REAR AXLE POPPING/CHATTER NOISE—DANA 80 MODEL DUAL REAR WHEEL (DRW)

TSB 04-16-4

FORD:
1999-2004 F-350

This article supersedes TSB **03-16-03** to update the vehicle model years.

ISSUE

Some F-350 vehicles equipped with the dual rear wheel (DRW) rear axle may exhibit a popping or audible chattering noise. This popping noise/feel results from the clutch plates and discs (in the limited slip differential case) sticking and then slipping. The condition can occur in either forward or reverse, or both, when the axle is required to differentiate, i.e. during vehicle turning.

ACTION

To verify the chatter condition, drive the vehicle in very sharp turning maneuvers at very low speeds, i.e. foot on brake, creeping. Testing should be done in both forward and reverse, both left and right turns, on flat, dry pavement. Frequent stops and slow starts are also recommended to determine presence of Chatter. If unit is 4 wheel drive, the test should be performed in 4X2 mode. Make sure that the front hub-locks are disengaged on 4X4 models. Refer to the following Service Procedure.

SERVICE PROCEDURE

WARNING
ALLOW AXLE TO COOL BEFORE DISASSEMBLY.

1. Remove rear axle carrier cover plate and drain fluid. Clean sealing surfaces of both carrier and cover plate. Reinstall cover plate with High Performance Silicone Sealant TA-29 and torque cover plate bolts to 54-68 N•m (40-50 lb-ft). Allow 15 minutes for silicone sealant to set-up. Refill carrier with 2 bottles (8oz.) of additive Friction Modifier XL-3 and 0.84 gallons (107 oz.) of XY-75W90-QLS Rear Axle Lubricant. Drive vehicle as outlined above until chatter is gone. Additionally, allow vehicle to set for one (1) hour or longer and road test again, using same procedure.
   a. If chatter is gone, return unit to customer.
   b. If chatter is very slight, (and deemed acceptable) explain to customer that some chatter feel is normal in limited slip axles, even more so in DRW units, as greater differentiation forces are present.
   c. If chatter is still unacceptable, proceed to Step 2.
2. Replace the clutch pack assemblies inside the limited slip differential. Obtain service part 3C3Z-4880-AA and continue with the following Service Procedure.

REPLACING CLUTCH PACKS ON DANA 80 LIMITED-SLIP DIFFERENTIAL

DISASSEMBLY OF DIFFERENTIAL FROM AXLE:

WARNING
ALLOW AXLE TO COOL BEFORE DISASSEMBLY.

1. Remove cover plate and drain axle oil.
2. Refer to Workshop Manual Section 205-02C for axle shaft removal.
3. Clean sealing surfaces of both the carrier and cover plate.
4. Clean ring gear and pinion, visually inspect for damage.
5. Measure the differential ring gear and pinion backlash at three (3) equally spaced points.

CAUTION
DO NOT SPREAD THE DIFFERENTIAL HOUSING MORE THAN SPECIFIED. USING THE SPECIAL TOOLS, SPREAD THE DIFFERENTIAL HOUSING TO THE SPECIFICATION, THEN REMOVE THE DIAL INDICATOR GAUGE WITH HOLDING FIXTURE. SPECIAL TOOLS 205-001 CASE SPREADER AND 100-D002 DIAL INDICATOR, SPECIFICATION 0.25 MM (0.010″).

6. Note positions of the mating letters stamped vertically and horizontally on the bearing caps and differential housing before removing the bearing caps. Remove bearing caps and bolts. Save for reuse during reassembly.

CAUTION
IT WILL BE NECESSARY TO USE LARGE PRY BARS TO REMOVE THE DIFFERENTIAL ASSEMBLY FROM THE DIFFERENTIAL HOUSING. DO NOT DAMAGE THE DIFFERENTIAL RING GEAR WHEN CARRYING OUT THIS STEP.

7. Carefully ease (pry if necessary) the differential out of the axle assembly. Set differential assembly on bench with differential bolt heads showing.

8. Note spacers in each carrier bore. Be certain to maintain the spacers in their original bore position.

DISASSEMBLY OF DANA 80 LIMITED SLIP DIFFERENTIAL:

1. The differential assembly has two (2) halves (flanged or gear half and button half) (Figure 1). Mark the flanged half, button half, and cross shaft positions for installation reference. These marks will be used during the rebuild procedures to insure the case halves and cross shaft are reassembled in the exact same position as original.

