

ROVs in a Bucket – Parts List – Appendix 1

“In a nutshell”

An ROV is an underwater robot. A simple ROV has been developed that can be built by grade-school children using off-the-shelf and off-the-Internet parts. PVC pipe is used for the frame, bilge pump motors for the power, and speaker wire transfers the power and control information from a controller to the robot. Soldering is not required. Once constructed, these ROV’s are safely powered by 12v car batteries and can be built small enough to be run inside a 30 gallon trash can or a small wading pool filled with fresh water. The goal was to keep the cost for the ROV system kits under \$100. The ROV shown in figure one was built using the following parts list.

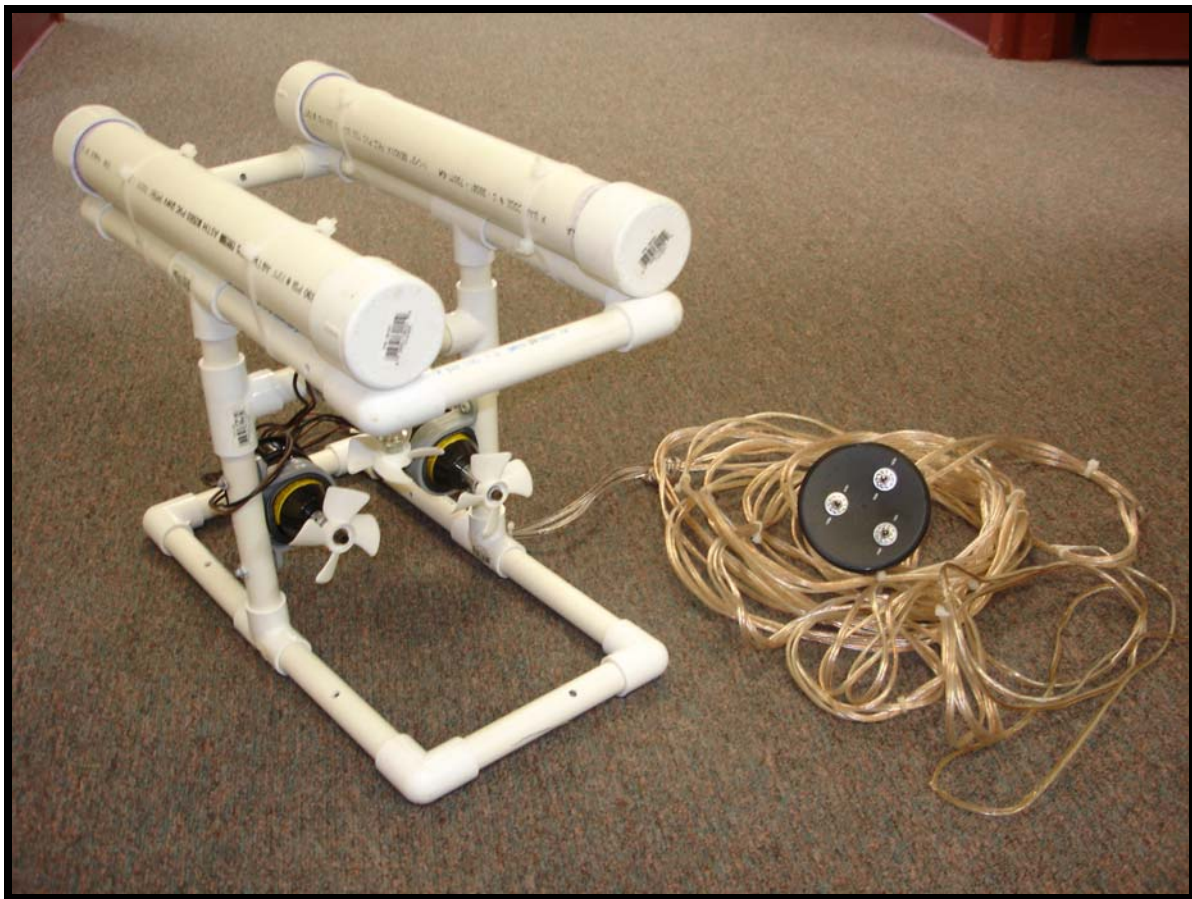


Figure 1: ROV Built from ROVs in a Bucket

Parts List

- 14 6" pieces of ½" Schedule 40 PVC
- 2 3" pieces of ½" Schedule 40 PVC
- 8 90 degree elbows ½" Schedule 40 PVC
- 6 T's ½" Schedule 40 PVC
- 2 15" pieces of 1 ½" Schedule 40 PVC
- 4 1 ½" end caps Schedule 40 PVC
- 3 600 GPM Bilge Pump Cartridges
- 3 Master Airscrew Direct Drive Prop Adapter Kits
- 3 Plastic Muffin Fan Blades
- 3 30' lengths of 18 gauge speaker wire
- 1 10' length of 18 gauge speaker wire
- 1 16 oz clear plastic container w/ plastic screw on lid
- 1 ½" male adapter Schedule 40 PVC
- 1 ½" conduit locknut
- 3 dpdt 3 amp switches center off (moment) on-off-on
Optional: Substitute 1 dpdt switch center off – on-off-on (non moment) for one of the moment switches. This will allow easier operation, keeping the ROV submerged.
- 18 Molex wire connectors for AWG 22-18 wire
- 9 4" lengths of 18 gauge red wire
- 6 4" lengths of 18 gauge green wire
- 3 4" lengths of 18 gauge black wire
- 2 Ring Crimp Terminals – one red, one black for 18 gauge wire
- 3 1 ½" Plastic Conduit Clamps
- 6 1 ¼" machine screws with nuts and washers
- 3 30" lengths of Temflex Rubber Tape
- 1 100 pack of 4" plastic tie wraps
- 1 20" length of black electrical tape
- 4 14" plastic tie wraps
- 2 Wire Nuts – Ideal #30-072
- 1 3/16" shrink wrap (I get one black, one yellow)
- 1 3/32" shrink wrap (I get one green, red, and black)
- 1 Silver Permanent Sharpie Marker

Tools List

1. Hack Saw or Circular Saw to cut PVC pieces
 - a. Power miter saw (best, if available)
2. Power Drill
 - a. Drill press (best, if available)
3. Drill bits – 3/8" wood bit, 13/16" wood bit
4. Wire cutter (diagonals)
5. Wire stripper/crimper
6. Heat Gun
7. Allen wrench (2) one for prop adapter set screw and one for hub
8. Tape Measure
9. 12" Ruler
10. Permanent magic marker – fine-tip ("Sharpie")