



TECHNICAL SERVICE BULLETIN

3.0L/6.7L - Illuminated MIL With Various Reductant System Related DTCs

23-2161
22 May 2023

This bulletin supersedes 22-2191. Reason for update: Revised Part List

Model:

| | |
|--------------------------------|--|
| Ford 2018-2021 F-150 | Engine: 3.0L |
| 2017-2022 F-Super Duty | Engine: 6.7L Built on or before 08-Mar-2022 |
| 2016-2022 F-650/F-750 | Engine: 6.7L |

Summary

This article supersedes TSB 22-2191 to update the Part List.

Issue: Some 2018-2021 F-150 vehicles equipped with a 3.0L diesel engine, 2016-2022 F-650/F-750 vehicles equipped with a 6.7L engine, and 2017-2022 F-Super Duty vehicles equipped with a 6.7L engine and built on or before 08-Mar-2022 may exhibit an illuminated malfunction indicator lamp (MIL) with diagnostic trouble codes (DTCs) P21DD, P20BA, P20B9, P204C, P208A, P208B, P208C, P203B, P205B, P21CD and/or U02A2 in the powertrain control module (PCM). This may be due to water intrusion within connectors C3613 and/or C4851/C3610 on the reductant harness going to the reductant pump/heater assembly and the reductant level sensor/quality module. This may also be due to movement of the wiring harness causing terminal fretting. To correct the condition, follow the Service Procedure to replace the reductant tank harness, the reductant pump/heater assembly and/or the reductant tank, as well as securing the wiring harness using a cable zip tie fastener.

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

- One of the following vehicles:
 - 2018-2021 F-150
 - 2017-2022 F-Super Duty built on or before 08-Mar-2022
 - 2016-2022 F-650/F-750
- 3.0L diesel or 6.7L diesel engine
- DTCs P21DD, P20BA, P20B9, P204C, P208A, P208B, P208C, P203B, P205B, P21CD and/or U02A2 stored in the PCM

Parts

| Service Part Number | Quantity | Description | Unit of Issue | Piece Quantity | Note |
|---------------------|----------|--|---------------|----------------|------|
| 4L3Z-9276-AA | 1 | Sealing Pump To Tank Gasket | 1 | 1 | |
| KC3Z-5J250-A | 1 | Inboard Frame Mounted Reductant Tank (F-Super Duty Pickup) | 1 | 1 | |
| HC3Z-14407-A | 1 | Inboard Frame Mounted Reductant Tank Harness (F-Super Duty Pickup) | 1 | 1 | |
| KC3Z-5J250-B | 1 | Outboard Frame Mounted Reductant Tank (F-Super Duty Chassis Cab) | 1 | 1 | |
| HC3Z-14407-B | 1 | Outboard Frame Mounted Reductant Tank Harness (F-Super Duty Chassis Cab) | 1 | 1 | |
| JL3Z-5J250-A | 1 | Reductant Tank (F-150) | 1 | 1 | |
| JL3Z-14407-AA | 1 | Reductant Tank Harness (F-150) | 1 | 1 | |

| | | | | | |
|--------------|---|---|-----|---|--|
| FC4Z-5J250-H | 1 | Reductant Tank (F-650/F-750) | 1 | 1 | |
| FC4Z-14407-C | 1 | Reductant Tank Harness (F-650/F-750) | 1 | 1 | |
| HC3Z-5J229-B | 1 | Reductant Tank Pump/Heater Assembly (All Vehicles) | 1 | 1 | |
| W520804-S439 | 1 | Reductant Tank Retaining J-nut (F-Super Duty) | 4 | 1 | F-Super Duty requires 2 different J-nut part numbers |
| W719567-S439 | 1 | Reductant Tank Retaining J-nut (F-Super Duty) | 4 | 2 | F-Super Duty requires 2 different J-nut part numbers |
| W503300-S450 | 1 | Reductant Tank Retaining Strap Bolts (F-650/F-750) | 4 | 4 | |
| W520803-S439 | 1 | Reductant Tank Retaining Strap J-nuts (F-650/F-750) | 4 | 4 | |
| TMRCL6 | 1 | Natural Cable Tie, 6 In. 40 Lb - Or Equivalent No Thicker Than 1.2 mm (0.047 in.) | 100 | 1 | Rotunda Technician Tools Program part number |

