TECHNICAL SERVICE BULLETIN
6.7L Diesel - Engine Oil Leak

22-2248
15 February 2024

This bulletin supersedes 22-2201.

Model:

Ford 2015-2019 F-Super Duty	Engine: 6.7L
2016-2019 F-650/F-750	Engine: 6.7L

Summary

This article supersedes TSB 22-2201 to update the vehicles affected, Service Procedure and Part List

Issue: Some 2015-2019 F-Super Duty and 2016-2019 F-650/F-750 vehicles equipped with a 6.7L engine may exhibit an oil leak from the oil filter, crankcase vent oil separator, oil cooler, or upper/lower oil pan. This may be due to the mating surfaces of the upper oil pan and the engine block or to a clogged crankcase vent oil separator.

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

- One of the following vehicle lines:
  - 2015-2019 F-Super Duty
  - 2016-2019 F-650/F-750
- 6.7L engine
- Engine oil leak in the area including the oil filter, crankcase vent oil separator, oil cooler, or upper/lower oil pan

Parts

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description	Note
BC3Z-6731-B	1	1	1	Oil Filter	
BC3Z-6840-A	1	1	1	Oil Filter Adaptor Press In Place Gasket	
W715618-S437	6	2	4	Torque Converter Nuts	
W711336-S441	6	2	4	Engine Support Insulator Nuts	
W709771-S440	2	2	1	Transmission Support Insulator Nuts	
W520515-S440	4	1	4	Cross Member Fastener Nuts	
W710356-S439	4	1	4	Cross Member Fastener Bolts	
391558-S102	2	2	1	Transmission Support Insulator To Transmission Bolt	
N605804-S439	1	1	4	Transmission Support Insulator Bracket Bolts (2WD Only)	
W715131-S437	1	1	4	Transmission Fluid Cooler Tube Bolt (Transmission Side)	
391308-S102	1	1	4	Transmission Fluid Filler Tube O-Ring (391308)	

BC3Z-6379-C	10	3	4	Flexplate Bolts	
DC3Z-6L621-B	1	1	1	Oil Cooler Gasket 1	
DC3Z-6L621-A	1	1	1	Oil Cooler Gasket 2	
DC3Z-6L621-C	1	1	1	Oil Cooler Gasket 3	
BC3Z-6695-B	1	1	1	Lower Oil Pan	
DC3Z-6710-A	2	1	2	Round Upper Oil Pan Press In Place Gasket	
DC3Z-6710-B	1	1	1	Square Upper Oil Pan Press In Place Gasket	
XT-10-QLVC		As Needed		Motorcraft® MERCON® LV Automatic Transmission Fluid (All Markets Except Canada)	
CXT-10-LV6		As Needed		Motorcraft® MERCON® LV Automatic Transmission Fluid (Canada Only)	
XT-10-QLVC		As Needed		Motorcraft® MERCON® LV Automatic Transmission Fluid (4x4 Only, Transfer Case Fluid) (All Markets Except Canada)	
CXT-10-LV6		As Needed		Motorcraft® MERCON® LV Automatic Transmission Fluid (4x4 Only, Transfer Case Fluid) (Canada Only)	
XO-10W30-QSDF		As Needed		Motorcraft® SAE 10W-30 Super Duty Diesel Motor Oil	
XO-15W40-QSDF		As Needed		Motorcraft® SAE 15W-40 Super Duty Diesel Motor Oil	
XO-5W40-QSD		As Needed		Motorcraft® SAE 5W-40 Full Synthetic Diesel Motor Oil	
XO-5W20-Q1FS		As Needed		Motorcraft® SAE 5W-20 Full Synthetic Motor Oil (F-Super Duty)	WSM Section 204-04A - Removal and Installation
XO-5W20-Q1SP		As Needed		Motorcraft® SAE 5W-20 Synthetic Blend Motor Oil (F-650/F-750) (All Markets Except Canada)	WSM Section 204-04 - Removal and Installation
CXO-5W20-LSP6		As Needed		Motorcraft® SAE 5W-20 Synthetic Blend Motor Oil (F-650/F-750) (Canada Only)	WSM Section 204-04 - Removal and Installation
TA-357		As Needed		Motorcraft® High Performance Engine RTV Silicone	
ZC-31-B		As Needed		Motorcraft® Metal Surface Prep Wipes	
XL-5-A		As Needed		Motorcraft® Multi-Purpose Grease Spray	
TA-24-B		As Needed		Motorcraft® Thread Sealant with PTFE (4x4 Only)	
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)	

