

## HOVERCRAFT

You will have a chance to construct a hovercraft for a student taking part in the Science Olympiad Division C. See General Rules, Eye Protection & other policies on [www.soinc.org](http://www.soinc.org) as they apply to every event.

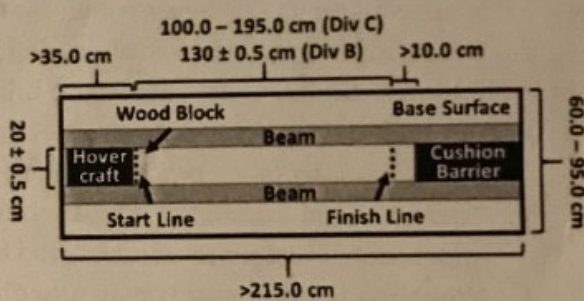
1. **DESCRIPTION:** Competitors may construct a self-propelled air-levitated vehicle with up to two battery powered motors that turn one propeller each to levitate and move the vehicle down a track.

2. **EVENT PARAMETERS:**

- a. The vehicle must be placed in a box (vehicle and box must be labeled with the team name and tournament specific team number) and must be impounded. Tools and supplies do not need to be impounded.
- b. Competitors must wear eye protection during Part II.

3. **THE TRACK:** Example setups are provided on the event page on [www.soinc.org](http://www.soinc.org)

- a. The supervisor will supply two 8' long beams each with a width and height at least 30.0 mm (standard 2x4s recommended to ensure straightness), a cushioned barrier to stop vehicles, a small wood block to hold back the vehicle at the starting line, and a base surface at least 215.0 cm long and between 60.0 and 95.0 cm wide (standard 8' long table or countertop recommended).
- b. Each beam must be clamped or securely affixed to the base with the widest side in contact with the base to form the track side rails. There must be a gap of  $20 \pm 0.5$  cm between them to form the vehicle track.
- c. At one end of the track, a start line must be marked that is at least 35.0 cm from the edge of the track.
- d. At the other track end, the finish line must be marked (see 5.a for location) and a cushioned barrier at least 10.0 cm from the finish line must block the channel.



4. **CONSTRUCTION:**

- a. The vehicle may be of any material, but must not modify the track.
- b. The length of the vehicle must be between 15.0 and 30.0 cm and cannot exceed 30.0 cm during the run (including any inflated skirts). The vehicle, excluding dowel (see 4.g) must be no more than 2000.0 grams.
- c. It is recommended that the vehicle be adjustable to accommodate variations in track rail width and height.
- d. The vehicle must have no more than two motors each rotating one propeller. Propellers must have shielding with holes less than  $\frac{1}{4}$ " in diameter, which the event supervisor must test by trying to pass a  $\frac{1}{4}$ " dowel through them.
- e. The entire vehicle, including the propeller(s) and required shielding, must not exceed 19.5 cm in width.
- f. The vehicle must have a  $\frac{1}{4}$ " or larger dowel vertically attached within 5.0 cm of its front edge such that the top end is between 30.0 and 35.0 cm above the lowest vehicle surface.
- g. Commercial batteries, not exceeding 9.0 V as labeled, may be used to energize motors on the vehicle. Multiple batteries may be connected together as long as the expected voltage across any points does not exceed 9.0 V as calculated by their labels. The vehicle must not have any other energy sources. Brushless motors and integrated circuits are not permitted.

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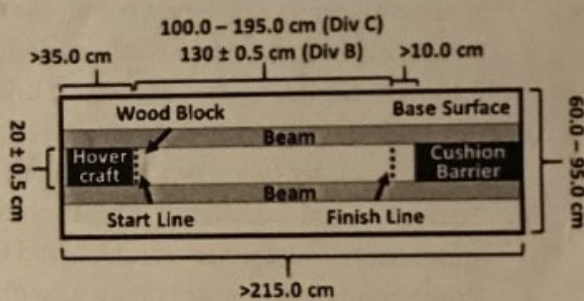
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