

Electromagnetic Kinetic Kit

I . About The Product

1.Parameters

1. Name: Electromagnetic Kinetic Kit
2. Brand: EIELEDIY
3. Dimension: 98*90*50mm
4. Working Voltage: DC 4.5-9V
5. Work Temperature: -20°C~80°C
6. Work Humidity:0%~95%RH

2.Description

This kit is a technology that uses electrical energy to convert into kinetic energy. Unlike traditional gunpowder burning gas pressure into kinetic energy, this kit uses the amperage generated by the electromagnetic field in an electromagnetic system to accelerate the metal to the kinetic energy required to pop it, compared to traditional gunpowder propulsion, electromagnetism can greatly increase the speed and distance of the metal. This kit is less powerful and suitable for experimentation although it is relatively safe, please do not point it at weak areas such as the eyes when using it. **under 14 years old please use under adult supervision!** The electromagnetic kinetic kit is a device that works at high voltages. The voltage in its energy storage capacitor can reach 100V, which can cause electric shocks, although the energy is low enough not to cause fatal injuries to humans. By placing the whole device in insulated plastic housing, safety is greatly increased.

3.Application

1. Family Education
2. School Courses
3. Electronic Competition

4. DIY Production
5. Welding Skills
6. Kit Sales
7. Gift Giving

4. Feature

1. Small size
2. Easy installation
3. Clear and clear working principle

II. Important Notes

1. Necessary Tools

Soldering Irons, Solder Wire, Multimeters, Tweezers, Wire Cutters and other professional equipment

2. Installation instructions

This product is a DIY kit and you need to install it yourself. DIY installation is quite a delicate operation, you need to have patience to complete this project.

It is not a finished product!!!!

1. It is strongly recommended to read the installation manual before starting the installation.
2. Check the parameters and quantity of accessories against the accessories list.
3. Please refer to the accessories list and PCB screen printing to confirm the installation direction, position, positive and negative of the accessories.
4. Short circuits are strictly prohibited, which will damage the circuit components.
5. Ensure that each solder joint can be welded in good condition. If problems are found, check whether the solder joint falls off, virtual welding,

and floating welding.

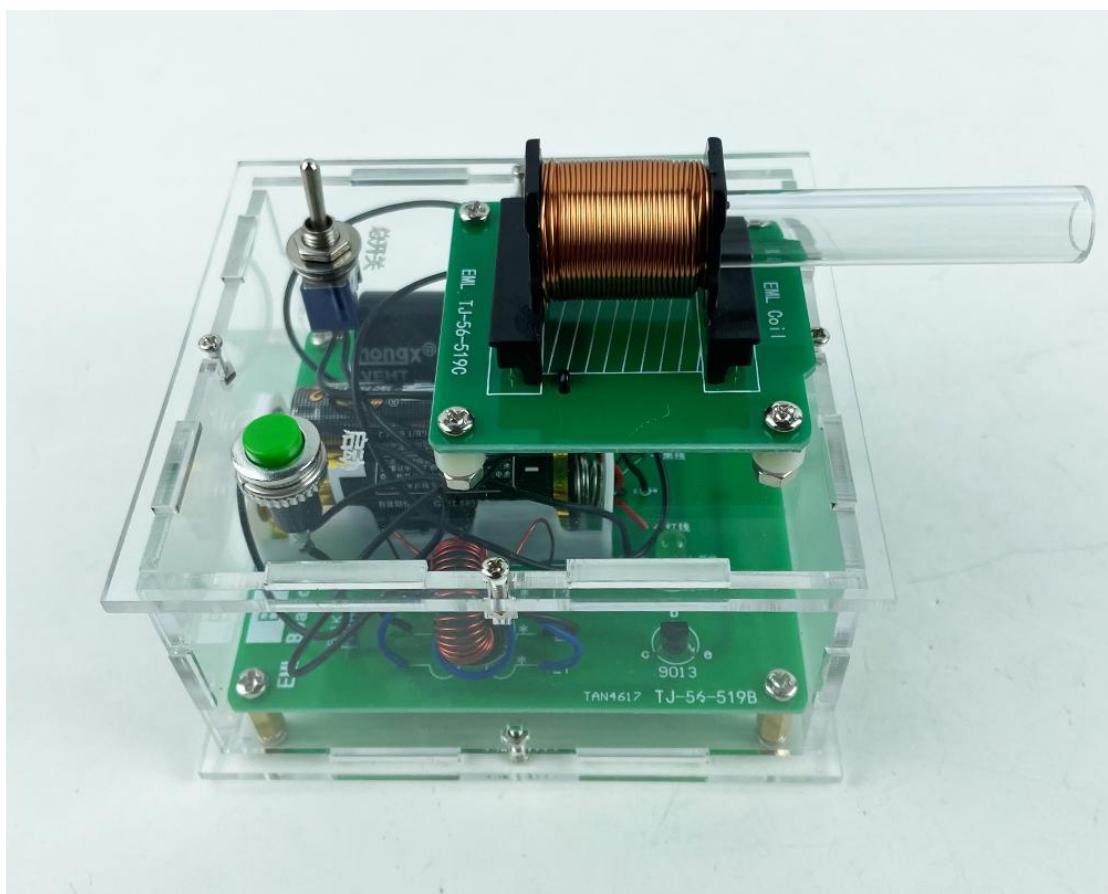
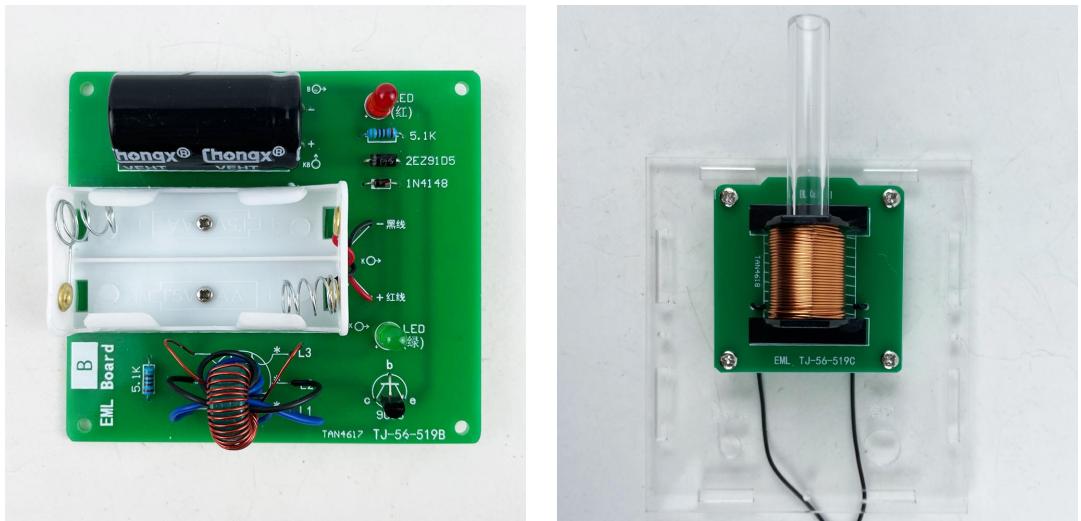
6. Do not let the soldering iron touch the component for too long, otherwise it will damage the component.

