



Division BMW Performance Center

Your/Our Reference

Your message dated

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Date 15 November 2017

Subject Anderson Career Center Automotive Technology – Letter of Recommendation

The Anderson Career Center District 1 & 2 Automotive Technology program is a fantastic start for students who have an interest in the automotive industry. The quality of this program, their equipment and the instructor, set the standard in our area. For this reason we have partnered with the school, offering various experiences and new technology training for these upcoming technicians. Each year we bring BMW's newest vehicles with the latest technology to the school so the students can gain knowledge about the current and future direction of the industry.

During our visits, we are continually impressed with the quality of students this program produces. Students show a level of professionalism that indicates their readiness for higher education and the workforce, as they near graduation. Additionally, each year the instructor, Kale Fortenberry, finds ways to improve the program and tailor it to the needs of the workforce.

For these reasons, I would highly recommend this program for this award, as the education provided to students is very impressive.

Best regards,

Jonathan Stribble
Product & Delivery Support Specialist

Company

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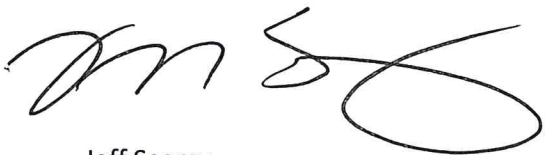
November 14, 2017

As General Manager of Piedmont Automotive in Anderson, South Carolina, I would like to extend my support of the Automotive Technology Program that is led by Kale Fortenberry through Anderson 1 and 2 Career and Technology Center in Williamston, South Carolina. We have worked closely with Kale and his students through several different avenues like internships, coops, interviewing skills and mentoring programs.

The Work Base Learning with ACTC has enabled us to have students that COOP with us, meaning they work in the evening at Piedmont Honda so they are exposed to work experience and our procedures to ready them for the future after college.

The results of the student COOP program hopefully will produce well rounded employees who have a better work ethic since they are already familiar with the processes of the automotive field and have the potential of entering in the workforce with a higher pay grade.

The Automotive Technology Program at ACTC is a program with professionalism and encouraging for businesses like us who thrive on exceptional employees.



Jeff Searcy

General Manager

Piedmont Honda





Today's Class

NATEF 2013

MLR TASK LIST TO LAB SHEET CROSSWALK

REQUIRED SUPPLEMENTAL TASKS (RST)

TASK #	TASK DESCRIPTION	LAB SHEET TITLE
A. SHOP AND PERSONAL SAFETY		
RSTA1	Identify general shop safety rules and procedures.	General Shop Safety
RSTA2	Utilize safe procedures for handling of tools and equipment.	Safety Procedures For Handling Tools and Equipment
RSTA3	Identify and use proper placement of floor jacks and jack stands.	Safety Procedures For Handling Tools and Equipment
RSTA4	Identify and use proper procedures for safe lift operation.	Safety Procedures For Handling Tools and Equipment
RSTA5	Utilize proper ventilation procedures for working within the lab/shop area.	Safety Procedures For Handling Tools and Equipment
RSTA6	Identify marked safety areas.	Personal/ Environmental Shop Safety
RSTA7	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.	Personal/ Environmental Shop Safety
RSTA8	Identify the location and use of eye wash stations.	Personal/ Environmental Shop Safety
RSTA9	Identify the location of the posted evacuation routes.	Personal/ Environmental Shop Safety
RSTA10	Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities.	General Shop Safety
RSTA11	Identify and wear appropriate clothing for lab/shop activities.	General Shop Safety
RSTA12	Secure hair and jewelry for lab/shop activities.	General Shop Safety
RSTA13	Demonstrate awareness of the safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits.	General Shop Safety

