SUBJECT
Shudder from the Driveline on Vehicles with xDrive
MODEL
E90 (3 Series xDrive Sedan)

E91 (3 Series xDrive Sports wagon)

E83 (X3 with xDrive)

E70 (X5)

E71 (X6)

E84 (X1)

F01 (7 Series xDrive Sedan)

F02 (7 Series xDrive Sedan)

F06 (6 Series xDrive Gran Coupe)

F07 (5 Series xDrive Gran Turismo)

F10 (5 Series xDrive Sedan)

F13 (6 Series xDrive Coupe)

F15 (X5)

F16 (X6)

F22 (2 Series xDrive Coupe)

F23 (2 Series xDrive Convertible)

F25 (X3)

F26 (X4)

F30 (3 Series xDrive Sedan)

F31 (3 Series xDrive Sports Wagon)

F32 (4 Series xDrive Coupe)

F34 (3 Series xDrive Gran Turismo)

F36 (3 Series xDrive Gran Coupe)

situation
There is a shudder or vibration from the driveline when taking off from a stop, or when accelerating at highway speeds.
cause
Possible multiple root causes related to the engine, wheels & tires, suspension components or internal wear on the clutch plates of the xDrive transfer case.

procedure
Use the attached troubleshooting guide to determine if the transfer case is at fault.
warranty information
This service information bulletin provides technical diagnostic and/or repair information.

Eligible and Covered Work/Repairs

Claims that result from the repair of a verified defect are to be submitted following the established and applicable warranty policy and procedures by assigning the corresponding defect code and labor operations that are provided in KSD2.

Attachments
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Transfer Case Diagnosis

SYMPTOMS

The following symptoms may be observed:

- Shudder from the driveline when taking off from a stop
- Shudder from the driveline when accelerating to pass (usually felt from 45 – 65 mph)
- Vehicle feels like it is locked in 4-wheel drive during parking lot maneuvers
- Drivetrain sensation which could be misinterpreted as an engine misfire

The following fault codes may be stored in addition to the above symptoms:

F-Series Vehicles:

- DSC 48097D – Transfer box: Fault, clutch position known, no four-wheel drive
- DSC D36D44 – Signal invalid, transmitter VTG
- LMV 440105 - Transfer box (VTG): Calibration faulty
- LMV 440100 - Transfer box (VTG): Control unit , complete system fault

E-Series Vehicles

- DSC 5F3A – Transfer case malfunction
- DSC 5DEC – Transfer case malfunction
- DSC 5F39 – Transfer case internal
- VGSG 54C5 – Offset motor current measurement
- LMV 522E - Transfer box (VTG): Offset compensation: Faulty
- LMV 5252 – Torque delivered outside torque characteristic

PROCEDURE

Checking the transfer case for a shudder when taking off from a stop:

1. Verify the complaint
2. In a safe/secure area (parking lot), engine running, foot on brakes and transmission shifted into “D”
3. Rev the engine to @2500 rpm – does the car shake?
   Yes – Diagnose engine vibration
4. No vibration – Slowly let off the brake to start moving forward. Is the shudder vibration present?
   - Yes? Internal wear in the transfer case clutch pack
   - No? Check suspension components and/or motor/transmission mounts for wear

Checking the transfer case for shudder/vibration while driving or during slow parking lot maneuvers:

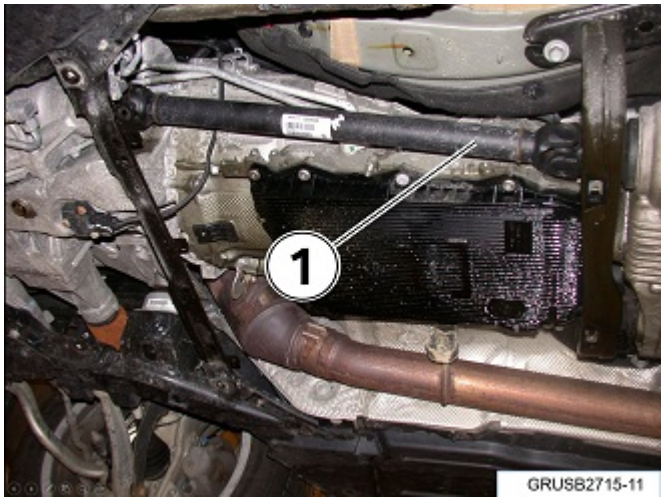
1. Verify the complaint
2. Unplug the VTG actuator on the transfer case and take for same test drive.

