

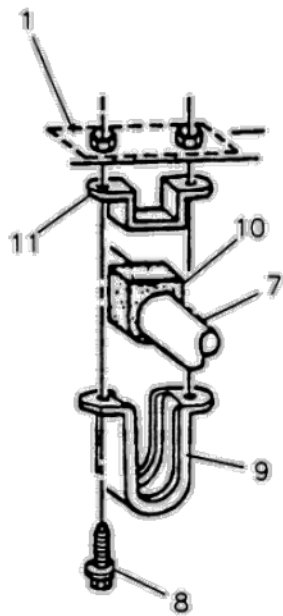
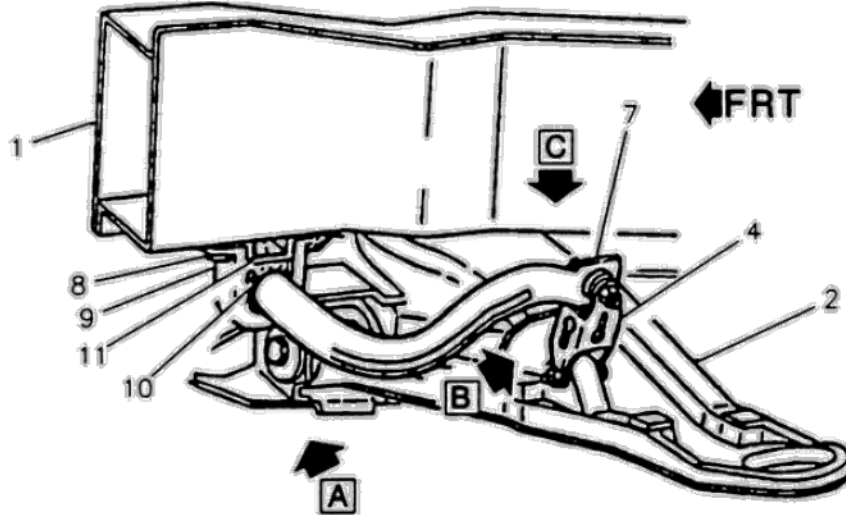
FRONT SUSPENSION COMPONENT LOCATIONS

1. Power steering gear
2. Stabilizer shaft
3. Upper control arm

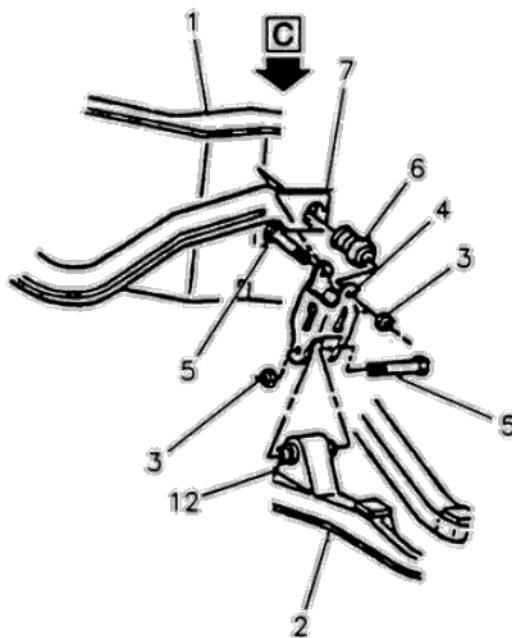
4. Upper ball joint
5. Tie rod end
6. Shock absorber

