Parts List for DIY Remotely Operated Vehicle

2 Submersible pumps (Approx. $2.40 each) Available at Amazon.com

2 Push-button switches (Approx. $0.79 each) Available at Amazon.com

Plastic sandwich container (Approx. $1.10) Any grocery store

Duct tape (Approx. $5.00) Available at Amazon.com

At least 10 ft of 4-conductor wire (Approx. $9 each) Available at Amazon.com

9V battery (Approx. $1.99) Available at most stores

9V battery connector (Approx. $0.79 each) Available at Amazon.com

Hot glue and gun (Approx. $4.27 each) Available at Amazon.com

Pack of fishing bobbers (Approx. $1.96) Available at Walmart.com

2 brackets, ¾” 90-degree (Approx. $0.57 each) Available at most hardware stores

Acrylic sheet (Approx. $3.80) Available at Homedepot.com

Electrical tape (Approx. $1.48) Available at Amazon.com

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1. BUILD REMOTE CONTROL
Drill, cut, or melt 2 half-inch diameter holes into sandwich container for the button switches

Insert button switches into the holes

2. WIRE THE PUMPS
Strip the ends of the wires

Twist the ends of the wires of pump 1 to two wires, and the ends of the wires from pump 2 to two different wires

Wrap the ends of the wires in duct tape to ensure contacts don’t touch and that the interface is waterproof

3. WIRE THE REMOTE CONTROL
Strip the ends of the wires

Connect the wires connected to the pump negative terminal (black) to the battery negative terminal (black) for both pumps
Connect the wires connected to the pump positive terminal (red) to the push button switches (one pump per switch)

Connect the battery positive terminal (red) to the open lead on both switches, cover all wire connections with electrical tape

Connect the battery and determine which motor is connected to the left and right switches

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4. ASSEMBLE THE ROV
Hot glue the brackets onto the pumps, ensure when gluing on the brackets the water jet on the pump points aft when the left motor is on the left side and the right motor is on the right side. The bracket should be above the pump jet, i.e. mounted alongside the mounting face on the pump.

5. ADJUST THE BUOYANCY
Clip 4 fishing bobbers on to the corners of the acrylic sheet.
It will be necessary to adjust the buoyancy by adding, removing, or changing the size of the bobbers. The goal is to make the ROV barely float. The buoyancy is correct when if the ROV is pushed under the water it slowly rises to the surface. The front of the ROV should be slightly lower than the back as well. This will ensure the ROV is pushed down when it goes fast and then as it slows down it slowly rises to the surface. The speed provides depth control in this configuration.

6. DRIVING THE ROV

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