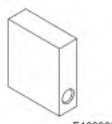
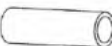
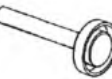
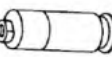


Differential Ring Gear and Pinion

Special Tool(s) / General Equipment

 E139373	100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge
 E234292	205-090 (T75L-1165-B) Plate, Bearing/Oil Seal
 E234293	205-092 (T75L-1165-DA) Installer, Rear Axle Bearing/Oil Seal
 E234294	205-098 (T75T-1176-A) Drawbar, Rear Axle
 E232970	205-1019 Dummy Pinion Bearing
 E232972	205-1021 Protector, Pinion Thread
 E232974	205-1023 Installer, Inner Pinion Bearing Cup
 E232975	205-1024 Installer, Outer Pinion Bearing Cup
 E234302	205-129 (T79P-4020-A18) Disc, Gauge
 E133913	205-153 (T80T-4000-W) Handle
 E169395	205-159 (T80T-4020-F42) Adapter for 205-S156 Pinion Depth Gauge T98T-1000-LM-1 TKIT-1998-LM (Navigator)
 E169394	205-160 (T80T-4020-F43) Adapter for 205-S156 Pinion Depth Gauge

 205-241	205-241 (T86P-3514-A) Remover, Halfshaft T86P-1000-S TKIT-2009TC-F TKIT-1986-F
 E238613	205-281 (T88T-4020-B) Depth Gauge/Aligner, Drive Pinion (Handle) TKIT-1988-FLM TKIT-1988-F
	205-424 Installer, RH Differential Carrier Oil Seal (Dana 50) TKIT-1999-F/FLM/LT
 E131849	205-425 Installer, Differential Carrier Seal LH TKIT-1999-F/FLM/LT
 E238639	205-428 Spreader Bar, Oil Seal TKIT-1999-F/FLM/LT
 E238640	205-430 Collets, Differential Carrier Bearing TKIT-1999-F/FLM/LT
 E238641	205-431 Retaining Ring, Differential Carrier Bearing TKIT-1999-F/FLM/LT
 E238643	205-432 Step Plate, Differential Carrier Bearing TKIT-1999-F/FLM/LT
	205-D012 (D80L-630-1) Step Plate
	205-D033 (D80T-4020-F48) Gauge Tube (3.8135)
	205-D044 (D81T-4221-A) Installer, Differential Carrier Bearing
	205-D047 (D81T-4222-DR) Set, Dummy Bearing
 E231410	308-047 (T77F-1102-A) Remover, Bearing Cup
	308-052 (T77J-7025-B) Remover/Installer, Bearing Tube
	308-092 (T84T-7025-B) Removal Screw, Bearing Tube TKIT-1984-F TKIT-1984-FLM TKIT-1984-LM
Dial Indicator	

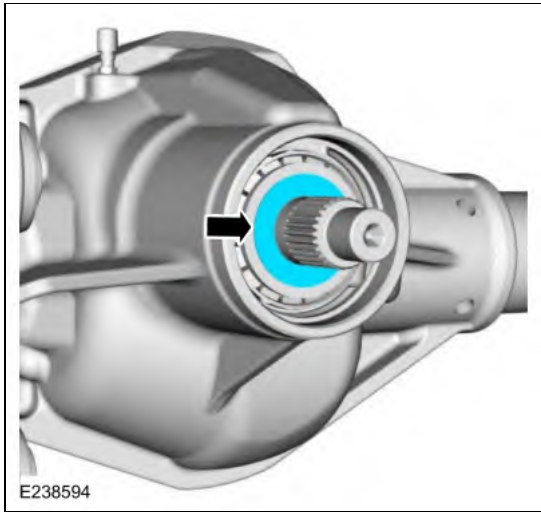
Hydraulic Press
Punch
Copper Hammer
Bearing Separator
Vise

Materials

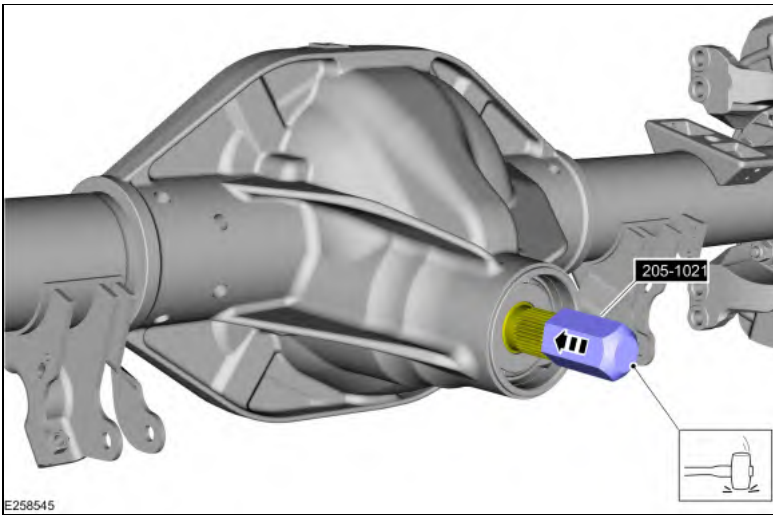
Name	Specification
Motorcraft® High Performance Engine RTV Silicone TA-357	WSE-M4G323-A6

Removal

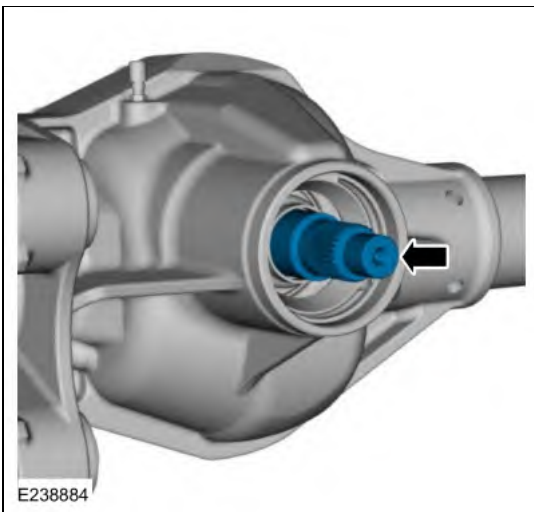
1. Remove the differential carrier.
Refer to: Differential Carrier (205-03 Front Drive Axle/Differential, Removal and Installation).
2. Remove the drive pinion flange and seal.
Refer to: Drive Pinion Flange and Seal (205-03 Front Drive Axle/Differential, Removal and Installation).
3. Remove the outer drive pinion oil slinger.



4. Using the special tool and a soft face mallet, tap the drive pinion free of the of the drive pinion outer bearing.
Use Special Service Tool: 205-1021 Protector, Pinion Thread.



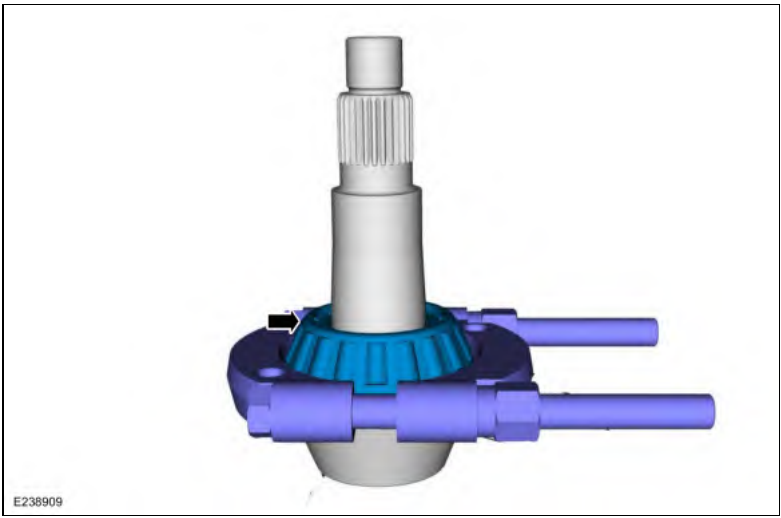
5. Remove the pinion through the rear of the differential housing



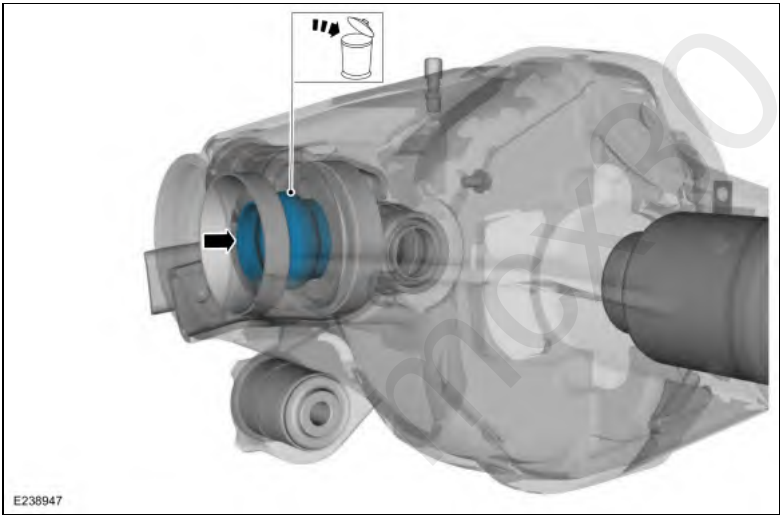
6. Remove the outer drive pinion bearing.



