Air Spring

Removal

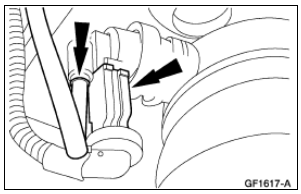
⚠ **WARNING: Do not remove an air spring under any circumstances when there is pressure in the air spring. Do not remove any components supporting an air spring without either exhausting the air or providing support for the air spring to prevent vehicle damage or personal injury.**

1. **NOTE:** The vehicle must be positioned on a suitable lifting device prior to deflating the air suspension system.

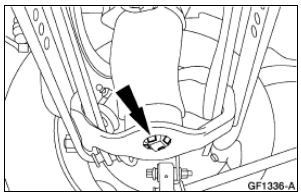
   Deflate the air suspension system; refer to Ride Height Adjustments .

2. Raise and support the vehicle; refer to Section 100-02 .

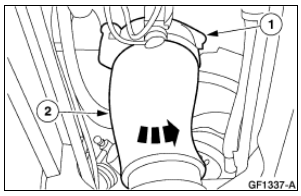
3. Disconnect the air spring solenoid electrical connector and air line.
   - Compress the quick connect locking ring and pull out the air line.



4. Lift the bottom of the air spring upward while depressing the locking tabs on the bottom of the air spring seat.



5. Remove the air spring.
   1. Depress the locking tabs.
   2. Rotate and remove the air spring.



Installation

1. To install, reverse the removal procedure.

Solenoid Valve Air Spring

Removal

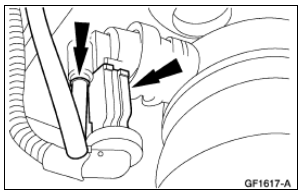
⚠ **WARNING: Do not remove an air spring under any circumstances when there is pressure in the air spring. Do not remove any components supporting an air spring without either exhausting the air or providing support for the air spring to prevent vehicle damage or personal injury.**

1. **NOTE:** The vehicle must be positioned on a suitable lifting device prior to deflating the air suspension system.

   Deflate the air suspension system. Refer to Ride Height Adjustments .

2. Raise and support the vehicle; refer to Section 100-02 .

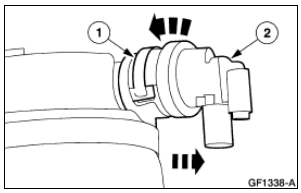
3. Disconnect the air spring solenoid connector and air line.
   - Compress the quick connect locking ring to pull out the air line.



4. **NOTE:** The air spring solenoid has a two-stage pressure relief fitting similar to a radiator cap.

   Remove the air spring solenoid.

   1. Remove the clip.
   2. Rotate the air spring solenoid counterclockwise to the air release stage, then continue to remove the air spring solenoid after all the trapped air has escaped.

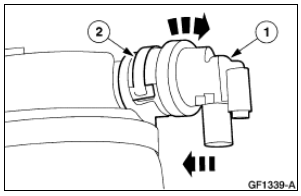


Installation

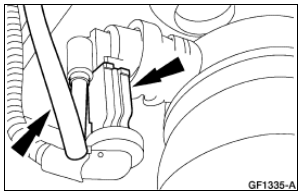
1. **NOTE:** Inspect the O-ring for damage and replace as necessary. Lubricate the solenoid seal area with Silicone Brake Caliper Grease and Dielectric Compound D7AZ-19A331A or equivalent meeting Ford specification ESE-M1C171-A.

   Install the air spring solenoid.

   1. Rotate the air spring solenoid clockwise while carefully pushing in.
   2. Install the retaining clip.



2. Install the air spring solenoid connector and air line.



3. Inflate the air suspension system; refer to Ride Height Adjustments .

Height Sensor

Removal

1. Turn air suspension switch off.

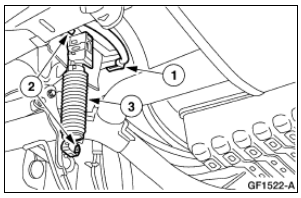
2. Remove the battery ground cable.

3. Raise and support the vehicle; refer to Section 100-02 .

4. **NOTE:** Rear height sensor shown; front similar.

   Remove the air suspension height sensor.

   1. Disconnect the electrical connector.
   2. Depress and hold the metal retaining tabs.
   3. Remove the air suspension height sensor from the ball studs.



Installation

1. **NOTE:** When the battery is disconnected and reconnected, some abnormal drive symptoms may occur while the vehicle relearns its adaptive strategy. The vehicle may need to be driven 16 km (10 mi) or more to relearn the strategy.

   NOTE: Ride height adjustments must be carried out after the rear height sensor is installed.

   To install, reverse the removal procedure.

