



WATER POWER mini

GREEN ENERGY



7389

60 PCS



8+

6 MODELS
TO BUILD

EXPLORE THE MAGIC OF
AIR-WATER POWER



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Product Features

- "Air and water" are the natural resources that are close to us, available at all time. We've once again used air and water to innovate and create an even more convenient super hydro kinetic series for the happiness of mankind and for a clean, fun, and friendly Earth. Let's explore the secrets of air and water; come and experience the unpolluted fun of air pressure water sprays with your children!

Learning

- The 18 pages colour instruction manual details the assembly of six models so that children can happily experiment and practice from basic assembly.
- Aside from detailed assembly steps, the instruction manual also has physics and science applications, so that children can learn the basic knowledge of air pressure and water through play.
- The block designs can be changed at will to create your own unique and fun model.

Innovation

- Include your own unique experiences and thoughts, from action to innovation, and guide children to add their unique ambitions and creative thinking to develop even more models using air and water; let children better explore the secrets of air and water!



Suggestions to Parents

- Please read carefully this instruction manual and follow all safety instructions. We suggest that you refer to the instructions within the manual to assemble models so as to gain a better understanding of the various possible combinations that will help you build the model you want.
- This toy is suitable for children above 8 years of age; the biggest feature is the ability to build intricate and fun models to explore how mankind converts "water and air pressure" into kinetic energy.
- Explain all safety instructions to children before use. This includes the function of parts, number of parts, and potential risks. After each operation, please count all parts before returning them to the box.

Safety Guidelines

























- Carefully read the instruction manual before use.
- When the pressurized bottle is half filled with water, do not pump the air more than 60 times. The normal pumping of air, according to the operation instructions, ensures the safety of the product.
- Do not use other tools to pump air in case of unforeseen risks.
- If the pressurized bottle is filled with pressurized air, do not hit or drop it to avoid damage to the pressurized bottle!
- Do not use standard PET bottles as a replacement for the pressurized bottle.
- Do not use force to bend or pull the product; if there are any cracks in the product, the air cannot be pressurized.

Warning

This set of toys is not suitable for children under three years old. Young children might swallow the small parts. Keep toys in a place that children can't reach.



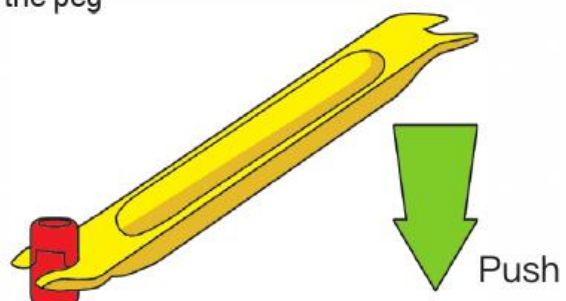
Parts List

 x1	 x1	 x1	 x1	 x1	 x2	 x1	 x5
 x3	 x2	 x2	 x2	 x2	 x4	 x2	 x2
 x2	 x5	 x13	 x1	 x1	 x4	 x1	 x1

- 1 Peg/Axle remover
- 2 Big pump
- 3 Plastic bottle
- 4 Front fixing rim
- 5 Released clip
- 6 O ring
- 7 Tube-B 80mm
- 8 Axle connector
- 9 Axle
- 10 90 degree converter (L)
- 11 90 degree converter (R)
- 12 Prolate rod (7 holes)
- 13 Prolate rod (11 holes)
- 14 Button fixer
- 15 3-Hole rod (side no hole)
- 16 5-Hole rod (side no hole)
- 17 Rod
- 18 Extra loose peg
- 19 Peg
- 20 DR. Axle 100mm
- 21 XL DR. Axle 150mm
- 22 Wheel
- 23 Shell side curve (L)
- 24 Shell side curve (R)

Safety Instructions During Assembly and Operation

- The tube should not be folded.
- Ensure that the tube and connector are properly connected.
- Do not pull on the connecting area of the nozzle and cap.
- The area connecting to the base of the bottle must put O ring first so that the air will not leak.
- Do not pull on the spring of the release clip.
- When pumping air, ensure that the release clip is fixed to the model.
- Newly opened products are completely dry and adding pressurized air into the bottle will cause leaking; this is a normal occurrence. Add some water into the bottle and a tight seal will be created to hold air.
- Before playing, prepare a deep bucket of water. When all water has been sprayed, immerse the model in the bucket and pump under water to inject more water into the model.
- When putting the model away, remember to release all air and water within the bottle.
- Use the "A" end of the Peg/Axle remover to pull off the peg





Assembly Steps to Re-build the Nozzle



Assemble the nozzle.



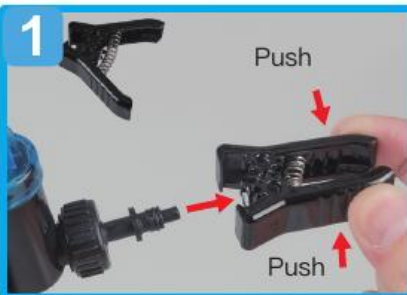
Assemble the O ring.



Tight the nut.

You can adjust the direction of nozzle before tightening the nut.

Assembly Steps for the Pumping Device



Assemble the release clip.



Assemble the rubber O ring.



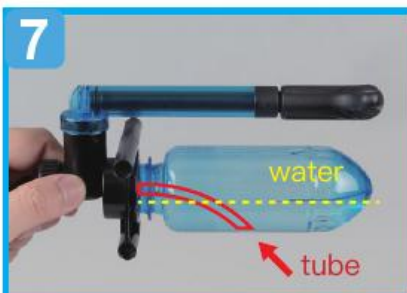
Assemble the tube.



