

SPECIFICATIONS

Material

Item	Specification	Fill Capacity
Additive Friction Modifier XL-3 (US); CXL-3 (Canada)	EST-M2C118-A	4 oz (Traction-Lok® only). 6 oz (If equipped with rear differential oil cooler).
Maximum Strength Retaining Compound Loctite® 638™	—	—
Motorcraft® SAE 75W-140 Synthetic Rear Axle Lubricant XY-75W140-QL (US); CXY-75W140-1L (Canada)	WSL-M2C192-A and GL-5	8.8-in rear axle. ^a
Motorcraft® SAE 75W-85 Premium Synthetic Hypoid Gear Lubricant XY-75W85-QL	WSS-M2C942-A	SVT 8.8-in rear axle. ^{a b}
Premium Long-Life Grease XG-1-C or XG-1-K (US); CXG-1-C (Canada)	ESA-M1C75-B	—
Silicone Gasket and Sealant TA-30	WSE-M4G323-A4	—

^a Service refill capacities are determined by filling the axle to a level of 5mm below the bottom of the filler hole. The vehicle must be on a level surface.

^b Vehicles equipped with a rear differential oil cooler. Refer to the procedure.

General Specifications


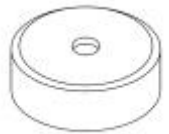
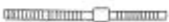
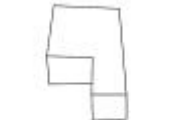
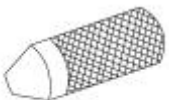
Item	Specification
Clearance, Tolerance and Adjustments	
Differential pinion gear thrust washer thickness	0.762-0.813 mm (0.030-0.032 in)
Differential side gear thrust washer thickness	0.762-0.813 mm (0.030-0.032 in)
Maximum axle shaft end play	0.762 mm (0.030 in)
Maximum differential case runout	0.076 mm (0.003 in)
Pinion bearing preload	1.8-3.3 Nm (16-29 lb-in)
Pinion flange runout	0.25 mm (0.010 in) T.I.R.
Ring gear backlash	0.203-0.304 mm (0.008-0.012 in)
Variation between teeth maximum backlash	0.102 mm (0.004 in)

Torque Specifications

Description	Nm	lb-ft	lb-in
Differential bearing cap bolts	122	90	—
Differential housing cover bolts (steel cover)	46	34	—
Differential housing cover bolts (aluminum cover)	32	24	—
Differential housing cover cooler line fittings	23	17	—

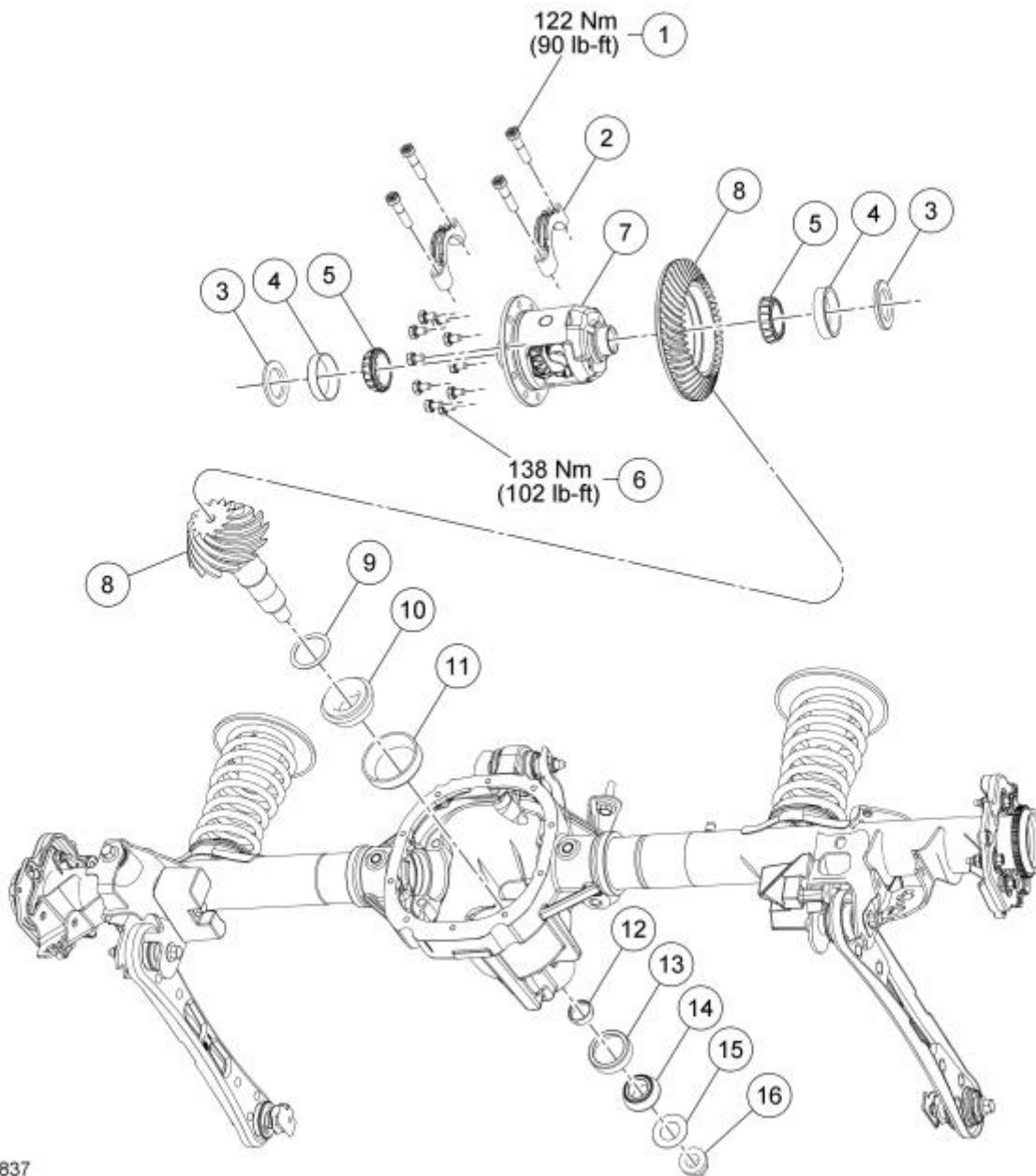
Differential oil cooler pump	11	—	97
Differential oil temperature sensor	10	—	89
Differential pinion shaft lock bolt	35	26	—
Differential ring gear bolts	135	100	—
Filler plug	30	22	—
Handle adapter for 205-S127	2.2	—	20
Lower arm bolt	175	129	—
Rear differential cooler line bolts	10	—	89
Shock absorber lower bolts	115	85	—
Tool 205-022 nut	27	20	—
Upper arm bushing nut	175	129	—
Wheel speed sensor bolt	15	—	133

