



**Correlation of**  
***Modern Automotive Technology*, by Duffy**  
**(Goodheart-Willcox Publisher ©2017)**

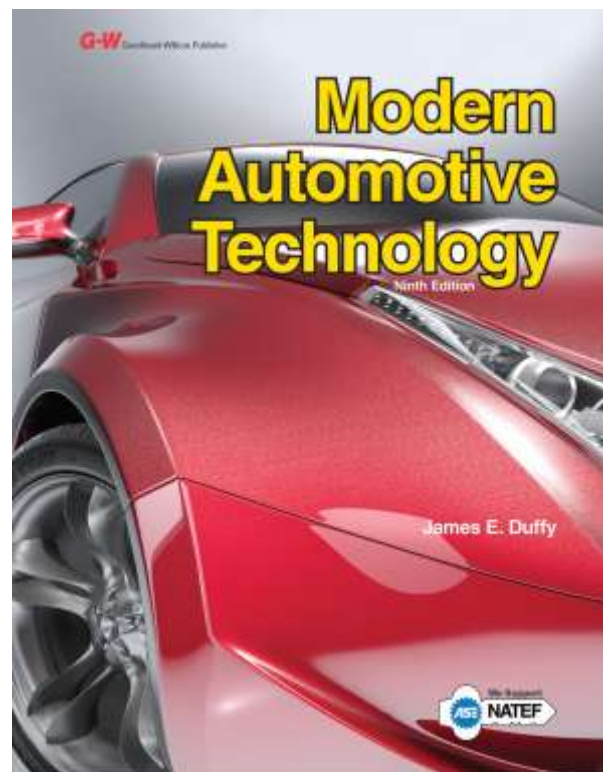
to

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

The following chart correlates the *Modern Automotive Technology* textbook (©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* textbook 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	Page #s
<b>I. ENGINE REPAIR</b>		
<b>A. General</b>		
1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.	P-1	109–114

Task Number and Description	Priority	Page #s
2. Verify operation of the instrument panel engine warning indicators.	P-1	302–307, 381–390, 399–411, 415–428, 620–623, 1003–1020
3. Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action.	P-1	302–307, 381–390, 399–411, 415–428, 620–623, 1003–1020
4. Install engine covers using gaskets, seals, and sealers as required.	P-1	137, 141–146, 150–151, 705–716, 735, 745, 755, 764, 766, 860–865, 873–877, 879, 912–920, 1028, 1289, 1325–1328, 1333
5. Verify engine mechanical timing.	P-2	1179–1182
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	1183–1189
7. Identify service precautions related to service of the internal combustion engine of a hybrid vehicle.	P-2	82, 454–458
<b>I. ENGINE REPAIR</b>		
<b>B. Cylinder Head and Valve Train</b>		
1. Adjust valves (mechanical or hydraulic lifters).	P-3	1170
2. Identify components of the cylinder head and valve train.	P-1	13, 174–177, 199–210
<b>I. ENGINE REPAIR</b>		
<b>C. Lubrication and Cooling System</b>		
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	863–865, 875, 884, 888–889
2. Inspect, replace, and/or adjust drive belts, tensioners, and pulleys; check pulley and belt alignment.	P-1	1188
3. Remove, inspect, and replace thermostat and gasket/seal.	P-1	870–873
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	112, 879–882, 884

Task Number and Description	Priority	Page #s
5. Perform engine oil and filter change; use proper fluid type per manufacturer specification; reset maintenance reminder as required.	P-1	400–401, 410, 620, 879–882, 884
6. Identify components of the lubrication and cooling systems.	P-1	16–17, 835–836, 839–854, 892–907

## 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	Page #s
<b>II. AUTOMATIC TRANSMISSION AND TRANSAXLE</b>		
<b>A. General</b>		
1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.	P-1	109–114, 138
2. Check fluid level in a transmission or transaxle equipped with a dipstick.	P-1	141–142
3. Check fluid level in a transmission or transaxle not equipped with a dipstick.	P-1	142
4. Check transmission fluid condition; check for leaks.	P-2	141–142, 1327–1328, 1331–1333
5. Identify drive train components and configuration.	P-1	17–20, 1229–1240, 1301–1321, 1343–1353, 1369–1373, 1375–1382, 1407–1409, 1412–1422
<b>II. AUTOMATIC TRANSMISSION AND TRANSAXLE</b>		
<b>B. In-Vehicle Transmission/Transaxle</b>		
1. Inspect, adjust, and/or replace external manual valve shift linkage, transmission range sensor/switch, and/or park/neutral position switch.	P-2	1333–1334
2. Inspect for leakage at external seals, gaskets, and bushings.	P-1	129–133, 138, 141–142, 1327–1328, 1331–1333, 1439
3. Inspect, replace, and/or align power train mounts.	P-2	1290–1295, 1358–1359, 1438

