



# TECHNICAL SERVICE BULLETIN

## Intermittent Grinding Noise From Integrated Wheel Ends (IWEs) While Driving In Two Wheel Drive (2WD)

**18-2273**

17 September 2018

**Model:**

<b>Ford</b> 2013-2018 Expedition
2013-2018 F-150
<b>Lincoln</b> 2013-2018 Navigator

**Issue:** Some 2013-2018 F-150/Expedition/Navigator vehicles may exhibit an intermittent grinding noise coming from the right or left IWE area in 2WD mode.

**Action:** Follow the Service Procedure steps to correct the condition.

**Parts**

Part Number	Description	Quantity
HL1Z-3C247-B	Clutch Ring Kit (All Models)	1
BL3Z-3A788-A	Check Valve (Tube Assembly) (2013-2014 F-150)	1
FL3Z-3A788-A	Check Valve (Tube Assembly) (2015-2018 F-150, Sep 2017-2018 Expedition/Navigator)	1
AL3Z-3A788-A	Check Valve (Tube Assembly) (2013-Aug 2017 Expedition/Navigator)	1
W520215-S441	Front Tie Rod Nut (2013-2014 F-150, 2013-2017 Expedition/Navigator)	2
W520215-S441	Front Upper Ball Joint Nut (2013-2014 F-150, 2013-2017 Expedition/Navigator)	2
W520215-S440	Front Tie Rod Nut (2015-2018 F-150, 2018 Expedition/Navigator)	2
W520214-S440	Front Upper Ball Joint Nut (2015-2018 F-150, 2018 Expedition/Navigator)	2
W714743-S439	Front Brake Caliper Bolts (2013-2014 F-150, 2013-2018 Expedition/Navigator)	1
W718303-S439	Front Brake Caliper Bolts (2015-2018 F-150)	2
CL3Z-1104-M	Front Hub Bearing (2013-2015 Early Build F-150)	2
FL3Z-1104-H	Front Hub Bearing (Late Build 2015-2018 F-150)	2
CL3Z-1104-L	Front Hub Bearing (2017-2018 F-150 Raptor)	2
CL3Z-1104-N	Front Hub Bearing (2013-2014 Expedition/Navigator)	2
FL1Z-1104-H	Front Hub Bearing (2015-2018 Expedition/Navigator)	2
7L1Z-3C247-A	Actuator Assembly (2013-2015 F-150 Expedition Navigator)	2
HL1Z-3C247-A	Actuator Assembly (2016-2018 F-150 Expedition Navigator)	2

W706890-S439	Wheel Bearing Bolts (All Models)	4
N802827-S100	Front Halfshaft Nut (2013-2015 F-150/Expedition/Navigator)	2
N802827-S100A	Front Halfshaft Nut (2016-2018 F-150/Expedition/Navigator)	2
XG-1-E1	Motorcraft® Premium Long-Life Grease	1

**Warranty Status:** Eligible Under Provisions Of New Vehicle Limited Warranty Coverage Warranty/ESP coverage limits/policies/prior approvals are not altered by a TSB. Warranty/ESP coverage limits are determined by the identified causal part and verified using the OASIS part coverage tool.