Is the shudder/vibration gone?

Yes? - There is internal wear in the transfer case clutch pack.

No? - Raise the vehicle and have transmission in “N”, ignition off.

Hold the front driveshaft and manually spin the rear wheels (1). The rear driveshaft needs to spin.



If the front driveshaft (1) cannot be held steady with minimal effort – the internal clutch pack is seized (extreme overheat).

If driveshaft can be held steady - Check for other causes of vibration (wheels/tires, etc.)

Causes for transfer case failure:

To insure the replacement transfer case will not fail, it is necessary to check the following:

Always check previous repair history.

Wrong or worn tires installed:

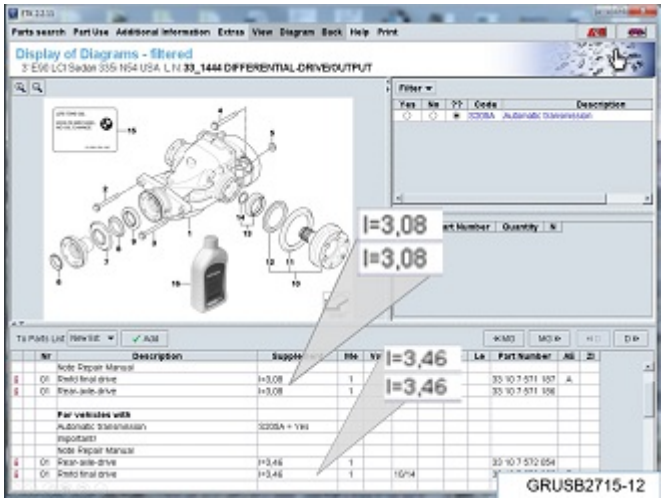
- Check the size and brand for correct fitment to the vehicle.
- One or more tires with extreme tire wear will keep the xDrive engaged.
- If tires are brand new (just replaced), the issue could have happened with old tires.
- If the vehicle was equipped with staggered sizes, check to make sure they are not mismatched to axle (front are now on rear).

Previous rear differential failure:

- The rear differential failed and vehicle was driven excessively with only front wheel drive. This would overheat the internal clutch pack of the transfer case.

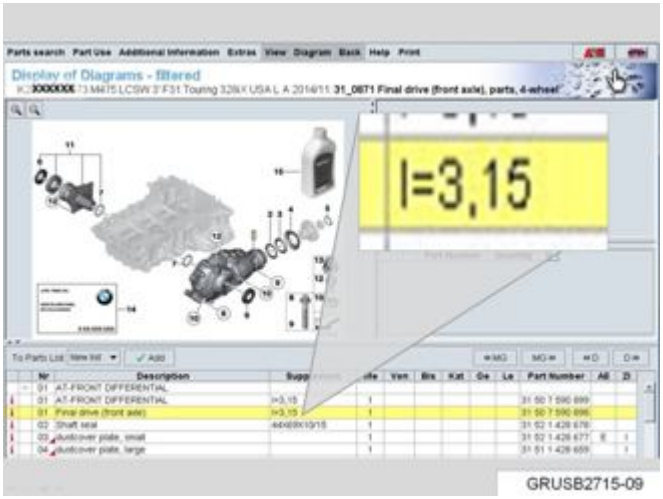
Wrong differential installed:

- Low mileage (under 10,000 miles) The wrong differential was installed at the factory (wrong gear ratio SIB 27 02 15)
- Higher mileage (over 10,000 miles) a failed differential was replaced with an incorrect ratio part.



When searching by VIN in ETK the part number for the manual and automatic transmission will still show up. Confirm that the correct part is being ordered for vehicle.

- Check PN/Model of vehicle. Be aware of production dates where model years change mid-year.
- Check the gear ratios for the front and rear differentials. These numbers must always match each other and also match what is listed in ETK



The correct gear ratio is listed in ETK when searching by VIN and selecting the correct transmission type.

Example of part label on a front or rear differential. The gear ratio is always located in the upper right corner (1).

Excessive use of xDrive:

- xDrive repeatedly overworked during severe weather conditions.
- Excessive off-road use.