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MINGDE RD., PUYAN, BINJIANG, HANGZHOU, CHINA.



PLAY • READ • INSPIRE




THE LEARNING BOOKLET

— FOR THE TURBO RACER —

Read to be inspired!



WARNING:
CHOKING HAZARD - Small parts,
Not for children under 3 years.



AGES **8+**



TABLE OF CONTENTS

Warning Message	01
Package Contents	05
Installation Instructions	08
Activities	17
What are Air Molecules	20
Learn more about Air Pressure	22
How Air Pressure relates to us	26
Why Doesn't Air Pressure crush our bodies	28
What Can Air Pressure be used for	30
Exploring Air Pressure	31
Leap Forward	33

WARNING MESSAGE

GENERAL WARNING

Before you begin, please read through the instructions together with your children. Make sure you understand the safety messages. Please keep the packaging and instructions, as they contain important information.

*This kit is designed for children over 8 years of age.
CHOKING HAZARD - Small parts, not for children under 3 years.*


Children should have parental supervision when assembling the product.

Please clean the product with a clean cloth when necessary.

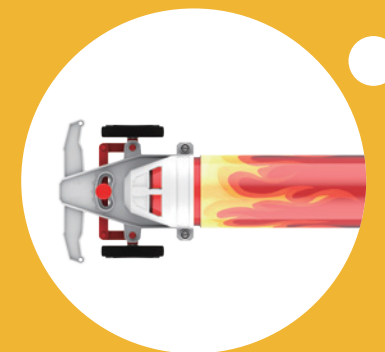
OTHER WARNINGS

Using a screwdriver

You must always be supervised by an adult when using a screwdriver. The metal may have sharp edges that can cause injury.

 *This kit was designed by using the default hand pump. The use of any other pump could lead to excessive air pressure which could damage the parts or even cause an explosion.*

1 | WARNING MESSAGE





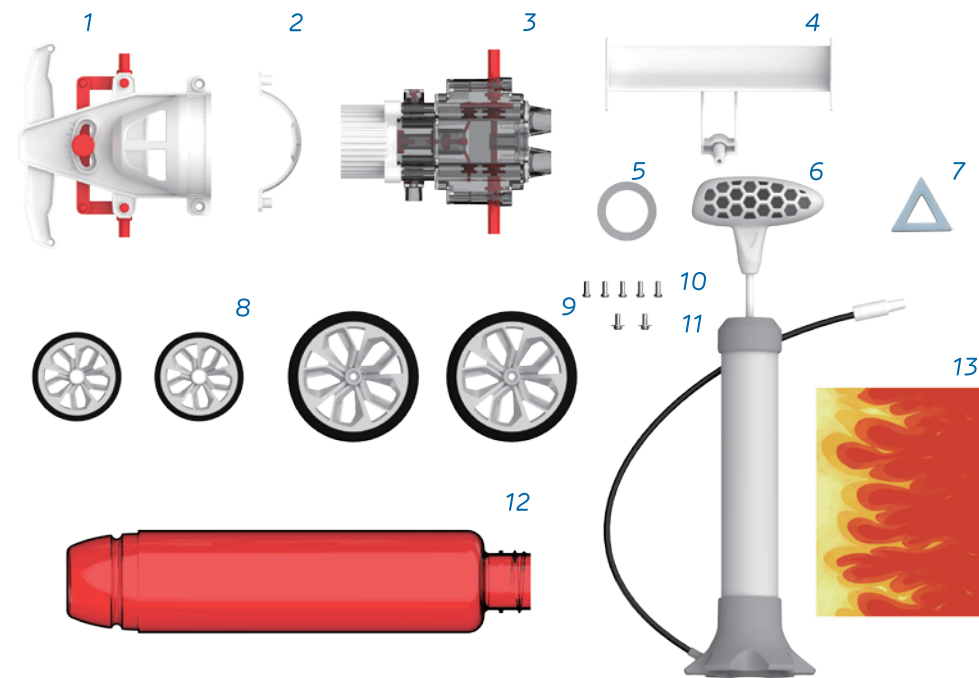
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2 | PACKAGE CONTENTS



