

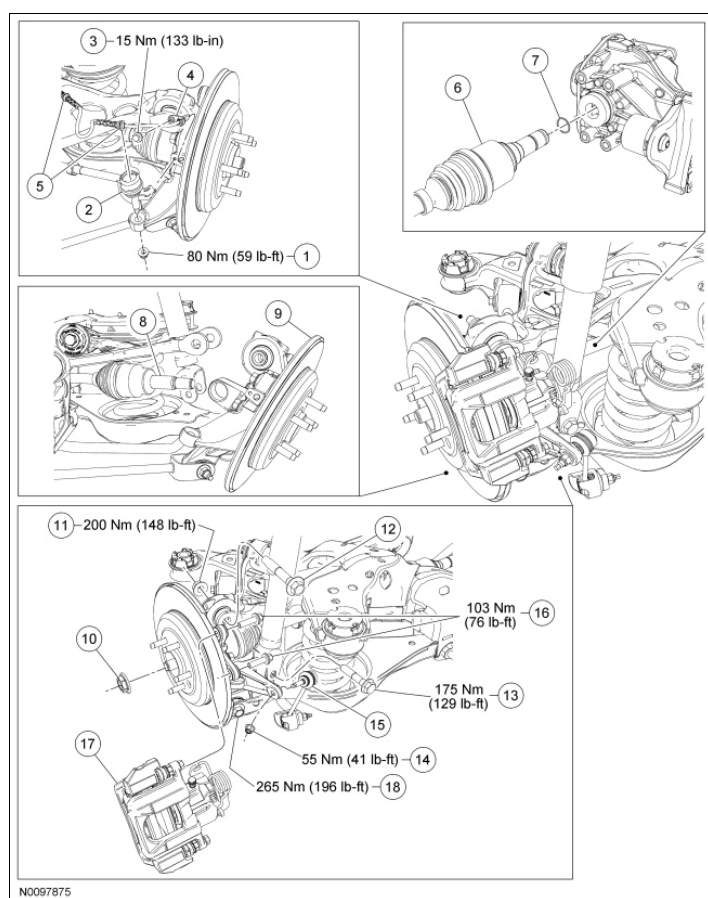


**Halfshaft**

Special Tool(s)

 ST2828-A	Axle Seal Protector 205-816
 ST2330-A	Front Hub Remover 205-D070 (D93P-1175-B) or equivalent



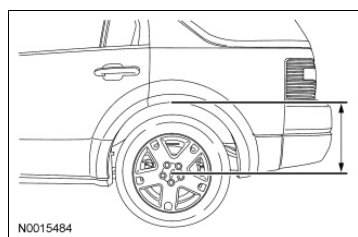
Item	Part Number	Description
1	W500747	Toe link-to-wheel knuckle nut
2	5B674	Toe link
3	W712797	Wheel speed sensor bolt
4	2C190	Wheel speed sensor
5	W520214	Wheel speed sensor harness retainers (part of 2C190) (2 required)
6	4K138/139	Halfshaft inner CV joint
7	-	Circlip
8	4K138/139	Halfshaft outer CV joint

9	5B758/5B759	Wheel knuckle
10	W712435	Wheel hub nut
11	W520517	Upper arm-to-wheel knuckle nut
12	W711479	Upper arm-to-wheel knuckle bolt
13	W714033	Shock absorber lower bolt
14	W520213	Stabilizer bar link upper nut
15	5D498 LH/ 5C486 RH	Stabilizer bar link
16	W710681	Brake caliper anchor plate bolts (2 required)
17	-	Brake caliper anchor plate and caliper assembly
18	W711478	Lower arm-to-wheel knuckle bolt

### Removal

**NOTICE:** Suspension fasteners are critical parts because they affect performance of vital components and systems and their failure may result in major service expense. New parts must be installed with the same part numbers or equivalent part, if replacement is necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to make sure of correct retention of these parts.

1. Measure the distance from the center of the wheel hub to the lip of the fender with the vehicle in a level, static ground position (curb height).



2. Remove the wheel and tire. For additional information, refer to [Section 204-04](#).
3. Remove the wheel hub nut.
  - Do not discard at this time.
4. **NOTICE:** Do not allow the caliper to hang from the brake hose or damage to the hose can occur.

