

3 Pre Dive Check List

Testing the System

1. Verify all thrusters respond to the controller inputs as expected.
2. Verify main camera tilts all the way up and all the way down.
3. Verify main camera focus - in and out.
4. Verify LED light function. Both LED modules dim until off and increase until full illumination.
5. Deploy vehicle and adjust ballast.
NOTE: It is okay to lower the vehicle using the tether.

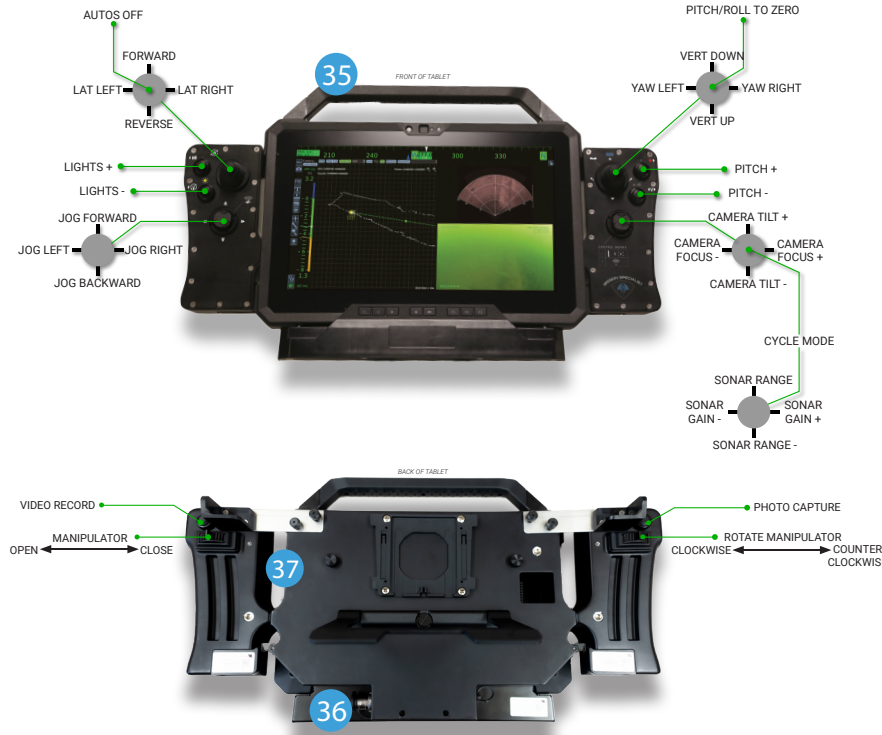
To ballast the ROV: Add or remove ballast weights **20** until the ROV is slightly positively buoyant. Typically, this is achieved when the top of the float block is even with the water surface

