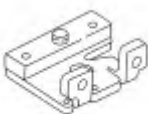
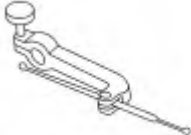
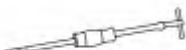


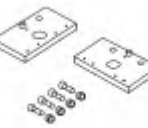
SECTION 205-03: Front Drive Axle/Differential
REMOVAL AND INSTALLATION

2014 F-150 Workshop Manual
 Procedure revision date: 10/25/2013

Differential Carrier

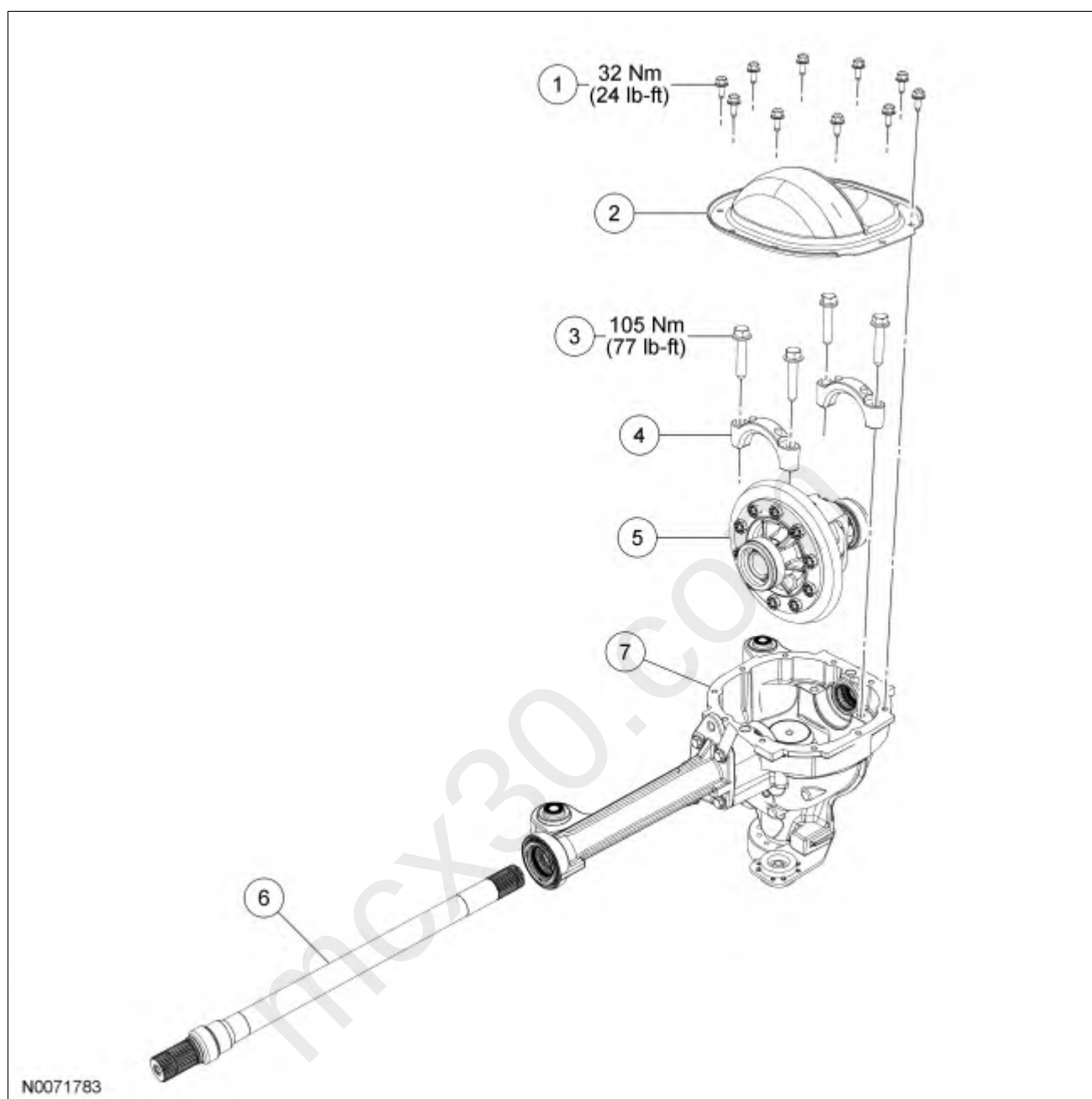
Special Tool(s)