Remove and discard the 2 brake caliper anchor plate bolts and position the brake caliper and anchor plate assembly aside.

- Support the brake caliper and anchor plate assembly using mechanic's wire.

5. **NOTE:** Use the hex-holding feature to prevent the stabilizer bar link stud from turning while removing or installing the nut.

Remove and discard the stabilizer bar link upper nut and disconnect the link.

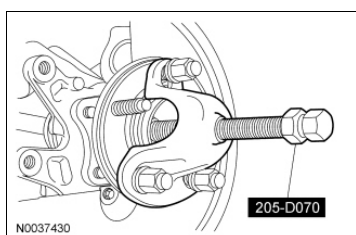
6. Remove and discard the toe link-to-wheel knuckle nut and disconnect the link.

7. Remove the wheel speed sensor bolt.

- Disconnect the wheel speed sensor harness retainers and position the sensor and harness

aside.

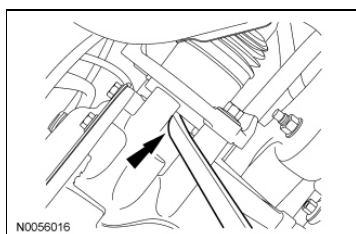
8. Position a screw-type jackstand under the lower arm.
9. Remove and discard the upper arm-to-wheel knuckle nut and bolt and disconnect the knuckle from the upper arm.
10. Remove and discard the shock absorber lower bolt and disconnect the shock absorber from the knuckle bracket.
11. Loosen, but do not remove the lower arm-to-wheel knuckle bolt.
12. Using the Front Hub Remover, separate the halfshaft outer CV joint from the hub bearing.



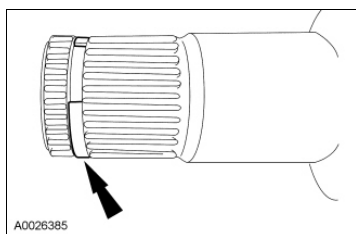
13. Swing the wheel knuckle outward and remove the halfshaft outer CV joint from the hub bearing.
14. **NOTICE: Do not damage the oil seal when removing the axle halfshaft from the differential.**

Using a suitable pry bar, remove the halfshaft inner CV joint from the differential.

- Remove the halfshaft from the vehicle.



15. Remove and discard the circlip from the halfshaft.

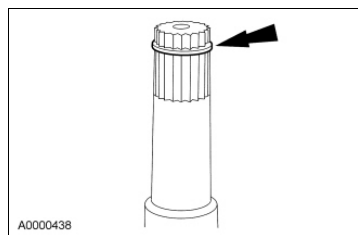


## Installation

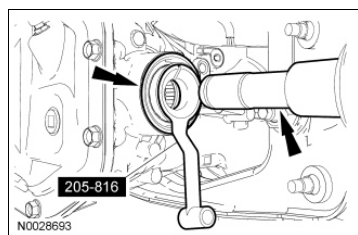
**NOTE:** Before tightening suspension bushing fasteners, use a jackstand to raise the rear suspension until the distance between the center of the hub and the lip of the fender is equal to the measurement taken in the removal procedure (curb height).

1. **NOTICE: The circlips are unique in size and shape for each shaft. Make sure to use the specified circlip for the application or vehicle damage may occur.**

Install a new circlip on the halfshaft.



2. Using the Axle Seal Protector, install the halfshaft inner CV joint into the differential.
  - Make sure the circlip locks in the side gear.



3. Swing the wheel knuckle inward and install the halfshaft outer CV joint through the hub bearing.
4. Position the wheel knuckle to the upper arm and loosely install a new nut and bolt.
5. Position the shock absorber and loosely install a new bolt.
6. Position the wheel speed sensor harness in the retainers and install the sensor and bolt.
  - Tighten to 15 Nm (133 lb-in).
7. Position the toe link and loosely install a new toe link-to-wheel knuckle nut.
8. Position a suitable jackstand under the lower control arm at the shock and spring assembly attachment point and raise the rear suspension until the distance between the center of the hub and the lip of the fender is equal to the measurement taken in Step 1 of the procedure (curb height).
9. **NOTE:** A slotted upper arm allows for the rear suspension camber to be adjusted by pushing inward or pulling outward on the wheel knuckle while tightening the upper arm-to-wheel knuckle nut.