Differential Ring and Pinion

Special Tool(s)	
 ST2026-A	2 Jaw Puller 205-D072 (D79L-4221-A1) or equivalent
 ST1743-A	Adapter for 205-S127 205-105 (T76P-4020-A3)
 ST1429-A	Adapter for 205-S127 205-109 (T76P-4020-A9)
 ST1431-A	Adapter for 205-S127 205-110 (T76P-4020-A10)
 ST1432-A	Adapter for 205-S127 205-111 (T76P-4020-A11)

 ST1743-A	Adapter for 205-S127 205-129 (T79P-4020-A18)
 ST1434-A	Adapter for 205-S127 205-130 (T79P-4020-A19)
 ST1375-A	Installer, Differential Side Bearing 205-010 (T57L-4221-A2)
 ST1678-A	Installer, Drive Pinion Bearing Cup 205-024 (T67P-4616-A)
 ST1367-A	Installer, Shaft Bearing Cone 308-169 (T88T-7025-B)
 ST1254-A	Plate, Bearing Oil Seal 205-090 (T75L-1165-B)
 ST1744-A	Protector, Drive Pinion Thread 205-460 or equivalent
 ST1543-A	Step Plate 205-D016 (D80L-630-5) or equivalent

Material	
Item	Specification
Maximum Strength Retaining Compound Loctite® 638™	—



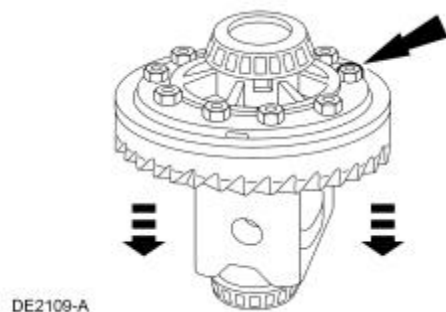
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Item	Part Number	Description
1	—	Differential bearing cap bolt (part of 4010)
2	—	Differential bearing cap (part of 4010)
3	4067	Differential bearing shims (2 required)
4	4221	Differential bearing cups (2 required)
5	4222	Differential bearing cones (2 required)
6	4216	Differential ring gear bolt (10 required)
7	—	Differential carrier assembly
8	4209	Ring gear (set with drive pinion)
9	4663	Pinion bearing adjustment shim
10	4630	Inner pinion bearing
11	4628	Inner pinion bearing cup
12	4662	Collapsible spacer
13	4616	Outer pinion bearing cup
14	4621	Outer pinion bearing

15	4670	Pinion oil slinger
16	4320	Pinion nut

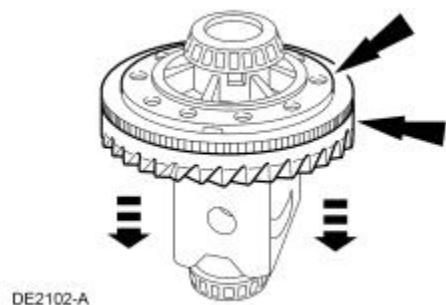
Removal

1. Remove the drive pinion flange seal. For additional information, refer to Drive Pinion Flange and Drive Pinion Seal in this section.
2. Remove the differential carrier. For additional information, refer to Differential Carrier in this section.
3. Remove and discard the 10 differential ring gear bolts.



4. **NOTE:** Do not damage the differential ring gear bolt hole threads.

Insert a punch in the differential ring gear bolt holes and drive the differential ring gear off.

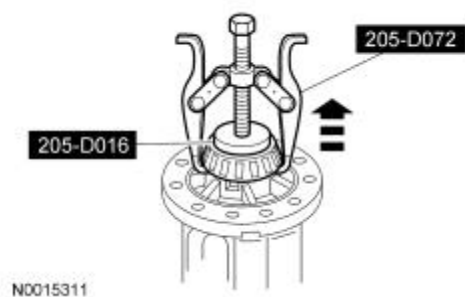


5. **NOTE:** The differential flange and ring gear flange must be free of any old retaining compound material. Failure to clean the surfaces can result in ring gear runout concerns.

Clean all traces of the old retaining compound material from the differential flange.

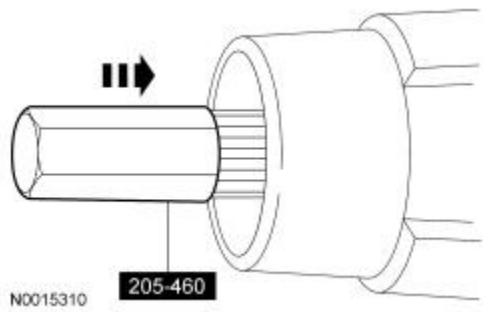
- Use solvent and Scotch-Brite® pads to remove.

6. Using the 2 Jaw Puller and Step Plate, remove the 2 differential bearings.

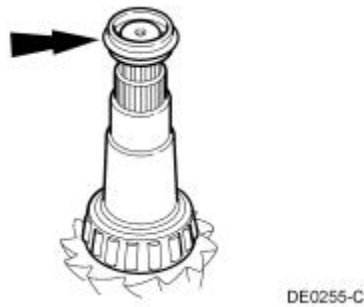


7. Remove the drive pinion shaft oil slinger and the outer drive pinion bearing.

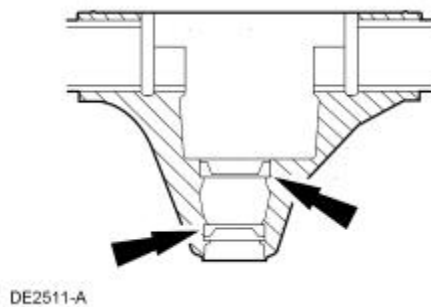
8. Install the Drive Pinion Thread Protector. Using a soft-faced hammer, drive the pinion assembly out of the axle housing.



