



www.graemecooper.com.au

Got the shakes?

A case of delirium tremens may feel life threatening, but shakes in the steering, suspension or drive train may actually be so. *Any* vibration should be checked as a matter of priority, because it can be an indicator of a potentially life threatening failure of some critical part. Even if this turns out not to be the case, it is better to be sure. Although it is not always easy to pick the origin of a vibration, because what is felt at the wheel may not be the source of the problem, careful noting of the circumstances will help considerably, especially when the problem occurs only at highway speeds, or intermittently.

Some basic understanding of the components and how associated problems usually manifest themselves will help to place the above warning into context and provide an indication of the relative urgency and seriousness:

Tyres are an obvious place to start. What about the tyre sizes? Are they as stated in the manufacturer specifications and all the same size? On a permanent all-wheel drive vehicle, if the back and front tyre sizes are unequal, the centre differential and/or viscous coupling may “wind up” initially causing vibration and ultimately component failure. Are tyre pressures correctly adjusted to suit driving conditions? Older service station gauges are notoriously inaccurate and a good reason the keep a pressure gauge in the glove box. Maybe one or more tyre pressure is way too low or high, What about the treads? The wear should not be too uneven. Is the wear even or excessive on the inside or outside of each tyre? If this condition occurs, it indicates a tracking adjustment problem.

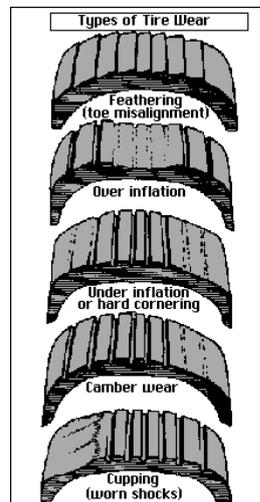


Illustration source: aa1car.com

Wheel damage is a not-infrequent source of vibration. A bent rim will invariably make it difficult for the tyre to flex correctly to suit the road camber or surface. More commonly, poor wheel balance will cause vibration, through this is relatively easy to identify, as harmonic vibration occurs at specific road speeds, usually at 60 or 100 KPH.

Drive train faults caused by defective or worn CV joints, universals, bushes or bolts can be a major problem, especially for older vehicles -see the separate article “Perils of metal fatigue.” Also, wear in the transfer case bearings will create vibration and should be rectified while the repair is relatively simple. The same applies to the differentials.



Worn engine and gearbox mounts are another frequent cause of vibration. Unless fixed, they will quickly create other problems. The rubber should be in good condition visually



Steering bushes can degrade surprisingly quickly and every service should include an inspection of the major components. These include tie-rod end and drop-arm bushes, Leaks in the steering box may not cause shudder immediately, but the problem needs to be rectified before significant wear occurs.

1. Steering Column and Box Assembly
2. Tie Rod Assembly fully threaded includes boot, washer, and lock nut
3. Longitudinal Steering Tube Assembly
4. Steering Relay Unit Assembly, Genuine
5. Track Rod Tube
6. Track Rod Assembly, includes tie rod ends, clamps and hardware
7. Drag Link Tube with bracket
8. Drag Link Assembly, includes tie rod ends, clamps and hardware
9. Steering Damper Assembly
10. Chassis Bracket for steering damper
11. Single Cap Reservoir
12. Power Steering Line Reservoir to steering box
13. Power Steering Line Reservoir to pump
14. Power Steering Line Pump to Steering Box
15. Steering Box Assembly
16. Steering Shaft Assembly
17. Pump Assembly
18. Pulley for Pump Assembly
19. Ball Joint Assembly LH Thread
20. Clamp Assembly (Small)
21. Adjuster Unit
22. Clamp Assembly (Large)
23. Track Rod with Ball Joint
24. Track Rod with Ball Joint
25. Drag Link Assembly
26. Track Rod Assembly
27. Nut for Ball Joint
28. Steering Damper Assembly
29. Clamp Assembly
30. Clamp Bolt
31. Washer
32. Clamp Nut
33. Drop Arm
34. Sealing Washer for high pressure line to pump
35. Clip for attaching p/s lines

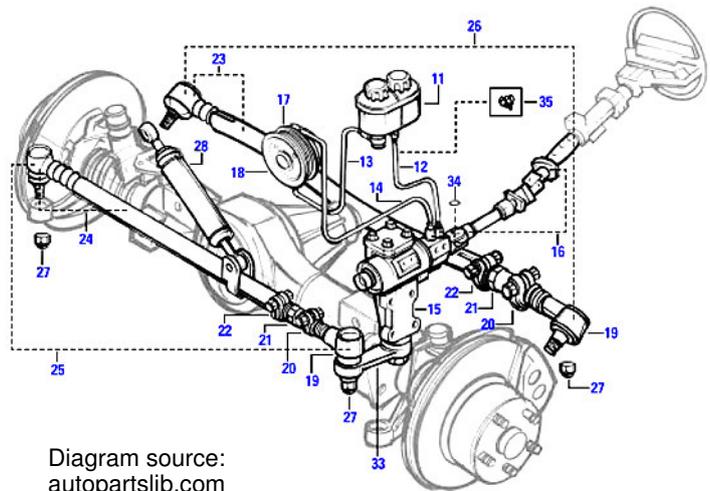


Diagram source: autopartslib.com



Worn suspension bushes will certainly affect the handling of the vehicle, though not always creating vibration in the steering. More likely, the result will be thumps, bangs and the tendency for the vehicle to wander off-line. There are several components that may affect the suspension:

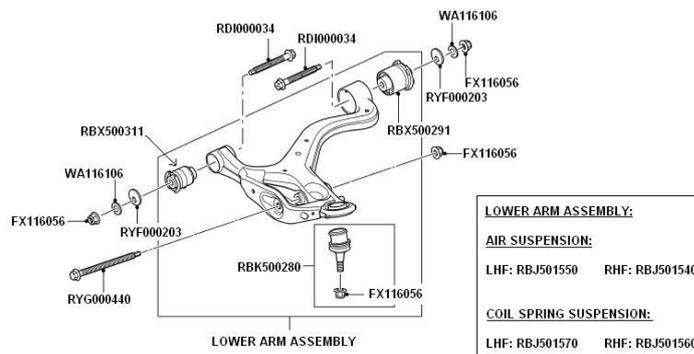


Diagram source: roverparts.com.au

Rear-link to chassis bushes when worn contribute significantly to poor handling. These are the bushes that literally tie the suspension to the chassis

Shock absorbers can usually be given a rough test by bouncing the vehicle at each corner. Recovery should be fast and smooth without obvious clunks and bangs. Before spending big on new shocks, have the inexpensive rubber bushes checked. If the shocks themselves need changing, consider that contrary to common perceptions, original gas shocks are highly effective and there is rarely a need to change to more expensive after-market versions. If the latter is advantageous for extended off-road driving, expert advice should be sought as not all brands and types will improve matters.

Worn ball joints degrade only slowly so this is unlikely to be a condition that appears suddenly. In the even of a oil leak from the housing, it can be rectified with "one-shot: grease.

On Classic Range Rovers, the load leveller and its bushes will cause rear end clatter and associated poor suspension trim. Usually it is the bushes that fail. If the unit itself is faulty, oil leaks are a good indicator

Professional servicing

Experience counts on Land Rover vehicles arguably more than on many other vehicle makes due to the specialised nature of the component design and component interaction. The latter means that not just one item may be the cause, The team at Graeme Cooper Automotive literally have decades of experience in the marque and may be trusted for an accurate diagnosis of the problem, leading to a professional solution.