

Fig. 5: Measuring Lash Between Inner Tie Rod & Steering Gear Housing
Courtesy of GENERAL MOTORS COMPANY

2. With the aid of an assistant, turn the steering wheel to the full stop position and hold the steering wheel in

that position until the test is complete. Part of the steering linkage inner tie rod (2) being tested should be inside the steering gear housing. The inner tie rod housing (1) being tested should be inside the steering gear housing and seated against the steering stop.

3. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
4. If there is not a good location for the **GE-8001** dial indicator pointer at the steering gear housing, install a large worm gear hose clamp (3) to the steering gear housing over the larger steering gear boot clamp and align the clamp so that the screw can be a location for the **GE-8001** dial indicator pointer.
5. Install the **GE-8001** dial indicator between the inner tie rod and the steering gear housing or the worm gear clamp in such a way as to measure the lash between the inner tie rod and the steering gear housing. The lash between the inner tie rod and the steering gear housing is equal to the lash between the inner tie rod and the inner tie rod housing because the inner tie rod housing is inside the steering gear housing during this procedure.

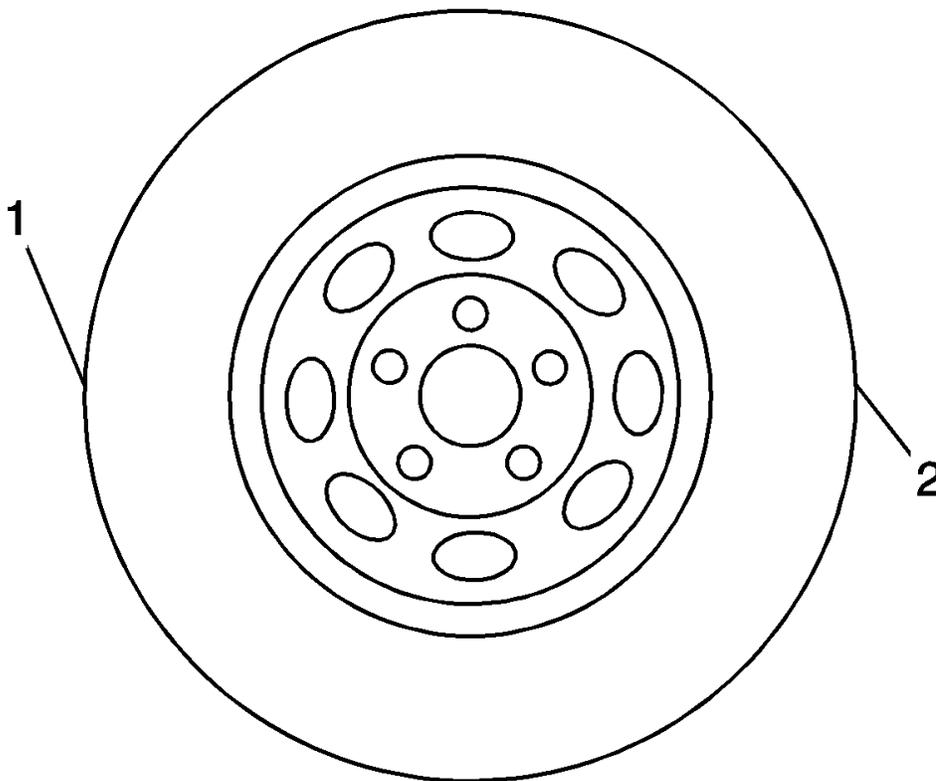


Fig. 6: Identifying Tire Grasping Positions
Courtesy of GENERAL MOTORS COMPANY

NOTE: Only move the tire enough to feel any lash between the inner tie rod and

the inner tie rod housing without moving the steering gear rack.

6. Grasping the tire at the 3 o'clock (2) and 9 o'clock (1) positions, gently push in on one side of the tire in order to remove any lash.
7. Zero the **GE-8001** dial indicator.
8. On the same side of the tire previously pushed in, gently pull out and measure the lash.
9. Record the measurement shown on the **GE-8001** dial indicator.
10. If the measured value exceeds 0.5 mm (0.02 in), replace the inner tie rod. Refer to **Steering Linkage Inner Tie Rod Replacement (NJ2)**, **Steering Linkage Inner Tie Rod Replacement (NJ1, NV7)**.
11. Repeat the procedure for the other side.

