



Crawford County Career & Technical Center

Student Start Date: _____

Student Name: _____

Competency Task List – Secondary Component

Automobile/Automotive Mechanics Technology/Technician CIP 47.0604

High School Graduation Years 2022, 2023, 2024

100 Orientation

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|---|--|------|
| 101 | Explain and follow all lab rules. | | |
| 102 | Participate in basic shop management. | | |
| 103 | Participate in parts ordering. | | |
| 104 | Demonstrate auto shop safety and hygiene. | | |
| 105 | Demonstrate the use of service information. | | |
| 106 | Demonstrate proper telephone courtesy. | | |
| 107 | Identify a vehicle by sight, vehicle identification number (VIN) and ID tag. | | |
| 108 | Identify career paths within the automotive technology profession. | | |
| 109 | Complete a work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. | | |
| 110 | Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins. | | |
| 111 | Locate and interpret vehicle and major component identification numbers. | | |

200 Safety

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|---|--|------|
| 201 | Identify and follow all safety rules. | | |
| 202 | Demonstrate the ability to secure vehicles on jack stands and hydraulic lifts. | | |
| 203 | Demonstrate the ability to set-up/shut-down oxygen acetylene welding equipment. | | |
| 204 | Identify chemical safety, Right-To-Know laws and Safety Data Sheets (SDS). | | |
| 205 | Identify and use hand tools. | | |
| 206 | Identify and use power tools. | | |
| 207 | Wear personal protective equipment (PPE). | | |
| 208 | Follow guidelines for use of fire protection equipment. | | |
| 209 | RESERVED | | |
| 210 | Follow EPA and OSHA regulations. | | |

300 Tools/Fasteners

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|--|--|------|
| 301 | Identify and use fasteners and bolts. | | |
| 302 | Drill and use re-threading tools. | | |
| 303 | Read and interpret precision automotive measuring tools. | | |
| 304 | Identify and use automotive specialty tools. | | |
| 305 | Perform common fastener and thread repairs, including remove broken bolt, restore internal and external threads, and repair internal threads with a threaded insert. | | |

400 Certifications

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|---|--|------|
| 401 | Prepare to obtain PA Safety Inspection Certification. | | |
| 402 | Prepare to obtain EPA 609 Refrigerant Recovery and Recycling Certification. | | |
| 403 | Prepare to obtain Emission Inspection Certification. | | |

500 Suspension and Steering

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|--|--|------|
| 501 | RESERVED | | |
| 502 | Identify and interpret suspension and steering system concerns and determine necessary actions. | | |
| 503 | RESERVED | | |
| 504 | RESERVED | | |
| 505 | RESERVED | | |
| 506 | RESERVED | | |
| 507 | Inspect rack and pinion steering gear and mounting bushings and brackets. | | |
| 508 | Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots. | | |
| 509 | Determine proper power steering fluid type and inspect fluid level and condition. | | |
| 510 | Flush, fill, and bleed power steering system. | | |
| 511 | Diagnose power steering fluid leakage and determine necessary actions. | | |
| 512 | RESERVED | | |
| 513 | Remove and reinstall power steering pump. | | |
| 514 | Remove and reinstall press fit power steering pump pulley and check pulley and belt alignment. | | |
| 515 | Inspect and replace power steering hoses and fittings. | | |
| 516 | Inspect and replace pitman arm, relay (centerlink/intermediate) rod, idler arm and mountings, and steering linkage damper. | | |

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| 517 | Inspect, replace, and adjust tie rod ends (sockets), tie rod sleeves, and clamps. | | |
| 518 | RESERVED | | |
| 519 | Inspect, and replace upper and lower control arms, bushings, shafts, and rebound bumpers. | | |
| 520 | Inspect and replace strut rods and bushings. | | |
| 521 | Inspect and replace upper and lower ball joints. | | |
| 522 | Inspect and replace steering knuckle assemblies. | | |
| 523 | Inspect and replace short and long arm suspension system coil springs and spring insulators. | | |
| 524 | Inspect, replace, and adjust suspension system torsion bars and inspect mounts. | | |
| 525 | Inspect and replace stabilizer bar bushings, brackets, and links. | | |
| 526 | Inspect and replace strut cartridge or assembly, strut coil spring, insulators (silencers), and upper strut bearing mount. | | |
| 527 | Inspect, remove, and replace shock absorbers. | | |
| 528 | RESERVED | | |
| 529 | Lubricate suspension and steering systems. | | |
| 530 | Perform pre-alignment inspection and measure vehicle ride height and; perform necessary actions. | | |
| 531 | Perform four-wheel alignment. | | |
| 532 | RESERVED | | |
| 533 | RESERVED | | |
| 534 | RESERVED | | |
| 535 | Check front and rear cradle (subframe) alignment. | | |
| 536 | Inspect tire condition, identify tire wear patterns, and check and adjust air pressure. | | |
| 537 | Diagnose wheel/tire vibration, shimmy, and noise. | | |
| 538 | Rotate tires according to manufacturer's recommendations. | | |
| 539 | Measure wheel, tire, axle flange, and hub runout. | | |
| 540 | RESERVED | | |
| 541 | Dismount, inspect, and remount tire on wheel and balance wheel and tire assembly (static and dynamic). | | |

