



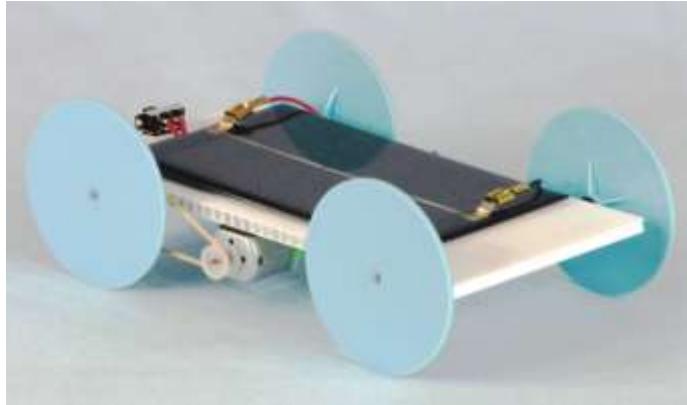
BLUE BROTHER – BLUE SKY (Code: *BLUESKY*)

DESCRIPTION

This is a four-wheeled solar powered vehicle at its simplest. Motive power is provided to the rear axle by a belt drive from an electric motor powered by the solar panel.

This vehicle illustrates a basic electric circuit (switch, electricity generated from a solar panel and motor).

This car can be used to perform basic experiments relating to solar energy.



LEVEL:

Introductory / Primary

HOURS TO CONSTRUCT:

1 - 2 hours

SKILL DEVELOPMENT:

- Planning and Design
- Manufacturing / Assembly
- Mechanical
- Electrical
- Basic Electric Circuits
- Renewable Energy - Solar

WHAT'S IN THE KIT?

- A corflute platform and all the mechanical and electrical components required to make the *BLUE SKY* work including the motor, solar panel, wheels, pulleys, screw-on connectors and switch.
- A detailed teaching unit with a complete parts list, design considerations, general construction / assembly guidelines and suggestions for testing cars.



WHAT ELSE IS NEEDED?

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

- Driveline (Axle) bearings (BEARBT)
- Screw-On connectors (CONN-SC)
- Rubber Band Size 18 (RUBBAND18)



SUGGESTED ITEMS FOR ASSEMBLY

- A pair of wire strippers (WIRESTR), to further strip back the insulation off any wires
- A flat piece of timber or thick, sturdy rubber mats on which the students can assemble their vehicles to avoid damaging benchtop or desktops

TOOLS REQUIRED

The following tools are required. Several are available from Scorpio Technology, and can be ordered separately if required:

REQUIRED TOOLS	ORDERING CODE
Hammer	HAMMERC/HAMMERCL
Ruler and pen	-
Scissors	-

ABOUT THE PROJECT

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

DESIGN PHASE

- The student should make a full size drawing to determine the position of the motor, sliding switch, solar panel & wheels.
- Working within the constraints set by the wheel / axle / bearing width, the students can create their own unique *BLUE SKY* design based on their drawings. This allows them to individualise their *BLUE SKY* 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, fitting of the belt (i.e., rubber band) on the pulleys

MAKING / CONSTRUCTION / ASSEMBLY

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

- Attach switch, axles, a pulley and wheels onto the *BLUE SKY* platform
- Mount a pulley onto the motor then attach onto platform
- Wire up motor and switch using the screw-on connectors
- Attach the solar panel to the platform and connect to the motor and switch
- Connect motor mounted pulley to axle mounted pulley using the belt (i.e. rubber band)
- Test and adjust the *BLUE SKY*
- Troubleshoot any problems!



DOES THE TEACHING UNIT INCLUDE ANY THEORY?

The Teaching unit has a THEORY section that covers:

- Introduction to Solar Energy
 - Solar Cells (PV cells) and how they work
 - Solar Panels
- Items for Investigation
- Items for Observation
 - Testing vehicles with uncovered and partially covered panels on a cloud-free day and a partly overcast day
 - Testing vehicles inside the classroom using various types of lighting
- How to calculate
 - Average speed

