

**CORRELATION
FLORIDA DEPARTMENT OF EDUCATION
COURSE DESCRIPTION**

SUBJECT: Industrial Education
COURSE NAME: Automotive Service Technology 8 & 9
SUBMISSION TITLE: Automotive Excellence Volume 1 © 2007
PUBLISHER: Glencoe/McGraw-Hill
GRADE(S): 9-12

COURSE CODE NUMBER:
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OUTCOME NUMBER	BENCHMARK NUMBER	INTENDED OUTCOME/BENCHMARK DESCRIPTION	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
13.0		DEMONSTRATE PROFICIENCY IN DIAGNOSING/TROUBLESHOOTING ELECTRICAL/ELECTRONIC COMPONENTS RELATED TO POWER TRAIN--The student will be able to:	
13.01		Identify and interpret electrical/electronic system concern; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-1 SE1: EL243-246
13.02		Research applicable vehicle and service information, such as electrical/electronic system operation, vehicle service history, service precautions, and technical service bulletins. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-1 SE1: HB44, SS548, SS592, EP372
13.03		Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, and calibration decals). SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-1 SE1: HB44, SS528, EP410-411
13.04		Diagnose electrical/electronic integrity for series, parallel and series-parallel circuits using principles of electricity (Ohm's Law). SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-1 SE1: EL231-233
13.05		Use wiring diagrams during diagnosis of electrical circuit problems. LA.A.142, LA.A.143, LA.A.244, MA.B.141, MA.B.241, MA.B.242	P-1 SE1: EL239-240, EL243-246

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13.06		Demonstrate the proper use of a digital multimeter (DMM) during diagnosis of electrical circuit problems. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-1 SE1: EL240-245
13.07		Check electrical circuits with a test light; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-2 SE1: EL240-245
13.08		Check voltage and voltage drop in electrical/electronic circuits using a digital multimeter (DMM); determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.B.141, MA.B.241, MA.B.242	P-1 SE1: EL282-283, EL302
13.09		Check current flow in electrical/electronic circuits and components using an ammeter; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.B.141, MA.B.241, MA.B.242	P-1 SE1: EL230-231, EL240-245, EL301
13.10		Check continuity and resistance(s) in electrical/electronic circuits and components with an ohmmeter; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.B.141, MA.B.241, MA.B.242	P-1 SE1: EL240-245
13.11		Check electrical circuits using fused jumper wires; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-2 SE1: EL243

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13.12		Locate shorts, grounds, opens, and resistance problems in electrical/electronic circuits; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.B.141, MA.B.241, MA.B.242	SE1: EL243-245, EL335 P-1
13.13		Measure and diagnose the cause(s) of abnormal key-off battery drain; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.B.141, MA.B.241, MA.B.242	SE1: EL253, EL261-263 P-1
13.14		Inspect and test fusible links, circuit breakers, and fuses; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL237-238, EL313 P-1
13.15		Inspect and test switches, connectors, relays, and wires of electrical/electronic circuits; repair or perform necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL236-238, EL243-245, EL276, EL284, EP400-401 P-1
13.16		Repair wiring harnesses and connectors. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141	SE1: EL235-237 P-1
13.17		Perform solder repair of electrical wiring. LA.A.142, LA.A.143, LA.A.244	SE1: EL246 P-1
14.0		DEMONSTRATE PROFICIENCY IN BATTERY DIAGNOSIS AND SERVICE --The student will be able to:	
14.01		Perform battery state-of-charge test; determine needed service. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL261 P-1

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OUTCOME NUMBER	BENCHMARK NUMBER	INTENDED OUTCOME/BENCHMARK DESCRIPTION	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
14.02		Perform battery capacity test; conform proper battery capacity for vehicle determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL260 P-1
14.03		Maintain or restore electronic memory functions. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.E.141, MA.B.242	SE1: EL265-266 P-2
14.04		Inspect, clean, fill, and replace battery. SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL258-266 P-2
14.05		Perform slow/fast battery charge. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL265 P-2
14.06		Inspect and clean battery cables, connectors, clamps, and hold-downs; repair or replace as needed. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL258-266 P-1
14.07		Start a vehicle using jumper cables and a battery or auxiliary power supply. SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL267-269 P-1
15.0		DEMONSTRATE PROFICIENCY IN STARTING SYSTEM DIAGNOSIS AND REPAIR--The student will be able to:	
15.01		Perform starter current draw tests. Determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.242	SE1: EL280-282 P-1

