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2013 FORD Taurus SHO OEM Service and Repair Workshop Manual

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- Carry out the condenser core leak check.
  REFER to: Condenser Core Leak Check(412-00 Climate Control System - General Information, General Procedures).

Did the low pressure gauge maintain 29.In HG for the 30 minutes in the condenser core?

Yes	GO to AI8

No	INSTALL a new condenser core. REFER to: Condenser - Electric (412-00 Climate Control System - General Information, Removal and Installation).

AI8 CHECK FOR LEAKS IN THE AIR CONDITIONING (A/C) COMPRESSOR

- Carry out the A/C compressor leak detection.
  REFER to: Air Conditioning (A/C) Compressor Leak Detection(412-00 Climate Control System - General Information, General Procedures).

Was a leak detected in the A/C compressor?

Yes	INSTALL a new A/C compressor. REFER to: Air Conditioning (A/C) Compressor - Electric (412-00 Climate Control System - General Information, Removal and Installation).

No	Follow the workshop manual for reassembly of the A/C System. CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) .

PINPOINT TEST AJ : P2DA4:00, P2DA5:00, P2DA7:00, U069E:81, U069E:87

Refer to Wiring Diagrams Cell 55for schematic and connector information.

Normal Operation and Fault Conditions Cabin coolant heater, REFER to: Climate Control System - Electric, Vehicles With: Dual Automatic Temperature Control (DATC) - System Operation and Component Description
(412-00 Climate Control System - General Information, Description and Operation).

DTC Fault Trigger Conditions

To prevent the risk of high-voltage shock, always follow precisely all warnings and service instructions, including instructions to depower the system. The high-voltage system utilizes approximately 300 volts DC, provided through high-voltage cables to its components and modules. The high-voltage cables and wiring are identified by orange harness tape or orange wire covering. All high-voltage components are marked with high-voltage warning labels with a high-voltage symbol. Failure to follow these instructions may result in serious personal injury or death.

NOTE

Make sure the high voltage battery is at least 50 % charged and the 12 volt battery state of charge must be above 61%. For 12 volt battery charging information, refer to section 414-01. For high voltage battery charging information, refer to section 414-03A.

AJ1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE SOBDMC (SECONDARY ON-BOARD DIAGNOSTIC CONTROL MODULE C)

- Ignition ON.
- Using the FDRS (Ford Diagnosis and Repair System) diagnostic scan tool, carry out the self-test for the SOBDMC (secondary on-board diagnostic control module C) .

Are Diagnostic Trouble Codes (DTCs) P2DA4:00, P2DA5:00, P2DA6:00, P2DA7:00, U069E:81 or U069E:87 present ?

Yes	For P2DA4:00, P2DA5:00, P2DA7:00, U069E:81 or U069E:87, GO to AJ2 For P2DA6:00, GO to Pinpoint Test AK
No	For all other Diagnostic Trouble Codes (DTCs), REFER to the Master DTC Chart.

AJ2 CHECK THE COOLANT LEVEL

NOTE

Allow the electrified drivetrain to cool before checking the coolant level.

- Make sure that the vehicle is on a level surface.
- Make sure that the steering wheel is set to the straight ahead position.
- Ignition OFF.

NOTE

The Cabin Coolant Heater and the Air Conditioning Control Module share the same High Voltage source. Monitor the ACCM HV PID.

- With the vehicle in Ready to Drive mode,
  Access the ACCM (air conditioning control module) and monitor the ACCM_CHVS (Electric A/C Compressor High Voltage Supply) (V) PID (parameter identification)

Is the voltage supply PID (parameter identification) between 135 volts and 413 volts?

Yes	GO to AJ8

No	GO to AJ5

AJ5 CHECK FOR PARTIALLY MATED HIGH VOLTAGE CONNECTORS

- Ignition OFF.
- Depower the High Voltage Battery system.
  REFER to: High Voltage System De-energizing - Electric(414-03A High Voltage Battery, Mounting and Cables, General Procedures).
- Inspect the high voltage ACCM (air conditioning control module) C1832B, in-line C295 and cabin coolant heater C1815B for partially mated connections.

Are any of the connectors not fully seated?

Yes	RECONNECT the disconnected connectors. Make sure they seat and latch correctly. TEST the system for normal operation. If the concern is still present, GO to AJ6

No	GO to AJ6

AJ6 CHECK THE CABIN COOLANT HEATER HIGH VOLTAGE CABLES FOR AN OPEN

- Ignition OFF.
- Disconnect High Voltage Battery Junction Box C4815A and C4815B .
- Disconnect ACCM (air conditioning control module) C1832B .
- Disconnect Cabin coolant heater C1815B .

high voltage which is present at several points under the cover. Failure to follow these instructions may result in serious personal injury or death.

