

SUSPENSION & STEERING

SUSPENSION AND STEERING WHEELS

REMOVAL & INSTALLATION

- Park the vehicle on a level surface.
 - Remove the jack, tire iron and, if necessary, the spare tire from their storage compartments.
 - Check the owner's manual or refer to General Information & Maintenance of this repair guide for the jacking points on your vehicle. Then, place the jack in the proper position.
 - If equipped with lug nut trim caps, remove them by either unscrewing or pulling them off the lug nuts, as appropriate. Consult the owner's manual, if necessary.
 - If equipped with a wheel cover or hub cap, insert the tapered end of the tire iron in the groove and pry off the cover.
1. Apply the parking brake and block the diagonally opposite wheel with a wheel chock or two.

Wheel chocks may be purchased at your local auto parts store, or a block of wood cut into wedges may be used. If possible, keep one or two of the chocks in your tire storage compartment, in case any of the tires has to be removed on the side of the road.

2. If equipped with an automatic transmission, place the selector lever in *P* or Park; with a manual transmission, place the shifter in Reverse.
3. With the tires still on the ground, use the tire iron/wrench to break the lug nuts loose.

If a nut is stuck, never use heat to loosen it or damage to the wheel and bearings may occur. If the nuts are seized, one or two heavy hammer blows directly on the end of the bolt usually loosens the rust. Be careful, as continued pounding will likely damage the brake drum or rotor.

3. Using the jack, raise the vehicle until the tire is clear of the ground. Support the vehicle safely using jackstands.
4. Remove the lug nuts, then remove the tire and wheel assembly.

To install:

5. Make sure the wheel and hub mating surfaces, as well as the wheel lug studs, are clean and free of all foreign material. Always remove rust from the wheel mounting surface and the brake rotor or drum. Failure to do so may cause the lug nuts to loosen in service.
6. Install the tire and wheel assembly and hand-tighten the lug nuts.
7. Using the tire wrench, tighten all the lug nuts, in a crisscross pattern, until they are snug.
8. Raise the vehicle and withdraw the jackstand, then lower the vehicle.

- Using a torque wrench, tighten the lug nuts in a crisscross pattern to 100 ft. lbs. (140 Nm) for 1982-85 vehicles with aluminum wheels, 80 ft. lbs. (110 Nm) for 1982-85 vehicles with steel wheels, 80 ft. lbs. (110 Nm) for 1986-91 vehicles or 100 ft. lbs. (140 Nm) for 1992 vehicles. Check your owner's manual or refer to General Information & Maintenance of this repair guide for the proper tightening sequence.

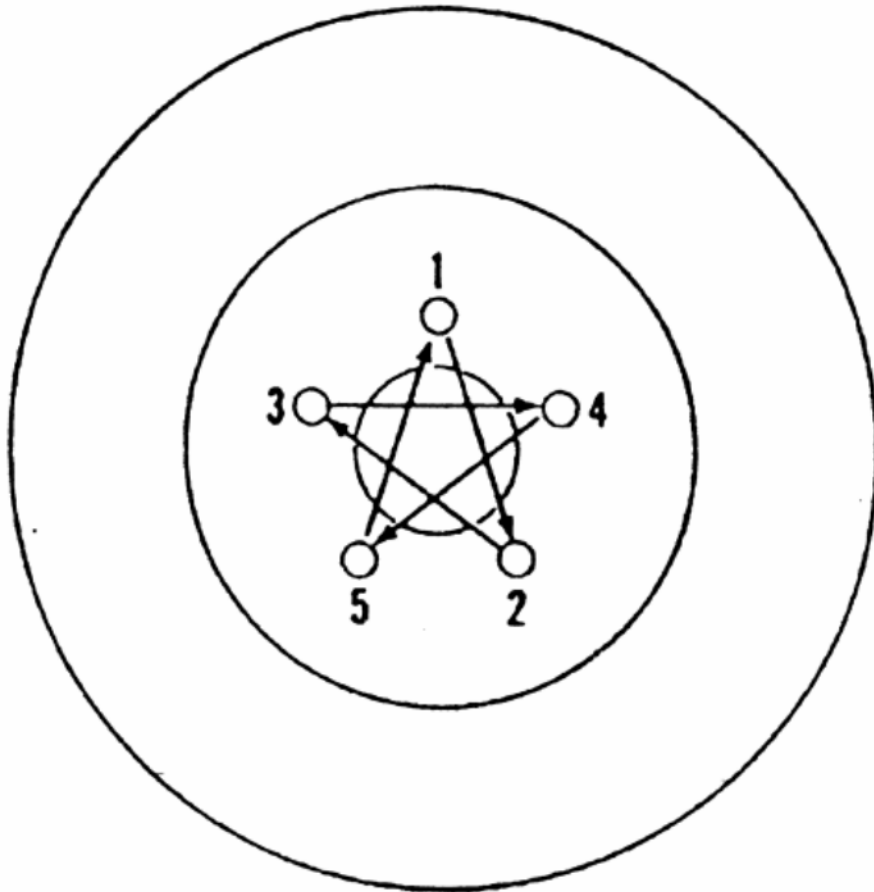


Fig. 1: Typical wheel lug tightening sequence

WARNING - Do not overtighten the lug nuts, as this may cause the wheel studs to stretch or the brake disc (rotor) to warp.

- If so equipped, install the wheel cover or hub cap. Make sure the valve stem protrudes through the proper opening before tapping the wheel cover into position.
- If equipped, install the lug nut trim caps by pushing them or screwing them on, as applicable.
- Remove the jack from under the vehicle, and place the jack and tire iron/wrench in their storage compartments. Remove the wheel chock(s).
- If you have removed a flat or damaged tire, place it in the storage compartment of the vehicle and take it to your local repair station to have it fixed or replaced as soon as possible.

INSPECTION

Inspect the tires for lacerations, puncture marks, nails and other sharp objects. Repair or replace as necessary. Also check the tires for treadwear and air pressure as outlined in General Information & Maintenance of this repair guide.

Check the wheel assemblies for dents, cracks, rust and metal fatigue. Repair or replace as necessary.

WHEEL LUG STUDS

REMOVAL & INSTALLATION

WITH DISC BRAKES

1. Raise and support the appropriate end of the vehicle safely using jackstands, then remove the wheel.
2. Remove the brake pads and caliper. Support the caliper aside using wire or a coat hanger. For details, please refer to Brakes of this repair guide.
3. Remove the outer wheel bearing and lift off the rotor. For details on wheel bearing removal, installation and adjustment, please refer to General Information & Maintenance of this repair guide.
4. Properly support the rotor using press bars, then drive the stud out using an arbor press.

If a press is not available, CAREFULLY drive the old stud out using a blunt drift. MAKE SURE the rotor is properly and evenly supported or it may be damaged.

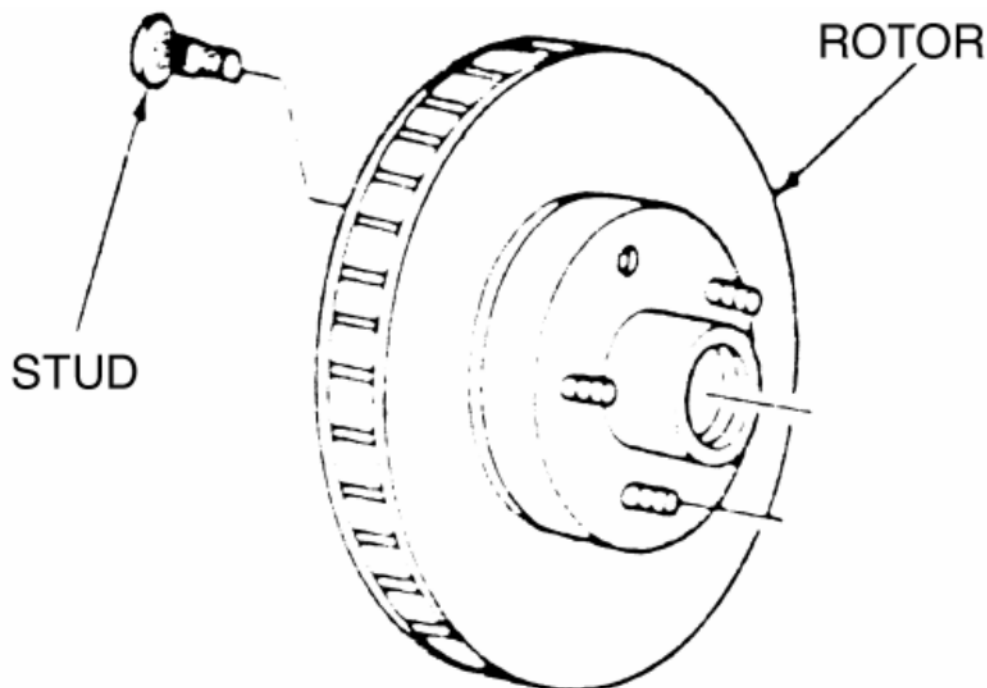


Fig. 1: View of the rotor and stud assembly

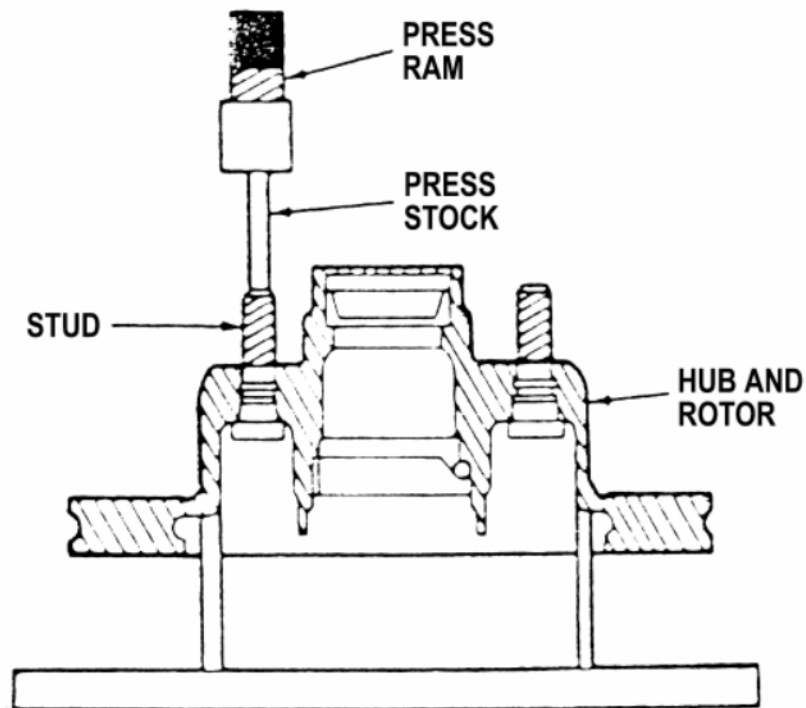


Fig. 2: Pressing the stud from the rotor

To install:

5. Clean the stud hole with a wire brush and start the new stud with a hammer and drift pin. Do not use any lubricant or thread sealer.
6. Finish installing the stud with the press.

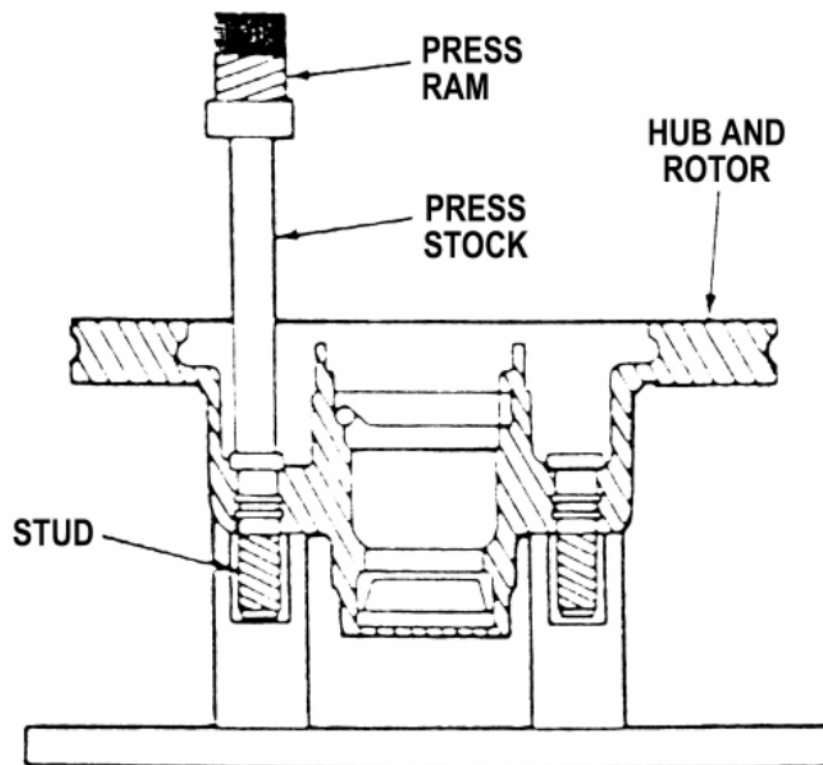


Fig. 3: Use a press to install the stud into the rotor

If a press is not available, start the lug stud through the bore in the hub, then position about 4 flat washers over the stud and thread the lug nut. Hold the hub/rotor while tightening the lug nut, and the stud should be drawn into position. MAKE SURE THE STUD IS FULLY SEATED, then remove the lug nut and washers.

7. Install the rotor and adjust the wheel bearings.
8. Install the brake caliper and pads.
9. Install the wheel, then remove the jackstands and carefully lower the vehicle.
10. Tighten the lug nuts to the proper torque.

WITH DRUM BRAKES

1. Raise the vehicle and safely support it with jackstands, then remove the wheel.
2. Remove the brake drum.
3. If necessary to provide clearance, remove the brake shoes, as outlined in Brakes of this repair guide.

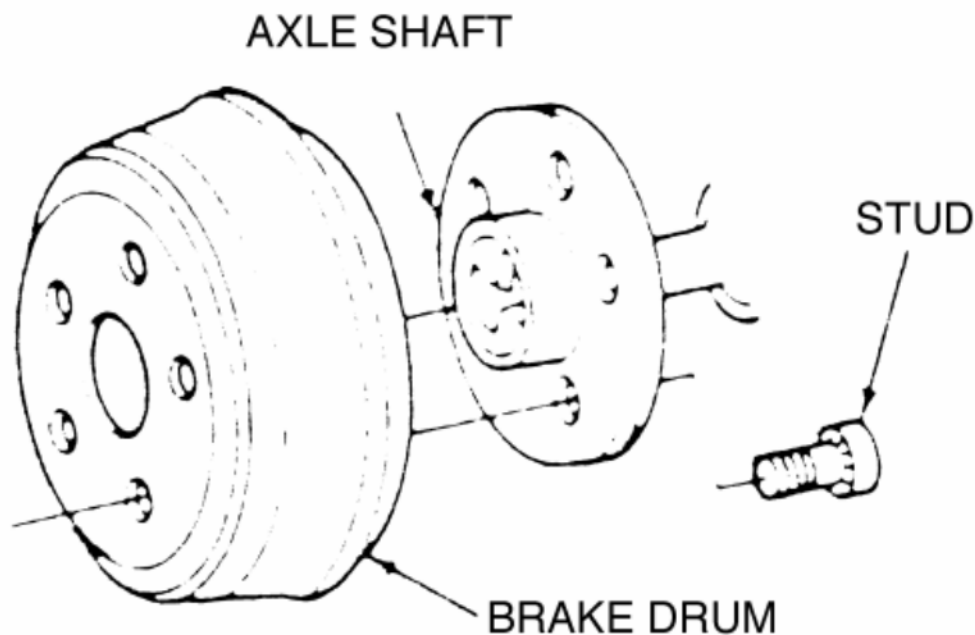


Fig. 4: Exploded view of the drum, axle flange and stud

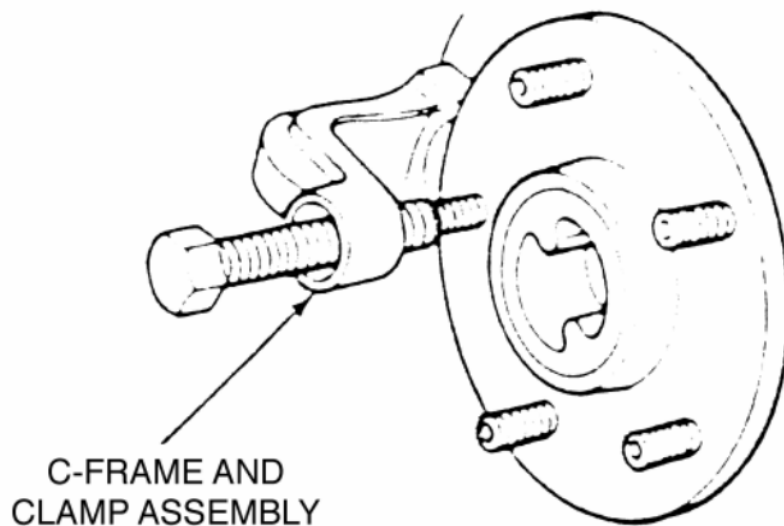


Fig. 5: Use a C-clamp and socket to press out the stud

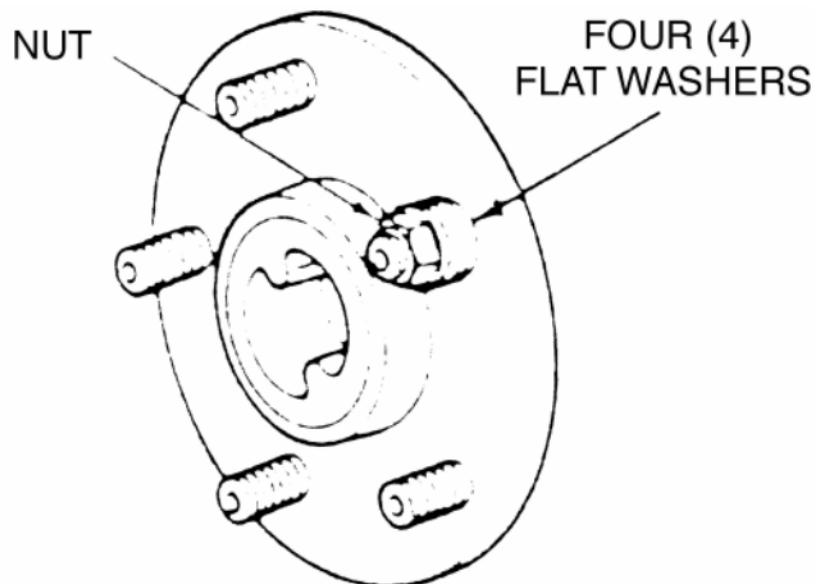


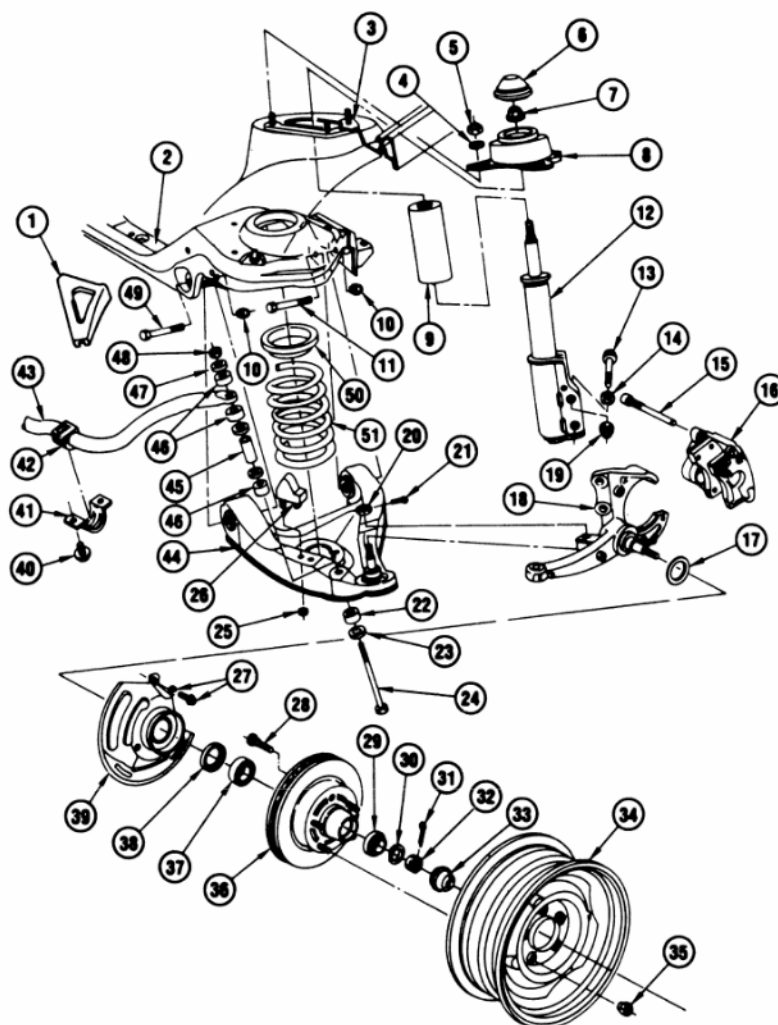
Fig. 6: Force the stud onto the axle flange using washers and a lug nut

