

Steering Feels Loose And/Or Excessive Lash (Adjust Steering Gear)

2016 Chevrolet Silverado 2500/3500

2016 GMC Sierra 2500/3500

With Digital Steering Assist (RPO NV8)

This PI was superseded to update Recommendation/Instructions. Please discard PIT5501.

The following diagnosis might be helpful if the vehicle exhibits the symptom(s) described in this PI.

Condition/Concern

Some owners many comment the steering feels loose or has excessive play. This concern could be cause by an incorrect Pitman Shaft Over-Center Preload Adjustment.

Recommendation/Instructions

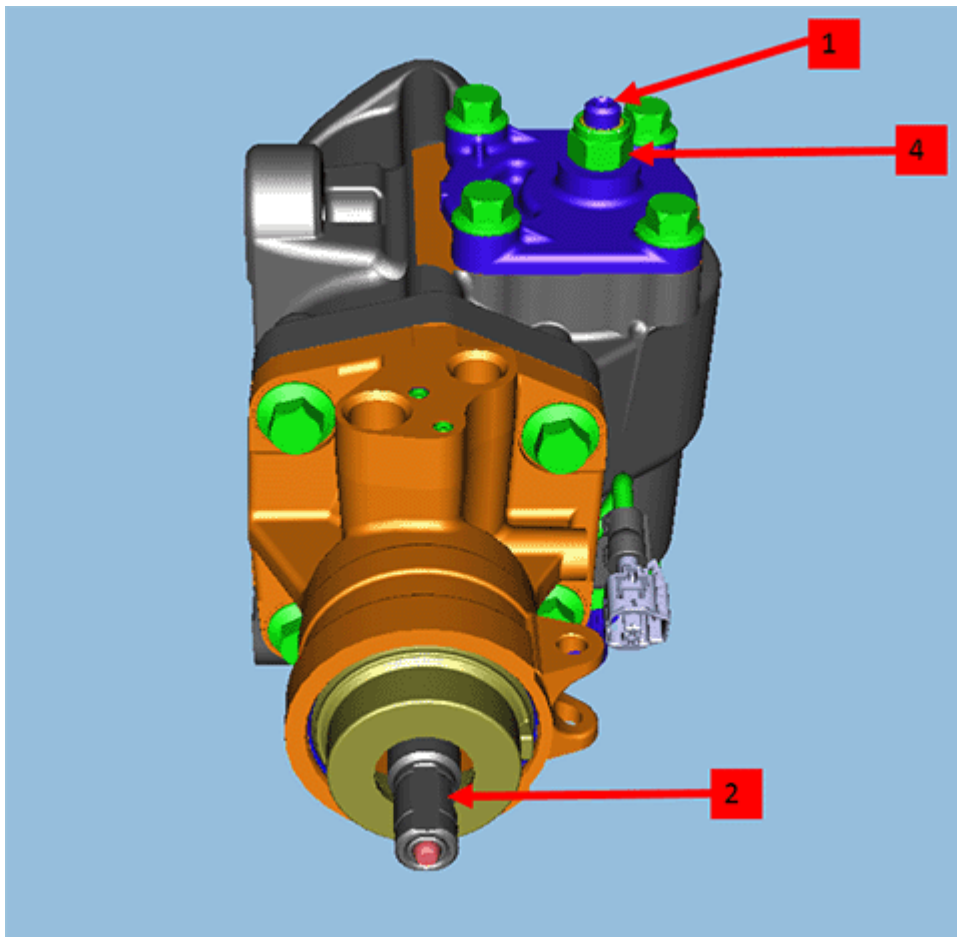
Do NOT replace the steering gear for this concern.