3.Service

1. Our main business is a variety of electronic components experimental practice kits and supporting tools, which are mainly used for training teaching, production courses, and welding exercises for the majority of electronic DIY enthusiasts. We are committed to allowing each customer to turn the purchased kit into a finished product, so that every assembly can be harvested. We insist on ensuring product quality with details and attitude, and improving service quality with professionalism and patience.
2. The assembly of the kit requires a certain amount of professional knowledge, and the degree of difficulty is also different. I hope you can try your best to communicate with us when you encounter difficulties in assembly. We will patiently assist you in completing the assembly.
3. The kit consists of multiple accessories, which we have repeatedly counted and tested before shipment. However, due to logistics reasons, the accessories you received are missing or the performance of the accessories is poor. Please contact us as soon as possible, and we will arrange a reissue for you immediately.

III. Start Installation(Enjoy the installation process to the fullest! ! !)

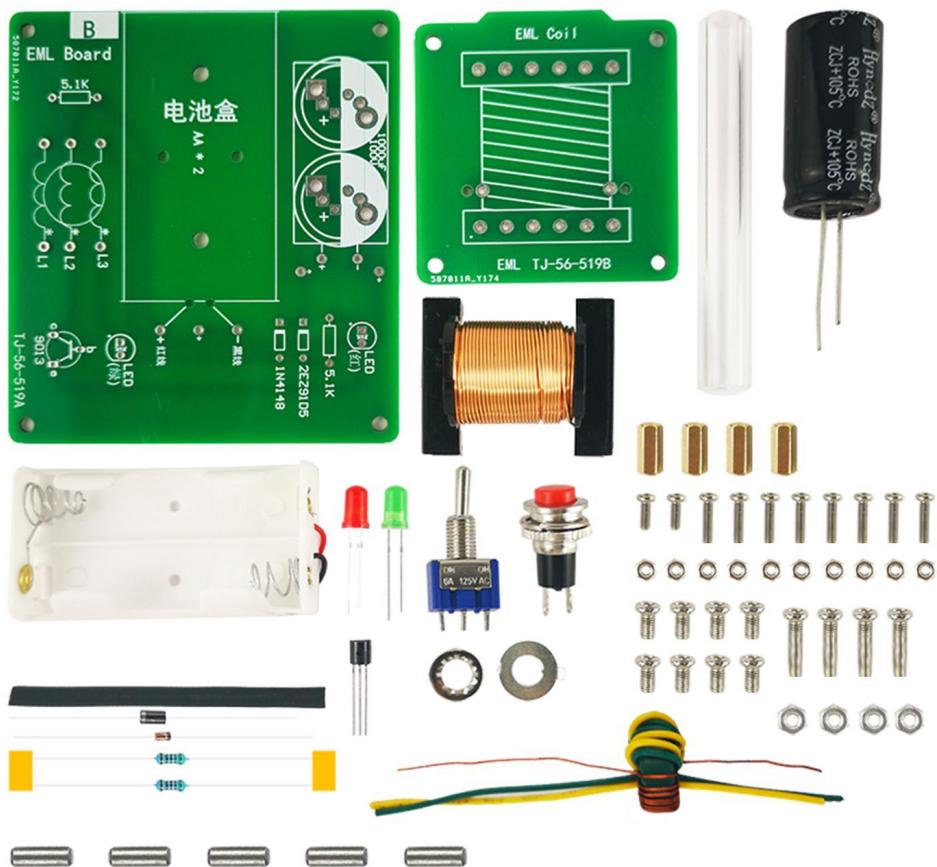
1. Product Assembly Result



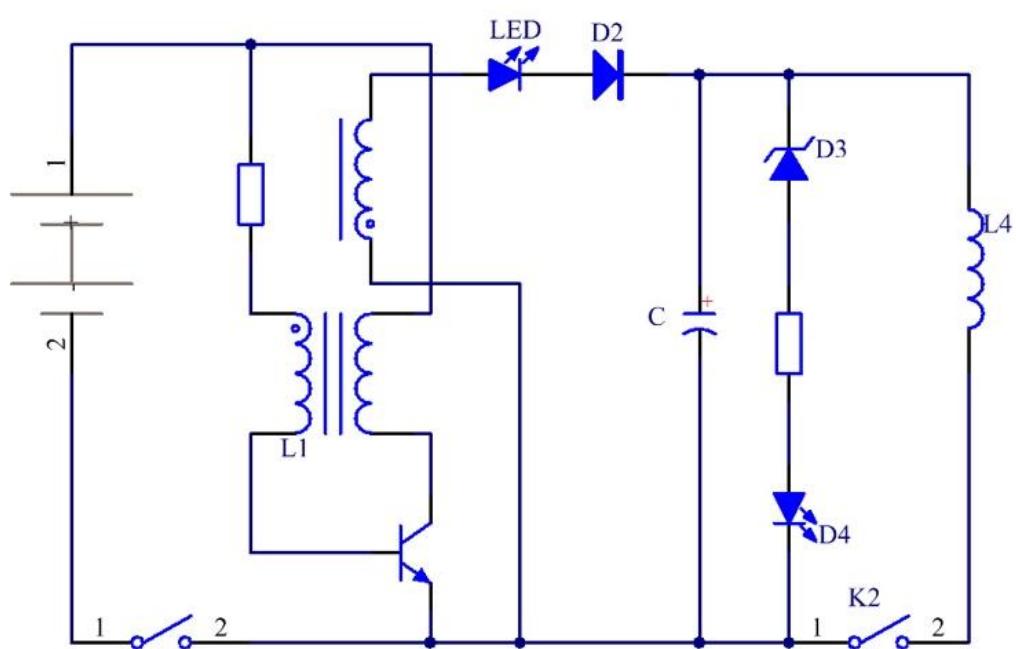
2. Component List

No	Package	Name	Parameter	Label	QYT
1	Package A	Diode	1N4148	1N4148	1
2		Voltage Regulator Diodes	2EZ91D5	2EZ91D5	1
3		Metal Film Resistors	5.1K	5.1K	2
4		LED	5mm Red	LED红	1
5		LED	5mm Green	LED绿	1
6		Triode	S9013	9013	1
7		Magnetic ring transformer	/	/	1
8		Tinned wire	20cm	/	4
9	Package B	Toggle Switch	/	/	1
10		Touch Switch	/	/	1
11	Package C	Solenoid Coil	/	/	1
12		Electrolytic Capacitors	1000μF	1000μF 100V	1
13		Plastic Pipe	/	/	1
14		Heat Shrink Tubes	3mm	/	10cm
15		Battery Box	AA*2	-黑线/+红线	1
16	Package D	PCB	78*86mm	/	1
17		PCB	50*50mm	/	1
18	Package E	Nylon Gasket	M3*5	/	4
19		Screws	M2*6	AA*2	2
20		Nuts	M2	AA*2	2
21		Screws	M2*10	/	8
22		Screws	M3*6	/	8
23		Screws	M3*12	/	4
24		Nuts	M2	/	8
25		Nuts	M3	/	4
26		Brass Pillar	M3*10	/	4
27		Iron Column	M4*12	/	5
28		Housing	/	/	6

