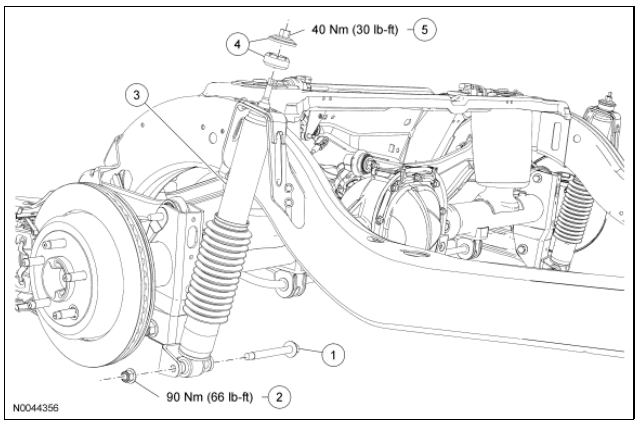
Shock Absorber



Item	Part Number	Description
1	W506551	Lower shock bolt
2	W520214	Lower shock nut
3	18125	Shock assembly
4	18A161	Shock washer and insulator
5	18197	Upper shock nut

Removal and Installation

⚠ WARNING: All vehicles are equipped with gas-pressured shock absorbers which will extend unassisted. Do not apply heat or flame to the shock absorber tube. Failure to follow these instructions may result in personal injury.

⚠ CAUTION: Suspension fasteners are critical parts because they affect performance of vital components and systems and their failure can result in major service expense. New fasteners with the same part number or an equivalent part must be installed if installation is necessary. Do not use a 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.

NOTE: Install shock absorbers individually as required. It is not necessary to install in pairs.

1. **⚠ WARNING: The electrical power to the air suspension system must be turned off prior to hoisting, jacking or towing an air suspension vehicle. Failure to do so can result in unexpected inflation or deflation of the air springs, which can result in shifting of the vehicle during these operations. Failure to follow these instructions may result in personal injury.**

   If equipped, turn the air suspension service switch to the OFF position.

2. **⚠ WARNING: If equipped with fire suppression system, depower the system. For important safety warnings and procedures, refer to Section 419-03 .**

   With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to Section 100-02 .

3. Use a suitable jack or jack stands to support the rear axle.

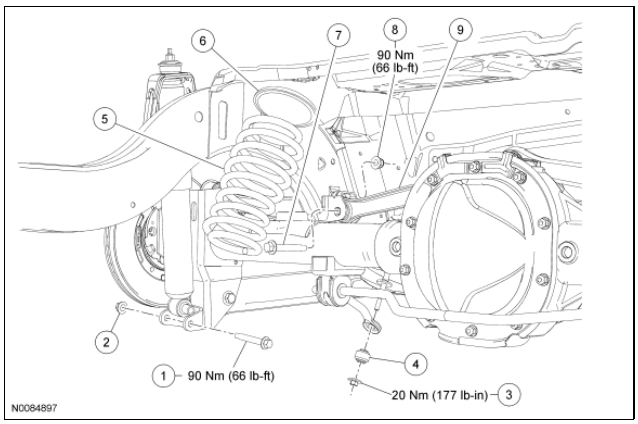
4. Remove the shock upper nut, washer and the insulator.
    - Discard the nut, washer and insulator.
    - To install, tighten to 40 Nm (30 lb-ft).

5. Remove lower shock nut, bolt and the shock absorber.
    - Discard the nut and bolt.
    - To install, tighten to 90 Nm (66 lb-ft).

6. **WARNING: If equipped with fire suppression system, repower the system. For important safety warnings and procedures, refer to Section 419-03 .**

   To install, reverse the removal procedure. If equipped with fire suppression system, repower the system.

Spring — Coil

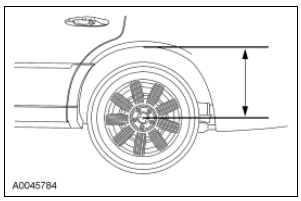


Item	Part Number	Description
1	W506551	Lower shock bolt
2	W520214	Lower shock nut
3	N621941	Stabilizer bar link nut
4	5493	Stabilizer bar link bushing
5	5560	Rear spring
6	5536	Rear spring insulator
7	W506545	Lateral arm bolt (2 required)
8	W520214	Lateral arm nut (2 required)
9	4264	Lateral arm (2 required)

Removal

NOTICE: **Suspension fasteners are critical parts because they affect the performance of vital components and their failure may result in major service expense. Install new fasteners with the same part number or an equivalent part if installation is necessary. Do not install a part of lesser quality or substitute design. Torque values must be used as specified during reassembly to ensure correct retention of these parts.**

1. For reference during the installation procedure, measure the distance from the lip of the fender to the center of the wheel hub with the vehicle in a static level ground position.