9. Remove and discard the drive pinion collapsible spacer.

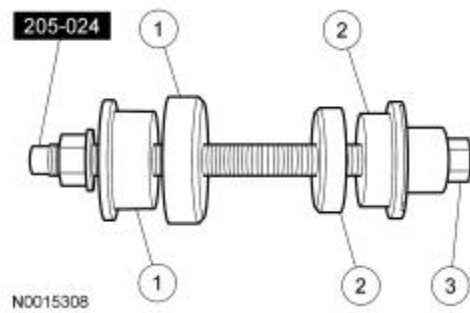


10. Using a brass drift, remove the drive pinion bearing cups by tapping alternately on opposite sides of the drive pinion bearing cups.

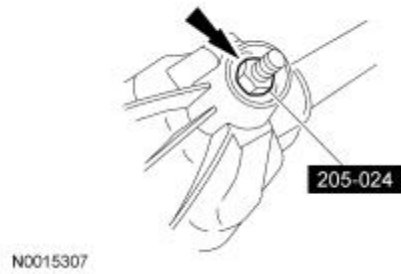


Installation

1. Position the Drive Pinion Bearing Cup Installer and the inner and outer drive pinion bearing cups in their respective bores.
 1. After placing the inner and outer drive pinion bearing cups in their bores, place the Drive Pinion Bearing Cup Installer (inner) on the inner drive pinion bearing cup.
 2. Place the Drive Pinion Bearing Cup Installer (outer) on the outer drive pinion bearing cup.
 3. Install the Drive Pinion Bearing Cup Installer.

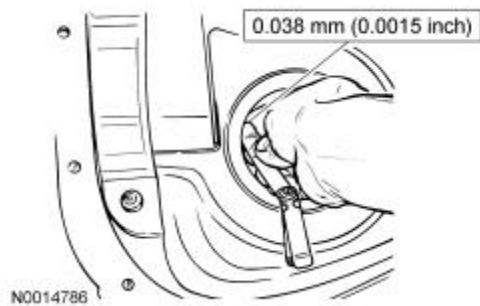


2. Tighten the Drive Pinion Bearing Cup Installer to seat the drive pinion bearing cups into their bores.



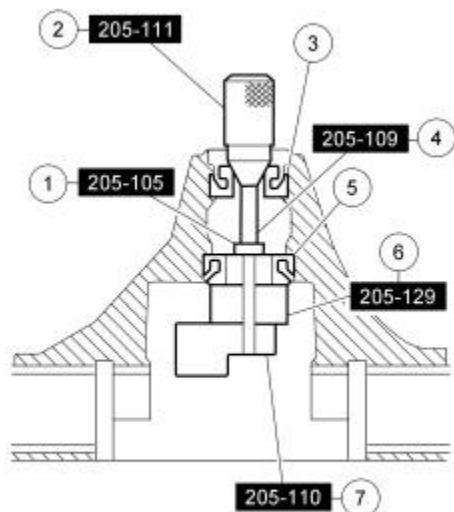
3. **NOTE:** If a feeler gauge can be inserted between a drive pinion bearing cup and the bottom of its bore at any point around the drive pinion bearing cup, the drive pinion bearing cup is not correctly seated.

Make sure the drive pinion bearing cups are correctly seated in their bores.



4. **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 and position the Adapters for 205-S127.



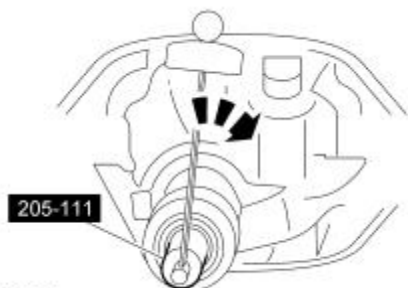
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Item	Part Number	Description
1	205-105	Adapter for 205-S127 (1.612 inch OD) (T76P-4020-A3)
2	205-111	Adapter for 205-S127 (T76P-4020-A11)
3	4621	Drive pinion bearing (outer)
4	205-109	Adapter for 205-S127 (T76P-4020-A9)
5	4630	Drive pinion bearing (inner)
6	205-129	Adapter for 205-S127 (1.1884 inch thick) (T79P-4020-A18)
7	205-110	Adapter for 205-S127 (1.7 inch thick) (T76P-4020-A10)

5. **NOTE:** This step duplicates final drive pinion bearing preload.

Tighten the Adapter.

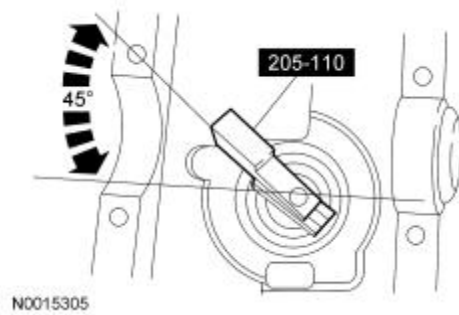
- Tighten to 2.2 Nm (20 lb-in).



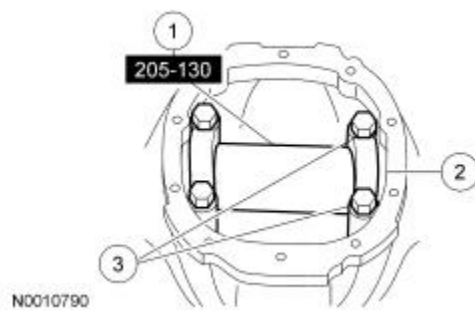
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6. **NOTE:** The Adapter must be offset to obtain an accurate reading.

Rotate the Adapter several half-turns to make sure of correct seating of the drive pinion bearings.



