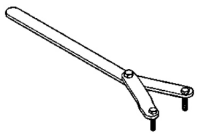
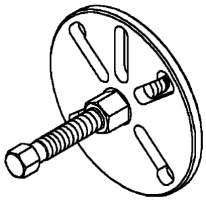
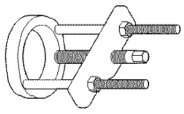
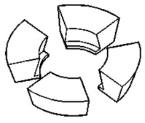
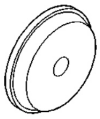
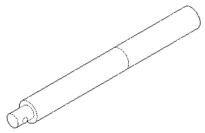
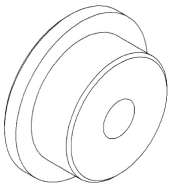
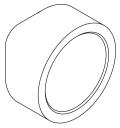
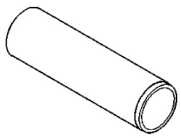
03 - Differential and Driveline/Rear Axle - M220/GEAR, Ring and Pinion/Removal and Installation

REMOVAL AND INSTALLATION

⊞ **Labor Operations:** Click to display a list of Labor Operations associated with this procedure
⊟ **Special Tools:** Click to hide the list of tools used in this procedure

Click here to launch the form to order any tools you need.

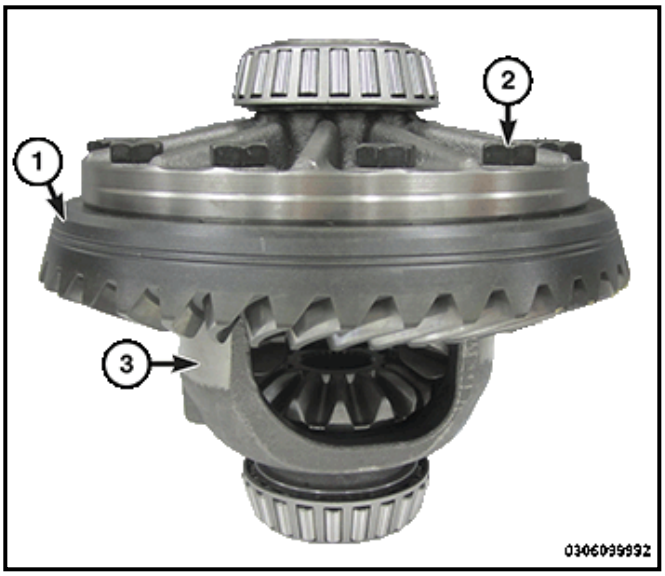
	6958 - Wrench, Spanner Originally Shipped In Kit Number(s) *6947, 6949, 6966, 8204, 8204CC, 8667*.
	8992 - Remover, Pinion Flange Originally Shipped In Kit Number(s) *8999, 8999CC, 9299, 9299CC, 9299CC, 9300A-CAN*.
	C-293-PA - Puller, Press Originally Shipped In Kit Number(s) *8418, 8837, C-293-M*.
	C-293-37 - Block Set, Puller Originally Shipped In Kit Number(s) *8418, 8562, C-293-M, DD-914-CLT-L*.
	D-111 - Installer, Bearing Cup Originally Shipped In Kit Number(s) *9925, 9926*.
	C-4171 - Driver Handle, Universal Originally Shipped In Kit Number(s) *9202, 9202A-CAN, 9202CC, 9299, 9299CC, 9299CC, 9300A-CAN*.
	8960 - Installer, Bearing Cup Originally Shipped In Kit Number(s) *8887, 8887CC*.
	9684 - Installer, Seal Originally Shipped In Kit Number(s) *9656*.