This concern could be caused by excessive steering gear lash. To check for excessive lash, perform the following test:

- Disconnect the Relay Rod/Center link from the steering gear pitman arm and idler arm. Allow the relay rod/center link to drop down and clear the pitman arm.
- With the steering gear in the centered position (wheels straight forward), have an assistant hold the steering wheel from turning.
- While the steering wheel is being held in the centered position, wiggle the pitman arm and feel for any lash/play.
- If lash/play is found, start at step 1 of the "Steering Gear Pitman Shaft Over-Center Preload Adjustment" procedure.
- If no lash/play is found, make sure the steering gear pitman shaft lash adjuster nut (4) is tightened to 75-85Nm (55-63 lb ft) and then start with step 16 of the "Steering Gear Pitman Shaft Over-Center Preload Adjustment" procedure.

Perform the "Steering Gear Pitman Shaft Over-Center Preload Adjustment" procedure below. SI will be updated shortly with this revised procedure.

1. Remove the steering gear from the vehicle

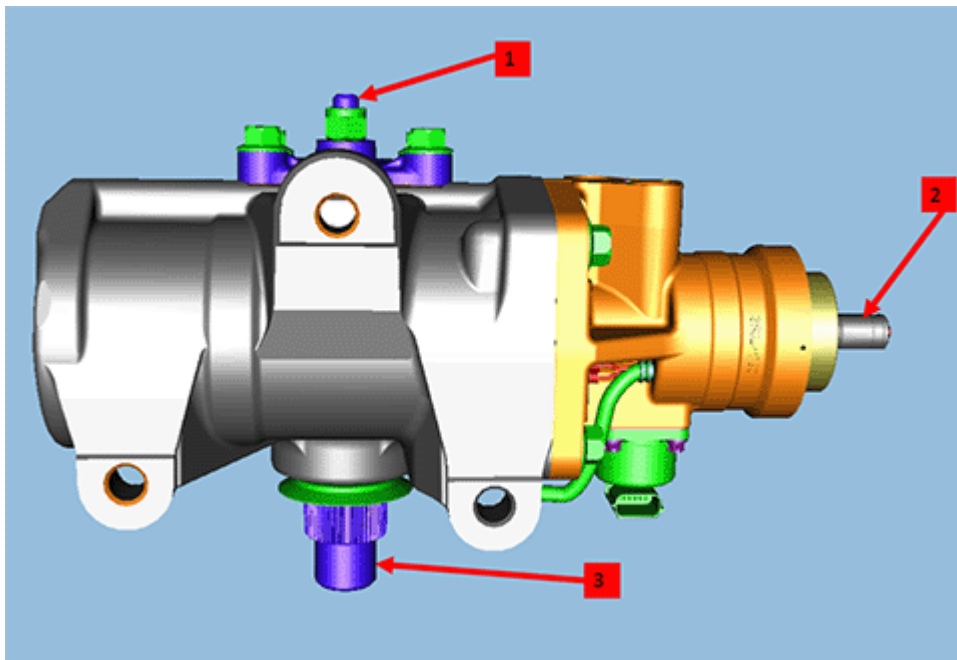


2. Mount the steering gear so the pitman arm shaft is vertical, See important note below. Loosen the steering gear pitman shaft lash adjuster nut (4).

