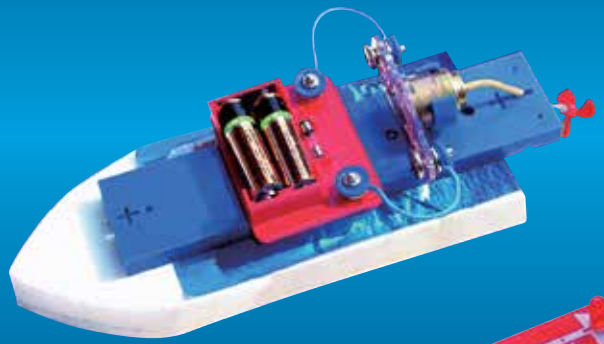
Car and Boat Snap-on Electronic Project Kit

KJ-8972

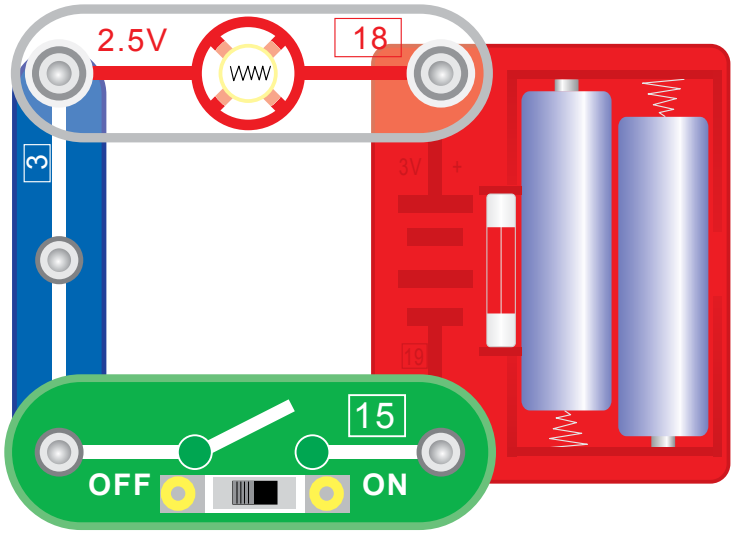


Simply snap together!

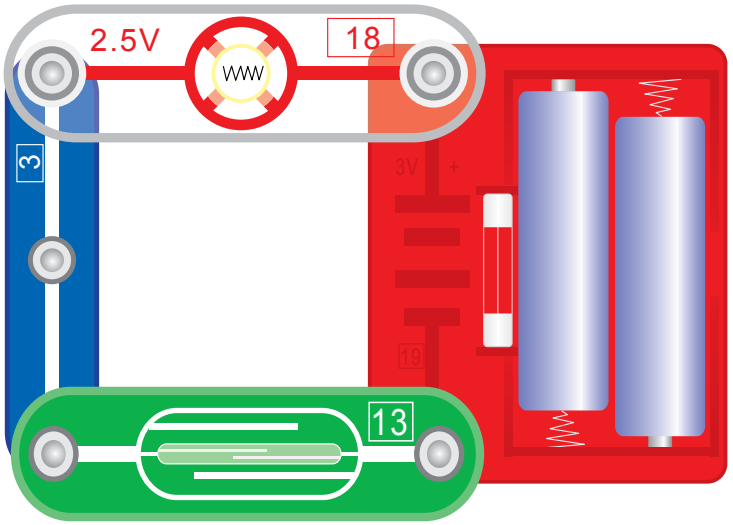
OVER 50 EXPERIMENTS

- Learn whilst building over 50 electronic experiments
- No tools or soldering required - quick and easy assembly
- Components simply snap together
- Includes full colour instruction manual

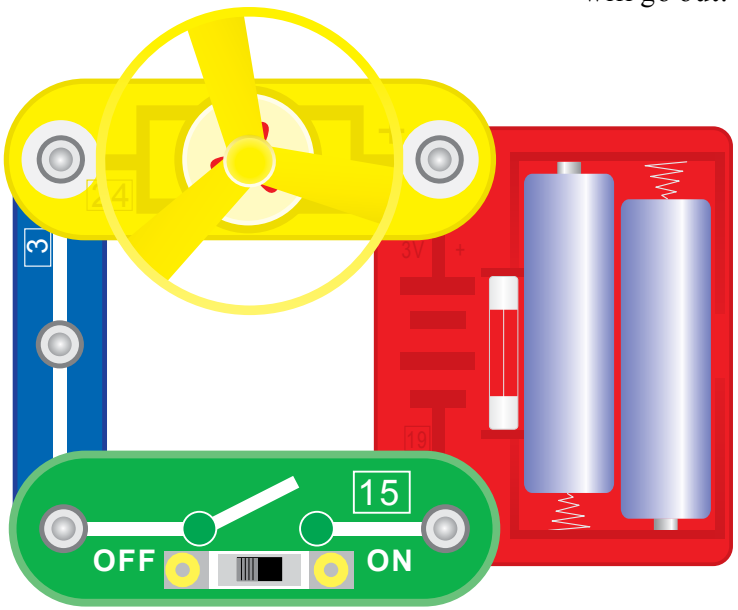
Contents...



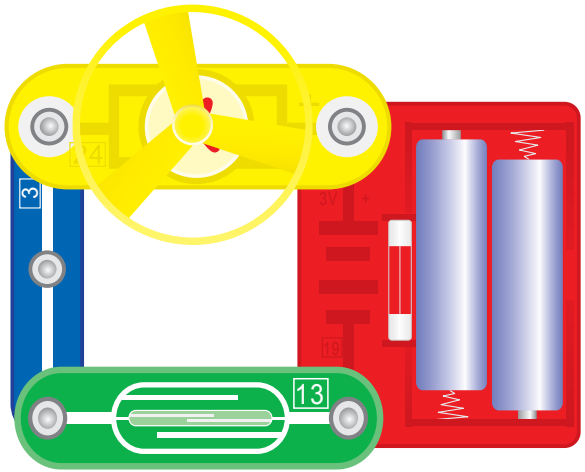
1.Lamp
Close slide switch 15 and the lamp 18 will light up.Switch off and lamp 18 will go out.



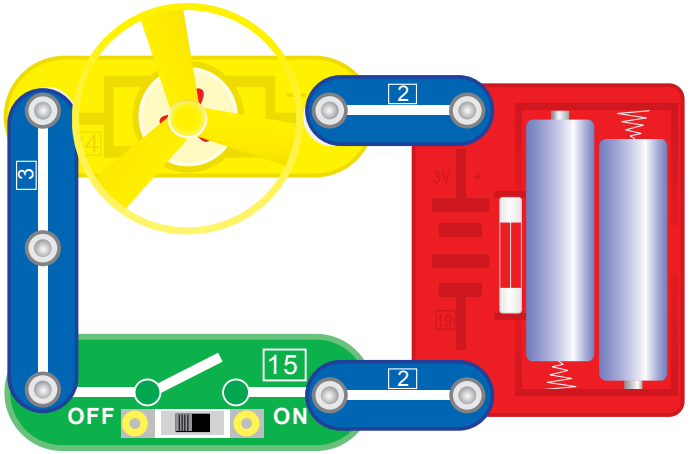
2.Magnet-controlled lamp t
Put a magnet near the dry reed switch 13,lamp 18 will light up.Take the magnet away fromthe dry reed switch 13,lamp 18 will go out.



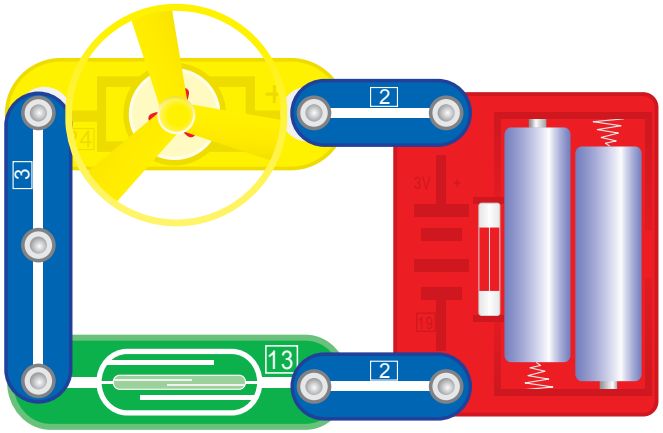
3. Electric fan
Place the yellow fan on the motor,close the slide switch 15 and the fan will spin round.



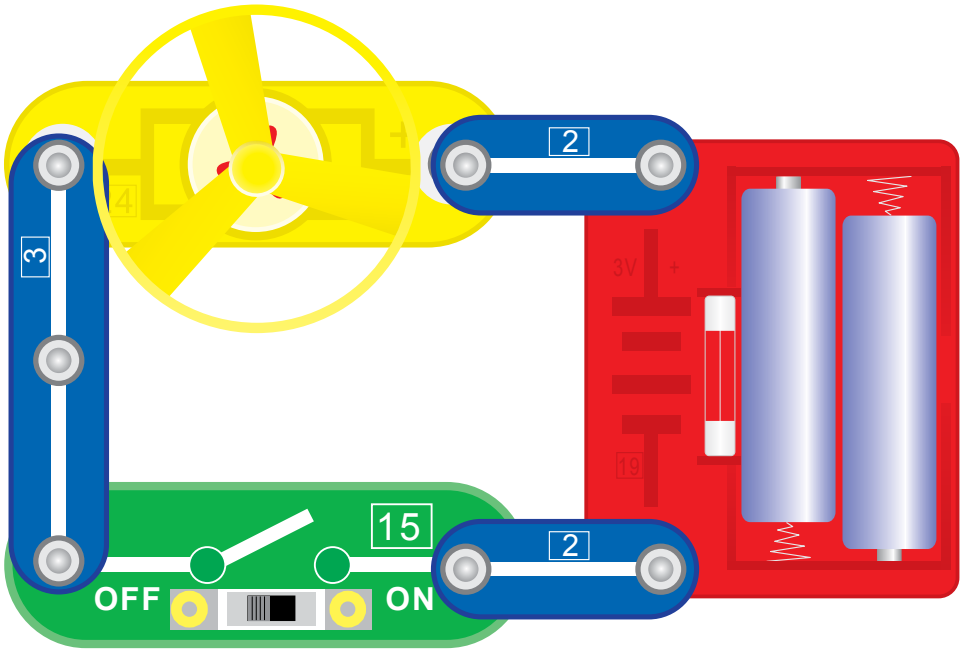
4.Magnet-controlled electric fan
Place the yellow fan on the motor, bring a magnet near to the dry reed switch 13,the fan will spin around.Take the magnet away from the dry reed switch 13 and the fan will stop rotating.