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| 542 | Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor. | | |
| 543 | RESERVED | | |
| 544 | Inspect tire and wheel assembly for air loss. | | |
| 545 | Repair tire using internal patch. | | |
| 546 | Identify indirect and direct tire pressure monitoring systems (TPMS), calibrate system, and verify operation of instrument panel lamps. | | |
| 547 | Identify steps required to remove and replace sensors in a tire pressure monitoring system (TPMS) including relearn procedure. | | |
| 548 | Identify the need for reset procedures post wheel alignment. | | |

600 Brakes

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|---|--|------|
| 601 | RESERVED | | |
| 602 | Identify and interpret brake system concerns. | | |
| 603 | RESERVED | | |
| 604 | RESERVED | | |
| 605 | Measure brake pedal height, travel, and free play as applicable. | | |
| 606 | Check master cylinder for internal/external leaks and proper operation. | | |
| 607 | Remove, bench bleed, and reinstall master cylinder. | | |
| 608 | Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging or wear; tighten loose fittings and supports; and determine necessary actions. | | |
| 609 | Replace brake lines, hoses, fittings, and supports. | | |
| 610 | Fabricate brake lines using proper material and flaring procedures (double flare and ISO types). | | |
| 611 | Select, handle, store, and test brake fluid for contamination and fill to proper level. | | |
| 612 | Inspect, test, and replace components of brake warning light system. | | |
| 613 | Bleed and flush brake system. | | |
| 614 | Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging, or | | |

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| | pedal pulsation concerns. | | |
| 615 | Remove, clean, inspect, and measure brake drums. | | |
| 616 | Refinish brake drum and measure final drum diameter. | | |
| 617 | Remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates then lubricate and reassemble. | | |
| 618 | Inspect and install wheel cylinders. | | |
| 619 | Pre-adjust brake shoes and parking brake, install brake drums or drum/hub assemblies, and wheel bearings. | | |
| 620 | Install wheel, torque lug nuts, and make final checks and adjustments. | | |
| 621 | RESERVED | | |
| 622 | Remove caliper assembly, inspect for leaks, and damage to caliper housing. | | |
| 623 | Clean and inspect caliper mounting and slides/pins for operation, wear, and damage. | | |
| 624 | Reassemble, lubricate, and reinstall caliper, pads, and related hardware; seat pads; and inspect for leaks. | | |
| 625 | Clean, inspect, and measure rotor thickness, lateral runout, and thickness variation. | | |
| 626 | Remove and reinstall rotor. | | |
| 627 | Refinish rotor on vehicle and measure final rotor thickness. | | |
| 628 | Refinish rotor off vehicle and measure final rotor thickness. | | |
| 629 | RESERVED | | |
| 630 | Check brake pad wear indicator system operation. | | |
| 631 | RESERVED | | |
| 632 | Check vacuum supply to vacuum-type power booster and check power assist operation. | | |
| 633 | Remove, clean, inspect, repack, and install wheel bearings, RACES and replace seals; install hub; and adjust bearings. | | |
| 634 | Check parking brake cables and components including integral parking brake system for wear, binding, and corrosion then clean, lubricate, adjust, or replace as needed. | | |
| 635 | Check parking brake and indicator light system operation. | | |
| 636 | Check operation of brake stop light system. | | |

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| 637 | RESERVED | | |
| 638 | Inspect and replace wheel studs. | | |
| 639 | Remove and reinstall sealed wheel bearing assembly. | | |
| 640 | Identify and inspect electronic brake control system components. | | |
| 641 | Diagnose electronic brake control system, electronic control(s), and components by retrieving diagnostic trouble codes and using recommended test equipment. | | |
| 642 | RESERVED | | |
| 643 | Bleed the electronic brake control system hydraulic circuits. | | |
| 644 | Identify traction control/vehicle stability control system components. | | |
| 645 | Describe the operation of a regenerative braking system. | | |

