



Correlation of
***Modern Automotive Technology*, by Duffy**
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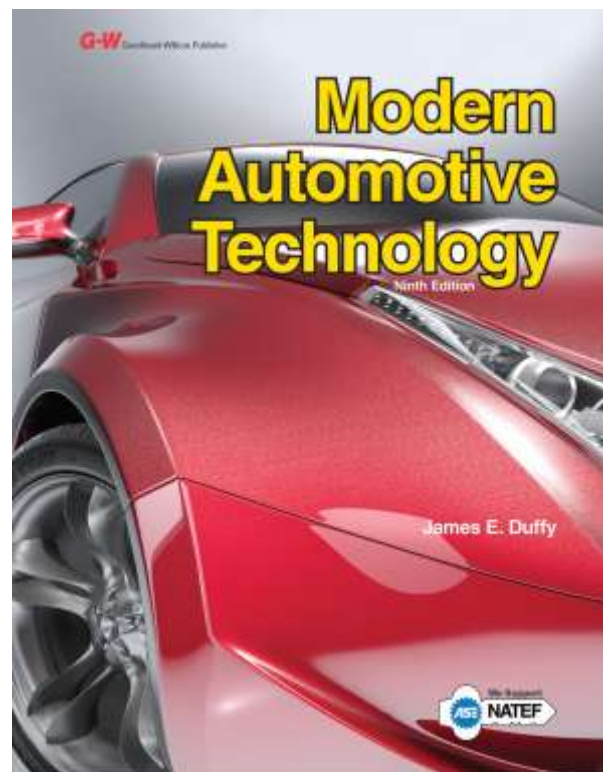
to

NATEF Maintenance and Light Repair (MLR) Task List Correlation Chart

The following chart correlates the *Modern Automotive Technology* MLR Shop Manual (©2017) to the 2017 NATEF Maintenance and Light Repair (MLR) Task List.

The correlation below lists the tasks, priority level, and the corresponding page numbers from the *Modern Automotive Technology* MLR Shop Manual for the Maintenance and Light Repair Task List.

For more information on NATEF standards, including additional information on the ASE Industry Education Alliance, please visit <http://www.asealliance.org/>.



ENGINE REPAIR

For every task in Engine Repair, the following safety requirement must be strictly enforced:

- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

| Task Number and Description | Priority | Job #s |
|---|----------|--------|
| I. ENGINE REPAIR | | |
| A. General | | |
| 1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins. | P-1 | 5 |

| Task Number and Description | Priority | Job #s |
|--|-----------------|---------------|
| 2. Verify operation of the instrument panel engine warning indicators. | P-1 | 6 |
| 3. Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action. | P-1 | 7 |
| 4. Install engine covers using gaskets, seals, and sealers as required. | P-1 | 8, 9 |
| 5. Verify engine mechanical timing. | P-2 | 10 |
| 6. Perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert. | P-1 | 11 |
| 7. Identify service precautions related to service of the internal combustion engine of a hybrid vehicle. | P-2 | 2 |
| I. ENGINE REPAIR | | |
| B. Cylinder Head and Valve Train | | |
| 1. Adjust valves (mechanical or hydraulic lifters). | P-3 | 12 |
| 2. Identify components of the cylinder head and valve train. | P-1 | 12 |
| I. ENGINE REPAIR | | |
| C. Lubrication and Cooling System | | |
| 1. Perform cooling system pressure dye tests to identify leaks; check coolant condition and level; inspect and test radiator, pressure cap, coolant recovery tank, heater core, and gallery plugs; determine necessary action. | P-1 | 13 |
| 2. Inspect, replace, and/or adjust drive belts, tensioners, and pulleys; check pulley and belt alignment. | P-1 | 14 |
| 3. Remove, inspect, and replace thermostat and gasket/seal. | P-1 | 15 |
| 4. Inspect and test coolant; drain and recover coolant; flush and refill cooling system; use proper fluid type per manufacturer specification; bleed air as required. | P-1 | 5, 13, 16, 17 |
| 5. Perform engine oil and filter change; use proper fluid type per manufacturer specification; reset maintenance reminder as required. | P-1 | 5, 17 |
| 6. Identify components of the lubrication and cooling systems. | P-1 | 13 |