ZC-30-A		As Needed		Motorcraft® Gasket Remover	
ZC-20		As Needed		Motorcraft® Engine Shampoo and Degreaser	
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)	
XL-2		As Needed		Motorcraft® High Temperature Nickel Anti-Seize Lubricant	
164-TP33200008		As Needed		Dye-Lite® Oil-Based Fluid Dye (Rotunda Part Number)	

Parts - Driveshaft Bolts And Straps - Not All Vehicles Will Use All Of The Parts Listed

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
N811880-S100	4 Per Affected Joint	1 Per Affected Joint	4	U-Joint Flange Style Bolts - Refer To The Parts Catalog For The Vin Specific Application
F1HZ-4N272-A	4 Per Affected Joint	1 Per Affected Joint	4	U-Joint Strap Style Bolts - Refer To The Parts Catalog For The Vin Specific Application
F81Z-4N272-AA	4 Per Affected Joint	1 Per Affected Joint	4	U-Joint Strap Style Bolts - Refer To The Parts Catalog For The Vin Specific Application
E4HZ-4A254-A	2 Per Affected Joint	2 Per Affected Joint	1	U-Joint Straps - Refer To The Parts Catalog For The Vin Specific Application
E4HZ-4A254-B	2 Per Affected Joint	2 Per Affected Joint	1	U-Joint Straps - Refer To The Parts Catalog For The Vin Specific Application
BC3Z-4N272-A	2 Per Affected Joint	1 Per Affected Joint	2	Driveshaft Center Bearing Bolts - Refer To The Parts Catalog For The Vin Specific Application

Parts - Parts To Inspect And Replace Only If Necessary

Service Part Number	Package Order Quantity	Number in Package	Description
LC3Z-6375-B	If Needed	1	Flexplate
HU2Z-11V002-ABRM	If Needed	1	Starter Motor
BC3Z-11002-B	If Needed	1	Starter Motor
5L7Z-7J324-A	If Needed	2	Transmission Fluid Tube Backing Rings
5L7Z-7D285-A	If Needed	2	Transmission Fluid Tube Seals
F2AZ-6397-A	If Needed	2	Transmission Dowel Pins
GC4Z-6A777-B	If Needed	1	Oil Separator Assembly

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
2015-2019 F-Super Duty 250-350 4X2 6.7L Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Pass) (Can Be Used With Operation C)	222248A	0.5 Hrs.

2015-2019 F-Super Duty 250-350 4X2 6.7L Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Fail) Replace CCV And Clean Oil From Turbo Outlet (Can Be Used With Operation C)	222248B	0.8 Hrs.
2015-2019 F-Super Duty 250-350 4X2 6.7L: Inspect For Oil Leaks And Reseal Upper Oil Pan (Can Be Used With Operation A Or B)	222248C	9.6 Hrs.
2015-2019 F-Super Duty 250-350 4X4 6.7L Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Pass) (Can Be Used With Operation F)	222248D	0.5 Hrs.
2015-2019 F-Super Duty 250-350 4X4 6.7L Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Fail) Replace CCV And Clean Oil From Turbo Outlet (Can Be Used With Operation F	222248E	0.8 Hrs.
2015-2019 F-Super Duty 250-350 4X4 6.7L: Inspect For Oil Leaks And Reseal Upper Oil Pan (Can Be Used With Operation D Or E)	222248F	10.2 Hrs.
2015-2019 F-Super Duty 450-550 4X2 6.7L Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Pass) (Can Be Used With Operation J)	222248G	0.5 Hrs.
2015-2019 F-Super Duty 450-550 4X2 6.7L Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Fail) Replace CCV And Clean Oil From Turbo Outlet (Can Be Used With Operation J)	222248H	0.8 Hrs.
2015-2019 F-Super Duty 450-550 4X2 6.7L: Inspect For Oil Leaks And Reseal Upper Oil Pan (Can Be Used With Operation G Or H)	222248J	9.8 Hrs.
2015-2019 F-Super Duty 450-550 4X4 6.7L Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Pass) (Can Be Used With Operation M)	222248K	0.5 Hrs.
2015-2019 F-Super Duty 450-550 4X4 6.7L Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Fail) Replace CCV And Clean Oil From Turbo Outlet (Can Be Used With Operation M)	222248L	0.8 Hrs.
2015-2019 F-Super Duty 450-550 4X4 6.7L: Inspect For Oil Leaks And Reseal Upper Oil Pan (Can Be Used With Operation K Or L)	222248M	10.4 Hrs.
2016-2019 F-650/750 6.7L Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Pass) (Can Be Used With Operation Q)	222248N	0.5 Hrs.
2016-2019 F-650/750 6.7L Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Fail) Replace CCV And Clean Oil From Turbo Outlet (Can Be Used With Operation Q)	222248P	0.7 Hrs.
2016-2019 F-650/750 6.7L: Inspect For Oil Leaks And Reseal Upper Oil Pan (Can Be Used With Operation N Or P)	222248Q	12.6 Hrs.
2016-2019 F-650/750 6.7L With Air Brakes Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Pass) (Can Be Used With Operation T)	222248R	0.5 Hrs.
2016-2019 F-650/750 6.7L With Air Brakes Chassis Cab: Inspect CCV Filter, Test Crankcase Pressure, (Fail) Replace CCV And Clean Oil From Turbo Outlet (Can Be Used With Operation T)	222248S	0.7 Hrs.
2016-2019 F-650/750 6.7L With Air Brakes: Inspect For Oil Leaks And Reseal Upper Oil Pan (Can Be Used With Operation R Or S)	222248T	12.8 Hrs.

