

STEERING

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POWER STEERING

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DESCRIPTION AND OPERATION

STEERING SYSTEM AND COMPONENT DESCRIPTION

This vehicle is available with 3 different types of power steering. They are standard, firm-feel, or speed-sensitive variable-effort (speed-proportional) power steering.

The power steering system consists of these major components: Power Steering Pump, Power Steering Gear, Power Steering Reservoir, Power Steering Supply, Return and Pressure Hoses, and Power Steering Cooler.

A turn of the steering wheel is converted into linear travel through the meshing of the spur pinion teeth with the rack teeth. Power assist steering is provided by an open center, rotary type control valve. It is used to direct oil from the power steering pump to either side of the integral steering rack piston.

The firm-feel steering gear is physically the same as the standard gear used on some models. The dif-

ference is internal. The internal calibration gives the driver a more firm feel at the steering wheel.

The speed-sensitive variable-effort power steering system, better known as speed-proportional steering, is an electronically controlled, variable-effort type power steering system. The steering gear has an externally mounted control valve which in conjunction with mechanical components varies steering effort at different vehicle speeds. At low speeds lower steering effort is needed to allow ease in steering and parking. At higher speeds, higher effort is provided to give a more firm, responsive steering feel.

POWER STEERING FLUID COOLER

All models of this vehicle are equipped with a cooler (Fig. 1) for the power steering system fluid. The purpose of the cooler is to keep the temperature of the power steering system fluid from rising to a level that would affect the performance of the power steering system.

DESCRIPTION AND OPERATION (Continued)

The power steering fluid cooler is located at the front of the vehicle. It is mounted to the radiator lower support just forward of the air-conditioning condenser and just rearward of the front fascia (Fig. 1). The cooler is positioned so it is in the air flow through the front fascia of the vehicle.

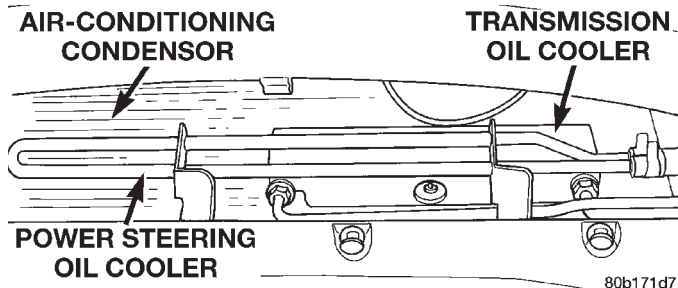


Fig. 1 Power Steering Fluid Cooler

The cooler used on this vehicle is referred to as a fluid-to-air type cooler. This means that the air flow across the tubes of the cooler is used to extract the heat from the cooler which it has absorbed from the power steering fluid flowing through it. The cooler is placed in series with the power steering fluid return line, between the steering gear and the power steering fluid reservoir. This lowers the temperature of the power steering fluid prior to it entering the power steering fluid reservoir where it is resupplied to the power steering pump.

POWER STEERING FLUID PRESSURE SWITCH

The power steering system has a power steering pressure switch which is used to improve the vehicle's idle quality. The pressure switch improves vehicle idle quality by monitoring engine idle speed and causing idle speed readjustment as necessary, due to increased pressure in the power steering system. This increased pressure will slow down the power steering pump which puts more load on the engine, decreasing engine idle speed.

This type of condition exists when turning the front tires of the vehicle when the vehicle is stationary and the engine is at idle speed. The pressure switch signals the powertrain control module that the power steering system is putting additional load on the engine. When this signal is sensed by the powertrain control module, the engine idle speed is

adjusted accordingly to maintain proper engine idle speed and quality.

On vehicles with 2.7 liter engines, the power steering pressure switch is mounted in the power steering pressure hose near the pump (Fig. 2).

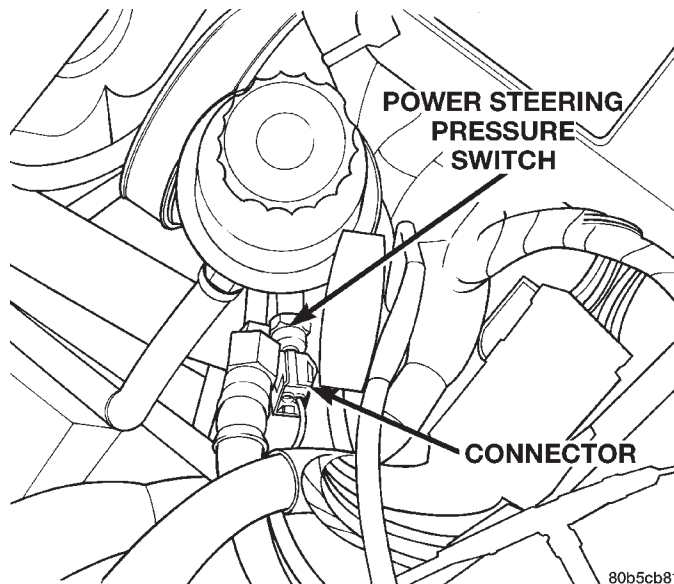


Fig. 2 Power Steering Pressure Switch Location With 2.7L Engine

On vehicles with 3.2 liter or 3.5 liter engines, the power steering pressure switch is mounted in the power steering pump (Fig. 3).

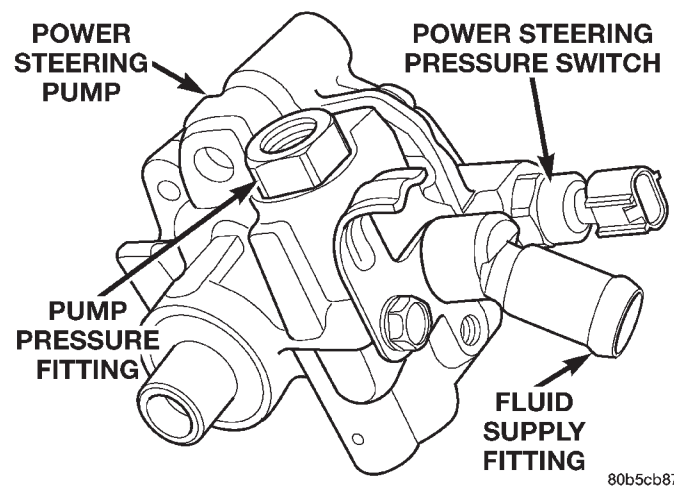


Fig. 3 Power Steering Pressure Switch Location With 3.2L/3.5L Engine

DIAGNOSIS AND TESTING

STEERING DIAGNOSIS CHARTS

STEERING NOISE

There is some noise in all power steering systems. One of the most common is a hissing sound evident at standstill parking. Hiss is a very high frequency noise similar to that experienced while slowly closing a water tap. The noise is present in every valve and results in high velocity fluid passing valve orifice edges. There is no relationship between this noise and performance of the steering. Hiss may be expected when steering wheel at end of travel or slowly turning at standstill.

CONDITION	POSSIBLE CAUSES	CORRECTION
Objectionable Hiss Or Whistle	1. Damaged or mispositioned steering column coupler to dash panel seal. 2. Noisy valve in power steering gear.	1. Check for proper seal between steering column coupler and dash seal. 2. Replace steering gear assembly.
Rattle Or Clunk	1. Steering gear loose on crossmember. 2. Front suspension crossmember to frame bolts or studs loose. 3. Tie rod looseness (outer or inner). 4. Loose lower control arm to front suspension crossmember bolts. 5. Lower control arm inner pivot bushing worn. 6. Lower control arm tension strut bushing worn. 7. Loose strut assembly to body attaching bolts or nuts. 8. Power steering fluid pressure hose touching the body of the vehicle. 9. Noise internal to power steering gear. 10. Damaged front suspension crossmember. 11. Stabilizer bar link ball joints worn.	1. Check steering gear to crossmember mounting bolts. Tighten to specified if found to be loose. 2. Tighten the front suspension crossmember attaching bolts or studs to the specified torque. 3. Tighten mounting nuts to specified torque. Check tie rod pivot points for wear. Replace worn/loose parts as required. 4. Tighten control arm mounting bolts to the specified torques. 5. Replace lower control arm pivot bushing. 6. Replace lower control arm tension strut bushing. 7. Check upper strut mount to body attaching bolts or nuts for looseness. If required tighten to the specified torques. 8. Adjust hose to proper position by loosening, repositioning, and tightening fitting to specified torque. Do not bend tubing. 9. Replace steering gear assembly. 10. Replace front suspension crossmember. 11. Replace stabilizer bar link.
Chirp or squeal (in the area of the power steering pump). Particularly noticeable at full wheel travel and during standstill parking.	1. Loose power steering pump drive belt.	1. Adjust power steering pump drive belt to specified tension.

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSES	CORRECTION
Power steering pump growl results from the development of high pressure fluid flow. Normally this noise should not be high enough to be objectionable. Abnormal situations, such as a low oil level causing aeration or hose touching the vehicle body, can create a noise level that could bring complaints.		
Whine Or Growl (Pump Noise)	1. Low fluid level. 2. Power steering hose touching vehicle body or frame. 3. Extreme wear of power steering pump internal parts. 4. Extremely cold temperatures of less than zero degrees Fahrenheit.	1. Fill power steering fluid reservoir to proper level and perform leakage diagnosis. (Recheck fluid level after power steering fluid is free of air.) 2. Reposition power steering hose. Replace hose if tube ends are bent. 3. Replace power steering pump and flush system. 4. Noise is typical when starting vehicle in extremely cold temperature. Normal duration of noisy operation is less than one minute. If noisy operation is longer, verify power steering fluid is at the correct level. If level is low perform leakage diagnosis.
Sucking Air Sound	1. Loose clamp on power steering fluid low pressure hose. 2. Missing O-Ring on power steering hose connection. 3. Low power steering fluid level 4. Air leak between power steering fluid reservoir and power steering pump.	1. Tighten or replace hose clamp. 2. Inspect connection and replace O-Ring as required. 3. Fill power steering fluid reservoir to proper level and perform leakage diagnosis. 4. Inspect and or replace power steering fluid reservoir as required.
SQUEAK OR RUBBING SOUND	1. Sound coming from steering column. 2. Sound internal to steering gear.	1. Check for squeak in steering column. Inspect for contact between shroud, intermediate shaft, column, and steering wheel. Realign if necessary. Check for lack of grease on steering column dash panel to lower coupler seal. 2. Replace steering gear assembly.
SCRUBBING OR KNOCKING SOUND	1. Incorrect tire size. 2. Check clearance between tires and other vehicle components, through the full travel of the suspension. 3. Check for interference between steering gear and other components.	1. Verify that tire size on vehicle is the same as originally supplied. 2. Correct as necessary. 3. Correct as necessary.

DIAGNOSIS AND TESTING (Continued)

BINDING STICKING SEIZED

CONDITION	POSSIBLE CAUSES	CORRECTION
CATCHES, STICKS IN CERTAIN POSITIONS OR IS DIFFICULT TO TURN.	1. Low power steering fluid level. 2. Tires not inflated to specified pressure. 3. Lack of lubrication in front suspension control arm ball joints. 4. Worn lower ball joint. 5. Lack of lubrication in front suspension outer tie rod ends. 6. Loose power steering pump drive belt. 7. Faulty power steering pump flow control. (Verify cause using Power Steering Pump Test Procedure.) 8. Excessive friction in steering column or intermediate shaft. 9. Binding lower ball joint. 10. Worn front strut seat and bearing or strut pin stuck in strut seat. 11. Excessive friction in steering gear.	1. Fill power steering fluid reservoir to specified level and perform leakage diagnosis. 2. Inflate tires to the specified pressure. 3. Replace lower control arm. 4. Replace the lower control arm. 5. Replace tie rod end. 6. Tighten the power steering pump drive belt to the specified tension. See accessory drive in service manual. 7. Replace power steering pump. 8. Correct condition. (See Steering Column Service Procedure) 9. Replace the lower control arm. 10. Replace front strut seat and bearing. 11. Replace steering gear assembly.

SHAKE SHUDDER VIBRATION

CONDITION	POSSIBLE CAUSES	CORRECTION
VIBRATION OF THE STEERING WHEEL AND/OR DASH DURING DRY PARK OR LOW SPEED STEERING MANEUVERS.	1. Air in the fluid of the power steering system. 2. Tires not properly inflated. 3. Excessive engine vibration. 4. Loose tie rod end. 5. Overcharged air conditioning system.	1. Steering shudder can be expected in new vehicles and vehicles with recent steering system repairs. Shudder should improve after the vehicle has been driven several weeks. 2. Inflate tires to the specified pressure. 3. Ensure that the engine is running properly. 4. Check inner and outer tie rod and adjustment pinch bolt for excessive free play. 5. Check air conditioning pump head pressure. (See Air Conditioning Refrigerant System Diagnosis)

DIAGNOSIS AND TESTING (Continued)

LOW ASSIST, NO ASSIST, HARD STEERING

CONDITION	POSSIBLE CAUSES	CORRECTION
STIFF, HARD TO TURN, SURGES, MOMENTARY INCREASE IN EFFORT WHEN TURNING.	1. Tires not properly inflated. 2. Low power steering fluid level. 3. Loose power steering pump drive belt. 4. Lack of lubrication in control arm ball joints. 5. Worn lower ball joint. 6. Low power steering pump pressure. (Verify using Power Steering System Test Procedure) 7. High internal leak in steering gear assembly. 8. Power steering pressure switch inoperative.	1. Inflate tires to specified pressure. 2. Add power steering fluid as required to power steering fluid reservoir to obtain proper level. Perform leakage diagnosis on power steering system. 3. Tighten the power steering pump drive belt to the specified tension. If drive belt is defective replace and correctly tension. 4. Replace lower control arm. 5. Replace the lower control arm. 6. Verify cause using the Power Steering System Test Procedure. Replace the power steering pump if necessary. 7. Check steering system using the Power Steering System Test Procedure. If steering gear is defective replace steering gear. 8. Diagnose the power steering pressure switch to assure the switch is operating correctly. Replace switch if not operating correctly.

