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Service Information Bulletin

SUBJECT	DATE
Model 4 Single - Model 4 Rear Tandem Pinion Bearing Repair	February 2014

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0141	Detroit Axles	Model 4 Single - Model 4 Rear Tandem Pinion Bearing Repair	Removed reference to Loctite 277 and corresponding torque spec,in step 29.

13400 Outer Drive, West, Detroit, Michigan 48239-4001
Telephone: 313-592-5000
www.demanddetroit.com

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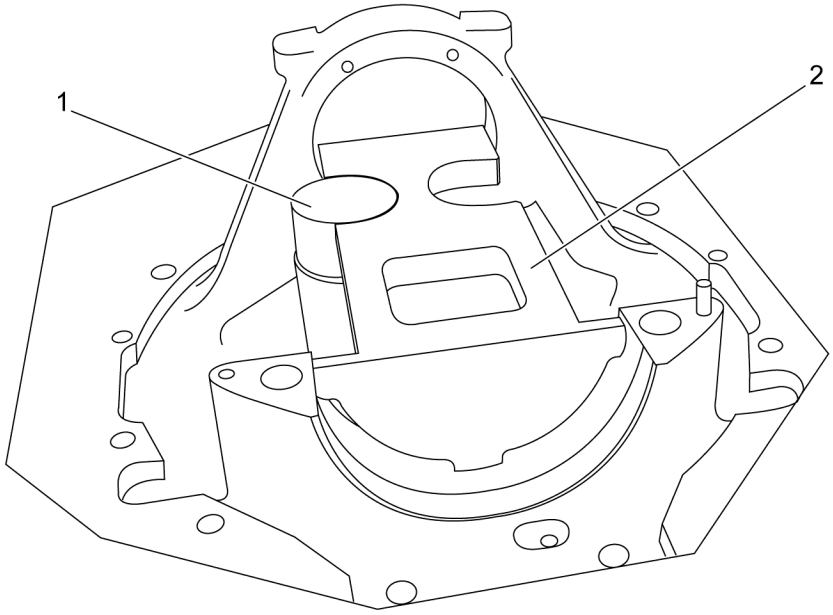
2 Model 4 Single – Model 4 Rear Tandem Pinion Bearing Repair

Repair as follows:

1. Remove the input yoke nut and washer from the carrier.
2. Remove the carrier input yoke from the pinion.
3. Remove the ring gear. Refer to section "Rebuilding of the Differential".
4. Using a suitable press, push out the pinion.

NOTE: Pinion shims are located below the head bearing race.

5. Remove tail bearing.
6. Using a brass drift and hammer, remove the head bearing race (which is the one next to the ring gear), and tail bearing races.
7. Clean all bearing race surfaces.
8. Install “c” dimension tool W420589001902 (1) and W42005890019O1(2). Make sure they are flush against each other.



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9. Install a dial indicator and measure the difference in the heights noted in images below. This difference will be used for step 2 of the below calculation

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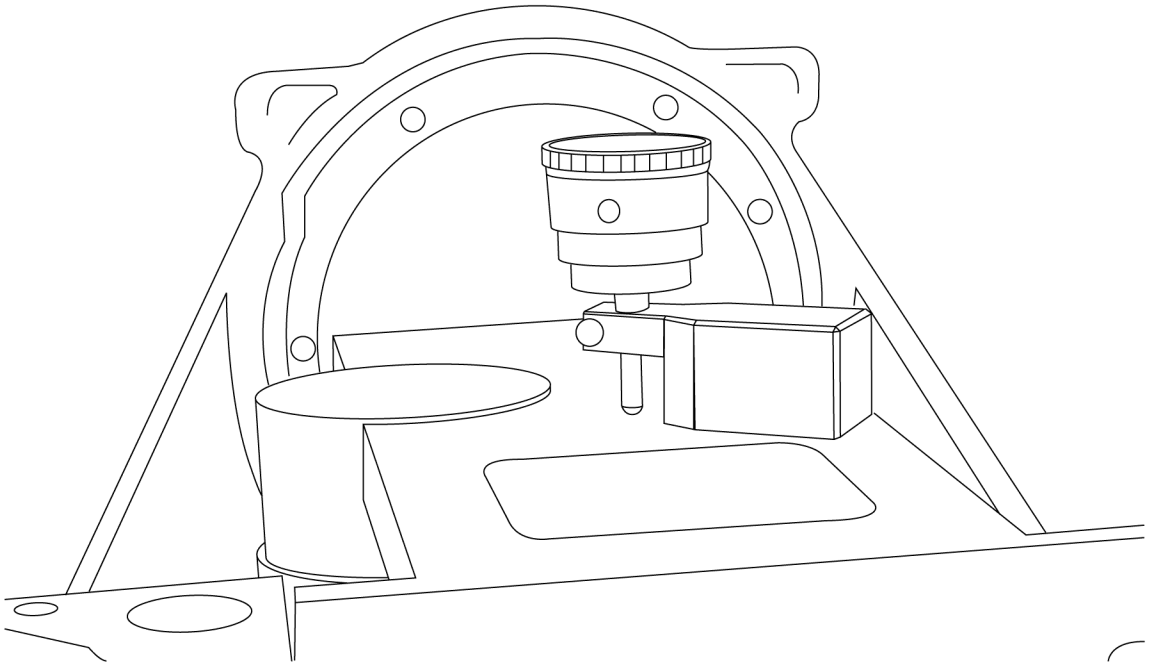
Table 1.

