

## TJ-56-678 Electromagnetic Swinging Device DIY Kit

### 1.Introduction:

TJ-56-678 is a Electromagnetic Swinging Device Circuit Electronic Soldering DIY Kit as know as swing or wiggler or wobbler. Automatically swing by magnetism from coil and magnet.

It can not only be used as a DIY electronic welding kit that allows you to better understand the circuit and learn how to soldering, but also as a very suitable experimental workbench tool.

### 2.Feature:

- 1>.Automatic control swinging device
- 2>.RGB LED Automatic Flashing
- 3>.Simple Operation
- 4>.DIY Hand Soldering

### 3.Parameter:

- 1>.Work voltage: DC 5V
- 2>.Power Type: DC-005
- 3>.Work Temperature:-40℃~85℃
- 4>.Work Humidity:5%~95%RH
- 5>.Size(Installed):99\*59\*164mm

### 4.Note:

1>.A3144 Hall Sensor must be placed above the metal axis of the coil, not above the copper wire of the coil, otherwise it cannot swing normally.

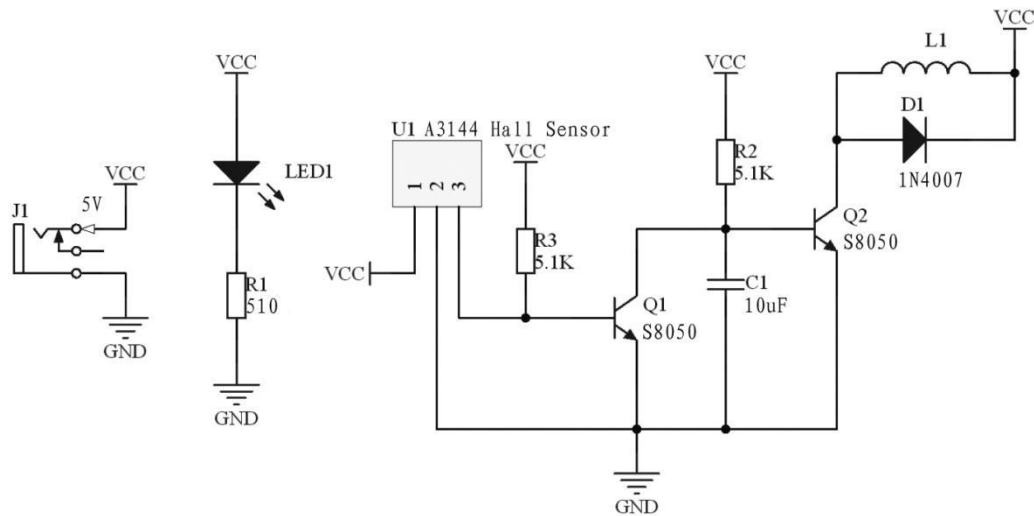
2>.The magnet cannot remain stationary for a long time (5 seconds) after power ON, otherwise it will cause damage to the components.

### 5.Component Listing:

NO.	Component Name	PCB Marker	Parameter	QTY
1	Metal Film Resistor	R1	510ohm	1
2	Metal Film Resistor	R2,R3	5.1Kohm	2
3	Monolithic Capacitor	C1	10uF	1
4	S8050 Transistor	Q1,Q2	TO-92	2
5	1N4007 Diode	D1	DO-41	1
6	3mm RGB LED	LED1	2Pin	1
7	A3144 Hall Sensor	U1	TO-92	1
8	DC-005 Power Socket	J1		1
9	Copper Coil	L1		1
10	Magnet			1
11	USB Power Wire			1
12	Acrylic Board			2
13	Metal Axis		30mm	1
14	Metal Axis		120mm	1
15	Yellow Limiting Washer			6
16	White Connector			1
17	White Wire		20cm	1
18	Copper Pillar		M3*20mm	4
19	Copper Pillar Screw		M3*7+6mm	4
20	Screw		M3*6mm	9
21	Screw		M2*10mm	2
22	M3 Nut		3mm	4
23	M2 Nut		2mm	2
24	PCB Circuit Board		50*41mm	1

Note:Users can complete the installation according to the PCB silk screen and component list.

## 6.Schematic Diagram:



## 7.Application:

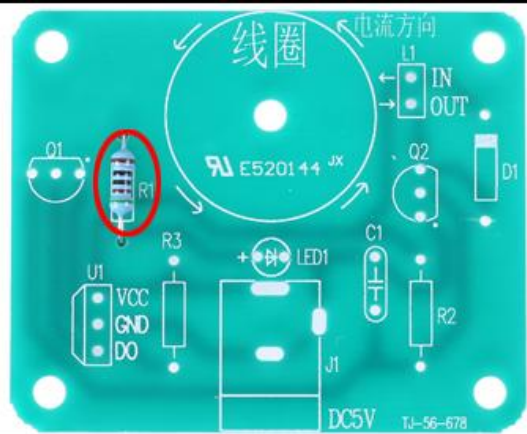
- 1>.Training welding skills
- 2>.Student school
- 3>.DIY production
- 4>.Project Design
- 5>.Electronic competition
- 6>.Gift giving
- 7>.Crafts collection
- 8>.Home decoration
- 9>.Souvenir collection
- 10>.Graduation design
- 11>.Holiday gifts