RSTA14	Demonstrate awareness of the safety aspects of high voltage circuits (such as high intensity discharge (HID) lamps, ignition systems, injection systems, etc.).	General Shop Safety	
RSTA15	Locate and demonstrate knowledge of material safety data sheets (MSDS).	Personal/ Environmental Shop Safety	
B. TOOLS AND EQUIPMENT			
RSTB1	Identify tools and their usage in automotive applications.	Automotive Tools	
RSTB2	Identify standard and metric designation.	Automotive Tools	
RSTB3	Demonstrate safe handling and use of appropriate tools.	Automotive Tools	
RSTB4	Demonstrate proper cleaning, storage, and maintenance of tools and equipment.	Automotive Tools	
RSTB5	Demonstrate proper use of precision measuring tools (i.e. micrometer, dial-indicator, dial-caliper).	Automotive Measuring Tools	
C. PREPARING VEHICLE FOR SERVICE			
RSTC1	Identify information needed and the service requested on a repair order.	Preparing a Vehicle For Service	
RSTC2	Identify purpose and demonstrate proper use of fender covers, mats.	Preparing a Vehicle For Service	
RSTC3	Demonstrate use of the three "C's" (concern, cause, and correction).	Preparing a Vehicle For Service	
RSTC4	Review vehicle service history.	Preparing a Vehicle For Service	
RSTC5	Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.	Preparing a Vehicle For Service	
D. PREPARING VEHICLE FOR CUSTOMER			
RSTD1	Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, etc.).	Preparing the Vehicle For Return to the Customer	

Today's Class

NATEF 2013

MLR TASK LIST TO LAB SHEET CROSSWALK

VI. ELECTRICAL/ELECTRONIC SYSTEMS

TASK #	TASK DESCRIPTION	PRIORITY	LAB SHEET TITLE
A. GENERAL			
MLR VIA1	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.	P-1	Vehicle Service Information and History
MLR VIA2	Demonstrate knowledge of electrical/electronic series, parallel and series-parallel circuits using principles of electricity (Ohm's Law).	P-1	Diagnose the Electrical/ Electronic Integrity of Electrical Circuits Using OHM's Law
MLR VIA3	Use wiring diagrams to trace electrical/electronic circuits.	P-1	Using Wiring Diagrams
MLR VIA4	Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance.	P-1	Using A Digital Multimeter (DMM)
MLR VIA5	Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits.	P-2	Diagnose The Effects of Electrical System Faults
MLR VIA6	Check operation of electrical circuits with a test light.	P-2	Check Electrical Circuits Using A Test Light
MLR VIA7	Check operation of electrical circuits with fused jumper wires.	P-2	Check Electrical Circuits Using Fused Jumper Wires
MLR VIA8	Measure key-off battery drain (parasitic draw).	P-1	Measure Key-Off Battery Drain (Parasitic Draw)
MLR VIA9	Inspect and test fusible links, circuit breakers, and fuses; determine necessary action.	P-1	Inspect and Test Fuses, Fusible Links, and Circuits Breakers
MLR VIA10	Perform solder repair of electrical wiring.	P-1	Perform Solder Repair of Electrical Wiring

MLR VIA11	Replace electrical connectors and terminal ends.	P-1	Replace Electrical Connectors And Terminal Ends
B. BATTERY SERVICE			
MLR VIB1	Perform battery state-of-charge test; determine necessary action.	P-1	Measure The Battery's State of Charge
MLR VIB2	Confirm proper battery capacity for vehicle application; perform battery capacity test; determine necessary action.	P-1	Confirm Battery Application and Perform a Load Test
MLR VIB3	Maintain or restore electronic memory functions.	P-1	Maintain or Restore the Electronic Memory Functions
MLR VIB4	Inspect and clean battery; fill battery cells; check battery cables, connectors, clamps, and hold-downs.	P-1	Inspect, Clean, Fill, and Replace a Battery
MLR VIB5	Perform slow/fast battery charge according to manufacturer's recommendations.	P-1	Perform Battery Charge
MLR VIB6	Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply.	P-1	Perform a Jump Start of a Vehicle
MLR VIB7	Identify high-voltage circuits of electric or hybrid electric vehicle and related safety precautions.	P-3	Identify High Voltage Circuits of Electric or Hybrid Vehicles
MLR VIB8	Identify electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery.	P-1	Identify Modules That Require Reinitialization
MLR VIB9	Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures.	P-3	Hybrid Vehicle Auxiliary Battery Service
C. STARTING SYSTEM			
MLR VIC1	Perform starter current draw tests; determine necessary action.	P-1	Perform Starter Current Draw Test
MLR VIC2	Perform starter circuit voltage drop tests; determine necessary action.	P-1	Perform Starter Circuit Voltage Drop Tests
MLR VIC3	Inspect and test starter relays and solenoids; determine necessary action.	P-2	Test the Starter Relays and Solenoids
MLR VIC4	Remove and install starter in a vehicle.	P-1	Remove and Install a Starter
MLR VIC5	Inspect and test switches, connectors, and wires of starter control circuits; determine necessary action.	P-2	Test the Starter Control System

