

Drivetrain - Rear Differential Whine/Hum Noise

[Notes](#)

TSB 05-23-3

11/28/05

REAR AXLE NOISE REPAIR

FORD:

1997-2005 Expedition, F-150

2002-2005 Explorer

LINCOLN:

1998-2005 Navigator

2003-2005 Aviator

MERCURY:

2002-2005 Mountaineer

This article supersedes TSB 05-12-6 to update the Service Kit and Service Procedure information.

ISSUE

Some vehicles may exhibit an axle whine or hum during acceleration, deceleration and/or cruise.

ACTION

An axle repair kit has been developed which incorporates most parts required for a comprehensive axle repair. The kit should be used instead of installing a complete axle assembly to repair an axle whine/hum. Replace Ring and Pinion with Axle Kit and Components.

NOTE REFER TO THE "DIFFERENTIAL RING AND PINION" IN-VEHICLE REPAIR PROCEDURE IN THE ONLINE WORKSHOP MANUAL SECTION 205-00, FOR THE LATEST AXLE DIAGNOSIS AND REPAIR PROCEDURES.

NOTE FOR 1999 AND PRIOR MODEL YEAR VEHICLES, USE THE 2000 MODEL YEAR WORKSHOP MANUAL.

NOTE WHEN SERVICING THE REAR AXLE ON ANY 2002-2004 F-150, EXPEDITION, NAVIGATOR, EXPLORER OR MOUNTAINEER BUILT BEFORE 3/30/2004, IF FLUID REPLACEMENT IS REQUIRED, REPLACE THE ORIGINAL FUEL EFFICIENT HIGH PERFORMANCE (FEHP) SAE 75W-90 REAR AXLE LUBRICANT WITH SAE 75W-140 HIGH PERFORMANCE SYNTHETIC REAR AXLE LUBRICANT. WHEN THE FLUID TYPE IS CHANGED, REPLACE THE CURRENT "FEHP" METAL TAG WITH A NEW "75W-140" TAG (F3TZ-4121-AA). IN ADDITION, REMOVE OR BLOCK-OUT THE FEHP REFERENCE ON THE MULTI-COLORED LABEL LOCATED ON THE RIGHT SIDE AXLE TUBE. IF THE

AXLE IS A LIMITED-SLIP MODEL, USE XL3 ADDITIVE FRICTION MODIFIER IN THE QUANTITY RECOMMENDED BY THE WORKSHOP MANUAL.

KIT ORDERING: REFER TO THE VEHICLE AXLE TAG FOR AXLE RATIO IDENTIFICATION

- ^ 5L3Z-4209-A = (8.8-Inch [Ring Gear](#)/3.31 ratio)
(1997-2005 F-150)
- ^ 5L3Z-4209-B = (8.8-Inch [Ring Gear](#)/3.55 ratio)
(1997-2005 F-150, 2002-2005 Explorer/Mountaineer/Aviator)
- ^ 5L3Z-4209-C = (8.8-Inch [Ring Gear](#)/3.73 ratio)
(1997-2005 F-150, 2002-2005 Explorer/Mountaineer/Aviator, 2003-2004 Expedition/Navigator)
- ^ 5L3Z-4209-D = (9.75-Inch [Ring Gear](#)/3.31 ratio)
(1997-2005 F-150, 2005 Expedition/Navigator, 1997-2002 Expedition/Navigator)
- ^ 5L3Z-4209-E = (9.75-Inch [Ring Gear](#)/3.55 ratio)
(1997-2005 F-150, 1997-2002 Expedition/Navigator)
- ^ 5L3Z-4209-F = (9.75-Inch [Ring Gear](#)/3.73 ratio)
(1997-2005 F-150, 1997-2005 Expedition/Navigator)

NOTE 9.75 REAR AXLE HOUSINGS WERE REDESIGNED IN MID-1999, INCREASING FRONT [PINION BEARING](#) SIZE. REPLACING RING & PINIONS IN AN OLD-STYLE AXLE ASSEMBLY WILL REQUIRE INSTALLATION OF SPACER P/N YL3Z4662-CA. SPACER IS TO BE INSTALLED BETWEEN INNER PINION BEARING AND COLLAPSIBLE SPACER.