	
	C-3095-A - Installer, Bearing
	2054200030 - Installer, Pinion Flange

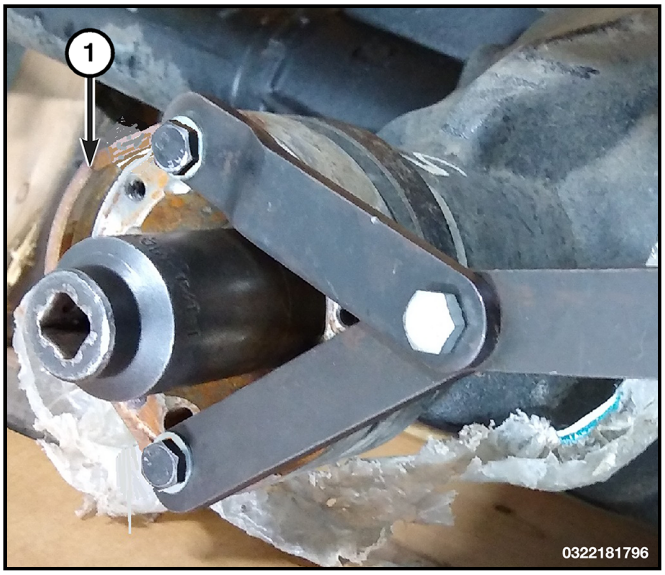
REMOVAL

NOTE:
The ring gear and pinion are serviced as a matched set. Never replace one without replacing the other.

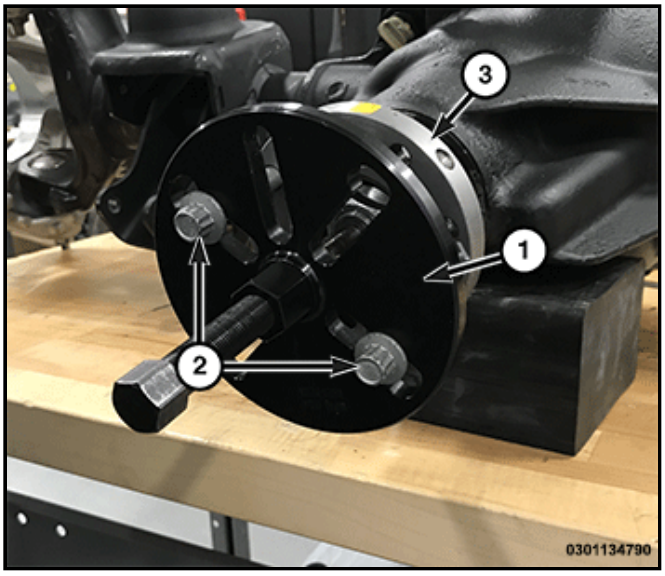
1. Remove the differential case assembly from the differential housing (Refer to 03 - Differential and Driveline/CASE ASSEMBLY, Differential/Removal and Installation) .
2. If equipped, remove the TRU-LOK actuator (Refer to 03 - Differential and Driveline/Rear Axle/ACTUATOR, Axle Locker/Removal and Installation) .
3. Remove the ring gear bolts (2) and the ring gear (1) from the differential case (3).



