



## TECHNICAL SERVICE BULLETIN

### 3.5L EcoBoost - Cold Start Ticking/Tapping Or Rattle Type Noise - Built On Or Before 31-Oct-2019

**20-2315**  
14  
September  
2020

This bulletin supersedes 20-2191. Reason for update: update the vehicle model years affected and production fix date

#### Model:

|                                       |                       |
|---------------------------------------|-----------------------|
| <b>Ford</b><br>2017-2020 F-150        | Engine: 3.5L EcoBoost |
| 2018-2020 Expedition                  |                       |
| <b>Lincoln</b><br>2018-2020 Navigator |                       |

#### Summary

This article supersedes TSB 20-2191 and 20-2166 to update the vehicle model years affected and production fix date.

**NOTE: Certain parts may now be reused for this repair. Refer to the Service Procedure for details.**

**Issue:** Some 2017-2020 F-150 2018-2020 Expedition/Navigator vehicles built on or before 31-Oct-2019 and equipped with a 3.5L EcoBoost engine may exhibit a ticking/tapping or rattle type noise from the top front cover area of the engine on initial start-up after a cold soak of 6 hours or more that may last for 2-5 seconds. This may be due to a worn variable camshaft timing (VCT) unit. To correct the condition, follow the Service Procedure steps to replace the VCT units and update the powertrain control module (PCM) calibration with revised VCT parameters.

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

- One of the following vehicle lines:
  - 2017-2020 F-150
  - 2018-2020 Expedition/Navigator
- Built on or before 31-Oct-2019
- 3.5L EcoBoost engine
- Customer symptom of ticking/tapping or rattle noise from the front cover area after a cold start

**NOTE: Dealers should only order parts for customer vehicles that require repairs. Because of part constraints, dealers may experience situational short-term backorders on some parts. Customers should continue to drive vehicles while parts are on order.**

**NOTE: Part quantity refers to the number of that service part number required, which may be different than the number of individual pieces. Service part numbers contain 1 piece unless otherwise stated. "As Needed" indicates the part is required but the number may vary 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.**

**NOTE: Oil Pump Electrical Connector Seal and VCT Oil Control Seal are the same service part number.**

## Parts

| Part Number   |                                              | Description                                                                    | Quantity  |
|---------------|----------------------------------------------|--------------------------------------------------------------------------------|-----------|
| HL3Z-6256-CD  | Package Contains 1 Piece, 2 Pieces Required  | Intake VCT Unit                                                                | 2         |
| HL3Z-6C525-CD | Package Contains 1 Piece, 2 Pieces Required  | Exhaust VCT Unit                                                               | 2         |
| HL3Z-6279-A   | Package Contains 1 Piece, 4 Pieces Required  | VCT Unit Bolt                                                                  | 4         |
| ML3Z-6584-G   | -                                            | Left Valve Cover Gasket                                                        | 1         |
| HL3Z-6584-A   | -                                            | Right Valve Cover Gasket                                                       | 1         |
| HL3Z-9439-A   | Package Contains 3 Pieces, 6 Pieces Required | Intake Port Gasket                                                             | 2         |
| W503275-S437  | Package Contains 4 Pieces, 1 Piece Required  | High Pressure Fuel Tube Retaining Bolt                                         | 1         |
| W503280-S437  | Package Contains 4 Pieces, 1 Piece Required  | High Pressure Fuel Tube Retaining Bolt                                         | 1         |
| W714498-S900  | Package Contains 4 Pieces, 2 Pieces Required | High Pressure Pump Mounting Bolt                                               | 1         |
| AA5Z-9E583-A  | -                                            | High Pressure Pump O-ring                                                      | 1         |
| HL3Z-8507-A   | -                                            | Coolant Pump Gasket                                                            | 1         |
| BR3Z-8527-A   | -                                            | Coolant Pump O-ring                                                            | 1         |
| HL3Z-6A340-A  | -                                            | Crankshaft Pulley Shaft Bolt                                                   | 1         |
| XW4Z-6700-AA  | -                                            | Front Crankshaft Seal                                                          | 1         |
| BR3Z-6020-A   | -                                            | Front Cover Coolant Pipe Seal                                                  | 1         |
| BR3Z-6C535-A  | -                                            | Oil Pump Electrical Connector Seal                                             | 1         |
| AA5Z-6714-A   | -                                            | Oil Filter                                                                     | 1         |
| TA-357        | -                                            | Motorcraft® High Performance Engine RTV Silicone                               | As Needed |
| ZC-30-A       | -                                            | Motorcraft® Silicone Gasket Remover                                            | As Needed |
| ZC-31-B       | -                                            | Motorcraft® Metal Surface Cleaner                                              | As Needed |
| VC-13-G       | -                                            | Motorcraft® Orange Antifreeze/Coolant Concentrated (All Markets Except Canada) | As Needed |
| CVC-13-G      | -                                            | Motorcraft® Orange Antifreeze/Coolant Concentrated (Canada Only)               | As Needed |
| VC-13-G       | -                                            |                                                                                |           |

