



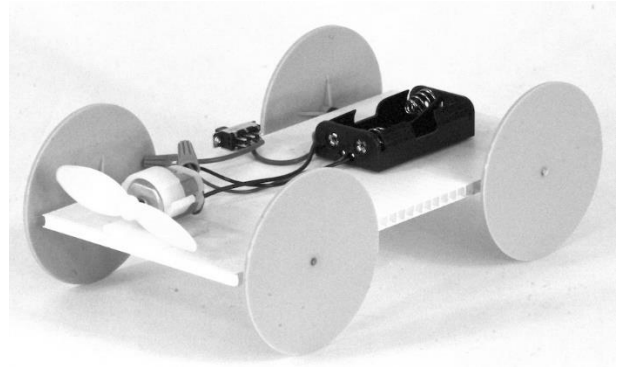
BLUE BROTHER- BREEZY (Code: BREEZY)

DESCRIPTION

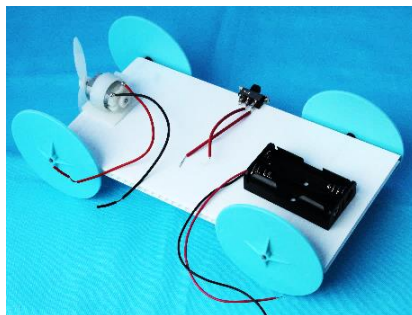
This basic four-wheeled vehicle uses a battery operated motor-driven propeller to make it move.

This vehicle can also be used to experiment simple concepts of electric circuits and investigate Newton's 3rd Law of Motion in physics!

Once car bodies are built, they can be decorated in the Art class.

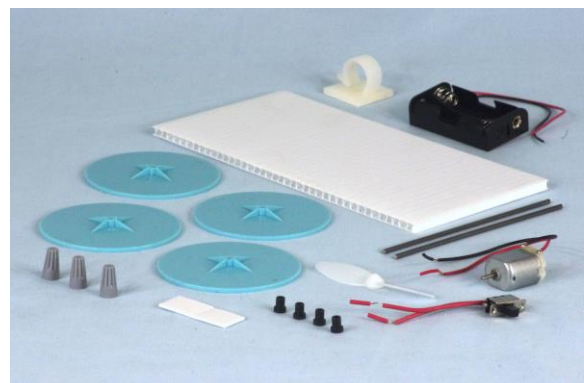


LEVEL:	Introductory
HOURS TO CONSTRUCT:	1 - 2 hours
SKILL DEVELOPMENT:	<ul style="list-style-type: none"> • Planning and Design • Manufacturing / Assembly • Mechanical • Electrical • Basic Electric Circuits • Renewable Energy



WHAT'S IN THE KIT?

- A corflute platform and all the mechanical and electrical components required to make the *BREEZY* work including the motor, propeller, wheels, screw-on connectors and switch.
- A detailed teaching unit with a complete parts list, design suggestions, general construction





guidelines and suggestions for testing and racing the cars.

WHAT ELSE IS NEEDED?

The following items are required and are available from Scorpio Technology, but need to be ordered separately:

- 2 x Battery – AA (BATTA or BATTALK40)

We recommend the following spares when buying class sets of kits to replace parts damaged or lost by students:

- Motors with wires (MOT12W)
- Small Sliding Switch with Wires (SSWS-W)
- Double sided tape (TAPEDS20X15X1)
- Driveline (Axle) bearings (BEARBT)
- Screw-On connectors (CONN-SC)

SUGGESTED ITEMS FOR ASSEMBLY

- A pair of wire strippers (WIRESTR), to further strip back the insulation off any wires
- A small piece of timber (such as pine) to drill a shallow hole in order to rest the propeller boss and mount the motor shaft
- A flat piece of timber on which the students can assemble their vehicles to avoid damaging benchtop or desktops
- Pair of scissors

TOOLS REQUIRED

The following tools are required. Several are available from Scorpio Technology, and can be ordered separately if required (item codes in brackets):

REQUIRED TOOLS	ORDERING CODE
Hammer	HAMMERC/HAMMERCL
Ruler and pen	-
Drill bit – 10mm (or similar)	

ABOUT THE PROJECT

The major features of this project are the planning, construction and assembly stages of a simple electric vehicle.

DESIGN PHASE

- The student should make a full size drawing to determine the position of the motor, sliding switch, battery holder & wheels.
- Working within the constraints set by the wheel / axle / bearing width, the students can create their own unique *BREEZY* design based on their drawings. This allows them to individualise their *BREEZY* design and increase their engagement in the project.

During the **Design phase**, students can:

- Take into account weight distribution, location of components and ease of operation



- Consider the practical aspects of construction and assembly. For example, clearance for the wheels

MAKING / CONSTRUCTION

Once the Design process has been completed, the students will be able to start **building their design**. They will:

- Attach switch, battery holder, axles and wheels onto the *BREEZY* platform
- Mount the propeller onto the motor then attach onto platform
- Wire up battery holder, motor and switch using the screw-on connectors
- Test and adjust the *BREEZY*
- Troubleshoot any problems!

DOES THE TEACHING UNIT INCLUDE ANY THEORY?

The Teaching unit has an ITEMS FOR INVESTIGATION section that covers:

- Calculating average speed
- Simple electric circuits
- Historical research of propellers and propeller driven cars
- Renewable energy challenge which incorporates a variety of STEM topics
- Advanced STEM Research Projects relating to propellers, Isaac Newton, Newton's 3rd Law of Motion and flight

