SARbot™

Best Practices

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HYBRIDROBOTICS

Best Practices

- Cover the Tether with a floor mat or tape to avoid tripping over the tether during dives.
- Preform Seal Maintenance Every 24 Hours of Operation OR Every 2 Months
    - o Grease all seals
    - o Visually inspect seals on the electronic tube
    - o Ensure all seals are not cracked or sliced.
    - o If damage is found, replace seals.
- Replace Vent Plug Seals Every 100 Hours of Operation OR Every 6 Months
- Replace Pressure Relief Valve every 3 years or 500 Dives
- Perform Vacuum Check Before Flying ROV For the First Time or After Changing Anything That Can Compromise a Seal
    - o Reference Vacuum Check Instructions
- Perform Pre-Dive Checklist Before Each Flight
    - o Reference Standard Pre-Dive Checklist
- Perform Comprehensive Checklist After Extensive Travel (by airplane or car/boat for 1+ hours) or Maintenance (removing electronics tube, exchanging penetrators, replacing seals)
    - o Reference Comprehensive Pre-Dive Checklist
- Practice Good Tether Management
    - o Keep tether away from propellers or jets if operating on/ near a boat
    - o Keep tether away from sharp objects (coral, rocks, etc)
    - o Do not deploy too much tether. Excess tether in the water will add drag to ROV.
    - o Do not step on tether.
- When Storing Vehicle Between Dives 15+ Minutes Apart, Keep ROV in Shaded Area or Cover With Towel
- If Deploying in Saltwater, Thoroughly Rinse Vehicle After Mission
- After Mission, Clean Sand and Seaweed From Thrusters, if needed.

Adopted From Blue Robotics Operation Guide

Dive Log

TIME	OPERATION

Standard Pre-Dive Checklist

- Check that the ROV has connected to QGroundControl.
- Gently attempt to twist the ballast weights clockwise.
- Pull on the side panels and attempt to twist the frame.
- Pull on the cable bundles going into the 14 hole end cap.
- Pull on and twist the tether thimble.
- Attempt to loosen all of the penetrators by hand.
- Check that the vent plugs are installed.
- Push and twist the battery enclosure.
- Visually check that all screws holding the back end caps are installed and look tight.
- Pull on all of the thrusters.
- Grab and shake the fairings.
- Pull on the Lumens.
- Visually check that all screws holding the dome and front battery end cap are installed and look tight.
- Visually check the radial seals on the electronics and battery enclosure are lubricated with silicone grease and intact (not cracked or sliced).
- Put the ROV on the ground and make sure that people are clear of the thrusters.
- Check to make sure the camera tilt function and lights work. If they do not, please see the Troubleshooting section.
- Put the ROV in Manual Mode.
- Arm the ROV.
- Press the forward/reverse stick forward to check that the vectored thrusters are spinning freely. Do not run the thrusters for more than 30 seconds in air.
- Press the ascend/descend stick forward to check that the vertical thrusters are spinning freely. Do not run the thrusters for more than 30 seconds in air.
- Disarm the ROV

Comprehensive Pre-Dive Checklist

- Check that the ROV has connected to QGroundControl.
- Tighten the M5x16 screws that hold the frame to the center and bottom panels using the short part of the M3 hex key as the handle or an M3 hex driver.
- Tighten the M3x12 screws that hold the back end caps to the flange seals using the M2.5 hex driver.
- Tighten the M3x16 screws that hold the clips to the electronics enclosure.
- Tighten the M3x12 screws that hold the dome and the front battery end cap to the flange seals using the M2.5 hex driver.
- Gently attempt to twist the ballast weights clockwise.
- Pull on the side panels and attempt to twist the frame.
- Pull on the cable bundles going into the 14 hole end cap.
- Pull on and twist the tether thimble.
- Attempt to loosen all the penetrators by hand.
- Check that the vent plugs are installed.
- Push and twist the battery enclosure.
- Visually check that all screws holding the back end caps are installed and look tight.
- Pull on all the thrusters.
- Grab and gently shake the fairings.
- Pull on the lights (Lumens).
- Visually check that all screws holding the dome and front battery end cap are installed and look tight.
- Visually check the radial seals on the electronics and battery enclosure are lubricated with silicone grease and intact (not cracked or sliced).
- Put the ROV on the ground and make sure that people are clear of the thrusters.
- Check to make sure the camera tilt function and lights work. If they do not, please see the Basic Troubleshooting Guide.
- Put the ROV in Manual Mode.
- Arm the ROV.
- Press the forward/reverse stick forward to check that the vectored thrusters are spinning freely.
- Press the ascend/descend stick forward to check that the vertical thrusters are spinning freely.
- Disarm the ROV.

