

## **SENIOR HEAVY DUTY EQUIPMENT MECHANIC TASK LIST 2024**

### **INSPECTION AND DIAGNOSIS**

1. Supervises, instructs and occasionally assists subordinates in the performance of inspection, testing and diagnosis of components on heavy construction, road maintenance, fire-fighting and other specialized equipment.
2. Reviews operator's written trouble reports, memos, and verbal reports of vehicle mechanical and electrical problems.
3. Validates, diagnoses and verifies repairs of equipment such as heavy construction, road maintenance, fire-fighting and other specialized equipment using road tests.
4. Diagnoses engine knocks and noises using stethoscopes and cylinder balance tester, diagnostic software and/or scan tool.
5. Tests wiring, ignition circuits, and electrical parts such as coils, starters, generators, alternators, and distributors using digital volt-ohm meter (dvom), ohm and battery-starter testers and oscilloscopes to ensure proper function of the system.
6. Inspects mechanical, hydraulic and air brake systems including shoes, springs, rotors, drums, valves, wheel and master cylinders, linkage, compressors, governors, hydraulic and air lines using micrometers, dial indicators, pressure, vacuum, and feeler gauges, and basic hand tools to ensure proper function of the system.
7. Inspects gasoline fuel systems including fuel injection systems, pumps, filters lines and fittings using pressure and vacuum gauges, volume container, and road tests to ensure proper function of the system.
8. Inspects diesel fuel systems including diesel injectors and pumps, filters, pick up and return lines by using pressure gauges to ensure proper function of the system.
9. Inspects clutch assemblies, transmissions, drive shafts, drive chains, power take off (pto) systems, and final drive assemblies using pressure gauges, diagnostic software, and/or scan tool to ensure proper function of the system.
10. Inspects exhaust and emission control components for leaks, damage, restricted flow, contamination, excessive heat and diesel back pressure using manometer, pyrometer, opacity meter, vacuum gauge, infrared combustion analyzer, diagnostic software and/or scan tool to ensure proper function of the system.
11. Inspects air conditioning components and controls using a thermometer, pressure leak detector, air conditioning service gauges, and air conditioning refrigerant recovery machine to ensure proper function of the system.
12. Inspects cooling system and components using thermometer, hydrometer, system pressure tester, chemical and block check tester to ensure proper function of the system.

13. Inspects steering and suspension systems, tires for wear and damage visually and using diagnostic tools to ensure the proper function of the system.
14. Inspects pins, bushings, sprockets, idlers, rollers, links or undercarriage and frame on track-type equipment using diagnostic and basic hand tools to ensure the proper function of the system.
15. Inspects manual and power steering systems and components using pressure gauges and road tests to ensure the proper function of the system.
16. Inspects hydraulic systems, pumps, controls, cylinders, valves, hoses, reservoirs and filters using flowmeters and pressure gauges to ensure the proper function of the system.
17. Visually inspects undercarriages for damage to frame, hoses, lines, rear suspension, shocks, springs and body parts to ensure the proper function of the system.
18. Tests batteries and charging systems using a digital volt-ohm meter (dvom), battery load tester, and charging system analyzers to ensure the proper function of the system.
19. Visually inspects interiors and exteriors of vehicles including dash, instruments, seats and belts, glass, mirrors, decals, paint, body surfaces, windshield wipers and safety warning devices such as back-up alarm and cameras.
20. Tests for faulty emergency equipment such as red and amber lights, spotlights, sirens, power converters and other specialized equipment by using test light, and digital volt-ohm meter (dvom).
21. Examines vehicle work history files using the fleet maintenance system to ensure the units are properly maintained, to assign work to staff, and provide reports.

## **MAINTENANCE AND REPAIR**

22. Supervises and instructs subordinates and occasionally assists in the performance of periodic maintenance or to correct malfunctions on heavy construction, road maintenance, fire-fighting and other specialized equipment.
23. Tunes engine, replacing or repairing defective gasoline and diesel fuel system components, injectors, injector and transfer pumps, fuel filters, lines and tanks, and carburetors and ignition system components using timing light, tach, vacuum and injector gauges, infrared analyzer, oscilloscope, diagnostic software/scan tool and basic hand tools to ensure the proper function of the system.
24. Diagnose and repair faulty electrical circuits using digital volt-ohm meter (dvom), soldering gun, and basic hand tools to ensure the proper function of the system.
25. Repairs, replaces or adjusts all mechanical, hydraulic and air brake systems including shoes, springs, rotors, drums, valves, wheel and master cylinders, linkage, compressors, governors, hydraulic and air lines using micrometers, dial indicators, brake adjusting tools, pressure brake bleeder and pressure, vacuum and feeler gauges, drum lathe and basic hand tools to ensure the proper function of the system.