POOR RETURN TO CENTER

CONDITION	POSSIBLE CAUSES	CORRECTION
STEERING WHEEL DOES NOT WANT TO RETURN TO CENTER POSITION.	1. Tires not inflated to specified pressure. 2. Improper front wheel alignment. 3. Lack of lubrication in front suspension control arm ball joints. 4. Mispositioned dash cover. 5. Steering wheel rubbing. 6. Damaged, mis-positioned or un-lubricated steering column coupler to dash seal. 7. Binding upper strut bearing. 8. Tight shaft bearing in steering column assembly. 9. Excessive friction in steering column coupling. 10. Excessive friction in steering gear.	1. Inflate tires to specified pressure. 2. Check and adjust as necessary. 3. Replace lower control arm. 4. Reposition dash cover. To evaluate items 5 and 6, disconnect the intermediate shaft. Turn the steering wheel and feel or listen for internal rubbing in steering column. 5. Adjust steering column shrouds to eliminate rubbing condition. 6. Determine condition which exists and correct. 7. Replace upper strut bearing. 8. Replace the steering column assembly. 9. Replace steering column coupling. 10. Replace steering gear.

DIAGNOSIS AND TESTING (Continued)

LOOSE STEERING

CONDITION	POSSIBLE CAUSES	CORRECTION
EXCESSIVE STEERING WHEEL KICKBACK OR TOO MUCH STEERING WHEEL FREE PLAY.	1. Air in the fluid of the power steering system. 2. Steering gear loose on crossmember. 3. Worn steering gear isolators. 4. Worn, broken or loose steering column to steering gear coupler. 5. Free play in steering column. 6. Loose front suspension control arm ball joints. 7. Loose steering knuckle to ball joint stud pinch bolt. 8. Front wheel bearings loose or worn. 9. Loose outer tie rod ends. 10. Worn inner tie rod Bushing. 11. Defective steering gear rotary valve.	1. Fill power steering fluid reservoir to the specified level. Perform procedure to bleed the air out of the power steering system. Perform leakage diagnosis. 2. Check steering gear to crossmember mounting bolts. Tighten to specified torque if found to be loose. 3. Inspect steering gear isolators and replace if necessary. 4. Check for worn universal joint, broken isolator or loose fasteners. Replace coupling if required. 5. Check steering column and replace if required. 6. Check and or replace the lower control arm as required. 7. Check pinch bolts and tighten if required to specified torque. 8. Tighten hub nut to specified torque or replace with new parts as necessary. 9. Check free play of outer tie rod ends and replace if required. 10. Replace inner tie rod assembly. 11. Replace steering gear assembly.

DIAGNOSIS AND TESTING (Continued)

VEHICLE LEADS TO THE SIDE

CONDITION	POSSIBLE CAUSES	CORRECTION
STEERING WHEEL DOES NOT WANT RETURN TO CENTER POSITION.	1. Radial tire lead. 2. Front suspension misaligned. 3. Wheel braking. 4. Unbalanced steering gear valve. (If this is the cause, the steering efforts will be very light in direction of lead and heavier in the opposite direction.	1. See Lead Diagnosis and Correction Chart in suspension section of this service manual, under Wheel Alignment. 2. See Lead Diagnosis and Correction Chart in suspension section of this service manual, under Wheel Alignment. 3. Check for dragging brakes. Refer to the procedures in the Brake Group of this service manual. 4. Replace steering gear.
STEERING WHEEL HAS FORE AND AFT LOOSENESS.	1. Steering wheel to steering column shaft retaining nut not properly tightened and torqued. 2. Steering column lower bearing spring retainer slipped on steering column shaft.	1. Tighten the retaining nut to its specified torque specification. 2. Replace steering column.

POWER STEERING FLUID LEAK

CONDITION	POSSIBLE CAUSES	CORRECTION
LOW FLUID LEVEL WITH: NO VISIBLE SIGNS OF A LEAK ON THE STEERING GEAR, POWER STEERING PUMP, FLOOR OR ANYWHERE ELSE.	1. Underfilled power steering fluid in reservoir.	1. Adjust the power steering fluid fill to the correct level.
LOW FLUID LEVEL WITH: VISIBLE LEAK ON STEERING GEAR, POWER STEERING PUMP, FLOOR OR ANYWHERE ELSE.	1. Power steering hose connections at the power steering pump, steering gear, cooler, pressure switch, and quick connect fittings. 2. Power steering pump or power steering gear leaking.	1. Check for loose fittings and if found, tighten the fitting to its specified torque. If fittings are tight examine the fittings for damaged or missing O-ring seals and replace as required. 2. Identify the location of the leak and repair or replace the component as required. Refer to Power Steering Pump and/or Power Steering Gear in this group of the service manual for required procedures.

DIAGNOSIS AND TESTING (Continued)

FOAMY OR MILKY POWER STEERING FLUID

CONDITION	POSSIBLE CAUSES	CORRECTION
AERATION AND OVERFLOW OF FLUID.	1. Air leaks. 2. Low fluid level. 3. Cracked power steering pump housing. 4. Water contamination.	1. Check for an air leak into the power steering system as described under Sucking Air Diagnosis and correct condition. 2. Extremely cold temperatures may cause power steering fluid aeration if the power steering fluid is low. Add power steering fluid as required to bring level up to specification. 3. Remove power steering pump from vehicle and inspect the power steering pump housing for cracks. If a defect in the housing is found, replace the power steering pump. 4. Drain the power steering fluid from the system if there is evidence of contamination. Then refill the system with fresh clean power steering fluid.

POWER STEERING SYSTEM FLOW AND PRESSURE TEST

ALL ENGINES

The following procedure is to be used to test the operation of the power steering system on this vehicle. This test will provide the flow rate of the power steering pump along with the maximum relief pressure. This test is to be performed any time a power steering system problem is present to determine if the power steering pump or power steering gear is not functioning properly. The following flow and pressure test is performed using the Power Steering Analyzer Kit, Special Tool 6815 (Fig. 4), hoses, Special Tools 6905 and 6959, and fittings from adapter kit, Special Tool 6893.

(1) Assemble hoses on Power Steering Analyzer, Special Tool 6815, as shown. Install Pressure Hose, Special Tool 6905 (in 6893 kit), in the inlet fitting on Power Steering Analyzer. Install Pressure Hose, Special Tool 6713 (in 6815 kit) on Pressure Hose, Special Tool 6905. Install Pressure Hose, Special Tool 6959, in the outlet fitting on Power Steering Analyzer.

Install the following adapters from Adapter Set, Special Tool 6893(Fig. 5), on the analyzer hose ends:

- **2.7L engine** — Install Adapter Fitting, Special Tool 6844, on Pressure Hose, Special Tool 6713.
- **3.2L or 3.5L engine** — Install Adapter Fitting, Special Tool 6825, on Pressure Hose, Special Tool 6713.
- **All models** — Install Adapter Fitting, Special Tool 6826, on Pressure Hose, Special Tool 6959.

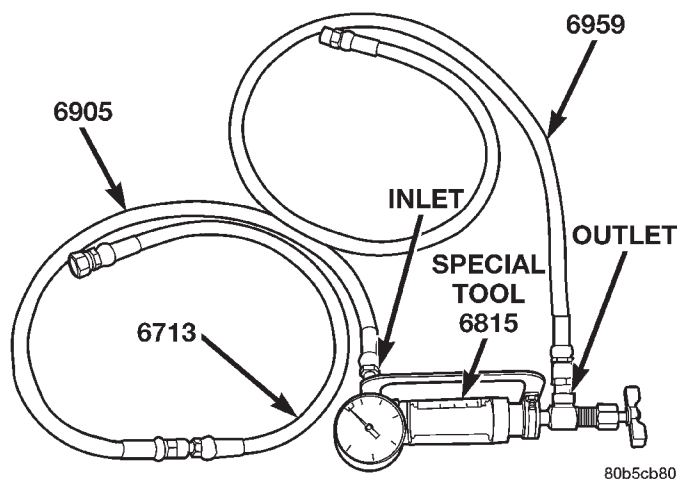


Fig. 4 Power Steering Analyzer With Hoses Installed

CAUTION: To prevent personal injury, safety goggles should be worn at all times when performing any test procedures on the power steering pump or power steering gear.

The following procedure is to be used to test the operation of the power steering system on the vehicle.

- (2) Check belt tension and adjust as necessary.

NOTE: On vehicles with 3.2 and 3.5 liter engines, it may be easier to access the power steering pump pressure fitting from the bottom of the vehicle engine compartment.

- (3) Disconnect the power steering fluid pressure hose from the power steering pump (Fig. 6) (Fig. 7).

DIAGNOSIS AND TESTING (Continued)

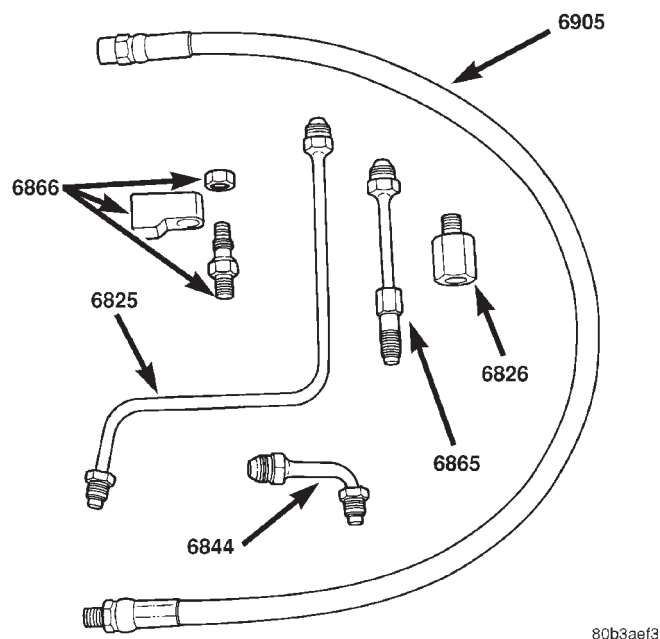


Fig. 5 Power Steering Analyzer Adapters 6893

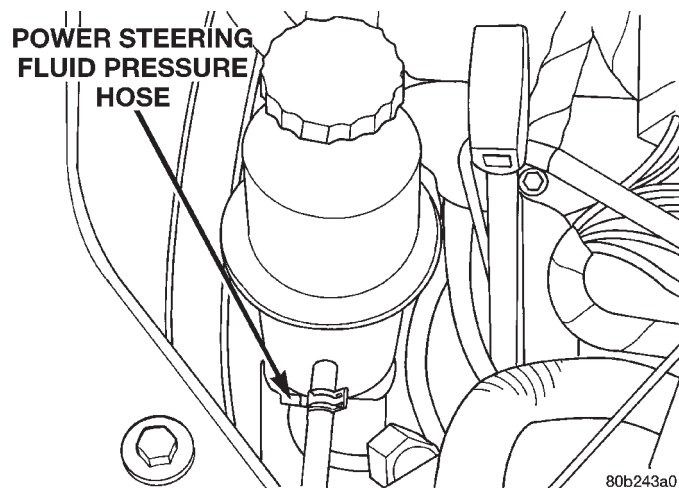


Fig. 6 Pressure Hose Connection To Power Steering Pump (2.7L Engine)

(4) **2.7L engine** — Connect Adapter Fitting, Special Tool 6844 (Fig. 8), attached to pressure hose from inlet (gauge end) of Power Steering Analyzer to the pressure fitting on the power steering pump.

(5) **3.2L or 3.5L engine** — Connect Adapter Fitting, Special Tool 6825, attached to pressure hose from inlet (gauge end) of Power Steering Analyzer to the pressure fitting on the power steering pump (Fig. 9).

(6) Connect vehicle power steering fluid pressure hose to Adapter Fitting, Special Tool 6826, which should be already installed in the outlet hose (valve end) of Power Steering Analyzer.

(7) Completely open valve on Power Steering Analyzer.

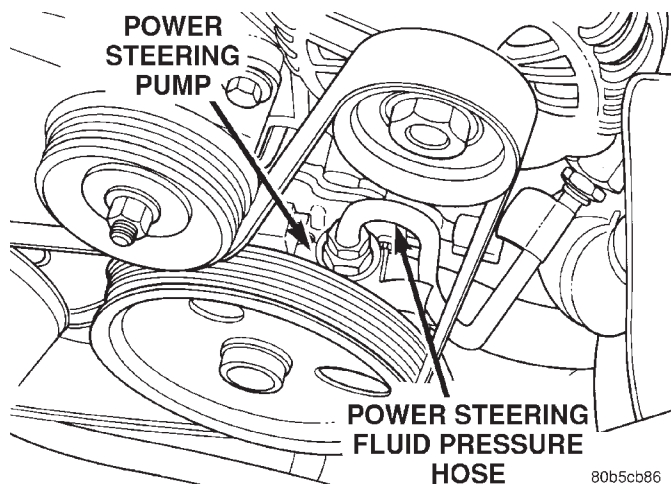


Fig. 7 Pressure Hose Connection To Power Steering Pump (3.2L/3.5L Engine)

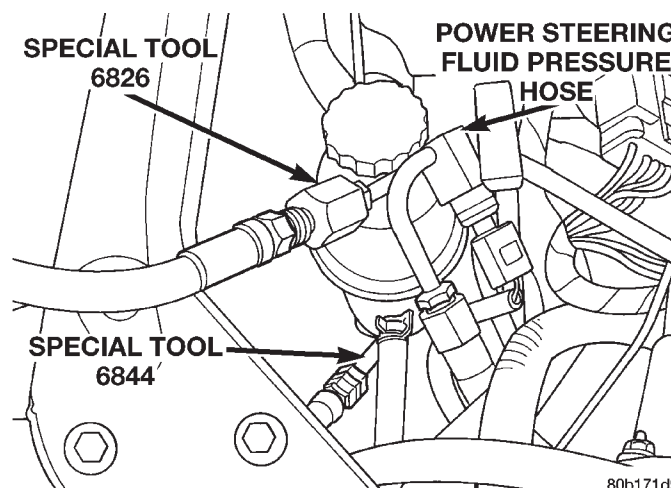


Fig. 8 Analyzer Connected To Power Steering Pump (2.7L Engine)

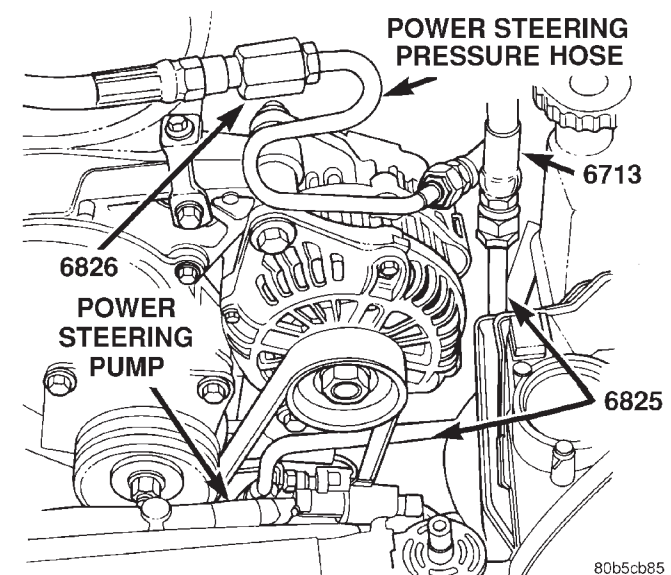


Fig. 9 Analyzer Connected To Power Steering Pump (3.2L/3.5L Engine)

DIAGNOSIS AND TESTING (Continued)

(8) Start engine and let idle long enough to circulate power steering fluid through the analyzer and hoses, until the air is out of the fluid. Shut off engine.