Model 4 FRT Pinion Bearing Calculation		
1.	Tool Dimension (This is the height of the tool)	248.740 mm
2.	Measured Difference	
3.	Equals line 1 minus line 2	
4.	Measured Bearing Height (Measurement provided in parts kit)	
5.	Equals line 3 minus line 4	
6.	Standard Value (This value is constant and does not change)	196.500 mm
7.	Desired Shim Thickness (Equals line 5 minus line 6)	



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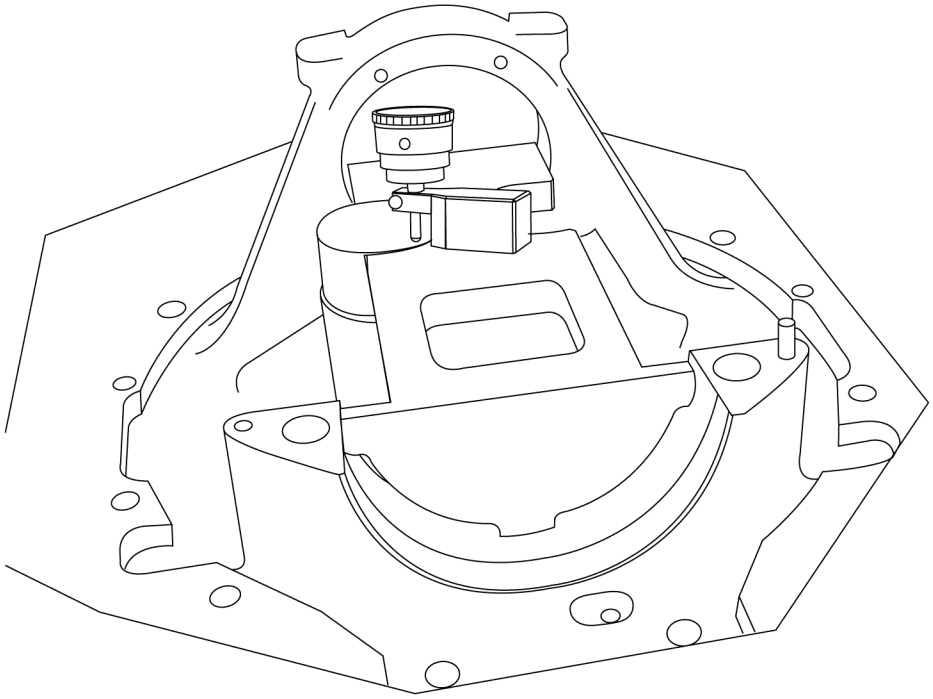

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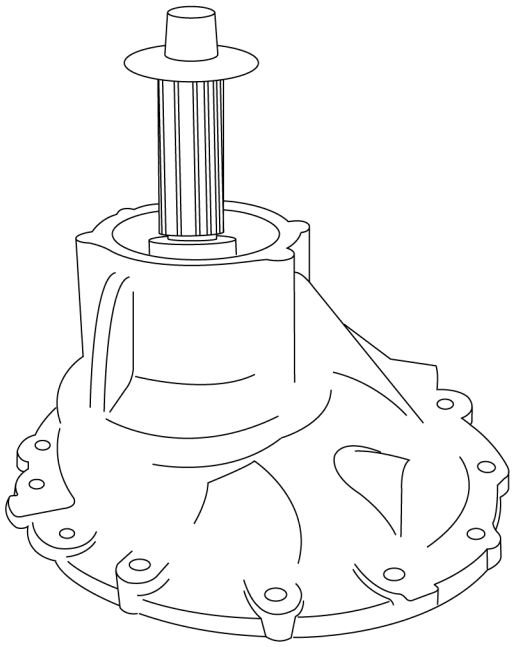
10. Remove all tooling.
11. Using bearing driver W420589001504 along with W420589001502 and a suitable press (or hammer and drift), install a new tail bearing race.



