

**HEAVY DUTY EQUIPMENT MECHANIC (3743)
TASK LIST – 2016**

Inspection and Diagnosis

1. Reads operator's written trouble reports and memos of equipment and vehicular malfunction (e.g., mechanical, electrical), electronic and hard copy manuals of the equipment or vehicle, and written notes taken after discussing malfunctions with the operator in order to determine cause of malfunctions.
2. Identifies cause of abnormal engine noises using stethoscopes and electronic diagnostic tools, such as a laptop and scan tools, in order to determine cause of malfunctions.
3. Tests wiring, ignition circuits, and electrical alternating and/or direct (AC/DC) components such as battery, electrical control modules, coils, starters, alternators, and distributors, and repairs faulty electrical circuits using tools such as digital volt ohmmeters (DVOM), analog volt ohmmeters, tachometers, battery and starter testers, soldering guns, test lights, and basic hand tools such as wrenches and screwdrivers in order to determine cause of malfunctions and ensure proper operation of the unit.
4. Inspects, tests, and diagnoses equipment used in light and heavy construction, road maintenance, firefighting, marine, aerial, and/or other specialized areas such as bucket trucks, ladder trucks, man baskets, and other man-lift equipment, by performing operational and/or visual tests recommended by the original equipment manufacturer (OEM) and the Division of Occupational Safety and Health (Cal/OSHA), including di-electric, proof, and visual tests, in order to determine cause of malfunctions.
5. Inspects gasoline fuel systems and their components including pumps, filters, lines, fittings, fuel injection systems, and computer controlled carburetors, as well as diesel fuel systems and their components including diesel injectors and pumps, filters, and pick up and return lines using pressure and vacuum gauges, volume containers, exhaust gas analyzers, road tests, electronic diagnostic tools (e.g. laptops, system databases, and scan tools), opacity meters, and pressure/flow gauges to determine cause of malfunctions.
6. Inspects compressed natural gas (CNG), liquefied natural gas (LNG), and other alternate fuel systems by performing tank inspections of fuel system components such as filters, pumps, injections, lines, and pressure safety devices using electronic diagnostic tools and personal protective equipment (PPE), such as splash shields and safety gloves, in order to determine cause of malfunctions.
7. Inspects exhaust systems, particulate filter devices, and emission control components, such as exhaust gas recirculation (EGR) valves, turbo wastegates,

O2 sensors, blown gaskets, plug filters, and damaged or hit filters for leaks, damage, restricted flow, contamination, excessive heat, and exhaust back pressure using scan tools, manometers, pyrometers, opacity meters, vacuum gauges, exhaust gas analyzers, and department software to determine cause of malfunctions.

8. Inspects, repairs, replaces, and recharges air conditioning and filtration components and controls such as air filters, drain valves, door motors, and vents, using thermometers, leak detectors, air conditioning service machines/stations, vacuum pumps, and basic hand tools such as wrenches and screwdrivers in order to determine cause of malfunctions and ensure proper operation of the unit.
9. Inspects, repairs, and replaces cooling and heating systems and components on car engines and/or the car itself, such as radiators, water pumps, hoses, oil coolers, and head gaskets, using thermometers, system pressure testers, pressure leak detectors, chemical block testers, and basic hand tools such as wrenches and screwdrivers to determine cause of malfunctions and restore units and components to proper operating condition.
10. Inspects tires and suspension components, such as kingpins, leaf springs, upper and lower control arms, steering shafts, and cross-over shafts, for wear and damage using tread depth gauges, tire pressure monitoring systems (TPMS), and visual inspection in order to determine if repair/replacement is necessary.
11. Inspects pins, bushings, sprockets, idlers, rollers, links or undercarriage and frame on track-type equipment, such as cranes, profilers, and pavers, using wear gauges and basic hand tools such as wrenches and screwdrivers in order to determine cause of malfunctions.
12. Inspects and diagnoses hydraulic systems and their components such as pumps, controls, cylinders, valves, hoses, reservoirs and filters by performing visual and operational tests using diagnostic equipment such as scan tools, department software, flowmeters, and pressure gauges to determine cause of malfunctions.
13. Inspects interiors and exteriors of vehicles including roll cages, dash, instruments, switches, seats and seat belts, glass, mirrors, decals, door fixtures, headliners, panels, mats, paint and body surfaces, windshield wipers, and safety warning devices such as the back-up alarm by performing tests such as, but not limited to, turning the key and/or ensuring that the instruments light up, and also inspects (visually) undercarriages for damage to frame, hoses, lines, front/rear suspensions, shocks, springs, and body parts using equipment such as flashlights in order to determine cause of malfunctions and repairs/and or replaces parts using basic hand or power tools to restore unit to proper operating condition.