6. Enable auto controls (they will turn green when enabled).



7. Begin operations and recording.

4 Expeditionary Splashproof Controller



5 Recovering the System Post Dive Check List

1. Navigate the vehicle back to the deployment site
2. Disable auto controls and stop recording.

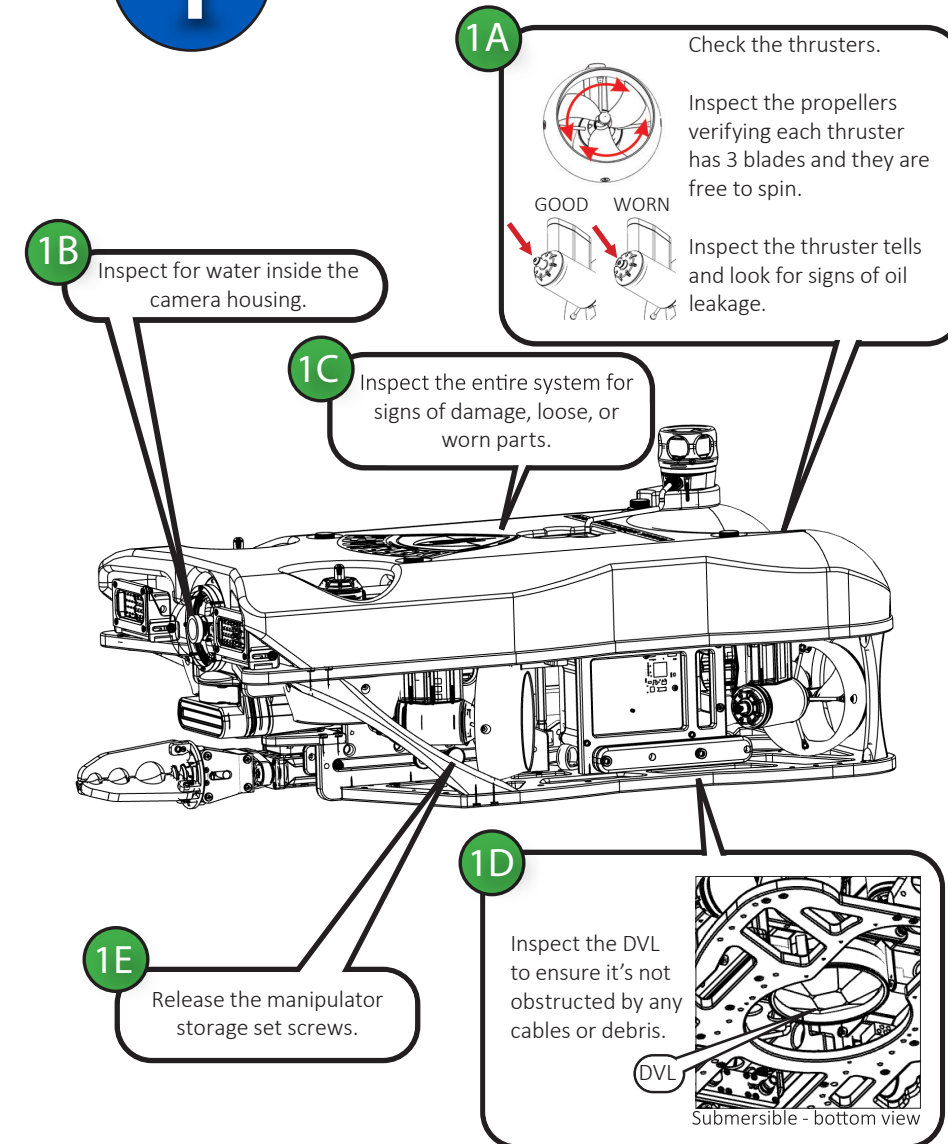


3. Retrieve the ROV.
4. Close the Greensea EOD Workspace by clicking on the red X on the top right corner of the EOD Workspace window.
5. Press the ROV Mains Power Switch.
6. Turn off the Workhorse Splashproof Controller using the Power Switch.
7. Secure the ROV and disconnect the tether.
8. Disconnect the tether from the Workhorse Splashproof Controller.
9. Replace the tether caps on all tether connections.
10. Visually inspect the system for damage that might have occurred during your operation.
11. Rinse the salt water from the system and soak the submersible for 30 minutes in fresh water.
12. Return all components to their storage cases after they have dried.



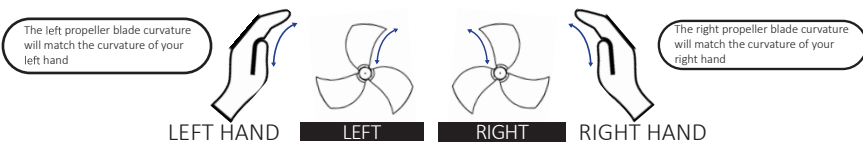
Quick Reference Guide

1 Visually Inspect the System

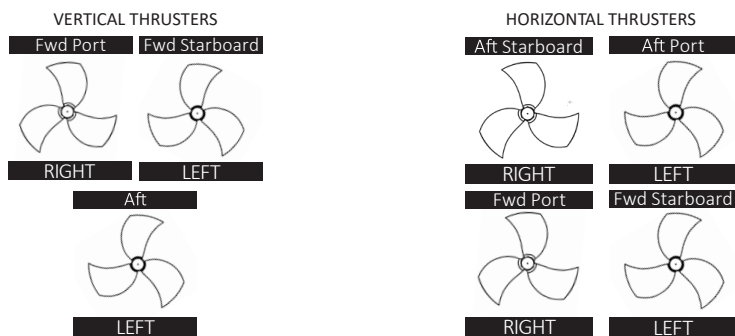


Thruster / Propeller Reference

Propeller Identification
All propellers are pictured facing the side with the nut



