



Service Bulletin

PRELIMINARY INFORMATION

Subject: Steering Feels Loose / Excessive Lash / Fluid Leak At Lash Adjuster (Adjust Steering Gear)

Models: 2016 Chevrolet Silverado 2500/3500
2016 GMC Sierra 2500/3500
With Digital Steering Assist (RPO NV8)

This PI was superseded to update the Condition and Recommendation/Instructions. Please discard PIT5501A.

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

Condition/Concern

Some owners may comment that the steering feels loose, there is excessive play in the steering, and/or a small power steering fluid leak from the steering gear lash adjuster may be noted. These concerns could be caused by an incorrect Pitman Shaft Over-Center Preload Adjustment.

Please have the Service Writer/Service Manager/Quality Control personnel review the following questions with the customer and attach his/her answers to the RO. Engineering is trying to better understand the situation for which dealerships are seeking vehicle repair. In answering the questions, please consider only the vehicle being repaired.

Driving conditions

- On which of the following road types have you driven this vehicle? Please indicate yes to ALL that apply.
 - Have you driven on freeways?
 - Have you driven on city streets?
 - Have you driven on other paved roads?
 - Have you driven on dirt or gravel roads?
- Of these roads types, which have you driven the most?
- Has your driving included off road?
- Have you used this vehicle for towing?
 - If you have used the vehicle for towing, approximately what percent of the total use has involved towing?
 - If you have used the vehicle for towing, what is the item you tow the most?
 - If you have used the vehicle for towing, what is the approximate weight of the item you tow the most?
- Have you used this vehicle to haul cargo in the pickup bed?
 - If you have used the vehicle to haul cargo in the pickup bed, approximately what percent of the use has involved hauling cargo in the pickup bed?
 - If you have used the vehicle to haul cargo in the pickup bed, what is the approximate weight of the heaviest load you have hauled?

Observations

- Approximately how many miles did the vehicle have when you first noticed steering lash?
- Can you describe when, where, and how you first noticed the condition?
- Did the condition seem to progress slowly over time or did it worsen rapidly?

About the vehicle

- What are the wheel / tire size on the vehicle?
- Which of these additions does your vehicle have? Please indicate yes to ALL that apply.
 - Does this vehicle have a lift kit?
 - Does this vehicle have a snow plow?
 - Does this vehicle have a brush-guard?
 - Does this vehicle have aftermarket wheels/tires?
 - Does this vehicle have any other aftermarket modifications to suspension or chassis?
- If this vehicle does have any other aftermarket modifications to suspension or chassis, what are the modifications?

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.

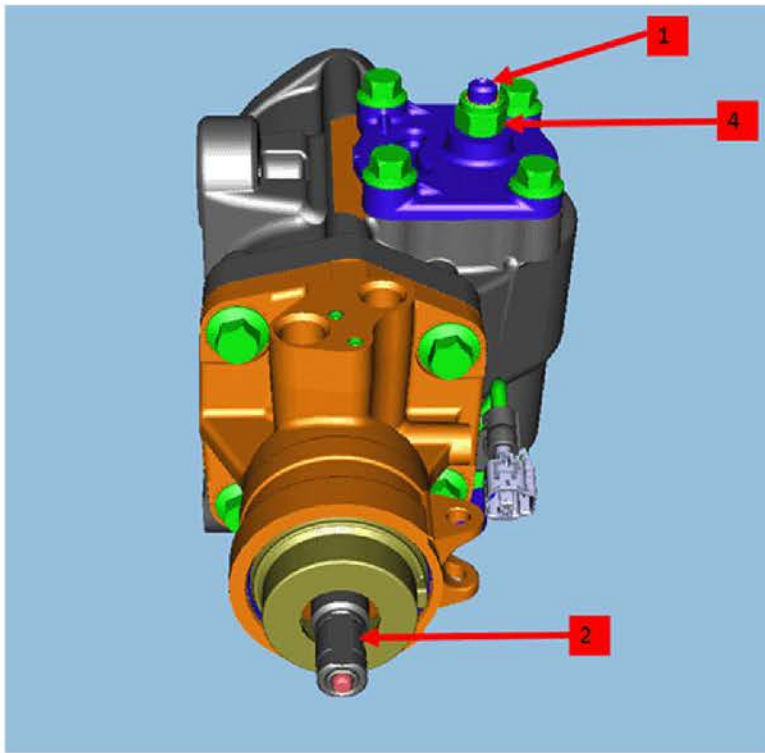
Perform the "Steering Gear Pitman Shaft Over-Center Preload Adjustment" procedure below. SI will be updated shortly with this revised procedure.

