



David J. Johnson
 Director
 Service Engineering Operations
 Ford Customer Service Division

Ford Motor Company
 P. O. Box 1904
 Dearborn, Michigan 48121

March 25, 2022

TO: All U.S. Ford and Lincoln Dealers

SUBJECT: **Customer Satisfaction Program 21N03 – Supplement #4**
 Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles Equipped with a 3.5L GTDI Engine
 Cam Phaser Replacement

REF: **Customer Satisfaction Program 21N03 – Supplement #3**
 Dated November 19, 2021

New! REASON FOR THIS SUPPLEMENT

- **Parts Requirements / Ordering Information – Intake Gaskets HL3Z-9439-A should be inspected and only replaced if damaged. It is no longer required to replace these gaskets.**

PROGRAM TERMS

This program extends the warranty coverage of the engine cam phasers until January 1, 2023 provided the Repair Order (RO) date of Powertrain Control Module reflash under Customer Satisfaction Program 21B10 occurred on or before February 28, 2022.

Ford will cover the repair or refund costs following the proration table below using the mileage shown on the RO.

Ford Vehicles	
Mileage	Ford Will Cover
Up to 69,999	100%
70,000 – 79,999	66%
80,000 – 89,999	33%
90,000 or higher	0%

Lincoln Vehicles	
Mileage	Lincoln Will Cover
Up to 79,999	100%
80,000 – 89,999	66%
90,000 – 99,999	33%
100,000 or higher	0%

This is a one-time repair program.

Coverage is automatically transferred to subsequent owners.

VEHICLES COVERED BY THIS PROGRAM

Vehicle	Model Year	Assembly Plant	Build Dates
F-150	2017-2020	Dearborn	March 10, 2016 through November 30, 2019
		Kansas	April 15, 2016 through November 30, 2019
Expedition	2018-2020	Kentucky Truck	March 14, 2017 through November 30, 2019
Navigator	2018-2020	Kentucky Truck	March 16, 2017 through December 21, 2019

Note: This program now includes the F-150 Raptor/Limited variants.

Affected vehicles are identified in OASIS.

REASON FOR PROVIDING EXTENDED WARRANTY COVERAGE

In some of the affected vehicles, an undesirable noise may develop from the cam phasers in the 3.5L GTDI engine. This noise might occur as a rattle when starting the engine after the vehicle was turned off for an extended period of time or as a knocking noise when the engine is idling after it is warmed up. These concerns should be addressed by the updated calibration provided in FSA 21B10. However, for peace of mind, Ford is providing an extended warranty for customers who receive the PCM update under program 21B10 prior to February 28, 2022 and continue to experience cam phaser noise after receiving that PCM update.

A cam phaser that has developed an undesirable noise does not affect the vehicle safety, performance, or emissions.

SERVICE ACTION

If an affected vehicle exhibits this condition, dealers are to replace all four cam phasers. This service will be covered by Ford Motor Company following the proration table contained within the terms and conditions.

OWNER NOTIFICATION MAILING SCHEDULE

Owner Letters were mailed the week of September 27, 2021. Dealers should repair any affected vehicles that experience undesirable cam phaser noise after field service action 21B10, whether or not the customer has received a letter.

New! ATTACHMENTS

Attachment I: Administrative Information
Attachment II: Labor Allowances and Parts Ordering Information
Attachment III: Technical Information

Owner Notification Letters

QUESTIONS & ASSISTANCE

For questions and assistance, contact the Special Service Support Center (SSSC) via the SSSC Web Contact Site. The SSSC Web Contact Site can be accessed through the Professional Technician System (PTS) website using the SSSC link listed at the bottom of the OASIS VIN report screen or listed under the SSSC tab.

Sincerely,



David J. Johnson

Customer Satisfaction Program 21N03 – Supplement #4

Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles
Equipped with a 3.5L GTDI Engine
Cam Phaser Replacement

OASIS ACTIVATION

OASIS was activated on March 2, 2021. Vehicles will not show FSA 21N03 until FSA 21B10 has been completed and processed.

FSA VIN LISTS ACTIVATION

FSA VIN Lists will not be activated for this service action.

SOLD VEHICLES

- Only owners with affected vehicles that exhibit the covered condition will be directed to dealers for repairs.
- Dealers are to prioritize repairs of customer vehicles over repairs of new and used vehicle inventory.

STOCK VEHICLES

- Do not perform this program unless the affected vehicle exhibits the covered condition.