Correct Propeller Type for each Location



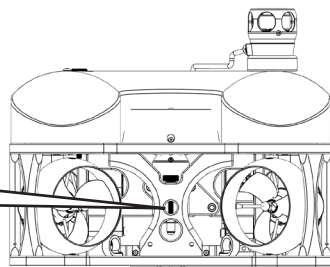
2 Connecting & Powering On

- WARNING:** Do not connect or disconnect cables while system is powered.
- CAUTION:** ALL ROV submerged connections must be terminated.
- CAUTION:** Follow the steps in order when starting the system.

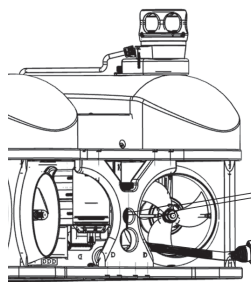
Connecting the System

1. Remove the tether caps and connect the socket end of the tether and strain relief to the vehicle - lubricate if necessary. See figures A & B.
2. If not already connected, connect the male end of the double ended connector **34A** to the Workhorse Splashproof Controller **34**.
3. Connect the plug end of the tether to the socket end of the double ended connector. **34B**
4. Remove the ROV float block bolts and remove the float block.
5. Inspect all 5-pin and 9-pin connectors to ensure they are seated and then replace and secure the float block. See figure 2C. CAUTION: If the connectors are not fully seated, clean, lubricate, and reseal them.
6. Extend the manipulator by loosening the two manipulator storage bolts. **5**
CAUTION: The manipulator is spring loaded. Carefully guide the manipulator when it is released from the two manipulator storage bolts.
7. Connect the end of the Fischer cable **24** labeled "To Tablet" into the Expeditionary Splashproof Controller **36** and then connect the remaining end of the Fischer cable into the port labeled "HMI" on the Workhorse Splashproof Controller. **31**
8. Confirm that the ROV POWER MAINS labeled "400v" is fully depressed. **33**
9. Connect the IP65 Power Cord **25** to the Workhorse Splashproof Controller **26** and turn the connector clockwise until it clicks into place. Connect the remaining end of the IP65 Power Cord to a power source.
10. Turn on the Workhorse Splashproof Controller. **27**
11. Turn on the Expeditionary Splashproof Controller. **37**
12. Turn on the ROV POWER MAINS. **33**
Twist the Red Power Mains button clockwise.
13. Double tap on the EOD Workspace icon to launch.

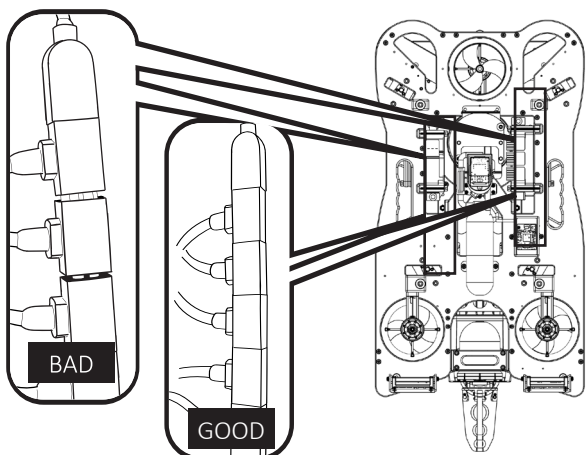
2A Attach the strain relief bolt through the eye hole of the strain relief cable.



2B Test the strain relief to verify the stress is on the cable not the tether or connector.