7. Lower ball joint
8. Lower control arm
9. Front transverse spring

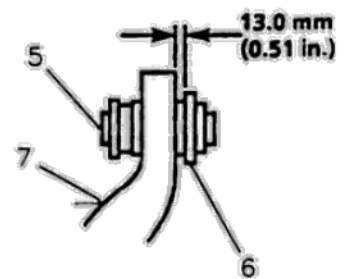




VIEW A

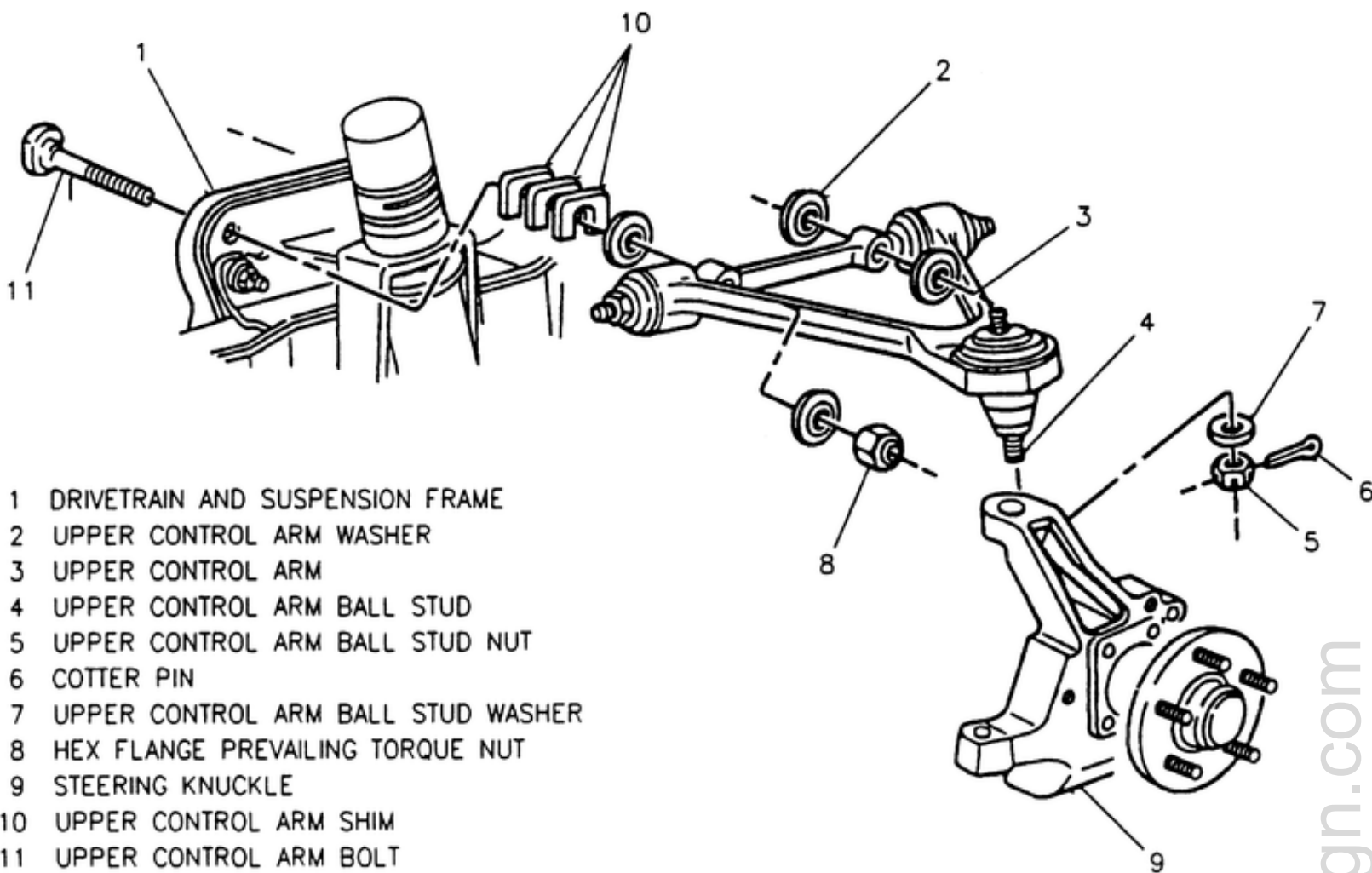


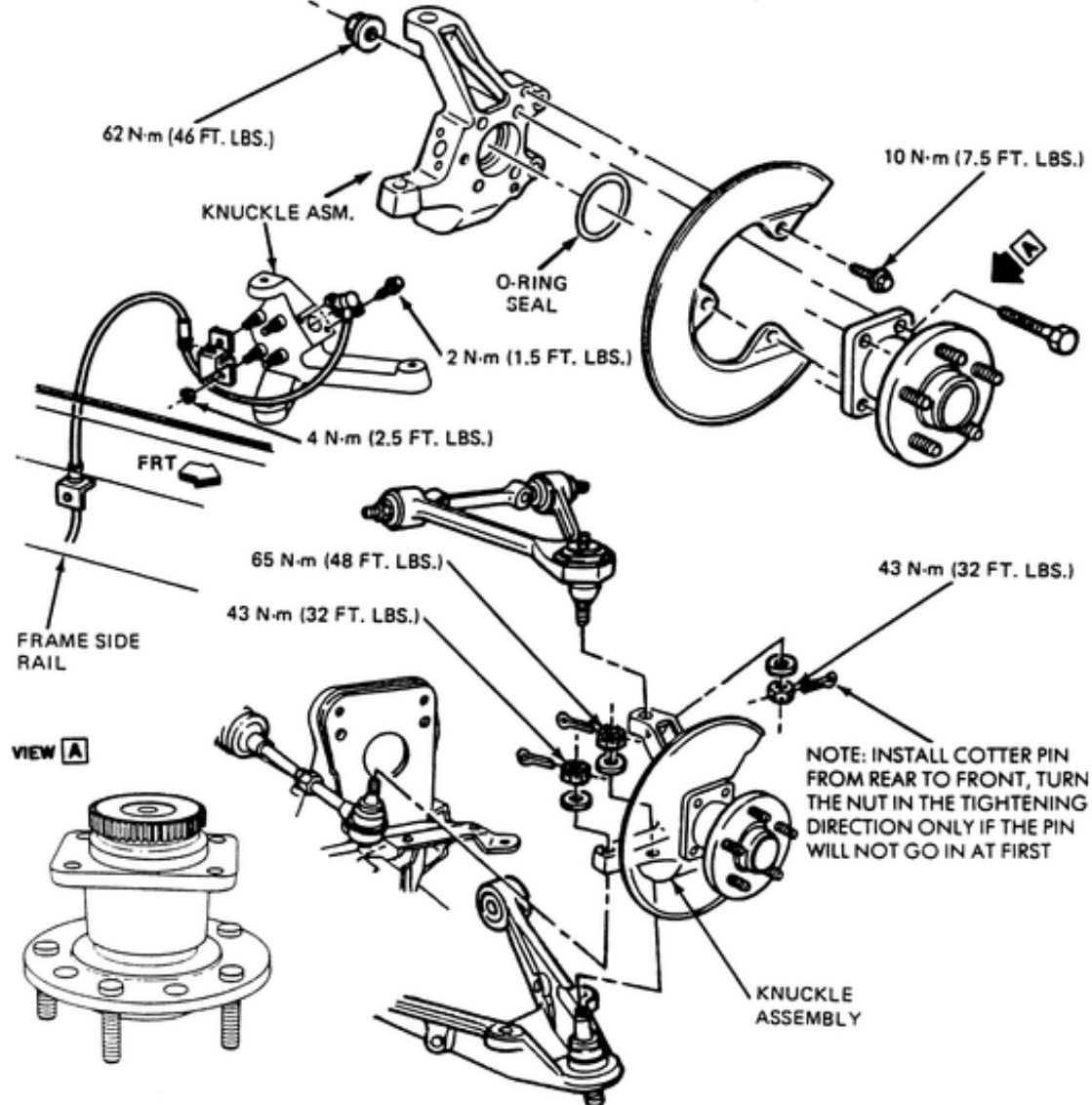
VIEW B

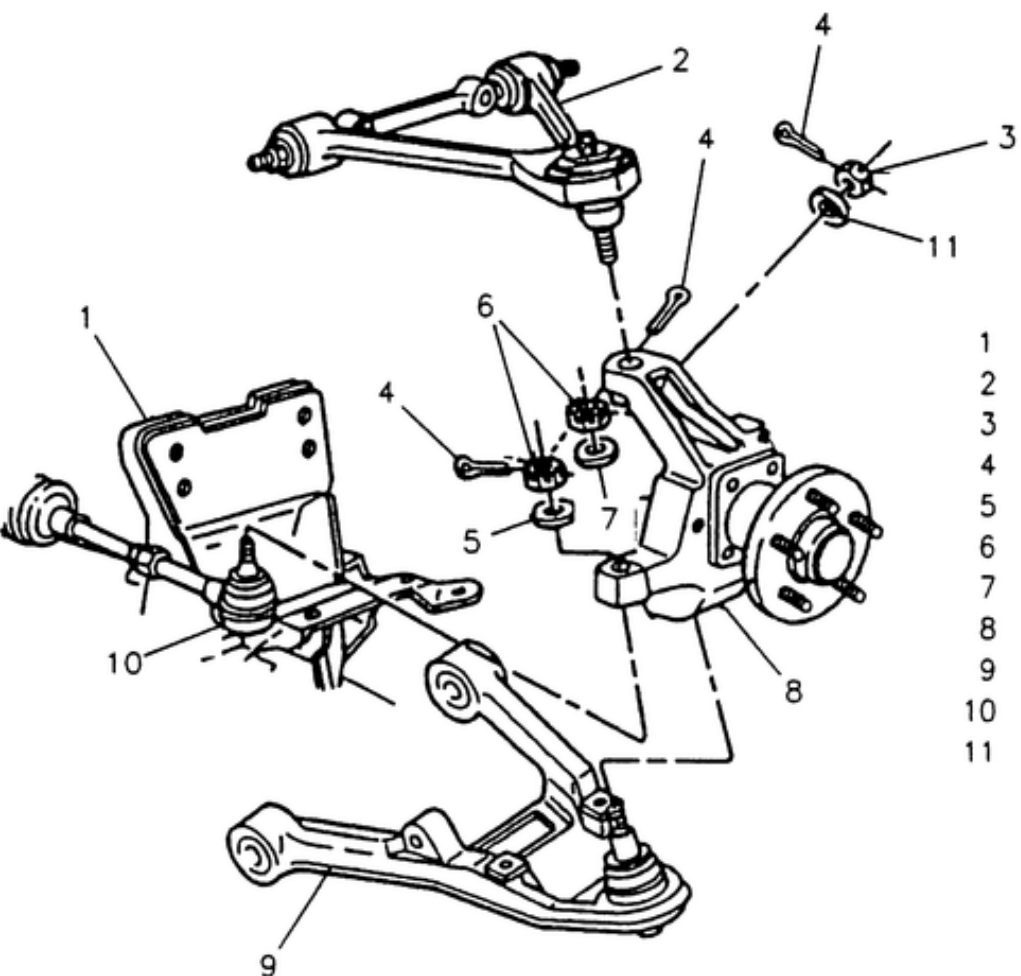


VIEW C

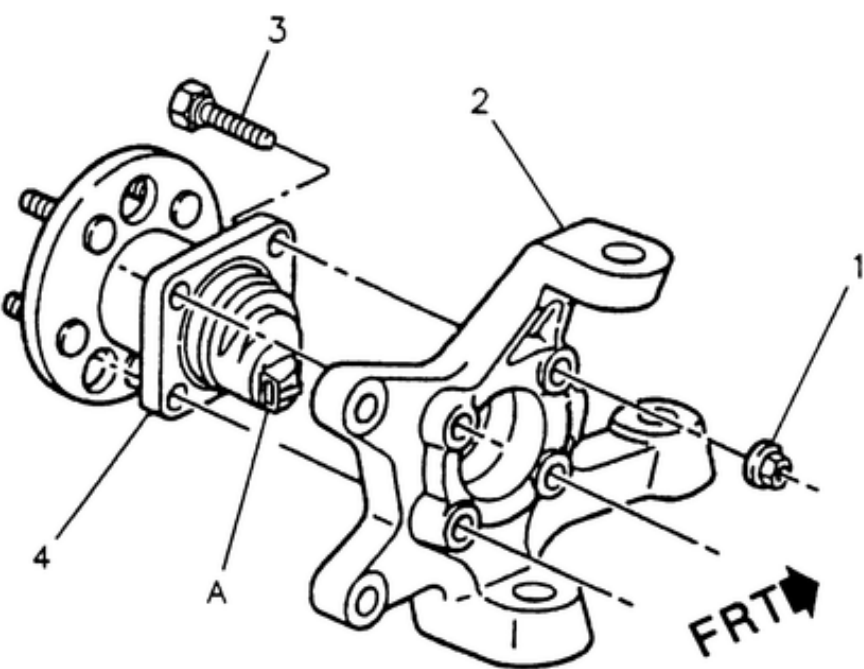
- 1 DRIVETRAIN AND SUSPENSION FRAME
- 2 LOWER CONTROL ARM
- 3 HEX NUT
- 4 STABILIZER SHAFT LINK
- 5 HEX BOLT
- 6 STABILIZER SHAFT LINK UPPER INSULATOR
- 7 STABILIZER SHAFT
- 8 BOLT
- 9 STABILIZER SHAFT INSULATOR CLAMP
- 10 STABILIZER SHAFT INSULATOR
- 11 STABILIZER SHAFT BRACKET
- 12 STABILIZER SHAFT LINK LOWER INSULATOR