TITLE BRANDED / SALVAGED VEHICLES

Vehicles with cancelled warranties are not eligible for this service action.

OWNER REFUNDS

- Ford Motor Company is offering a refund for owner-paid repairs covered by this program if the repair was performed before the date of the Owner Notification Letter. This refund offer expires February 28, 2022.
- Dealers are also pre-approved to refund owner-paid emergency repairs that were performed away from an authorized servicing dealer after the date of the Owner Notification Letter. Non-covered repairs, or those judged by Ford to be excessive, will not be reimbursed.
- Refunds will only be provided for the cost associated with cam phaser replacement due to unacceptable noise.
- To ensure that the correct proration is applied, follow the directions in the Refund Claiming section.

Note: FSA 21B10 must be claimed by February 28, 2022 to activate 21N03 and provide eligibility for customer refunds. Please contact the SSSC if the customer no longer owns the vehicle.

RENTAL VEHICLES

Dealers are pre-approved for up to 1 day for a rental vehicle. Follow Extended Service Plan (ESP) guidelines for dollar amounts. Rentals will only be reimbursed for the day(s) the vehicle is at the dealership for part replacement. Prior approval for more than 1 rental day is required from the SSSC via the SSSC Web Contact Site.

LINCOLN PICKUP AND DELIVERY

Owners of 2017 MY and newer Lincoln vehicles have the option of requesting pickup and delivery service with a Lincoln loaner (up to 2 days) from their dealership. For details, reference EFC08708 2021 Lincoln Pickup & Delivery Updates. Claim the difference of pre-approved days, or any additional rental days approved by the SSSC, as instructed.

Customer Satisfaction Program 21N03 – Supplement #4

Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles
Equipped with a 3.5L GTDI Engine
Cam Phaser Replacement

ADDITIONAL REPAIR (LABOR TIME AND/OR PARTS)

Additional repairs identified as necessary to complete the FSA should be managed as follows:

- For related damage and access time requirements, refer to the Warranty and Policy Manual – Section 6 – Ford & Lincoln Program Policies / General Information & Special Circumstances for FSA's / Related Damage.
- For vehicles within new vehicle bumper-to-bumper warranty coverage, no SSSC approval is required, although related damage must be on a separate repair line with the Related Damage radio button checked.
 - Ford vehicles – 3 years or 36,000 miles
 - Lincoln vehicles – 4 years or 50,000 miles
- For vehicles outside new vehicle bumper-to-bumper warranty coverage, submit an Approval Request to the SSSC Web Contact Site prior to completing the repair.

CLAIMS PREPARATION AND SUBMISSION

- **Claim Entry:** Enter claims using Dealer Management System (DMS) or One Warranty Solution (OWS) online.
 - When entering claims:
 - Claim type 31: Field Service Action. The FSA number 21N03 is the sub code.
 - Customer Concern Code (CCC): N09
 - Condition Code (CC): 42
 - Causal Part Number: 6256
 - Part Quantity: 0
 - For additional claims preparation and submission information, refer to the Recall and Customer Satisfaction Program (CSP) Repairs in the OWS User Guide.
- **Related Damage/Additional labor and/or parts:** Must be claimed as Related Damage on a separate repair line from the FSA with same claim type and sub code as described in Claim Entry above.
- **IMPORTANT:** Click the Related Damage Indicator radio button.
- **Rentals:** For rental vehicle claiming, follow Extended Service Plan (ESP) guidelines for dollar amounts. Enter the total amount of the rental expense under Miscellaneous Expense code RENTAL.
- **Lincoln Pickup & Delivery:** Claims for Lincoln Pickup & Delivery with a Lincoln loaner (up to 2 days) should be submitted on a separate line from the FSA. Refer to EFC08708, 2021 Lincoln Pickup & Delivery Updates for details.
- **Refund Claiming Instructions:** Submit each unique refund on a separate **repair order**.
 - Program Code: 21N03
 - Misc. Expense: ADMIN
 - Misc. Expense: REFUND
 - Misc. Expense: 0.2 Hrs.