Package Contents



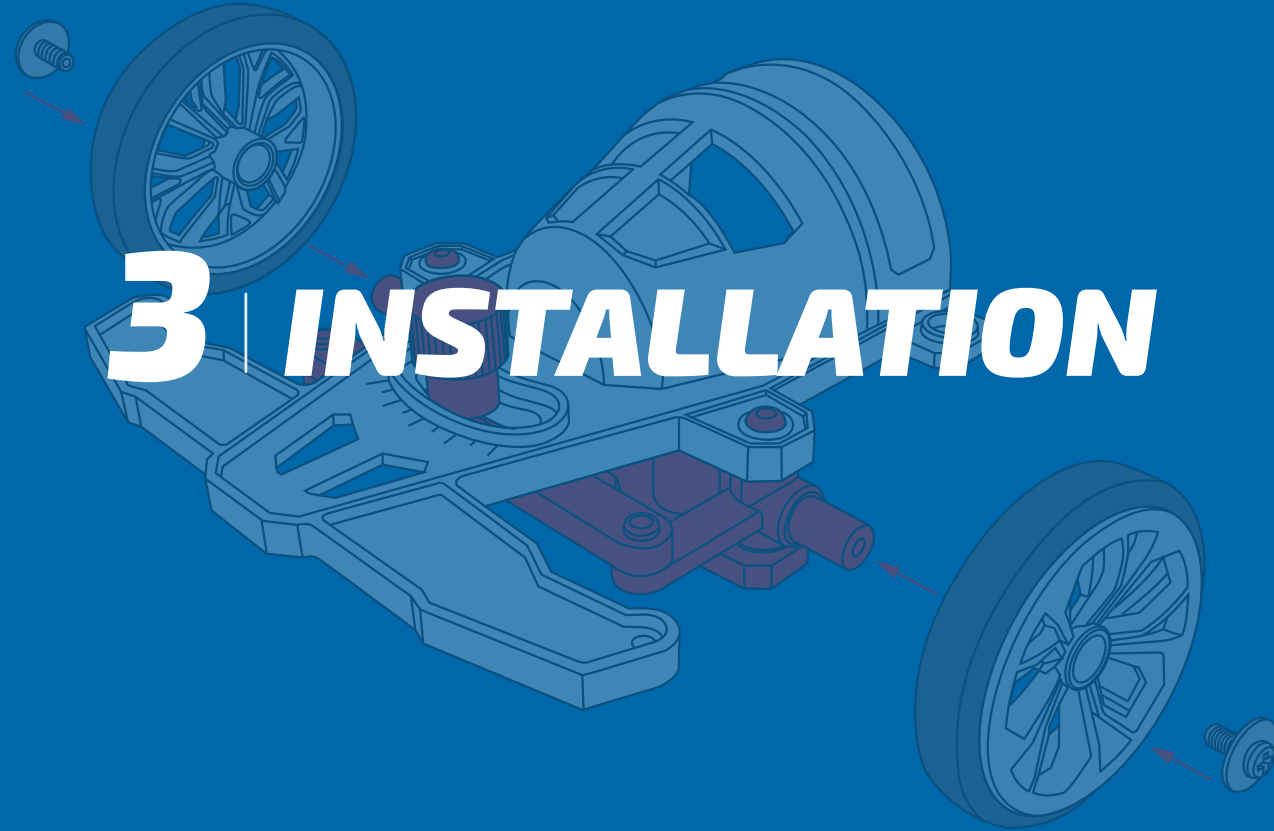
Serial	Name	Quantity	Serial	Name	Quantity
1	Front	1	8	Front wheel	2
2	Bottle hoop	1	9	Rear wheel	2
3	Engine components	1	10	PB 2.3*8 Screw	4+1(spare)
4	Spoiler	1	11	PWB 2.3*6 Screw	2
5	Leak-proof gasket	1	12	Bottle	1
6	hand pump	1	13	Sticker	1
7	Pressure indicator	1			