14. Inspects, repairs, and/or replaces faulty emergency equipment such as red and amber lights, spotlights, sirens, power converters and other specialized equipment using test lights, DVOM's, soldering guns, and basic hand tools such as wrenches and screwdrivers in order to determine cause of malfunctions and restore unit to proper operating condition.
15. Inspects and repairs water pumping equipment components such as water discharge valves, transfer valves, pump relief valves, flow control valves, and seals using hand, power, and plumbing tools such as manometers, pressure gauges, and pipe and strap wrenches in order to determine cause of malfunctions and restore unit to proper operating condition.
16. Inspects and diagnoses air conditioner (AC) generator components including power systems, governors, controls, and voltage output using visual inspection, DVOM and/or analog volt-ohm meters, or load simulation devices to identify and determine cause(s) of defects.
17. Inspects and diagnoses gas, electric, power takeoff (PTO) driven, and diesel powered air compression equipment for overall output using pressure and flow gauges in order to identify and determine cause(s) of defects.

Maintenance and Repair

18. Tunes engine by replacing or repairing defective gasoline, alternative fuel, and diesel fuel system components such as injections, transfer pumps, fuel filters, lines and tanks, carburetors, and ignition system components using tachometers, vacuum and injector gauges, infrared analyzers, diagnostic scan tools, (OEM) software, and basic hand tools such as wrenches and screwdrivers to restore unit to proper operating condition.
19. Replenishes lubricants, fluid levels, coolants, and fuel products using hydrometers, hand and pneumatic lube guns and pumps, and basic hand tools such as wrenches and screwdrivers to ensure proper operation of the unit.
20. Repairs and/or replaces manual and power steering systems and their components, such as gearboxes, column shafts, hydraulic pumps, hoses, and fluids, using pressure and flow gauges, pullers, basic hand tools such as wrenches and screwdrivers, and basic power tools such as drills to restore unit to proper operating condition.
21. Adjusts, repairs and overhauls components of piston, rotary, screw-type stationary, and portable air compressors such as sensors, relays, couplings, and pumps using precision measurement tools (e.g., such as micrometers, bore gauges), precision fit & finish tools (e.g., files, scrapers, power tools, orifice

gauges), and basic hand tools such as wrenches and screwdrivers to ensure proper operation of the unit.