2. ⚠ **WARNING: Before servicing a vehicle equipped with a fire suppression system, depower the system by following the procedure in Section 419-03 . Failure to follow the instructions may result in serious personal injury.**

   With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to Section 100-02 .

3. Disconnect the stabilizer bar from the stabilizer bar links in the following sequence.
    1. Remove the nuts and the bushings.
    2. Rotate the stabilizer bar off the links.
    3. Discard the nuts.

4. Use a suitable jack or jackstands to support the rear axle.

5. Remove the nuts and bolts and disconnect the lateral arms from the frame.
    - Discard the nuts and bolts.

6. ⚠ **WARNING: Keep all body parts clear of shock absorbers or strut rods. Shock absorbers or struts can extend unassisted. Failure to follow this instruction may result in serious personal injury.**

   Remove the nuts and bolts, and disconnect the shock absorbers from the axle.

    - Discard the nuts and bolts.

7. Carefully lower the jack or jackstands.

8. Remove the springs and spring insulators.

Installation

1. Inspect the spring insulators for wear or damage.
    - Install new insulators, if necessary.

2. Install the spring insulators on the springs.

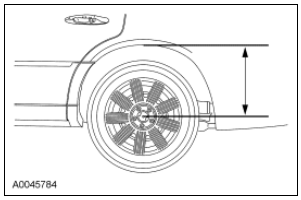
3. Install the springs and the spring insulators in the vehicle.
    - Make sure that the springs are correctly seated.

4. Raise the axle using the jack or jackstands.

5. Connect the shock absorbers to the axle and install new bolts and nuts.
    - Make sure that the bolts are installed from the inboard side.
    - Tighten the nuts to 90 Nm (66 lb-ft).

6. Connect the lateral arms to the frame and loosely install new bolts and nuts.
    - Do not tighten at this time.

7. Using the jack, raise the suspension until the distance between the lip of the fender and the center of the wheel hub is equal to the measurement taken in the removal procedure.



8. Tighten the lateral arm-to-frame bolts to 90 Nm (66 lb-ft).

9. Lower the axle and remove the suitable jack or jackstands.

10. Connect the stabilizer bar to the stabilizer bar links in the following sequence.
    1. Rotate the stabilizer bar onto the links and install the bushings.
    2. Install the new nuts and tighten to 20 Nm (177 lb-in).

11. ⚠ **WARNING: If the vehicle is equipped with a fire suppression system, repower the system. For important safety warnings and procedures, refer to Section 419-03 . Failure to follow these instructions may result in serious personal injury.**

    If equipped with a fire suppression system, repower the system.

General Specifications

Item	Specification
Cleaners	
Wheel and Tire Cleaner ZC-27-A, -B, -C	—
Wheel Runout	
Lateral (aluminum)	0.50 mm (0.020 in)
Radial (aluminum)	0.80 mm (0.03 in)
Lateral (steel)	0.64 mm (0.025 in)
Radial (steel)	0.89 mm (0.035 in)
Tire Runout	
Radial runout (maximum)	1.0 mm (0.04 in)
Lateral runout (maximum)	2.0 mm (0.08 in)
Tire Balance Weight	
Maximum	140g (5 oz) per wheel 70g (2.5 oz) per flange
Tire Inflation	
Tires	See safety certification sticker located on driver door jamb

Torque Specifications

Description	Nm	lb-ft	lb-in
Wheel nuts	135	100	—
Wheel cover nuts	9	—	80

Wheels And Tires

⚠ WARNING: Do not mix different types of tires on the same vehicle such as radial, bias or bias-belted tires except in emergencies (temporary spare usage), because vehicle handling may be seriously affected and may result in loss of control. Failure to follow these instructions may result in personal injury.

⚠ CAUTION: When removing adhesive stick-on weights from wheels, use a plastic scraper to prevent damaging the wheels' protective finish.

Factory-installed tires and wheels are designed to operate satisfactorily with loads up to and including full-rated load capacity when inflated to recommended inflation pressures.

Correct tire pressure and driving techniques have an important influence on tire life. Heavy cornering, excessively rapid acceleration and unnecessary sharp braking increase tire wear.

To equalize tire wear, the tires should be rotated at recommended intervals.

Safety Precautions

⚠ WARNING: Never run the engine with one wheel off the ground, for example, when changing a tire. The wheel(s) resting on the ground could cause the vehicle to move. Failure to follow these instructions may result in personal injury.

⚠ WARNING: The tire and wheel must always be correctly matched. It is very important to determine the size of each component before any assembly operations commence. Failure to adhere to these instructions can result in an explosive separation and cause serious bodily injury or death.