Repair/Claim Coding

Causal Part:	6675
Condition Code:	D8

Service Procedure

1. Is the vehicle equipped with single rear wheels and a pickup bed?

(1). Yes - proceed to Step 10.

(2). No - proceed to Step 2.

2. Does the truck have a serviceable crankcase vent filter? This can be determined by looking at the crankcase vent lid. If the lid is removable, then it has a serviceable filter.

(1). Yes - proceed to Step 3.

(2). No - proceed to Step 10.

3. Allow the engine to reach normal operating temperatures and then turn the engine off.

4. Remove the engine oil dipstick.

5. Install a commercially available pressure gauge such as Lisle 20300 which can read from 0-35 kPa (0-5 psi) into the oil dipstick tube.

6. Start the engine and allow the vehicle to idle. Record the pressure. Is the pressure greater than 7 kPa (1 psi)?

(1). Yes - proceed to Step 7.

(2). No - proceed to Step 10.

7. Install a new crankcase ventilation filter. Refer to Workshop Manual (WSM) Section 303-08. Re-run the procedures in Steps 3-6.

NOTE: Not following the oil maintenance interval and using oil that does not meet Ford specifications as outlined in the Owner's Manual can contribute to the filter becoming restricted.

8. Is the pressure still greater than 7 kPa (1 psi)?

(1). Yes - this article does not apply. Refer to WSM, Section 303-01C > Engine Diagnosis and Testing.

(2). No - proceed to Step 9.

9. Remove the turbocharger compressor outlet hose to charge air cooler (CAC). Inspect the turbocharger compressor outlet, outlet hose, and CAC for oil. Is oil present?

(1). Yes - clean the oil from the turbocharger compressor outlet, outlet hose, and CAC. Do not replace the turbocharger. Turbocharger rings (seals) pass oil if the crankcase pressure is greater than the compressor side pressure. Once proper crankcase pressure has been established, the turbocharger rings hold oil from carrying over into the compressor/turbine housing and outlets.

(2). No - proceed to Step 10.

10. Inspect the lower portion of the engine for any signs of an oil leak. Refer to Workshop Manual (WSM), Section 303-01. If necessary, clean the engine, add fluorescent dye and inspect for the source of the oil leak. Are there signs of an oil leak in the area of the upper oil pan near the block to upper oil pan joint?

(1). Yes - proceed to Step 11.

(2). No - this article does not apply. Refer to WSM, Section 303-00 for further diagnostics.

11. Is the fluorescent dye that is present leaking from the mating surfaces of the upper oil pan and on the engine block assembly?

(1). Yes - proceed to Step 12.