Task Number and Description	Priority	Page #s
4. Drain and replace fluid filter(s); use proper fluid type per manufacturer specification.	P-1	112, 138, 141–142, 1327–1328, 1331–1333
<b>II. AUTOMATIC TRANSMISSION AND TRANSAXLE</b>		
<b>C. Off-Vehicle Transmission/Transaxle</b>		
1. Describe the operational characteristics of a continuously variable transmission (CVT).	P-3	1416
2. Describe the operational characteristics of a hybrid vehicle drive train.	P-3	437–438, 443–449

## 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	Page #s
<b>III MANUAL DRIVE TRAIN AND AXLES</b>		
<b>A. General</b>		
1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.	P-1	109–114, 1289, 1293, 1394
2. Drain and refill manual transmission/transaxle and final drive unit; use proper fluid type per manufacturer specification.	P-1	1269, 1430
3. Check fluid condition; check for leaks.	P-2	143–144
4. Identify manual drive train and axle components and configuration.	P-1	17–20, 1229–1240, 1265–1266, 1268–1276, 1343–1353, 1369–1373, 1375–1382, 1407–1409, 1412–1422
<b>III MANUAL DRIVE TRAIN AND AXLES</b>		
<b>B. Clutch</b>		
1. Check and adjust clutch master cylinder fluid level; use proper fluid type per manufacturer specification.	P-1	112, 145
2. Check for hydraulic system leaks.	P-1	145
<b>III MANUAL DRIVE TRAIN AND AXLES</b>		
<b>C. Transmission/Transaxle</b>		
1. Describe the operational characteristics of an electronically-controlled manual transmission/transaxle.	P-2	1280, 1282

Task Number and Description	Priority	Page #s
<b>III MANUAL DRIVE TRAIN AND AXLES</b>		
<b>D. Drive Shaft, Half Shaft, Universal Joints, and Constant-Velocity (CV) Joints (Front, Rear, All, and Four-wheel Drive)</b>		
1. Inspect, remove, and/or replace bearings, hubs, and seals.	P-2	1254–1255, 1292–1295, 1389, 1382
2. Inspect, service, and/or replace shafts, yokes, and universal/CV joints.	P-2	1360–1362
3. Inspect locking hubs.	P-3	1379, 1387–1394
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	112, 143, 147, 1360–1363
<b>III MANUAL DRIVE TRAIN AND AXLES</b>		
<b>E. Differential Case Assembly</b>		
1. Clean and inspect differential case; check for leaks; inspect housing vent.	P-1	1390
2. Check and adjust differential case fluid level; use proper fluid type per manufacturer specification.	P-1	112, 143–144, 1390
3. Drain and refill differential housing.	P-1	112, 144, 1390
4. Inspect and replace drive axle wheel studs.	P-1	1392, 1394

## 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	Page #s
<b>IV. SUSPENSION AND STEERING</b>		
<b>A. General</b>		
1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.	P-1	109–114, 1568, 1747
2. Disable and enable supplemental restraint system (SRS); verify indicator lamp operation.	P-1	1747–1748
3. Identify suspension and steering system components and configurations.	P-1	20, 1492–1509, 1538–1540, 1542–1556