## 8.Installation Tips:

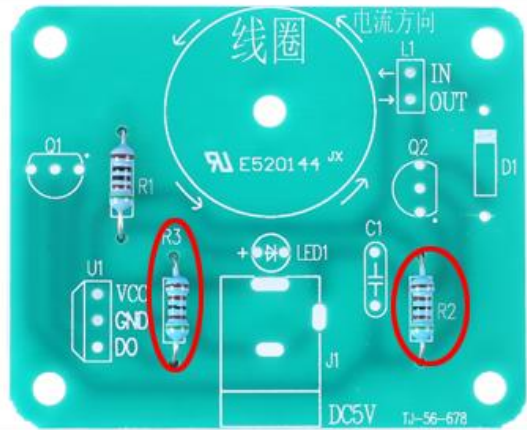
- 1>.User needs to prepare the welding tool at first.
  - 1.1>.Soldering iron (<50 Watt)
  - 1.2>.Rosin core ("radio") solder
  - 1.3>.Wire cutters
  - 1.4>.Wire strippers
  - 1.5>.Screwdriver
- 2>.Please be patient until the installation is complete.
- 3>.The package is DIY kit.It need finish install by user.
- 4>.Soldering iron can't touch components for a long time(1.0s), otherwise it will damage components.
- 5>.Pay attention to the positive and negative of the components.
- 6>.Strictly prohibit short circuit.
- 7>.User must install the LED according to the specified rules.Otherwise some LED will not light.
- 8>.Install complex components preferentially.
- 9>.Make sure all components are in right direction and right place.
- 10>.It is strongly recommended to read the installation manual before starting installation!!!
- 11>.Please wear anti-static gloves or anti-static wristbands when installing electronic components.

## 9.Installation Steps(Please be patient install!!!):

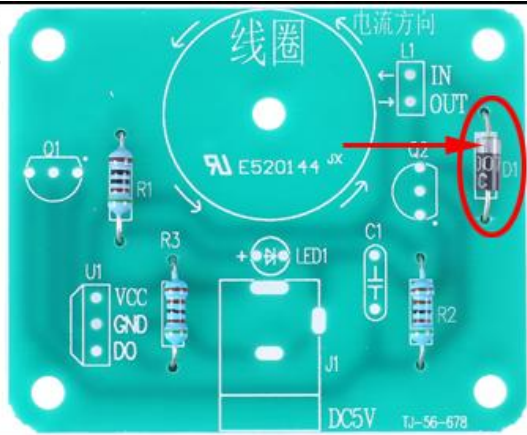
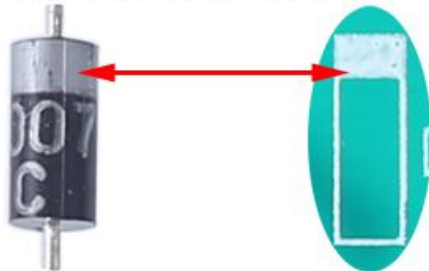
Step 1: Install 1pcs 510ohm Metal Film Resistor at R1.



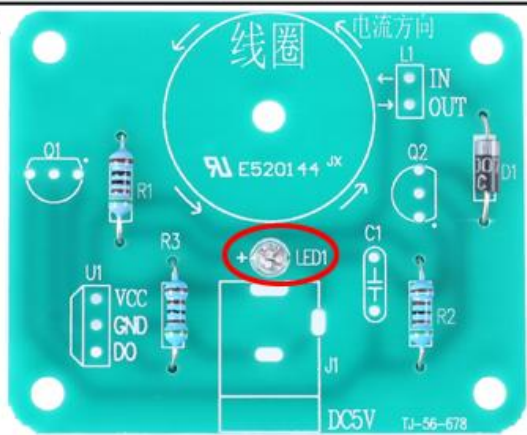
Step 2: Install 2pcs 5.1Kohm Metal Film Resistor at R2,R3.



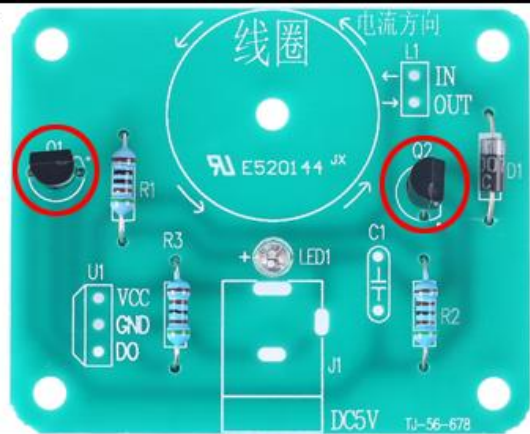
Step 3: Install 1pcs DO-41 1N4007 Diode at D1. Pay attention to the installation direction. There is a white mark on 1N4007 and a white mark on PCB which are used to confirm the installation direction.



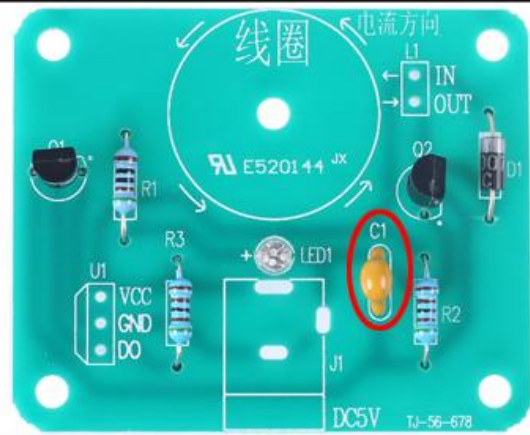
Step 4: Install 1pcs 3mm RGB LED at LED1. The Longer pin is positive pole connect to the '+' pad.



Step 5: Install 2pcs TO-92 S8050 Transistor at Q1,Q2. Pay attention to the installation direction. The arc on the PCB corresponds to the arc of the component



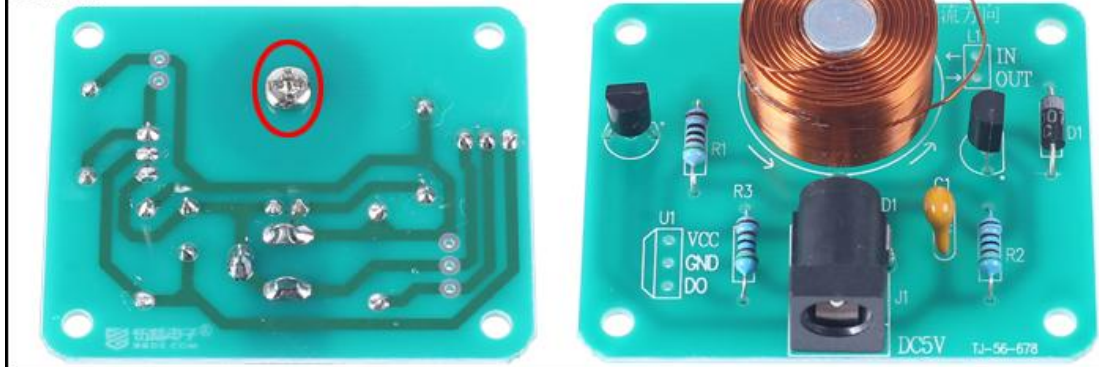
Step 6: Install 1pcs 10uF Monolithic Capacitor at C1.