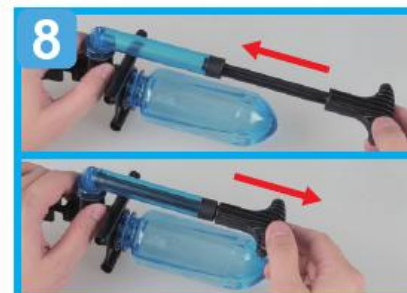
Filled half of the water.



Assemble and tight the bottle.



Adjust the tube to be down into the water.



Pump 40-60 times.



Do not drop it to the ground.



Scientific Principles

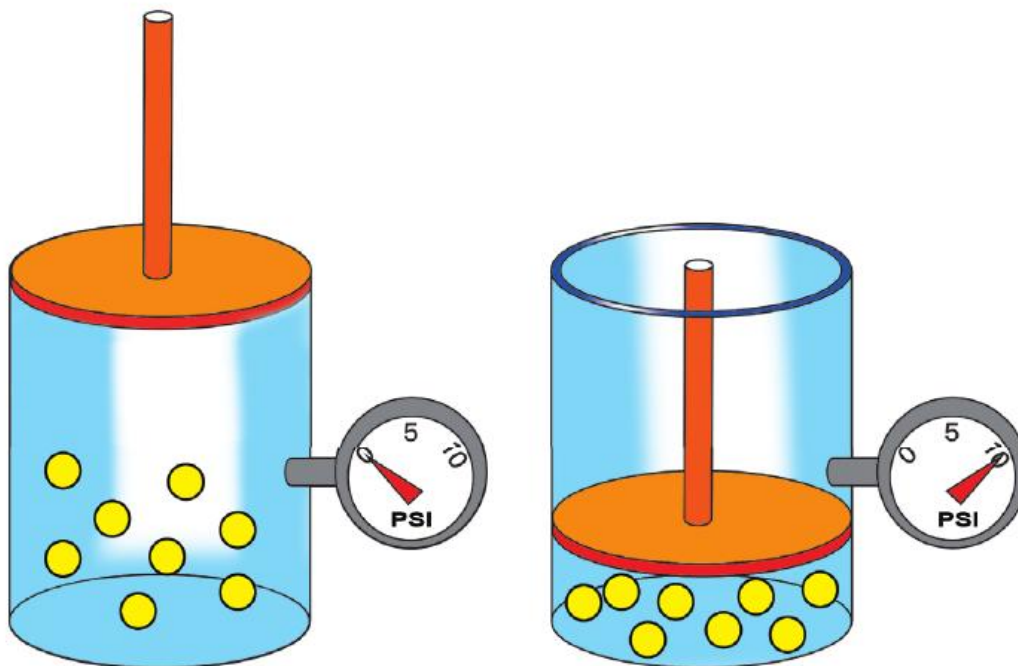
The principle behind a pressurized water spray:

Air is a gas that can be pressurized. In other words, you can use pressure to reduce the mass of air; however, water does not behave in the same manner. When you add water into the bottle, water will also take up a fixed amount of volume. As the space in a bottle is limited, the water that takes up more space than air will compress the air within. This results in internal air pressure that is far greater than the external air pressure. This pressurized air pushes on the water within the bottle and, in turn, water pushes at the sides of the bottle in an attempt to escape and balance the pressure.

When the pressurized bottle is filled with water and then pumped, more air is added to the fixed amount of space that's not been taken by the water; therefore, internal air pressure becomes greater.

This phenomenon explains many physics principles:

1. Water has very low compressibility while air has high compressibility.
2. Boyle's Law: At constant temperature for a fixed mass, the absolute pressure and volume of a gas are inversely proportional ($P_1V_2 = P_2V_1$) ($P_1/P_2 = V_2/V_1$). Adding more air into a fixed container results in an increase of air pressure.
3. Pascal's Principle is also known as Pascal's Law and it defines fluid (gas or liquid) mechanics. This means when a change in pressure occurs on a confined fluid in a container, this pressure will be completely conveyed to all areas of the fluid and container walls.



Air pressure can be multiplied by compressing air density to half of its original volume.



Air Pressure Experiment

Kids, you can try this experiment by putting a sponge into the pressurized bottle and then pumping air into it.