(9) Check power steering fluid level and add fluid as necessary. Start engine again and let idle.

(10) Gauge should read below 862 kPa (125 psi), if above, inspect the hoses for restrictions and repair as necessary. The initial pressure should be in the range of 345-862 kPa (50-125 psi).

CAUTION: The following test procedure involves testing maximum pump pressure output and flow control valve operation. Do not leave valve closed for more than five seconds as the pump could be damaged.

(11) Close valve fully three times and record highest pressure indicated each time. **All three readings must be above specifications and within 345 kPa (50 psi) of each other.**

NOTE: Power steering pump maximum relief pressure is 8275 to 8975 kPa (1250 to 1350 psi.).

- Power steering pump pressures above specifications but not within 345 kPa (50 psi) of each other, replace pump.
- Pressures within 345 kPa (50 psi) of each other but below specifications, replace pump.

CAUTION: Do not force the pump to operate against the stops for more than 2 to 4 seconds at a time because, pump damage will result.

(12) Completely open the valve on the Power Steering Analyzer. Turn the steering wheel to the extreme left until the stop in the steering gear is met, then turn the steering wheel to the right until the right stop is met. Record the highest indicated pressure at each position. Compare the recorded readings to the specifications. If the highest output pressures are not the same against either stop, the steering gear is leaking internally and must be replaced.

SERVICE PROCEDURES

POWER STEERING FLUID LEVEL CHECK

WARNING: FLUID LEVEL SHOULD BE CHECKED WITH ENGINE OFF TO PREVENT INJURY FROM MOVING PARTS. DO NOT USE AUTOMATIC TRANSMISSION FLUID IN THE POWER STEERING SYSTEM. DO NOT OVERFILL THE POWER STEERING SYSTEM.

Wipe off the power steering fluid reservoir so that it is free of dirt (Fig. 10) (Fig. 11). Check the fill level of the power steering fluid in the reservoir according to the markings on the side of the reservoir. The MAX. COLD/MIN. COLD fluid levels are to be measured with the power steering fluid at a normal ambient temperature of approximately 32°C to 43°C (90°F to 110°F). In all pumps add fluid as necessary, using only **Mopar® Power Steering Fluid, or an equivalent. DO NOT USE ANY TYPE OF AUTOMATIC TRANSMISSION FLUID.**

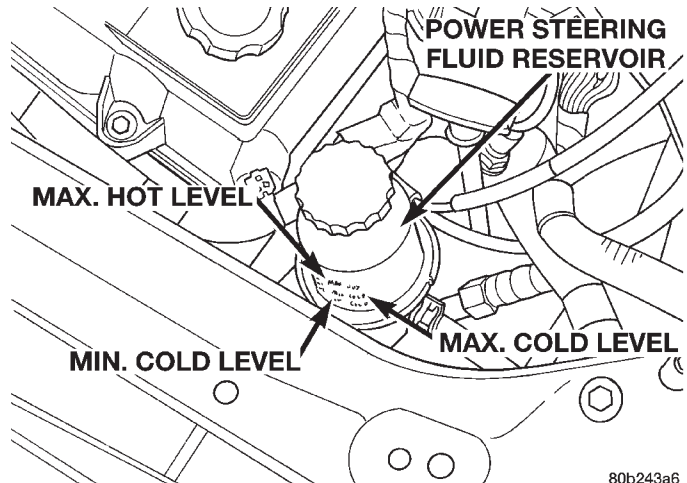


Fig. 10 Power Steering Fluid Reservoir (2.7L Engine)

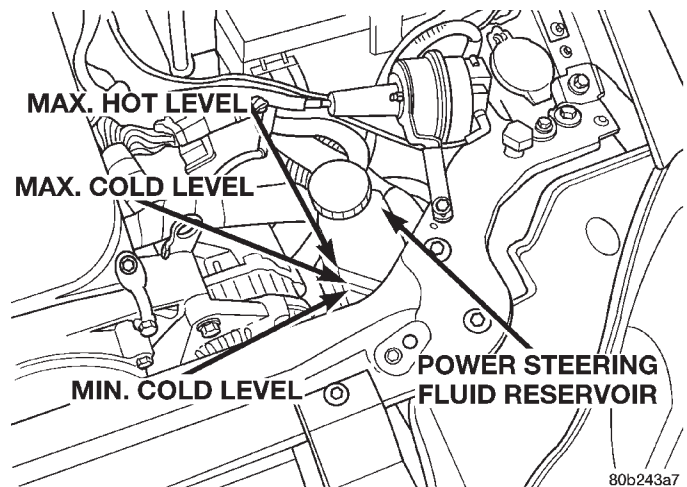


Fig. 11 Power Steering Fluid Reservoir (3.2L/3.5L Engine)

REMOVAL AND INSTALLATION

POWER STEERING FLUID COOLER

REMOVE

(1) Using a siphon pump, remove as much power steering fluid as possible from the power steering fluid reservoir.

(2) Raise vehicle using a frame contact type hoist or supported as required using jack stands. See

REMOVAL AND INSTALLATION (Continued)

Hoisting in the Lubrication And Maintenance group of this service manual for the required hoisting or jacking procedure to be used for this vehicle.

(3) 300M only — The front fascia will require removal to access the power steering cooler. See Frames and Bumpers, Group 13, in this service manual for required procedure.

(4) Remove the hose clamp from the lower hose at the power steering fluid cooler (Fig. 12). Remove the lower hose from the power steering fluid cooler. Drain remaining power steering fluid from the hoses and the power steering fluid cooler.

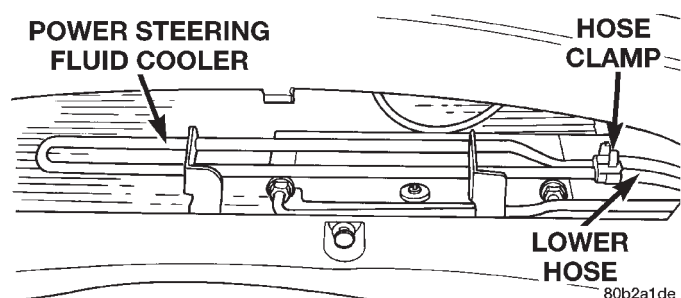


Fig. 12 Lower Hose At Power Steering Fluid Cooler

(5) Remove the hose clamp and upper hose (Fig. 13) from the power steering fluid cooler.

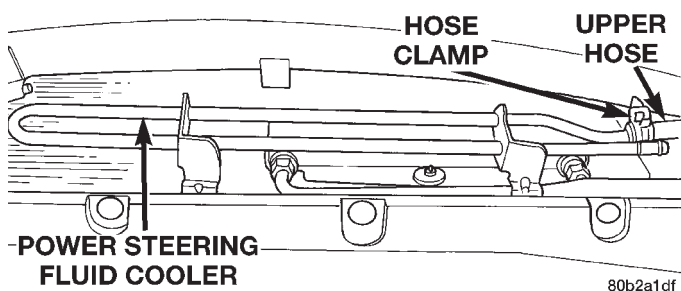


Fig. 13 Upper Hose At Power Steering Fluid Cooler

(6) Remove the 6 clips (Fig. 14) mounting the air dam to the radiator lower support.

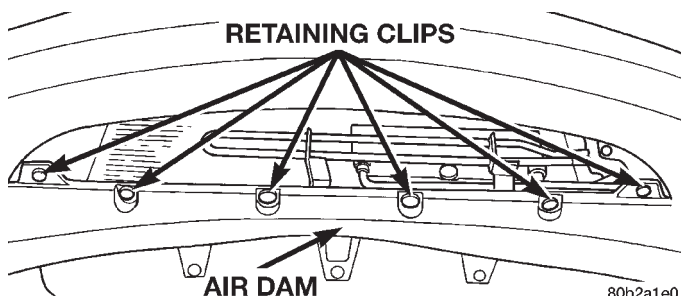


Fig. 14 Air Dam Retaining Clips

(7) Remove the 2 nuts (Fig. 15) attaching the power steering fluid cooler to the radiator lower crossmember.

(8) Remove the power steering fluid cooler from the radiator lower crossmember.

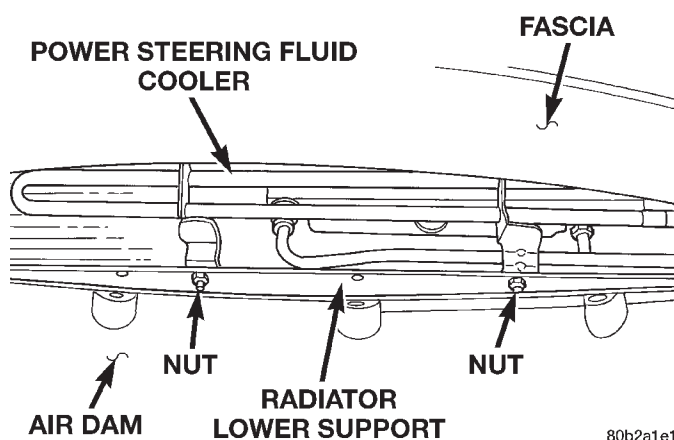


Fig. 15 Power Steering Fluid Cooler Attachment

INSTALL

(1) Install the power steering fluid cooler on the radiator lower crossmember.

(2) Install the 2 nuts (Fig. 15) attaching the power steering fluid cooler to the radiator lower crossmember. Tighten the attaching nuts to a torque of 12 N·m (105 in. lbs.).

(3) Install the air dam on the radiator lower support. Attach the air dam to the radiator lower support using **new retaining clips**.

(4) Install power steering fluid hoses (Fig. 13) and (Fig. 12) on the power steering fluid cooler. **Be sure hose clamps are installed on hose past the upset bead on the power steering oil cooler.**

(5) 300M only — Reinstall front fascia.

(6) Lower the vehicle to a point where front tires are just off the ground.

CAUTION: Do not use automatic transmission fluid. Use only the proper Mopar Power Steering Fluid or equivalent when filling the power steering fluid reservoir.

(7) Perform Power Steering Pump Initial Operation procedure which can be found in the Power Steering Pump section of this group to properly refill and bleed power steering system.

POWER STEERING FLUID HOSES (PRESSURE AND RETURN)

NOTE: On this vehicle the power steering fluid pressure and return hoses are connected together by their mounting brackets. For this reason both hoses need to be removed together if either of the hoses should fail. Use the procedure below for the replacement of either power steering fluid hose.

REMOVAL AND INSTALLATION (Continued)

REMOVE

On this vehicle the steering gear needs to be removed from the crossmember to remove the power steering hoses from the vehicle.

(1) Remove the battery ground cable from the ground stud on the shock tower and isolate the ground cable by installing the cable isolator on the ground stud (Fig. 16).

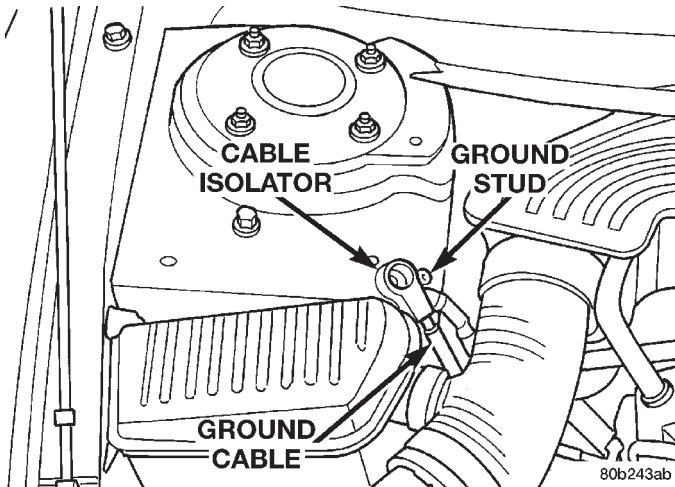


Fig. 16 Correctly Isolated Remote Ground Cable

(2) Position the front tires of the vehicle so that they are facing straight ahead.

(3) Raise the vehicle on a frame contact type hoist until the front tires of the vehicle are just off the floor. See Hoisting in the Lubrication and Maintenance section of this manual for the required lifting procedure to be used for this vehicle.

(4) Remove caps from both wiper arms at the attachment to the pivots to expose the wiper arm attaching nuts. Remove the nut (Fig. 17) attaching each wiper arm to its pivot.

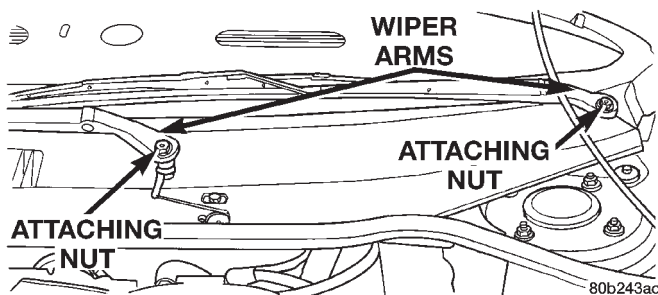


Fig. 17 Wiper Arm Attachment To Pivot

(5) Remove the wiper arms from the pivots. Wiper arms are removed from the pivots by rocking them back and force on the pivots until they can be pulled off the pivots.

(6) Remove the wiper module cover and cowl cover (Fig. 18).

(7) Remove the 8 bolts, attaching the reinforcement (Fig. 19) to the strut towers and the 1 bolt

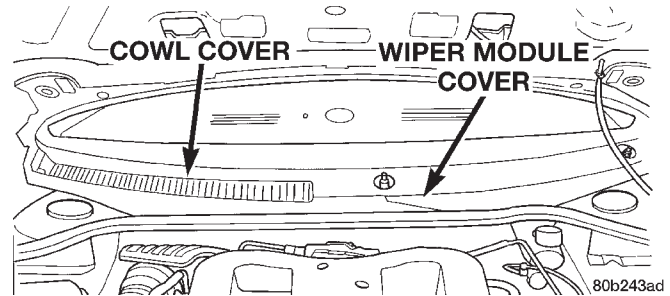


Fig. 18 Wiper Module And Cowl Cover

(Fig. 19) attaching the wiper module to the reinforcement. Remove the reinforcement from the vehicle.

