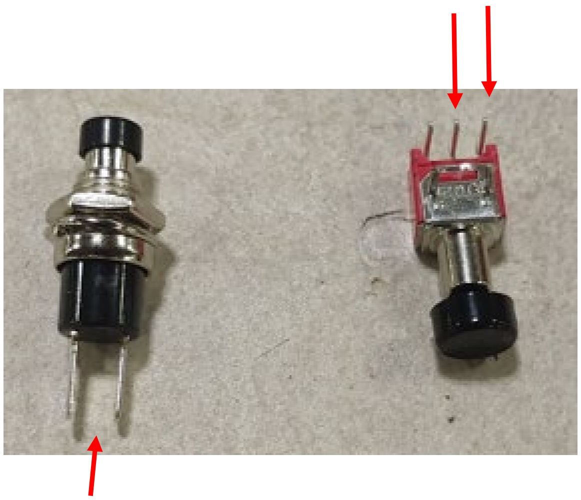
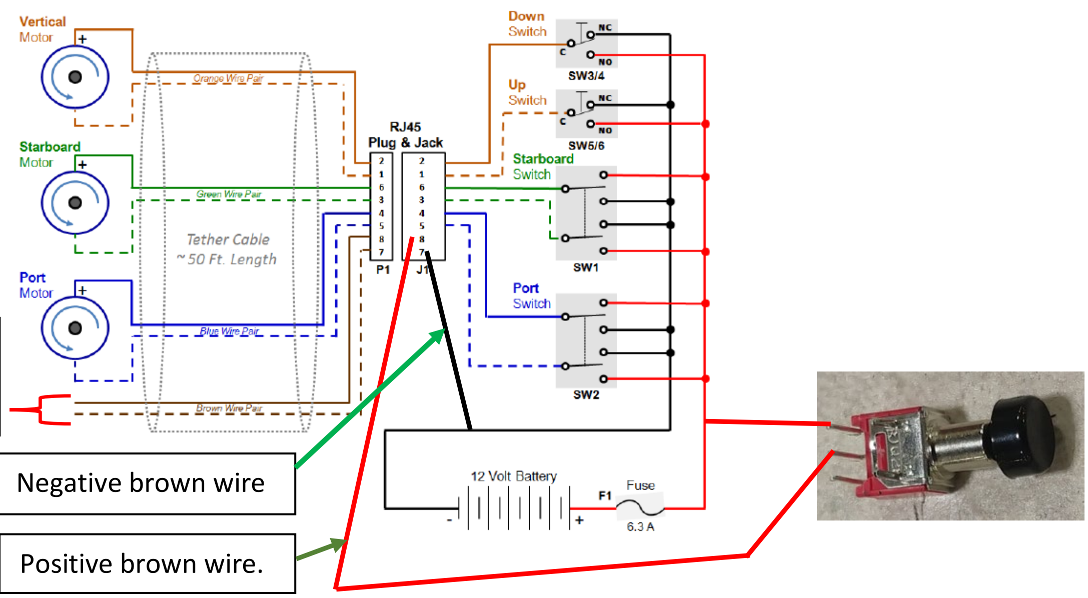


The right two posts seem to provide a push-to-close, which is what is needed in the circuit. This just has to be inserted into one connection of the circuits. See the diagram below. This can be verified by connecting two wires from a battery to a multi-meter. Cut one of the two wires. Attach one end of the wire to one pole of the push button and the other end of the wire to the other pole. It should read zero volts when it is un-pushed and full battery voltage when pushed. Switch poles if necessary to verify push-to-close.

This push button appears to be a push-to-open, which does not meet the requirements for launching the rocket. Verify with a multi-meter. If it reads full voltage in an un-pushed condition and zero voltage when pushed, then it is a push-to-open.

SeaPerch ROV Electrical Circuit Diagram

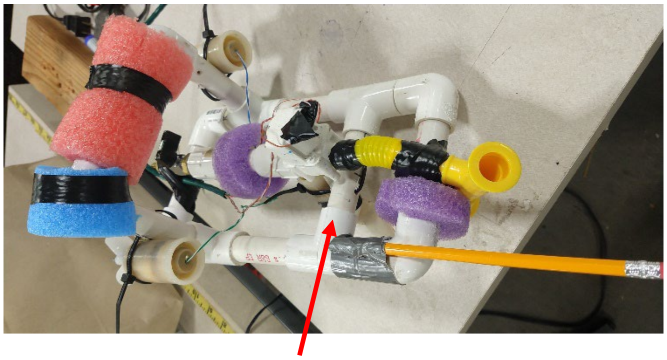


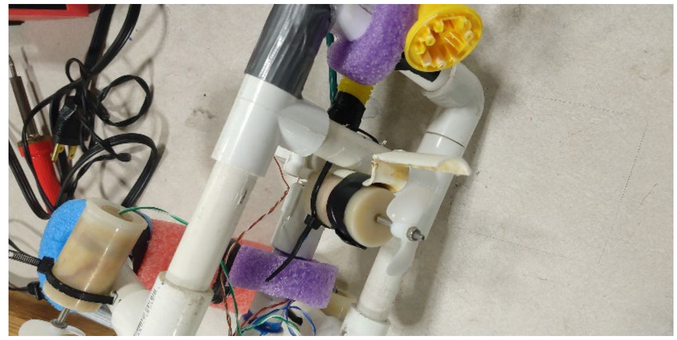
These are the brown wires going to the solenoid

Negative brown wire

Positive brown wire.