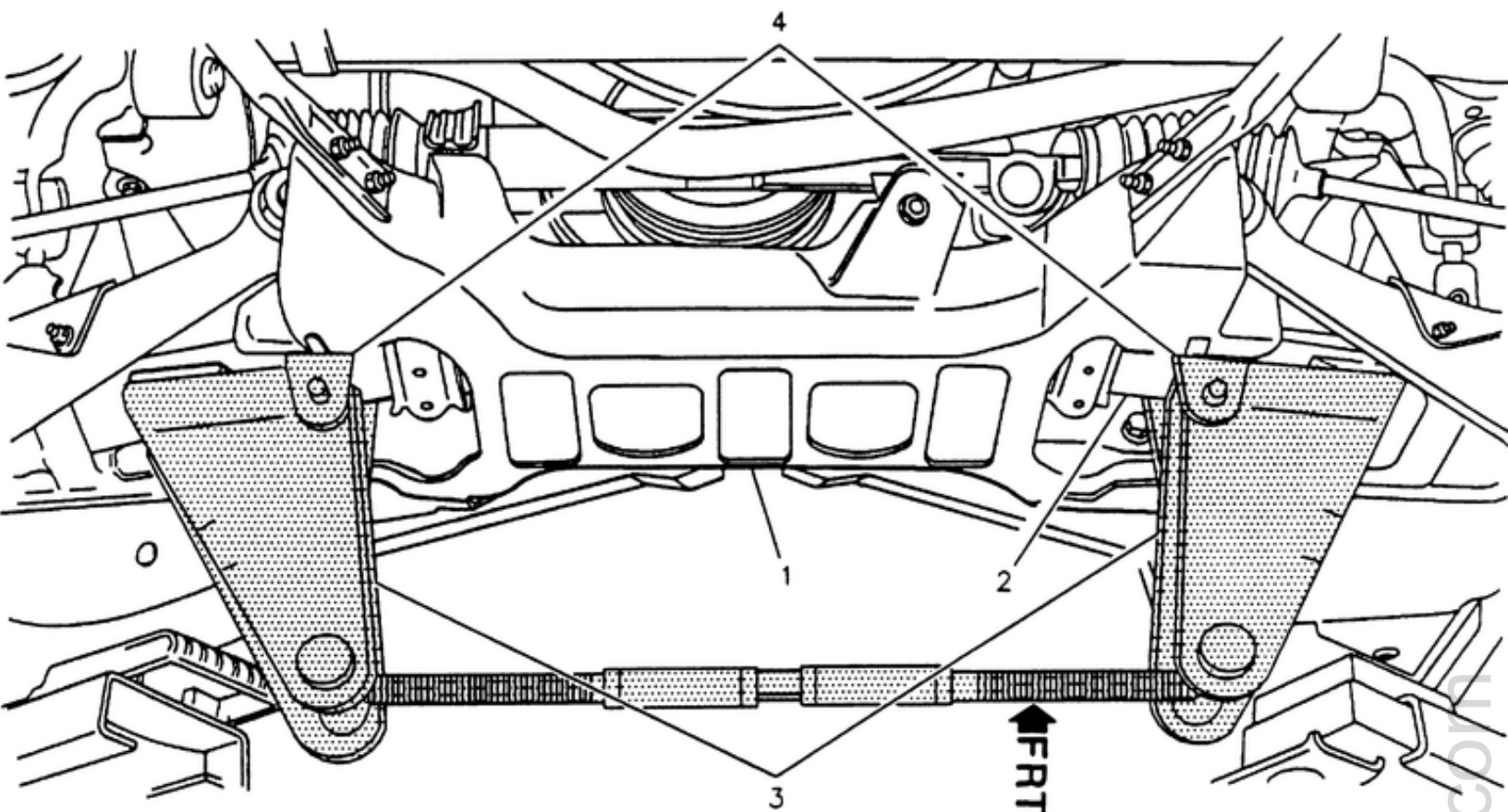




- 1 DRIVETRAIN AND SUSPENSION FRAME
- 2 UPPER CONTROL ARM
- 3 UPPER CONTROL ARM BALL STUD NUT
- 4 COTTER PIN
- 5 TIE ROD BALL STUD WASHER
- 6 HEX SLOTTED NUT
- 7 LOWER CONTROL ARM BALL STUD WASHER
- 8 STEERING KNUCKLE
- 9 LOWER CONTROL ARM
- 10 STEERING GEAR TIE ROD BALL STUD
- 11 UPPER CONTROL ARM BALL STUD WASHER

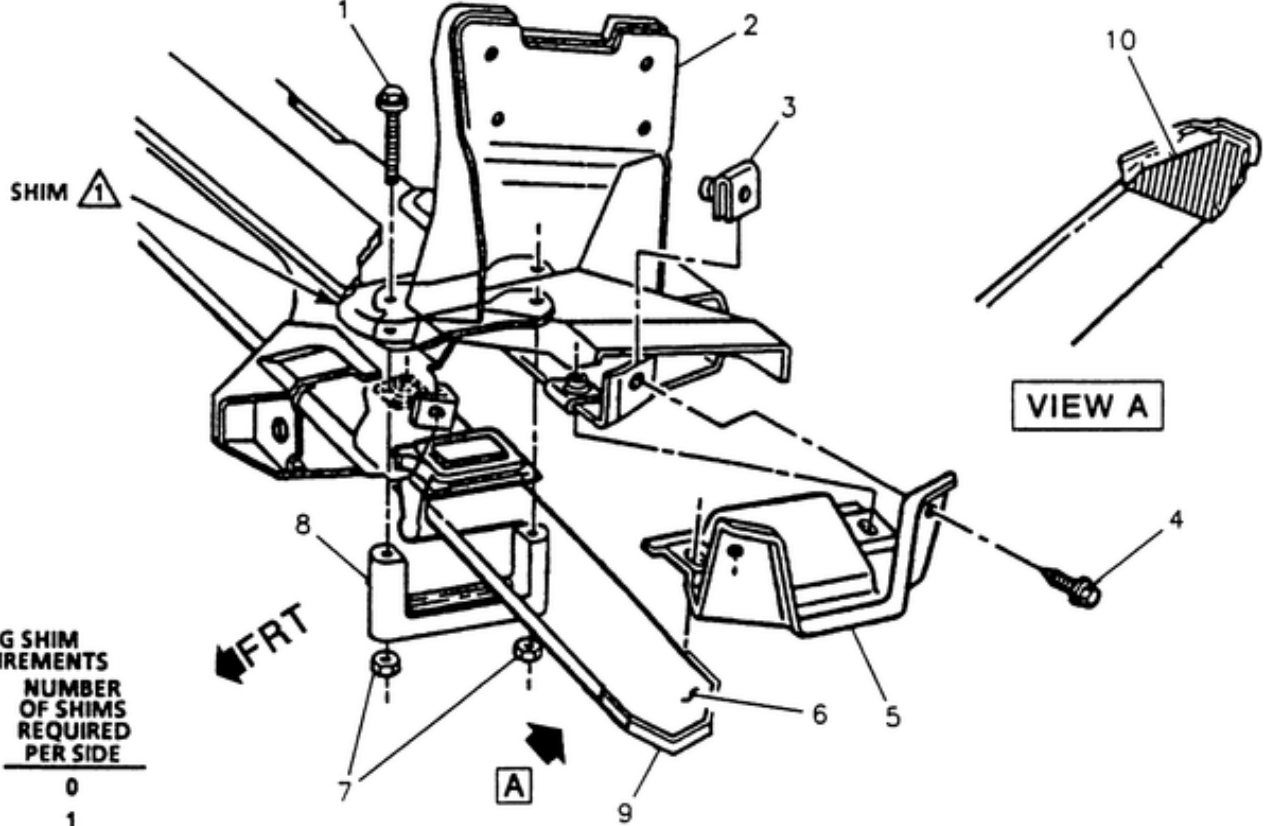


- 1 HEX FLANGE TORQUE NUT
- 2 STEERING KNUCKLE
- 3 WHEEL HUB BOLT
- 4 WHEEL HUB
- A SPEED SENSOR CONNECTOR
MUST BE FACING THE REAR
OF THE VEHICLE