7. Install the Adapter.
 1. Position the Adapter.
 2. Install the 2 differential bearing caps.
 3. Install the 4 differential bearing cap bolts.
 - Tighten to 122 Nm (90 lb-ft).

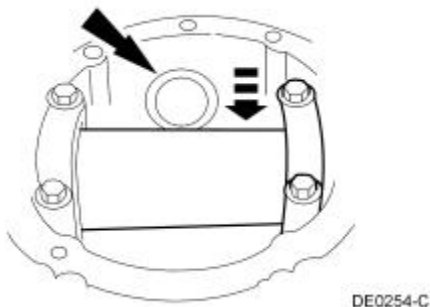


8. **NOTE:** Drive pinion bearing adjustment shims must be flat and clean.

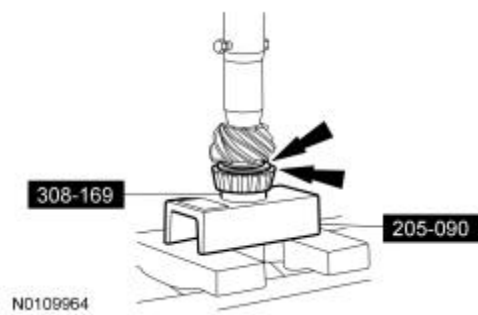
NOTE: A slight drag should be felt for correct drive pinion bearing adjustment shim selection. Do not attempt to force the drive pinion bearing adjustment shim between the gauge block and the gauge tube. This will minimize selection of a drive pinion bearing adjustment shim thicker than required, which 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.

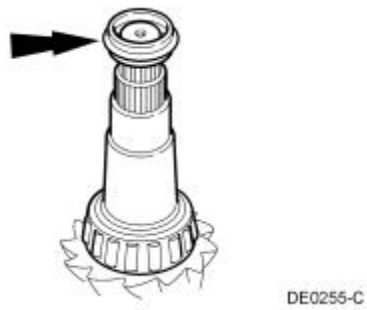
- After the correct drive pinion bearing adjustment shim thickness has been determined, remove all of the Adapters.



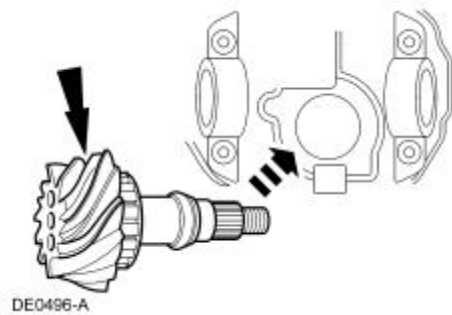
9. Using the Shaft Bearing Cone Installer and Bearing Oil Seal Plate with a shop press, drive the inner drive pinion bearing and the selected drive pinion bearing adjustment shim until they are firmly seated on the pinion shaft.



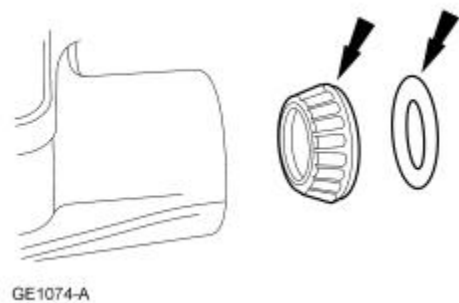
10. Install a new drive pinion collapsible spacer on the pinion shaft against the pinion shaft shoulder.



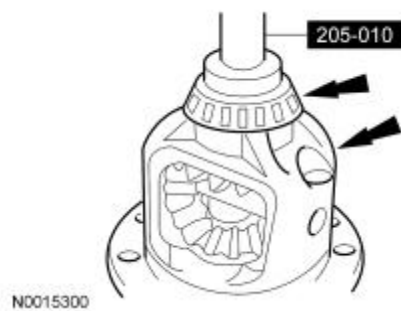
11. Install the drive pinion assembly into the axle housing.



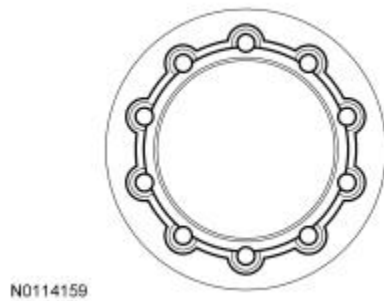
12. Install the outer drive pinion bearing and the drive pinion shaft oil slinger.



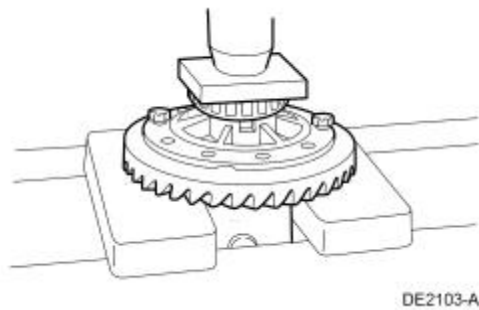
13. Using the Differential Side Bearing Installer, install the 2 new differential bearings.



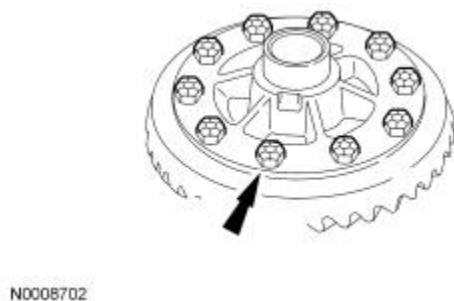
14. Apply a one-eighth inch bead of maximum strength retaining compound on the rear face of the ring in the pattern shown.



15. Using 2 ring gear bolts as a guide, press the ring gear on the differential assembly.





16. Install the 10 new differential ring gear bolts.
 - Tighten to 138 Nm (102 lb-ft).



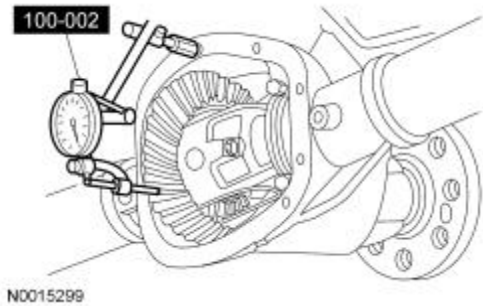
17. Install the drive pinion seal and flange. For additional information, refer to Drive Pinion Flange and Drive Pinion Seal in this section.
18. Install the differential carrier. For additional information, refer to Differential Carrier in this section.

