SUSPENSION AND STEERING SYSTEM DIAGNOSIS

CONDITION	POSSIBLE CAUSES	CORRECTION
FRONT END NOISE	1. Loose or worn wheel bearing.	1. Replace wheel bearing.
	2. Loose or worn steering or suspension components.	2. Tighten or replace components as necessary.
	3. Loose or worn steering or suspension components.	3. Tighten or replace components as necessary.
EXCESSIVE PLAY IN STEERING	1. Loose or worn wheel bearing.	1. Replace wheel bearing.
	2. Loose or worn steering or suspension components.	2. Tighten or replace components as necessary.
	3. Loose or worn steering gear.	3. Replace steering gear.
FRONT WHEELS SHIMMY	1. Loose or worn wheel bearing.	1. Replace wheel bearing.
	2. Loose or worn steering or suspension components.	2. Tighten or replace components as necessary.
	3. Tires worn or out of balance.	3. Replace or balance tires.
	4. Alignment.	4. Align vehicle to specifications.
VEHICLE INSTABILITY	1. Loose or worn wheel bearing.	1. Replace wheel bearing.
	2. Loose or worn steering or suspension components.	2. Tighten or replace components as necessary.
	3. Tire pressure.	3. Adjust tire pressure.
	4. Alignment.	4. Align vehicle to specifications.
EXCESSIVE STEERING EFFORT	1. Loose or worn steering gear.	1. Replace steering gear.
	2. Column coupler binding.	2. Replace coupler.
	3. Tire pressure.	3. Adjust tire pressure.
	4. Alignment.	4. Align vehicle to specifications.
VEHICLE PULLS TO ONE SIDE	1. Tire pressure.	1. Adjust tire pressure.
	2. Tire.	2. Criss-Cross Front Tires.
	3. Alignment.	3. Align vehicle to specifications.
	4. Loose or worn steering or suspension components.	4. Tighten or replace components as necessary.
	5. Radial tire lead.	5. Rotate or replace tire as necessary.
	6. Brake pull.	6. Repair brake as necessary.
	8. Ride height.	8. Measure and adjust ride height.

FRONT

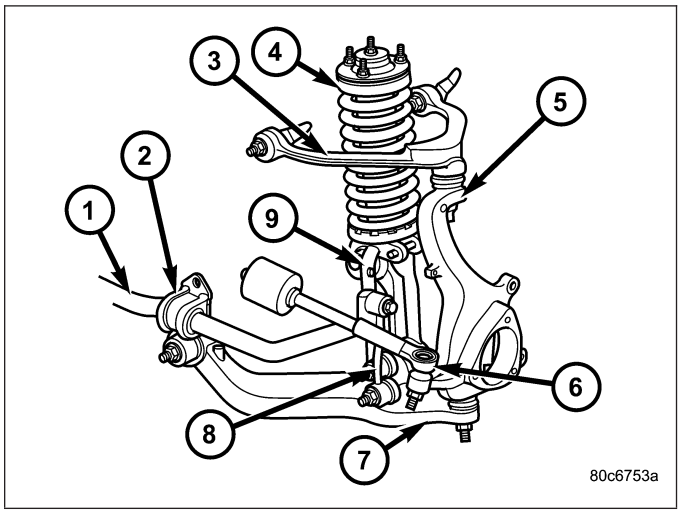
TABLE OF CONTENTS

FRONT

DESCRIPTION

NOTE: Suspension components with rubber/urethane bushings should be tightened with the vehicle at normal ride height. It is important to have the springs supporting the weight of the vehicle when the fasteners are torqued. If springs are not at their normal ride position, vehicle ride comfort could be affected and premature bushing wear may occur.

The front suspension is designed to allow each wheel to adapt to different road surfaces independently. The wheels are mounted to hub bearings on the steering knuckle spindles. The double-row hub bearings are sealed and lubricated for life. The steering knuckles turn (pivot) on ball joints integral to the outboard portion of the upper control arms and pressed into the lower steering knuckle. The ball joints are lubricated for life.



SPECIFICATIONS

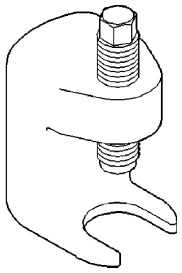
TORQUE CHART

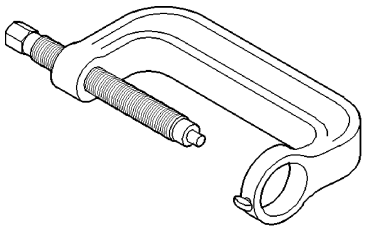
TORQUE SPECIFICATIONS

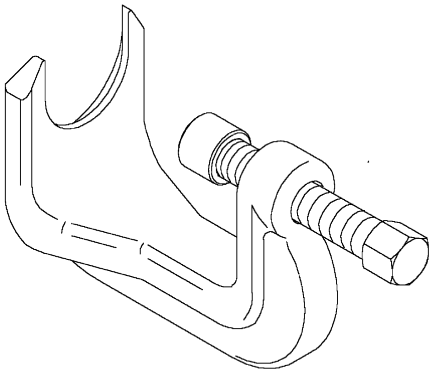
DESCRIPTION	N·m	Ft. Lbs.	In. Lbs.
Shock Absorber Upper Nuts	95	70	—
Shock Absorber Clevis Bracket	81	60	—
Clevis Bracket to Lower Control Arm	169	125	—
Upper Control Arm Bolt/Nut to Body	122	90	—
Lower Control Arm Bolt	142	105	—
Lower Control Arm Bolt/Nut Front Pivot	169	125	—
Upper Ball Joint Nut	75	55	—
Lower Ball Joint Nut	95	70	—
Stabilizer Bar Retainer Bolts	142	105	—
Stabilizer Bar Link Upper Nut	135	100	—
Stabilizer Bar Link Lower Bolt	115	85	—
Hub Bearing Knuckle Bolts	136	100	—

SPECIAL TOOLS

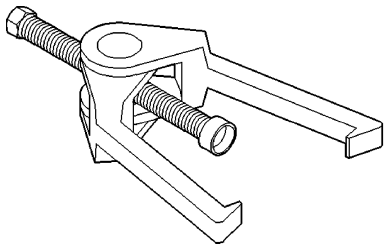
FRONT SUSPENSION

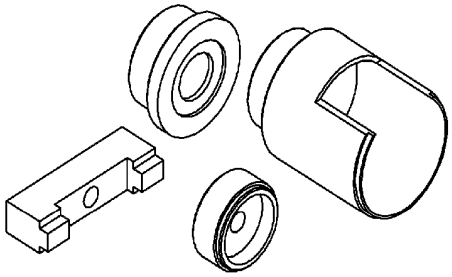




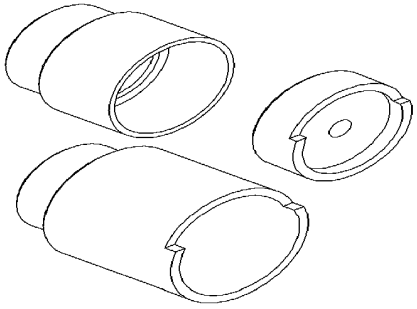


PULLER - 8677

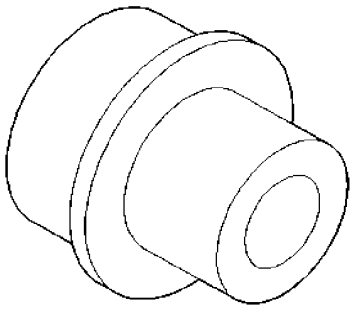




CLEVIS BUSHING - 9653



BALL JOINT - 9654



BALL JOINT - C-4212-3

BUSHINGS

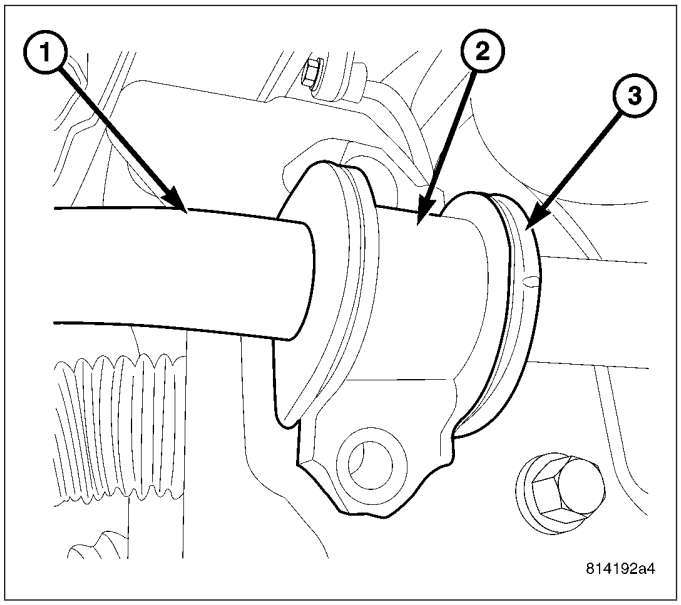
DESCRIPTION

Suspension components with rubber/urethane bushings should be tightened with the vehicle at normal ride height. It is important to have the springs supporting the weight of the vehicle when the fasteners are torqued. If springs are not at their normal ride position, vehicle ride comfort could be affected and premature bushing wear may occur.

REMOVAL

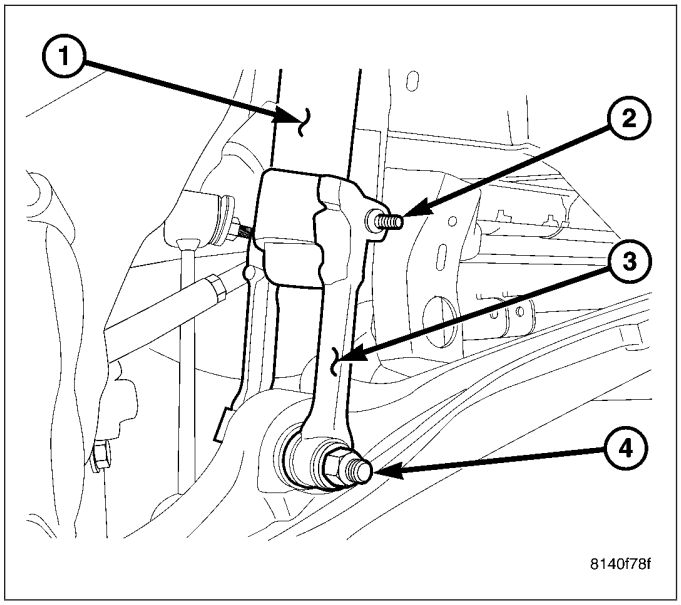
STABILIZER BAR TO FRAME BUSHING

1. Raise and support the vehicle.
2. Remove the front splash shield.
3. Remove the two stabilizer barretainer bracket bolts (2).
4. Remove the bushing clamp (2).
5. Remove the stabilizer bar bushing (3).



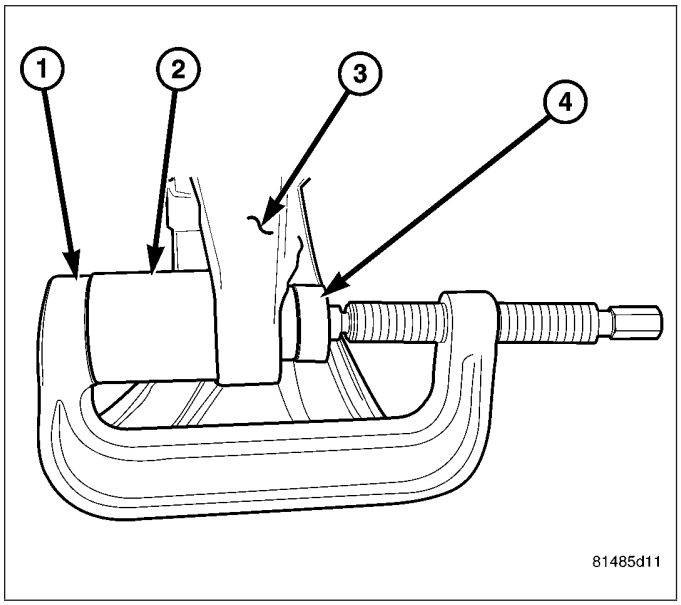
CLEVIS BRACKET BUSHING

1. Remove the clevis bracket (3) from the shock (1) (Refer to 2 - SUSPENSION/FRONT/CLEVIS BRACKET - REMOVAL).



NOTE: Extreme pressure lubrication must be used on the threaded portions of the tool. This will increase the longevity of the tool and insure proper operation during the removal and installation process.

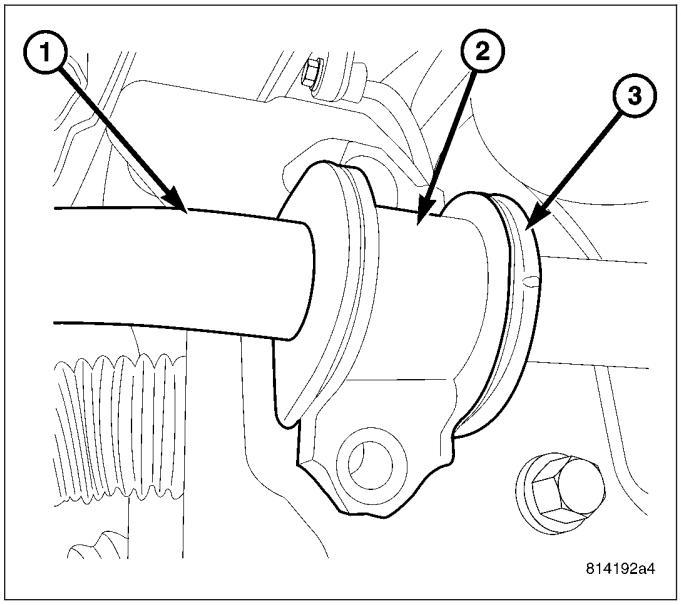
2. Press the bushing out using special tools C-4212-F (Press) (1), 9653–1 (driver) (4) and 9653–2 (Receiver) (2) from the lower control arm (3).



INSTALLATION

STABILIZER BAR TO FRAME BUSHING

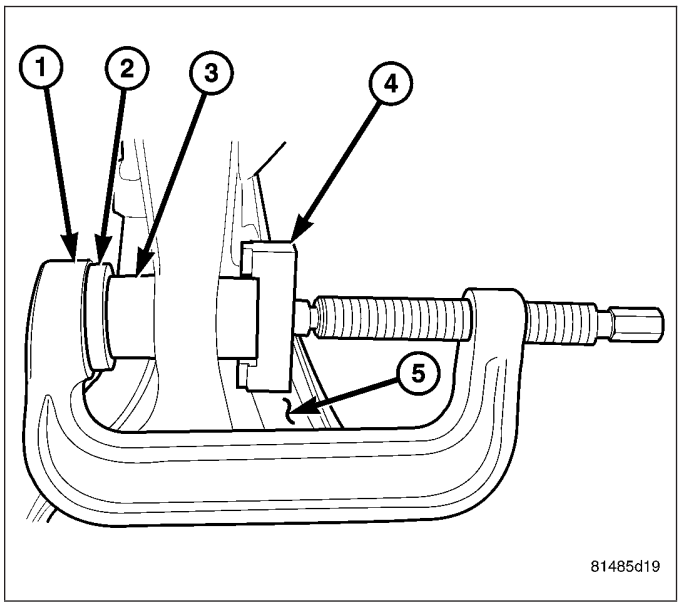
1. Install the stabilizer bar bushing (3) to the bar (1).
2. Install the stabilizer bar bushing reatainer bracket (2) bolts and tighten the two mounting bolts.
3. Install the front splash shield.
4. Lower the vehicle.



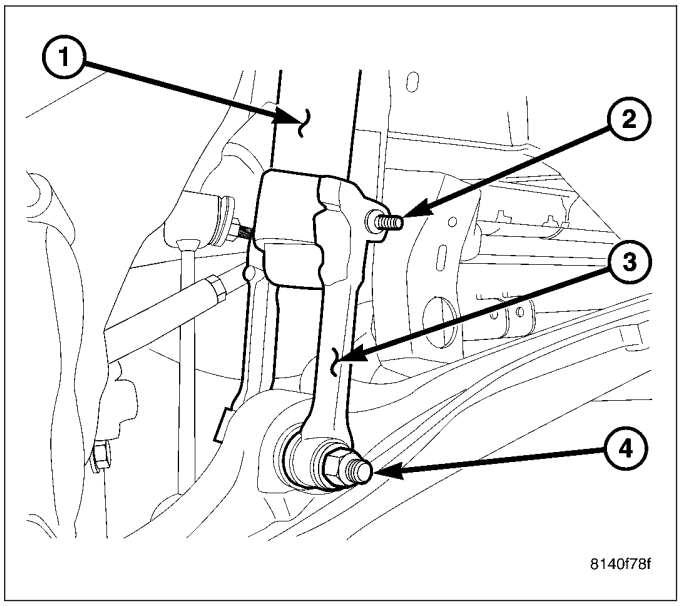
CLEVIS BRACKET BUSHING

NOTE: Extreme pressure lubrication must be used on the threaded portions of the tool. This will increase the longevity of the tool and insure proper operation during the removal and installation process.

1. Install the new clevis bracket bushing (3) into the lower control arm (5) using tools C-4212-F (Press) (1), 9653–3 (driver) (2), 9653–4 (Depth gauge) (4) the depth gauge will automatically set the depth of the bushing (3) in the control arm (5).



2. Install the clevis bracket (3) to the shock (1) (Refer to 2 - SUSPENSION/FRONT/CLEVIS BRACKET - INSTALLATION).



HUB / BEARING

DESCRIPTION

The bearing used on the front hub of this vehicle is the combined hub and bearing unit type assembly. This unit assembly combines the front wheel mounting hub (flange) and the front wheel bearing into a one piece unit. The wheel mounting studs are the only replaceable component of the hub/bearing assembly.