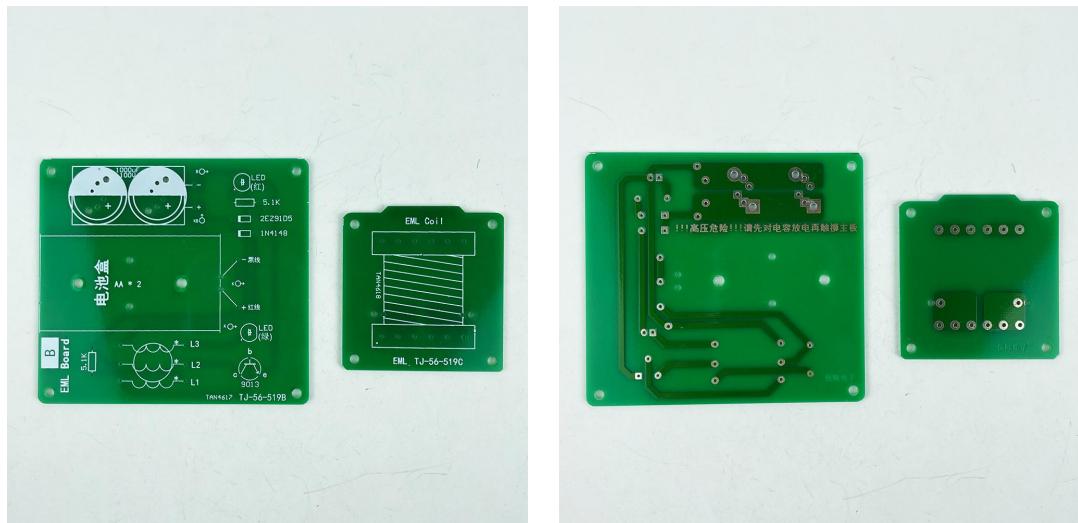
3. Product parts diagram



4. Circuit Principle



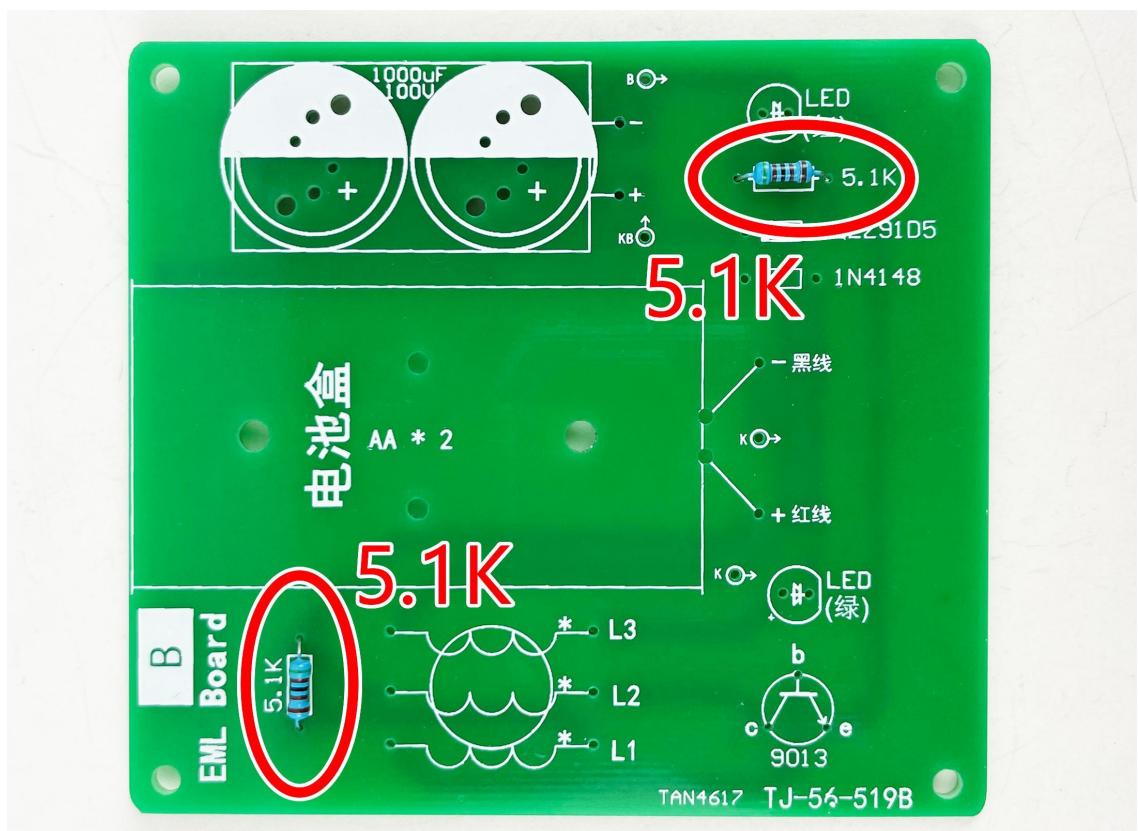
5. Soldering Steps



- **Step 1: Soldering Metal Film Resistors**

Mark: Install the 5.1K Metal Film Resistors to the 5.1K position;

Tips: Soldering metal film resistors without distinguishing between positive and negative terminals.

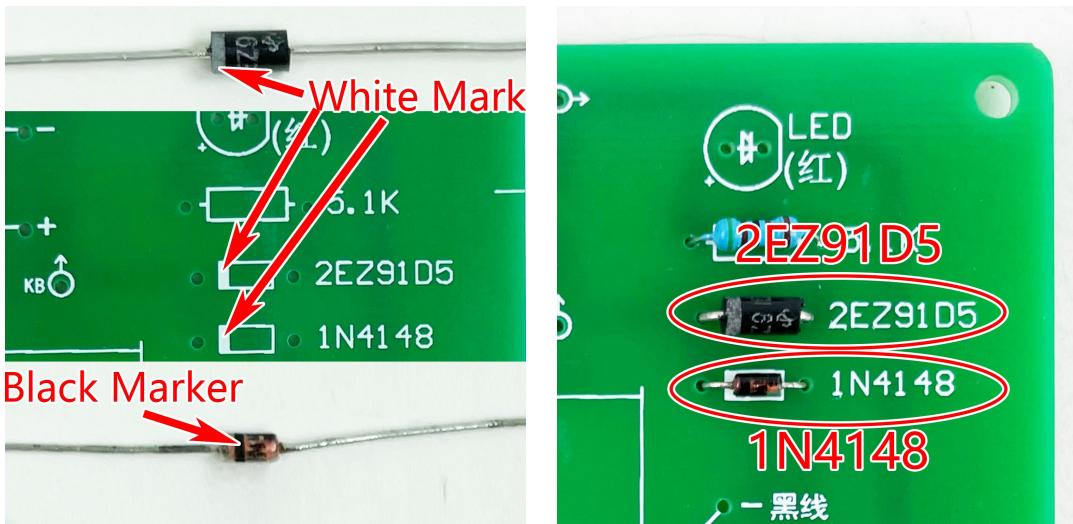


- **Step 2: Soldering Diode**

Mark: Install the 2EZ91D5 diode to the 2EZ91D5 position;

Install the 1N4148 diode to the 1N4148 position;

Tips: The end of the diode with the white (black) marking corresponds to the end printed in white on the PCB.