5.Flying fan
Place the yellow fan on the motor, press the slide switch 15,when the motor reaches its top speed,release it, the dish will fly up into air.(Note: Keep your head out of the way!)

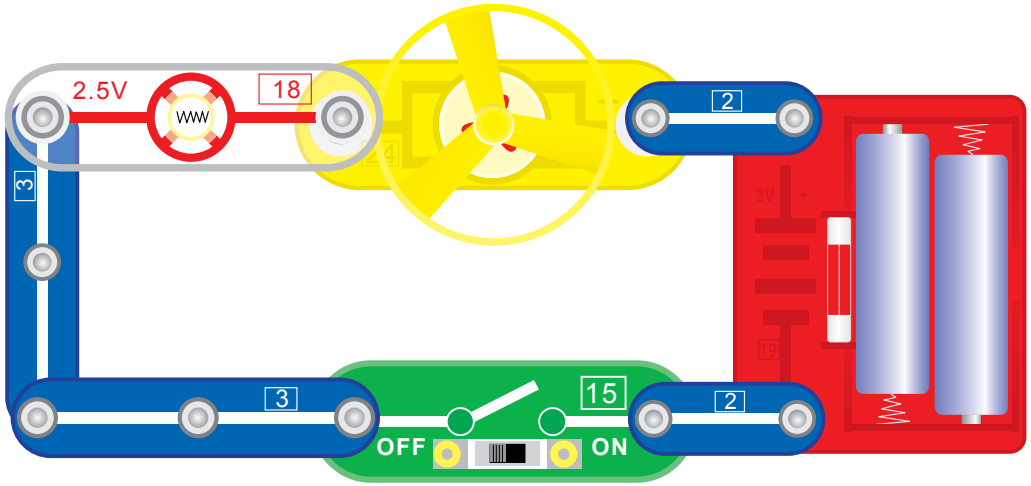


6.Magnet-controlled flying fan
Replace the slide switch 15 with the dry reed switch 13, bring a magnet near to the dry reed switch 13, when the motor reaches its top speed,take the magnet away,the dish will fly up into air.(Note:Keep your head out of the way!)



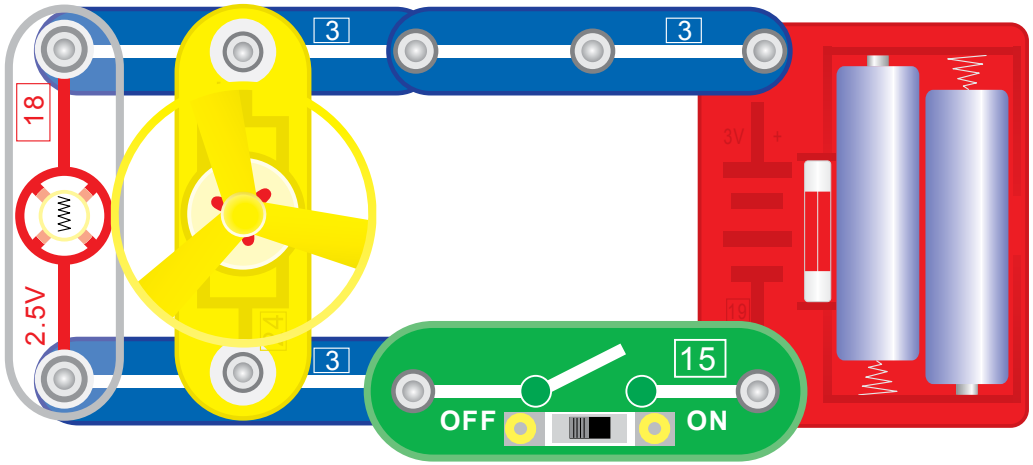
7.Clockwise and anticlockwise rotation of an electric motor

Press the slide switch 15,you will see that rotation of the electric motor is reversed,the dish will not fly into the air but becomes an electric fan blowing air upwards.



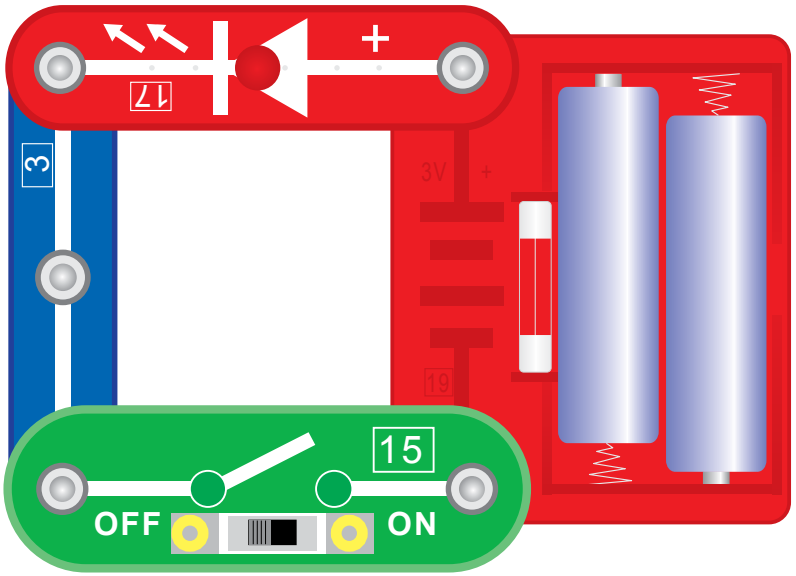
8. **An electric motor and a lamp connected in series.**

Place the yellow fan on the motor,close the slide switch15, the fan will begin to rotate and the lamp 18 will also light up.Switch off, the fan will stop rotating and the lamp 18 will also go out.



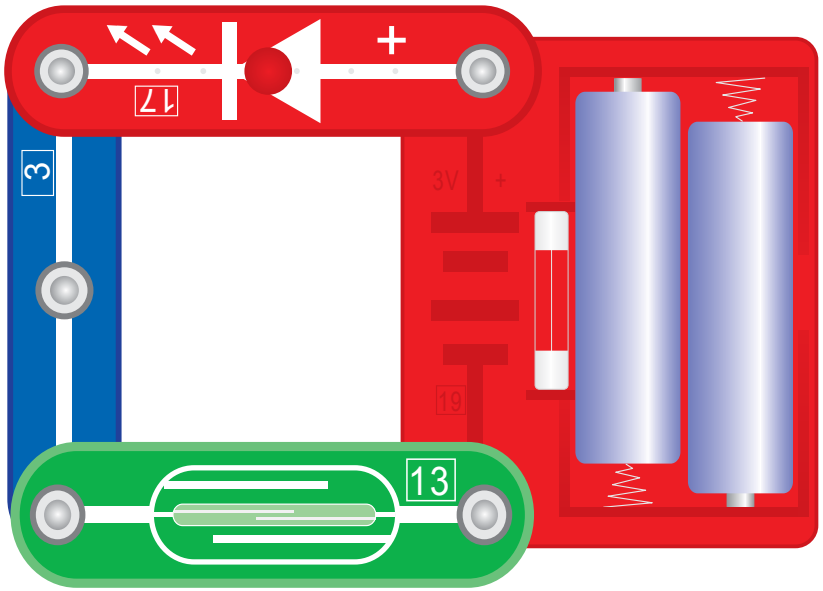
9. **An electric motor and a lamp connected in parallel**

Place the yellow fan on the motor,close the slide switch 15,the fan will begin to rotate and the lamp 18 will also light up.Switch off, the fan will stop rotating and the lamp 18 will also go out.