Parts

Parts To Inspect And Replace Only If Necessary

| Service Part Number | Quantity | Description | Unit of Issue |
|---------------------|-----------|---|---------------|
| W716694-S300 | If Needed | Lower Reductant Tank Cover Access Door Retainer (F-Super Duty, F-150) | 4 |
| PM-27-GAL | If Needed | Diesel Exhaust Fluid (Only If The Reductant Tank Is Replaced) | 1 Gallon |
| PM-27-JUG | If Needed | Diesel Exhaust Fluid (Only If The Reductant Tank Is Replaced) | 2.5 Gallons |

Quantity refers to the amount of the service part number required to repair the vehicle.

Unit of Issue refers to the number of individual pieces included in a service part number package.

Piece Quantity refers to the total number of individual pieces required to repair the vehicle.

As Needed indicates the amount of the part may vary and/or is not a whole number. Parts can be billed out as non-whole numbers, including less than 1.

If Needed indicates the part is not mandatory.

Labor Times

| Description | Operation No. | Time |
|---|---------------|----------|
| 2017-2022 F-250 - F-550 6.7L DIT Pick Up: Retrieve DTCs, Inspect Connectors And Replace Harness Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161A | 0.6 Hrs. |
| 2017-2022 F-250 - F-550 6.7L DIT Pick Up: Retrieve DTCs, Inspect Connectors And Replace Harness And The Reductant Pump /Heater Assembly Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161B | 1.5 Hrs. |
| 2017-2022 F-250 - F-550 6.7L DIT Pick Up: Retrieve DTCs, Inspect Connectors And Replace Harness And The Reductant Tank Assembly Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161C | 1.3 Hrs. |
| 2017-2022 F-350 - F-550 Chassis Cab 6.7L DIT: Retrieve DTCs, Inspect Connectors And Replace Harness Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161D | 0.6 Hrs. |

| | | |
|---|---------|----------|
| 2017-2022 F-350 - F-550 Chassis Cab 6.7L DIT: Retrieve DTCs, Inspect Connectors And Replace Harness And The Reductant Pump /Heater Assembly Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161E | 1.6 Hrs. |
| 2017-2022 F-350-F-550 Chassis Cab 6.7L DIT: Retrieve DTCs, Inspect Connectors And Replace Harness And The Reductant Tank Assembly Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161F | 1.4 Hrs. |
| 2016-2022 F-650/F-750 6.7L DIT: Retrieve DTCs, Inspect Connectors And Replace Harness Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161G | 0.5 Hrs. |
| 2016-2022 F-650/F-750 6.7L DIT: Retrieve DTCs, Inspect Connectors And Replace Harness And The Reductant Pump /Heater Assembly Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161H | 1.6 Hrs. |
| 2016-2022 F-650/F-750 6.7L DIT: Retrieve DTCs, Inspect Connectors And Replace Harness And The Reductant Tank Assembly Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161J | 1.4 Hrs. |
| 2018-2021 F-150 3.0L Diesel: Retrieve DTCs, Inspect Connectors And Replace Harness Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161K | 0.6 Hrs. |
| 2018-2021 F-150 3.0L Diesel: Retrieve DTCs, Inspect Connectors And Replace Harness And The Reductant Pump /Heater Assembly Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161L | 1.4 Hrs. |
| 2018-2021 F-150 3.0L Diesel: Retrieve DTCs, Inspect Connectors And Replace Harness And The Reductant Tank Assembly Includes Time To Install Cable Tie (Do Not Use With Any Other Labor Operations) | 232161M | 1.4 Hrs. |

Repair/Claim Coding

| | |
|-----------------|-------|
| Causal Part: | 14407 |
| Condition Code: | 49 |

