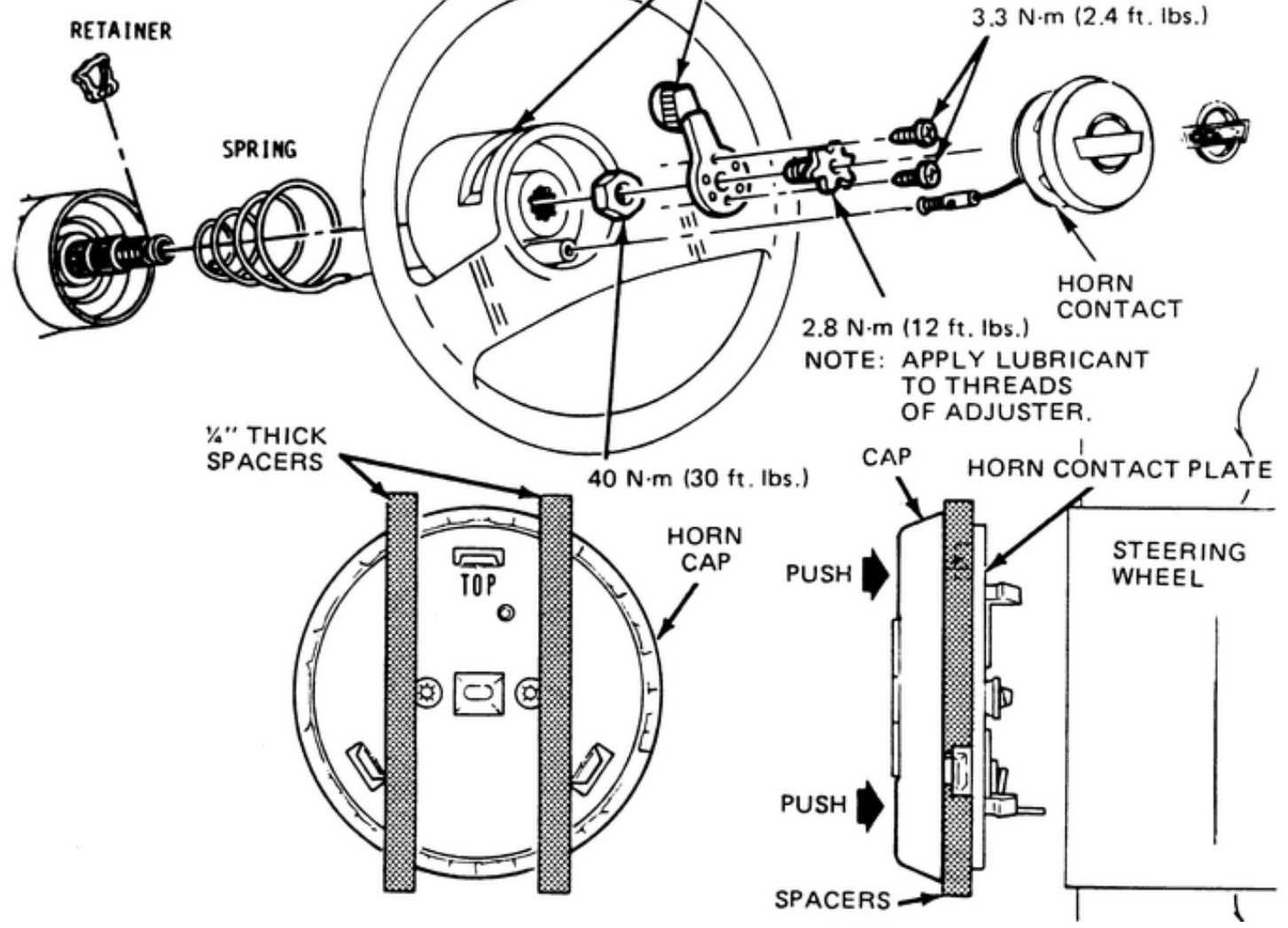
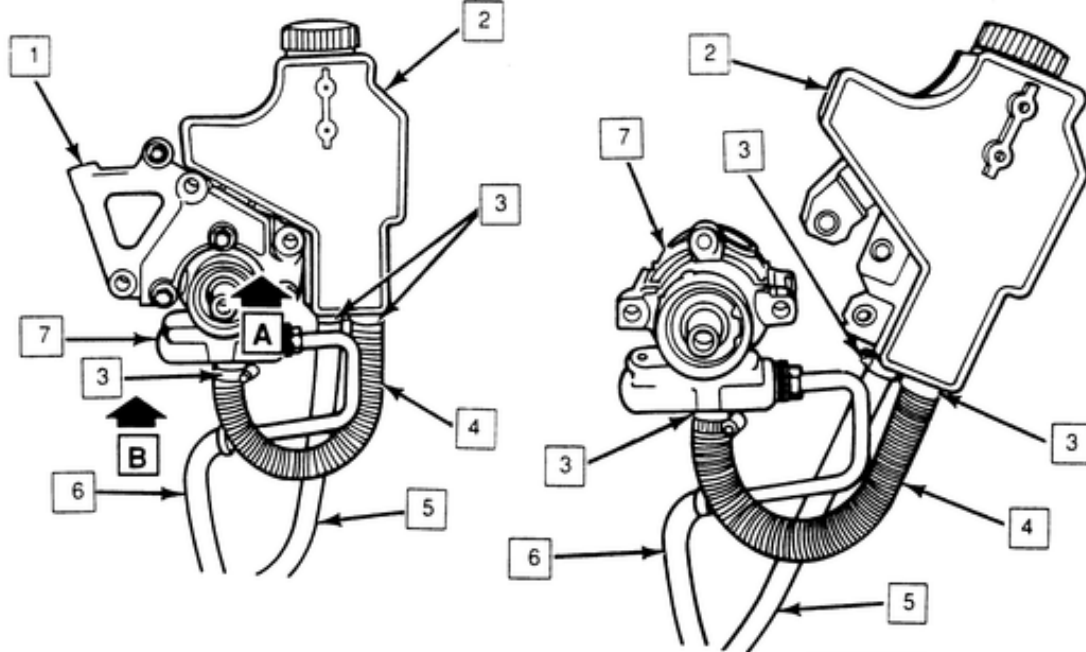
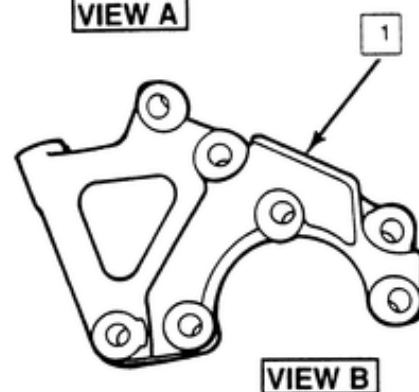


NOTE: LEVER MUST BE INSTALLED THROUGH SLOT IN TOP OF STRG. WHEEL.



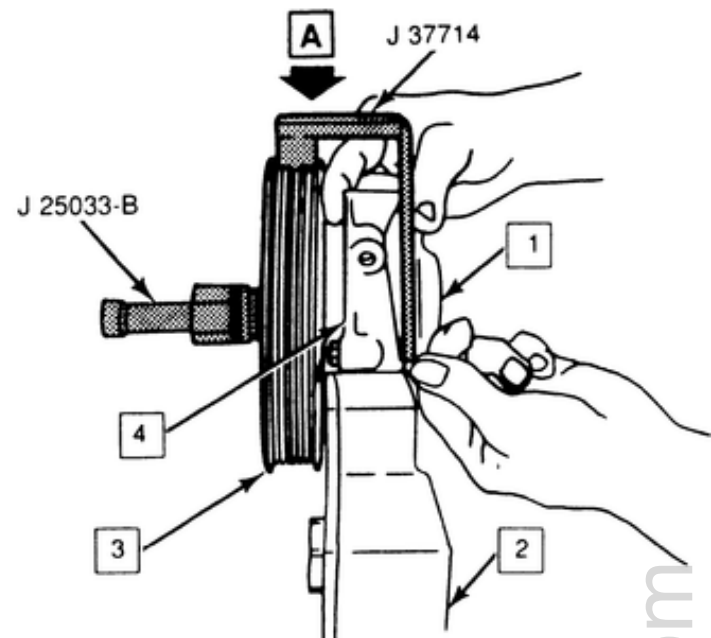
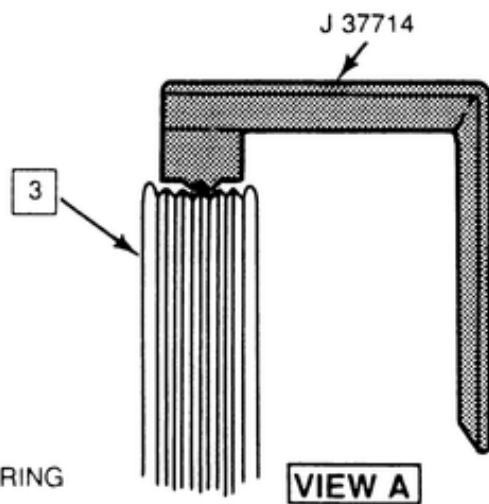


VIEW A



VIEW B

- 1 BRACKET, POWER STEERING PUMP MOUNTING
- 2 RESERVOIR, POWER STEERING
- 3 CLAMPS
- 4 HOSE, POWER STEERING RESERVOIR
- 5 HOSE, COOLER ASSEMBLY OUTLET
- 6 HOSE ASSEMBLY, POWER STEERING GEAR INLET
- 7 PUMP, POWER STEERING



- 1 PUMP, POWER STEERING
- 2 RESERVOIR, POWER STEERING
- 3 PULLEY, POWER STEERING PUMP
- 4 BRACKET, POWER STEERING PUMP MOUNTING

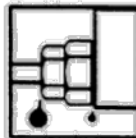
Bleeding Air from Power Steering Systems

Before bleeding: Inspect steering system.
Check, and correct as needed:



Hoses must not touch any other part of vehicle.

- Steering system noise could be caused by hose touching frame, body, or engine.



All hose connections must be tight.

- Loose connections might not leak but could allow air into system.

When to bleed:

After any component replacement
After disconnecting fluid line
In case of steering system noise

Why bleed?

To prevent pump damage
To ensure proper system operation
To stop steering system noise

Power Steering Fluid

Use only clean, new power steering fluid. Fluid must be:

Conventional/Climate:

GM #1052884 – 16 ounce

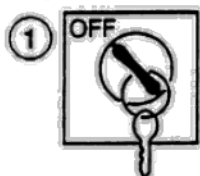
#1050017 – 32 ounce

Cold Climate:

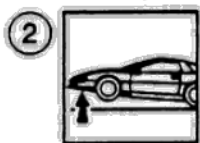
GM #12345866 – 16 ounce

#12345867 – 32 ounce

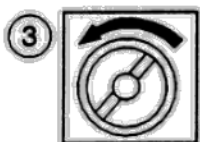
How to bleed:



1 OFF
Switch ignition off.



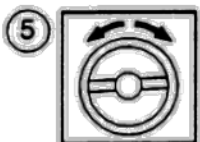
2
Raise front wheels off ground



3
Turn steering wheel full left.

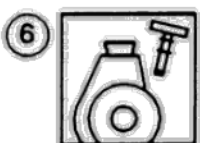


4
Fill fluid reservoir to "FULL COLD" level. Leave cap off.



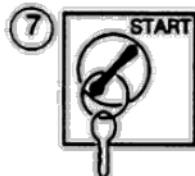
5
With assistant checking fluid level and condition, turn steering wheel lock-to-lock at least 20 times. Engine remains off.

- On systems with long return lines or fluid coolers, turn steering wheel lock-to-lock at least 40 times.
- Trapped air may cause fluid to overflow. Thoroughly clean any spilled fluid to allow for leak check.
- Keep fluid level at "FULL COLD."