700 Electrical/Electronic Systems

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|---|--|------|
| 701 | RESERVED | | |
| 702 | Identify and interpret electrical/electronic system concerns. | | |
| 703 | RESERVED | | |
| 704 | RESERVED | | |
| 705 | Use wiring diagrams during diagnosis of electrical circuit problems. | | |
| 706 | Check electrical circuits with a test light. | | |
| 707 | Check electrical circuits using fused jumper wires. | | |
| 708 | Locate shorts, grounds, opens, and resistance problems in electrical/electronic circuits. | | |
| 709 | Measure and diagnose the cause(s) of excessive parasitic draw. | | |
| 710 | Inspect and test fusible links, circuit breakers, and fuses. | | |
| 711 | Inspect and test switches, connectors, relays, solenoid solid state devices, and wires of electrical/electronic circuits. | | |
| 712 | Remove and replace terminal end from connector, replace connectors, and terminal ends. | | |
| 713 | Repair wiring harness and solder repair. | | |

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| 714 | RESERVED | | |
| 715 | Identify location of electric hybrid vehicle high voltage circuit disconnect (service plug) location and safety procedures. | | |
| 716 | Perform battery state-of-charge test. | | |
| 717 | Perform battery capacity test and confirm proper battery capacity for vehicle application. | | |
| 718 | Maintain and restore electronic memory functions. | | |
| 719 | Inspect, clean, fill, and replace battery, battery cables, connectors, clamps, and hold-downs. | | |
| 720 | Perform battery charge. | | |
| 721 | Start a vehicle using jumper cables or an auxiliary power supply. | | |
| 722 | Identify electronic modules, security systems, radios, and other accessories that require reinitialization or code entry following battery disconnect. | | |
| 723 | Perform starter current draw tests. | | |
| 724 | Perform starter circuit voltage drop tests. | | |
| 725 | Inspect and test starter relays and solenoids. | | |
| 726 | Remove and install starter in a vehicle. | | |
| 727 | Inspect and test switches, connectors, and wires of starter control circuits and perform necessary action. | | |
| 728 | Differentiate between electrical and engine mechanical problems that cause a slow-crank or no-crank condition. | | |
| 729 | Perform charging system output test and determine necessary action. | | |
| 730 | Diagnose charging system for the cause of undercharge, no-charge, and overcharge conditions. | | |
| 731 | RESERVED | | |
| 732 | Remove, inspect, and install generator (alternator). | | |
| 733 | RESERVED | | |
| 734 | RESERVED | | |
| 735 | Inspect, replace, and aim headlights and bulbs. | | |
| 736 | RESERVED | | |
| 737 | RESERVED | | |
| 738 | RESERVED | | |
| 739 | Diagnose the cause of incorrect operation of warning devices and other | | |

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| | driver information systems. | | |
| 740 | Diagnose incorrect horn operation. | | |
| 741 | Diagnose incorrect wiper operation and diagnose wiper speed control and park problems. | | |
| 742 | Diagnose incorrect washer operation. | | |
| 743 | Diagnose incorrect operation of motor-driven accessory circuits. | | |
| 745 | RESERVED | | |
| 746 | Remove and reinstall door panel. | | |
| 747 | Use a digital multimeter (DMM). | | |
| 748 | Demonstrate knowledge of an automatic idle start/stop system. | | |

800 Engine Performance

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|--|--|------|
| 801 | RESERVED | | |
| 802 | Identify and interpret engine performance concern. | | |
| 803 | RESERVED | | |
| 804 | RESERVED | | |
| 805 | RESERVED | | |
| 806 | Diagnose abnormal engine noise or vibration concerns. | | |
| 807 | Diagnose abnormal exhaust color, odor, and sound. | | |
| 808 | Perform engine absolute (vacuum/boost) manifold pressure tests. | | |
| 809 | Perform cylinder power balance test. | | |
| 810 | Perform cylinder cranking and running compression tests. | | |
| 811 | Perform cylinder leakage test. | | |
| 812 | Diagnose engine mechanical, electrical, electronic, fuel, and ignition concerns. | | |
| 813 | Verify engine operating temperature. | | |
| 814 | RESERVED | | |
| 815 | RESERVED | | |

