

**TECHNICAL SERVICE BULLETIN****23-2143****3.5L EcoBoost - Cold Start Ticking/Tapping/Rattle With Possible No Restart During Auto-Start-Stop Operation**

04 May 2023

This bulletin supersedes 22-2200.

Model:

Ford 2018-2020 Expedition	Built on or before 30-Nov-2019
2017-2020 F-150	Engine: 3.5L EcoBoost Built on or before 30-Nov-2019
Lincoln 2018-2020 Navigator	Built on or before 30-Nov-2019

Summary

This article supersedes TSB 22-2200 to update the production fix date, Action statement and customer symptom.

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

Issue: Some 2017-2020 F-150 and 2018-2020 Expedition/Navigator vehicles built on or before 30-Nov-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. Some vehicles may also exhibit an intermittent condition with no auto restart during auto-start-stop operation with or without diagnostic trouble code (DTC) P164C present in the powertrain control module (PCM). This may be due to a worn variable camshaft timing (VCT) unit. To correct the condition, follow the Service Procedure to replace the VCT units.

Action: Follow the Service Procedure 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 30-Nov-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 parts constraints, dealers may experience situational short-term backorders on some parts. Customers should continue to drive the vehicle while parts are on order.

Parts

Service Part Number	Quantity	Description	Unit of Issue	Piece Quantity	Note
HL3Z-6256-CD	2	Intake VCT Unit	1	2	
HL3Z-6C525-CD	2	Exhaust VCT Unit	1	2	
HL3Z-6279-A	4	VCT Unit Bolt	1	4	
ML3Z-6584-G	1	Left Valve Cover Gasket	1	1	
HL3Z-6584-	1	Right Valve Cover Gasket	1	1	

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W503275-S437	1	High Pressure Fuel Tube Retaining Bolt	4	1	
W503280-S437	1	High Pressure Fuel Tube Retaining Bolt	4	1	
W714498-S900	1	High Pressure Pump Mounting Bolt	4	2	
AA5Z-9E583-A	1	High Pressure Pump O-ring	1	1	
HL3Z-8507-A	1	Coolant Pump Gasket	1	1	
BR3Z-8527-A	1	Coolant Pump O-ring	1	1	
HL3Z-6A340-A	1	Crankshaft Pulley Shaft Bolt	1	1	
XW4Z-6700-AA	1	Front Crankshaft Seal	1	1	
BR3Z-6020-A	1	Front Cover Coolant Pipe Seal	1	1	
BR3Z-6C535-A	1	Oil Pump Electrical Connector Seal	1	1	Oil Pump Electrical Connector Seal and VCT Oil Control Seal are the same service part number
AA5Z-6714-A	1	Oil Filter	1	1	
TA-357	As Needed	Motorcraft® High Performance Engine RTV Silicone			
ZC-30-A	As Needed	Motorcraft® Silicone Gasket Remover			
ZC-31-B	As Needed	Motorcraft® Metal Surface Cleaner			
VC-13-G	As Needed	Motorcraft® Yellow Antifreeze/Coolant Concentrated (All Markets Except Canada)			
CVC-13-G	As Needed	Motorcraft® Yellow Antifreeze/Coolant Concentrated (Canada Only)			
XO-5W30-Q1SP	As Needed	Motorcraft® SAE 5W-30 Premium Synthetic Blend Motor Oil (All Markets Except Canada)			
CXO-5W30-LSP6	As Needed	Motorcraft® SAE 5W-30 Super Premium Motor Oil (Canada Only)			
ZC-20	As Needed	Motorcraft® Engine Shampoo and Degreaser			
PM-4-A	As Needed	Motorcraft® Metal Brake Parts Cleaner (Compliant With Low Volatile Organic Compound Requirements As Required In Some USA States)			
PM-4-B	As Needed	Motorcraft® Metal Brake Parts Cleaner (Not Compliant With Volatile Organic Compound Requirements)			

Parts

Parts To Inspect And Replace Only If Necessary

Service Part Number	Quantity	Description	Unit of Issue	Note
HL3Z-9439-C	If Needed	Valve Cover Intake Port Gasket	3	
HL3Z-9H486-A	If Needed	Upper Intake Manifold Gaskets	6	
BR3Z-6C535-A	If Needed	VCT Oil Control Seal	1	Oil Pump Electrical Connector Seal and VCT Oil Control Seal are the same service part number
BR3Z-6C535-B	If Needed	Spark Plug Tube Seal	1	
HL3Z-9417-A	If Needed	High Pressure Pump Mounting Plate Seal	1	
BL3Z-9374-A	If Needed	High Pressure Pump Mounting Plate O-ring	1	
HL3Z-8507-D	If Needed	Thermostat Housing O-ring	1	
HL3Z-8527-B	If Needed	Thermostat Housing O-ring	1	
HL3Z-8590-A	If Needed	Water Pump Outlet O-ring	1	
HL3Z-9J323-C	If Needed	High Pressure Pump to Rail Tube	1	

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.

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 (Do Not Use With Any Other Labor Operations)	232143A	9.6 Hrs.
2017-2020 F-150 Raptor 3.5L EcoBoost: Replace All Four (4) VCT Units (Do Not Use With Any Other Labor Operations)	232143B	9.7 Hrs.
2018-2020 Expedition: Replace All Four (4) VCT Units (Do Not Use With Any Other Labor Operations)	232143C	9.8 Hrs.
2018-2020 Navigator: Replace All Four (4) VCT Units (Do Not Use With Any Other Labor Operations)	232143D	9.8 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.

- Upper intake manifold gaskets (HL3Z-9H486-A)
- Valve cover intake port gaskets (HL3Z-9439-C)
- High pressure fuel tube (HL3Z-9J323-C) may be reused for this repair, if it has not been previously reused. Tighten the high-pressure fuel pump to fuel rail high-pressure fuel tube flare nuts 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-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 2 left valve cover camshaft position (CMP) sensors.
- (2). All the VCT solenoid and spark plug tube seals require inspection, but not all require replacement.

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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.