6
While turning wheel, check fluid constantly.

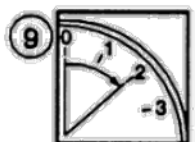
- No bubbles are allowed.
- For any sign of bubbles, recheck connections. Repeat step 5.



7 START
Start engine. With engine idling, maintain fluid level. Reinstall cap.



8
Return wheels to center. Lower front wheels to ground



9
Keep engine running for two minutes.



10
Turn steering wheel in both directions.

Verify:

- ☒ Smooth power assist
- ☒ Noiseless operation
- ☒ Proper fluid level
- ☒ No system leaks
- ☒ Proper fluid condition

- No bubbles, no foam, no discoloration

11 If all proper conditions apply, procedure is complete.

12 If any problem remains, see "Special Conditions."

Special Conditions:

Fluid



- Foam or bubbles in fluid
Fluid must be completely free of bubbles. In step 5, be alert to periodic bubbles that could indicate a loose connection or leaky O-ring seal in either the return hose or pressure hose.
- Discolored fluid
(milky, opaque, or light tan color)

Switch ignition off. Wait two minutes. Recheck hose connections. Repeat steps 7-10. If condition still exists, replace and check a possible cause:

- ☒ Return hose clamps
- ☒ Return hose O-rings
- ☒ Pressure hose O-rings
- ☒ Gear cylinder line O-rings

Fill system and repeat bleed procedure for each possible cause. Repeat steps 7-10 to verify whether noise had been eliminated.

Noise



- Pump whine or groan

With engine running, recheck hoses for possible contact with frame body or engine. If no contact is found, follow either method below to cool down fluid and repressurize system.

Method 1: Normal Cool Down

Switch engine off.
Wait for system to cool.
Install reservoir cap.

Method 2: partial Fluid Replacement

Switch engine off.
Use a suction device to remove fluid from reservoir. Refill with cool, clean fluid. Install reservoir cap.

After either method of cooling, start engine and allow engine to come up to operating temperature. If noise persists, remove and replace power steering pump. Repeat bleed procedure following pump replacement.

TORQUE SPECIFICATIONS

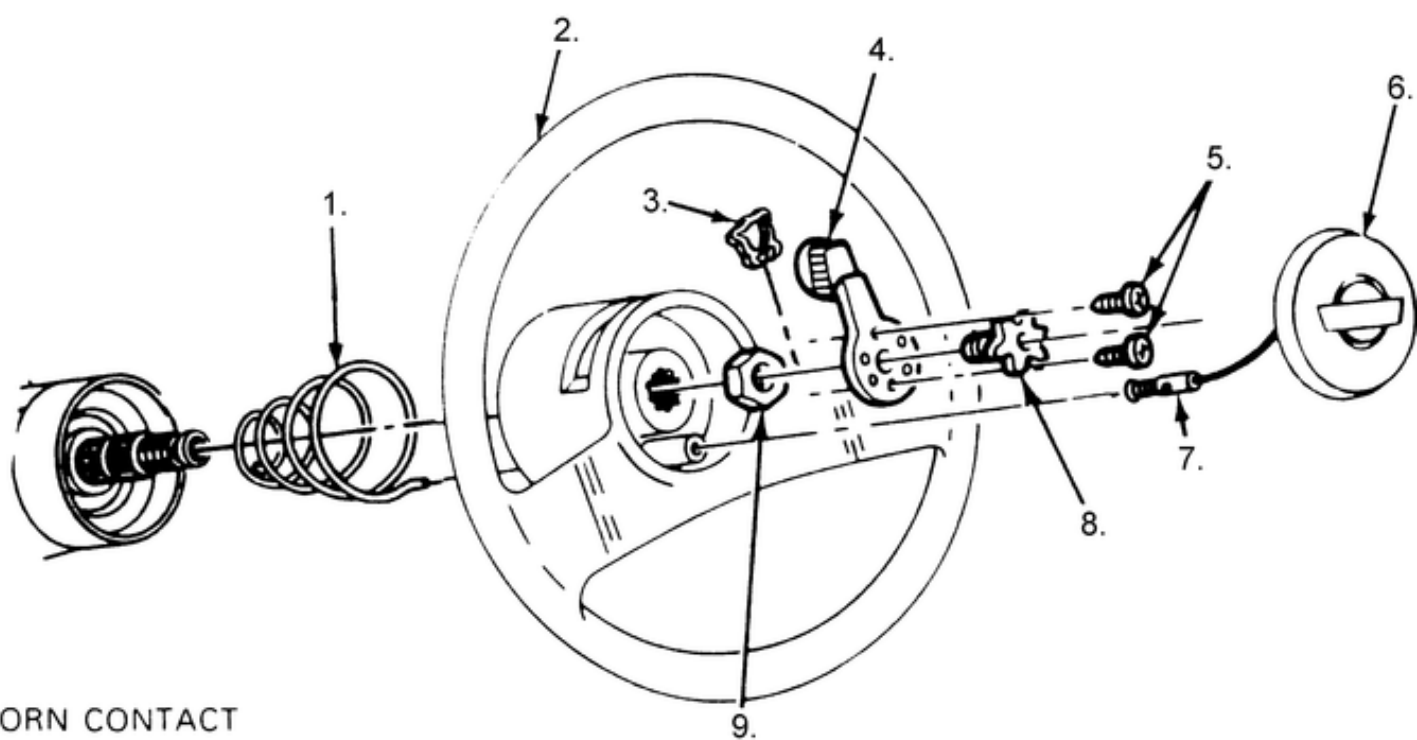
Component	ft. lbs.	inch lbs.	Nm
Wheels			
Lug nuts	100		136
Front Suspension			
Transverse spring			
Lower control arm ball stud nuts			
minimum	50		68
maximum	88		120
Spring protector bolts	18		25
Shock absorber-to-lower control arms lower mounting nuts	19		26
Spring retainer nuts (at proper trim height)	46		63
Stabilizer shaft link nuts (at proper trim height)	33		45
Shock Absorber			
Without selective ride control			
Upper and lower shock mounting nuts	19		26
With selective ride control			
Lower shock absorber mounting nuts and bolts	19		26
Upper mounting nut			
1992-95 vehicles	31		42
1996 vehicles	19		26
Upper Ball Joints			
Ball joint nuts	13		18
Upper control arm ball stud hex nut			
minimum	33		45
maximum (to insert cotter pin)	63		85
Lower Ball Joints			
Lower control arm ball stud nut			
minimum	50		68
maximum (to insert cotter pin)	88		120
Stabilizer Shaft			
Stabilizer shaft link nuts to 35 ft. lbs. (48 Nm)	35		48
Insulator clamp bolts to 40 ft. lbs. (54 Nm)	40		54
Upper Control Arm nuts			
1984-86 vehicles	63		85
1987 vehicles	48		65
1988-96 vehicles	37		50
Lower Control Arm bolts			
1984-87 vehicles	96		130
1988-96 vehicles	82		112
Knuckle and Spindle			
Tie rod ball stud hex nut			
minimum	35		47
maximum (to insert cotter pin)	52		70
Front hub and bearing nuts	46		62
Rear Suspension			
Transverse spring anchor plate bolts	37		50
Shock Absorber			
1984-87 vehicles			
Shock absorber-to-body bracket nut and bolt	66		90
Shock absorber-to-knuckle washer and nut	60		80

TORQUE SPECIFICATIONS

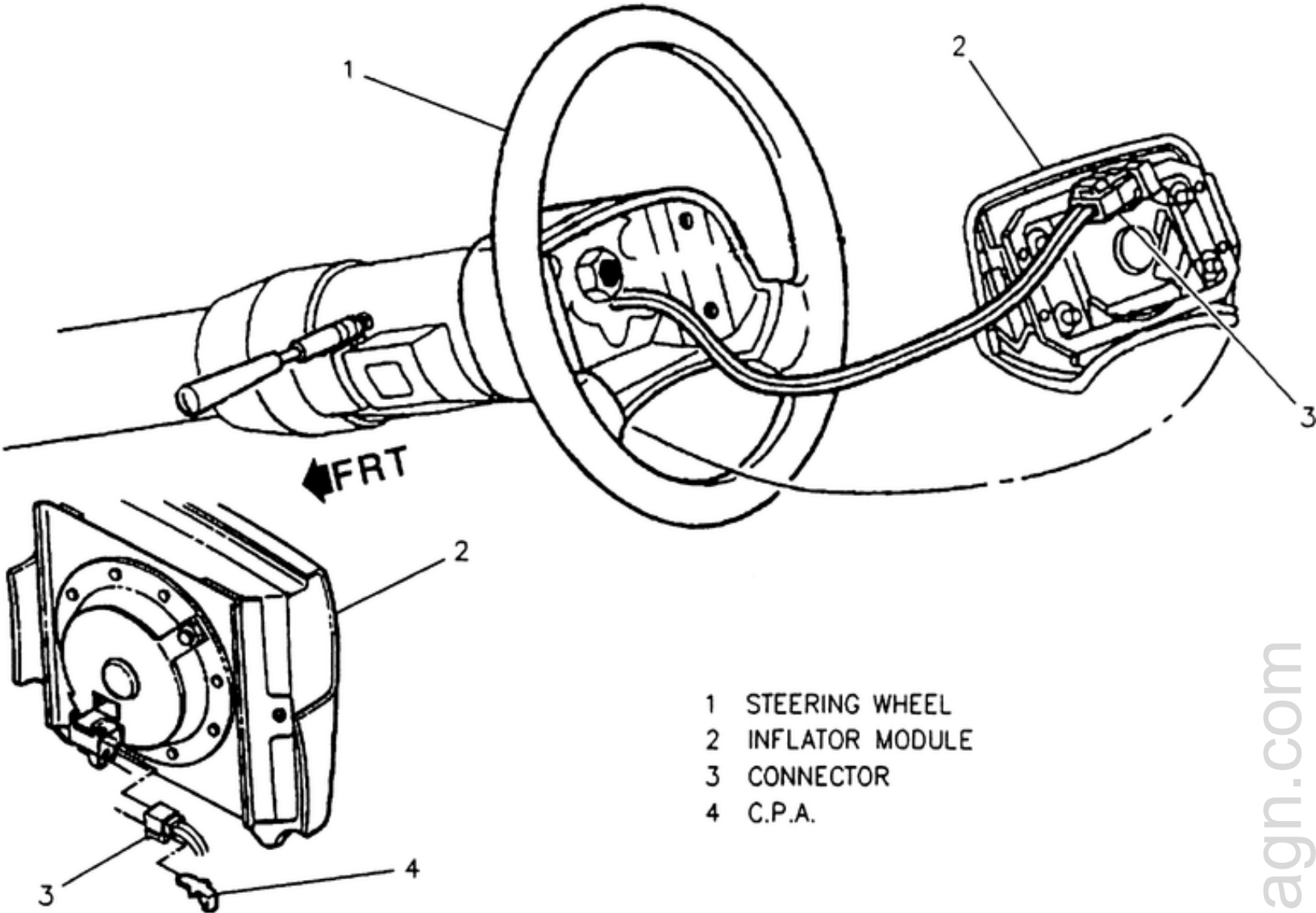
Component	ft. lbs.	inch lbs.	Nm
Rear Suspension cont.			
Shock Absorber			
1988-96 vehicles			
Upper bracket retaining nut	19		26
Upper bracket mounting bolts	22		30
Lower mounting nut	61		83
Control Rods			
Bracket bolt	63		85
Knuckle nut	140		190
Spindle Support Rod			
Spindle/support rod-to-knuckle nut	107		145
Spindle/support rod adjustment nut	186		253
Stabilizer Shaft			
1984-88 vehicles			
Stabilizer bar-to-body retainers	15-22		20-30
1989 vehicles			
Bracket nuts	18		25
Link bolt nut	35		48
1990-96 vehicles			
Stabilizer shaft bracket nuts	18		25
Stabilizer shaft link-to-stabilizer shaft nuts	39		53
Stabilizer shaft link-to-link bracket nuts	31		42
Fuel tank-to-stabilizer shaft bracket nuts	18		25
Mufflers-to-muffler hangers nuts	40		54
Hub and Bearing			
Wheel hub mounting bolts	66		90
Spindle nut	164		223
Steering			
Steering Wheel			
1984-89 vehicles			
Steering wheel retaining nut	30		41
Telescope lever shaft lock knob screw		30	2.8
Telescope adjustment lever screws		40	3.3
1990-96 vehicles			
Steering wheel jam nut	30		41
SIR inflator module retaining screws		86	9.7
Turn signal switch			
1990-96 vehicles			
Turn signal switch assembly screws		30	3.4
Switch arm mounting screws		20	2.3
Ignition switch			
Ignition and dimmer switch mounting stud		35	4
Dimmer switch screw and nut		35	4
Lock cylinder retaining screw		22	2.5
Front Tie Rod Ends			
Hex nut			
minimum	35		47
maximum (to insert cotter pin)	52		70