OPERATION

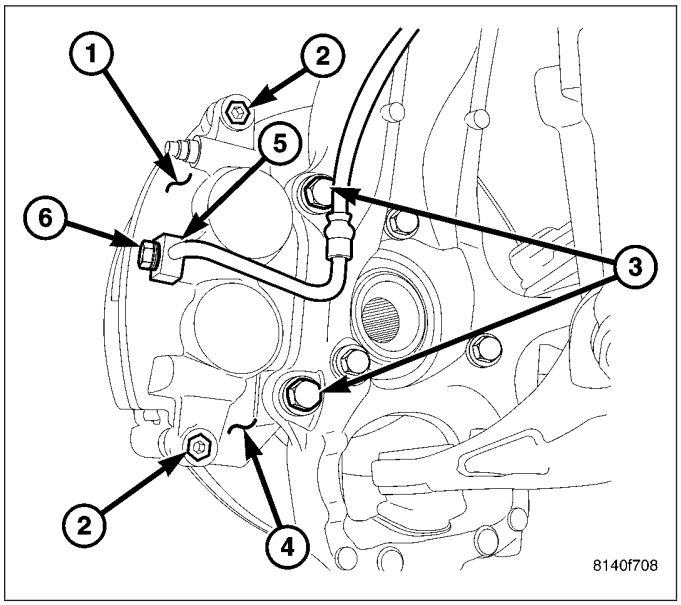
The hub/bearing assembly is mounted to the steering knuckle and is retained by three mounting bolts accessible from the back of the steering knuckle. The hub/bearing unit is not serviceable and must be replaced as an assembly if the bearing or the hub is determined to be defective.

REMOVAL

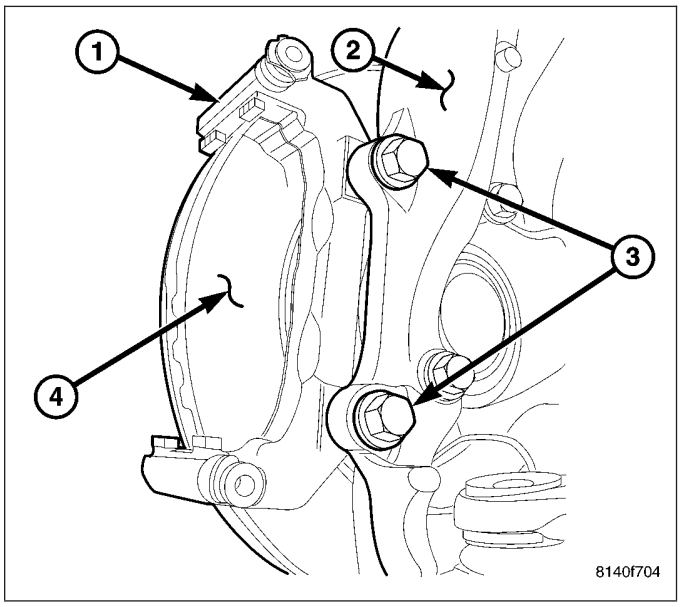
1. Raise and support the vehicle.
2. Remove the wheel and tire assembly.

Support the caliper, Do not let the caliper hang by the hose.

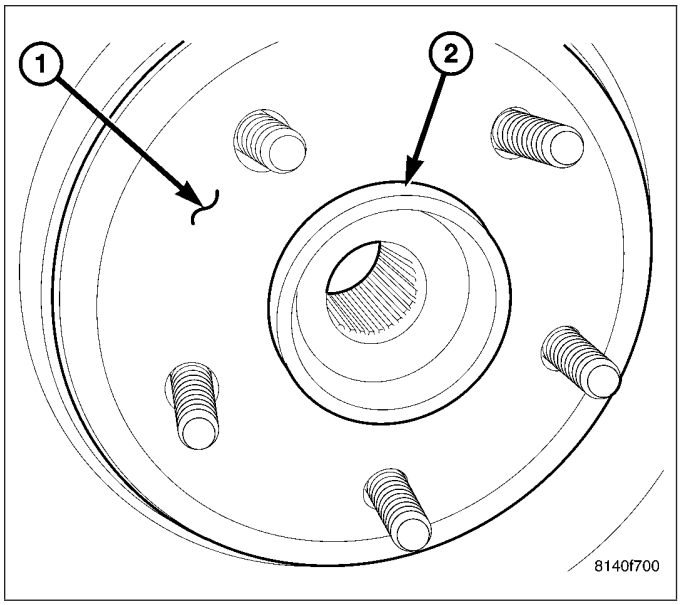
3. Remove the disc brake caliper (1) (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/DISC BRAKE CALIPERS - REMOVAL).



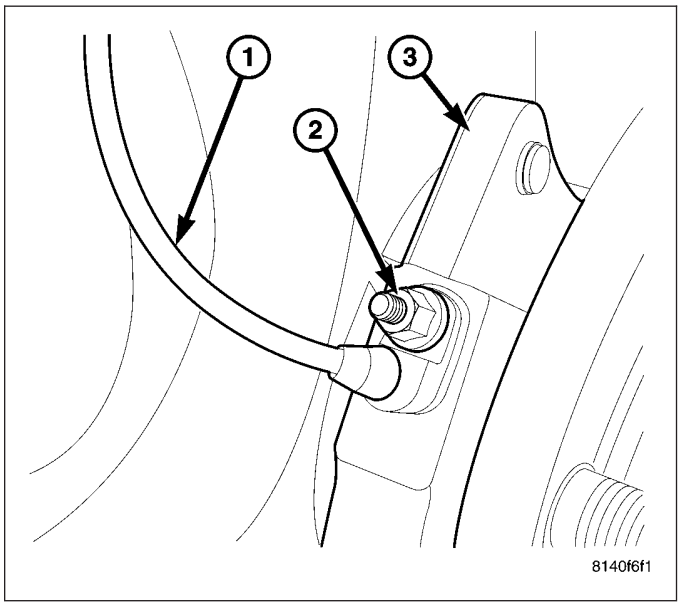
4. Remove the brake caliper adaptor (1) (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/DISC BRAKE CALIPER ADAPTER - REMOVAL).



5. Remove and discard the o-ring (2) and then remove the disc brake rotor (1) (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/ROTORS - REMOVAL).

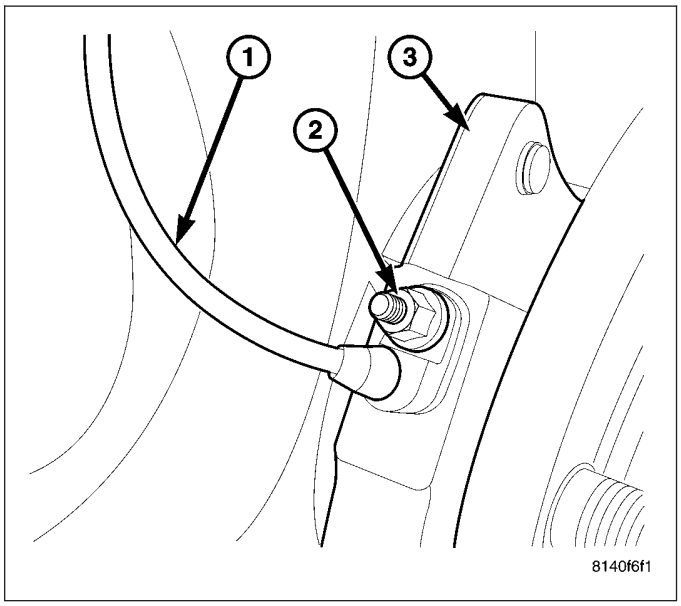


6. Remove the wheel speed sensor nut (2).
7. Remove the wheel speed sensor (Refer to 5 - BRAKES/ELECTRICAL/FRONT WHEEL SPEED SENSOR - REMOVAL).
8. Remove the 3 hub bearing mounting bolts from the back of the steering knuckle. Remove hub bearing (3) from the steering knuckle.

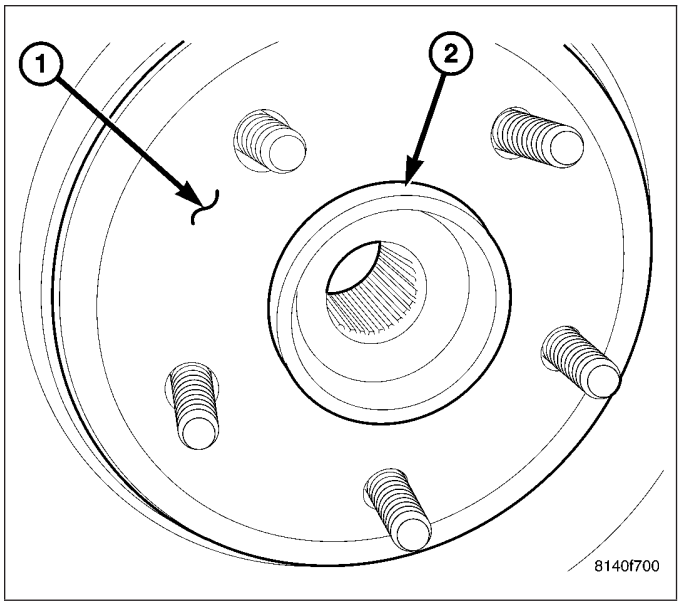


INSTALLATION

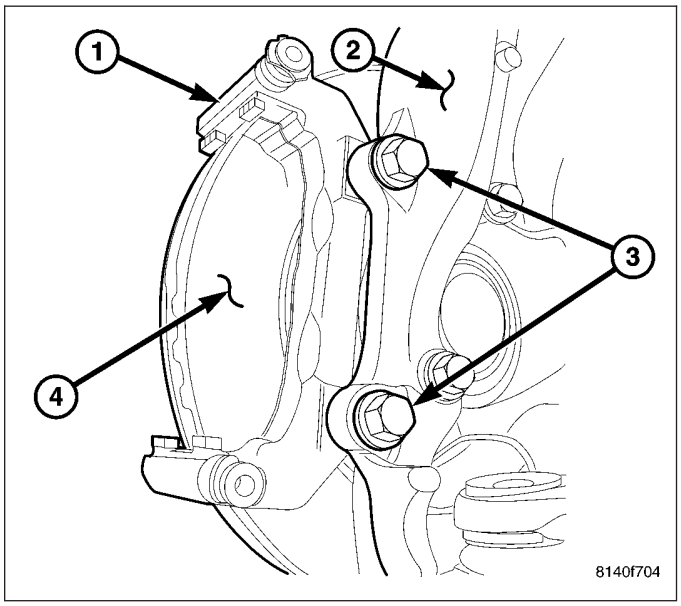
1. Install the hub bearing (3) to the knuckle.
2. Install the hub bearing to knuckle and the 3 bolts then tighten to 136 N·m (100 ft. lbs.).
3. Install the wheel speed sensor (Refer to 5 - BRAKES/ELECTRICAL/FRONT WHEEL SPEED SENSOR - INSTALLATION).
4. Install the wheel speed sensor nut (2).



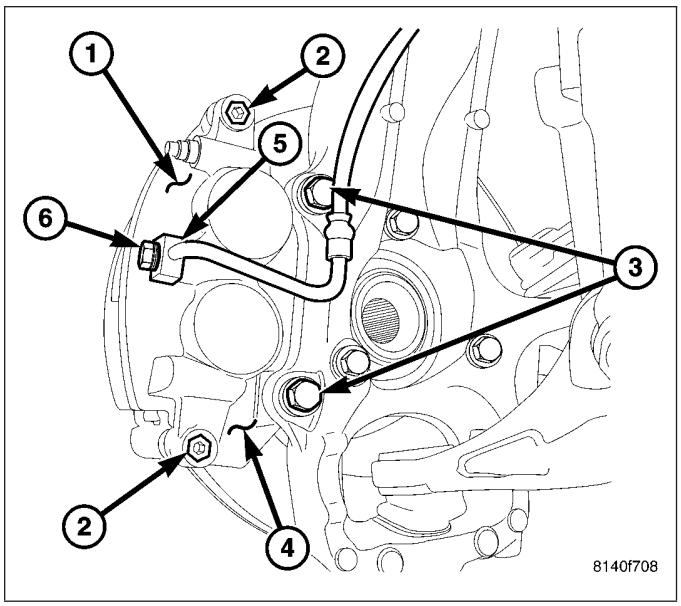
5. Install the brake rotor (1) (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/ROTORS - INSTALLATION).



6. Install the brake caliper adaptor (1) (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/DISC BRAKE CALIPER ADADPTER - INSTALLATION).



7. Install the caliper (1) (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/DISC BRAKE CALIPERS - INSTALLATION).



8. Install the wheel and tire assembly (Refer to 22 - TIRES/WHEELS - STANDARD PROCEDURE).

9. Remove the support and lower the vehicle.

KNUCKLE

DESCRIPTION

The knuckle is a single casting with legs machined for the upper and lower ball joints. The knuckle also has machined mounting locations for the front brake calipers and hub bearing.

OPERATION

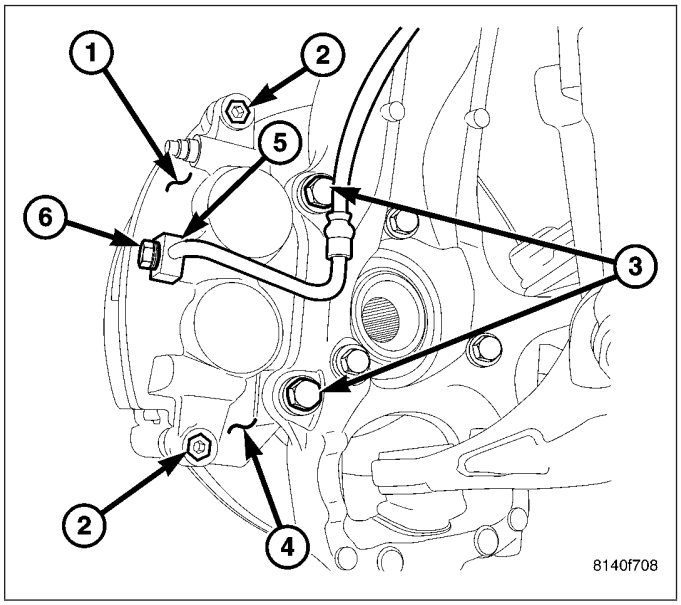
The steering knuckle pivot between the upper and lower ball joint. Steering linkage attached to the knuckle allows the vehicle to be steered.

REMOVAL

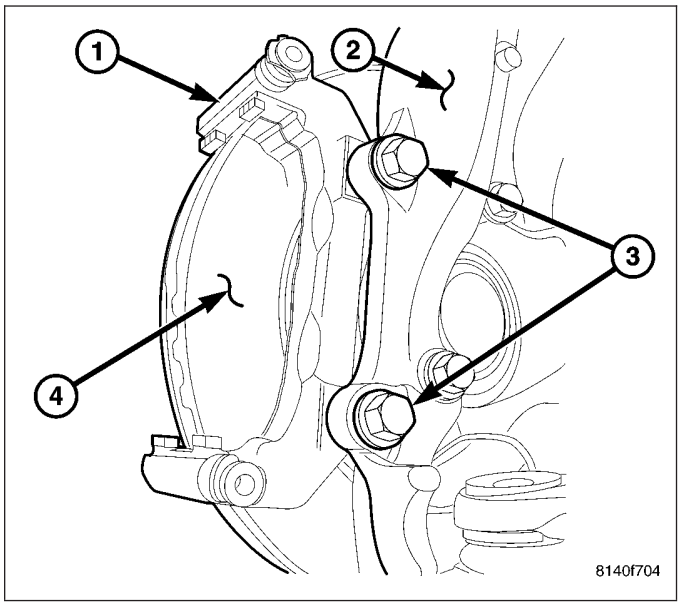
1. Raise and support the vehicle.
2. Remove the tire and wheel assembly.

CAUTION: Never allow the disc brake caliper to hang from the brake hose. Damage to the brake hose will result. Provide a suitable support to hang the caliper securely.

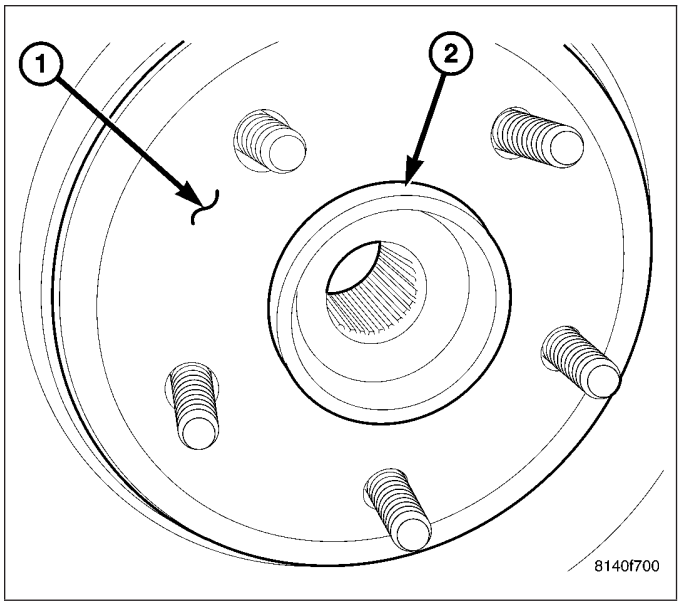
3. Remove the brake caliper (1).



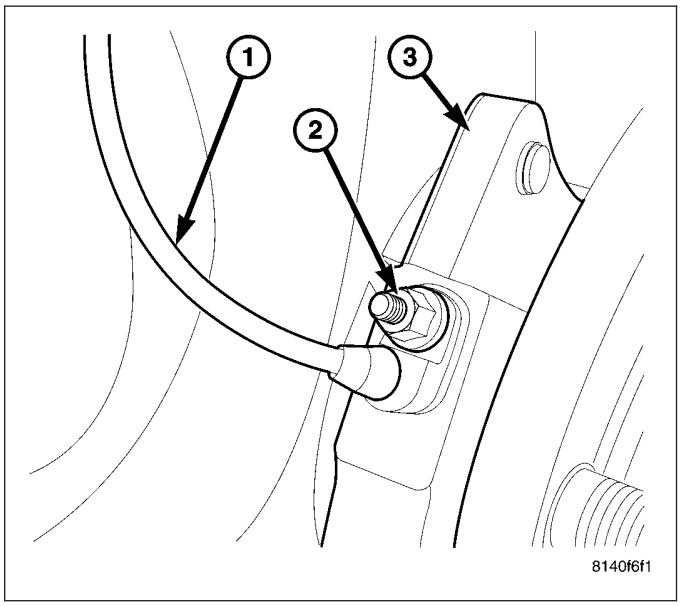
4. Remove the caliper adapter (1). (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/DISC BRAKE CALIPER ADAPTER - REMOVAL).