4. Hold the pinion flange (1) using Wrench, Spanner 6958 and remove the pinion nut and washer.

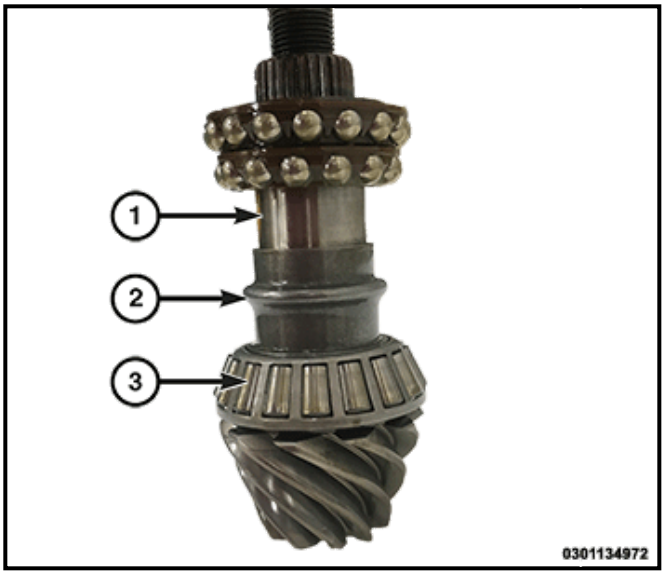


5. Remove the pinion flange (3) using the Remover, Pinion Flange 8992 (1).

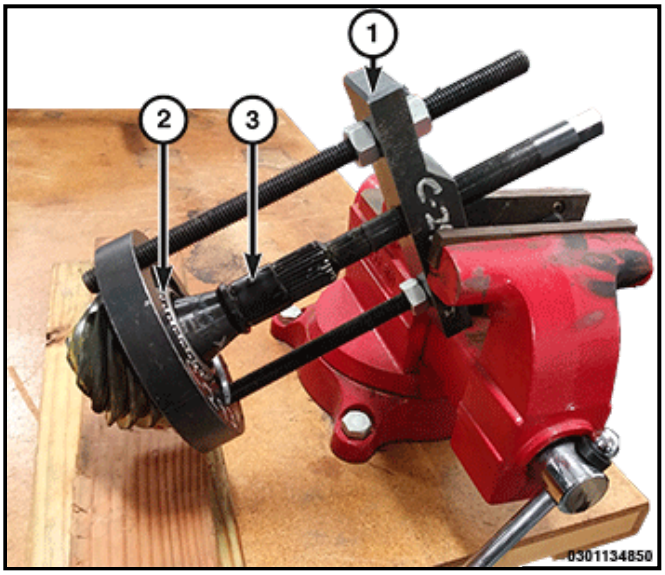


6. Remove the pinion gear from the housing using a dead blow hammer.

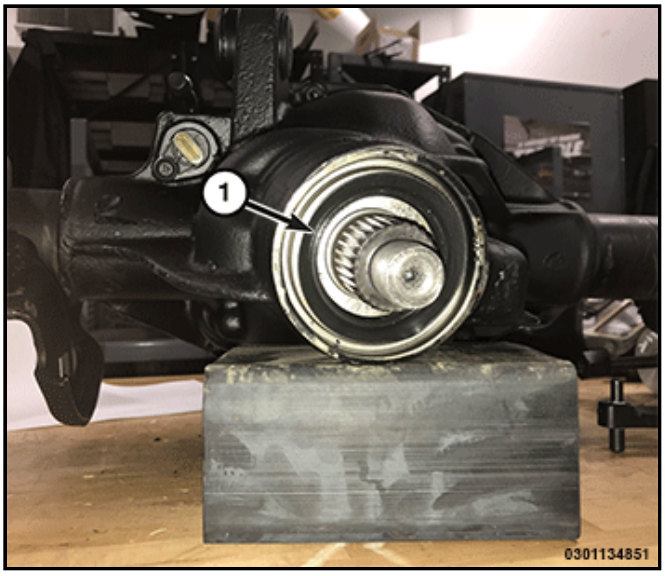
7. Remove the collapsible spacer (2) from the pinion gear shaft (1).



8. Remove the rear pinion bearing (2) from pinion gear shaft (3) using the C-293-PA (1) and Block Set, Puller C-293-37 .

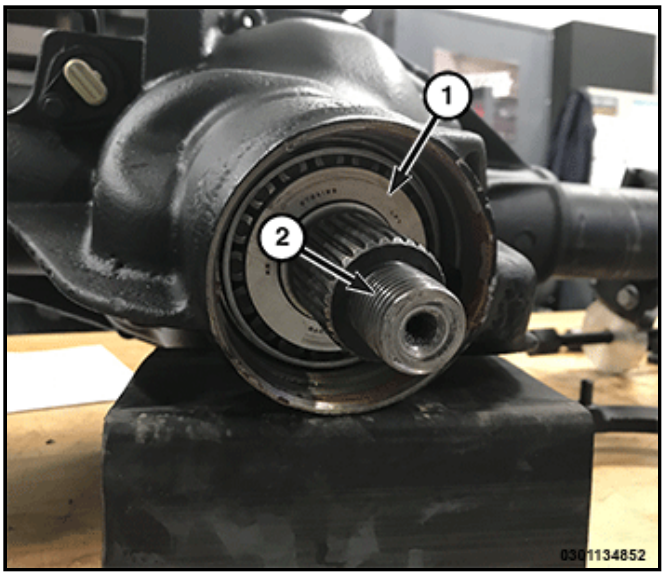


9. Remove the pinion seal (1).



10. Remove the front pinion bearing (1).

NOTE: Pinion gear shaft shown, pinion gear will have been removed in previous steps.