 ST1150-B	Adapter for Differential Housing Spreader 205-368 (T96T-4000-A)
 ST1214-A	Dial Indicator Gauge with Holding Fixture 100-002 (TOOL-4201-C)
 ST1348-A	Gauge, Clutch Housing 308-021 (T75L-4201-A)
 ST1186-A	Holding Fixture, Transmission 307-003 (T57L-500-B)
 ST2891-A	Remover, Transmission Fluid Pump 307-397
 ST1185-A	Slide Hammer 100-001 (T50T-100-A)
	Spreader, Differential Carrier 205-001 (TOOL-4000-E)

 ST1259-A	
 ST1344-A	Spreader, Differential Housing (Plate) 205-335 (T93P-4000-A) (RH)

Material

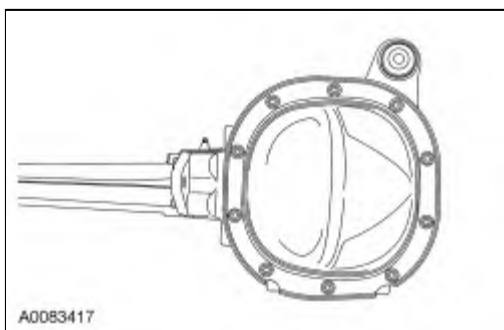
Item	Specification
Motorcraft® SAE 80W-90 Premium Rear Axle Lubricant XY-80W90-QL (US); CXY-80W90-1L (Canada)	WSP-M2C197-A
Premium Long-Life Grease XG-1-C or XG-1-K (US); CXG-1-C (Canada)	ESA-M1C75-B
Silicone Gasket and Sealant TA-30	WSE-M4G323-A4



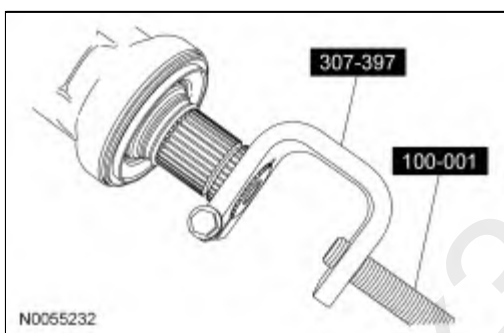
Item	Part Number	Description
1	390919	Differential housing cover bolt (10 required)
2	3N136	Differential housing cover
3	—	Differential bearing cap bolt (part of 3A412) (4 required)
4	—	Differential bearing cap (part of 3A412) (2 required)
5	3C202	Differential assembly
6	3A380	Intermediate axle shaft
7	3A412	Differential housing

Removal

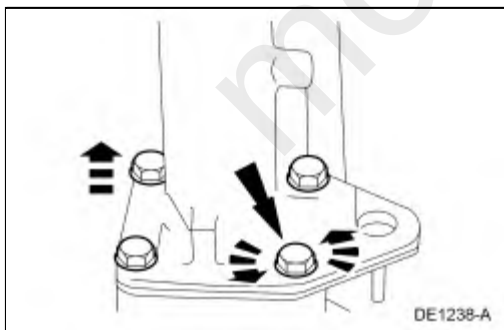
1. Remove the axle assembly. For additional information, refer to [Axle Assembly](#) in this section.
2. Remove the 10 bolts and the differential housing cover.
 - Drain the fluid.