Necessary but not included

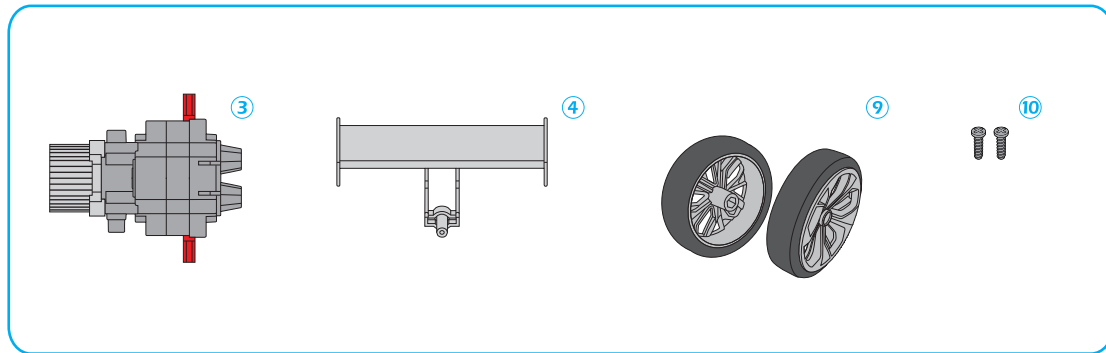


Cross-headed screwdriver

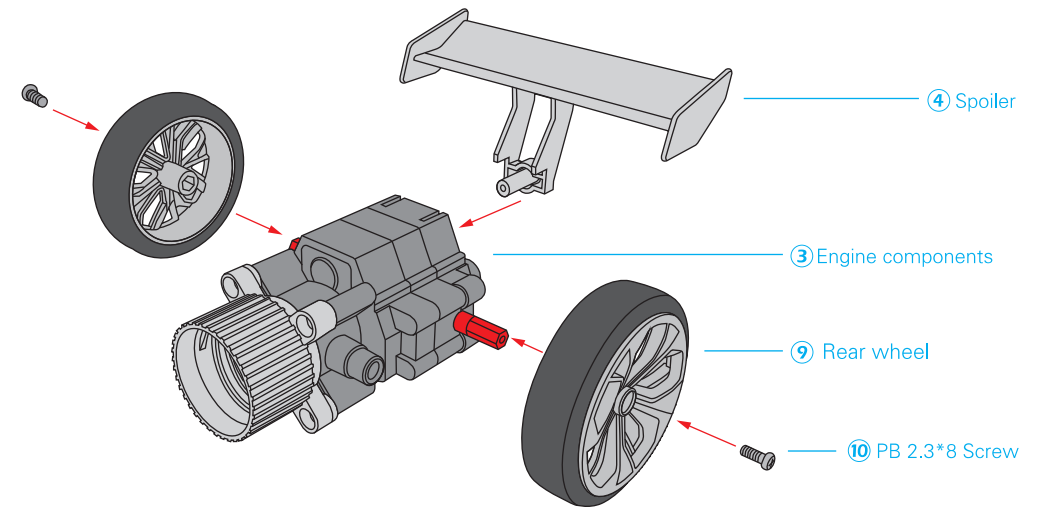
3 | INSTALLATION

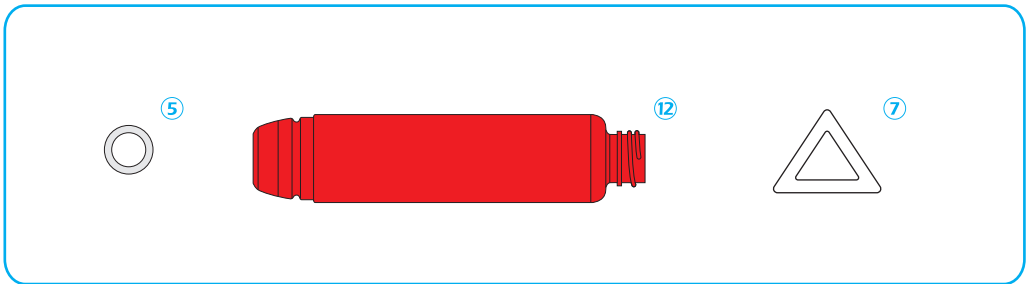


Assembly Steps

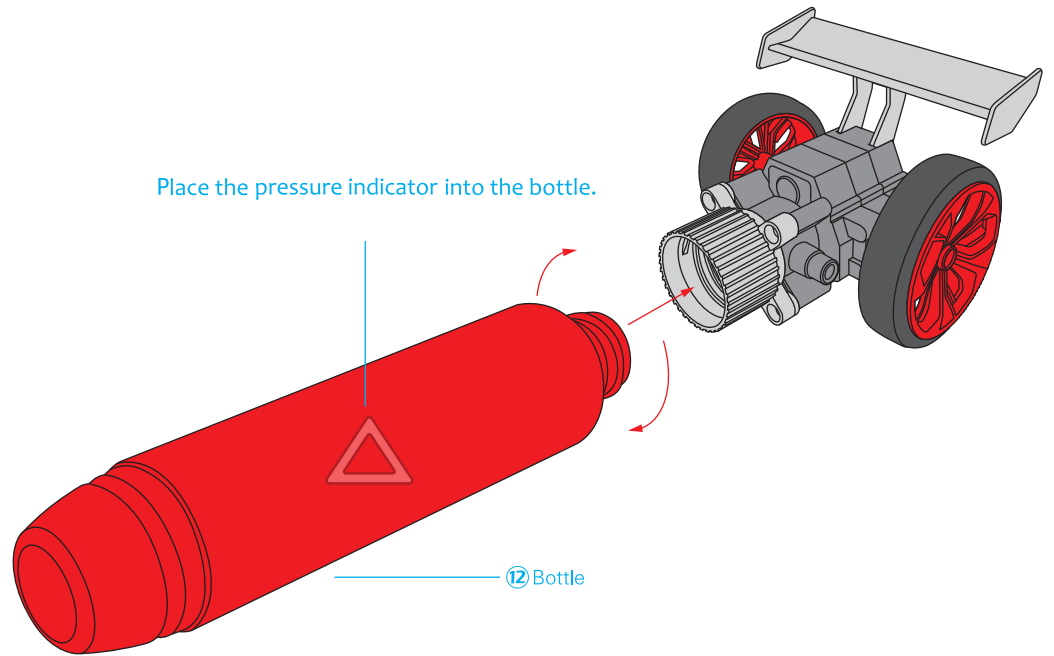
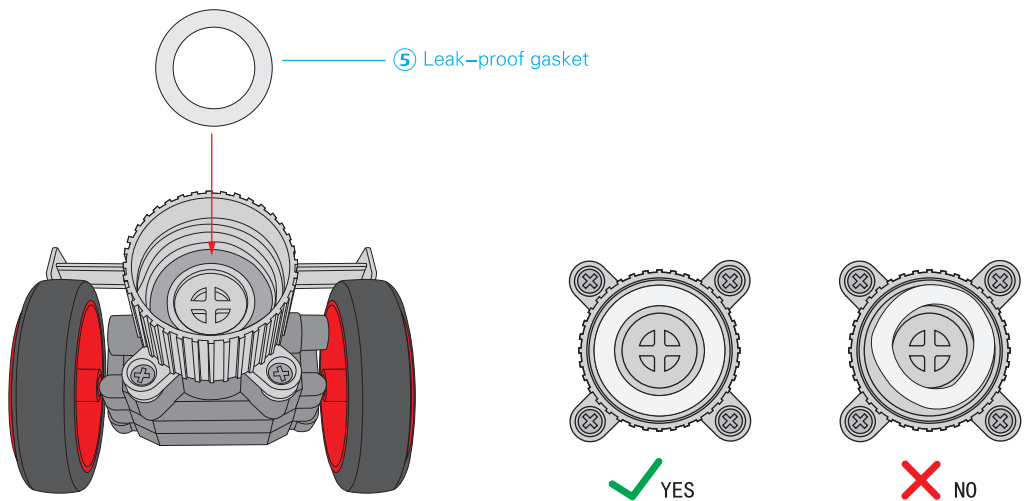


- 1 Insert the rear wheels into the rear axles and secure with screws. Attach the spoiler to the engine components.