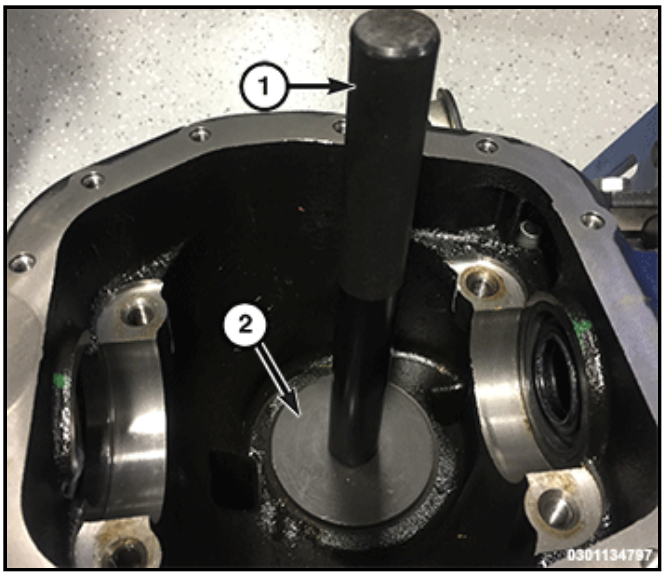
11. Remove the front and rear pinion bearing cups from the differential housing using a brass drift punch.

12. Remove the selectable washer from behind the rear pinion bearing cup.

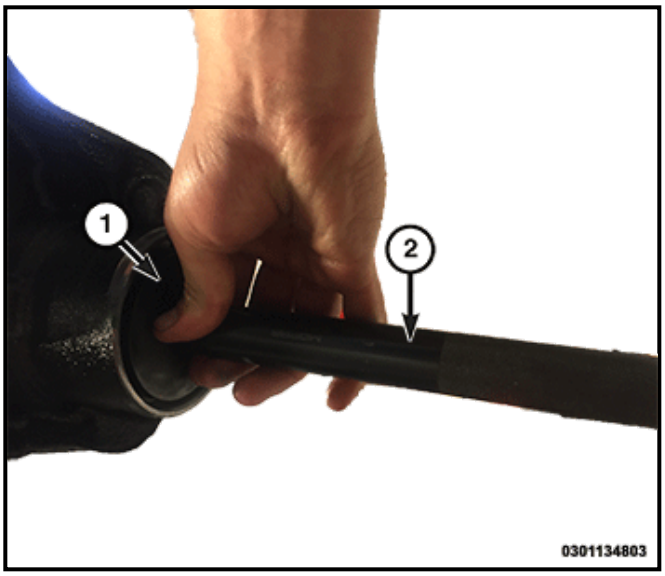
INSTALLATION

NOTE:
If replacing the ring and pinion gears perform the pinion height, differential bearing preload, the backlash and gear contact adjustment procedures (Refer to 03 - Differential and Driveline/Rear Axle/Adjustments) .

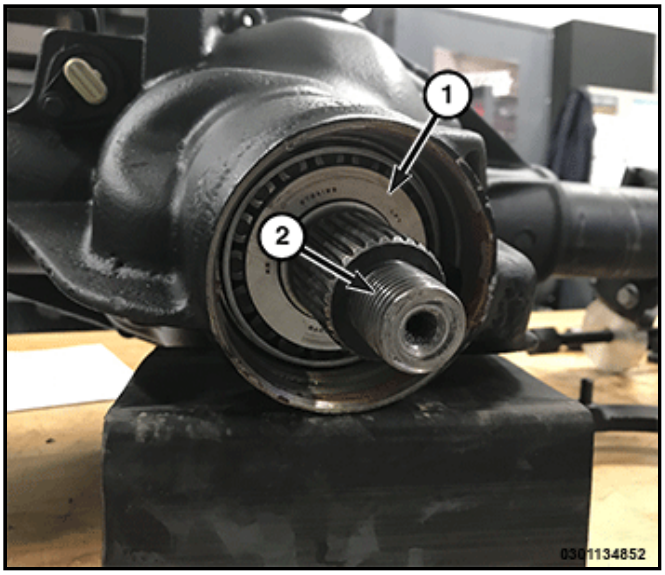
1. Install the selectable washer into the case before installing the rear bearing cup.
2. Install the rear bearing cup using the Installer, Bearing Cup D-111 (2) and Driver Handle, Universal C-4171 (1).