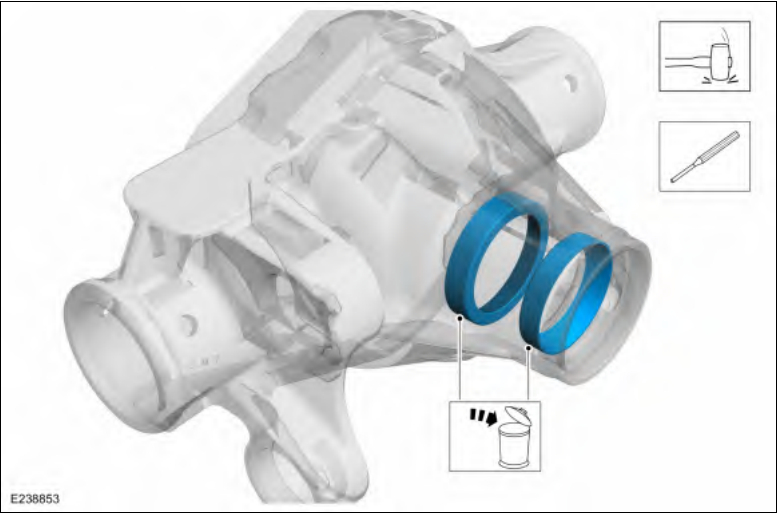
7. Using the general equipment, remove the inner drive pinion bearing.
Use the General Equipment: Bearing Separator



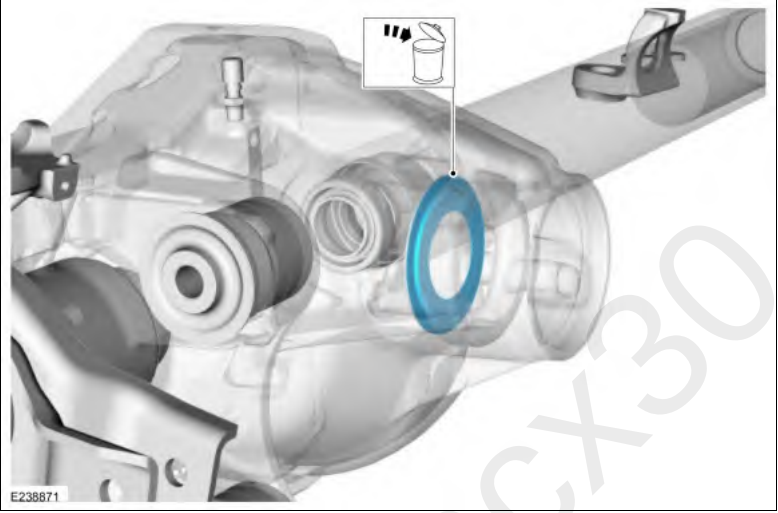
8. Remove and discard the drive pinion collapsible spacer.



9. Using the general equipments, remove and discard the drive pinion inner and outer bearing cups.
Use the General Equipment: Copper Hammer
Use the General Equipment: Punch



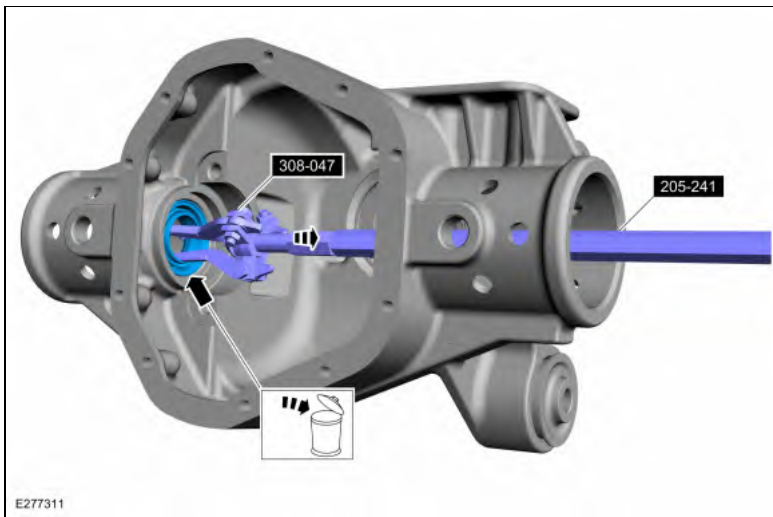
10. If necessary, remove and discard the drive pinion oil baffle.



11. **NOTE:** Left side shown, right side similar.

Using a special tool, drive the inner axle shaft oil seal out of the differential housing from the axle tube. Discard the seal.

Use Special Service Tool: 308-047 (T77F-1102-A) Remover, Bearing Cup. , 205-241 (T86P-3514-A) Remover, Halfshaft.

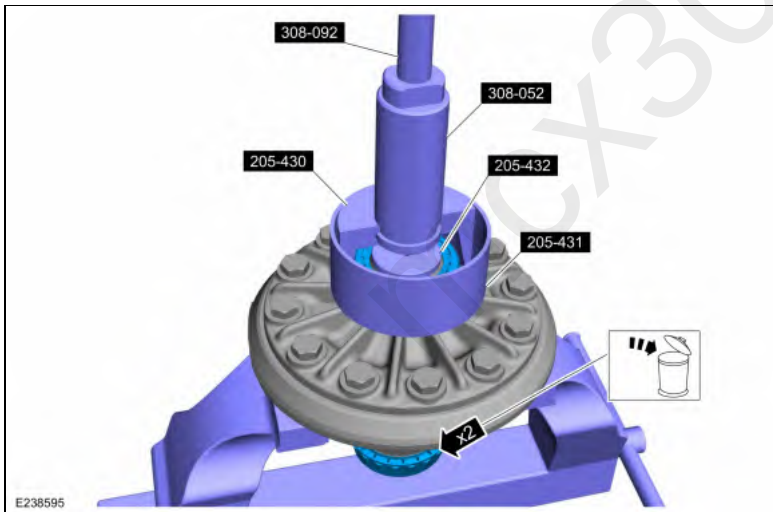


12. **NOTE:** Place the component in the vise.

Using the special tools, remove and discard the differential bearings.

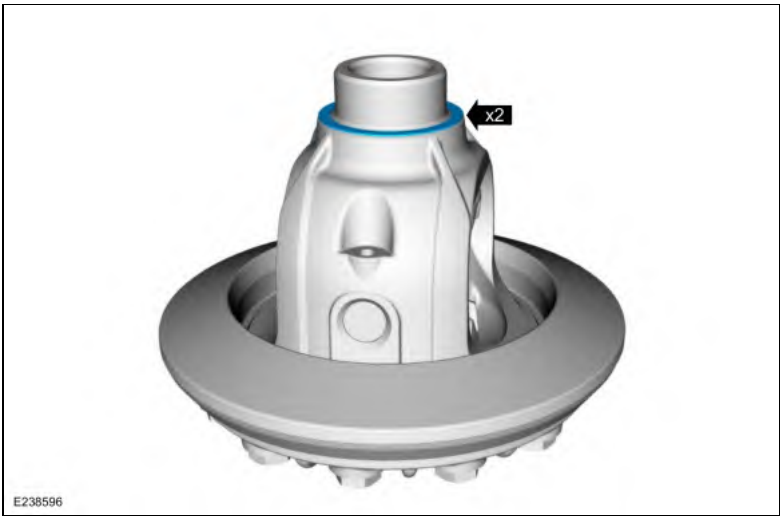
Use Special Service Tool: 205-430 Collets, Differential Carrier Bearing, , 205-431 Retaining Ring, Differential Carrier Bearing, , 205-432 Step Plate, Differential Carrier Bearing, , 308-052 (T77J-7025-B) Remover/Installer, Bearing Tube, , 308-092 (T84T-7025-B) Removal Screw, Bearing Tube.

Use the General Equipment: Vise

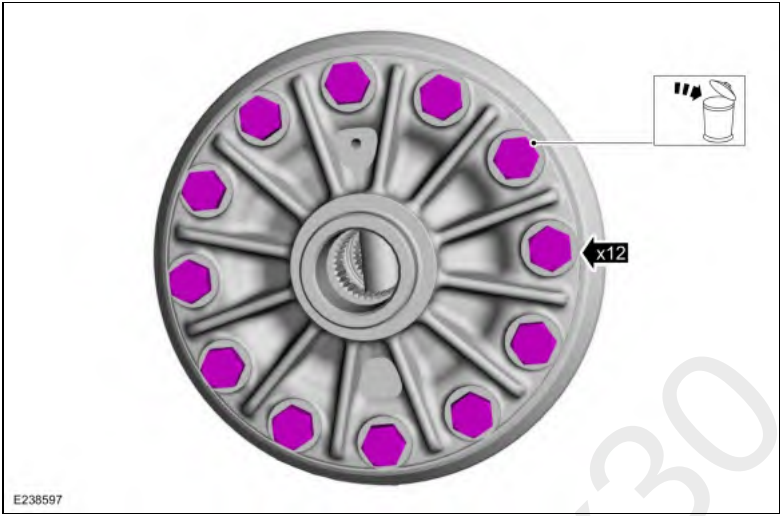


13. **NOTE:** Wire the shims together and mark from which side they were removed.