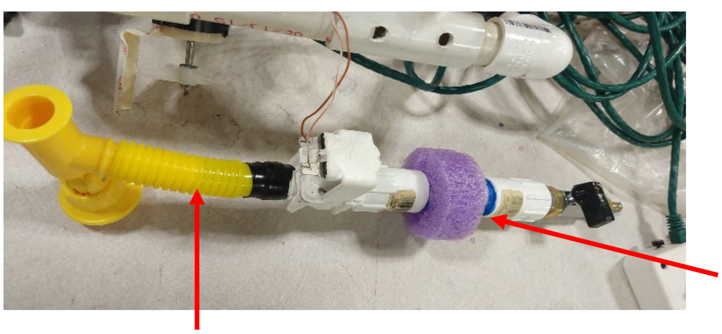
Poles 7 and 8 on the RJ45 Jack should be for the brown wires. Verify with a multi-meter. Set the multi-meter for measuring ohms (resistance). Hold one probe of the multi-meter to pole 7 (at the soldered point on the circuit board) and the other to the end of one of the brown wires. If you get a zero or low number, then that pole is connected to that brown wire (either the solid brown or striped brown). If it is not the correct wire, then the multi-meter will read infinity resistance, which may be indicated on the screen as a "- ". Do the same for the other pole. Once verified which pole goes to the correct wire, then solder the wires from the RJ45. Drill a hole in the controller's case to either mount the push button internally or externally. If internal, make sure there is room between the circuit board and be able to close the cover. If external, pass the wires through the hole to the push button. Recommend taping down or gluing to secure it to the control box.





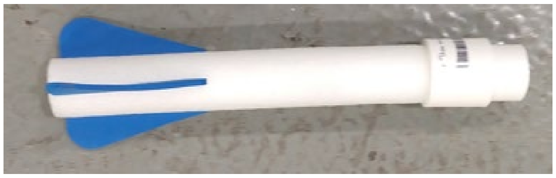
Note: This was a design that was tested by the SeaPerch design team and was shown to meet the objectives of the mission. The launch tube was removed to perform the underwater portion of the mission. The pencil was chosen because it was a lightweight object that can be used to push the push-plate and move the sea creature. This was basically the same design as the standard design with the above indicated change. As indicated, this horizontal piece was done to reduce the overall mass of the robot and mount the vertical motor.

The vertical motor was mounted below the robot, zip-tied to the horizontal pipe. Also added was a guard for the propeller. This guard is just a piece of a ½" PVC pipe, cut, heated to soften, and bent into shape. This will protect the propeller if the robot bumps into anything. It can be done for all the motors, if desired.



This is the air reservoir apparatus and can be mounted on the robot, held down by duct tape or zip-ties. This has a four inch PVC pipe nipple between the solenoid valve and the ball valve and is the air reservoir (covered by the purple float). Note: the two wires are the unused brown wires from the Cat 5 cable to the solenoid valve. They can be covered with the rubber putty that is used to water proof, which is provided in the SeaPerch kit. This makes it easier to disconnect, if a team chooses to remove the air reservoir apparatus for the obstacle course. If a team does this, then the amount of floats has to be adjusted, otherwise the robot will not submerge.

Recommend keeping the launch tubing as short as possible. As this fills with water the buoyancy changes and will affect the robot's ability to surface.



The nose PVC fitting is an option that teams can utilize, depending upon the size of the air reservoir and the air pressure used, to inhibit the trajectory of the rocket. The use of a nose cone or any weight will reduce the height and distance traveled for a set air pressure. The four inch PVC pipe nipple that is shown above for the air reservoir does not require this nose cone because of the small air reservoir. The use of a nose cone or any weight in the nose of the rocket is a trade-off between the size of the air reservoir, the air pressure in the reservoir, and the distance/height (angle of the launch tube) desired for the performance of the rocket. The size of the air reservoir is a trade-off between the overall mass/weight of the robot and height/distance that the rocket will travel for a given air pressure. For the underwater mission, these rockets (provided by Temple/Navy) will have the nose cone. Teams can either launch with the nose cone or remove it. Rockets for the initial launches will be provided by the individual teams.