D. CHARGING SYSTEM			
MLR VID1	Perform charging system output test; determine necessary action.	P-1	Perform a Charging System Output Test
MLR VID2	Inspect, adjust, or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment.	P-1	Inspect and Adjust Generator Drive Belt
MLR VID3	Remove, inspect, and re-install generator (alternator).	P-2	Remove and Install the Generator (Alternator)
MLR VID4	Perform charging circuit voltage drop tests; determine necessary action.	P-1	Perform Charging Circuits Voltage Drop Tests
E. LIGHTING SYSTEMS			
MLR VIE1	Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed.	P-1	Inspect and Test Lighting System
MLR VIE2	Aim headlights.	P-2	Aim Headlights
MLR VIE3	Identify system voltage and safety precautions associated with high-intensity discharge headlights.	P-2	Safety Precautions For High Intensity Discharge Headlights
F. ACCESSORIES			
MLR VIF1	Disable and enable airbag system for vehicle service; verify indicator lamp operation.	P-1	Disarm and Enable the Air Bag System
MLR VIF2	Remove and reinstall door panel.	P-1	Remove and Reinstall a Door Panel
MLR VIF3	Describe the operation of keyless entry/remote-start systems.	P-3	Keyless Entry/Remote Start Systems
MLR VIF4	Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators.	P-1	Verify Operation of Instrument Panel
MLR VIF5	Verify windshield wiper and washer operation; replace wiper blades.	P-1	Test Windshield Wiper and Washer Operation



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IV. SUSPENSION AND STEERING

TASK #	TASK DESCRIPTION	PRIORITY	TASK EVALUATION SHEET TITLE
MLR IVA1	Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins.	P-1	Vehicle Service Information and History
MLR IVA2	Disable and enable supplemental restraint system (SRS); verify indicator lamp operation.	P-1	Disable and Enable a Supplemental Restraint System (SRS)
MLR IVA3	Identify suspension and steering system components and configurations.	P-1	Suspension and Steering Components and Configurations
MLR IVB1	Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots.	P-1	Inspect Rack-and-Pinion Inner Tie-Rods and Bellows Boots
MLR IVB2	Inspect power steering fluid level and condition.	P-1	Inspect and Adjust Power Steering Fluid Levels
MLR IVB3	Flush, fill, and bleed power steering system; use proper fluid type per manufacturer specification.	P-2	Flush the Power Steering System
MLR IVB4	Inspect for power steering fluid leakage.	P-1	Diagnose Fluid Leaks in the Power Steering System
MLR IVB5	Remove, inspect, replace, and adjust power steering pump drive belt.	P-1	Inspect, Replace, and Adjust the Power Steering Pump Belt
MLR IVB6	Inspect and replace power steering hoses and fittings.	P-2	Inspect and Replace the Power Steering Hoses
MLR IVB7	Inspect pitman arm, relay (center link/intermediate) rod, idler arm, mountings, and steering linkage damper.	P-1	Inspect Steering Linkage Components