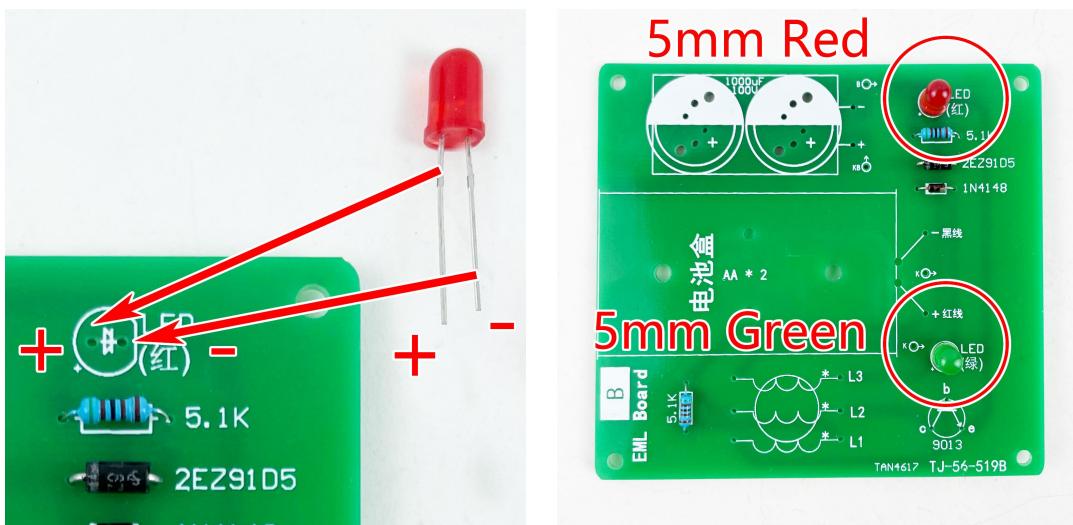


- **Step 3: Soldering LED**

Mark: Install the 5mm Red LED to the LED(红) position;

Install the 5mm Green LED to the LED(绿) position;

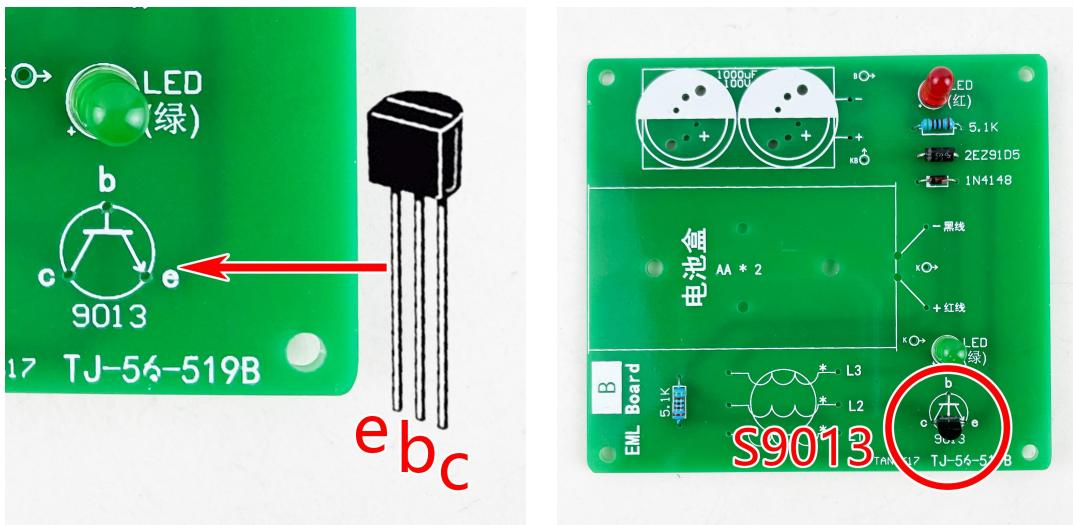
Tips: LED pin length positive short negative. The direction of the screen printed triangle is the positive electrode, and the direction of the screen printed vertical line is the negative electrode.



- **Step 4: Soldering Triode**

Mark: Install the S9013 triode to the 9013 position;

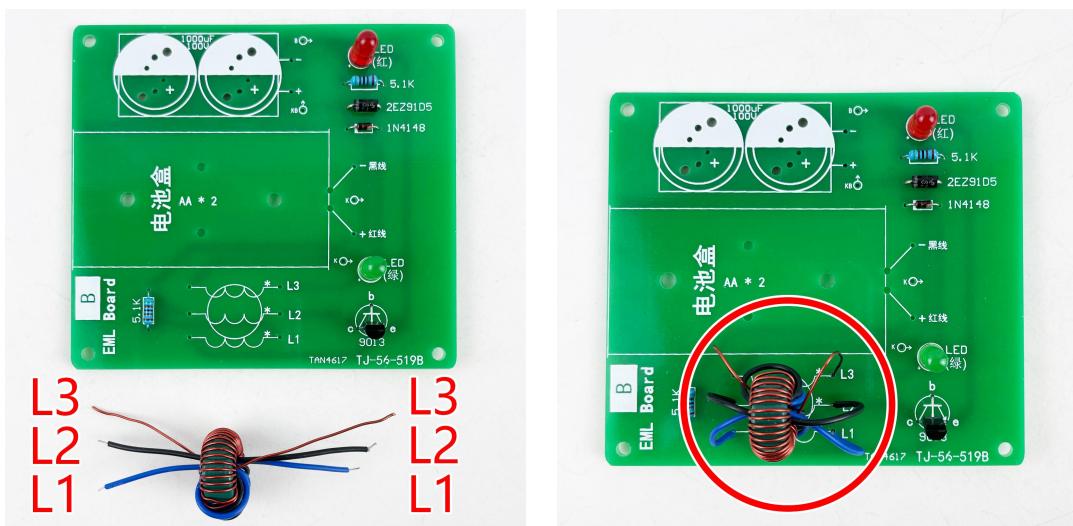
Tips: The triode pins need to be mounted in correspondence with the through holes on the PCB and can be bent appropriately.



- **Step 5: Solder Ring Transformers**

Tips: Install the wires in correspondence with the marked through holes.

The soldered end of the enamelled wire needs to be scraped off the surface paint so that the copper wire inside is exposed and soldered.