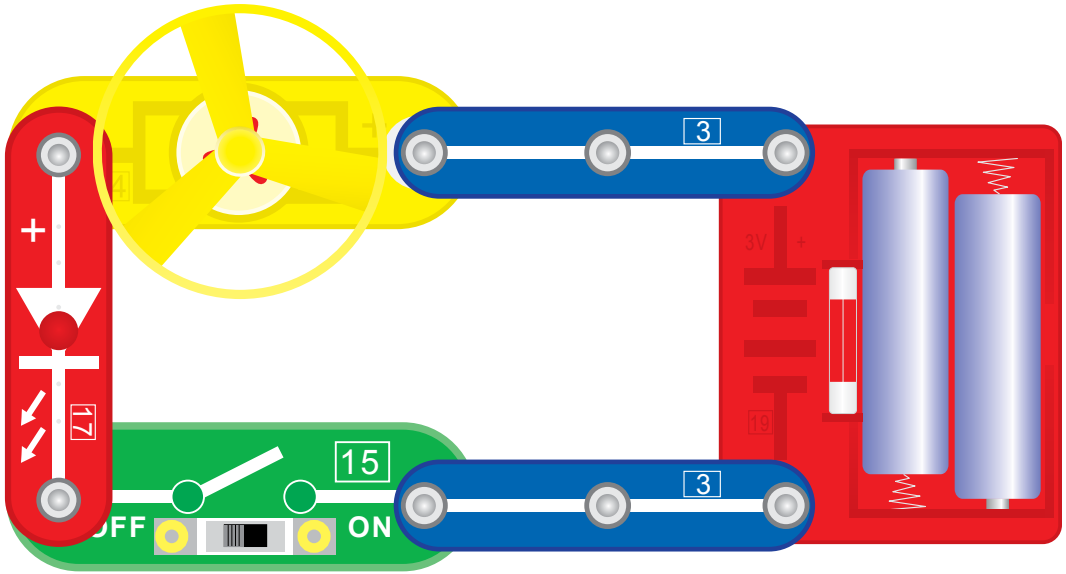
10.Using an LED(light emitting diode)LED's require a resistor wired in series to prevent it burning out,you can see this on the underside of the LED.

Close the slide switch 15,the LED 17 will light up.



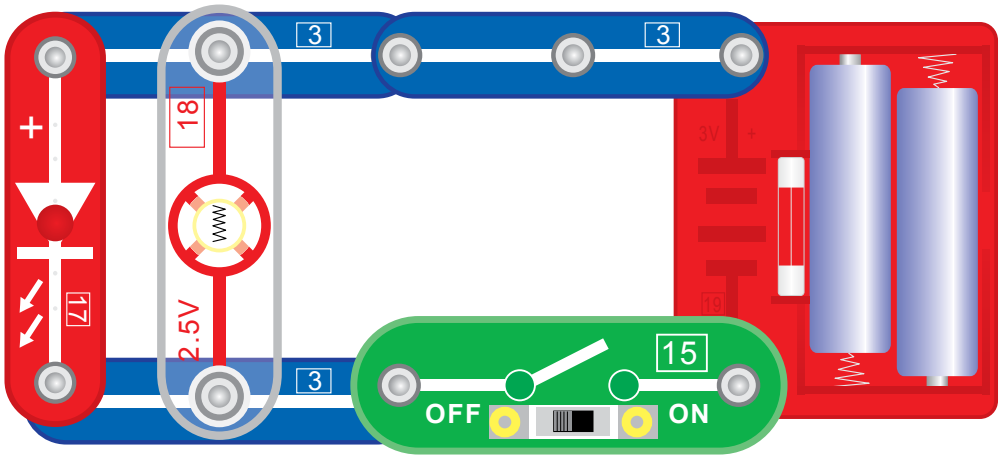
11.Magnet-controlled LED

Bring a magnet near to the dry reed switch 13,the LED 17 will light up,take the magnet away,the LED 17 will go out.



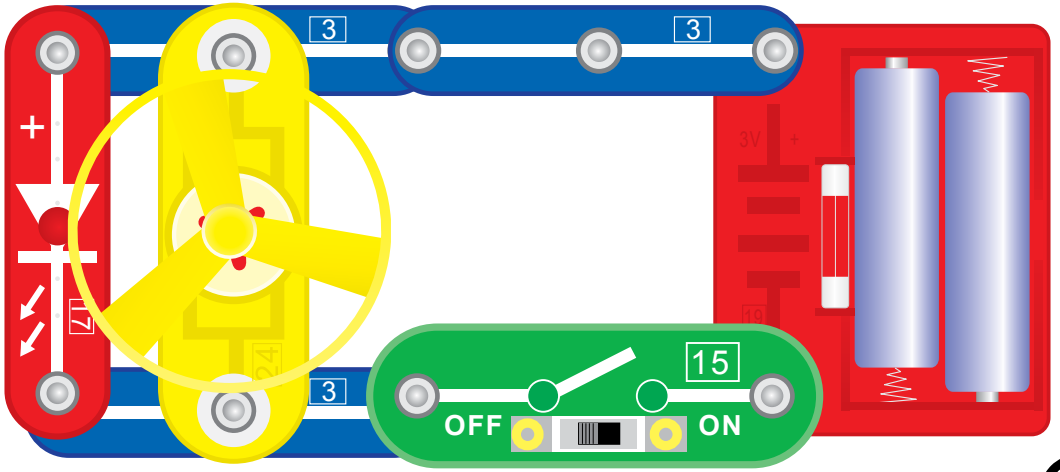
12.An LED and an electric fan connected in series.

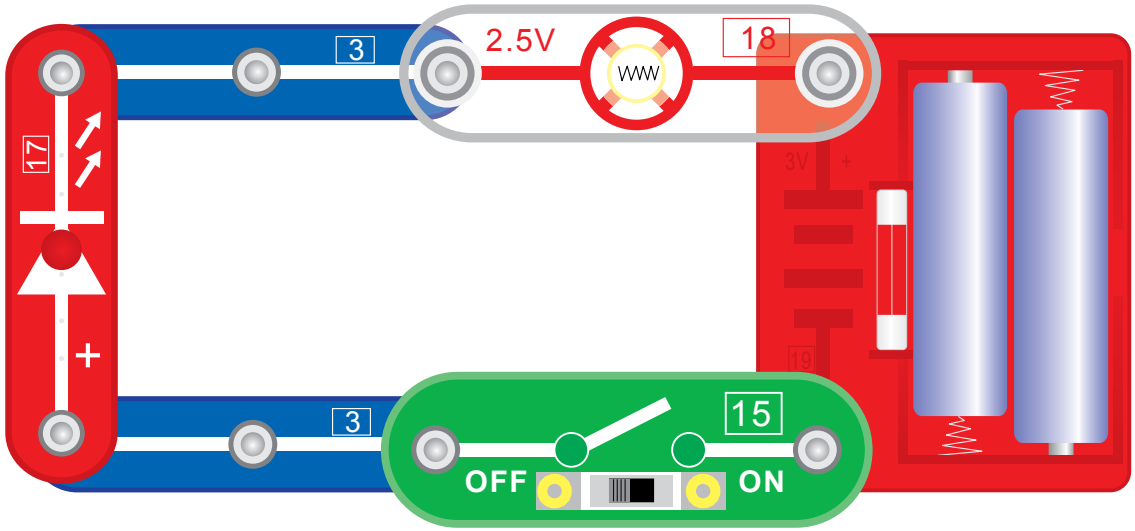
Close the slide switch 15 , the LED 17 will light up,but the motor 24 will not rotate,because the motor requires a large current and this is prevented by the LED.



13.An LED and a lamp connected in parallel.
Close the slide switch 15,the LED 17 and lamp 18 will light up at the same time,but the light in LED is dark,because the motor requires a large current and this is prevented by the LED.

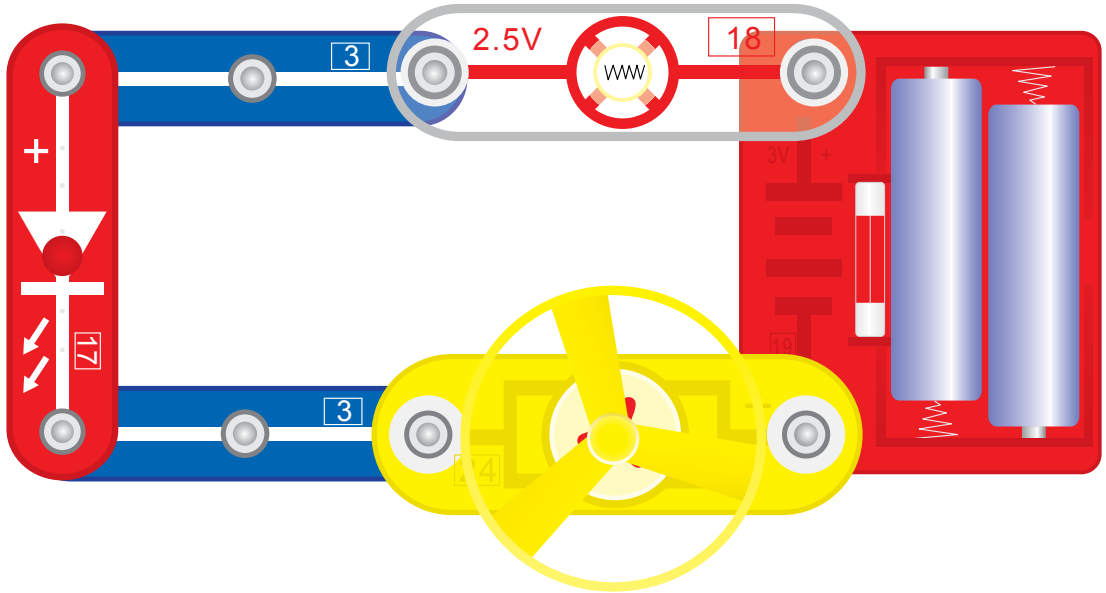
14.An LED and an electric fan connected in parallel.
Close the slide switch 15,the LED 17 will light up and the fan will begin to rotate.





