

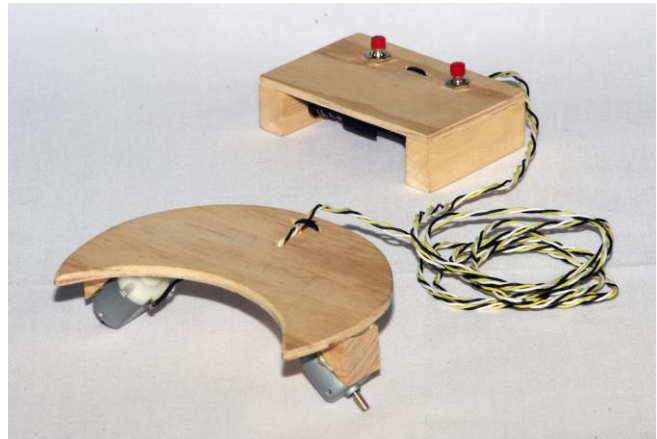


SOCCKER 'BOT – NO SOLDER (Code: SOCCKER-NS)

DESCRIPTION

The *SOCCKER 'BOT* is a simple electro-mechanical device that responds to a wired handheld controller. Two push button switches steer the device to move forwards, left or right.

The scoop at the front of the *SOCCKER 'BOT* can "capture" a tennis ball to play a game of soccer between two or more participants. The scoop is shallow enough to allow a competitor to knock the tennis ball out of control, then capture the ball and try to score.



LEVEL:

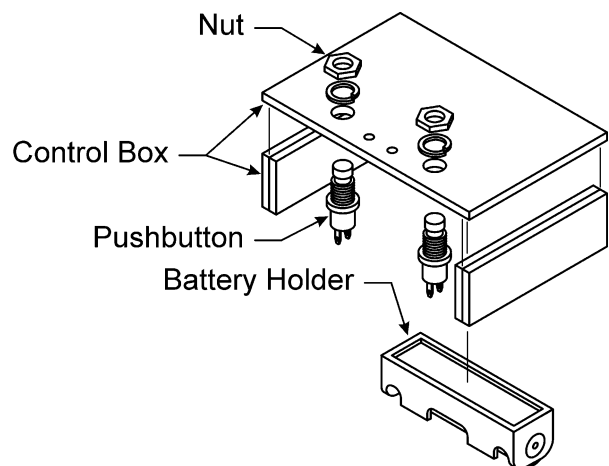
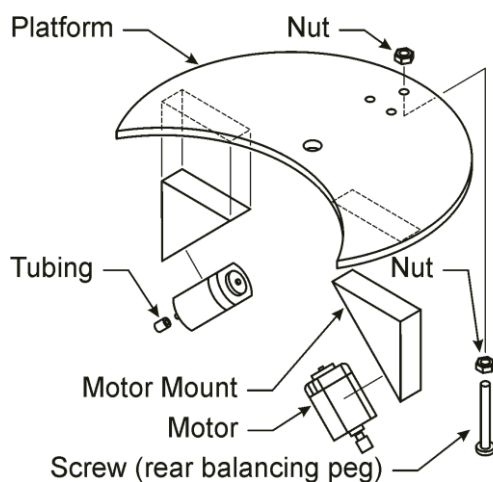
Introductory

HOURS TO CONSTRUCT:

7 hours

SKILL DEVELOPMENT:

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

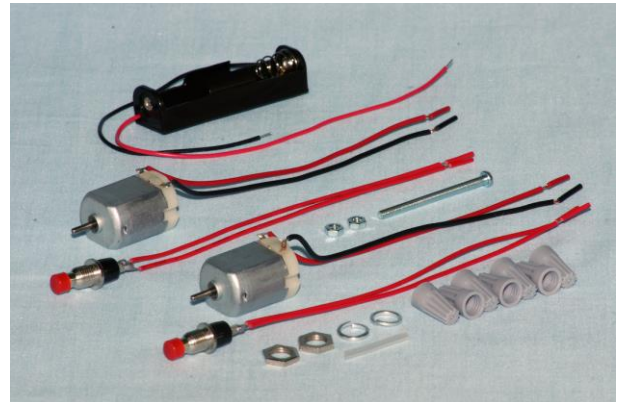




OVERVIEW – SOCCER ‘BOT -NO SOLDER

WHAT’S IN THE KIT?

- All the mechanical and electrical components required to make the *SOCCER ‘BOT* work including the motors, battery holder, switches and screw-on connectors.
- A detailed teaching unit with a complete parts list, design suggestions, and general construction guidelines.



WHAT ELSE IS NEEDED?

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

- 1 x Battery – AA (BATTA – 4 pack **or** BATTALK40 – 40 pack)
- Cable ties (100mm x 3.65mm) (CABTIE100)
- Hot Glue (GLUESTK)
- or** Double-sided adhesive tape (TAPEDS **or** TAPEDS20X15X1)
- Single-sided adhesive tape (TAPESS)

The following material is to be supplied by the student / teacher:

- Material for the components (PVC or acrylic sheet, plywood, etc.)

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)	-
Ruler and pen	-
Craft knife	CRKNF
Wire strippers	WIRESR
Spanner for the nuts on the Pushbutton switch	-
Drill Bit – 7.0mm	-
Drill Bit – 3.5mm	DB3.5

ABOUT THE PROJECT

The major features of this project are the planning, design, construction and assembly stages of a simple wire controlled robotic device.

DESIGN PHASE

- Create your own unique *SOCCER ‘BOT* design based on our drawings which focus on component relationships, rather than dimensions. This provides scope for



OVERVIEW – SOCCER ‘BOT -NO SOLDER

students to individualise their *SOCCER ‘BOT* design and increase their engagement in the project.

- There are two parts of the *SOCCER ‘BOT* to design:
 - the *SOCCER ‘BOT* itself.
 - the handheld control unit.

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

- Evaluate the suitability of various materials, such as PVC, acrylic, plywood or balsa wood
- Determine where to place the motors
- Determine what to use as the 3rd "leg" to support the 'Bot
- Evaluate the ergonomics of the handheld control unit
- Evaluate available technologies that can be used, for example:
 - 3D printer
 - laser cutter (which allows more interesting shapes than usual)
 - vacuum former
- Take into account weight distribution and ease of operation
- Consider the practical aspects of construction and assembly. For example, where to drill holes for the wires to the motors

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 *SOCCER ‘BOT* platform and control unit that they have designed (platform, motor mounts and balancing peg, control unit)
- Mount the motors, axles, wheels and balancing 3rd leg on to the platform
- Mount the battery holder and switches to the control unit
- Wire up the switches, battery holder and motors
- Test and adjust the *SOCCER ‘BOT*
- Troubleshoot any problems!

DOES THE TEACHING UNIT INCLUDE ANY THEORY?

The Teaching unit does not have a THEORY section.

For more information and ideas, go to our website:

<https://www.scorpiontechnology.com.au/kits-in-action>