WARNING

To prevent the risk of high-voltage shock, always follow precisely all warnings and service instructions, including instructions to depower the system. The high-voltage system utilizes approximately 450 volts DC, provided through high-voltage cables to its components and modules. The high-voltage cables and wiring are identified by orange harness tape or orange wire covering. All high-voltage components are marked with high-voltage warning labels with a high-voltage symbol. Failure to follow these instructions may result in serious personal injury or death.

- REFER to: High Voltage Low Current Fuse - Electric(414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).
- Measure the resistance of the high voltage low current fuse.

Is the resistance less than 3 ohms?

Yes	GO to AJ8

No	INSTALL a new (50A) high voltage low current fuse. REFER to: High Voltage Low Current Fuse - Electric (414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).

AJ8 CHECK THE CABIN COOLANT HEATER LOW VOLTAGE CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect BCMC (body control module C) fuse 99 (15A).
- Disconnect Cabin coolant heater C1815A .
- Disconnect SOBDMC (secondary on-board diagnostic control module C) C3471C .
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1815A-3	V⎓	Ground

Positive Lead	Measurement / Action	Negative Lead
C1815A-3	Ω	BCMC (body control module C) fuse 99 (15A) cavity, (component side)

Positive Lead	Measurement / Action	Negative Lead
C1815A-2	Ω	C3471C-6

Positive Lead	Measurement / Action	Negative Lead
C1815A-1	Ω	Ground

Are the resistances less than 3 ohms?

Yes	GO to AJ11

No	REPAIR the circuit in question.

AJ11 CHECK THE CABIN COOLANT HEATER LOW VOLTAGE CIRCUITS FOR A SHORT TOGETHER

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C1815A-1	Ω	C1815A-2
C1815A-1	Ω	C1815A-3

Before an active command of the Cabin Heater Coolant Pump, the Cabin Coolant Heater or the Cabin Heater Coolant Diverter Valve can be performed, the vehicle must be in Ready to Drive mode. Switch the ignition on with transmission selector lever in position P.

- Reconnect all disconnected connectors. Make sure they seat and latch correctly.
- Place vehicle in Ready to Drive mode.
- Set the HVAC (heating, ventilation and air conditioning) controls to Auto and set the temperature to 80°F.
- Using a diagnostic scan tool, CLEAR all SOBDMC (secondary on-board diagnostic control module C) Diagnostic Trouble Codes (DTCs).
- Access the SOBDMC (secondary on-board diagnostic control module C) and control the HTRCABIN_PWM (Cabin Coolant Heater Control) (%) PID (parameter identification)
- Touch the heater core hoses.

Do the heater core hoses increase in temperature?

Yes	If the cabin coolant heater operates normally, the system is operating correctly at this time. The concern may have been caused by cabin coolant heater connections. ADDRESS the root cause of any connector or pin issues.
No	INSTALL a new cabin coolant heater. REFER to: Cabin Coolant Heater - Electric (412-00 Climate Control System - General Information, Removal and Installation). RE-CHECK the cabin coolant heater system hose routing. View the coolant hose routing, REFER to: Electrified Drivetrain Cooling (302-03A Electrified Drivetrain Cooling, Description and Operation). TEST the system for normal operation.

PINPOINT TEST AK : P2DA6:00

Normal Operation and Fault Conditions

For information on the Cabin Coolant Heater System, High Voltage Battery Coolant Diverter Valve, Cabin Heater Coolant Pump, Isolated and Coolant Loops, REFER to: Climate Control System - Electric, Vehicles With: Dual Automatic Temperature Control (DATC) - System Operation and Component Description(412-00 Climate Control System - General Information, Description and Operation).

DTC Fault Trigger Conditions

- Ignition OFF.
- Visually inspect the coolant level in the coolant expansion tank

Is the level of coolant below the minimum fill line or has the vehicle been recently serviced for coolant system repair?

Yes	If the coolant is below the minimum fill line, add coolant and using the FDRS (Ford Diagnosis and Repair System) scan tool run the fill and bleed procedure, located in the BECM (battery energy control module) . If the vehicle was recently serviced for a coolant system repair and the coolant level is correct, use the FDRS (Ford Diagnosis and Repair System) scan tool to run the fill and bleed procedure for the electric drivetrain cooling system. REFER to: Electrified Drivetrain Cooling System Draining, Vacuum Filling and Bleeding (302-03A Electrified Drivetrain Cooling, General Procedures).
No	GO to AK3

AK3 CHECK FOR CABIN HEATER COOLANT PUMP, COOLANT PUMP FOR HIGH VOLTAGE BATTERY AND DIVERTER VALVE DIAGNOSTIC TROUBLE CODES (DTCS)