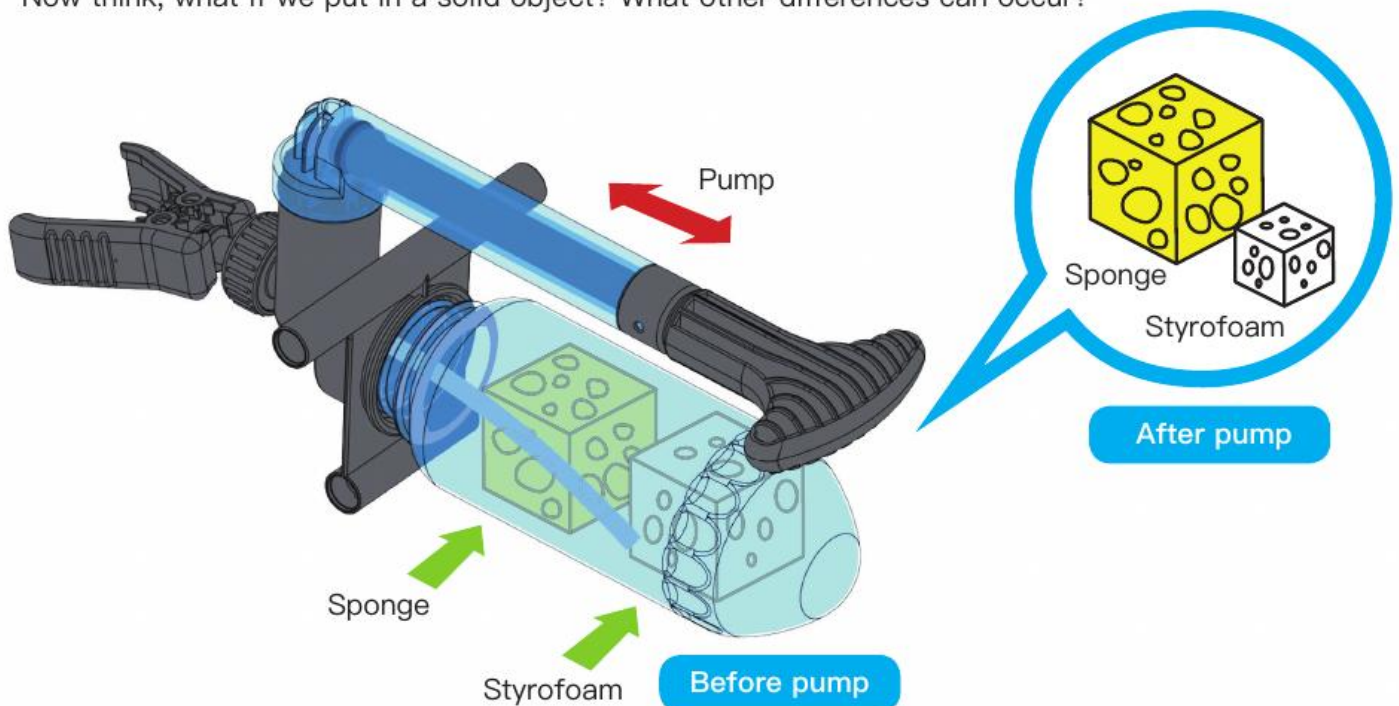
As air can enter the pores of the sponge, it will not show any changes in volume even if air pressure increases within the bottle.

Now try the same experiment but replace the sponge with styrofoam and observe the changes that occur.

This experiment allows the observation of the direct impact of air pressure.

As styrofoam has higher density than a sponge, air cannot enter it so when pressure in the bottle increases, styrofoam will be compressed by air.

Now think, what if we put in a solid object? What other differences can occur?



Little Fact

Kids, now that you know the impact of air pressure, do you know that air pressure exists everywhere in nature?

Scientists define natural air pressure as:

3.5kg/cm² of pressurized air is akin to 3.4 atmospheric pressures. When comparing potential energy, 1 atm = 10.336 meters of water pillar = 0.5 meters in water pillar pressure (similar to a 10 story building).

Therefore, when you pump air into the bottle, the atmospheric pressure stored within can propel many of your unique models and allow them to operate.