MLR IVB8	Inspect tie rod ends (sockets), tie rod sleeves, and clamps.	P-1	Inspect Tie Rods
MLR IVB9	Inspect upper and lower control arms, bushings, and shafts.	P-1	Inspect and Service Control Arms and Bushing
MLR IVB10	Inspect and replace rebound bumpers	P-1	Service Rebound Bumpers
MLR IVB11	Inspect track bar, strut rods/radius arms, and related mounts and bushings.	P-1	Inspect Rear Suspension Control Arms and Bushings
MLR IVB12	Inspect upper and lower ball joints (with or without wear indicators).	P-1	Inspect Ball Joints
MLR IVB13	Inspect suspension system coil springs and spring insulators (silencers).	P-1	Inspect Suspension System Coil Springs
MLR IVB14	Inspect suspension system torsion bars and mounts.	P-1	Inspect Suspension System Torsion Bar Springs
MLR IVB15	Inspect and/or replace front/rear stabilizer bar (sway bar) bushings, brackets, and links.	P-1	Inspect and Replace Stabilizer Bars and Bushings
MLR IVB16	Inspect, remove, and/or replace strut cartridge or assembly; inspect mounts and bushings.	P-2	Inspect, Remove, and Install Strut Assemblies
MLR IVB17	Inspect front strut bearing and mount.	P-1	Inspect Front Strut Bearings and Mounts
MLR IVB18	Inspect rear suspension system lateral links/arms (track bars), control (trailing) arms.	P-1	Inspect Rear Suspension Control Arms and Bushings
MLR IVB19	Inspect rear suspension system leaf spring(s), spring insulators (silencers), shackles, brackets, bushings, center pins/bolts, and mounts.	P-1	Inspect Rear Leaf Springs
MLR IVB20	Inspect, remove, and/or replace shock absorbers; inspect mounts and bushings.	P-1	Inspect and Replace Shocks Absorbers
MLR IVB21	Inspect electric power steering assist system.	P-2	Inspect and Test Electric Power Steering

MLR IVB22	Identify hybrid vehicle power steering system electrical circuits and safety precautions.	P-2	Identify Hybrid Vehicle Power Steering System Electrical Circuits
MLR IVB23	Describe the function of suspension and steering control systems and components, (i.e. active suspension, and stability control).	P-3	Function of Suspension and steering control systems
MLR IVC1	Perform prealignment inspection; measure vehicle ride height.	P-1	Prealignment Inspection
MLR IVC2	Describe alignment angles (camber, caster and toe)	P-1	Wheel Alignment Angles
LR IVD1	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	Inspect Vehicle Tire Condition
MLR IVD2	Rotate tires according to manufacturer's recommendations including vehicles equipped with tire pressure monitoring systems (TPMS).	P-1	Rotate Tires
MLR IVD3	Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly.	P-1	Dismount, Inspect, Mount, and Balance Tires
MLR IVD4	Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor.	P-1	Service a Tire and Wheel Equipped with a Tire Pressure Sensor
MLR IVD5	Inspect tire and wheel assembly for air loss; determine needed action.	P-1	Inspect Tires for Air Leakage
MLR IVD6	Repair tire following vehicle manufacturer approved procedure.	P-1	Repair Tire Punctures
MLR IVD7	Identify indirect and direct tire pressure monitoring systems (TPMS); calibrate system; verify operation of instrument panel lamps.	P-1	Test and Calibrate Tire Pressure Monitoring Systems
MLR IVD8	Demonstrate knowledge of steps required to remove and replace sensors in a tire pressure monitoring system, (TPMS) including relearn procedure.	P-1	Remove and Replace a Tire Pressure Sensor

