

< - Back

Forward ->

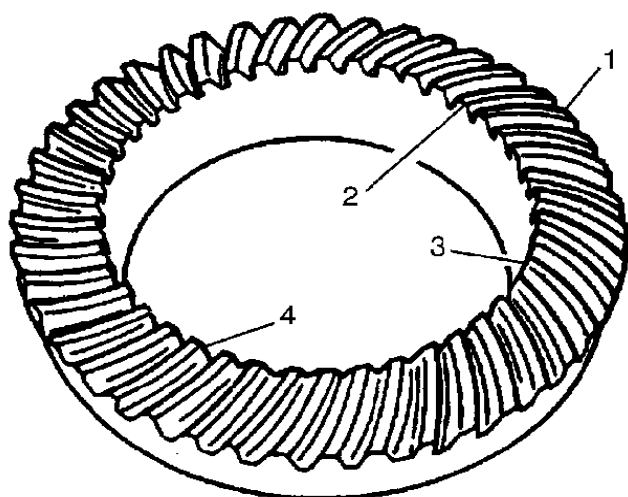
Document ID# 671781
2001 GMC Truck Jimmy - 4WD

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Gear Tooth Contact Pattern Inspection

The contact pattern check is not a substitute for adjusting the pinion depth and backlash. Use this method in order to verify the correct running position of the ring gear and the drive pinion. Gear sets which are not positioned properly may be noisy and/or have a short life. A pattern check ensures the best contact between the ring gear and the drive pinion for low noise and long life.

[Gear Tooth Nomenclature](#)



The side of the ring gear tooth which curves outward, or is convex, is the drive side (4). The concave side is the coast side (3). The end of the tooth nearest the center of the ring gear is the toe end (2). The end of the tooth farthest away from the center is the heel end (1).

[Adjustments Affecting Tooth Contact](#)

The following 2 adjustments affect the tooth contact pattern:

- Backlash adjustment
- Pinion depth adjustment

The effects of bearing preloads are not readily apparent on hand-loaded tooth contact pattern tests. However, bearing preloads should be within specifications before proceeding with backlash and pinion depth adjustments.

Pinion Depth Adjustment

Adjust the position of the pinion by increasing or decreasing the distance between the pinion head and the centerline of the ring gear. Decreasing the distance moves the pinion closer to the centerline of the ring gear. Increasing the distance moves the pinion farther away from the centerline of the ring gear.

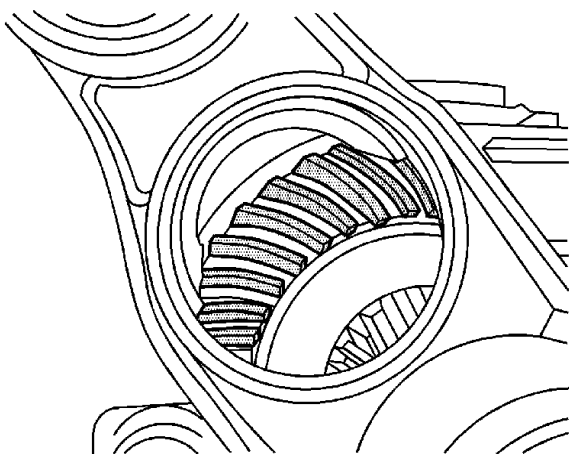
Backlash Adjustment

Adjust the backlash by means of moving the side bearing adjuster sleeves which move the case and ring gear assembly closer to or farther from the pinion. Also use the adjuster sleeves in order to set the side bearing preload.

- If the left side adjuster sleeve is moved in, along with an equal outward movement of the right side adjuster, the backlash will increase.
- If the left side adjuster sleeve is moved out, along with an equal inward movement of the right side adjuster, the backlash will decrease.

Testing Procedure

1. Wipe clean the differential case, the ring gear and the differential carrier housing of lubricant. Carefully clean each tooth of the ring gear.



2. Use a medium stiff brush in order to sparingly apply gear marking compound GM P/N 1052351 (Canadian P/N 10953497) or equivalent to all of the ring gear teeth.