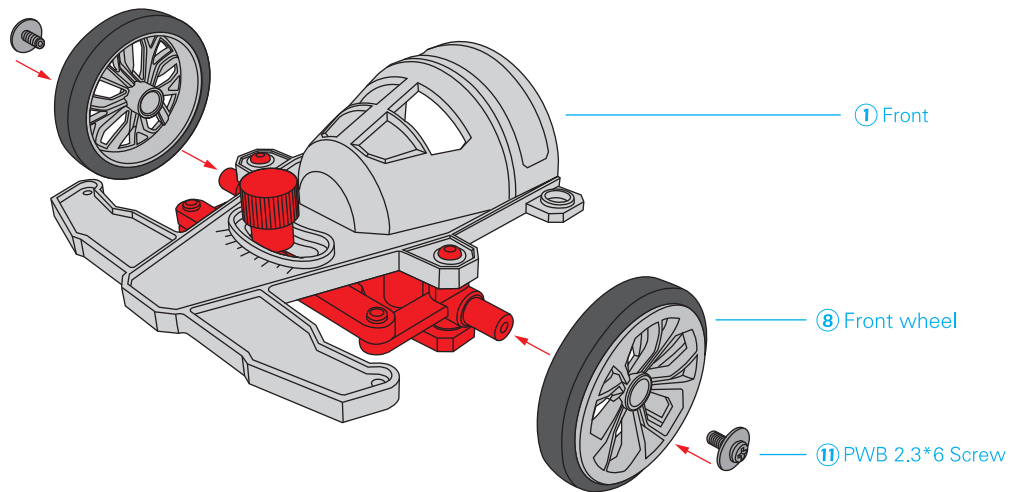


2 Put the leak-proof gasket tightly into the bottle cap of the engine components.

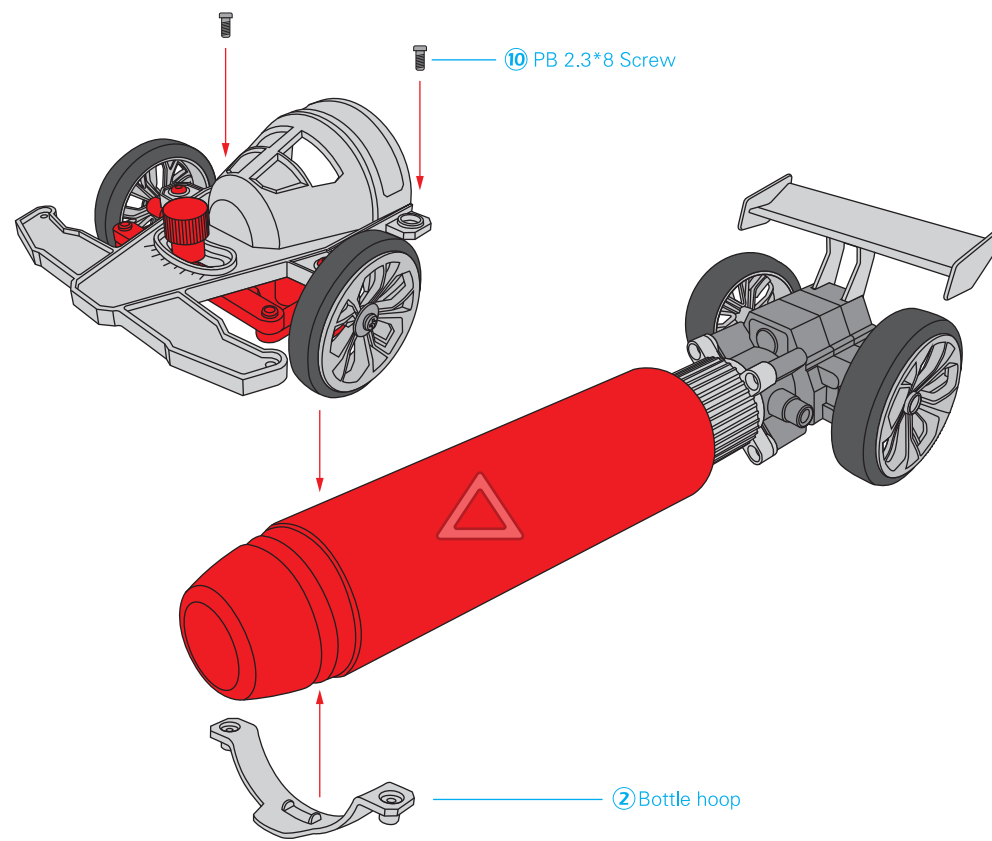




3 Insert the front wheels into the front axles and secure with screws.

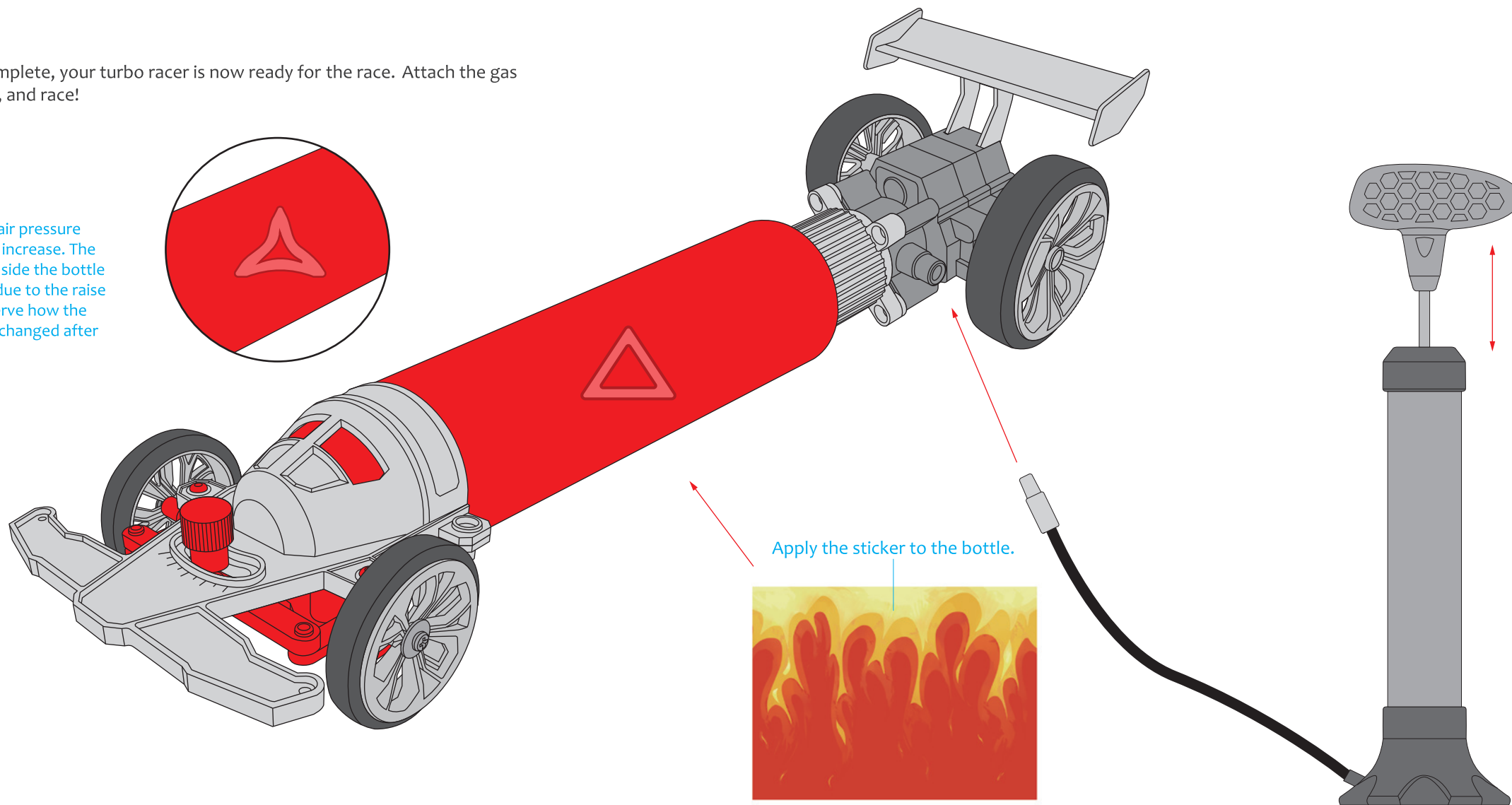


4 Snap the bottle hoop into the bottle's grooves, while aligning the front and bottle hoop. Once set, secure with screws.



- 5 Installation is complete, your turbo racer is now ready for the race. Attach the gas nozzle, pump air, and race!

While pumping, the air pressure inside the bottle will increase. The pressure indicator inside the bottle will be compressed due to the raise of air pressure. Observe how the triangle's shape has changed after the racer stops.