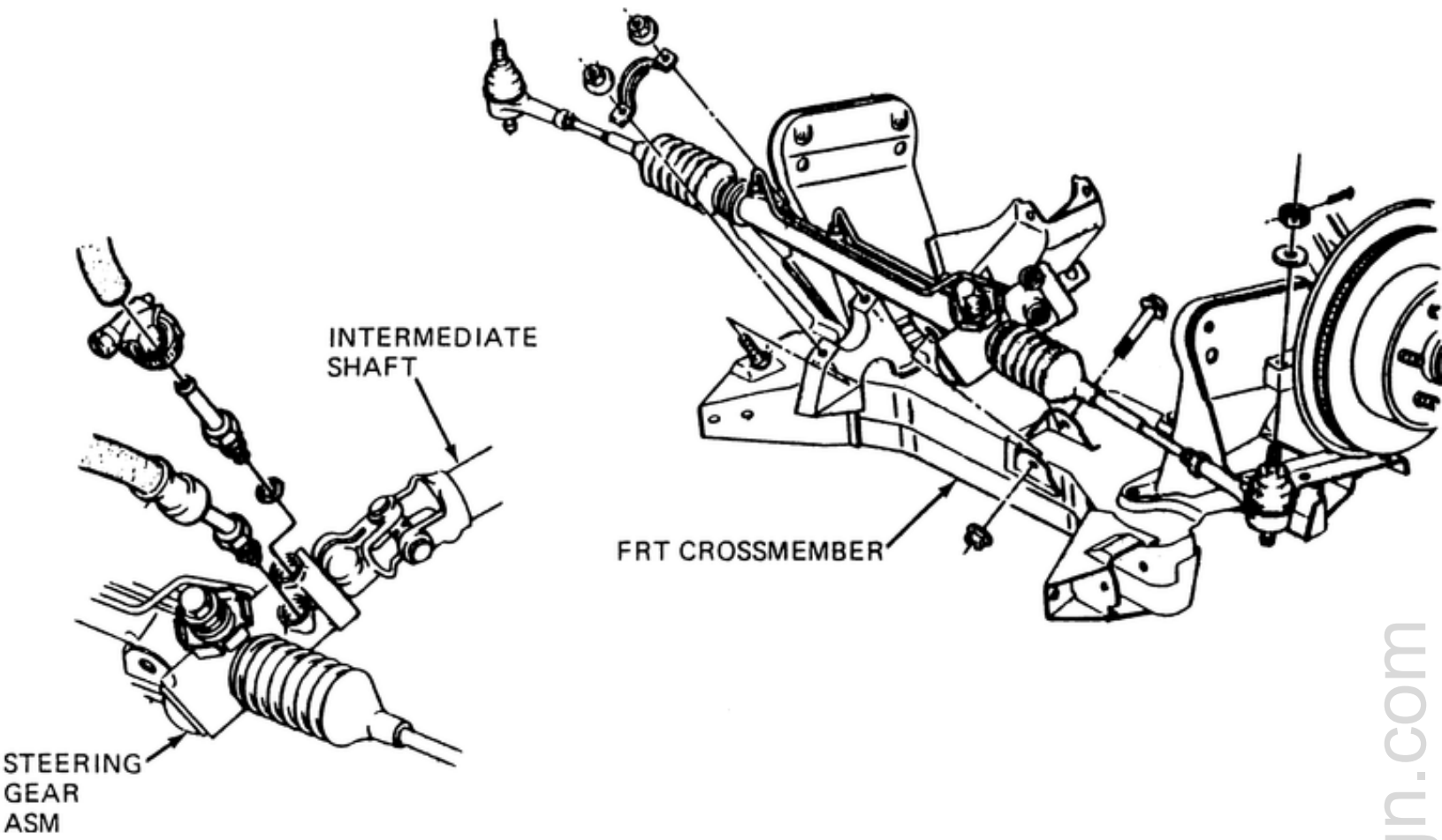
TORQUE SPECIFICATIONS

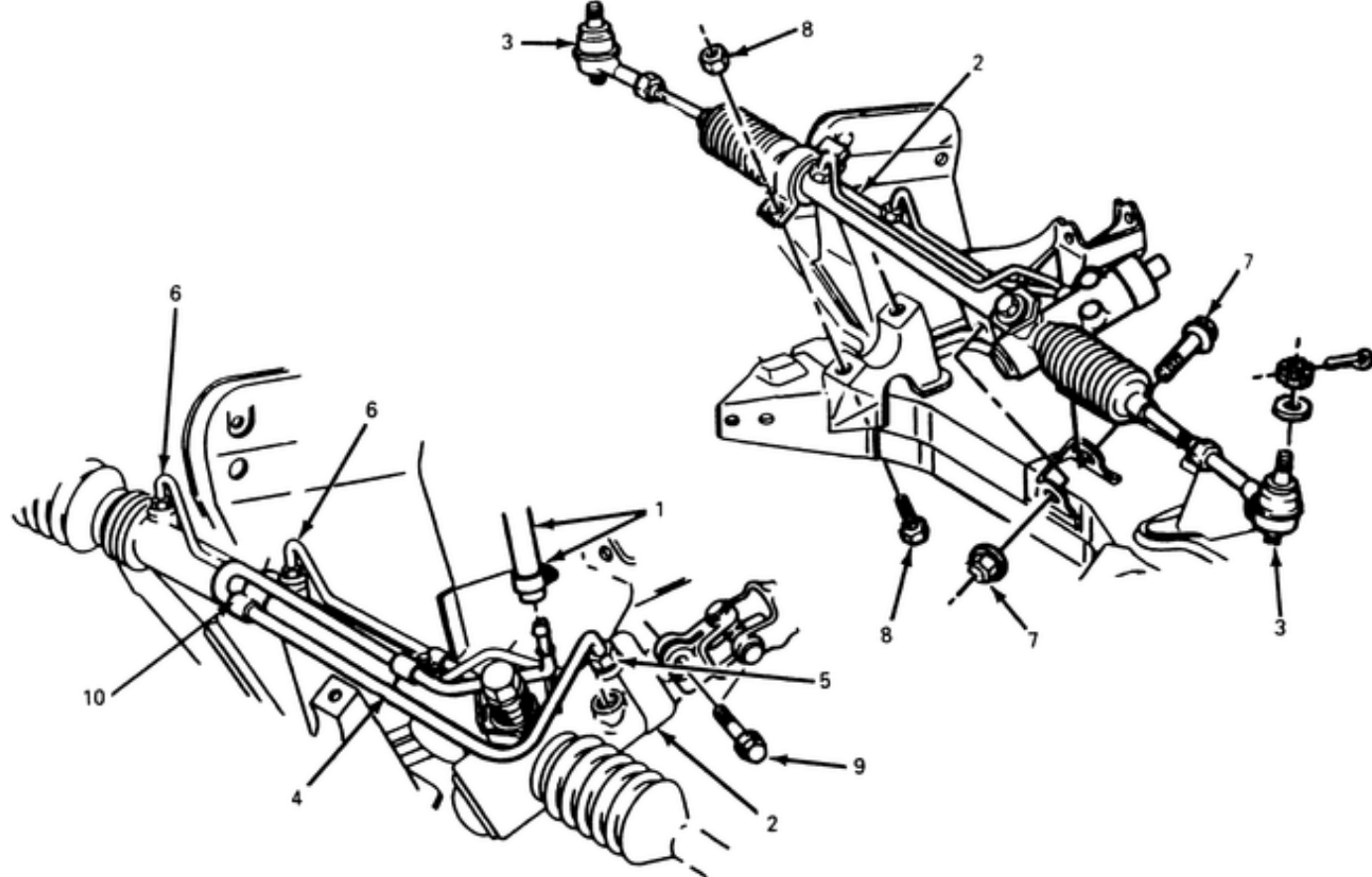
Component	ft. lbs.	inch lbs.	Nm
Steering cont.			
Front Tie Rod Ends			
Jam nut	50		68
Rear Tie Rod Ends			
Axle rod-to-differential carrier bolts	55		74
Axle tie rod nuts	37		50
Tie rod jam nuts	49		67
Power Steering Gear			
1987-96 vehicles			
Intermediate shaft-to-gear pinch bolt	44		60
Rack saddle (clamp) mounting nuts	18		25
Rack mounting through bolt and nut	30		40
Outlet hose clamp		22	2.5
Outlet hose fitting	21		28
Inlet hose fitting	20		27
Intermediate shaft pinch bolt	44		60
Power Steering Pump			
VIN 8 engines			
Power steering pump mounting bolts	18		25
Power steering pump rear bracket-to-rear brace bolt	24		33
Engine mount bolts	41		56
Power steering pump rear bracket-to-power steering pump bolt	18		25
Power steering reservoir assembly bracket bolts		89	10
VIN P & 5 engines			
Power steering pump and front bracket mounting bolts	18		25
VIN J engines			
Pump reservoir hose clamp screw		22	2.5
1993-96 vehicles			
Pump retaining bolts	19		25
Outlet hose-to-cooler clamp screw		22	2.5
Power steering gear inlet pipe fitting	21		28
A/C Compressor-to-pump bracket bolts	19		26
1990-92 vehicles			
Gear inlet pipe fitting	21		27
Cooler assembly outlet hose clamp screw		22	2.5
A/C compressor-to-pump bracket bolt	19		26
Pump bracket -to-cylinder head bolts	19		26
Power steering pump reservoir screws		13	1.5



- 1. SPRING, HORN CONTACT
- 2. WHEEL, STEERING
- 3. RETAINER, STEERING WHEEL NUT
- 4. LEVER, TELESCOPE ADJUSTMENT
- 5. SCREWS, TELESCOPE LEVER
- 6. CAP, HORN
- 7. WIRE, HORN BUTTON
- 8. SCREW, SHAFT LOCK KNOB
- 9. NUT, HEX