Task Number and Description	Priority	Page #s
<b>IV. SUSPENSION AND STEERING</b>		
<b>B. Related Suspension and Steering Service</b>		
1. Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots.	P-1	1566
2. Inspect power steering fluid level and condition.	P-1	144, 1563
3. Flush, fill, and bleed power steering system; use proper fluid type per manufacturer specification.	P-2	112, 1571
4. Inspect for power steering fluid leakage.	P-1	1563
5. Remove, inspect, replace, and/or adjust power steering pump drive belt.	P-1	1564
6. Inspect and replace power steering hoses and fittings.	P-2	1542–1543
7. Inspect pitman arm, relay (centerlink/intermediate) rod, idler arm, mountings, and steering linkage damper.	P-1	1542, 1565–1566
8. Inspect tie rod ends (sockets), tie rod sleeves, and clamps.	P-1	1566
9. Inspect upper and lower control arms, bushings, and shafts.	P-1	1522–1524
10. Inspect and replace rebound bumpers.	P-1	—
11. Inspect track bar, strut rods/radius arms, and related mounts and bushings.	P-1	1522–1524
12. Inspect upper and lower ball joints (with or without wear indicators).	P-1	1519–1520
13. Inspect suspension system coil springs and spring insulators (silencers).	P-1	1517
14. Inspect suspension system torsion bars and mounts.	P-1	1519
15. Inspect and/or replace front/rear stabilizer bar (sway bar) bushings, brackets, and links.	P-1	1499
16. Inspect, remove, and/or replace strut cartridge or assembly; inspect mounts and bushings.	P-2	1517
17. Inspect front strut bearing and mount.	P-1	1517
18. Inspect rear suspension system lateral links/arms (track bars), control (trailing) arms.	P-1	1522–1524
19. Inspect rear suspension system leaf spring(s), spring insulators (silencers), shackles, brackets, bushings, center pins/bolts, and mounts.	P-1	1518
20. Inspect, remove, and/or replace shock absorbers; inspect mounts and bushings.	P-1	1514–1516
21. Inspect electric power steering assist system.	P-2	1574
22. Identify hybrid vehicle power steering system electrical circuits and safety precautions.	P-2	454–458, 1545, 1552–1556, 1574

Task Number and Description	Priority	Page #s
23. Describe the function of suspension and steering control system components (i.e., active suspension and stability control).	P-3	1506–1509, 1653–1654, 1660–1662
<b>IV. SUSPENSION AND STEERING</b>		
<b>C. Wheel Alignment</b>		
1. Perform prealignment inspection; measure vehicle ride height.	P-1	1585–1589
2. Describe alignment angles (camber, caster, and toe).	P-1	1582–1584
<b>IV. SUSPENSION AND STEERING</b>		
<b>D. Wheels and Tires</b>		
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	1449–1455, 1467–1470, 1472
2. Rotate tires according to manufacturer's recommendations, including vehicles equipped with tire pressure monitoring systems (TPMS).	P-1	1455, 1472, 1479–1480
3. Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly.	P-1	1474–1478
4. Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor.	P-1	1479
5. Inspect tire and wheel assembly for air loss; determine necessary action.	P-1	1478
6. Repair tire following vehicle manufacturer approved procedure.	P-1	1478
7. Identify indirect and direct tire pressure monitoring systems (TPMS); calibrate system; verify operation of instrument panel lamps.	P-1	1479–1480
8. Demonstrate knowledge of steps required to remove and replace sensors in a tire pressure monitoring system (TPMS), including relearn procedure.	P-1	1479–1480



## 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	Page #s
<b>V. BRAKES</b>		
<b>A. General</b>		
1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.	P-1	109–114
2. Describe procedure for performing a road test to check brake system operation, including anti-lock brake system (ABS).	P-1	1625, 1669
3. Install wheel and torque lug nuts.	P-1	1473
4. Identify brake system components and configuration.	P-1	20, 1601–1620
<b>V. BRAKES</b>		
<b>B. Hydraulic System</b>		
1. Describe proper brake pedal height, travel, and feel.	P-1	1628
2. Check master cylinder for external leaks and proper operation.	P-1	1631
3. Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, wear, and loose fittings/supports.	P-1	1628–1630
4. Select, handle, store, and fill brake fluids to proper level; use proper fluid type per manufacturer specification.	P-1	112, 1628–1629
5. Identify components of hydraulic brake warning light system.	P-3	1627
6. Bleed and/or flush brake system.	P-1	1631–1634
7. Test brake fluid for contamination.	P-1	145, 1628–1629
<b>V. BRAKES</b>		
<b>C. Drum Brakes</b>		
1. Remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability.	P-1	1643
2. Refinish brake drum and measure final drum diameter; compare with specification.	P-1	1643–1645
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	1645–1648
4. Inspect wheel cylinders for leaks and proper operation; remove and replace as needed.	P-2	1643