Remove the differential bearing shims.

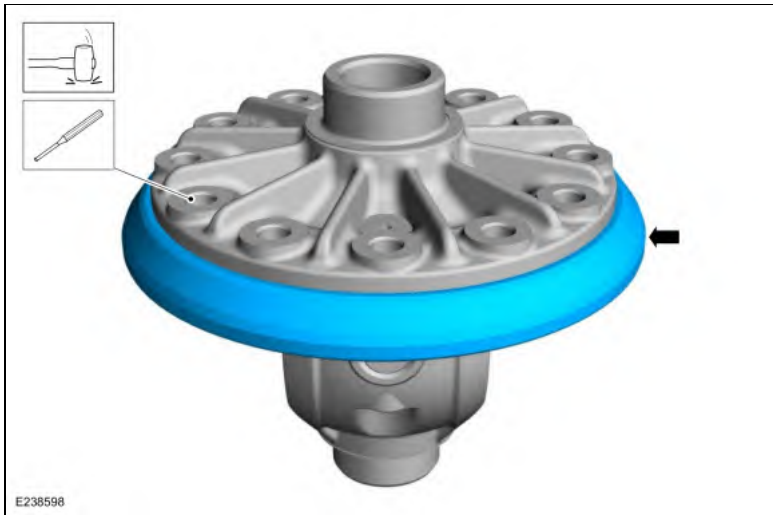


14. Remove and discard the ring gear bolts.



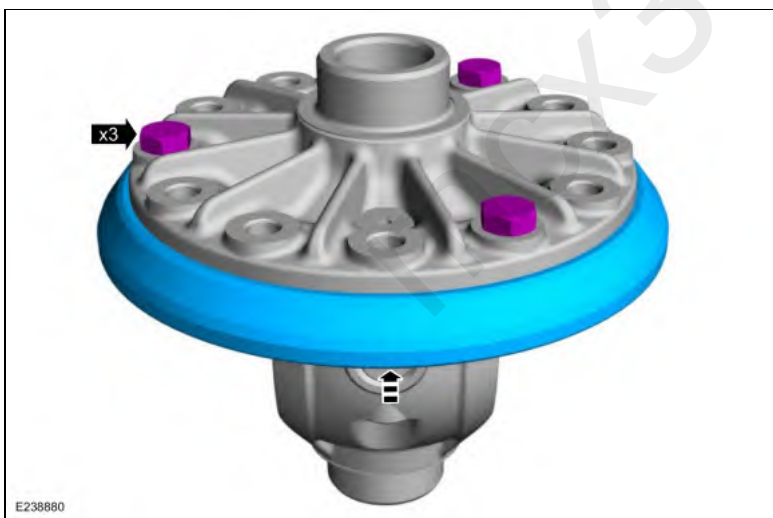
15. **NOTICE:** Care should be taken not to damage the differential ring gear bolt hole threads.

Using the general equipments, separate the ring gear from the differential case.
Use the General Equipment: Copper Hammer
Use the General Equipment: Punch



Installation

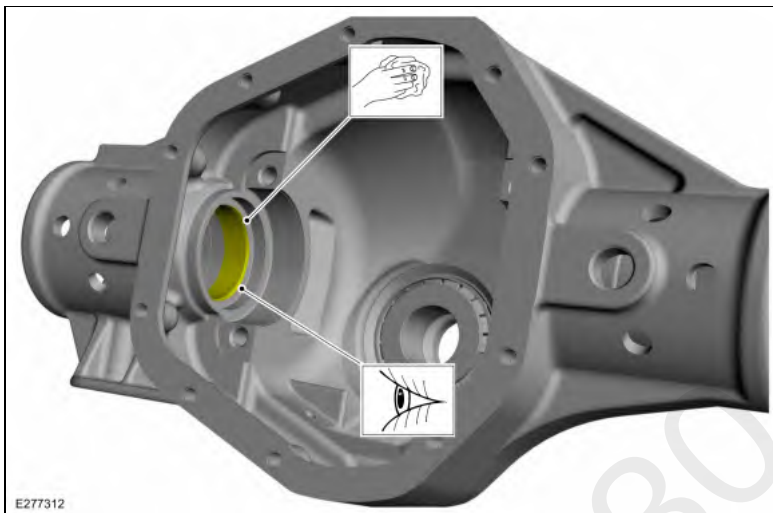
1. Install the ring gear onto the differential carrier. Align the ring gear using 3 new bolts. Using the general equipment: press the ring gear into place.
Use the General Equipment: Hydraulic Press



2. Install the remaining new ring gear bolts.
Torque: 159 lb.ft (215 Nm)



3. Clean and inspect the differential inner oil seal surface.

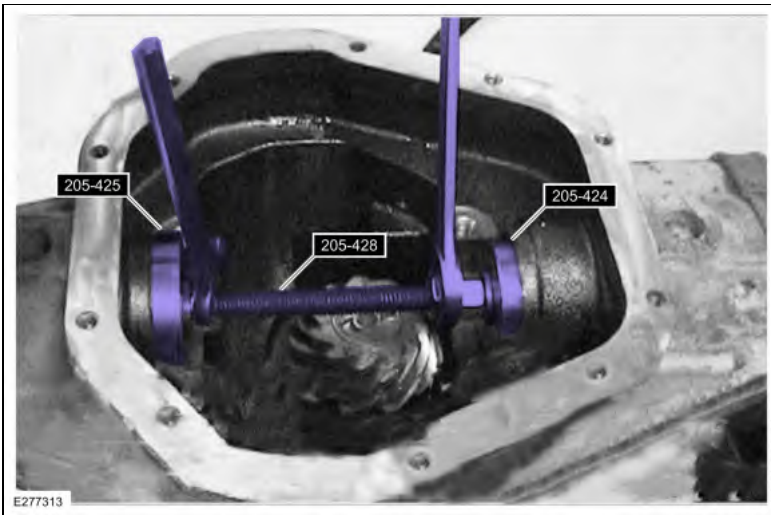


4. **NOTE:** To ease installation, coat the seal axle tube mating surfaces with lubricant.

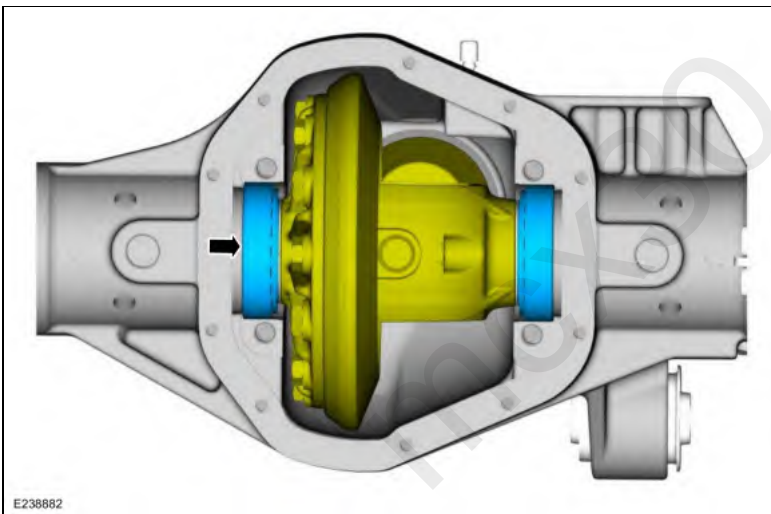
NOTE: The inner axle shaft oil seals are installed with the black rubber lip towards the center of the axle housing.

Using the special tools, install the axle shaft oil seals.

- Place the axle shaft oil seals onto the Installers and position the assembly into the differential housing. Lengthen the Spreader Bar as necessary until both seals start evenly in the axle tubes. Continue to lengthen the tool until both step plates bottom out against the housing.
Use Special Service Tool: 205-424 Installer, RH Differential Carrier Oil Seal (Dana 50) , 205-425 Installer, Differential Carrier Seal LH. , 205-428 Spreader Bar, Oil Seal.

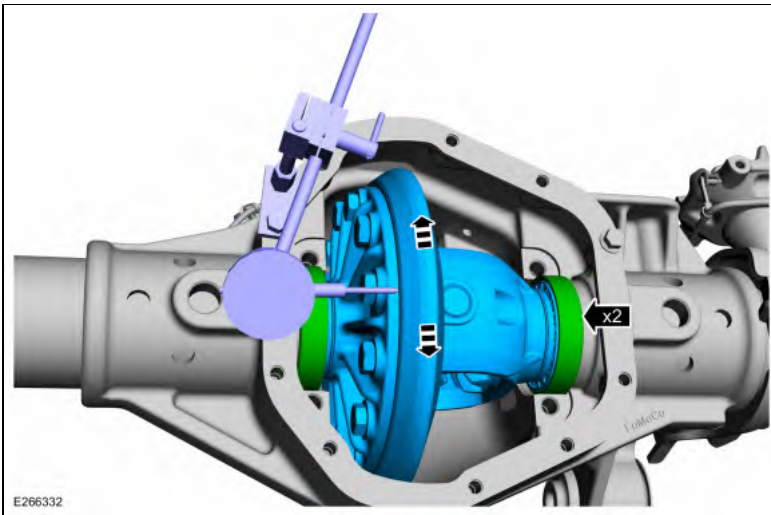


5. Place the Dummy Bearing Set on the differential case hubs and position the assembly into the differential housing.
Use Special Service Tool: 205-D047 (D81T-4222-DR) Set, Dummy Bearing.