1 DRIVETRAIN AND SUSPENSION FRAME
2 SPRING

3 TOOL - J 33432-A
4 TOOL ADAPTERS - J 33432-88

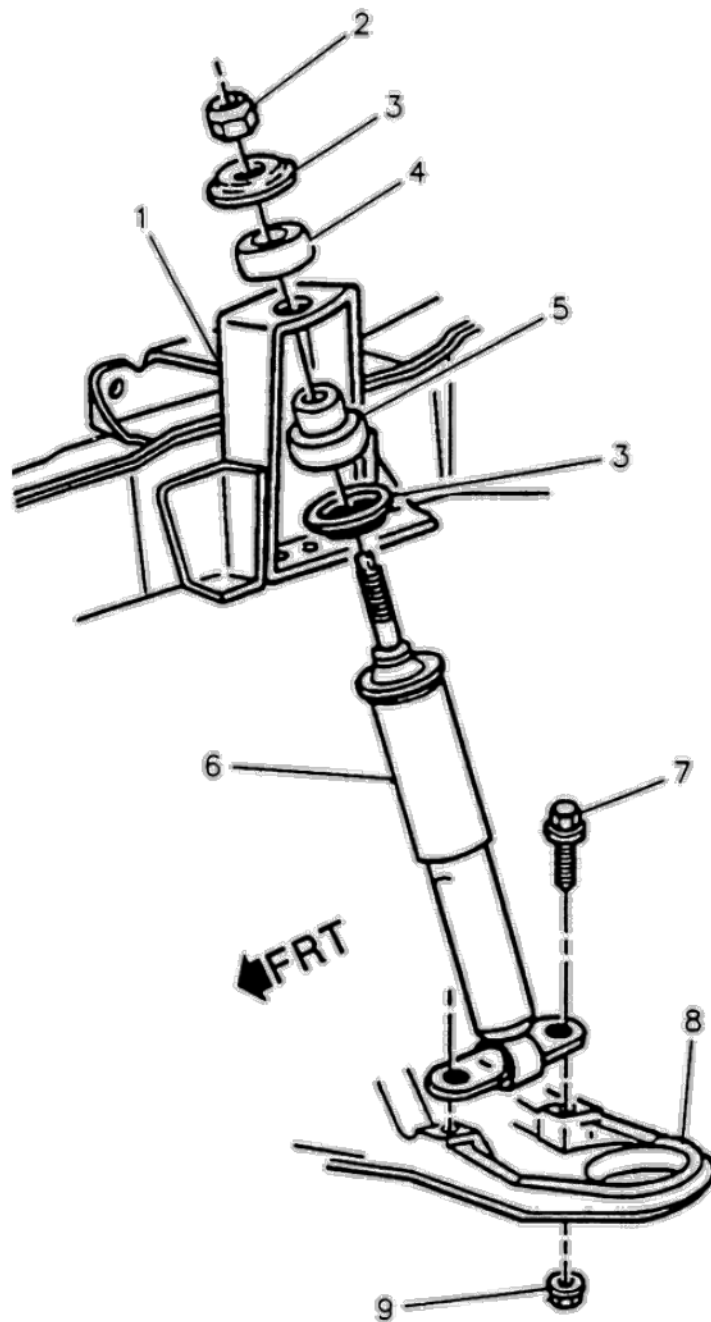


SPRING SHIM REQUIREMENTS

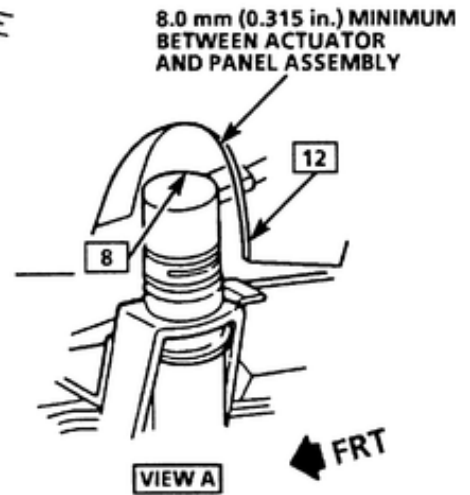
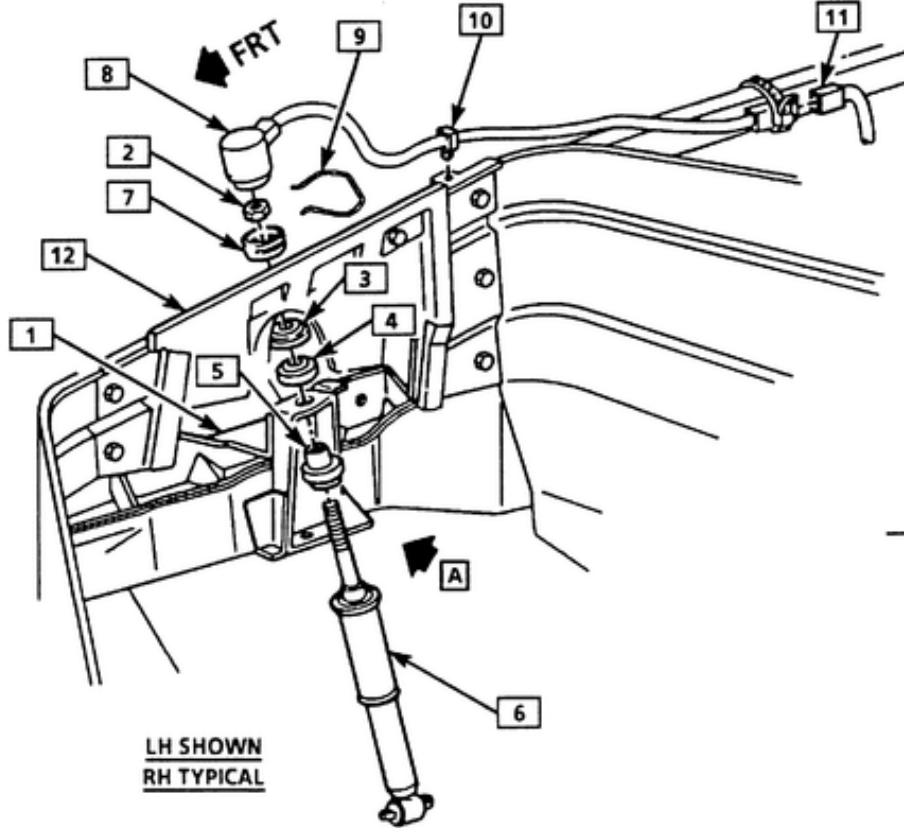
SPRING COLOR CODE	NUMBER OF SHIMS REQUIRED PER SIDE
BLUE	0
YELLOW	1
GREEN	2

- 1 SPRING RETAINING BOLT
- 2 DRIVETRAIN AND SUSPENSION FRAME
- 3 MULTI-THREAD "U" NUT
- 4 SPRING PROTECTOR TO FRAME BOLT
- 5 SPRING PROTECTOR

- 6 FRONT TRANSVERSE SPRING
- 7 SPRING RETAINER NUT
- 8 FRONT SPRING RETAINER
- 9 SPRING PAD
- 10 APPLY RUBBER LUBRICANT

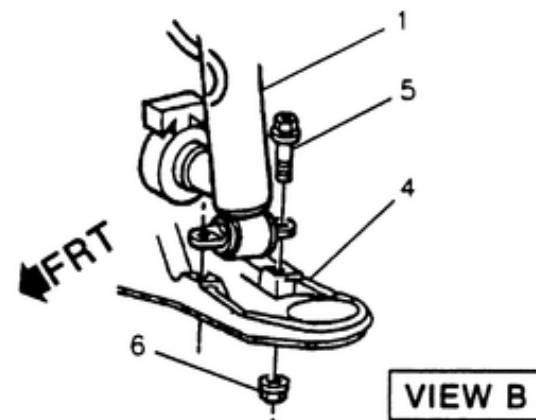
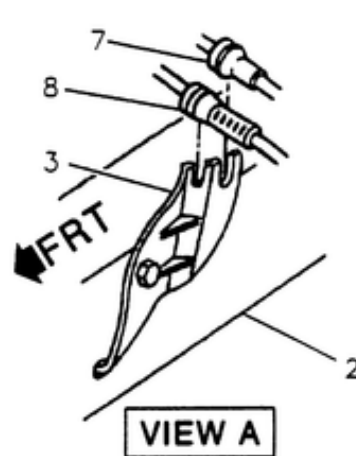
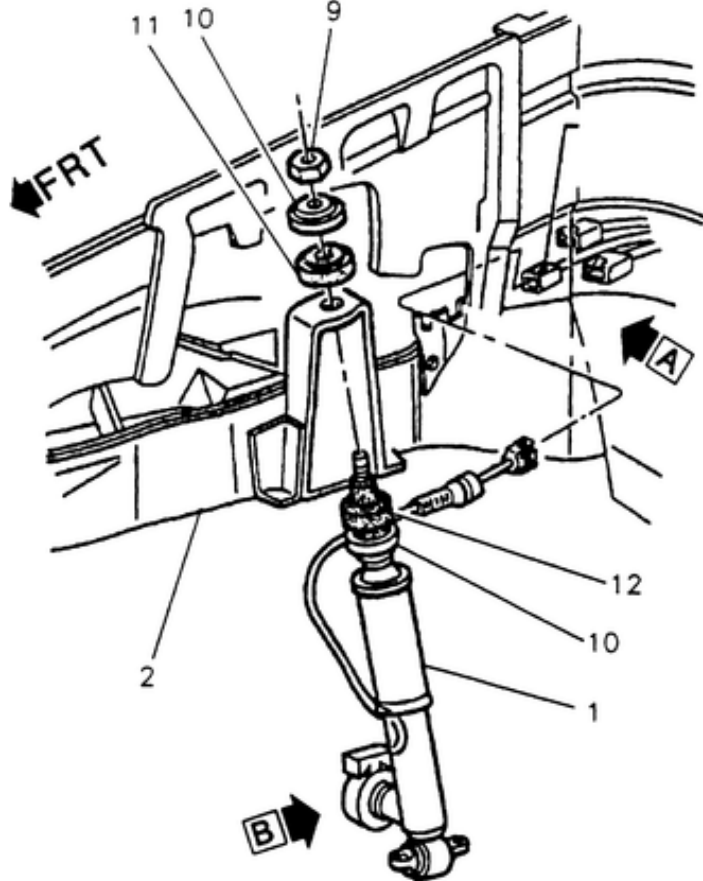


- 1 SHOCK ABSORBER TOWER
- 2 HEX PREVAILING TORQUE NUT
- 3 SHOCK ABSORBER INSULATOR RETAINER
- 4 SHOCK ABSORBER UPPER INSULATOR
- 5 SHOCK ABSORBER LOWER INSULATOR
- 6 SHOCK ABSORBER
- 7 HEX FLANGE HEAD BOLT
- 8 LOWER CONTROL ARM
- 9 HEX FLANGE NUT