AUTOMATIC TRANSMISSION AND TRANSAXLE

For every task in Automatic Transmission and Transaxle, the following safety requirement must be strictly enforced:

- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

| Task Number and Description | Priority | Job #s |
|--|----------|------------|
| II. AUTOMATIC TRANSMISSION AND TRANSAXLE | | |
| A. General | | |
| 1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins. | P-1 | 5, 18 |
| 2. Check fluid level in a transmission or transaxle equipped with a dipstick. | P-1 | 18 |
| 3. Check fluid level in a transmission or transaxle not equipped with a dipstick. | P-1 | 18 |
| 4. Check transmission fluid condition; check for leaks. | P-2 | 18 |
| 5. Identify drive train components and configuration. | P-1 | 19, 20, 23 |
| II. AUTOMATIC TRANSMISSION AND TRANSAXLE | | |
| B. In-Vehicle Transmission/Transaxle | | |
| 1. Inspect, adjust, and/or replace external manual valve shift linkage, transmission range sensor/switch, and/or park/neutral position switch. | P-2 | 19 |
| 2. Inspect for leakage at external seals, gaskets, and bushings. | P-1 | 18 |
| 3. Inspect, replace, and/or align power train mounts. | P-2 | 20, 21 |
| 4. Drain and replace fluid filter(s); use proper fluid type per manufacturer specification. | P-1 | 5, 17, 22 |
| II. AUTOMATIC TRANSMISSION AND TRANSAXLE | | |
| C. Off-Vehicle Transmission/Transaxle | | |
| 1. Describe the operational characteristics of a continuously variable transmission (CVT). | P-3 | 23 |
| 2. Describe the operational characteristics of a hybrid vehicle drive train. | P-3 | 23 |

MANUAL DRIVE TRAIN AND AXLES

For every task in Manual Drive Train and Axles, the following safety requirement must be strictly enforced:

- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

| Task Number and Description | Priority | Job #s |
|---|----------|----------------|
| III MANUAL DRIVE TRAIN AND AXLES | | |
| A. General | | |
| 1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins. | P-1 | 5 |
| 2. Drain and refill manual transmission/transaxle and final drive unit; use proper fluid type per manufacturer specification. | P-1 | 5, 17, 24 |
| 3. Check fluid condition; check for leaks. | P-2 | 25 |
| 4. Identify manual drive train and axle components and configuration. | P-1 | 27, 28, 29, 30 |
| III MANUAL DRIVE TRAIN AND AXLES | | |
| B. Clutch | | |
| 1. Check and adjust clutch master cylinder fluid level; use proper fluid type per manufacturer specification. | P-1 | 5, 17, 26 |
| 2. Check for hydraulic system leaks. | P-1 | 26 |
| III MANUAL DRIVE TRAIN AND AXLES | | |
| C. Transmission/Transaxle | | |
| 1. Describe the operational characteristics of an electronically-controlled manual transmission/transaxle. | P-2 | 23 |
| III MANUAL DRIVE TRAIN AND AXLES | | |
| D. Drive Shaft, Half Shaft, Universal Joints, and Constant-Velocity (CV) Joints (Front, Rear, All, and Four-wheel Drive) | | |
| 1. Inspect, remove, and/or replace bearings, hubs, and seals. | P-2 | 27 |
| 2. Inspect, service, and/or replace shafts, yokes, and universal/CV joints. | P-2 | 27, 28 |
| 3. Inspect locking hubs. | P-3 | 30 |
| 4. Check for leaks at drive assembly and transfer case seals; check vents; check fluid level; use proper fluid type per manufacturer specification. | P-2 | 30 |
| III MANUAL DRIVE TRAIN AND AXLES | | |
| E. Differential Case Assembly | | |
| 1. Clean and inspect differential case; check for leaks; inspect housing vent. | P-1 | 24 |