4. Using a large C-clamp and socket, press the stud from the axle flange.
5. Coat the serrated part of the stud with liquid soap and place it into the hole.

To install:

6. Position about 4 flat washers over the stud and thread the lug nut. Hold the flange while tightening the lug nut, and the stud should be drawn into position. **MAKE SURE THE STUD IS FULLY SEATED**, then remove the lug nut and washers.
7. If applicable, install the brake shoes.
8. Install the brake drum.
9. Install the wheel, then remove the jackstands and carefully lower the vehicle.
10. Tighten the lug nuts to the proper torque.

MACPHERSON STRUT FRONT SUSPENSION



- | | | |
|----------------------------|-------------------------------|-------------------------------|
| 1. Crossmember brace | 18. Knuckle | 35. Nut |
| 2. Crossmember | 19. Nut (M16 × 2) | 36. Hub |
| 3. Retainer | 20. Nut (9/16-18) | 37. Inner front wheel bearing |
| 4. Washer | 21. Cotter pin (1/8 × 1) | 38. Seal |
| 5. Nut (M8 × 1.25) | 22. Grommet | 39. Shield |
| 6. Washer | 23. Retainer | 40. Bolt (M10 × 1.5 × 30) |
| 7. Nut (M14 × 2) | 24. Bolt (5/16-18 × 7) | 41. Bracket |
| 8. Mount | 25. Nut (7/16-14) | 42. Insulator |
| 9. Shield | 26. Bumper | 43. Front stabilizer shaft |
| 10. Nut (M12 × 1.75) | 27. Bolt | 44. Lower control arm |
| 11. Bolt (M12 × 1.75 × 95) | 28. Bolt | 45. Spacer |
| 12. Absorber w/strut | 29. Outer front wheel bearing | 46. Grommet |
| 13. Bolt | 30. Washer | 47. Retainer |
| 14. Washer | 31. Cotter pin (M3.2 × 25) | 48. Nut |
| 15. Bolt | 32. Nut | 49. Bolt (M12 × 1.75 × 115) |
| 16. Caliper | 33. Cap | 50. Insulator |
| 17. Gasket | 34. Wheel | |

Fig. 1: MacPherson strut front suspension

1982-92 Camaros are equipped with a front suspension consisting of a pivoting lower control arm on which are mounted a coil spring and a MacPherson strut. The strut and spring are separate. The spring upper end bears on a fixed crossmember; the strut upper end is located in a strut tower on the fender.

COIL SPRINGS

REMOVAL & INSTALLATION

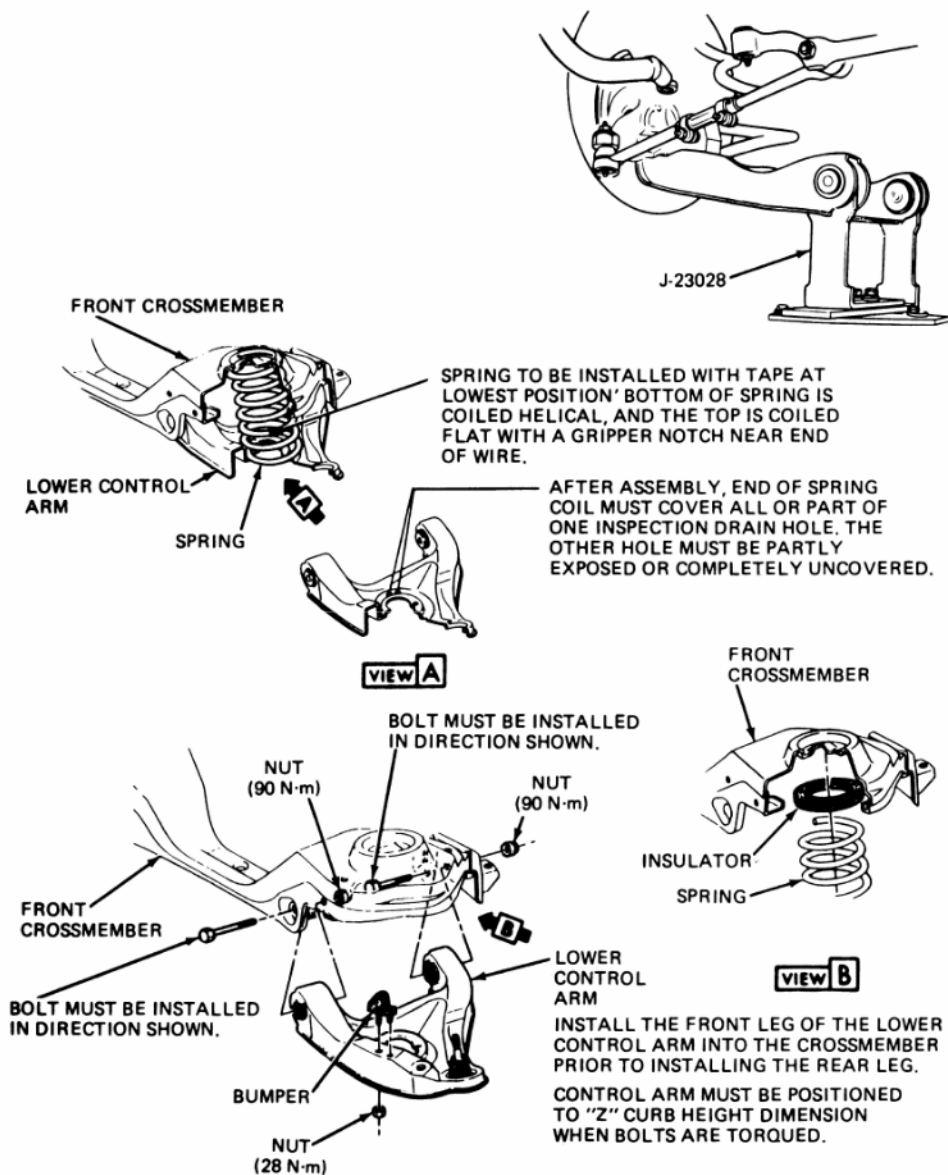


Fig. 1: Removing the coil spring

1. Raise the front of the vehicle and support it on jackstands.
2. Remove the road wheel(s).
3. Disconnect the stabilizer link from the lower control arm.
4. If the steering gear hinders removal procedures, detach the unit and move it out of the way.

5. Disconnect the tie rod from the steering knuckle using a ball joint remover.
6. Using an internal fit coil spring compressor, compress the coil spring so that it is loose in its seat.

CAUTION - Be sure to follow manufacturer's instructions when using spring compressor. Coil springs in a compressed state contain enormous energy which, if released accidentally, could cause serious injury.

7. To remove the coil spring, disconnect the lower control arm from the crossmember at the pivot bolts. If additional clearance is necessary, disconnect the lower control arm from the steering knuckle at the ball joint.

To install:

8. Compress the coil spring until spring height is the same as when removed, then position the spring on the control arm. Make sure the lower end of the coil spring is properly positioned in the lower control arm and that the upper end fits correctly in its pad.
9. Connect the lower control arm from the steering knuckle at the ball joint. Connect the lower control arm from the crossmember at the pivot bolts and install the coil spring.
10. Connect the tie rod to the steering knuckle.
11. Attach the steering gear unit.
12. Connect the stabilizer link to the lower control arm.
13. Install the wheel(s).
14. Lower the vehicle.

STRUTS

REMOVAL & INSTALLATION

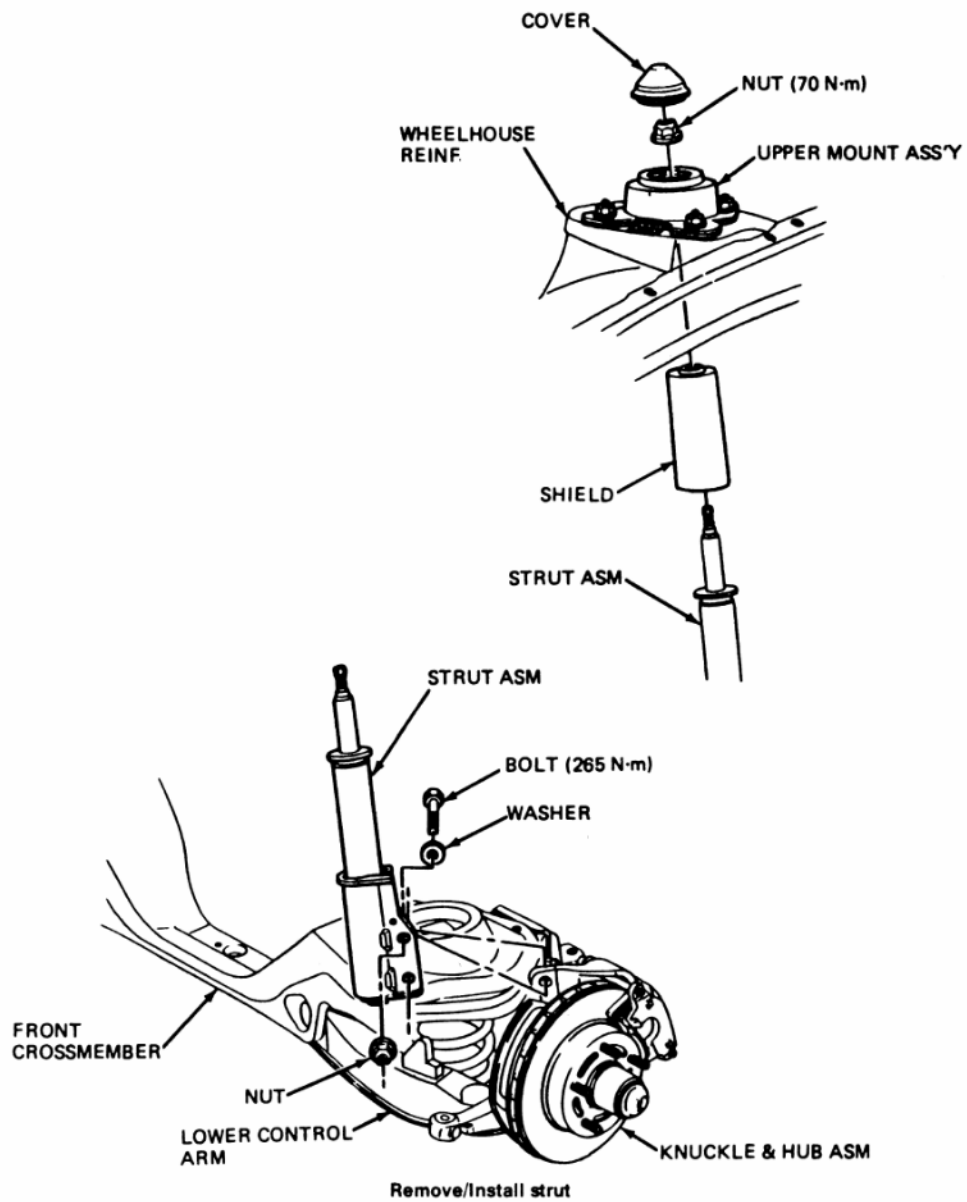


Fig. 1: Strut removal

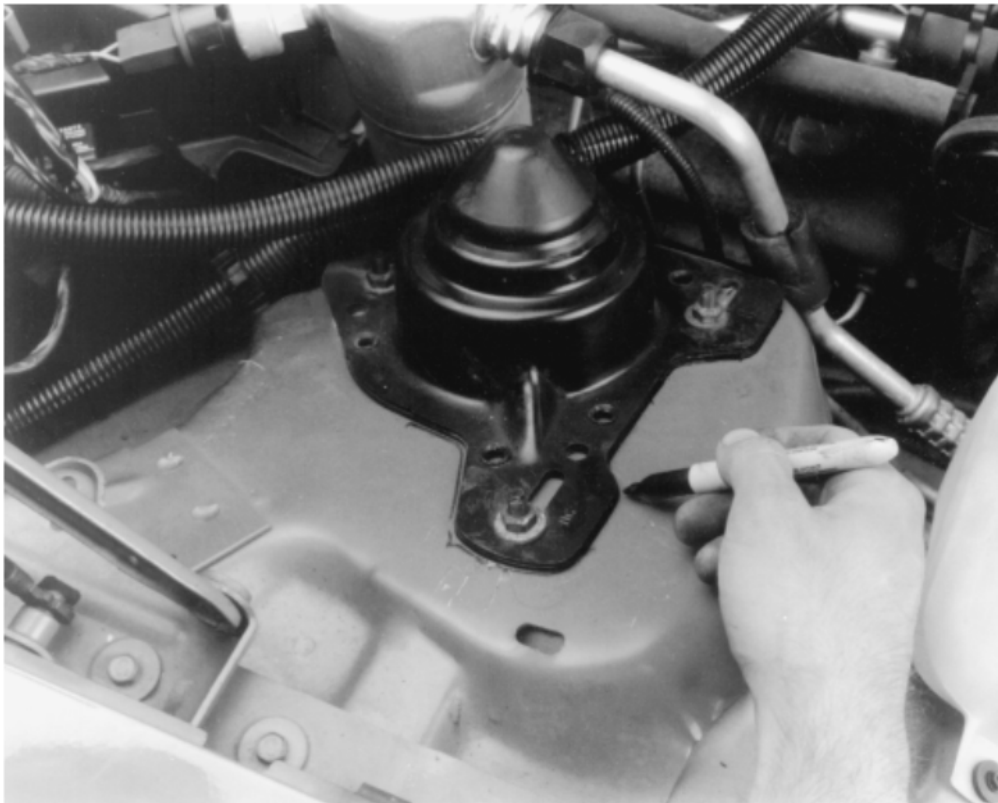


Fig. 2: Matchmarking the strut brace position

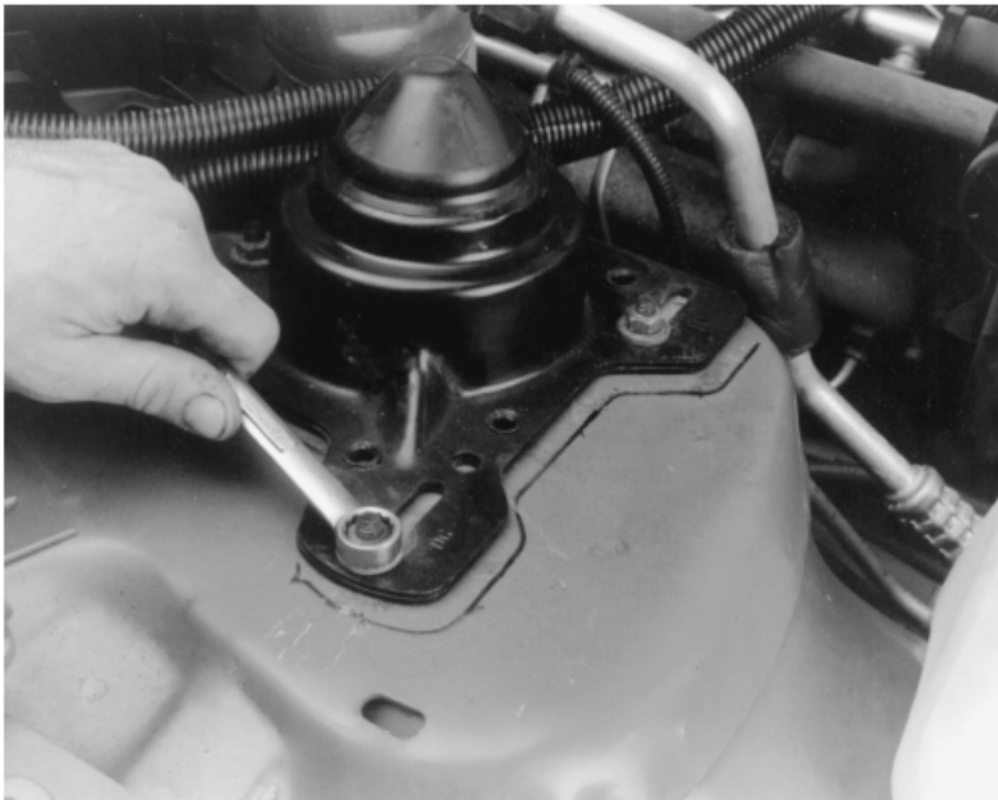


Fig. 3: Removing the strut brace nuts



Fig. 4: Lifting out the strut

1. Place the ignition key in the unlocked position so that the front wheels can be moved.
2. From inside the engine compartment, remove the upper strut to upper mount nut.