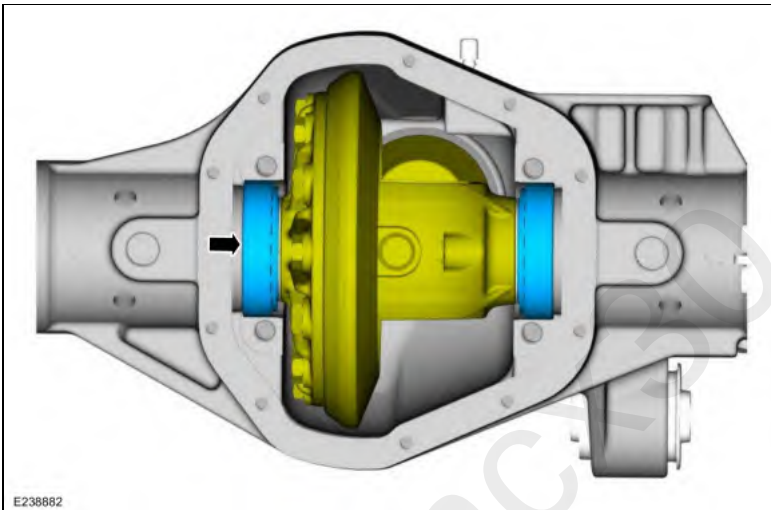
6. **NOTE:** Repeat this step until there is a consistent reading.

Force the differential case as far as possible toward the Dial Indicator Gauge with Holding Fixture and Clutch Housing Gauge. With force applied, set the Dial Indicator Gauge at 0. Force the differential case as far as it will go in the opposite direction. Record the total differential case end play reading.
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.

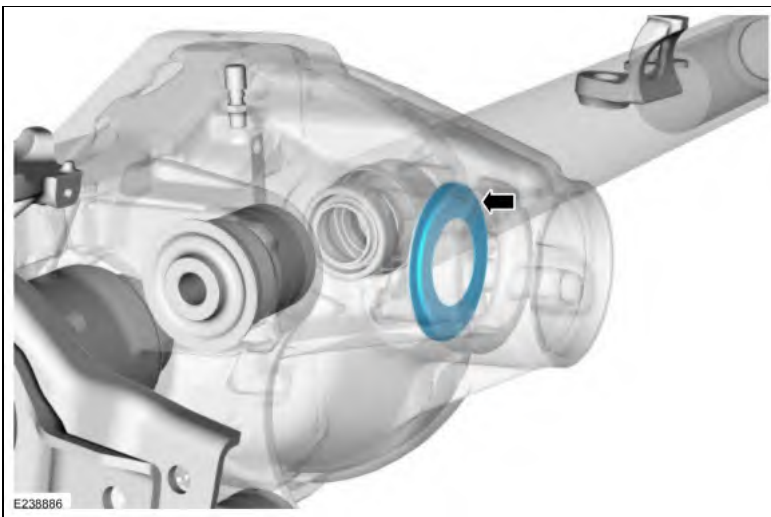


7. **NOTE:** Do not remove the Dummy Bearing Set from the differential case hubs.

Remove the differential case with the Dummy Bearing Set from the differential housing.
Use Special Service Tool: 205-D047 (D81T-4222-DR) Set, Dummy Bearing.



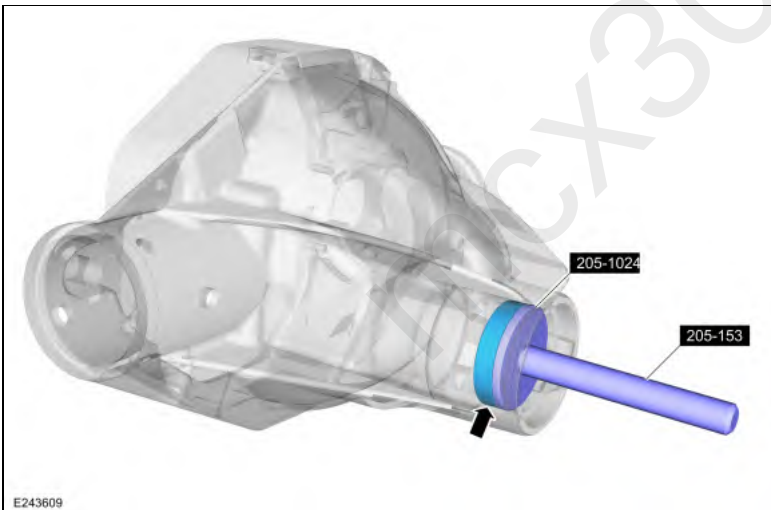
8. If removed, install the new drive pinion oil baffle.



9. **NOTE:** Make sure the drive pinion bearing cups are seated correctly or damage to the components may occur.

Using the special tools, install the new outer drive pinion bearing cup.

Use Special Service Tool: 205-153 (T80T-4000-W) Handle. , 205-1024 Installer, Outer Pinion Bearing Cup.



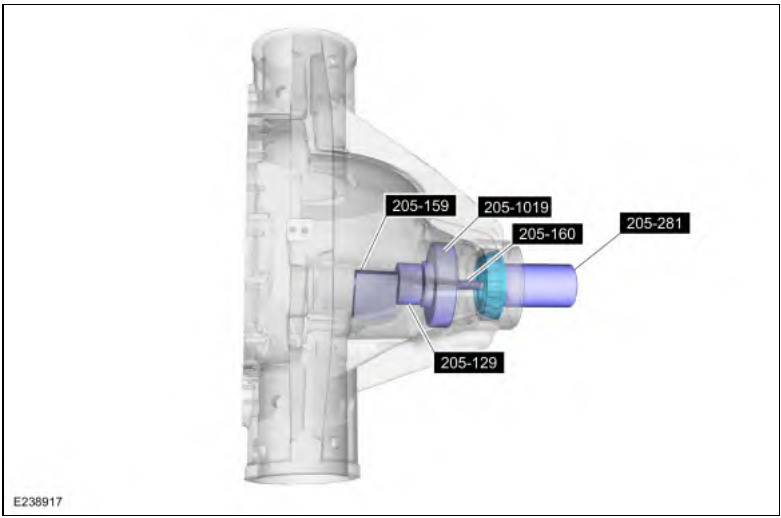
10. **NOTICE:** Use the same drive pinion bearings and the drive pinion bearing adjustment shim from the drive pinion bearing adjustment shim selection procedure for final assembly or damage to the component may occur.

NOTE: Install new drive pinion bearings without any additional lubricant since the anti-rust oil provides adequate lubricant without upsetting the drive pinion bearing preload settings.

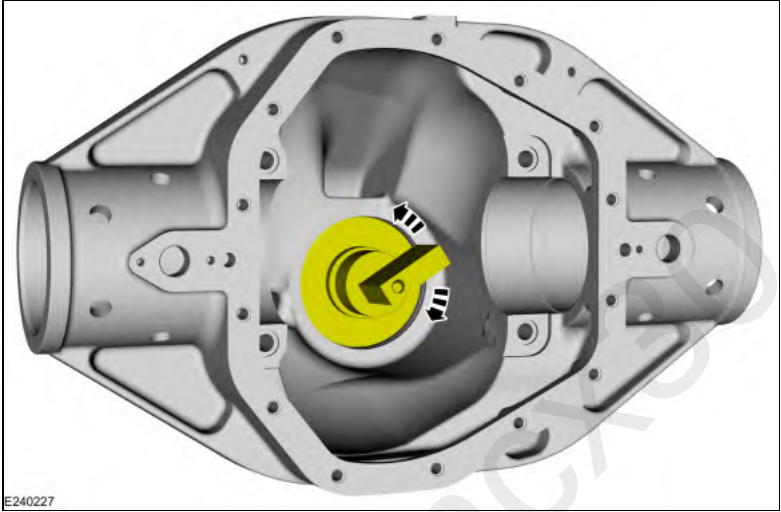
Assemble the special tools using the new outer drive pinion bearing.

Use Special Service Tool: 205-159 (T80T-4020-F42) Adapter for 205-S156 Pinion Depth Gauge. , 205-160 (T80T-4020-F43) Adapter for 205-S156 Pinion Depth Gauge. , 205-281 (T88T-4020-B) Depth Gauge/Aligner, Drive Pinion (Handle). , 205-1019 Dummy Pinion Bearing. , 205-129 (T79P-4020-A18) Disc, Gauge.