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OUTCOME NUMBER	BENCHMARK NUMBER	INTENDED OUTCOME/BENCHMARK DESCRIPTION	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
15.02		Perform starter circuit voltage drop tests; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL282-283 P-1
15.03		Inspect and test starter relays and solenoids; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL284 P-2
15.04		Remove and install starter in a vehicle. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.242	SE1: EL283-284 P-2
15.05		Inspect, and test switches, connectors, and wires of starter control circuits; perform necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL284 P-2
15.06		Differentiate between electrical and engine mechanical problems that cause a slow-crank or no-crank condition. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL281-282 P-2
16.0		DEMONSTRATE PROFICIENCY IN CHARGING SYSTEM DIAGNOSIS AND REPAIR--The student will be able to:	
16.01		Perform charging system output test; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.142, MA.E.141, MA.B.242	SE1: EL301-302 P-1

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OUTCOME NUMBER	BENCHMARK NUMBER	INTENDED OUTCOME/BENCHMARK DESCRIPTION	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
16.02		Diagnose charging system for the cause of undercharge, no charge, and overcharge conditions. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-1 SE1: EL302-303
16.03		Inspect and adjust generator (alternator) drive belts, pulleys and tensioners; check pulley and belt alignment. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.242	P-1 SE1: EL303-304
16.04		Inspect and test voltage regulator/regulating circuit; perform necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-2 SE1: EL301-302
16.05		Remove, inspect, and install generator (alternator). LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.242	P-2 SE1: EL303-304
16.06		Perform charging circuit voltage drop tests; determine necessary action. SC.H.346, SC.C.242, MA.B.442, MA.E.141, MA.B.242	P-1 SE1: EL300-301
17.0		DEMONSTRATE PROFICIENCY IN LIGHTING SYSTEMS, GAUGES, WARNING DEVICES, AND DRIVER INFORMATION SYSTEMS DIAGNOSIS AND REPAIR --The student will be able to:	
17.01		Diagnose the cause of brighter than normal, intermittent, dim or no light operation; determine necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-1 SE1: EL316-318
17.02		Inspect, replace, and aim headlights and bulbs. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-2 SE1: EL318-319

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17.03		Inspect and diagnose incorrect turn signal or hazard light operation; perform necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL316-318 P-2
17.04		Inspect and test gauges and gauge sending units for cause of intermittent, high, low, or no gauge readings; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL324 P-2
17.05		Inspect and test connectors, wires, and printed circuit boards of gauge circuits; repair or determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL236-237 P-3
17.06		Diagnose the cause of incorrect operation of warning devices and other driver information systems; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL324 P-1
17.07		Inspect and test sensors, sending units, connectors, and wires of electronic instrument circuits; determine necessary action. SC.H.346, SC.C.242, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL236-237 P-3
18.0		DEMONSTRATE PROFICIENCY IN HORN AND WIPER/WASHER AND ACCESSORIES DIAGNOSIS AND REPAIR --The student will be able to:	

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18.01		Diagnose incorrect horn operation; perform necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.242	P-3 SE1: EL348-349
18.02		Diagnose incorrect wiper operation; diagnose wiper speed control and park problems; perform necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-3 SE1: EL333
18.03		Diagnose incorrect washer operation; perform necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-3 SE1: EL333
18.04		Diagnose incorrect operation of motor-driven accessory circuits; determine necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.242	P-2 SE1: EL333-336
18.05		Diagnose incorrect heated glass operation; determine necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.242	P-3 SE1: EL333-335
18.06		Diagnose incorrect electric lock operation; determine necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-3 SE1: EL336
18.07		Diagnose incorrect operation of cruise control systems; determine necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-3 SE1: EL337-340

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18.08		Diagnose supplemental restraint system (SRS) concerns; determine necessary action. (NOTE: Follow manufacturer's safety procedures to prevent accidental deployment). SC.H.346, LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: SS546, EL341-347 P-2
18.09		Diagnose radio static and weak, intermittent, or no radio reception, determine necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-3
18.10		Disarm and enable the airbag system for vehicle service. LA.A.142, LA.A.143, LA.A.44, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: SS532 P-1
18.11		Diagnose radio static and weak, intermittent, or no radio reception; determine necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-3
18.12		Remove and reinstall door panel. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL336 P-1
18.13		Diagnose body electronic system circuits using a scan tool; determine necessary action. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EL242, EP483 P-2
18.14		Check for module communication errors using a scan tool. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	SE1: EP391 P-3

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18.15		Diagnose the cause of false, intermittent, or no operation of anti-theft system. LA.A.142, LA.A.143, LA.A.244, MA.B.442, MA.E.141, MA.B.241, MA.B.242	P-2	SE1: EP239-245

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