Important

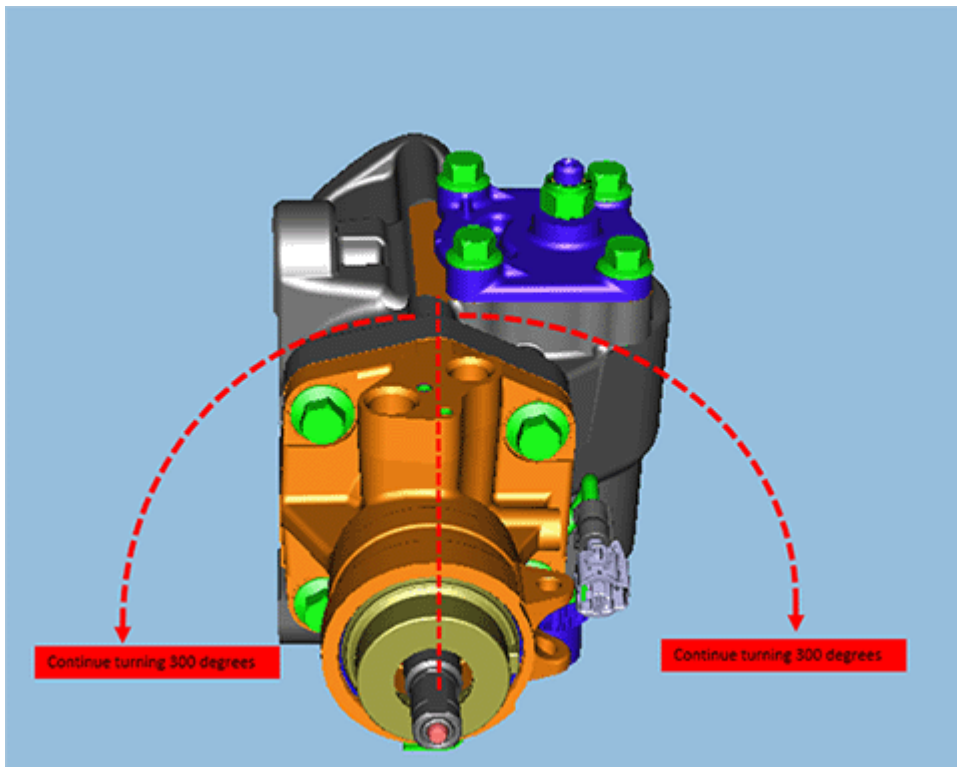
Do NOT lay the steering gear on its side when performing this procedure. Doing so will cause torque readings to be incorrect. The steering gear must be mounted so the pitman shaft is vertical.

3. Turn the steering gear pitman shaft lash adjuster screw (1) counterclockwise until fully extended.
4. Turn the steering gear pitman shaft lash adjuster screw clockwise 1 full turn.
5. Rotate the steering gear input shaft (2) from stop to stop using a socket designed for the input shaft geometry, or crows foot with ratchet while counting the number of turns.
6. Starting at either stop, turn the steering gear input shaft (2) back half the total number of turns counted previously. This is the center position.



7. Ensure the steering gear pitman shaft is centered by inspecting the following items:
 - The flat on the steering gear input shaft (2) faces upward.
 - The flat on the steering gear input shaft (2) is parallel with the steering gear side cover.
 - The master spline (3) on the steering gear pitman shaft is in line with the steering gear pitman shaft lash adjuster screw (1).
8. Place a torque wrench on the steering gear input shaft (2) with the handle in the vertical position.