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V. BRAKES

TASK#	TASK DESCRIPTION	PRIORITY	TASK EVALUATION SHEET TITLE
MLR VA1	Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins.	P-1	Vehicle Service Information and History
MLR VA2	Describe procedure for performing a road test to check brake system operation; including an anti-lock brake system (ABS).	P-1	Road Test Brake System Operation
MLR VA3	Install wheel and torque lug nuts	P-1	Installation of Tire and Wheel Assembly
MLR VA4	Identify brake system components and configuration.	P-1	Brake System Components
MLR VB1	Describe proper brake pedal height, travel, and feel.	P-1	Inspect, Measure, and Adjust the Brake Pedal
MLR VB2	Check master cylinder for external leaks and proper operation.	P-1	Inspect the Master Cylinder for Leaks
MLR VB3	Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, wear and loose fittings/supports.	P-1	Inspect Brake Lines and Hoses
MLR VB4	Select, handle, store, and fill brake fluids to proper level; use proper fluid type per manufacturer specification.	P-1	Check and Adjust the Master Cylinder Fluid Level
MLR VB5	Identify components of hydraulic brake warning light system.	P-3	Test and Repair the Brake Warning Light System
MLR VB6	Bleed and/or flush brake system.	P-1	Bleed and Flush the Brake System
MLR VB7	Test brake fluid for contamination.	P-1	Check Brake Fluid for Contamination

MLR VC1	Remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability.	P-1	Remove and Inspect Brake Drum
MLR VC2	Refinish brake drum and measure final drum diameter; compare with specifications.	P-1	Machine Brake Drums
MLR VC3	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	Disassemble and Inspect Drum Brake Components
MLR VC4	Inspect wheel cylinders for leaks and proper operation; remove and replace as needed.	P-2	Service Wheel Cylinders
MLR VC5	Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; perform final checks and adjustments.	P-1	Install and Adjust Drum Brake Components
MLR VD1	Remove and clean caliper assembly; inspect for leaks and damage/wear; determine needed action.	P-1	Remove, Clean, and Inspect Caliper Assembly
MLR VD2	Inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine needed action.	P-1	Clean, and Inspect Caliper Mounting
MLR VD3	Remove, inspect and/or replace brake pads and retaining hardware; determine needed action.	P-1	Remove, Inspect, and Replace Pads
MLR VD4	Lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads and inspect for leaks.	P-1	Install Disc Brake Calipers
MLR VD5	Clean and inspect rotor and mounting surface, measure rotor thickness, thickness variation, and lateral runout; determine needed action.	P-1	Measure Rotor Thickness, Parallelism, and Runout
MLR VD6	Remove and reinstall/replace rotor.	P-1	Remove and Install Brake Rotors

MLR VD7	Refinish rotor on vehicle; measure final rotor thickness and compare with specifications.	P-1	Machine Disc Brake Rotors On the Vehicle
MLR VD8	Refinish rotor off vehicle; measure final rotor thickness and compare with specifications.	P-1	Machine Disc Brake Rotors Off the Vehicle
MLR VD9	Retract and re-adjust caliper piston on an integral parking brake system.	P-2	Retract and Adjust Integrated Parking Caliper
MLR VD10	Check brake pad wear indicator; determine needed action.	P-1	Test Brake Pad Wear Indicator System
MLR VD11	Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer's recommendations.	P-1	Brake Pad Break-In
MLR VE1	Check brake pedal travel with, and without, engine running to verify proper power booster operation.	P-2	Check Brake Pedal Travel to Verify Vacuum Brake Booster Operation
MLR VE2	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	Identify Components of the Brake Power Assist System and Test Vacuum Supply to Power Brake Booster
MLR VF1	Remove, clean, inspect, repack, and install wheel bearings; replace seals; install hub and adjust bearings.	P-1	Inspect, Replace, and Adjust Serviceable Wheel Bearings
MLR VF2	Check parking brake system components for wear, binding, and corrosion; clean, lubricate, adjust and/or replace as needed.	P-2	Inspect Parking Brake Cables and Components
MLR VF3	Check parking brake operation and parking brake indicator light system operation; determine necessary action.	P-1	Test Parking Brake System
MLR VF4	Check operation of brake stop light system.	P-1	Test the Brake Lights
MLR VF5	Replace wheel bearing and race.	P-2	Replace Serviceable Wheel Bearings
MLR VF6	Inspect and replace wheel studs	P-1	Inspect and Replace Wheel Studs

