

****Northern Virginia’s Regional SeaPerch Challenge****

****SeaPerch ROV RULES****

This section provides the rules and requirements for the construction of your SeaPerch. The SeaPerch is a small, tethered, underwater vehicle with multiple thrusters to control lift and direction.

****Size Requirements****

1. The SeaPerch must fit, front-to-back, through an 18” diameter hoop and may be no longer than 20”.

****Body Requirements****

1. The body design may be changed from the tutorial design, but it must follow the constraints for size and allowable materials.
2. The body may be glued together for rigidity, or it may be press-fit for adjustability.
3. If any part of the body becomes unattached during a round, the ROV may be repaired and re-inspected prior to re-entering the event. **This does not apply to propellers (see 12 below.**
4. A dull hook or other weight-holding device may be attached to the ROV for any and all games as long as it does not exceed the size requirements.
5. No decal is allowed on the ROV except for what is explicitly called for in the instruction manual for electrical insulation purposes.  \*Tape may be used for non-functional, decorative purposes.  Inspector’s discretion is allowed.

Thruster Requirements

1. A thruster consists of a correctly insulated motor, a shaft extension, and a secured propeller.
2. Teams may only utilize three (3) thrusters.
	1. A thruster is defined as a means of propulsion for the SeaPerch, normally but not limited to a motor and propeller assembly.
3. An insulated motor consists of a taped-wrapped motor with wires correctly soldered to it, sealed and capped in a plastic canister with wax or another waterproofing substance.
4. Only the parts listed in the kit of parts may be used for thrusters.
5. No changes can be made to the propeller or the motor.
6. If a propeller becomes unattached or lost during a round, the ROV is permitted to continue in the current round w/o any point deductions, but must be repaired before the next round.
7. It is recommended that teams have several spare thrusters, propellers and other parts to perform common repairs.
8. All motors must be waterproofed.
9. Additional motors may be utilized for actuation or other NON-PROPULSION uses. Motors may be found at Jameco P/N 232022.
10. Teams may only utilize stock SeaPerch motors in thrusters (Jameco P/N 232022).Teams may not add additional thrusters to the SeaPerch. **Electrical Requirements**
11. ONLY one 4-pair tether (Ethernet) cable may be used.
12. Each pair of wires on the tether may power ONLY one motor.
13. Teams will design for and utilize a 12-volt power source.
14. Only the battery type listed in the kit of parts is allowed.
15. Each team is allowed the use of only one battery per round.
16. Multiple teams may not use a single battery concurrently.
17. Additional batteries and chargers may be purchased and used.
18. The control box supply wires must be insulated and must use an external inline 10A slow-blow fuse (as included in the kit of parts) on the positive wire.
19. The control box voltage supply wires may not be permanently attached to the battery; they must use an insulated secure connector that can be easily disconnected. Insulated alligator clips are recommended.
20. Control boxes must be able to be opened during inspection (do not for example, glue it closed).
21. Only one electrical connection per pole on each switch is allowed.
22. Switches other than those listed in the kit of parts may be used in the control box but they must meet or exceed the safety rating of the switches in the KOP. Inspector’s discretion allowed.
23. ROV controllers shall use simple switches only, no power conditioning or PWM controls are allowed. Used of a fixed resistor to reduce voltage is acceptable.
24. The battery must be contained in a dry container/holder so that it does not rest directly on the concrete or wet pool deck. The plastic SeaPerch crate is allowed.
25. All electrical connections that go in the water must be insulated with Butyl rubber, hot melt glue, or wax.

Expectations

1. The electrical connection for all ROVs will be properly insulated and or waterproofed, following the minimal guidelines contained in the instruction manual.
2. No epoxy will be allowed the day of the competition as it will not dry in time to compete.
3. No items will be washed or cleaned in the pool or the spa area as it may damage the facility.
4. All rules will be followed at all times.
5. Teams have a budget of $20.00 to modify the SeaPerch. Receipt must accompany inspection sheet upon check-in.
6. 3D printed parts will be costed out at $0.05 per gram.