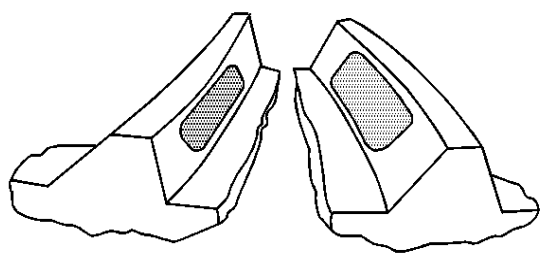
Important

Avoid turning the ring gear excessively.

3. Using a wrench, turn the drive pinion flange/yoke so that the ring gear rotates at least 3 full revolutions.
4. Turn the drive pinion flange/yoke in the opposite direction so that the ring gear rotates at least 3 full revolutions in the opposite direction.
5. Observe the pattern on the ring gear teeth. Compare the pattern with the following illustrations.

Correct Contact Pattern

Condition



The backlash and pinion depth is correct.

Correction

None required.

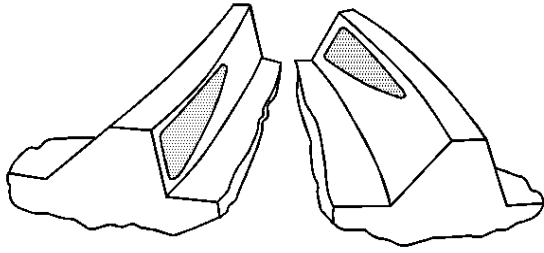
Service Hints

Loose bearing on the drive pinion or in the differential case may cause patterns that vary. If the contact pattern varies, inspect the following preload settings:

- Total assembly
- Differential case
- Drive pinion

If these settings are correct, inspect for damage or incorrectly assembled parts.

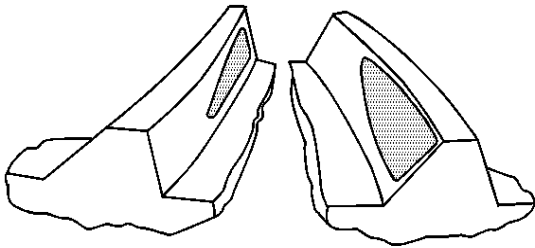
[Drive Side Heel -- Coast Side Toe Contact Pattern](#)

**Condition**

The pinion depth is incorrect. The drive pinion is too far away from the ring gear.

Correction

Adjust the pinion depth of drive pinion. Refer to [Pinion Depth Adjustment](#) .

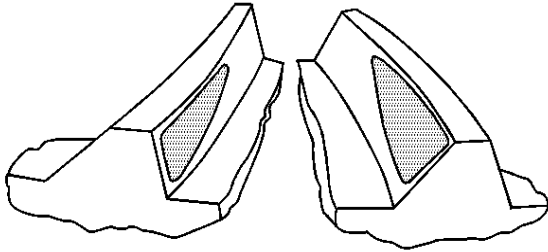
[Drive Side Toe -- Coast Side Heel Contact Pattern](#)**Condition**

The pinion depth is incorrect. The drive pinion is too close to the ring gear.

Correction

Adjust the pinion depth of drive pinion. Refer to [Pinion Depth Adjustment](#) .

[Drive Side Heel -- Coast Side Heel Contact Pattern](#)



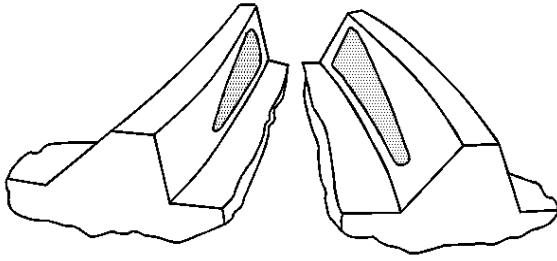
Condition

The backlash is incorrect. The ring gear is too far away from the drive pinion.

Correction

Decrease the backlash. Move the ring gear closer to the drive pinion by adjusting the side bearing adjuster sleeves. Refer to [Backlash Inspection and Adjustment](#) .

[Drive Side Toe -- Coast Side Toe Contact Pattern](#)

**Condition**

The backlash is incorrect. The ring gear is too close to the drive pinion.

Correction

Increase the backlash. Move the ring gear away from the drive pinion by adjusting the side bearing adjuster sleeves. Refer to [Backlash Inspection and Adjustment](#) .

<- Back

Forward ->

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Print