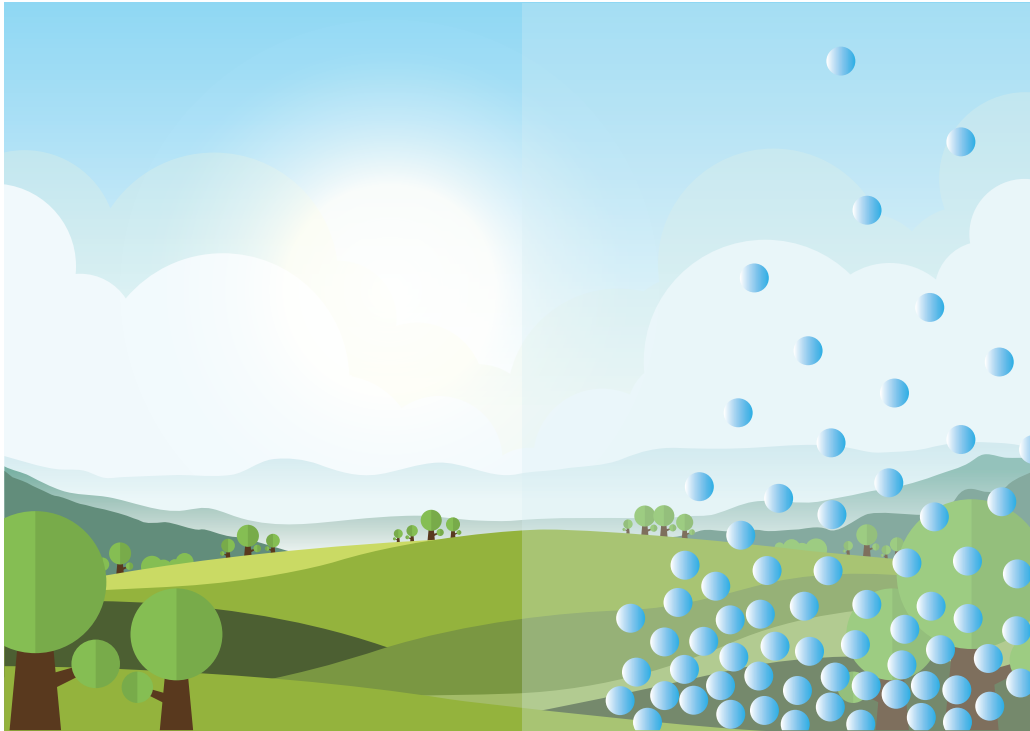


4 | *ACTIVITIES*



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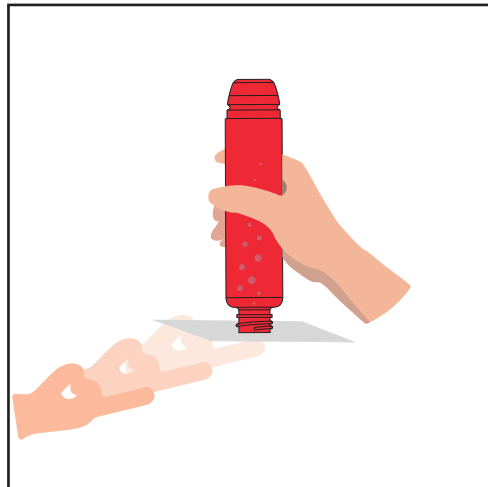
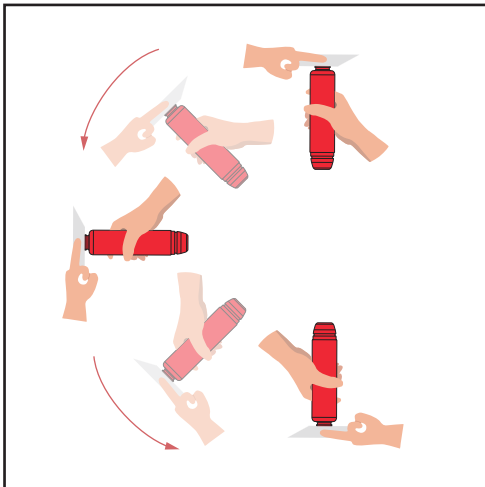
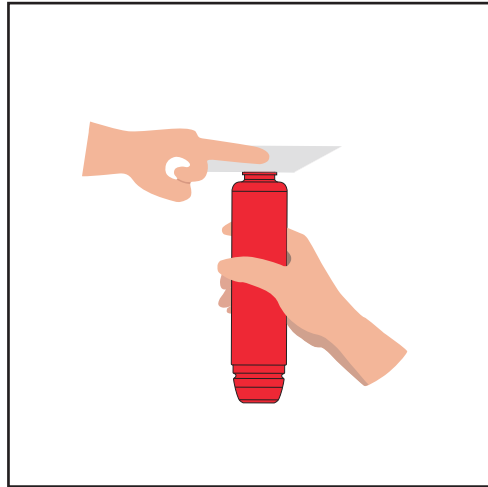
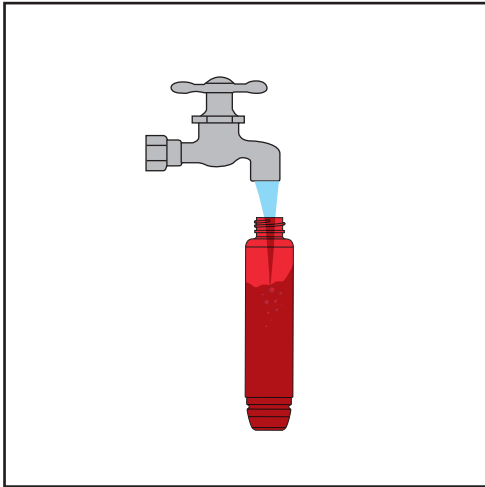




What are Air Molecules?

Before learning about air pressure, we need to understand a new term - Air Molecules.

