FORD:
2008-2010 F-250, F-350

This article supersedes TSB 9-4-9 to update the vehicle model years.

ISSUE
Some 2008-2010 F-Super Duty 250/350 vehicles with single rear wheels (SRW) and F-350 dual rear wheel (DRW) may exhibit an excessive drive-away shudder or vibration under moderate to heavy acceleration from a stop, especially when heavily loaded. This may be due to driveline angle. The shudder or vibration may be more evident while towing a trailer or if vehicle is overloaded.

- Trailer tongue weight should be 10-20 percent of the total trailer weight, depending on the hitch.
- If towing a 5th wheel or gooseneck trailer the centerline of the hitch should be two (2) inches in front of the rear axle centerline.
- Refer to the Owners Guide and Certification Label on the drivers door for maximum payload and cargo capacity.

ACTION
Follow the Service Procedure steps to correct the condition.

SERVICE PROCEDURE

NOTE
TECHNICIAN SHOULD DISCUSS WITH THE CUSTOMER HOW THE VEHICLE IS DRIVEN THE MAJORITY OF TIME (LOADED OR UNLOADED), AS ADJUSTING THE DRIVELINE ANGLE PER THIS PROCEDURE MAY RESULT IN A SLIGHT SHUDDER WITH VEHICLE UNLOADED.

Due to changes in the suspension of the 2008-2010 F-Super Duty, the repair procedure is different from prior model years (1999-2007 F-Super Duty). Use the worksheet to measure and calculate the three working angles. The driveshaft should have an optimum three (3) degree operating angle. If necessary, change the pinion angle to the axle and the height of the center bearing (CB) carrier bracket.

Measure Operating Angles:
1. Check the angle of the engine and record its value. The best location to accomplish this is on the starter since it is the most parallel to the engine's crankshaft. The special tool Anglemaster II Driveline Inclinometer / Protractor 164-R2402 or equivalent should be used. (Figure 1)

2. Check the angle of the coupling shaft and record its value. (Figure 1)

3. Check the angle of the driveshaft and record its value. (Figure 1)

4. Rotate the driveshaft until the flange U-joint cup is facing downward. In this position the flange is the closest point parallel to the pinion gear. (Figure 2)

5. Using the U-joint bearing cup attached to the pinion flange as the reference point for the pinion gear, check the angle of the pinion flange and record its value. (Figure 2)

**Calculate Operating Angles:**

Use the worksheet below to calculate the three operating angles.

1. Operating Angle (A)

   Using the recorded angles for the engine and the coupling shaft, subtract the smaller number from the larger number to obtain operating angle (A).

   Engine angle (degrees) _____ - Coupling shaft angle (degrees) _____ = Operating Angle (A) _____

2. Operating Angle (B)

   Using the recorded angles for the coupling shaft and driveshaft, subtract the smaller number from the larger number to obtain operating angle (B).

   Coupling shaft angle (degrees) _____ - Driveshaft angle (degrees) _____ = Operating Angle (B) _____

3. Operating Angle (C)

   Using the recorded angles for the driveshaft and pinion, subtract the smaller number from the larger number to obtain operating angle (C).

   Driveshaft angle (degrees) _____ - Pinion angle (degrees) _____ = Operating Angle (C) _____
NOTE
THE COMBINED TOTALS SHOULD HAVE AN OPTIMUM 3 DEGREE OPERATING ANGLE.

Change the Operating Angle:

**F-Super Duty 250/350 4X2 SRW 156" and 172" Wheelbase**

1. Install a 1 degree or 2 degree pinion angle shim (wide end at front) to pitch the axle. This is typically all that is needed to correct or minimize the concern.

**F-Super Duty 250/350 4X4 SRW 156" and 172" Wheelbase**

1. Install a 1 degree or 2 degree pinion angle shim (wide end at front) to pitch the axle or replace spacer block with a 2″ 0 degree block.

2. Replace the frame support bracket to raise CB height (if required).

**NOTE**
STEPS 1 AND 2 ARE TYPICALLY ALL THAT IS NEEDED TO CORRECT OR MINIMIZE THE CONCERN

3. Measure operating angle for a second time, continue to Step 4 only if additional adjustments are necessary to have an optimum three (3) degree operating angle.

4. A shim kit may be required to lower CB height to lessen unloaded truck shudder. Up to three (3) shims per side may be placed under the support bracket. When refastening the carrier bracket, use bolt listed or a 7/16"-14 grade 5 bolt may be substituted providing that it extends at least three (3) threads past the nut. Torque bolt to 52 lb-ft (70 N•m)

**F-Super Duty 350 DRW 4X2**

Install 1 degree pinion angle shim (wide end at front) to pitch the axle. Condition should be corrected or minimized.

**F-Super Duty DRW 4X4**

Install 1 or 2 degree pinion angle shim (wide end at front) to pitch the axle or replace spacer block with a 2″ 0 degree block and 1 degree shim. Condition should be corrected or minimized.

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

**IMPORTANT:** Warranty coverage limits/policies are not altered by a TSB.

Warranty coverage limits are determined by the identified causal part.

### OPERATION DESCRIPTION TIME

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<th>PART NUMBER</th>
<th>PART NAME</th>
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<tr>
<td>8C3Z-4A209-A</td>
<td>C/B Shim</td>
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<tr>
<td>7C3Z-4831-A</td>
<td>Support Bracket For 172&quot; Wheelbase</td>
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<tr>
<td>7C3Z-4831-G</td>
<td>Support Bracket For 156&quot; Wheelbase</td>
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<tr>
<td>7C3Z-5598-L</td>
<td>Spacer Block 2&quot;</td>
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<td>F81Z-5598-DA</td>
<td>Spacer Block 4&quot;</td>
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<td>EOTZ-5A313-C</td>
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<tr>
<td>EOTZ-5A313-B</td>
<td>2 Degree Pinion Wedge</td>
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<tr>
<td>56764-S439</td>
<td>Bolt</td>
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**F-Super Duty 250/350 4X2 SRW 156/172 Wheelbase Vehicles: Install Pinion Angle Shims, Includes Time To Measure And Calculate Working Angles (Do Not Use With 5560A)**

**F-Super Duty 350 4X2/4X4 DRW Vehicles: Install Pinion Angle Shims, Includes Time To Measure And Calculate Working Angles (Do Not Use With 5560A)**

**F-Super Duty 250/350 4X4 SRW 156/172 Wheelbase Vehicles: Install Pinion Angle Shims, Replace C/B Bracket And/Or Install C/B Shims. If Necessary, Includes Time To Measure And Calculate Working Angles Twice (Do Not Use With 5560A)**

### DEALER CODING

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<tr>
<th>BASIC PART NO.</th>
<th>CONDITION CODE</th>
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<tbody>
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