It is recommended to review the June 2016 Emerging Issues Video "Steering Gear Over Center Adjustment", before performing the procedure below. Here is the pathing to the video:

- <https://www.centerlearning.com>
- Log in
- Select the "Resources" tab at top and then pick "Service Know How/TECHAssist" from the drop down
- Select "Emerging Issues"
- Select "Searchable Streaming Video"
- Enter "10216.06V" in the Search Video box
- Select the "June 2016 Emerging Issues" video

The steering over center adjustment video is approximately 7 minutes long and starts approximately 35 minutes into the emerging issues video. The video scroll bar can be pulled across to the 35 minute mark and start watching the video from that point. Note: You may not be able to fast forward the video until it is fully loaded.

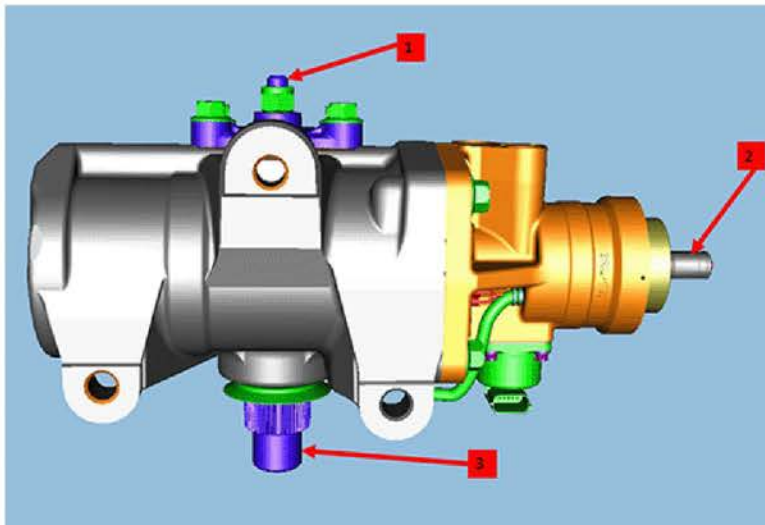
1. Remove the steering gear from the vehicle.



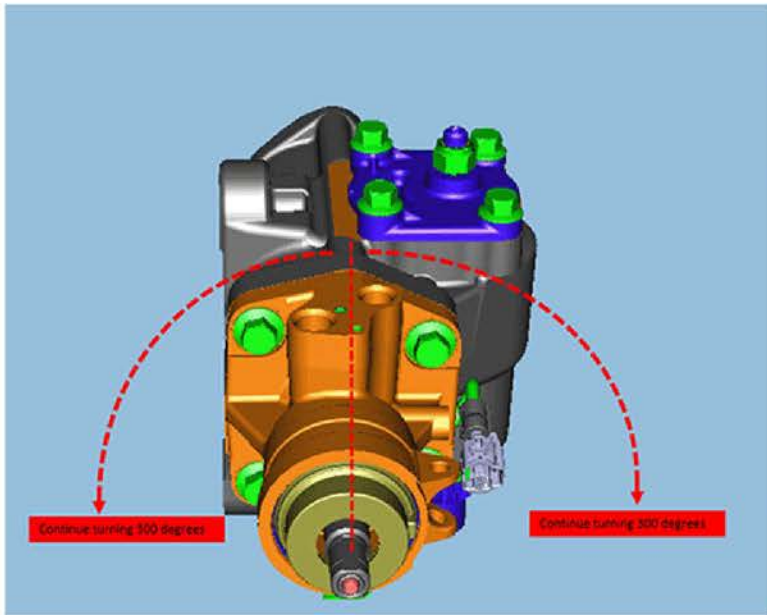
2. Mount the steering gear so the pitman arm shaft is vertical, See important note below. Loosen the steering gear pitman shaft lash adjuster nut (4).