- 1** SHOCK ABSORBER TOWER
- 2** HEX PREVAILING TORQUE NUT
- 3** SHOCK ABSORBER INSULATOR RETAINER
- 4** SHOCK ABSORBER UPPER INSULATOR
- 5** SHOCK ABSORBER LOWER INSULATOR
- 6** SHOCK (SELECTIVE RIDE) ABSORBER

- 7** CUP ASSEMBLY RETAINER
- 8** SHOCK ABSORBER ELECTRICAL ACTUATOR
- 9** ACTUATOR RETAINING CLIP
- 10** ROSEBUD CLIP
- 11** ACTUATOR ELECTRICAL CONNECTOR
- 12** FRONT WHEELHOUSE LOWER CENTER PANEL

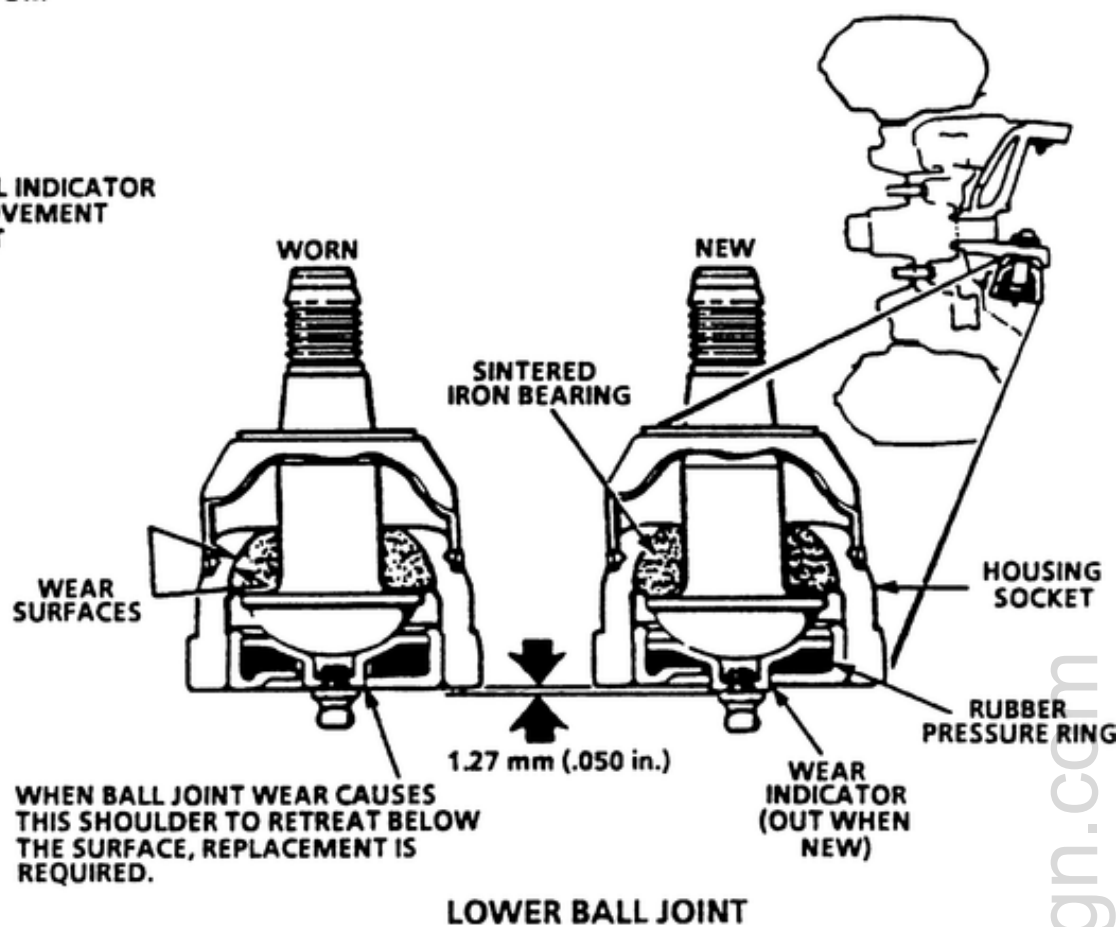


- 1 REAL TIME DAMPING SHOCK ABSORBER
- 2 SIDE FRAME RAIL
- 3 RTD HARNESS BRACKET
- 4 LOWER CONTROL ARM
- 5 HEX FLANGE HEAD BOLT
- 6 HEX FLANGE NUT

- 7 ABS/SPEED SENSOR WIRING HARNESS
- 8 RTD SOLENOID WIRING HARNESS
- 9 HEX PREVAILING TORQUE NUT
- 10 SHOCK ABSORBER INSULATOR RETAINER
- 11 SHOCK ABSORBER UPPER INSULATOR
- 12 SHOCK ABSORBER LOWER INSULATOR

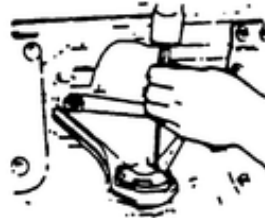
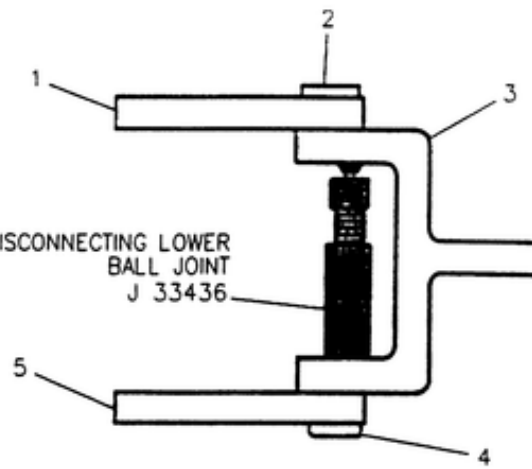
- A. SUPPORT L.C. ARM AS FAR OUTBOARD AS POSSIBLE
- B. POSITION DIAL INDICATOR TO CHECK MOVEMENT AT THIS POINT
- C. ROCK WHEEL IN AND OUT AT TOP AND BOTTOM

UPPER BALL JOINT



- 1 UPPER CONTROL ARM
- 2 UPPER CONTROL ARM BALL STUD
- 3 STEERING KNUCKLE
- 4 LOWER CONTROL ARM BALL STUD
- 5 LOWER CONTROL ARM

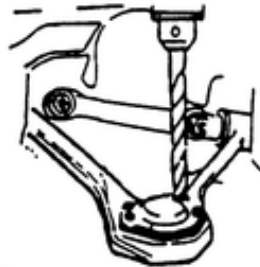
DISCONNECTING LOWER
BALL JOINT
J 33436



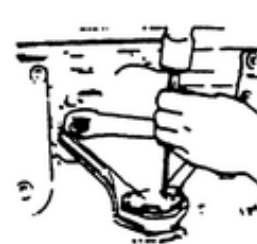
(A) CENTER PUNCH RIVET



(B) DRILL PILOT HOLE



(C) DRILL RIVET HEAD



(D) PUNCH OUT RIVET

54 N·m (40 FT. LBS.)

MUST BE
INSTALLED IN
DIRECTION SHOWN

STABILIZER SHAFT
ASSEMBLY

48 N·m (35 FT. LBS.)

MUST BE
INSTALLED IN
DIRECTION SHOWN

30 N·m (22 FT. LBS.)

48 N·m (35 FT. LBS.)

13.0 MM

UPPER BUSHING

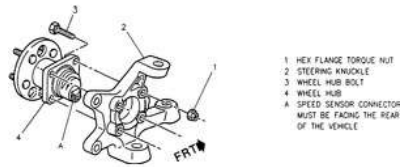
1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable, then raise and support the vehicle safely.
2. Remove the tire and wheel assembly.
3. Remove the caliper and support it aside, then remove the rotor.
4. If equipped, disengage the ABS speed sensor electrical connector, then remove the ABS speed sensor cable bracket.
5. Remove the wheel hub/bearing/speed sensor assembly.

Fig. 1: Front wheel hub and bearing/speed sensor mounting — 1996 vehicle shown



To install:

6. Install the hub/bearing/speed sensor assembly onto the vehicle. Make sure the speed sensor cable connection is facing rearward.
7. Tighten the assembly mounting nuts to 46 ft. lbs. (62 Nm).
8. If equipped, engage the ABS electrical connector and install the cable bracket.
9. Install the brake rotor and caliper.
10. Install the tire and wheel assembly, then lower the vehicle.
11. Connect the negative battery cable. The bearings do not require adjustment.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS



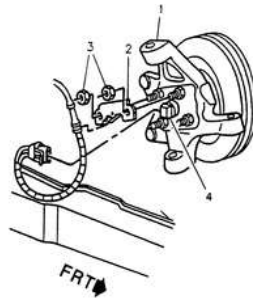
1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable, then raise and support the vehicle safely.
2. Remove the tire and wheel assembly.
3. Remove the brake caliper and rotor. Support the caliper from the suspension to prevent damage to the brake line.
4. If equipped, disengage the ABS speed sensor electrical connection and remove the cable bracket.
5. Remove the wheel hub/speed sensor assembly.