| Task Number and Description | Priority | Job #s |
|--|----------|--------|
| 2. Check and adjust differential case fluid level; use proper fluid type per manufacturer specification. | P-1 | 24 |
| 3. Drain and refill differential housing. | P-1 | 24 |
| 4. Inspect and replace drive axle wheel studs. | P-1 | 29 |

SUSPENSION AND STEERING

For every task in Suspension and Steering, the following safety requirement must be strictly enforced:

- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

| Task Number and Description | Priority | Job #s |
|---|----------|----------------|
| IV. SUSPENSION AND STEERING | | |
| A. General | | |
| 1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins. | P-1 | 5 |
| 2. Disable and enable supplemental restraint system (SRS); verify indicator lamp operation. | P-1 | 31, 67 |
| 3. Identify suspension and steering system components and configurations. | P-1 | 32, 34, 36, 40 |
| IV. SUSPENSION AND STEERING | | |
| B. Related Suspension and Steering Service | | |
| 1. Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots. | P-1 | 32 |
| 2. Inspect power steering fluid level and condition. | P-1 | 33 |
| 3. Flush, fill, and bleed power steering system; use proper fluid type per manufacturer specification. | P-2 | 5, 17, 35 |
| 4. Inspect for power steering fluid leakage. | P-1 | 33 |
| 5. Remove, inspect, replace, and/or adjust power steering pump drive belt. | P-1 | 14 |
| 6. Inspect and replace power steering hoses and fittings. | P-2 | 34 |
| 7. Inspect pitman arm, relay (centerlink/intermediate) rod, idler arm, mountings, and steering linkage damper. | P-1 | 32 |
| 8. Inspect tie rod ends (sockets), tie rod sleeves, and clamps. | P-1 | 32 |
| 9. Inspect upper and lower control arms, bushings, and shafts. | P-1 | 32 |
| 10. Inspect and replace rebound bumpers. | P-1 | 32 |
| 11. Inspect track bar, strut rods/radius arms, and related mounts and bushings. | P-1 | 32 |

| Task Number and Description | Priority | Job #s |
|--|----------|------------|
| 12. Inspect upper and lower ball joints (with or without wear indicators). | P-1 | 32 |
| 13. Inspect suspension system coil springs and spring insulators (silencers). | P-1 | 32 |
| 14. Inspect suspension system torsion bars and mounts. | P-1 | 32 |
| 15. Inspect and/or replace front/rear stabilizer bar (sway bar) bushings, brackets, and links. | P-1 | 32 |
| 16. Inspect, remove, and/or replace strut cartridge or assembly; inspect mounts and bushings. | P-2 | 32 |
| 17. Inspect front strut bearing and mount. | P-1 | 32 |
| 18. Inspect rear suspension system lateral links/arms (track bars), control (trailing) arms. | P-1 | 32 |
| 19. Inspect rear suspension system leaf spring(s), spring insulators (silencers), shackles, brackets, bushings, center pins/bolts, and mounts. | P-1 | 32 |
| 20. Inspect, remove, and/or replace shock absorbers; inspect mounts and bushings. | P-1 | 36 |
| 21. Inspect electric power steering assist system. | P-2 | 37 |
| 22. Identify hybrid vehicle power steering system electrical circuits and safety precautions. | P-2 | 2, 37 |
| 23. Describe the function of suspension and steering control system components (i.e., active suspension and stability control). | P-3 | 36, 37, 38 |
| IV. SUSPENSION AND STEERING | | |
| C. Wheel Alignment | | |
| 1. Perform prealignment inspection; measure vehicle ride height. | P-1 | 39 |
| 2. Describe alignment angles (camber, caster, and toe). | P-1 | 39 |
| IV. SUSPENSION AND STEERING | | |
| D. Wheels and Tires | | |
| 1. Inspect tire condition; identify tire wear patterns; check for correct tire size, application (load and speed ratings), and air pressure as listed on the tire information placard/label. | P-1 | 40, 42 |
| 2. Rotate tires according to manufacturer's recommendations, including vehicles equipped with tire pressure monitoring systems (TPMS). | P-1 | 41 |
| 3. Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly. | P-1 | 41 |
| 4. Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor. | P-1 | 42 |

