pump_unit

The Pump Unit consists of a Blue Robotics M200 subsea motor and 3D printed pump components (Pump Base, Pump Housing, Impeller, and Pump Head. The motor is powered by the 14-cell battery pack and controlled by Teensy via the Blue Robotics Basic ESC, all of which are contained within the watertight enclosure. A Blue Robotics WetLink Penetrator links the external motor with the internal power source. The Pump Unit is secured to the Frame Base Plate with four M4 stainless steel screws.

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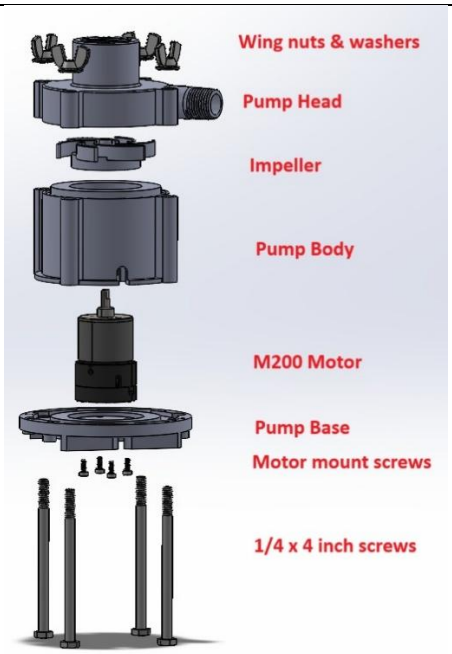
<td> 
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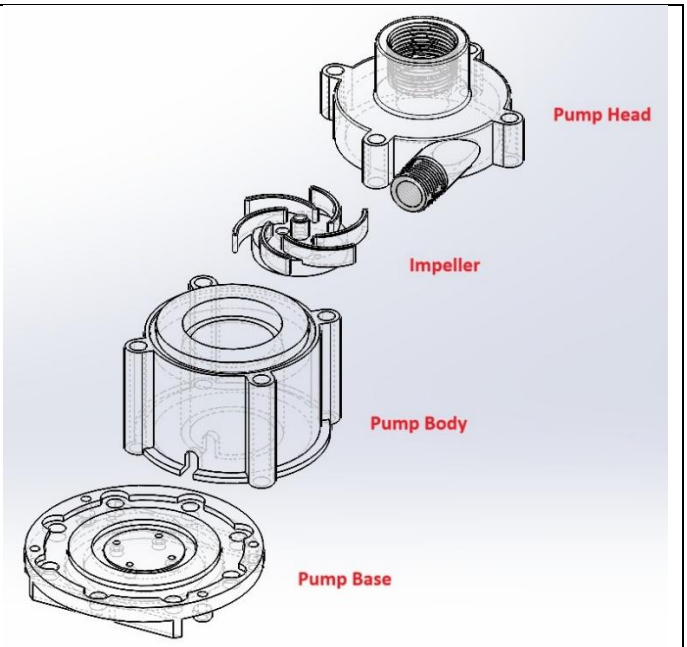
<td> 
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<td>Pump Unit - exploded view
(Not shown: power cord, strainer, impeller screws, & O-ring)</td>
<td>Pump Unit 3D printed parts</td>
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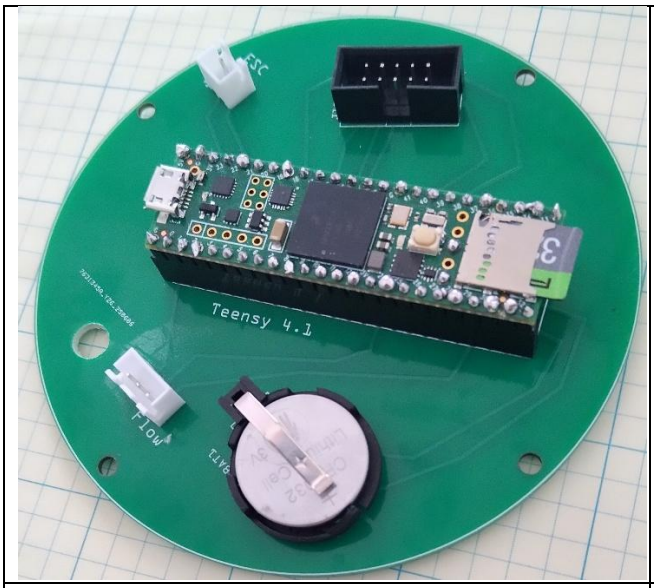
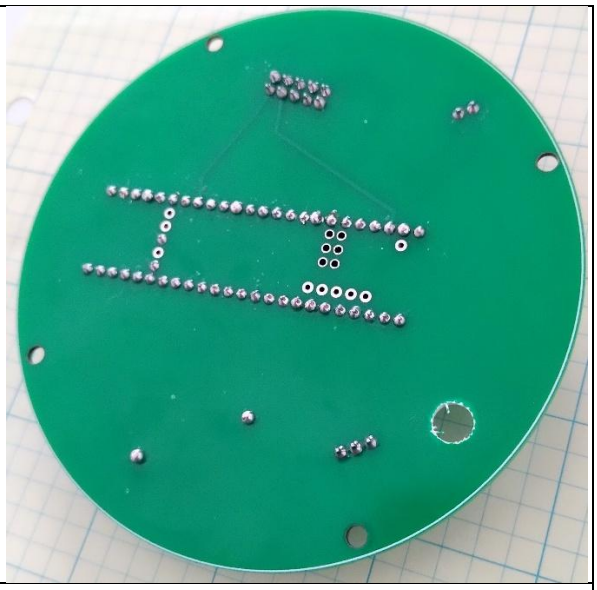
Bill of Materials (BOM)				
#	*Description*	*Cost*	*Qty*	*Supplier*
1	M200 subsea motor with 1m cable	$175.00	1	Blue Robotics
3	WetLink Penetrator, M10-6.5mm-LC	$12.00	1	Blue Robotics
4	Gold RC bullet banana connectors with heat shrink tubeing, male, 3.5 mm	$0.15	3	Amazon.com
5	Pump Base		1	3D printed (resin)