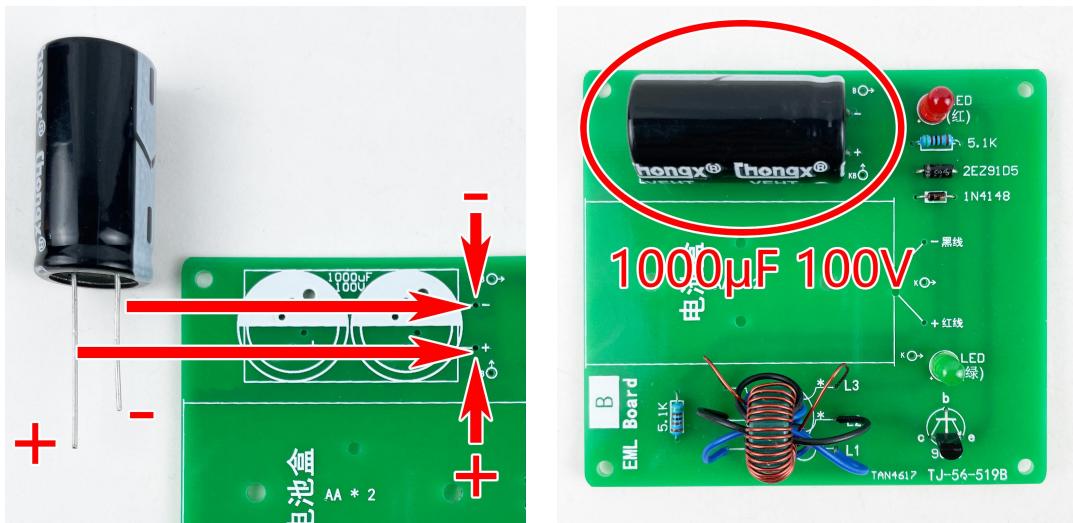


- **Step 6: Soldering Electrolytic Capacitors**

Mark: Install the 1000μF 100V Electrolytic Capacitors to 1000μF 100V position;

Tips: Electrolytic capacitor pin length positive short negative. The holes marked with "+" or left blank in screen printing are positive electrodes.

Electrolytic capacitor pins need to be reserved for inverted mounting.



- **Step 7: Soldering Battery Box**

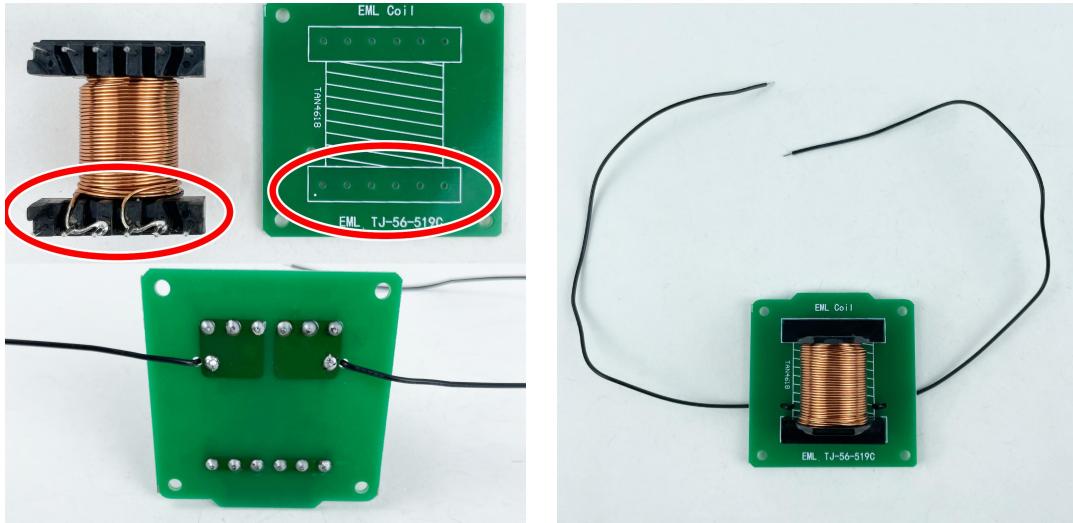
Tips: Red to positive pole, Black to negative pole. Secure the battery compartment to the PCB with the screw nuts.



- **Step 8: Soldering Solenoid Coils**

Tips: The side of the coil with the link point corresponds to the side of the PCB with the trademark for installation.

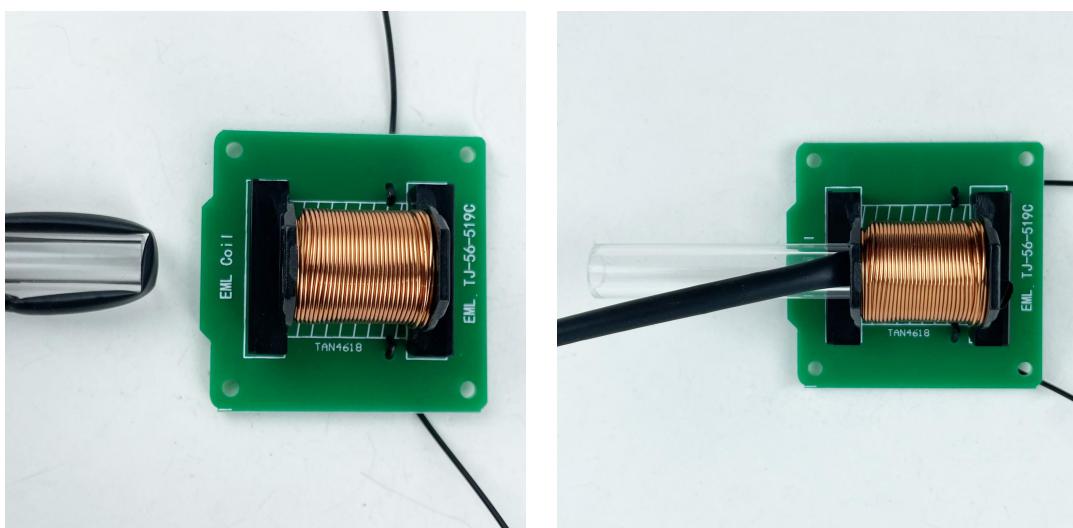
The conductors are soldered from the back of the PCB through the through holes.