3. Using the Transmission Fluid Pump Remover and Slide Hammer, remove the intermediate shaft.

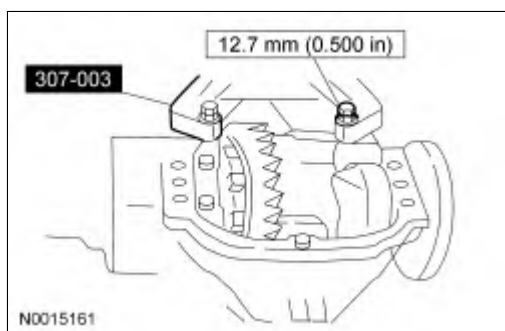


4. Remove the 4 bolts and the axle housing tube.



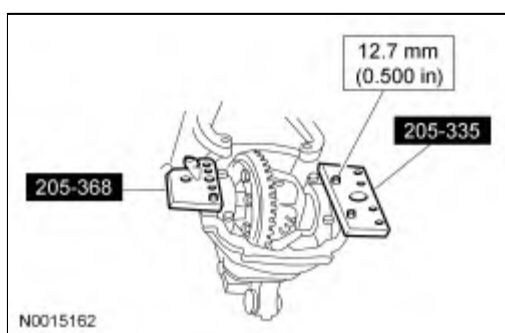
5. **NOTICE:** The fixture mounting bolts must have the minimum specified thread engagement in the carrier or damage to the component may occur.

Install the Transmission Holding Fixture.

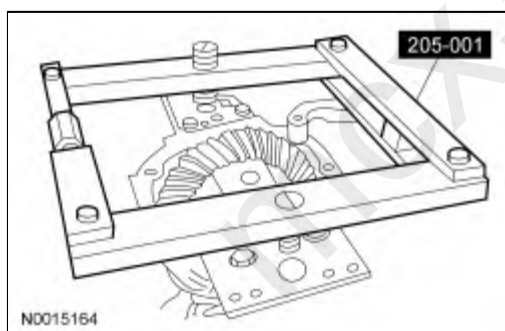


6. **NOTICE:** The housing spreader adapter bolts must have the minimum specified thread engagement in the carrier or damage to the component may occur.

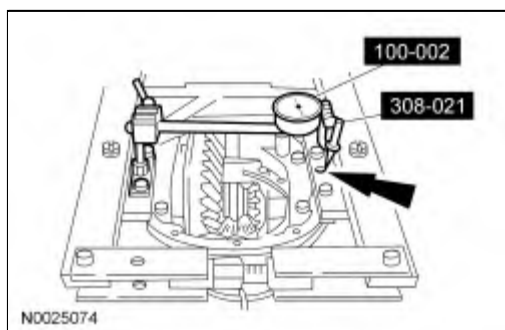
Install the Differential Housing Spreader Plate and Adapter for Differential Housing Spreader.



7. Position the Differential Carrier Spreader on the spreader adapters.



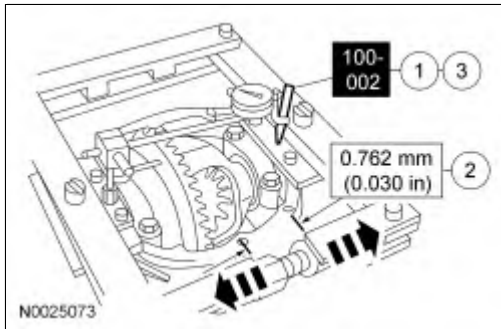
8. Install the Dial Indicator Gauge with Holding Fixture and Clutch Housing Gauge.
- Position the adapter tip in the spreader adapter hole.



9. **NOTICE:** Overspreading may damage the component.

Spread the axle housing to the specification.