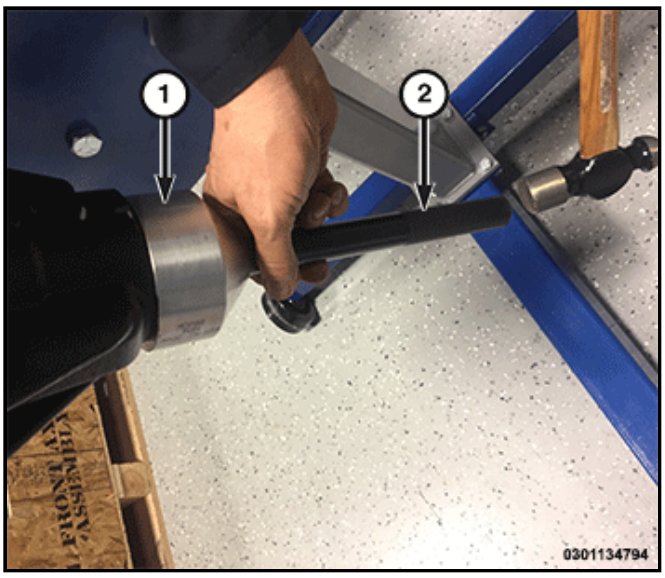
3. Install the front bearing cup using the Installer, Bearing Cup 8960 (1) and Driver Handle, Universal C-4171 (2).



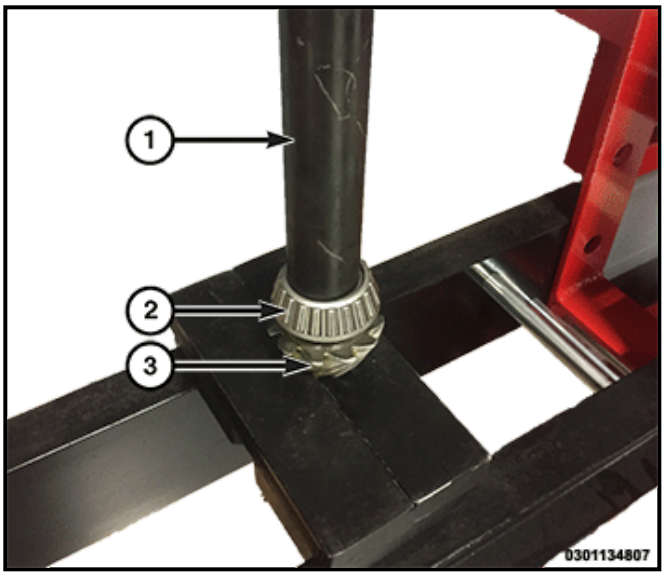
4. Install the front pinion bearing (1).



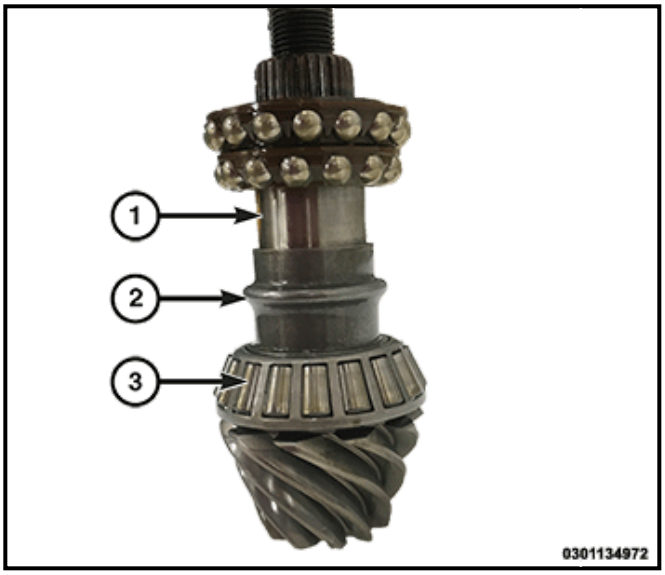
5. Apply a light coating of gear lubricant on the lip of the pinion seal. Install the pinion seal using the Installer, Seal 9684 (1) and Driver Handle, Universal C-4171 (2).