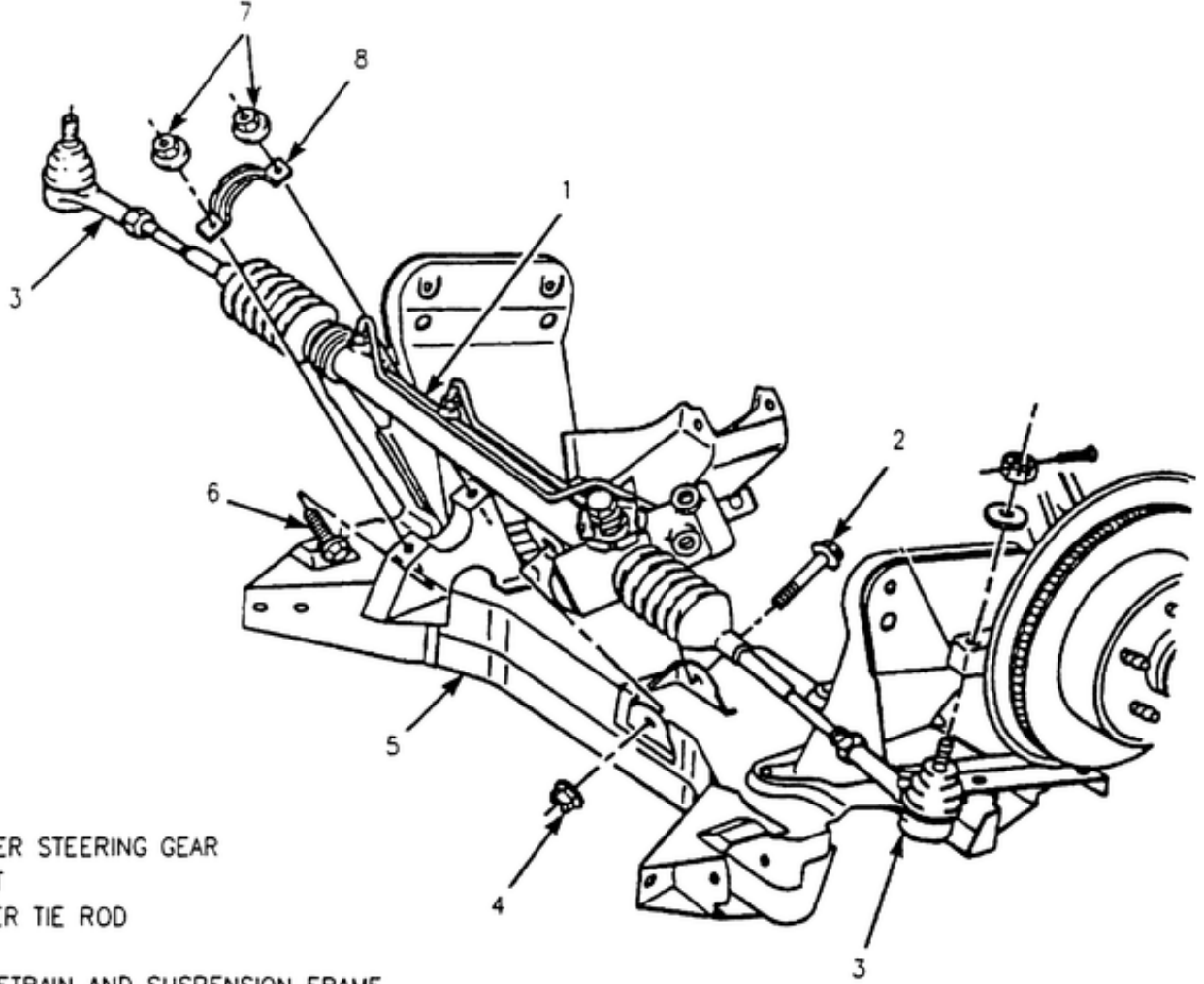




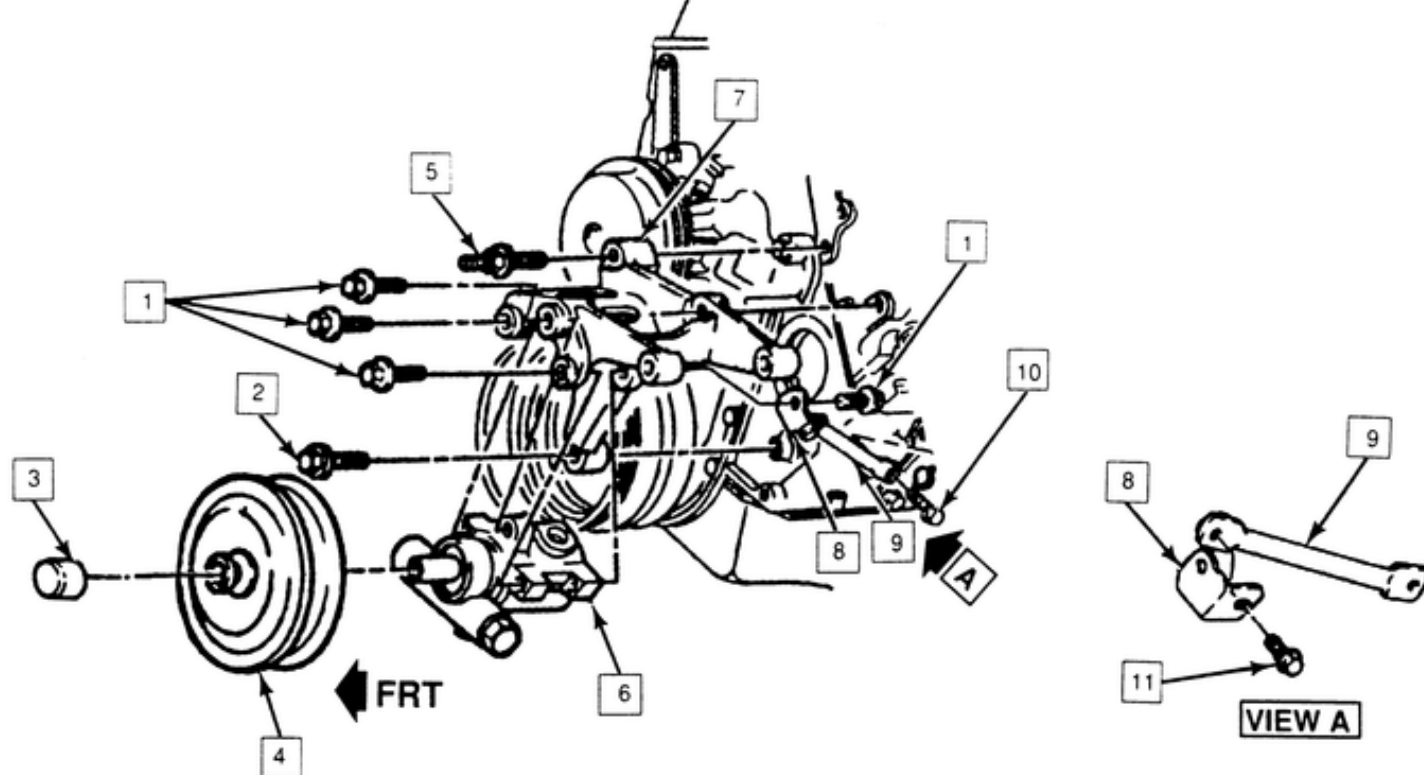


- 1 HOSE AND CLAMP, OUTLET
- 2 STEERING ASSEMBLY, POWER RACK AND PINION
- 3 TIE ROD END
- 4 PIPE, FLUID COOLING
- 5 FITTING
- 6 PIPE. FEED

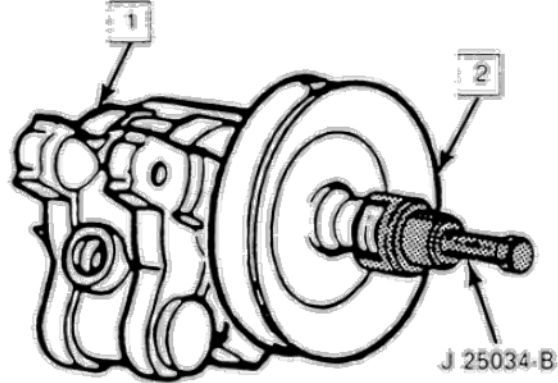
- 7 BOLT AND NUT, RACK MOUNTING THROUGH
- 8 BOLTS AND NUTS, RACK SADDLE
- 9 BOLT, PINCH
- 10 BRACKET, FLUID COOLING PIPE



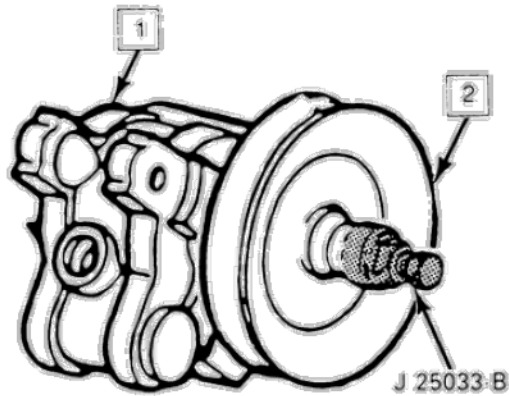
- 1 POWER STEERING GEAR
- 2 BOLT
- 3 OUTER TIE ROD
- 4 NUT
- 5 DRIVETRAIN AND SUSPENSION FRAME
- 6 BOLT
- 7 NUT
- 8 STEERING GEAR TO FRAME CLIP



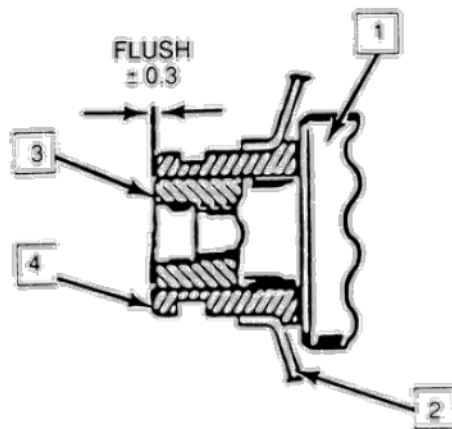
- | | | | |
|---|-------------------------------------|----|--|
| 1 | BOLTS, POWER STEERING PUMP MOUNTING | 7 | BRACKET, GENERATOR/POWER STEERING PUMP |
| 2 | BOLT, BRACKET MOUNTING | 8 | BRACKET, POWER STEERING PUMP REAR |
| 3 | CAP, POWER STEERING PUMP PULLEY HUB | 9 | BRACE, POWER STEERING PUMP REAR |
| 4 | PULLEY, POWER STEERING PUMP | 10 | BOLT, ENGINE MOUNT |
| 5 | STUD, AIR INJECTION BRACKET | 11 | BOLT, REAR BRACE MOUNTING |
| 6 | PUMP, POWER STEERING | | |