Ring Gear Backlash Adjustment

Special Tool(s)	
	Dial Indicator Gauge With Holding Fixture 100-002 (TOOL-4201-C)
	Installer, Differential Shim 205-220 (T85L-4067-AH)

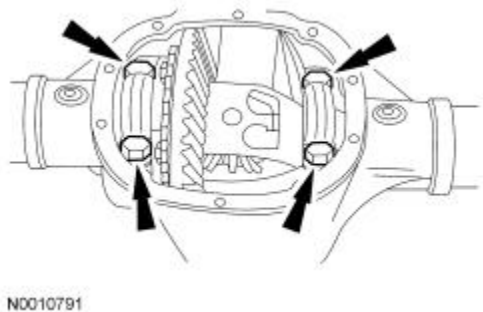
Material	
Item	Specification
Motorcraft® High Contrast Hypoid Gear Marking Compound XG-14	—

1. Remove the differential housing cover. For additional information, refer to Differential Housing Cover in this section.
2. Install the Dial Indicator Gauge with Holding Fixture and measure the ring gear backlash.
 - If a zero backlash condition occurs or the backlash is not within specification, proceed to Step 3.
 - If the backlash is within specification, proceed to Step 14.



3. Remove the axle shafts. For additional information, refer to Axle Shaft in this section.
4. **NOTE:** Index-mark the position of the differential bearing caps, as arrows may not be visible. The differential bearing caps must be installed in their original locations and positions.

Remove the 4 differential bearing cap bolts and 2 caps.



5. If a zero backlash condition had occurred, add 0.50 mm (0.020 in) to the RH side shim and subtract 0.50 mm (0.020 in) from the LH side shim to allow a backlash indication. Install the 2 bearing caps and 4 bolts.
 - Tighten to 122 Nm (90 lb-ft).
 - Go back to Step 2.
6. To correct for high or low backlash, increase the thickness of one differential bearing shim and decrease the thickness of the other differential bearing shim by the same amount. Refer to the following tables when adjusting the backlash.

Backlash Change Required		Thickness Change Required	
mm	Inch	mm	Inch
0.025	0.001	0.050	0.002
0.050	0.002	0.050	0.002
0.076	0.003	0.101	0.004
0.101	0.004	0.152	0.006
0.127	0.005	0.152	0.006
0.152	0.006	0.203	0.008
0.177	0.007	0.254	0.010
0.203	0.008	0.254	0.010
0.228	0.009	0.304	0.012
0.254	0.010	0.355	0.014
0.279	0.011	0.355	0.014
0.304	0.012	0.406	0.016
0.330	0.013	0.457	0.018
0.335	0.014	0.457	0.018
0.381	0.015	0.508	0.020

7.

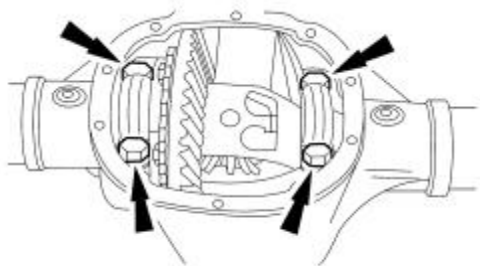
8. Differential Shim Size Chart 4067

Stripes and Color Code	Dimension A	
	mm	Inch
2 — C-COAL	7.7978-7.8105	0.3070-0.3075
1 — C-COAL	7.7470-7.7597	0.3050-0.3055
5 — BLU	7.6962-7.7089	0.3030-0.3035
4 — BLU	7.6454-7.6581	0.3010-0.3015
3 — BLU	7.5946-7.6073	0.2990-0.2995
2 — BLU	7.5458-7.5565	0.2970-0.2975
5 — PINK	7.4422-7.4549	0.2930-0.2935
4 — PINK	7.3914-7.4041	0.2910-0.2915
3 — PINK	7.3406-7.3533	0.2890-0.2895
2 — PINK	7.2898-7.3025	0.2870-0.2875
1 — PINK	7.2390-7.2517	0.2850-0.2855
5 — GRN	7.1882-7.2009	0.2830-0.2835
4 — GRN	7.1374-7.1501	0.2810-0.2815
3 — GRN	7.0866-7.0993	0.2790-0.2795
2 — GRN	7.0358-7.0485	0.2770-0.2775
1 — GRN	6.9850-7.0485	0.2750-0.2755

5 — WH	6.9342-6.9469	0.2730-0.2735
4 — WH	6.8834-6.8961	0.2710-0.2715
3 — WH	6.8326-6.8453	0.2690-0.2695
2 — WH	6.7818-6.7945	0.2670-0.2675
1 — WH	6.7310-6.7437	0.2650-0.2655
5 — YEL	6.6802-6.6929	0.2630-0.2635
4 — YEL	6.6294-6.6421	0.2610-0.2615
3 — YEL	6.5786-6.5913	0.2590-0.2595
2 — YEL	6.5278-6.5405	0.2570-0.2575
1 — YEL	6.4770-6.4897	0.2550-0.2555
5 — ORNG	6.4262-6.4389	0.2530-0.2535
4 — ORNG	6.3754-6.3881	0.2510-0.2515
3 — ORNG	6.3246-6.3373	0.2490-0.2495
2 — ORNG	6.2738-6.2865	0.2470-0.2475
1 — ORNG	6.2223-6.2357	0.2450-0.2455
2 — RED	6.1722-6.1849	0.2430-0.2435
1 — RED	6.1214-6.1341	0.2410-0.2415

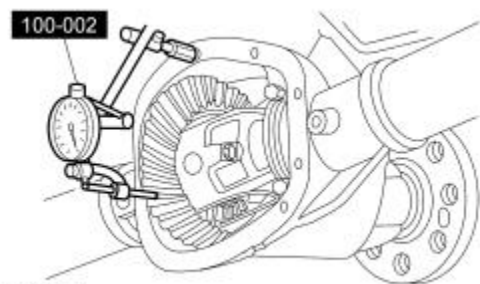
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7. Install the 2 differential bearing caps and 4 bolts.
- Tighten to 122 Nm (90 lb-ft).



