



TECHNICAL SERVICE BULLETIN

4WD - Grinding/Clicking/Ratcheting Noise From Front Wheel Area

24-2188

23 July 2024

This bulletin supersedes 22-2219. Reason for update: revised Part List and Service Procedure to clarify applicable steps by vehicle application

Model:

Ford 2003-2020 Expedition	4WD
2006-2020 F-150	Non-Raptor 4WD
Lincoln 2003-2020 Navigator	4WD

Markets: North American markets only

Issue: Some 2003-2020 Expedition/Navigator and 2006-2020 F-150 (non-Raptor) vehicles equipped with 4WD may exhibit grinding/clicking/ratcheting noise from the front wheel area. This may be due to partial engagement of the IWE. To correct this condition, follow the Service Procedure to remove and cap the vacuum supply line or to reprogram the TCCM and replace any worn vacuum and/or IWE components.

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

- One of the following vehicles:
 - 2003-2020 Expedition/Navigator
 - 2006-2018 F-150 (non-Raptor)
 - 2019-2020 F-150 (non-Raptor) equipped with a torque-on-demand transfer case (with 4A position on the MSS as shown in Figure 2)
- Equipped with 4WD
- Grinding/clicking/ratcheting noise from the front axle area

Parts - ESOF Parts To Inspect And Replace Only If Necessary

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
1104	Only If Necessary	Only If Necessary		Front Hub Bearing (Refer To The Parts Catalog For The VIN Specific Application)
N802827-S100	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	4	Front Half Shaft Nut (2013-2016 F-150 Built On Or Before 2-Aug-2016)
N802827-S100A	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	4	Front Half Shaft Nut (2016-2020 F-150 Built On Or After 3-Aug-2016)
7L1Z-3C247-A	Only If Necessary (2 Possible)	Only If Necessary (2 Possible)	1	IWE Actuator (2013-2015 F-150 Built On Or Before 11-Oct-2015, 2013-2015 Expedition/Navigator)
HL1Z-3C247-A	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	2	IWE Actuator (2015-2020 F-150 Built On Or After 12-Oct-2015)
W706890-S439	Only If Necessary (8 Possible)	Only If Necessary (2 Possible)	4	Front Hub Bearing Bolts

HL1Z-3C247-B	Only If Necessary (2 Possible)	Only If Necessary (2 Possible)	1	IWE Clutch Ring Kit
BL3Z-7A785-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Vacuum Lines (2013-2014 F-150)
FL3Z-7A785-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Vacuum Lines (2015-2018 F-150)
JL3Z-7A785-B	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Vacuum Lines (2019-2020 F-150)
FL3Z-3C125-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Vacuum Hose To IWE (2015-2020 F-150)
W720613-S439	Only If Necessary (4 Possible)	Only If Necessary (1 Possible)	4	Caliper Anchor Bolt (2015-2020 F-150)
W714743-S439	Only If Necessary (4 Possible)	Only If Necessary (1 Possible)	4	Caliper Anchor Bolt (2013-2014 F-150)
W520215-S441	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	4	Tie Rod Nut (2013-2014 F-150 Built On Or Before 23-Dec-2014)
W520215-S440	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	4	Tie Rod Nut (2014-2020 F-150 Built On or after 24-Dec-2014)
W520214-S440	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	2	Upper Ball Joint Nut (2013-2020 F-150)
BL3Z-3A788-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	3-Port Check Valve (Refer To The Parts Catalog For The VIN Specific Application)
FL3Z-3A788-B	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	2-Port Check Valve (Refer To The Parts Catalog For The VIN Specific Application)
AL3Z-3A788-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Check Valve (Refer To The Parts Catalog For The VIN Specific Application)
XG-1-E1	Only If Necessary	Only If Necessary		Motorcraft® Premium Long-Life Grease

Parts - Torque-On-Demand

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
W716372-S300	2	1	4	Cap (Expedition/Navigator, 2006-2020 F-150 With Torque On Demand Transfer Case)

Warranty Status: Eligible under provisions of New Vehicle Limited Warranty (NVLW)/Service Part Warranty (SPW)/Service Part New Vehicle (SPNV)/Extended Service Plan (ESP) coverage. Limits/policies/prior approvals are not altered by a TSB. NVLW/SPW/SPNV/ESP coverage limits are determined by the identified causal part and verified using the OASIS part coverage tool.