Fig. 1: View of the wheel speed sensor and electrical harness — 1996 vehicle shown



- 1 STEERING KNUCKLE (LEFT SIDE SHOWN)
- 2 WHEEL SPEED SENSOR CABLE BRACKET
- 3 WHEEL SPEED SENSOR CABLE BRACKET RETAINING NUTS
- 4 WHEEL SPEED SENSOR

6. For 1984–86 vehicles, remove the splash shield.
7. Support the lower control arm with a jackstand.
8. Separate the upper and lower ball joints from the steering knuckle using J-33436 or equivalent ball joint remover tool.
9. Remove the tie rod ball stud from the steering knuckle using, J-6627–A or equivalent steering linkage puller.
10. Remove the knuckle from the vehicle.

Fig. 2: Exploded view of the steering knuckle, wheel hub and bearing assembly — 1984–86 vehicles

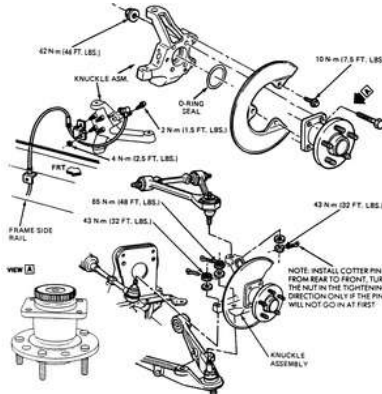
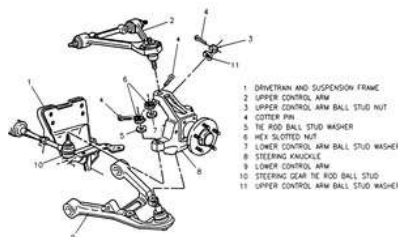


Fig. 3: Exploded view of the steering knuckle assembly — 1996 vehicle shown



To install:

11. Position the knuckle and install the tie rod ball stud. Tighten the hex nut to 35 ft. lbs. (47 Nm), then insert a new cotter pin from the rear to the front of the vehicle. If necessary tighten the nut additionally in order to insert the pin, but do not exceed a total torque of 52 ft. lbs. (70 Nm) and do not back off the original torque.
12. Install the upper and lower ball joints to the steering knuckle. Make sure the studs are positioned so cotter pins may be installed from the rear to the front of the vehicle, then install the washers and nuts.

13. Tighten the upper control arm ball stud nut to 33 ft. lbs. (45 Nm). Tighten the nut additionally as necessary to insert the cotter pin but do not exceed 63 ft. lbs. (85 Nm).
14. Tighten the lower control arm ball stud nut to 50 ft. lbs. (68 Nm). Tighten the ball stud nut additionally, as necessary to insert a cotter pin, but do not exceed 88 ft. lbs. (120 Nm) to align the cotter pin holes.
15. Remove the jackstand.
16. Install the wheel hub or the wheel hub/speed sensor assembly, as applicable.
17. If equipped, install the ABS speed sensor bracket and engage the electrical connection.
18. For 1984–86 vehicles, install the splash shield.
19. Install the rotor and caliper.
20. Install the tire and wheel assembly.
21. Lower the vehicle and connect the negative battery cable.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. With the weight of the vehicle properly loading the ball joints, check the wear indicators on the bottom of the lower ball joints.
2. The wear indicator (lower grease fitting shoulder) should protrude 0.050 in. (1.27mm) when new.
3. When the wear indicator shoulder retreats below the surface, the ball joint must be replaced.

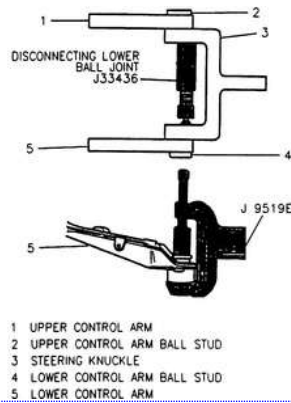
1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Raise and support the vehicle safely.
2. Safely support the lower control arm with a jackstand.
3. Remove the tire and wheel assembly.
4. Using J-33436 or equivalent ball joint removal tool, separate the ball joint from the knuckle.
5. Press the upper ball joint from the control arm using tool J-9519-E or an equivalent removal tool.

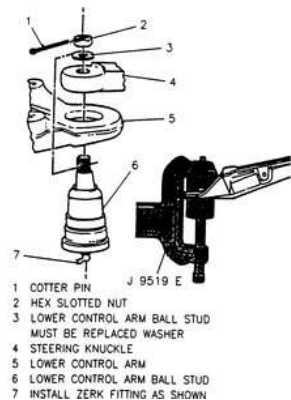
Fig. 1: You must use the proper tools to remove the lower ball joint



To install:

6. Position the ball stud so the cotter pin may be installed from the rear to the front of the vehicle and press into the control arm using J-9519-E or equivalent.

Fig. 2: Installation of the lower ball joint



7. Position the ball joint into the steering knuckle, then install the washer and nut. Tighten the lower control arm ball stud nut to 50 ft. lbs. (68 Nm). Tighten the ball stud nut additionally, as necessary to insert a cotter pin, but do not exceed 88 ft. lbs. (120 Nm) to align the cotter pin holes.
8. Install a new cotter pin from the rear to the front of the vehicle.
9. Remove the jackstand and lubricate the ball joint.
10. Install the tire and wheel assembly, then lower the vehicle.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable, then raise and support the vehicle safely.
2. Remove the tire and wheel assembly, then remove both spring protectors.
3. Using tool J-33432 and adapters J-33432-88 or equivalent, compress the spring.
4. Support the lower control arm with a jackstand.
5. Disconnect the shock absorber from the lower control arm, then disconnect the front stabilizer shaft link from the lower control arm.
6. If equipped, disengage the speed sensor electrical connector and remove the cable from the bracket.
7. Using tool J-33436 or equivalent, disconnect the lower ball joint from the knuckle.
8. Remove the engine support bracket.
9. Remove nuts, washers and bolts attaching the lower control arm to the frame.
10. Remove the jackstand and the lower control arm.

To install:

11. Install the lower control arm, bolts, washers and nuts.
12. Support the lower control arm with a jackstand.
13. Install the engine support bracket.
14. Position the ball joint into the steering knuckle, then install the washer and nut. Tighten the lower control arm ball stud nut to 50 ft. lbs. (68 Nm). Tighten the ball stud nut additionally, as necessary to insert a cotter pin, but do not exceed 88 ft. lbs. (120 Nm) to align the cotter pin holes.
15. Install a new cotter pin from the rear to the front of the vehicle.
16. If equipped, connect the ABS speed sensor bracket, cable and/or electrical connection, as applicable.
17. Connect the stabilizer shaft link to the lower control arm but hand-tighten the nuts only.
18. Remove the spring compression tool and adapters.
19. Hold the suspension at the proper trim height using jackstands and tighten the stabilizer link nuts to 35 ft. lbs. (48 Nm) and the lower control arm bolts to 96 ft. lbs. (130 Nm) for 1984-87 vehicles or to 82 ft. lbs. (112 Nm) for 1988-96 vehicles.
20. Connect the shock absorber to the lower control arm and tighten the nuts to 19 ft. lbs. (26 Nm).
21. Remove the jackstands and install both spring protectors. Tighten the bolts to 18 ft. lbs. (25 Nm).
22. Install the tire and wheel assembly.
23. Lower the vehicle and connect the negative battery cable.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

Without Selective Ride Control

1. Raise and support the vehicle safely.
2. Remove the tire and wheel assemblies.
3. Disconnect the shock absorber from the lower control arm and the shock tower. If necessary, remove the front wheelhouse lower center panel to access the upper mount nut.

Fig. 1: Unclip the wiring harness retainer for access to the trim panel retainers



Fig. 2: Unfasten the trim panel retainers, then lift the panel up and out of the vehicle for access to the upper shock nut



Fig. 3: Use a wire brush to clean off the upper shock mounting nut threads and stud



Fig. 4: There is a special socket available to place on the shock stud to prevent it from turning while removing the nut



Fig. 5: Use a wrench to loosen the shock upper nut while holding the ratchet and socket over the shock stud



Fig. 6: Remove the upper shock mounting nut (1) and insulator retainer (2) . . .



Fig. 7: . . . then remove the upper shock insulator



Fig. 8: Remove the 2 shock lower mounting bolts . . .

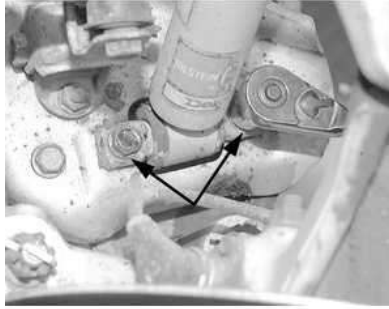
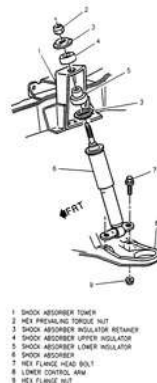


Fig. 9: ... then remove the shock absorber assembly from the vehicle



Fig. 10: Exploded view of the shock absorber mounting



4. Remove the insulator and retainers from the shock absorber and the shock absorber from the vehicle.
5. Installation is the reverse of the removal procedure. Tighten the upper and lower mount nuts to 19 ft. lbs. (26 Nm).