MLR VG1	Identify traction control/vehicle stability control system components.	P-3	Identify Traction Control and Stability Control System Components
MLR VG2	Describe the operation of a regenerative braking system.	P-3	Regenerative Braking

MAINTENANCE AND LIGHT REPAIR 2017

VI. ELECTRICAL/ELECTRONIC SYSTEMS

TASK #	TASK DESCRIPTION	PRIORITY	TASK EVALUATION SHEET TITLE
MLR VIA1	Research vehicle service information, including vehicle service history, service precautions, and technical service bulletins.	P-1	Vehicle Service Information and History
MLR VIA2	Demonstrate knowledge of electrical/electronic series, parallel and series-parallel circuits using principles of electricity (Ohm's Law).	P-1	Diagnose the Integrity of Electrical Circuits Using Ohm's Law
MLR VIA3	Use wiring diagrams to trace electrical/electronic circuit problems.	P-1	Use Wiring Diagrams
MLR VIA4	Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow and resistance.	P-1	Using a Digital Multimeter (DMM)
MLR VIA5	Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits.	P-1	Diagnose the Effects of Electrical System Faults
MLR VIA6	Use a test light to check operation of electrical circuits.	P-2	Check Electrical Circuits Using a Test Light
MLR VIA7	Use fused jumper wires to check operation of electrical circuits.	P-2	Check Electrical Circuits Using Fused Jumper Wires
MLR VIA8	Measure key-off battery drain (parasitic draw).	P-1	Measure and Diagnose Key-Off Battery Drain (Parasitic Draw)
MLR VIA9	Inspect and test fusible links, circuit breakers, and fuses; determine necessary action.	P-1	Test and Service Fuses, Fusible Links, and Circuits Breakers

MLR VIA10	Repair and/or replace connectors, terminal ends, and wiring of electrical/electronic systems (including solder repair).	P-1	Repair Terminals, Wiring and Wiring Harnesses
MLR VIA11	Identify electrical/electronic system components and configuration.	P-1	Identify Electrical System Components
MLR VIB1	Perform battery state-of-charge test; determine necessary action.	P-1	Measure Battery State of Charge
MLR VIB2	Confirm proper battery capacity for vehicle application; perform battery capacity and load test: determine needed action.	P-1	Perform a Battery Load Test
MLR VIB3	Maintain or restore electronic memory functions.	P-1	Identify, Maintain, or Restore Electronic Memory Functions Affected by Battery Disconnect
MLR VIB4	Inspect and clean battery, fill battery cells, check battery cables, connectors, clamps, and hold-downs.	P-1	Inspect, Clean, and Replace a Battery
MLR VIB5	Perform slow/fast battery charge according to manufacturer's recommendations.	P-1	Charge a Battery
MLR VIB6	Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply.	P-1	Jump Start a Vehicle
MLR VIB7	Identify safety precautions for high-voltage systems on electric, hybrid-electric and diesel vehicles.	P-2	High Voltage Circuits of Electric or Hybrid Vehicles
MLR VIB8	Identify electrical/electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery.	P-1	Identify, Maintain, or Restore Electronic Memory Functions Affected by Battery Disconnect

MLR VIB9	Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures.	P-2	Hybrid Vehicle Auxiliary Battery Service
MLR VIC1	Perform starter current draw tests; determine needed action.	P-1	Inspect the Starting System and Perform Current Draw Test
MLR VIC2	Perform starter circuit voltage drop tests; determine needed action.	P-1	Test the Starter Control Circuit Components
MLR VIC3	Inspect and test starter relays and solenoids; determine needed action.	P-2	Test the Starter Control Circuit Components
MLR VIC4	Remove and install starter in a vehicle.	P-1	Remove and Install a Starter
MLR VIC5	Inspect and test switches, connectors, and wires of starter control circuits; perform needed action.	P-2	Test the Starter Control Circuit Components
MLR VIC6	Demonstrate knowledge of an automatic idle-stop/start-stop system.	P-3	Automotive Automatic Idle Stop/Start Systems
MLR VID1	Perform charging system output test; determine needed action.	P-1	Perform a Charging System Output Test
MLR VID2	Inspect, adjust, and/or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment.	P-1	Remove and Install the Generator and Drive Belt