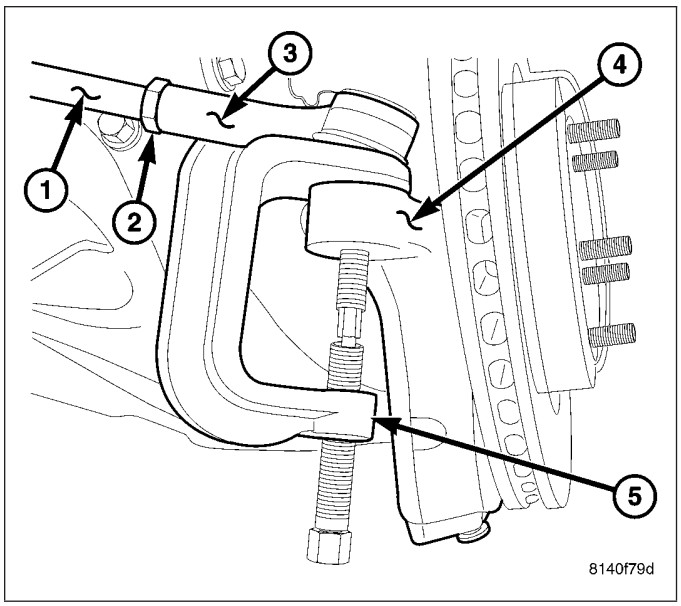
5. Remove the o-ring (2) and discard then remove disc brake rotor (1). (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/ROTORS - REMOVAL).



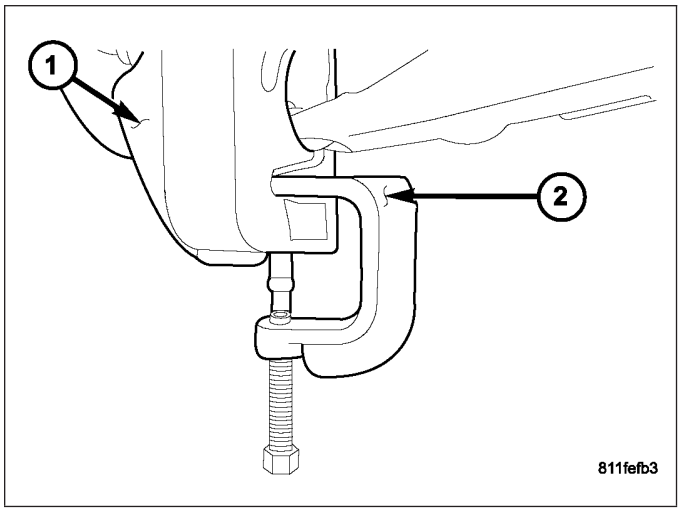
6. Remove the wheel speed sensor (2). (Refer to 5 - BRAKES/ELECTRICAL/FRONT WHEEL SPEED SENSOR - REMOVAL).
7. Remove the axle shaft nut. (if equipped with four wheel drive)
8. Remove the hub/bearing (3). (Refer to 2 - SUSPENSION/FRONT/HUB / BEARING - REMOVAL).



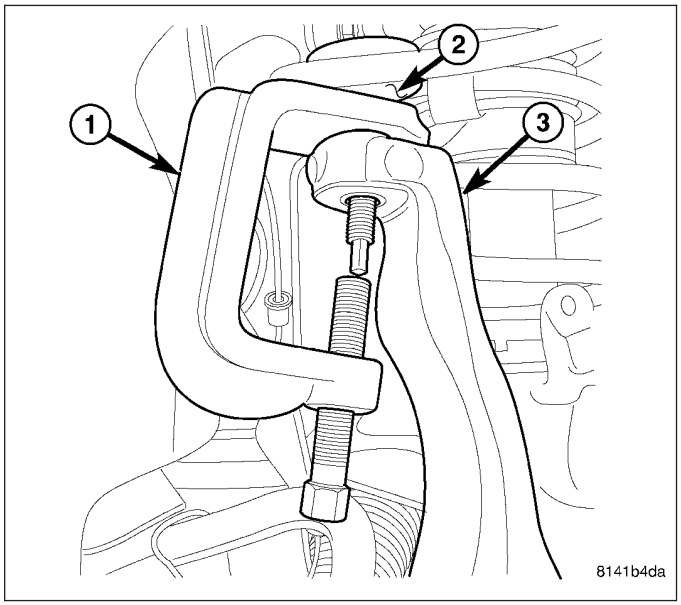
9. Remove the outer tie rod end retaining nut.
10. Seperate the outer tie rod end (3) from the steering knuckle using special tool 8677(5). (Refer to 19 - STEERING/LINKAGE/TIE ROD END - REMOVAL).



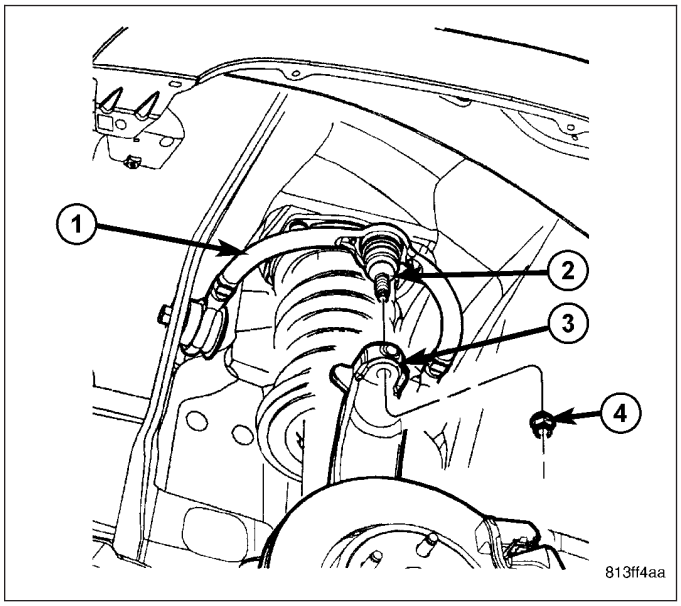
11. Remove the lower ball joint nut.
12. Seperate the lower ball joint from the knuckle (1) using tool C–4150A (2).



13. Remove the upper ball joint nut.
14. Seperate the upper ball joint (2) from the knuckle (3) using tool 8677 (1).

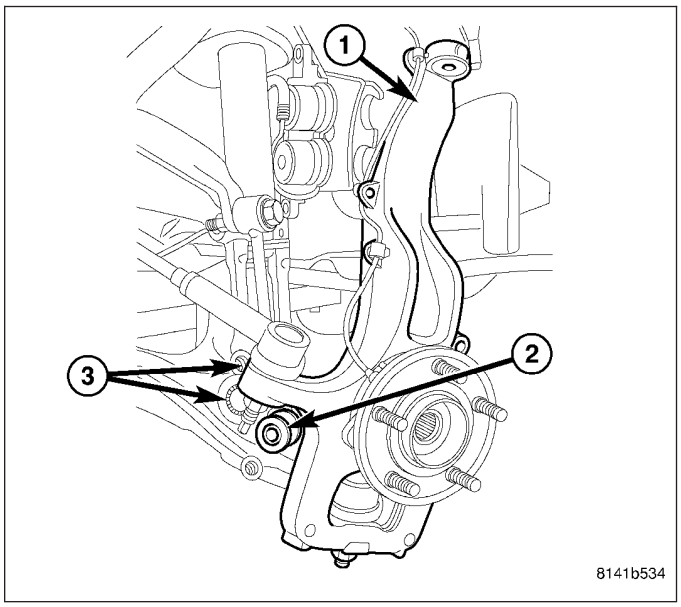


15. Remove the knuckle (3) from the vehicle.

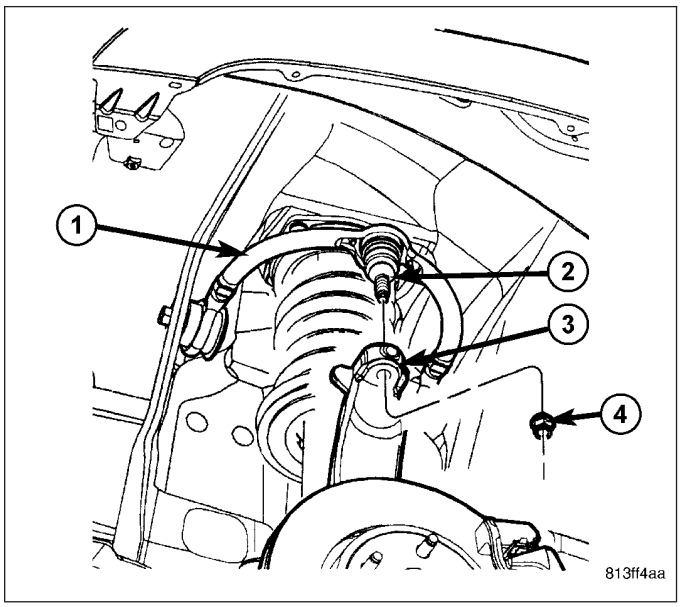


INSTALLATION

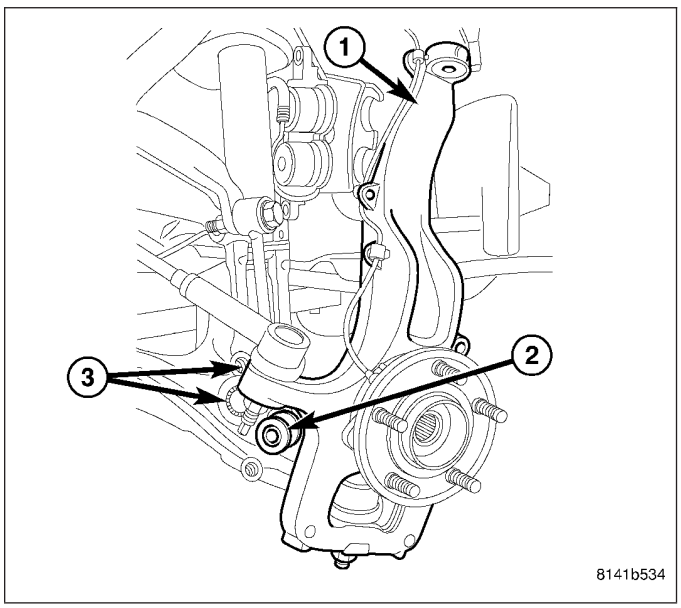
1. Install the knuckle (1) to the vehicle.
2. Install the lower ball joint into the knuckle.
3. Install the lower ball joint nut. Tighten the nut to 81 N·m (60 ft.lbs.).



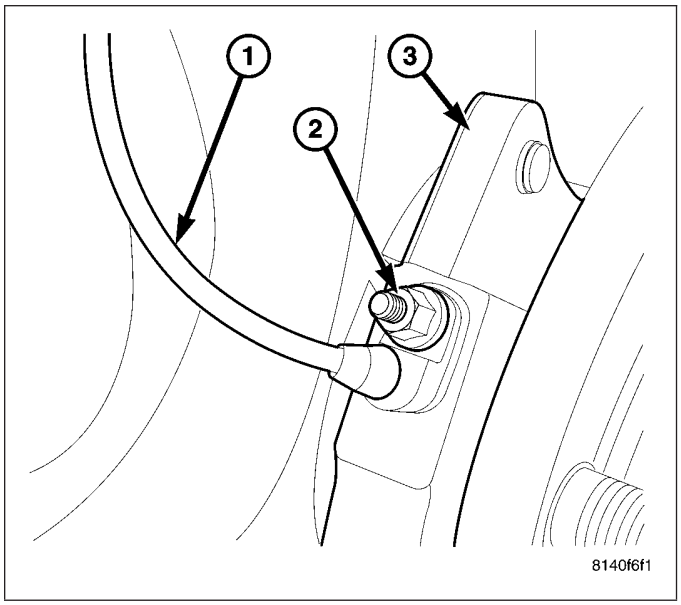
4. Install the upper ball joint (2) into the knuckle (3)
5. Install the upper ball joint nut (4). Tighten the nut to 81 N·m (60 ft.lbs.).



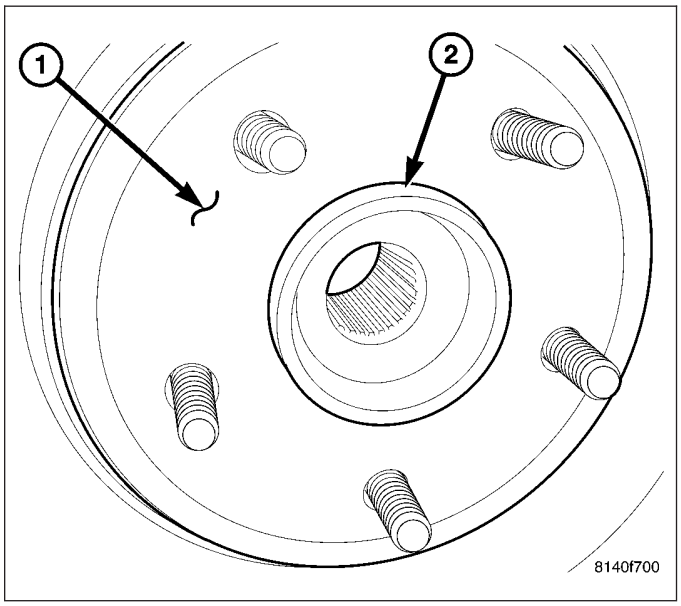
6. Install the outer tie rod end to the steering knuckle. (Refer to 19 - STEERING/LINKAGE/TIE ROD END - INSTALLATION).



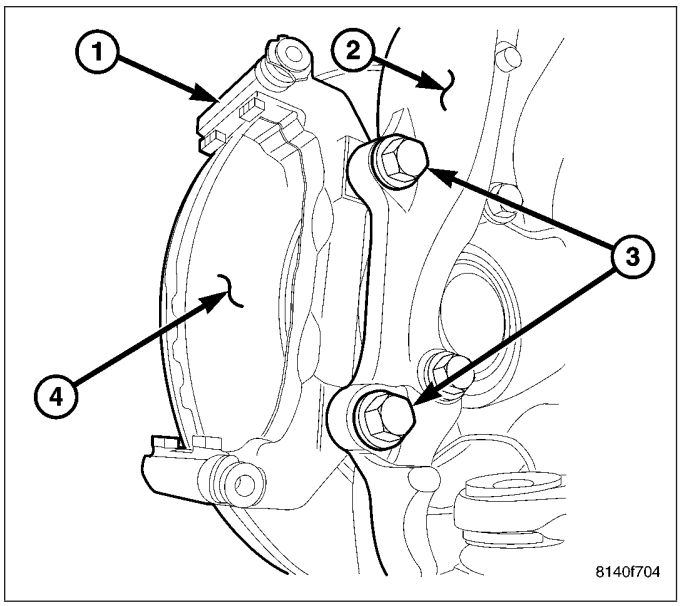
7. Install the hub/bearing (3), Tighten to 136 N·m (100 ft.lbs.). (Refer to 2 - SUSPENSION/FRONT/HUB / BEARING - INSTALLATION).
8. Install the axle shaft nut. Tighten the nut to 135 N·m (96 ft.lbs.).(if equipped with four wheel drive).
9. Install the wheel speed sensor (2). (Refer to 5 - BRAKES/ELECTRICAL/FRONT WHEEL SPEED SENSOR - INSTALLATION).



10. Install the disc brake rotor (1). (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/ROTORS - INSTALLATION).



11. Install the caliper adapter (1). (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/DISC BRAKE CALIPER ADAPTER - INSTALLATION).
12. Install the tire and wheel assembly. (Refer to 22 - TIRES/WHEELS/WHEELS - STANDARD PROCEDURE).
13. Perform wheel alignment (Refer to 2 - SUSPENSION/WHEEL ALIGNMENT - STANDARD PROCEDURE).



LOWER BALL JOINT

DIAGNOSIS AND TESTING

LOWER BALL JOINT

NOTE: If the ball joint is equipped with a lubrication fitting, grease the joint then road test the vehicle before performing test.

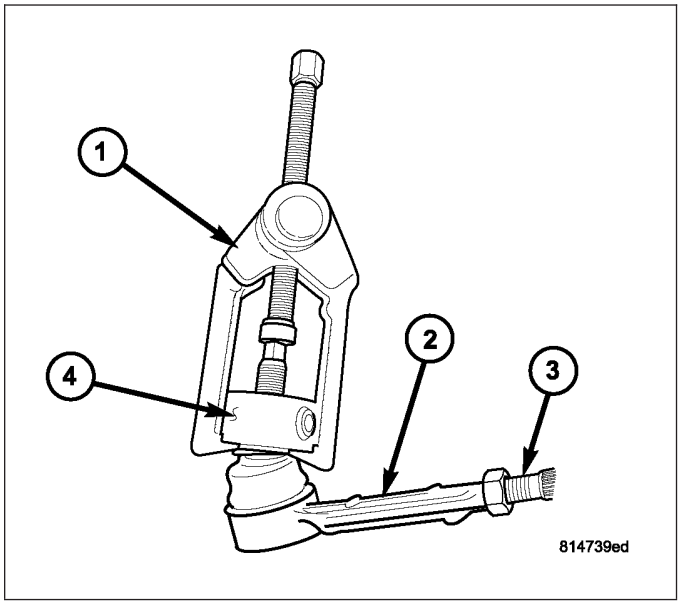
1. Raise the front of the vehicle. Place safety floor stands under both lower control arms as far outboard as possible. Lower the vehicle to allow the stands to support some or all of the vehicle weight.
2. Mount a dial indicator solidly to the topside of the lower control arm and then zero the dial indicator.
3. Position the indicator plunger against the bottom surface of the steering knuckle.

NOTE: The dial indicator plunger must be perpendicular to the machined surface of the steering knuckle.

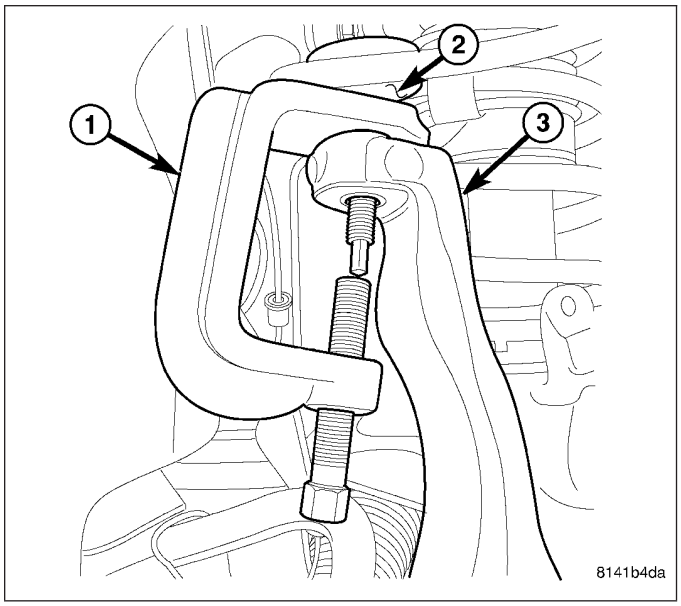
4. Position a pry bar under the tire assembly. Pry upwards on the tire assembly.
5. If the travel exceeds 0.5 mm (0.020 in.), replace the lower ball joint (Refer to 2 - SUSPENSION/FRONT/LOWER BALL JOINT - REMOVAL).