With the wheel knuckle pushed inward for maximum negative camber, tighten the upper arm-to-wheel knuckle nut to 200 Nm (148 lb-ft).

10. Tighten the lower arm-to-wheel knuckle bolt to 265 Nm (196 lb-ft).
11. Tighten the shock absorber lower bolt to 175 Nm (129 lb-ft).
12. Tighten the toe link-to-wheel knuckle nut to 80 Nm (59 lb-ft).
13. **NOTE:** Use the hex-holding feature to prevent the stabilizer bar link stud from turning while removing or installing the nut.

Connect the stabilizer bar link and install a new stabilizer bar link upper nut.

- Tighten to 55 Nm (41 lb-ft).

14. Position the brake caliper and anchor plate assembly and install the 2 bolts.

- Tighten to 103 Nm (76 lb-ft).

15. **NOTICE:** Do not tighten the wheel hub nut with the vehicle on the ground. The nut must be tightened to specification before the vehicle is lowered onto the wheels. Wheel bearing damage will occur if the wheel bearing is loaded with the weight of the vehicle applied.

**NOTE:** Apply the brake to keep the halfshaft from rotating.

Use the previously removed hub nut to seat the halfshaft.

- Tighten to 350 Nm (258 lb-ft).
- Remove and discard the hub nut.

16. **NOTICE:** The wheel hub nut contains a one-time locking chemical that is activated by the heat created when it is tightened. Install and tighten the new wheel hub nut to specification within 5 minutes of starting it on the threads. Always install a new wheel hub nut after loosening or when not tightened within the specified time or damage to the components can occur.

**NOTE:** Apply the brake to keep the halfshaft from rotating.

Install a new hub nut.

- Tighten to 350 Nm (258 lb-ft).

17. Install the wheel and tire. For additional information, refer to [Section 204-04](#) .

18. Check and if necessary, adjust the rear toe. For additional information, refer to [Section 204-00](#) .

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## Material

Item	Specification	Fill Capacity
High Performance DOT 3 Motor Vehicle Brake Fluid PM-1-C (US); CPM-1-C (Canada)	WSS-M6C62-A or WSS-M6C65-A1	1000 ml (2.11 pt)
Metal Brake Parts Cleaner PM-4-A or PM-4-B (US); CPM-4 (Canada)	-	-
Silicone Brake Caliper Grease and Dielectric Compound XG-3-A	ESE-M1C171-A	-

## General Specifications

Item	Specification
<b>Brake Disc</b>	
Front brake disc minimum thickness	28.5 mm (1.122 in)
Rear brake disc minimum thickness	10.0 mm (0.394 in)
<b>Brake Pads</b>	
Brake pad maximum taper wear (in any direction)	3.0 mm (0.118 in)
Brake pad minimum thickness	3.0 mm (0.118 in)

## Torque Specifications

Description	Nm	lb-ft	lb-in
Front caliper bleeder screw	11	-	97
Master cylinder brake tube fittings	22	16	-
Rear caliper bleeder screw	10	-	89



## Brake System

The brake system consists of the following components:

- Front and rear disc brakes
- Cable/caliper actuated parking brake
- Brake master cylinder and fluid reservoir
- Vacuum-assisted power brake booster
- Four-wheel ABS
- Red brake light indicator

The brake pedal is connected to the power brake booster, which is connected to the brake master cylinder. When the brake pedal is pressed, brake fluid is pushed through the double-walled steel tubes and flexible hoses to the front and rear disc brake calipers. The brake fluid enters the disc brake calipers, forcing the caliper pistons and brake pads outward against the brake disc friction surface, slowing or stopping rotation. When the brake pedal is released, brake fluid pressure is relieved, returning the front and rear disc brake caliper pistons and brake pads to the unapplied position.

