filter_holder_assembly

The Pump Unit consists of a Blue Robotics M200 subsea motor and the 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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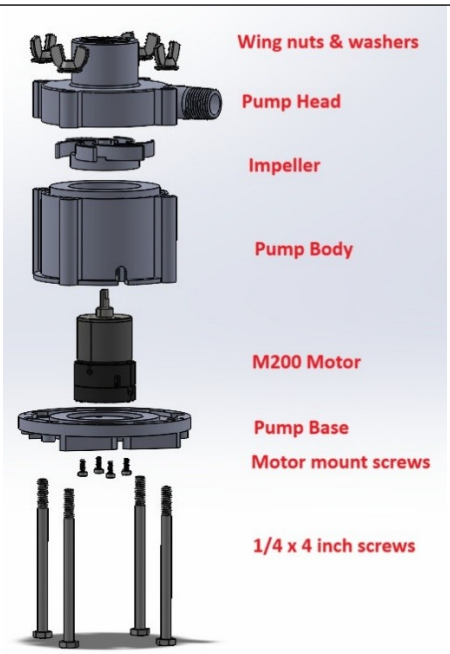
<td> 
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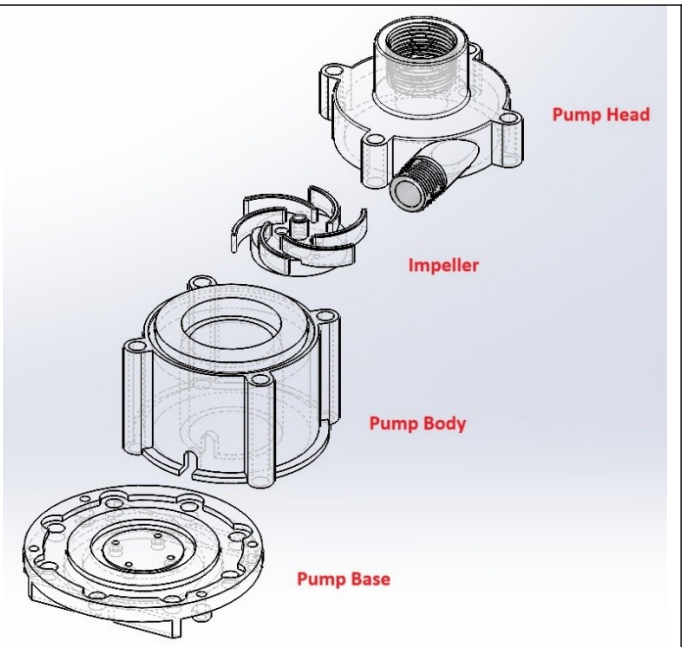
<td> 
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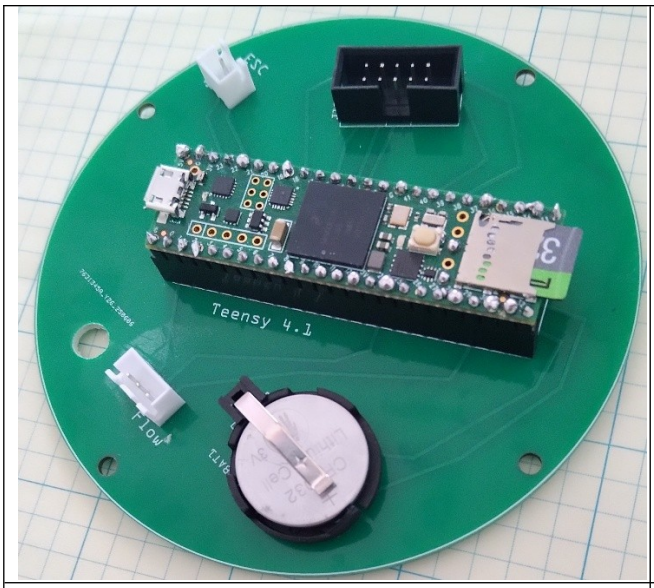
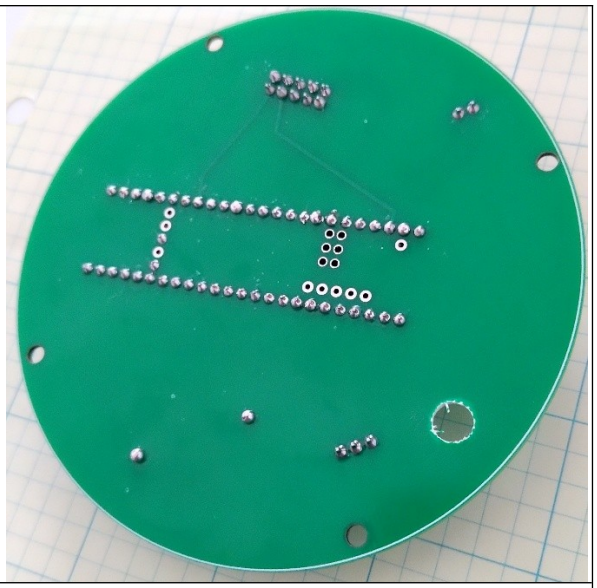
<tr>
<td>Pump Unit - exploded view
(Not shown: power cord, strainer, impeller screws, & O-ring)</td>
<td>Pump Unit 3D printed parts</td>
</tr>
</table>

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.

	Bill of Materials (BOM)				
#	*Description*	*Unit Cost*	*Qty*		*Supplier*
1	Filter holder, Pentair Pentek Traditional Slim Line Series #5, 3/8-inch NPT	$27.63	3		Amazon.com
3	Filter holder mount		3		3D printed (PETG)
4	Low flow water meter, WM-PD Series, ½-inch NPT	$63.00	1		Assured Automation
5	Bracket to prevent flow meter rotation		1		3D printed (PETG)
6	Self-tapping slotted thread inserts, M4 x 8mm, stainless steel	$0.36	12		Amazon.com
7	Vinyl tubing, ½-inch I.D. x ¾-inch O.D.		1		Amazon.com
8	Water filter cartridge, 5 x 2.5 inch, 1 micron pore size, polypropylene	$1.68	1		Amazon.com
9	Mini reactor refillable filter cartridge, 5-inch	$10.79	2		Bulk Reef Supply
10	Plastic barbed tube fitting, elbow adapter, for ½-inch tube I.D., 3/8-inch NPT male	$0.98	1		McMaster Carr
11	Plastic barbed tube fitting, straight adapter, for ½-inch tube I.D., 3/8-inch NPT male	$0.69	4		McMaster Carr
12	Threaded pipe fitting, straight connector, 3/8-inch NPT male, stainless-steel	$6.70	1		McMaster Carr
13	Threaded pipe fitting, elbow reducer, ½-inch x 3/8-inch NPT female, stainless steel	$7.42	1		McMaster Carr
14	1-inch threaded, suction screen strainer	$4.85	1		Amazon.com
	Total	$201.59			

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