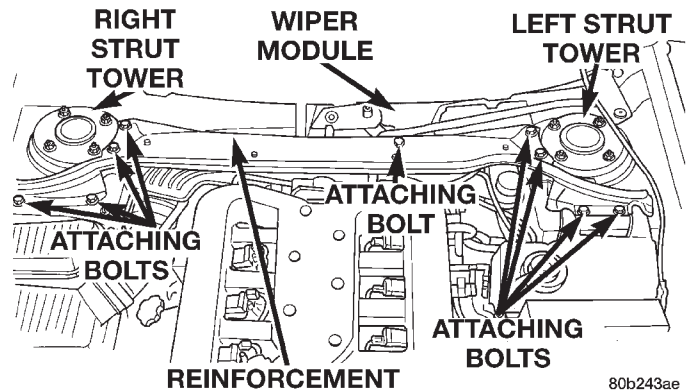


Fig. 19 Reinforcement Attachment To Vehicle

(8) Remove the in-line resonator and inlet hose (Fig. 20) from the throttle body and air let hose coming from the lid of the air cleaner housing.

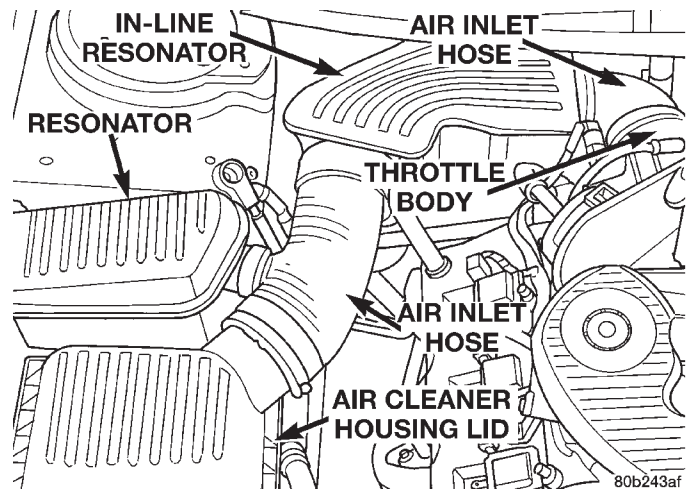


Fig. 20 In-Line Resonator And Air Inlet Hose

NOTE: When locking the steering wheel, the front tires of the vehicle are to be facing straight ahead.

(9) Using a steering wheel clamp, (Fig. 21) lock the steering wheel from rotating.

REMOVAL AND INSTALLATION (Continued)

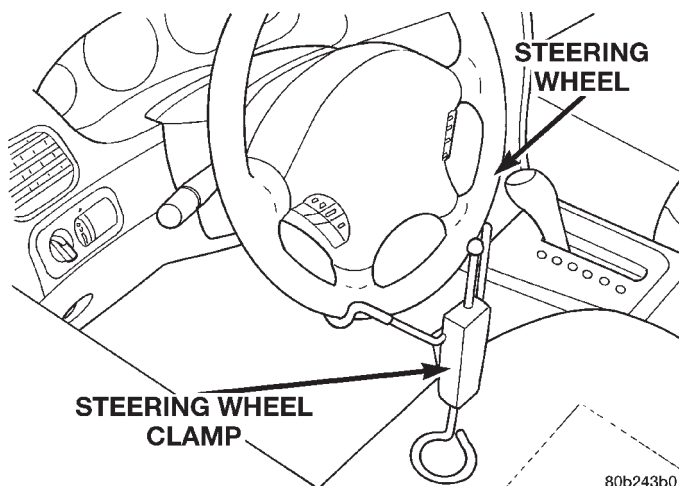


Fig. 21 Steering Wheel Lock Installed (Typical)

CAUTION: Before removing the steering column coupler from the intermediated steering shaft be sure the steering wheel is locked from rotating (Fig. 21). If the steering wheel is allowed to rotate freely after it is disconnected from the intermediated shaft, the clockspring will be damaged and will need to be replaced.

(10) Remove the retaining pin and the coupler bolt from the steering column coupler (Fig. 22). Separate the intermediate steering shaft from the steering column coupler.

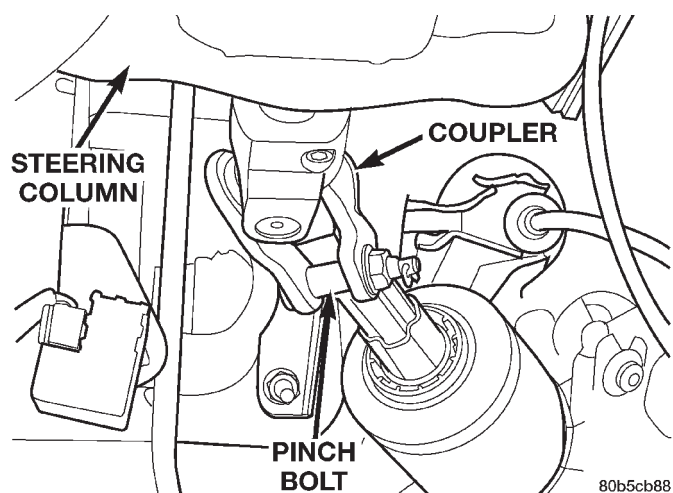


Fig. 22 Steering Column Coupler

(11) Bend back the retaining tabs on the mounting plate for the tie rod to steering gear mounting bolts (Fig. 23).

(12) Remove the bolts, mounting plate and washers (Fig. 24) attaching the tie rods to the steering gear. Lay the tie rods on top of the transaxle bell housing.

NOTE: The following step should be done to prevent excessive spilling of power steering fluid when

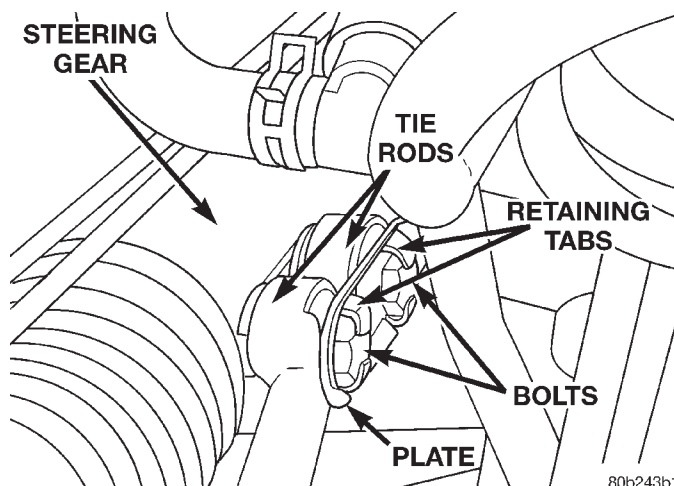


Fig. 23 Tie Rod Attachment Bolt Retaining Tabs

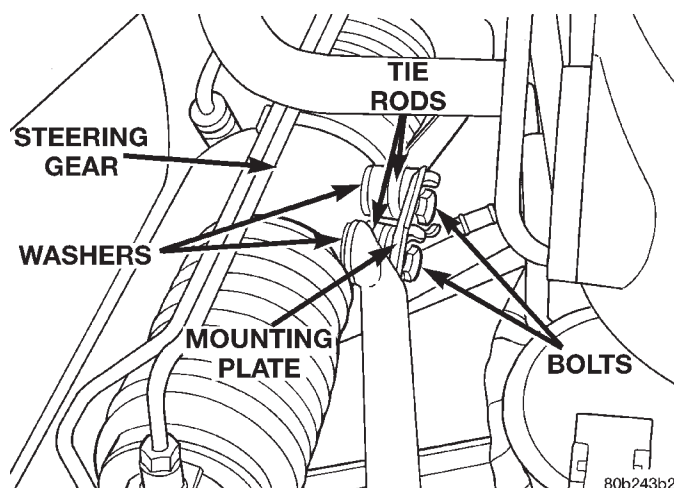


Fig. 24 Tie Rod To Steering Gear Attaching Bolts

the power steering fluid lines are removed from the steering gear.

(13) Using a siphon pump, remove as much power steering fluid as possible from the power steering fluid reservoir.

(14) Remove the 2 nuts (Fig. 25) mounting the master cylinder to the vacuum booster.

(15) Remove the master cylinder with the brake tubes connected, from the vacuum booster. Carefully position the master cylinder in an upright position on the left side valve cover of the engine.

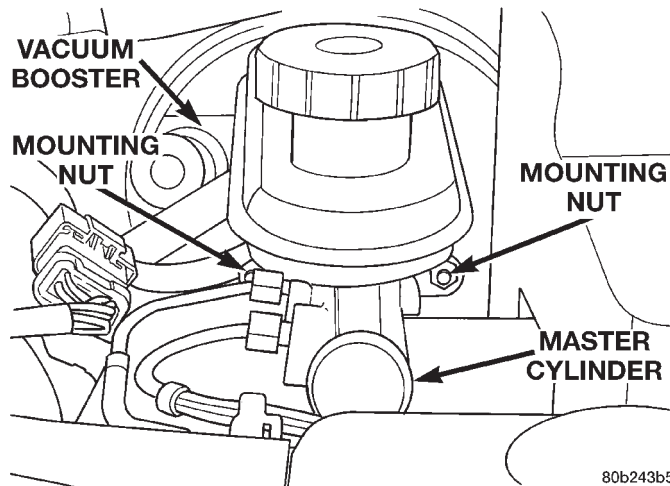
(16) Remove the vacuum supply hose to the vacuum booster at the check valve in the vacuum booster. Position the vacuum hose out of the way.

(17) Remove the power steering fluid pressure hose and return hose (Fig. 26) from the steering gear.

(18) Remove the 2 bolts attaching the left side of the steering gear to the crossmember (Fig. 27).

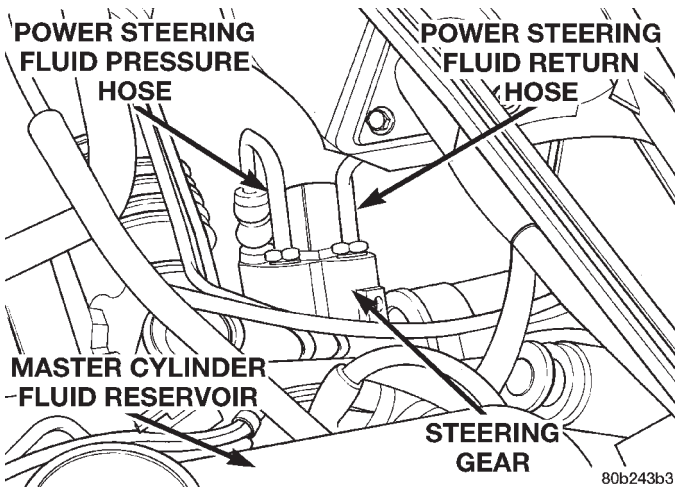
(19) Remove the 2 bolts attaching the steering gears right side mounting bracket (Fig. 28) to the crossmember.

REMOVAL AND INSTALLATION (Continued)



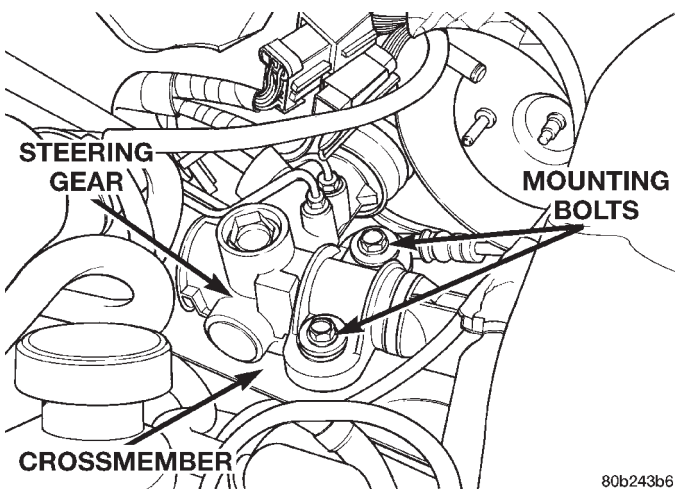
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Fig. 25 Master Cylinder To Vacuum Booster Mounting



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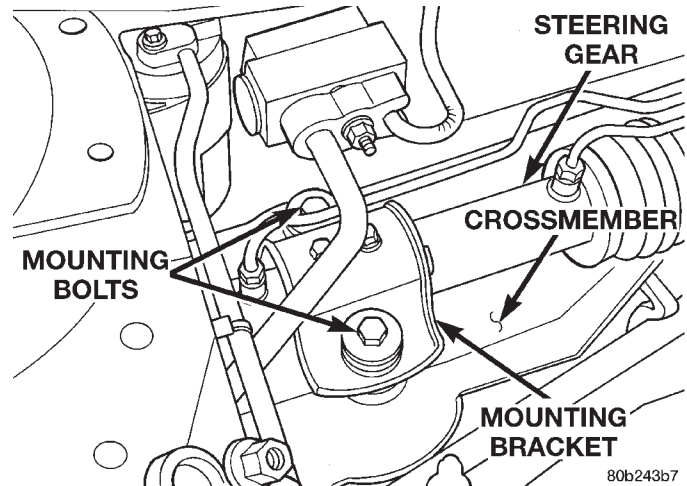
Fig. 26 Power Steering Hose Connections At Steering Gear



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Fig. 27 Steering Gear Attachment To Crossmember (Left Side)

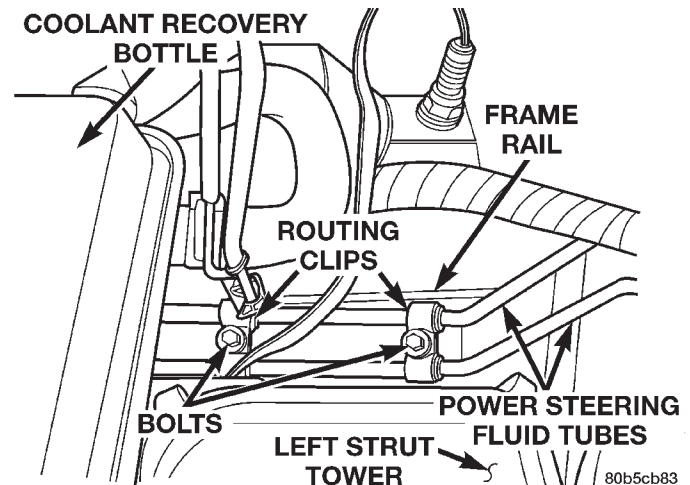
(20) Move the steering gear to clear the pressure and return lines.



