

Wheels: Carol of Miamisburg says that her 1989 Buick Regal makes a loud humming sound and a vibration when turning right or left. The power steering pump has been replaced, yet the noise still occurs. Do you have any ideas?

Halderman: There are several possible causes including:

- **Defective or worn strut bushing** – The strut assembly on the front suspension rotates when the front tires are turned. If the upper bearing assembly is worn or damaged on one or both sides, the result could be the noise and vibration you hear and feel.
- **Defective or worn ball joints** - Again, as the strut rotates, the movement is controlled by ball joints at the lower control arm.
- **Defective or worn power rack and pinion steering gear assembly** – The steering rack can cause the noise and vibration you are experiencing.

Wheels: Many of these components and units sound expensive. What can Carol's service technician do to help pin down the root cause?

Halderman: Try to find a competent service technician who has the experience and resources necessary to determine the cause of the problem. I know the items listed could be expensive. This is why the real cause of the problem should be diagnosed rather than have someone start replacing parts until the problem is found. Even though the diagnostic procedure will cost because the technician has to perform tests, it is usually less expensive to pay for the diagnosis than to keep replacing parts.

Wheels: What should a service technician do to determine the cause?

Halderman: The first step is a thorough visual inspection followed by a dry-park test. This test involves gently moving the steering wheel about 1 inch either way from straight ahead while an assistant checks all steering components for wear, movement, or noise. The next step involves disconnecting the tie rod ends and checking for proper operation of the steering components with the wheels disconnected from the system. The front wheels can also be rotated individually to check for binding or looseness caused by worn components.

Wheels: Isn't there anything that could cause the noise that is easy and inexpensive to repair?

Halderman: Yes. If power steering lines are touching the body or other components, a vibration could be felt. This is why the wise service technician always starts with a visual inspection first. Sometimes other service work could result in the moving of one of the power steering hoses and nothing was noticed at first but the noise or vibration could start when the power steering hose contacted the frame or body of the vehicle.

Wheels: What is the most common cause of this type of noise and vibration?

Halderman: Unfortunately, the most common cause of this noise is a faulty rack and pinion steering assembly. A typical remanufactured rack and pinion assembly could cost \$300 to \$500 or more plus labor plus an alignment. Because of this expense, it is wise to make sure that all of the other possible causes are checked and corrected before replacing the rack and pinion steering.