Vacuum Check Instructions

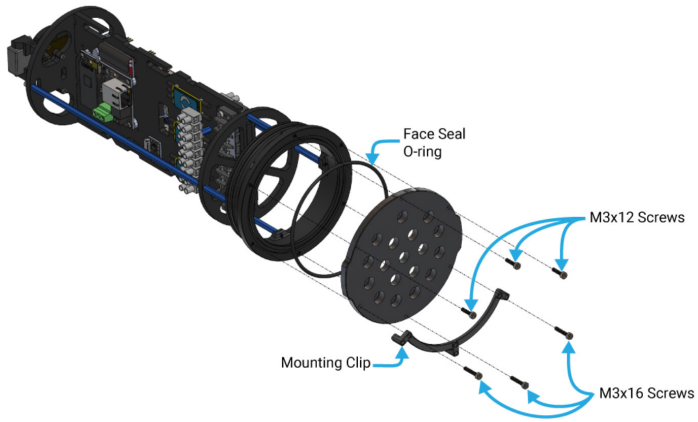
1. Remove the vent/pressure relief plugs from both the electronics and Vehicle Power Supply/Battery.
2. Install one of the vacuum plugs on the included tee in the electronics enclosure and the other in the Vehicle Power Supply/Battery.
3. Pump until the gauge reads 10 in. Hg [34 kPa] vacuum.
4. Let the ROV and pump sit for 10 minutes.
5. If the gauge still reads 10 in. Hg [31 kPa] vacuum after 10 minutes, your seals are acceptable.

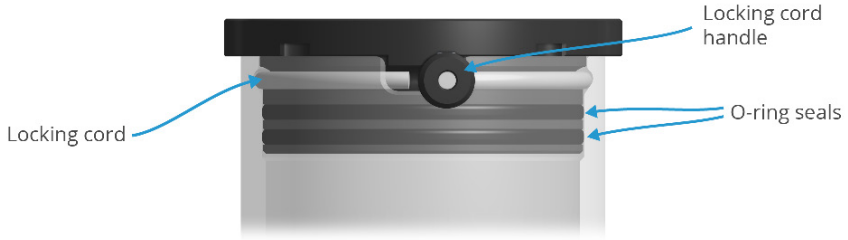
If the gauge reads below 10 in. Hg [31 kPa] vacuum after 10 minutes, you should check the following:

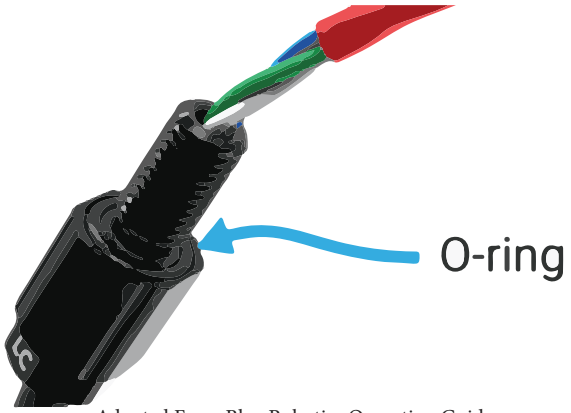
1. Make sure that the M3 screws on the front and back end caps of the electronics encloure using the M2.5 hex driver. If you can tighten one or more, attempt the vacuum test again.
2. Make sure that the penetrators on the electronics enclosure are fully tightened. Check by attempting to loosen by hand. If you can tighten one or more, attempt the vacuum test again.
3. Make sure that all the O-rings are installed in the penetrators. If any are missing, install then attempt the vacuum test again.
4. Check that the Face seal O-rings and radial O-rings are installed in the electronics enclosures and in good condition. If you find a damaged or missing O-ring, install, and attempt the vacuum test again.

Adopted From Blue Robotics Operation Guide

Location of Seals







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