

Undersea junction box & communications port

The junction box is a standard milk crate, 34 cm x 34 cm square, with a depth of 28 cm. A ridged, PVC sheet will completely cover the top of the milk crate. In the center of the PVC sheet a 4.9cm diameter circle will be cut, just large enough to fit a length of 1 ½ inch PVC.

The communication port is comprised of a 1 ½ inch PVC Coupling, a 10 cm length of 1 ½ inch PVC, a 1 ½ inch endcap, a plexiglass circle approximately 4.9 cm in diameter, and a magnetic switch (sensor magnetic cylinder reed ... Digikey part number 374-1024-ND), 50 feet of 18 gauge stereo wire, and surface light (Malibu Brand, 4 watt, 12 volt Wedge Base Bulb, Part # ML4WR2C).

Glue/attach the plexiglass circle to one end of a 10 cm length of 1 ½ inch PVC pipe. Glue the magnetic switch to the center of this plexiglass circle. Cover completely with 5 minute epoxy. Drill a 1/8 inch (approximately) hole along the upper edge of the PVC coupling. This hole is where the wires from the magnetic switch will exit the communication port. Attach the 1 ½ inch PVC endcap over the end of the 1 ½ inch PVC which has the magnetic switch, with the lead wires sticking out the hole through the endcap. Fill the remaining volume of the endcap with epoxy, glue or spray foam to prevent water from reaching the magnetic switch.

Push the other end of the 1 ½ inch PVC pipe through the hole in the plexiglass sheet that acts as the top of the junction box / milk crate. Attach the 1 ½ inch coupling to the end protruding through the plexiglass sheet to prevent the communication port from falling back through the hole.

The depth of the communication port should be approximately 13 – 15 cm deep.

The communication port assembly is now complete. Attach the lead wires coming out of the endcap to the 50 feet of 18 gauge stereo wire. This stereo wire will run to an indicator light on the surface. For the indicator light, we are using a 4 watt light bulb (Colored Wedge Base Bulb). This bulb is wired directly into a series circuit with the magnetic switch and 12 volt car battery.

Note: Teams that do not wish to build the full version of this prop device can simulate the mission by simply using a 1 ½ inch coupling. Dropping the communication probe into the coupling is all that is needed to practice this mission.