#### Labor Times

Description	Operation No.	Time
2013-2018 F-150, Expedition/Navigator 4X4: Replace Check Valve, Apply Vacuum To Both (2) IWEs (Both Pass) Road Test (Pass) (Do Not Use With Any Other Labor Operations)	182273A	0.7 Hrs.
2013-2018 F-150, Expedition/Navigator 4X4: Replace Check Valve, Apply Vacuum To Both (2) IWEs (One Fail) Remove One IWE, Inspect Wheel Bearing Splines (Pass) Replace One (1) IWE (Do Not Use With Any Other Labor Operations)	182273B	1.0 Hrs.
2013-2018 F-150, Expedition/Navigator 4X4: Replace Check Valve, Apply Vacuum To Both (2) IWEs(Both Fail) Remove Both IWEs, Inspect Wheel Bearing Splines (Both Pass) Replace Both (2) IWEs (Do Not Use With Any Other Labor Operations)	182273C	1.7 Hrs.
2013-2018 F-150, Expedition/Navigator 4X4: Replace Check Valve, Apply Vacuum To Both (2) IWEs (Both fail) Remove IWEs, Inspect Wheel Bearing Splines (One Fail) Replace One (1) Wheel Bearing And One (1) IWE (Do Not Use With Any Other Labor Operations)	182273D	1.8 Hrs.
2013-2018 F-150, Expedition/Navigator 4X4: Replace Check Valve, Apply Vacuum To Both (2) IWEs (Both fail) Remove IWEs, Inspect Wheel Bearing Splines (Both Fail) Replace Both (2) Wheel Bearings And Both (2) IWEs (Do Not Use With Any Other Labor Operations)	182273E	2.0 Hrs.
2013-2018 F-150, Expedition/Navigator 4X4: Replace Check Valve, Apply Vacuum To Both (2) IWEs (Both Pass) Road test (Fail One Side) Remove IWE, Inspect Wheel Bearing Splines (Pass) Replace One (1) IWE Clutch Ring (Do Not Use With Any Other Labor Operations)	182273F	1.5 Hrs.
2013-2018 F-150, Expedition/Navigator 4X4: Replace Check Valve, Apply Vacuum To Both (2) IWEs (Both Pass) Road test (Fail Both Sides) Remove Both IWEs, Inspect Wheel Bearing Splines (Pass) Replace Both (2) IWE Clutch Rings (Do Not Use With Any Other Labor Operations)	182273G	2.2 Hrs.
2013-2018 F-150, Expedition/Navigator 4X4: Replace Check Valve, Apply Vacuum To Both (2) IWEs (Both Pass) Road Test (fail One Side) Remove IWE, Inspect Wheel Bearing Splines (Fail One Side) Replace One (1) Wheel Bearing And One (1) IWE Clutch Ring (Do Not Use With Any Other Labor Operations)	182273H	1.7 Hrs.
2013-2018 F-150, Expedition/Navigator 4X4: Replace Check Valve, Apply Vacuum To Both (2) IWEs (Both Pass) Road test (Fails Both Sides) Remove Both IWEs, Inspect Wheel Bearing Splines (Fail Both Sides) Replace Both (2) Wheel Bearing And Both (2) IWE Clutch Rings (Do Not Use With Any Other Labor Operations)	182273J	2.5 Hrs.

#### Repair/Claim Coding

Causal Part:	3C247
Condition Code:	D4

**Tool List**

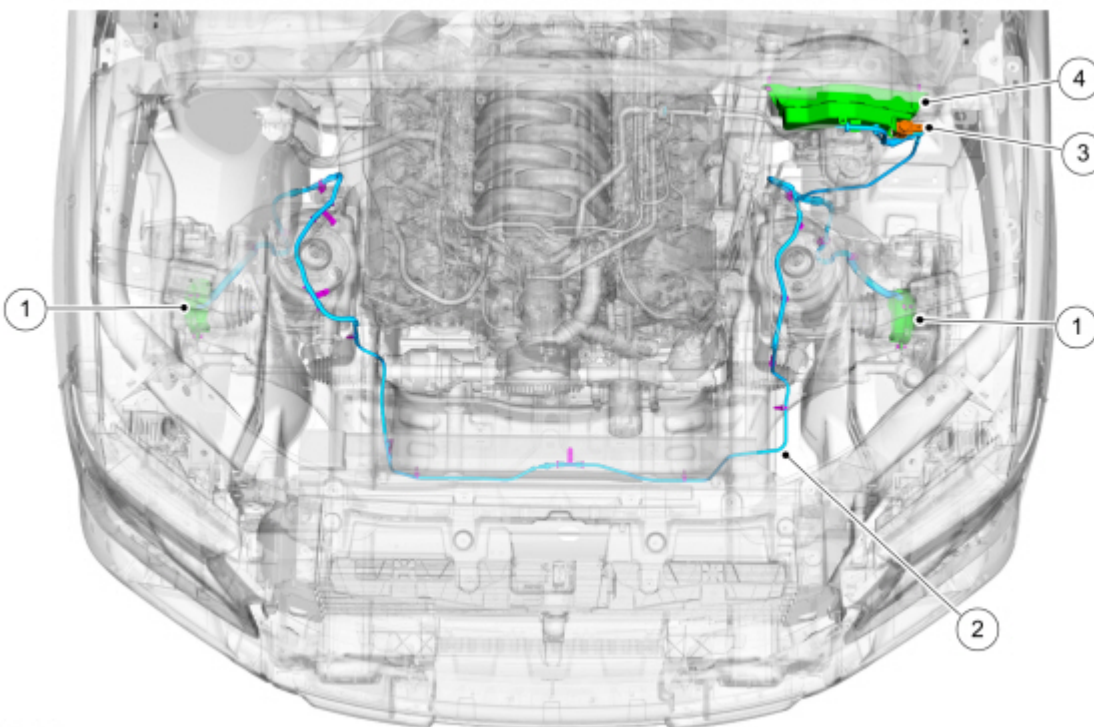
Drive	Tool Name
1/4"	Power Tool
1/4"	Torque Wrench
1/4"	7 mm Socket
3/8"	Power Tool
3/8"	Torque Wrench
3/8"	10 mm Socket
3/8"	13 mm Socket
3/8"	19 mm Socket
1/2"	Impact Wrench
1/2"	Torque Wrench
1/2"	21 mm Socket
1/2"	21 mm Deep Socket
	Medium Trim Tool