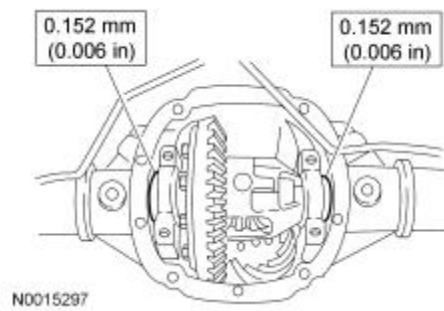
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8. Using the Dial Indicator Gauge with Holding Fixture, recheck the ring gear backlash.
- If backlash is now within specification, proceed to Step 9.
 - If backlash is not within specification, go back to Step 4.

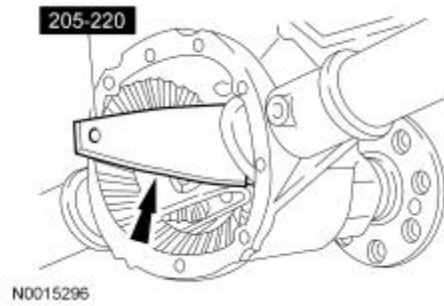


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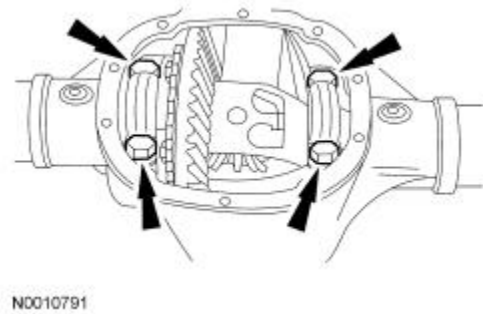
9. Remove the 4 bearing cap bolts and 2 bearing caps.
10. To establish differential bearing preload, increase both LH and RH differential bearing shim size by the thickness shown.



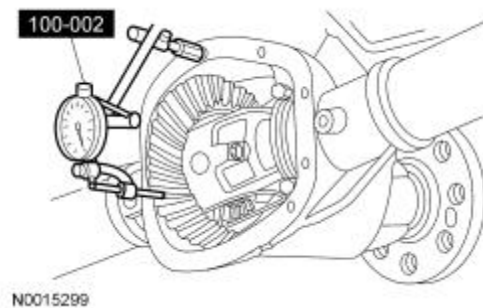
11. Using the Differential Shim Installer, fully seat the differential bearing shims. Make sure the assembly rotates freely.



12. Install the 2 differential bearing caps and 4 bolts.
 - Tighten to 122 Nm (90 lb-ft).




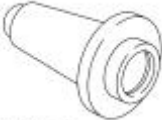


13. Using the Dial Indicator Gauge with Holding Fixture, do a final check of the ring gear backlash.

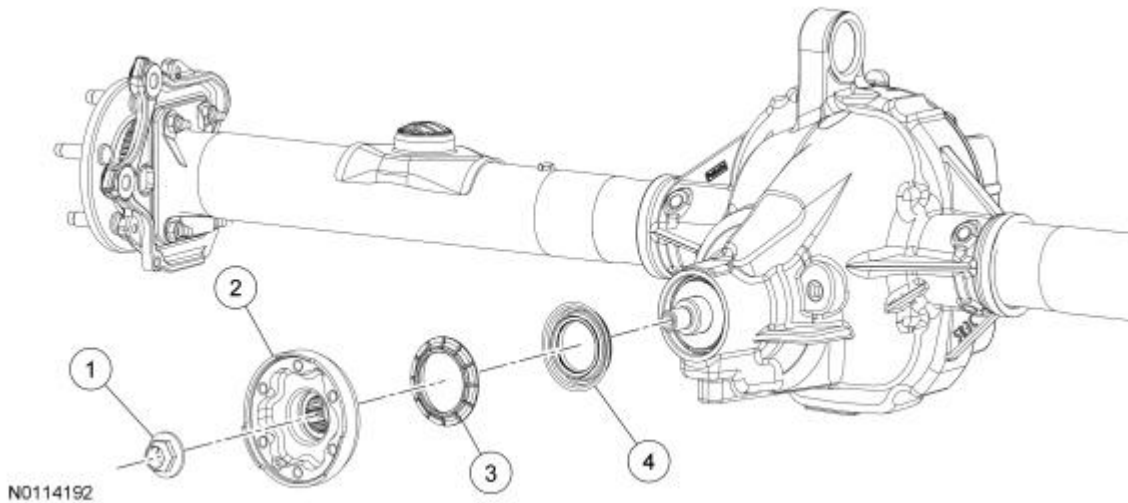


14. Apply marking compound and rotate the differential assembly 5 complete revolutions.
15. Verify an acceptable pattern check. For additional information, refer to Tooth Contact Pattern Check in Section 205-00.
16. Install the axle shafts. For additional information, refer to Axle Shaft in this section.
17. Install the differential housing cover. For additional information, refer to Differential Housing Cover in this section.

Drive Pinion Flange and Drive Pinion Seal

Special Tool(s)	
 ST2026-A	2 Jaw Puller 205-D072 (D97L-4221-A) or equivalent
 ST1257-A	Holding Fixture, Drive Pinion Flange 205-126 (T78P-4851-A)
	Installer, Drive Pinion Flange 205-002 (TOOL-4858-E)
 ST1325-A	Installer, Drive Pinion Oil Seal 205-208 (T83T-4676-A)

Material		
Item		Specification
Motorcraft® SAE 75W-140 Synthetic Rear Axle Lubricant XY-75W140-QL (US); CXY-75W140-1L (Canada)		WSL-M2C192-A and GL-5
Motorcraft® SAE 75W-85 Premium Synthetic Hypoid Gear Lubricant XY-75W85-QL		WSS-M2C942-A
Premium Long-Life Grease XG-1-C or XG-1-K (US); CXG-1-C (Canada)		ESA-M1C75-B



Item	Part Number	Description
1	4320	Pinion nut
2	4851	Pinion flange
3	4859	Deflector
4	4676	Drive pinion seal

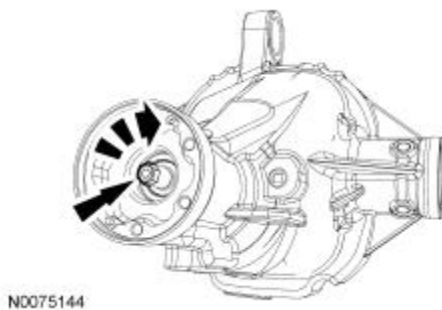
Removal

NOTICE: This operation disturbs the pinion bearing preload. Install a new pinion nut with the same color as the original if not replacing the collapsible spacer. If a new collapsible spacer is installed, install the pinion nut in the kit or damage to the component may occur.