With Selective Ride Control

1992-95 VEHICLES

NOTE: Although the basic principles remained the same, in 1996 the name of the system changed from Selective Ride Control to Real Time Damping.

1. Disconnect the negative battery cable.
2. Raise and safely support vehicle, then remove the tire and wheel assemblies.
3. Safely support the lower control arm with a jackstand.

Fig. 11: Place a jack or stand under the control arm for support



4. For 1992–95 vehicles, remove the actuator retaining clip, then remove the actuator from the cup retainer. Note the position of the actuator electrical leads for installation purposes.
5. For 1996 vehicles, detach the shock absorber solenoid electrical connector, then remove the solenoid harness from the support bracket.

NOTE: Do not let the shock absorber hang by the wiring harness after removing the retainers.

6. Remove the shock absorber upper mounting nut(s).
7. If equipped, remove the cup retainer, then remove the upper insulator retainer and insulator.
8. Remove the shock absorber lower mounting bolts, nuts, then compress the shock absorber and remove it from the vehicle. If necessary, remove the lower insulator from the shock.

Fig. 12: Exploded view of the front selective ride control shock absorber

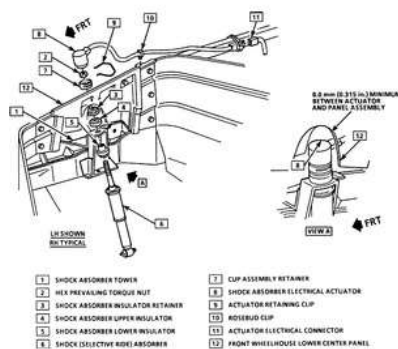
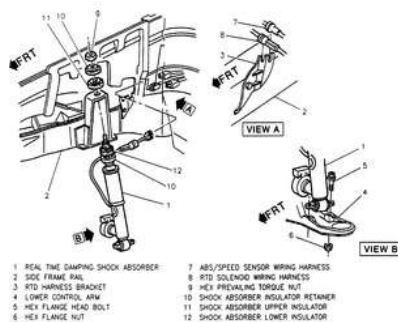


Fig. 13: Exploded view of the real time damping shock absorber, used on 1996 vehicles



To install:

9. If removed, install the lower insulator to the shock absorber, compress the shock and install into the vehicle.
10. Install the shock absorber lower mounting nuts and bolts, then tighten the bolts to 19 ft. lbs. (26 Nm).
11. Install the upper insulator and retainer, then install the cup assembly retainer.
 - A. Install the upper mounting nut and tighten to 31 ft. lbs. (42 Nm) for 1992–95 vehicles. For 1996 vehicles, install the nut but do not tighten it at this time. On 1992–95 vehicles, the selector gear should be at least 0.178 inch (4.5mm) above the top of the cup assembly retainer.
 - B. For 1992–95 vehicles, perform the following:
 - C. Install and properly seat the actuator retaining clip onto the cup assembly retainer. Make sure the ends of the actuator clip protrude outward from the retainer.
 - D. Install the actuator onto the cup assembly retainer with the electrical leads in the same position as noted earlier. Verify that there is at least 0.315 inch (8mm) of clearance between the front wheelhouse lower center panel and the actuator electrical leads.
- NOTE: Very little effort is required to snap the actuator onto the retainer, do not force it into position.**
12. For 1996 vehicles, attach the solenoid electrical connector, then secure the solenoid harness in the bracket. Tighten the upper mounting nut to 19 ft. lbs. (26 Nm).
13. Install the tire and wheel assembly, then remove the jackstand.
14. Lower the vehicle and connect the negative battery cable.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

The purpose of the shock absorber is simply to limit the motion of the spring during compression and rebound cycles. If the vehicle is not equipped with these motion dampers, the up and down motion would multiply until the vehicle was alternately trying to leap off the ground and to pound itself into the pavement.

Contrary to popular rumor, the shocks do not affect the ride height of the vehicle. This is controlled by other suspension components such as springs and tires. Worn shock absorbers can affect handling; if the front of the vehicle is rising or falling excessively, the "footprint" of the tires changes on the pavement and steering is affected.

The simplest test of the shock absorber is simply push down on one corner of the unladen vehicle and release it. Observe the motion of the body as it is released. In most cases, it will come up beyond its original rest position, dip back below it and settle quickly to rest. This shows that the damper is controlling the spring action. Any tendency to excessive pitch (up-and-down) motion or failure to return to rest within 2-3 cycles is a sign of poor function within the shock absorber. Oil-filled shocks may have a light film of oil around the seal, resulting from normal breathing and air exchange. This should NOT be taken as a sign of failure, but any sign of thick or running oil definitely indicates failure. Gas filled shocks may also show some film at the shaft; if the gas has leaked out, the shock will have almost no resistance to motion.

Fig. 1: When fluid is seeping out of the shock absorber, it's time to replace it



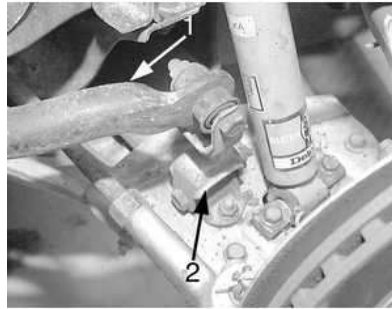
While each shock absorber can be replaced individually, it is recommended that they be changed as a pair (both front or both rear) to maintain equal response on both sides of the vehicle. Chances are quite good that if one has failed, its mate is weak also.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

Fig. 1: View of the front stabilizer shaft (1) and link (2)



1. Raise and support vehicle safely, then remove the tire and wheel assemblies.
2. Support the lower control arms using jackstands.
3. Remove the stabilizer shaft insulator clamp bolts and brackets from the frame.
4. Remove the stabilizer shaft-to-links attaching bolts. Note the bolt positioning for installation purposes.
5. Remove the stabilizer shaft from the vehicle.
6. If necessary, remove the link upper or lower insulators, using a suitable universal steering linkage puller and a suitable spacer to provide contact with the insulator flange.

Fig. 2: Exploded view of the stabilizer shaft assembly — 1984–87 vehicles

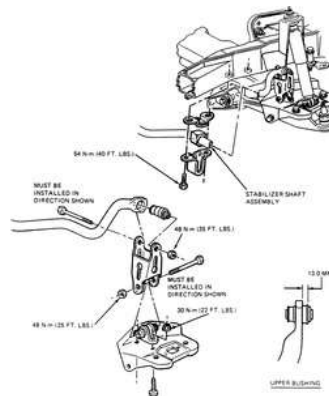
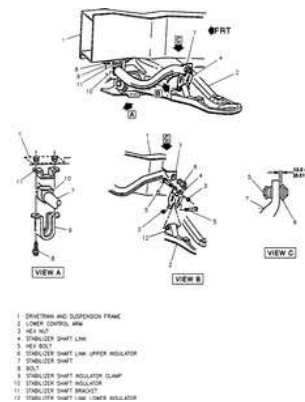


Fig. 3: Exploded view of the stabilizer shaft and insulators — 1988–96 vehicles



To install:

7. If removed, install the stabilizer shaft link upper or lower insulators using the puller and a spacer. The upper insulators must be installed to the dimension shown in the accompanying figure.
8. The remainder of installation is the reverse of the removal procedure.
9. Install the shaft link bolts and nuts facing the same positions as they were removed. With the suspension held at the proper trim height, tighten the stabilizer shaft link nuts to 35 ft. lbs. (48 Nm) and the insulator clamp bolts to 40 ft. lbs. (54 Nm).

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

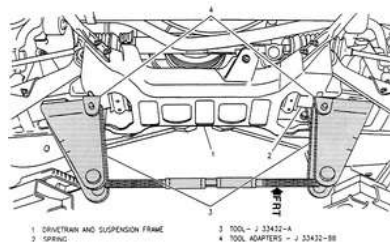
NOTE: This procedure requires the use of special tools to properly compress the spring for removal. Do NOT attempt this procedure without the proper tools!

1. Raise and support the vehicle safely. Position the supports so the front suspension hangs freely.
2. Remove both front tire and wheel assemblies.

NOTE: Do not use corrosive cleaning agents, engine degreasers or solvents near the fiberglass front spring, or extensive damage could occur to the spring assembly.

3. For 1988–96 vehicles, perform the following:
 - A. Unfasten the retaining nuts and bolts, then disconnect both shock absorbers from the lower control arms.
 - B. Remove the nuts and bolts, then disconnect the stabilizer shaft links from both lower control arms.
4. If equipped with ABS, detach the wheel speed sensor electrical connectors, then remove the speed sensor wire from the bracket.
5. Remove the spring protectors.
6. Compress the front leaf springs using tool J-33432 and adapters J-33432-88 or a suitable equivalent tool, then compress the spring.
7. Disconnect the lower control arms from the steering knuckles by separating the ball joints from the knuckle bores.
8. Remove the spring retainer nuts and retainers, then carefully release the spring compression and remove the tools.