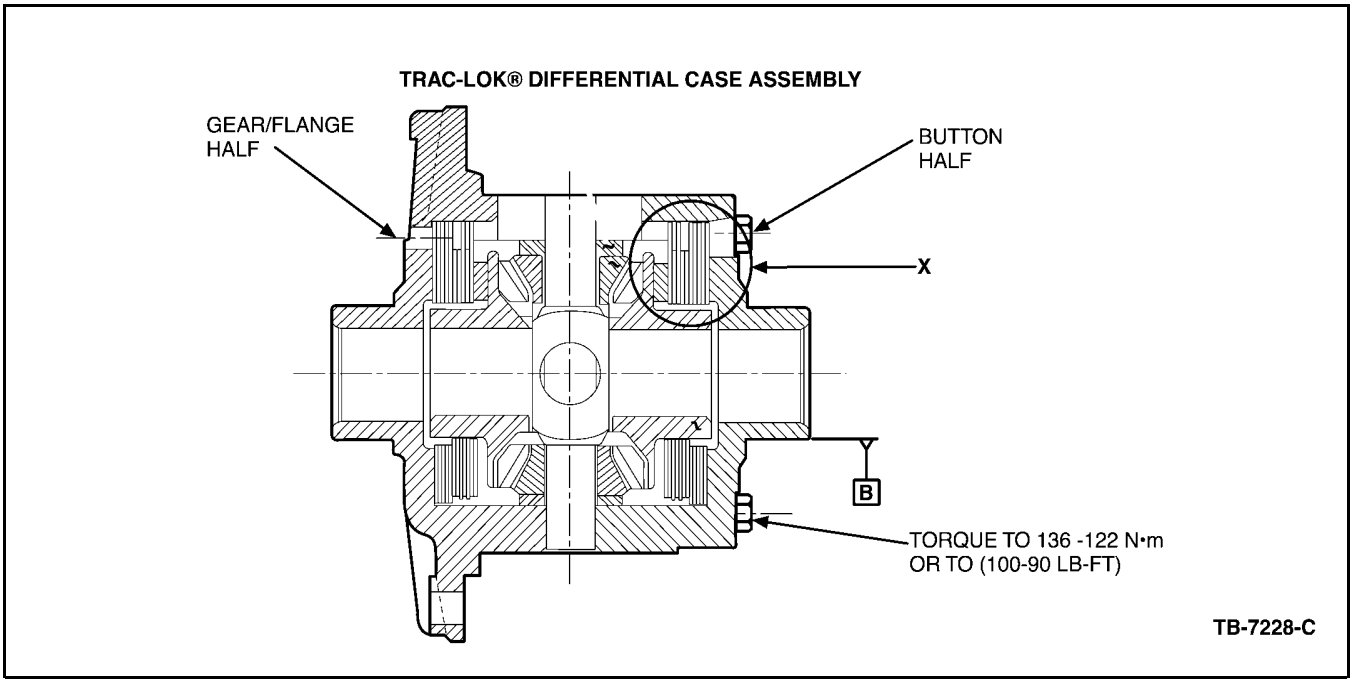

Figure 1 - Article 04-16-4

2. Remove the case attaching bolts and remove the button half (part of differential without the ring gear). Save the bolts for reuse during reassembly.

3. Once the button half is removed from the flanged half, there should be one side gear and clutch pack clearly visible. Remove the clutch pack and discard (save the side gear for reuse). Inspect the space in the button half where the clutch pack resides. Remove and discard any clutch discs or plates that may be stuck in the button half.

4. Remove the cross shaft and pinion mate gears (4 gears).

5. Once the cross shaft and pinion mate gears are removed, the flange half side gear is clearly visible. Remove the side gear clearly revealing the flange half clutch pack (save the side gear for reuse). Remove and discard the clutch pack from flange half.

REASSEMBLY OF DANA 80 LIMITED SLIP DIFFERENTIAL:

1. The clutch packs are replaceable as complete sets only. Do not reorient the clutch pack. You must use the clutch pack orientation as received. Remove the shipping wire from the clutch pack. Lubricate each component with Friction-Modifier XL-3 (both sides of all plates and discs).

2. Assemble clutch pack into flange half in exactly the same arrangement as removed. The convex side of the belleville washer should be visible (Figure 2).

