Equipment Mechanic
Task List

1. Verifies engine knocks by starting the engine and listening and then diagnosing the source of the problem using stethoscopes and cylinder balance tester.

2. Tests wiring, ignition circuits, and electrical parts such as coils, condensers, starters, generators, alternators and distributors using digital volt ohmmeter, ohm and dwell meters or dwell tachometers, battery-starter testers, oscilloscopes, on-board computer systems, and scan tools.

3. Inspects and tests mechanical, hydraulic, anti-lock brake systems (ABS) and air brake systems including shoes, brake chambers, springs, rotors, drums, valves, wheel and master cylinders, linkage, compressors, governors, vacuum booster, hydraulic and air lines using micrometers, dial indicators, pressure, vacuum, feeler gauges, ultra-sonic leak detector, and basic hand tools.

4. Inspects and tests gasoline fuel system including carburetor, pumps, filters, lines, fittings, fuel injection system, and computer controlled carburetors, using pressure and vacuum gauges, volume container, and road tests in order to determine what repairs are needed.

5. Inspects clutch assembles, transmissions, drive shafts, drive chains, and rear-axle assembly using pressure gauge and stethoscope and computer diagnostics.

6. Inspects cooling system and components using vision, thermometer, hydrometer system pressure tester, chemical and block tester, and infrared thermometer.

7. Inspects tires and suspension for wear or damage and proper inflation using tread depth gauge and visual inspection.

8. Tests batteries and charging system components using hydrometer, multimeter, V.A.T., and battery starter tester.

9. Visually inspects interiors and exteriors of vehicles including dash, instruments, seats and seat belts, glass, mirrors, decals, paint, and body surfaces.

10. Visually inspects lubricants, fluid levels, coolants and fuel products using hydrometer, hand pneumatic lube guns and pumps, and hand tools.

11. Diagnoses air conditioning and heating systems such as electronic, vacuum, cable or manual control units, using air conditioning manifold gauges, leak detectors, thermometer, hand vacuum pump, test light, volt meter, visual inspections, electronic sight glass, and system pressure tester in order to determine a malfunction within the system.

12. Diagnoses computer controlled ignition and fuel systems such as Ford, GM, Chrysler computer command controls (CC3, C4) using scope, digital volt ohmmeter, scanners, breakout box, test light, code book, shop manual, hand operated vacuum pump, and exhaust gas analyzer in order to determine drivability (14.7 air to 1 AR fuel ratio) and optimum efficiency of the engine.

13. Diagnoses gas and diesel engines using scan tools, compression gauge, scope, vacuum gauge, cylinder leak down tester, combustion exhaust analyzer, oil pressure, fuel pressure gauge, fuel pump and ignition tester, dynamometer, and manometer in order to determine mechanical problem in the engine.

14. Inspects hydraulic brake systems and components such as drum, band, pad, rotor, caliper, cylinder, hose, hydraulic fluid, proportioning valve, warning light, cable backing plate, star wheel adjuster, self adjusting cable, and springs using micrometers, and safety procedures in order to ensure that the vehicle stops properly.

15. Visually inspects airbrake systems and components such as drum, shoes, springs, “wedge” and “S” cam air brake, chambers, spider, brake lines, hoses, slack adjusters, compressors, maxi, and air-dryer in order to determine necessary repairs.

16. Inspects pneumatic, semi-pneumatic and solid tires and wheels visually and by using tire air gauge, depth gauge, tire caliper, tire spreader, water tank, and soap bubble in order to determine the condition of the tire and ensure vehicle safety.

17. Inspects wheel alignment and steering system (manual, power, rack and pinion) and components (stocks, steering damper, ram, hydraulic hose, belts, pumps idler arm, pitman arm, drag link, center link, control valve, upper/lower control arm bushing, tie rod assembly, column coupler, and ball joints) such as axle bearing wear, alignment, tire pressure, tire wear, damaged hose, and broken belts using mirror, flashlight, pry bar, shop manual, belt tension gauge and jack in order to ensure proper steering and vehicle safety.

18. Inspects equipment such as automobiles, trucks, cars, busses, and motorcycles using standard checklist and road test in order to ensure safety of vehicle before being assigned to department or personnel.

19. Inspects diesel and gasoline fuel systems for leaks, restrictions, damaged hoses, filters, pressure and vacuum lines, contaminated fuel, or broken or corroded fuel tank using vacuum and pressure gauge, float level gauge, volume of fuel flow bottle, flashlight, mirror, and basic hand tools in order to determine proper amount of fuel delivered to engine at operating ranges.

20. Inspects drive shaft for time/phasing, damage, bends, "U" joint play, tightness, center support bearing, slip yoke play, proper balance, and proper alignment using dial indicator, protractor, straight edge, and pry bar in order to determine improper wear and vibration.

21. Inspects exhaust system components for fumes, leaks, loud sounds, loose mounting hardware, cracked heat riser, and muffler pipes; holes in manifold, turbo charger, particulate trap and catalytic converter; and back pressure by visual inspection, listening and road testing using vacuum gauge, and monometer gauge (pressure gauge) in order to determine whether exhaust flow is causing engine problems.