PULLEY REMOVAL

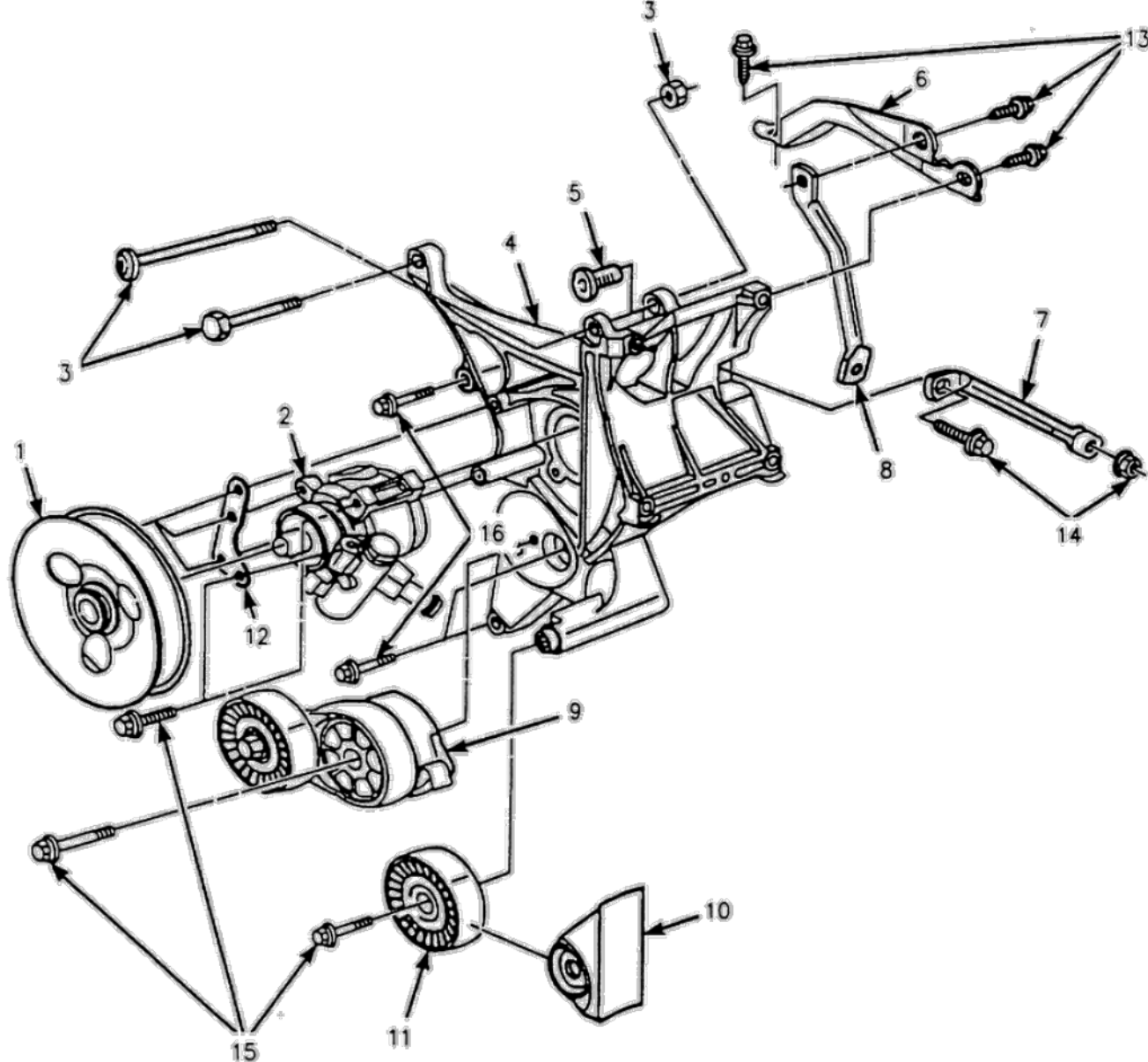


PULLEY INSTALLATION



**PULLEY HUB TO PUMP
SHAFT AXIAL TOLERANCE**

- 1** PUMP, POWER STEERING
- 2** PULLEY, POWER STEERING PUMP
- 3** SHAFT, POWER STEERING PUMP
- 4** HUB, POWER STEERING PUMP PULLEY (PART OF 2)



- 1 PUMP PULLEY
- 2 POWER STEERING PUMP
- 3 GENERATOR MOUNTING BOLTS AND NUT
- 4 GENERATOR/ A/C COMPRESSOR AND POWER STEERING PUMP BRACKET
- 5 GENERATOR MOUNTING BRACKET SPACER
- 6 REAR INNER SUPPORT BRACE
- 7 REAR SUPPORT BRACE
- 8 OUTER SUPPORT BRACE
- 9 TENSIONER
- 10 IDLER SHIELD
- 11 IDLER PULLEY
- 12 POWER STEERING BRACKET
- 13 REAR INNER SUPPORT BRACE BOLTS
- 14 REAR SUPPORT BRACE BOLT/NUT
- 15 BOLTS
- 16 BRACKET MOUNTING BOLTS

1990 Chevrolet CORVETTE

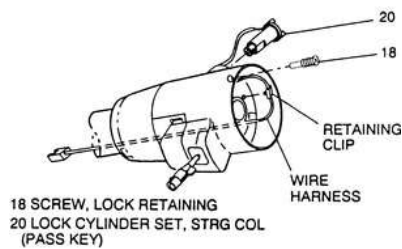
Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

NOTE: On vehicles equipped with a SIR air bag system, it is imperative that the disarming procedure is followed before repairs, and that the coil centering and rearming procedures are followed after repairs.

1. If equipped, disable the SIR system, then disconnect the negative battery cable.
2. Remove turn signal switch assembly, but do not disconnect or pull the wire harness through the column. Allow the switch assembly to hang freely from the wires.
3. If necessary, remove the coil assembly as follows:
 - A. Disengage the coil terminal connector from the vehicle harness. Remove the yellow connector shroud from the black connector.
 - B. Remove wiring protector.
 - C. Attach a length of mechanic's wire to the terminal connector to aid in reassembly.
 - D. Carefully pull the wire harness through the column, leaving the mechanic's wire in the column for installation purposes.
4. Remove the key from the lock cylinder.
5. Remove the buzzer switch and clip.
6. Reinsert the key into the lock cylinder, making sure the key is in the **LOCK** position.
7. Remove the lock retaining screw.
8. Disengage the Pass Key wire harness connector from the bulkhead connector. If not done already, remove the wiring protector.
9. Attach a piece of string or mechanic's wire to the wire connector to aid in reassembly, disconnect the retaining clip from the housing cover and pull the wire up through the column. Leave the length of string or wire in the column in order to pull the new harness into position.
10. Remove the lock cylinder.

Fig. 1: Exploded view of the lock cylinder mounting — 1996 vehicle shown, others similar



To install:

11. Using the length of string or the mechanic's wire, pull the PASS Key wire harness down through the column into the original position and engage the connector.
12. Install the lock cylinder set. Snap the wire retaining clip into the hole in the housing.
13. Engage the lock cylinder wiring connector to the bulkhead connector.
14. Install the lock cylinder retaining screw and tighten to 22 inch lbs. (2.5 Nm).
15. Remove the key and install the buzzer switch with retaining clip, then insert the key and leave in the **LOCK** position.
16. If removed, pull the turn signal switch wiring connector and/or the coil wiring connector through the steering column, connect the harnesses and install the wiring protector.
17. Install the turn signal switch assembly.
18. Connect the negative battery cable and enable the SIR system, if equipped.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

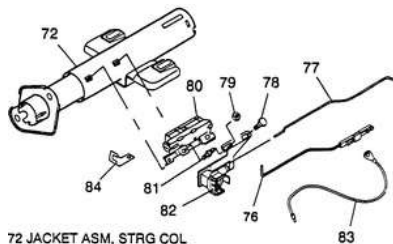
Fuel Delivery: FI | Fuel: GAS

1. If equipped, disable the SIR system, as outlined in Section 6, then disconnect the negative battery cable.
2. Remove the column to instrument panel trim plates and attaching nuts.
3. Loosen the steering column mounting bolts.
4. Remove the steering column mounting bolts, lower and properly support the column. If access to the switch is not sufficient, remove the column from the vehicle.

NOTE: Be sure the steering column is supported at all times in order to prevent damage to the column.

5. Remove the hex nut and washer head screw securing the dimmer switch to the column.
6. If equipped, remove the horn ground strap attached to the dimmer/ignition switch mounting stud.
7. If equipped, remove the cable bracket.
8. Disengage the switch assembly from the actuator rod, unplug the wiring harness connector and remove the dimmer switch assembly.
9. Remove the dimmer and ignition switch mounting stud.
10. Remove the ignition switch from the actuating assembly and disengage the switch wire connector.

Fig. 1: Exploded view of the ignition and dimmer switches — 1996 vehicle shown, others similar



72 JACKET ASM, STRG COL
76 ACTUATOR ASM, IGN SWITCH
77 ROD, DIMMER SWITCH
78 SCREW, WASH HD (#10-24X.25)
79 NUT, HEXAGON (#10-24)
80 SWITCH ASM, IGNITION
81 STUD, DIMR & IGN SW MTG
82 SWITCH ASM, DIMMER
83 WIRE ASM, HORN PAD GROUND
84 BRACKET, CABLE

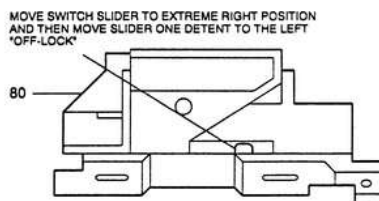
To install:

11. Make sure that the key cylinder is in the **OFF-LOCK** position.

NOTE: Install the ignition switch to the jacket with the switch in the "OFF-LOCK" position, as shown in the accompanying figure. New switches will be pinned in the "OFF-LOCK" position. Remove the plastic pin after the switch is assembled to the column. Failure to do this may cause switch damage.

12. Install the switch with the rod in the hole and adjust as necessary. To verify the switch is in the lock position, adjust the ignition switch assembly as follows:
 - A. Move the switch slider to the extreme right position.
 - B. Move the switch slider one detent to the left **"OFF-LOCK"** position.
 - C. Install a $\frac{3}{32}$ in. drill bit in the hole on the switch to limit travel.

Fig. 2: Ignition switch adjustment



80 SWITCH ASM, IGNITION

13. Install the ignition switch to the actuator assembly. Install the ignition and dimmer switch mounting stud and tighten to 35 inch lbs. (4.0 Nm).
14. Remove the drill bit from the switch.
15. Install the dimmer switch assembly to the actuator rod.
16. If equipped, install the cable bracket and the horn pad ground wire.
17. Install and finger-tighten the washer head screw and the hex nut.
18. Adjust the dimmer switch and tighten the screw and nut to 35 inch lbs. (4.0 Nm).
19. Position the steering column, then engage the ignition and dimmer switch connectors. Secure the column in the vehicle.
20. Connect the negative battery cable and enable the SIR system.

1990 Chevrolet CORVETTE

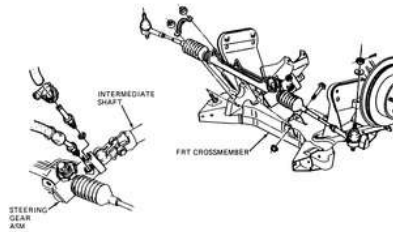
Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1984–86 Vehicles

1. Disconnect the negative battery cable.
2. Raise and safely support the vehicle, then remove the drivers side wheel and tire assembly.
3. Disconnect the power steering fluid lines from the gear, then plug the lines to prevent excessive leaking and system contamination.
4. Disconnect the outer tie rod ends from both sides, as outlined in this section.
5. Remove the upper and lower mounting bolts from the passenger side of the vehicle.
6. Remove the drivers side mounting bolts.
7. Remove the intermediate shaft lower universal joint from the rack and pinion assembly.
8. Remove the stabilizer bar.
9. Remove the electrical fan assembly.
10. Remove the rack and pinion assembly from the vehicle.

Fig. 1: Power rack and pinion steering gear mounting — 1984–86 vehicles



11. Installation is the reverse of the removal procedure.
12. Properly fill and bleed the power steering system.
13. Have the front end alignment checked and adjusted, if necessary.

1987–96 Vehicles

1. Position a suitable drain pan under the vehicle to catch power steering fluid.
2. For 1993–96 vehicles equipped with a VIN P or 5 engine, perform the following:
 - A. Remove the air intake duct.
 - B. Remove the serpentine drive belt.
 - C. Remove the drive belt idler pulley.
3. If equipped, unfasten the clamp, then disconnect the outlet hose from the return pipe.
4. Disconnect the inlet hose from the steering gear. Plug the fluid lines to prevent excessive leakage and system contamination.
5. Remove the lower coupling shield.
6. Remove the intermediate shaft pinch bolt from the steering gear.
7. Raise and safely support the vehicle.
8. Remove the tire and wheel assemblies.
9. Separate both tie rod ends from the knuckles using a suitable puller.
10. For 1993–96 vehicles, remove the power steering cooler assembly.
11. Remove the stabilizer shaft, as outlined earlier in this section.
12. Unfasten the rack mounting through bolt and nut.
13. Remove the rack saddle (clamp) mounting bolts and nuts.
14. Remove the power rack and pinion assembly.
15. If necessary, remove the outer tie rods and rack and pinion boots from the steering gear.
16. If necessary, remove the return pipe and brackets from the housing.