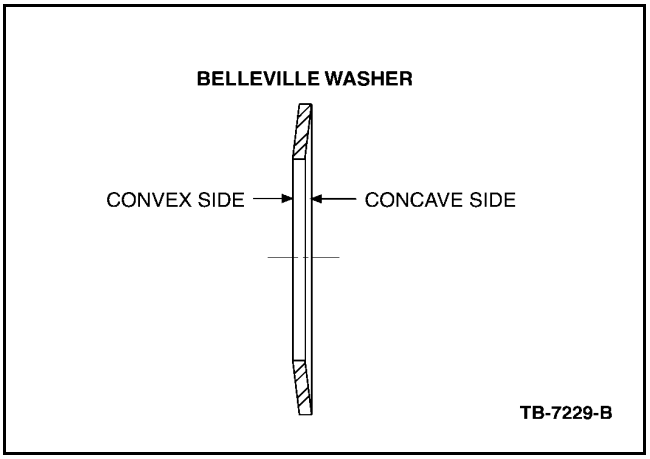

Figure 2 - Article 04-16-4

3. Make sure the clutch plate lugs (Figure 3) enter the slots in the case. Also make sure the clutch pack bottoms out on the case.

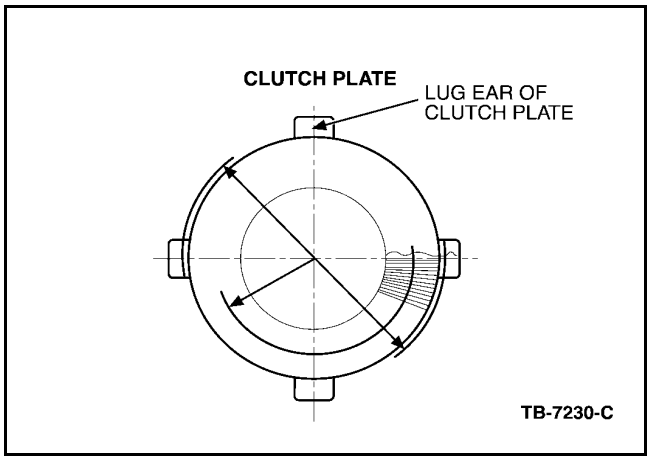

Figure 3 - Article 04-16-4

4. Install the flange half side gear into the clutch pack in the flange half.

5. Install pinion mate shaft and pinion mate gears. Make sure pinion mate shaft is correctly installed according to the alignment marks made during disassembly.

6. Install button half side gear with splined hub end facing vertical.

7. Lubricate the second clutch pack in the same manner the flange half clutch pack was lubricated, refer to Step 1. Install clutch pack to the side gear with the belleville washer's convex side touching the side gear back face.

8. Correctly align and assemble button half to flange half. Install case body screws finger tight.

9. Tighten body screws alternately and evenly. Torque screws to 122-136 N•m (90-100 lb-ft.).

REINSTALLATION OF DANA 80 LIMITED SLIP DIFFERENTIAL INTO AXLE:

1. Verify that spacers are still present in their original differential bearing bore.

2. Install differential into the carrier housing. Use rubber mallet if necessary to seat the differential into the carrier.

3. Install the bearing caps, aligning the letters with those on the carrier housing. Tighten the bolts to 95-122 N•m (70-90 lb-ft.).

4. Remove the differential housing spreader.

5. Install dial indicator.

6. Recheck the backlash to verify reading taken at the beginning of the procedure.

7. Refer to Workshop Manual Section 205-02C for axle shaft reinstallation.
8. Apply High Performance Silicone Sealant TA-29 to cover plate and reinstall to carrier. Torque cover plate bolts to 54-68 N•m (40-50 lb-ft.). Allow 15 minutes for the silicone sealant to set-up.
9. Refill carrier with two (2) bottles (8oz.) of additive Friction Modifier XL-3 and 0.84 gallons (107 oz.) of XY-75W90-QLS Rear Axle Lubricant.
10. Drive vehicle as described Action Section until chatter is gone.

PART NUMBER	PART NAME
3C3Z-4880-AA	Kit - Clutch Pack
XL-3	Friction Modifier
XY-75W90-QLS	SAE 75W-90 Synthetic Rear Axle Lubricant
TA-29	High Performance Silicone Sealant

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

OPERATION	DESCRIPTION	TIME
041604A	Change Rear Axle Lubricant And Friction Modifier (Includes Time For Two Road Test Cycles As Indicated In Procedure)	1.2 Hrs.
041604B	Change Rear Axle Lubricant And Friction Modifier Perform Two Road Test Cycles To Verify Repair. Noise Still Present, Replace The Rear Axle Clutch Packs Following Service Procedure. (This Repair Is Performed With The Differential Housing In Vehicle)	3.4 Hrs.

DEALER CODING

BASIC PART NO.	CONDITION CODE
4026	41