



<b>Tasks</b>	<b>Hazards</b>	<b>Controls</b>
<b>Construction</b>		
Machining	Burn	Don't touch newly machined, drilled, or cut pieces.
	Cut	Don't touch sharp freshly machined edges or cutting tools, deburr all edges or use chamfers
	Entanglement	Tie up long hair, remove jewelry and watches, and don't wear loose clothing while operating machine tools
	Crushing	Keep appendages out of gantries and other moving parts while machines are active
	Projectiles	Wear safety glasses at all times while using machine tools
	Bloodstream nitrogen contamination	Do not put hands in waterjet tank while machine is active
Assembly	Pinch	Avoid pinch points, clearly communicate while working with others
	Crushing	Wear protective footwear to avoid injury due to dropping parts
Soldering	Burn	Only solder with proper training, don't touch freshly soldered parts. Wear gloves or use appropriate handling tools while installing heat sink inserts.
	Contact with lead	Use lead-free solder or avoid contact with the leaded solder and wash hands after soldering
	Fume Inhalation	Use proper ventilation while soldering, painting, and powdercoating
Welding	Burning	Wear protective jacket and fully cover skin while welding
	Eye damage	Wear protective welding helmet
	Electrocution	Ensure that workpiece is grounded
	Crushing	Beware of potential to drop heavy parts, wear protective foot equipment as necessary
	Fume inhalation	Use proper ventilation; ensure that fume hood is active while welding



Operation		
Launch/Recovery	Tripping	Wear non-slip shoes, ensure tether does not become caught or is left with too much slack
	Drowning	Wear a lifejacket or ensure that lifeguard is on duty
	Back injury/other lifting injuries	Lift with your legs, not back. Launch and recover ROV with two people if necessary.
	Cut/pinch hazards from thrusters	Robot is disarmed when people working on it and only re-armed after diver or handler confirms all is clear and commands ARM to the pilot.
Operation	Pinching/ crushing form pneumatics	Clearly announce yourself before handling the ROV and give ENGAGE/DISANGE commands for pneumatics.
	Pneumatics explosion	Set tank regulator to 100 psi and operating pressure regulator to 40 psi. Verify pressure ratings and inspection of components. Monitor pressure in tank at startup and use dump valve if necessary.
	Electrocution	Visually inspect for wire problems or water in the ebay before launch and during each period in which the ROV surfaces
	Tripping	Wear non-slip shoes, ensure tether does not become caught or is left with too much slack
	Drowning	Wear a lifejacket or ensure that lifeguard is on duty
	ROV interfering with diver in pool	Person on surface managing tether is responsible for ensuring diver's safety. If diver is too close to the ROV or on a collision course with the robot or the tether, either the diver or tether handler can command DISARM to stop and disarm the robot. In case of emergency, operator or tether handler can push the E-stop button.
	Tether entanglement with diver in pool	Tether handler is responsible for ensuring diver's safety in regards to the ROV and tether. Handler must ensure the tether is not in the way of the diver and warn the diver or move the tether accordingly. Either the diver or tether handler can command DISARM to stop and disarm the robot. In case of emergency, operator or tether handler can push the E-stop button.