Fig. 2: Power rack and pinion steering gear — 1987–89 vehicles

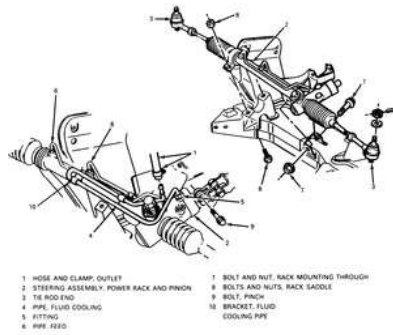
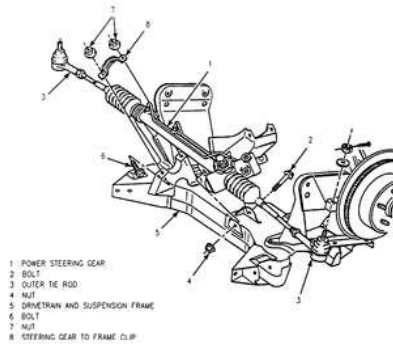


Fig. 3: Power steering gear mounting — 1996 vehicle shown



To install:

17. Install the return pipe and brackets to the housing.
18. Install the power rack and pinion assembly.
19. Fasten the intermediate shaft pinch bolt at the gear assembly and tighten to 44 ft. lbs. (60 Nm).
20. Install the rack saddle (clamp) mounting nuts and bolts and tighten the nuts to 18 ft. lbs. (25 Nm).
21. Install the rack mounting through bolt and nut, then tighten the nut to 30 ft. lbs. (40 Nm).
22. Install the stabilizer shaft, as outlined in this section.
23. For 1993–96 vehicles, install the power steering cooler assembly.
24. Connect both tie rod ends to the knuckle, then tighten the slotted nuts to 33 ft. lbs. (45 Nm).
25. Install the tire and wheel assemblies, then carefully lower the vehicle.
26. Connect the outlet hose and clamp, if equipped, to the return pipe. Tighten the clamp to 22 inch lbs. (2.5 Nm) or the fitting to 21 ft. lbs. (28 Nm).
27. Attach the inlet hose assembly to the steering gear. Tighten the inlet pipe fitting to 20 ft. lbs. (28 Nm).
28. Install the intermediate shaft pinch bolt to the gear and tighten to 44 ft. lbs. (60 Nm).
29. Properly fill and bleed the power steering system.
30. Have the front end alignment checked and adjusted, if necessary.

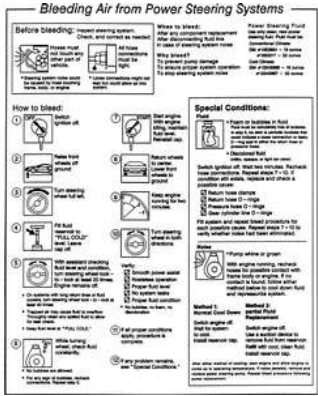
1.

With the engine **OFF** and wheels off the ground, turn the steering wheel all the way to the left. Add power steering fluid to the **COLD** mark on the fluid level indicator.
2.

Bleed the system by turning the wheels from side-to-side without reaching the stop at either end. It may be necessary to turn the wheel from side-to-side several times. Be sure to keep the fluid full.
3.

Start the engine. With engine idling, recheck the fluid level. If necessary add fluid to bring the fluid up to the **COLD** mark.

Fig. 1: Bleeding the power steering system



4.

Return the wheels to the center position. Lower the front wheels to the ground and continue to run for 2–3 minutes.
5.

Road test the vehicle to make sure the steering functions normally and without noise.
6.

Check for fluid leakage. Check to make sure the fluid level is at the **HOT** mark after the system is stabilized at its normal operating temperature.

[TORQUE SPECIFICATIONS](#)

[TORQUE SPECIFICATIONS](#)

[TORQUE SPECIFICATIONS](#)

1990 Chevrolet CORVETTE

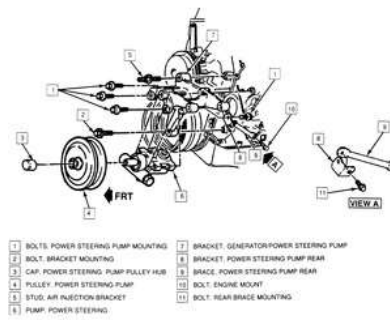
Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

VIN 8 Engines

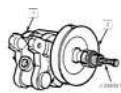
1. Disconnect the negative battery cable and place a drain pan under the vehicle to catch fluid.
2. Remove the serpentine drive belt.
3. Remove the power steering pump pulley as follows:
 - A. If equipped with an automatic transmission, remove the water pump damper.
 - B. Unfasten the bolts securing the power steering reservoir bracket to the drivetrain and front suspension frame.
 - C. Reposition the reservoir bracket with the reservoir and hoses for pulley clearance.
 - D. Remove the power steering pump pulley hub cap, then remove the pulley using a suitable removal tool.
4. Disconnect and plug the power steering gear inlet hose from the pump. Disconnect and plug the reservoir hose from the power steering pump.
5. Unfasten the bolt securing the pump rear bracket to the rear brace.
6. Remove the engine mount bolt and power steering pump rear brace.
7. Remove the power steering pump mounting bolts.
8. Remove the power steering pump and rear bracket.

Fig. 1: Exploded view of the power steering pump and related components — 1990 shown, others similar



9. If alternator/power steering pump bracket removal is necessary, perform the following:
 - A. Remove the alternator assembly, as outlined in Section 2 of this manual.
 - B. Remove the AIR pump and bracket.
 - C. Remove the bolts securing the alternator/power steering pump bracket to the engine, then remove the bracket.
- To install:**
10. If removed, install the alternator/power steering pump bracket as follows:
 - A. Position the bracket to the engine and secure with the retaining bolts. Tighten the bolts to 24 ft. lbs. (33 Nm).
 - B. Install the AIR pump bracket and pump.
 - C. Install the alternator.
11. Install the power steering pump, rear bracket and bolts to the alternator/power steering pump bracket.
12. Install the power steering pump rear brace and engine mount bolt.
13. Install the bolt holding the rear bracket to the rear brace.
14. Tighten the bolts to the following specifications:
 - A. Power steering pump mounting bolts: 18 ft. lbs. (25 Nm)
 - B. Power steering pump rear bracket-to-rear brace bolt: 24 ft. lbs. (33 Nm)
 - C. Engine mount bolts: 41 ft. lbs. (56 Nm)
 - D. Power steering pump rear bracket-to-power steering pump bolt: 18 ft. lbs. (25 Nm)
15. Connect the power steering reservoir hose and clamp to the power steering pump.
16. Attach the power steering gear inlet hose and tighten the fitting to 21 ft. lbs. (28 Nm).
17. Install the power steering pump pulley as follows:
 - A. Install the pulley using a suitable installation tool such as J 25033-B or equivalent. The pulley must be installed onto the pump shaft to the specifications shown in the accompanying figure.

Fig. 2: Power steering pump pulley removal and installation



PULLEY REMOVAL



PULLEY INSTALLATION



PULLEY HUB TO PUMP SHAFT FLUSH ALIGNMENT

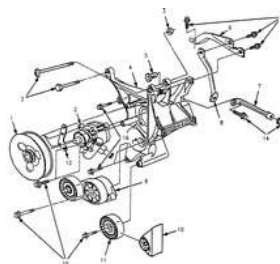
- 1 PUMP PULLEY
- 2 POWER STEERING PUMP
- 3 PULLEY POWER STEERING PUMP
- 4 PULLEY POWER STEERING PUMP
- 5 HUB POWER STEERING PUMP PULLEY (PART OF 2)

- B. Install the hub cap on the pulley.
 - C. Position the reservoir bracket with the reservoir and hoses.
 - D. Install the bolts retaining the reservoir assembly bracket to the drivetrain and front suspension frame. Tighten the bolts to 89 inch lbs. (10 Nm).
 - E. If equipped with an automatic transmission, install the water pump damper.
18. Install the serpentine drive belt.
 19. Connect the negative battery cable, then properly fill and bleed the power steering system.

VIN P and 5 Engines

1. Disconnect the negative battery cable and place a drain pan under the vehicle to catch fluid.
2. Remove the air intake duct, then remove the serpentine drive belt.
3. Remove the steering pump pulley hub cap, then remove the pulley using J-25034-B or an equivalent puller tool.
4. For 1993-96 vehicles, remove the serpentine drive belt idler pulley.
5. Disconnect the gear inlet hose assembly from the pump. For 1993-96 vehicles, remove the pump inlet pipe mounting bolts, then disconnect the pipe assembly from the pump.
6. For 1992 vehicles, disconnect the reservoir hose and clamp from the pump.
7. Remove the power steering pump mounting bolts.
8. Remove the power steering pump and front bracket.

Fig. 3: Exploded view of the power steering pump and brackets — 5.7L (VIN P & 5) engines



- 1 PUMP PULLEY
- 2 POWER STEERING PUMP
- 3 GENERATOR MOUNTING BOLTS AND NUT
- 4 GENERATOR A/C COMPRESSOR AND POWER STEERING PUMP BRACKET
- 5 GENERATOR MOUNTING BRACKET SPACER
- 6 REAR WHEEL SUPPORT BRACE
- 7 REAR WHEEL SUPPORT BRACE
- 8 REAR WHEEL SUPPORT BRACE
- 9 TENSIONER
- 10 ELDER SHIELD
- 11 ELDER PULLEY
- 12 POWER STEERING BRACKET
- 13 REAR WHEEL SUPPORT BRACE BOLT
- 14 REAR WHEEL SUPPORT BRACE BOLT/OUT
- 15 BOLT
- 16 BRACKET MOUNTING BOLT

To install:

9. Install the power steering pump and front bracket with the mounting bolts. Tighten the bolts to 18 ft. lbs. (25 Nm).
10. For 1992 vehicles, connect the power steering pump reservoir hose and clamp to the pump. Tighten the clamp to 22 inch lbs. (2.5 Nm).
11. For 1993-96 vehicles, install the pump inlet pipe to the pump, then install the mounting bolts and tighten to 24 ft. lbs. (33 Nm).
12. Connect the power steering gear inlet hose assembly to the power steering pump and tighten the fitting to 21 ft. lbs. (28 Nm).
13. For 1993-96 vehicles, install the serpentine drive belt idler pulley.
14. Using J-25033-B, or an equivalent installation tool, install the power steering pump pulley so the front of the pulley hub is flush with the front of the pump shaft.
15. Install the hub cap to the pulley.
16. Install the serpentine drive belt, then install the intake air duct.
17. Connect the negative battery cable and remove the drain pan.
18. Refill the power steering reservoir and properly bleed the system.

VIN J Engines

1. Disconnect the negative battery cable and remove the air intake duct.
2. Drain the engine cooling system into a suitable container.
3. Drain and appropriately discard the power steering fluid.
4. Remove the serpentine drive belt.
5. Remove the left coolant outlet cover and hose.
6. Disconnect the vacuum hose retainer from the pump reservoir, then remove the vacuum hose(s) and set aside.
7. For 1990-92 vehicles:
 - A. Remove the power steering pump bracket-to-cylinder head bolts.
 - B. Remove the pump bracket to air conditioning compressor bolt.
 - C. Remove the cooler assembly outlet hose from the reservoir.
 - D. Disconnect the power steering gear inlet pipe from the power steering pump, then remove the power steering pump assembly from the vehicle.

- E. As necessary, remove the pump pulley using tool J-25034-B or equivalent puller. Remove the reservoir hose from the pump. Remove the power steering pump-to-mounting bracket bolts and remove the pump and/or reservoir from the bracket.
- 8. For 1993-96 vehicles:
 - A. Remove the bolts retaining the compressor hose clip to the crossmember.
 - B. Remove the pulley hub cap and separate the pulley from the pump using J-25034-B or an equivalent puller.
 - C. Remove the crankcase vent inlet pipe from the power steering pump bracket.
 - D. Remove the crankcase vent inlet hose from the throttle body extension.
 - E. Remove the compressor-to-power steering pump bracket bolt.
 - F. Remove the gear inlet pipe from the pump, then remove the outlet hose from the cooler assembly.
 - G. Remove the power steering pump bracket-to-cylinder head bolts, then remove the pump from the vehicle.
 - H. As necessary, remove the fluid reservoir hose from the assembly, remove the pump-to-mounting bracket bolts and remove the pump and/or reservoir from the mounting bracket.

