

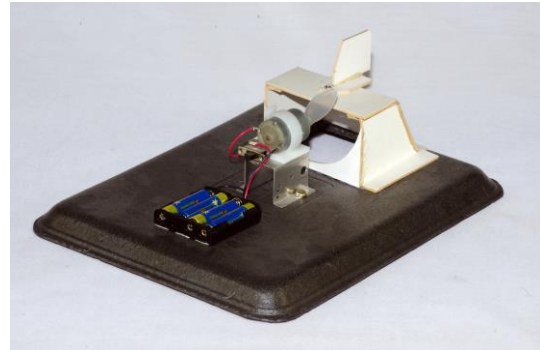


## *HOVERCRAFT (Code: HOVER)*

### DESCRIPTION

One motor, driving a small propeller is enough to make this *HOVERCRAFT* glide along a smooth surface on a bed of air!

The kit comes with both narrow and wide trays, which provides a choice of how big to make the *HOVERCRAFT*.

**LEVEL:**

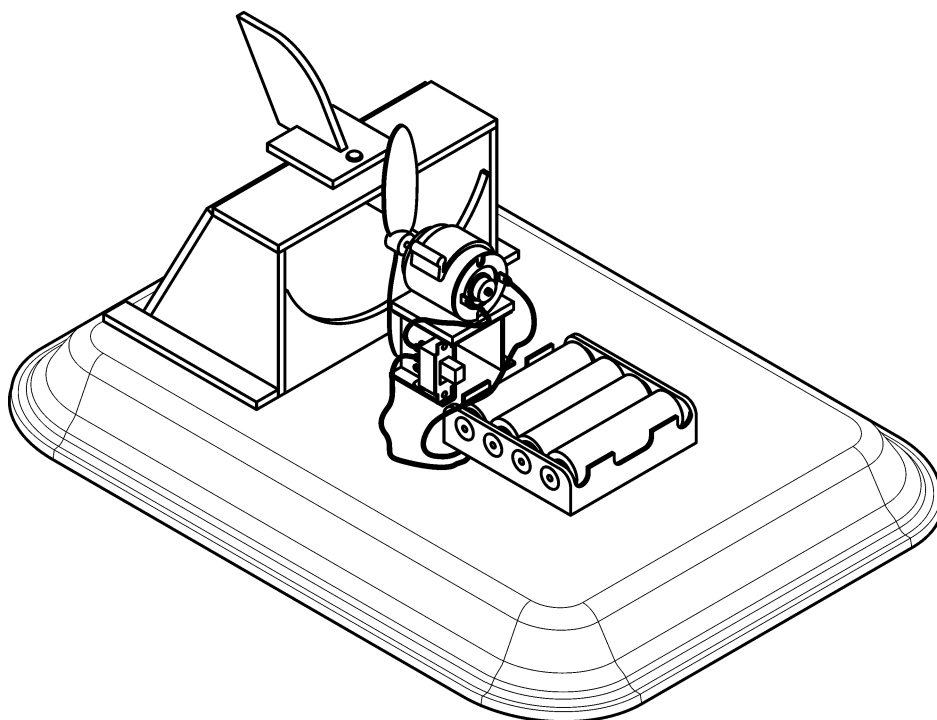
Intermediate

**HOURS TO CONSTRUCT:**

2 - 4 hours

**SKILL DEVELOPMENT:**

- Planning and Design
- Manufacturing
- Soldering
- Mechanical
- Electrical





## WHAT'S IN THE KIT?

- All the mechanical and electrical components required to make the *HOVERCRAFT* work including the foam trays, propeller, battery holder, motor and switch.
- A detailed teaching unit with a complete parts list, design suggestions, general construction guidelines and suggestions for testing and racing the hovercrafts.



## WHAT ELSE IS NEEDED?

The following items are required in addition to the kit and must be supplied by the maker – some are available from Scorpio Technology, but need to be ordered separately:

ADDITIONAL REQUIREMENTS	ORDERING CODE
4 x AAA batteries (Available in packs of 4 or 40) – Alkaline recommended	BATTA4 or BATTA40
Single-sided adhesive tape	TAPES
Double-sided adhesive tape	TAPEDS
Hot glue	GLUESTK
1.5 to 2mm Artboard Material, 3mm Core flute or any other suitable material for construction of the cowling and fins.	
Steel washer or similar to act as ballast (weights)	
<i>If experimenting with alternative positioning of battery holder:</i>	
2 x Battery Holder for 2 x AA batteries	BH2AA
4 x AA Batteries (Available in packs of 4 or 40)	BATTAA or BATTALK40

## TOOLS REQUIRED

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

REQUIRED TOOLS	ORDERING CODE
Assorted hand tools (depending on materials used)	-
Hammer	HAMMERCP/HAMMERCL
Ruler and pen	-
Craft knife	CRKNF
Soldering Iron and Soldering iron stand: – a good quality soldering iron, with a fine tip <b>or</b>	SOLDIRN SOLDIRNSTD
Soldering station	SOLDSTN
Solder: – 0.71mm 60/40 solder is recommended	SOLD500



Wire strippers	WIRESTR
Side cutters	SIDECUT or SIDECUTM
Drill	-
Drill bit – 3.0mm	-
Hot glue	GLUEGUN
Scribe (or other sharp object) to pierce holes in tray	SCRIBE
Philips Head Screwdriver #2 point for bolts	SCREWDRPH2/100
Spanner or Multitool for 3mm nuts	--- or MULTITOOL

### **ABOUT THE PROJECT**

The major features of this project are the planning, design, construction and assembly stages of a hovercraft.

#### DESIGN PHASE

- ☐ Decide whether to make a wide bodied or narrow bodied craft. Create your own unique *HOVERCRAFT* design based on our drawings. Focus on component relationships, to ensure the *HOVERCRAFT* is balanced and will travel well.
- ☐ This provides scope for students to be creative and have fun individualising their *HOVERCRAFT* design and increase their engagement in the project.

During the **Design phase**, students will need to:

- ☐ Evaluate the suitability of various materials, such as artboard material, corflute for the cowling and fins
- ☐ Investigate the possibility of adding steering (how?). Hint: Consider the weight being added.
- ☐ Evaluate available technologies that can be used, for example:
  - 3D printer
  - laser cutter (which allows more interesting shapes than usual)
- ☐ Take into account weight distribution and balance of the *HOVERCRAFT*; and ease of operation
- ☐ Consider the practical aspects of construction and assembly. For example, position of the battery holder

#### MAKING / CONSTRUCTION

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

- ☐ Make and assemble the cowling and fins
- ☐ Assemble the *HOVERCRAFT* motor and propeller on to the bracket
- ☐ Mount the motor bracket, switch, axles and battery holder on to the platform
- ☐ Wire up and solder the battery holder, motor and switch
- ☐ Test and adjust the *HOVERCRAFT*
- ☐ Troubleshoot any problems!



### **DOES THE TEACHING UNIT INCLUDE ANY THEORY?**

The Teaching unit does not have a THEORY section.