Labor Times

Description	Operation No.	Time
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2003-2020 Expedition/Navigator, 2006-2020 F-150 (non-Raptor): Diagnose And Repair Vehicle Following The TSB Service Procedure	MT242188	Actual Time
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Repair/Claim Coding

Causal Part:	3C247
Condition Code:	D4

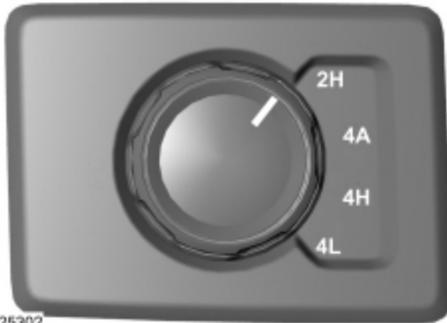
Service Procedure

Figure 1 - Electronic Shift-On-The-Fly (ESOF)



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Figure 2 - Torque-On-Demand



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1. Proceed to the applicable procedure:

- (1). For vehicles equipped with a MSS that only includes 2H, 4H and 4L positions (Figure 1), proceed to the Electronic Shift On-The-Fly (ESOF) Transfer Case procedure.
- (2). For vehicles equipped with a MSS that includes a 4-wheel auto (4A) option (Figure 2), proceed to the Torque-On-Demand Transfer Case procedure.

Electronic Shift-On-The-Fly (ESOF) Transfer Case

Figure 1 - Electronic Shift-On-The-Fly



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1. Is the vehicle a 2017-2018 F-150?

- (1). Yes - reprogram the TCCM using the latest version of the IDS scan tool while connected to the internet. Proceed to Step 2.

NOTE: The new TCCM calibration changes IWE operation at start up. When ambient temperature is above 0°C (32°F) the IWEs stay engaged regardless of a 4WD mode selection for approximately 0.8 km (0.5 miles). IWE engagement only occurs once per key cycle and is not reset when shifting between park (P) and drive (D). The TCCM uses this strategy to delay vacuum use until vacuum-intensive engine startup has completed and sufficient vacuum is available to fully disengage IWEs.

- (2). No - for all vehicles, refer to the 2018 F-150 WSM, Section 308-07A Four-Wheel Drive Systems, Diagnosis and Testing, Four-Wheel Drive Systems - Vehicles With: Electronic Shift Transfer Case, Pinpoint Test N for normal diagnostics. Repair is complete.
2. Perform the vacuum system check procedure. For all vehicles, refer to the 2018 F-150 WSM, Section 308-07A Four-Wheel Drive Systems, Diagnosis and Testing, Four-Wheel Drive Systems - Vehicles With: Electronic Shift Transfer Case, Pinpoint Test N. Repair is complete.

Torque-On-Demand Transfer Case

Figure 2 - Torque-On-Demand



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1. Locate the vacuum supply line between the source vacuum and the IWE check valve. Refer to WSM, Section 308-07A. (Figures 3-4)