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Fig. 28 Steering Gear Attachment To Crossmember (Right Side)

(21) Remove the bolts mounting the power steering hoses to the left frame rail (Fig. 29).



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Fig. 29 Power Steering Hose To Frame Rail Mounting

(22) Raise vehicle.

(23) 300M only — The front fascia will require removal to access the power steering cooler. See Frames and Bumpers, Group 13, in this service manual for required procedure.

(24) Remove the power steering fluid return hose from the power steering fluid cooler (Fig. 30). Let the remaining power steering fluid drain out of the return hose and the power steering fluid cooler.

(25) Lower the vehicle.

(26) Remove the power steering fluid hoses from the vehicle. The power steering fluid hoses are removable from the back of the engine compartment (Fig. 31).

INSTALL

(1) Install the power steering hoses into the vehicle using the reverse of the removal procedure

(2) Raise the vehicle.

REMOVAL AND INSTALLATION (Continued)

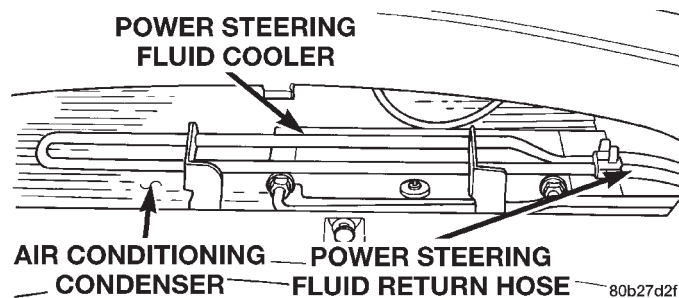


Fig. 30 Power Steering Return Hose At Cooler

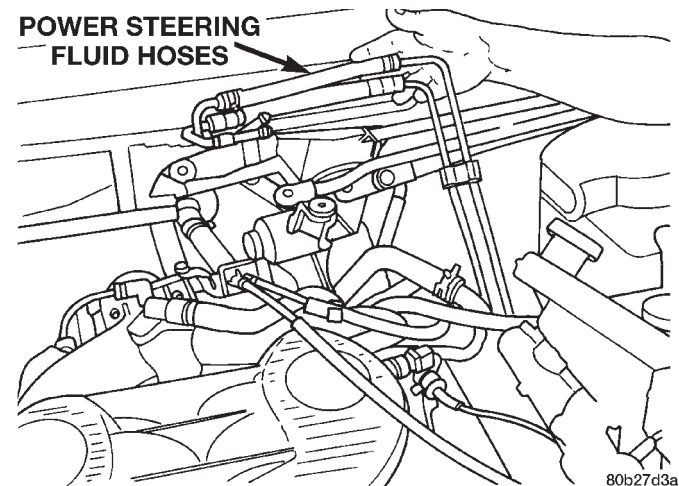


Fig. 31 Power Steering Hose Removal/Installation

(3) Install the power steering fluid return hose on the power steering fluid cooler (Fig. 30). **Be sure the hose clamp is installed past the upset bead on the power steering fluid cooler.**

(4) 300M only — Reinstall front fascia.

(5) Lower the vehicle until the tires are just clear of the floor.

(6) Install the power steering hoses onto the left frame rail (Fig. 29) by installing the routing clip bolts. Tighten the bolts to 10 N·m (89 in. lbs.).

(7) Slide steering gear and intermediate shaft back into dash panel sealing boot. Align the steering gear mounting holes with its mounting holes in crossmember.

(8) Loosely install the bolts mounting the left side of the steering gear to the crossmember (Fig. 27).

CAUTION: Tightening the steering gear to crossmember mounting bolts to the proper torque is very important.

(9) Install the bolts mounting the right side mounting bracket for the steering gear to the crossmember (Fig. 28). Tighten the mounting bolts to a torque of 58 N·m (43 ft. lbs.).

(10) Tighten the bolts mounting the left side of the steering gear to the crossmember (Fig. 27) to a torque of 58 N·m (43 ft. lbs.).

(11) Attach power steering fluid, pressure and return lines into proper ports of the steering gear

(Fig. 26). Tighten both power steering hose tube nuts to a torque of 47 N·m (35 ft. lbs.).

CAUTION: Before installing tie rods on steering gear be sure the tie rod spacer block inside the steering gear bellows (Fig. 32) is correctly aligned with the bolt holes in the rack of the steering gear and the steering gear bellows.

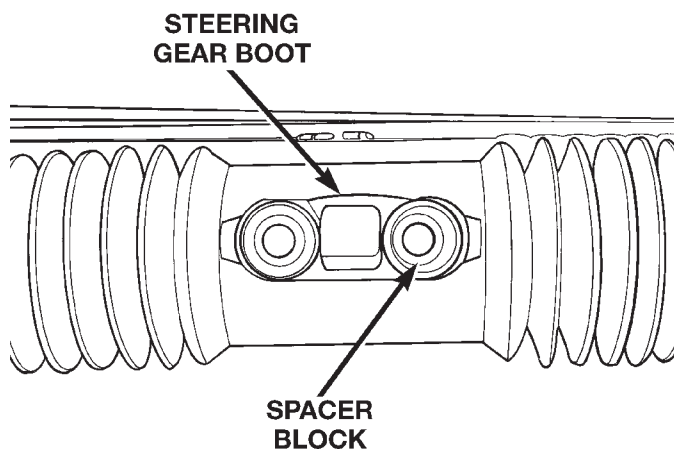


Fig. 32 Tie Rod Spacer Block

(12) Align center take off on steering gear with the tie rod assemblies. Install tie rod attaching bolts and washers into steering gear. **Be sure washers are installed between tie rods and steering gear (Fig. 33). Tighten the tie rod to steering gear bolts to a torque of 82 N·m (60 ft. lbs.).**

CAUTION: After tie rod attaching bolts are torqued, bend attaching bolt retaining tabs against heads of attaching bolts (Fig. 23).

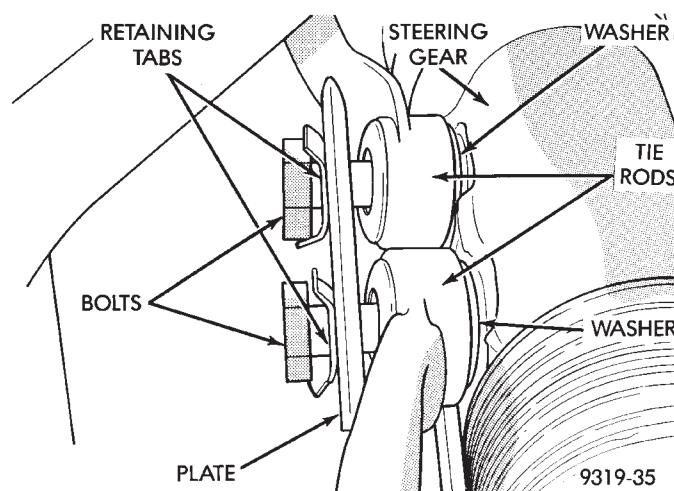


Fig. 33 Tie Rod Attachment To Steering Gear

(13) Install the vacuum hose for the vacuum booster on intake manifold vacuum port. Install hose clamp on vacuum hose.

REMOVAL AND INSTALLATION (Continued)

(14) Install the master cylinder on the vacuum booster. Install the 2 nuts attaching the master cylinder to the vacuum booster. Tighten the master cylinder mounting nuts to a torque of 28 N·m (250 in. lbs.).

(15) Remove the clamp from the steering wheel (Fig. 21).

(16) Install the intermediate shaft onto the steering column shaft. Install steering column coupler pinch bolt (Fig. 22) and tighten to a torque of 28 N·m (21 ft. lbs.). Install the pinch bolt nut retaining pin in pinch bolt.

(17) Install the reinforcement (Fig. 19) on the vehicle. Install the 8 bolts, attaching the reinforcement (Fig. 19) to the strut towers. Install the bolt (Fig. 19) attaching the wiper module to the reinforcement.

(18) Install the in-line resonator and inlet hose (Fig. 20) on the throttle body and air let hose coming from the lid of the air cleaner housing.

(19) Install the covers (Fig. 18) over the wiper module and the cowl. Install and securely tighten the attaching screws.

(20) Install the wiper arms (Fig. 17) on the pivots. Install and securely tighten the wiper arm to pivot attaching nuts. Install the caps on the wiper arms covering the pivot nuts.

(21) Install the battery ground cable onto the ground stud on the shock tower.

CAUTION: Do not use automatic transmission fluid. Use only the proper Mopar Power Steering Fluid or equivalent when filling the power steering fluid reservoir.

(22) Perform Power Steering Pump Initial Operation procedure which can be found in the Power Steering Pump section of this group to properly refill and bleed power steering system.

(23) Lower vehicle.

(24) Adjust front toe if necessary. Refer to Suspension, Group 2, for the required procedure.

POWER STEERING FLUID PRESSURE SWITCH (2.7L ENGINE)

REMOVE

(1) Remove the battery ground cable from the ground stud on the shock tower and isolate it cable by installing the cable isolator on the ground stud (Fig. 34).

(2) Remove the wire harness connector on from the power steering pressure switch (Fig. 35).

(3) Remove the power steering pressure switch from the power steering pressure hose (Fig. 35).

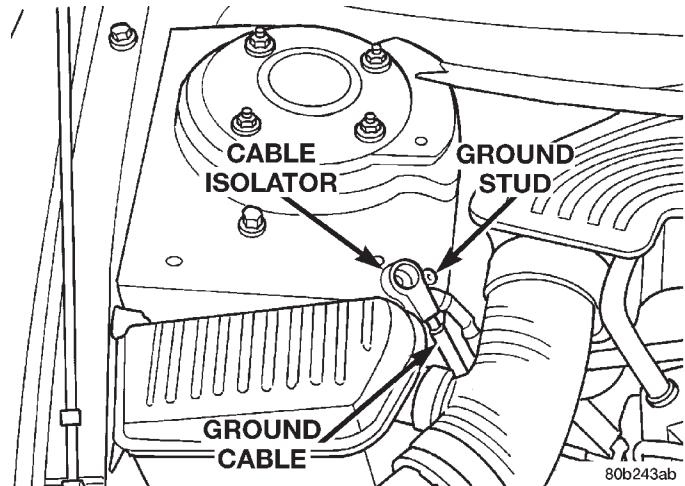


Fig. 34 Correctly Isolated Remote Ground Cable

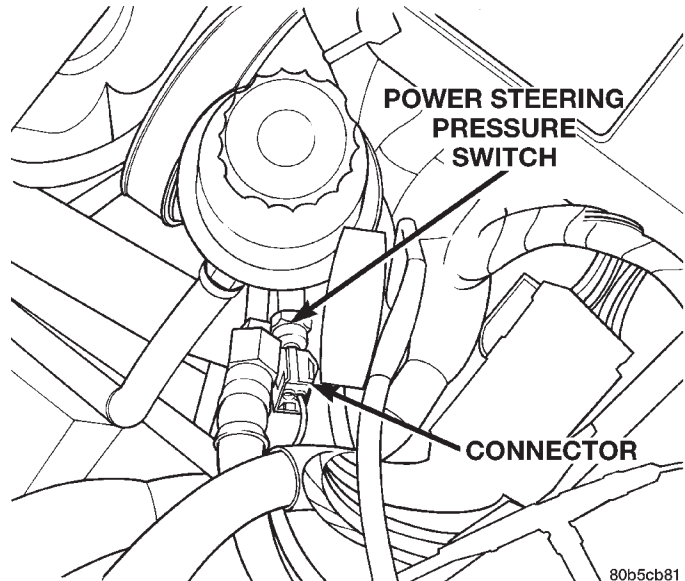


Fig. 35 Power Steering Pressure Switch Location

INSTALL

(1) Install the power steering pressure switch into the power steering pressure hose (Fig. 35). Tighten the pressure switch to a torque of 16 N·m (140 in. lbs.).

(2) Connect the wire harness connector.

(3) Connect the battery ground cable to the ground stud located on the strut tower.

POWER STEERING FLUID PRESSURE SWITCH (3.2L/3.5L ENGINE)

REMOVE

(1) Remove the battery ground cable from the ground stud on the shock tower and isolate it cable by installing the cable isolator on the ground stud (Fig. 36).

(2) Raise the vehicle. See Hoisting in the Lubrication And Maintenance section of this manual.

REMOVAL AND INSTALLATION (Continued)

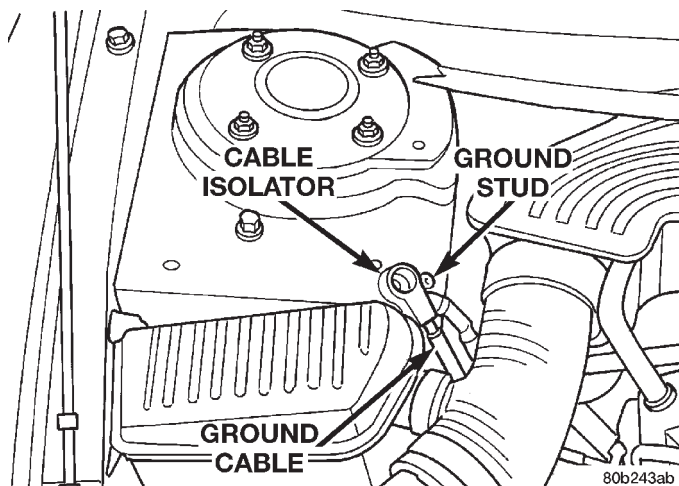


Fig. 36 Correctly Isolated Remote Ground Cable

(3) Remove the wire harness connector on from the power steering pressure switch (Fig. 37).