| Task Number and Description | Priority | Job #s |
|--|----------|------------|
| 5. Inspect tire and wheel assembly for air loss; determine necessary action. | P-1 | 40, 42 |
| 6. Repair tire following vehicle manufacturer approved procedure. | P-1 | 42 |
| 7. Identify indirect and direct tire pressure monitoring systems (TPMS); calibrate system; verify operation of instrument panel lamps. | P-1 | 42 |
| 8. Demonstrate knowledge of steps required to remove and replace sensors in a tire pressure monitoring system (TPMS), including relearn procedure. | P-1 | 42, 58, 67 |

BRAKES

For every task in Brakes, the following safety requirement must be strictly enforced:

- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

| Task Number and Description | Priority | Job #s |
|---|----------|----------------------------|
| V. BRAKES | | |
| A. General | | |
| 1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins. | P-1 | 5 |
| 2. Describe procedure for performing a road test to check brake system operation, including anti-lock brake system (ABS). | P-1 | 43 |
| 3. Install wheel and torque lug nuts. | P-1 | 40 |
| 4. Identify brake system components and configuration. | P-1 | 43, 44, 47, 49, 52, 53, 54 |
| V. BRAKES | | |
| B. Hydraulic System | | |
| 1. Describe proper brake pedal height, travel, and feel. | P-1 | 43 |
| 2. Check master cylinder for external leaks and proper operation. | P-1 | 43 |
| 3. Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, wear, and loose fittings/supports. | P-1 | 44 |
| 4. Select, handle, store, and fill brake fluids to proper level; use proper fluid type per manufacturer specification. | P-1 | 5, 17, 45 |
| 5. Identify components of hydraulic brake warning light system. | P-3 | 46 |
| 6. Bleed and/or flush brake system. | P-1 | 45 |

| Task Number and Description | Priority | Job #s |
|--|----------|--------|
| 7. Test brake fluid for contamination. | P-1 | 45 |
| V. BRAKES | | |
| C. Drum Brakes | | |
| 1. Remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability. | P-1 | 47 |
| 2. Refinish brake drum and measure final drum diameter; compare with specification. | P-1 | 48 |
| 3. Remove, clean, inspect, and/or replace brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble. | P-1 | 47 |
| 4. Inspect wheel cylinders for leaks and proper operation; remove and replace as needed. | P-2 | 47 |
| 5. Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; make final checks and adjustments. | P-1 | 47 |
| V. BRAKES | | |
| D. Disc Brakes | | |
| 1. Remove and clean caliper assembly; inspect for leaks and damage/wear; determine necessary action. | P-1 | 49 |
| 2. Inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine necessary action. | P-1 | 49 |
| 3. Remove, inspect, and/or replace brake pads and retaining hardware; determine necessary action. | P-1 | 49 |
| 4. Lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads and inspect for leaks. | P-1 | 49 |
| 5. Clean and inspect rotor and mounting surface, measure rotor thickness, thickness variation, and lateral runout; determine necessary action. | P-1 | 49 |
| 6. Remove and reinstall/replace rotor. | P-1 | 49 |
| 7. Refinish rotor on vehicle; measure final rotor thickness and compare with specification. | P-1 | 50 |
| 8. Refinish rotor off vehicle; measure final rotor thickness and compare with specification. | P-1 | 50 |
| 9. Retract and readjust caliper piston on an integral parking brake system. | P-2 | 49 |
| 10. Check brake pad wear indicator; determine necessary action. | P-1 | 49 |
| 11. Describe the importance of operating a vehicle to burnish/break in replacement brake pads according to manufacturer's recommendation. | P-1 | 49 |