|                                                |                           |                                                                                     |           |
|------------------------------------------------|---------------------------|-------------------------------------------------------------------------------------|-----------|
|                                                |                           | Motorcraft® Yellow Antifreeze/Coolant Concentrated (All Markets Except Canada)      | As Needed |
| CVC-13-G                                       | -                         | Motorcraft® Yellow Antifreeze/Coolant Concentrated (Canada Only)                    | As Needed |
| XO-5W30-Q1SP                                   | -                         | Motorcraft® SAE 5W-30 Premium Synthetic Blend Motor Oil (All Markets Except Canada) | As Needed |
| CXO-5W30-LSP6                                  | -                         | Motorcraft® SAE 5W-30 Super Premium Motor Oil (Canada Only)                         | As Needed |
| Parts To Inspect And Replace Only If Necessary |                           |                                                                                     |           |
| HL3Z-9H486-A                                   | Package Contains 6 Pieces | Upper Intake Manifold Gaskets                                                       | If Needed |
| BR3Z-6C535-A                                   | -                         | VCT Oil Control Seal                                                                | If Needed |
| BR3Z-6C535-B                                   | -                         | Spark Plug Tube Seal                                                                | If Needed |
| HL3Z-9417-A                                    | -                         | High Pressure Pump Mounting Plate Seal                                              | If Needed |
| BL3Z-9374-A                                    | -                         | High Pressure Pump Mounting Plate O-ring                                            | If Needed |
| HL3Z-8507-D                                    | -                         | Thermostat Housing O-ring                                                           | If Needed |
| HL3Z-8527-A                                    | -                         | Thermostat Housing O-ring                                                           | If Needed |
| HL3Z-8590-A                                    | -                         | Water Pump Outlet O-ring                                                            | If Needed |
| HL3Z-9J323-C                                   | -                         | High Pressure Pump to Rail Tube                                                     | If Needed |

**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      |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------|
| 2017-2020 F-150 3.5L EcoBoost: Replace All Four (4) VCT Units And Reprogram The PCM (Do Not Use With Any Other Labor Operations)        | 202315A       | 9.7 Hrs.  |
| 2017-2020 F-150 Raptor 3.5L EcoBoost: Replace All Four (4) VCT Units And Reprogram The PCM (Do Not Use With Any Other Labor Operations) | 202315B       | 9.9 Hrs.  |
| 2018-2020 Expedition: Replace All Four (4) VCT Units And Reprogram The PCM (Do Not Use With Any Other Labor Operations)                 | 202315C       | 10.1 Hrs. |
| 2018-2020 Navigator: Replace All Four (4) VCT Units And Reprogram The PCM (Do Not Use With Any Other Labor Operations)                  | 202315D       | 10.2 Hrs. |

#### Repair/Claim Coding

|                 |      |
|-----------------|------|
| Causal Part:    | 6256 |
| Condition Code: | 42   |

#### Service Procedure

**NOTE:** The following parts may be reused for this repair if no damage is present.

- Intake gaskets (HL3Z-9H486-A)
- High pressure fuel tube (HL3Z-9J323-C) may be reused for this repair, if the fuel tube has not previously been reused. The high-pressure fuel pump to fuel rail high-pressure fuel tube flare nuts must be torqued to 32 Nm +/-2 Nm when reusing the fuel tube for this TSB.
- VCT solenoid seals (BR3Z-6C535-A) and spark plug tube seals (BR3Z-6C535 6C535-B) should continue to be reused if no damage is present.

1. Replace all 4 VCT units. Refer to Workshop Manual (WSM), Section 303-01. Do not replace any additional VCT or engine timing related components not included in the Parts List.

(1). It is not necessary to remove the two left valve cover camshaft sensors.

(2). All the VCT solenoid and spark plug tube seals require inspection, but not all require replacement.

2. Reprogram the PCM using the latest software level of the appropriate Ford scan tool.

**NOTE: Advise the customer this vehicle is equipped with an adaptive transmission shift strategy which allows the vehicle's computer to learn the transmission's unique parameters and improve shift quality. When the adaptive strategy is reset, the computer will begin a relearning process. This relearning process may result in firmer than normal upshifts and downshifts for several days.**

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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.