STEERING LINKAGE OUTER TIE ROD INSPECTION

Special Tools

GE-8001 Dial Indicator Set

For equivalent regional tools, refer to **Special Tools**.

NOTE: **This inspection procedure does not supersede local government required inspections that have more stringent requirements.**

1. Inspect the outer tie rod seal. If the outer tie rod seal is torn, replace the outer tie rod. Refer to **Steering Linkage Outer Tie Rod Replacement**.
2. Raise the side of the vehicle being inspected with a floor jack while maintaining contact between the opposite wheel and the shop floor. Support the lower control arm with a floor jack stand as far outboard as possible and remove the floor jack. Refer to **Lifting and Jacking the Vehicle**.

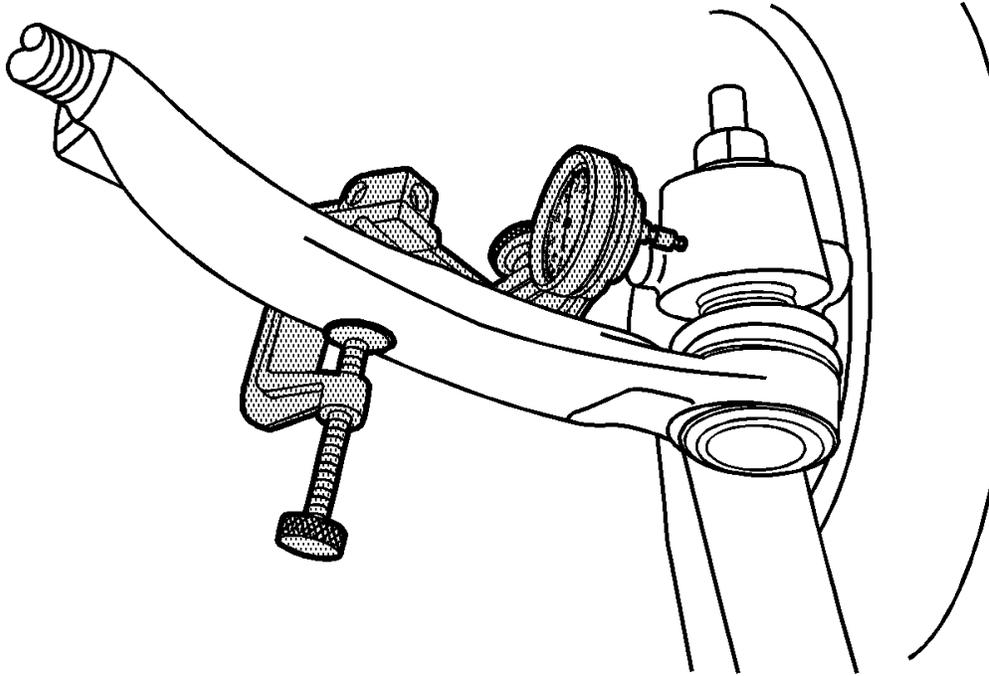


Fig. 7: Measuring Outer Tie Rod Lash
Courtesy of GENERAL MOTORS COMPANY

3. Install the **GE-8001** dial indicator between the outer tie rod and the steering knuckle as shown in the graphic. Note that the tire and wheel assembly is shown removed only for clarification of the **GE-8001** dial indicator position.

