# Driveshaft

Base Part Number: 4602

## Principles of Operation

The driveline system enables the power generated by the engine and transferred through the transmission and, if applicable, transfer case, to place the vehicle in motion. Rotational torque received from the transmission or transfer case is delivered to the front and rear drive axles by way of the driveshafts. The U-joints or CV joints at the ends of the shafts allow the shafts to rotate smoothly in an allowable angle plane. The rotational torque is introduced into the axle differential which drives the axles/halfshaft.

## Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.
3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

## Symptom Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

## Symptom Chart: NVH

### Symptom Chart

| Condition | Possible Sources | Actions |
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| Driveline clunk - loud clunk when shifting from REVERSE to DRIVE | • Damaged or worn driveshaft U-joint | • INSPECT the driveshaft U-joints for wear or damage. INSTALL a new driveshaft U-joint or driveshaft as necessary. REFER to: Driveshaft Universal Joint (205-01 Driveshaft, Disassembly and Assembly). |
| Driveline clunk — occurs as the vehicle starts to move forward following a stop | • Worn driveshaft U-joint with excessive play | • INSPECT the driveshaft U-joint for a worn condition. INSTALL a new driveshaft U-joint if necessary. REFER to: Driveshaft Universal Joint (205-01 Driveshaft, Disassembly and Assembly). |
| Buzz – buzzing noise is the same at | • Incorrect driveline | • CHECK for correct driveline |

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| cruise or coast/deceleration | angles | angles.<br>REFER to: Driveshaft Angle Measurement (205-01 Driveshaft, General Procedures).<br>REPAIR as necessary. |
| Rumble or Boom – noise occurs at coast/ deceleration, usually driveshaft speed-related and noticeable over a wide range of speeds | • Driveshaft out of balance | • CHECK the driveshaft for damage, missing weights or undercoating. CHECK the driveshaft balance. REFER to: Driveshaft Runout and Balancing (205-01 Driveshaft, General Procedures). INSTALL a new driveshaft as necessary. REFER to: Rear Driveshaft (205-01 Driveshaft, Removal and Installation). |
| Grunting — normally associated with a shudder experienced during acceleration from a complete stop | • Driveshaft CV joint and/or U-joint binding | • INSTALL a new driveshaft as necessary. REFER to: Rear Driveshaft (205-01 Driveshaft, Removal and Installation). REFER to: Front Driveshaft (205-01 Driveshaft, Removal and Installation). |
| Driveline shudder – occurs during acceleration from a slow speed or stop | • Driveline angles out of specification | • CHECK for correct driveline angles. REFER to: Driveshaft Angle Measurement (205-01 Driveshaft, General Procedures). |
| | • Binding or damaged driveshaft CV joint and/or U-joint | • INSPECT the driveshaft CV joint and/or U-joint and coupling shaft for wear or damage. INSTALL a new driveshaft as necessary. REFER to: Rear Driveshaft (205-01 Driveshaft, Removal and Installation). REFER to: Front Driveshaft (205-01 Driveshaft, Removal and Installation). |
| Driveline vibration - occurs at cruising speeds | • Worn or damaged driveshaft center bearing support | • CHECK the insulator for damage or wear. ROTATE the driveshaft and CHECK for rough operation. INSTALL a new driveshaft as necessary. REFER to: Driveshaft Center Bearing (205-01 Driveshaft, Removal and Installation). |
| | • Center bearing bolts not properly seated | • REPLACE and TORQUE the center bearing bolts. |
| | • Loose axle pinion flange bolts | • INSPECT the axle pinion flange. REPLACE the pinion flange bolts to specification. REFER to: Rear Driveshaft (205-01 Driveshaft, Removal and |

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| | | Installation). |
| | • Excessive axle pinion flange runout | • CARRY OUT a runout check. REPAIR as necessary. REFER to: Specifications (205-01 Driveshaft, Specifications). |
| | • Driveshaft is out of balance | • CHECK the driveshaft for damage , missing balance weights or undercoating. CHECK the driveshaft balance. REFER to: Driveshaft Runout and Balancing (205-01 Driveshaft, General Procedures). |
| | • Binding or damaged driveshaft CV joint and/or U-joint | • INSPECT the driveshaft CV joint and/or U-joint for wear or damage. INSTALL a new driveshaft as necessary. REFER to: Rear Driveshaft (205-01 Driveshaft, Removal and Installation). REFER to: Front Driveshaft (205-01 Driveshaft, Removal and Installation). |
| | • Excessive driveshaft runout | • CARRY OUT a runout check. REFER to: Driveshaft Runout and Balancing (205-01 Driveshaft, General Procedures). |
| | • Driveline angles out of specification | • CHECK for correct driveline angles. REFER to: Driveshaft Angle Measurement (205-01 Driveshaft, General Procedures). REPAIR as necessary. |