6. Install the rear pinion bearing (2) on the pinion gear (3) using the Installer, Bearing C-3095-A (1) and a press.

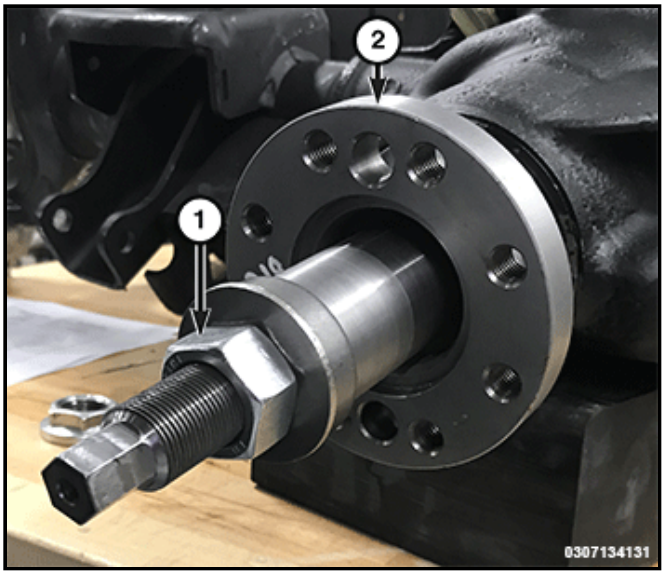


7. Install a **NEW** collapsible spacer (2) on the pinion shaft (1).



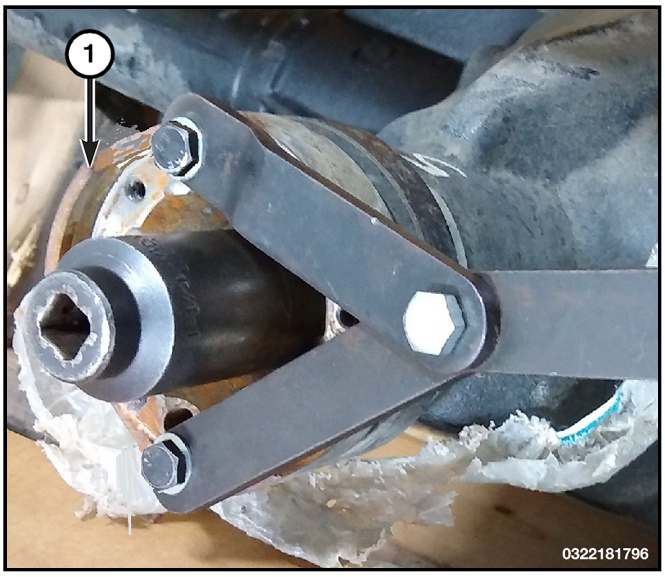
8. Install the pinion gear into the differential housing.

9. Install the pinion flange (2) using the Installer, Pinion Flange 2054200030 (1).



10. Install the pinion washer and a **NEW** pinion nut. Hold the pinion flange (1) with Wrench, Spanner 6958 and tighten the pinion nut to the proper (Torque Specifications) .

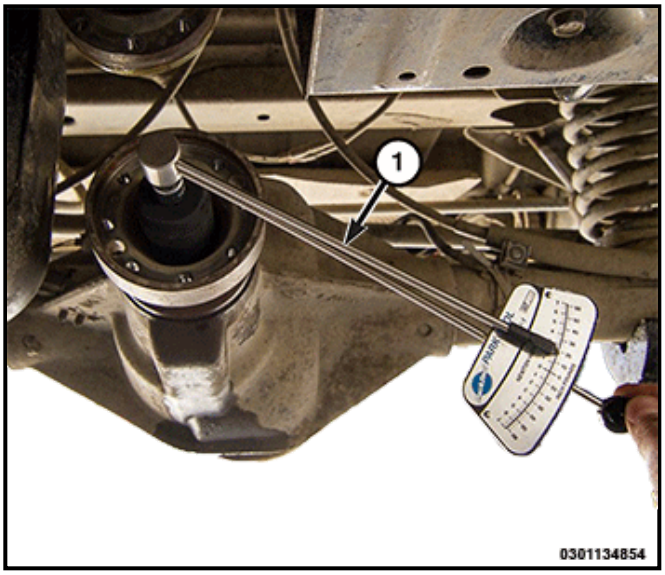
11. Tighten the pinion nut in 6.8 N·m (5 ft. lbs.) increments until the Pinion Torque To Rotate (PTTR) specification is achieved.