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12. Install shim(s), there may be more than one shim being installed into the head bearing race cavity. If so, install race using W420589001504 along with W420589001502.

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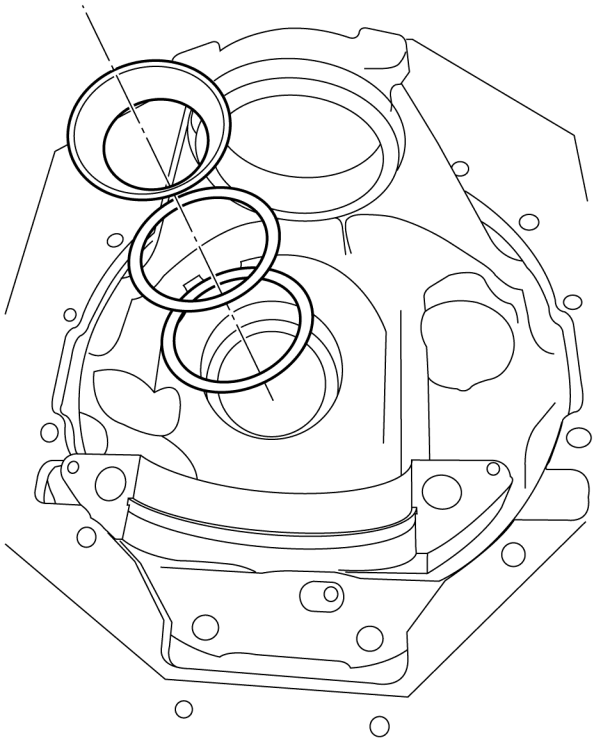

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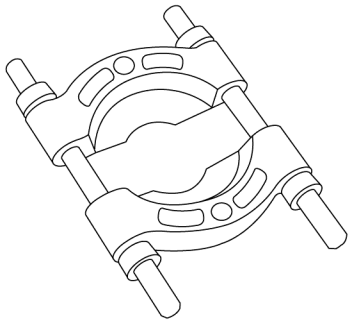
13. Using locally sourced bearing remover, remove old bearing from pinion gear.



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14. Use bearing installer W420589001503, press new pinion head bearing into place.

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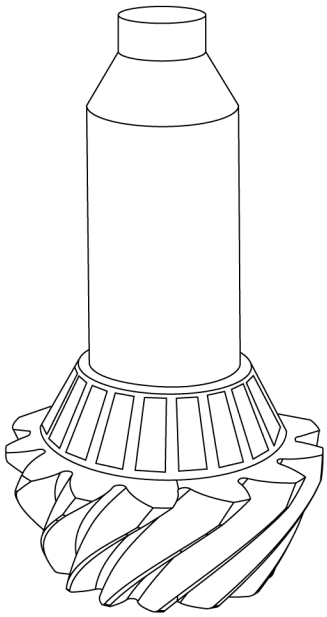

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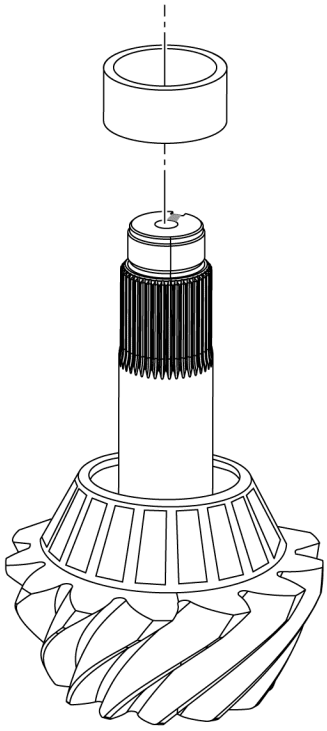
15. Install pinion bearing spacer.



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16. Install temporary shim (2.50 test shim is provided in the kit). Install onto pinion.

