Vibration Diagnostics

Important: Use factory service manuals and procedures and refer to all applicable safety precautions when servicing vehicles. This document is intended to assist with drivetrain vibration diagnosis. It does not guarantee an immediate solution nor does it guarantee warranty responsibility or reimbursement. Refer to Roadranger.com for Product Warranty Statements, Warranty Manual, and Warranty Guidelines.

**Gather Info**
- When did vibration start?
- Where is vibration felt?
- What road conditions?
- Under load or high torque conditions?
- During acceleration/deceleration?
- Speed dependent?
- RPM dependent?
- Noise?
- Suspension modified recently?
- Lube clean and at proper level?

**Road Test**
- Have vehicle driver recreate complaint condition, if possible
- Leave trailer attached
- Run up to suspected RPM and put transmission in neutral
- In the road test in Step 2, the vehicle was run up to the suspected RPM and the transmission shift lever was placed in neutral.

**Simulate Conditions**
- Speed RPM
- Gear Position
- Coast
- Under power
- Loaded / Unloaded
- Correct per OEM procedures

**Record Findings**
- Speed RPM
- Gear position
- Coast
- Under power
- Loaded / Unloaded

**Stationary Inspection**
- Tires
- Rims
- Dented driveshaft tubing
- Engine supports
- Transmission supports
- Driveshaft center bearing

**Vibrations While Stationary**
- Yes
- Perform visual inspection and use Eaton Driveline Angle Analyzer (DAA).
- Look for loose:
  - U-joint bearing cups and trunnions
  - Bearing straps
  - Flange yoke / companion flange
  - Drive-mounted damper
  - Parking brake
  - Center bearing
  - Axle mount / air ride system
  - Driveshaft for damage / missing weights
  - Driveshaft slip spline (wear / bottoming / inadequate engagement)
  - Cab mounts / air ride system

- No
- Previous work on clutch or engine
  - Yes
  - If clutch work recently done, problem could be related to the clutch. Verify proper clutch was installed.
  - No
  - If engine work recently done, problem could be related to the engine. Contact your engine distributor.

- No
- Does ride height meet OEM specs
  - Yes
  - Perform visual inspection and use Eaton Driveline Angle Analyzer (DAA).
  - Look for loose:
    - Torque arms
    - Driveshaft slip spline (wear / bottoming / inadequate engagement)
    - U-joint
    - Bearing straps
    - Flange yoke / companion flange
    - Center bearing
    - Axle mount / air ride system
  - Correct per OEM procedures
  - Does ride height meet OEM specs
    - Yes
    - Problem is related to the wheel end. Take known good wheel assembly and test replacement from wheel to wheel to isolate problem.
    - No
    - Problem is related to the inter-axle shaft. Contact Roadranger Support Team: 1-800-826-4357.
  - No
  - Problem Occur with Trailer Loaded?
    - Yes
    - 1-800-826-4357
    - Problem Solved
    - Correct per OEM procedures
    - Does ride height meet OEM specs
      - Yes
      - Problem is related to the inter-axle shaft. Contact Roadranger Support Team: 1-800-826-4357.
      - No
      - Problem persists, contact Roadranger Support Team: 1-800-826-4357.
    - No
    - Problem Solved
    - Check for other possible causes:
      - Clutch
      - Center bearing
      - Transmission rear supports
      - Engine mounts
      - Done!

- Problem Solved
- Isolate Suspect Shaft
  - Yes
  - Problem is related to driveshaft. Replace driveshaft.
  - No
  - Was suspect shaft isolated?
    - Yes
    - Problem persisted, contact Roadranger Support Team: 1-800-826-4357.
    - No
    - Problem persisted, contact Roadranger Support Team: 1-800-826-4357.

**Contact your engine distributor.**