Fig. 4: Power steering pump, reservoir and mounting bracket — 5.7L (VIN J) engine

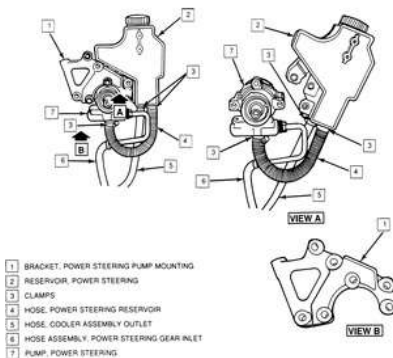
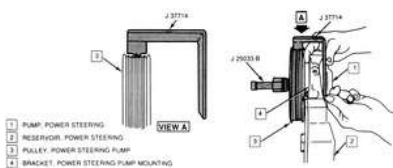


Fig. 5: Installation of the power steering pump pulley — 5.7L (VIN J) engine



To install:

- 9. If replacing the pump, do not use a pump with the letter **R** on the back of the pump housing.
- 10. If removed, install the reservoir and/or pump to the bracket. Apply Loctite® 565 or equivalent, to the pump-to-bracket mounting bolts and install. Tighten the bolts to 19 ft. lbs. (26 Nm).
- 11. If removed, connect the pump reservoir hose to the pump and tighten the clamp screw to 22 inch lbs. (2.5 Nm).
- 12. For 1993-96 vehicles:
 - A. Install the pump assembly to the vehicle. Coat the bolt threads with Loctite® 565 or equivalent, then install the bolts and tighten 19 ft. lbs. (26 Nm).
 - B. Connect the outlet hose to the cooler assembly. Tighten the clamp screw to 22 inch lbs. (2.5 Nm).
 - C. Connect the gear inlet pipe to the pump, then tighten the fitting to 21 ft. lbs. (28 Nm).
 - D. Install the compressor-to-power steering pump bracket bolt and tighten to 19 ft. lbs. (26 Nm).
 - E. Install the crankcase vent inlet hose to the throttle body extension and to the power steering pump bracket.
 - F. Install the pump pulley using J-25033-B or equivalent installation tool, then install the hub cap.
 - G. Install the bolt retaining the compressor hose clip to the crossmember.
- 13. For 1990-92 vehicles:
 - A. If removed, install the power steering pump pulley using a suitable installation tool.
 - B. Position the pump assembly onto the engine.
 - C. Connect the gear inlet pipe to the pump and tighten the fitting to 21 ft. lbs. (28 Nm).
 - D. Install the cooler assembly outlet hose to the reservoir and tighten the hose clamp screw to 22 inch lbs. (2.5 Nm).
 - E. Install the A/C compressor to power steering pump bracket bolt and tighten to 19 ft. lbs. (26 Nm).
 - F. Apply a coat of Loctite® 565 to the pump bracket-to-cylinder head bolts, install and tighten the bolts to 19 ft. lbs. (26 Nm).
- 14. Install the vacuum hose(s) and connect the retainer to the power steering pump reservoir. Tighten the screws to 13 inch lbs. (1.5 Nm).
- 15. Install the left coolant outlet cover and hose.
- 16. Install the serpentine drive belt.
- 17. Install the air intake duct and connect the negative battery cable.
- 18. Refill the power steering reservoir.
- 19. Properly fill the engine cooling system.
- 20. Bleed the power steering system.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

Tie Rod Ends

FRONT

1. Raise and safely support the vehicle.
2. Matchmark the installed position of the tie rod end with paint or a marker.

Fig. 1: Make sure you matchmark the installed position of the tie rod end for proper alignment during installation



3. Use a pair of pliers to hold the inner tie rod stationary, then loosen tie rod jam nut.

Fig. 2: Use pliers to hold the inner tie rod end, then loosen the jam nut

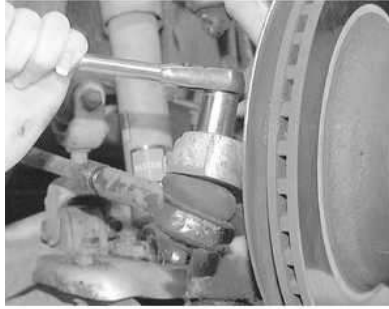


4. Remove and discard the tie rod cotter pin, then loosen, but do not remove, the hex slotted nut.

Fig. 3: Remove the cotter pin from the slotted nut



Fig. 4: Loosen the slotted nut, but do NOT remove it at this time

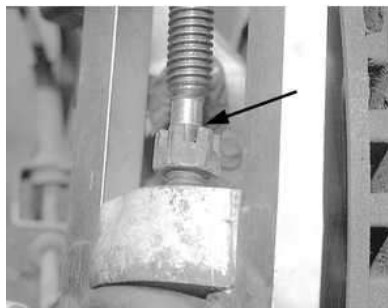


5. Use a universal steering linkage puller, such as tool J-24319-01 or equivalent, to separate the tie rod end from the steering knuckle.

Fig. 5: Install a suitable jawed puller to separate the tie rod end from the steering knuckle



Fig. 6: Make sure there is good and even contact of the tie rod end stud and puller screw

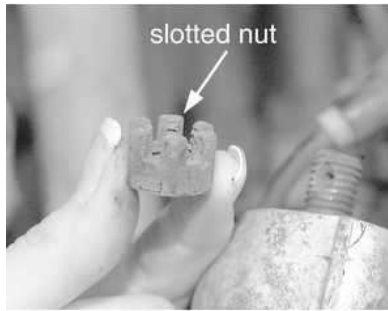


6. After the tie rod is separated, remove the hex slotted nut, then remove the tie rod end from the knuckle.

Fig. 7: Unfasten the slotted nut, then remove the tie rod end from the steering knuckle

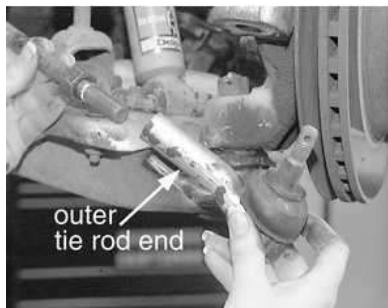


Fig. 8: View of the tie rod end slotted nut



7. Unscrew the outer tie rod end from the steering rack assembly, counting the number of turns necessary to remove the tie rod end.

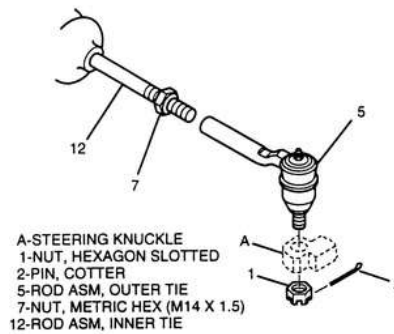
Fig. 9: Unscrew the outer tie rod end from the inner tie rod



To install:

8. Install the tie rod to the steering rack assembly, but do not tighten the jam nut. Thread the tie rod end in the same number of turns and/or align it to the marks made during removal.

Fig. 10: Exploded view of the outer tie rod end replacement



9. Install the tie rod to the steering knuckle and install the hex slotted nut to the tie rod stud.
10. Tighten the hex nut to 35 ft. lbs. (47 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 52 ft. lbs. (70 Nm) and do not back off the original torque.

NOTE: Make sure the rack and pinion boot is not twisted or puckered during installation or adjustment.

11. Adjust the toe by turning the inner tie rod, making sure the rack and pinion boot is not twisted or puckered during toe adjustment.
12. Tighten the jam nut against the tie rod to 50 ft. lbs. (68 Nm).
13. Carefully lower the vehicle. Have the front end alignment checked and adjusted if necessary at a reputable repair shop.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1984–89 Vehicles

1. Disconnect the negative battery cable.
2. Squeeze the top and bottom of the horn cap to disengage the locking fingers, then pull back and remove the horn cap.
3. If equipped, carefully pull the horn contact plate from the steering wheel.
4. Disconnect the horn lead wire.
5. Remove the telescope lever screws and the shaft lock knob, then remove the telescope adjusting lever from the slot in the top of the steering wheel.
6. If equipped, remove the steering wheel nut retainer, then unfasten the wheel retaining nut.
7. Note the matchmarks on the steering wheel and shaft for alignment during installation. If you can't see any marks, use a marker or equivalent to make matchmarks.
8. Install a suitable steering wheel puller, then remove the steering wheel from the vehicle.
9. Remove the horn contact spring.

Fig. 1: Exploded view of the steering wheel components — 1984–88 vehicles

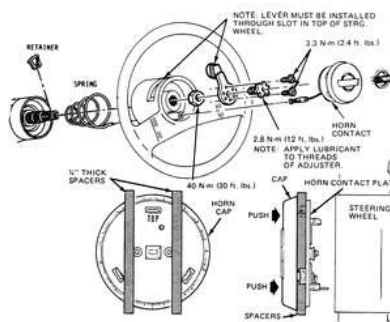
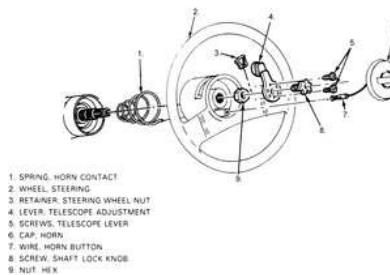


Fig. 2: Steering wheel removal and installation — 1989 vehicles



To install:

10. Install the horn contact spring.
11. Align the matchmarks, then position the steering wheel. Secure with the retaining nut and tighten it to 30 ft. lbs. (40 Nm). When tightening, do not force the steering shaft against the steering column "Lock".
12. Install the steering wheel nut retainer.
13. Install the telescope lever assembly through the slot in the top of the steering wheel. Install the shaft lock knob screw and tighten to 30 inch lbs. (2.8 Nm).
14. Position the telescope adjustment lever as far to the right as possible while aligning the screws holes, then install the screws and tighten to 40 inch lbs. (3.3 Nm).
15. Connect the horn electrical lead.
16. For 1984–88 vehicles, perform the following:
 - A. Align the contact plate (with the horn lead wire on the bottom) and press it in place.
 - B. Align the horn cap with the openings in the contact plate.
 - C. Use 2 1/4 in. square spacers as shown in the accompanying figure to press the cap to seat the 2 locking fingers, then withdraw the spacers.
17. For 1989 vehicles, secure the horn cap to the steering wheel.
18. Connect the negative battery cable.

1990–96 Vehicles

CAUTION

Some models covered by this manual may be equipped with a Supplemental Inflatable Restraint (SIR) system, which uses an air bag. Whenever working near any of the SIR components, such as the impact sensors, the air bag module, steering column and instrument panel, disable the SIR, as described in Section 6.

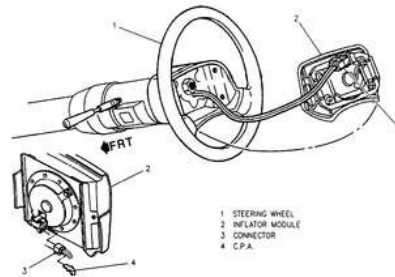
PREFERRED METHOD

1. Properly disable the SIR system, as outlined in Section 6 of this manual.
2. Remove the SIR inflator module as follows:
 - A. Unfasten the screws from the back of the steering wheel retaining the inflator module to the steering wheel.
 - B. Remove the inflator module from the steering wheel.
 - C. Detach the CPA and SIR coil electrical connector from the inflator module.

CAUTION

When carrying a live inflator module, make sure the bag and trim cover and pointed away from you. Never carry the module by the wires or connector on the underside of the module. If the bag accidentally deploys, the bag will deploy with minimal chance of injury. When you place the inflator module on a bench or other surface, always face the bag and trim cover up, away from the surface. Refer to Section 6 for more information about the air bag system.