- **Step 9: Installation Of Plastic Pipes**

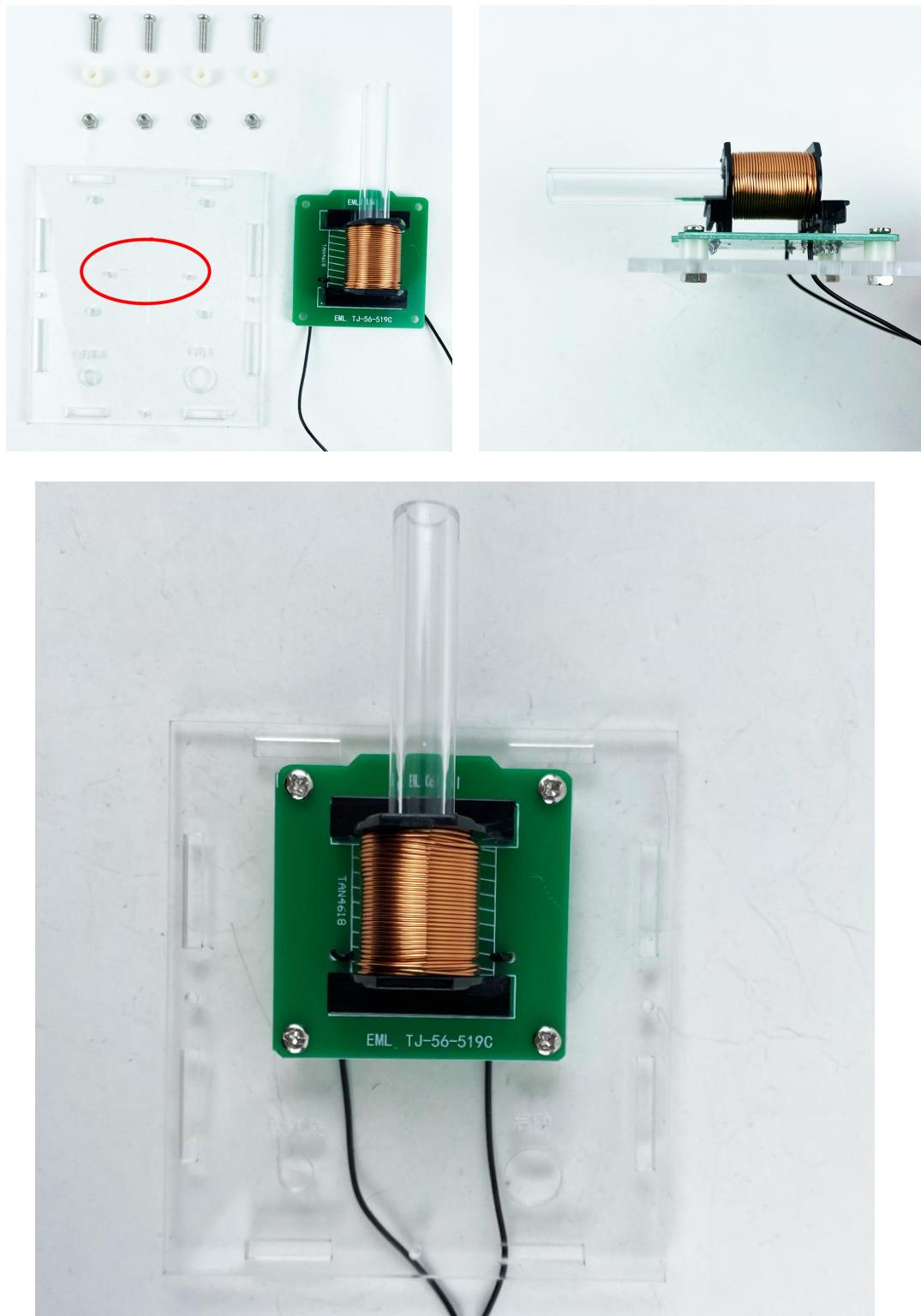
Tips: The plastic tube is fitted into the solenoid coil using heat shrink tubing, which acts as a fixing device. Remove the excess heat shrink after the plastic tube has been installed.

Note the direction of insertion of the plastic tube.

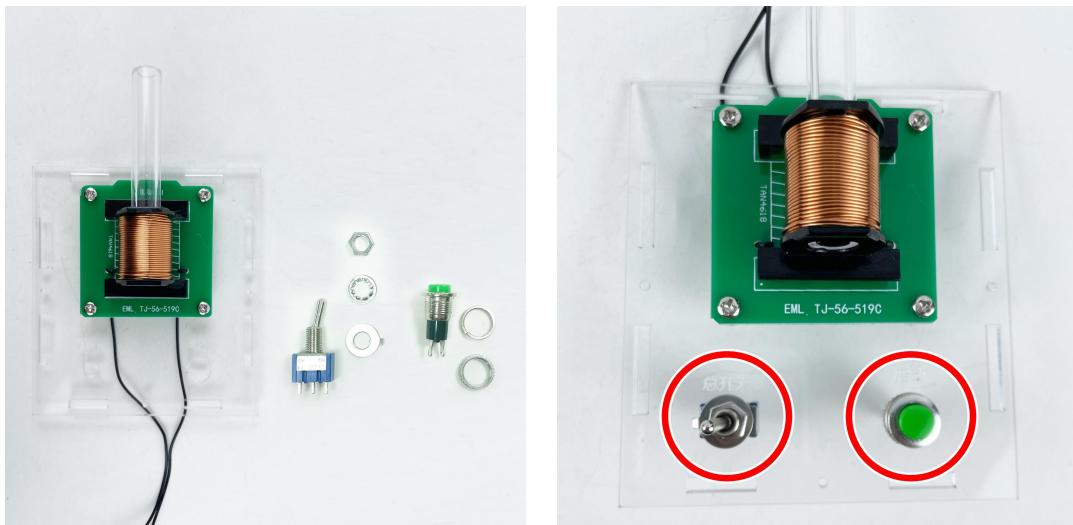


- **Step 10: Fix the solenoid assembly to the top housing**

Tips: First pass the wires through the through holes in the housing. Then fix the PCB to the top of the housing with screw nuts and nylon tubing.



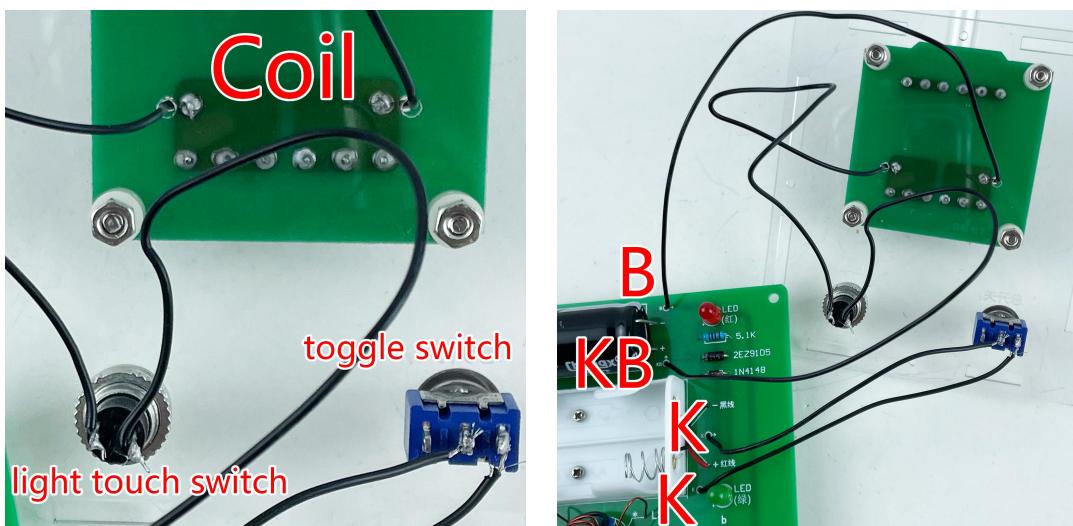
- **Step 11: Installation of toggle switches, light touch switches**



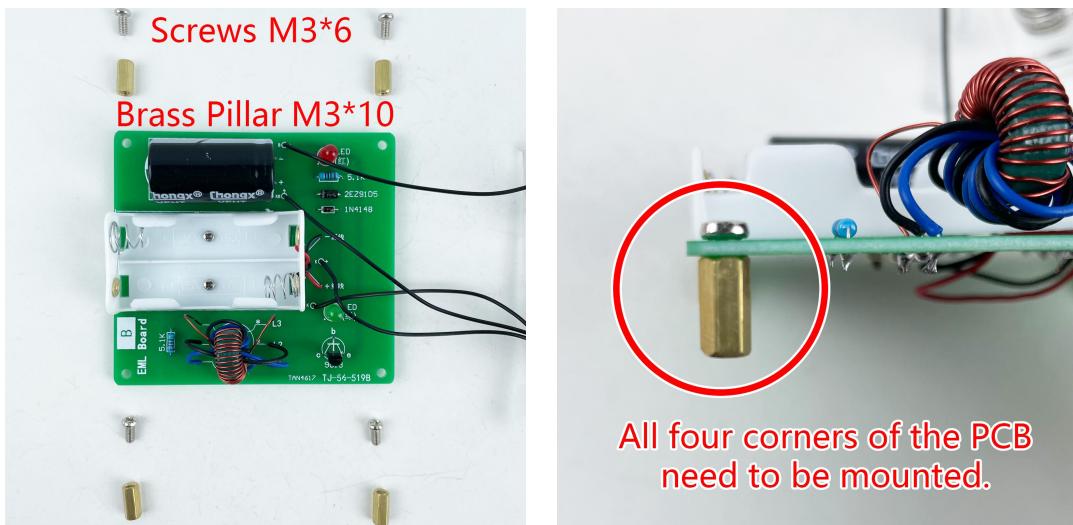
- **Step 12: Connecting Wires**

Refer to the illustration for installation.

