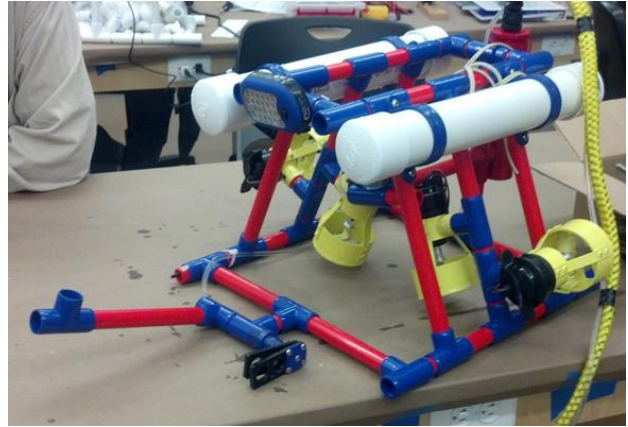


## MATE Center TriggerFish ROV Kit - \$500



*TriggerFish ROV with control box.*



*TriggerFish ROV with vectored thrusters.*

The TriggerFish ROV kit uses four bidirectional motor controllers and 2 joysticks for precision navigation. The ROV system is light and highly portable and includes a wide angle camera (170°) with high resolution 7" monitor. Although sensors (e.g. lights, temperature) and hydraulics tools are not included, they can easily be added to the ROV. The ROV system comes with a cigarette light adapter and can be powered off of most 12 volt supplies (e.g. <http://www.harborfreight.com/12-volt-jump-start-and-power-supply-38391.html>)

### **What is included:**

1. Three Cables: 10 meters each of power, video, and Cat 5 cable
2. K166 bi-directional motor controllers (4)
3. Joysticks (2)
4. Camera that will need to be waterproofed (epoxy not included)
5. 7" monitor
6. 500 GPH bilge pump motor cartridges (4)
7. Camera Filter kit (ferrite core, diode, capacitor, wire)
8. Substitute resistors for K166: 470 Ohm (4) and 3.9 K Ohm (4)
9. Box for housing controls with o-rig seal and latches
10. Heat shrink wrap: one package, assorted sizes
11. Wire for the joysticks
12. Bi-polar LEDs (4)
13. 330 Ohm ½ watt resistors (8)
14. Red LED (1)
15. Terminal Strip
16. Self-Adhesive Cable Tie Mounts (15)
17. Screws and nuts for control box (30)
18. Cigarette power adapter with on-off switch (1)
19. Slow Blow 15 amp glass fuse (2)
20. Power cord ( 5m)
21. Power cord stress relief connector (2)
22. Tether strain relief (2)

23. Octura Propellers (4)
24. Master Airscrews (4)
25. Thruster Mounts (4)
26. Tether housing mounting screw (1) and nut (2)

**What is not included:** *[Everything can be purchased at Home Depot except items #7] These items will cost between \$30 and \$60 depending upon what you choose.]*

1. Hot glue (waterproofing connections)
2. Solder
3. Loctite or JB Weld (for attaching propellers)
4. PVC about 15 feet of ½", 4 feet of 2" PVC or ABS plus end caps and maybe 30 connectors ~ \$15 (if you would like to order colored PVC, we ordered it from Simplified Building Concepts. It is about \$1/foot, connectors are expensive. See <http://www.simplifiedbuilding.com/blog/color-furniture-grade-pvc-fittings-now-available/> It is a special order. Allow extra time and patience if you order colored PVC.
5. If you chose to order colored PVC and connectors you will want sheet metal screws to hold the frame together. The colored PVC connections are a little loose. [Large Diameter (truss) Head Screw For Sheet Metal, 18-8 SS, Phillips, No. 6 Size, 1/4" Length]
6. Ballast. We used stainless steel threaded rod (SKU # 286884). This is an expensive option but will not rust. You could spend \$25 on this. But there are many other options.
7. *Envirotex Lite (epoxy for waterproofing cameras) [Amazon and many hobby and craft shops carry this] Plan on about \$4 per ROV camera)*
8. Brackets to hold PVC ballast if you use 2" PVC for buoyancy (you can buy them at Home Depot - SKU # 181747). The come in packages of 5. The 5<sup>th</sup> bracket can be used to secure the tether housing to the ROV.
9. Assorted cable ties (about 12 small ones are needed to secure cables in the control box, others and different sizes may be needed to secure other items)
10. No hydraulic tools for ROV are included such as air tubing, syringes, etc.
11. No sensors: temperature or lights (however we include the cable in the kit to make it easy to add them to the ROV)
12. No Shrouds for motors are included (we used NDS 4 in. Styrene Drain Grate Model # 9110 from Home Depot in the summer institute)
13. Rope for tether (Everbilt 3/8 in. x 100 ft. Hollow-Braid Poly Rope in Yellow Model # 14124 – Home Depot. However you might want to look at water ski ropes, they might be better.)
14. Tether housing on ROV (1 ¼" ABS or PVC with an ABS 1 1/4" SLIP to 1/2" threaded adapter) both can be found at Home Depot.

**Tools are not included but you will need:**

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|-----------------------------|---|
| 1. Hot glue gun             | 8. Multimeter   |
| 2. Soldering iron           | 9. PVC cutter   |
| 3. Heat gun for shrink wrap | 10. Scissors  |
| 4. Wire strippers           | 11. Drill and drill bits  |
| 5. Wire cutters             | 12. If you use threaded rod, a tool to cut it and file the edges. |
| 6. Solder sucker            | 13. Oscilloscope (optional)                                       |
| 7. Assorted screwdrivers    |   |