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.

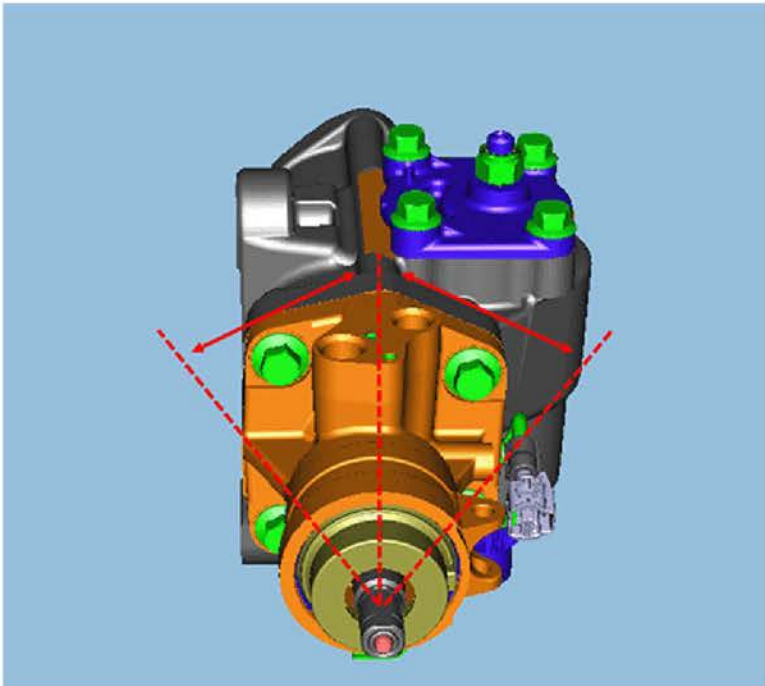
3. Turn the steering gear pitman shaft lash adjuster screw (1) counterclockwise until fully extended.
4. Turn the steering gear pitman shaft lash adjuster screw clockwise 1 full turn.
5. Rotate the steering gear input shaft (2) from stop to stop using a socket designed for the input shaft geometry, or 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.

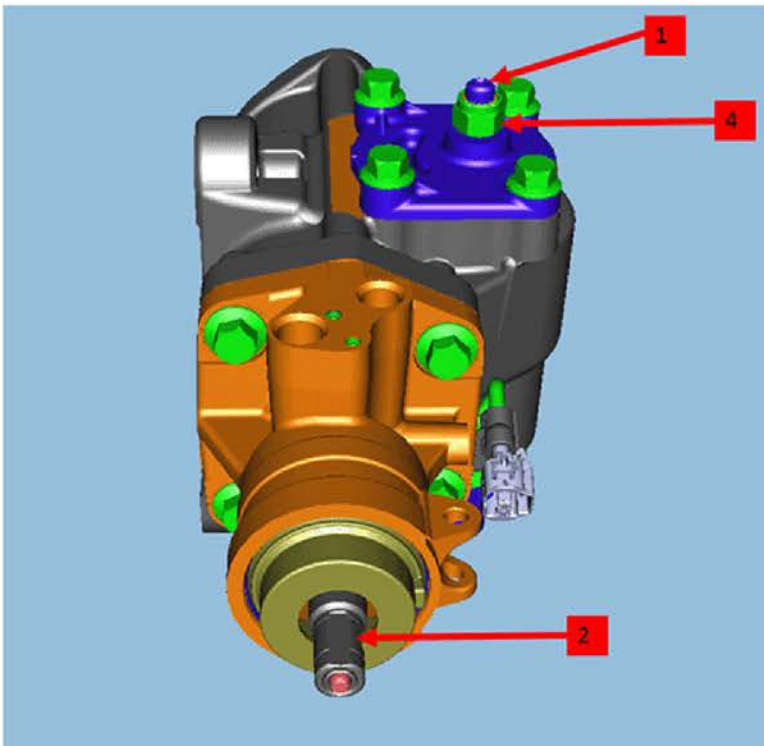


12. Next, adjust the "over center preload" torque.

- 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:

Labor Operation	Description	Labor Time
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.

GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.



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