MLR VID3	Remove, inspect, and/or replace generator (alternator).	P-2	Remove and Install the Generator and Drive Belt
MLR VID4	Perform charging circuit voltage drop tests; determine needed action.	P-2	Perform Charging Circuit Tests
MLR VIE1	Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed.	P-1	Diagnose the Lighting System
MLR VIE2	Aim headlights.	P-2	Inspect, Replace, and Aim Headlights
MLR VIE3	Identify system voltage and safety precautions associated with high-intensity discharge headlights.	P-2	Safety Precautions For High Intensity Discharge Headlights
MLR VIE4	Disable and enable supplemental restraint system (SRS); verify indicator lamp operation.	P-1	Disable and Enable the Supplemental Restraint System
MLR VIE5	Remove and reinstall door panel.	P-1	Remove and Reinstall a Door Panel
MLR VIE6	Describe the operation of keyless entry/remote-start systems.	P-3	Keyless Entry/Remote
MLR VIE7	Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators.	P-1	Test Instrument Panel Operation
MLR VIE8	Verify windshield wiper and washer operation, replace wiper blades.	P-1	Test Windshield Wiper and Washer Operation

MAINTENANCE AND LIGHT REPAIR 2017

VIII. ENGINE PERFORMANCE

TASK #	TASK DESCRIPTION	PRIORITY	TASK EVALUATION SHEET TITLE
MLR VIII A1	Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.	P-1	Vehicle Service Information and History
MLR VIII A2	Perform engine absolute manifold pressure tests; (vacuum/boost); document results.	P-2	Perform Engine Absolute Manifold Pressure Tests
MLR VIII A3	Perform cylinder power balance test; document results.	P-2	Perform a Cylinder Power Balance Test
MLR VIII A4	Perform cylinder cranking and running compression tests; document results.	P-2	Perform Engine Compression Tests
MLR VIII A5	Perform cylinder leakage test; document results.	P-2	Perform a Cylinder Leakage Test
MLR VIII A6	Verify engine operating temperature.	P-1	Verify Engine Operation Temperature
MLR VIII A7	Remove and replace spark plugs; inspect secondary ignition components for wear and damage	P-1	Service Ignition Systems Components
MLR VIII B1	Retrieve and record diagnostic trouble codes (DTC), OBD monitor status, and freeze frame data; clear codes when applicable.	P-1	Obtain and Interpret Diagnostic Trouble Codes and Scan Tool Data
MLR VIII B2	Describe the use of the OBD monitors for repair verification.	P-1	Describe the Importance and Procedures of Running all OBDII Monitors for Verification of Repairs
MLR VIII C1	Replace fuel filter(s) where applicable.	P-2	Inspect and Replace the Fuel Filter
MLR VIII C2	Inspect, service, or replace air filters, filter housings, and intake duct work.	P-1	Inspect and Test the Air Induction System

MLR VIII C3	Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shield(s); determine needed action.	P-1	Inspect, Test, and Service the Exhaust System
MLR VIII C4	Inspect condition of exhaust system hangers, brackets, clamps and heat shields; determine needed action.	P-1	Inspect, Test, and Service the Exhaust System
MLR VIII C5	Check and refill diesel exhaust fluid (DEF).	P-2	Service Diesel Exhaust Fluid (Def)
MLR VIII D1	Inspect, test and service positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; perform needed action.	P-2	Diagnose and Service the Positive Crankcase Ventilation System