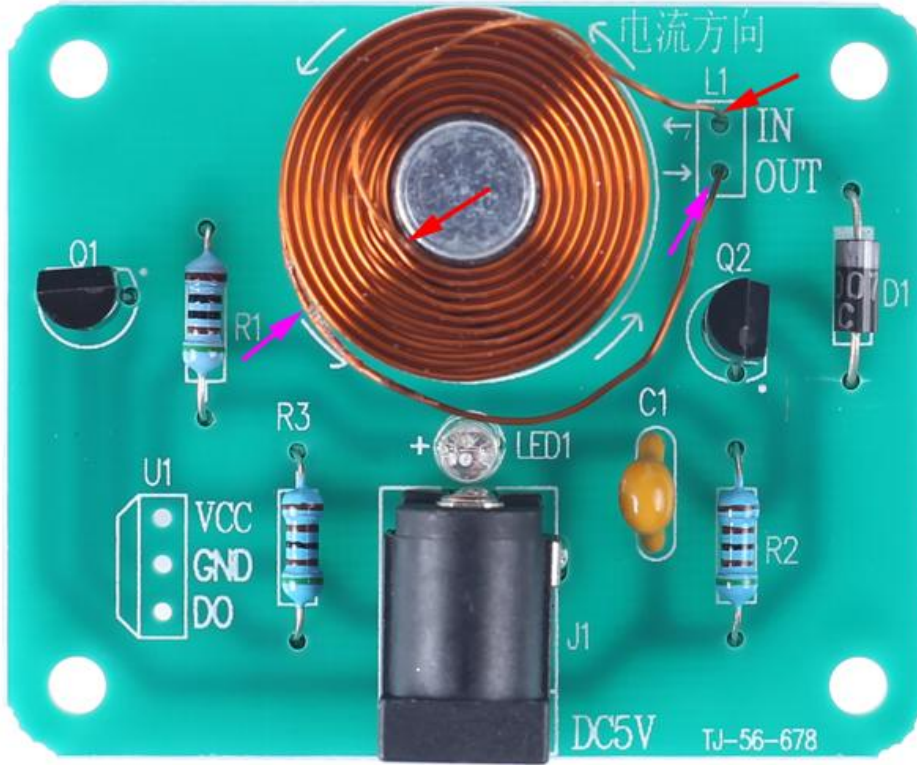
Step 7: Install 1pcs DC-005 Power Socket at J1.



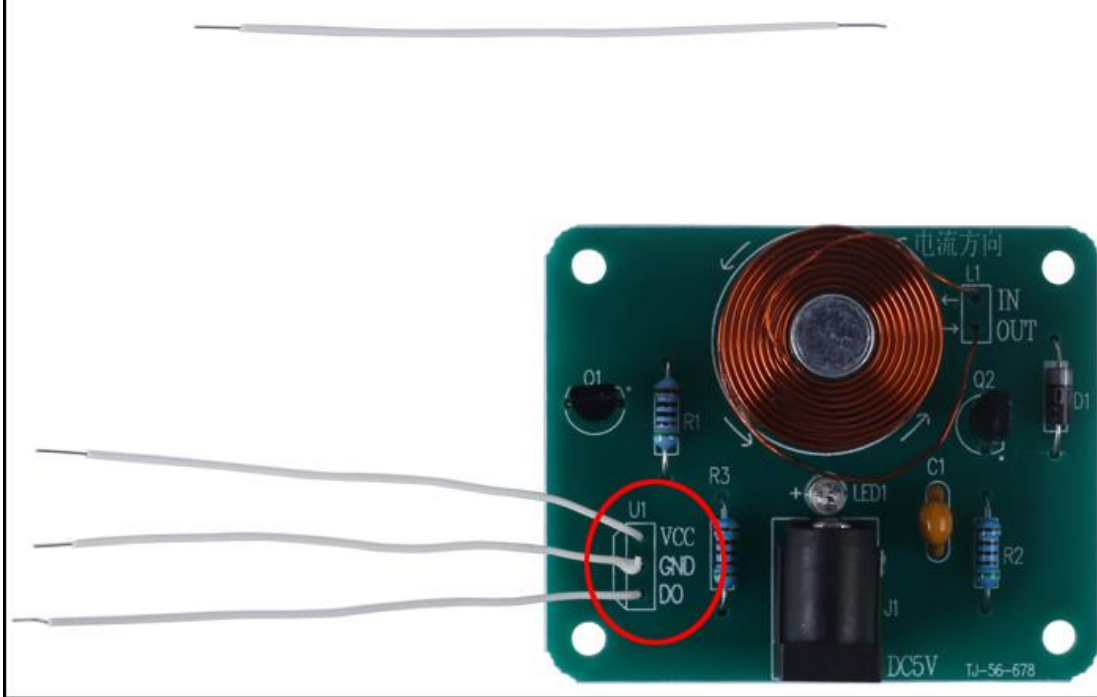
Step 8: Fix Copper Coil at L1 by M3\*6mm Screw.



Step 9: Connect copper wire from the middle of coil to ' IN ' pad. Another copper wire to ' OUT ' pad.