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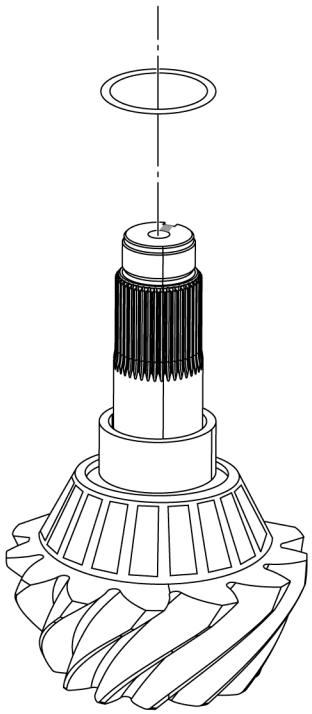

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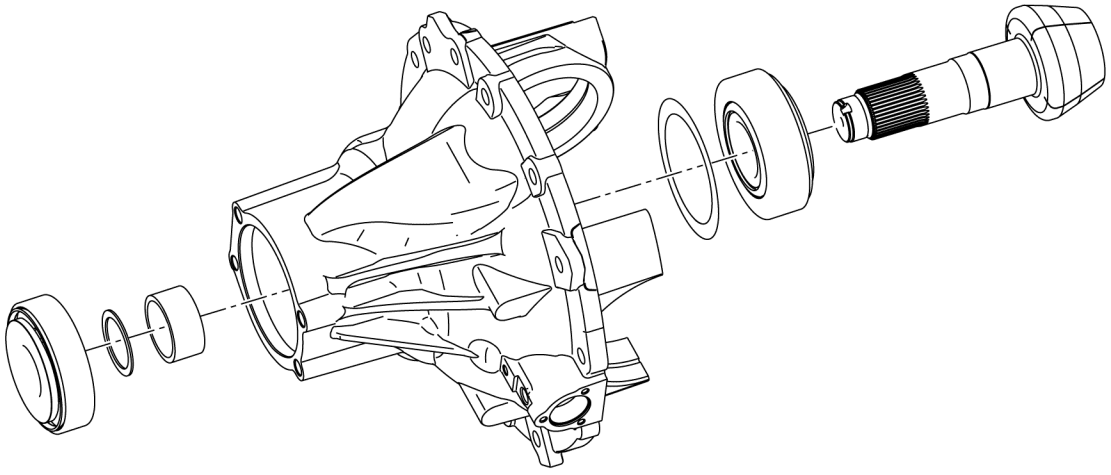
17. Install pinion into carrier. It is necessary to support from the underside.



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18. Using bearing installer W420589001503 and a suitable press, install the tail bearing onto pinion shaft.

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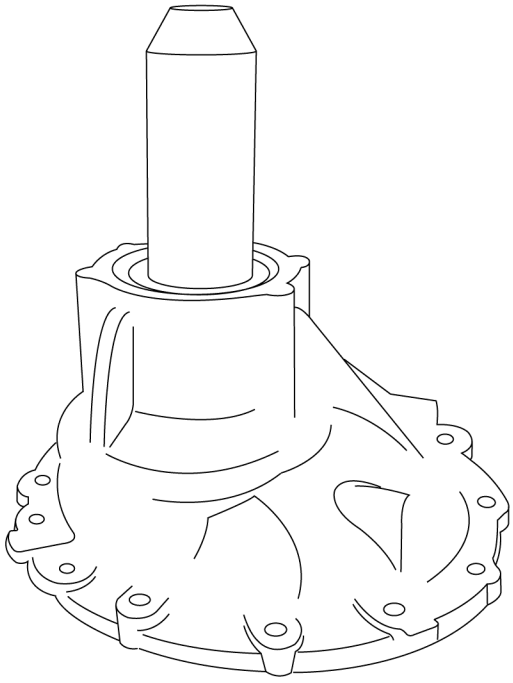

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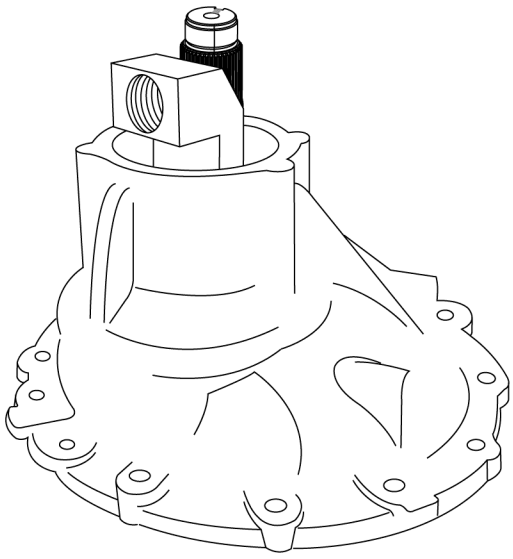
19. Remove bearing installer.
20. Install counterholder.