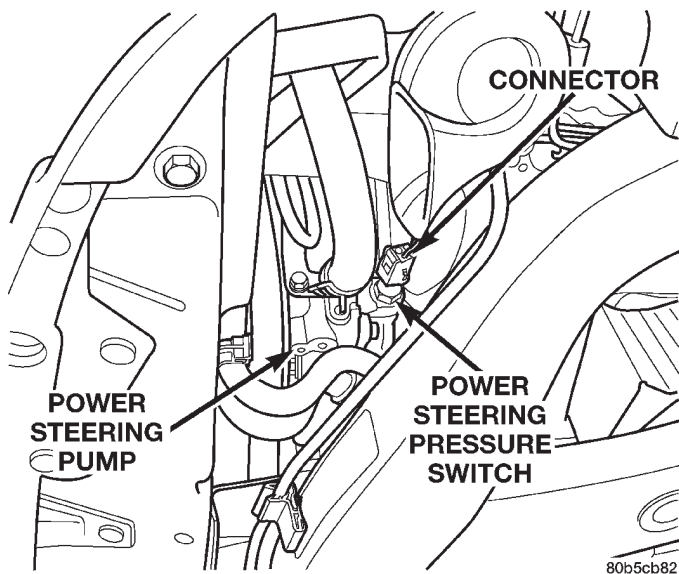


Fig. 37 Power Steering Pressure Switch Location

(4) Remove the power steering pressure switch from the power steering pump (Fig. 37).

INSTALL

- (1) Install the power steering pressure switch (Fig. 37). Tighten the pressure switch to a torque of 16 N·m (140 in. lbs.).
- (2) Connect the wire harness connector.
- (3) Lower the vehicle.
- (4) Connect the battery ground cable to the ground stud located on the strut tower.
- (5) Check and adjust fluid level as necessary.

SPECIFICATIONS**POWER STEERING FASTENER TORQUE SPECIFICATIONS**

DESCRIPTION	TORQUE
-------------	--------

POWER STEERING GEAR:

Crossmember Bolts	58 N·m (43 ft. lbs.)
Tie Rod Steering Arm Nut . . .	37 N·m (27 ft. lbs.)
Tie Rod Steering Gear Bolt . . .	82 N·m (60 ft. lbs.)
Tie Rod Adjuster Pinch bolt . .	45 N·m (33 ft. lbs.)

POWER STEERING FLUID HOSES:

Hose Tube Nuts	47 N·m (35 ft. lbs.)
--------------------------	----------------------

POWER STEERING PRESSURE SWITCH:

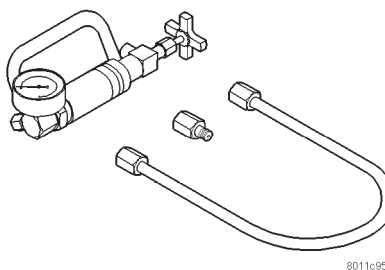
Power Steering Pressure Switch	22 N·m (200 in. lbs.)
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POWER STEERING PUMP:

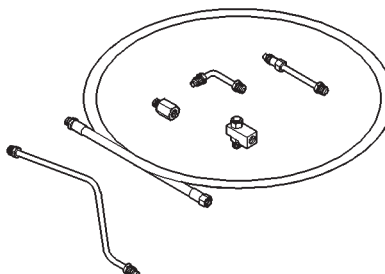
Discharge Fitting	84 N·m (62 ft. lbs.)
Mounting Bolts	28 N·m (250 in. lbs.)

POWER STEERING FLUID RESERVOIR:

Mounting Bolt-2.7L Pulley Side	13 N·m (115 in. lbs.)
Mounting Bolts-2.7L Rear . . .	24 N·m (212 in. lbs.)
Mounting Screw-3.2L/3.5L . . .	12 N·m (105 in. lbs.)

SPECIAL TOOLS**POWER STEERING**

Power Steering Analyzer 6815



Adapters, Power Steering Analyzer 6893

POWER STEERING PUMP

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DESCRIPTION AND OPERATION

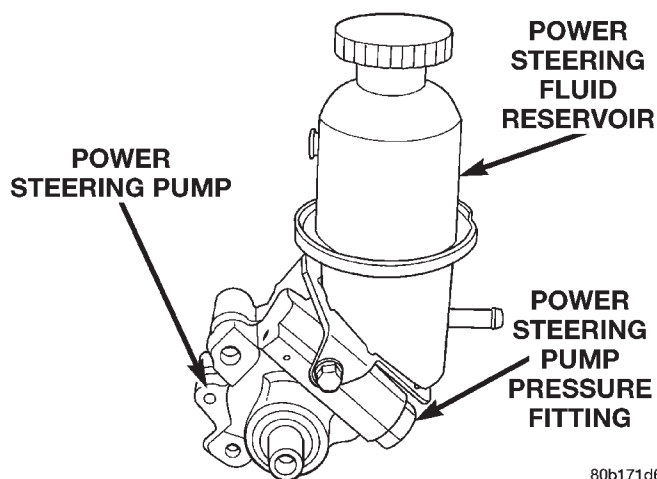
POWER STEERING PUMP

Hydraulic pressure for the operation of the power steering system is provided by a belt driven power steering pump. The power steering pump is a constant flow rate and displacement vane type pump. Vehicles equipped with the 2.7 liter engine use a power steering pump that uses an integral reservoir for the power steering fluid (Fig. 1). Vehicles equipped with the 3.2 liter or 3.5 liter engine use a power steering pump (Fig. 2) that has a remotely mounted reservoir for the power steering fluid. Power steering fluid from the remote reservoir is supplied to the power steering pump through a hose connecting the power steering pump to the reservoir. Also, the power steering system uses a power steering pressure switch which is integral to the power steering pump on 3.2 and 3.5 liter engines. It is part of the quick connect tube assembly in the power steering pressure hose on 2.7 liter engines.

Because of unique flow control levels, or pump displacements, power steering pumps may be used only on specific vehicle applications. Be sure that the pump is only replaced with a pump that is the correct replacement for that specific application.

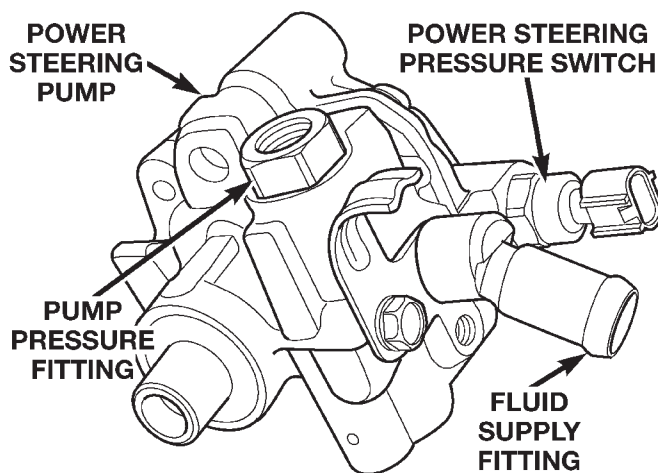
The service procedures for the power steering pump are limited to the areas and components listed below.

- Power steering fluid reservoirs, related components and attaching hardware.
- Power steering fluid reservoir filler cap.



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Fig. 1 Power Steering Pump (2.7L Engine)



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Fig. 2 Power Steering Pump (3.2L/3.5L Engine)

- Power steering pump pulley.

DESCRIPTION AND OPERATION (Continued)

No repair procedures are to be done on the internal components of the power steering pump. Repair of a power steering fluid leak from any area of the power steering pump is not allowed.

The Power steering pump operates as follows. A belt driven pulley turns a shaft which drives a rotor. Rectangular pumping vanes carried by the shaft driven rotor move the fluid from the intake to the cam ring pressure cavities. As the rotor begins to turn, centrifugal force throws the vanes against the inside surface of the cam ring to pickup residual oil. This oil is then forced into the high pressure area. As more oil is picked up by the vanes, the additional oil is forced into the cavities of the thrust plate through two crossover holes in the cam ring and pressure plate. The crossover holes empty into the high pressure area between the pressure plate and the housing end cover.

When the high pressure area of the power steering pump is filled with power steering fluid, the fluid flows under the vanes in the rotor slots, forcing the vanes to follow the inside oval surface of the cam ring. As the vanes reach the restricted area of the cam ring, oil is forced out from between the vanes. When excess oil flow is generated during high-speed operation, a regulated amount of oil returns to the pump intake side through a flow control valve. The flow control valve reduces the power required to drive the pump and holds down temperature build-up.

When steering conditions exceed maximum pressure requirements, such as turning the wheels against the stops, the pressure built up in the steering gear also exerts pressure on the spring end of the flow control valve. The end of the valve houses the pressure relief valve. High pressure lifts the relief valve ball from its seat and allows oil to flow through a trigger orifice located in the outlet fitting. This reduces pressure on the spring end of the flow control valve which then opens and allows the oil to return to the intake side of the pump. This action limits maximum pressure output of the pump to a safe level.

Under normal power steering pump operating conditions, the pressure requirements of the pump are below maximum, causing the pressure relief valve to remain closed.

In the event of a power steering pump drive belt failure, manual steering control of the vehicle can still to be maintained. However, under these conditions, steering effort will significantly increase.

SERVICE PROCEDURES

POWER STEERING PUMP INITIAL OPERATION

CAUTION: The fluid level should be checked with engine off to prevent injury from moving components. Use only Mopar® Power Steering Fluid. Do not use automatic transmission fluid. Do not over-fill.

Wipe the power steering fluid reservoir and filler cap clean. Check the level of the power steering fluid in the reservoir. The power steering fluid level should be between MAX. COLD and MIN. COLD when the fluid is at a normal ambient temperature of approximately 32°C to 43°C (90°F to 110°F).

(1) Fill the pump fluid reservoir to the proper level and let the fluid settle for at least two (2) minutes.

(2) Start the engine and let run for a few seconds. Then turn the engine off.

(3) Add fluid if necessary. Repeat the above procedure until the fluid level remains constant after running the engine.

(4) Raise the front wheels off the ground.

(5) Start the engine. Slowly turn the steering wheel right and left, lightly contacting the wheel stops for less than 2 seconds at a time.

(6) Add power steering fluid if necessary.

(7) Lower the vehicle and turn the steering wheel slowly from lock to lock.

(8) Stop the engine. Check the fluid level and refill as required.

(9) If the fluid is extremely foamy, allow the vehicle to stand a few minutes and repeat the above procedure.

(10) Lower the vehicle.

REMOVAL AND INSTALLATION

POWER STEERING PUMP (2.7L ENGINE)

Cap all open ends of the power steering fluid hoses. This will prevent the entry of foreign material into the components when power steering hoses are removed.

WARNING: POWER STEERING OIL, ENGINE COMPONENTS AND THE EXHAUST SYSTEM MAY BE EXTREMELY HOT IF ENGINE HAS BEEN RUNNING. DO NOT START ENGINE WITH ANY LOOSE OR DISCONNECTED HOSES OR DRIVE BELTS. DO NOT ALLOW HOSES TO TOUCH HOT EXHAUST MANIFOLD OR CATALYST.

REMOVAL AND INSTALLATION (Continued)

REMOVE

(1) Remove the battery ground cable from the ground stud on the shock tower and isolate the ground cable by installing the cable isolator on the ground stud (Fig. 3).

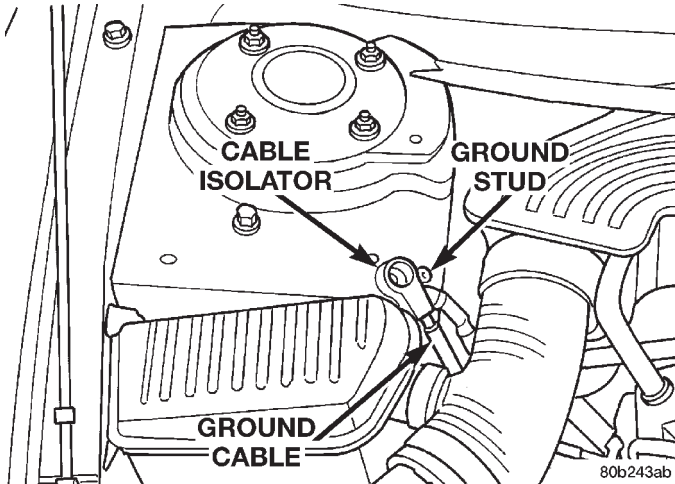


Fig. 3 Correctly Isolated Remote Ground Cable

NOTE: The following step should be done to prevent excessive spilling of power steering fluid when the power steering fluid lines are removed from the power steering pump.

(2) Using a siphon pump, remove as much power steering fluid as possible from the power steering fluid reservoir.

CAUTION: When removing the power steering fluid supply hose from the nipple on the power steering fluid reservoir, do not use excessive force. This will result in the nipple being broken off of the power steering fluid reservoir.

(3) Remove the power steering fluid return hose (Fig. 4) from the power steering fluid reservoir.

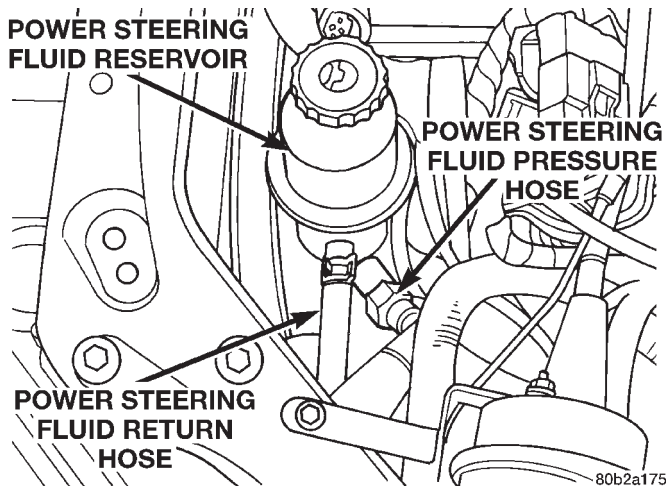


Fig. 4 Return Hose At Power Steering Fluid Reservoir

(4) Let power steering fluid drain from the power steering fluid reservoir and power steering pump.

(5) Install a cap on the open nipple of the power steering fluid reservoir to prevent power steering fluid from spilling when removing the power steering pump.

(6) Remove the power steering fluid pressure hose (Fig. 5) from the pressure fitting on the power steering pump.

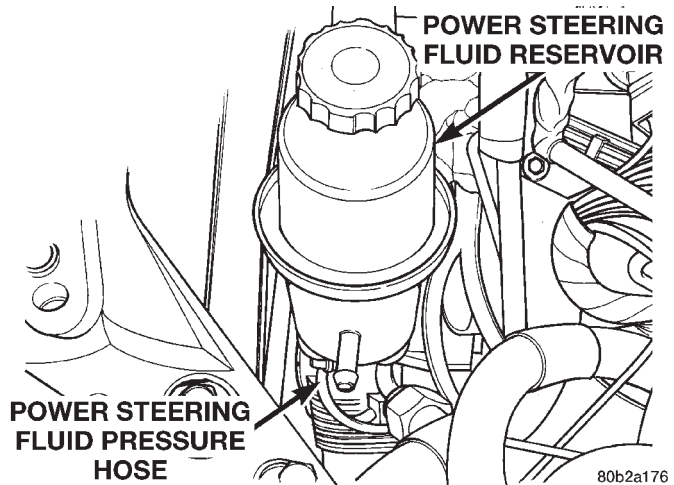


Fig. 5 Pressure Hose At Power Steering Pump

(7) Let remaining power steering fluid drain from the power steering pump.