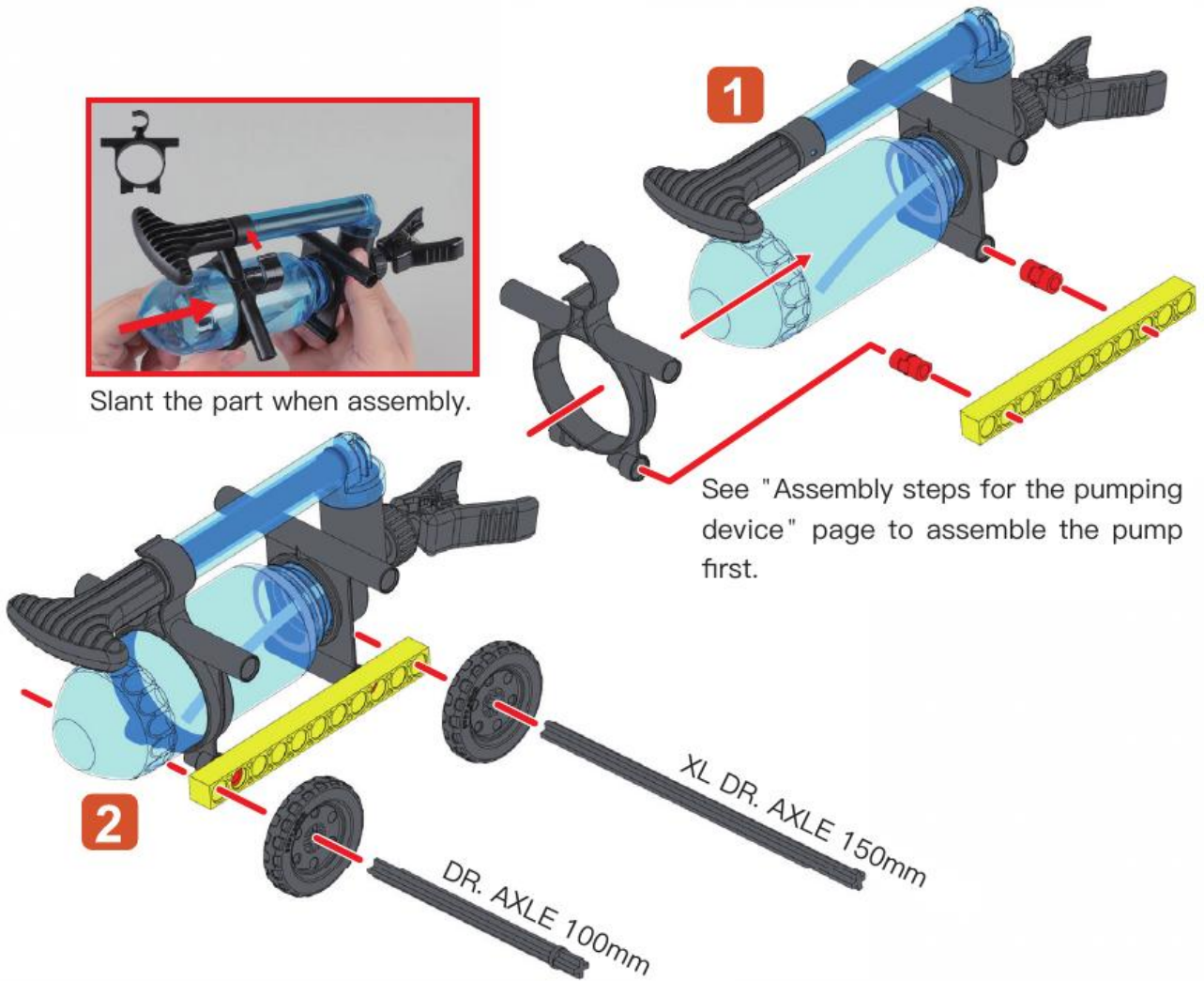


Kit Contents

1	2	3	4	5	6
x1	x1	x1	x1	x1	x1
7	17	19	20	21	22
x1	x2	x4	x1	x1	x4



Slant the part when assembly.





3



Tip



Leave 1mm gap between rod and wheel, the axle will rotate smoothly.



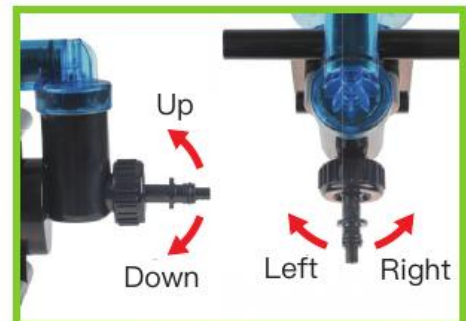
COMPLETE

How to Play



1. Make sure all wheels are rotating smoothly before playing the model.
2. Half full of water, pumping 40~60 times.
3. Play on the flat ground.
4. Open the release clip, the water will spray out of the nozzle.

Tip



You can adjust the directions of nozzle to turn car left or right.



Kit Contents

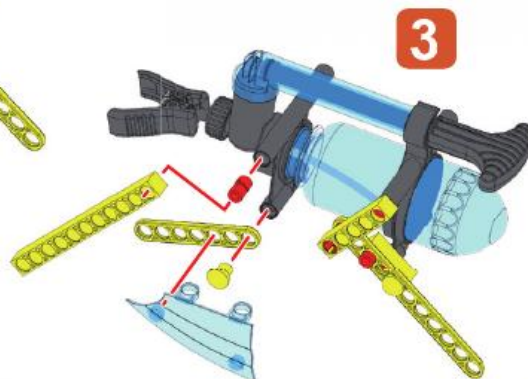
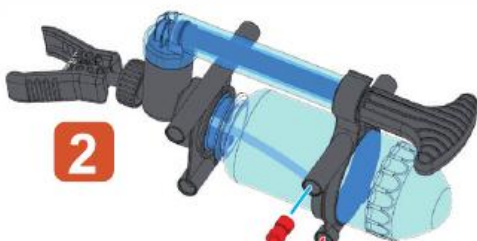
1	2	3	4	5	6	
x1	x1	x1	x1	x1	x1	
7	8	12	13	14	15	16
x1	x2	x2	x2	x4	x2	x2
17	19	20	21	22	23	24
x2	x8	x1	x1	x4	x1	x1



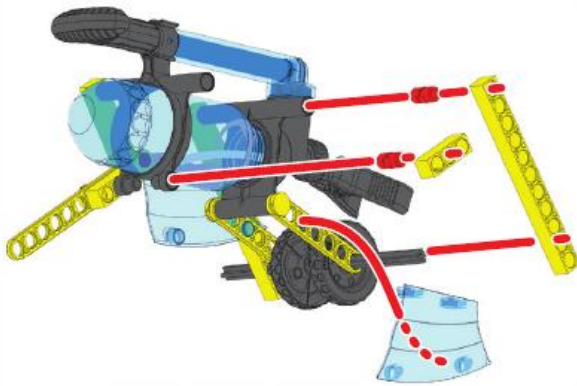
See "Assembly steps for the pumping device" page to assemble the pump first.



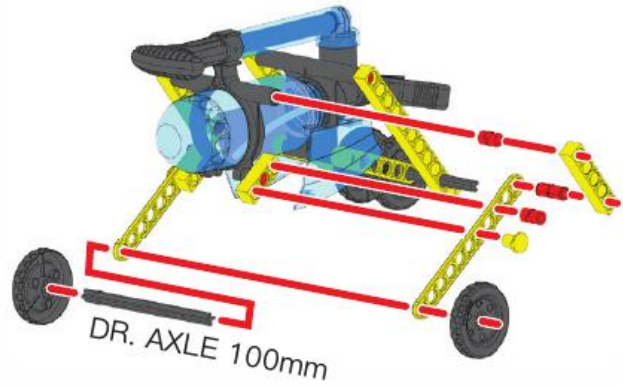
Slant the part when assembly.



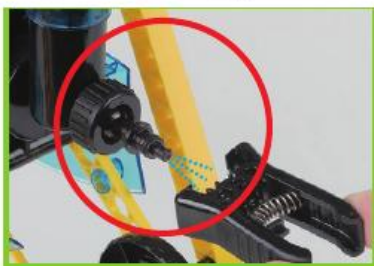
5



6



How to Play



1. Make sure all wheels are rotating smoothly before playing the model.
2. Half full of water, pumping 40-60 times.
3. Play on the flat ground.
4. Open the release clip, the water will spray out of the nozzle.