26. Repairs or replaces standard and/or automatic transmissions, clutch assemblies, drive shafts, drive chains, final drive assemblies using transmission and other jacks and basic hand and power tools to ensure the proper function of the system.
27. Repairs or replaces charging and starting system components using a digital volt-ohm meter (dvm), battery load tester, charging system analyzers, and basic hand tools.
28. Replaces exhaust and emission control devices and components using basic hand tools to ensure emission compliance.
29. Services, repairs, replaces and recharges air conditioning and air filtration system components using vacuum pump and air conditioning charging station and basic hand tools to ensure the proper function of the system.
30. Services, repairs, replaces cooling and heating systems controls and components, oil coolers for hydraulic systems and inter coolers, leak detectors, and basic hand tools to ensure the proper function of the system.
31. Repairs and/or replaces suspension components on track-type crawlers, rubber-tire construction equipment and trailers using pneumatic wrench, hydraulic press and special pullers to maintain proper operational parameters.
32. Repairs and/or replaces manual and power steering components using basic hand tools to ensure the proper function of the system.
33. Repairs and/or replaces faulty emergency equipment and components such as sirens, spotlights, red and amber lights, power converters and other specialized equipment using soldering guns and basic hand tools to ensure the proper function of the system.
34. Repairs and/or replaces interior and exteriors including roll cages, safety warning devices, dash, instruments, switches, seats, belts, glass and mirrors, door fixtures, headliner, panels, decals and mats using basic hand tools to ensure safe operation of the system.
35. Adjust headlights using headlight aimer calibrated to departmental and state motor vehicle code specifications using basic hand tools to ensure proper function of the system.
36. Repairs or replaces piping systems, components and tanks on sweepers, flushers and other equipment to eliminate leaks or blockage using dies, taps, welding and soldering equipment to ensure proper function of the system.
37. Straightens, repairs, replaces or removes frames, axles, body or cab components, cages, latches or window regulators to restore function or correct safety hazards using hand tools, hydraulic presses, saws, bench grinders, air and electric drills and acetylene torches.
38. Repairs hydraulic systems on cranes, aerial platforms, construction equipment, and motor sweepers using specialized and basic hand tools to ensure proper function of the system.

## **OVERHAUL**

39. Supervises and occasionally assists subordinates in rebuilding major equipment components to restore systems to manufacturer specifications.

40. Overhauls engine, including valve grinding, rebore and honing cylinders, knurling pistons, aligning and fitting connecting rods, piston rings and piston pins, using cylinder hone, cylinder boring bar, con-rod aligner, pin installing tool, feeler gauge, torque wrench, micrometers, valve guide knurler, plasti-gauge and basic hand tools to restore systems to manufacturer specifications.
41. Rebuilds transmissions, clutch assemblies, differentials and other drive train components using specialized tools such as clamps, spreaders, pinion jigs, dial indicator and basic hand tools to restore systems to manufacturer specifications.
42. Overhauls hydraulic systems and components including controls, valves, cylinders, motors and pumps using high pressure gauges, cylinder hone, micrometers and basic hand tools to restore systems to manufacturer specifications.

## **GENERAL**

43. Performance test equipment after inspection, repair, and/or servicing to ensure safe and correct operating parameters.
44. Performs emergency repairs on vehicles and equipment using a service vehicle in the field.
45. Uses basic hand and power shop tools such as metric and standard tools, bench grinder, drill press, welding and soldering equipment and pneumatic tools to fabricate and install special equipment and parts on vehicles.