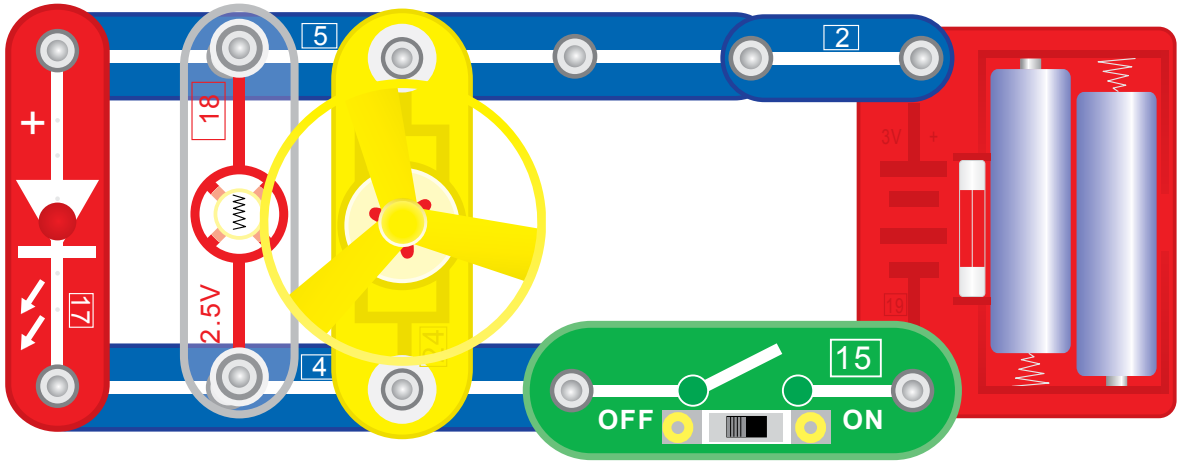
15.One-way conductivity of LED

Close the slide switch 15,you will see that the LED 17 will all not light up,this is because the LED will only allow the current flow from positive to negative and not from negative to positive.



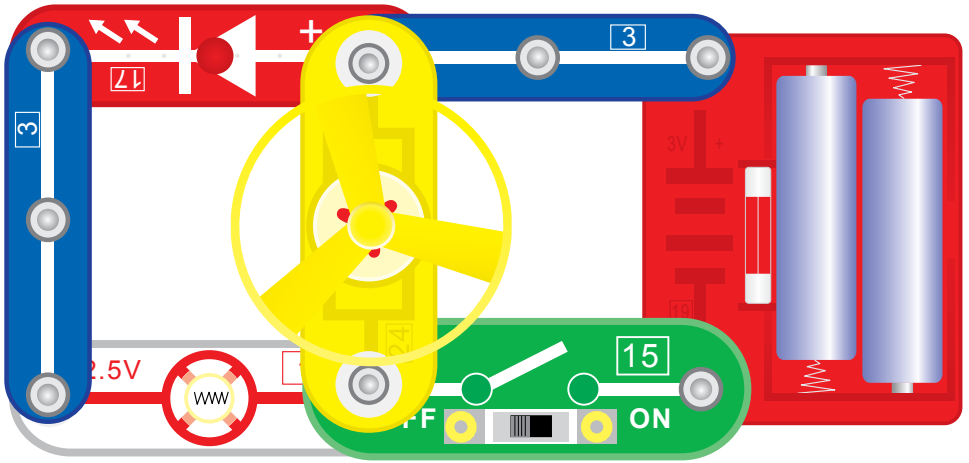
16. **Series connection of LED,lamp and electric motor**

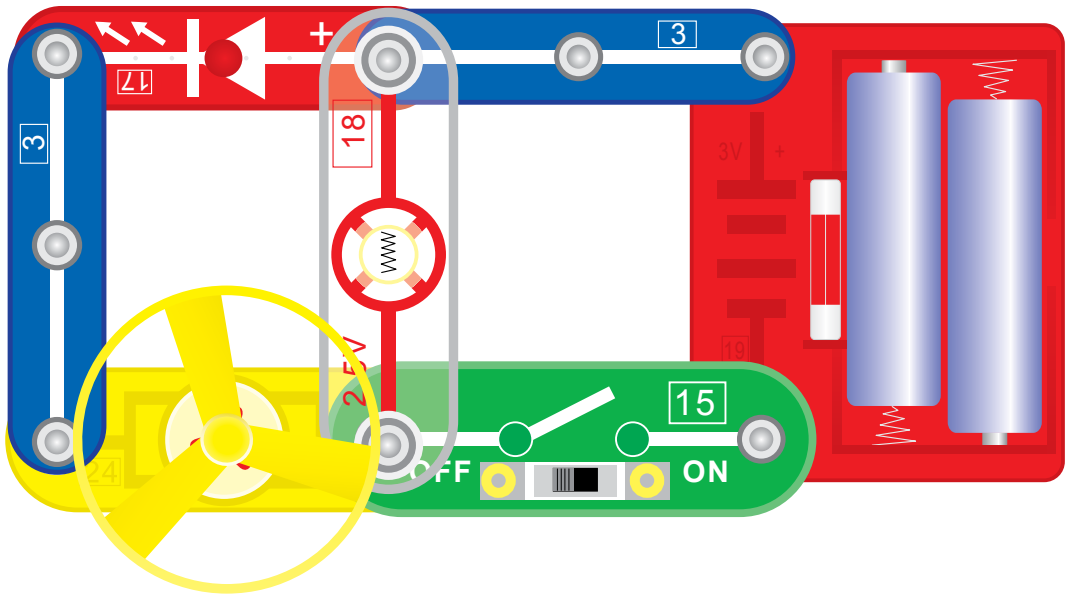
After connecting the circuit,only LED 17 lights up,the lamp 18 and motor 24 won't work for the small current.



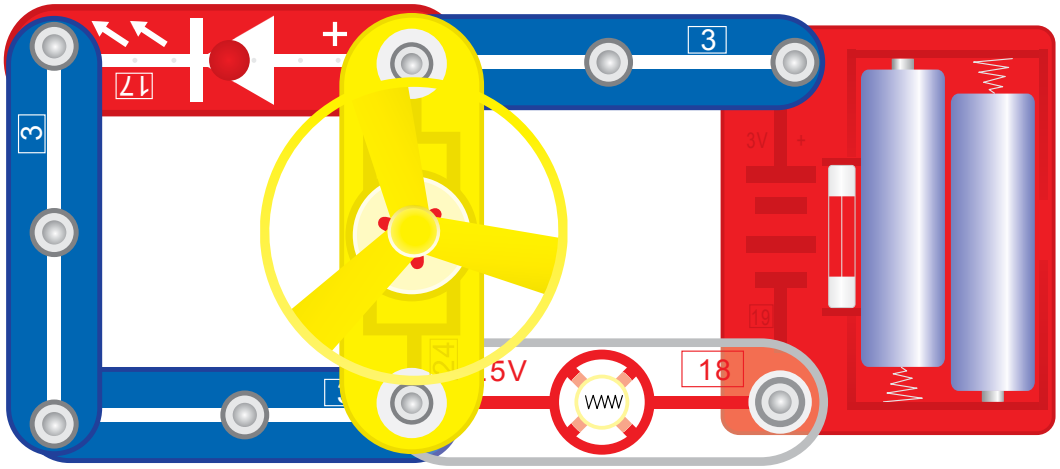
17. **An LED,lamp and electric motor connected in parallel.**
Close the slide switch 15, the LED 17 and the lamp18 will light up at the same time, the motor 24 will rotate.

18. **Series-parallel connection of LED, lamp and electric motor(1)**
After connecting the circuit, motor 24 will begin to rotate, the LED17 will light up,but the lamp 18 won't light up,this is because the lamp and LED are connected in series, the current passing through the lamp is too small. After series connecting LED,the lamp also connects to the motor in parallel,this is called connecting in series-parallel.