CAUTION - Do not attempt to move the vehicle with the upper strut fastener disconnected.

3. Raise the front of the vehicle and position safety stands under the vehicle.
4. Remove the wheel and tire assembly.
5. Remove the brake caliper without disconnecting the fluid hose, and hang out of the way on a wire. Do not allow the caliper to hang by its fluid hose.
6. Remove the two lower bolts attaching the strut to the steering knuckle.
7. Lift the strut up from the steering knuckle to compress the rod, then pull down and remove the strut.

To install:

8. Half extend the rod through the upper mount, then hand-start the upper fastener, engaging as many threads as possible.
9. Extend the strut and position it onto the steering knuckle.
10. Install the lower mount bolts hand-tight.
11. Tighten the upper fastener fully.

12. Fully tighten the lower bolts only when the front suspension is on the ground. Torque the steering knuckle-to-strut nuts to 125 ft. lbs. (170 Nm) followed by a 120 degree turn. Do not exceed a final torque of 148 Ft. lbs. (200 Nm).
13. Install the brake caliper
14. Install the wheel and tire assembly.
15. Lower the front of the vehicle.
16. From inside the engine compartment, tighten the upper strut to upper mount nut to 44 ft. lbs. (60 Nm).
17. Have the front end aligned.

OVERHAUL

The OEM domestic struts are serviced by replacement of the entire unit. There is no strut cartridge to replace.

LOWER BALL JOINT

INSPECTION

Before performing this inspection, make sure the wheel bearings are adjusted correctly and that the control arm bushings are in good condition.

1. Jack the car up under the front lower control arm at the spring seat.
2. Raise the car until there is 1-2 in. (25-51mm) of clearance under the wheel.
3. Insert a bar under the wheel and pry upward. If the wheel raises more than $\frac{1}{8}$ in. (3mm), the ball joints are worn. Determine if the lower ball joint is worn by visual inspection while prying on the wheel.

REMOVAL & INSTALLATION

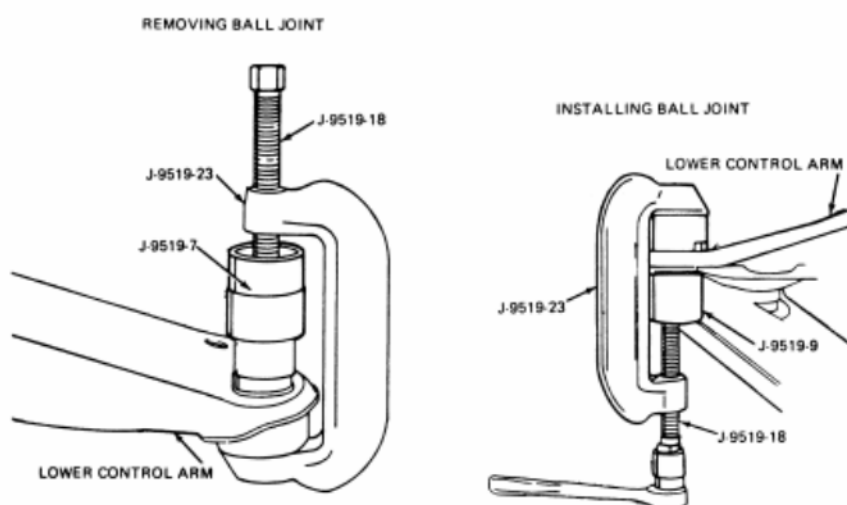


Fig. 1: Lower ball joint replacement

To prevent component damage, an on-car ball joint press, such as Kent-Moore tool J-9519-23 should be used.

1. Raise and safely support the vehicle, then remove the wheel.
2. Support the lower control arm spring seat with a jack.
3. Loosen the lower ball stud nut. Break the ball stud loose. Remove the ball stud nut.
4. Remove the ball stud from the steering knuckle. Support the steering knuckle aside using a hanger or wire.
5. Using a ball joint press, remove the ball joint from the lower control arm.

To install:

6. Install the new ball joint, using the press.
7. Install the ball stud in the steering knuckle boss.
8. Install the nut on the ball stud, tightening to 77 ft. lbs. (105 Nm) on all models. Continue to tighten the nut until the cotter pin holes align and install the pin. Do not back off the nut to align the holes.
9. Install the lube fitting and grease the new joint.

STABILIZER SHAFT

REMOVAL & INSTALLATION

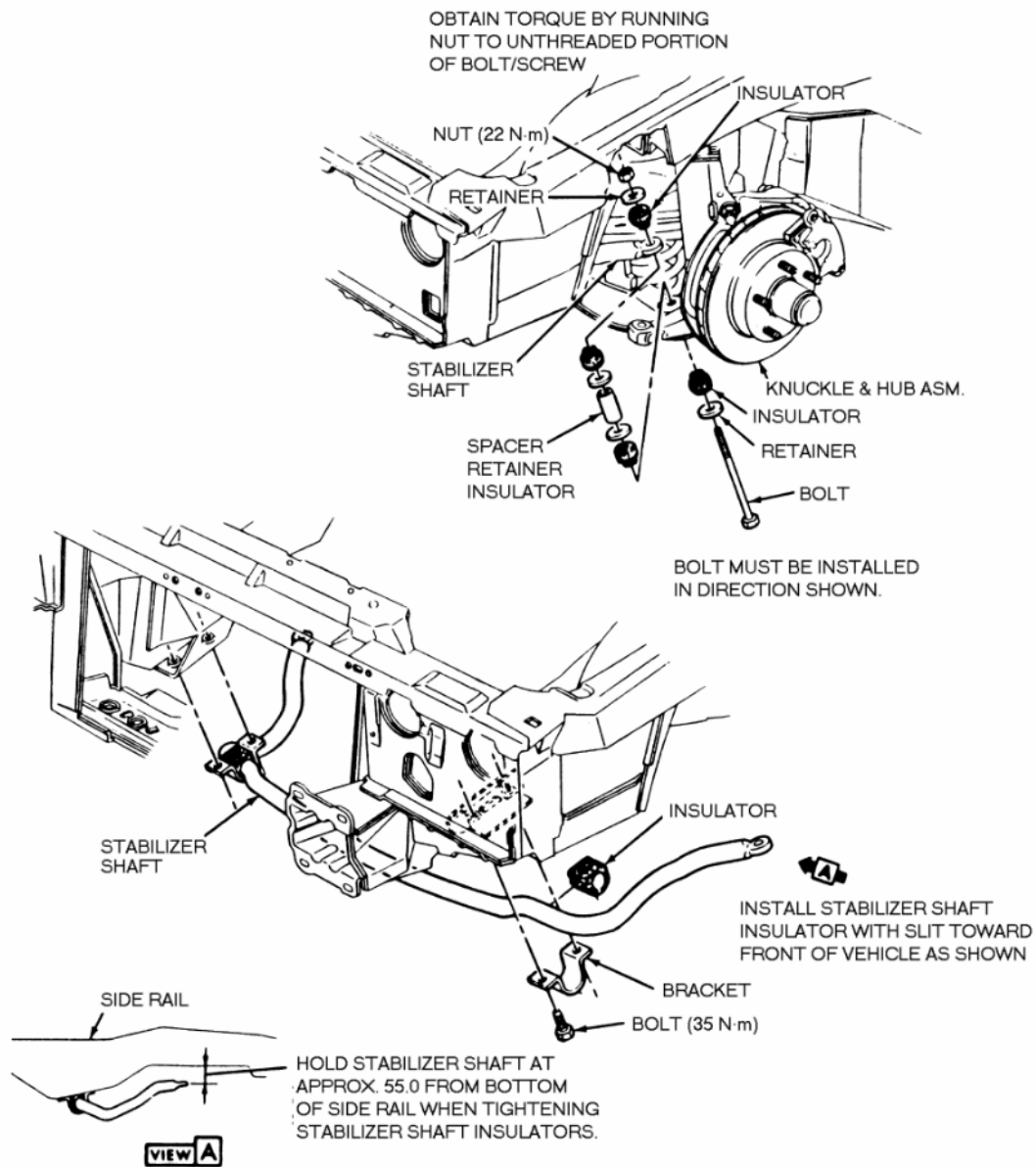


Fig. 1: Stabilizer removal

1. Raise the car and safely support on jackstands.
2. Remove the link bolt, nut, grommet, spacer and retainers.
3. Remove the insulators and brackets.
4. Remove the stabilizer shaft.

To install:

5. Position the stabilizer shaft into place and install the insulators and brackets.

6. Hold the stabilizer shaft approximately 55mm from the bottom of the side rail and torque the bracket bolts to 37 ft. lbs. (50 Nm).
7. Install the bolt, nut, grommets, spacer and retainers.
8. Lower the car.

LOWER CONTROL ARM

REMOVAL & INSTALLATION

1. Raise the car and safely support on jackstands.
2. Remove the wheel and tire.
3. Remove the stabilizer link and bushings at the lower control arm.
4. Remove the pivot bolt nuts. DO NOT remove the pivot bolts at this time.
5. Install tool J-23028 or equivalent adapter to the jack and place into position with tool J-23028 or equivalent adapter supporting bushings.
6. Install the jackstand under the outside frame rail on the opposite side of the vehicle.
7. Raise tool J-23028 or equivalent adapter enough to remove both pivot bolts.
8. Lower tool J-23028 or equivalent adapter.
9. Remove the spring and insulator tape insulator to the spring.
10. Remove the ball joint from the knuckle.
11. To install, reverse the removal procedure.

STEERING KNUCKLE AND SPINDLE

REMOVAL & INSTALLATION

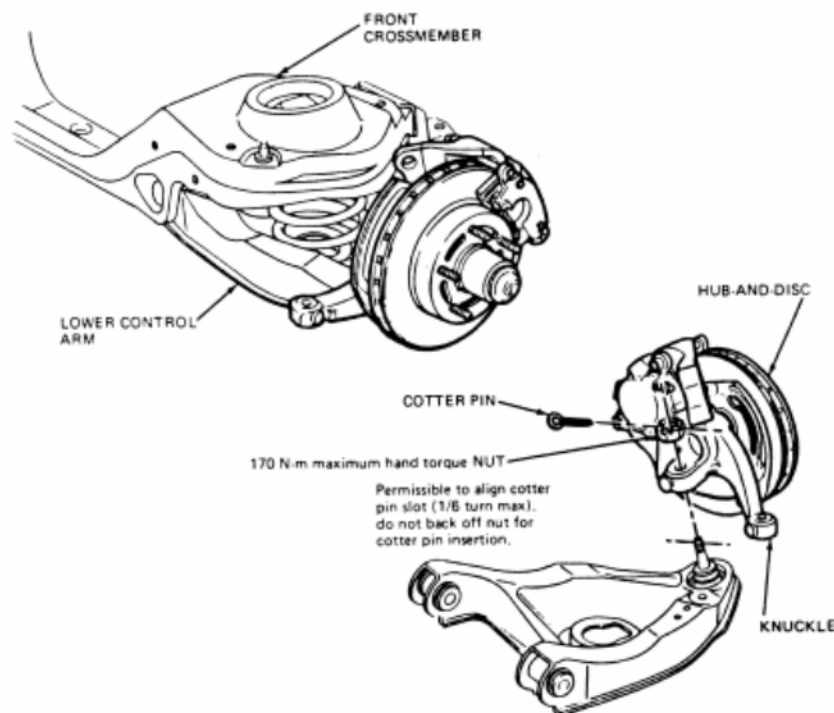


Fig. 1: Steering knuckle removal

1. Siphon some brake fluid from the master cylinder. Raise and support the vehicle.
2. Remove the wheel and tire. Remove the brake hose from the strut.
3. Remove the caliper and support on a wire. Refer to Brakes for procedures, then remove the hub-and-disc.
4. Remove the splash shield. Disconnect the tie rod from the steering knuckle.
5. Support the lower control arm and disconnect the ball joint from the steering knuckle using tool J-24292A.
6. Remove the 2 bolts securing the strut to the steering knuckle and remove the steering knuckle.

To install:

7. Place the steering knuckle into position and install the 2 bolts securing the strut to the steering knuckle.
8. Support the lower control arm and connect the ball joint to the steering knuckle.
9. Connect the tie rod to the steering knuckle. Install the splash shield.
10. Install the caliper.
11. Install the brake hose from the strut. Install the wheel and tire.
12. Lower the vehicle and refill the master cylinder with brake fluid.

FRONT WHEEL BEARINGS

ADJUSTMENT

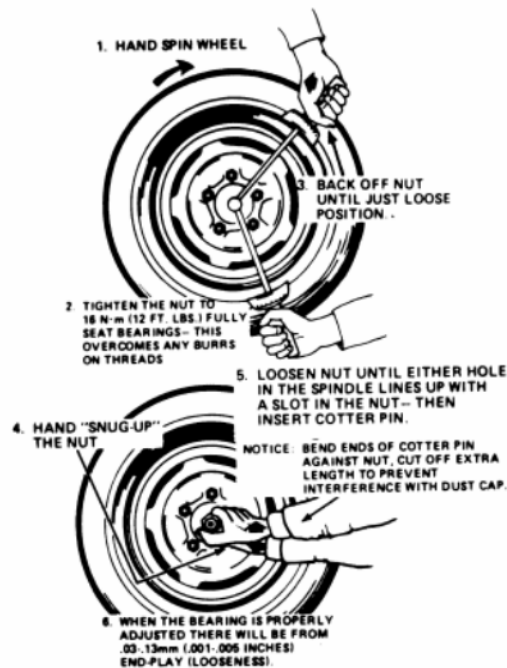


Fig. 1: Wheel bearing adjustment

1. Raise the car and support it at the lower arm.
2. Remove the hub dust cover and spindle cotter pin. Loosen the nut.
3. While spinning the wheel, snug the nut down to seat the bearings. Do not exert over 12 ft. lbs. (16 Nm) of force on the nut.
4. Back the nut off $\frac{1}{4}$ turn or until it is just loose. Line up the cotter pin hole in the spindle with the hole in the nut.
5. Insert a new cotter pin. Endplay should be between 0.001-0.005 in. (0.03-0.13mm). If play exceeds this tolerance, the wheel bearings should be replaced.

REMOVAL & INSTALLATION

1. Raise the car and support it at the lower arm. Remove the wheel. Remove the brake caliper and support it on a wire.
2. Remove the dust cap, cotter pin, castle nut, thrust washer and outside wheel bearing. Pull the disc/hub assembly from the steering knuckle.
3. Pry out the inner seal and remove the inner bearing. If necessary to remove the inner bearing races, use a hammer and a brass drift to drive the bearing races from the hub.
4. Clean all parts in kerosene or equivalent, DO NOT use gasoline. After cleaning, check parts for excessive wear and replace damaged parts.
5. Smear grease inside of hub. Install the bearing races into hub, using a hammer and a brass drift. Drive the races in until they seat against the shoulder of the hub.
6. Pack the bearings with grease and install the inner bearing in the hub. Install a new grease seal, be careful not to damage the seal.
7. Install the disc/hub assembly onto the steering knuckle. Install the outer bearing, thrust washer and castle nut. Tighten the nut until the wheel does not turn freely.
8. Back off the nut until the wheel turns freely and install the cotter pin. Install the dust cap, caliper and wheel. Lower the car.

PACKING

Clean the wheel bearings thoroughly with solvent and check their condition before installation.

CAUTION - Do not blow the bearing dry with compressed air as this could allow the bearing to turn without lubrication.

Apply a sizable amount of lubricant to the palm of one hand. Using your other hand, work the bearing into the lubricant so that the grease is pushed through the rollers and out the other side. Keep rotating the bearing while continuing to push the lubricant through it.

FRONT END ALIGNMENT

DESCRIPTION

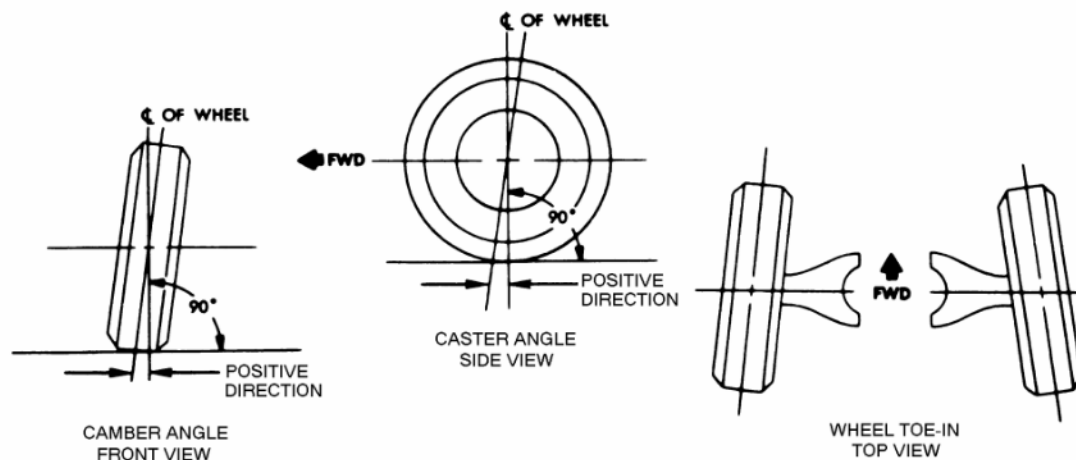


Fig. 1: Alignment characteristics

CAMBER

Camber is the inward or outward tilting of the front wheels from the vertical. When the wheels tilt outward at the top, the camber is said to be positive (+). When the wheels tilt inward at the top, the camber is said to be negative (-). The amount of tilt is measured in degrees from the vertical and this measurement is called the camber angle.

CASTER

Caster is the tilting of the front steering axis either forward or backward from the vertical. A backward tilt is said to be positive (+) and a forward tilt is said to be negative (-).

TOE

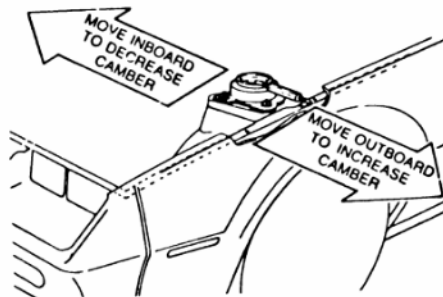
Toe is the turning in of the front wheels. The actual amount of toe-in or toe-out is normally only a fraction of a degree. The purpose of toe is to ensure parallel rolling of the front wheels. Excessive toe-in or toe-out will cause tire wear.