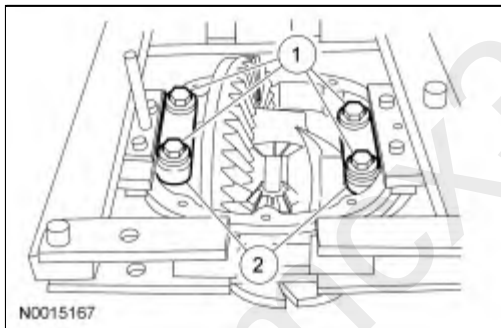
1. Adjust the Dial Indicator Gauge to zero.
2. Tighten the housing spreader screw to spread the axle housing to the specification.
3. Remove the Dial Indicator Gauge with Holding Fixture.



10. **NOTICE:** Mark the differential bearing caps Top or Bottom and LH or RH appropriately before removing them. Always install the differential bearing caps in their original positions or damage to the component may occur.

Mark and remove the 2 differential bearing caps.

1. Remove the 4 differential bearing cap bolts.
2. Remove the 2 differential bearing caps.

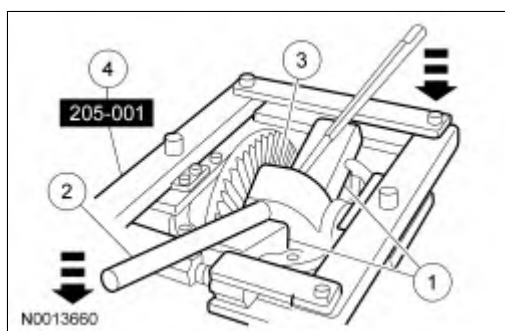


11. **NOTE:** Use wood blocks to avoid axle housing damage.

NOTE: Index-mark the position of the differential bearing shims. The differential bearing shims must be installed in their original locations and positions.

Remove the differential carrier from the axle housing.

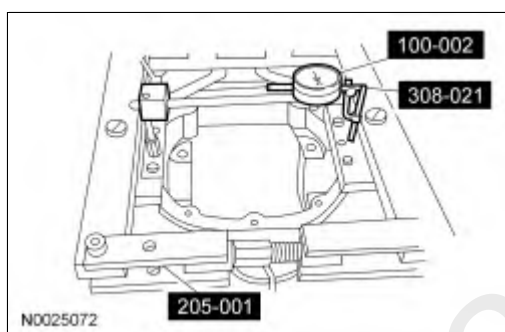
1. Position the wood blocks.
2. Position and push down on the 2 pry bars.
3. Remove the differential carrier.
4. Remove the Differential Carrier Spreader.



Installation

1. **NOTE:** Make sure the Dial Indicator needle is in the spreader adapter hole.

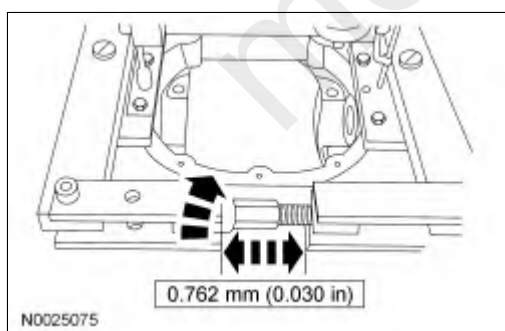
Install the Dial Indicator Gauge with Holding Fixture, Clutch Housing Gauge and Differential Carrier Spreader.



2. **NOTICE:** Overspreading may damage the component.

Spread the axle housing to the specification.

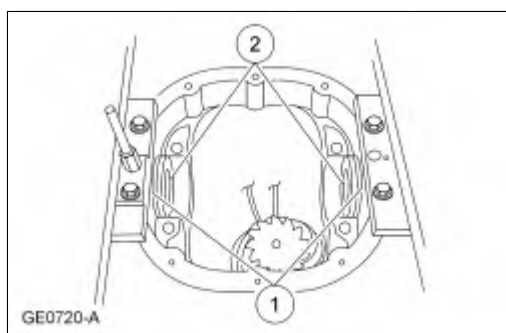
- Remove the Dial Indicator.