- Make sure the vehicle is not plugged into the charger.
- Ignition ON. Ready to drive mode.
- To allow consistent FDRS (Ford Diagnosis and Repair System) scan tool operation, set the vehicle power down timer to off. This is a setting in the display unit under settings. (if equipped)
- For the high voltage battery coolant pump,
  Access the BECM (battery energy control module) and control the COOL_PMP_A_CMD (Coolant Pump -A- Control Speed - Commanded) (%) PID (parameter identification)
- For the cabin heater coolant pump,
  Access the PCM (powertrain control module) and control the COOLANT_PMP_A (Coolant Pump -A- is Commanded On) PID (parameter identification)
- For the high voltage battery coolant diverter valve,
  Access the SOBDMC (secondary on-board diagnostic control module C) and control the HYTRACB_THRM_OP (Hybrid/EV Traction Battery Thermal System Operational Levels) PID (parameter identification)
  and active command the parameter to Battery Heating – Request Coolant Flow Through PTC (Positive Temperature Coefficient) Heater
- Run the coolant pumps for a minimum of 2 minutes.
- Turn off both coolant pumps.

and active command the PID to True (on).

- Access the PCM (powertrain control module) and monitor the COOLPMP_A_STAT (Coolant Pump -A- Control Diagnostic Status) PID (parameter identification)
  and monitor the PID and Observe the Cabin Heater Coolant Pump is commanded on and no fault detected.
- For the high voltage battery coolant diverter valve,
  Access the SOBDMC (secondary on-board diagnostic control module C) and control the HYTRACB_THRM_OP (Hybrid/EV Traction Battery Thermal System Operational Levels) PID (parameter identification)
  and active command the PID to Thermal System is Off (No Coolant Circulation).

Does the status Coolpmp_A _stat PID state no fault detected?

Yes	GO to AK6

No	GO to Pinpoint Test E

AK6 CHECK PARAMETER IDENTIFICATIONS (PIDS) FOR INTERNAL FAILURE OF CABIN COOLANT HEATER

- Ignition ON. Ready to drive mode.
- Using the FDRS (Ford Diagnosis and Repair System) scan tool, monitor the PIDs for the Cabin Coolant Heater.
- Access the SOBDMC (secondary on-board diagnostic control module C) and monitor the COOLHTR_A_OP (Coolant Heater -A- Operating Modes) PID (parameter identification)
- Access the SOBDMC (secondary on-board diagnostic control module C) and monitor the PTC_AMP_F (PTC Heater Current Sensor Fault - Short to Ground/Open Load or Out of Range) PID (parameter identification)
- Set the HVAC controls in MAX defrost mode. Run MAX defrost for 30 seconds.

Does the PTC_AMP_F show no Fault, except for the over temperature?

Yes	INSTALL a new Cabin Coolant Heater. REFER to: Cabin Coolant Heater - Electric (412-00 Climate Control System - General Information, Removal and Installation).

No	GO to AK7

and record the battery coolant inlet temperature PID value.

- Make sure the temperature is less than 45°C (113 degrees F). If not, turn the vehicle off and allow the vehicle to soak for one hour to cool.
- Access the SOBDMC (secondary on-board diagnostic control module C) and control the HYTRACB_THRM_OP (Hybrid/EV Traction Battery Thermal System Operational Levels) PID (parameter identification)
  and command this PID to Battery heating - Request Coolant Flow through PTC Heater (Cabin Coolant Heater)
- Run the pump for 1 minutes.
- For the Cabin Heater Coolant Temperature Sensor,
  Access the PCM (powertrain control module) and monitor the ECT2_SUP (Engine Coolant Temperature Sensor 2 Supported) PID (parameter identification)
  and record Cabin Heater Coolant Temperature sensor ECT2 value.

Are the temperatures for the Cabin heater coolant temperature sensor ECT2 and the High Voltage Battery coolant temperature within 10°C or 18°F of each other?

Yes	INSTALL a new Cabin Coolant Heater. REFER to: Cabin Coolant Heater - Electric (412-00 Climate Control System - General Information, Removal and Installation).
No	GO to AK9

AK9 CHECK FOR PROPER ROUTING, BENT OR PINCHED COOLANT HOSES

NOTE

Routing of the coolant hoses is critical to proper Cabin Coolant Heater System operation.

- Ignition OFF.
- Check the cabin coolant heater system hose routing found in the Removal and Installation procedure of the Cabin Coolant Heater and the High Voltage Battery Coolant Diverter Valve.
  REFER to: Cabin Coolant Heater - Electric(412-00 Climate Control System - General Information, Removal and Installation).
  and REFER to: High Voltage Battery Coolant Diverter Valve (302-03A Electrified Drivetrain Cooling, Removal and Installation).

Is there any improper hose routing, bent or pinched off hoses?

Yes	Fix and repair the hose routing, bent, or pinched off hoses as necessary.