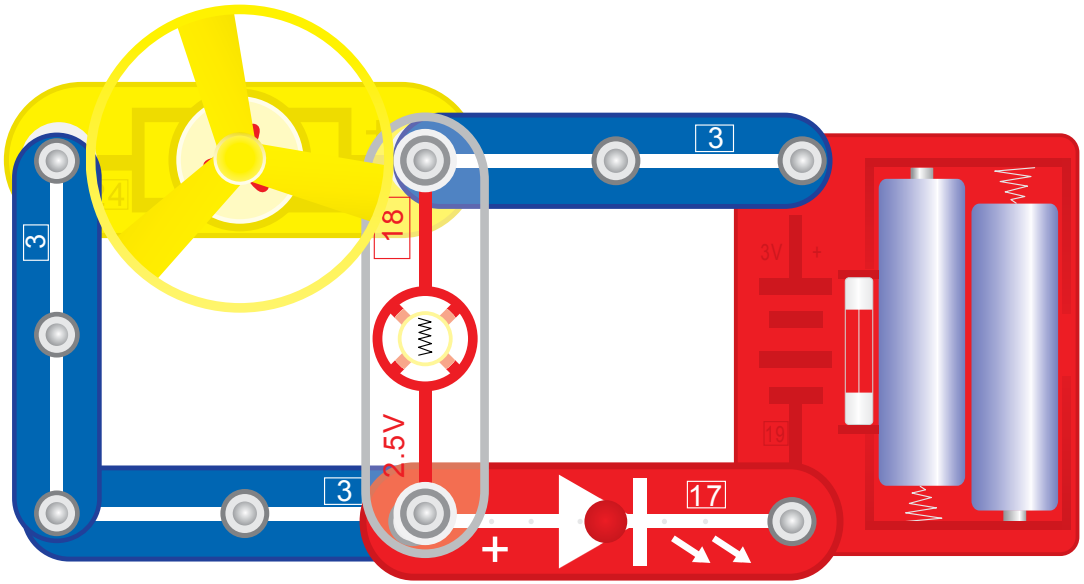




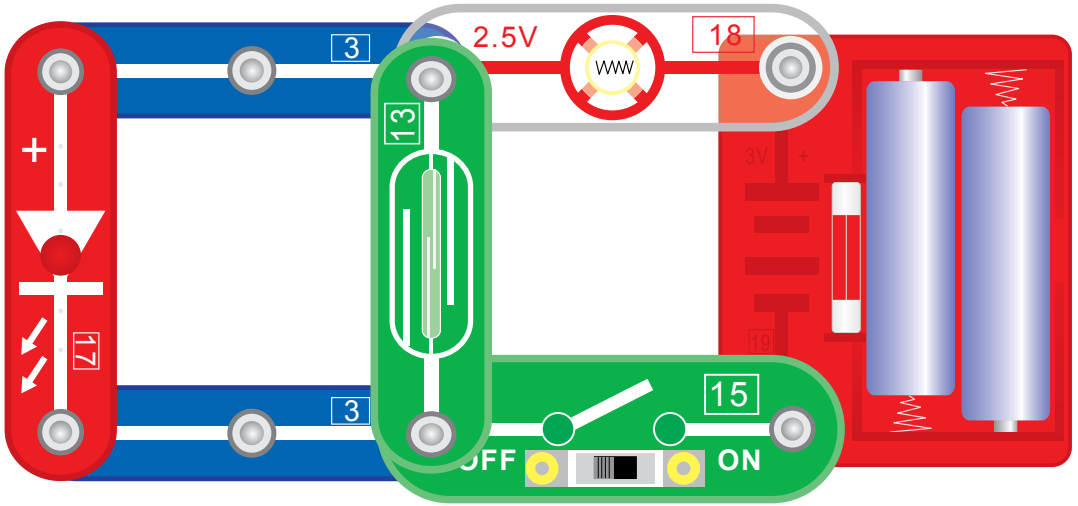
19.**Series-parallel connection of LED, lamp and electric motor(2)**
After connecting the circuit,the lamp18 and LED17 will light up, but the motor24 won't work,the principle as above.



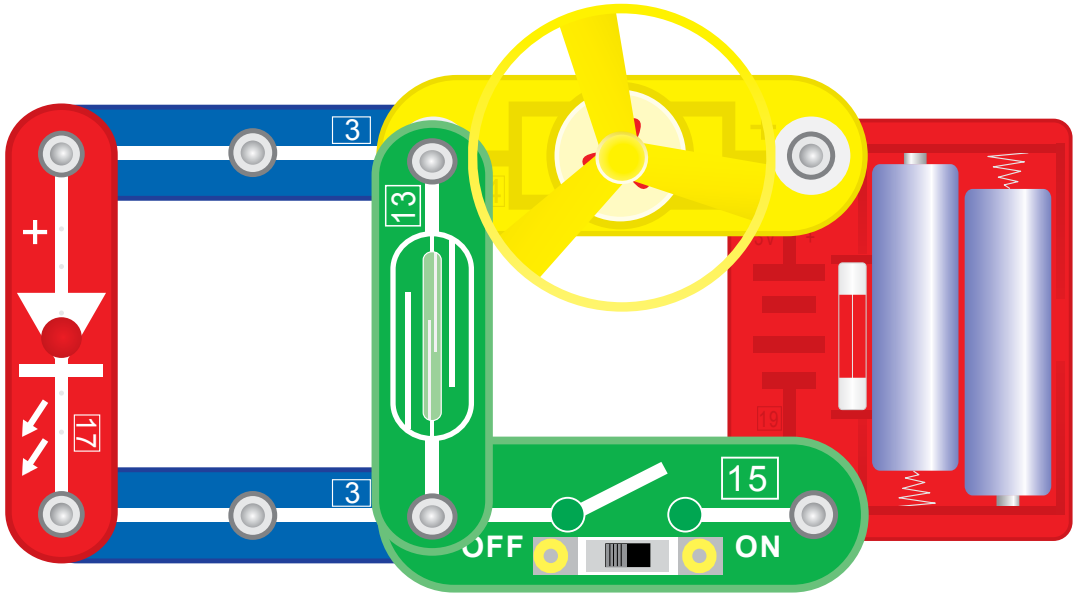
20.**Series-parallel connection of LED,lamp and electric motor(3).**
The LED 17 and lamp 18 will light up,the motor 24 will also begin to rotate.



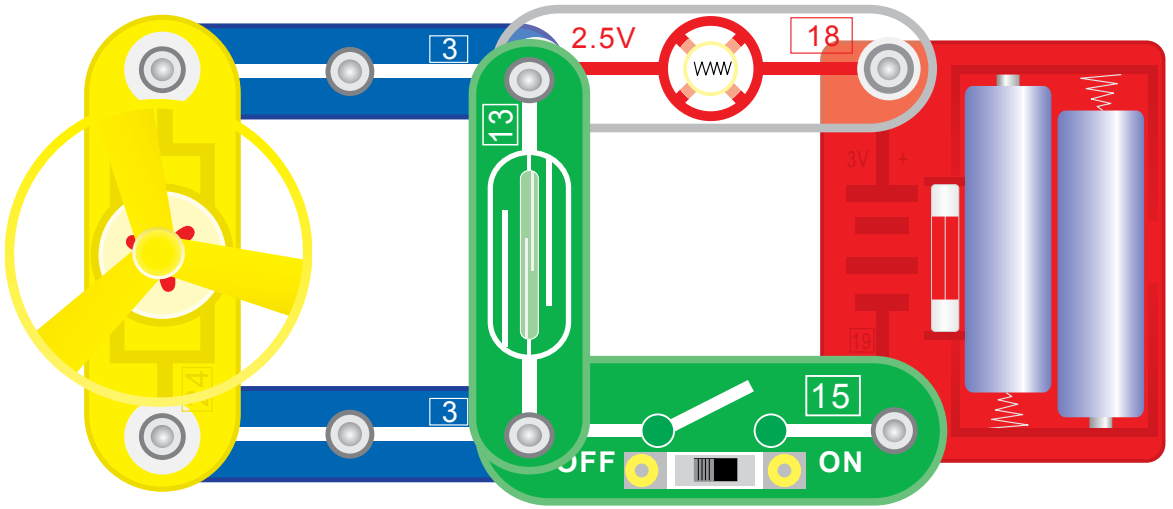
21. **Series-parallel connection of LED,lamp and electric motor(4).**
After connecting the circuit,only LED17 will light up, but the motor 24 and lamp18 won't work normally.



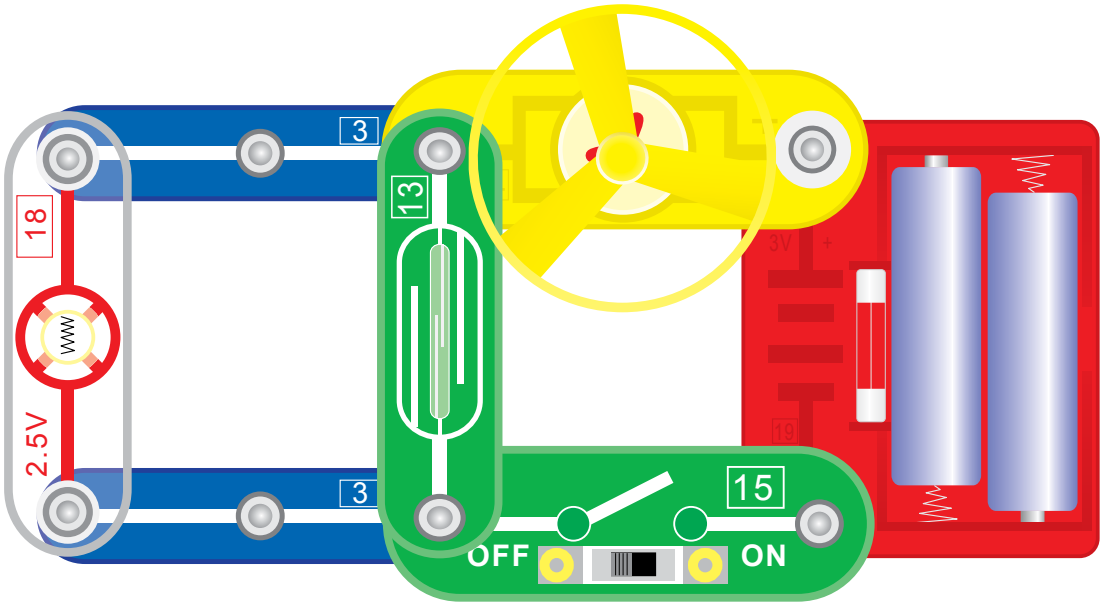
22. **Switched lamp and LED**
Close the slide switch 15,only the LED 17 will light up, put a magnet near to dry the reed switch 13,the LED 17 will go out and the lamp 18 will light up.



23.Electric fan and LED worked by turns
Operation as above.