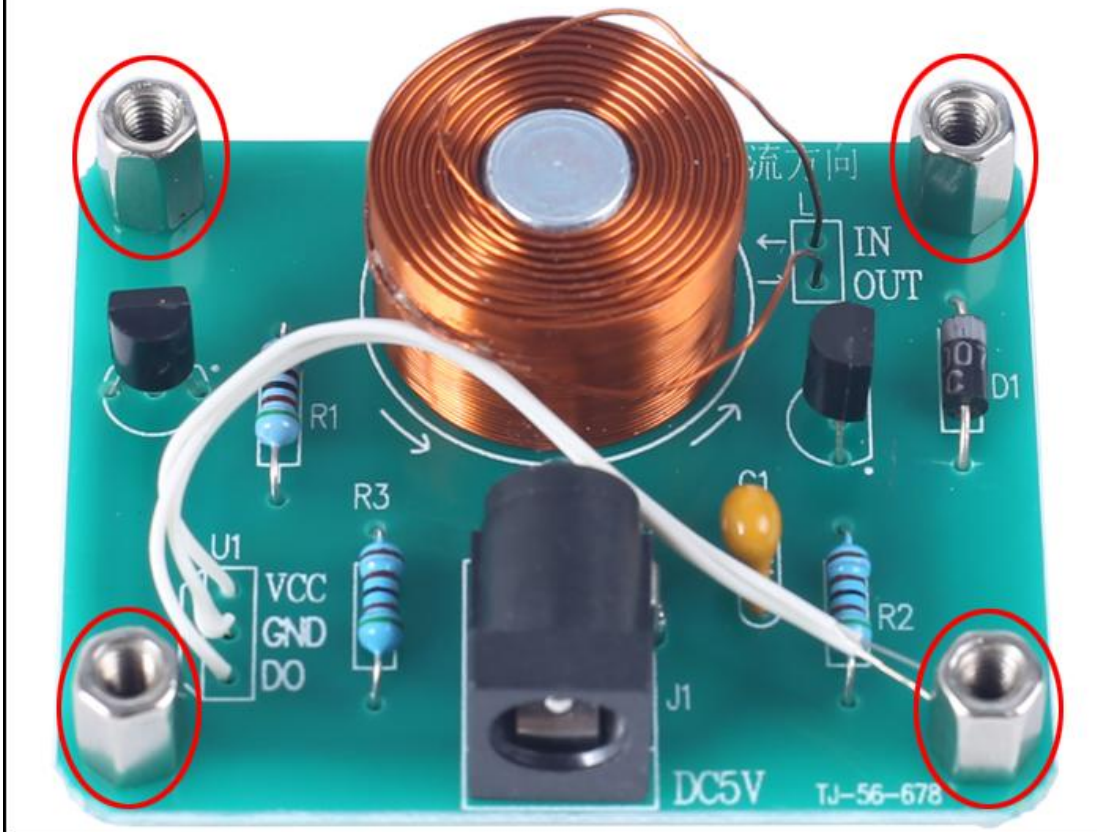
Step 10: Cut 3pcs 5cm wire from 20cm white thin wire and connect to VCC/GND/DO pads at U1.



Step 11: Tear off the protective film on the surface of the acrylic boards.



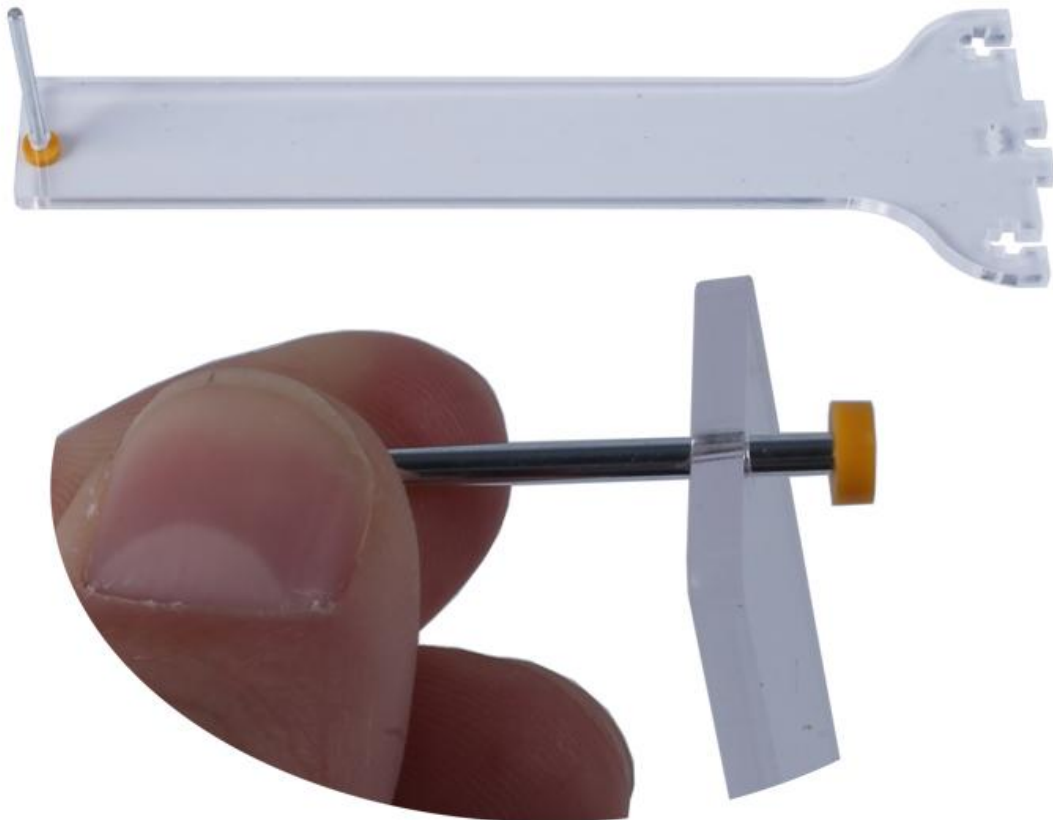
Step 12: Fix 4pcs M3\*7+6mm Copper Pillar Screw on PCB by 4pcs M3 Nut.