Customer Satisfaction Program 21N03 – Supplement #4

Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles
Equipped with a 3.5L GTDI Engine
Cam Phaser Replacement

• **Refund Claiming Instructions Continued:**

- To ensure that the correct proration is applied, OWS will automatically do the prorate calculations. See below.
 - **Step 1** – Claim Repair Order write up in dealer DMS
 - Open separate RO from 21B10 in the dealer DMS
 - **NO OTHER REPAIR LINES ALLOWED**
 - Check that original repair receipt provided matches vehicle owner
 - Check original repair mileage qualifies for the prorate
 - Use the **CURRENT DATE** and **MILEAGE** on this Repair Order
 - Customer Concern field - Enter (Requests Refund for Program 21N03)
 - Tech comment section - Provide Date of Repair, Mileage, Full Dollar Amount of Original Repair
 - Refund amount is only for the **CAM PHASER** repairs
 - Do a misc. expense at **ZERO** dollars
 - Close RO – Ensure REFUND is at zero dollars
 - Do **NOT** submit via DMS
 - **Step 2** – Claim submittal into OWS
 - **MANUALLY ENTER THIS CLAIM**
 - Enter the **DATE** and **MILEAGE FROM THE ORIGINAL REPAIR RECEIPT**
 - Enter the **CURRENT RO NUMBER**
 - Submit for the **FULL** amount of the refund. OWS will **AUTOMATICALLY** prorate the refund for you based on the original mileage from the customer repair invoice provided to you
 - **PRE-VALIDATE** and **SUBMIT**
 - When claim pays, perform necessary accounting adjustments depending on your DMS
 - Provide customer with refund check

• **Proration Table**

Ford Vehicles	
Mileage	Ford Will Cover
Up to 69,999	100%
70,000 – 79,999	66%
80,000 – 89,999	33%
90,000 or higher	0%

Lincoln Vehicles	
Mileage	Ford Will Cover
Up to 79,999	100%
80,000 – 89,999	66%
90,000 – 99,999	33%
100,000 or higher	0%

Customer Satisfaction Program 21N03 – Supplement #4

Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles
Equipped with a 3.5L GTDI Engine
Cam Phaser Replacement

• Submitting Claims with Ford or Lincoln Protect for Balance Remaining

- If the customer has an active Ford Protect contract that will cover the repair, the remaining amount can be submitted to Ford Protect on another line.
 - Please follow these submission instructions to claim the remaining parts/labor/loaner under Ford Protect:
 - Claim Type: 11 – Vehicle Coverage
 - Sub-Code: ESP
 - Causal Part: 6256
 - CCC: N09
 - CC: 42
 - Customer Comments: Include the FSA number as well as the RO/Line that was submitted for the FSA reimbursed cost (E.g., “FSA 21N03 portion paid on RO 123456, Line 01”)
 - Dealer Comments: Include comments detailing the Total Cost of the Repair and the FSA reimbursed amount/percentage. (E.g., “Total repair cost \$1200.00, FSA covering \$792.00 which is pro-rated 66% of repair. ESP to cover remaining 34%.”)
 - Parts: Use **FSAPRTPR**, enter quantity of 1, and in the “Amount” field of the part line enter the customer responsibility portion of the pro-rate (this is the total part amount minus what is being reimbursed by the FSA)
 - Labor: Use **FSALABORPR**, enter quantity of 1, and enter the customer responsibility portion of the pro-rate (this is the total labor amount minus what is being reimbursed by the FSA)
 - Miscellaneous:
 - Loaner: Use “**LOANER**” and enter the total loaner days to be covered by Ford Protect and the total amount to be covered by Ford Protect. Please note that Ford Protect loaner rules apply (max daily rate, max number of days). Ford Protect will not reimburse for loaner in excess of contract terms.
 - Enter any applicable tax according to normal Ford Protect tax rules in your state. Note that only the costs reimbursed by Ford Protect are taxable.
 - Once you submit the claim, OWS will automatically remove the deductible, if one applies.
 - Note that Ford Protect Prior Approval is required for a claim that is reimbursing for the customer responsibility portion of a pro-rated FSA claim under sub-code ESP when more than 4 days of loaner are required or when the GROSS reimbursement amount exceeds your Ford & Lincoln Protect self-approval limit.