(8) Loosen the lock-nut (Fig. 6) on the front of the pulley for the serpentine drive belt tensioner.

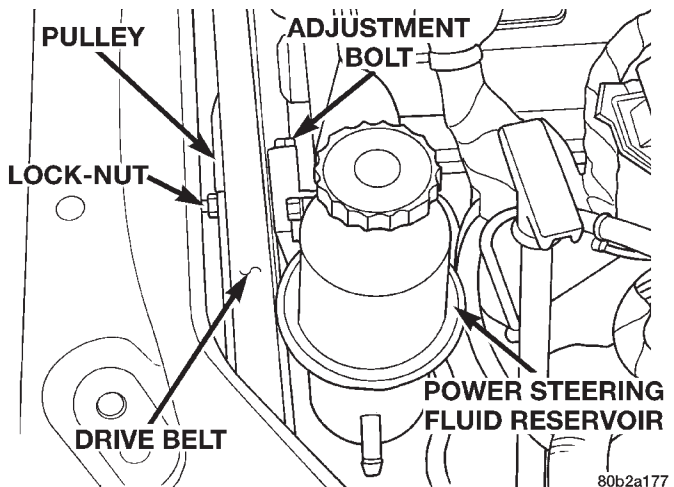


Fig. 6 Drive Belt Tensioner Lock-Nut And Adjustment Bolt

(9) Using the adjustment bolt (Fig. 6) remove the tension from the drive belt for the power steering pump.

(10) Remove the drive belt from the power steering pump pulley.

NOTE: Access for the power steering pump mounting bolts is through the holes in the face of the power steering pump pulley.

REMOVAL AND INSTALLATION (Continued)

(11) Remove the 3 bolts attaching the power steering pump to the power steering pump mounting bracket.

NOTE: The following step must be performed to have the space necessary to remove the power steering pump from the mounting bracket.

(12) Insert a screwdriver between the power steering pump and the sleeve in the tensioner bracket (Fig. 7). Using the screwdriver push the sleeve forward in the tensioner bracket until it is flush with the back side of the tensioner bracket (Fig. 7).

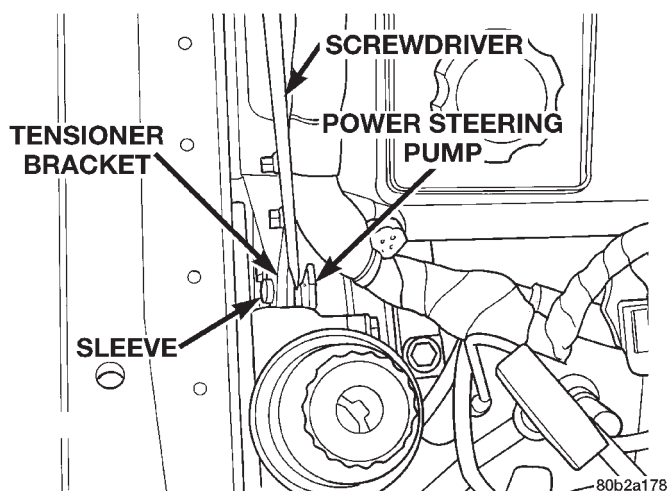


Fig. 7 Tensioner Bracket To Power Steering Pump Sleeve

(13) Remove the power steering pump, power steering fluid reservoir and pulley as an assembly from the engine. Power steering pump is removed from the top of the engine.

(14) Transfer the required parts from the removed power steering pump to the replacement power steering pump. See Disassembly and Assembly in this section of this group in the service manual.

INSTALL

(1) Install the power steering pump back in the mounting bracket using the reverse sequence of its removal.

NOTE: The long mounting bolt for the power steering pump is installed in the location where the sleeve is in the tensioner bracket.

(2) Loosely install the 3 bolts mounting the power steering pump to the mounting bracket.

NOTE: When tightening the power steering pump mounting bolt going through the sleeve (Fig. 7) be sure the sleeve is fully seated against the power steering pump.

(3) Tighten the power steering pump mounting bolts to a torque of 28 N·m (250 in. lbs.).

(4) Install the drive belt on the power steering pump pulley. Refer to Cooling, Group 7, for required installation and tensioning procedure.

(5) Securely tighten the lock-nut on the pulley of the drive belt tensioner (Fig. 6).

(6) Install the power steering pressure hose in the pressure fitting of the power steering pump (Fig. 5). Tighten the power steering fluid pressure hose tube nut to a torque of 47 N·m (35 ft. lbs.).

(7) Install the power steering fluid return hose on the power steering fluid reservoir. **When installing the hose clamp on the power steering fluid return hose be sure the clamp is installed past the upset bead on the nipple of the power steering fluid reservoir.**

(8) Connect the battery ground cable onto the ground stud located on the strut tower.

CAUTION: Do not use automatic transmission fluid in this vehicles power steering system. Only use Mopar Power Steering Fluid, or equivalent.

(9) Perform Power Steering Pump Initial Operation procedure which can be found in the Power Steering Pump section of this group, to properly refill and bleed power steering system.

POWER STEERING PUMP (3.2L/3.5L ENGINE)

Cap all open ends of the power steering fluid hoses. This will prevent the entry of foreign material into the components when power steering hoses are removed.

WARNING: POWER STEERING FLUID, ENGINE COMPONENTS AND THE EXHAUST SYSTEM MAY BE EXTREMELY HOT IF ENGINE HAS BEEN RUNNING. DO NOT START ENGINE WITH ANY LOOSE OR DISCONNECTED HOSES OR DRIVE BELTS. DO NOT ALLOW HOSES TO TOUCH HOT EXHAUST MANIFOLD OR CATALYST.

REMOVE

(1) Remove the battery ground cable from the ground stud on the shock tower and isolate the ground cable by installing the cable isolator on the ground stud (Fig. 8).

NOTE: The following step should be done to prevent excessive spilling of power steering fluid when the power steering fluid lines are removed from the power steering pump.

(2) Using a siphon pump, remove as much power steering fluid as possible from the power steering fluid reservoir.

REMOVAL AND INSTALLATION (Continued)

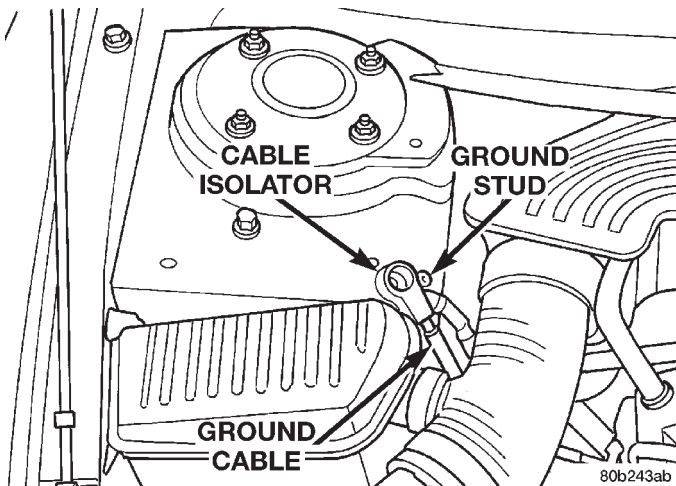


Fig. 8 Correctly Isolated Remote Ground Cable

- (3) Raise vehicle.
- (4) Remove the power steering fluid supply hose (Fig. 9) from the supply fitting on the power steering pump.

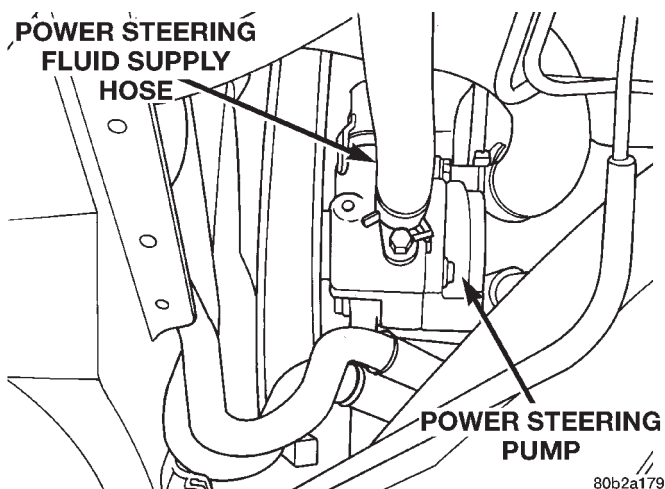


Fig. 9 Power Steering Fluid Supply Hose At Power Steering Pump

- (5) Let power steering fluid drain from the power steering fluid reservoir and power steering pump.
- (6) Install a cap on the open nipple of the power steering fluid reservoir to prevent power steering fluid from spilling when removing the power steering pump.
- (7) Remove the power steering fluid pressure hose (Fig. 10) from the pressure fitting on the power steering pump.
- (8) Let remaining power steering fluid drain from the power steering pump.
- (9) Remove the wiring harness connector from the power steering pressure switch located on the side of the power steering pump.
- (10) Loosen the lock-nut (Fig. 11) on the front of the pulley for the serpentine drive belt tensioner.

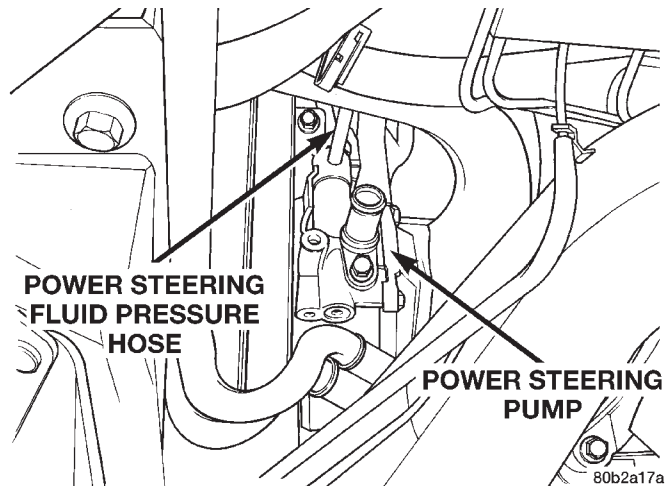


Fig. 10 Pressure Hose At Power Steering Pump

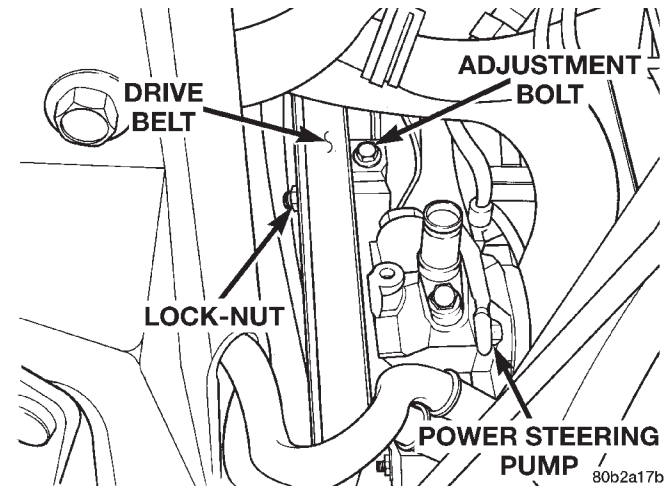


Fig. 11 Drive Belt Tensioner Lock-Nut And Adjustment Bolt

- (11) Using the adjustment bolt (Fig. 11) remove the tension from the drive belt for the power steering pump.

- (12) Remove the drive belt from the power steering pump pulley.

NOTE: Access for the power steering pump mounting bolts is through the holes in the face of the power steering pump pulley.

- (13) Remove the 3 bolts attaching the power steering pump to the power steering pump mounting bracket.

- (14) Remove the power steering pump from the engine. The power steering pump and pulley are removed as an assembly from the engine. The power steering pump is removed from the bottom of the engine between the radiator lower support and the cradle (Fig. 12).

- (15) Transfer the required parts from the removed power steering pump to the replacement power steer-

REMOVAL AND INSTALLATION (Continued)

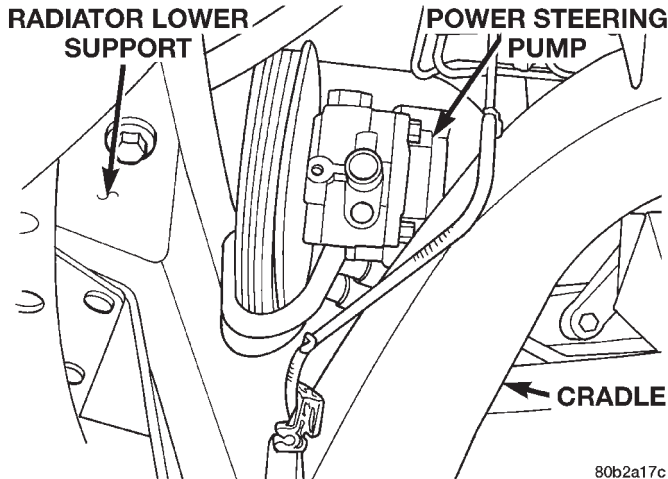


Fig. 12 Power Steering Pump Remove/Install

ing pump. See Disassembly and Assembly in this section of this group of the service manual.

INSTALL

- (1) Install the power steering pump back in the mounting bracket using the reverse sequence of its removal (Fig. 12).
- (2) Loosely install all 3 bolts mounting the power steering pump to the mounting bracket.
- (3) Tighten the power steering pump mounting bolts to a torque of 28 N·m (250 in. lbs.).
- (4) Install the drive belt on the power steering pump pulley. Refer to Cooling, Group 7, for required installation and tensioning procedure.
- (5) Securely tighten the lock-nut on the pulley of the drive belt tensioner (Fig. 11).
- (6) Install the wiring harness connector on the power steering pressure switch.
- (7) Install the power steering pressure hose on the pressure fitting of the power steering pump (Fig. 10). Tighten the power steering fluid pressure hose tube nut to a torque of 47 N·m (35 ft. lbs.).
- (8) Install the power steering fluid supply hose onto the supply fitting on power steering pump (Fig. 9). **When installing the hose clamp on the power steering fluid return hose be sure the clamp is installed past the upset bead on the nipple of the power steering fluid reservoir.**
- (9) Lower vehicle.
- (10) Connect the battery ground cable onto the ground stud located on the strut tower.