Service Procedure

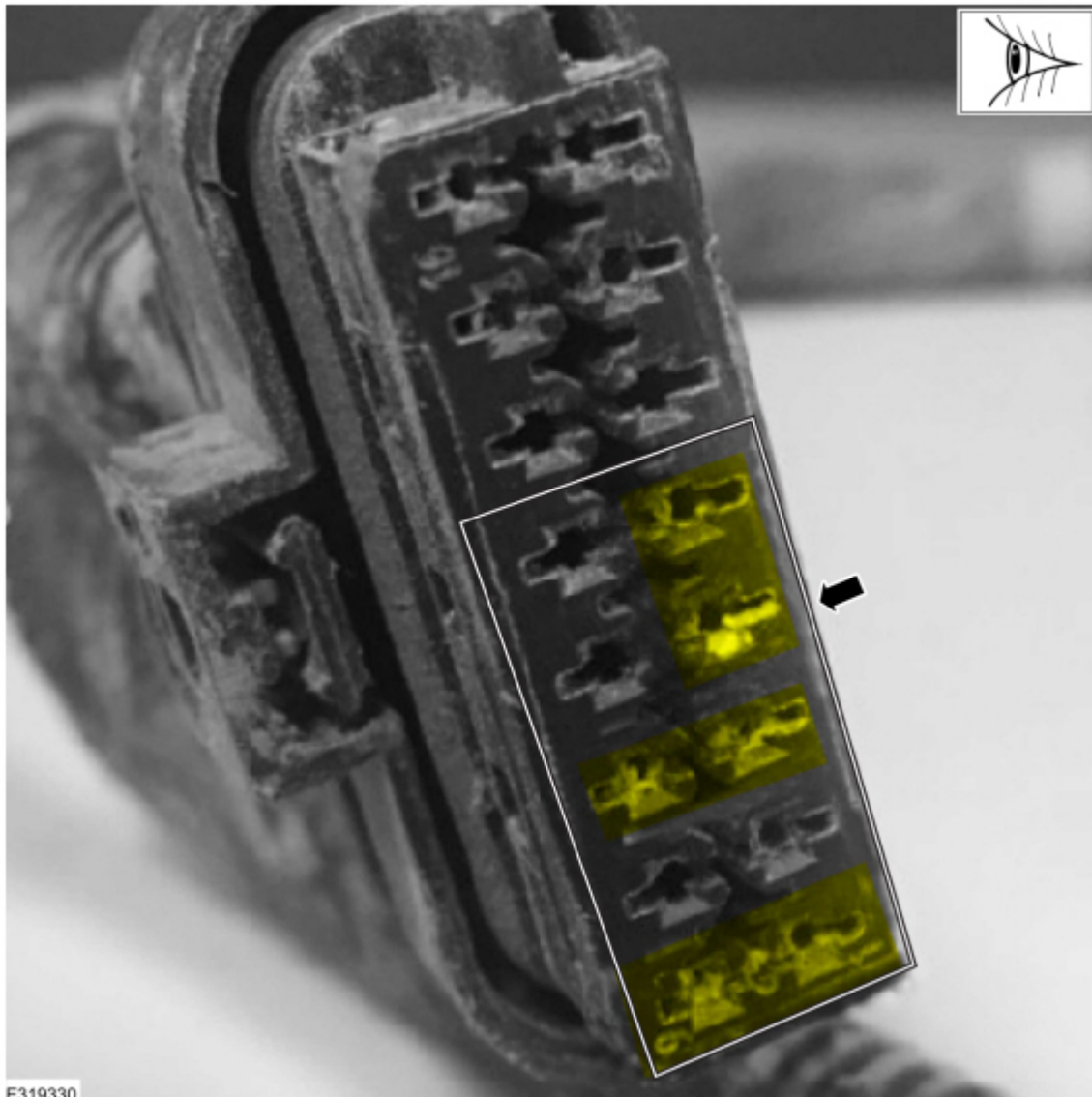
NOTE: For DTCs P21DD, P20BA, P20B9, P204C, P208A, P208B, P208C this can indicate a concern with connector C3613. For DTCs P21CD, P203B, P205B and/or U02A2 this can indicate a concern with connector C4851 (F-Super Duty) or connector C3610 (F-150, F-650/F-750).