Customer Satisfaction Program 21N03 – Supplement #4

Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles
Equipped with a 3.5L GTDI Engine
Cam Phaser Replacement

- **Submitting Claims with Customer Loyalty Program for Balance Remaining**
 - **For Expedition and F-150 claims**
 - Create Empowerment case (if total repair is <=\$750) or CRC Fast Path case if >\$750 to get the amount and approval code for Ford's CLP participation
 - Claim Type: 13
 - Sub-Code: PCLP (Empowerment), P11 (CRC)
 - Causal Part: 6256
 - CCC: N09
 - CC: 42
 - Customer Comments: Include the FSA number as well as the RO/Line that was submitted for the FSA reimbursed cost (E.g., "FSA 21N03 portion paid on RO 123456, Line 01")
 - Dealer Comments: Include comments detailing the Total Cost of the Repair and the FSA reimbursed amount/percentage. (E.g., "Total repair cost \$1200.00, FSA covering \$792.00 which is pro-rated 66% of repair. CLP to cover remaining 34%.")
 - Parts: Use FSAPRTPR, enter quantity of 1, and in the "Amount" field of the part line enter the customer responsibility portion of the pro-rate (this is the total part amount minus what is being reimbursed by the FSA)
 - Labor: Use FSALABORPR, enter quantity of 1, and enter the customer responsibility portion of the pro-rate (this is the total labor amount minus what is being reimbursed by the FSA)

Customer Satisfaction Program 21N03 – Supplement #4

Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles
Equipped with a 3.5L GTDI Engine
Cam Phaser Replacement

- **For Dealers that wish to claim the Balance Remaining using Lincoln Loyalty Funds on Navigator claims**
 - Claim Type: 13
 - Sub-Code: P18
 - Causal Part: 6256
 - CCC: N09
 - CC: 42
 - Customer Comments: Include the FSA number as well as the RO/Line that was submitted for the FSA reimbursed cost (E.g., “FSA 21N03 portion paid on RO 123456, Line 01”)
 - Dealer Comments: Include comments detailing the Total Cost of the Repair and the FSA reimbursed amount/percentage (E.g., “Total repair cost \$1200.00, FSA covering \$792.00 which is pro-rated 66% of repair. CLP to cover remaining 34%.”)
 - Parts: Use FSAPRTPR, enter quantity of 1, and in the “Amount” field of the part line enter the customer responsibility portion of the pro-rate (this is the total part amount minus what is being reimbursed by the FSA)
 - Labor: Use FSALABORPR, enter quantity of 1, and enter the customer responsibility portion of the pro-rate (this is the total labor amount minus what is being reimbursed by the FSA)
 - Loaner: Use “RENTAL” and enter the total loaner days to be covered by CLP and the total amount to be covered by CLP. Please note that CLP rental rules apply (max daily rate, max number of days).
 - Normal approval requirements apply based on the total amount being paid by CLP.
 - Ford-only dealers with no Lincoln P18 funds, or Lincoln dealers that do not have sufficient P18 funds to cover the balance, submit a Financial Assistance Request in GCCT to the Lincoln Concierge.

Customer Satisfaction Program 21N03 – Supplement #4

Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles
Equipped with a 3.5L GTDI Engine
Cam Phaser Replacement

LABOR ALLOWANCES

Description	Labor Operation	Labor Time
Replace all four (4) VCT units – F-150 (excluding Raptor)	21N03B	9.5 Hours
Replace all four (4) VCT units – F-150 Raptor	21N03C	9.7 Hours
Replace all four (4) VCT units – Navigator	21N03D	9.8 Hours
Replace all four (4) VCT units – Expedition	21N03E	9.8 Hours
Reprogram PCM - F-150/Raptor/Exp/Nav	21N03F	0.2 Hours

New! PARTS REQUIREMENTS / ORDERING INFORMATION

Note: Intake gaskets HL3Z-9439-A should be inspected and only replaced if damaged

Part Number	Description	Order Quantity	Claim Quantity
ML3Z-6256-A*	Intake VCT Unit - Package Contains 1 Piece, 2 Pieces Required	2	2
*Note: If part ML3Z-6256-A is not available, part HL3Z-6256-CD is an alternate option.			
ML3Z-6C525-A*	Exhaust VCT Unit - Package Contains 1 Piece, 2 Pieces Required	2	2
*Note: If part ML3Z-6C525-A is not available, part HL3Z-6C525-CD is an alternate option.			
HL3Z-6279-A	VCT Unit Bolt Package Contains 1 Piece, 4 Pieces Required	4	4
ML3Z-6584-G	Left Valve Cover Gasket	1	1
HL3Z-6584-A	Right Valve Cover Gasket	1	1
W503275-S437	High Pressure Fuel Tube Retaining Bolt - Package Contains 4 Pieces, 1 Piece Required	1	1
W503280-S437	High Pressure Fuel Tube Retaining Bolt - Package Contains 4 Pieces, 1 Piece Required	1	1
W714498-S900	High Pressure Pump Mounting Bolt - Package Contains 4 Pieces, 2 Pieces Required	1	2
AA5Z-9E583-A	High Pressure Pump O-ring	1	1
HL3Z-8507-A	Coolant Pump Gasket	1	1
BR3Z-8527-A	Coolant Pump O-ring	1	1
HL3Z-6A340-A	Crankshaft Pulley Shaft Bolt	1	1
XW4Z-6700-AA	Front Crankshaft Seal	1	1
BR3Z-6020-A	Front Cover Coolant Pipe Seal	1	1