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21. Install yoke nut measuring device using a 56 mm (2 3/16 in.) 12 point socket; torque to 900 N·m (664 lb·ft).
22. Install push-pull arm.
23. Install dial indicator.

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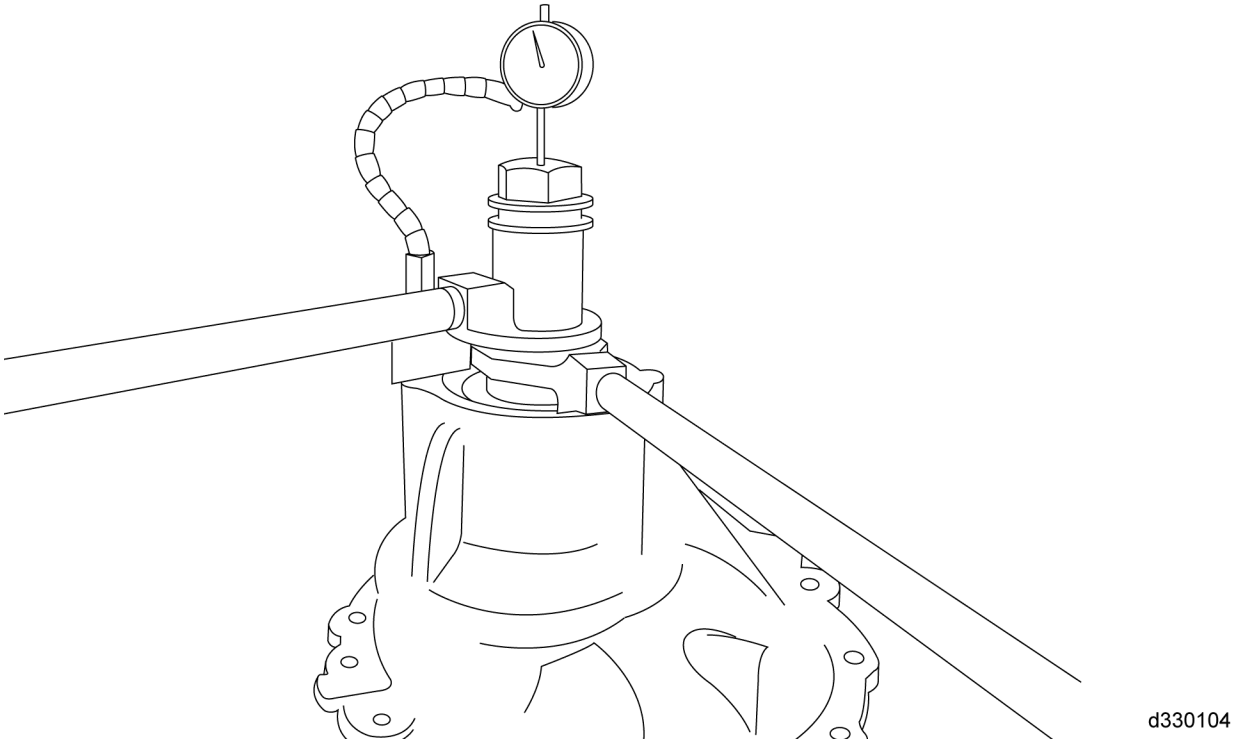

24. Pull down on arm to check end play on pinion. Rotate the pinion several times in order to fully seat the pinion bearings to get an accurate measurement. *Example: Take the end play measurement and subtract that from the size of the shim installed. Our shim was 2.36 mm (0.093 in.). Our end play 0.220 mm (0.0086 in.). For the calculation, subtract 0.05 mm (0.002 in.) – this is a standard value needed to calculate the preload 2.36 mm - 0.22 mm - 0.05 mm (0.093 in. – 0.0086 in. – 0.003 in.). Proper size of tail shim for preload is 2.09 mm (0.082 in.). Verify size of shim with micrometer.*
25. Remove all special tools.
26. Using press, press the pinion back out of the carrier housing.
27. Remove test shim and then install the correct shim based on the measurement above.
28. Supporting pinion from below, guide pinion into housing. Install spacer, then shim onto pinion. Install upper bearing. Using bearing installer tool W420589001503, press bearing back onto pinion shaft.