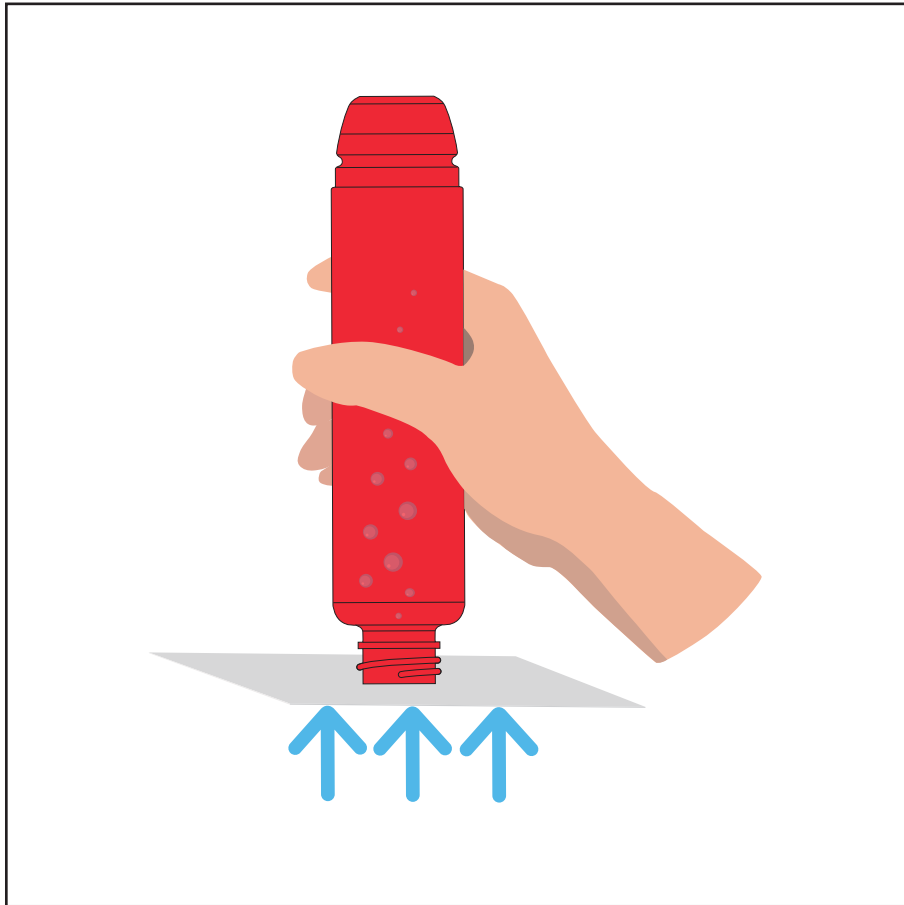
Air Molecules are super tiny particles that surround us.
Gravity pulls the air molecules toward the earth.
The denser the air molecules, the heavier they are.
The weight of the air molecules around us is called - AIR PRESSURE.



Learn more about Air Pressure

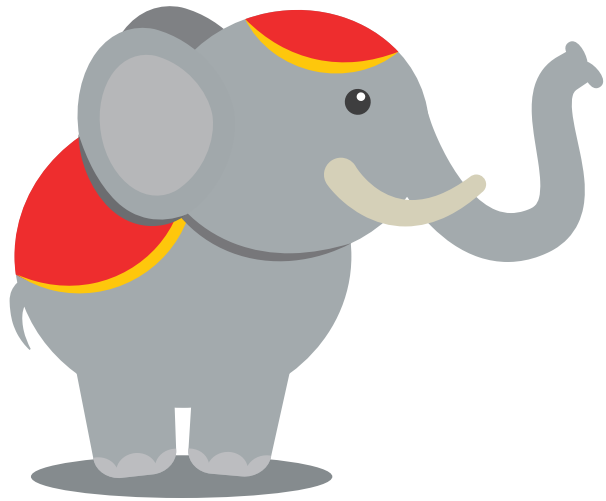
The weight of air pressure above a given area of the Earth's surface is called Atmospheric Pressure. It can be measured by an instrument called Barometer.

How can we test the existence of Air Pressure from home? Let's do a simple experiment by using the bottle provided for the Turbo Racer.



How does it work?

It is magical, isn't it? The reason why the water doesn't pour out is Air Pressure. When we fill the bottle up with water, all air inside has been squeezed out. The space inside the bottle becomes a vacuum. Air Pressure pushes the card towards the bottle's mouth and thus keeps the water from pouring out.



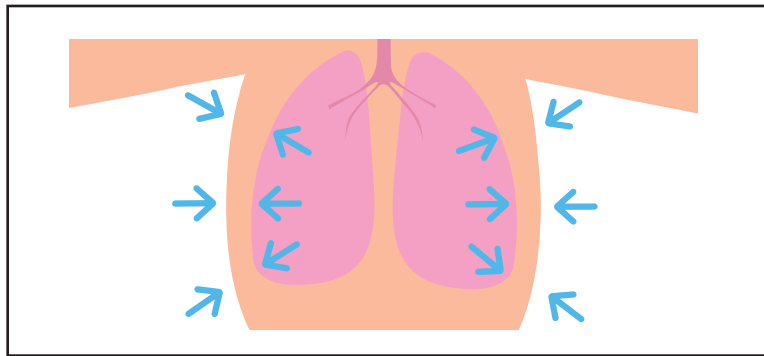
How Air Pressure relates to us.