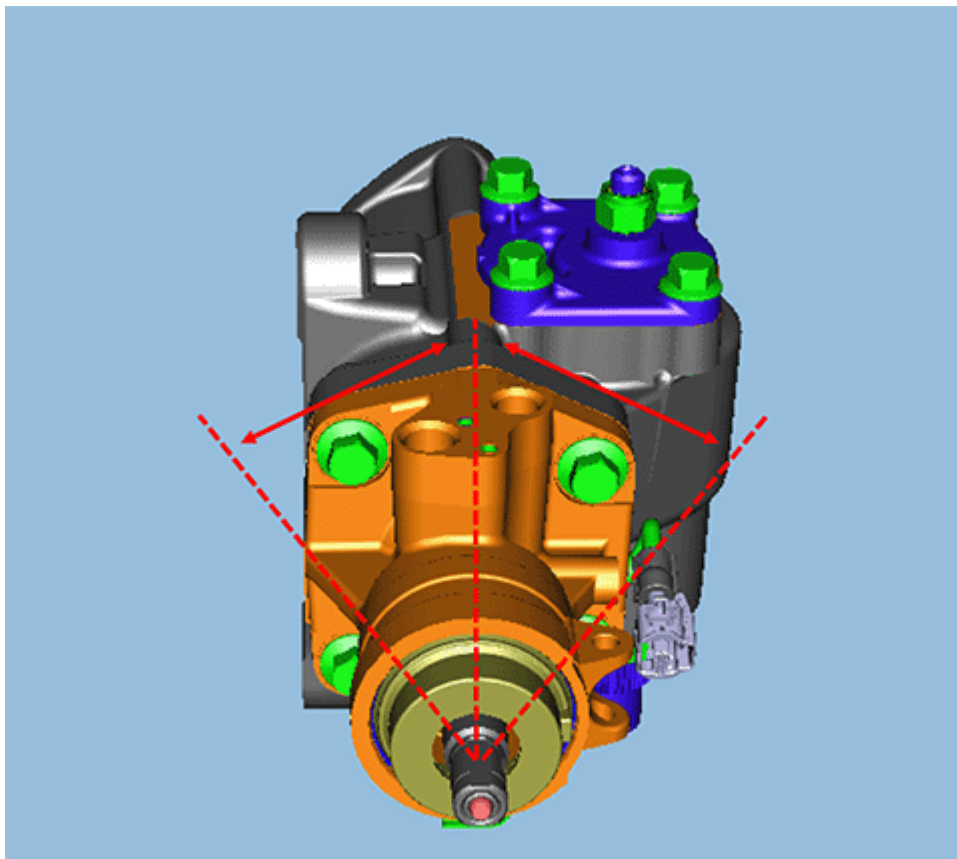
9. Rotate the steering gear input shaft 300 degrees from each side of the center of the input shaft.

The input shaft **MUST** rotate smoothly and must **NOT** stick or bind.

Important

Do **NOT** lay the steering gear on its side when performing this procedure. Doing so will cause torque readings to be incorrect. The steering gear must be mounted so the pitman shaft is vertical.

10. Record the average turning torque from -300 to +300 degree sweep. This value is the "off center friction" torque.
11. The average "off center friction" torque must be 0.4 to 1.1 Nm (4 to 10 in lbs). If the torque is outside this range, replace the steering gear assembly.



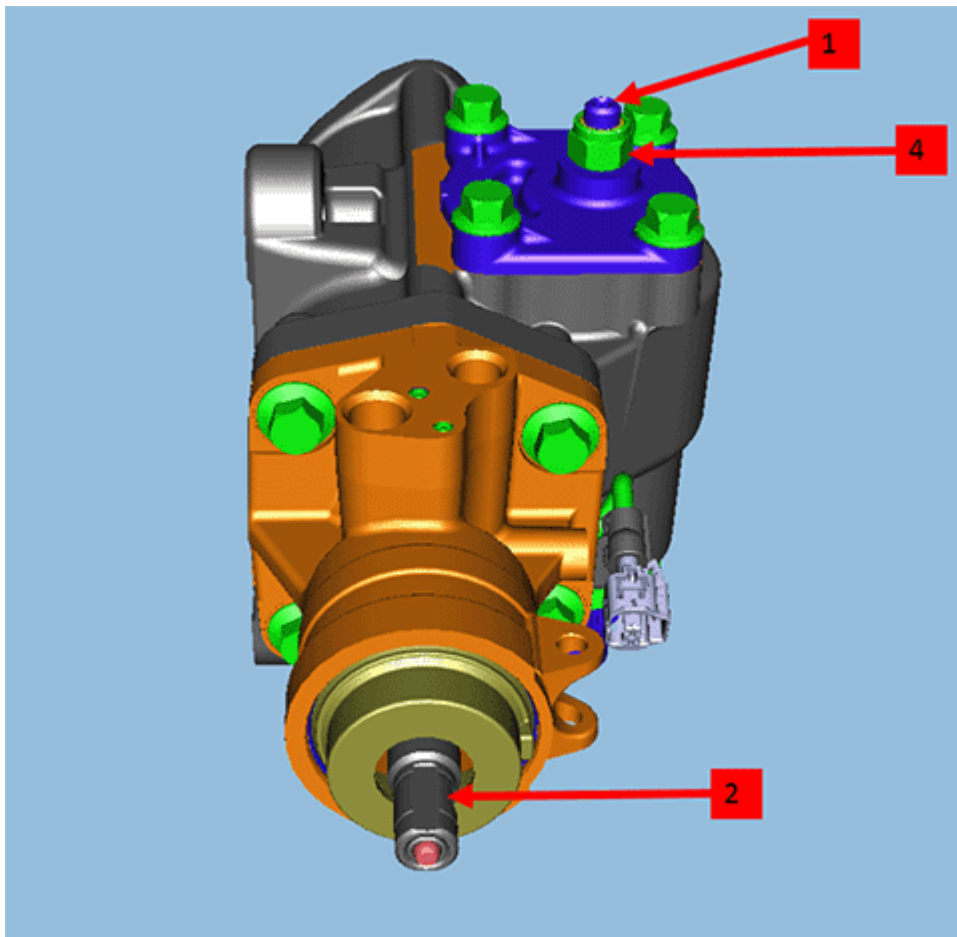
12. Next, adjust the "over center preload" torque.