ADJUSTMENT

CASTER/CAMBER

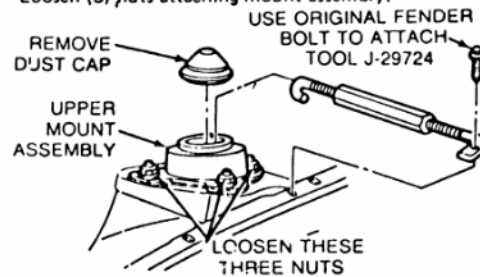
An alignment verification label on the upper mount-to-wheelhouse tower verifies the accuracy of camber and caster adjustment. If a steering problem exists, it is important to check other possible causes before adjusting camber or caster.

- Using reliable alignment equipment, follow the manufacturer's instructions to obtain camber and caster readings. Adjust the camber by rotating the turnbuckle on J-29724 to allow the mount assembly to move inboard or outboard.



- When the correct camber and caster readings are obtained, tighten the (3) nuts attaching the mount assembly to 28 N·m. Remove J-29724. Install the fender bolt and dust cap.

- Remove dust cap and fender bolt. Attach J-29724, using original fender bolt. Tighten the turnbuckle. Loosen (3) nuts attaching mount assembly.



- After obtaining the correct camber reading, caster can be adjusted by lightly tapping the mount assembly forward or rearward.

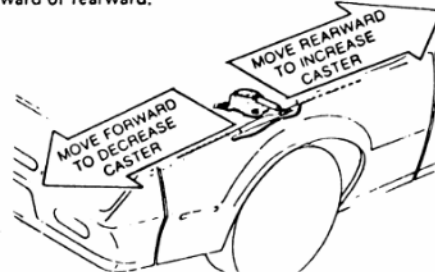
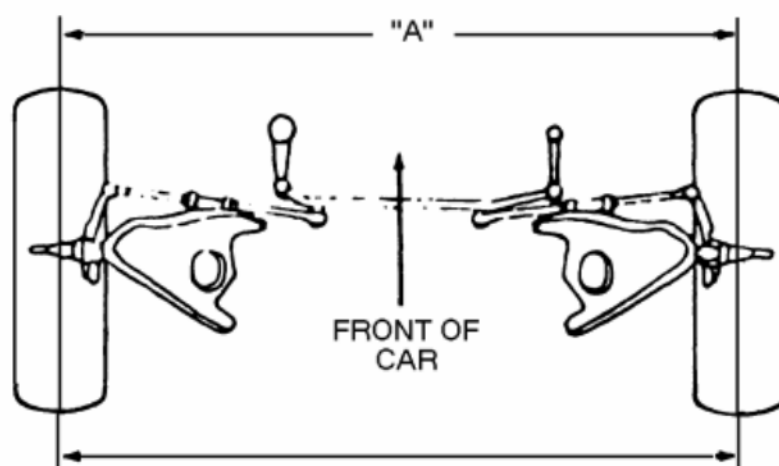


Fig. 1: Caster & camber adjustments

Caster and camber can be adjusted by moving the position of the upper strut mount assembly. Moving the mount forward/rearward adjusts caster. Movement inboard/outboard adjusts camber.

TOE



DIMENSION "A" SHOULD BE LESS THAN "B"

Fig. 2: Toe adjustment

1. Loosen the clamp bolts at each end of the steering tie rod adjustable sleeves.
2. With the steering wheel set straight ahead, turn the adjusting sleeves to obtain the proper adjustment.
3. When the adjustment has been completed, check to see that the number of threads showing on each end of the sleeve are equal. Also check that tie rod end housings are at the right angles to the steering arm.

REAR SUSPENSION

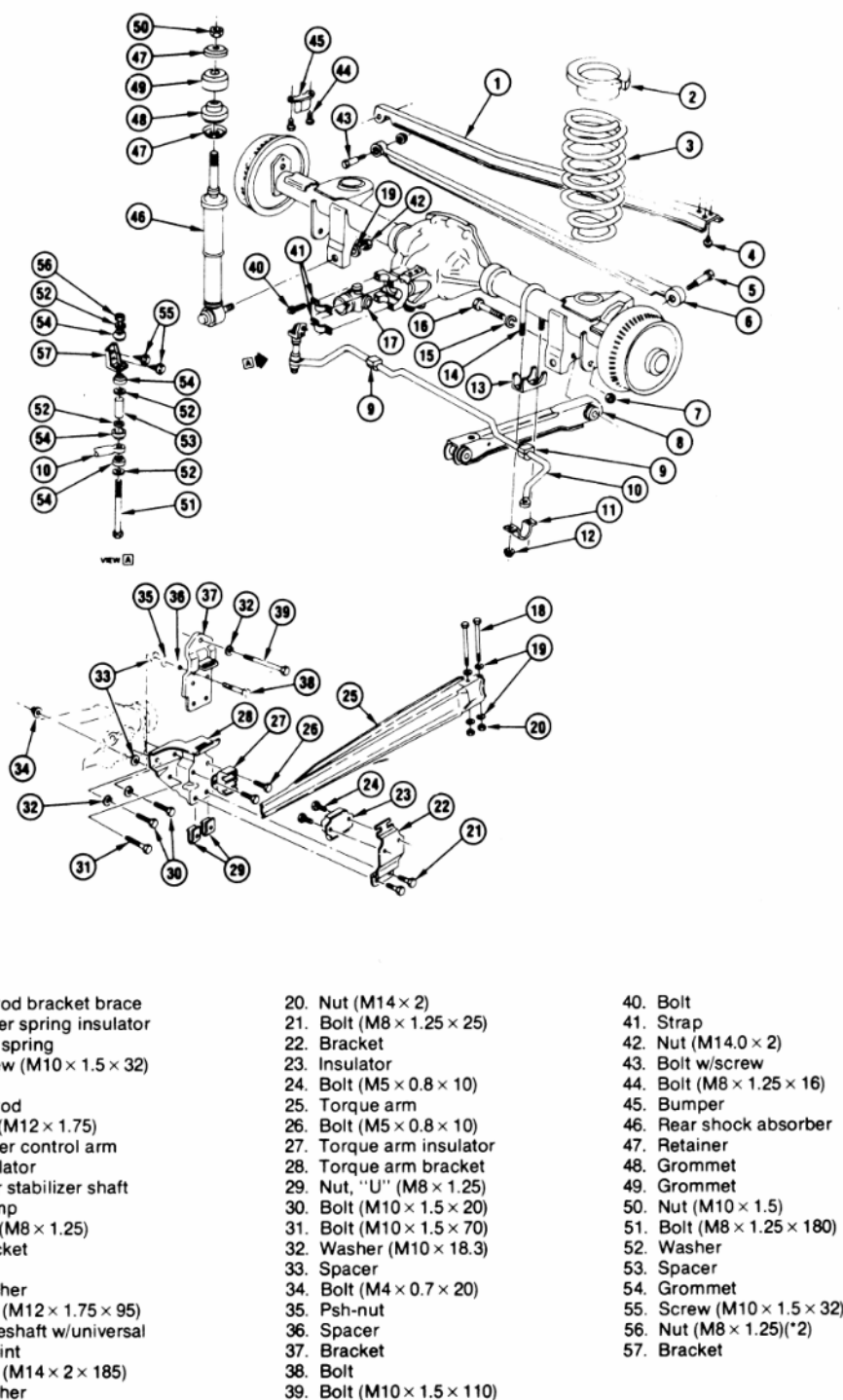


Fig. 1: Rear suspension (exploded view)

COIL SPRINGS

REMOVAL & INSTALLATION

1. Raise the car by the frame so that the rear axle can be independently raised and lowered.
2. Support the rear axle with a floor jack.
3. If equipped with brake hose attaching brackets, disconnect the brackets allowing the hoses to hang free. Do not disconnect the hoses. Perform this step only if the hoses would otherwise be stretched and damaged when the axle is lowered.
4. Disconnect the track bar from the axle.
5. Remove the lower shock absorber bolts and lower the axle. Make sure the axle is supported securely on the floor jack and that there is no chance of the axle slipping after the shock absorbers are disconnected.

On vehicles equipped with a 4-cylinder engine, remove the driveshaft.

6. Lower the axle and remove the coil spring. Do not lower the axle past the limits of the brake lines or the lines will be damaged.

To install:

7. Position spring with the axle lowered.
8. On vehicles equipped with 4-cylinder engines, install the driveshaft.
9. Raise the axle and install the lower shock absorber bolts.
10. Connect the track bar to the axle.
11. Connect the brake hose attaching brackets, if removed.
12. Remove the support from the rear axle.
13. Lower the vehicle.

SHOCK ABSORBERS

REMOVAL & INSTALLATION



Fig. 1: Rear shock upper mount



Fig. 2: Rear shock lower mount

1. Jack up the car to a convenient working height. Support the axle assembly with jackstands.
2. Disconnect the upper shock attaching nuts.
3. Remove the lower shock to axle mounting bolt.
4. Remove the shock absorber.

To install:

5. Position the shock into place.
6. Install the lower shock to axle mounting bolt. Torque to 70 ft. lbs. (95 Nm).
7. Connect the upper shock attaching nuts. Torque the upper nuts to 13 ft. lbs. (17 Nm).
8. Lower the car.

TESTING

Visually inspect the shock absorber. If there is evidence of leakage and the shock absorber is covered with oil, the shock is defective and should be replaced.

If there is no sign of excessive leakage (a small amount of weeping is normal) bounce the car at one corner by pressing down on the fender or bumper and releasing. When you have the car bouncing as much as you can, release it. The car should stop bouncing after the first rebound. If the bouncing continues past the center point of the bounce more than once, the shock absorbers are worn and should be replaced.

TRACK BAR

REMOVAL & INSTALLATION

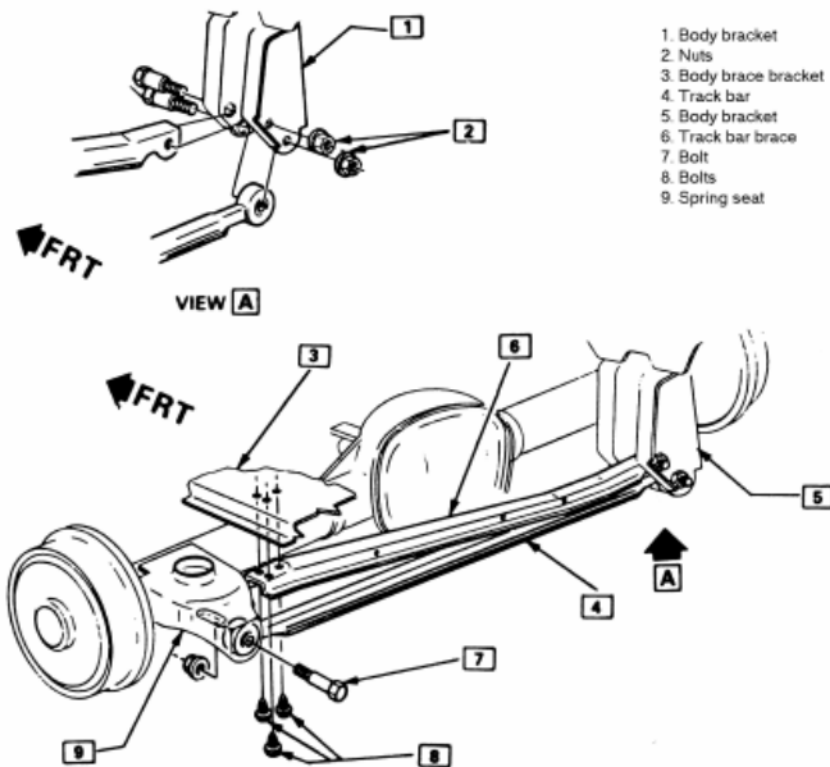


Fig. 1: Track bar replacement

1. Raise the rear of the vehicle, place jackstands under the rear axle, then lower the jack so that the stands are supporting all of the weight.
2. Remove the track bar mounting fasteners. Remove the track bar.

To install:

3. Clean all of the track bar fasteners.
4. Position the track bar in the body bracket, then loosely install the bolt and the nut.
5. Position the track bar to the axle assembly, then install the bolt and the nut. Torque the bolt to 59 ft. lbs. (80 Nm).
6. Torque the body bracket nut to 78 ft. lbs. (105 Nm).

TRACK BAR BRACE

REMOVAL & INSTALLATION

1. Raise the rear of the vehicle, place jackstands under the rear axle, then lower the jack so that the stands are supporting all of the weight.
2. Remove the heat shield screws from the track bar brace.
3. Remove the three track bar brace-to-body brace screws.
4. Remove the track bar-to-body bracket fasteners and remove the track bar brace.

To install:

5. Place the track bar brace into position.
6. Install the track bar-to-body bracket fasteners.
7. Install the three track bar brace-to-body brace screws.
8. Install the heat shield screws to the track bar brace.
9. Lower the vehicle.

CONTROL ARM

REMOVAL & INSTALLATION

Remove/reinstall only one lower control arm at a time. If both arms are removed at the same time, the axle could roll or slip sideways, making reinstallation of the arms very difficult.

1. Raise the rear of the vehicle, place jackstands under the rear axle, then lower the jack so that the stands are supporting all of the weight.
2. Remove the control arm attaching fasteners, then remove the control arm.
3. Installation is a simple matter of bolting the arm into place. Torque the 3 bolts at the body brace bracket to 35 ft. lbs. (47 Nm) and the nut at the body bracket to 61 ft. lbs. (83 Nm).

TORQUE ARM

REMOVAL & INSTALLATION

The coil springs must be removed BEFORE the torque arm. If the torque arm is removed first, vehicle damage will result. In order to proceed, the vehicle must be supported in a manner which will allow the rear axle height to be adjusted independently of the body height.

1. Remove the track bar mounting bolt at the axle assembly, then loosen the track bar bolt at the body brace.
2. Disconnect the rear brake hose clip at the axle assembly, which will allow additional drop of the axle.
3. Remove the lower attaching nuts from both rear shock absorbers.
4. Disconnect the shock absorbers from their lower attaching points.

5. On models with four cylinder engines, remove the driveshaft.
6. Carefully lower the rear axle assembly and remove the rear coil springs.

CAUTION - DO NOT overstretch the brake hose when lowering the axle-damage to the hose will result.

7. Remove the torque arm rear attaching bolts.
8. Remove the front torque arm outer bracket.
9. Remove the torque arm from the vehicle.

To install:

10. Place the torque arm in position and loosely install the rear torque arm bolts.
11. Install the front torque arm bracket and torque the nuts to 31 ft. lbs. (42 Nm).
12. Torque the rear torque arm nuts to 100 ft. lbs. (135 Nm).
13. Place the rear springs and insulators in position, then raise the rear axle assembly until all of the weight is supported by the spring.
14. Attach the shock absorbers to the rear axle and torque the fasteners to 70 ft. lbs. (95 Nm).
15. Clean and reinstall the track bar mounting bolt at the axle. Torque the bolt to 59 ft. lbs. (80 Nm).
16. Clean and reinstall the track bar-to-body brace nut. Torque the nut to 78 ft. lbs. (105 Nm).
17. Install the brake line clip to the underbody.
18. On four cylinder models, reinstall the driveshaft.
19. Lower the vehicle.

STABILIZER (SWAY) BAR

REMOVAL & INSTALLATION



Fig. 1: Stabilizer end links

1. Raise and support the rear end on jackstands.
2. Disconnect the end link bolts.
3. Remove the U-bolts and insulators.
4. Installation is the reverse of removal. Please refer to the torque specifications chart.

STEERING COLUMN

WARNING - Before attempting any repairs involving the steering wheel or disassembly of it, ensure that the Supplemental Inflatable Restraint (Air Bag) system is properly disarmed.

AIR BAG

WARNING - Before attempting any repairs involving the steering wheel or disassembly of it, ensure that the Supplemental Inflatable Restraint (Air Bag) system is properly disarmed.

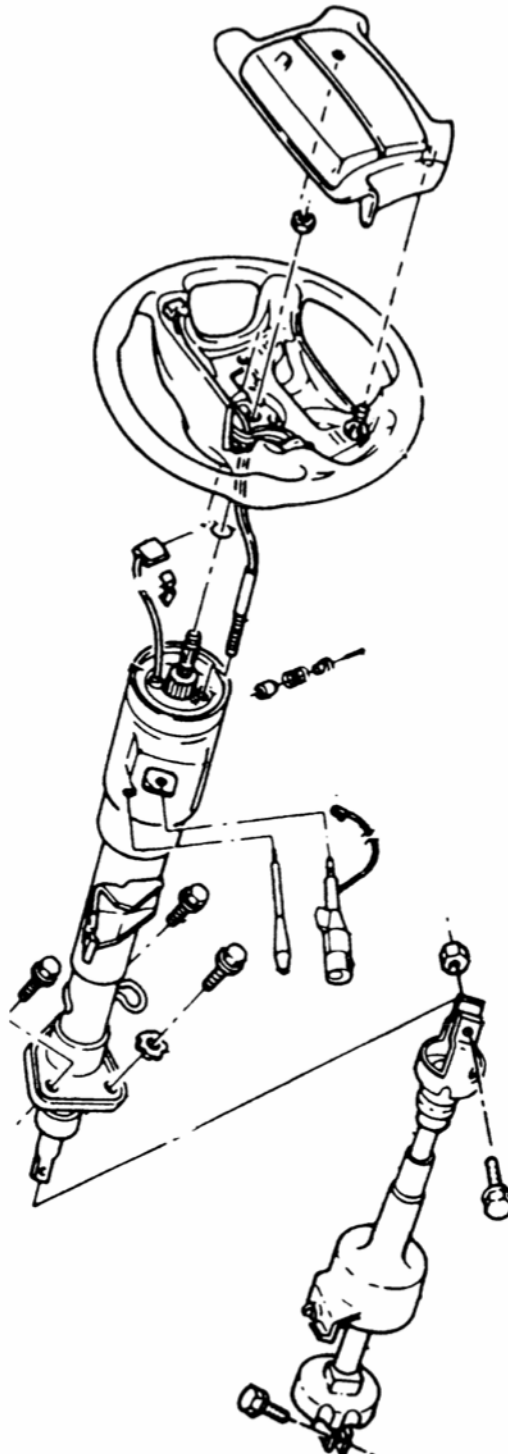


Fig. 1: Air bag-equipped steering column

DISARMING

1. Turn the steering wheel to align the wheels in the straight-ahead position.
2. Turn the ignition switch to the *LOCK* position.
3. Remove the SIR air bag fuse from the fuse block.
4. Remove the left side trim panel and disconnect the yellow 2-way SIR harness wire connector at the base of the steering column.