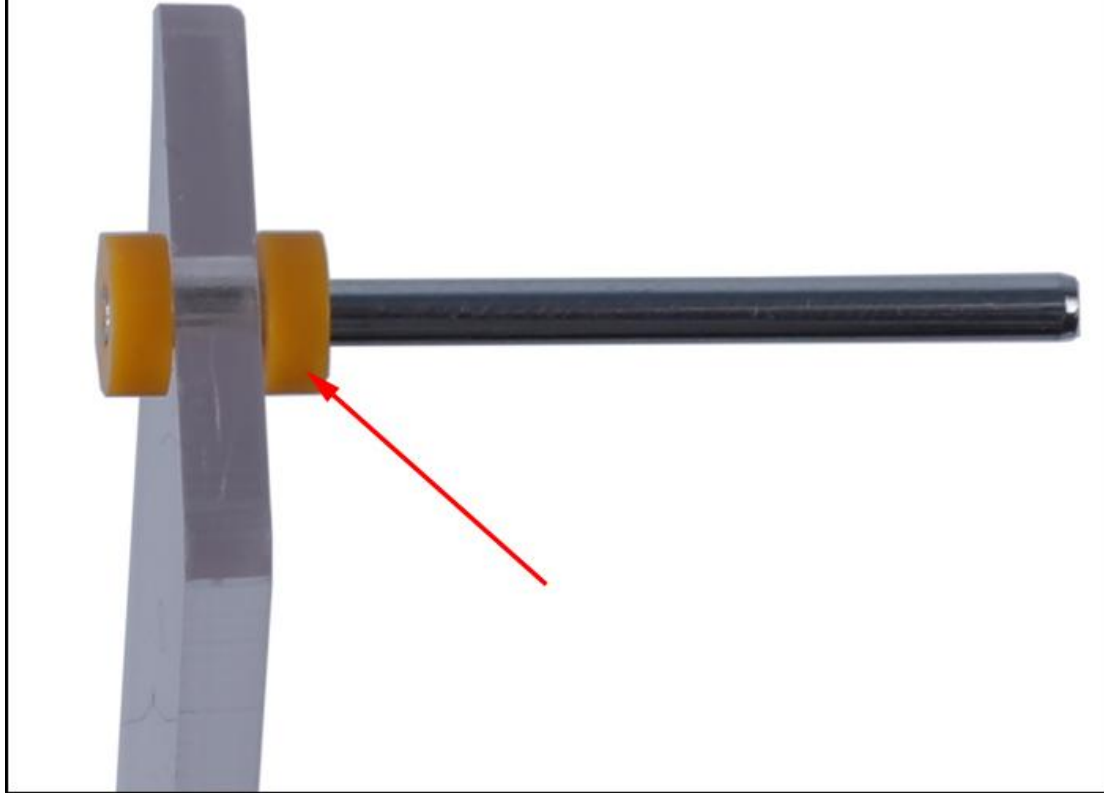
Step 13: Fix 1pcs Yellow Limiting Washer on the end of 30mm Metal Axis.



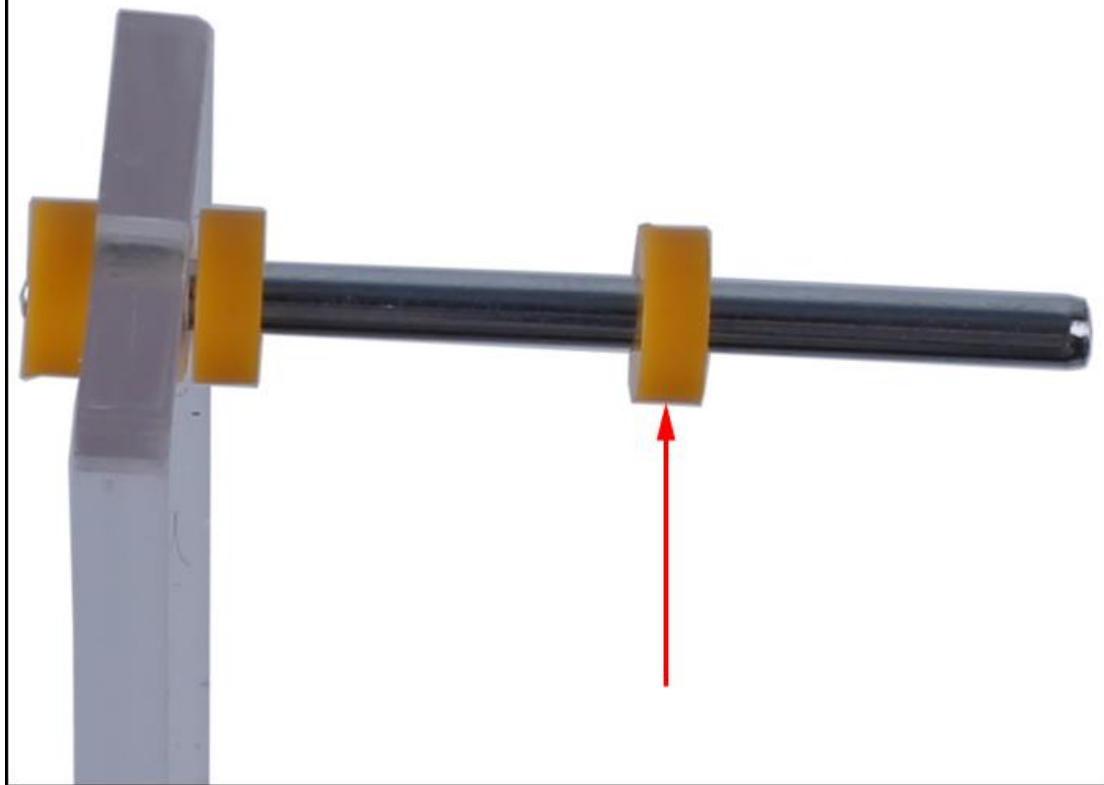
Step 14: Thread this metal shaft through a longer acrylic board.