Task Number and Description	Priority	Page #s
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	1648–1649
<b>V. BRAKES</b>		
<b>D. Disc Brakes</b>		
1. Remove and clean caliper assembly; inspect for leaks and damage/wear; determine necessary action.	P-1	1637–1638
2. Inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine necessary action.	P-1	1634–1638
3. Remove, inspect, and/or replace brake pads and retaining hardware; determine necessary action.	P-1	1629, 1634, 1636
4. Lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads and inspect for leaks.	P-1	1629, 1634, 1636
5. Clean and inspect rotor and mounting surface, measure rotor thickness, thickness variation, and lateral runout; determine necessary action.	P-1	1637–1638
6. Remove and reinstall/replace rotor.	P-1	1638–1642
7. Refinish rotor on vehicle; measure final rotor thickness and compare with specification.	P-1	1641–1642
8. Refinish rotor off vehicle; measure final rotor thickness and compare with specification.	P-1	1640–1641
9. Retract and readjust caliper piston on an integral parking brake system.	P-2	1639–1640
10. Check brake pad wear indicator; determine necessary action.	P-1	1627–1628
11. Describe the importance of operating a vehicle to burnish/break in replacement brake pads according to manufacturer's recommendation.	P-1	1636
<b>V. BRAKES</b>		
<b>E. Power-Assist Units</b>		
1. Check brake pedal travel with and without engine running to verify proper power booster operation.	P-2	1628
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	1607–1608, 1630
<b>V. BRAKES</b>		
<b>F. Related Systems (i.e., Wheel Bearings, Parking Brakes, Electrical)</b>		
1. Remove, clean, inspect, repack, and install wheel bearings; replace seals; install hub and adjust bearings.	P-1	1480, 1482–1483

Task Number and Description	Priority	Page #s
2. Check parking brake system components for wear, binding, and corrosion; clean, lubricate, adjust, and/or replace as needed.	P-2	1629, 1649
3. Check parking brake operation and parking brake indicator light system operation; determine necessary action.	P-1	1629, 1649
4. Check operation of brake stop light system.	P-1	1480–1483
5. Replace wheel bearing and race.	P-2	1484
6. Inspect and replace wheel studs.	P-1	1392, 1394
<b>V. BRAKES</b>		
<b>G. Electronic Brake, Traction Control, and Stability Control Systems</b>		
1. Identify traction control/vehicle stability control system components.	P-3	1660–1661
2. Describe the operation of a regenerative braking system.	P-3	24, 442, 1666–1667

## 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	Page #s
<b>VI. ELECTRICAL/ELECTRONIC SYSTEMS</b>		
<b>A. General</b>		
1. Research service information, including vehicle service history, service precautions, and technical service bulletins.	P-1	109–114
2. Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law).	P-1	266–268
3. Using wiring diagrams to trace electrical/electronic circuits.	P-1	327–342, 1716–1718
4. Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance.	P-1	305, 355–362
5. Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits.	P-1	349–352
6. Use a test light to check operation of electrical circuits.	P-2	353–354
7. Use fused jumper wires to check operation of electrical circuits.	P-2	352–353
8. Measure key-off battery drain (parasitic draw).	P-1	494

Task Number and Description	Priority	Page #s
9. Inspect and test fusible links, circuit breakers, and fuses; determine necessary action.	P-1	283–284, 326–327, 365
10. Repair and/or replace connectors, terminal ends, and wiring of electrical/electronic systems (including solder repair).	P-1	317–327, 334, 419–424
11. Identify electrical/electronic system components and configuration.	P-1	15–17, 277–296, 311–317
<b>VI. ELECTRICAL/ELECTRONIC SYSTEMS</b>		
<b>B. Battery Service</b>		
1. Perform battery state-of-charge test; determine necessary action.	P-1	492
2. Confirm proper battery capacity for vehicle application; perform battery capacity and load test; determine necessary action.	P-1	497–498
3. Maintain or restore electronic memory functions.	P-1	425
4. Inspect and clean battery; fill battery cells; check battery cables, connectors, clamps, and hold-downs.	P-1	499, 527–528
5. Perform slow/fast battery charge according to manufacturer's recommendations.	P-1	494
6. Jump-start vehicle using jumper cables and booster battery or an auxiliary power supply.	P-1	496–497
7. Identify safety precautions for high voltage systems on electric, hybrid-electric, and diesel vehicles.	P-2	438, 454–458, 499–506
8. Identify electrical/electronic modules, security systems, radios, and other accessories, that require reinitialization or code entry after reconnecting vehicle battery.	P-1	410, 411, 992, 1748
9. Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures.	P-2	478, 500
<b>VI. ELECTRICAL/ELECTRONIC SYSTEMS</b>		
<b>C. Starting System</b>		
1. Perform starter current draw test; determine necessary action.	P-1	525–526
2. Perform starter circuit voltage drop tests; determine necessary action.	P-1	526–527
3. Inspect and test starter relays and solenoids; determine necessary action.	P-2	528–529
4. Remove and install starter in a vehicle.	P-1	530, 532
5. Inspect and test switches, connectors, and wires of starter control circuits; determine necessary action.	P-2	529–530
6. Demonstrate knowledge of an automatic idle-stop/start-stop system.	P-3	438–439