Customer Satisfaction Program 21N03 – Supplement #4

Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles
Equipped with a 3.5L GTDI Engine
Cam Phaser Replacement

BR3Z-6C535-A	Oil Pump Electrical Connector Seal	1	1
AA5Z-6714-A	Oil Filter	1	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	
ZC-20	Motorcraft® Engine Shampoo and Degreaser (All Markets Except Canada)	As Needed	
CXC-66-A	Motorcraft® Engine Shampoo (Canada Only)	As Needed	
PM-4-A	Motorcraft® Metal Brake Parts Cleaner (Compliant With Low Volatile Organic Compound Requirements As Required In Some USA States)	As Needed	
PM-4-B	Motorcraft® Metal Brake Parts Cleaner (Not Compliant With Volatile Organic Compound Requirements)	As Needed	
Parts To Inspect And Replace Only If Necessary			
HL3Z-9H486-A	Upper Intake Manifold Gaskets - Package Contains 6 Pieces	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	

Customer Satisfaction Program 21N03 – Supplement #4

Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles
Equipped with a 3.5L GTDI Engine
Cam Phaser Replacement

HL3Z-8590-A	Water Pump Outlet O-ring	If Needed
HL3Z-9J323-C	High Pressure Pump to Rail Tube	If Needed
<i>HL3Z-9439-A</i>	<i>Intake Gaskets</i>	<i>If Needed</i>

Order your parts requirements through normal order processing channels. To guarantee the shortest delivery time, an emergency order for parts must be placed.

DEALER PRICE

For latest prices, refer to DOES II.

PARTS RETENTION, RETURN, & SCRAPPING

Follow the provisions of the Warranty and Policy Manual, Section 1 - WARRANTY PARTS RETENTION AND RETURN POLICIES. If a replaced part receives a scrap disposition, the part must be scrapped in accordance with all applicable local, state and federal environmental protection and hazardous material regulations. Federal law prohibits selling motor vehicle parts or components that are under safety, compliance, or emissions recall.

EXCESS STOCK RETURN

Excess stock returned for credit must have been purchased from Ford Customer Service Division in accordance with Policy Procedure Bulletin 4000.

REPLACED FSA PARTS INSPECTION AND SIGN OFF

Effective March 1st 2021 all parts replaced as part of an FSA repair with a repair order open date of March 1st 2021 or later must be inspected and signed off on the repair order by a member of your dealer's fixed operations management team or an employee the task has been delegated to. If the task is to be delegated to a non-management employee, the employee needs to be someone other than the technician who completed the repair and needs to understand the importance of completing this task consistently and accurately.

- All parts replaced as part of an FSA repair should be returned to the parts department following the Warranty Parts Retention and Return Policies.
- Inspect the replaced parts to verify the FSA repair was completed.
- If the FSA repair is found to be complete, the designated employee signs the repair order line or parts return stamp area (electronic or hand signed) for the FSA repair indicating the parts were inspected and validated to have been replaced.
- After the parts have been inspected, they should be handled based on the guidance in the parts status report in the Online Warranty System (Hold, Return, CORE, Scrap, etc.).
- This process is subject to review during warranty audits for FSA repairs with a repair order open date of March 1st 2021 or later. Any eligible FSA claims requiring parts replacement and found not to have been inspected and signed off during a warranty audit will be subject to chargeback and consideration for enrollment into the Dealer Incomplete Recall Repair Process.

Customer Satisfaction Program 21N03 – Supplement #4

Certain 2017-2020 Model Year F-150, 2018-2020 Expedition, and 2018-2020 Navigator Vehicles
Equipped with a 3.5L GTDI Engine
Cam Phaser Replacement

Note: Other approvals (electronic or handwritten) for add-on repair lines, dealer owned vehicle repairs, and repeat repairs do not qualify as FSA parts inspection approvals. The post-repair FSA parts inspection process (electronic or handwritten) is independent from other warranty approval requirements. The approval by the designated employee implies that the FSA parts were found to be replaced and must be able to be clearly identified on the Repair Order. If multiple FSA's require approval on a single Repair Order, each applicable occurrence will require individual post repair approval by the designated employee.