## **ADMINISTRATIVE**

46. Orders parts from outside vendors, manufacturers and contract sources to expedite repairs on equipment.
47. Obtains estimates of costs on parts and labor from outside vendors for unit repair work such as repair of hydraulic motors and pumps, tracks and electric motors to expedite repairs on equipment.
48. Prepares city stores requisition or checks stores requisition prepared by mechanics based on estimates obtained from outside vendors in order to get needed unit repair work done.
49. Contacts user departments by phone or e-mail to schedule preventive maintenance or needed repair work on equipment.
50. Prepares written shop orders by examining vehicle and equipment work history, results of diagnostic and other equipment tests, and actual condition of vehicle and/or equipment to determine type and extent of repairs necessary.
51. Maintains inventory of tools, repair and replacement parts and/or housekeeping supplies using controlled supply system, material requisition forms and equipment repair records to ensure that tools, parts and supplies are available when needed.

52. Prepares daily, weekly and/or monthly standard and memo-type activity reports to keep track of the status of overall shop operations using records of man-hours spent, deployment of personnel and repair work status.
53. Prepares and maintains vehicle work history files, by reviewing for accuracy and completeness, entries on maintenance record forms for the purpose of maintaining a permanent record of vehicle repair history.

## **SUPERVISION**

54. Documents job performance of staff by evaluating employees in areas relevant to the job, completing necessary documentation, and discussing evaluations with the employee in order to provide feedback, identify developmental needs, and prepare employees for career advancement opportunities.
55. Plans the work of Heavy Duty Equipment Mechanics and other employees engaged in journey-level work in the maintenance and repair of construction, road maintenance, marine, or firefighting equipment, by assigning and directing work, taking into account the priority and difficulty level of each job, the skill set needed to complete the work, and the schedules and workloads of employees, and assigns work verbally, via email, or in hardcopy format in order to ensure sufficient staffing according to operational needs
56. Documents incidents of noteworthy good or poor job performance; evaluates employees in areas relevant to the job; documents employee evaluations; and discusses evaluations with the supervisor in order to provide feedback, identify developmental needs, and prepare employees for career advancement opportunities.
57. Communicates information to employees orally and in writing, including information from management such as policy changes or department objectives and priorities including, but not limited to, interpretations of City policies or memorandums of understanding (MOU), Executive Directives (ED) such as updated safety information, and training and promotional opportunities in order to provide employees with relevant information.
58. Communicates activities of the unit with other supervisors and/or staff and informs management of completed work activities, deviations from planned work, and/or employee suggestions and concerns in order to ensure everyone is informed of work activities including project status.
59. Reviews and approves employee timesheets including employee requests for time off in order to ensure necessary levels of staffing, timely completion of work, and appropriate documentation.
60. Evaluates job candidates for positions such as Heavy Duty Equipment Mechanics in order to make hiring recommendations and/or decisions based on factors such as technical knowledge and Personnel policies including the Rule of Three Whole Scores.
61. Applies the principles of Equal Employment Opportunity (EEO) through the promotion of a positive work environment through training and discussion and monitoring employees' behavior regarding cultural diversity, sexual harassment, discrimination, and retaliation and taking appropriate corrective action when necessary to ensure compliance with City and department policies and procedures.

62. Orients new employees by explaining job requirements and providing written materials such as safety and performance standards, personnel rules, policies, procedures, and benefits in order to ensure new staff members are prepared to complete their job duties successfully and in accordance with Department standards.
63. Trains employees through various means such as using videos, explaining and demonstrating work procedures or inviting technical guest speakers to training sessions, and documents training and observes employee performance to ensure employees are properly trained and to determine additional training needs in order to ensure employees can successfully perform their job duties and do so in compliance with Department standards.

## **SAFETY**

64. Inspects work locations, equipment and tools to ensure compliance with good safety regulations using cal/osha and other general safety standards.
  - a. Enforces safety policies such as the use of appropriate personnel protective equipment by observing employees in the field and immediately informing personnel of any rule they may be in violation of and taking appropriate corrective action when necessary in order to promote safe practices and ensure compliance with safety requirements and regulations including but not limited to California Occupational Health and Safety Administration (Cal/OSHA) requirements and regulations.
65. Dispatches subordinate personnel either verbally or written instructions for the purpose of making emergency field repairs.
  - a. Responds to safety related issues, including emergency field repairs, by scheduling and dispatching subordinate staff, such as Heavy Duty Equipment Mechanics, to respond to such issues, in order to ensure it is resolved in a timely manner.