Task Number and Description	Priority	Page #s
<b>VI. ELECTRICAL/ELECTRONIC SYSTEMS</b>		
<b>D. Charging System</b>		
1. Perform charging system output test; determine necessary action.	P-1	553–558
2. Inspect, adjust, and/or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment.	P-1	552–553, 558–559
3. Remove, inspect, and/or replace generator (alternator).	P-2	558–559
4. Perform charging circuit voltage drop test; determine necessary action.	P-2	526–527
<b>VI. ELECTRICAL/ELECTRONIC SYSTEMS</b>		
<b>E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems</b>		
1. Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (for lights/driving lights); replace as needed.	P-1	613–616
2. Aim headlights.	P-2	616–617
3. Identify system voltage and safety precautions associated with high-intensity discharge headlights.	P-2	607, 615
4. Disable and enable supplemental restraint system (SRS); verify indicator lamp operation.	P-1	1743, 1745–1746
5. Remove and reinstall door panel.	P-1	649
6. Describe the operation of keyless entry/remote start systems.	P-3	665–666
7. Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators.	P-1	882–883
8. Verify windshield wiper and washer operation; replace wiper blades.	P-1	630

## 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	Page #s
<b>VII. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)</b>		
<b>A. General</b>		
1. Research vehicle service information, including refrigerant/oil type, vehicle service history, service precautions, and technical service bulletins.	P-1	109–114

Task Number and Description	Priority	Page #s
2. Identify heating, ventilation, and air conditioning (HVAC) components and configuration.	P-1	20, 1677–1691
<b>VII. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)</b>		
<b>B. Refrigeration System Components</b>		
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	1709–1710
2. Identify hybrid vehicle A/C system electrical circuits and the service/safety precautions.	P-2	462
3. Inspect A/C condenser for airflow restrictions; determine necessary action.	P-1	1710
<b>VII. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)</b>		
<b>C. Heating, Ventilation, and Engine Cooling Systems</b>		
1. Inspect engine cooling and heater systems hoses and pipes; determine necessary action.	P-1	1710, 1714
<b>VII. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)</b>		
<b>D. Operating Systems and Related Controls</b>		
1. Inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets; determine necessary action.	P-1	146–147, 1697–1698, 1714, 1716
2. Identify the source of A/C system odors.	P-2	1708

## 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	Page #s
<b>VIII. ENGINE PERFORMANCE</b>		
<b>A. General</b>		
1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.	P-1	109–114, 989–990
2. Perform engine absolute manifold pressure test (vacuum/boost); document results.	P-2	114, 997, 1034
3. Perform cylinder power balance test; document results.	P-2	114, 1034–1035
4. Perform cylinder cranking and running compression test; document results.	P-2	114, 1029–1034, 1055–1056
5. Perform cylinder leakage test; document results.	P-2	114, 1034
6. Verify engine operating temperature.	P-1	837–838