⚠ WARNING: Aftermarket aerosol tire sealants are extremely flammable. Always question the customer to make sure these products have not been used. Failure to follow these instructions may result in personal injury.

⚠ WARNING: Aftermarket wheel assemblies may not be compatible with the vehicle. Use of incompatible wheel assemblies can result in equipment failure and possible injury. Use only approved wheel assemblies. Failure to follow these instructions may result in personal injury.

⚠ WARNING: Use only wheels and wheel nuts that have been designed for current model Ford trucks. Aftermarket wheels or wheel nuts may not fit or function correctly. Failure to follow these instructions may result in personal injury.

⚠ WARNING: Always wear safety goggles or a face shield when performing any work with the tire and wheel assemblies. Failure to follow these instructions may result in personal injury.

⚠ CAUTION: Reduce the air pressure as much as possible by pushing the valve core plunger in prior to removing the valve core. Avoid working in a position in which the face or body is directly over a tire in which there is pressure.

When carrying out any inspection or repair procedures on wheels and tires, follow the preceding safety precautions.

Wheels And Tires

Special Tool(s)

 ST2869-A	Digital Tire Gauge 204-354
 ST3058-A	Hunter Road Force® Wheel Balancer GSP9700 Series

Inspection and Verification

⚠ WARNING: If equipped with fire suppression system, refer to Section 419-03 for Important Safety Warnings. Failure to follow this instruction may result in serious personal injury.

⚠ WARNING: Vehicle may have multiple drive wheels. Do not use engine to power the driveline unless all drive wheels are elevated off the ground. Drive wheels in contact with ground could cause unexpected vehicle movement. Failure to follow this instruction may result in serious personal injury.

Verify the customer concern by carrying out a road test on a smooth road. If any vibrations are apparent, GO to Symptom Chart - Wheel and Tire Vibration .

To maximize tire performance, inspect for signs of incorrect inflation and uneven wear, which may indicate a need for balancing, rotation or front suspension alignment.

Correct tire pressure and driving techniques have an important influence on tire life. Heavy cornering, excessively rapid acceleration and unnecessary sharp braking increase tire wear.

Replacement tires must follow the recommended:

- tire sizes.
- speed rating.
- load range.
- tire construction type.

The use of any other tire/wheel size or type can seriously affect:

- ride.
- handling.
- speedometer/odometer calibration.
- vehicle ground clearance.
- tire clearance between the body and chassis.
- wheel bearing life.
- brake cooling.

New wheels need to be installed when the vehicle's wheels:

- are bent.

- are cracked.
- are dented.
- are heavily corroded.
- are leaking.
- have elongated wheel hub bolt holes.
- have excessive lateral or radial runout.

It is mandatory to use only the tire sizes recommended on the tire chart attached to the vehicle. Larger or smaller tires can damage the vehicle, affect durability and require changing the speedometer calibration. Make sure wheel size and offsets match those recommended for the tire in use.

1. Inspect the tires for signs of uneven wear. Refer to the following descriptions to identify the type of wear and GO to Symptom Chart - Tire Wear for the appropriate repair action to be carried out.

2. Check the tires for:
   - cuts.
   - stone bruises.
   - abrasions.
   - blisters.
   - embedded objects.

3. Tread wear indicators are molded into the bottom of the tread grooves. Install a new tire when the indicator bands are less than 2/32 in.

Tire Wear

Tire wear is commonly defined as a loss of tread depth. Tire tread wear occurs due to friction with the contact surface (road/pavement). The tread should wear down uniformly all the way around the circumference of the tire and all the way across the tread face. When this does not occur, the tire may have abnormal/incorrect wear.

Normal Tire Wear

Normal tire wear is identified as even wear around and across the tread. Because there are many factors (driving style, road surfaces, type of vehicle, type of tire) that can affect tire wear, there is no absolute mileage expectation for a normal wear condition. A tire is considered worn-out when the tread has worn to the level of the tread-wear indicators.

Abnormal/Incorrect Tire Wear

Abnormal/incorrect tire wear is identified as tire wear that is not even around or across the tread and that creates performance-related issues.

Abnormal/incorrect wear can be caused by numerous factors, some of which include driving style (aggressive, passive), climate (hot, cold), road conditions, vehicle loading and maintenance. It is important to determine the root cause of wear on a vehicle before carrying out repair. Tires exhibiting abnormal/incorrect tire wear may still be serviceable provided that the minimum tread depth is greater than 2/32 in and the tire is not causing a vehicle performance (noise/vibration) concern.

Some abnormal/incorrect wear patterns look the same all the way around the tread of the tire, other wear patterns are not consistent and can occur in various spots on the tread area. The underlying causes of the 6 wear categories are different. Refer to the following descriptions to identify the type of wear and GO to Symptom Chart - Tire Wear for the appropriate repair action to be carried out.