REMOVAL

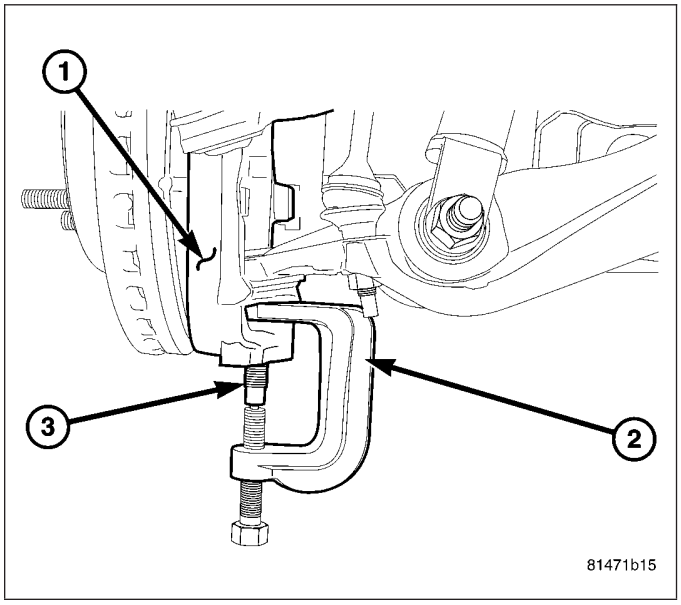
1. Remove the tire and wheel assembly.
2. Remove the brake caliper and rotor (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/ROTORS - REMOVAL).
3. Disconnect the tie rod (1) from the steering knuckle using special tool C-3894-A (1) (Refer to 19 - STEERING/LINKAGE/TIE ROD END - REMOVAL).



4. Separate the upper ball joint (2) from the knuckle (3) using special tool 8677 (1).



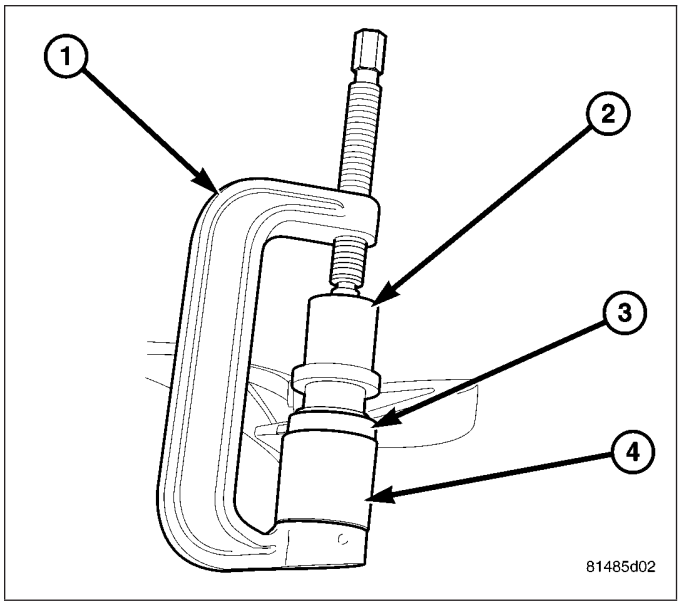
5. Separate the lower ball joint (3) from the steering knuckle (1) using special tool 8677 (2).



6. Remove the steering knuckle (Refer to 2 - SUSPENSION/FRONT/KNUCKLE - REMOVAL).
7. Move the halfshaft to the side and support the halfshaft out of the way **4X4 only**.
8. Chisel out the ball joint stakes.

NOTE: Extreme pressure lubrication must be used on the threaded portions of the tool. This will increase the longevity of the tool and insure proper operation during the removal and installation process.

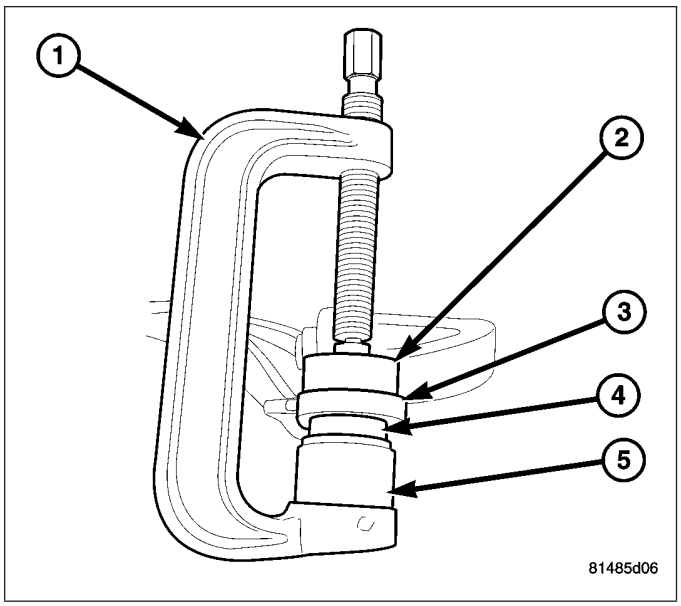
9. Press the ball joint from the lower control arm (3) using special tools C-4212-F (PRESS) (1), C–4212–3 (Driver) (2) and 9654–3 (Receiver) (4).



INSTALLATION

NOTE: Extreme pressure lubrication must be used on the threaded portions of the tool. This will increase the longevity of the tool and insure proper operation during the removal and installation process.

1. Install the ball joint (4) into the control arm (3) and press in using special tools C-4212-F (press) (1), 9654–1 (Driver) (5) and 9654–2 (Receiver) (2).



2. Stake the ball joint flange in four evenly spaced places around the ball joint flange, using a chisel and hammer.
3. Remove the support for the halfshaft and install into position **4X4 only**.
4. Install the steering knuckle (Refer to 2 - SUSPENSION/FRONT/KNUCKLE - INSTALLATION).
5. Install the tie rod end into the steering knuckle (Refer to 19 - STEERING/LINKAGE/TIE ROD END - INSTALLATION).
6. Install and tighten the halfshaft nut to 251 N·m (185 ft. lbs.). (If Equipped).
7. Install the brake caliper and rotor (Refer to 5 - BRAKES/HYDRAULIC/MECHANICAL/ROTORS - INSTALLATION).
8. Install the tire and wheel assembly (Refer to 22 - TIRES/WHEELS/WHEELS - STANDARD PROCEDURE).
9. Check the vehicle ride height (Refer to 2 - SUSPENSION/WHEEL ALIGNMENT - STANDARD PROCEDURE).
10. Perform a wheel alignment (Refer to 2 - SUSPENSION/WHEEL ALIGNMENT - STANDARD PROCEDURE).

LOWER CONTROL ARM

DESCRIPTION

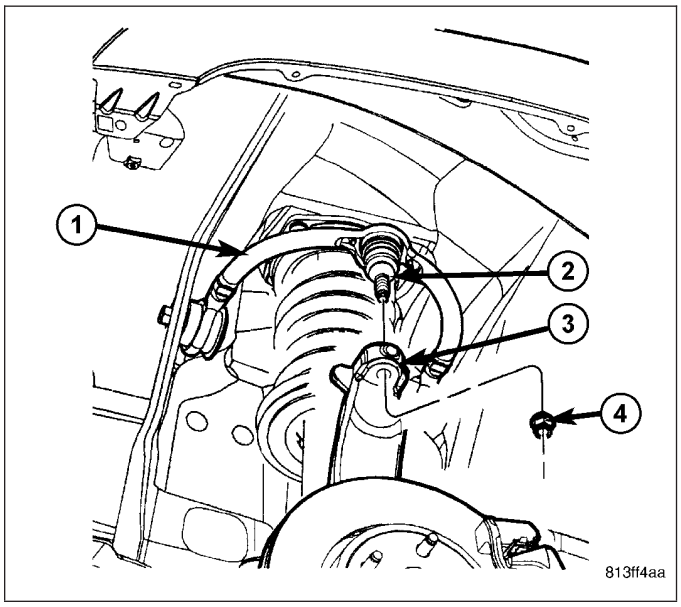
The front lower suspension arms are cast iron.

OPERATION

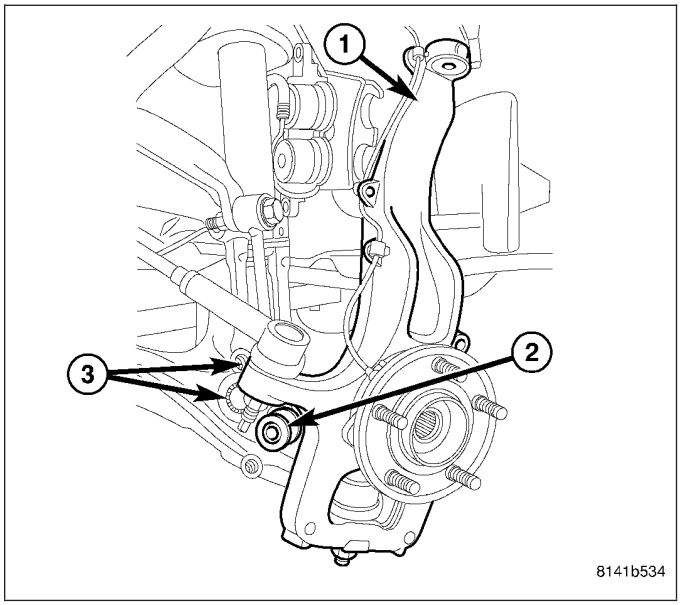
The bushings provide isolation from the road. The arms mount to the cradle bracket and the knuckle. The arm and bushings provide location and react to loads from the road.

REMOVAL

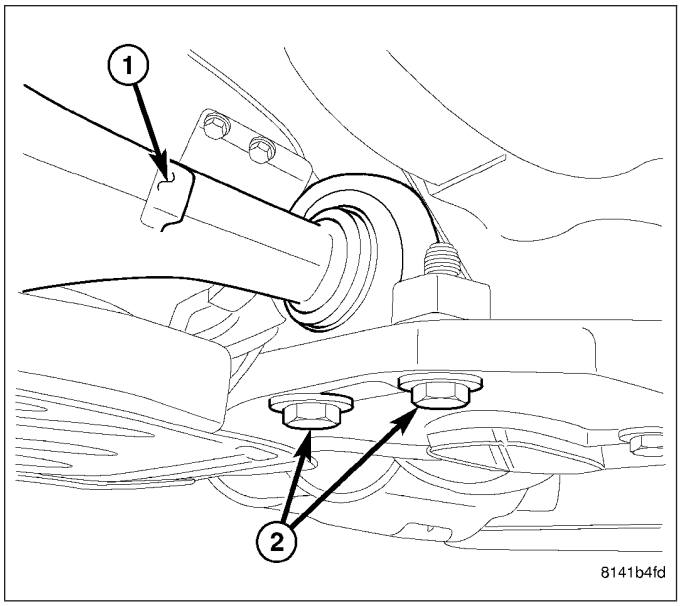
1. Raise and support the vehicle.
2. Remove the tire and wheel assembly.
3. Remove the steering knuckle (3). (Refer to 2 - SUSPENSION/FRONT/KNUCKLE - REMOVAL).



4. Remove the shock clevis bracket (2) from the lower control arm.

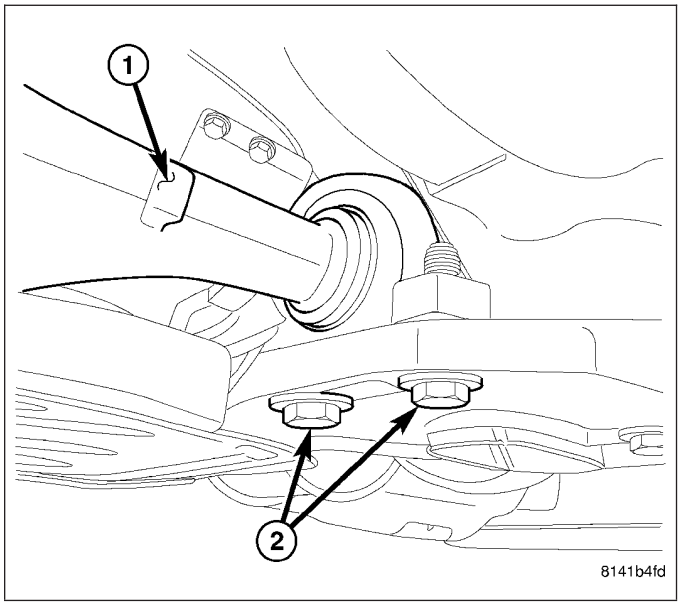


5. Remove the nut and bolt from the front of the lower control arm.
6. Remove the rear bolts and flag nuts from the lower control arm.
7. Remove the lower control arm from the vehicle.

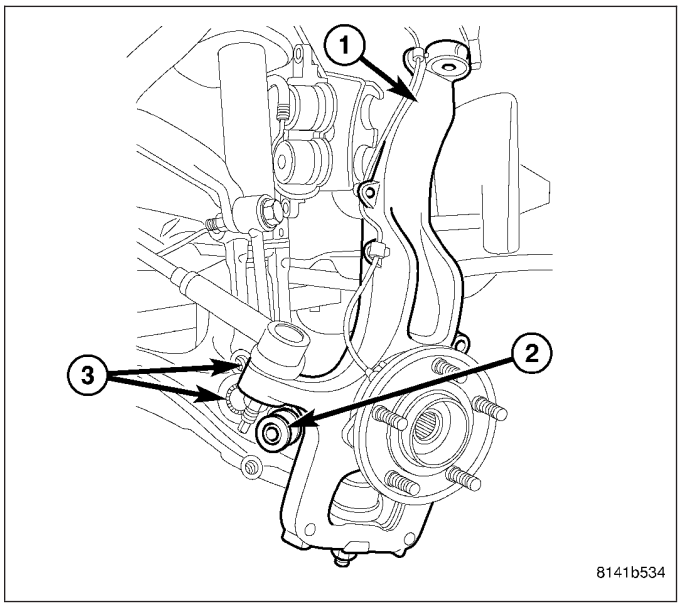


INSTALLATION

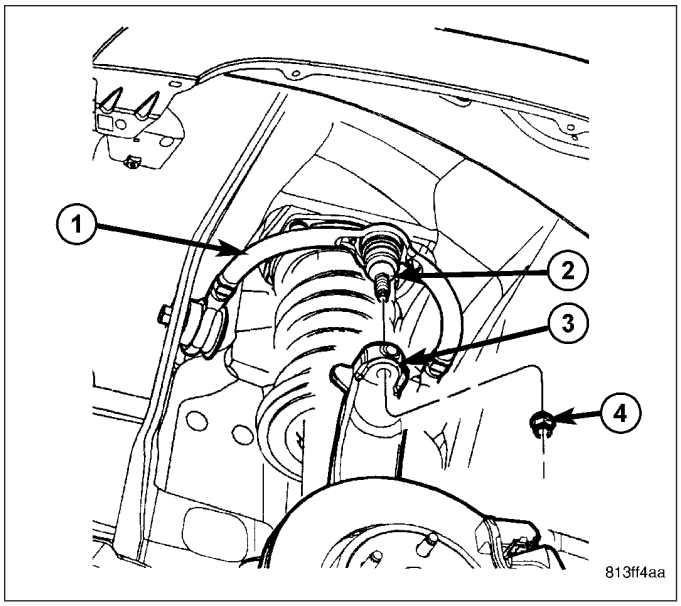
1. Position the lower suspension arm into the frame rail bracket.
2. Install the rear bolts for the lower control arm to the frame, Tighten to 142 N·m (105 ft lbs).
3. Install the nut and bolt for the front of the lower control arm Tighten to 169 N·m (125 ft lbs).



4. Install the lower clevis bolt (2) at the lower control arm and tighten to 88 N·m (65 ft. lbs.).



5. Install the steering knuckle (3) and tighten the nut to 75 N·m (55 ft. lbs.) (Refer to 2 - SUSPENSION/ FRONT/KNUCKLE - INSTALLATION).



6. Install the tire and wheel assembly.
7. Lower the vehicle.
8. Perform wheel alignment (Refer to 2 - SUSPENSION/WHEEL ALIGNMENT - STANDARD PROCEDURE).

SHOCK

DESCRIPTION

The top of the shock absorbers are bolted to the body. The bottom of the shocks are bolted to the lower control arm. The standard shocks have conventional twin tube construction and are low pressure gas charged. Gas charging prevents cavitation during rough road operation.

OPERATION

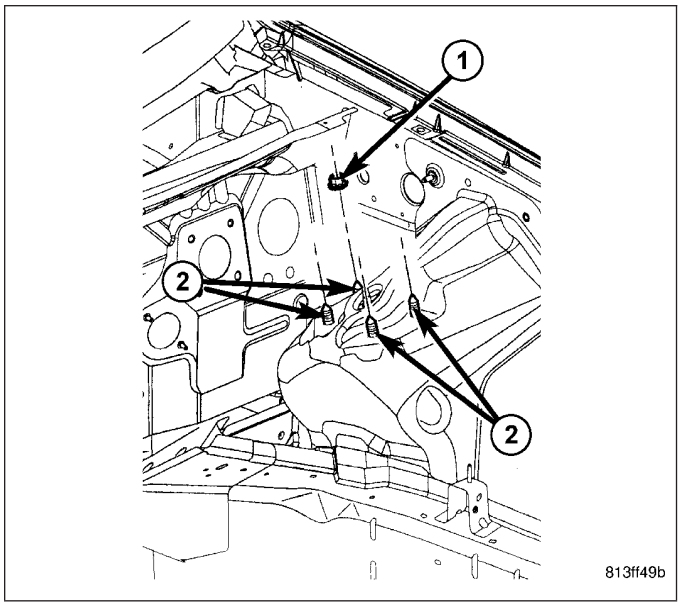
The shock absorbers dampen jounce and rebound motion of the vehicle over various road conditions and limit suspension rebound travel.