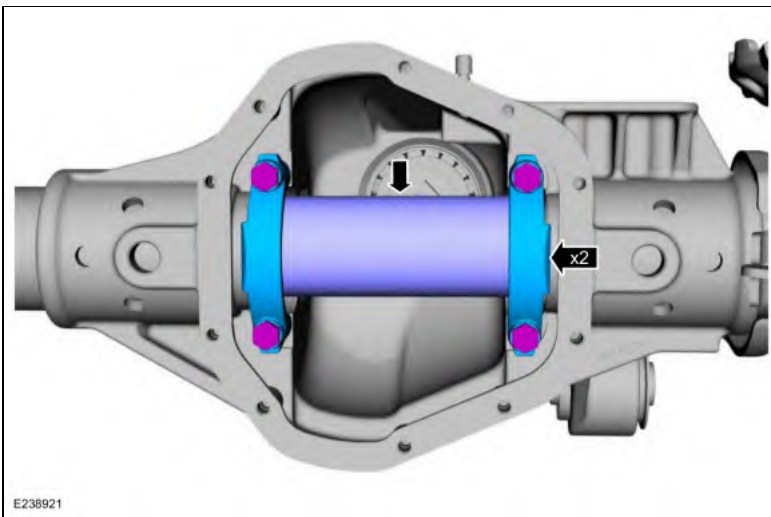
Torque: 19 lb.in (2.2 Nm)



- 11.
- Tighten special tools and check for clear rotation.
 - **NOTE:** This step duplicates final drive pinion bearing preload.
- Tighten the special tool to the specified torque.
Torque: 18 lb.in (2 Nm)
- Slowly rotate and record the rotational torque readings.



12. Install the special tool, the differential bearing caps and the differential bearing cap bolts.
Use Special Service Tool: 205-D033 (D80T-4020-F48) Gauge Tube (3.8135).
Torque: 80 lb.ft (108 Nm)

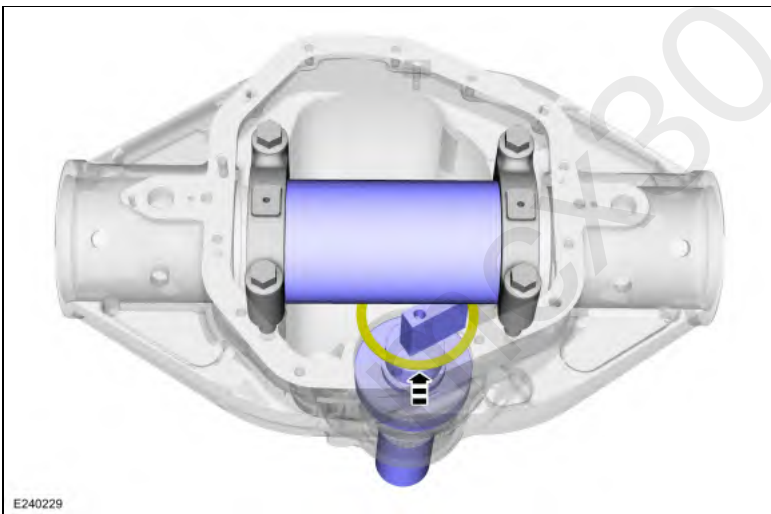


13. **NOTE:** Drive pinion bearing adjustment shims must be flat and clean.

NOTE: A slight drag should be felt for correct drive pinion bearing adjustment shim selection. Do not attempt to force the drive pinion bearing adjustment shim between the gauge block and the gauge tube. This will minimize selection of a drive pinion bearing adjustment shim thicker than required, which results in a deep tooth contact in final assembly of integral axle assemblies.

Use a drive pinion bearing adjustment shim as a gauge for drive pinion bearing adjustment shim selection.

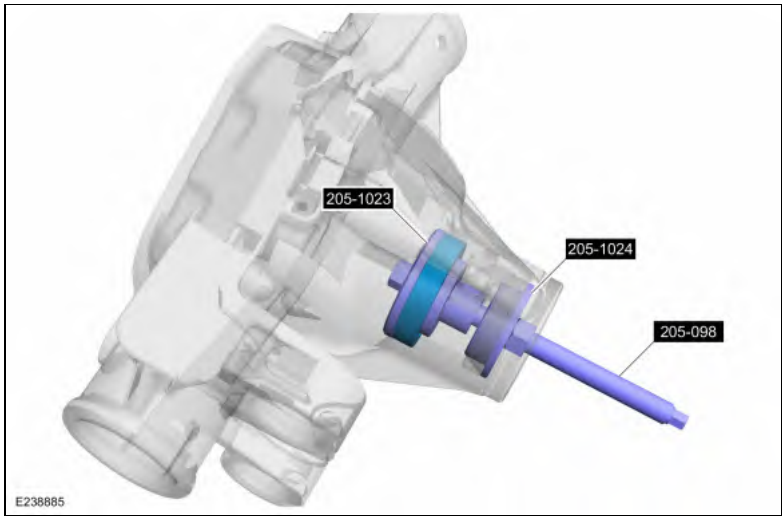
- After the correct drive pinion bearing adjustment shim thickness has been determined, remove the special tools.



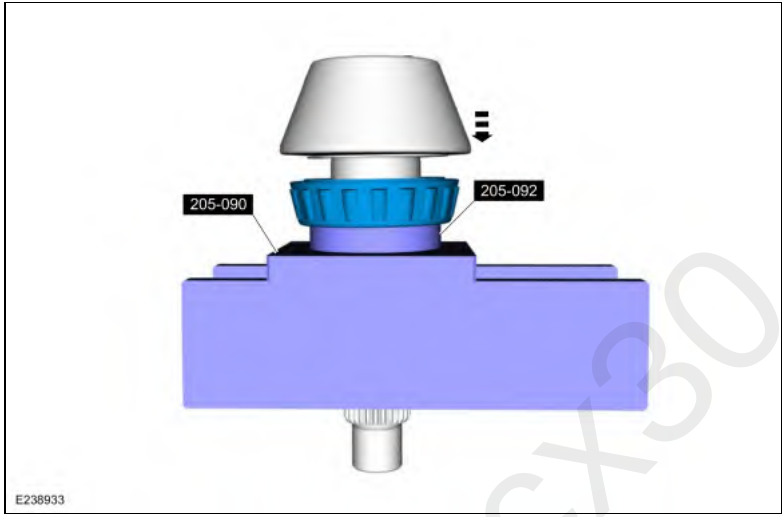
14. **NOTE:** Make sure the drive pinion bearing cups are seated correctly or damage to the components may occur.

Using the special tools, install the new inner drive pinion bearing cup.

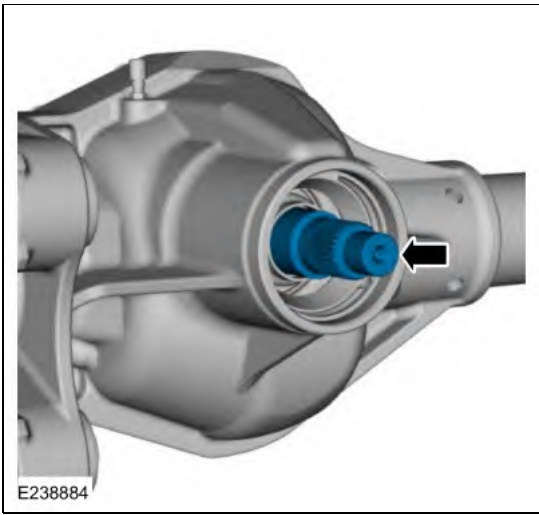
Use Special Service Tool: 205-098 (T75T-1176-A) Drawbar, Rear Axle. , 205-1024 Installer, Outer Pinion Bearing Cup. , 205-1023 Installer, Inner Pinion Bearing Cup.



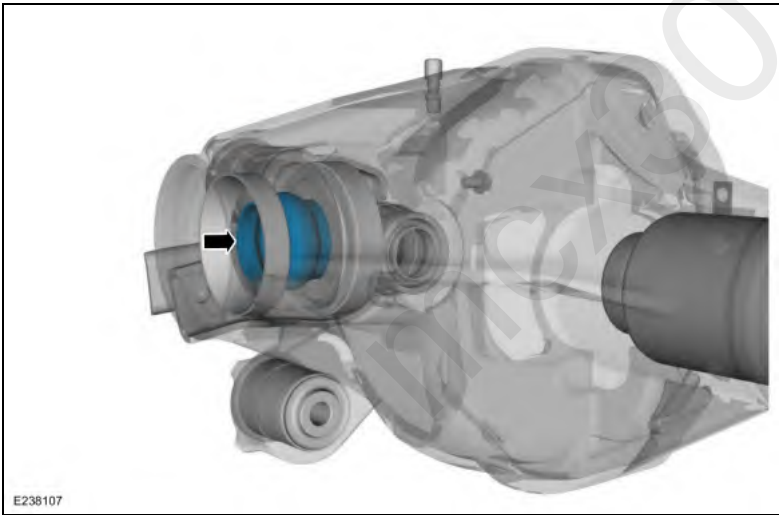
15. Install the drive pinion bearing until it is firmly seated on the drive pinion.
Use Special Service Tool: 205-090 (T75L-1165-B) Plate, Bearing/Oil Seal. , 205-092 (T75L-1165-DA) Installer, Rear Axle Bearing/Oil Seal.
Use the General Equipment: Hydraulic Press