22. Inspects cooling system components for leaks, (on hose, thermostat, radiator, gasket, and control) radiator air flow restriction, corroded freeze plug, damaged fan belt, worn radiator cap, broken fan clutch or electric fans, restricted water flow, and carbon mixture in water using pressure tester, coolant mixture hydrometer, litmus paper, belt tension gauge, multimeter, thermometer, and block check in order to ensure that the engine operates at proper temperature.

23. Inspects undercarriage for damage on ball joints, control arms, struts, springs, tie rod, bushing, shock, anti sway bar, frame (cross member and rails), and other structures (i.e., gas tank, oil pan, transmission, rear end) using creeper, vehicle hoist, flashlight, mirror, pry bar, and ball joint gauge in order to determine vehicle drivability.

24. Inspects battery for low fluid levels, corroded cables or connectors, leaks, cracks, loose post, low specific gravity, low voltage, gassing and wrong type of battery (e.g. cold cranking amps, amp hours, wattage, voltage) using hydrometer, VAT, multimeter, test light, load tester, baking soda and terminal brush in order to determine that the proper amount of power is available to crank the engine and operate the electronic components and accessories.

25. Inspects interior and exterior of vehicle for damage to mirrors, doors, locks, seat belts, pedal pads, door handles, window locks, instruments, knobs, windshield, water leaks, warning, fluid tank, bumper, fenders, paint, glass, head and tail lights, door handles, side mirror, and tires, using sight, touch, and standard check list in order to ensure that the vehicle is properly maintained and ready for issue.

26. Diagnoses charging system components such as battery, alternator, cable, connectors, voltage regulators, magneto, and belts using voltmeter, carbon pile, belt tension, gauges, hydrometer, amp meter, test light, jumper cables, ohm meter, and hand tools in order to ensure the vehicle has the proper cranking power.

27. Tests for faulty emergency equipment such as red and amber lights, spotlights, sirens, power converters and other specialized equipment by using test light and multimeter.

28. Tests wiring such as ignition cable, primary ignition system, light bar, head and tail light, turn signals, fuse block, and switches, using multimeter, and scope in order to determine proper resistance, voltage and amperes for the circuit.

29. Road tests vehicles such as trucks, automobiles, and small equipment using troubleshooting guide, manual, sight, smell, hearing and touch in order to determine any malfunction and to ensure that the vehicle is operating in a safe manner.

30. Repairs faulty electrical circuits using multimeter, electrical solderless connector, soldering gun, and hand tools.

31. Removes and replaces engine by disconnecting battery and electrical connectors, draining fluids, disconnecting fuel systems and capping lines, disconnecting or removing accessories, disconnecting transmission, disconnecting motor mounts, exhaust system, linkage, hoses, drive shaft, hood and radiator using chain hoist, engine stand, hand tools, and specialized tools in order to return engine to manufacturer's specification in a safe and timely manner.

32. Tunes up and adjusts engines by replacing or repairing defective diesel and gasoline fuel system components, ignition system components, and emission system components using timing light, tach and dwell meter, vacuum gauge, infrared analyzer, pressure gauge, oscilloscope, diagnostic center, volume container, hand vacuum pump, feeler gauge and basic hand tools in order to eliminate possible failure on the road and keep to the vehicle under a preventative maintenance schedule.

33. Removes and replaces faulty fuel pumps (i.e., leaking fuel, leaking oil, broken diaphragm, not enough volume or pressure), using basic hand tools in order to ensure proper fuel flow to the engine.

34. Removes and replaces electric fuel pump (internal and external to the gas tank) due to low fuel pressure using basic hand tools in order to have accurate pressure to start the engine and keep it running.

35. Reviews operator's written trouble reports, inspector's shop order report, memos, and verbal reports of vehicle mechanical and electrical problems.

36. Reads vehicle work history file or access information from the section's computer terminal by typing in appropriate codes in order to determine the previous work history of the vehicle and other background information.

37. Maintains repair records such as parts used, repairs done, time expended, cost, and problem write ups; using paper, pencil, computer, and forms in order to evaluate past problems and upkeep cost of the vehicle.

38. Reads written reports such as trouble report from operator or inspector, shop order, modification directive, service bulletin and preventative maintenance sheet, and asks questions confirming that the discrepancy or modification exists on the vehicle by using operator, inspector, and mechanic input, and vehicle history folder in order to ensure that a problem or change exists and to prioritize the assignment.

39. Practices shop and field safety procedures such as maintaining hand tools and equipment clear from grease, dirt and other substances, keeps work spaces and floors clean from greases, harmful solvents and chemicals, ensures shop equipment is in safe operating condition, and uses OSHA regulation and departmental procedures in order to ensure a safe and secure working environment.

40. Inspects emergency equipment such as road hazardous vehicle signs, emergency flasher, fire extinguishing bottle, and flares, using checklist in order to ensure vehicle meets legal requirements.

41. Operates service vehicle such as tow truck, preventative maintenance service truck, tire truck, emergency service truck, and roll back truck in order to perform emergency repairs, replace defective equipment, or to recover disabled vehicles.