Task Number and Description	Priority	Page #s
7. Remove and replace spark plugs; inspect secondary ignition components for wear and damage.	P-1	586–591
<b>VIII. ENGINE PERFORMANCE</b>		
<b>B. Computerized Controls</b>		
1. Retrieve and record diagnostic trouble codes (DTC), OBD monitor status, and freeze frame data; clear codes when applicable.	P-1	403–411, 415–416, 994
2. Describe the use of the OBD monitors for repair and verification.	P-1	400–410
<b>VIII. ENGINE PERFORMANCE</b>		
<b>C. Fuel, Air Induction, and Exhaust Systems</b>		
1. Replace fuel filter(s) where applicable.	P-2	701
2. Inspect, service, or replace air filters, filter housings, and intake ductwork.	P-1	715–716, 1051
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	801–802, 1051
4. Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; determine necessary action.	P-1	801–805
5. Check and refill diesel exhaust fluid (DEF).	P-2	689
<b>VIII. ENGINE PERFORMANCE</b>		
<b>D. Emissions Control Systems</b>		
1. Inspect, test, and service positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; perform necessary action.	P-2	968–969, 971–972

**REQUIRED SUPPLEMENTAL TASKS**

<b>Task Number and Description</b>	<b>Page #s</b>
<b>Shop and Personal Safety</b>	
1. Identify general shop safety rules and procedures.	83–84
2. Utilize safe procedures for handling of tools and equipment.	77, 83
3. Identify and use proper placement of floor jacks and jack stands.	84
4. Identify and use proper procedures for safe lift operation.	76–77
5. Utilize proper ventilation procedures for working within the lab/shop area.	81
6. Identify marked safety areas.	78
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.	79–80
8. Identify the location and use of eyewash stations.	83
9. Identify the location of the posted evacuation routes.	78
10. Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities.	83
11. Identify and wear appropriate clothing for lab/shop activities.	83
12. Secure hair and jewelry for lab/shop activities.	83
13. Demonstrate awareness of the safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits.	54, 82, 454–458, 607
14. Demonstrate awareness of the safety aspects of high voltage circuits (such as high intensity discharge (HID) lamps, ignition systems, injection systems, etc.).	54, 82, 607
15. Locate and demonstrate knowledge of material safety data sheets (MSDS).	84–85
<b>Tools and Equipment</b>	
1. Identify tools and their usage in automotive applications.	42–54, 59–71
2. Identify standard and metric designation.	89–90
3. Demonstrate safe handling and use of appropriate tools.	42, 51–52, 59–70
4. Demonstrate proper cleaning, storage, and maintenance of tools and equipment.	41–42
5. Demonstrate proper use of precision measuring tools (i.e., micrometer, dial-indicator, dial-caliper).	91, 93–97, 106, 880
<b>Preparing Vehicle for Service</b>	
1. Identify information needed and the service requested on a repair order.	114–115



Task Number and Description	Page #s
2. Identify purpose and demonstrate proper use of fender covers, mats.	71
3. Demonstrate use of the three Cs (concern, cause, and correction).	112
4. Review vehicle service history.	—
5. Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.	114–115
<b>Preparing Vehicle for Customer</b>	
1. Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, etc.).	71, 1222

## Workplace Employability Skills

Task Number and Description	Page #s
<b>Personal Standards</b>	
1. Reports to work daily on time; able to take directions and motivated to accomplish the task at hand.	157, 230
2. Dresses appropriately and uses language and manners suitable for the workplace.	159
3. Maintains appropriate personal hygiene.	159
4. Meets and maintains employment eligibility criteria, such as drug/alcohol-free status, clean driving record, etc.	159
5. Demonstrates honesty, integrity, and reliability.	159, 230, 296, 342
<b>Work Habits/Ethic</b>	
1. Complies with workplace policies/laws.	1384
2. Contributes to the success of the team, assists others, and requests help when needed.	158–159, 180
3. Works well with all customers and coworkers.	72, 84, 180
4. Negotiates solutions to interpersonal and workplace conflicts.	158
5. Contributes ideas and initiative.	158
6. Follows directions.	158
7. Communicates (written and verbal) effectively with customers and coworkers.	84, 159–160, 180
8. Reads and interprets workplace documents; writes clearly and concisely.	160
9. Analyzes and resolves problems that arise in completing assigned tasks.	158
10. Organizes and implements a productive plan of work.	158–159, 854–855
11. Uses scientific, technical, engineering, and mathematic principles and reasoning to accomplish assigned tasks.	89–105, 266–272, 316, 347–349, 1603–1604
12. Identifies and addresses the needs of all customers, providing helpful, courteous, and knowledgeable service and advice as needed.	84, 160, 194, 296