REMOVAL

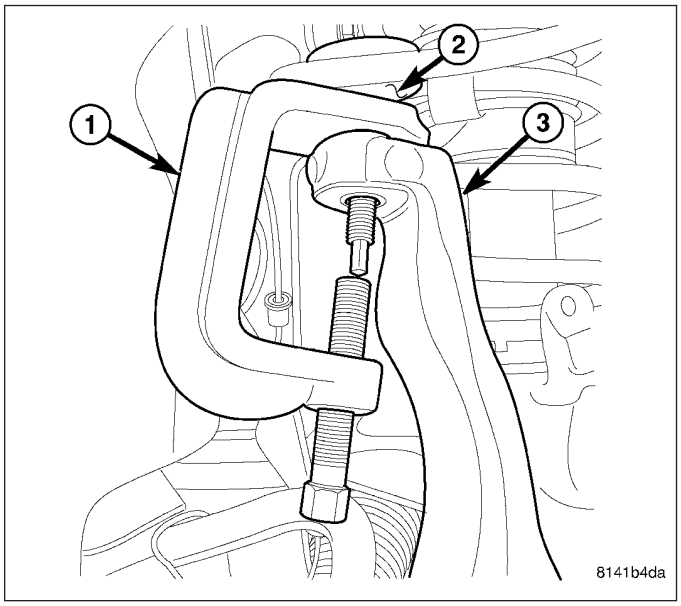
RIGHT FRONT

1. Remove the air box cover and air intake hose.
2. Disconnect the cruise control servo electrical connector.
3. Remove the coolant reservoir mounting bolt and move the coolant reservoir off to the side.

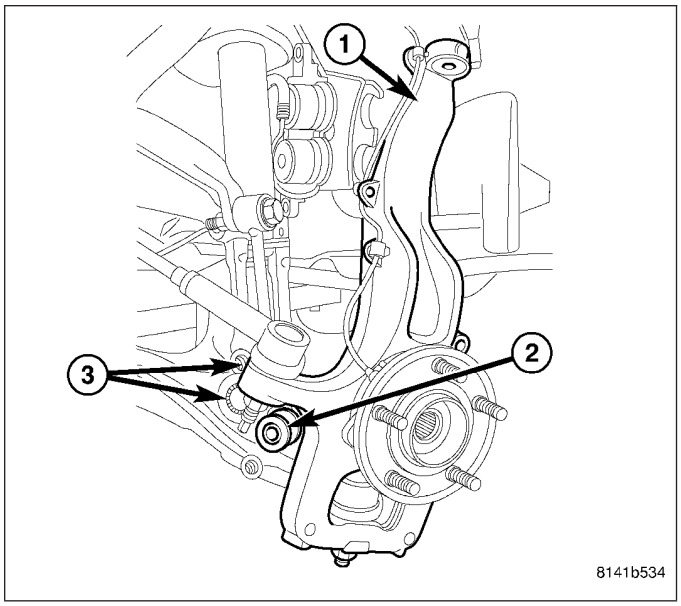
4. Remove the four upper shock mounting nuts (1).



5. Raise and support the vehicle.
6. Remove the tire.
7. Remove the two brake caliper adapter bolts.
8. Support the brake caliper adaptor and caliper. **Do not allow the caliper to hang by the brake hose.**
9. Remove the disc brake rotor.
10. Remove the upper ball joint nut.
11. Separate the upper ball joint (2) from the knuckle (3) using special tool 8677(1).



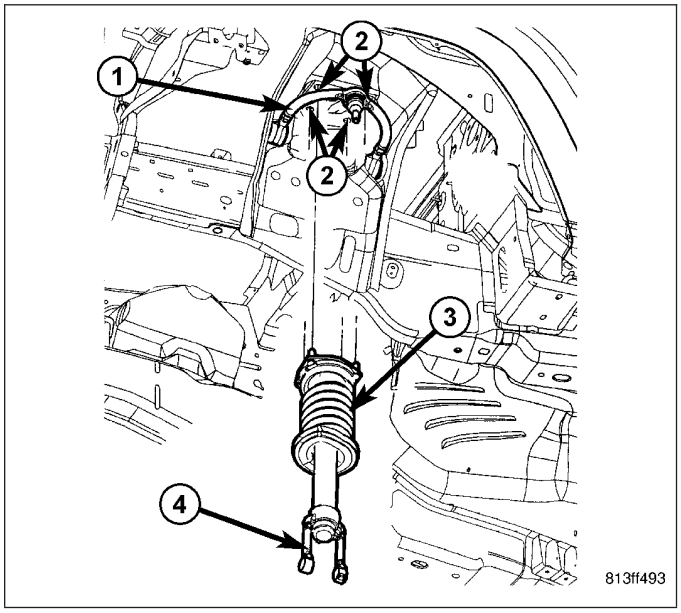
12. Remove the lower clevis bolt (2) at the lower control arm.
13. Remove the lower stabilizer bolt (3) at the lower control arm.

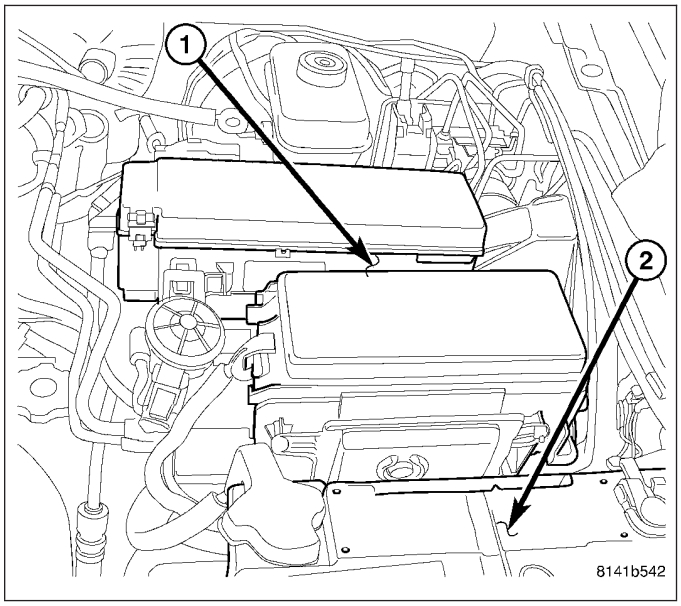


14. Remove the shock from the vehicle.
15. Remove the spring if necessary (Refer to 2 - SUSPENSION/FRONT/SPRING - REMOVAL).

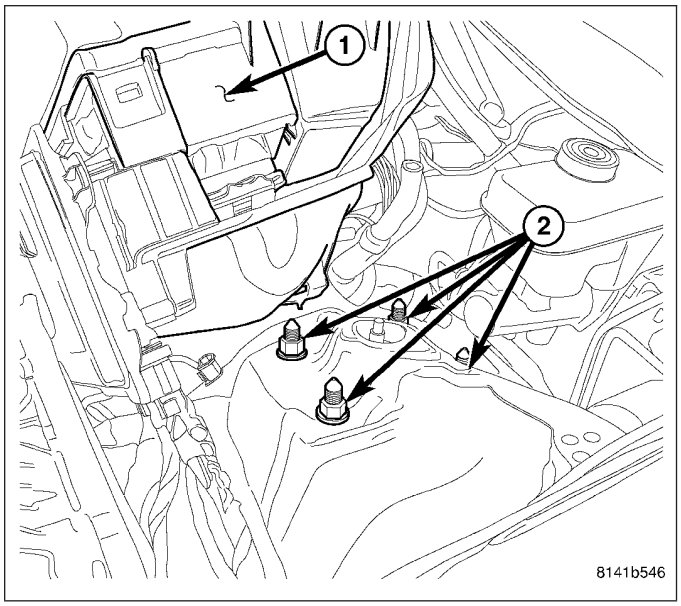
LEFT FRONT

1. Remove the air box cover and air intake hose.
2. Remove the 3 PDC bracket nuts (1).

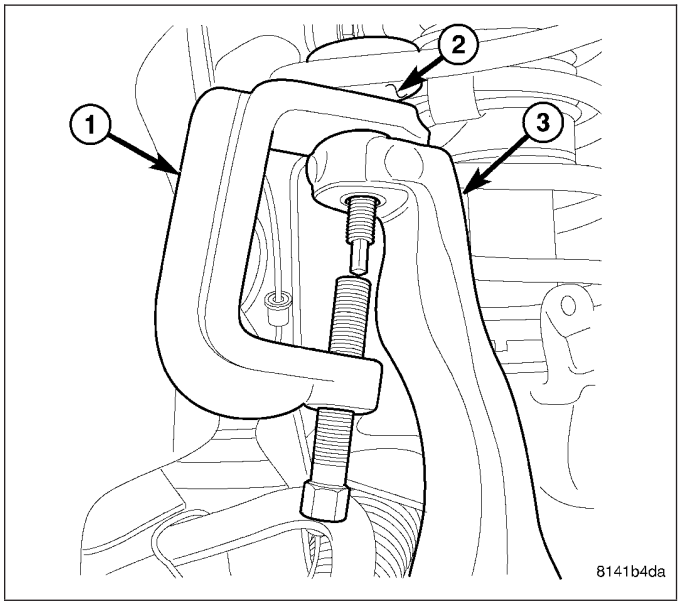




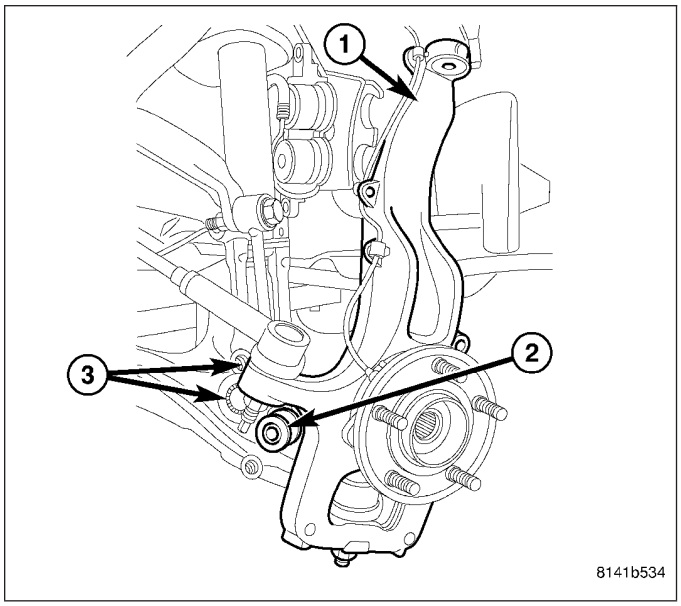
3. Move the PDC (1) off to the side to access the four upper shock mount nuts (2).
4. Remove the four upper shock mount nuts (2).



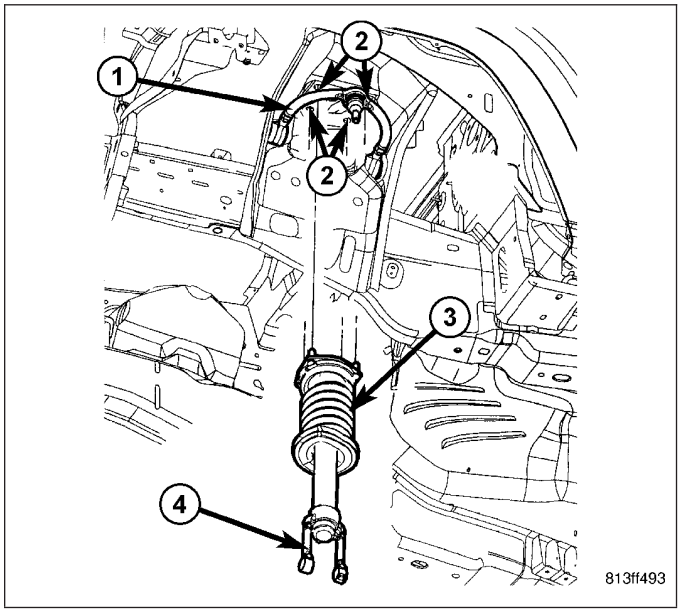
5. Raise and support the vehicle.
6. Remove the tire.
7. Remove the two brake caliper adapter bolts.
8. Support the brake caliper adaptor and caliper. **Do not allow the caliper to hang by the brake hose.**
9. Remove the disc brake rotor.
10. Remove the upper ball joint nut.
11. Separate the upper ball joint (2) from the knuckle (3) using special tool 8677 (1).



12. Remove the lower clevis bolt (2) at the lower control arm.
13. Remove the lower stabilizer bolt (3) at the lower control arm.



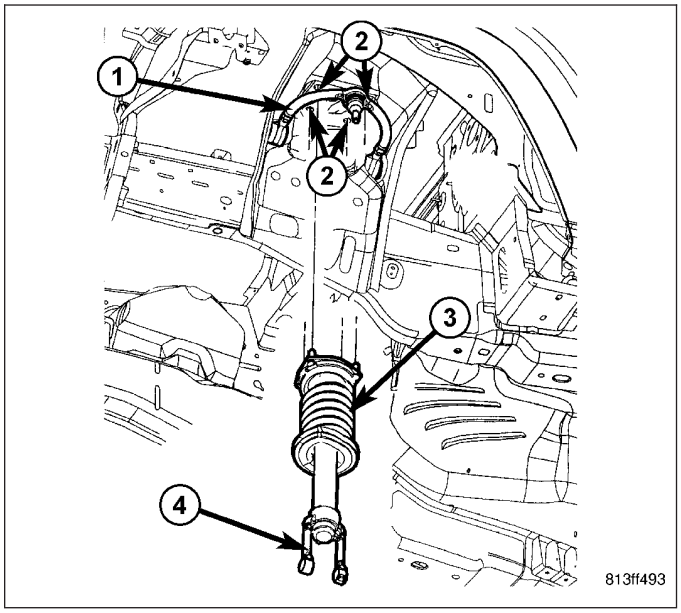
14. Remove the shock (3) from the vehicle.
15. Remove the spring if necessary (Refer to 2 - SUSPENSION/FRONT/SPRING - REMOVAL).



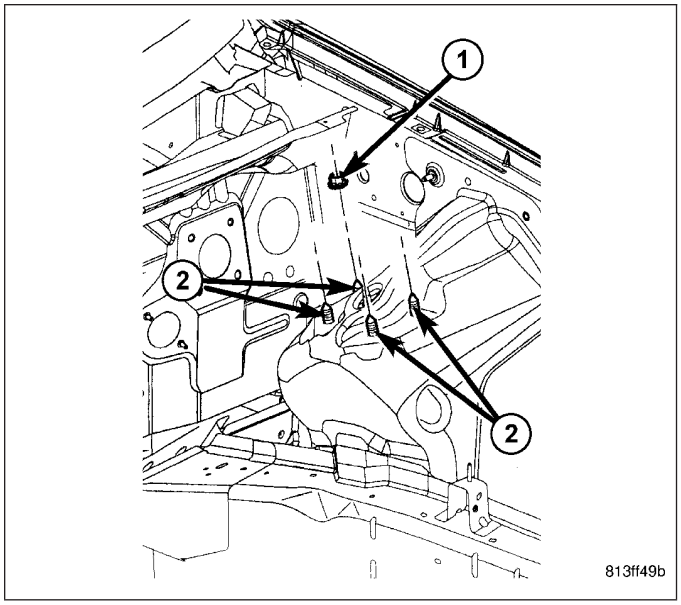
INSTALLATION

RIGHT FRONT

1. Install the clevis bracket (4) to the shock (3) and tighten to 122 N·m (90 ft. lbs.)..
2. Install the shock assembly (3) to the vehicle.

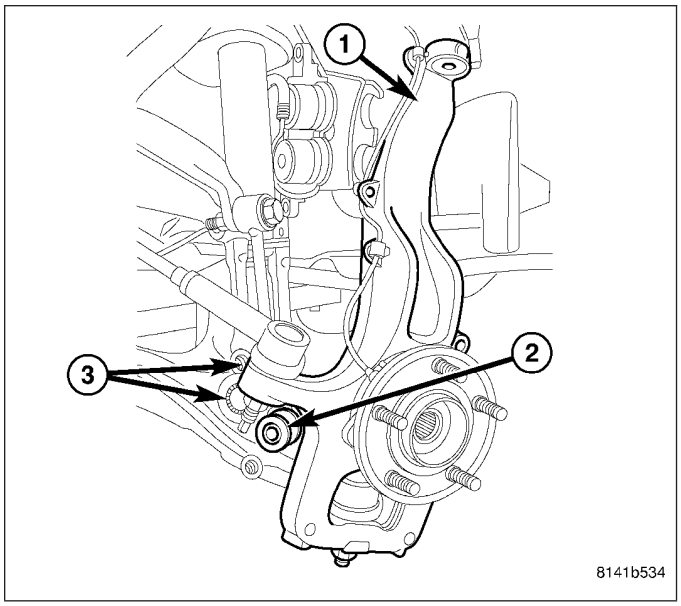


3. Install the four upper shock nuts (1), Tighten to 95 N·m (70 ft. lbs.).



4. Install the coolant reservoir bolt.
5. Reconnect the cruise control servo wiring connector.
6. Install the air box cover and air intake hose.
7. Raise the vehicle up.

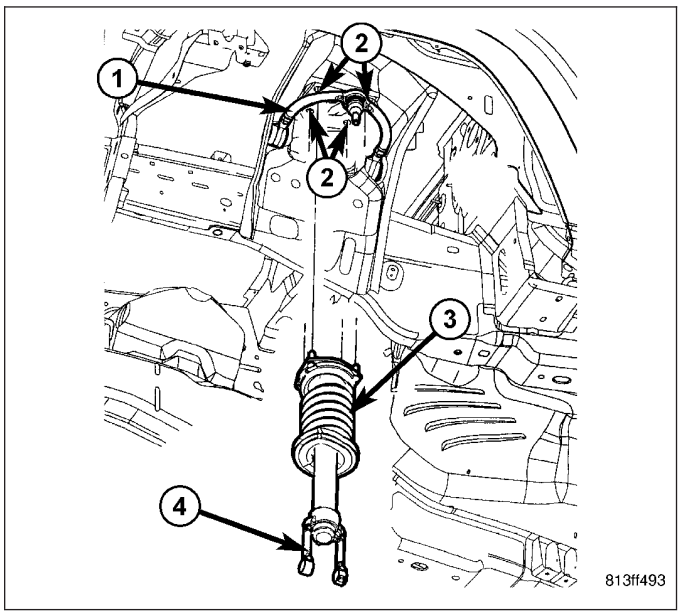
8. Install the lower stabilizer bolt (2) at the lower control arm.
9. Install the lower clevis bolt (3) at the lower control arm and tighten to 169 N·m (125 ft. lbs.).
10. Install the upper ball joint into the knuckle (1) and tighten the nut to 75 N·m (55 ft. lbs.).
11. Install the disc brake rotor.