To enable system:

5. Turn the ignition switch to the *LOCK* position.
6. Reconnect the yellow 2-way connector at the base of the steering column.
7. Reinstall the SIR fuse and the left side trim panel.
8. Turn the ignition switch to the *RUN* position.
9. Verify the SIR indicator light flashes 7-9 times, if not as specified, inspect system for malfunction or contact the manufacturer.

For more details on the SIR system - including disarming instructions for passenger bags - please refer to Chassis Electrical in this repair guide.

SUPPLEMENTAL INFLATABLE RESTRAINT (SIR) COIL ASSEMBLY

After performing repairs on the internals of the steering column the coil assembly must be centered in order to avoid damaging the coil or accidental deployment of the air bag. There are 2 different styles of coils, one rotates clockwise and the other rotates counterclockwise.

ADJUSTMENT (CENTERING THE COIL)

1. With the system properly disarmed, hold the coil assembly with the clear bottom up to see the coil ribbon.
2. While holding the coil assembly, depress the lock spring and rotate the hub in the direction of the arrow until it stops. The coil should now be wound up snug against the center hub.
3. Rotate the coil assembly in the opposite direction approximately $2\frac{1}{2}$ turns and release the lock spring between the locking tabs in front of the arrow.
4. Install the coil assembly onto the steering shaft.

STEERING WHEEL

WARNING - Before attempting any repairs involving the steering wheel or disassembly of it, ensure that the Supplemental Inflatable Restraint (Air Bag) system is properly disarmed.

REMOVAL & INSTALLATION

If the vehicle is equipped with a SIR (Air Bag) system, ensure that the proper disarming procedure is followed.

1982-89 VEHICLES

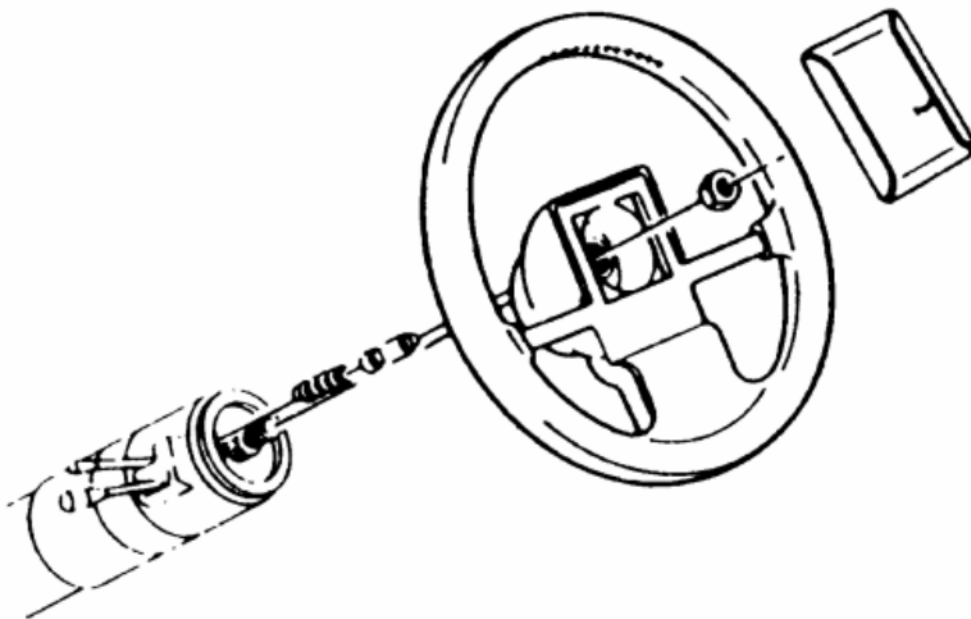


Fig. 1: Steering wheel removal

1. Disconnect the negative battery cable.
2. Remove the horn pad.
3. Disconnect the horn contact lead.
4. Remove the retainer and steering wheel nut.
5. Using a suitable steering wheel puller, remove the steering wheel.
6. Installation is the reverse of the removal procedure. Tighten the steering wheel nut to 31 ft. lbs. (42 Nm).

1990-92 VEHICLES

CAUTION - The vehicle is equipped with a Supplemental Inflatable Restraint (SIR) system, follow the recommended disarming procedures before performing any work on or around the system. Failure to do so may result in possible deployment of the air bag and/or personal injury.

Disconnect the negative battery cable.

1. Disable the Supplemental Inflatable Restraint (SIR) system as follows:
 - a. Turn the steering wheel so the vehicle's wheels are pointing straight-ahead.
 - b. Remove the left sound insulator by removing the nut from the stud and gently prying the insulator from the knee bolster.
 - c. Disconnect the Connector Position Assurance (CPA) clip and yellow 2-way SIR harness connector at the base of the steering column.
 - d. Remove the SIR fuse from the fuse block.

2. Loosen the screws and locknuts from the back of the steering wheel using a suitable Torx® driver or equivalent, until the inflator module can be released from the steering wheel. Remove the inflator module from the steering wheel.

CAUTION - When carrying a live inflator module, ensure the bag and trim cover are pointed away from the body. In case of an accidental deployment, the bag will then deploy with minimal chance of injury. When placing a live inflator module on a bench or other surface, always place the bag and trim cover up, away from the surface. This is necessary so a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment. Otherwise, personal injury may result. Also, never carry the inflator module by the wires or connector on the underside of the module.

4. Disconnect the coil assembly connector and CPA clip from the inflator module terminal.
5. Remove the steering wheel locking nut.
6. Using a suitable puller, remove the steering wheel and disconnect the horn contact. When attaching the steering wheel puller, use care to prevent threading the side screws into the coil assembly and damaging the coil assembly.

To install:

7. Route the coil assembly connector through the steering wheel.
8. Connect the horn contact and install the steering wheel. When installing the steering wheel, align the block tooth on the steering wheel with the block tooth on the steering shaft within 1 female serration.
9. Install the steering wheel locking nut. Tighten the nut to 31 ft. lbs. (42 Nm).
10. Connect the coil assembly connector and CPA clip to the inflator module terminal.
11. Install the inflator module. Ensure the wiring is not exposed or trapped between the inflator module and the steering wheel. Tighten the inflator module screws to 25 inch lbs. (2.8 Nm).
12. Connect the negative battery cable.
13. Enable the SIR system as follows:
 - a. Connect the yellow 2-way SIR harness connector to base of the steering column and CPA.
 - b. Install the left sound insulator.
 - c. Install the SIR fuse in the fuse block.
 - d. Turn the ignition switch to the *RUN* position and verify that the inflatable restraint indicator flashes 7-9 times and then turns *OFF*. If the indicator does not respond as stated, a problem within the SIR system is indicated.

TURN SIGNAL SWITCH

WARNING - Before attempting any repairs involving the steering wheel or disassembly of it, ensure that the Supplemental Inflatable Restraint (Air Bag) system is properly disarmed.

REMOVAL & INSTALLATION

STANDARD COLUMNS WITHOUT AIR BAG

1. Remove the steering wheel as previously outlined. Remove the trim cover.
2. Pry the cover off, and lift the cover off the shaft.
3. Position the U-shaped lockplate compressing tool on the end of the steering shaft and compress the lock plate by turning the shaft nut clockwise. Pry the wire snapping out of the shaft groove.
4. Remove the tool and lift the lockplate off the shaft.
5. Remove the canceling cam assembly and upper bearing preload spring from the shaft.
6. Remove the turn signal lever. Push the flasher knob in and unscrew it. On models equipped with a button and a knob, remove the button retaining screw, then remove the button, spring, and knob.
7. Pull the switch connector out the mast jacket and tape the upper part to facilitate switch removal. Attach a long piece of wire to the turn signal switch connector. When installing the turn signal switch, feed this wire through the column first, and then use this wire to pull the switch connector into position. On tilt wheels, place the turn signal and shifter housing in low position and remove the harness cover.
8. Remove the three switch mounting screws. Remove the switch by pulling it straight up while guiding the wiring harness cover through the column.

To install:

9. Install the replacement switch by working the connector and cover down through the housing and under the bracket. On tilt models, the connector is worked down through the housing, under the bracket, and then the cover is installed on the harness.
10. Install the switch mounting screws and the connector on the mast jacket bracket. Install the column-to-dash trim plate.
11. Install the flasher knob and the turn signal lever.
12. With the turn signal lever in neutral and the flasher knob out, slide the upper bearing preload spring, and canceling cam assembly onto the shaft.
13. Position the lock plate on the shaft and press it down until a new snapping can be inserted in the shaft groove. Always use a new snapping when assembling.
14. Install the cover and the steering wheel.

TILT COLUMNS WITHOUT AIR BAG

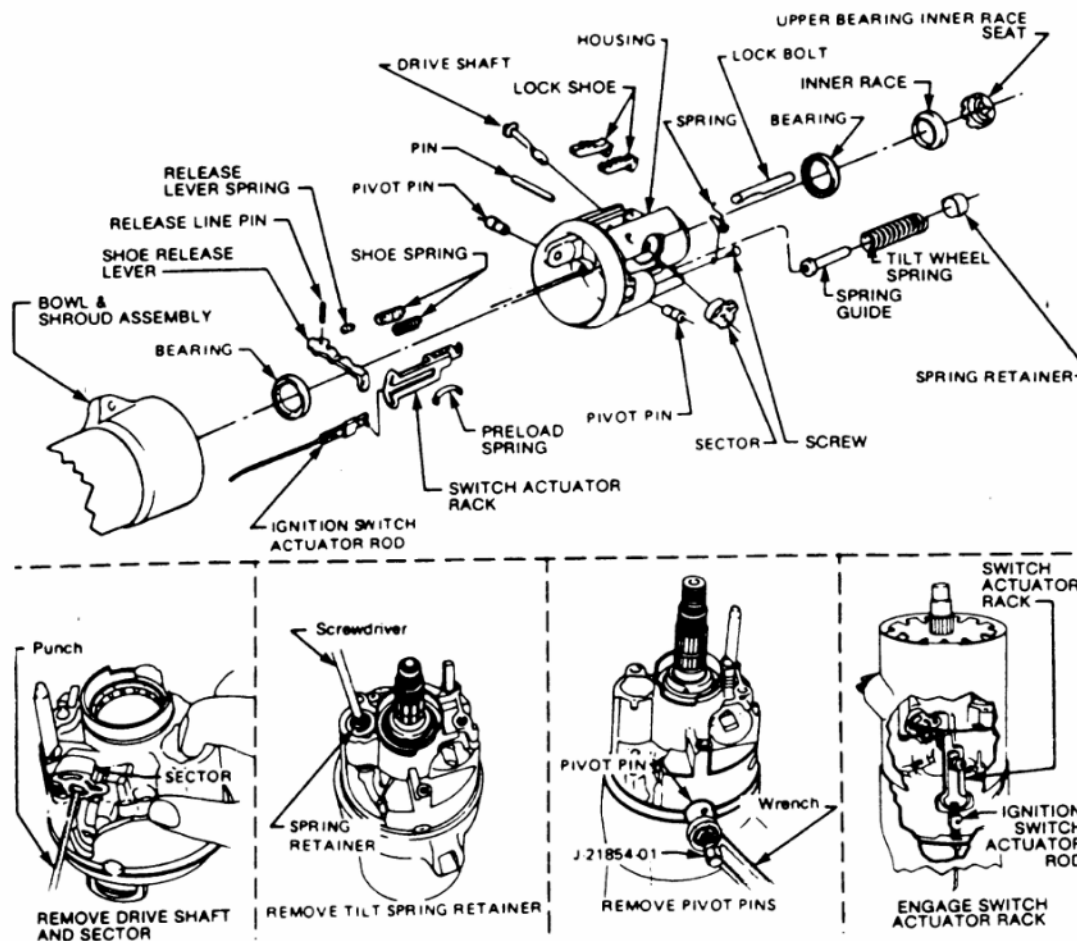


Fig. 1: Tilt column assembly

CAUTION - All elements of energy-absorbing (telescopic) steering columns are very sensitive to damage. Do not strike any part of the column (nuts, bolts, etc.) as this could ruin the entire assembly.

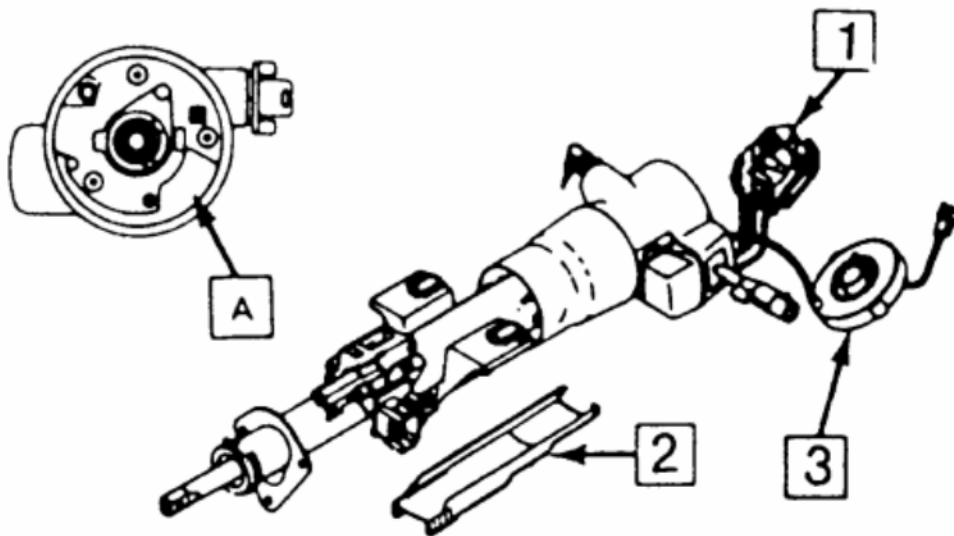
1. Disconnect the battery cable.
2. Remove the steering wheel as outlined earlier.
3. Remove the cover from the steering column shaft.
4. Press down on the lockplate and pry the snapping from the shaft.
5. Remove the lockplate and the canceling cam.
6. Remove the upper bearing preload spring.
7. Remove the turn signal lever and the hazard flasher knob.
8. Lift up on the tilt lever and position the housing in its central position.
9. Remove the switch attaching screws.
10. Remove the lower trim cap from the instrument panel and disconnect the turn signal connector from the wiring harness.
11. Remove the four bolts which secure the bracket assembly to the jacket.
12. Loosen the screw that holds the shift indicator needle and disconnect the clip from the link.

13. Remove the two nuts from the column support bracket while holding the column in position. Remove the bracket assembly and wire protector from the wiring, then loosely install the support column bracket.
14. Tape the turn signal wires at the connector to keep them fit and parallel.
15. Carefully remove the turn signal switch and wiring from the column.

To install:

16. Carefully install the turn signal switch and wiring into the column.
17. Remove the tape from the turn signal wires.
18. Install the wire protector and, while holding the column in position, install the two nuts to the column support bracket.
19. Connect the clip to the link and tighten the screw that holds the shift indicator needle.
20. Install the four bolts which secure the bracket assembly to the jacket.
21. Connect the turn signal connector to the wiring harness and install the lower trim cap to the instrument panel.
22. Install the switch attaching screws.
23. Install the turn signal lever and the hazard flasher knob.
24. Install the upper bearing preload spring.
25. Install the lockplate and the canceling cam.
26. Press down on the lockplate and install the snapping to the shaft using a new snapping.
27. Install the cover to the steering column shaft.
28. Install the steering wheel.
29. Connect the battery cable.

STEERING COLUMN WITH AIR BAG



A. 6 o'clock position: harness through here

1. Coil assembly
2. Turn signal and hazard switch
3. Wiring protector

Fig. 2: Turn signal switch, w/air bag

1. Properly disable the SIR air bag system.
2. Disconnect the negative battery cable.
3. Remove the inflator module.
4. Remove the steering wheel.
5. Ensure the steering wheel is locked in the straight-ahead position and remove the coil assembly retaining ring.
6. Pull the coil assembly out and allow it to hang.
7. Using a suitable tool, depress the lock plate to gain access to the snapping. Remove the snapping and remove the lockplate.
8. Remove the turn signal canceling cam, upper bearing spring and signal switch arm.
9. Remove the hazard warning knob, turn signal lever and steering column wiring protector.
10. Disconnect the turn signal switch connector from the harness connector.
11. Remove the switch retaining screws and remove the turn signal switch.
12. Installation is the reverse of the removal procedure. Make certain to follow the SIR coil adjustment procedure previously described.

IGNITION SWITCH

WARNING - Before attempting any repairs involving the steering wheel or disassembly of it, ensure that the Supplemental Inflatable Restraint (Air Bag) system is properly disarmed.

REPLACEMENT

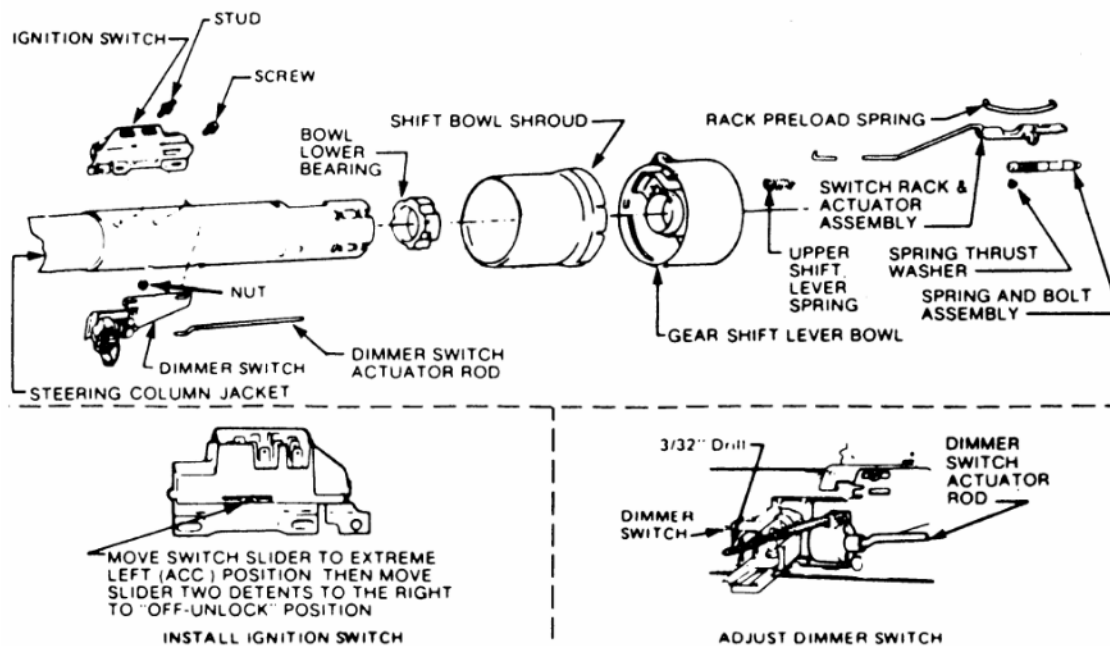


Fig. 1: Ignition switch

The switch is located inside the channel section of the brake pedal support and is completely inaccessible without first lowering the steering column. The switch is actuated by a rod and rack assembly. A gear on the end of the lock cylinder engages the toothed upper end of the rod.