Tip

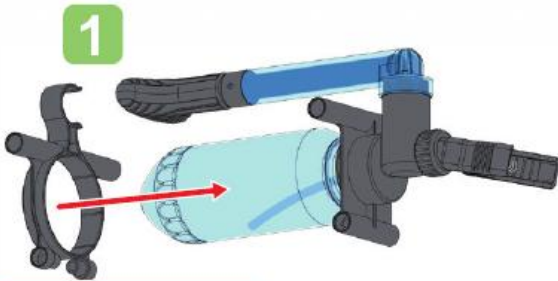
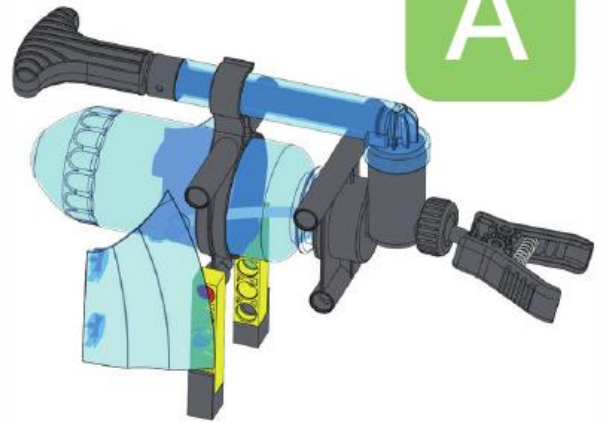


You can adjust the directions of nozzle to turn car left or right.



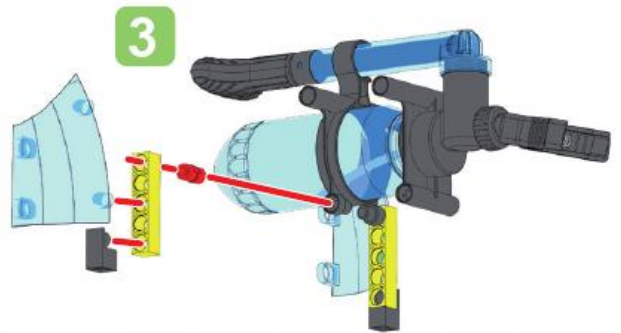
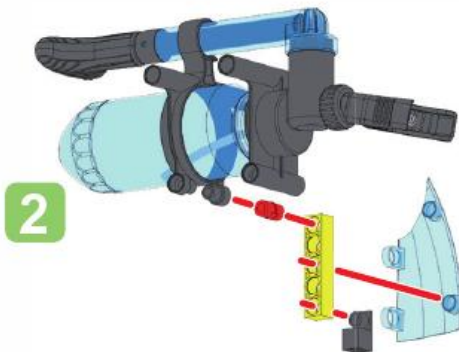
Kit Contents

1 	2 	3 	4 	5 	6
x1	x1	x1	x1	x1	x1
7 	8 	11 	12 	13 	14
x1	x1	x2	x2	x2	x4
16 	17 	19 	23 	24 	
x2	x2	x8	x1	x1	

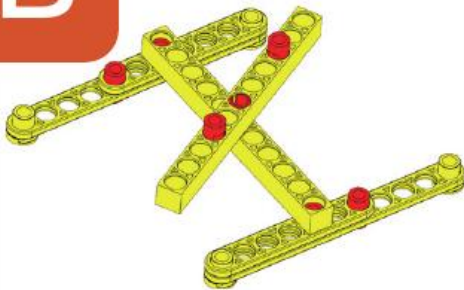


Slant the part when assembly.

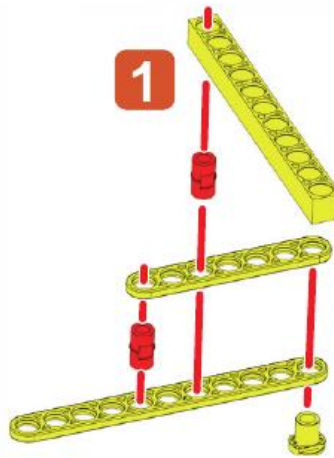
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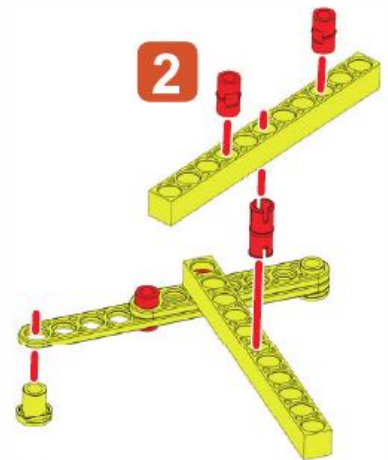
B