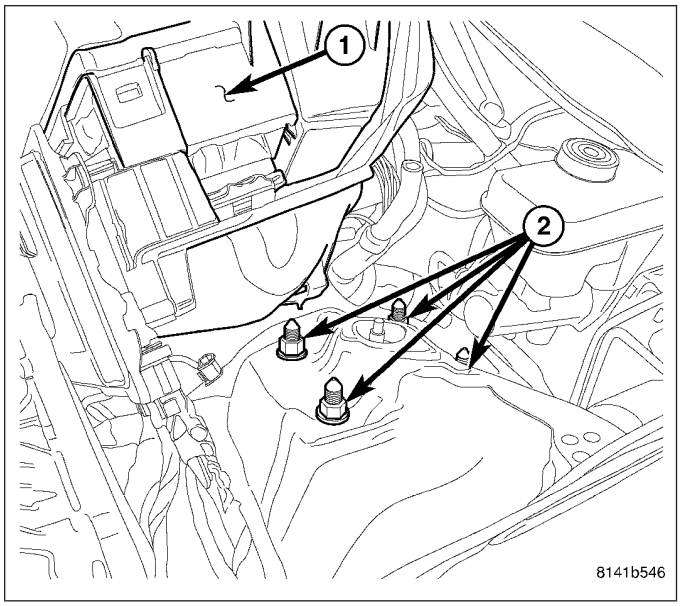
12. Install the caliper adaptor mounting bolts to 176 N·m (130 ft. lbs.).
13. Install the tire and wheel assembly.
14. Lower the vehicle.

LEFT FRONT

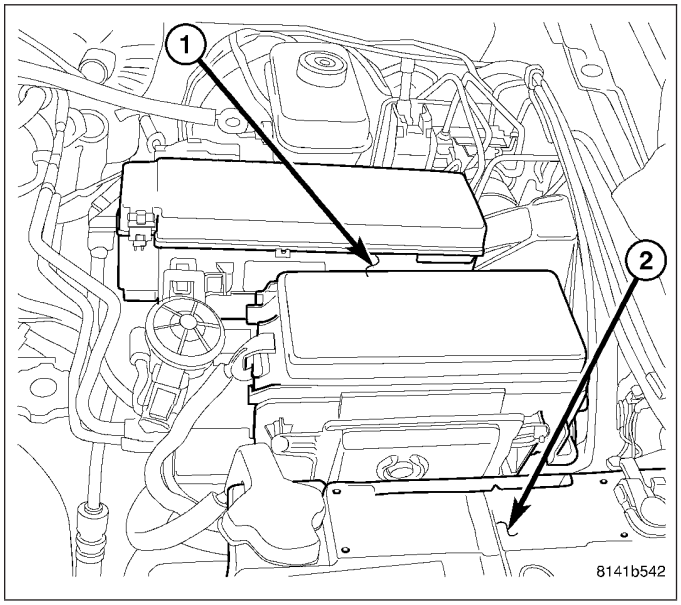
1. Install the clevis bracket (4) to the shock (3) and tighten to 122 N·m (90 ft. lbs.)..
2. Install the shock assembly (3) to the vehicle.



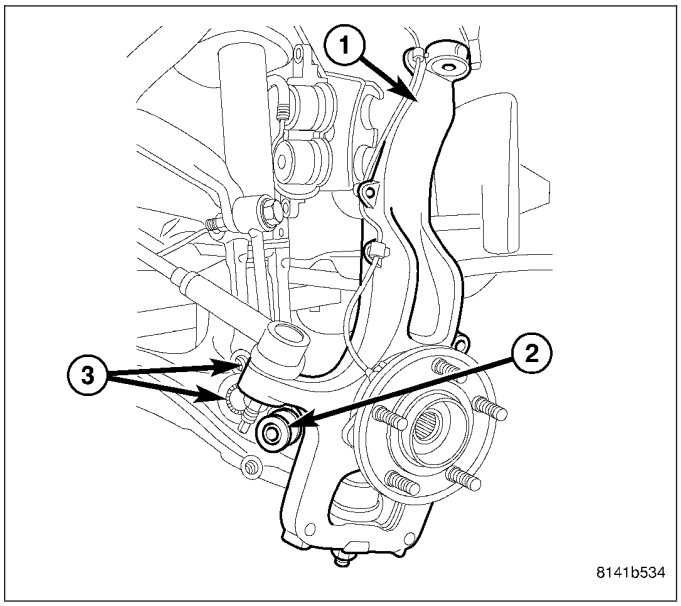
3. Install the four upper shock nuts (2), Tighten to 95 N·m (70 ft. lbs.).



4. Install the 3 PDC (1) bracket nuts.



5. Raise the vehicle up.
6. Install the lower stabilizer bolt (2) at the lower control arm and tighten to 115 N·m (85 ft. lbs.).
7. Install the lower clevis bolt (3) at the lower control arm and tighten to 169 N·m (125 ft. lbs.).
8. Install the upper ball joint into the knuckle (1) and tighten the nut to 75 N·m (55 ft. lbs.).
9. Install the disc brake rotor.



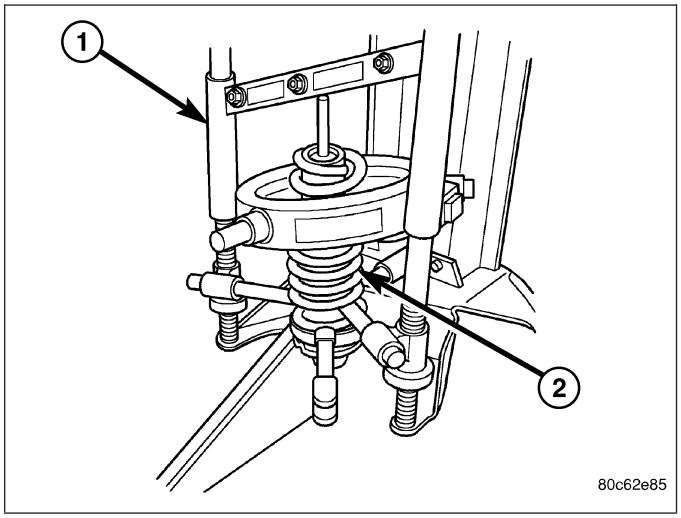
10. Install the caliper adaptor mounting bolts to 176 N·m (130 ft. lbs.).

11. Install the tire and wheel assembly.
12. Lower the vehicle.

SPRING

REMOVAL

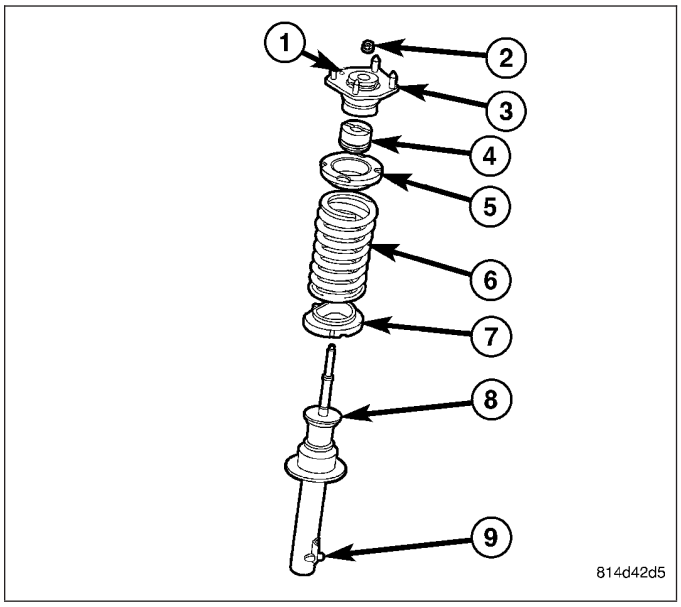
1. Remove the shock (Refer to 2 - SUSPENSION/ FRONT/SHOCK - REMOVAL).
2. Install the shock assembly in the Branick 7200® spring removal/installation tool or equivalent (1).
3. Compress the spring (2).



4. Remove the upper shock nut (2).

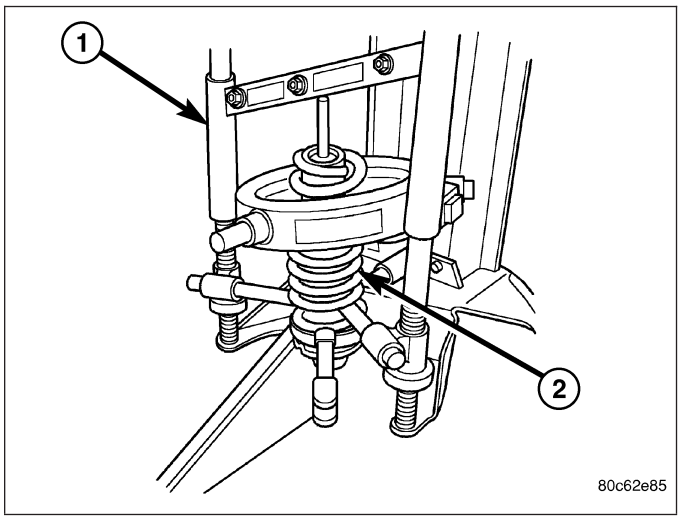
NOTE: The nub (1) in the upper shock mount (3) must be 180° from the centerline of the lower bracket (9) on the shock (8) for proper installation.

5. Remove the shock (8).
6. Remove the shock upper mounting plate (3).
7. Remove and inspect the upper (5) and lower (7) spring isolators.



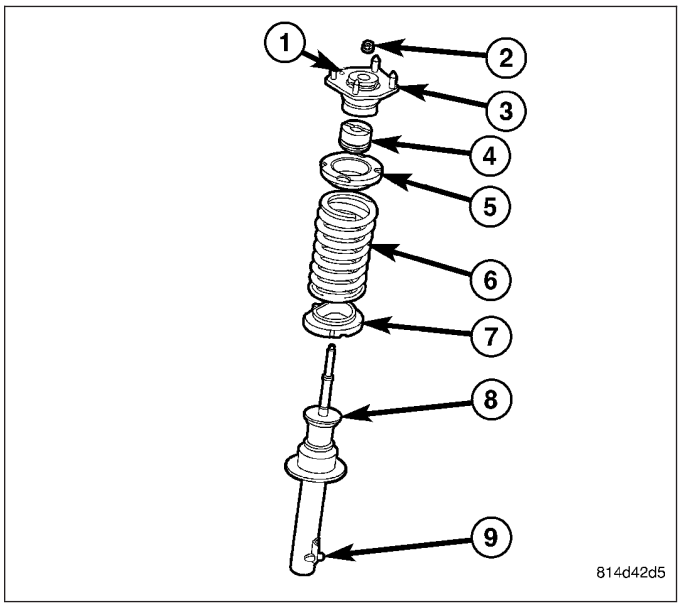
INSTALLATION

1. Compress the spring (2).



2. Install the lower isolator (7).
3. Position the shock (8) into the coil spring (6) **make sure the jounce bumper (4) is on the shock rod**.
4. Install the upper isolator (5).

NOTE: For proper orientation the nub hole (1) in the upper shock plate (3) must be 180° in a centerline from the bracket (9) at the bottom of the shock (8).



5. Install the upper shock mounting plate (3).
6. Install the shock upper mounting nut (2) Tighten to 39 N·m (25 ft. lbs.).
7. Decompress the spring.
8. Remove the shock assembly from the spring compressor tool (1).
9. Install the shock assembly (Refer to 2 - SUSPENSION/FRONT/SHOCK - INSTALLATION).

STABILIZER BAR

DESCRIPTION

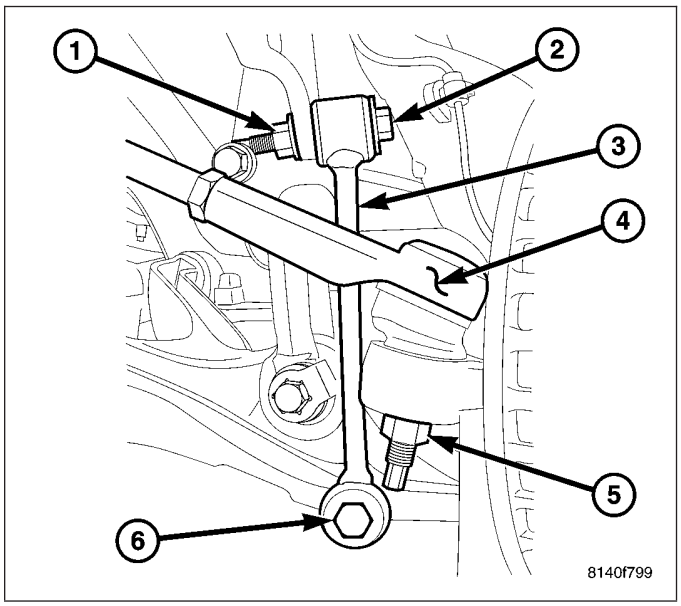
The bar extends across the front underside of the chassis and is mounted to the cradle. Links are connected from the bar to the lower control arms. The stabilizer bar and links are isolated by rubber bushings.

OPERATION

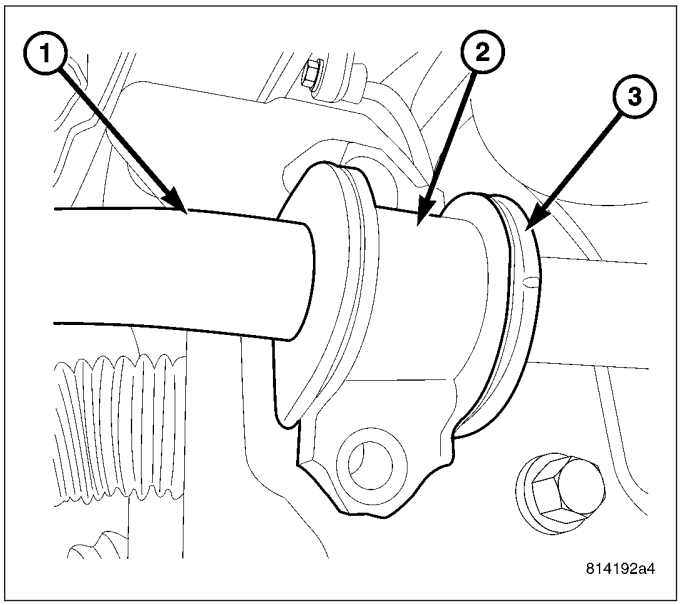
The stabilizer bar is used to control vehicle body sway during turns. The spring steel bar helps to control the vehicle body in relationship to the suspension.

REMOVAL

1. Raise and support the vehicle.
2. Remove the front splash shield.
3. Remove the stabilizer bar link upper nut (1) & bolt (2).

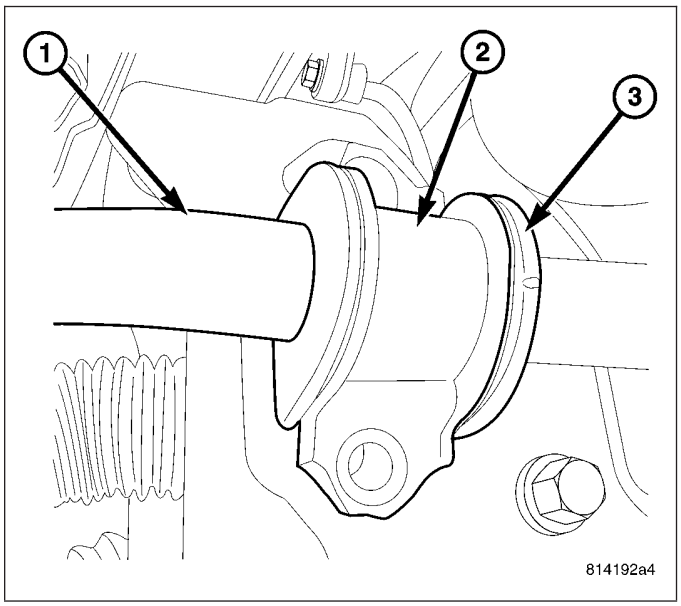


4. Remove the two stabilizer bushing clamp bolts (2).
5. Remove the stabilizer bar (1).

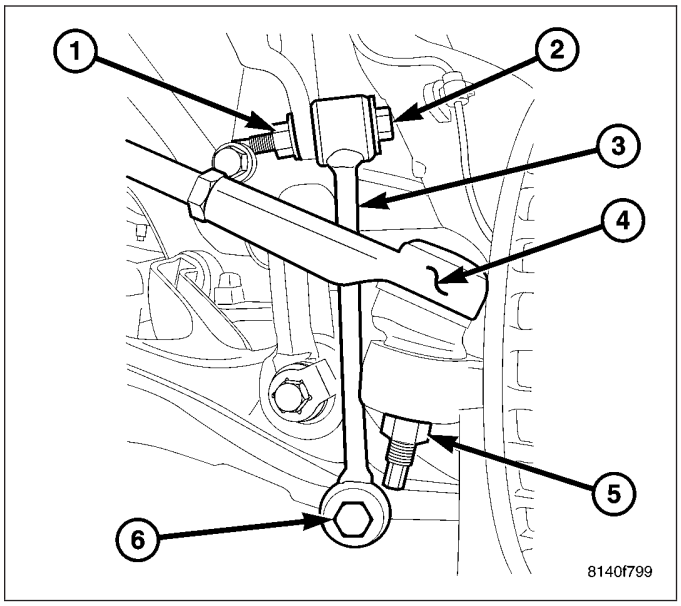


INSTALLATION

1. Install the stabilizer bar (1) to the vehicle.
2. Install the stabilizer bushing clamp (2) and tighten the bolts to 142 N·m (105 ft. lbs.).



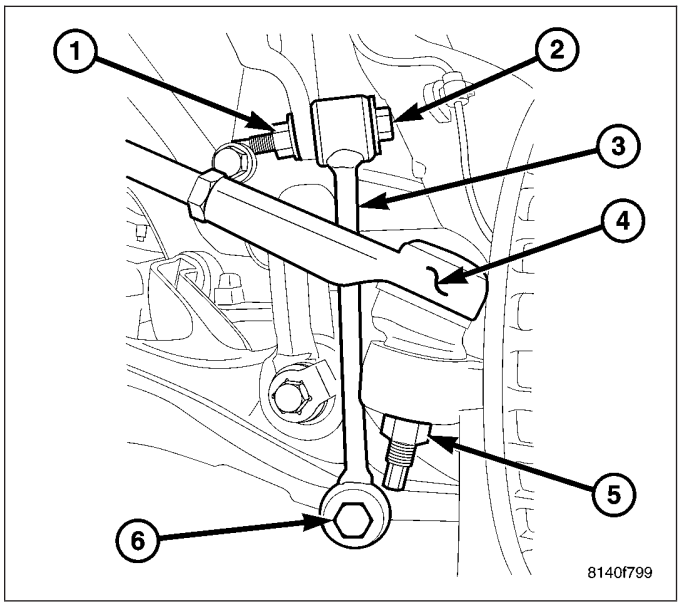
3. Install the upper stabilizer link (3) and tighten nut (1) & bolt (2) to 135 N·m (100 ft. lbs.).
4. Install the front splash shield.
5. Lower the vehicle.