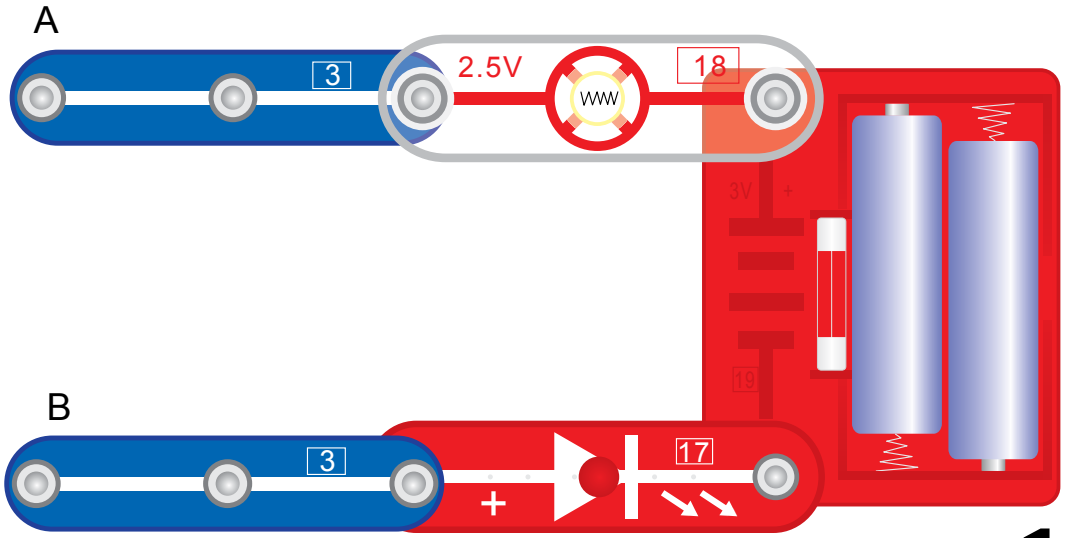


24. Light-changeable lamp
Close the slide switch15,the lamp 18 will light up,Put a magnet near to dry reed switch 13,you may control the lamp by a magnet.



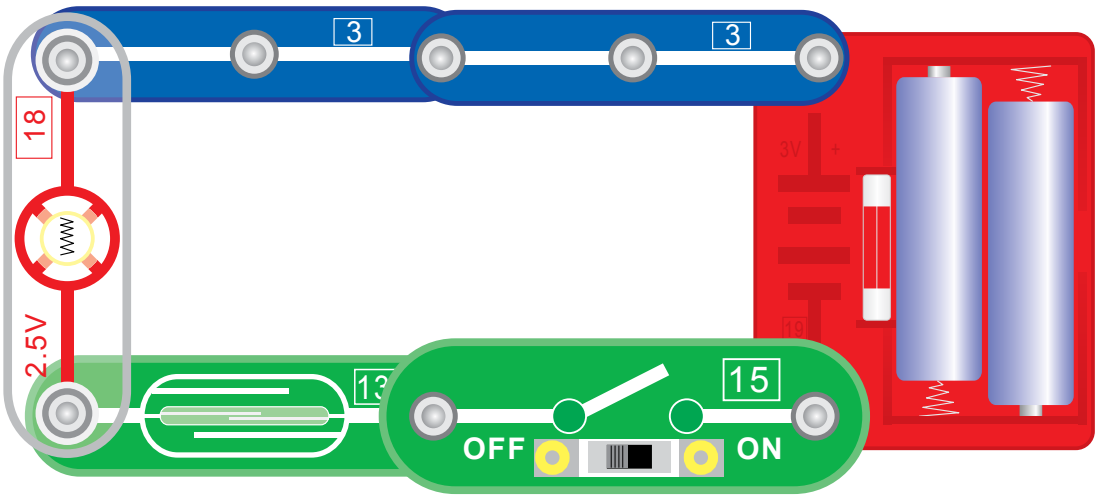
25.Magnet-controlled speed-changeable electric fan

Close the slide switch 15 and the lamp 18 will light up, the motor 24 will also begin to rotate. Use the magnet and the dry reed switch to control the fan speed.



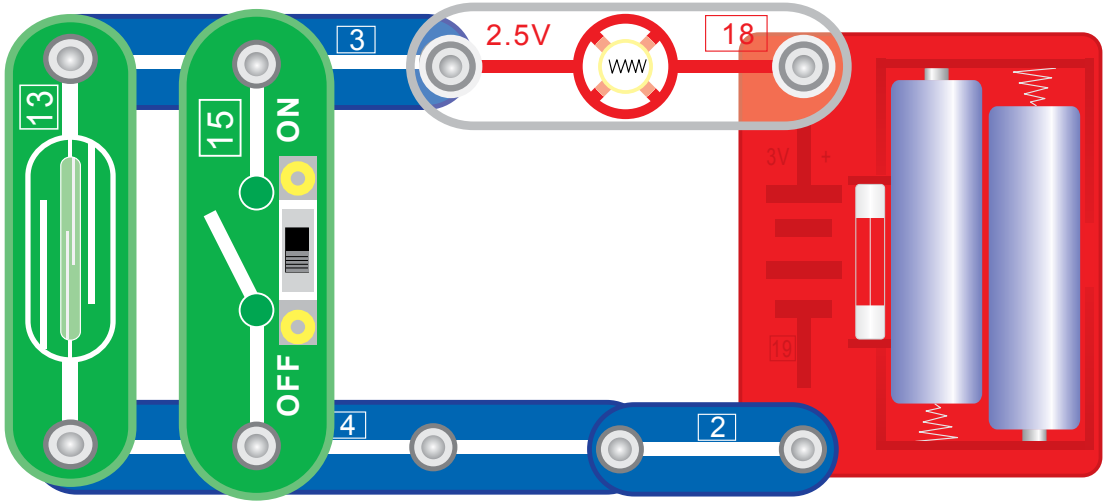
26. **Circuit tester**

The tester can check out whether a coil of wire has any breaks in it or not.Put the two ends of the coil on termainals A and B,if the LED17 lights up,the wire is unbroken,if the LED 17 doesn't light up,the wire has a break in it.



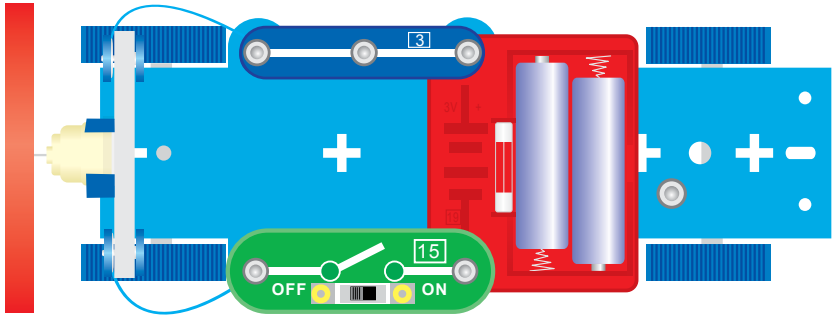
27. **The AND gate**

After connecting the circuit, you should bring a magnet near to the dry reed switch 13 and close the slide switch 15 at the same time, then the lamp 18 will light up.

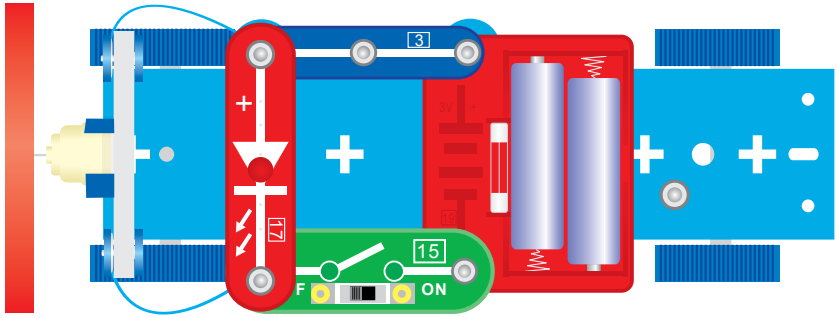


28..The OR gate

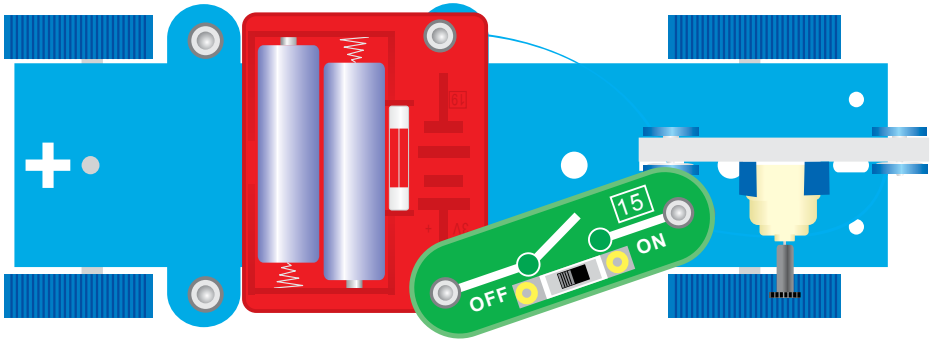
After connecting the circuit,you should bring a magnet near to the dry reed switch 13 or close the slide switch 15, the lamp 18 will light up.



29.Air propeller electric motor car(1)
Place the red blade onto the motor as illustrated above. Then put the car onto a smooth, level surface. After connecting the circuits as per the diagram the car will run in an opposite direction.