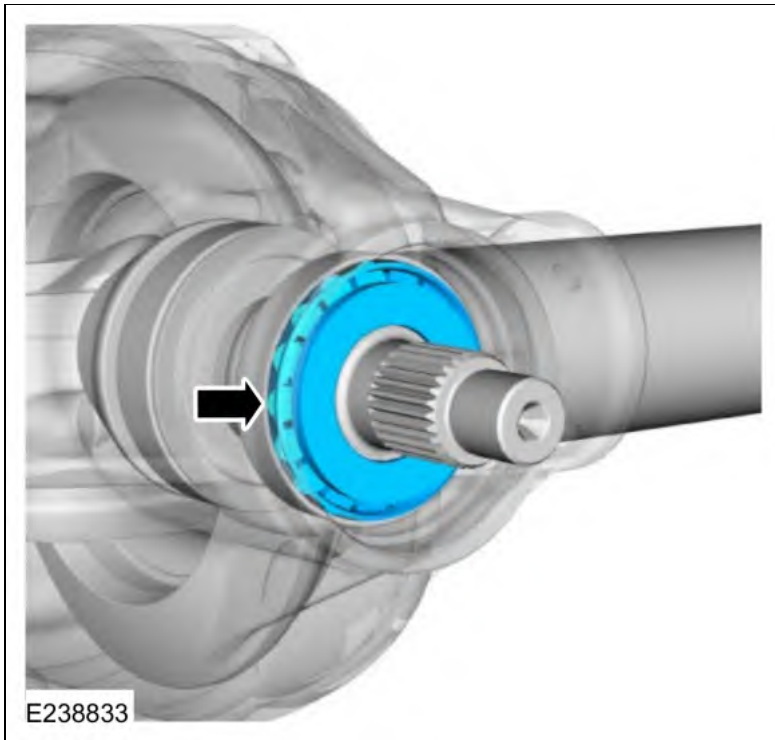
16. Install the pinion gear.



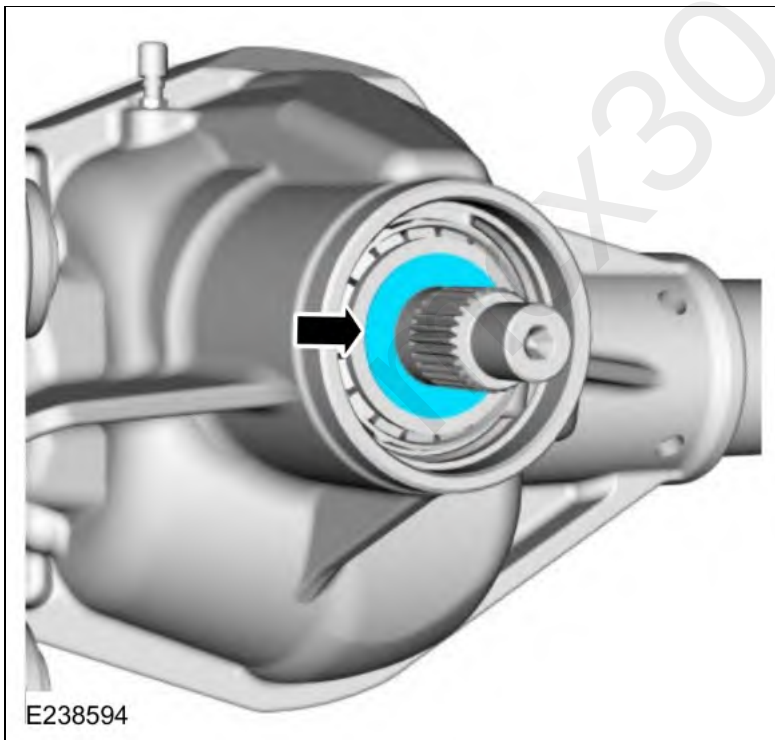
17. Install the new drive pinion collapsible spacer.



18. Install the outer drive pinion bearing.



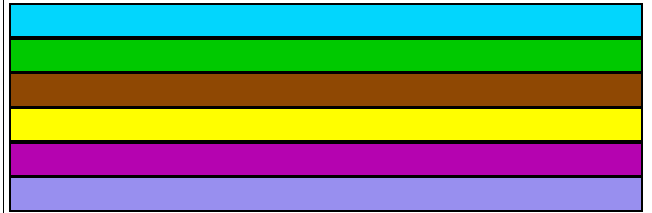
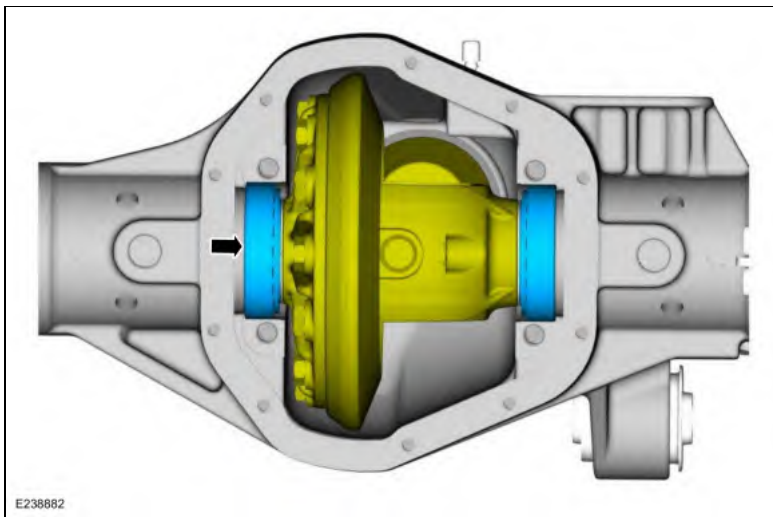
19. Install the outer drive pinion oil slinger.



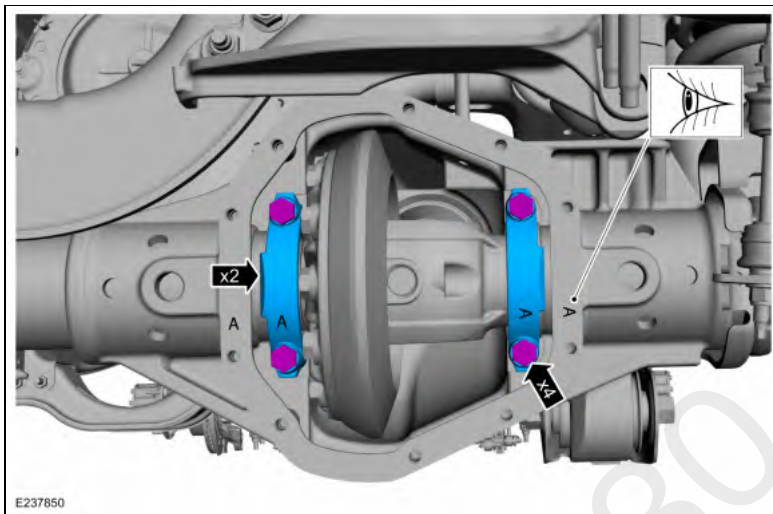
20. Install the drive pinion flange and seal.
Refer to: Drive Pinion Flange and Seal (205-03 Front Drive Axle/Differential, Removal and Installation).

21. **NOTICE: It is necessary to loosely install the bearing caps and bolts to hold the differential in place.**

Position the differential case with the Dummy Bearing Set into the differential housing.
Use Special Service Tool: 205-D047 (D81T-4222-DR) Set, Dummy Bearing.



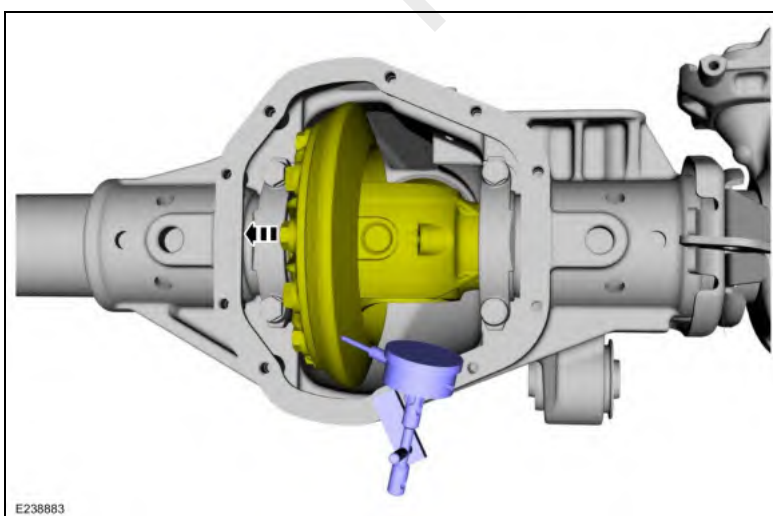
22. Loosely install the differential bearing caps.

[illegible]

23. **NOTE:** Repeat this step until there is a consistent reading.

Using the Dummy Bearing Set, Dial Indicator Gauge with Holding Fixture and Clutch Housing Gauge, determine the total thickness of differential bearing shims to install under the differential bearing on the ring gear side of the differential case. Record this measurement, as the shim thickness required for the ring gear side of the differential case.

