

Engine Repair: Cooling System Service

Student/intern information:

Name _____ Date _____ Class _____

Vehicle used for this activity:

Year _____ Make _____ Model _____

Odometer _____ VIN _____

Learning Objective/Task	CDX Tasksheet Number	2013 MLR NATEF Reference Number; Priority Level	2013 AST NATEF Reference Number; Priority Level	2013 MAST NATEF Reference Number; Priority Level
• Perform cooling system pressure and dye tests to identify leaks; check coolant condition; inspect and test radiator, pressure cap, coolant recovery tank, and heater core; determine necessary action.	C578	1C1; P-1	1D1; P-1	1D1; P-1
• Inspect, replace, and adjust drive belts, tensioners, and pulleys; check pulley and belt alignment.	C734	1C2; P-1	1D3; P-1	1D3; P-1
• Inspect and replace engine cooling and heater system hoses.	N/A	N/A	N/A	N/A
• Remove, inspect, and replace thermostat and gasket/seal.	C735	1C3; P-1	1D7; P-1	1D7; P-1
• Inspect and test coolant; drain and recover coolant; flush and refill cooling system with recommended coolant; bleed air as required.	C050	1C4; P-1	1D4; P-1	1D4; P-1
• Inspect, remove, and replace water pump.	C680		1D5; P-2	1D5; P-2
• Remove and replace radiator.	C052		1D6; P-2	1D6; P-2
• Inspect and test fan(s) (electrical or mechanical), fan clutch, fan shroud, and air dams.	C053		1D8; P-1	1D8; P-1
• Inspect auxiliary coolers; determine necessary action.	C871		1D11; P-3	1D11; P-3
• Identify causes of engine overheating.	C598		1D2; P-1	1D2; P-1

Time off _____

Time on _____

Total time _____

Materials Required

- Vehicle or simulator
- Cooling system pressure tester
- Anti-freeze hydrometer (or refractometer)
- pH test strip or pH tester
- Infrared temperature gun
- DVOM
- Drain pan
- Gasket scraper

Some Safety Issues to Consider

- Only open the radiator cap (or any other part of the cooling system) when the engine is cool. Opening a radiator cap on a warm or hot engine could cause severe burns.
- Electric fans can turn on at any time. Keep hands and fingers away.
- Remove the ignition key and secure it so the vehicle can't be started. And if the vehicle is equipped with a push button start, keep the key at least 25 feet away from the vehicle.
- Keep away from moving belts and pulleys as they can severely injure or kill you.
- When running any vehicles in the shop, make sure you use the shop's exhaust ventilation system to discharge all exhaust gas safely outside.
- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

Performance Standard

0—No exposure: No information or practice provided during the program; complete training required

1—Exposure only: General information provided with no practice time; close supervision needed; additional training required

2—Limited practice: Has practiced job during training program; additional training required to develop skill

3—Moderately skilled: Has performed job independently during training program; limited additional training may be required

4—Skilled: Can perform job independently with no additional training