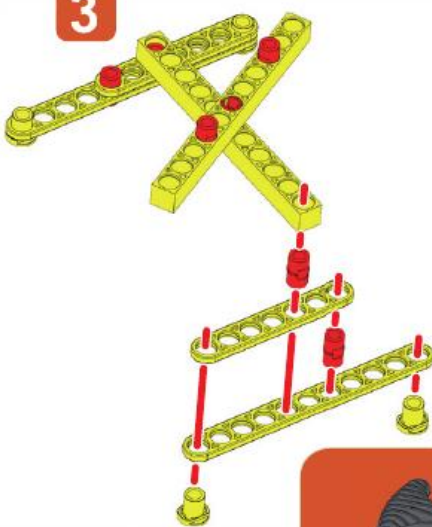
1



2



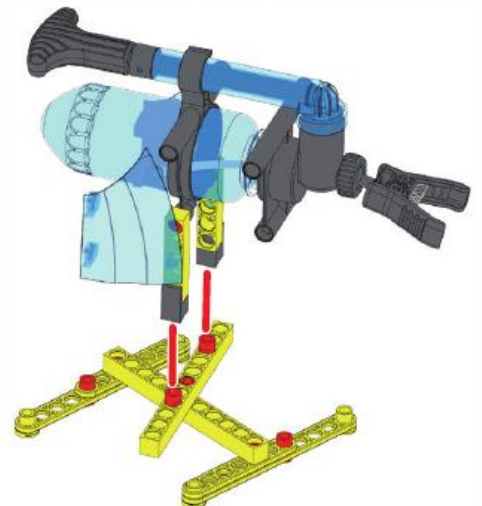
3



A

+

B



COMPLETE



How to Play



1. Pumping 30~40 times.
2. Play on the flat ground.
3. Open the release clip, the nozzle will spray water in a circle.

Tip



Adjust the water bottle back and forth to balance the model.

Tip



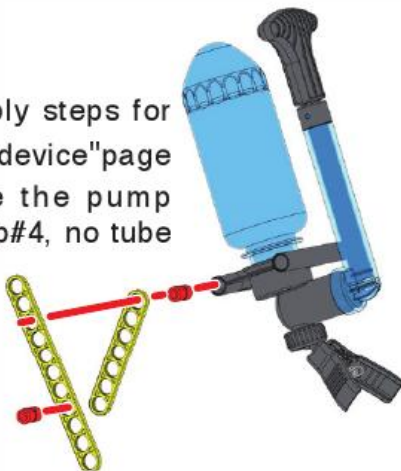
Push the nozzle to the left down, the model will rotate finely.



Kit Contents



1
See "Assembly steps for the pumping device" page to assemble the pump first. Skip step#4, no tube needed.



2



3



4

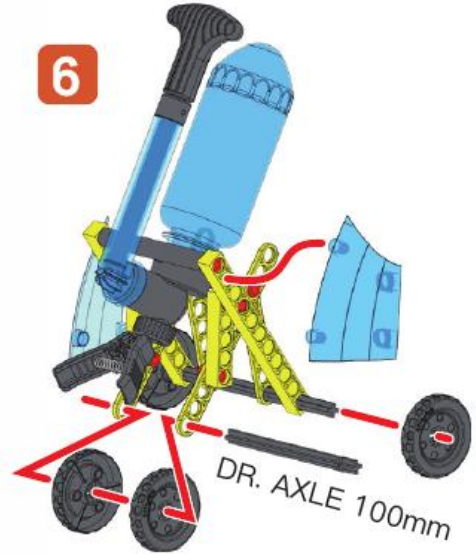




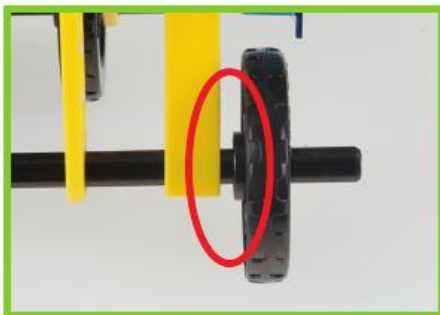
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6

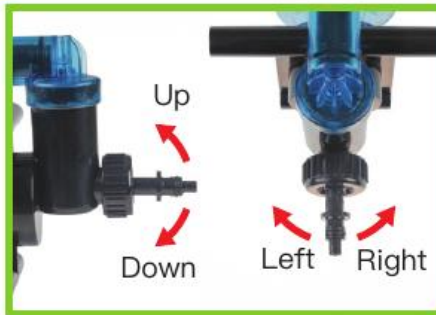


Tip



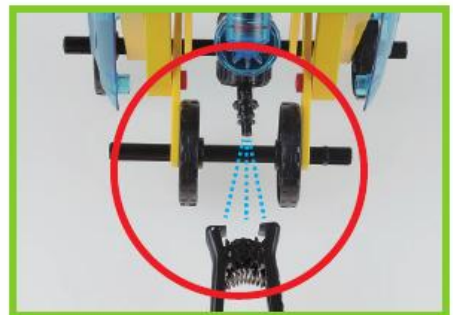
Leave 1mm gap between rod and wheel, the axle will rotate smoothly.

Tip



You can adjust the directions of nozzle to turn car left or right.

How to Play

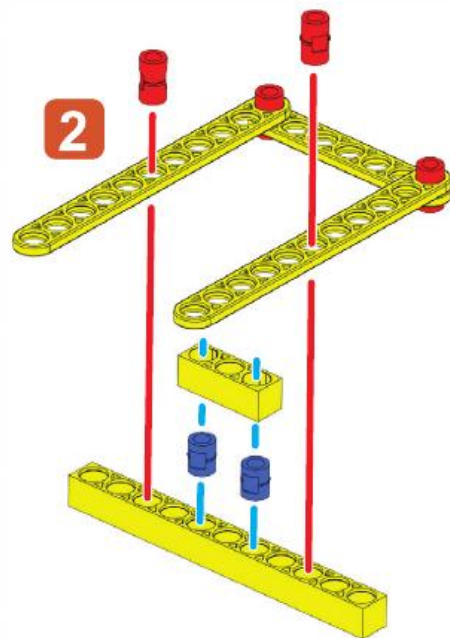


1. Make sure all wheels are rotating smoothly before playing the model.
2. Half full of water, pumping 40~50 times.
3. Play on the flat ground.
4. Open the release clip, the water will spray out of the nozzle.

