. The inside of the pipe was in fact the only place I could hide a fog machine at all. Luckily, with my self-made one being so thin, it fit in perfectly! Therefore I drilled in some holes through the foam and the PVC pipe all the way to the center of the mace. Inside the PVC pipe I created a small, closed off room where the fog would collect and the only way for it to escape were through the drilled in holes. I distributed these holes all over the mace so the escaping fog would spread evenly all over the whole weapon. I then added a cool fire animation to the built-in LEDs strips. The result looked like the core was actually burning and in general was pretty awesome. I think this was the moment I fell in love with those little fog machines and began to add them to more of my creations.

Watch the making of video on Youtube:
<https://youtu.be/DUk8l8gRHRE>





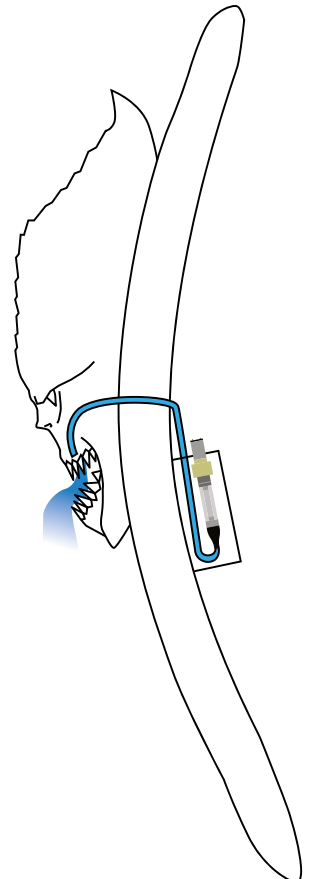
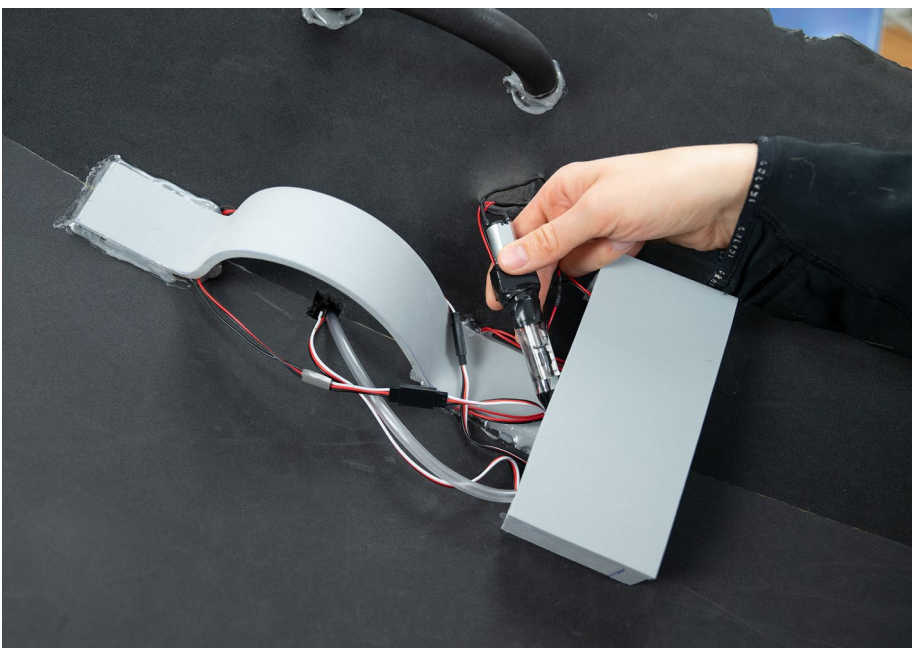


One of the biggest projects I've used a smoke machine for was the Diablo shield from my Demoniac Brigitte costume (yes this costume has a lot of smoke). It actually looked already quite impressive with over 600 LEDs built in, but the fog machine gave it another extra layer of craziness. I was a little bit lazy with hiding the circuit properly however. I basically completely finished the shield and wired all the LED strips into a few connection plugs that came out through holes in the back. Then for the fog machine, I placed a long silicone tube into the mouth of the skull on the front and pulled it through a hole in the center of the shield to the back. I created a box out of EVA foam, attached it to the back and basically just smashed all batteries, the chipset for the LEDs as well as the fog machine into it. While this might be not the most professional craftsmanship, nobody would ever see the shield from the back anyway (except you), and it allowed me to reach the fog machine really fast and lets me easily refill and fix things.

Once the project was done, I took all the electronics and smoke machine out again and used them in my next project. Pretty cool right? This simple box wasn't such a bad idea!

See it in action on our YouTube channel:

https://youtu.be/Ku2_91NZPZ8





Thanks for reading all the way through and reaching the end of this mini-guide. I hope everything was explained vwell enough and you are now super excited to build your very own fog machine!

At this point I would like to thank a few people who inspired and helped me to create this guide:

[Valkyrie Studios](#)
[Waynes Workshop](#)
[Artymus Garage](#)

Check out my website for more tutorials, write-ups and videos.

www.kamuicosplay.com

Do you have a question about a costume or prop you want to create? Join our community group on Facebook:

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