General Specifications

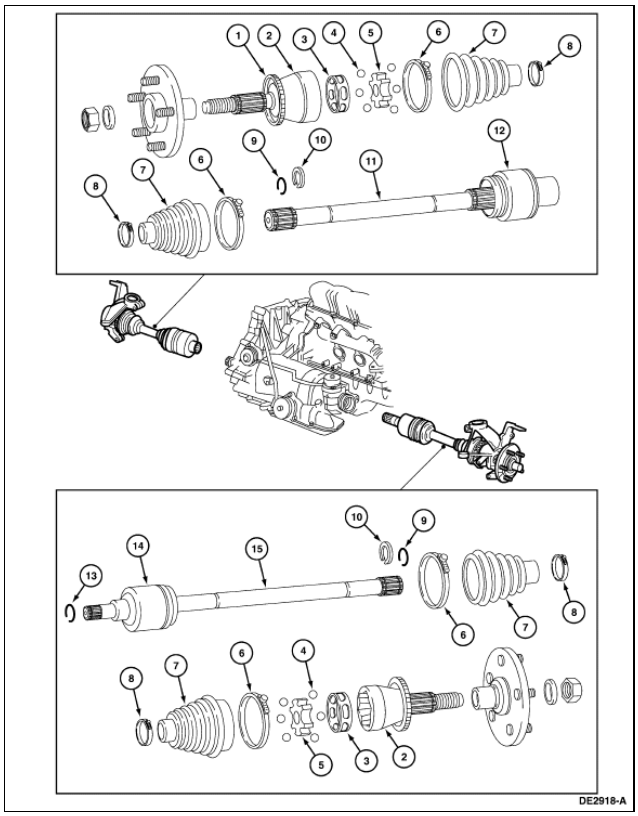
Item	Specification
Halfshaft assembled length (LH)	463.65 mm (18.25 in)
Halfshaft assembled length (RH)	560.7 mm (22.07 in)
Lubricant	
Ford High Temp Constant Velocity Joint Grease E43Z-19590-A	ESP-M1C207-A
Outboard front wheel driveshaft joint	180g (6.3 oz.)
Inboard CV joint housing	475g (16.75 oz.)

Torque Specifications

Description	Nm	lb-ft
Front anti-lock brake sensor mounting bolt	9	7
Front axle wheel hub retainer	250	184
Front suspension lower arm to ball joint nut	63	46

Front Drive Halfshafts

Front Drive Halfshafts



Item	Part Number	Description
1	2C182	Front brake anti-lock sensor indicator
2	3B413	Front wheel driveshaft joint
3		Ball cage (part of 3B413)
4		Balls (6 req'd) (part of 3B413)
5		Race (part of 3B413)
6	3B478	Front wheel driveshaft joint boot clamp (large)
7	3A331	Front wheel driveshaft joint boot
8	3B478	Front wheel driveshaft joint boot clamp (small)
9	N804139-ST	Circlip
10	N803657-S	Stop ring
11		Interconnecting shaft (part of 3B437)
12	3B437	Inboard CV joint housing assy
13	N804139-ST	Circlip
14	3B436	Inboard CV joint housing assy
15		Interconnecting shaft (part of 3B436)

The front wheel drive halfshaft system consists of and operates as follows:

- Halfshafts transmit engine torque from the transaxle to the front wheels.
- Halfshafts rotate at approximately one-third the speed of a conventional rear-wheel drive driveshaft and do not contribute to rotational vibration disturbances.
- A constant velocity (CV) joint is a mechanism for transmitting uniform torque and rotary motion while operating through a range of angles.
- CV joints at both inboard (differential) and outboard (wheel) ends provide operating smoothness.
- The inboard CV joints are plunge-type joints that provide the axial movement necessary to affect shaft length changes.
- The outboard CV joints have a higher angle capability than the inboard CV joints to accommodate suspension travel.
- Inboard and outboard CV joints connect to a splined shaft. Driveshaft bearing retainer circlips retain the CV joints to the splined shaft.
- On the RH side, a driveshaft bearing retainer circlip retains the splined inboard CV joint to the differential side gear. Install a new circlip every time you remove the halfshaft from the vehicle.
- A front axle wheel hub retainer secures the splined outboard CV joint to the wheel hub.
- The lubed-for-life CV joints use special CV joint grease. They require no periodic lubrication.
- A periodic inspection of the outer and inner boots is necessary so that immediate repair can take place if damage or grease leakage is evident. Continued operation without repair will result in CV joint wear and noise due to contamination and loss of the CV joint grease.

Halfshaft Handling

⚠ CAUTION: Never pick up or hold the halfshaft only by the inboard or outboard CV joint.

Handle all halfshaft components carefully during removal and installation and during various component disassembly and assembly procedures.

- Do not over-angle the CV joints.
- Damage will occur to an assembled inboard CV joint if it is over-plunged outward from the joint housing.
- Never use a hammer to remove or install the halfshafts.
- Never use the halfshaft assembly as a lever to position other components. Always support the free end of the halfshaft.
- Do not allow the boots to contact sharp edges or hot exhaust components.
- Handle the halfshaft only by the interconnecting shaft to avoid pull-apart and potential damage to the CV joints.
- Do not drop assembled halfshafts. The impact will cut the boots from the inside without evidence of external damage.
- Keep CV joints clean and maintain correct grease refill when installing new halfshaft components.
- Do not remove the outer CV joint by pulling on the interconnecting shaft.
- Inspect all machined surfaces and splines for damage.

Wheel and Tire Balancing, Rear

⚠ WARNING: Do not balance the front wheels and tires while mounted on the vehicle. Possible tire disintegration, differential or halfshaft failure can result, causing personal injury or extensive component damage. Use an off-vehicle wheel and tire balancer only.

Hoisting

⚠ CAUTION: Use a frame-contact hoist only. Vehicle or component damage can result if other types of hoists are used.

Never raise the vehicle using the halfshafts as lift points.

Towing

Never tow a vehicle using the halfshafts as anchor points for tow truck cable or chains. Refer to the Towing Manual for correct procedures.

Undercoating and Rustproofing

During undercoating and rustproofing procedures, protect the boots from the coating materials. Foreign materials on the rubber boots will cause extreme advanced wear.

Front Drive Halfshafts

Halfshafts, Front Wheel

NOTE: Do not install new constant velocity (CV) joints unless disassembly and inspection reveals wear/damage.

NOTE: Inspect for, and remove indentations (dimples) in the boot convolutions.

- Inspect the boots for cracks, tears, and splits.
- Inspect the vehicle underbody for grease splatter near the outboard and inboard boots. This is an indication of boot/clamp damage.

Symptom Chart

Symptom Chart