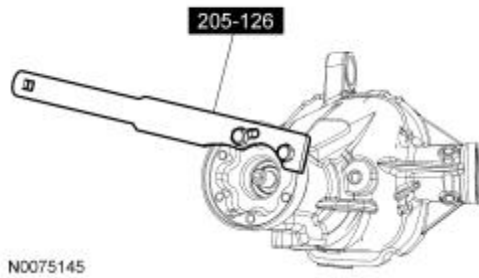
1. With the vehicle in NEUTRAL, position it on a hoist. Refer to Section 100-02.
2. Remove the driveshaft. Refer to Section 205-01.
3. **NOTE:** The disc brake calipers must be removed to prevent brake drag during drive pinion bearing preload adjustment.

Remove the rear brake disc. Refer to Section 206-04.

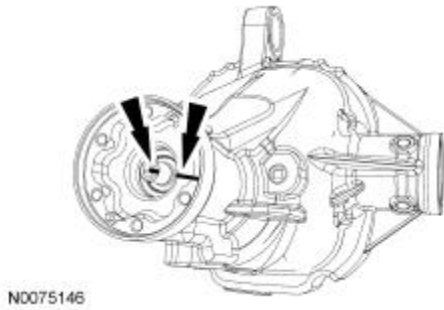
4. Using a Nm (lb-in) torque wrench on the pinion nut, record the torque required to maintain rotation of the pinion gear through several revolutions.



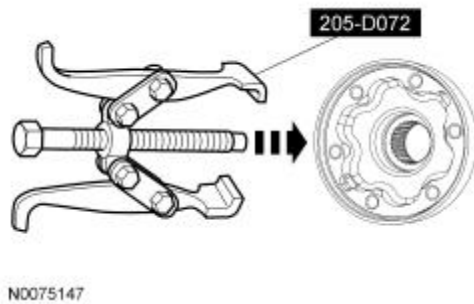
5. Using the Drive Pinion Flange Holding Fixture to hold the pinion flange, remove and discard the pinion nut.



6. Index-mark the pinion flange in relation to the drive pinion stem to make sure of correct alignment during installation.



7. Using the 2 Jaw Puller, remove the pinion flange.



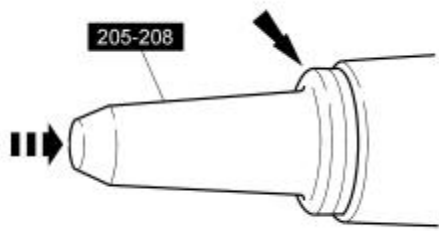
8. Force up on the metal flange of the drive pinion seal. Install gripping pliers and strike with a hammer until the drive pinion seal is removed.



Installation

1. Lubricate the new drive pinion seal with grease.
2. **NOTE:** If the new drive pinion seal becomes misaligned during installation, remove the drive pinion seal and install a new drive pinion seal.

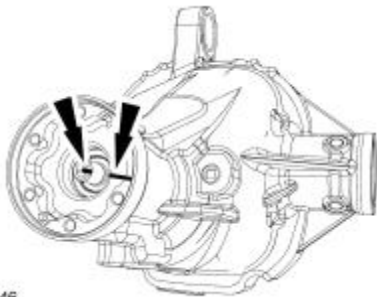
Using the Drive Pinion Oil Seal Installer, install a new drive pinion seal.



N0015303

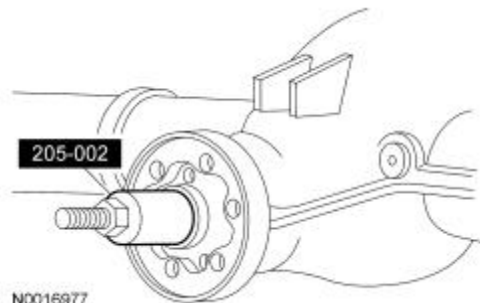
3. Lubricate the pinion flange splines with axle lubricant.
4. **NOTE:** Disregard the scribe marks if a new pinion flange is being installed.

Align the pinion flange with the drive pinion shaft.



N0075146

5. Using the Drive Pinion Flange Installer, install the pinion flange.



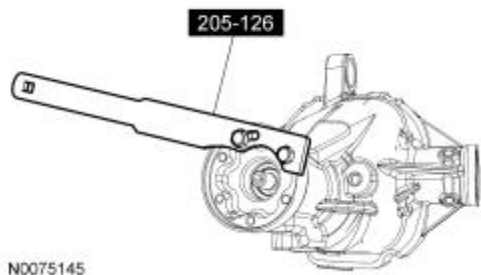
N0016977

6. Position the new pinion nut.
7. **NOTE:** Under no circumstances is the pinion nut to be backed off to reduce drive pinion bearing preload. If reduced drive pinion bearing preload is required, a new drive pinion collapsible spacer and pinion nut kit must be installed.

NOTE: Remove the Drive Pinion Flange Holding Fixture while taking drive pinion bearing preload readings with the Nm (lb-in) torque wrench.

Using the Drive Pinion Flange Holding Fixture to hold the pinion flange, tighten the pinion nut.

