

Port Electrical Mechanic
Task List (2016)

Electrical Maintenance and Repair

1. Replaces and adjusts electrical contacts, relays, and solid state components using hand tools such as needle nose pliers, screwdrivers, and electrical test equipment such as volt-ohm-meters for the purposes of repairing electrical and/or electronic components of marine electrical and electronic equipment.
2. Conducts insulation resistance testing by performing high potential testing and by using various electrical instruments up to 34,500 volts such as multi-meters and meggers for the purposes of determining dielectric strength and/or bad resistance.
3. Cleans de-energized high voltage switchgear up to 34,500 volts such as transformers, fuses, and busses using cloths and solvents in order to ensure that components are operating efficiently and quietly without shorts or grounds.
4. Repairs marine electrical equipment such as container cranes, high mast poles, and Badger Avenue bridge by performing motor brush inspections, insulation tests, and electronic drive repairs to ensure equipment is operating efficiently and effectively.
5. Performs high voltage shore connections for alternative marine power by physically connecting ships to shore power.
6. Repairs and replaces electric motors by stoning commutators, cleaning motors, and replacing motor brushes and ensuring that motor brushes are properly set to commutators in electrical motors for the purposes of preventive motor maintenance.
7. Repairs and replaces electric motors by replacing motor bearings by the use of bearing removal and installation tools for the purposes of ensuring smooth operation of the armature shaft.
8. Repairs and replaces electric motors by conducting diagnostic tests on motor windings according to manufacturer's specifications using instruments such as multi-meters, oscilloscopes, meggers, and clamp-on meters for the purposes of determining if there are grounds, short circuits, high resistance joints, wrong connections, or wrong polarity.

Mechanical Maintenance and Repair

9. Performs visual inspections of marine structural components such as lifting beam, sheaves, and wheel fenders by physically climbing on or walking around a marine structure up to 240 feet to determine if repairs are needed.
10. Visually inspects marine equipment couplings for the purposes of determining if there is excessive wear and misalignment.
11. Conducts diagnostic tests and repairs on marine hydraulic systems using pressure gages, analog meters, and digital meters to check pressure in cases of component failure and/or fluid leakage for the purposes of determining if the system is working correctly.
12. Reads hydraulic schematics to determine the manufacturer's specifications of marine hydraulic systems for the purposes of conducting diagnostic tests and repairing hydraulic systems.
13. Fabricates parts for marine equipment repair work using machine shop tools and precision hand tools such as lathes and drill presses for the purposes of efficiently and precisely replacing malfunctioning marine mechanical parts.

Gear Box Maintenance

14. Disassembles gear box using screwdrivers, impact wrenches, pliers, hoists, and cranes for inspection and repair purposes.
15. Visually inspects inside of gear box to check for excessive wear patterns, fit and tolerance, and condition of meshes.
16. Lubricates open gears by using grease, grease gun, and by hand application for the purposes of ensuring smooth operation.
17. Reassembles gear box by setting back lash and resealing box using dial indicators, feeler gages, shims, and jacking screws pliers for the purposes of proper shaft alignment.
18. Repairs cracked welds on marine equipment using welding processes such as arc, mig and oxy-acetylene in order to restore marine equipment to good working condition.
19. Visually inspects rope, multiple-strand cable, sockets, and cable in order to check for excessive wear, breaks, and broken strands.

20. Writes reports such as daily maintenance logs, time sheets, and high voltage shore connection for the purposes of informing supervisors and other personnel of previous and current marine equipment maintenance and repair work.
21. Utilizes required safety and personal protective equipment such as safety gloves and hard hats when working around marine equipment to ensure that work is being performed safely.
22. Diagnoses damaged electronic components such as condensers, metal oxide varistors, and thyristors to make necessary repairs.