1. Disconnect and inspect C3613 (16 pin connector) at the reductant pump/heater assembly and C4851/C3610 (4 pin connector) at the reductant level sensor/quality module for signs of corrosion. Refer to the Workshop Manual (WSM), Section 303-08 and the Wiring Diagram.

(1). Inspect both the harness side and component side of both connectors for signs of water intrusion. Focus on all pins at connector C3613 and pins 1 and 4 at connector C4851/C3610. Inspect for signs of:

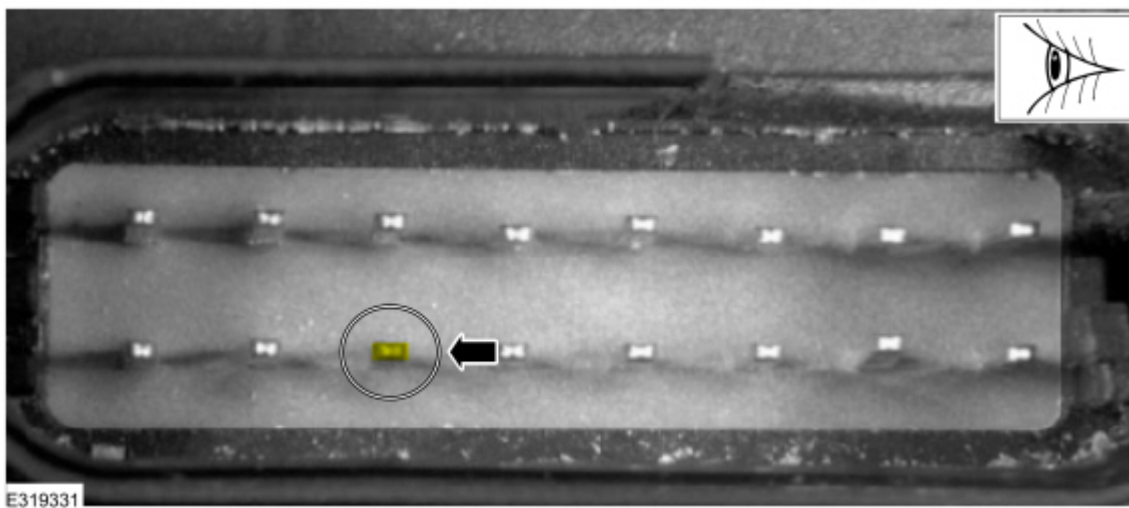
- Visible green corrosion on multiple terminals on the harness side of connector C3613. (Figure 1)

Figure 1



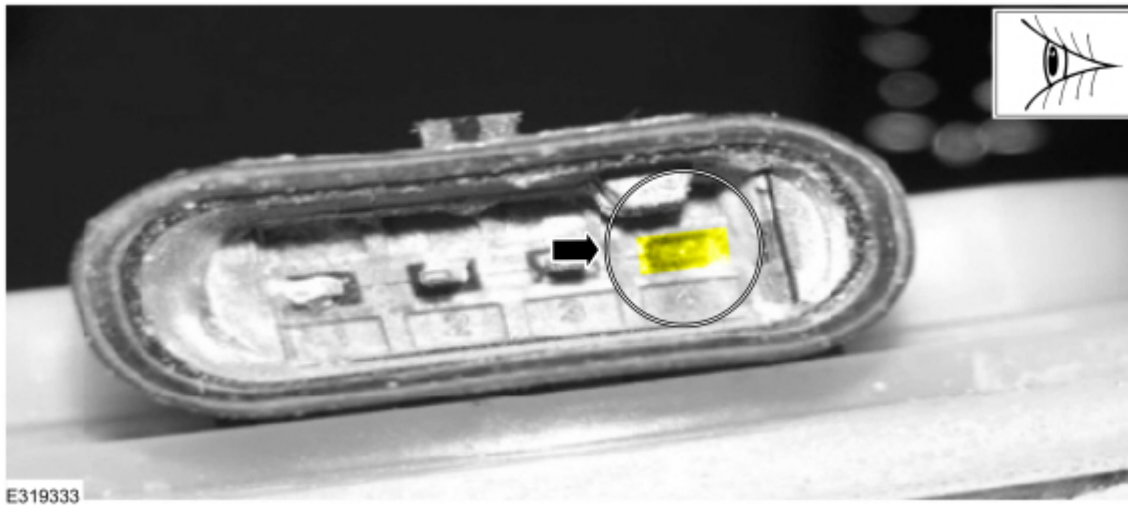
- Corroded pins on the reductant pump/heater assembly at connector C3613. (Figure 2)