- Rotate the drive pinion occasionally to make sure the drive pinion bearings are seating correctly.
- Install a Nm (lb-in) torque wrench on the pinion nut.
- Rotating the drive pinion through several revolutions, take frequent drive pinion bearing preload readings until the original recorded drive pinion bearing preload reading is obtained.
- If the original recorded drive pinion bearing preload is lower than specifications, tighten to the specification. If the drive pinion bearing preload is higher than specification, tighten the pinion nut to the original reading as recorded. For additional information, refer to the Specifications portion of this section.



8. Install the driveshaft. Refer to Section 205-01.
9. Install the rear brake disc. Refer to Section 206-04.

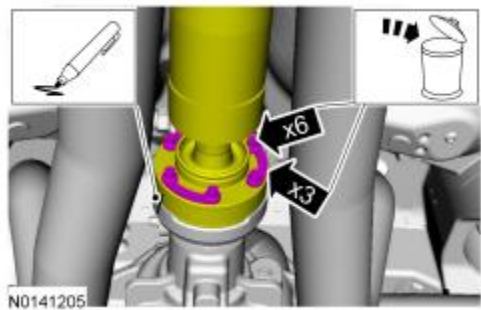
Driveshaft — 5.8L (4V)

Material	
Item	Specification
Threadlock and Sealer TA-25	WSK-M2G351-A5

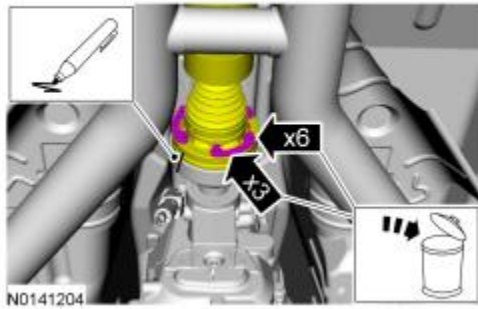
Removal

NOTICE: Do not drop the driveshaft, or damage to the driveshaft can occur. If the driveshaft is dropped, replace the driveshaft with a new one.

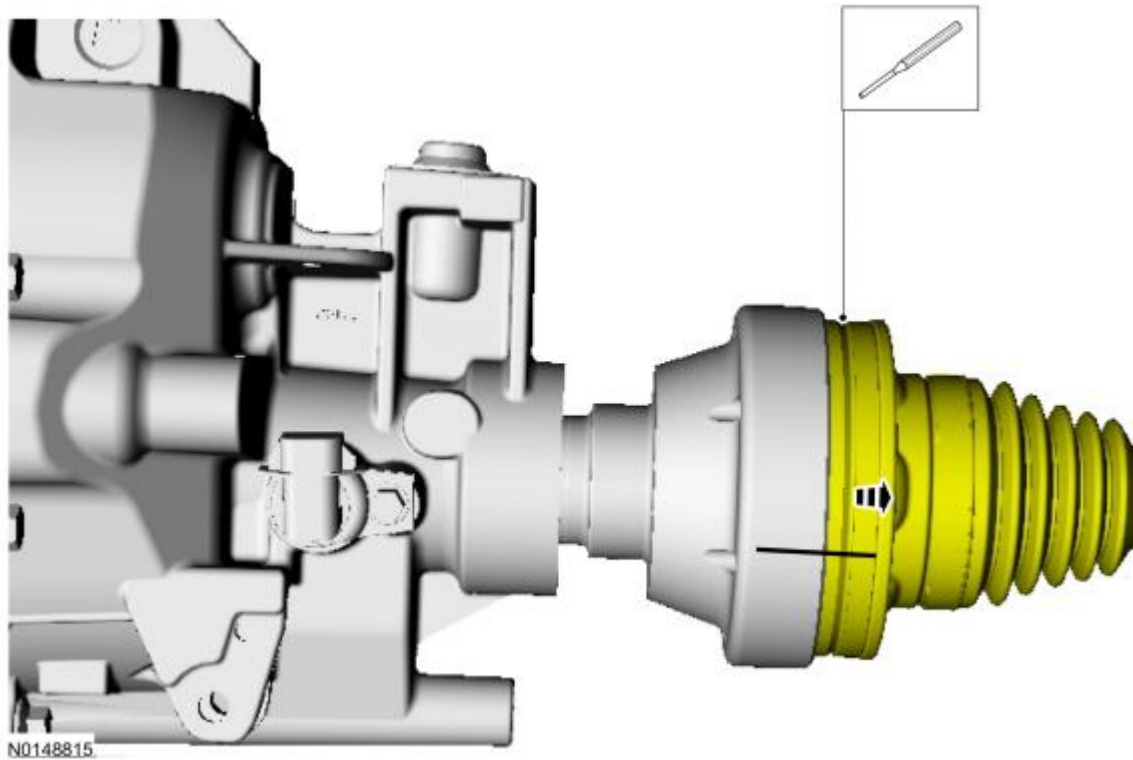
1. With the vehicle in NEUTRAL, position it on a hoist. Refer to Section 100-02.
2. Remove the LH exhaust intermediate pipe. Section 309-00
3. **NOTICE:** Use a deepwell socket to remove the driveshaft bolts, or damage to the CV boot can occur.
 - To install, tighten the new bolts to 55 Nm (41 lb-ft).



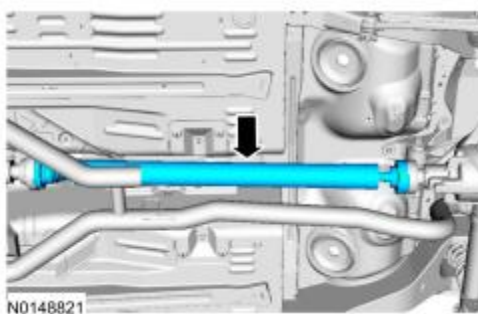
4.
 - To install, tighten the new bolts to 55 Nm (41 lb-ft).



5.



6.



Installation

- NOTE:** If new driveshaft flange bolts are not available, coat the threads of the original bolts with threadlock and sealer and reuse the original washers and spacers.

NOTE: The driveshaft flanges fit tightly on the transmission output flange pilot. To make sure that the driveshaft flange seats squarely on the transmission output flange, tighten the driveshaft flange bolts evenly in a cross pattern.

To install, reverse the removal procedure.