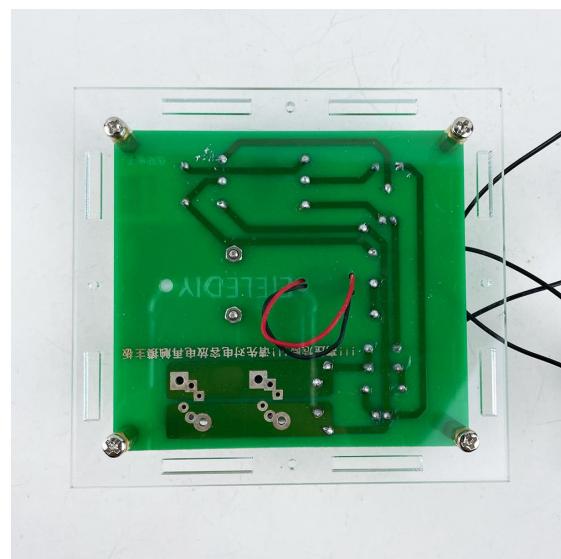
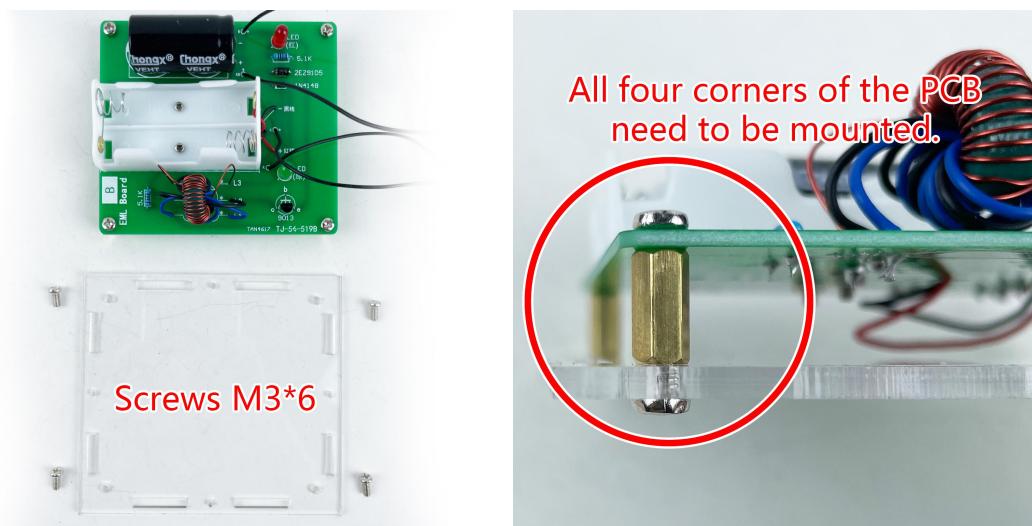
- The two wires of the coil are connected to the light touch switch and position B of the PCB.
 - The other terminal of the light touch switch is connected with a wire to the KB position on the PCB.
 - Two wires are connected to the toggle switch, one wire must be connected to a soldering point in the center and the other wire is randomly connected to a soldering point on either side.
 - The other end of these two wires is connected to the K position on the PCB.
- No distinction is made between positive and negative poles.



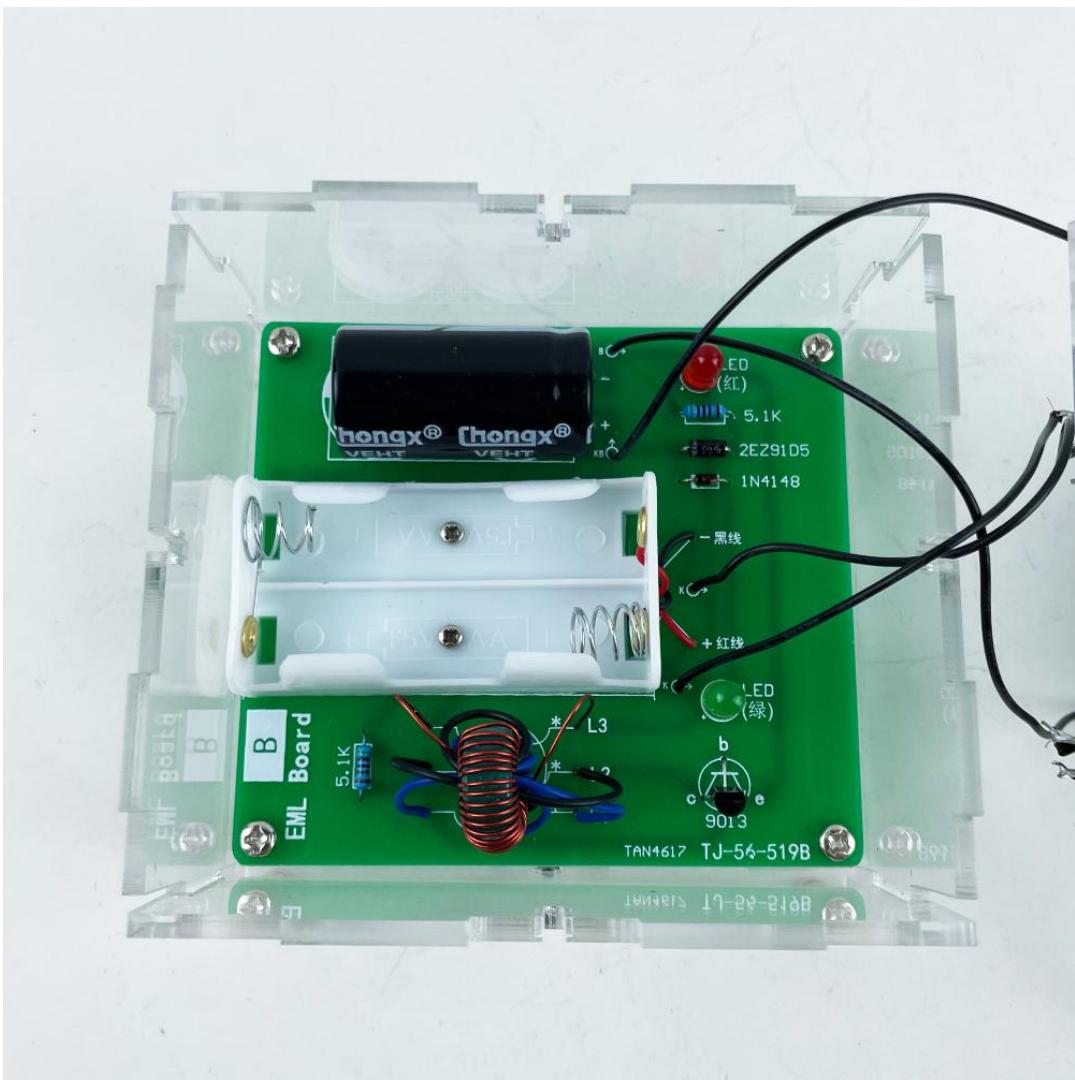
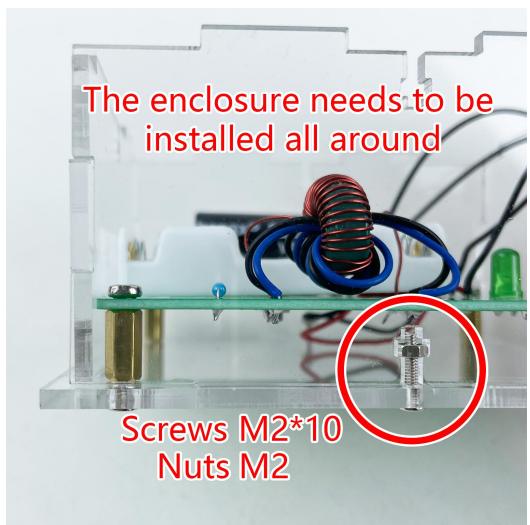
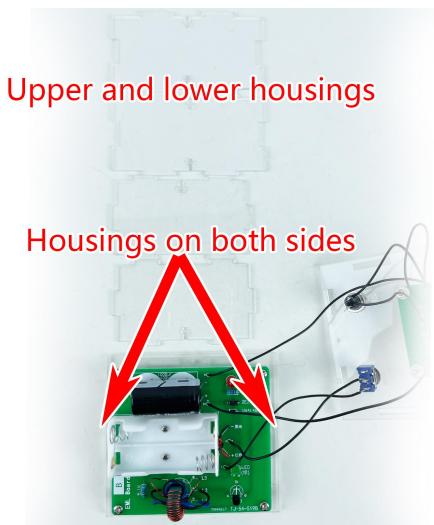
- **Step 13: Attaching copper posts and screws to the PCB**