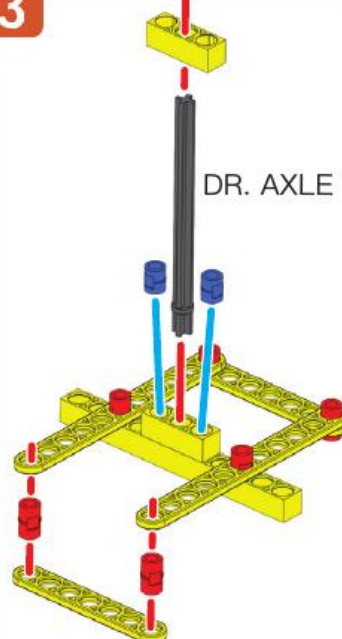


Kit Contents

						
x1	x1	x1	x1	x1	x1	x2
						
x2	x2	x2	x2	x2	x2	x2
						
x2	x4	x8	x1	x4	x1	x1

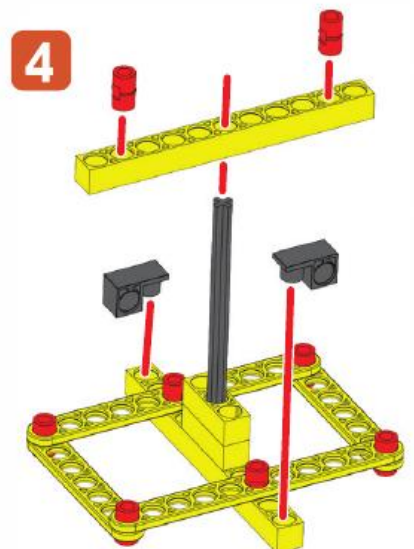


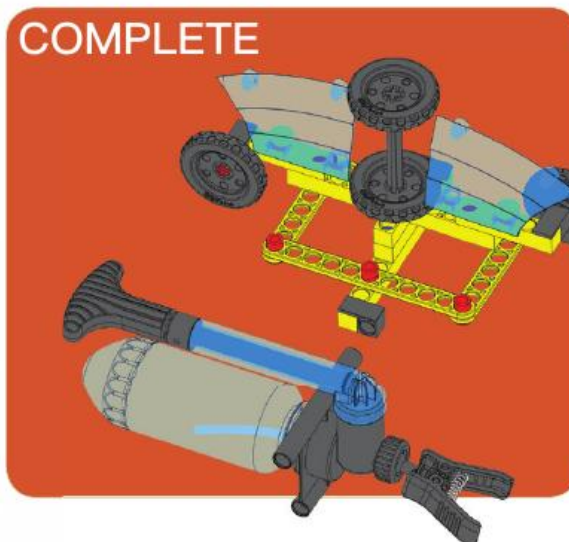
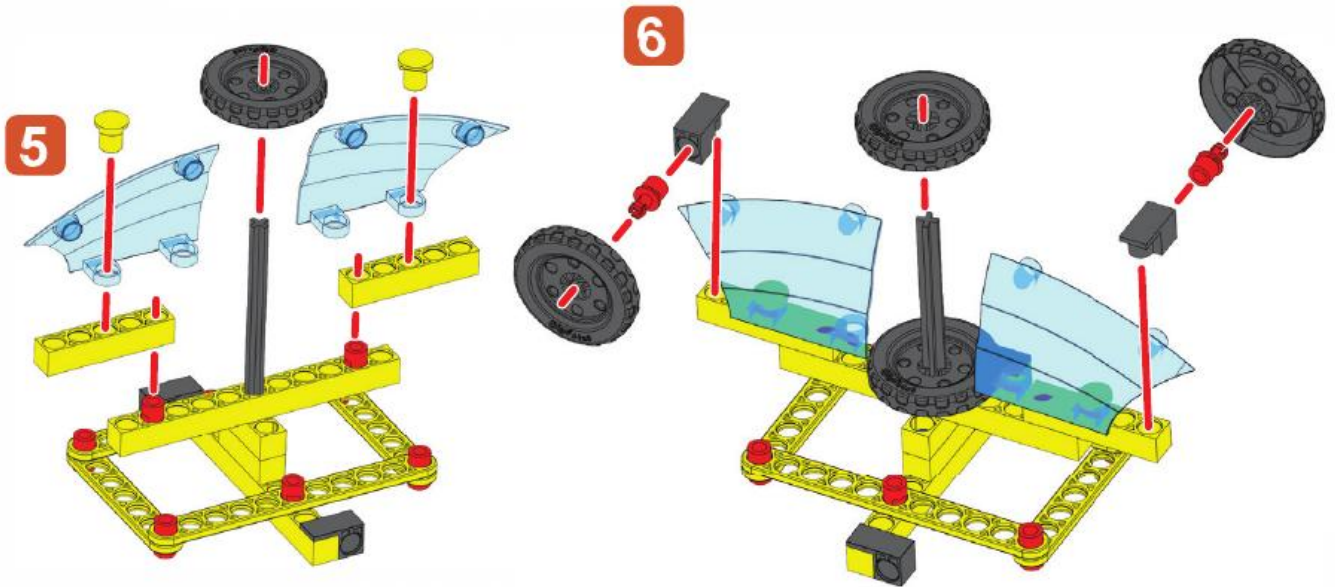
3



DR. AXLE 100mm

4





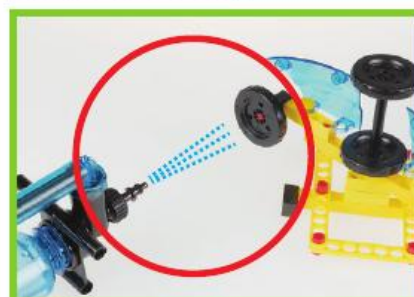
See "Assembly steps for the pumping device" page to assemble the pump first.