CERTAIN 2017-2020 MODEL YEAR F-150, 2018-2020 EXPEDITION, AND 2018-2020 NAVIGATOR VEHICLES EQUIPPED WITH A 3.5L ECOBOOST ENGINE — CAM PHASER REPLACEMENT

NEW ! SERVICE PROCEDURE

NOTE: This procedure will only resolve noise concerns with the cam phasers. The two noise concerns that a phaser can make is a cold engine start rattle and a hot idle knock. These sound clips are representative of a cam phaser noise.

- i. Sound captured of a cold engine rattle. [Click Here.](#)
- ii. Sound captured of a hot idle knock. [Click Here.](#)

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

- **Intake gaskets (HL3Z-9439-A).**
- 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 FSA.
- 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 Variable Camshaft Timing (VCT) units. Please follow the Workshop Manual (WSM) procedures in Section 303-01C for F-150 and 303-01 for Expedition and Navigator.

NOTE: Do not replace any additional VCT or engine timing related components.

- It is not necessary to remove the two left valve cover camshaft sensors.
- All the VCT solenoid and spark plug tube seals require inspection, but not all require replacement.

IMPORTANT NOTE: Federal law prohibits selling motor vehicle parts or components that are under safety, compliance, or emissions recall. Unless a part is requested to be returned to Ford, all parts replaced under this FSA must be scrapped in accordance with all applicable local, state and federal environmental protection and hazardous material regulations. Refer to the Parts Retention, Return, & Scrapping section of the FSA dealer bulletin for further information.



Module Reprogramming

NOTE: All vehicles are to have the Powertrain Control Module (PCM) reprogrammed regardless of symptoms.

NOTE: If any other Diagnostic Trouble Codes (DTC's) are present in the PCM and the engine light is illuminated, record them on the repair order and advise the customer that this update will not repair these issues and that the DTC's will be cleared but will return again after this update.

F-150 VEHICLES

2. Connect a battery charger to the 12 volt battery.

NOTE: Verify that the negative cable of the charger is installed on a chassis or engine ground, and not the 12 volt battery negative terminal to prevent the battery saver mode from activating on the vehicle.

NOTE: Make sure the Integrated Diagnostic Software (IDS) computer does not enter sleep mode during programming.

3. Reprogram the PCM using the latest IDS release. Make sure you are connected to the Internet prior to reprogramming. Make sure to select "Yes" at the beginning of the procedure when asked if programming the vehicle is due to an engine shudder.

NOTE: Calibration files may also be obtained at www.motorcraftservice.com.

NOTE: Follow the IDS on-screen instructions to complete the reprogramming procedure.

4. Clear all DTC's.

5. Disconnect the battery charger from the 12 volt battery once the reprogramming has completed.

NOTE: Advise the customer that 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 re-learning process. This re-learning process may result in firmer than normal upshifts and downshifts for several days.



EXPEDITION AND NAVIGATOR VEHICLES

6. Connect a battery charger to the 12V battery.

NOTE: Verify that the negative cable of the charger is installed on a chassis or engine ground, and not the 12 volt battery negative terminal to prevent the battery saver mode from activating on the vehicle.

NOTE: If the diagnostic software does not load or if the vehicle cannot be identified properly, make sure there is a good internet connection and the VCM is properly connected to the DLC.

7. Log into Ford Diagnostic and Repair System (FDRS).

NOTE: Vehicle information is automatically retrieved by the diagnostic software and a Network Test is run. Vehicle identification data appears on the screen when this is complete.

8. Click 'Read VIN from Vehicle' or manually enter the VIN.

NOTE: Available modules are shown on the LH side of the screen, and available procedures are listed on the RH side of the screen. Modules that are communicating are highlighted in green.

9. Select Toolbox tab.

10. From the list on the LH side of the screen, select the PCM.

11. From the list on the RH side of the screen, select PCM - Powertrain Control Module (PCM) Software Update.

12. Click RUN. Follow all on-screen instructions carefully. Make sure to select "Yes" at the beginning of the procedure when asked if programming the vehicle is due to an engine shudder.