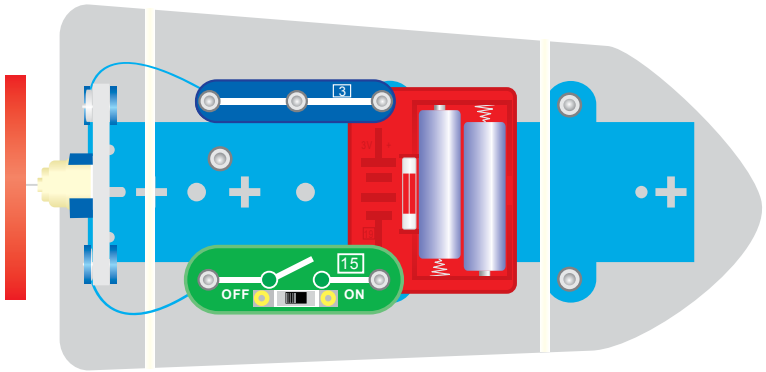


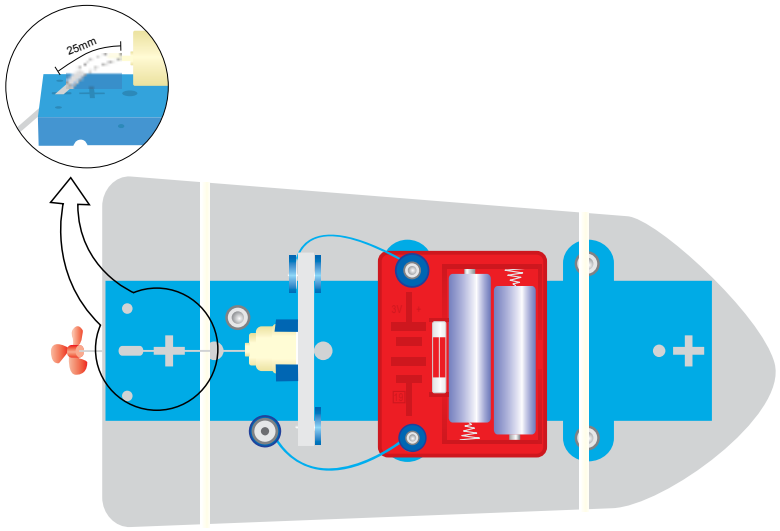
30. **Air propeller electric motor car(2)**
Add a LED 17 to one terminal of the slide switch 15 and wire 3.The LED will light up while the car is running.



31.**Gear car(1)**
Assemble as illustrated, adjust the height of the motor so that the small gear wheel contacts with the drive wheel.

32. **Gear car(2)**
Replace the small gear wheel with half of the rubber tube. Adjust the height of the motor as for described above.

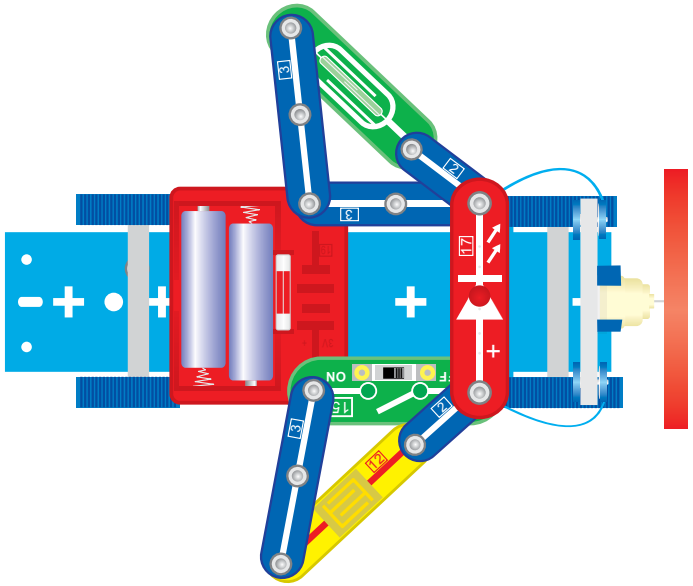




34. Underwater propeller electric boat
Use the wheel axles as screw axles,connect the motor and screw axles by a rubber neck.

33.Air propeller electric boat
Assemble as an air propeller electric motor car, take away the wheels, then make the bottom board and the hull of foam trussed by elastic, put the hull on the water carefully, press the slide switch 15, the boat will run along the opposite direction of the wind power.

You can also assemble an airplane as below:



(In 29-34, turn the motor round, you can change the running direction of the vehicle and boat. Also replace the slide switch 15 with the dry reed switch 13 and they will change into a magnet-controlled electric vehicle and boat.)

Integration principle for space war

Transcribe various sounds of space war in integration circuit in advance, as long as you connect a small quantity of component with, the sound of space war can be played.

Touch-feeling principle

Due to the human body not conducting electricity well.
When you touch the touch plate 12, the two terminals resistance of touch the plate will be smaller obviously. Through magnification effect of the electric component,you can control the different sound of space war.

35. Manual-controlled space war

Connecting the circuit,close the slide switch 15, and put a magnet near to the dry reed switch 13, the speaker 20 will give out sound of space war.

36. Magnetic controlled space war

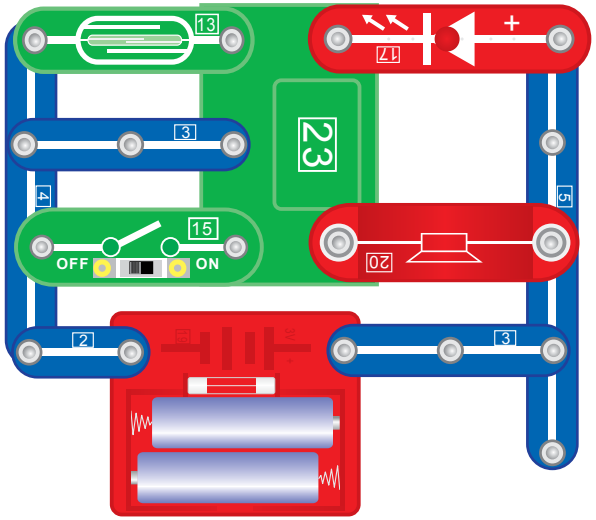
Take away the slide switch 15,replace the position of slide switch 15 with the dry reed switch 13, put a magnet near the dry reed switch 13, the speaker 20 will give out sound of space war.

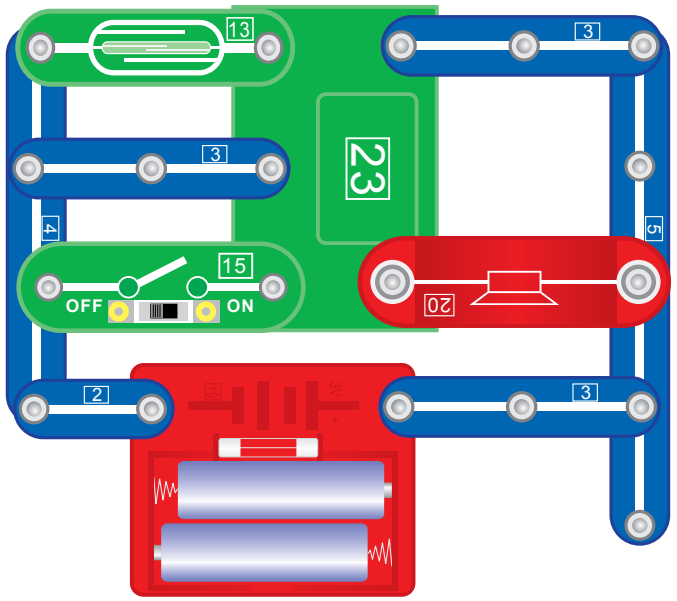
37. Optical-controlled space war

Replace the slide switch 15 with photosensor 16, move your hand over the photosensor 16, the speaker 20 will give out sound of space war.

38. Touch-feeling-controlled space war

Replace the dry reed switch 13 with touch plate 12, touch the touch plate 12 over and again, the speaker 20 will give out sound of space war.





39. Manual-controlled low sound of space war

Connecting circuit,close the slide switch 15,and put a magnet near to the dry reed switch 13,the speaker 20 will give out low sound of space war.

40. Magnetic controlled low sound of space war

Take away the slide switch 15,replace the position of slide switch 15 with the dry reed switch 13, put a magnet near to dry reed switch 13, the speaker 20 will give out the low sound of space war.

41. Optical-controlled low sound of space war

Replace the slide switch 15 with photosensor 16, move your hand over the photosensor 16, the speaker 20 will give out the low sound of space war.

42. Touch controlled low sound of space war

Replace the dry reed switch 13 with touch plate 12, touch the touch plate 12 over and again, the speaker 20 will give out low sound of space war.

43.Touch-feeling-controlled flash LED

Connect the circuit, touch the touch plate 12 over and again, the LED will light up.

44. Optical-controlled flash LED

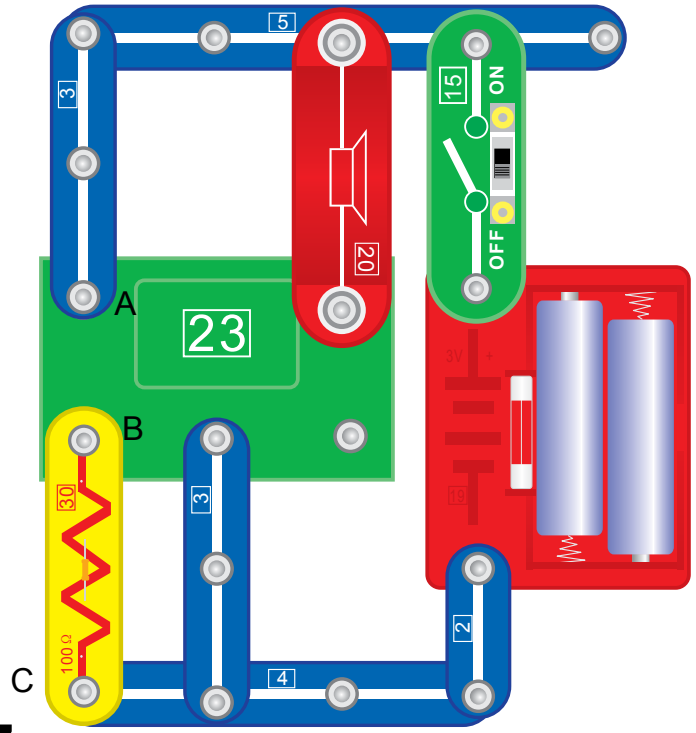
Move your hand over the photosensor 16, you can control it either to light up or go out.