1. Lower the steering column; be sure to properly support it.
2. Put the switch in the *Off-Unlocked* position. The *Off-Unlocked* position is two detents from the top.
3. Remove the two switch screws and remove the switch assembly.

To install:

4. Before installing, place the new switch in the *Off-Unlocked* position. Make sure the lock cylinder and actuating rod are in the *Off-Unlocked* (second detent from the top) position.
5. Install the activating rod into the switch and assemble the switch on the column. Tighten the mounting screws. Use only the specified screws since overlength screws could impair the collapsibility of the column.
6. Reinstall the steering column.

IGNITION LOCK CYLINDER

WARNING - Before attempting any repairs involving the steering wheel or disassembly of it, ensure that the Supplemental Inflatable Restraint (Air Bag) system is properly disarmed.

REMOVAL & INSTALLATION

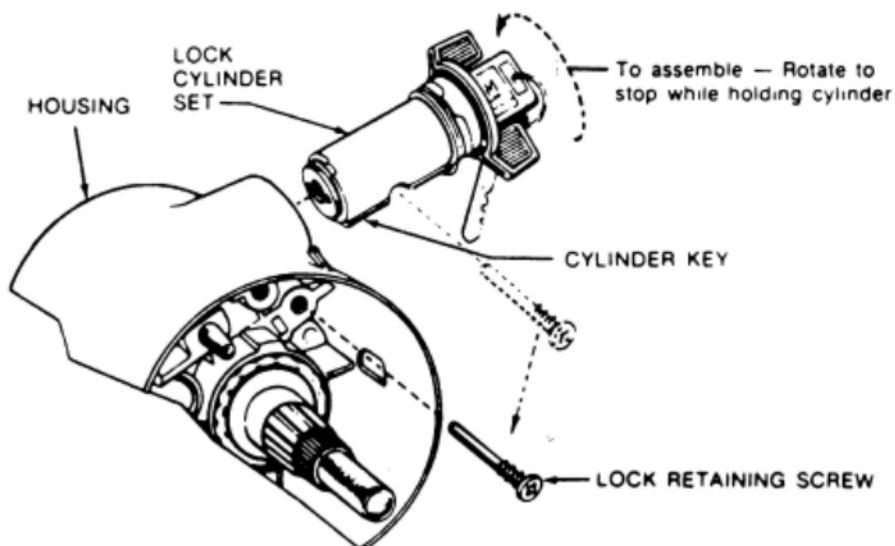


Fig. 1: Lock cylinder replacement

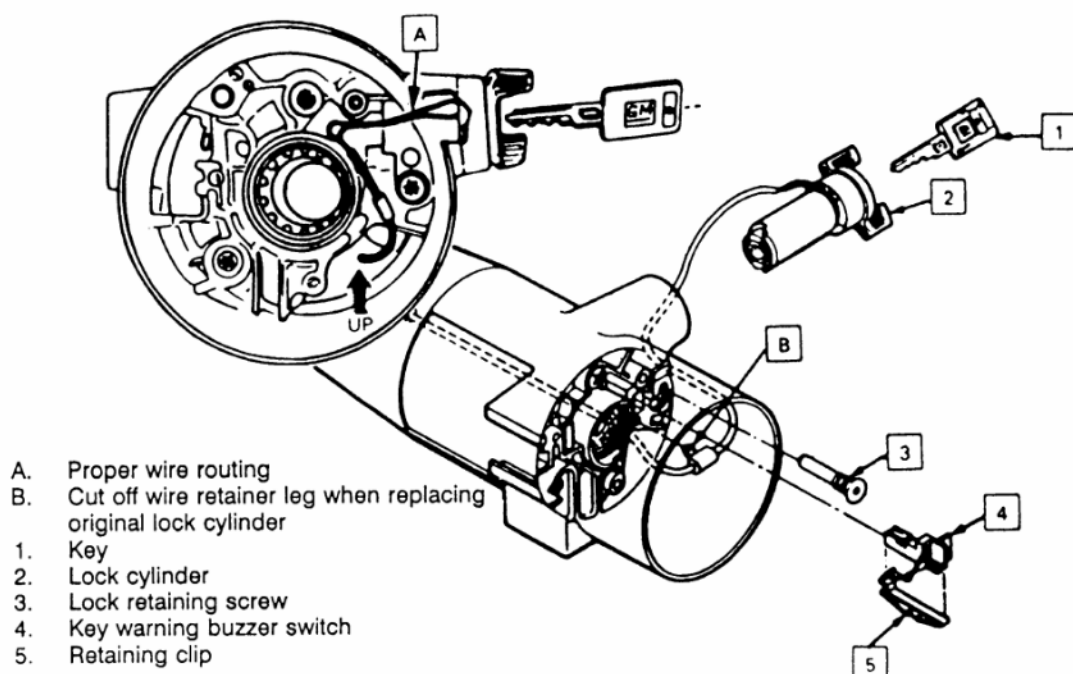


Fig. 2: Lock cylinder w/VATS

1. Properly disable the SIR air bag system, if equipped.
2. Place the lock in the *Run* position.
3. Remove the lock plate, turn signal switch and buzzer switch.
4. Remove the screw and lock cylinder.

CAUTION - If the screw is dropped on removal, it could fall into the column, requiring complete disassembly to retrieve the screw.

To install:

5. Rotate the cylinder clockwise to align cylinder key with the keyway in the housing.
6. Push the lock all the way in.
7. Install the screw. Tighten the screw to 14 inch lbs. (1.5 Nm) for adjustable columns and 25 inch lbs. (2.8 Nm) for standard columns. Re-center the SIR coil assembly as previously directed.

STEERING COLUMN

WARNING - Before attempting any repairs involving the steering wheel or disassembly of it, ensure that the Supplemental Inflatable Restraint (Air Bag) system is properly disarmed.

REMOVAL & INSTALLATION

The front of the dash mounting plates must be loosened whenever the steering column is to be lowered from the instrument panel.

1. Disconnect the negative battery cable.
2. On 1990-92 vehicles, disable the Supplemental Inflatable Restraint (SIR) system as follows:
 - a. Turn the steering wheel so the vehicle's wheels are pointing straight-ahead.

The wheels of the vehicle must be in the straight-ahead position and the steering column in the locked position before proceeding with steering column removal. Failure to follow this procedure will cause the SIR coil to become uncentered, resulting in damage to the coil assembly.

- b. Remove the SIR fuse from the fuse block.
 - c. Remove the left sound insulator by removing the nut from the stud and gently prying the insulator from the knee bolster.
 - d. Disconnect the Connector Position Assurance (CPA) and yellow 2-way SIR harness connector at the base of the steering column.
3. Remove the nut and bolt from the upper intermediate shaft coupling. Separate the coupling from the lower end of the steering column.
 4. Remove the steering wheel, if the column is to be replaced or repaired on the bench.
 5. Remove the knee bolster and bracket, if equipped.

6. Remove the bolts attaching the toe plate to the cowl.
7. Disconnect the electrical connectors.
8. Remove the capsule nuts attaching the steering column support bracket to the instrument panel.
9. Disconnect the park lock cable from the ignition switch inhibitor, if equipped with automatic transmission.
10. Remove the steering column from the vehicle.

To install:

If a replacement steering column is being installed, do not remove the anti-rotation pin until after the steering column has been connected to the steering gear. Removing the anti-rotation pin before the steering column is connected to the steering gear may damage the SIR coil assembly.

11. Position the steering column in the vehicle.
12. Connect the park lock cable to the ignition switch inhibitor on vehicles with automatic transmission.
13. Install the capsule nuts attaching the steering column support bracket to the instrument panel and tighten to 20 ft. lbs. (27 Nm).
14. Install the nut and bolt to the upper intermediate shaft coupling attaching the upper intermediate shaft to the steering column. Tighten the nut to 44 ft. lbs. (60 Nm).
15. Install the bolts attaching the toe plate to the cowl and tighten to 58 inch lbs. (6.5 Nm).
16. Connect the electrical connectors.
17. Remove the anti-rotation pin if a service replacement steering column is being installed.
18. Install the knee bolster and bracket, if equipped.
19. Install the sound insulator panel.

If SIR coil has become uncentered by turning of the steering wheel without the column connected to the steering gear, follow the proper adjustment procedure for the SIR coil assembly before proceeding.

20. Install the steering wheel.
21. Connect the negative battery cable.
22. Enable the SIR system as follows:
 - a. Connect the yellow 2-way SIR harness connector to the base of the steering column and CPA clip and install the SIR fuse.
 - b. Install the left sound insulator.
 - c. Turn the ignition switch to the *RUN* position and verify that the inflatable restraint indicator flashes 7-9 times and then turns *OFF*. If the indicator does not respond as stated, a problem within the SIR system is indicated.

STEERING GEAR, PUMP AND LINKAGE

STEERING LINKAGE

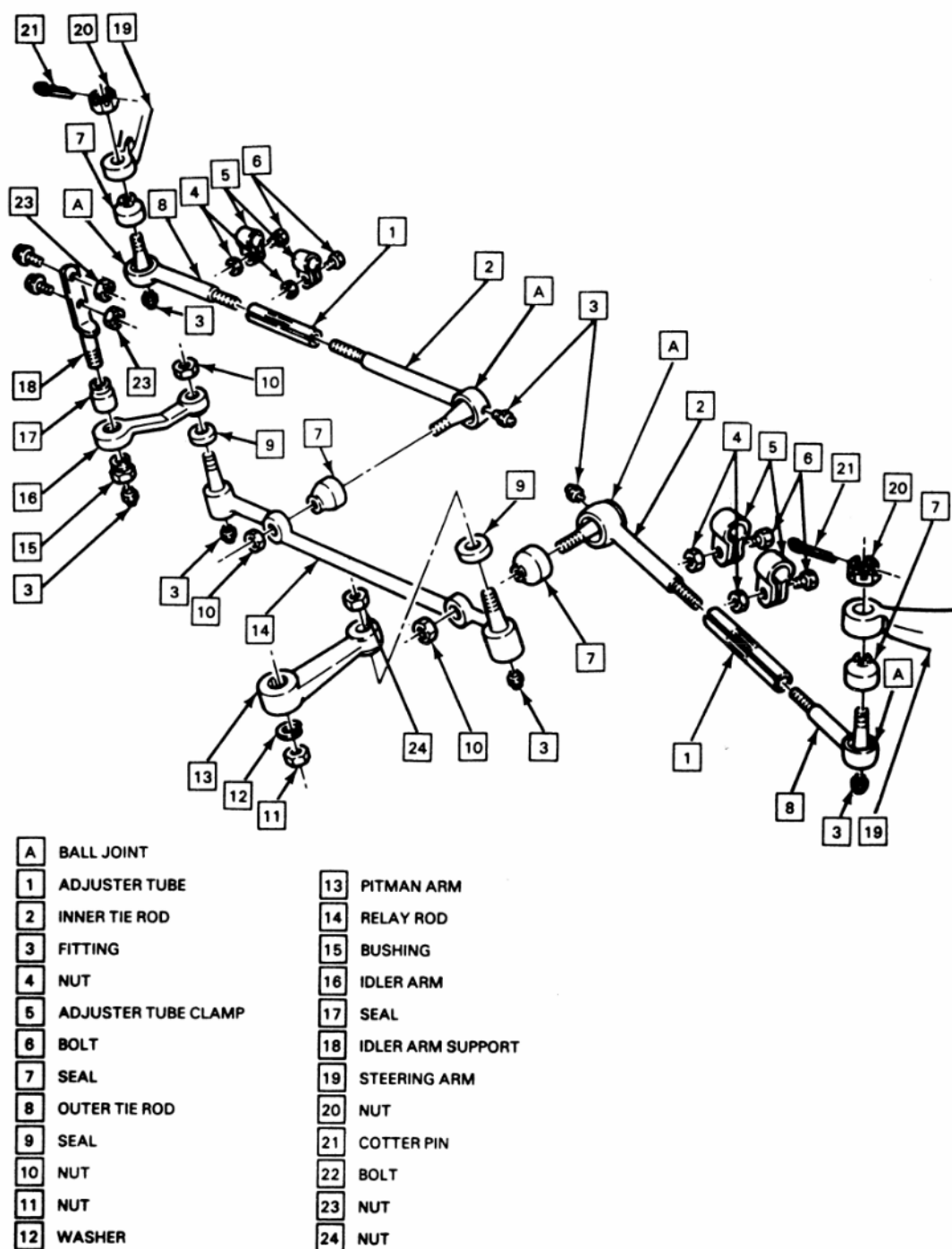


Fig. 1: Steering linkage (exploded view)

REMOVAL & INSTALLATION

PITMAN ARM

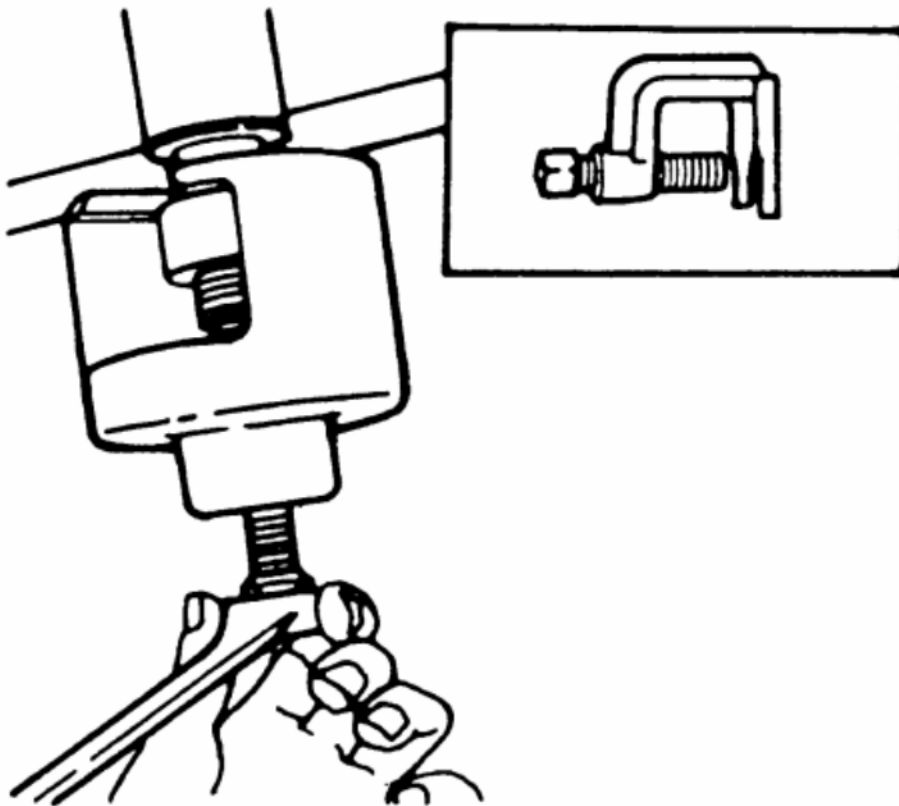


Fig. 2: Removing the Pitman arm with the tool shown

1. Raise the vehicle and support safely on jackstands.
2. Remove the nut from the Pitman arm ball stud.
3. Remove the relay rod from the Pitman arm by using a tool such as J-24319-01 or equivalent. Pull down on the relay rod to remove it from the stud.
4. Remove the Pitman arm nut from the Pitman shaft and mark the relation of the arm position to the shaft.
5. Remove the Pitman arm with tool J-5504 or tool J-6632 or equivalent. **DO NOT HAMMER ON THE PULLER.**

To install:

6. Position the Pitman arm on the Pitman shaft, lining up the marks made upon removal.
7. Position the relay rod on the Pitman arm. Use J-29193 or J-29194 or equivalent to seat the tapers. A torque of 15 ft. lbs. (20 Nm) is required. With the tapers seated, remove the tool, then install a prevailing torque nut, and tighten to 35 ft. lbs. (48 Nm).
8. Set the relay rod height. Torque the idler arm-to-frame mounting bolts to 61 ft. lbs. (83 Nm).
9. Lower the vehicle.

Idler Arm

1. Raise the vehicle and support safely on jackstands.
2. Remove the idler arm to frame nuts, washers, and bolts.
3. Remove the nut from the idler arm to relay rod ball stud.
4. Remove the relay rod from the idler arm by using J-24319-01 or equivalent.
5. Remove the idler arm.

To install:

6. Position the idler arm on the frame and LOOSELY install the mounting bolts, washers and nuts.
7. Install the relay rod to the idler arm, making certain seal is on the stud. Use J-29193 or J-29194 or equivalent to seat the tapers. A torque of 15 ft. lbs. (20 Nm) is required. With the tapers seated, remove the tool, then install a prevailing torque nut, and tighten to 35 ft. lbs. (48 Nm).
8. Set the relay rod height. Torque the idler arm-to-frame mounting bolts to 61 ft. lbs. (83 Nm).
9. Lower the vehicle.