22. Fabricates and installs department-dependent special equipment and parts on vehicles and equipment, such as, brackets, shields, and blades, using basic hand and power shop tools such as metric and standard tools, bench grinders, drill presses, lathes, welding and soldering equipment, and pneumatic tools to ensure proper operation of the unit.
23. Repairs, replaces or adjusts all mechanical, hydraulic and air brake system components including shoes/pads, springs, rotors, drums, valves, wheel and master cylinders, linkages, compressors, governors, and hydraulic and air lines after having performed an inspection of the aforementioned components using micrometers, dial indicators, brake adjusting tools, pressure brake bleeders, vacuum and feeler gauges, lathes, and basic hand tools such as wrenches and screwdrivers to restore unit to proper operating condition.
24. Repairs, replaces, or rebuilds standard and/or automatic transmissions, clutch assemblies, hydrostatic drives, drive shafts, drive chains, marine drives, final drive assemblies, differentials, and other power train components after having performed an inspection of the aforementioned components using pressure gauges, transmission jacks, hoists or cranes, specialized tools such as clamps, spreaders, pinion jigs, hydraulic press, dial indicators, micrometers, and basic hand and power tools such as wrenches and screwdrivers to restore unit to proper operating condition.
25. Repairs or replaces batteries and charging and starting system components, such as starter relays, generators, alternators, distributors, magnetos, and carburetors, using basic hand tools and power tools such as wrenches and screwdrivers if defects were identified after performing tests using hydrometers, volt ohmmeters, and battery load testers in order to restore unit to proper operating condition.
26. Services and/or replaces exhaust systems, particulate filter devices, and emission control devices and components, such as exhaust gas recirculation (EGR) valves, turbo wastegates, O2 sensors, blown gaskets, plug filters, and/or damaged or hit filters using electronic diagnostic tools such as department software and scan tools, power saws, cutters, torches, welders, and basic hand tools if defects were identified after performing inspections of said exhaust systems and devices for leaks, restricted flow, contamination, excessive heat, and exhaust back pressure to ensure proper operation of the unit.
27. Repairs, replaces or fabricates piping systems, components and tanks on sweepers, flushers, and other equipment using taps, dies, welding and soldering equipment, and basic hand tools such as wrenches and screwdrivers to eliminate leaks or blockage and restore piping systems to proper operating condition.

28. Repairs and/or replaces frames, axles, body or cab components, cages, latches, or window regulators using hand tools, hydraulic presses, saws, grinders, air and electric drills and acetylene torches to restore unit to proper operating condition.
29. Overhauls and repairs electrical, mechanical, hydraulic, and pneumatic systems on cranes, aerial equipment, marine equipment, construction equipment, motor sweepers, and components of the aforementioned systems and equipment including pumps, valves, cylinders, and motors using DVOM's, high pressure gauges, heavy lifting equipment, specialty tools, cylinder hone, micrometers, and basic hand and power tools such as wrenches and screwdrivers to restore unit to proper operating condition.
30. Cleans and washes debris and dirt off equipment using a pressurized and/or chemical-based parts washer, hot water, chemical and/or solvent cleaning apparatus to ensure proper operation of the unit.

Other Job Duties

31. Practices shop and field safety precautions by cleaning tools and equipment, wearing PPE when performing job tasks, and by testing the functionality of equipment to obtain inspection diagnostics using diagnostic tool software, standard industry practices, and/or OEM operating procedures to ensure that tools and equipment are in safe operating condition, and to ensure job duties are being performed in compliance with Cal/OSHA requirements and other safety regulations.
32. Drives department-specific service vehicles such as service trucks and/or City vehicles to job sites to make repairs and/or replacements on vehicles and equipment in the field.
33. Trains new personnel by demonstrating proper practices and procedures of using tools and equipment to complete automotive and construction equipment repair work, such as operating diagnostic scan tools, tire guns, and/or smoke machines, to ensure that new personnel are properly trained.
34. Communicates with coworkers and supervisors (orally) regarding emergency and non-emergency repairs in the field by operating radio equipment and/or cellphones.
35. Creates and/or updates vehicle documents and equipment work history files by reviewing entries on maintenance record forms for accuracy and completeness, and writes hardcopy and/or electronic repair or work orders via paper and pencil or on systems such as Faster or Vehicle Management Systems (VMS) after examining physical vehicle and equipment work history files or online data on fleet management system, results of diagnostic and other equipment tests, and

actual condition of vehicle and/or equipment to determine type and extent of appropriate repairs necessary for the purpose of creating a permanent record of vehicle and equipment repairs.

36. Prioritizes and schedules repair and maintenance work by contacting user departments within the City and/or external customers by phone, email, text, radio, and/or in person, researching parts necessary to complete work tasks, ordering parts verbally, online, or in writing from outside vendors, manufacturers, and contract sources, and using established maintenance programs and available shop facilities to schedule expedited or as-needed repair and preventative maintenance work on equipment to ensure maximum availability of vehicle and equipment.