- Start by ensuring the steering gear is centered, as explained in step 7.
- Check the "over center preload" torque by installing a torque wrench on the steering gear input shaft (2) with the handle in the vertical position and rotate the steering gear input shaft 45 degrees from each side of center of the input shaft, as shown above.
- Adjust the lash adjuster screw (1) until the over center preload torque is 0.65 - 1.1Nm (6 to 10 in lbs) above the "off center friction" torque recorded in step 10.

Important

Do NOT lay the steering gear on its side when performing this procedure. Doing so will cause torque readings to be incorrect. The steering gear must be mounted so the pitman shaft is vertical.

Example, if the recorded value in step 10 was .8 Nm (7 in lbs) then adjust the lash adjuster screw (1) until the over center preload torque is between 1.45 to 1.9 Nm (13 to 17 in lbs).



13. Tighten the steering gear pitman shaft lash adjuster nut (4) to 75-85Nm (55-63 lb ft).

Note

Prevent the steering gear pitman shaft lash adjuster screw (1) from turning while tightening the steering gear pitman shaft lash adjuster nut (4).

14. Reinstall the steering gear and bleed the power steering system, See Important note below.

Important

Correct bolt torque and gear position are very important to steering feel. When installing the steering gear have an assistant push up on the steering gear while tightening the steering gear mounting bolts. Torque the steering gear mounting bolts to 275 NM (203 ft lbs).

15. Measure and adjust the front toe.
16. Reprogram the Power Steering Control module with the latest calibrations in Tis2Web.
17. Using the scan tool perform a Steering Angle Sensor Centering procedure listed in SI (example doc id 3970641).
18. Next, with the ignition ON, engine OFF, steering wheel straight forward and NO steering wheel input, use the scan tool and go into the Power Steering Control Module/ Configuration and Reset Functions and perform a "Power Steering Pressure Sensor Learn".
19. Test drive the truck and make sure the steering wheel is level and the "Steering Wheel Angle" parameter is 0 degrees (+/-3 degrees) the while driving the truck on a flat level straight road at

slower speeds (approximately 25 mph). To view the "Steering Wheel Angle" parameter, using the scan tool and go into the Power Steering Control Module/Data Display

20. Complete test drive to verify customer complaint is corrected.

Warranty Information

For vehicles repaired under warranty use:

7480228*	Inspect For Excessive Steering Gear Lash, Perform GDS2 SAS and Pressure Sensor Relearns	0.7 hr
Add	R and R Steering Gear, Perform Over Center Adjustment, Bleed Power Steering System, Adjust Toe	2.9 hr
Add	If Necessary Reprogram the Power Steering Control Module	0.3 hr

* This is a unique labor operation for bulletin use only. This will not be published in the Labor Time Guide.

Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.