ASE Education Foundation

Engine Performance (A8)

2025 Correlation Chart

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 #
	A. General						
1.	Research vehicle service information such as fluid type, vehicle service history, service precautions, technical service bulletins, and recalls including xEV and vehicles equipped with advanced driver assistance systems (ADAS).	P-1	✓	✓	✓	2-7; 342-353	
2.	Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed	P-1	✓	✓	✓	359-366; 642-655	
3.	Verify proper engine cooling system operation; determine needed action.	P-1	✓*	✓	✓	397-399; 651-652	
4.	Verify correct camshaft timing including engines equipped with variable valve timing (VVT) systems; determine needed action.	P-1	✓**	✓	✓	437	
5.	Identify engine performance concerns; determine needed action.	P-1		✓	✓	383-384	
6.	Diagnose abnormal engine noises or vibration concerns; determine needed action.	P-2		✓ (P-3)	✓	386-387	

*Demonstrate understanding of proper engine cooling system operation.

**Demonstrate understanding of camshaft timing including engines equipped with variable valve timing (VVT) systems.

	Task	Priority	MLR	AST	MAST	Text Page #	Task Page #
7.	Diagnose the cause of excessive oil consumption, coolant consumption, unusual exhaust color, odor, and sound; determine needed action.	P-2		✓	✓	384-385	
8.	Perform engine manifold pressure tests (vacuum/boost); determine needed action.	P-1		✓	✓	394-396	
9.	Perform cylinder power balance test; determine needed action.	P-1		✓ (P-2)	✓	393-394	
10.	Perform cylinder cranking and running compression tests; determine needed action.	P-1		✓	✓	388-302	
11.	Perform cylinder leakage test; determine needed action.	P-1		✓	✓	392-393	
	B. Computerized Controls						
1.	Identify computerized control system components and configurations.	P-1	✓	✓	✓	425-430	
2.	Access and use service information to perform step-by-step (troubleshooting) diagnosis.	P-1		✓	✓	643-654	
3.	Perform active tests of actuators using a scan tool; determine needed action.	P-1		✓	✓	363	
4.	Demonstrate knowledge of OBD readiness flags, monitors, and drive cycle for repair verification	P-1		✓	✓	624-632	
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-1		✓ (P-2)	✓	363; 455-458; 463-464; 483; 492-496; 557-558;	

	Task	Priority	MLR	AST	MAST	Text Page #	Task Page #
6.	Describe the process for reprogramming or recalibrating the powertrain/engine control module (PCM/ECM).	P-1		✓	✓	635-640	
7.	Diagnose the causes of emissions or driveability concerns with stored or active diagnostic trouble codes (DTC); obtain, graph, and interpret scan tool data.	P-1			✓	363-365; 647-654	
8.	Diagnose emissions or driveability concerns without stored or active diagnostic trouble codes; determine needed action.	P-1			✓	643-650	
9.	Diagnose driveability 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			✓	643-654	
	C. Ignition System						
1.	Identify ignition system components and configurations.	P-1	✓	✓	✓	433-440	
2.	Remove and replace spark plugs; inspect secondary ignition components for wear and damage; determine needed action.	P-1	✓ (P-2)	✓	✓	452-455	
3.	Diagnose no-starting, hard starting, engine misfire, poor driveability, spark knock, power loss, poor mileage, and emissions concerns elated to ignition system problems; determine needed action.	P-1		✓ (P-2)	✓	446-459	

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4.	Inspect and test crankshaft and camshaft position sensor(s); determi38ne needed action.	P-1		✓ (P-2)	✓	447-448	
5.	Inspect, test, and/or replace ignition control module and/or powertrain/engine control module; reprogram/initialize as needed.	P-2		✓	✓	448-450	
	D. Fuel, Air Induction, and Exhaust Systems						
1.	Identify fuel, air induction, and exhaust system components and configurations.	P-1	✓	✓	✓	507-579	
2.	Replace fuel filter(s) where applicable.	P-3	✓	✓	✓	517-518	
3.	Inspect, service, or replace air filters, filter housings, and intake duct work.	P-1	✓	✓	✓	383; 481-482	
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	✓	✓	✓	396-397; 575-578; 618-621	
5.	Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; determine needed action.	P-1	✓	✓	✓	492-496	
6.	Check and refill diesel exhaust fluid (DEF).	P-3	✓	✓	✓	-	
7.	Check fuel for quality, composition, and contamination; determine needed action.	P-1		✓ (P-2)	✓	409-412	
8.	Inspect and test fuel pump(s) and pump control system for pressure, regulation, and volume; determine needed action.	P-1		✓	✓	514-520	
9.	Inspect throttle body, air induction system, intake manifold and gaskets for vacuum leaks and/or unmetered air.	P-1		✓	✓	482-484; 561;	

	Task	Priority	MLR	AST	MAST	Text Page #	Task Page #
10.	Inspect, test, and/or replace fuel injectors on low-and high-pressure systems.	P-1		✓ (P-2)	✓	554-559	
11.	Verify proper idle speed; determine needed action.	P-1		✓	✓	559-561	
12.	Perform exhaust system back-pressure test; determine needed action	P-2		✓	✓	396-397; 618-619	
13.	Demonstrate knowledge of the operation of turbocharger/supercharger systems.	P-2		✓	✓	570-578	
14.	Diagnose hot or cold no-starting, hard starting, poor driveability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems; determine needed action.	P-2			✓	643-654	
	E. Emissions Control Systems						
1.	Identify emission control system components and configurations.	P-1	✓	✓	✓	583-621	
2.	Inspect, test, service, and/or replace positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; determine needed action.	P-2	✓	✓	✓	607-610	
3.	Diagnose oil leaks, emissions, and driveability concerns caused by the positive crankcase ventilation (PCV) system; determine needed action.	P-2		✓	✓	608-610	

	Task	Priority	MLR	AST	MAST	Text Page #	Task Page #
4.	Diagnose emissions and driveability concerns caused by the exhaust gas recirculation (EGR) system; inspect, test, service and/or replace electrical/electronic sensors, controls, wiring, tubing, exhaust passages, vacuum/pressure controls, filters, and hoses of exhaust gas recirculation (EGR) systems; determine needed action.	P-1		✓ (P-2)	✓	600-605	
5.	Inspect and test electrical/electronically operated components and circuits of secondary air injection systems; determine needed action.	P-3		✓	✓	610-612	
6.	Diagnose emission and driveability concerns caused by catalytic converter system; determine needed action.	P-1		✓	✓	618-621	
7.	Diagnose emissions and driveability concerns caused by the evaporative emissions control (EVAP) system; determine needed action.	P-1		✓	✓	596-600	