RELAY ROD



Fig. 3: Removing the relay rod-to-tie rod nut



Fig. 4: Separating the tie rod from the relay rod using a gear puller

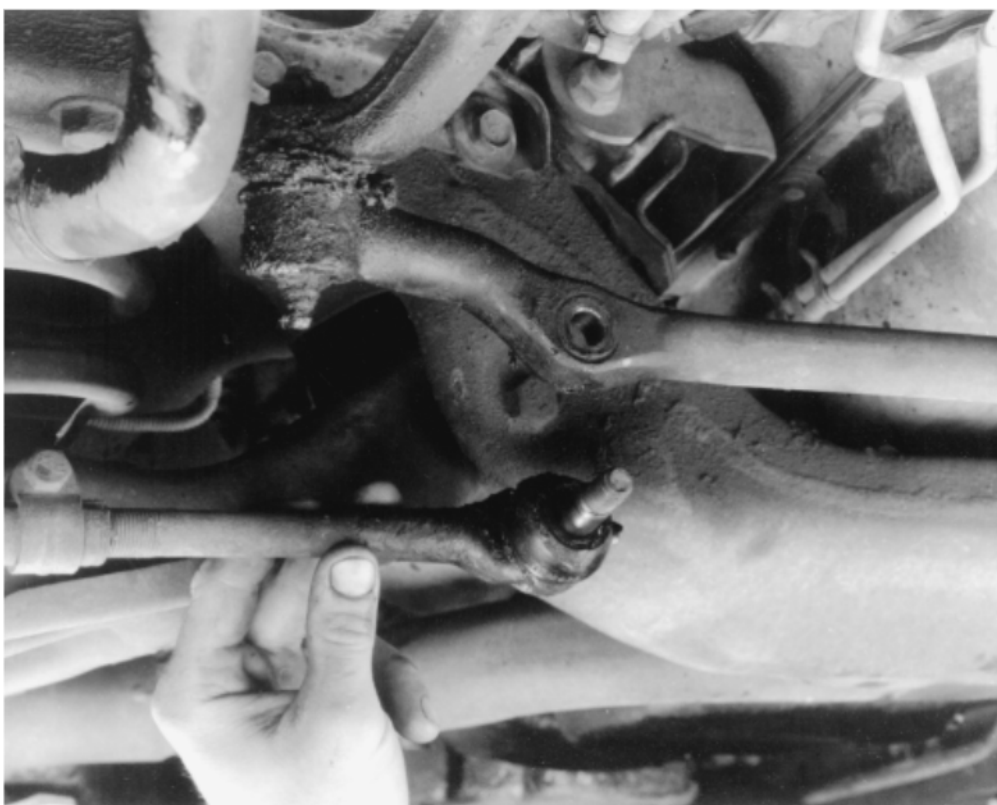


Fig. 5: Disconnecting the tie rod from the relay rod

During production, the installed position of the relay rod is carefully controlled to assure that the rod is at the proper height. Both the left end and the right end of the relay rod must be held at the same height. The side-to-side height is controlled by adjusting the position of the idler arm

Whenever disconnecting the relay rod assembly, it is important to first scribe the position of the idler arm-to-frame, and to reinstall the idler arm in the same position. Be sure to prevent the idler support from turning in the bushing, since that motion could result in improper relay rod height.

Whenever replacing the relay rod, or the idler arm, or the Pitman arm, it is mandatory to establish the correct height.

1. Raise the vehicle and support safely on jackstands.
2. Remove the inner ends of the tie rods from the relay rod.
3. Remove the nut from the relay rod ball stud attachment at Pitman arm.
4. Detach the relay rod from the Pitman arm by using tool such as J-24319-01 or equivalent. Shift the steering linkage as required to free the Pitman arm from the relay rod.
5. Remove the nut from the idler arm and remove the relay rod from the idler arm.

To install:

6. Install the relay rod to idler arm, making certain idler stud seal is in place. Use J-29193 or J-29194 or equivalent to seat the tapers. A torque of 15 ft. lbs. (20 Nm) is required. With the tapers seated, remove the tool, then install a prevailing torque nut, and tighten to 35 ft. lbs. (48 Nm).
7. Raise the end of the rod and install on the Pitman arm. Use J-29193 or J-29194 or equivalent to seat the tapers. A torque of 15 ft. lbs. (20 Nm) is required. With the tapers seated, remove the tool, then install a prevailing torque nut, and tighten to 35 ft. lbs. (48 Nm).
8. Install the tie rod ends to the relay rod. Lubricate the tie rod ends.
9. Install the damper, if equipped.
10. Set the relay rod height. Torque the idler arm-to-frame mounting bolts to 61 ft. lbs. (83 Nm).
11. Lower the vehicle.
12. Check and, if necessary, adjust front end alignment.

TIE ROD ENDS

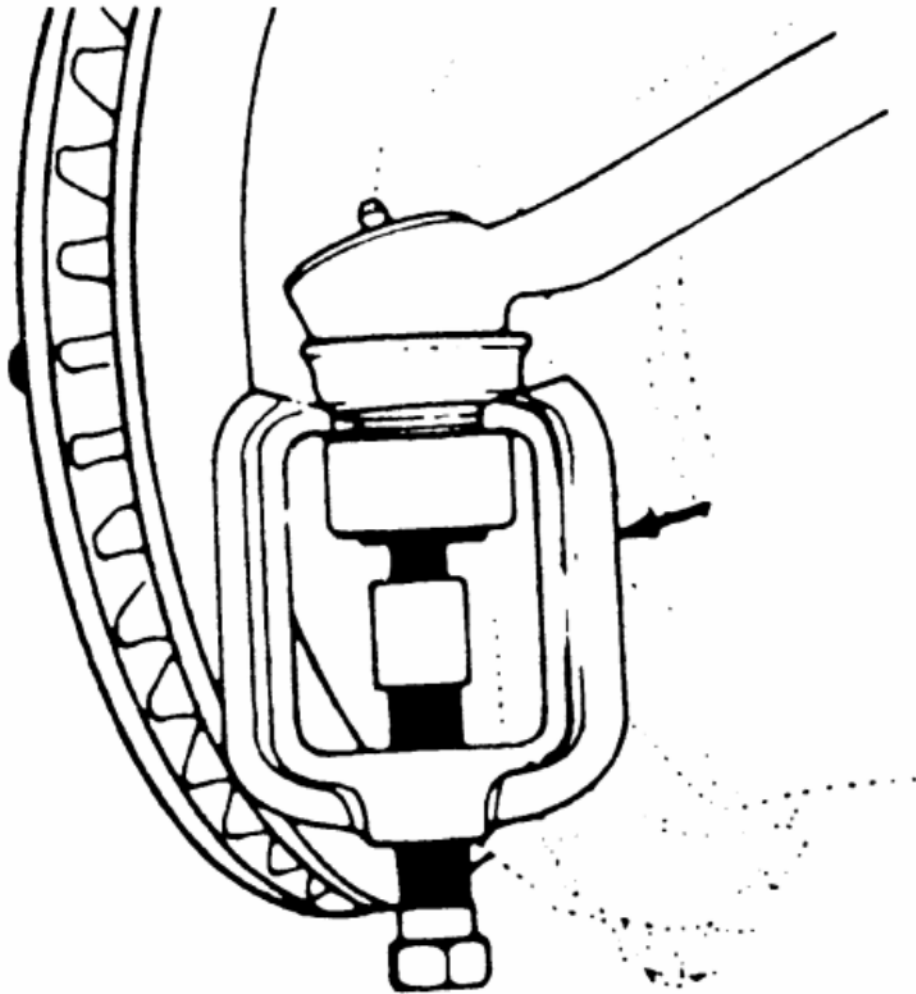


Fig. 6: Using a tie rod removal tool

1. Raise the vehicle and support safely on jackstands.
2. Remove the cotter pins from the ball studs and remove the castellated nuts.
3. Remove the outer ball stud by using the ball stud puller. If necessary, pull downward on the tie rod to disconnect it from the steering arm.
4. Remove the inner ball stud from the relay rod using a similar procedure.
5. Remove the tie rod end or ends to be replaced by loosening the clamp bolt and unscrewing them.

To install:

6. Lubricate tie rod threads with chassis grease and install new tie rod(s). Make sure both ends are an equal distance from the tie rod and tighten clamp bolts.
7. Make sure ball studs, tapered surfaces, and all threaded surfaces are clean and smooth, and free of grease. Install seals on ball studs. Install ball stud in steering arm and relay rod.

8. Rotate both inner and outer tie rod housings rearward to the limit of ball joint travel before tightening clamps. Make sure clamp slots and sleeve slots are aligned before tightening clamps. Make sure tightened bolts will be in horizontal position to 45 degrees upward (in the forward direction) when the tie rod is in its normal position. Make sure the tie rod end stays in position relative to the rod during the tightening operation. Tighten the clamps, and then return the assembly to the center of its travel.
9. Install ball stud nuts and torque to 35 ft. lbs. (47 Nm) Then tighten (do not loosen) further as required to align cotter pin holes in studs and nuts. Install new cotter pins.
10. Lubricate new tie rod ends and lower the vehicle.

POWER STEERING GEAR

ADJUSTMENTS

Adjust the worm bearing preload first, then proceed with the Pitman shaft over-center adjustment.

WORM BEARING PRELOAD

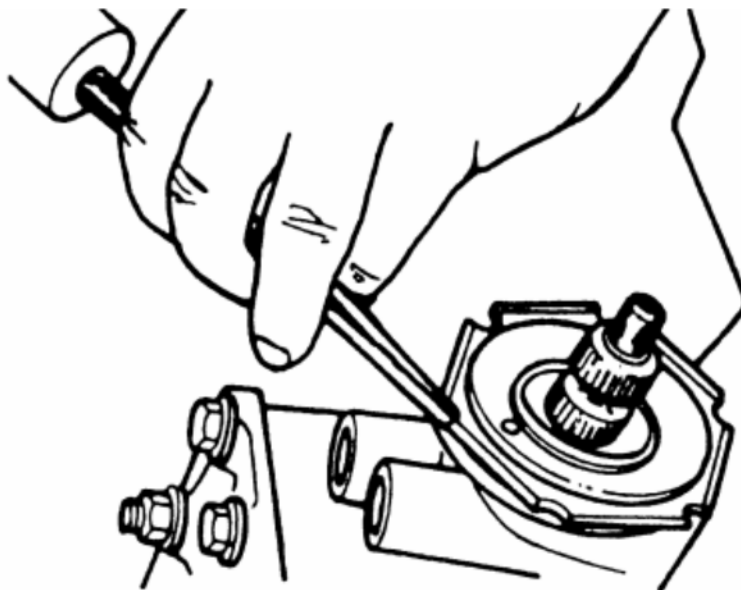
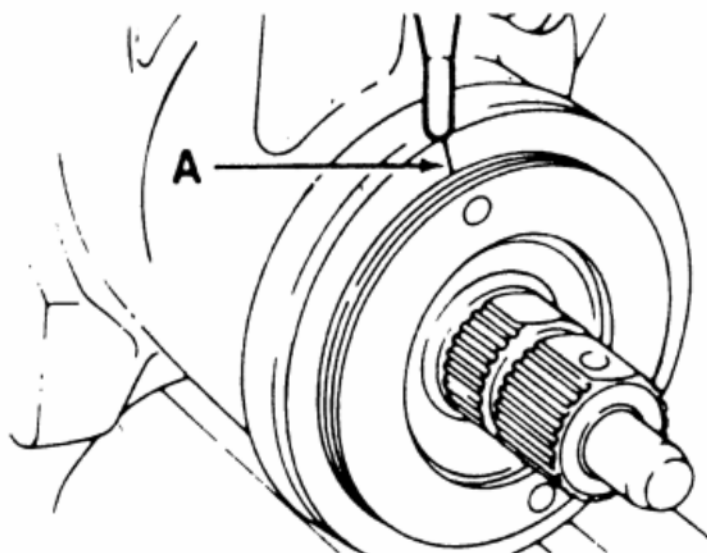


Fig. 1: Loosening the power steering gear adjuster plug



A. Index mark

Fig. 2: Marking the housing even with the adjuster plug hole

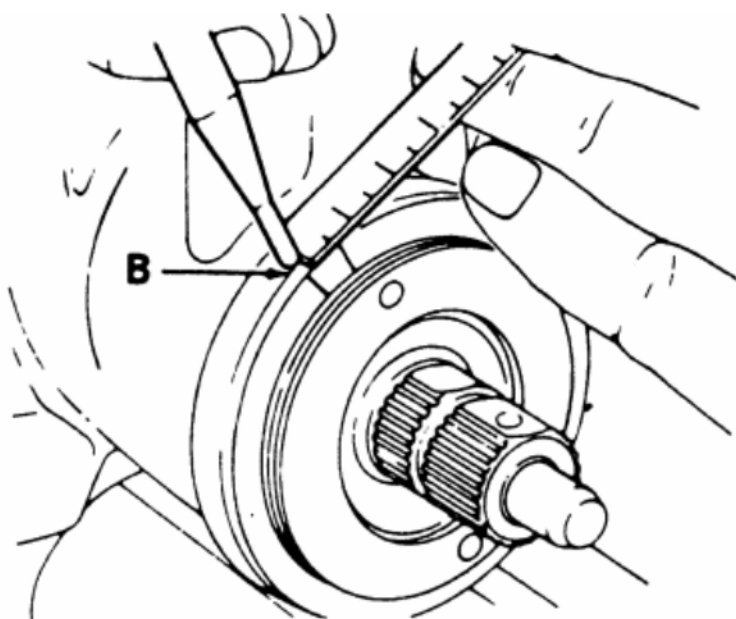


Fig. 3: Scribing the second index mark

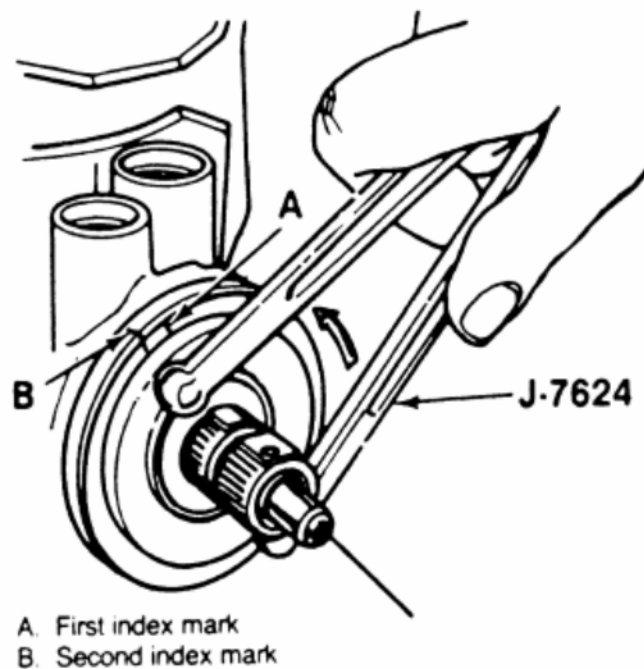
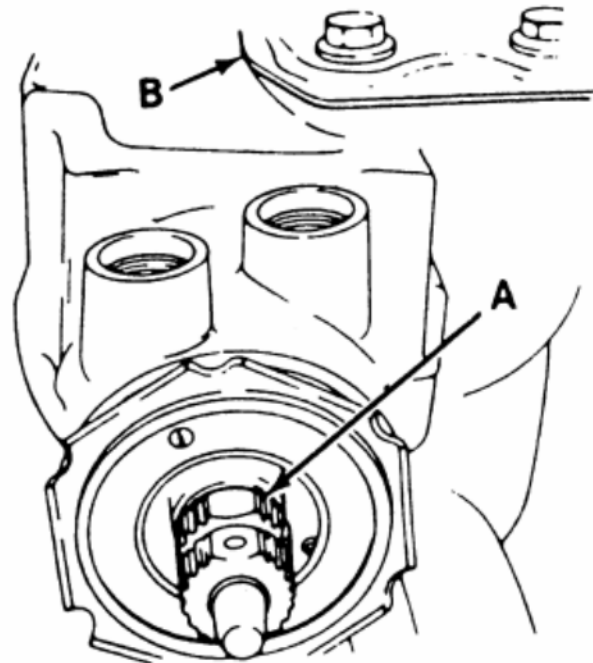


Fig. 4: Using a spanner wrench to align the adjuster plug with the second mark

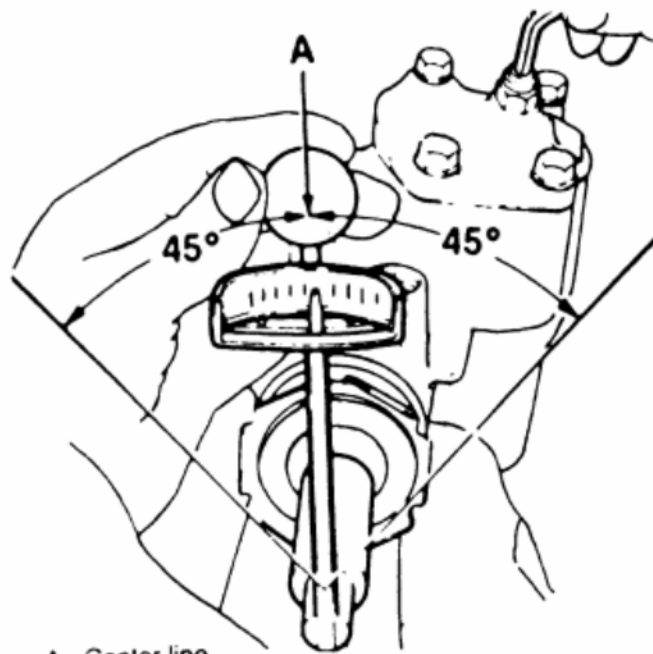
1. Disconnect the negative battery cable.
2. Remove the steering gear.
3. Rotate the stub shaft and drain the power steering fluid into a suitable container.
4. Remove the adjuster plug nut.
5. Turn the adjuster plug in (clockwise) using a suitable spanner wrench until the adjuster plug and thrust bearing are firmly bottomed in the housing. Tighten the adjuster plug to 20 ft. lbs. (27 Nm).
6. Place an index mark on the housing even with 1 of the holes in the adjuster plug.
7. Measure back counterclockwise $\frac{1}{2}$ in. (13mm) and place a second mark on the housing.
8. Turn the adjuster plug counterclockwise until the hole in the adjuster plug is aligned with the second mark on the housing.
9. Install the adjuster plug nut and using a suitable punch in a notch, tighten securely. Hold the adjuster plug to maintain alignment of the marks.
10. Install the steering gear and connect the negative battery cable.

Pitman Shaft Over-Center



- A. Stub shaft flat
- B. Side cover

Fig. 5: Aligning the stub shaft parallel with the top cover



- A. Center line

Fig. 6: Checking the over-center rotational torque

1. Disconnect the negative battery cable.
2. Remove the steering gear.

3. Rotate the stub shaft and drain the power steering fluid into a suitable container.
4. Turn the Pitman shaft adjuster screw counterclockwise until fully extended, then turn back 1 full turn.
5. Rotate the stub shaft from stop-to-stop and count the number of turns.
6. Starting at either stop, turn the stub shaft back half the total number of turns. This is the "Center" position of the gear. When the gear is centered, the flat on the stub shaft should face upward and be parallel with the side cover, and the master spline on the Pitman shaft should be in line with the adjuster screw.
7. Rotate the stub shaft 45 degrees each side of the center using a suitable torque wrench with the handle in the vertical position. Record the worm bearing preload measured on or near the center gear position.
8. Adjust the over-center drag torque by loosening the adjuster locknut and turning the Pitman shaft adjuster screw clockwise until the correct drag torque is obtained: Add 6-10 inch lbs. (0.7-1.1 Nm) of torque to the previously measured worm bearing preload torque. Tighten the adjuster locknut to 20 ft. lbs. (27 Nm). Prevent the adjuster screw from turning while tightening the adjuster screw locknut.
9. Install the steering gear and connect the negative battery cable.