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| 816 | Retrieve and record diagnostic trouble codes, OBD monitor status, and freeze frame data and clear codes when applicable. | | |
| 817 | Diagnose the causes of emissions or drivability concerns with stored or active diagnostic trouble codes and obtain, graph, and interpret scan tool data. | | |
| 818 | Access and use service information to perform step-by-step diagnosis. | | |
| 819 | Perform active tests of actuators using a scan tool. | | |
| 820 | Describe the importance of running all OBDII monitors for repair verification. | | |
| 821 | RESERVED | | |
| 822 | Inspect and test ignition primary and secondary circuit wiring and solid-state components and test ignition coil(s). | | |
| 823 | Inspect and test crankshaft and camshaft position sensor(s). | | |
| 824 | Inspect, test, and replace ignition control module and powertrain/engine control module and reprogram as necessary. | | |
| 825 | Diagnose hot or cold no-starting, hard starting, poor drivability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems. | | |
| 826 | Inspect and test fuel pumps and pump control systems for pressure, regulation, and volume. | | |
| 827 | Replace fuel filters. | | |
| 828 | Inspect throttle body, air induction system, intake manifold, and gaskets for vacuum leaks and unmetered air. | | |
| 829 | Inspect and test fuel injectors. | | |
| 830 | Verify idle control operation. | | |
| 831 | Inspect the integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shield(s). | | |
| 832 | RESERVED | | |
| 833 | Inspect, test, and service positive crankcase ventilation (PCV) filter/breather cap, valve, tubes, orifices, and hoses. | | |
| 834 | RESERVED | | |
| 835 | Inspect, test, service, and replace components of the EGR system, including electrical/electronic sensors, controls, and wiring, EGR tubing, exhaust passages, vacuum/pressure controls, filters, and hoses. | | |
| 836 | RESERVED | | |

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| 837 | Inspect and test mechanical components of secondary air injection systems. | | |
| 838 | Inspect and test electrical/electronically operated components and circuits of air injection systems. | | |
| 839 | Inspect and test catalytic converter efficiency. | | |
| 840 | RESERVED | | |
| 841 | Inspect and test components and hoses of the evaporative emissions control system. | | |
| 842 | Interpret diagnostic trouble codes (DTCs) and scan tool data related to the emissions control systems. | | |
| 843 | RESERVED | | |
| 844 | RESERVED | | |
| 845 | RESERVED | | |
| 846 | RESERVED | | |

900 Engine Repair

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|--|--|------|
| 901 | RESERVED | | |
| 902 | Verify operation of the instrument panel engine warning indicators. | | |
| 903 | Install engine covers using gaskets, seals, and sealers. | | |
| 904 | RESERVED | | |
| 905 | Adjust valves (mechanical or hydraulic lifters). | | |
| 906 | Inspect, replace, and adjust drive belts, tensioners, and pulleys and check pulley and belt alignment. | | |
| 907 | Inspect and test coolant, drain and recover coolant, and flush and refill cooling system with recommended coolant. | | |
| 908 | Perform cooling system pressure tests; check coolant condition; inspect and test radiator, pressure cap, coolant recovery tank, and hoses. | | |
| 909 | Identify components and inspect engine assembly for fuel, oil, coolant, and other leaks. | | |
| 910 | Remove and replace timing belt and verify correct camshaft timing. | | |
| 911 | Remove and replace thermostat and gasket/seal. | | |

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| 912 | Inspect and test mechanical/electrical fans, fan clutch, fan shroud/ducting, air dams, and fan control devices. | | |
| 913 | Perform engine oil and filter change. | | |

1000 Automatic Transmission and Transaxle

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|--|--|------|
| 1001 | RESERVED | | |
| 1002 | Check fluid level and fluid condition in a transmission or a transaxle equipped with a dip-stick. | | |
| 1003 | Check fluid level and fluid condition in a transmission or a transaxle not equipped with a dip-stick. | | |
| 1004 | Drain, replace, and exchange fluid and filter(s). | | |
| 1005 | Identify drivetrain components and configuration. | | |
| 1006 | Inspect, adjust, and replace external manual valve shift linkage, transmission range sensor/switch, and park/neutral switch. | | |
| 1007 | Inspect for leakage at external seals, gaskets, and bushings. | | |
| 1008 | Inspect, replace, and align powertrain mounts. | | |

1100 Manual Drive Train and Axles

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|--|--|------|
| 1101 | RESERVED | | |
| 1102 | Drain and refill manual transmission/transaxle and final drive unit. | | |
| 1103 | Check and adjust clutch master cylinder fluid level. | | |
| 1104 | Check for system leaks. | | |
| 1105 | Check and adjust differential housing fluid level. | | |
| 1106 | Drain and refill differential housing. | | |
| 1107 | Identify, inspect, and replace manual drivetrain and axle components and | | |

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|--|----------------|--|--|
| | configuration. | | |
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1200 Heating and Air Conditioning

| Item | Task | (X) Indicates Proficiency ¹ | Date |
|------|--|--|------|
| 1201 | RESERVED | | |
| 1202 | RESERVED | | |
| 1203 | Inspect air conditioning (A/C) condenser for airflow restrictions. | | |
| 1204 | Inspect engine cooling and heating systems hoses. | | |
| 1205 | Inspect A/C heating ducts, doors, hoses, cabin filters, and outlets. | | |
| 1206 | Check for A/C leaks. | | |

¹ Student Demonstrated Entry-Level Industry Proficiency as Indicated by (X)

Secondary CTE Instructor Signature _____ Date _____

Student Signature _____ Date _____