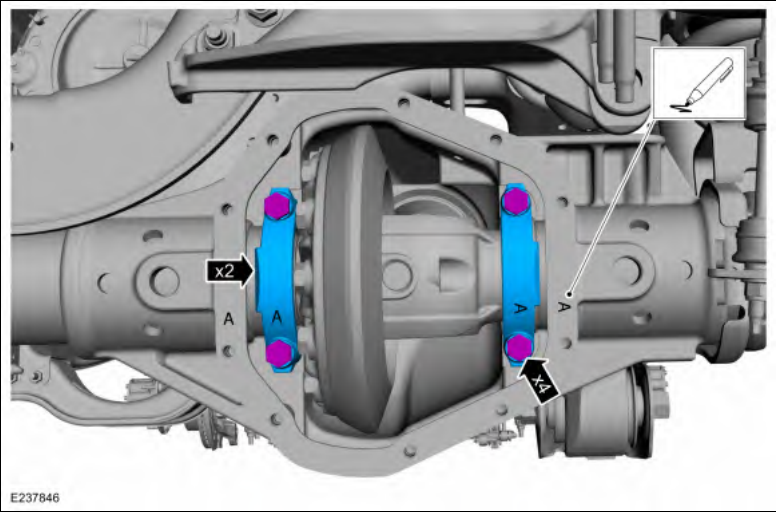
- Force the ring gear away from the pinion and zero the Dial Indicator Gauge.
- Force the ring gear into mesh with the pinion. Rock the ring gear to allow the teeth of the gears to mesh.
- Record the reading.



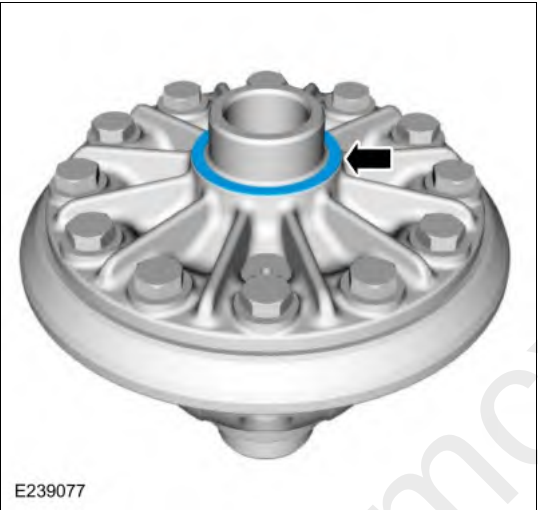
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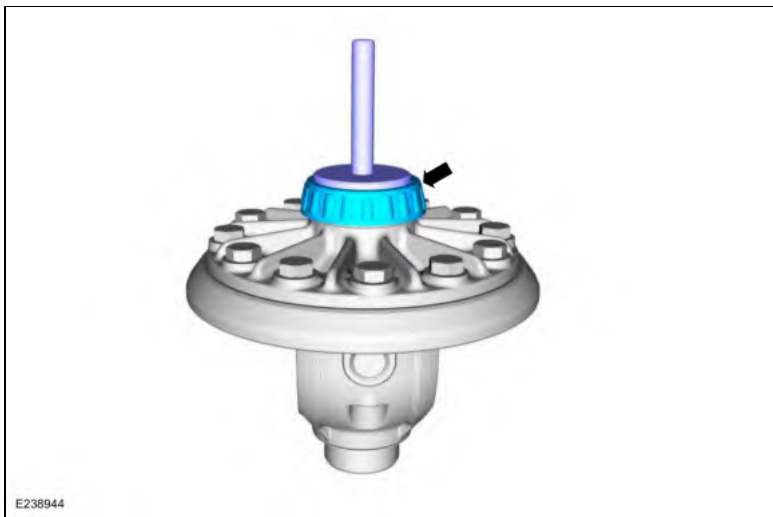
24. Remove the differential case and the Dummy Bearing Set from the differential housing.
- Remove the Dummy Bearing Set from the differential case.



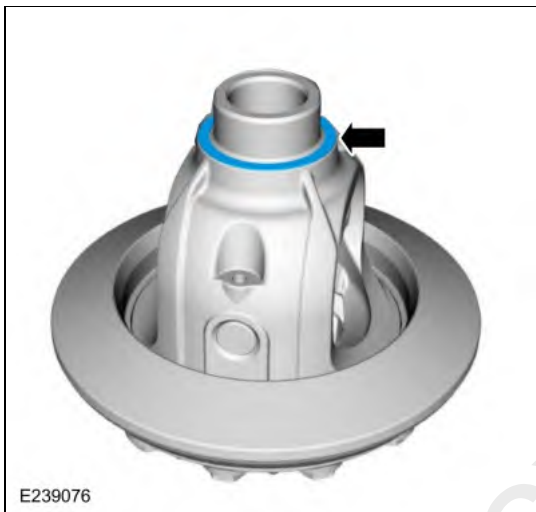
25. Place the required thickness of differential bearing shims on the ring gear side of the differential case. Refer to the measurement recorded, as the shim thickness required for the ring gear side of the differential case.
- For example, a reading of 1.14 mm (0.045 in), requires that 1.14 mm (0.045 in) shims be placed on the ring gear side of the differential case. For available differential bearing shims. Refer to: Specifications (205-03 Front Drive Axle/Differential, Specifications).



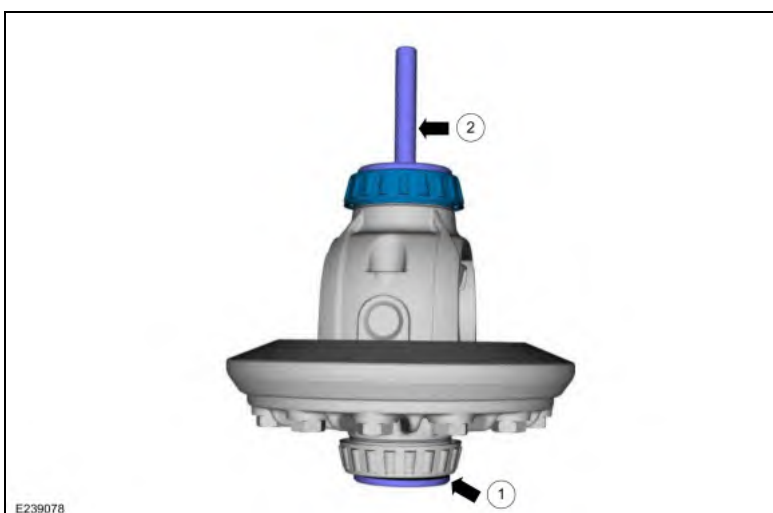
26. Using a special tool, install the differential bearing.
- Use Special Service Tool: 205-D044 (D81T-4221-A) Installer, Differential Carrier Bearing.

[illegible]

27. Determine the total thickness of differential bearing shims to install under the differential bearing on the drive pinion side of the differential case.
 - Subtract the measurement recorded, as the shim thickness required for the ring gear side of the differential case, from the total case end play measurement taken at the beginning of the assembly procedure. Then, add 0.38 mm (0.015 in) to the total. This is the total amount of differential bearing shims to install under the differential bearing on the drive pinion side of the differential case.
28. Place the amount of differential bearing shims, as determined by the calculation made in the previous step, on the drive pinion side of the differential case.



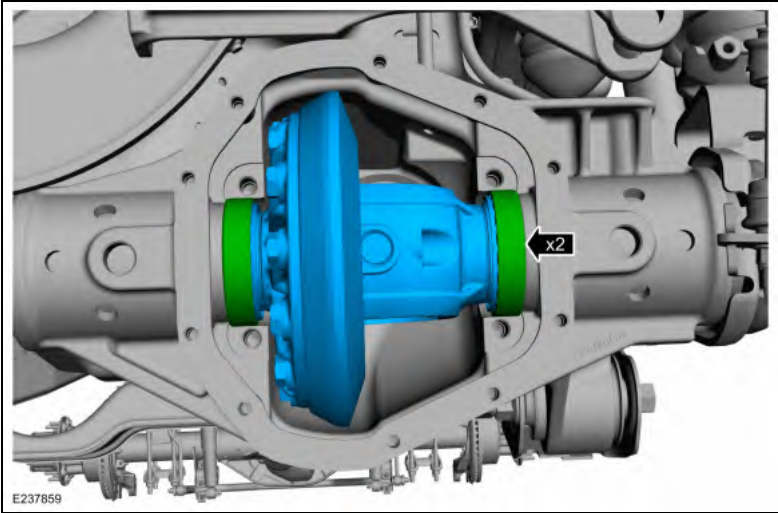
29. Using the special tools, install the differential bearing.
- Place the Step Plate under the bearing to protect it during the bearing installation.
Use Special Service Tool: 205-D012 (D80L-630-1) Step Plate.
 - Using the Differential Carrier Bearing Installer, install the bearing.
Use Special Service Tool: 205-D044 (D81T-4221-A) Installer, Differential Carrier Bearing.



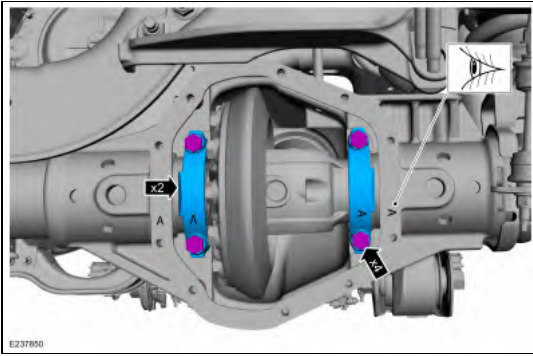
30. Position the differential bearing cups on the bearings.