Step 15: Install another Yellow Limiting Washer to fix Metal Axis.

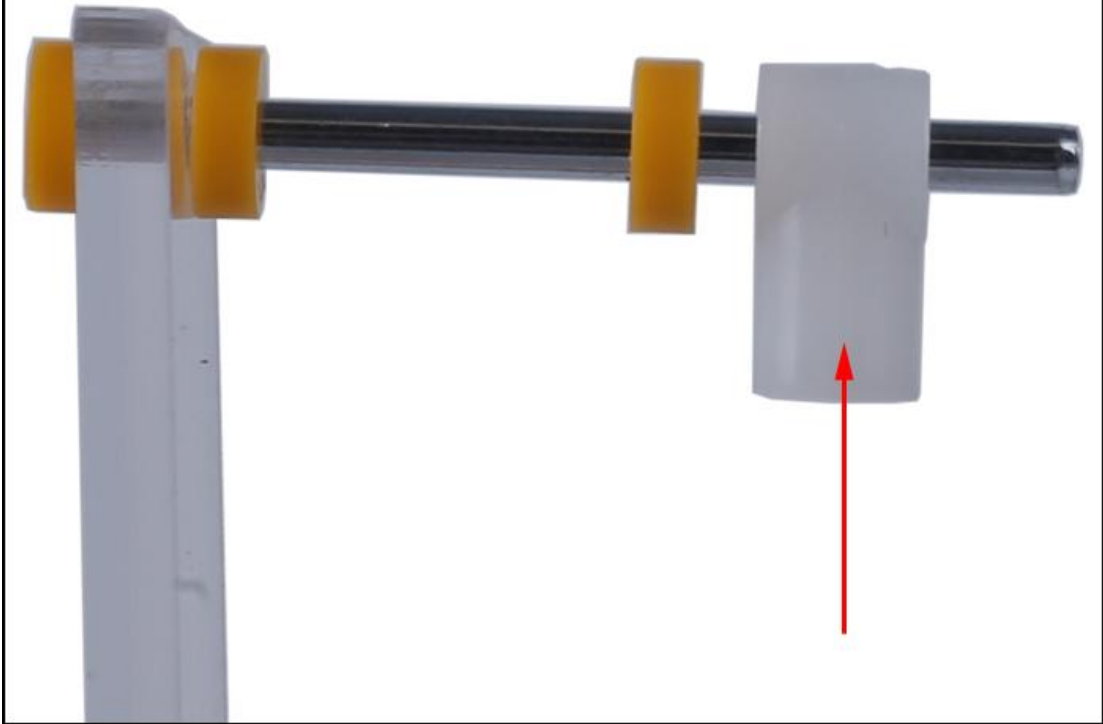


Step 16: Install another Yellow Limiting Washer on Metal Axis as shown.