6	Pump Body		1	3D printed (resin)
7	Impeller		1	3D printed (resin)
8	Pump Head		1	3D printed (resin)
9	Plastic barbed tube fitting, straight adapter, for ½-inch tube I.D., ½-inch NPT female	$1.28	1	McMaster Carr
10	O-ring, Buna-N rubber, 2 7/8 x 3 1/16 in (ID x OD)	$0.26	1	McMaster Carr
11	M3 x 0.5mm x 8mm stainless steel, socket head screws	$0.055	6	McMaster Carr
12	¼”-20 stainless steel screw, 4-inch length	$0.91	4	McMaster Carr
13	¼”-20 stainless steel wingnut	$1.21	4	McMaster Carr
14	¼” stainless steel flat washer	$0.055	4	McMaster Carr
15	1-inch threaded, suction screen strainer	$4.85	1	Amazon.com
	Total	$201.59		

Assembly *(approximate time: 20 minutes):*

1. Assemble the WetLink Penetrator with the motor cable following the instructions on the Blue Robotics website.
2. Solder the banana connectors to the three conductors of the motor cable. Then apply heat shrink tubing to the connections.
3. Attach the motor to Pump Base with four M3 x 8mm screws.
4. Place the Pump Body over the motor.
5. Attach impeller to motor with two M3 x 8mm screws.
6. Insert O-ring into groove in Pump Body.
7. Seat the Pump Head over the Impeller and onto Pump Body.
8. Secure Pump Head to Pump Base with four sets of ¼ inch screws, washers, and wingnuts.

	
Assembled PCB: Mainboard (front)	Assembled PCB: Mainboard (back)