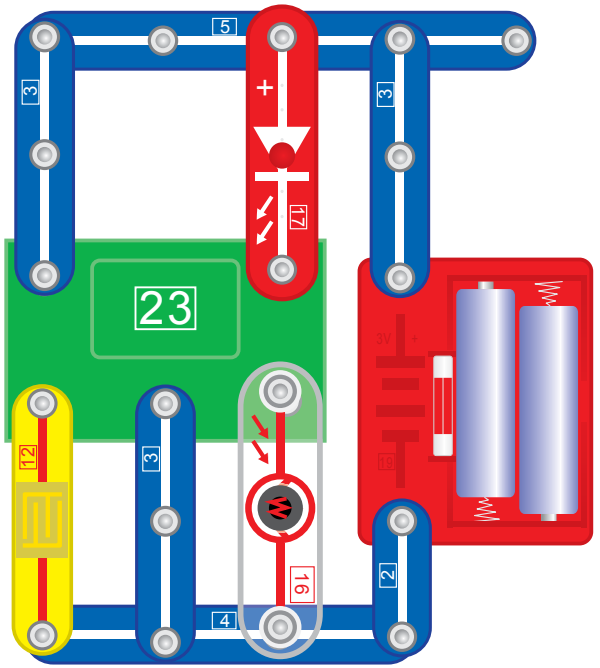
45. Manual-control flash LED

Replace the photosensor 16 with the dry reed switch 13, put a magnet near to the dry reed switch 13, the LED will light up.

46.Touch-feeling lamp

Replace the LED 17 with lamp 18, touch the touch plate 12,the lamp 18 will light up.





47.Breakage and anti-theft alarm

After connecting the circuit,the speaker 20 will give out a sound of space war.If you connect terminals A B with wire,the sound of space war will stop. To activate the anti-theft alarm, you may put a long and thin wire through the object,then connect two terminals of wire to terminals A B, if a thief breaks the thin wire,the speaker will make the sound of space war.

48. Anti-theft alarm

Install a dry reed switch13 on the door and window,connect two wires to terminals A and B respectively.Close the door and window, put the magnet to the door and window, install the dry reed switch.If in this addition close the slide switch15, the speaker will not make a sound,which indicates the installation is successful. If a thief opens the door or window, the speaker will give out the sound of space war to warn immediately.

49.Baby bed alarm

Replace the resistor 30 with the touch plate 12, connect the touch plate 12 to terminals BC, put it under the bed of a baby, if the touch plate 12 is wet, the speaker 20 will give out the sound of music.

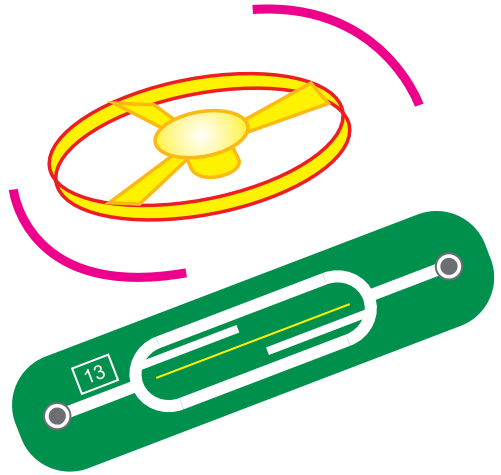
50.Rain alarm

Replace the resistor 30 with the touch plate 12 and put it outdoors,connect two wires to terminals B C. Close the slide switch 15, when it is raining, the speaker 20 will give out the sound of space war.

*DO NOT LEAVE COMPONENTS OUTDOOR FOR LONG LENGTHS OF TIME.

PREFACE

CHALLENGE

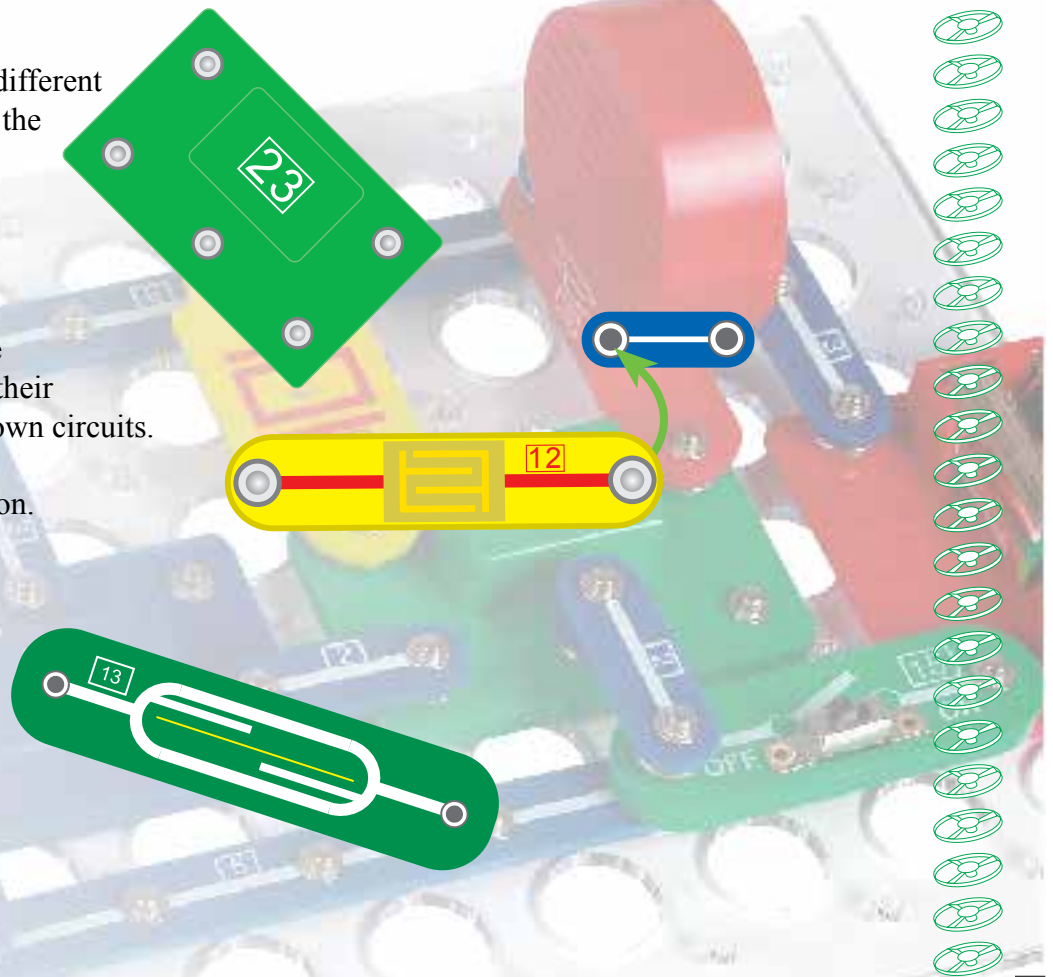


The land, sea and air transport project kit contains exciting experiments which are designed to teach the principles of electronics to children of ages 5 years and upwards.

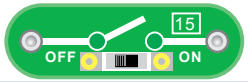
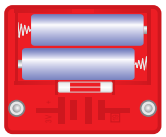
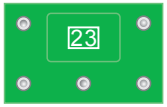
The easy- to-handle components snap together to create a huge number of different circuits on the base board. All wires are secured within the components, so the kit is completely safe and amazingly simple to operate. The circuits are activated by magnet, touch, light and sound. The kit contains various electronic experiments, encompassing light motorised movement and brilliant sound effects.

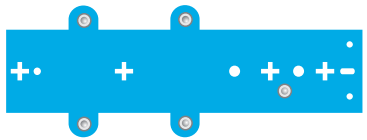
Children of all ages will quickly learn how to set up the circuits and will be captivated by the results of their experiments. Older children will increase their knowledge of electronics by using their imaginations to design, their very own circuits.

An understanding of electronics is a vital part of a child's scientific education. The land, sea and air transport project kit provides a comprehensive understanding of electronic circuits, in a fun and practical way.



Parts List

Number	Description	Item
1	Pigtail	
2	Two-Snap Connector	
3	Three Snap Connector	
4	Four-Snap Connector	
5	Five-Snap Connector	
12	Touch plate	
13	Dry reed switch	
15	Slide Switch	
16	Photosensor(CdS)	
17	LED(Light Emitting Diode)	
18	2.5V Lamp	
19	Battery case	
20	Speaker	
23	Space war IC	

Number	Description	Item
24	DC Motor	
30	Resistor	
	Blades	
	Elastic	
	Hull	
	Airscrew	
	Axle	
	Wheel	
	Bodywork	
	Magnet	
	Small gear	
	Rubber tube	
	Seat	

Warranty Information

Our product is guaranteed to be free from manufacturing defects for a period of 12 Months.

If your product becomes defective during this period, Electus Distribution will repair, replace, or refund where a product is faulty; or not fit for intended purpose.

This warranty will not cover modified product; misuse or abuse of the product contrary to user instructions or packaging label; change of mind and normal wear and tear.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and failure does not amount to a major failure.

To claim warranty, please contact the place of purchase. You will need to show receipt or other proof of purchase. Additional information may be required to process your claim.

Any expenses relating to the return of your product to the store will normally have to be paid by you.

The benefits to the customer given by this warranty are in addition to other rights and remedies of the Australian Consumer Law in relation to the goods or services to which this warranty relates.

This warranty is provided by:

Electus Distribution
Address 46 Eastern Creek Drive, Eastern Creek NSW 2766
Ph. 1300 738 555