For additional information on the following:

- Front disc brakes, refer to [Section 206-03](#) .
  - Rear disc brakes, refer to [Section 206-04](#) .
  - Parking brake actuation, refer to [Section 206-05](#) .
  - Hydraulic brake actuation, refer to [Section 206-06](#) .
  - Vacuum-assisted power brake booster, refer to [Section 206-07](#) .
  - ABS, refer to [Section 206-09](#) .
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## Principles of Operation

### Brake System

Applying the brake pedal uses lever action to push a rod into the brake booster, which through the use of vacuum, boosts the force of the rod and then transmits this force to the primary piston in the master cylinder. This produces hydraulic pressure in the master cylinder. This pressure builds in the master cylinder and brake tubes as the brake pedal is applied further. The pressure between the primary and secondary piston forces the secondary piston to compress, building pressure in its circuit. The hydraulic pressure is transmitted by brake fluid through the brake tubes to the ABS Hydraulic Control Unit (HCU), which then distributes that pressure to the individual brake calipers. The brake calipers use hydraulic pressure to apply the pads. The application of the brake pads will cause the rotation of the wheels to slow or stop, depending on how much brake pressure is applied. The parking brakes carry out the same function except that they are mechanically actuated by a cable that connects only to the rear brakes.

### Brake Master Cylinder Compensator Ports

The purpose of the compensator ports in the brake master cylinder is to supply additional brake fluid from the master cylinder reservoir when needed by the brake system due to brake lining wear and allow brake fluid to return to the master cylinder reservoir when the brakes are released. The returning brake fluid creates a slight turbulence in the master cylinder reservoir. This is a normal condition and indicates that the compensator ports are not clogged. Clogged compensator ports may cause the brakes to hang up or not fully release.

### Red Brake Warning Indicator

The red brake warning indicator alerts the driver to certain conditions that exist in the brake system. The Instrument Cluster (IC) performs a bulb check when the ignition key is turned to the RUN position. The conditions that cause the indicator to illuminate are low brake fluid level, the parking brake is applied or there is a fault in the ABS (if the yellow ABS warning indicator is also illuminated). To diagnose red brake warning indicator concerns, refer to [Section 413-01](#).

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**Inspection And Verification**

## Material

Item	Specification
High Performance DOT 3 Motor Vehicle Brake Fluid PM-1-C (US); CPM-1-C (Canada)	WSS-M6C62-A or WSS-M6C65-A1

**⚠ WARNING: Do not use any fluid other than clean brake fluid meeting manufacturer's specification. Additionally, do not use brake fluid that has been previously drained. Following these instructions will help prevent system contamination, brake component damage and the risk of serious personal injury.**

**⚠ WARNING: Carefully read cautionary information on product label. For EMERGENCY MEDICAL INFORMATION seek medical advice. In the USA or Canada on Ford/Motorcraft products call: 1-800-959-3673. For additional information, consult the product Material Safety Data Sheet (MSDS) if available. Failure to follow these instructions may result in serious personal injury.**

**NOTICE: Blistering or swelling of rubber brake components can indicate contamination of the brake fluid by a petroleum-based substance. The entire hydraulic brake system must be flushed with clean, specified brake fluid and contaminated rubber components must be replaced to prevent recontamination.**

**NOTICE: Do not spill brake fluid on painted or plastic surfaces or damage to the surface may occur. If brake fluid is spilled onto a painted or plastic surface, immediately wash the surface with water.**

The first indication that something may be wrong in the brake system is a change in the feeling through the brake pedal. The brake warning indicator in the Instrument Cluster (IC) and the brake fluid level in the brake master cylinder reservoir are also indicators of system concerns.

If a wheel is locked and the vehicle must be moved, open a bleeder screw at the locked wheel to let out enough fluid to relieve the pressure. Close the bleeder screw. If multiple wheels are locked, check the brake pedal free play to verify brake pedal is not partially applied. These operations may release the brakes, but will not correct the concern. If this does not relieve the locked wheel condition, repair the locked components before proceeding.

1. Verify the customer concern.
  - For parking brake concerns, refer to [Section 206-05](#) .
  - For ABS concerns, refer to [Section 206-09](#) .
  - For adjustable pedal concerns, refer to [Section 206-06](#) .
  - For all other concerns, continue with the next step.
2. Visually inspect for obvious signs of mechanical or electrical damage.

**Visual Inspection Chart**