Figure 2



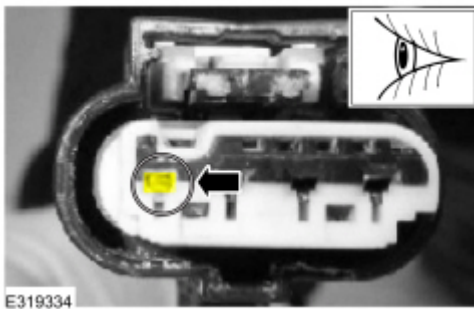
- Visible green corrosion on the reductant level sensor/quality module side of connector C4851/C3610. (Figure 3)

Figure 3



- Visible green corrosion on the harness side of connector C4851/C3610. (Figure 4)

Figure 4



2. Follow the appropriate procedure:

- (1). If no signs of corrosion or water intrusion are present on either connector or component, replace the reductant tank harness only.
- (2). If signs of corrosion or discoloration are present on the reductant tank harness connector C3613 or reductant pump/heater assembly perform the following:
 - If there is corrosion or discoloration on the reductant tank harness connector only and not on the reductant pump/heater assembly, only replace the reductant tank harness.
 - If there are signs of corrosion or discoloration on the reductant pump/heater assembly, replace both the reductant tank harness and the reductant pump/heater assembly. Refer to WSM, Section 303-08.
- (3). If signs of corrosion or discoloration are present on the reductant tank harness connector C4851/C3610 or the reductant level sensor/quality module perform the following:
 - If there is corrosion or discoloration on the reductant tank harness connector only and not the reductant level sensor/quality module, only replace the reductant tank harness.
 - If there are signs of corrosion or discoloration on the reductant level sensor/quality module, replace both the reductant tank harness and the reductant tank (reductant level sensor/quality module built in).

NOTE: Do not add any dielectric grease to the electrical connectors.

3. Prior to installing the reductant tank, using a 40lb tensile strength cable zip tie fastener, secure the harness to the reductant pump metal lock ring. (Figures 5-7)