12. Measure PTTR after each 6.8 N·m (5 ft. lbs.) increment with an inch pound torque wrench (1). Pinion Torque To

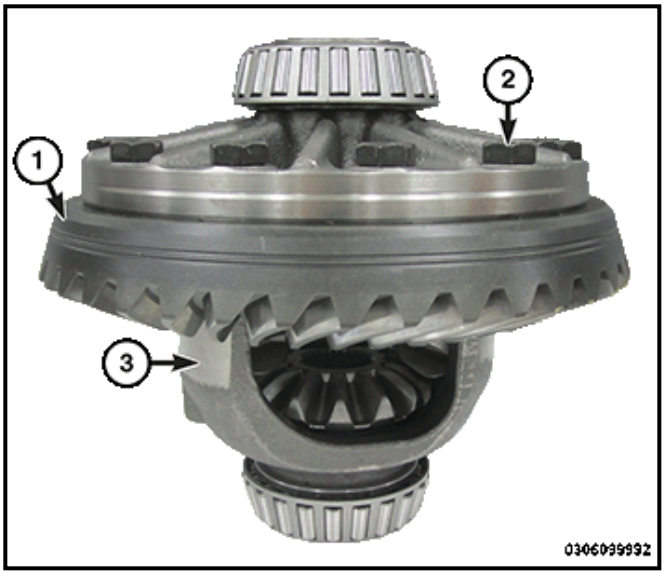
Rotate is:

- **NEW BEARINGS** 1.3 to 2.3 N·m (12 to 20 in. lbs.)

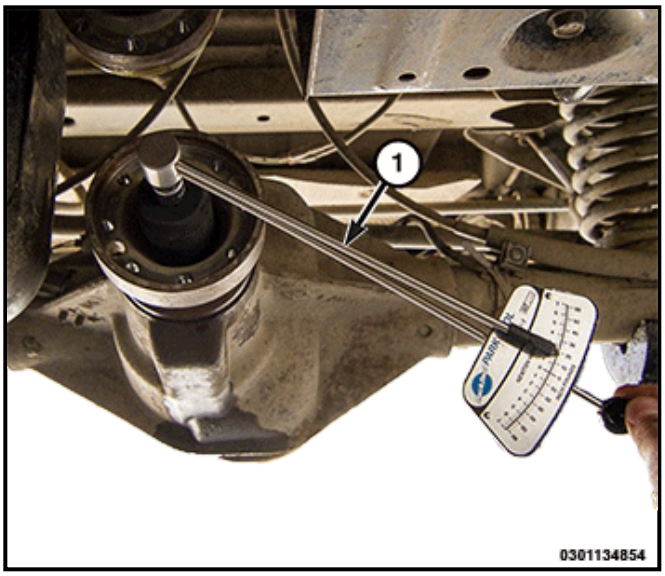


CAUTION:

Never reuse ring gear bolts, the bolts can fracture causing extensive damage. Failure to these instruction may result in damage.



13. Install the **NEW** ring gear bolts (2) and alternately tighten to the proper (Torque Specifications) .
14. For Tru-Loc equipped vehicles, install the Axle Locker Actuator (Refer to 03 - Differential and Driveline/Rear Axle/ACTUATOR, Axle Locker/Removal and Installation) .
15. Install differential case assembly (3) in the differential housing (Refer to 03 - Differential and Driveline/Rear Driveline Module/CASE ASSEMBLY, Differential/Removal and Installation) .
16. Measure the Total Torque To Rotate (TTTR) with an inch pound torque wrench (1) before installing the axle shafts. Total Torque To Rotate is: Pinion Torque To Rotate plus 1.8 - 5.8 N·m (16 - 51 in lbs.).



NOTE:

If TTTR is too high, decrease the washer thickness equally from both sides of the differential and check TTTR again. If TTTR is too low, increase the washer thickness equally to both sides of the differential and check TTTR again.