Fig. 1: You must install special tools to safely compress and remove the transverse spring

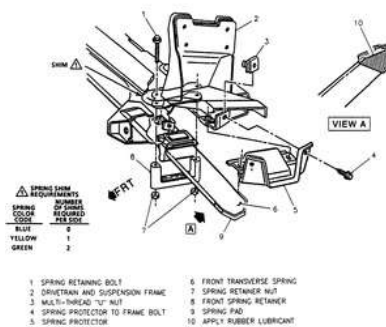


9. With the aid of an assistant, pull both lower control arms downward to release the spring ends from the lower control arms.
10. Remove the spring and retainer shims from the vehicle. Use care not to scratch or damage the spring and note the number, types (color) and positions of the shims.

To install:

11. Lubricate the spring pads with an appropriate lubricant.
12. Carefully install the retainer shims and the spring. Be careful not to scratch the spring and be sure to use the correct number and type of shims.

Fig. 2: Exploded view of the front transverse spring installation and shim location



13. With the aid of an assistant, pull both lower control arms downward while seating the spring ends into the lower control arms.
14. Using the J-33432 and J-33432-88 or equivalents, compress the spring.
15. Install the retainers and hand-tighten the retainer nuts. Install both lower control arm ball joints into the steering knuckles. The ball joints must be positioned so the cotter pins can be inserted from the rear to the front of the vehicle.
16. Install both lower control arm ball stud washers and nuts. Tighten the hex nut to 50 ft. lbs. (68 Nm), then insert a new cotter pin. If necessary tighten the nut additionally in order to insert the pin, but do not exceed a total torque of 88 ft. lbs. (120 Nm) and do not back off the original torque.
17. Install the cotter pins from the rear to the front of the vehicle.
18. Release and remove the spring compression tools.
19. Install both spring protectors and tighten the bolts to 18 ft. lbs. (25 Nm).
20. Install the wheel speed sensor connector, cable and/or bracket, as applicable.
21. If removed, install the stabilizer shaft links, bolts and nuts to the lower control arm. Make sure the link bolts are properly positioning, then hand-tighten the nuts.
22. If removed, connect both shock absorbers to the lower control arms and tighten the lower mounting nuts to 19 ft. lbs. (26 Nm).
23. Use jackstands to hold the suspension at proper trim height, then tighten the spring retainer nuts to 46 ft. lbs. (63 Nm) and the stabilizer shaft link nuts to 33 ft. lbs. (45 Nm).
24. Remove the jackstand supports, then install the tire and wheel assemblies.
25. Lower the vehicle, then have the front end alignment checked and adjusted, as necessary.

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NOTE: Anytime the ball joint is separated from the knuckle, it should be checked for looseness. If it is loose or can be twisted in the socket by hand, the ball joint must be replaced.

1. Raise and safely support the vehicle with jackstands under the left and right lower control arms, as far outboard and nearest to the ball joint as possible.
2. Make sure the vehicle is stable and does not rock on the stands.

Fig. 1: The upper ball joint is mounted in the upper control arm

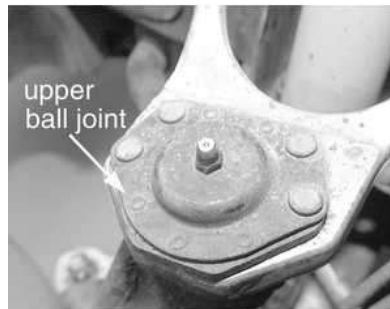
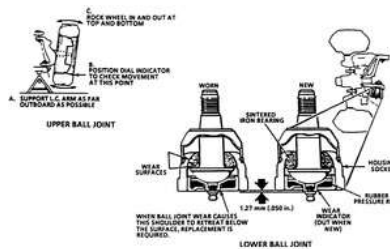


Fig. 2: Upper and lower ball joint inspection



3. Position a dial indicator against the wheel rim.
4. Grasp the front tire and push in on the bottom while pulling out at the top. Read the dial indicator, then reverse the push-pull procedure.
5. Horizontal deflection on the dial indicator must not exceed 0.125 in. (3.18mm).
6. The ball joint must be replaced if deflection is greater than indicated.

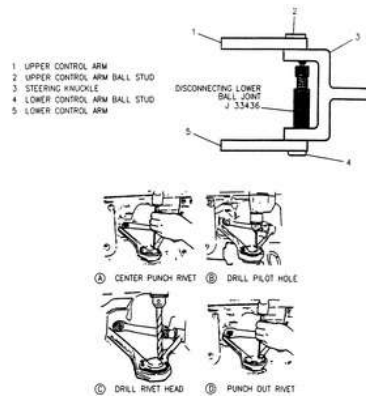
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1. Raise and support the vehicle safely.
2. Safely support the lower control arm with a jackstand.
3. Remove the tire and wheel assemblies.
4. Using J-33436 or equivalent ball joint removal tool, separate the ball joint from the knuckle.
5. Remove the upper ball joint from the control arm as follows:
 - A. Center punch the rivet.
 - B. Drill a pilot hole, then drill the rivet head.
 - C. Punch out the rivet.

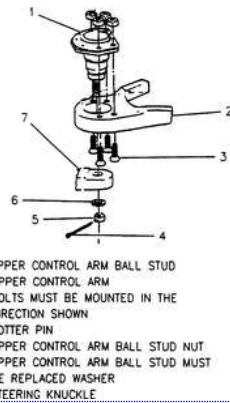
Fig. 1: The upper ball joint is secured in the upper control arm by rivets



To install:

6. Install a new ball joint into the upper control arm and position so the cotter pin can be installed from the rear to the front of the vehicle.
7. Install and tighten the mounting nuts to 13 ft. lbs. (18 Nm).

Fig. 2: Replacement upper ball joints are secured with nuts and bolts



8. Position the ball stud into the steering knuckle, then install the upper ball joint stud washer and nut. Tighten the upper control arm ball stud nut to 33 ft. lbs. (45 Nm). Tighten the nut additionally as necessary to insert the cotter pin but do not exceed 63 ft. lbs. (85 Nm).
9. Install a new cotter pin from the rear to the front of the vehicle.
10. Remove the jackstand and lubricate the ball joint.
11. Install the tire and wheel assembly, then lower the vehicle.

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1. Disconnect the negative battery cable, then raise and support the vehicle safely.
2. Remove the tire and wheel assembly.
3. For 1988–96 vehicles, remove the front wheelhouse panel seal and lower center panel.
4. If equipped, remove the shock absorber actuator wire connector.
5. Support the lower control arm with a jackstand.
6. If equipped, disengage the speed sensor electrical connector and remove the cable from the bracket.
7. Use tool J-33436 or equivalent and disconnect the upper ball joint from the knuckle.
8. Remove the upper control arm attaching bolts, shims and nuts. Note the number and position of the shims for reinstallation purposes. Remove the control arm.

Fig. 1: View of the upper control arm (1) and ball joint (2)

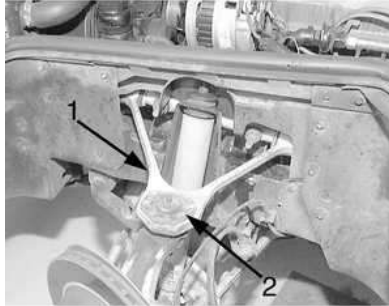
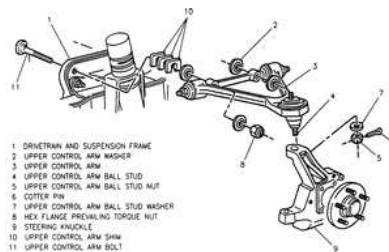


Fig. 2: Note the position of any upper control arm shims



Fig. 3: Exploded view of the upper control arm — 1996 vehicle shown, other years similar



To install:

9. Position the bolts through the frame, then install the upper control arm and shims. Place the shims in the locations noted during removal. Install and tighten the control arm nuts as follows:
 - A. 1984–86 vehicles: 63 ft. lbs. (85 Nm)
 - B. 1987 vehicles: 48 ft. lbs. (65 Nm)
 - C. 1988–96 vehicles: 37 ft. lbs. (50 Nm)
10. Position the ball stud into the steering knuckle, then install the upper ball joint stud washer and nut. Tighten the upper control arm ball stud nut to 33 ft. lbs. (45 Nm). Tighten the nut additionally as necessary to insert the cotter pin but do not exceed 63 ft. lbs. (85 Nm).

11. Install a new cotter pin from the rear to the front of the vehicle.
12. If equipped, connect the ABS speed sensor bracket, cable and/or electrical connection, as applicable.
13. If equipped, engage the shock absorber electrical actuator connection.
14. Remove the jackstand and install the front wheelhouse lower center panel and seal, if removed.
15. Install the tire and wheel assembly.
16. Lower the vehicle and connect the negative battery cable.
17. Have the front end alignment checked and adjusted, as necessary.