| Task Number and Description | Priority | Job #s |
|--|----------|--------|
| V. BRAKES | | |
| E. Power-Assist Units | | |
| 1. Check brake pedal travel with and without engine running to verify proper power booster operation. | P-2 | 51 |
| 2. Identify components of the brake power assist system (vacuum and hydraulic); check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster. | P-1 | 51 |
| V. BRAKES | | |
| F. Related Systems (i.e., Wheel Bearings, Parking Brakes, Electrical) | | |
| 1. Remove, clean, inspect, repack, and install wheel bearings; replace seals; install hub and adjust bearings. | P-1 | 52 |
| 2. Check parking brake system components for wear, binding, and corrosion; clean, lubricate, adjust, and/or replace as needed. | P-2 | 53 |
| 3. Check parking brake operation and parking brake indicator light system operation; determine necessary action. | P-1 | 53 |
| 4. Check operation of brake stop light system. | P-1 | 64 |
| 5. Replace wheel bearing and race. | P-2 | 52 |
| 6. Inspect and replace wheel studs. | P-1 | 29 |
| V. BRAKES | | |
| G. Electronic Brake, Traction Control, and Stability Control Systems | | |
| 1. Identify traction control/vehicle stability control system components. | P-3 | 54 |
| 2. Describe the operation of a regenerative braking system. | P-3 | 54 |

ELECTRICAL/ELECTRONIC SYSTEMS

For every task in Electrical/Electronic Systems, the following safety requirement must be strictly enforced:

- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

| Task Number and Description | Priority | Job #s |
|---|----------|--------|
| VI. ELECTRICAL/ELECTRONIC SYSTEMS | | |
| A. General | | |
| 1. Research service information, including vehicle service history, service precautions, and technical service bulletins. | P-1 | 5 |
| 2. Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law). | P-1 | 55 |
| 3. Using wiring diagrams to trace electrical/electronic circuits. | P-1 | 55 |

| Task Number and Description | Priority | Job #s |
|---|----------|------------------------|
| 4. Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance. | P-1 | 55 |
| 5. Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits. | P-1 | 55 |
| 6. Use a test light to check operation of electrical circuits. | P-2 | 55 |
| 7. Use fused jumper wires to check operation of electrical circuits. | P-2 | 67 |
| 8. Measure key-off battery drain (parasitic draw). | P-1 | 55 |
| 9. Inspect and test fusible links, circuit breakers, and fuses; determine necessary action. | P-1 | 55 |
| 10. Repair and/or replace connectors, terminal ends, and wiring of electrical/electronic systems (including solder repair). | P-1 | 56 |
| 11. Identify electrical/electronic system components and configuration. | P-1 | 56, 58, 60, 62, 66, 68 |
| VI. ELECTRICAL/ELECTRONIC SYSTEMS | | |
| B. Battery Service | | |
| 1. Perform battery state-of-charge test; determine necessary action. | P-1 | 57 |
| 2. Confirm proper battery capacity for vehicle application; perform battery capacity and load test; determine necessary action. | P-1 | 57 |
| 3. Maintain or restore electronic memory functions. | P-1 | 58 |
| 4. Inspect and clean battery; fill battery cells; check battery cables, connectors, clamps, and hold-downs. | P-1 | 58 |
| 5. Perform slow/fast battery charge according to manufacturer's recommendations. | P-1 | 58 |
| 6. Jump-start vehicle using jumper cables and booster battery or an auxiliary power supply. | P-1 | 59 |
| 7. Identify safety precautions for high voltage systems on electric, hybrid-electric, and diesel vehicles. | P-2 | 56 |
| 8. Identify electrical/electronic modules, security systems, radios, and other accessories, that require reinitialization or code entry after reconnecting vehicle battery. | P-1 | 58 |
| 9. Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures. | P-2 | 57, 58 |
| VI. ELECTRICAL/ELECTRONIC SYSTEMS | | |
| C. Starting System | | |
| 1. Perform starter current draw test; determine necessary action. | P-1 | 60 |