Tip



Leave 1mm gap between rod and wheel, the axle will rotate smoothly.

How to Play



1. Half full of water, pumping 40~50 times.
2. Aim the wheel and open the release clip, the model will rotate.

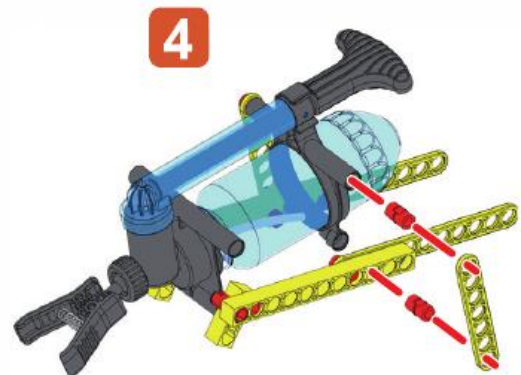


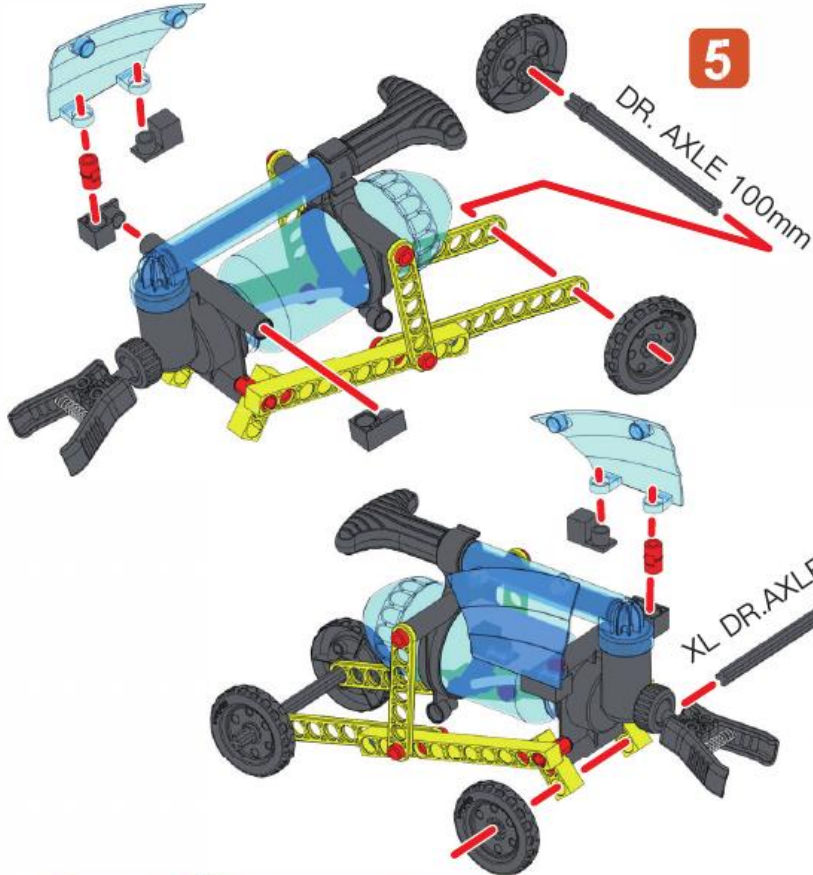
Kit Contents

1	2	3	4	5	6	7	8
x1	x1	x1	x1	x1	x1	x1	x2
10	11	12	13	15	17		
x2	x2	x2	x2	x2	x2		
18	19	20	21	22	23	24	
x2	x12	x1	x1	x4	x1	x1	

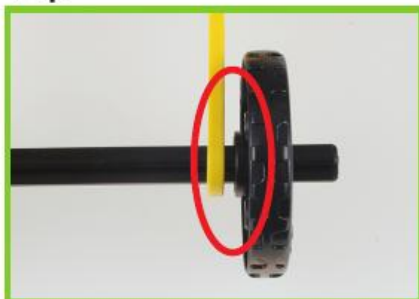


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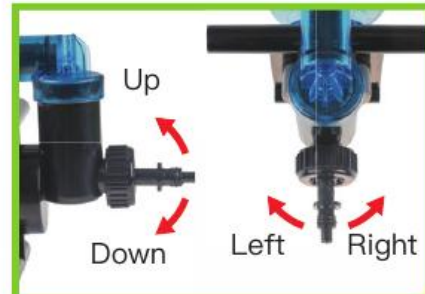


Tip



Leave 1mm gap between rod and wheel, the axle will rotate smoothly.

Tip



You can adjust the directions of nozzle to turn car left or right.

How to Play



1. Make sure all wheels are rotating smoothly before playing the model.
2. Half full of water, pumping 40~60 times.
3. Play on the flat ground.
4. Open the release clip, the water will spray out of the nozzle.

GREEN ENERGY



WIND TURBINE
#7400
5 Models to build
77 PCS



SOLAR EVOLUTION
#7346
5 Models to build
142 PCS



WATER POWER
#7323
15 Models to build
165 PCS



SOLAR BUGGY
#7399
5 Models to build
37 PCS



ULTRALIGHT AIRPLANE
#7402
5 Models to build
44 PCS



RUBBER BAND RACERS
#7403
5 Models to build
71 PCS



ANIMAL MACHINES
#7336
8 Models to build
89 PCS



SPACE MACHINES
#7337
10 Models to build
255 PCS



SMART MACHINES
#7416
8 Models to build
230 PCS



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