STABILIZER LINK

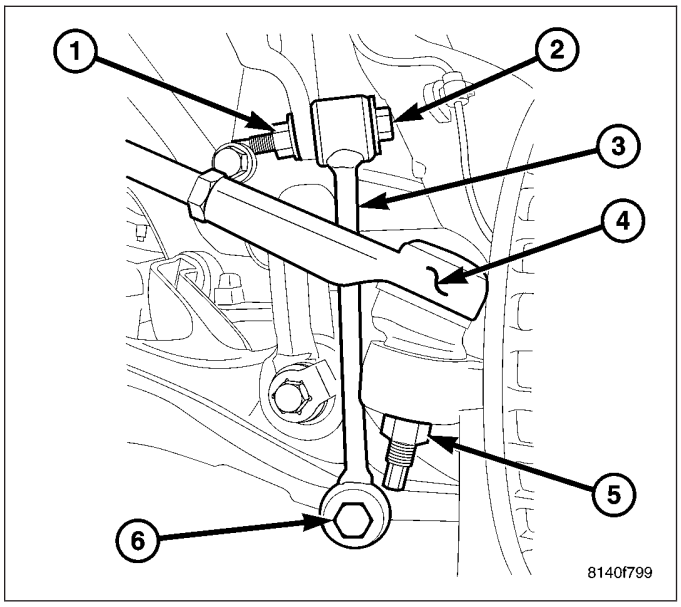
REMOVAL

1. Raise and support the vehicle.
2. Remove the tire and wheel assembly.
3. Remove the upper link bolt/nut (1&2).
4. Remove the lower link bolt (6).
5. Remove the stabilizer link (3).



INSTALLATION

1. Install the stabilizer link (3) to the vehicle.
2. Install the lower link bolt (6) and tighten to 115 N·m (85 ft. lbs.)
3. Install the upper link bolt/nut (1&2) and tighten to 135 N·m (100 ft. lbs.).
4. Install the tire and wheel assembly.
5. lower the vehicle.

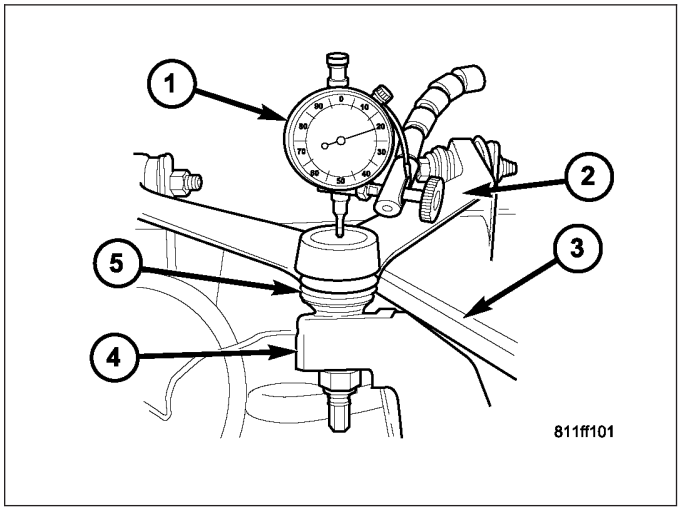


UPPER BALL JOINT

DIAGNOSIS AND TESTING

UPPER BALL JOINT

1. Raise the front of the vehicle. Place safety floor stands under both lower control arms as far outboard as possible. Lower the vehicle to allow the stands to support some or all of the vehicle weight.
2. Remove the front tires.
3. Mount a dial indicator (1) solidly to the frame and then zero the dial indicator.
4. Position dial indicator plunger on the topside of the upper ball joint (5).



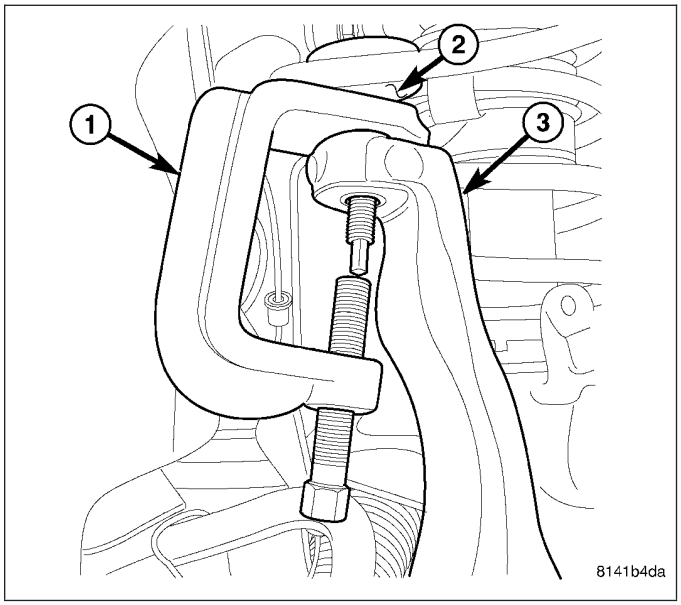
NOTE: The dial indicator plunger must be perpendicular to the machined surface of the ball joint.

NOTE: Use care not to pry or tear the ball joint boot, when checking the free play.

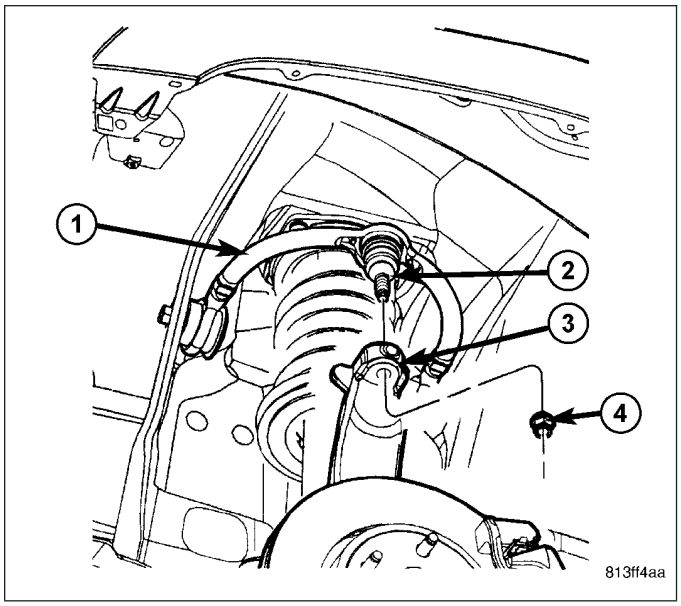
5. Position a pry bar (3) between the steering knuckle (4) and the upper control arm (2). Pry upwards on the upper control arm.
6. If the travel exceeds 0.5 mm (0.020 in.), replace the upper ball joint (Refer to 2 - SUSPENSION/FRONT/UPPER BALL JOINT - REMOVAL).
7. If the upper ball joint is within specs reinstall the front tires (Refer to 22 - TIRES/WHEELS/WHEELS - STANDARD PROCEDURE).

REMOVAL

1. Raise vehicle and support the axle.
2. Remove the tire and wheel.
3. Remove the upper ball joint retaining nut.
4. Separate the upper ball joint (2) from the knuckle (3) using special tool #8677 (1).

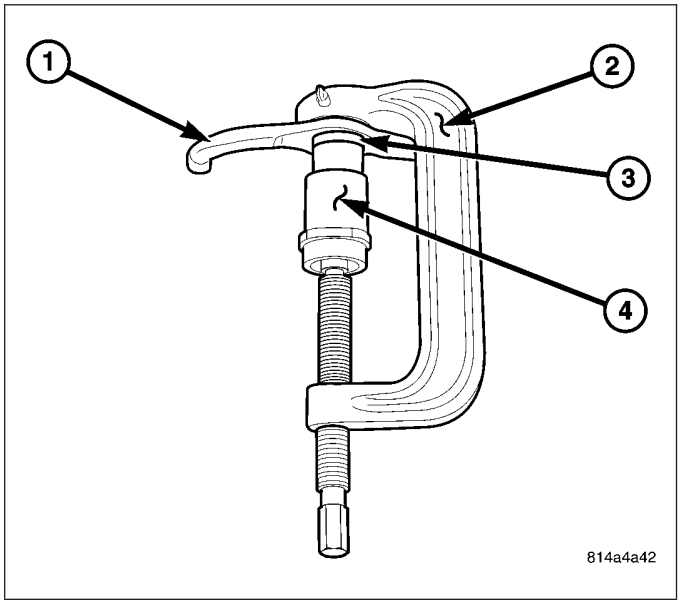


5. Remove the wheel speed sensor wire from the upper control arm (1).
6. Move the knuckle (3) out of the way to allow ball joint removal tool access.



NOTE: Extreme pressure lubrication must be used on the threaded portions of the tool. This will increase the longevity of the tool and insure proper operation during the removal and installation process.

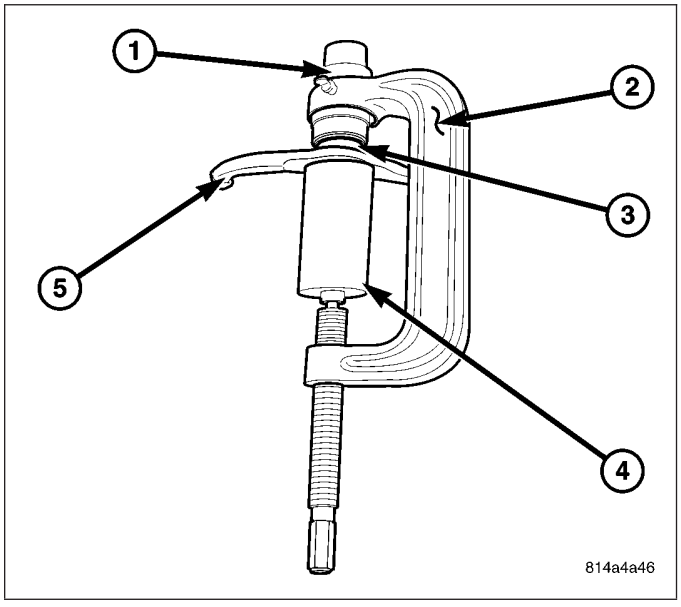
7. Press the ball joint from the upper control arm (1) using special tools C-4212-F (PRESS) (2) and 9652 (Driver) (3).



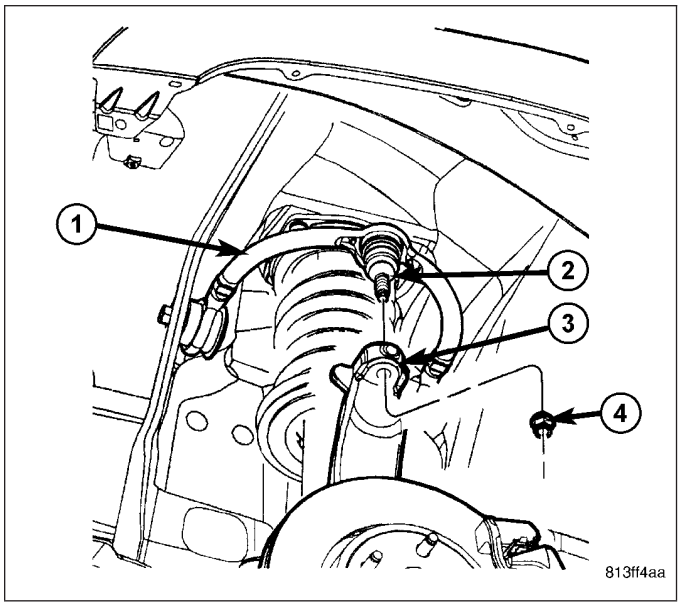
INSTALLATION

NOTE: Extreme pressure lubrication must be used on the threaded portions of the tool. This will increase the longevity of the tool and insure proper operation during the removal and installation process.

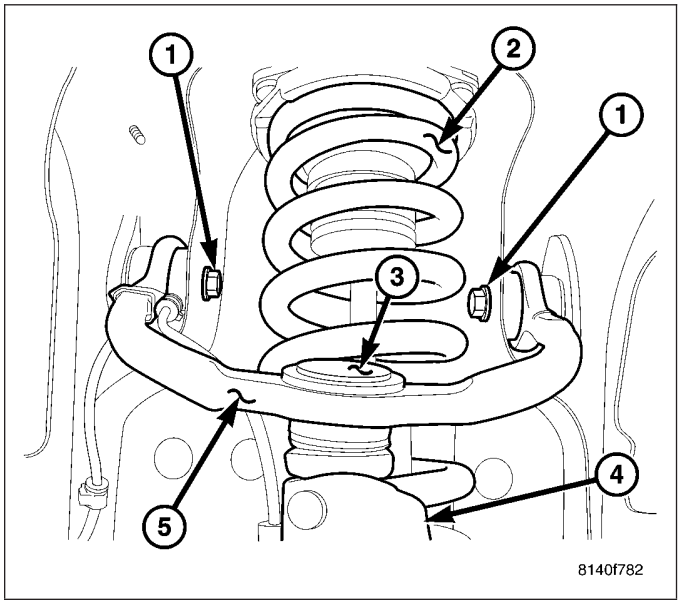
1. Install the ball joint (4) into the upper control arm (5) and press in using special tools C-4212-F (press) (2), 9652 (Driver) (1) and 8975–2 (Receiver) (4).



2. Install the upper ball joint (2) into the knuckle (3).
3. Install the upper ball joint retaining nut (4) and tighten to 75 N·m (55 ft. lbs.).



4. Install the wheel speed sensor wire to the upper control arm.
5. Install the tire and wheel.
6. Remove the supports and lower the vehicle.
7. Perform a wheel alignment (Refer to 2 - SUSPENSION/WHEEL ALIGNMENT - STANDARD PROCEDURE).



UPPER CONTROL ARM

DESCRIPTION

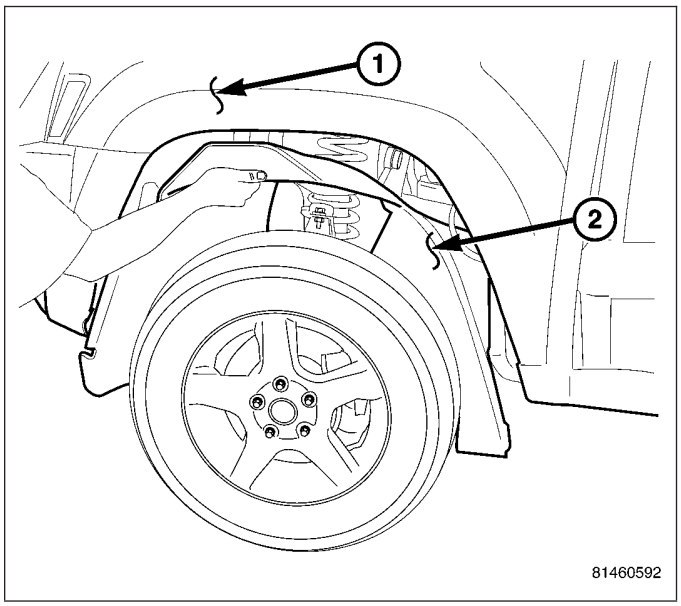
The upper suspension arms are forged steel and use rubber bushings at each end of the arm.

OPERATION

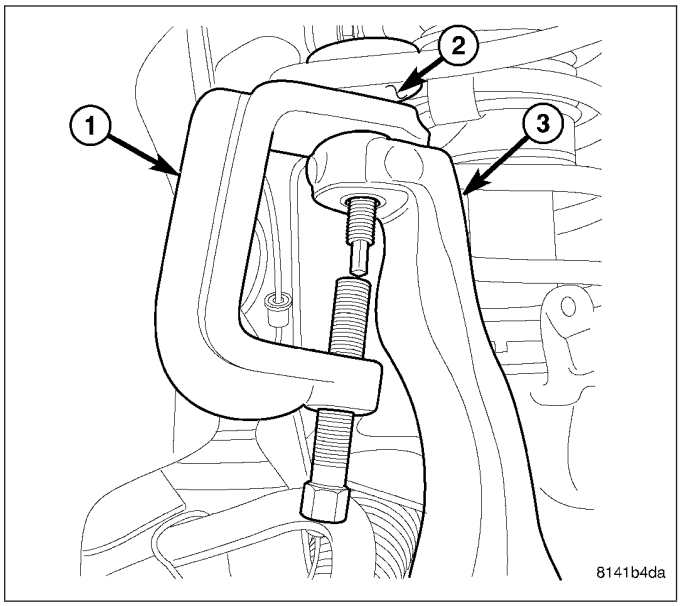
The arms mount to the unibody frame rail bracket and the knuckle. The arm and bushings provide location and react to loads from the road. The bushings provide isolation from the road.

REMOVAL

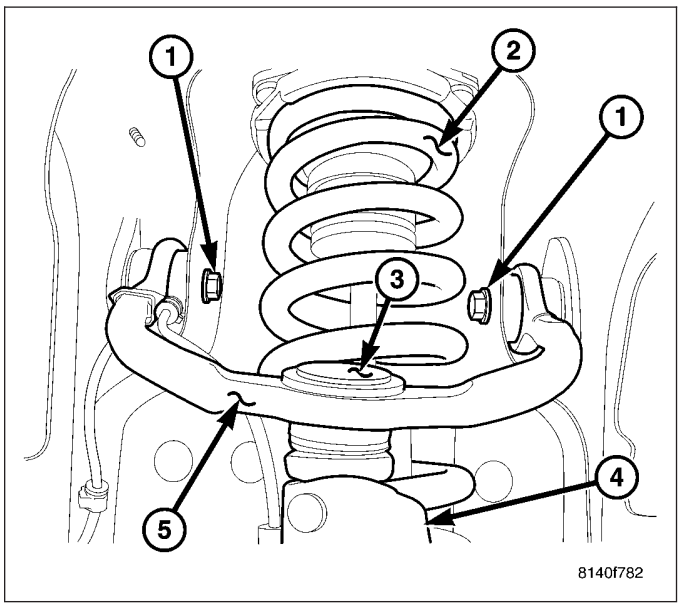
1. Raise vehicle and support the axle.
2. Remove the tire and wheel.
3. Remove the inner fender well (2).