2C If the connectors are spaced, do not place the system in water. Clean, lubricate and reseal the connectors.



Verify System Connectivity

14. Heading - The compass bar will turn green when connected.
15. Depth - The Depth and Altitude Tracker will turn green when connected.
16. Sonar - Imagery will display in the sonar window when the sonar has connected.
17. Video - Imagery will appear in the video window when the camera has connected.

USBL Installation

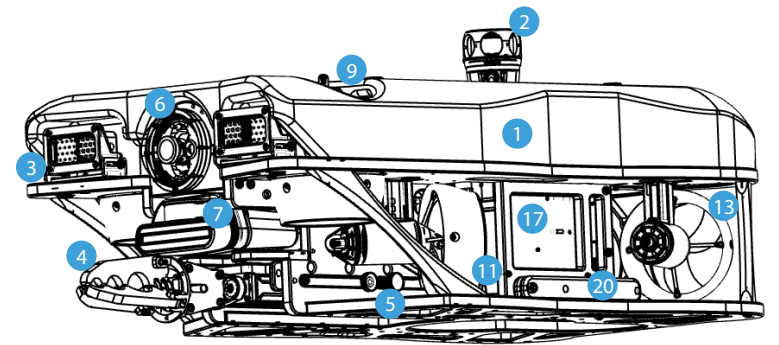
- NOTE:** The USBL is an optional accessory.
- NOTE:** If not using the USBL, make sure the ROV connector port is sealed.

18. Remove the float block.
19. Feed the USBL accessory cable through the GPS hole in the float block.
20. Connect the accessory cable's 9-pin connector to port 6 on the communications module.
21. Replace the float block and connect the remaining end of the accessory cable to the USBL beacon.
22. Attach the USBL beacon to either the port or starboard side on the aft end of float block by lining the notches on the float block with the USBL Beacon mount.
23. Connect the USBL Topside Station to the port labeled "USBL" on the Workhorse Splashproof Controller. Turn the connector cap clockwise until it clicks into place.
24. Connect the Topside GPS Antenna to one of the Auxiliary USB ports labeled "AUX USB" on the Workhorse Splashproof Controller. Turn the connector cap clockwise until it clicks into place.
25. Deploy the USBL Topside Station in the water.

Workhorse Splashproof Controller



The Defender System



1. Float part number 70779
2. USBL Beacon part number 70693
3. LED Lighting Module part number 70023 (QTY 2)
4. Rotating Manipulator part number 70824
5. Manipulator Storage Set Screw(One on each side)
6. HD Camera Module part number 70044
7. Multibeam 750D Sonar part number 71047
8. Vertical Rear Thruster part number 70503
9. Vertical Port Thruster part number 70503
10. Vertical Starboard Thruster part number 70503
11. Forward Port Thruster part number 70503
12. Forward Starboard Thruster part number 70503
13. Rear Port Thruster part number 70503
14. Rear Starboard Thruster part number 70503
15. Submersible GPS Module part number 70809
16. Power Module part number 70160
17. Communications Module part number 70191
18. AHRS Module part number 70273
19. Navigation DVL part number 71044
20. Ballast part number 71044
21. Serial Number Plate
22. Float Block Screw
23. Workhorse Splashproof Controller part number 72847
24. Fischer Cable
25. IP65 Power Cord
26. IP65 Power Cord Connection
27. Workhorse Splashproof Controller Power On|Off Switch
28. USBL Connector Port
29. Auxiliary Ethernet Port
30. Auxiliary USB port
31. Workhorse Splashproof Controller Fischer Cable Connection
32. Line Insulation Monitor
33. ROV Power Mains/Emergency Stop
34. Tether Whip Connection
- 34A-34B. Tether Double Ended Connector
35. Expeditionary Splashproof Controller part number 73424
36. Expeditionary Splashproof Controller Fischer Cable Connection
37. Expeditionary Splashproof Controller On|Off Button
38. Compass Bar
39. Depth and Altitude Tracker
40. Sonar feed
41. Video feed
42. Record button

