

2021 ASE Correlation Chart

Electrical/Electronic (A6)

MLR- Maintenance & Light Repair

AST- Auto Service Technology

MAST- Master Auto Service Technology

	Task	MLR	AST	MAST	Text Page #	Task Page #
A. General						
1.	Research vehicle service information such as fluid type, vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced driver assistance systems (ADAS).	P-1	P-1	P-1	2-4	5, 6, 7,
2.	Identify electrical/electronic system components and configurations.	P-1	P-1	P-1	64-67	15
3.	Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed.	P-1	P-1	P-1	682-683; 685-692	125, 126, 127, 128
4.	Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law).	P-1	P-1	P-1	67-68; 72-81	15-24
5.	Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow and resistance	P-1	P-1	P-1	87-103	25

	Task	MLR	AST	MAST	Text Page #	Task Page #
6.	Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits.	P-1	P-1	P-1	64-66	34, 35, 36
7.	Describe types of test lights; use appropriate test light to check operation of electrical circuits as directed per service information.	P-2	P-1	P-1	85-86	26
8.	Use fused jumper wires to check operation of electrical circuits per service information.	P-2	P-1	P-1	85	27
9.	Use wiring diagrams during the diagnosis of electrical/electronic circuit problems.	P-1	P-1	P-1	131-147	34, 35, 36
10.	Measure and diagnose the cause(s) of excessive key-off battery drain (parasitic draw); determine needed action.	P-2	P-1	P-1	241-243	43
11.	Inspect and test fusible links, circuit breakers, and fuses; determine needed action.	P-1	P-1	P-1	118-123	29
12.	Inspect, test, repair, and/or replace components, connectors, terminals, harnesses, and wiring in electrical/electronic systems (including solder repairs)	P-2 Inspect and replace only	P-1	P-1	123-128	31, 32, 33
13.	Check electrical/electronic circuit waveforms; interpret readings and determine needed repairs.		P-2	P-1	106-112	28
B. Batteries (Conventional 12-volt)						
1.	Perform battery state-of-charge test; determine needed action.	P-1	P-1	P-1	234-235	44
2.	Confirm proper battery capacity for vehicle application; perform battery capacity and load test; determine needed action.	P-1	P-1	P-1	228-229; 235-237	42, 44

	Task	MLR	AST	MAST	Text Page #	Task Page #
3.	Maintain or restore electronic memory functions as recommended by manufacturer.	P-2	P-2	P-2	243-244	45
4.	Inspect and clean battery; fill battery cells (if applicable); check battery cables, connectors, clamps, and hold-downs.	P-1	P-1	P-1	233	46
5.	Perform battery charging according to manufacturer's recommendations.	P-1	P-1	P-1	238-239	47
6.	Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply.	P-1	P-1	P-1	240	48
7.	Identify electrical/electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery.	P-2	P-2	P-2	342-343	49
C. Starting System						
1.	Perform starter current draw tests; determine needed action.	P-1	P-1	P-1	266-267	54
2.	Perform starter circuit voltage drop tests; determine needed action.	P-1	P-1	P-1	264-265	54
3.	Inspect and test starter relays and solenoids; determine needed action.	P-2	P-2	P-2	266-267	55
4.	Remove and install starter in a vehicle.	P-3	P-2	P-1	267; 270	56
5.	Inspect and test switches, connectors, and wires of starter control circuits; determine needed action.	P-2	P-1	P-1	263; 270	55
6.	Demonstrate knowledge of automatic idle-stop/start-stop system.	P-2	P-1	P-1	258-260	-
7.	Differentiate between electrical and engine mechanical problems that cause a slow-crank or a no-crank condition.		P-2	P-1	266-267	54

	Task	MLR	AST	MAST	Text Page #	Task Page #
8.	Diagnose a no-crank condition using a wiring diagram and test equipment; determine needed action.		P-2	P-1	-	-
D. Charging System						
1.	Perform charging system output test; determine needed action.	P-1	P-1	P-1	298	62
2.	Inspect, adjust, and/or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment	P-1	P-1	P-1	293-296; 299-304	63
3.	Remove, inspect, and/or replace generator (alternator).	P-3	P-2	P-1	299-304	64
4.	Perform charging circuit voltage drop tests; determine needed action.	P-2	P-1	P-1	296-297	65
5.	Diagnose charging system for causes of undercharge, no-charge, or overcharge conditions; determine needed action.		P-1	P-1	292-298	63
E. Lighting Systems						
1.	Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); determine needed action	P-1 Inspect and replace only	P-1	P-1	326; 328-330	66
2.	Aim headlights.	P-2	P-2	P-2	328	68
3.	Diagnose (troubleshoot) the causes of brighter-than-normal, intermittent, dim, or no light operation; determine needed action.		P-1	P-1	314-327	66