| Task Number and Description | Priority | Job #s |
|--|----------|--------|
| 2. Perform starter circuit voltage drop tests; determine necessary action. | P-1 | 60 |
| 3. Inspect and test starter relays and solenoids; determine necessary action. | P-2 | 60 |
| 4. Remove and install starter in a vehicle. | P-1 | 61 |
| 5. Inspect and test switches, connectors, and wires of starter control circuits; determine necessary action. | P-2 | 60 |
| 6. Demonstrate knowledge of an automatic idle-stop/start-stop system. | P-3 | — |
| VI. ELECTRICAL/ELECTRONIC SYSTEMS | | |
| D. Charging System | | |
| 1. Perform charging system output test; determine necessary action. | P-1 | 62 |
| 2. Inspect, adjust, and/or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment. | P-1 | 14, 62 |
| 3. Remove, inspect, and/or replace generator (alternator). | P-2 | 63 |
| 4. Perform charging circuit voltage drop test; determine necessary action. | P-2 | 62 |
| VI. ELECTRICAL/ELECTRONIC SYSTEMS | | |
| E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems | | |
| 1. Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (for lights/driving lights); replace as needed. | P-1 | 64 |
| 2. Aim headlights. | P-2 | 65 |
| 3. Identify system voltage and safety precautions associated with high-intensity discharge headlights. | P-2 | 65 |
| 4. Disable and enable supplemental restraint system (SRS); verify indicator lamp operation. | P-1 | 31 |
| 5. Remove and reinstall door panel. | P-1 | 66 |
| 6. Describe the operation of keyless entry/remote start systems. | P-3 | 66 |
| 7. Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators. | P-1 | 67 |
| 8. Verify windshield wiper and washer operation; replace wiper blades. | P-1 | 68 |

HEATING AND AIR CONDITIONING

For every task in Heating and Air Conditioning, the following safety requirement must be strictly enforced:

- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

| Task Number and Description | Priority | Job #s |
|---|----------|--------|
| VII. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) | | |
| A. General | | |
| 1. Research vehicle service information, including refrigerant/oil type, vehicle service history, service precautions, and technical service bulletins. | P-1 | 5 |
| 2. Identify heating, ventilation, and air conditioning (HVAC) components and configuration. | P-1 | 69 |
| VII. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) | | |
| B. Refrigeration System Components | | |
| 1. Inspect and replace A/C compressor drive belts, pulleys, and tensioners; visually inspect A/C components for signs of leaks; determine necessary action. | P-1 | 14, 69 |
| 2. Identify hybrid vehicle A/C system electrical circuits and the service/safety precautions. | P-2 | 2 |
| 3. Inspect A/C condenser for airflow restrictions; determine necessary action. | P-1 | 69 |
| VII. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) | | |
| C. Heating, Ventilation, and Engine Cooling Systems | | |
| 1. Inspect engine cooling and heater systems hoses and pipes; determine necessary action. | P-1 | 13 |
| VII. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) | | |
| D. Operating Systems and Related Controls | | |
| 1. Inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets; determine necessary action. | P-1 | 69 |
| 2. Identify the source of A/C system odors. | P-2 | 69 |

ENGINE PERFORMANCE

For every task in Engine Performance, the following safety requirement must be strictly enforced:

- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

| Task Number and Description | Priority | Job #s |
|---|----------|--------|
| VIII. ENGINE PERFORMANCE | | |
| A. General | | |
| 1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins. | P-1 | 5 |
| 2. Perform engine absolute manifold pressure test (vacuum/boost); document results. | P-2 | 5, 70 |
| 3. Perform cylinder power balance test; document results. | P-2 | 5, 70 |
| 4. Perform cylinder cranking and running compression test; document results. | P-2 | 5, 71 |
| 5. Perform cylinder leakage test; document results. | P-2 | 5, 71 |
| 6. Verify engine operating temperature. | P-1 | 73 |
| 7. Remove and replace spark plugs; inspect secondary ignition components for wear and damage. | P-1 | 72 |
| VIII. ENGINE PERFORMANCE | | |
| B. Computerized Controls | | |
| 1. Retrieve and record diagnostic trouble codes (DTC), OBD monitor status, and freeze frame data; clear codes when applicable. | P-1 | 73 |
| 2. Describe the use of the OBD monitors for repair and verification. | P-1 | 73 |
| VIII. ENGINE PERFORMANCE | | |
| C. Fuel, Air Induction, and Exhaust Systems | | |
| 1. Replace fuel filter(s) where applicable. | P-2 | 75 |
| 2. Inspect, service, or replace air filters, filter housings, and intake ductwork. | P-1 | 75 |
| 3. Inspect integrity of the manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tailpipe(s), and heat shields; determine necessary action. | P-1 | 76 |
| 4. Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; determine necessary action. | P-1 | 76, 77 |
| 5. Check and refill diesel exhaust fluid (DEF). | P-2 | 76, 77 |

| Task Number and Description | Priority | Job #s |
|--|----------|--------|
| VIII. ENGINE PERFORMANCE | | |
| D. Emissions Control Systems | | |
| 1. Inspect, test, and service positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; perform necessary action. | P-2 | 78 |

REQUIRED SUPPLEMENTAL TASKS

| Task Number and Description | Job #s |
|---|-----------|
| Shop and Personal Safety | |
| 1. Identify general shop safety rules and procedures. | 1 |
| 2. Utilize safe procedures for handling of tools and equipment. | 1, 4 |
| 3. Identify and use proper placement of floor jacks and jack stands. | 1 |
| 4. Identify and use proper procedures for safe lift operation. | 1 |
| 5. Utilize proper ventilation procedures for working within the lab/shop area. | 1 |
| 6. Identify marked safety areas. | 1 |
| 7. Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment. | 1 |
| 8. Identify the location and use of eyewash stations. | 1 |
| 9. Identify the location of the posted evacuation routes. | 1 |
| 10. Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities. | 1 |
| 11. Identify and wear appropriate clothing for lab/shop activities. | 1 |
| 12. Secure hair and jewelry for lab/shop activities. | 1 |
| 13. Demonstrate awareness of the safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits. | 1, 31, 54 |
| 14. Demonstrate awareness of the safety aspects of high voltage circuits (such as high intensity discharge (HID) lamps, ignition systems, injection systems, etc.). | 65 |
| 15. Locate and demonstrate knowledge of material safety data sheets (MSDS). | 1 |
| Tools and Equipment | |
| 1. Identify tools and their usage in automotive applications. | 4 |
| 2. Identify standard and metric designation. | 3 |
| 3. Demonstrate safe handling and use of appropriate tools. | 4 |
| 4. Demonstrate proper cleaning, storage, and maintenance of tools and equipment. | 4 |

| Task Number and Description | Job #s |
|--|---------------|
| 5. Demonstrate proper use of precision measuring tools (i.e., micrometer, dial-indicator, dial-caliper). | 3 |
| Preparing Vehicle for Service | |
| 1. Identify information needed and the service requested on a repair order. | 5 |
| 2. Identify purpose and demonstrate proper use of fender covers, mats. | 5 |
| 3. Demonstrate use of the three Cs (concern, cause, and correction). | 5 |
| 4. Review vehicle service history. | 5 |
| 5. Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. | 5 |
| Preparing Vehicle for Customer | |
| 1. Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, etc.). | 5 |