- **Step 14: Fixing the PCB to the bottom housing**



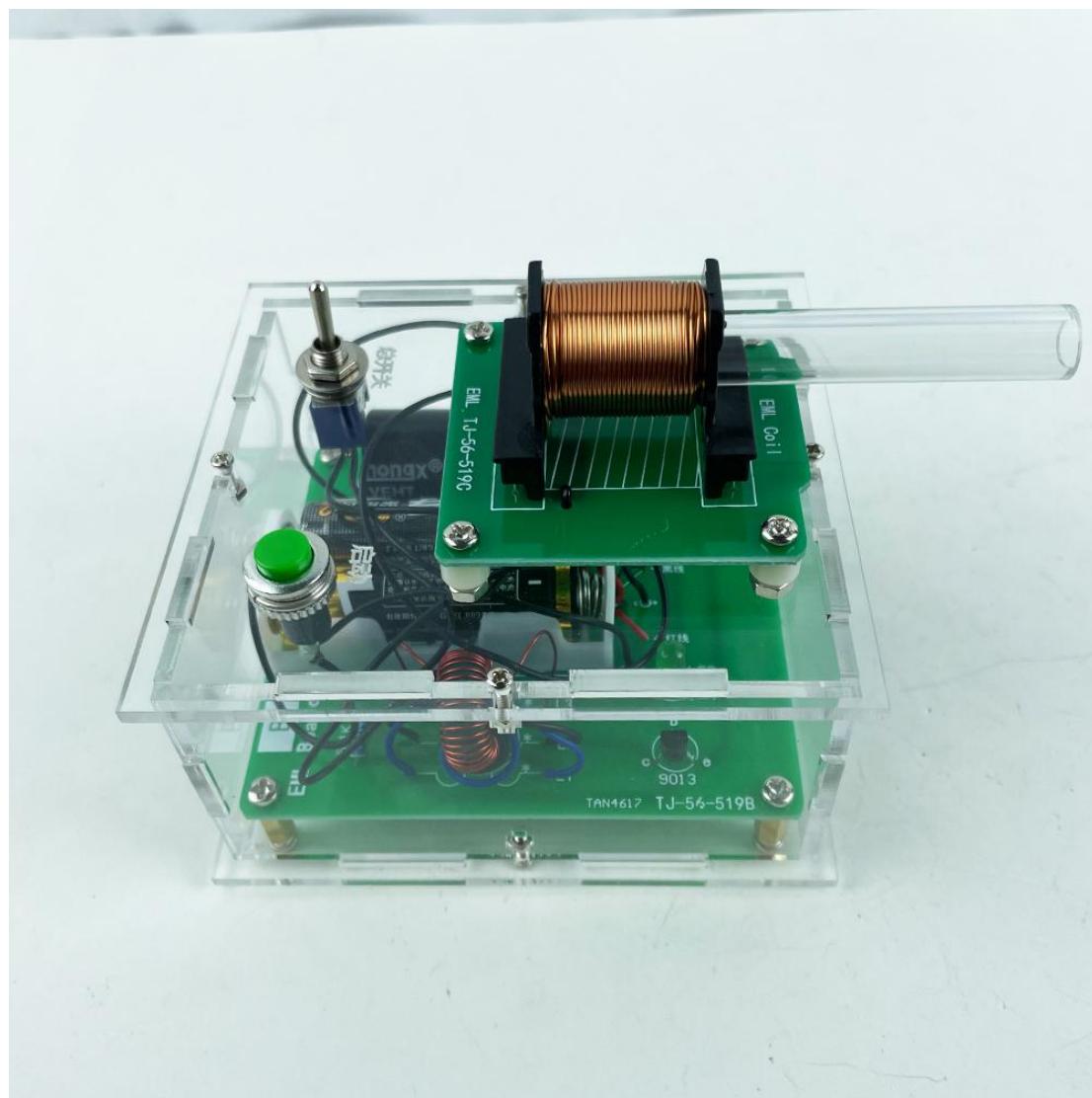
- **Step 15: Mounting side housing**



- **Step 16: Mounting the top housing**

Tips: When installing the top housing, one of the screws will be blocked by the plastic tube. You need to remove the plastic tube to install the housing and then put the plastic tube back on.

Remember to install the batteries before installing the top housing.



IV. Instructions for Use

- 1.** Toggle the toggle switch, at this point the green LED lights up and the circuit starts charging the energy storage capacitor. Wait for about 2-3 minutes for the red LED to light up as well, at which point the energy storage capacitor is fully charged and ready to go.
- 2.** Place the metal post through the back end of the plastic tube, with the end flush with the plastic tube (you can try different positions yourself to test the position that gets the most kinetic energy).
- 3.** Press the light touch button, the metal post will fly out of the plastic tube and the process is complete. (Be careful to press the flick button in a crisp motion and release it as soon as possible after pressing it.)

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under 14 years old please use under adult supervision!

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