	Task	MLR	AST	MAST	Text Page #	Task Page #
F. Instrument Cluster and Driver Information Systems						
1.	Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators as required.	P-1	P-1	P-1	335-337	69, 71
2.	Inspect and test gauges and gauge sending units for causes of abnormal readings; determine needed action.		P-2	P-1	337-338; 344	69
3.	Diagnose (troubleshoot) the causes of incorrect operation of warning devices and other driver information systems; determine needed action.		P-2	P-1	335-336; 343-344	70
G. Repair Body Electrical Systems						
1.	Demonstrate understanding and diagnose vehicle comfort, convenience, access, safety, and related systems operation; determine needed action.	P-3	P-2	P-2	365-378	70, 77, 81
2.	Remove and reinstall door panel.	P-2	P-1	P-1		75
3.	Describe and diagnose operation of security/anti-theft systems and related circuits (such as: theft deterrent, door locks, remote keyless entry, remote start, and starter/fuel disable); determine needed repairs.	P-3 Describe operation only	P-2	P-1	375-377	81
4.	Describe disabling and enabling procedures for supplemental restraint system (SRS); verify indicator lamp operation.	P-2	P-1	P-1	413	83
5.	Verify windshield wiper and washer operation; replace wiper blades.	P-1	P-1	P-1	354-360	73

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6.	Diagnose operation of entertainment and related circuits (such as: radio, DVD, remote CD changer, navigation, amplifiers, speakers, antennas, and voice-activated accessories); determine needed repairs.		P-2	P-2	434-436	84
7.	Diagnose operation of safety systems and related circuits (such as: horn, airbags, seat belt pretensioners, occupancy classification, wipers, washers, speed control/collision avoidance, heads-up display, parking assist, and back-up camera); determine needed action.		P-2	P-1	338-339; 353-378; 406-410	72, 74, 76, 77, 81, 82
8.	Diagnose body electronic systems circuits using a scan tool; check for module communication errors (data bus systems); determine needed action.		P-2	P-1	215-219	41, 76
9.	Describe the process for software transfer, software updates, or reprogramming of electronic modules		P-2	P-1	693-695	-

Engine Performance (A8)**MLR-** Maintenance & Light Repair**AST-** Auto Service Technology**MAST-** Master Auto Service Technology

	Task	MLR	AST	MAST	Text Page #	Task Page #
A. General						
1.	Research vehicle service information such as fluid type, vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced driver assistance systems (ADAS).	P-1	P-1	P-1	2-4	5, 6, 7
2.	Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed.	P-1	P-1	P-1	682-683; 685-692	108, 125, 126, 127
3.	Demonstrate understanding of proper engine cooling system operation; verify proper engine cooling system operation; determine needed action.	P-1 Under- standing only	P-1	P-1	504-508	-
4.	Demonstrate understanding of camshaft timing; verify correct camshaft timing including engines equipped with variable valve timing (VVT) systems; determine needed action.	P-1 Under- standing only	P-1	P-1	-	-
5.	Identify and interpret engine performance concerns; determine needed action.		P-1	P-1	679-691	114, 115, 128

	Task	MLR	AST	MAST	Text Page #	Task Page #
6.	Diagnose abnormal engine noises or vibration concerns; determine needed action.		P-3	P-2	681-682	-
7.	Diagnose the cause of excessive oil consumption, coolant consumption, unusual exhaust color, odor, and sound; determine needed action.		P-2	P-2	681-682	-
8.	Perform engine absolute manifold pressure tests (vacuum/boost); determine needed action.		P-2	P-1	523-525	116
9.	Perform cylinder power balance test; determine needed action.		P-1	P-1	-	-
10.	Perform cylinder cranking and running compression tests; determine needed action.		P-1	P-1	-	-
11.	Perform cylinder leakage test; determine needed action.		P-1	P-1	-	-
12.	Diagnose engine mechanical, electrical, electronic, fuel, and ignition concerns; determine needed action.		P-2	P-1	679-685	-
B. Computerized Controls						
1.	Identify computerized control system components and configurations.	P-1	P-1	P-1	464; 591-594; 600	89, 106, 107,
2.	Access and use service information to perform step-by-step (troubleshooting) diagnosis.		P-1	P-1	679-684; 695-696	128