Figure 5

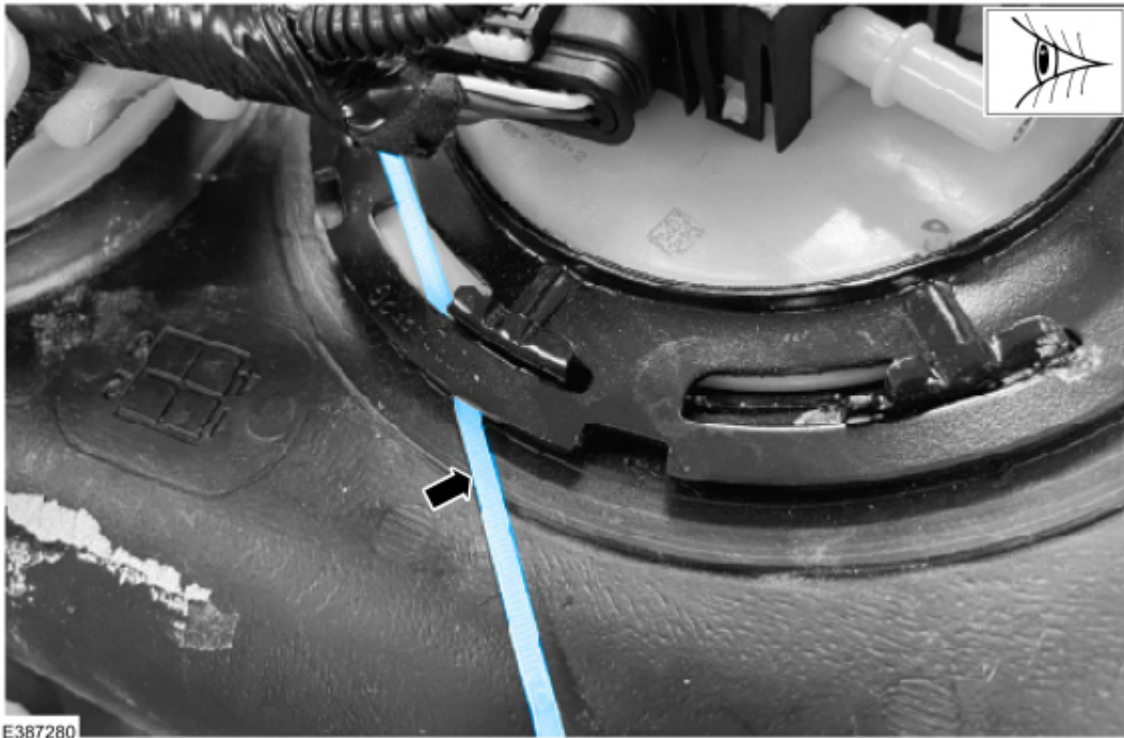


Figure 6

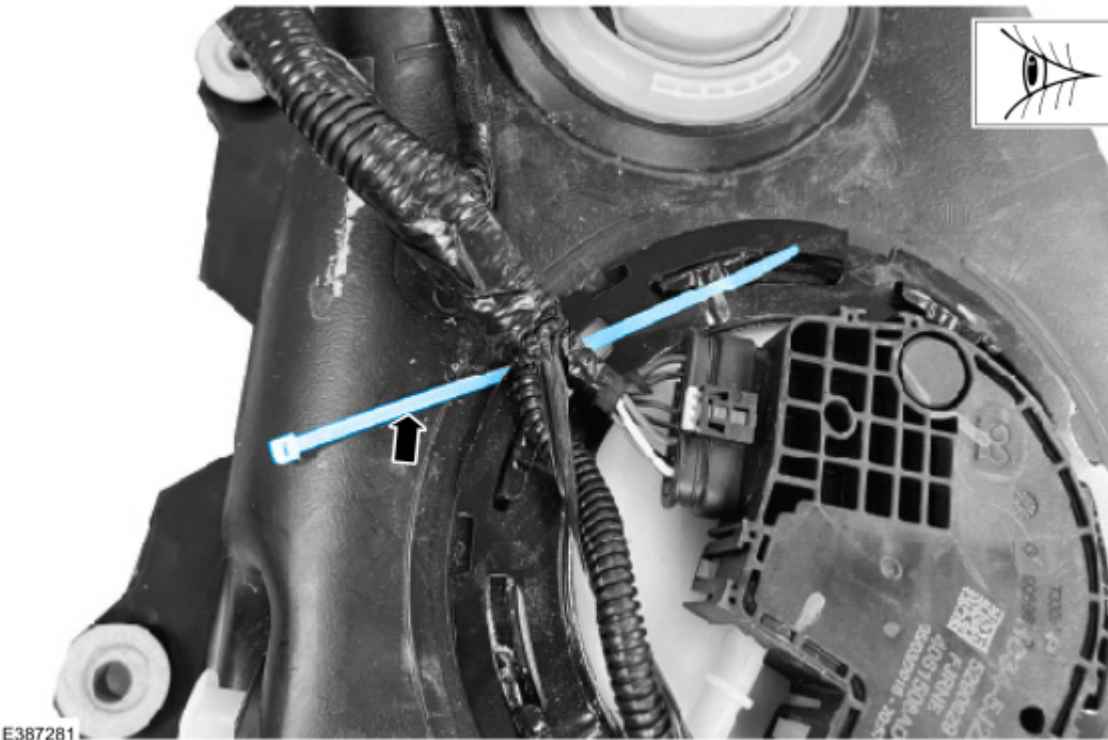


Figure 7



© 2023 Ford Motor Company

All rights reserved.

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.