4. Remove the upper ball joint retaining nut.
5. Seperate the upper ball joint (2) from the knuckle (3) using special tool #8677 (1).

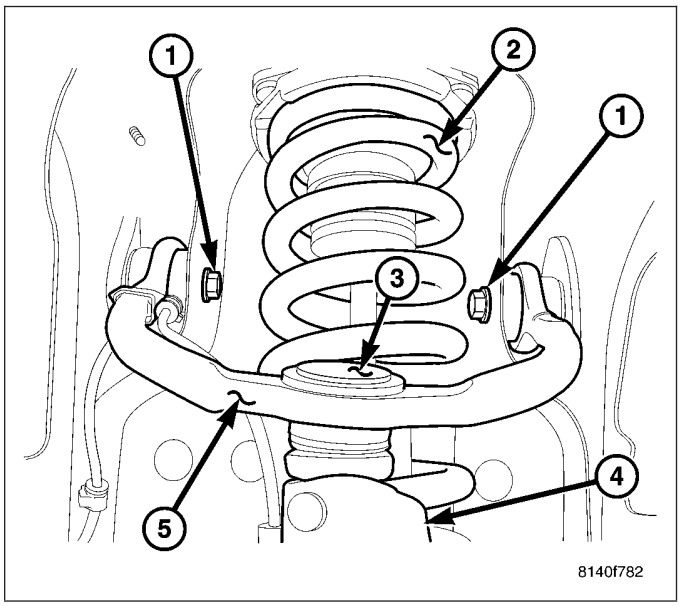


6. Remove the wheel speed sensor wire from the upper control arm (5).
7. Remove the nut and bolt (1) securing the upper control arm (5) to the body.
8. Remove the upper control arm (5) from the vehicle.

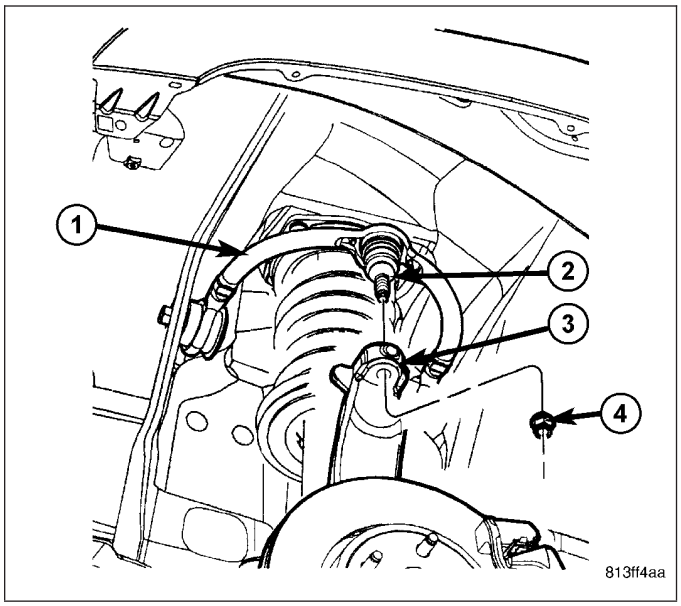


INSTALLATION

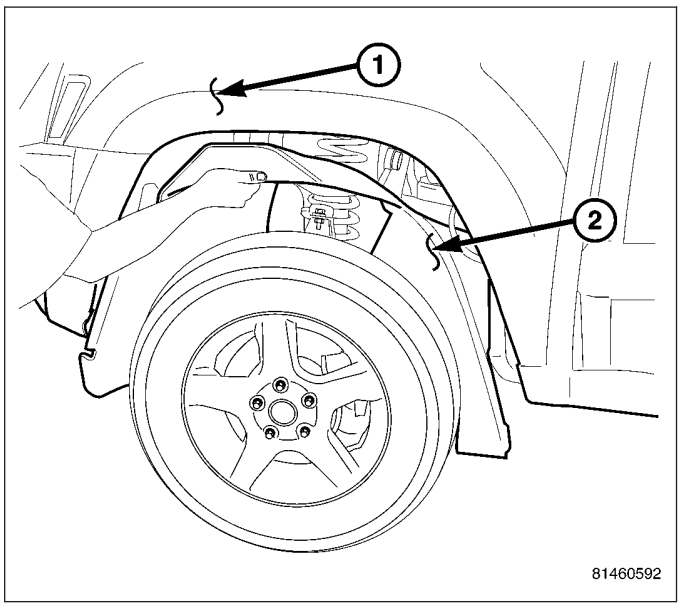
1. Install the upper control arm (5) to the vehicle.
2. Install the nut and bolt (1) securing the upper control arm (5) to the body.
3. Install the wheel speed sensor wire to the upper control arm (5).



4. Install the upper ball joint (2) into the knuckle (3).
5. Install the upper ball joint retaining nut (4) and tighten the nut to 81 N·m (60 ft.lbs.).



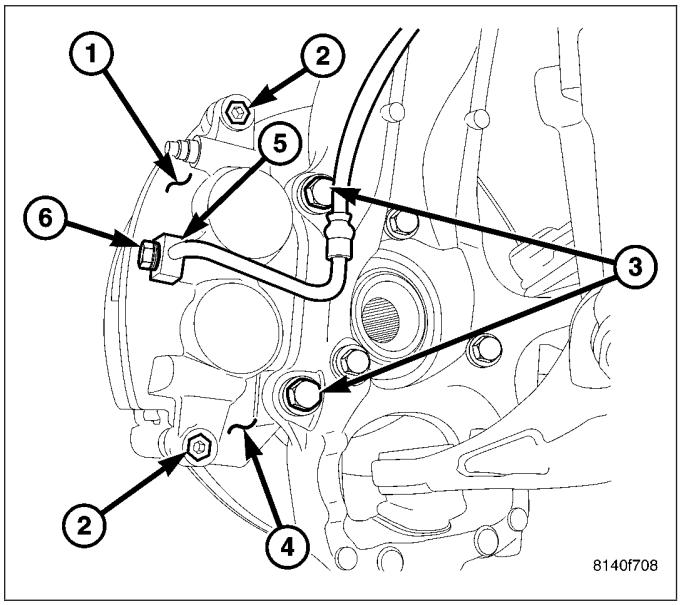
6. Install the inner fender well (2).
7. Install the tire and wheel.
8. Remove the supports and lower the vehicle.
9. Perform a wheel alignment (Refer to 2 - SUSPENSION/WHEEL ALIGNMENT - STANDARD PROCEDURE).



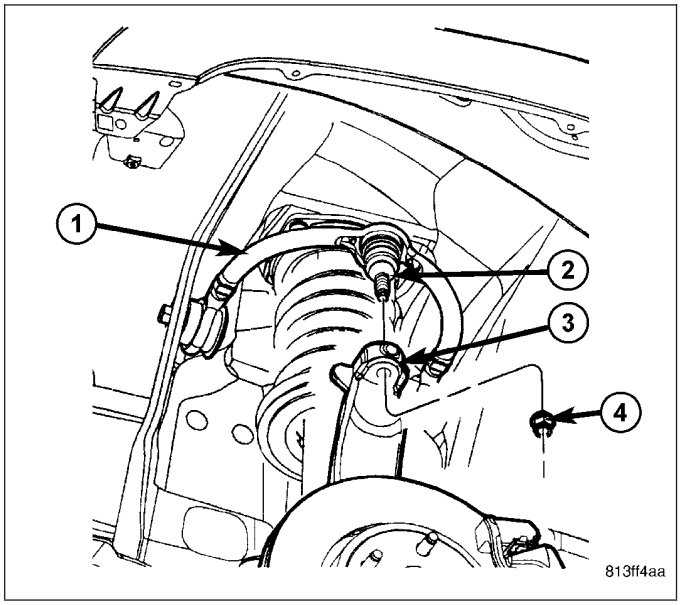
CLEVIS BRACKET

REMOVAL

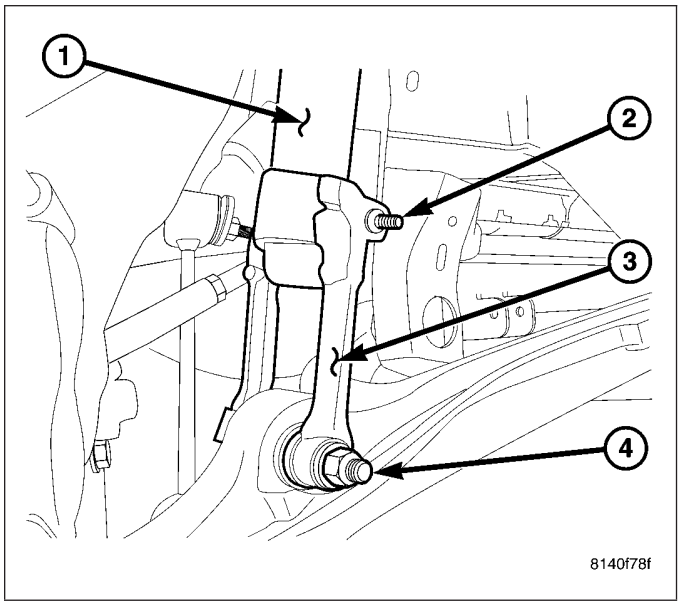
1. Raise and support the vehicle.
2. Remove the tire.
3. Remove the two brake caliper adapter bolts (3).
4. Support the brake caliper adaptor and caliper. **Do not allow the caliper to hang by the brake hose.**



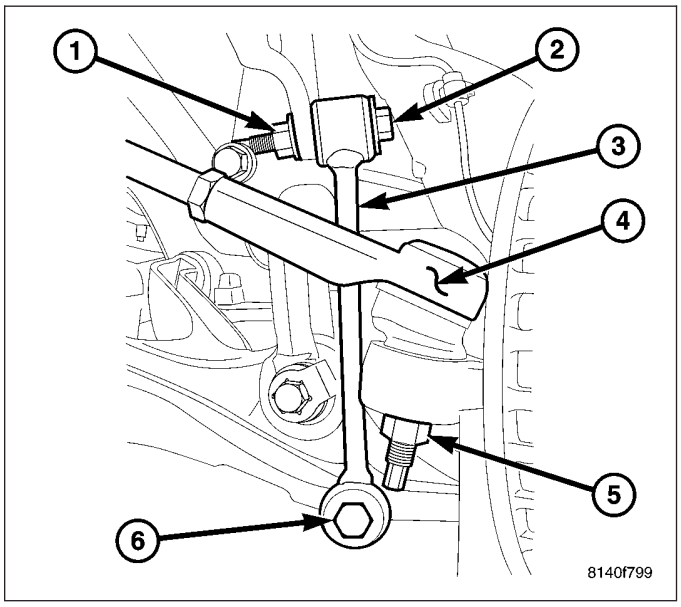
5. Remove the disc brake rotor.
6. Remove the upper ball joint nut (4).
7. Separate the upper ball joint (2) from the knuckle (3) using special tool 8677.



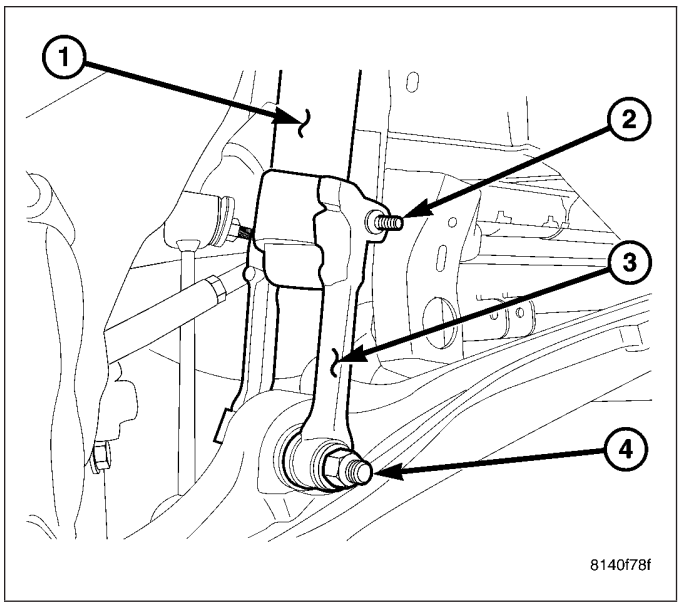
8. Remove the clevis bolt (2) at the shock (1).
9. Remove the lower clevis bolt/nut (4) at the lower control arm.



10. Remove the lower stabilizer link bolt (6).

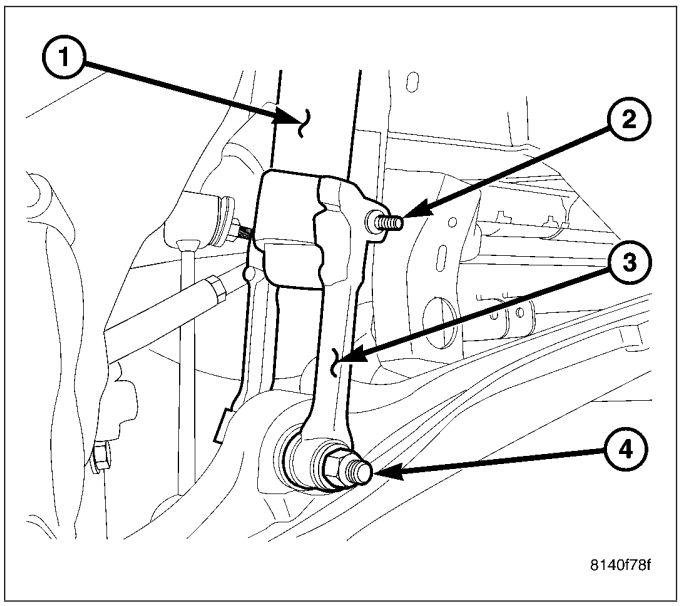


11. Remove the clevis bracket (3).

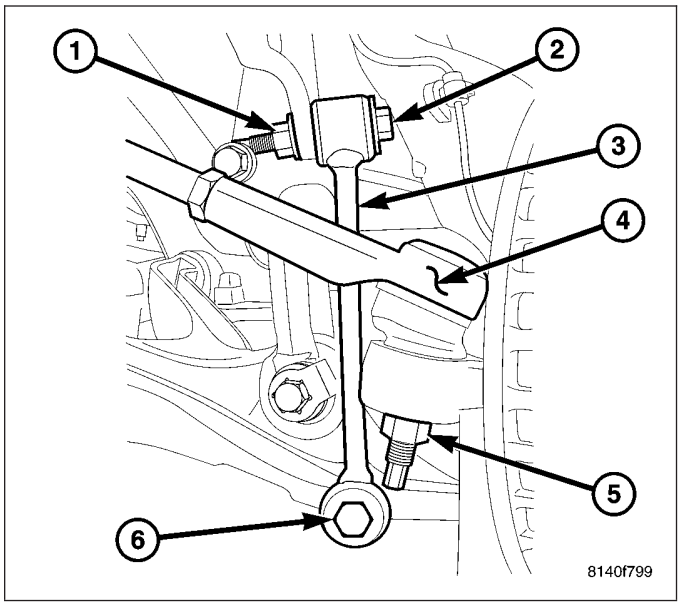


INSTALLATION

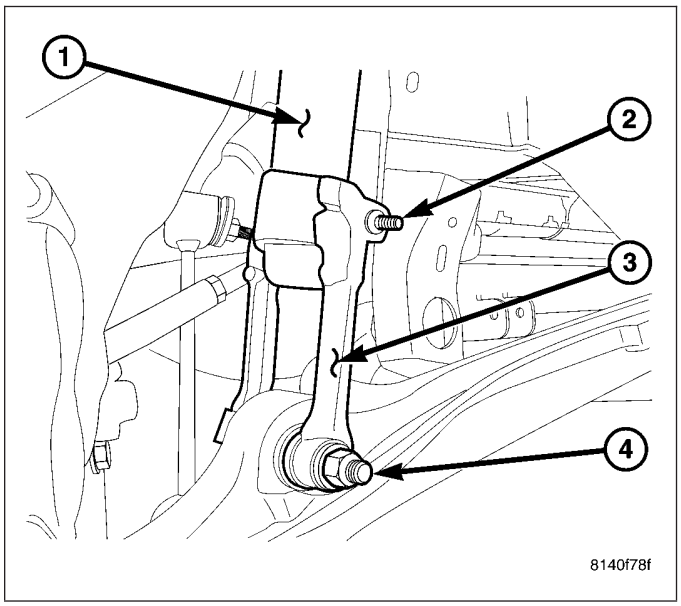
1. Install the clevis bracket (3) to the shock (1) and tighten to 122 N·m (90 ft. lbs.)..



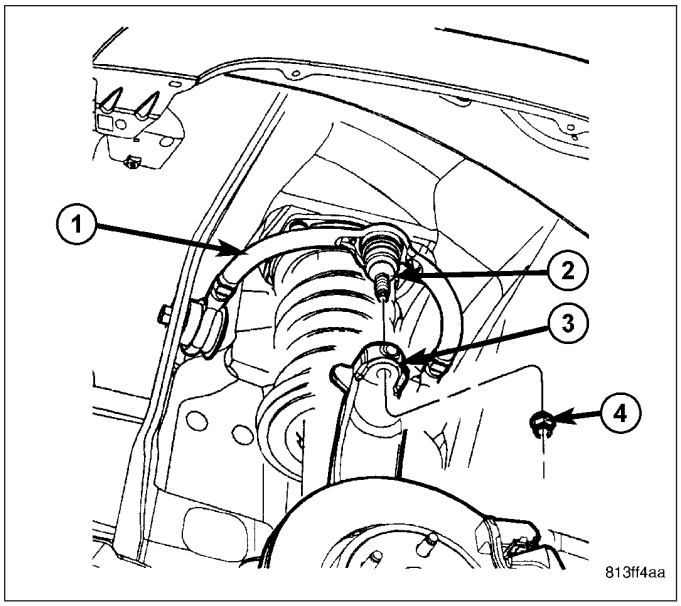
2. Install the lower stabilizer link bolt (6) and tighten to 115 N·m (85 ft. lbs.)..



3. Install the lower clevis bolt/nut (4) at the lower control arm and tighten to 169 N·m (125 ft. lbs.)..



4. Install the upper ball joint (2) into the knuckle (3) and tighten the nut to 75 N·m (55 ft. lbs.).



5. Install the disc brake rotor.
6. Install the caliper adaptor mounting bolts (3) to 25 N·m (18 ft. lbs.).
7. Install the tire and wheel assembly.
8. Lower the vehicle.