Fig. 3: Exploded view of the SIR inflator module mounting — 1990–96 vehicles

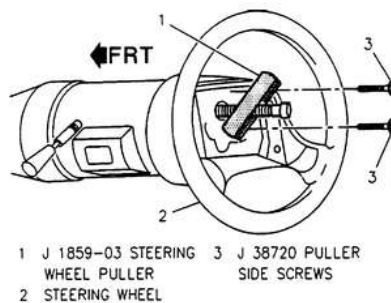


WARNING

Make sure to use the proper type of steering wheel puller or side screws. Using the wrong type could easily damage the SIR coil.

3. Unfasten the steering wheel jam nut. Discard the nut and use a new one during installation.
4. Detach the horn electrical connector.
5. Note the matchmarks on the steering wheel and shaft for alignment during installation. If you can't see any marks, use a marker or equivalent to make matchmarks.
6. Install a suitable steering wheel puller and puller screws such as the type shown in the accompanying figure. Remove the steering wheel from the shaft. If the steering wheel does not come off easily, follow the "ALTERNATE METHOD" procedure.

Fig. 4: The proper type of puller and side screws must be used when removing the steering wheel



To install:

7. Attach the horn electrical connector.
8. Position the steering wheel on the column, observing the alignment marks (splines).
9. Install a new steering wheel jam nut and tighten to 30 ft. lbs. (41 Nm).
10. Install the inflator module, by performing the following steps:
 - A. Make sure the ignition switch is **OFF**.
 - B. Attach the SIR coil electrical connector to the inflator module, then install the CPA retaining clip.
 - C. Position the inflator module to the steering wheel, then install the module retaining screws through the back of the steering wheel to the inflator module. Tighten the retaining screws to 86 inch lbs. (9.7 Nm).
11. Properly enable the SIR system, as outlined in Section 6 of this manual.

ALTERNATE METHOD

1. Remove the inflator module, jam nut and horn connector as outlined under the "PREFERRED METHOD" procedure.
2. Install a suitable steering wheel puller (J 1859-A or equivalent), using J 38720 side screws. Make sure the side screws are fully threaded (up to shoulder) into the puller, then tighten the puller center screw snugly against the steering shaft.
3. Back out each side screw 1 revolution from the fully installed position. Retighten the puller center screw.

NOTE: Tightening the screws more than $\frac{1}{4}$ turn at a time could damage the steering wheel.

4. Alternately tighten each side screw $\frac{1}{4}$ turn until you can remove the steering wheel.

5. To install, follow the procedure located under "PREFERRED METHOD".

1990 Chevrolet CORVETTE

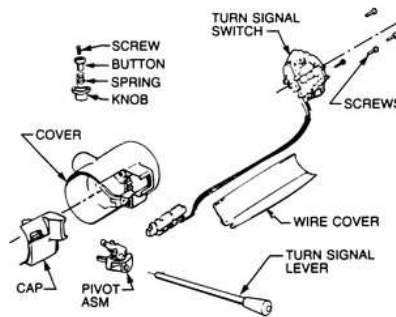
Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

[1984-88 Vehicles](#)

1. Disconnect the negative battery cable.
2. Remove the steering wheel, as outlined earlier in this section.
3. Remove the steering column/dash trim cover.
4. Remove the C-ring plastic retainer.
5. Install the special lockplate compressor tool (J-23653 and J-23063) over the steering shaft. Place $\frac{5}{16}$ in. nut under each tool leg and reinstall the star screw to prevent the shaft from moving.
6. Compress the lockplate by turning the shaft nut clockwise until the C-ring can be removed.
7. Remove the tool and lift out the lockplate, horn contact carrier, and the upper bearing preload spring.
8. Pull the switch connector out of the mast jacket and tape the upper part to facilitate switch removal.
9. Remove the turn signal lever. Push the flasher in, then unscrew it.
10. Position the turn signal and shifter housing in the Low position. Remove the switch by pulling it straight up while guiding the wiring harness out of the housing.

Fig. 1: Exploded view of the turn signal switch and related components — 1984-88 vehicles



To install:

11. Install the replacement switch by working the harness connector down through the housing and under the mounting bracket.
12. Install the harness cover and clip the connector to the mast jacket.
13. Install the switch mounting screws, signal lever and the flasher knob.
14. With the turn signal lever in neutral and the flasher knob out, install the upper bearing preload spring, horn contact carrier, and lockplate onto the shaft.
15. Position the tool as in Step 5, and compress the plate far enough to allow the C-ring to be installed.
16. Remove the tool, then install the plastic C-ring retainer.
17. Install the column/dash trim cover and steering wheel.
18. Connect the negative battery cable.

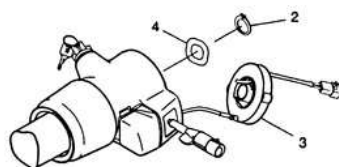
[1989-96 Vehicles](#)

NOTE: Some of these vehicles may be equipped with a Supplemental Inflatable Restraint (SIR) air bag system, it is imperative that the disarming procedure is followed before repairs, and that the coil centering and rearming procedures are followed after repairs. Although it may be possible to perform this procedure with the steering column installed in the vehicle, but lowered for access, the manufacturer suggests that the column be removed.¹

1. For 1990-96 vehicles, properly disable the SIR system. Place the ignition switch to the **LOCK** position in order to prevent uncentering of the coil assembly.
2. Disconnect the negative battery cable.
3. Properly remove and store the inflator module, if equipped with an air bag, then remove the steering wheel. Either remove the column from the vehicle or lower it for access.
4. If equipped with a SIR system, remove the coil assembly retaining ring. Remove the coil assembly and allow it to hang freely from the wiring.

NOTE: The coil assembly will become uncentered if the steering column is separated from the steering gear and allowed to rotate or the center spring of the coil assembly is pushed down, letting the hub rotate while the coil is removed from the steering column. In the event this should occur, follow the recommended procedure for recentering of the coil in order to avoid accidental deployment of the air bag or damage to the internal components of the steering column.

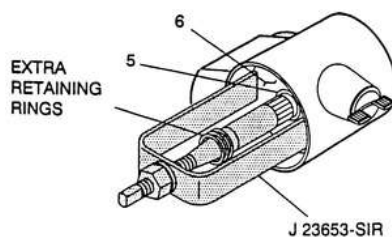
Fig. 2: Exploded view of the SIR coil assembly — 1996 vehicle shown, others similar



2 RING, RETAINING
3 COIL ASM, INFL RESTRAINT
4 WASHER, WAVE

5. Remove the wave washer.
6. Remove the shaft lock retaining ring using tool J-23653-C or equivalent, shaft lock compressor. Discard the old ring.

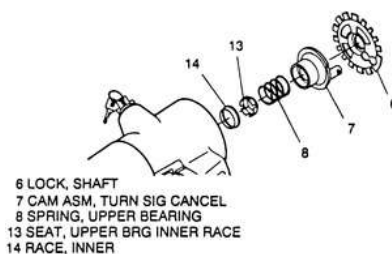
Fig. 3: You must use the proper tool to remove the shaft lock retaining ring



5 RING, RETAINING
6 LOCK, SHAFT

7. Remove the shaft lock, turn signal canceling cam and upper bearing assembly.

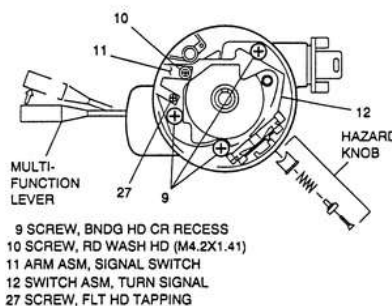
Fig. 4: Exploded view of the upper shaft components — 1996 vehicle shown, others similar



6 LOCK, SHAFT
7 CAM ASM, TURN SIG CANCEL
8 SPRING, UPPER BEARING
13 SEAT, UPPER BRG INNER RACE
14 RACE, INNER

8. Move the multi-function lever to the **RIGHT TURN** position. Remove the column housing cover end cap by pulling toward the vehicle front. Disconnect the electrical harness connector and remove the turn signal lever by pulling toward the driver door.
9. Remove the hazard knob retaining screw and assembly.
10. Remove the turn signal switch arm and screws.
11. Remove the turn signal switch screws.

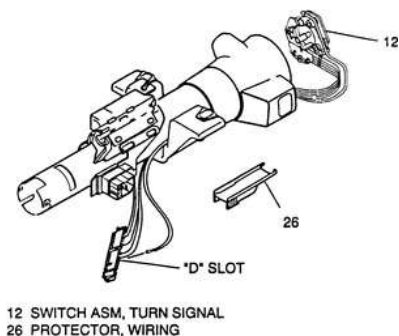
Fig. 5: Turn signal removal preparation



9 SCREW, BNDG HD CR RECESS
10 SCREW, RD WASH HD (M4.2X1.41)
11 ARM ASM, SIGNAL SWITCH
12 SWITCH ASM, TURN SIGNAL
27 SCREW, FLT HD TAPPING

12. Disconnect the switch harness connector from the bulkhead connector and remove the wiring protector.
13. Remove the horn pad ground wiring assembly from slot "D" of the switch connector.
14. Attach a length of mechanic's wire to the switch harness to aid in reinstallation and gently pull the assembly up through the housing. Leave the wire routed through the column in order to pull the new harness back into position.
15. Remove the switch and harness from the vehicle.

Fig. 6: Exploded view of the turn signal switch



To install:

16. Connect the horn pad ground wiring assembly to slot "D" of the turn signal switch connector.
17. Using the mechanic's wire, pull the switch harness through the column and connect to the bulkhead connector.
18. Install the harness wiring protector.
19. Position the turn signal switch assembly and install the attaching screws. Tighten the screws to 30 inch lbs. (3.4 Nm).
20. Install the switch arm and mounting screws. Tighten the screws to 20 inch lbs. (2.3 Nm).
21. Install the hazard knob assembly and the multi-function lever.
22. Install the inner race, the upper bearing race seat, and the upper bearing spring.
23. Lubricate the friction surfaces using synthetic grease, then install the turn signal canceling cam.
24. Position the shaft lock. Install the a new shaft lock retaining ring using tool J-23653-C or equivalent. Be sure the ring is firmly seated in the groove of the shaft.
25. Install the wave washer.
26. Install the coil assembly, making sure it is properly centered.
27. Position and secure the steering column, as necessary.
28. Install the steering wheel and the inflator module.
29. Connect the negative battery cable and, if equipped, enable the SIR system as outlined in Section 6 of this manual.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

[1984-89 Vehicles](#)

NOTE: On 1984-89 vehicles, the windshield wiper switch is located on the driver's side door panel.

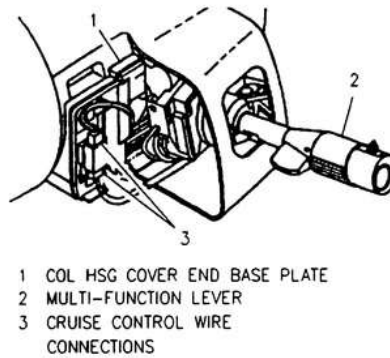
1. Disconnect the negative battery cable.
2. Remove the armrest and filler from the door panel.
3. Remove the accessory trim plate.
4. If equipped, remove the retainers, detach the connector, then remove the windshield wiper switch.
5. Installation is the reverse of the removal procedure.

[1990-96 Vehicles](#)

NOTE: On 1990-96 vehicles, the wiper switch is a non-replaceable component of the multi-function turn signal lever. For multi-function lever removal and installation, refer to the following procedure.

1. Disconnect the negative battery cable.
2. Remove the column housing cover end cap by pulling it toward the front of the vehicle.
3. Detach the electrical harness connector and grommet.
4. Pull toward the driver side door to release the detent/multi-function turn signal lever.

Fig. 1: View of the multi-function lever, which includes the wiper switch



To install:

5. Position the multi-function turn signal lever. Align the lever tab into the slot with the lever in the **OFF** position.
6. Attach the electrical harness connector and grommet.
7. Install the column housing cover end cap.