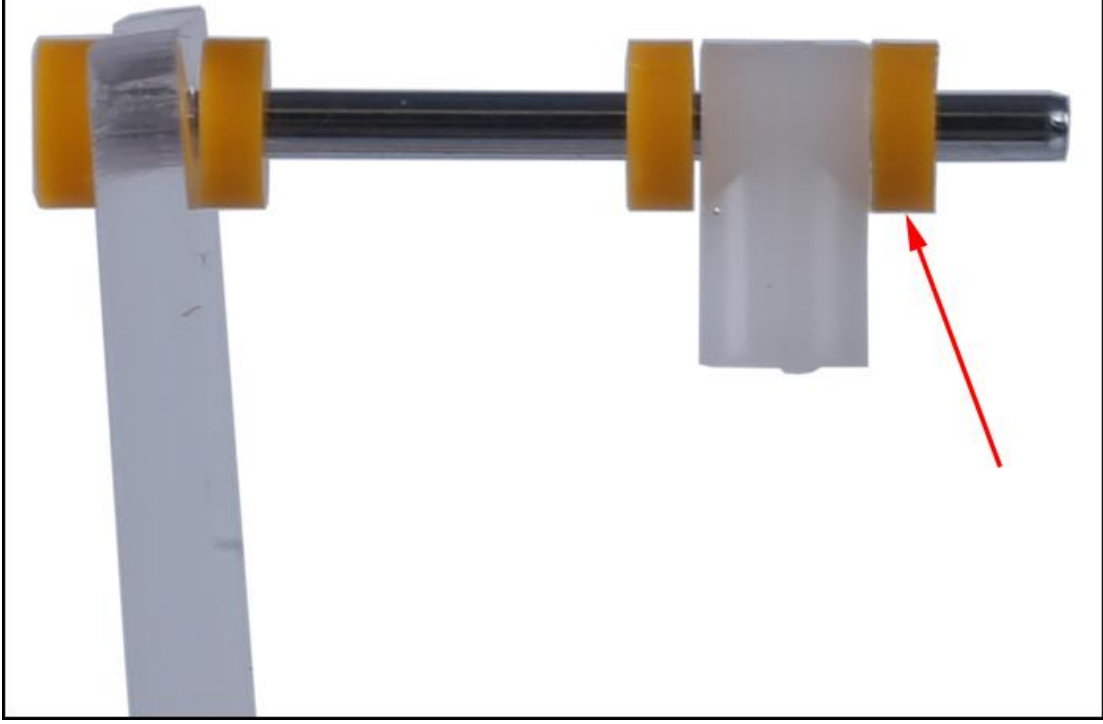




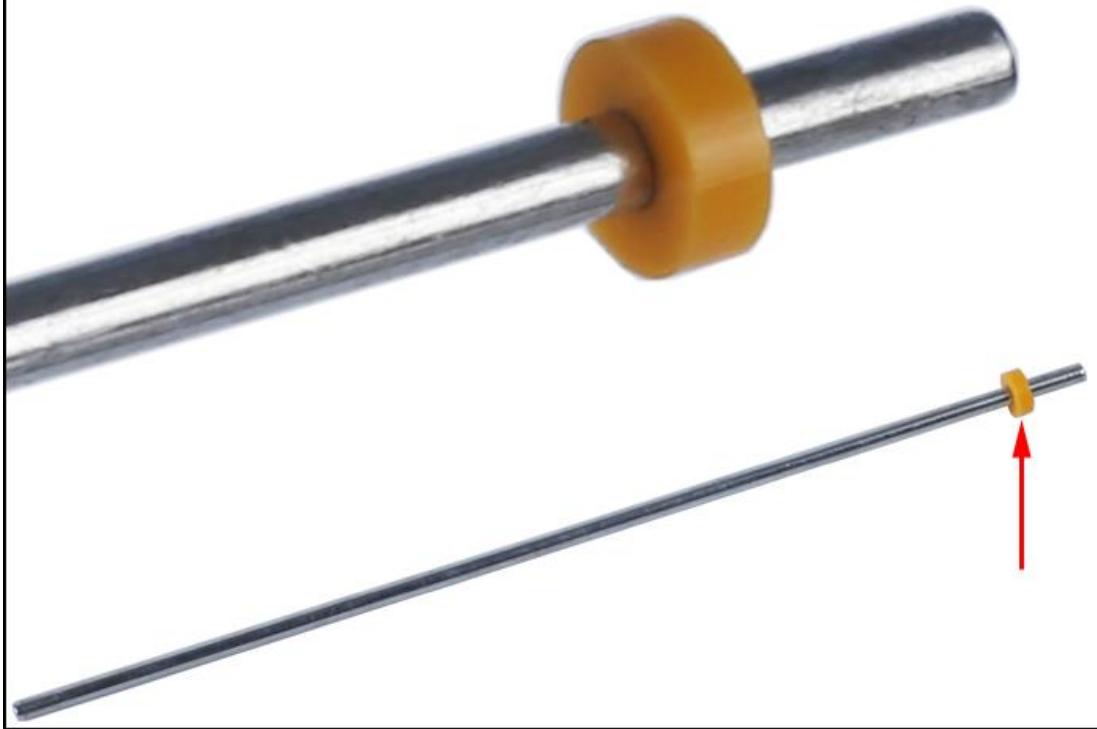
Step 17: Install White Connector on Metal Axis as shown.



Step 18: Install another Yellow Limiting Washer to fix White Connector.



Step 19: Fix 1pcs Yellow Limiting Washer on the end of 130mm Metal Axis as shown.



Step 20: Fix 1pcs Magnet 130mm Metal Axis by Yellow Limiting Washer as shown.  
Note: The groove of the magnet is close to the end of the Metal Axis.



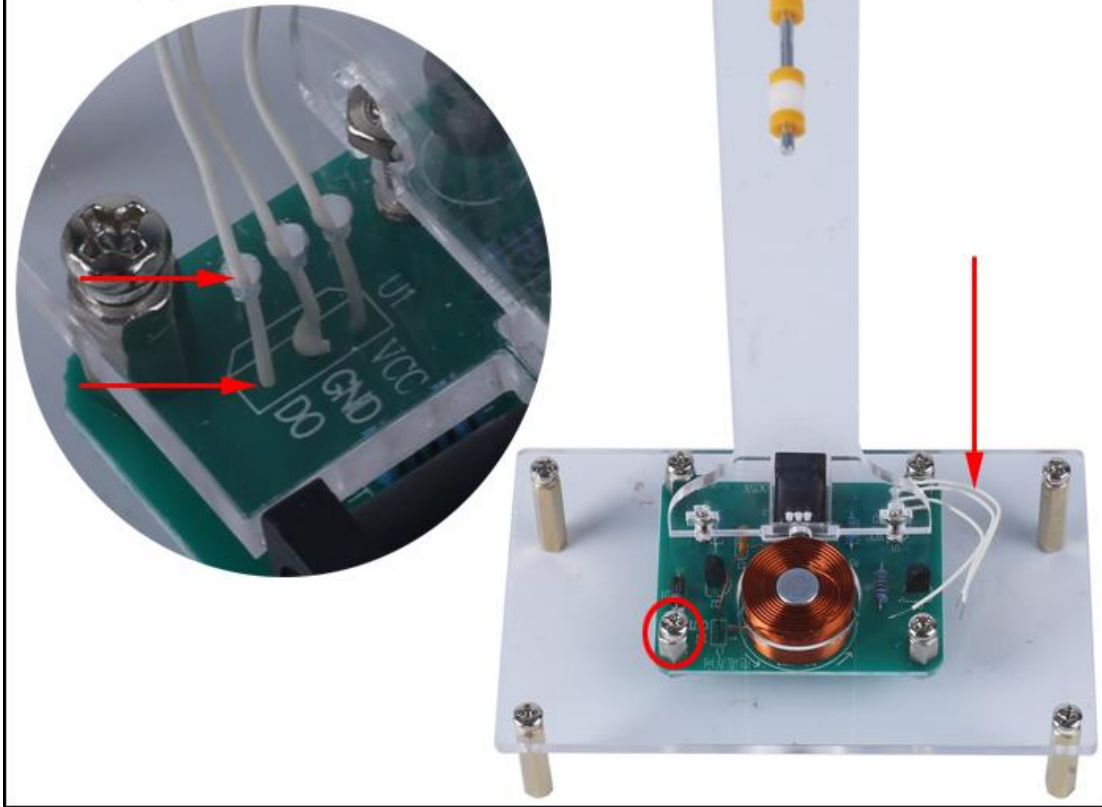
Step 21: Fix two Acrylic Boards by 2pcs M2\*10mm Screw and 2pcs M2 Nut. Pay attention to the direction of the base plate.



