PROPELLER CAR KIT

NOTES FOR CONSTRUCTION OF PROPELLER CAR KIT CAT# CAR_PROP

INFO

WARNING:

- This kit includes sharp and small objects. Keep them out of reach of small children.
- Not for children younger than 10 years old.
- Adult supervision and support is required.
- Materials and specifications of this kit are subject to change without notice.

KIT CONTENTS:

- Electric motor
- Plastic propeller
- battery holder
- 4 wheels
- 2 axle rods
- Eye screw axle holders
- wood board for chassis
- Wood dowels for motor base
- Motor strap

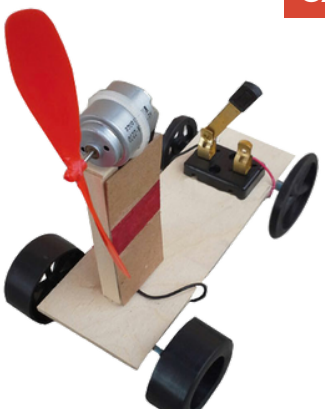
Also requires (Not Included):

- 2 AA batteries
- Wood glue
- Phillips screwdriver for assembly
- Knife or Cutter

KNOW THE PARTS:

The motor and propeller work together to create air current and push the car forward.

CAR_PROP



OBJECTIVE

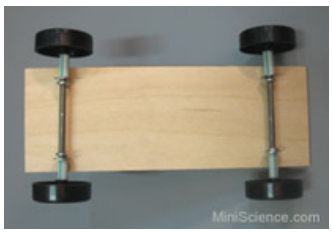
The objective of this project is to make a model car that moves by air.

MORE INFO:

INSTRUCTIONS

HOW TO MAKE?

The chassis of this car is a 2" x 6" wooden board. Mark the location of the axles by drawing a line parallel to the front side or backside. Insert the eye screw axle holders on the axle lines about one centimeter or 3/8 inch away from each side. Make sure the screws enter in a right angle and they are not slanted to one side.
Cut pieces of 1/2 inch straw and keep them ready to be used as spacers in the next step.
Insert the axle in one wheel. Then add a spacer and a metal washer onto it. Insert the axle in the front or back axle holders and then insert a washer, a spacer and the other wheel onto it.



After installing the front and back wheels and axles test the car and make sure that it can roll smoothly. Test all the wheels. Make adjustments if necessary. If the straw spacers are very long, replace them with shorter spacers.
This image shows the under side of the car.
Turn the car over and test it on a smooth flat surface.

Use additional wood pieces and wood glue to build a stand on the car similar to the one shown on this picture. Space the wood dowels or pillars about 1/4" apart. The plastic strap that will secure the motor must be able to pass trough the space between the dowels. The height of the stand must be 2.5 inches (5 centimeters) or more so that the spinning propeller will not touch the car chassis. Allow the glue to dry at least for 4 hours.

Insert the shaft of the motor into the hole at the center of the propeller.

PROPELLER CAR KIT

NOTES FOR CONSTRUCTION OF PROPELLER CAR KIT CAT# CAR_PROP

INFO

WARNING:

- This kit includes sharp and small objects. Keep them out of reach of small children.
- Not for children younger than 10 years old.
- Adult supervision and support is required.
- Materials and specifications of this kit are subject to change without notice.

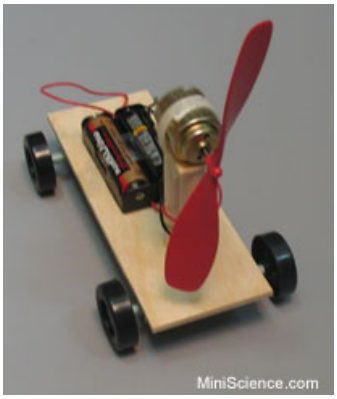
TERMS, CONCEPTS AND QUESTIONS TO START BACKGROUND RESEARCH

To do an experiment in this area, you should do research that enables you to understand the following terms and concepts:

- aerodynamic
- Propeller physics
- polarity
- Friction,

INSTRUCTIONS

Place the motor-propeller combination on the stand and secure it in place with a plastic strap that is included in your kit.
Mount the battery holder with batteries on the car. You may use Velcro tape or double sided tape to attach the bottom of the battery holder to the car.
Locate the two metal connectors in the back of the motor. Each connector has a hole in the center that will be used to hook the connection wires.

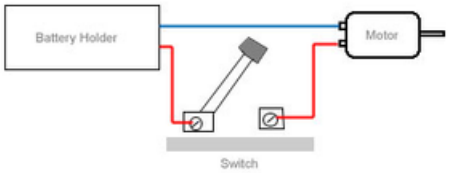


Connect one of the wires on the battery holder to one of the connectors o the motor. (Pass the wire trough the hole and twist it to keep it in place securely.)
Place the batteries in the battery holder (if they are not there already).
Hook the other wire of the battery holder to the second connector. The propeller will start turning. Place the car on a flat and smooth surface so that the car can move.
If the car moves backward, you can change the turning direction of propeller so that the car can move forward.

SIMPLE ELECTRIC CIRCUIT

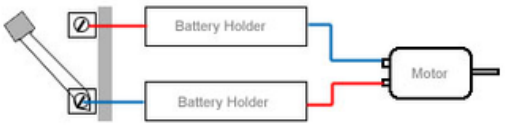
The battery and the electric motor used in this project will form a simple electric circuit. Connections are possible in many different ways. If you need to install the switch for your car, you can decide on the location of the switch as long as it does not block the movements of the propeller.

In the simplest form, you connect the two wires of the battery holder directly to the electric contacts at the back of the electric motor.



In a standard design you will use one battery holder, one switch and one electric motor. One wire from the battery holder connects to the electric motor directly. The other will connect to the switch and then another wire from the switch will connect to the electric motor.

In a more complex design you may use two battery holders and install the switch between the two battery holders.



TO CHANGE THE TURNING DIRECTION (PUSH OR PULL)YOU MUST SWITCH THE POSITION OF TWO WIRES IN THE BACK OF THE MOTOR.
OR USING A KNIFE SWITCH DPDT