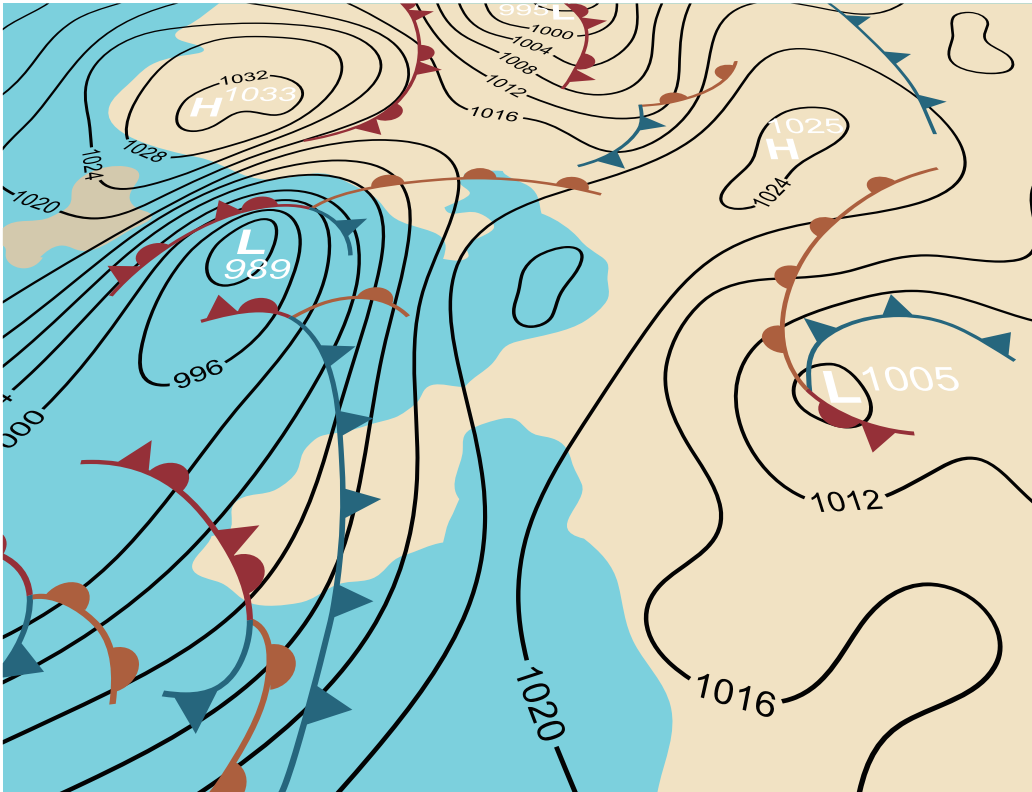
Did you know that Air Pressure all around us is very high?
For every square meter, the weight of air pressure can reach around 1 ton. It is just like an elephant sitting on your head.
You may ask another question:



Why Doesn't Air Pressure crush our bodies?

Indeed, there is Air Pressure inside of our bodies and it acts as a counterpart to balance the Air Pressure outside. We breathe fresh air into our lungs, filling them with air and maintaining a balanced level of Air Pressure. So, it keeps us alive on Earth.





What can Air Pressure be used for?

Air Pressure can be utilized as energy to trigger our Atmospheric Turbo Racer and help us breathe. Apart from this, Air Pressure can also be used to predict short-term weather changes. Have you ever seen this weather diagram before?

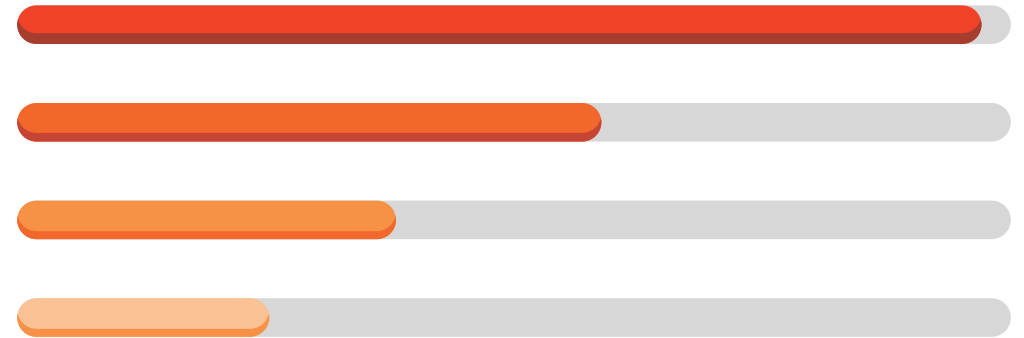
Changes between High and Low Air Pressure will cause short-term weather changes, for example, wind, rain or even tornados!

Exploring Air Pressure

As you would probably expect, the more air you pump, the further the car goes. You will also notice that if you pump a very little amount of air, the car will not even start running. If you want to have a good understanding of the relation between the amount of air and the distance, you can follow a scientific approach and carry out this experiment with your turbo racer:



- 1) Pump three times with the hand pump and try to run the car.
- 2) Increase the amount of pumping by 3 and try again. Write down the first amount of pumping that was enough to run the car and the distance the car ran.
- 3) Keep the increment of 3 pumps and record the results. Avoid exceeding 30 pumps to prevent any excess pressure.
- 4) You can draw a graph from your table to visualize the relationship between the amount of pumping and the distance.



Leap Forward!

Do you want to see your turbo racer fly? Try to make it jump using an inclined plane. For example you can put a book on a pencil case to make it a slope. The book has to be thin enough to let the turbo racer cross the edge smoothly.