Figure 3

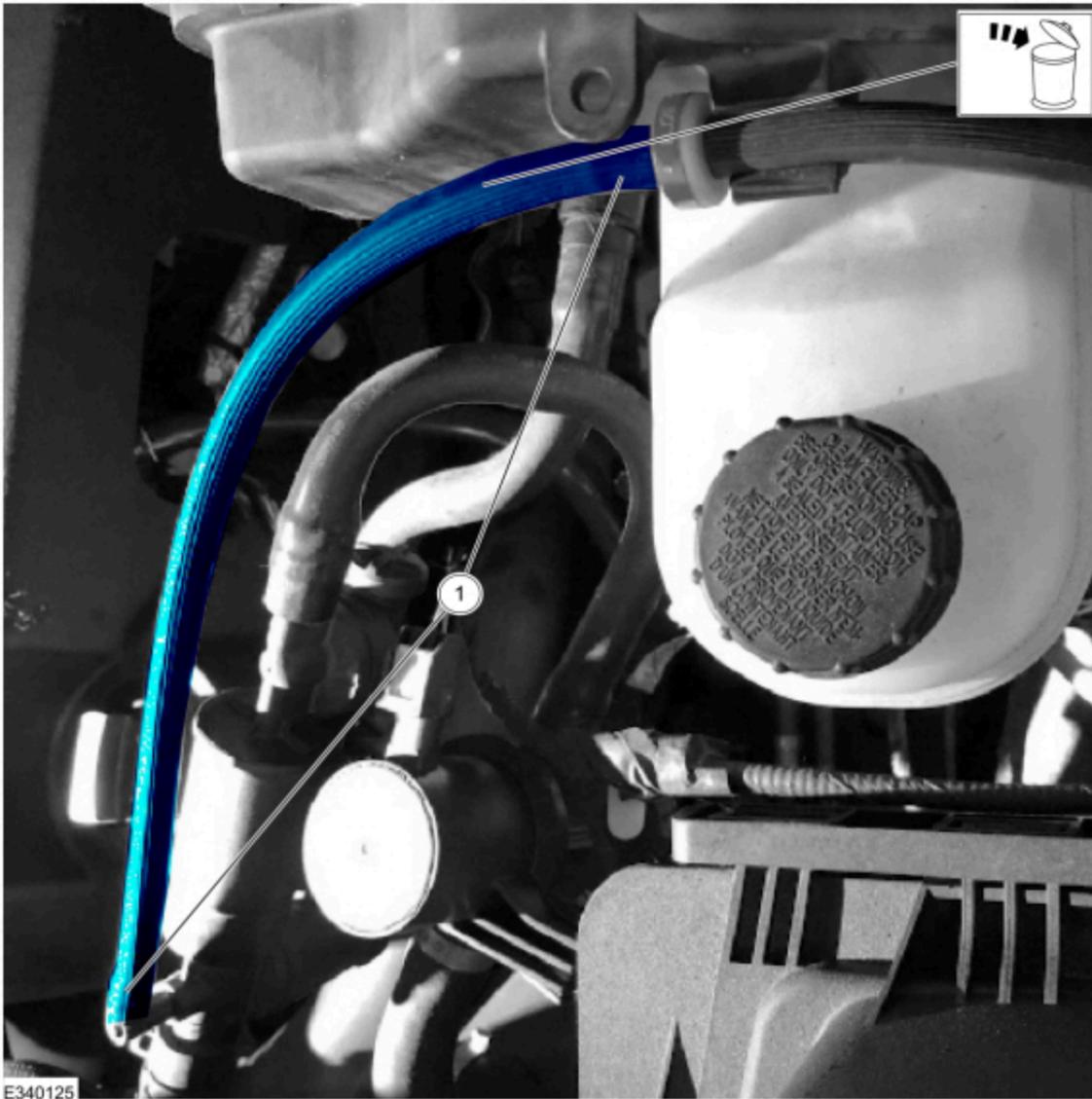
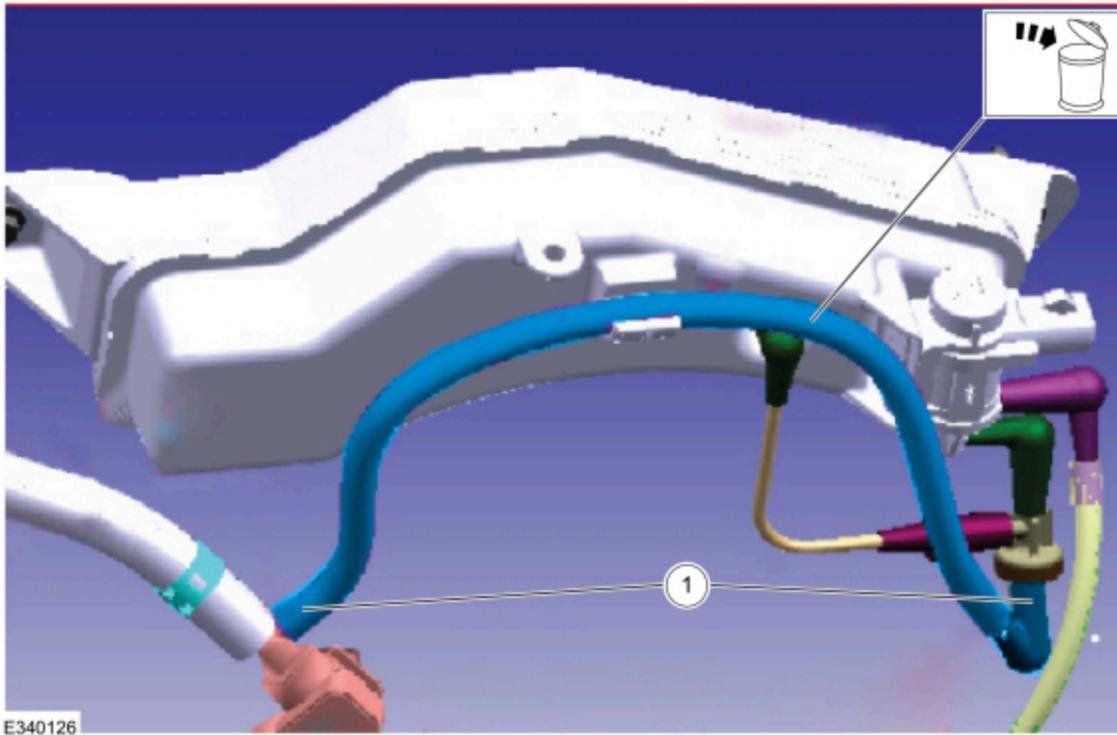


Figure 4



2. Remove the vacuum supply line.
3. Install the vacuum caps at the IWE check valve and the vacuum source.

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