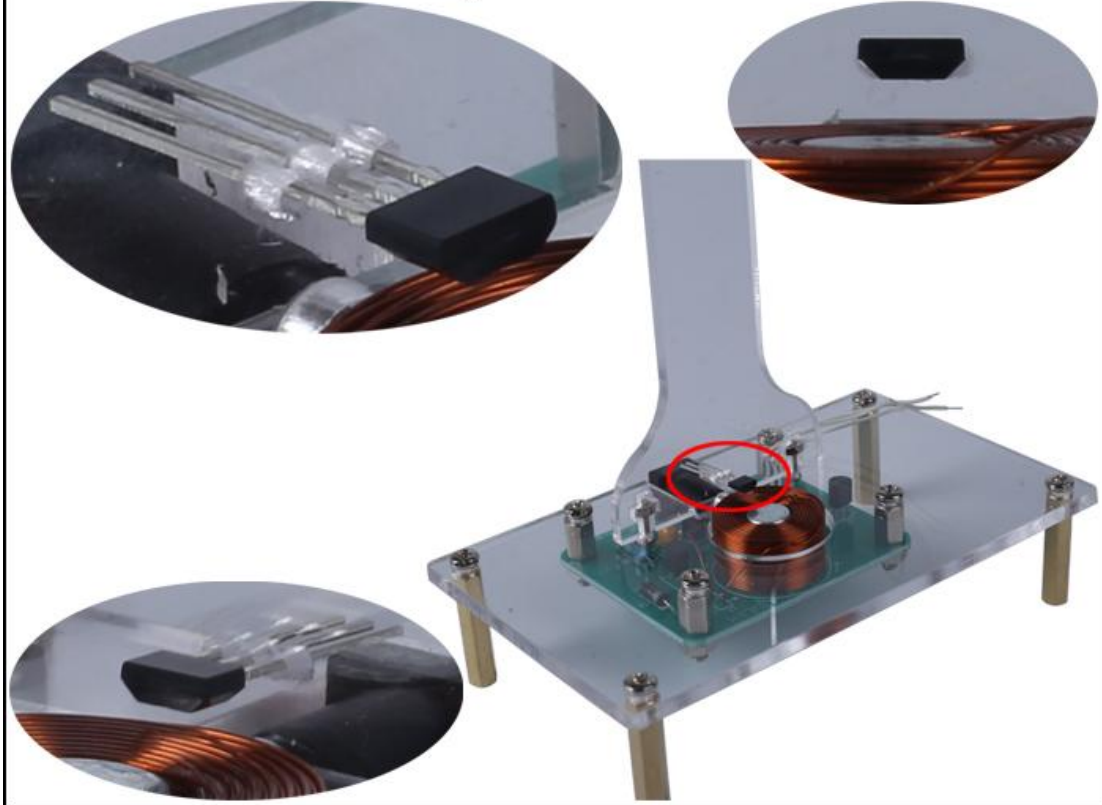
Step 22: Fix 4pcs M3\*20mm Copper Pillar on base plate by 4pcs M3\*6mm Screw.



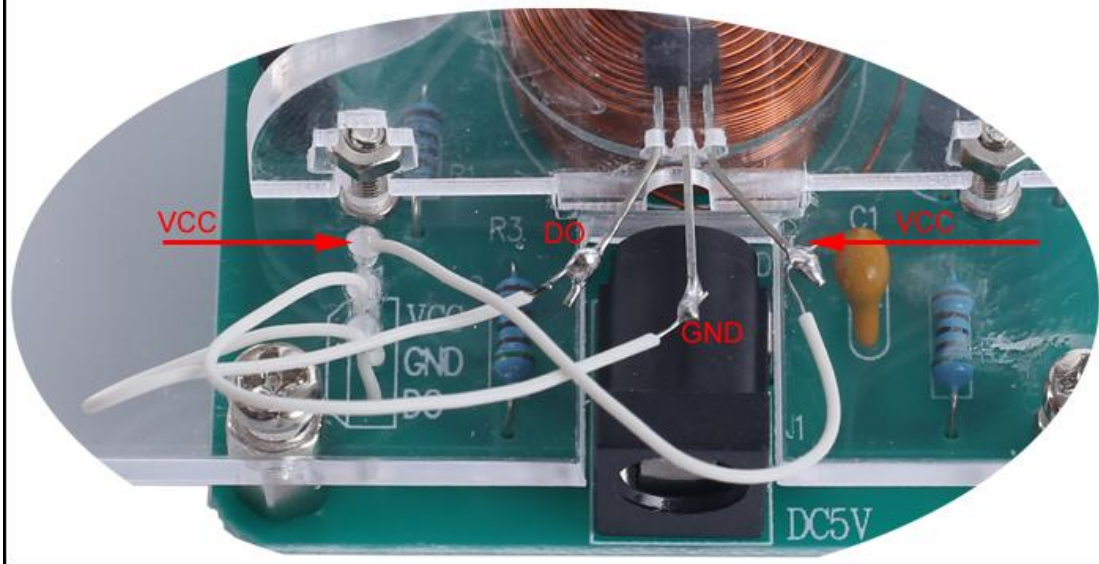
Step 23: The 3 white wires passes through 3 small holes in acrylic board and then fix PCB by 4pcs M3\*6mm Screw.



Step 24: Insert A3144 Hall Sensor into the vertical acrylic board.  
Note: The side with silk screen facing the coil. The direction must not be misplaced!!!



Step 25: Connect VCC white wire to the right pin and GND white to the middle pin and DO white wire to the left pin of A3144 Hall Sensor. Sensors must be placed correctly!!!



Step 26: Adjusting the position of the A3144 Hall Sensor. It must be placed above the metal axis of the coil, not above the copper wire of the coil, otherwise it cannot swing normally. The black probe must be placed above the metal cylinder but not above copper wire.