3. **NOTICE:** Never attempt to drive the differential bearing shim in place. Permanent damage to the machined axle housing surfaces may occur.

Position the differential bearing shims.

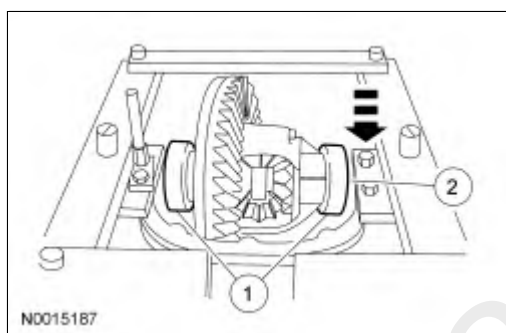
1. Apply a light coating of grease to one side of the differential bearing shims to help hold them in place.
2. Position the differential bearing shims.



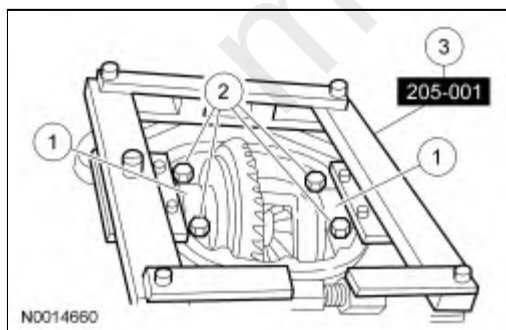
4. **NOTE:** Push the differential carrier downward to fully seat the differential bearing cups in the axle housing.

Position the differential carrier.

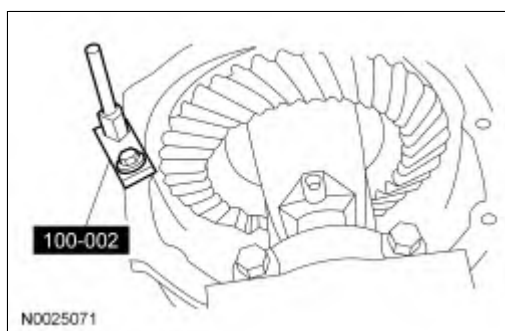
1. Position the differential bearing cups on the differential bearings.
2. Lower the differential assembly in place between the differential bearing shims.



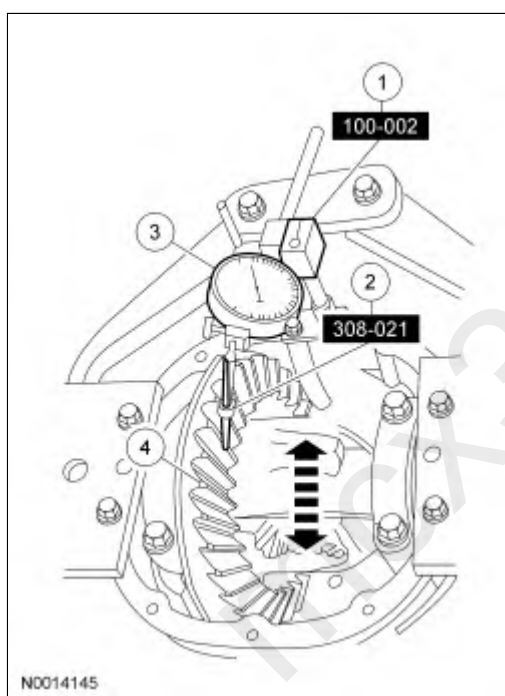
5. Install the differential bearing caps in their original positions and tighten with the housing still spread.
1. Position the 2 differential bearing caps.
 2. Install the 4 differential bearing cap bolts.
 - Tighten to 105 Nm (77 lb-ft).
 3. Remove the Differential Carrier Spreader.