	Task	MLR	AST	MAST	Text Page #	Task Page #
3.	Perform active tests of actuators using a scan tool; determine needed action.		P-1	P-1	685	40, 128
4.	Describe the use of OBD monitors for repair verification		P-1	P-1	695-696	127
5.	Inspect and test computerized engine control system sensors, powertrain/engine control module (PCM/ECM), actuators, and circuits using a graphing multimeter (GMM), digital storage oscilloscope (DSO), and/or scan tool; determine needed action.		P-2	P-1	508; 518; 537; 548-549; 554; 616-617	28, 40, 41, 96-101, 113
6.	Describe the process for reprogramming or recalibrating the powertrain/engine control module (PCM/ECM).		P-1	P-1	693-695	-
7.	Diagnose the causes of emissions or drivability concerns with stored or active diagnostic trouble codes (DTC); obtain, graph, and interpret scan tool data.			P-1	682-683	115
8.	Diagnose emissions or drivability concerns without stored diagnostic trouble codes; determine needed action.			P-1	692-693	109

	Task	MLR	AST	MAST	Text Page #	Task Page #
9.	Diagnose drivability and emissions problems resulting from malfunctions of interrelated systems (cruise control, security alarms, suspension controls, traction controls, HVAC, automatic transmissions, non-OEM installed accessories, or similar systems); determine needed action.			P-1	395	126
C. Ignition System						
1.	Identify ignition system components and configurations.	P-1	P-1	P-1	464-475	89
2.	Remove and replace spark plugs; inspect secondary ignition components for wear and damage; determine needed action.	P-2	P-1	P-1	490-492	93, 94, 95
3.	Diagnose ignition system related problems such as no-starting, hard starting, engine misfire, poor driveability, spark knock, power loss, poor mileage, and emissions concerns; determine needed action.		P-2	P-1	482-500	90, 91, 92
4.	Inspect and test crankshaft and camshaft position sensor(s); determine needed action.		P-2	P-1	483-485	95
5.	Inspect, test, and/or replace ignition control module, powertrain/engine control module; reprogram/initialize as needed.		P-2	P-2	483	-

	Task	MLR	AST	MAST	Text Page #	Task Page #
D. Fuel, Air Induction, and Exhaust Systems						
1.	Identify fuel, air induction, and exhaust system components and configurations.	P-1	P-1	P-1	576-580	105, 106
2.	Replace fuel filter(s) where applicable.	P-2	P-2	P-2	567	104
3.	Inspect, service, or replace air filters, filter housings, and intake duct work.	P-1	P-1	P-1	535; 608	105
4.	Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; determine needed action.	P-1	P-1	P-1	654-657	-
5.	Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; determine needed action.	P-1	P-1	P-1	-	-
6.	Check and refill diesel exhaust fluid (DEF).	P-3	P-3	P-3	-	-
7.	Check fuel for quality, composition, and contamination; determine needed action.		P-2	P-1	445-446	88
8.	Inspect and test fuel pumps and pump control systems for pressure, regulation, and volume; determine needed action.		P-1	P-1	609-611	102, 103
9.	Inspect throttle body, air induction system, intake manifold and gaskets for vacuum leaks and/or unmetered air.		P-1	P-1	617-618	105
10.	Inspect, test, and/or replace fuel injectors on low- and high-pressure systems.		P-2	P-1	613-618	111, 112, 113

	Task	MLR	AST	MAST	Text Page #	Task Page #
11.	Verify proper idle speed; determine needed action.		P-1	P-1	600-601	107
12.	Perform exhaust system back-pressure test; determine needed action.		P-2	P-2	655	116
13.	Diagnose (troubleshoot) 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; determine needed action.			P-2	609-622	110
14.	Test the operation of turbocharger/supercharger systems; determine needed action.			P-2	-	-
E. Emissions Control Systems						
1.	Identify emission control system components and configurations.	P-1	P-1	P-1	640-665	-
2.	Inspect, test, service and /or replace positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; perform needed action.	P-2	P-2	P-2	647-650	117
3.	Diagnose oil leaks, emissions, and drivability concerns caused by the positive crankcase ventilation (PCV) system; determine needed action.		P-2	P-2	647	117

	Task	MLR	AST	MAST	Text Page #	Task Page #
4.	Diagnose emissions and drivability concerns caused by the exhaust gas recirculation (EGR) system; inspect, and test, service and/or replace electrical/electronic sensors, controls, and wiring of exhaust gas recirculation (EGR) systems tubing, exhaust passages, vacuum/pressure controls, filters and hoses of exhaust gas recirculation (EGR) systems; determine needed action.		P-2	P-1	640-646	118, 119, 120
5.	Inspect and test electrical/electronically operated components and circuits of secondary air injection systems; determine needed action.		P-3	P-3	650-652	122
6.	Diagnose emission and drivability concerns caused by catalytic converter system; determine needed action.		P-1	P-1	654-657	121
7.	Diagnose emissions and drivability concerns caused by the evaporative emissions control (EVAP) system; determine needed action.		P-1	P-1	658-665	123, 124
8.	Interpret diagnostic trouble codes (DTCs) and scan tool data related to the emissions control systems; determine needed action		P-1	P-1	646; 650; 652; 658; 665	115