

A/C CLUTCH COIL

The A/C clutch coil electrical circuit is controlled by the Powertrain Control Module (PCM) or Engine Control Module (ECM) (depending on engine application), through the Totally Integrated Power Module (TIPM). See Wiring Information for complete HVAC wiring diagrams. Begin testing of a suspected A/C clutch coil problem by performing the preliminary checks.

PRELIMINARY CHECKS

1. Using a scan tool, check for Diagnostic Trouble Codes (DTCs) in the A/C-heater control, TIPM and PCM/ECM. If no DTCs are found, go to [2](#) . If any DTCs are found, repair as required.
2. If the A/C clutch still will not engage, verify the refrigerant charge level by conducting the A/C Performance Test (Refer to 24 - Heating and Air Conditioning - Diagnosis and Testing). If the refrigerant charge level is OK, go to [COIL RESISTANCE TEST](#) and [COIL CURRENT DRAW TEST](#) . If the refrigerant charge level is not OK, adjust the refrigerant charge as required.

COIL RESISTANCE TEST

1. Disconnect and isolate the negative battery cable.
2. Disconnect the wire harness connector from the A/C clutch coil connector.
3. Use an ohm meter and Back Probe Tool [6801](#) and measure the resistance of the A/C clutch coil at the coil connector terminals.
4. See A/C Clutch Coil Specifications table for acceptable A/C clutch coil resistance. Specifications apply for a work area temperature of 21° C (70° F).
 - a If the A/C clutch coil reading is below specifications, the coil is shorted and must be replaced.
 - b If the A/C clutch coil reading is above specifications, the coil is open and must be replaced.

COIL CURRENT DRAW TEST

1. Verify the battery state of charge (Refer to 08 - Electrical/8F - Engine Systems/Battery System/BATTERY - Diagnosis and Testing).
2. Connect an ammeter (0 to 10 ampere scale selected) in series with the clutch coil feed terminal using Back Probe Tool [6801](#) . Connect a voltmeter (0 to 20 volt scale selected) to measure voltage across the battery and the clutch coil.
3. With the A/C-heater control in the A/C mode and the blower motor at low speed, start the engine and allow it to run at a normal idle speed.
4. The A/C clutch should engage immediately, and the clutch coil supply voltage should be within two volts of the battery voltage. If the coil supply voltage is OK, go to [5](#) . If the coil supply voltage is not within two volts of battery voltage, test the clutch coil feed circuit for excessive voltage drop and repair as necessary.
5. See A/C Clutch Coil Specifications table for acceptable A/C clutch coil current draw. Specifications apply for a work area temperature of 21° C (70° F). If voltage is more than 12.5 volts, add electrical loads by turning on electrical accessories until voltage reads below 12.5 volts.

- a If the A/C clutch coil current reading is zero, the coil is open and must be replaced.
- b If the A/C clutch coil current reading is above specifications, the coil is shorted and must be replaced.

A/C CLUTCH COIL SPECIFICATIONS

Application	Coil Resistance	Coil Current Draw
3.7L/4.7L/5.7L Gasoline Engines	3.6 ± 0.2 ohms	3.2 - 3.3 amps @ 12V ± 0.5V @ 21° C (70° F)
5.9L/6.7L Diesel Engines	3.0 - 4.0 ohms	3.1 - 4.0 amps @ 12V ± 0.5V @ 21° C (70° F)