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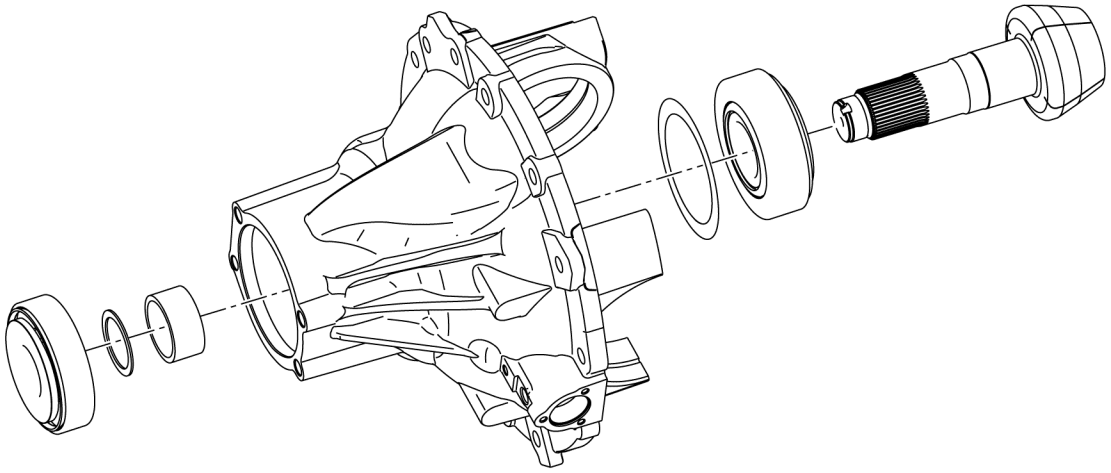

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29. Install pinion nut and torque to 900 N·m (664 lb·ft). Check rotating torque, which should be between 7 and 25 N·m (5.2 and 18.4 lb·ft). If OK, stake the pinion nut. If turning torque is too high, increase shim size. If turning torque is too low, decrease shim size.
30. Reinstall the ring gear. Refer to section "Rebuilding of the Differential".
31. After ring gear installation, it is necessary to check pinion ring gear tooth contact pattern. Apply gear marking compound to 4 to 6 teeth of the ring gear. Cover both the drive and coast side. Rotate the ring gear forward and backward so pinion teeth have been fully engaged with paint marks on ring gear and a contact pattern can be observed. See examples below.

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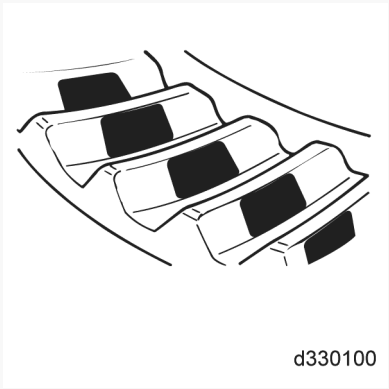
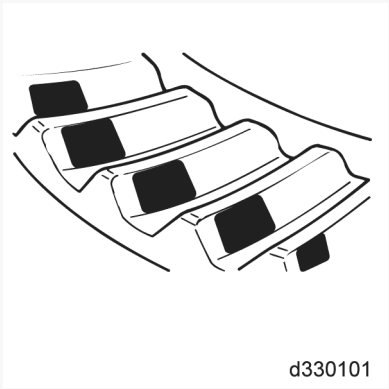
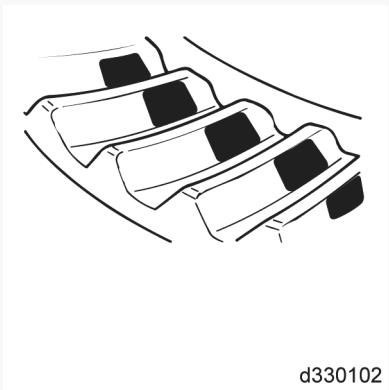
Table 2.

Good Tooth Contact Pattern	 d330100
High Tooth Contact Pattern – increase pinion head shim size	 d330101
Low Tooth Contact Pattern – decrease pinion head shim size	 d330102

32. Using seal installer J-47369, install pinion yoke seal.
33. Install yoke and torque to 900 N·m (664 lb·ft).

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