**Service Procedure**

1. Inspect the IWE vacuum hoses. Refer to Workshop Manual (WSM), Section 308-07A. Are there any disconnected or damaged vacuum hoses? (Figure 1)

- (1). Yes - this article does not apply. Refer to WSM, Section 308-07A for normal diagnostics.
- (2). No – proceed to Step 2.

Figure 1

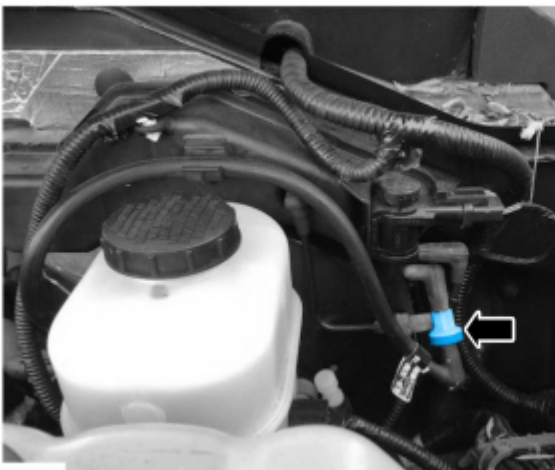


E226414

Item	Description
1	IWEs (spring loaded vacuum hubs)
2	Vacuum hoses
3	IWE solenoid
4	Vacuum reservoir

2. Replace the vacuum check valve located near the vacuum canister brake booster area. Refer to WSM, Section 308-07A. (Figure 2)

Figure 2



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3. Using a hand vacuum pump attached to the IWE one side at a time, apply 67 kPa (20 in Hg) of vacuum. Does the vacuum maintain or drop less than 1.7 kPa (0.5 in Hg) per minute?
- (1). Yes - proceed to Step 6.
  - (2). No – proceed to Step 4.
4. Remove the IWE assembly from the affected wheel. Refer to WSM, Section 308-07A.
5. Inspect the wheel bearing splines. Is wheel bearing spline damage found?
- (1). Yes - replace the IWE assembly and wheel bearing. Refer to WSM, Section 308-07A and 204-01B. Repair is complete.
  - (2). No - replace the IWE assembly. Refer to WSM, Section 308-07A. Repair is complete.
6. Road test the vehicle for noise by performing heavy accelerations and engage 4WD system to verify proper engagement/disengagement quality. Is a grinding noise present?
- (1). Yes – proceed to Step 7.
  - (2). No – repair is complete.
7. Remove the IWE assembly from the affected wheel. Refer to WSM, Section 308-07A.
8. Inspect the wheel bearing splines. Is wheel bearing spline damage found?
- (1). Yes - replace the IWE clutch ring and wheel bearing. Refer to WSM, Section 308-07A and 204-01B.
  - (2). No - replace the IWE clutch ring. Refer to WSM, Section 308-07A.

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