

Engine Coolant Temperature (ECT) Graph

Meets NATEF Task: (A8-B-5) Inspect and test sensors, actuators, and circuits using a graphing multimeter (GMM)/digital storage oscilloscope (DSO); perform necessary action. (P-1)

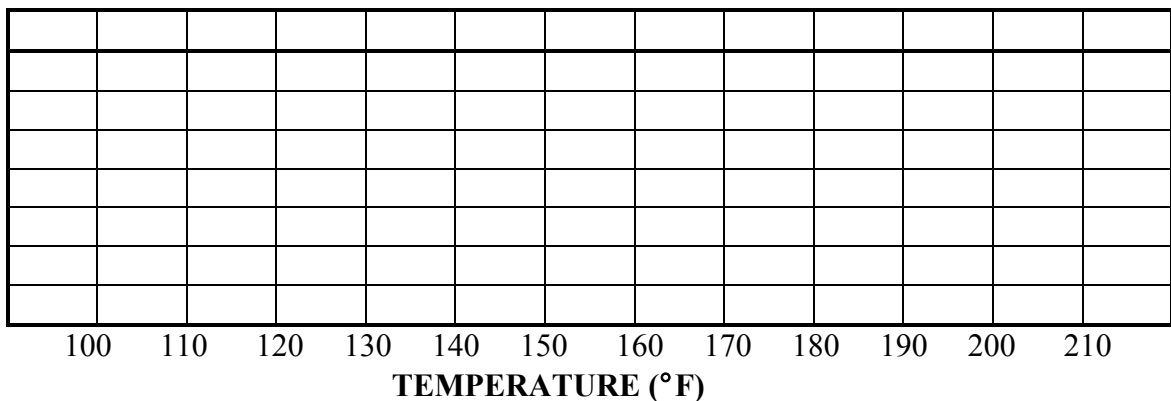
Name _____ Date _____ Time on Task _____

Make/Model/Year _____ VIN _____ Evaluation: 4 3 2 1

Most engine coolant temperature sensors (ECTs) use a negative temperature coefficient (NCT) thermistor. The resistance of the sensor decreases as the temperature of the engine coolant increases. The vehicle computer applies a voltage to the sensor. The purpose of this worksheet is to plot the relationship of the ECT sensor temperature and the voltage.

- _____ 1. Carefully back probe the signal wire of the engine coolant temperature (ECT) sensor.
- _____ 2. Set the digital multimeter to read DC volts.
- _____ 3. Connect a scan tool or use a pyrometer to measure engine coolant temperature.
- _____ 4. Plot the voltage of the ECT every 10° as the engine warms up.

NOTE: Many engine computers connect another resistor in the ECT circuit when the temperature of the coolant reaches 120°-140°. This causes the voltage at the ECT sensor to rise, then continue to fall as the coolant temperature continues to rise.



- _____ 5. Was there an upward movement of the graph when the thermostat opened?
 YES ____ **NO** ____
- _____ 6. Was there a slight movement upward when the cooling fan came on?
 YES ____ **NO** ____
- _____ 7. Based on the test results, what is the necessary action? _____