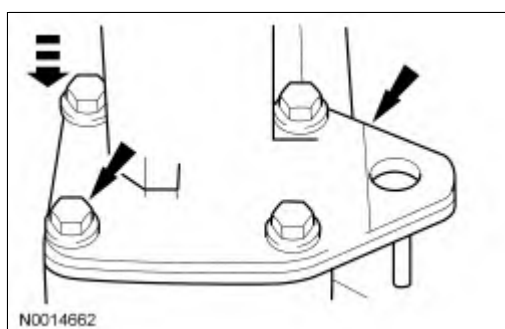
6. Install the Dial Indicator Gauge with Holding Fixture.



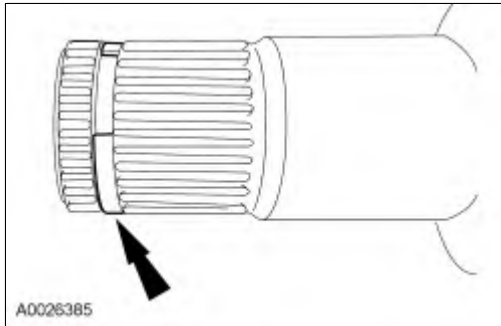
7. Using the Dial Indicator Gauge with Holding Fixture and Clutch Housing Gauge, measure the differential ring gear backlash at 4 equally spaced points.
1. Attach the Dial Indicator Gauge with Holding Fixture.
 2. Position the Clutch Housing Gauge tip centrally on a drive tooth.
 3. Zero the Dial Indicator.
 4. Turn the differential ring gear without turning the drive pinion gear.



8. Install the axle housing tube and the 4 bolts.
- Tighten to 73 Nm (54 lb-ft).



9. Install a new stub shaft seal. For additional information, refer to [Stub Shaft Pilot Bearing and Seal](#) in this section.
10. Install a new circlip on the intermediate shaft end.

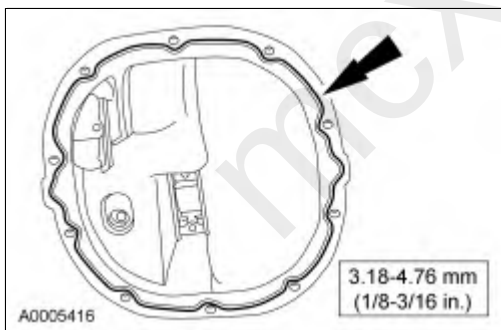


11. Insert the intermediate shaft and engage the circlip with the differential side gear.
12. Remove the axle assembly from the Transmission Holding Fixture and place it on the bench.
13. **NOTE:** Remove all of the silicone gasket and make sure the surfaces are free of oil before applying the new silicone gasket.

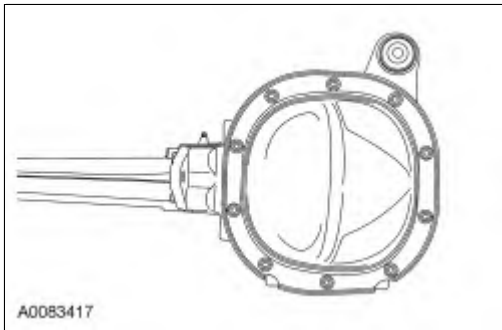
NOTE: The differential housing cover must be installed within 15 minutes of application of the silicone, or new sealant must be applied. If possible, allow one hour before filling with lubricant to make sure the silicone sealant has correctly cured.

Apply a continuous bead of sealant, of the specified thickness, to the differential housing cover mounting surface as shown in the illustration.

- Use silicone gasket and sealant.



14. Install the differential housing cover and the 10 differential housing cover bolts.
 - Tighten to 32 Nm (24 lb-ft).



15. Install the axle assembly. For additional information, refer to [Axle Assembly](#) in this section.
 16. Remove the fill plug and fill the axle assembly with the specified type and amount of axle lubricant.
 - Tighten the fill plug to 25 Nm (18 lb-ft).
-