



TECHNICAL SERVICE BULLETIN

Hybrid - Illuminated Malfunction Indicator Lamp (MIL) With DTC P2D40

22-2342

09 September
2022

Model:

Ford 2022 Explorer	PHEV or FHEV powertrain
2020-2022 Police Interceptor Utility	PHEV or FHEV powertrain
Lincoln 2020-2022 Aviator	PHEV or FHEV powertrain

Issue: Some 2020-2022 Explorer/Aviator/Police Interceptor Utility vehicles equipped with a hybrid powertrain may exhibit an illuminated MIL with diagnostic trouble code (DTC) P2D40. This may be due to the chiller not interpreting the correct cooling value of the high voltage battery chiller. To correct the condition, follow the Service Procedure to diagnose the cause of the incorrect value.

Action: Follow the Service Procedure to correct the condition on vehicles that meet the following criteria:

- 2020-2022 Explorer/Aviator/Police Interceptor Utility
- Plug-in hybrid (PHEV) or full-hybrid (FHEV) powertrain
- Illuminated MIL with DTC P2D40

Parts

Parts To Inspect And Replace Only If Necessary

Service Part Number	Quantity	Description
L1MZ-10C708-AB	1	Cooling Unit Assembly (High Voltage Battery Cooler)
L1MZ-18N345-FBB	1	Valve Assembly (Coolant Diverter Valve)
VC-13DL-G	As Needed	Motorcraft® Yellow Prediluted Antifreeze/Coolant (All Markets Except Canada)
CVC-13DL-G	As Needed	Motorcraft® Yellow Prediluted Antifreeze/Coolant (Canada Only)
YN-33-A	As Needed	R-1234yf Refrigerant (All Markets Except Canada)
HS7Z-19B519-BA	As Needed	R-1234yf Refrigerant (Canada Only)

Warranty Status: Eligible under provisions of New Vehicle Limited Warranty (NVLW)/Emissions Warranty/Service Part Warranty (SPW)/Special Service Part (SSP)/Extended Service Plan (ESP) coverage. Limits/policies/prior approvals are not altered by a TSB. NVLW/Emissions Warranty/SPW/SSP/ESP coverage limits are determined by the identified causal part and verified using the OASIS part coverage tool.

Labor Times

Description	Operation No.	Time
2020-2022 Explorer/Aviator/Police Interceptor Hybrid: Diagnose And Repair The Cause Of The Incorrect Value	MT222342	Actual Time

Repair/Claim Coding

Causal Part:	10C708
Condition Code:	42

Service Procedure

1. Place the vehicle in a location with a minimum ambient temperature of 65°F (18°C) for 3 hours.
2. Turn the ignition to the ON position.
3. Using the Ford Diagnostic and Repair System (FDRS), access the secondary on-board diagnostic module C (SOBDMC) and use output state control to control the HYTRACB_THRM_OP parameter identification (PID). Active command the parameter to Battery Cooling - Request Coolant Flow Through Radiator (with Fan Request).
4. Wait for 5 minutes. The fan and pump will turn on and run through this time.
5. Using the FDRS, access the battery energy control module (BECM), and monitor the BAT_COOL_INLETTEMP (Deg C) PID and verify the PID value is greater than or equal to 65°F or (18°C).
6. Is the temperature greater than or equal to 65°F (18°C)?
 - (1). Yes - proceed to Step 7.
 - (2). No - repeat steps 2-4 until a temperature greater or equal to 65°F (18°C) is achieved.
7. Once the temperature is greater than or equal to 65°F (18°C), access the SOBDMC and control the HYTRACB_THRM_OP PID and active command the PID to Battery Temperature Equalization - Coolant Flow Circulation Within Battery (No Intent To Transfer Heat In/Out).
8. Wait 5 minutes.
9. Record the coolant inlet temperature PID value.
10. Access the SOBDMC and control the HYTRACB_THRM_OP PID and active command the PID to Battery Cooling - Request Coolant Flow Through Chiller (Maximum Coolant Flow).
11. Wait for 2 minutes.
12. Access the BECM and monitor the BAT_COOL_INLETTEMP (Deg C) PID.
13. Record the PID Value.
14. Did the PID value in Step 13 indicate a drop of 3°C (6°F) from the PID value taken in Step 9?
 - (1). Yes - proceed to Step 18.
 - (2). No - proceed to Step 15.
15. Inspect the high voltage battery coolant cooler fins are cold to the touch. Are the battery coolant cooler fins cold to the touch?
 - (1). Yes - proceed to Step 16.
 - (2). No - replace the high voltage battery coolant cooler. Proceed to Step 18.
16. Check for high voltage battery coolant pump DTCs. If any high voltage battery coolant pump DTCs are present, refer to pinpoint test AJ in Workshop Manual (WSM), Section 303-03E, then proceed to Step 18. If no high voltage battery coolant pump DTCs are present, proceed to Step 17.
17. Check for high voltage battery coolant diverter valve DTCs. If any high voltage battery coolant diverter valve DTCs are present, refer to PPT H in WSM, Section 303-03E. If no high voltage battery coolant pump DTCs are present, install a new high voltage battery coolant diverter valve. Proceed to Step 18.
18. Clear DTCs and turn the vehicle off for 5 minutes.
19. Turn the ignition on and select normal Drive Mode from the selectable drive modes.
20. Using FDRS, access the SOBDMC and control the HYBATP_CCV_A PID and active command the PID to TRUE.
21. Using FDRS, access the BECM and monitor the Battery Temperature H_BATT_TEMP.
22. Drive the vehicle, avoiding wide open throttle on police vehicles to prevent entering pursuit mode.
23. Continue to drive the vehicle until SOBDMC_HYTRACB_THRM_OP state is Battery Cooling - Request Coolant Flow Through Chiller (Modulated Coolant Flow). This should occur once the BECM battery temperature access (H_BATT_TEMP) is greater than 125.6°F (51°C) for FHEV and 107.6°F(42°C) for PHEV.
24. Continue to drive the vehicle for an additional 5 minutes.
25. Check the SOBDMC and BECM for DTCs.
26. Did the SOBDMC or BECM set any DTCs?
 - (1). Yes - proceed to Step 27.
 - (2). No - the system is operating properly at this time. Repair is complete.

- 27.** If the SOBDMC or BECM set a DTC other than P2D40, proceed with normal diagnostics found in WSM, Section 303-03. If the SOBDMC set P2D40, the thermal system is not cooling as it should. This could be the result of pinched hoses, air in the coolant, low refrigerant, or a partially blocked cooler.
- 28.** Perform the cooling system fill routine. If any concerns are found, correct the condition as necessary, and perform Steps 18-26 again. If no concerns are found, proceed to Step 29.
- 29.** Reinspect the coolant lines verifying no pinched, bent, or kinked hoses are present. If any concerns are found, correct the condition as necessary, and perform Steps 18-26 again. If no concerns are found, proceed to Step 30.
- 30.** Perform an air conditioning (A/C) system evacuation on the refrigerant system. Record the captured weight. Is the refrigerant weight below 80% of the specification?
- (1). Yes - diagnose and repair any leaks in the A/C system as necessary outside of this article.
 - (2). No - replace the coolant cooler and refill the system. Repeat Steps 18-26.

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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 or Lincoln dealership to determine whether the Bulletin applies to your vehicle. Warranty Policy and Extended Service Plan documentation determine Warranty and/or Extended Service Plan coverage unless stated otherwise in the TSB article. The information in this Technical Service Bulletin (TSB) was current at the time of printing. Ford Motor Company reserves the right to supersede this information with updates. The most recent information is available through Ford Motor Company's on-line technical resources.