(2). No - this article does not apply. Refer to WSM, Section 303-00 to inspect oil filter, crankcase vent oil separator, and/or oil cooler as other possible causes.

12. Remove the upper engine oil pan. Refer to WSM, Section 303-01.

 **CAUTION: Cleaning and preparation of the engine sealing surface is absolutely critical for proper adhesion of the upper oil pan. Improperly cleaned and prepared sealing surfaces could result in an oil leak.**

13. Thoroughly clean the engine sealing surface using Motorcraft® Silicone Gasket Remover and a plastic scraper. Allow the gasket remover to set for several minutes after application to aid in removal of the RTV sealant.

(1). The engine block skirt stiffener and upper oil pan sealing surfaces must be clean and free of any residual RTV. Do not use metal scrapers, wire brushes, or rotary tools of any type on the engine sealing surface. These tools damage the sealing surfaces including scratches or gouges that create leak paths. A second application of Motorcraft® Silicone Gasket Remover may be required.

NOTE: Use a lint-free cloth when cleaning the engine block and upper oil pan sealing surfaces. Spraying the surfaces with brake cleaner and air drying does not adequately remove the oil and other contaminants from the surfaces and may leave residue from the brake cleaner behind that may interfere with RTV adhesion.

14. Use a lint-free towel and Motorcraft® Metal Brake Parts Cleaner to remove all residual sealant and oil from the engine and upper oil pan sealing surfaces until a clean lint free towel no longer shows any residual oil when wiping the surface.

(1). Use only Motorcraft® Metal Brake Parts Cleaner to clean the upper oil pan and engine block sealing surfaces. Some unapproved brake parts cleaners contain chemicals that inhibit RTV adhesion or may evaporate without removing all of the residual oil from the sealing surface, resulting in a repeat leak condition.

15. Wipe the metal engine block skirt stiffener and upper oil pan sealing surfaces using Motorcraft® Metal Surface Prep Wipes. Thoroughly coat the surface with the fluid. Discard wipes after a single use.

(1). Motorcraft® Metal Surface Prep Wipes create a conversion coating providing an improved base for RTV sealing. The Motorcraft® Metal Surface Prep Wipe fluid is a water-based, slightly acidic solution that etches and bonds to the metal to provide a microscopic layer to which the RTV can adhere. If the surface is oily, the solution beads and the surface is not properly treated. If the solution beads when applied to the sealing surface, clean the surface again with Motorcraft® Metal Brake Parts Cleaner and a lint-free towel and reapply the Motorcraft® Metal Surface Prep Wipes.

16. Allow the surface to air dry for approximately 2 minutes.

(1). Do not dry the surface using any other method. Attempting to dry the surface may result in sealing surface contamination that may cause oil leaks.

17. Install the 3 new press-in-place oil pump gaskets. Refer to WSM, Section 303-01.

CAUTIONS:

The upper oil pan must be installed within 10 minutes of applying the RTV. Prior to installing the upper oil pan, check for any additional oil that has drained from the engine and clean as necessary. Failure to do so could result in a repeat repair.

Do not check for warpage on the upper oil pan. When the upper oil pan is not bolted to the engine, it has a natural tendency to twist slightly due to the manufacturing process of the pan. This condition will not result in an oil leak.

18. Apply a 4.5 mm (0.18 in.) bead of Motorcraft® High Performance Engine RTV Silicone to the upper oil pan. The RTV bead must be applied to straddle the step chamfer and sealing face.

(1). Using too little sealant may result in oil leaks and using too much sealant may result in oil contamination and engine damage.

19. Apply a 9 mm (0.35 in.) bead of Motorcraft® High Performance Engine RTV Silicone to the engine front cover-to-cylinder block joint areas on the upper oil pan.

20. Install the upper oil pan. Refer to the WSM, Section 303-01.

21. Perform Steps 9-13 on the upper oil pan surface to prep the surface for installation of the lower oil pan.

22. Apply a 4.5 mm (0.177 in.) diameter bead of Motorcraft® High Performance Engine RTV Silicone on the outside of the chamfer on the new lower oil pan sealing face. The lower oil pan must be installed within 10 minutes of applying the RTV.

(1). Using too little sealant may result in oil leaks and using too much sealant may result in oil contamination and engine damage.

23. Install the new lower oil pan. Refer to WSM, Section 303-01.
