

HVAC: Refrigeration System Component Diagnosis and Repair

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
• Inspect and replace A/C compressor drive belts, pulleys, and tensioners; determine necessary action.	C653	7B1; P-1	7B1; P-1	7B1; P-1
• Inspect, test, and/or replace A/C compressor clutch components and/or assembly; check compressor clutch air gap; adjust as needed.	C654		7B2; P-2	7B2; P-2
• Remove, inspect, and reinstall A/C compressor and mountings; determine required oil quantity.	C826		7B3; P-2	7B3; P-2
• Remove and inspect A/C system mufflers, hoses, lines, fittings, O-rings, seals, and service valves; perform necessary action.	C355		7B6; P-2	7B6; P-2
• Remove, inspect, and reinstall receiver/drier or accumulator/drier; determine recommended oil quantity.	C829		7B8; P-2	7B8; P-2
• Remove, inspect, and install expansion valve or orifice (expansion) tube.	C873		7B9; P-1	7B9; P-1
• Evacuate and charge A/C system; add refrigerant oil as required.	C658		7E4; P-1	7E4; P-1
• Perform correct use and maintenance of refrigerant handling equipment according to equipment manufacturer's standards.	C656		7E1; P-1	7E1; P-1
• Determine procedure to remove and reinstall evaporator; determine required oil quantity.	C831		7B11; P-2	7B12; P-2
• Remove, inspect, and reinstall condenser; determine required oil quantity.	C832			7B13; P-2

Time off _____

Time on _____

Total time _____

Materials Required

- Appropriate air conditioning manifold gauge set including service hoses
- Air conditioning service station and recovery/recycling equipment as necessary
- Refrigerant leak detecting equipment
- Refrigerant identifier
- Appropriate thermometers
- Feeler gauge set
- Clutch removal and installer tools
- Belt tension gauge
- Infrared temperature gun/thermocouple
- Anemometer
- DVOM
- Clean measuring container for refrigerant oil
- Specified refrigerant oil
- Specified vacuum pump oil

Some Safety Issues to Consider

- Refrigerant can cause serious damage if it comes in contact with a person's unprotected skin and eyes.
- When operating, the air conditioning system is normally subject to very high pressure in the system. Extreme caution must be exercised when working on an operating system.
- Extreme caution must be exercised when working around rotating components.
- When running any vehicles in the shop, make sure you use the shop's exhaust ventilation system to discharge all exhaust gas safely outside.
- Diagnosis of this fault may require test-driving the vehicle on the school grounds. Attempt this task only with full permission from your instructor and follow all the guidelines exactly.
- Vehicle hoists are important tools that increase productivity and make the job easier. However, they can also cause severe injury or death if used improperly. Make sure you follow the manufacturer's operation procedures.
- 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