THE AXLE SERVICE KITS INCLUDE THE FOLLOWING COMPONENTS:

- ^ 4630 - Head Bearing
- ^ 4628 - Head Bearing Cup
- ^ 4676 - Pinion Seal
- ^ 386989-S2 - Washer (Slinger)
- ^ 4621 - Tail Bearing
- ^ 4616 - Tail Bearing Cup
- ^ 4222 - Differential Bearing Cups
- ^ 4221 - Differential Bearings
- ^ 4209 - [Gear](#) Set (includes pinion shims, pinion nut and crush spacer)
- ^ 4209 - Instruction Sheet

NOTE THE KIT DOES NOT INCLUDE THE FOLLOWING ITEMS. SOME OR ALL OF THESE ITEMS WILL BE REQUIRED TO COMPLETE THE AXLE SERVICE, DEPENDING ON AXLE APPLICATION/STYLE.

ORDER AS NEEDED:

NOTE REUSE OF [RING GEAR](#) BOLTS, CARRIER BEARING CAP BOLTS AND DIFFERENTIAL SLAVE PIN RETAINING BOLT REQUIRES CLEANING OF THREADS AND INSTALLATION OF TA-27 STUD AND BEARING MOUNT RETAINING COMPOUND & SEALANT.

- ^ YL3Z-4662-CA - [Pinion Bearing Spacer](#) for
1997-1998 9.75 axles
- ^ XG-14 - [Gear](#) Marking Compound
- ^ 4067 - Differential Shims 0.241" to 0.307"
- ^ SAE XY-75W140-QL - High Performance Synthetic Rear Axle Lubricant
- ^ XL-3 - Additive Friction Modifier (Limited Slip Axles Only)
- ^ 205-506 - Seal Protectors (Rotunda Tool)
- ^ W710084-5439 - Wheel End Nuts
- ^ 390266-S199 - Differential Slave Pin Bolt (9.75" axles)
- ^ 387426-S100 - Differential Slave Pin Bolt (8.8" axles)
- ^ 4B422 - Axle Circlips
- ^ ZC-21 - Metal Surface Cleaner
- ^ TA-29 - Ultra Silicone Sealant
- ^ TA-27 - Stud and Bearing Mount Retaining Compound and Sealer
- ^ F3TZ-4121-AA - Fluid Tag (REQUIRED IF FLUID TYPE IS CHANGED FROM FEHP DURING REPAIR)

WARRANTY STATUS: Eligible Under Provisions Of New Vehicle Limited
Warranty Coverage

OPERATION	DESCRIPTION	TIME
052303A	1997-2002 Expedition, 1998-2002 Navigator, 1997-2004 F-150 Heritage, 2004-2005 F-150: Rear Axle Noise Repair (Includes Time For Road Test To Verify Concern (Beam Axle)) (Do Not Use With 4205A Or 4205A4)	4.7 Hrs.
052303A	2003-2005 Expedition: Rear Axle Noise Repair (Includes Time For Road Test To Verify Concern (lrs Axle)) (Do Not Use With 4010D Or 4010D4)	5.8 Hrs.
052303A	2003-2005 Expedition/Navigator With Air Suspension: Rear Axle Noise Repair (Includes	5.9 Hrs.

Time For Road Test To
Verify Concern (lrs Axle))
(Do Not Use With 4010D
Or 4010D4)

052303A	2002-2005 Explorer/Mountaineer, 2003-2005 Aviator: Rear Axle Noise Repair (Includes Time For Road Test To Verify Concern (lrs Axle)) (Do Not Use With 4010D Or 4010D4)	6.6 Hrs.
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DEALER CODINGCONDITION

BASIC PART NO. CODE

4209 14