REMOVAL & INSTALLATION

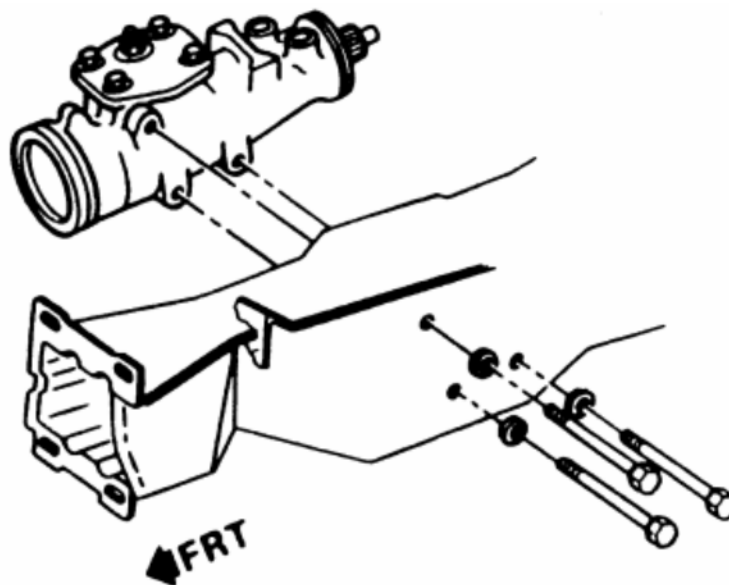


Fig. 7: Steering gear removal

1. Disconnect the negative battery cable. Remove the coupling shield.
2. Remove the retaining bolts at the steering coupling to steering shaft flange.
3. Remove the Pitman arm nut and washer. Mark the relation of the arm position to the shaft.

4. Remove Pitman arm using special tool J-6632 or its equal.
5. Remove the steering box to frame bolts. Remove the steering box.

On vehicles with power steering, remove the fluid hoses and cap them to prevent foreign material from entering the system.

To install:

6. Position the steering box and secure with the steering box-to-frame bolts.
7. Install the Pitman arm to the matchmarks made earlier.
8. Install the Pitman arm nut and washer.
9. Install the retaining bolts at the steering coupling to steering shaft flange.
10. Install the coupling shield.
11. Connect the negative battery cable.

POWER STEERING PUMP

REMOVAL & INSTALLATION

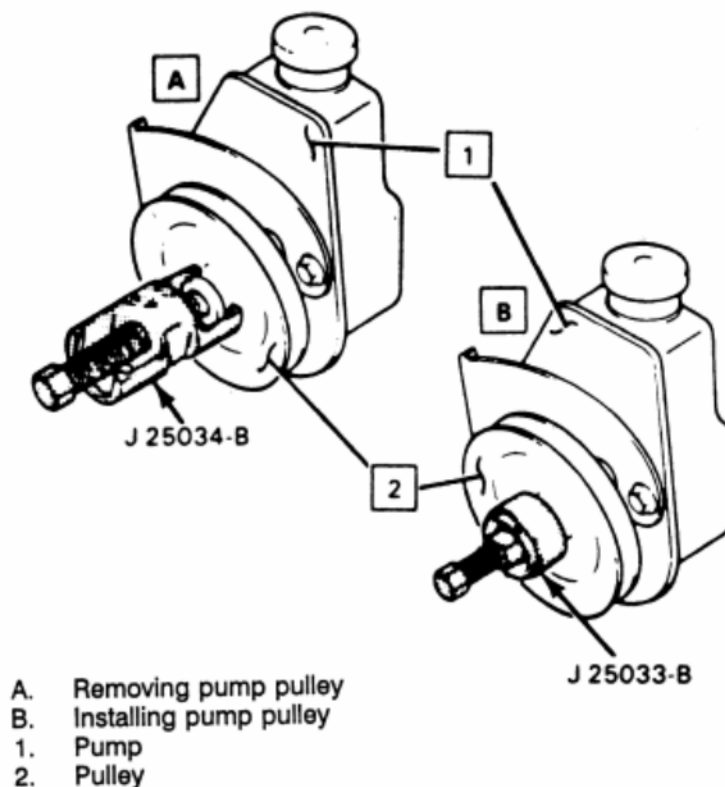


Fig. 1: Pulley removal

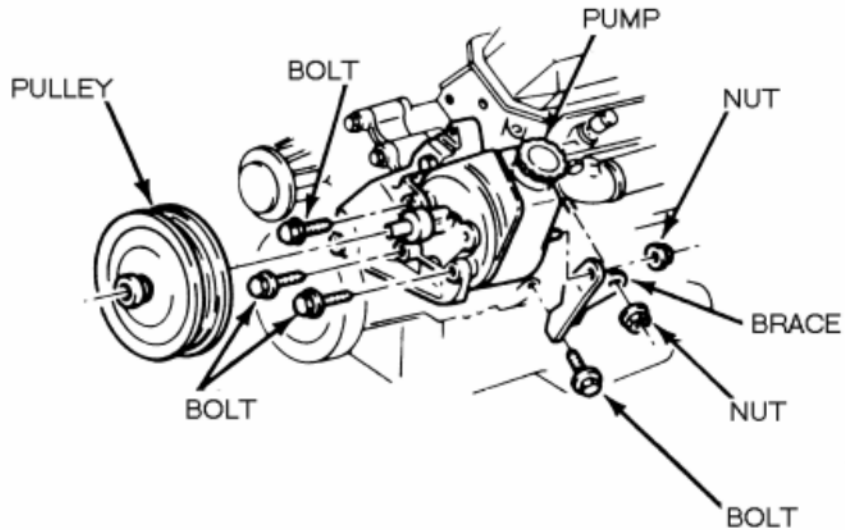


Fig. 2: Steering pump removal; V6

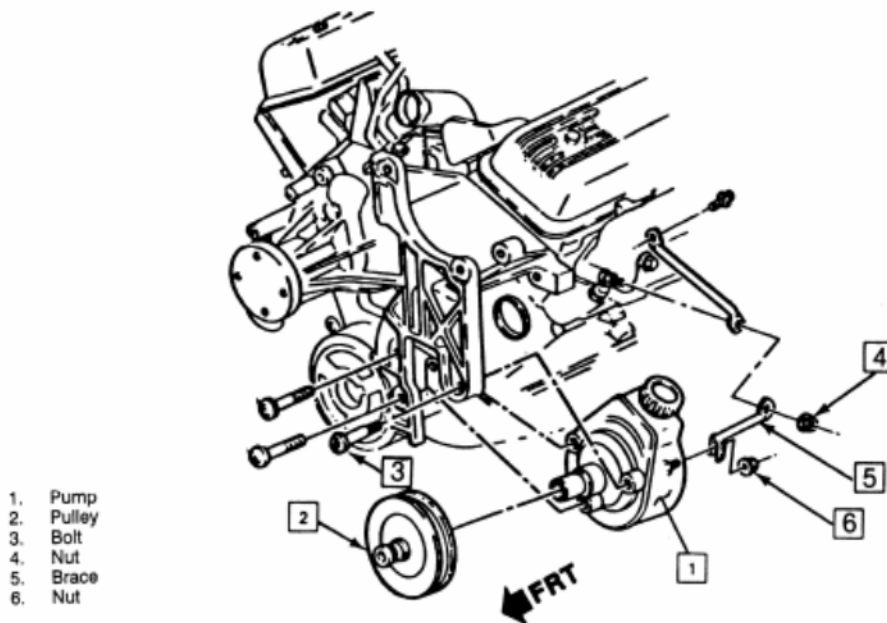


Fig. 3: Steering pump removal; V8

1. Remove the hoses at the pump and tape the openings shut to prevent contamination. Position the disconnected lines in a raised position to prevent leakage.
2. Remove the pump belt. Remove the pump pulley, as required
3. Loosen the retaining bolts and any braces, and remove the pump.

To install:

4. Install the pump on the engine with the retaining bolt handtight.
5. Connect and tighten the hose fittings.

6. Refill the pump with fluid and bleed by turning the pulley counterclockwise (viewed from the front). Stop the bleeding when air bubbles no longer appear.
7. Install the pump belt on the pulley and adjust the tension.

SYSTEM BLEEDING

1. Fill the reservoir with power steering fluid.

The use of automatic transmission fluid in the power steering system is NOT recommended.

2. Allow the reservoir and fluid to sit undisturbed for a few minutes.
3. Start the engine, allow it to run for a moment, then turn it off.
4. Check the reservoir fluid level and add fluid if necessary.
5. Repeat the above steps until the fluid level stabilizes.
6. Raise the front of the vehicle so that the wheels are off of the ground.
7. Start the engine and increase the engine speed to about 1500 rpm.
8. Turn the front wheels right to left (and back) several times, lightly contacting the wheel stops at the ends of travel.
9. Check the reservoir fluid level. Add fluid as required.
10. Repeat step 8 until the fluid level in the reservoir stabilizes.
11. Lower the vehicle and repeat steps 8 and 9.

SPECIFICATIONS CHARTS

FRONT SUSPENSION TORQUE SPECIFICATIONS

Component	U.S.	Metric
Ball joints		
Lower		
1982-88	90 ft. lbs.	120 Nm
1989-91	83 ft. lbs.	113 Nm
1992	80 ft. lbs.	108 Nm
Lower control arm pivot nuts		
1982-84	65 ft. lbs.	90 Nm
1985-86	60 ft. lbs.	83 Nm
1987-91	67 ft. lbs.	90 Nm
1992	61 ft. lbs.	83 Nm
Rebound bumper		
1982-92	20 ft. lbs.	27 Nm
Stabilizer bar link-to-control arm		
1982-91	15 ft. lbs.	20 Nm
1992		
w/o handling package	15 ft. lbs.	20 Nm
w/handling package	18 ft. lbs.	24 Nm
Stabilizer bar mounting bracket-to-frame		
1982-84	26 ft. lbs.	35 Nm
1985-92	39 ft. lbs.	53 Nm
Strut-to-knuckle bolts		
1982-86	195 ft. lbs.	265 Nm
1987-90	203 ft. lbs.	275 Nm
1991-92		
Step 1	125 ft. lbs.	170 Nm
Step 2 + 120 deg. turn or minimum	148 ft. lbs.	200 Nm
Strut-to-upper mount nut		
1982-84	50 ft. lbs.	70 Nm
1985-86	44 ft. lbs.	60 Nm
1987-88	52 ft. lbs.	70 Nm
1989-91	46 ft. lbs.	63 Nm
1992	44 ft. lbs.	60 Nm
Upper mount-to-wheelhouse tower		
1982-88	20 ft. lbs.	27 Nm
1989-92	18 ft. lbs.	24 Nm

REAR SUSPENSION TORQUE SPECIFICATIONS

Component	U.S.	Metric
Control arm-to-axle		
1982-87	68 ft. lbs.	93 Nm
1988	80 ft. lbs.	108 Nm
1989-92	85 ft. lbs.	115 Nm
Control arm-to-frame		
1982-87	68 ft. lbs.	93 Nm
1988	80 ft. lbs.	108 Nm
1989-92	85 ft. lbs.	115 Nm
Rebound bumper		
1982-92	20 ft. lbs.	27 Nm
Shock absorber		
Lower end		
1982-91	70 ft. lbs.	95 Nm
1992	66 ft. lbs.	90 Nm
Upper end		
1982-92	13 ft. lbs.	17 Nm
Stabilizer bar U-bolts		
1982-92	20 ft. lbs.	27 Nm
Stabilizer link-to-bar		
1982-87	12 ft. lbs.	17 Nm
1988-91	16 ft. lbs.	22 Nm
1992	18 ft. lbs.	24 Nm
Stabilizer link-to-frame		
1982-92	35 ft. lbs.	47 Nm
Torque arm-to-axle		
1982-88	100 ft. lbs.	135 Nm
1989-92	98 ft. lbs.	133 Nm
Torque arm-to-transmission		
1982	20 ft. lbs.	27 Nm
1983-85		
200C	20 ft. lbs.	27 Nm
All others	31 ft. lbs.	42 Nm
1986-92	31 ft. lbs.	42 Nm
Track bar-to-axle		
1982-87	93 ft. lbs.	125 Nm
1988-89	59 ft. lbs.	80 Nm
1990-91	61 ft. lbs.	83 Nm
1992	35 ft. lbs.	47 Nm

REAR SUSPENSION TORQUE SPECIFICATIONS

Component	U.S.	Metric
Track bar-to-frame brace		
1982-87	58 ft. lbs.	78 Nm
1988	78 ft. lbs.	105 Nm
1989-91	80 ft. lbs.	108 Nm
1992	76 ft. lbs.	103 Nm
Track bar brace-to-frame		
1982-87	58 ft. lbs.	78 Nm
1988	78 ft. lbs.	105 Nm
1989	61 ft. lbs.	83 Nm
1990-91	80 ft. lbs.	108 Nm
1992	76 ft. lbs.	103 Nm

WHEELS/HUBS/BEARINGS TORQUE SPECIFICATIONS

Component	U.S.	Metric
Front wheel bearings		
1982-92		
Seating torque	12 ft. lbs.	16 Nm
Back off	Until loose	
Adjusting torque	Hand tight	
Wheel lug nuts		
1982-85		
Aluminum wheels	100 ft. lbs.	140 Nm
Steel wheels	80 ft. lbs.	110 Nm
1986-91	80 ft. lbs.	110 Nm
1992	100 ft. lbs.	140 Nm

STEERING COMPONENTS TORQUE SPECIFICATIONS

Component	U.S.	Metric
Power steering gear		
Adjuster plug locknut		
1982-92	80 ft. lbs.	110 Nm
Ball return guide clamp screw		
1982-92	48 inch lbs.	5 Nm
Coupling flange bolt		
1982-92	30 ft. lbs.	40 Nm
Coupling flange nuts		
1982-92	20 ft. lbs.	27 Nm
Gear-to-frame		
1982-84	80 ft. lbs.	110 Nm
1985-88	70 ft. lbs.	95 Nm
1989-91	66 ft. lbs.	90 Nm
1992	73 ft. lbs.	99 Nm
Mesh load adjuster screw locknut		
1982-91	20 ft. lbs.	27 Nm
1992	36 ft. lbs.	49 Nm
Pitman shaft nut		
1982-92	185 ft. lbs.	240 Nm
Pressure hose-to-gear		
1982-92	20 ft. lbs.	27 Nm
Rack piston plug		
1982-91	75 ft. lbs.	100 Nm
1992	111 ft. lbs.	150 Nm
Return hose-to-gear		
1982-92	20 ft. lbs.	27 Nm
Side cover bolts		
1982-92	45 ft. lbs.	60 Nm
Power steering pump		
Brace-to-engine bolt		
1982-92	18 ft. lbs.	25 Nm
Brace-to-engine bolt		
1982-92	24 ft. lbs.	33 Nm
Brace-to-pump nut		
1982-92		
V6	18 ft. lbs.	25 Nm
V8	37 ft. lbs.	50 Nm
Flow control fitting		
1982-92	35 ft. lbs.	48 Nm
Pressure hose		
1982-92	20 ft. lbs.	27 Nm
Pump bracket bolts		
1982-92	24 ft. lbs.	33 Nm
Pump bracket-to-stud bolts		
1982-92	37 ft. lbs.	50 Nm
Pump bracket-to-stud nuts		
1982-92	24 ft. lbs.	33 Nm
Reservoir bolt		
1982-92	35 ft. lbs.	48 Nm

STEERING COMPONENTS TORQUE SPECIFICATIONS

Component	U.S.	Metric
Steering column		
Bracket-to-column bolt		
1982-88	30 ft. lbs.	40 Nm
Breakaway bracket-to-column nuts		
1982-88	25 ft. lbs.	34 Nm
Ignition switch screws		
1982-92	35 inch lbs.	4 Nm
Inflator module-to-steering wheel	25 inch lbs.	3 Nm
Intermediate shaft-to-flex coupling bolt		
1982-92	30 ft. lbs.	40 Nm
Intermediate shaft-to-flex coupling nuts		
1982-89	20 ft. lbs.	27 Nm
1990-92	44 ft. lbs.	60 Nm
Intermediate shaft-to-column shaft		
1982-88	55 ft. lbs.	70 Nm
1989-92	44 ft. lbs.	60 Nm
Lock cylinder housing		
1989	80 inch lbs.	9 Nm
Steering column shroud screws		
1982-88	100 inch lbs.	11 Nm
Steering column toe plate		
1982-88	45 inch lbs.	5 Nm
Steering wheel nut		
1982-92	30 ft. lbs.	40 Nm
Steering wheel pad screws	28 inch lbs.	4 Nm
Turn signal switch screws		
1982-89	35 inch lbs.	4 Nm
1990-92	27 inch lbs.	3 Nm
Steering linkage		
Idler arm-to-frame		
1982	50 ft. lbs.	70 Nm
1983-84	60 ft. lbs.	80 Nm
1985-91	50 ft. lbs.	70 Nm
1992	63 ft. lbs.	86 Nm
Idler arm-to-intermediate (relay) rod nut		
1982-84	40 ft. lbs.	54 Nm
1985-92	35 ft. lbs.	48 Nm
Intermediate (relay) rod-to-Pitman arm		
1982	40 ft. lbs.	54 Nm
1983-84	45 ft. lbs.	60 Nm
1985-92	35 ft. lbs.	48 Nm
Pitman arm-to-steering gear nut		
1982-92	180 ft. lbs.	250 Nm
Tie rod adjusting sleeve nuts		
1982-92	14 ft. lbs.	19 Nm
Tie rod-to-intermediate (relay) rod nut		
1982-84	40 ft. lbs.	54 Nm
1985-88	35 ft. lbs.	48 Nm
1989-92	40 ft. lbs.	54 Nm
Tie rod-to-knuckle ball stud*		
1982	40 ft. lbs.	54 Nm
1983-84	30 ft. lbs.	40 Nm
1985-92	35 ft. lbs.	48 Nm
Toerod outer end jamnut		
1993-92	50 ft. lbs.	68 Nm

* Do not back off; advance to nearest hole for cotter pin