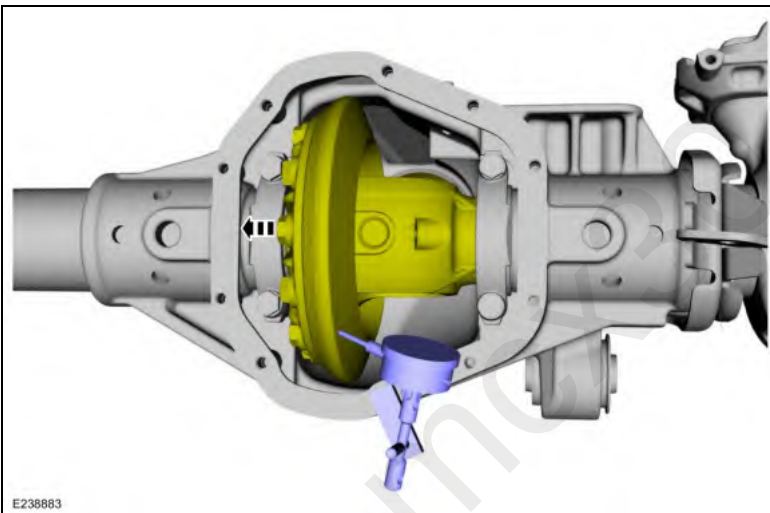
31. Position the differential carrier and bearing races along with shims in the axle housing.



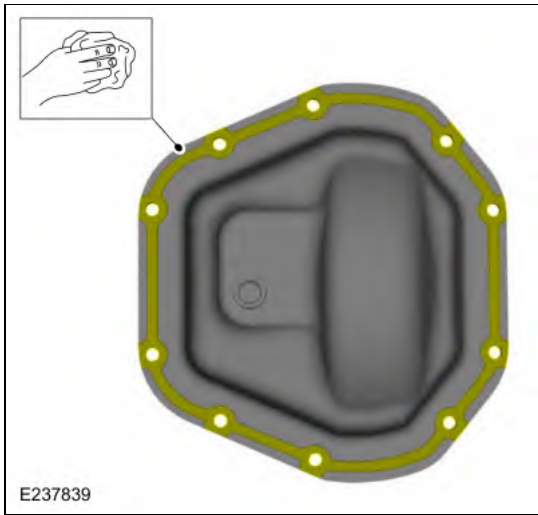
32. Install the bearing caps and the bolts.
Torque: 80 lb.ft (108 Nm)



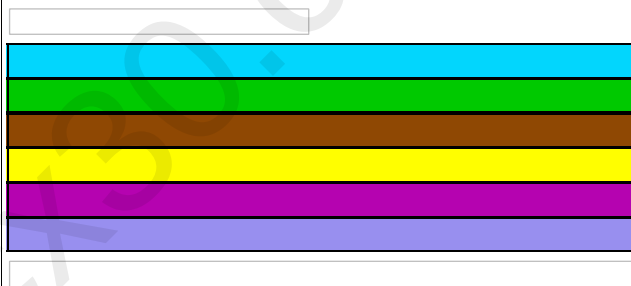
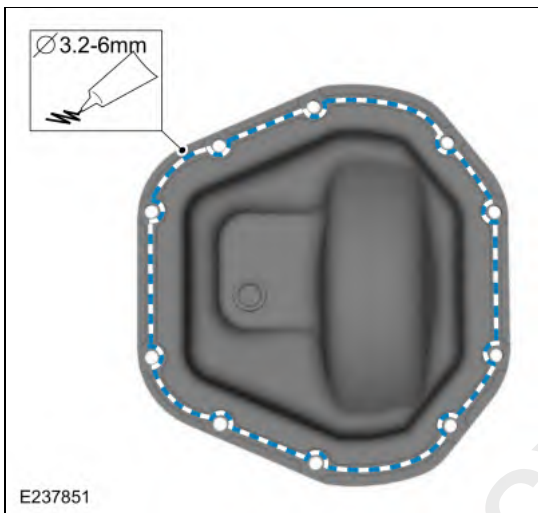
33. Using the general equipment, measure the backlash at 3 equally spaced points.
- The backlash must be within the specifications and cannot vary more than 0.05 mm (0.002 in) between points checked.
Use the General Equipment: Dial Indicator
 - Make the necessary corrections by moving shims from one side of the differential case to the other, until the correct backlash adjustment is achieved.
 - Correct for low backlash by moving the ring gear away from the pinion.
 - Correct for high backlash by moving the ring gear toward the pinion.
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.



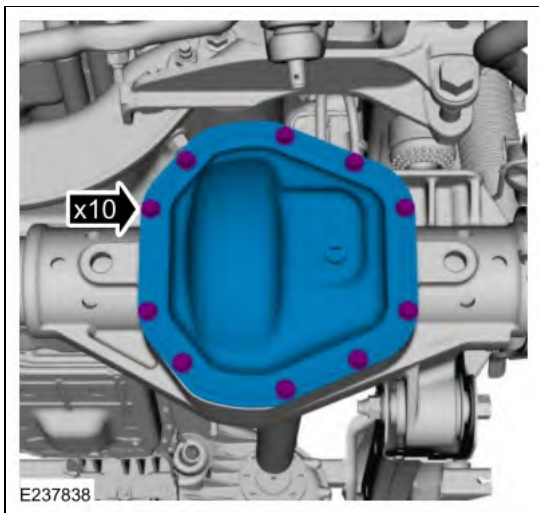
34. Apply marking compound and rotate the differential assembly 5 complete revolutions.
35. Verify an acceptable pattern check.
Refer to: Front Drive Axle (205-03 Front Drive Axle/Differential, Diagnosis and Testing).
36. Clean the gasket material from the differential housing and the differential housing cover.
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).



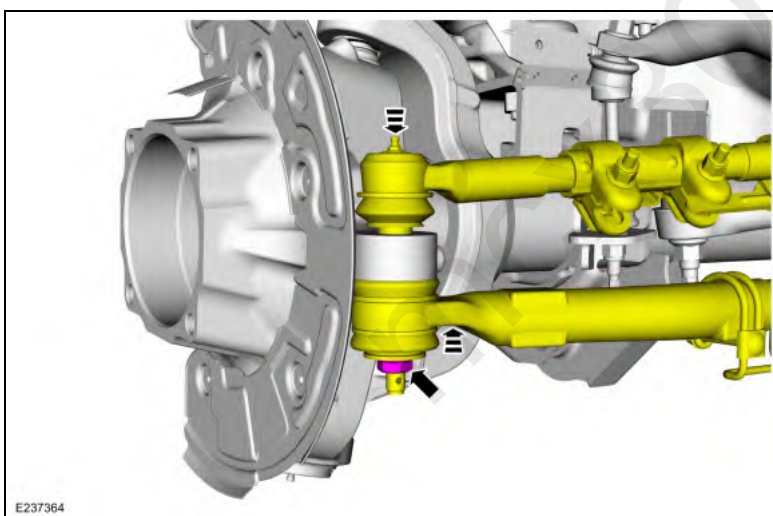
37. Apply a new continuous bead of sealant to the differential housing cover as shown.
 Material: Motorcraft® High Performance Engine RTV Silicone / TA-357 (WSE-M4G323-A6)



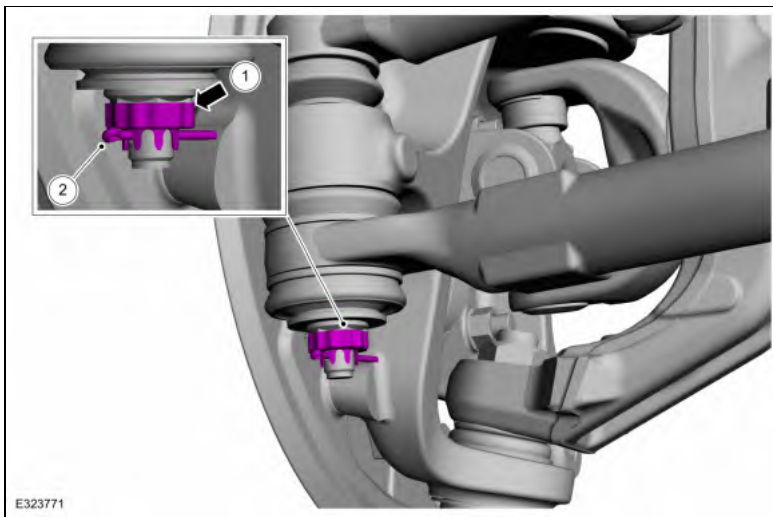
38. Install the differential cover and differential cover bolts.
 Torque: 45 lb.ft (61 Nm)



39. Attach the RH outer tie rod end and drag link to the wheel knuckle and install the new tie rod end nut.
Torque: 85 lb.ft (115 Nm)



- 40.
1. Install the sector shaft arm drag link nut retainer.
 2. **NOTE:** *Make sure that the new component is used.*
 Install the new sector shaft arm drag link cotter pin.



41. Install the axle shaft seal.
Refer to: Axle Shaft Seal (205-03 Front Drive Axle/Differential, Removal and Installation).
42. Check the front differential fluid level.
Refer to: Differential Fluid Level Check (205-03 Front Drive Axle/Differential, General Procedures).

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