

2004 Ford Mustang V8-4.6L SOHC VIN X

Vehicle > Technical Service Bulletins

## A/C - HEATER CORE ELECTROLYSIS/LEAKAGE

TSB 06-21-19

10/30/06

### HEATER CORE LEAKAGE AND ELECTROLYSIS (INFORMATION ONLY)

#### FORD:

1997-2002 Contour

1997-2007 Crown Victoria, Mustang, Taurus

2000-2007 Focus

2002-2005 Thunderbird

2005-2007 Five Hundred, Freestyle

2006-2007 Fusion

1997-1999 F-250 Light Duty

1997-2003 Windstar

1997-2007 E-Series, Expedition, Explorer,

F-150, F-53 Motorhome Chassis,

F-Super Duty, Ranger

2000-2005 Excursion

2001-2003 Explorer Sport

2001-2007 Escape, Explorer Sport Trac

2004 F-150 Heritage

2004-2007 Freestar

2005-2007 Escape Hybrid

1999-2007 F-650, F-750

#### LINCOLN:

1997-2002 Continental

1997-2007 Town Car

2000-2006 Lincoln LS

2006 Zephyr

2007 MKZ

1998-2007 Navigator

2002-2003 Blackwood

2003-2005 Aviator

2006-2007 Mark LT

#### MERCURY:

1997-2002 Cougar, Mystique

1997-2005 Sable

1997-2007 Grand Marquis

2005-2007 Montego

2006-2007 Milan  
1997-2002 Villager  
1997-2007 Mountaineer  
2005-2007 Mariner  
2006-2007 Mariner Hybrid

This article supersedes TSB 01-15-6 to update the vehicle model years and Service Procedure.

#### ISSUE

The majority of repeat heater core leaks are due to high flow rate or use of poor quality coolant. However, electrolysis should also be checked, especially when repeat repairs have occurred.

#### ACTION

If the heater core is leaking, review the location of the leakage and check the condition of the coolant.

#### SERVICE PROCEDURE

1. Review the location of the leakage and check the condition of the coolant:

a. If leaks are found on the inlet (or outlet) tubes entering / exiting the heater core, it is most likely due to high flow rate - replace the heater core and install a restrictor in the heater hose closest to the engine block, reference Workshop Manual, Section 412.

b. If leaks are found in the body of the heater core itself, and does not appear to be the result of physical damage like contact or puncture, check the coolant for possible electrolysis.

#### Testing For Electrolysis

Check for voltage in the cooling system by touching the negative contact of a voltmeter to the battery ground or a known good ground and suspend the positive lead in the coolant, making sure it is in contact with the coolant but not touching any metal part of the radiator or cooling system. Both AC and DC voltages must be checked. Vehicles normally have DC voltages; however, a faulty engine block heater or faulty diode in the alternator can produce AC voltages. It is understood that coolant is lost due to heater core failure but try to obtain a voltage reading on the old coolant in the engine block before addition to or replacement of. To keep more coolant from exiting the heater core clamp off heater core lines and measure coolant in the engine block. Try not to dilute the original coolant with new coolant during testing if possible.

1. Determine whether coolant condition is acceptable.

a. Remove both cables from the battery and ensure they do not contact each other or the vehicle.

b. Touch negative lead of voltmeter to engine ground and positive lead in the coolant.

#### NOTE

POSITIVE TEST PROBE IS IN THE COOLANT FOR TESTING.

c. Check the voltage in the cooling system. If less than or equal to 0.4 volts (V) OK, reconnect battery cables and proceed to Step 2.

- d. If greater than 0.4 V, flush cooling system thoroughly.
  - e. Recheck voltage less than or equal to 0.4 V.
  - f. Reconnect battery cables.
  - g. Refill the system with appropriate Motorcraft engine coolant.
2. Check for loose or missing grounds at static conditions.
- a. Turn off all accessories. Turn ignition on but do not start engine.
  - b. Test with ground probe to battery ground, engine ground, and vehicle ground sequentially.
  - c. Voltage less than or equal to 0.4 V on all grounds OK.
  - d. Any one greater than 0.4 V, check and clean ground cable connections.
  - e. Check accessories without using the on off switch on the vehicle instrument panel, use a jumper wire to ground.
  - f. Plug in engine block heater, if equipped, and test.
  - g. Recheck voltage less than or equal to 0.4 V.
  - h. Unplug engine block heater, if equipped.
3. Check for loose, missing, or inadequate grounds.
- a. Test with ground probe to battery ground, engine ground, and vehicle ground sequentially.
  - b. Crank engine but do not start.
  - c. Monitor voltage while cranking. less than or equal to 0.4 V OK
  - d. If greater than 0.4 V, ground or repair starter.
  - e. Start engine and run at about 2000 rpm.
  - f. Turn on all accessories including those customer only uses occasionally such as CB radio, cell phone, etc.
  - g. Test with ground probe to battery ground, engine ground, and vehicle ground sequentially.
  - h. Voltage less than or equal to 0.4 V OK
  - i. If greater than 0.4 V, turn off one item at a time until V drops to less than or equal to 0.4 V. Repair ground to the accessory just identified.

- j. Recheck voltage less than or equal to 0.4 V
- k. Turn the DVOM to AC volts.
- l. Check for ANY AC voltage greater than 0.4.
- m. If any AC voltage is present then try turning off each accessory one at a time including blower motor and any fan motors.
- n. If AC voltage is still present then shut engine off and remove B+ from the alternator and tape it up then retest.
- o. If voltage drop is gradual to less than or equal to 0.4 V, the ground straps may simply be overloaded by added accessories. Test by using heavy gauge jumper to ground. If indicated, install heavier gauge ground strap(s) and recheck.

**NOTE**

If vehicle is equipped with electric cooling fans, be sure they cycle during this testing and monitor voltage when they are on and when off.

**CAUTION**

DO NOT GROUND HEATER CORE. IF THE HEATER CORE IS GROUNDED, YOU HAVE PROVIDED THE ELECTROLYSIS A PATH THROUGH THE HEATER CORE. THIS WOULD CAUSE THE HEATER CORE TO BECOME AN ANODE OR RECEIVER AND IT WOULD PROMOTE THE ELECTROLYSIS, OR ANY STRAY VOLTAGE TO USE THE COOLANT AS THE GROUND PATH.

4. Refill the engine cooling system, reference Workshop Manual, Section 303-03.

**NOTE**

IF THE HEAT OUTPUT IS INSUFFICIENT, OR THE ENGINE DOES NOT REACH NORMAL OPERATING TEMPERATURES, VERIFY PROPER THERMOSTAT OPERATION AND REPEAT PROCEDURE IF REQUIRED.

WARRANTY STATUS: Eligible Under Provisions Of New Vehicle Limited Warranty Coverage

DEALER CODING

CONDITION BASIC PART NO. CODE 18476 42

**NOTE:** The information in Technical Service Bulletins is intended for use by trained, professional technicians with the knowledge, tools, and equipment to do the job properly and safely. It informs these technicians of conditions that may occur on some vehicles, or provides information that could assist in proper vehicle service. The procedures should not be performed by "do-it-yourselfers". Do not assume that a condition described affects your car or truck. Contact a Ford, Lincoln, or Mercury dealership to determine whether the Bulletin applies to your vehicle.

Disclaimer