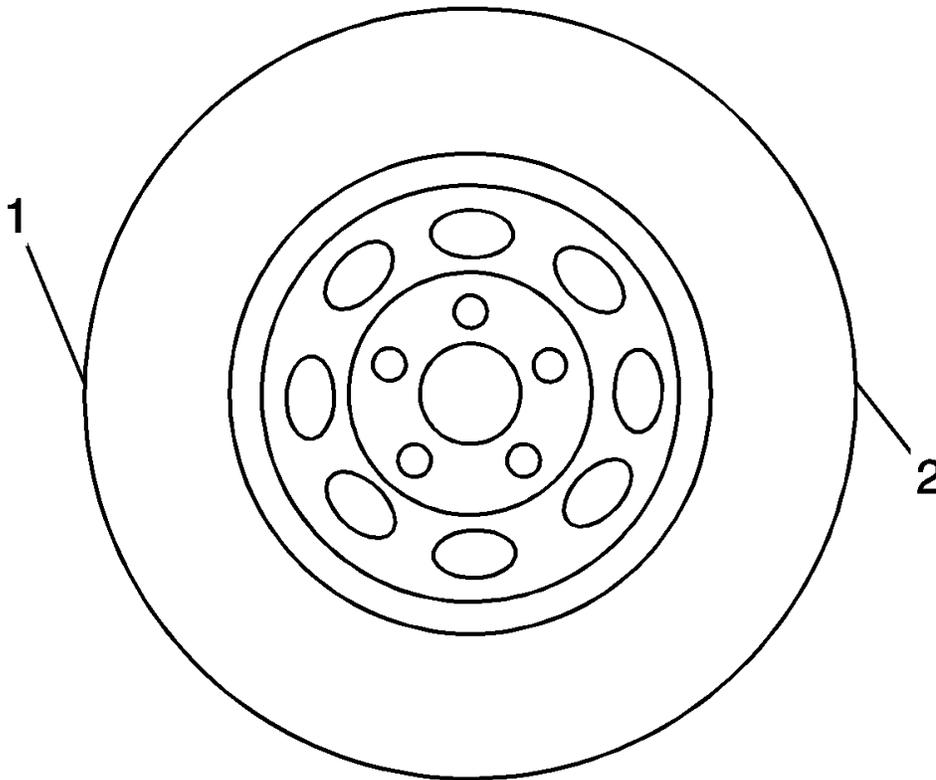


Fig. 8: Identifying Tire Grasping Positions
Courtesy of GENERAL MOTORS COMPANY

4. Grasping the tire at the 3 o'clock (2) and 9 o'clock (1) positions, gently push in on one side of the tire to remove any lash.
5. Zero the **GE-8001** dial indicator.
6. On the same side of the tire previously pushed inwards, gently pull outwards and measure the lash.
7. Record the measurement shown on the **GE-8001** dial indicator.
8. If the measured value exceeds 0.5 mm (0.02 in), replace the outer tie rod. Refer to **Steering Linkage Outer Tie Rod Replacement**.
9. Repeat the procedure for the other side.

POWER STEERING SYSTEM BLEEDING

NOTE:

- Use clean, new power steering fluid only. Refer to **Adhesives, Fluids, Lubricants, and Sealers**.

- **Hoses touching the frame, body or engine may cause system noise. Ensure the hoses do not touch any other part of the vehicle.**
- **Loose connections may not leak, but could allow air into the steering system. Ensure all hose connections are tight.**
- **Maintain the power steering fluid level throughout the bleeding procedure.**

1. Fill the power steering fluid reservoir with fluid to the minimum system level, the FULL COLD level, or the middle of the hash mark on the cap stick fluid level indicator, as applicable.
2. Raise the vehicle until the front wheels are off the ground. Refer to **Lifting and Jacking the Vehicle** .
3. With the key in the ON position and with the engine OFF, turn the steering wheel from stop to stop 12 times.

If the vehicle is equipped with longer length power steering hoses, turn the steering wheel from stop to stop 15 to 20 times.

4. Verify the power steering fluid level. Refer to **Checking and Adding Power Steering Fluid**.
5. Start the engine. Rotate the steering wheel from left to right. Inspect the power steering system for signs of cavitation or fluid aeration, like pump noise or whining.
6. Verify the fluid level. Repeat the bleed procedure, if necessary.
7. Lower the vehicle.

CHECKING AND ADDING POWER STEERING FLUID

1. Run the engine until the power steering fluid reaches about 80°C (170°F).
2. Turn the engine OFF.
3. If the power steering fluid reservoir is covered by a shield or a cover, remove the shield or the cover, as applicable.
4. Clean the power steering fluid reservoir and the reservoir cap.
5. Remove the reservoir cap.

NOTE: **Inspect the power steering pump fluid level at regular intervals.**

6. Inspect the power steering fluid level in the reservoir or on the cap stick, as applicable. Ensure that the fluid level is at the HOT/FULL/MAX mark on the cap stick or on the reservoir, as applicable.

CAUTION: When adding fluid or making a complete fluid change, always use the proper power steering fluid. Failure to use the proper fluid will cause hose and seal damage and fluid leaks.

7. Add power steering fluid if necessary. Refer to **Adhesives, Fluids, Lubricants, and Sealers**.
8. Install the reservoir cap.