

## APPENDIX 4

### 2017 ASE Correlation Chart

#### Engine Performance (A8)

**MLR-** Maintenance & Light Repair

**AST-** Auto Service Technology (Includes MLR)

**MAST-** Master Auto Service Technology (Includes MLR and AST)

	Task	Priority	MLR	AST	MAST	Text Page #	Task Page #
<b>A. General: Engine Diagnosis</b>							
1.	Identify and interpret engine performance concerns; determine needed action.	P-1		✓	✓	679-691	114
2.	Research vehicle service information including, vehicle service history, service precautions, and technical service bulletins.	P-1	✓	✓	✓	679-683	85-87,89,106,107,125,128
3.	Diagnose abnormal engine noises or vibration concerns; determine needed action.	P-3		✓	✓	681-682	-
4.	Diagnose the cause of excessive oil consumption, coolant consumption, unusual exhaust color, odor, and sound; determine needed action.	P-2		✓	✓	681-682	-
5.	Perform engine absolute manifold pressure tests (vacuum/boost); determine needed action.	P-1		✓	✓	523-525	116
6.	Perform cylinder power balance test; determine needed action.	P-1		✓	✓	-	-
7.	Perform cylinder cranking and running compression tests; determine needed action.	P-1		✓	✓	-	-
8.	Perform cylinder leakage test; determine needed action.	P-1		✓	✓	-	-

9.	Diagnose engine mechanical, electrical, electronic, fuel, and ignition concerns; determine needed action.	P-2		✓	✓	679-685	-
10.	Verify engine operating temperature; determine needed action.	P-1		✓	✓	504-508	-
11.	Verify correct camshaft timing including engines equipped with variable valve timing systems (VVT).	P-1	✓	✓	✓	-	-
<b>B. Computerized Controls Diagnosis and Repair</b>							
1.	Retrieve and record diagnostic trouble codes (DTC), OBD monitor status, and freeze frame data; clear codes when applicable.	P-1		✓	✓	682-683	108, 127
2.	Access and use service information to perform step-by-step (troubleshooting) diagnosis.	P-1		✓	✓	679-684; 695-696	129
3.	Perform active tests of actuators using a scan tool; determine needed action.	P-1		✓	✓	685	40, 129
4.	Describe the use of OBD monitors for repair verification	P-1	✓	✓	✓	695-696	127
5.	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
6.	Diagnose emissions or drivability concerns without stored diagnostic trouble codes; determine needed action.	P-1			✓	692-693	109
7.	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); perform needed action.	P-2			✓	508; 518; 537; 548-549; 554; 616-617	28, 41, 96-101

8.	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-2			✓	395	126
<b>C. Ignition System Diagnosis and Repair</b>							
1.	Diagnose (troubleshoot) ignition system related problems such as no-starting, hard starting, engine misfire, poor drivability, spark knock, power loss, poor mileage, and emissions concerns; determine needed action.	P-2		✓	✓	482-500	90-92
2.	Inspect and test crankshaft and camshaft position sensor(s); determine needed action.	P-1		✓	✓	483-485	95
3.	Inspect, test, and/or replace ignition control module, powertrain/engine control module; reprogram/initialize as needed.	P-3		✓	✓	483	-
4.	Remove and replace spark plugs; inspect secondary ignition components for wear and damage.	P-1	✓	✓	✓	490-492	93, 94
<b>D. Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair</b>							
1.	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
2.	Check fuel for contaminants; determine needed action.	P-2		✓	✓	445-446	88

3.	Inspect and test fuel pumps and pump control systems for pressure, regulation, and volume; perform needed action.	P-1		✓	✓	609-611	102, 103
4.	Replace fuel filter(s) where applicable.	P-2	✓	✓	✓	567	104
5.	Inspect, service, or replace air filters, filter housings, and intake duct work.	P-1	✓	✓	✓	535; 608	103
6.	Inspect throttle body, air induction system, intake manifold and gaskets for vacuum leaks and/or unmeasured air.	P-2		✓	✓	609-610; 617-618	103
7.	Inspect test and /or replace fuel injectors.	P-2		✓	✓	613-618	111-113
8.	Verify idle control operation.	P-1		✓	✓	620	103
9.	Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; perform needed action.	P-1	✓	✓	✓	654-657	-
10.	Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; determine needed action.	P-1	✓	✓	✓	-	-
11.	Perform exhaust system back-pressure test; determine needed action.	P-2			✓	655	-
12.	Check and refill diesel exhaust fluid (DEF).	P-2	✓	✓	✓	-	-
13.	Test the operation of turbocharger/supercharger systems; determine needed action.	P-2			✓	-	-

#### **E. Emissions Control Systems Diagnosis and Repair**

1.	Diagnose oil leaks, emissions, and drivability concerns caused by the positive crankcase ventilation (PCV) system; determine needed action.	P-3		✓	✓	647	117
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2.	Inspect, test, service and /or replace positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; perform needed action.	P-2	✓	✓	✓	647-650	117
3.	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		✓	✓	640-646	118-120
4.	Diagnose emissions and drivability concerns caused by the components and circuits of air injection systems; inspect, test, repair, and/or replace electrical/electronically-operated components and circuits of secondary air injection systems; determine needed action.	P-2		✓	✓	650-652	122
5.	Diagnose emissions and drivability concerns caused by the evaporative emissions control (EVAP) system; determine needed action.	P-2			✓	658-665	123
6.	Diagnose emission and drivability concerns caused by catalytic converter system; determine needed action.	P-2			✓	654-657	121
7.	Interpret diagnostic trouble codes (DTCs) and scan tool data related to the emissions control systems; determine needed action	P-3		✓	✓	646; 650; 652; 658; 665	115