13. From the list on the RH side of the screen, select Self-Test and click RUN.

14. Click the Run Selected Tests button in the lower right.

15. Click the Clear & Retest button at the top of the screen to clear DTCs in all modules.

16. Disconnect the battery charger from the 12V battery once the programming has completed.

NOTE: Advise the customer that 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 re-learning process. This re-learning process may result in firmer than normal upshifts and downshifts for several days.



Important Information for Module Programming when using IDS

NOTE: When programming or reprogramming a module, use the following basic checks to ensure programming completes without errors.

- Make sure the 12V battery is fully charged before carrying out the programming steps and connect IDS/scan tool to a power source.
- Inspect Vehicle Communication Module (VCM) and cables for any damage. Make sure scan tool connections are not interrupted during programming.
- A hardwired connection is strongly recommended.
- Turn off all unnecessary accessories (radio, heated/cooled seats, headlamps, interior lamps, HVAC system, etc.) and close doors.
- Disconnect/depower any aftermarket accessories (remote start, alarm, power inverter, CB radio, etc.).
- Follow all scan tool on-screen instructions carefully.
- Disable IDS/scan tool sleep mode, screensaver, hibernation modes.
- Create all sessions key on engine off (KOEO). Starting the vehicle before creating a session will cause errors within the programming inhale process.

Recovering a module when programming has resulted in a blank module: **NEVER DELETE THE ORIGINAL SESSION!**

- a. Obtain the original IDS that was used when the programming error occurred during module reprogramming (MR) or programmable module installation (PMI).
- b. Disconnect the VCM from the data link connector (DLC) and the IDS.
- c. Reconnect the VCM to IDS and then connect to the DLC. Once reconnected, the VCM icon should appear in the corner of the IDS screen. If it does not, troubleshoot the IDS to VCM connection.
- d. Locate the original vehicle session when programming failed. This should be the last session used in most cases. If not, use the session created on the date that the programming failed.

NOTE: If the original session is not listed in the previous session list, click the Recycle Bin icon at the lower right of the previous session screen. This loads any deleted sessions and allows you to look through them. Double-click the session to restore it.

- e. Once the session is loaded, the failed process should resume automatically.
- f. If programming does not resume automatically, proceed to the Module Programming menu and select the previously attempted process, PMI or MR.
- g. Follow all on-screen prompts/instructions.
- h. The last screen on the IDS may list additional steps required to complete the programming process. Make sure all applicable steps listed on the screen are followed in order.



Important Information for Module Programming when using FDRS

NOTE: When programming a module, use the following basic checks to ensure programming completes without errors.

- Make sure the 12V battery is fully charged before carrying out the programming steps and connect FDRS/scan tool to a power source.

NOTE: A good internet connection is necessary to identify the vehicle and to load the diagnostic software.

- Inspect Vehicle Communication Module II (VCM II)/Vehicle Communication and Measurement Module (VCMM) and cables for any damage. Make sure scan tool connections are not interrupted during programming.
- A hardwired connection is strongly recommended.
- Turn off all unnecessary accessories (radio, heated/cooled seats, headlamps, interior lamps, HVAC system, etc.) and close doors.
- Disconnect/depower any aftermarket accessories (remote start, alarm, power inverter, CB radio, etc.).
- Follow all scan tool on-screen instructions carefully.
- Disable FDRS/scan tool sleep mode, screensaver, hibernation modes.
- Create all sessions key on engine off (KOEO). Starting the vehicle before creating a session will cause errors within the programming inhale process.

Recovering a module when programming has resulted in a blank module

- a. Disconnect the VCMII or VCMM from the data link connector (DLC) and your PC.
- b. After ten seconds, reconnect the VCMII/VCMM to the DLC and the PC. Launch FDRS. The VCMII/VCMM icon should turn green in the bottom right corner of the screen. If it does not, troubleshoot the FDRS to VCM connection.
- c. If you are using the same FDRS as the initial programming attempt, select the appropriate VIN from the Vehicle Identification menu. If you are using a different FDRS, select "Read VIN from Vehicle" and proceed through the Network Test.
- d. In the Toolbox menu, navigate to the failed module and Download/Run Programmable Module Installation (PMI). Follow the on-screen prompts. When asked if the original module is installed, select "No" and continue through the installation application.
- e. Once programming has completed, a screen may list additional steps required to complete the programming process. Make sure all applicable steps are followed in order.