CAUTION: Do not use automatic transmission fluid in this vehicles power steering system. Only use Mopar Power Steering Fluid, or equivalent.

- (11) Perform Power Steering Pump Initial Operation procedure which can be found in the Power Steering Pump section of this group, to properly refill and bleed power steering system.

POWER STEERING FLUID RESERVOIR (3.2L/3.5L Engine)

The power steering pump fluid reservoir on this vehicle with these engine applications is remotely mounted from the power steering pump (Fig. 13). The reservoir is located on the left front frame rail.

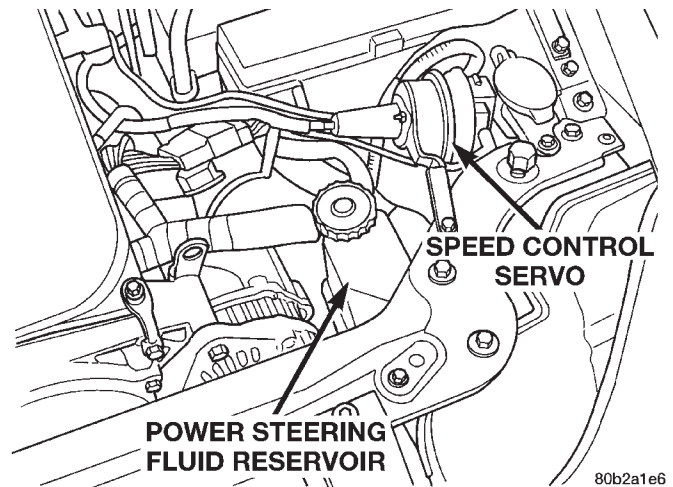


Fig. 13 Power Steering Fluid Reservoir Location

REMOVE

- (1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual for the required lifting procedure to be used for this vehicle.
- (2) Remove the power steering return hose from the side of the power steering fluid reservoir. Remove the power steering fluid supply hose going to the power steering pump from the bottom of the power steering fluid reservoir. Let power steering fluid drain from hoses and reservoir.
- (3) Lower the vehicle.
- (4) Remove the power steering fluid reservoir from the mounting bracket by rotating the rear of the reservoir toward the engine and out of the bracket.

INSTALL

- (1) Install the power steering fluid reservoir into the mounting bracket. Be sure the retaining tab on the bracket is holding the reservoir in the bracket. Fasten screw to 12 N·m (105 in. lbs.).
- (2) Raise vehicle.
- (3) Install the power steering return hose onto the nipple on the side of the power steering fluid reservoir. Install the power steering fluid supply hose going to the power steering pump, on the bottom nipple of the power steering fluid reservoir. Install the hose clamps, being sure they are past the hose retention beads on reservoir nipples.
- (4) Lower vehicle.

REMOVAL AND INSTALLATION (Continued)

CAUTION: Do not use automatic transmission fluid in power steering system. Only use Mopar Power Steering Fluid, or equivalent.

(5) Fill the power steering pump reservoir to correct fluid level.

(6) Start engine and turn steering wheel several times from stop to stop to bleed air from fluid in system. Stop engine, check fluid level, and inspect system for leaks. See Checking Fluid Level.

DISASSEMBLY AND ASSEMBLY

POWER STEERING FLUID RESERVOIR (2.7L ENGINE)

REMOVE

The 2.7 liter engine uses a power steering fluid reservoir that is integral to the power steering pump. To replace the power steering fluid reservoir used on this power steering pump the power steering pump will need to be removed from the engine.

(1) Remove the power steering pump from the engine. Refer to the procedure in the Removal And Installation Section in this group of the service manual.

(2) Remove the 3 bolts (Fig. 14) mounting the power steering fluid reservoir to the power steering pump.

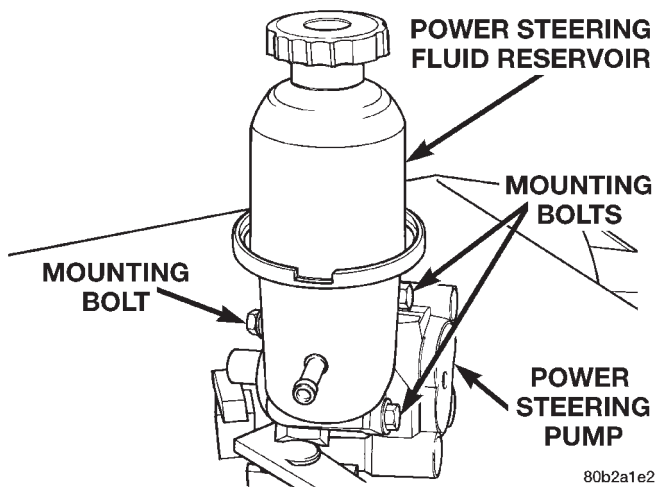
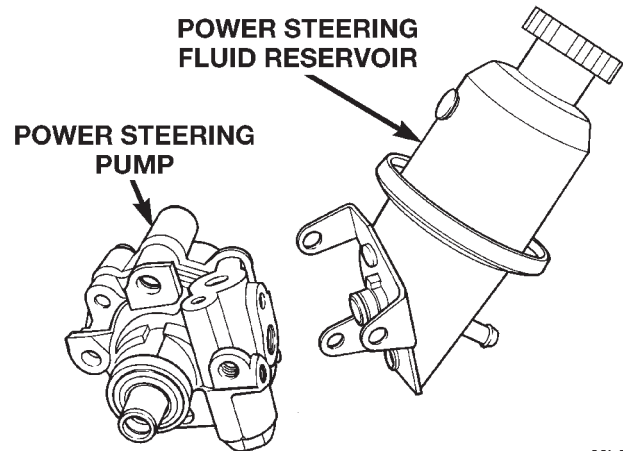


Fig. 14 Fluid Reservoir To Pump Mounting

(3) Separate the power steering fluid reservoir from the power steering pump (Fig. 15). The reservoir is separated from the power steering pump by pulling it straight out of the pump.

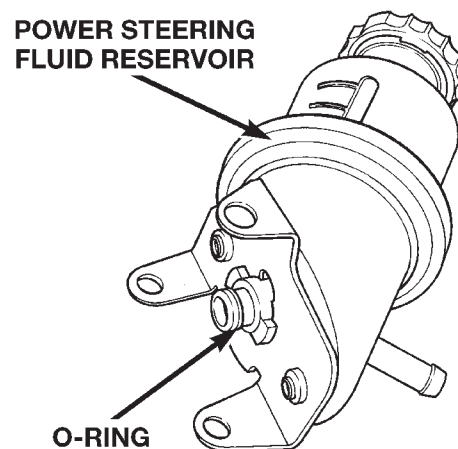
INSTALL

(1) Lubricate the O-ring seal on the power steering fluid reservoir (Fig. 16) with fresh clean power steering fluid.



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Fig. 15 Fluid Reservoir Removal/Installation



80b2a1e5

Fig. 16 Reservoir O-Ring Seal

(2) Install the power steering fluid reservoir on the power steering pump (Fig. 15). The reservoir is installed on the pump by pressing the nipple of the reservoir straight into the pump without twisting or rotating the reservoir.

(3) Install and securely tighten the three bolts mounting the power steering fluid reservoir to the power steering pump. Tighten bolt on pulley side to 13 N·m (115 in. lbs.). Tighten bolts on rear to 24 N·m (212 in. lbs.).

(4) Install the power steering pump on the engine. Refer to the procedure in the Removal And Installation Section in this group of the service manual.

POWER STEERING PUMP PULLEY

DISASSEMBLE

CAUTION: When mounting the power steering pump in the vise do not clamp the pump in the vise by the body of the power steering pump.

DISASSEMBLY AND ASSEMBLY (Continued)

(1) Mount the power steering pump in a vise using the mounting bosses for the power steering pump (Fig. 17).

NOTE: Do not press or hammer on the shaft of the power steering pump in an attempt to remove the pulley. This will damage the internal components of the power steering pump.

(2) Remove the power steering pump pulley from the power steering pump shaft using Puller, Special Tool C-4333 (Fig. 17).

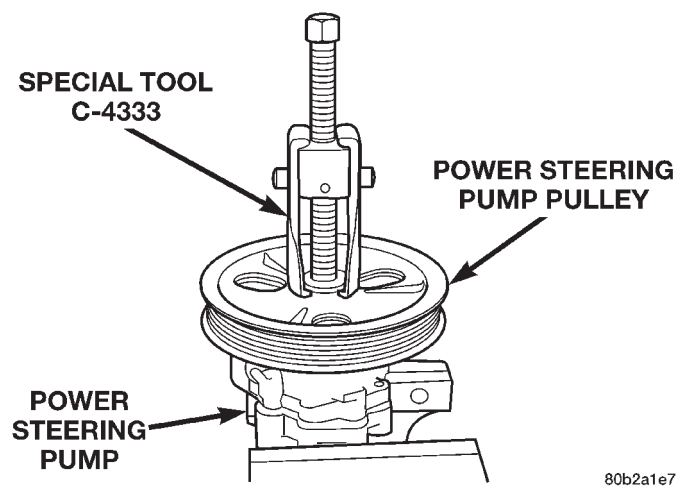


Fig. 17 Power Steering Pump Pulley Removal

ASSEMBLE

NOTE: Do not press or hammer on the shaft of the power steering pump in an attempt to install the pulley. This will damage the internal components of the power steering pump.

(1) Place the power steering pump pulley on the end of the power steering pump shaft. Make sure the pulley is installed squarely on the end of the shaft.

CAUTION: When installing the pulley on the power steering pump, Spacer, Special Tool 6936, **MUST** be used. The spacer provides for the correct pulley location on the power steering pump to provide correct accessory drive belt alignment. The alignment is critical in controlling accessory drive belt noise. It also prevents the pulley from contacting the power steering pump when it is installed, causing power steering pump or pulley damage.

(2) Install Spacer, Special Tool 6936, into the hub of the power steering pump pulley (Fig. 18).

(3) Insert the Pulley Installer, Special Tool C-4063, (without adapters) through hole in spacer. Thread

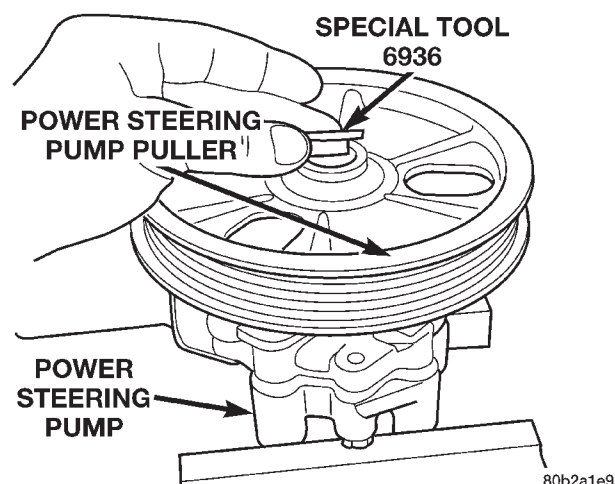


Fig. 18 Spacer Installed In Power Steering Pump Pulley

the Installer into the end of the power steering pump shaft (Fig. 19). Tighten the installer into pump shaft.

(4) Holding the Pulley Installer with one wrench so it will not rotate, turn hex (Fig. 19) down threaded rod of installer pushing the pulley onto the shaft of the power steering pump (Fig. 19). Ensure that the tool and the pulley remain aligned with the pump shaft so pulley does not become cocked on shaft.

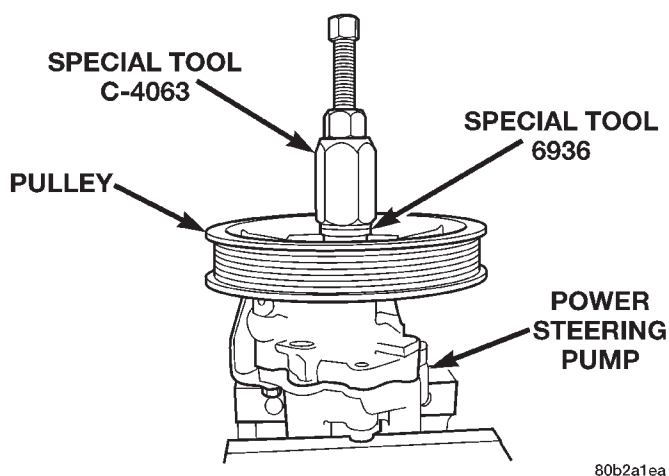


Fig. 19 Installing Power Steering Pump Pulley

(5) Continue to push pulley onto shaft of power steering pump until Pulley Installer will no longer turn. This will ensure the spacer provided is fully seated against the front of the power steering pump shaft.

(6) Remove the Pulley Installer from the shaft of the power steering pump. Remove the Spacer from the hub of the power steering pump pulley.

(7) Verify the pulley turns properly on the pump shaft.

DISASSEMBLY AND ASSEMBLY (Continued)

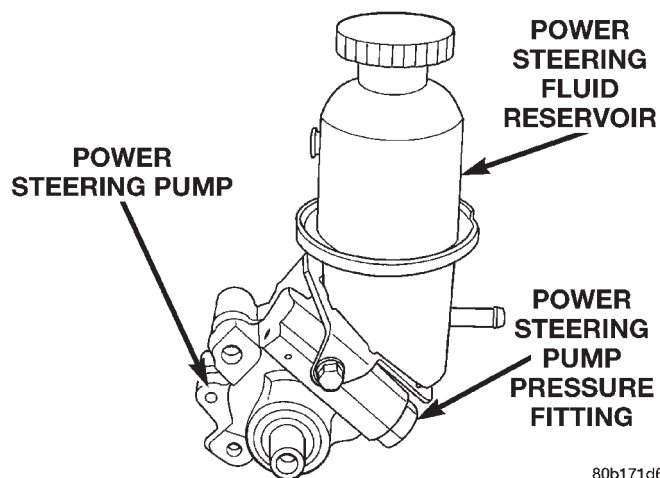
POWER STEERING PUMP PRESSURE FITTING SEAL

To replace the O-ring seal on the pressure fitting of the power steering pump, the power steering pump will need to be removed from the engine.

DISASSEMBLE

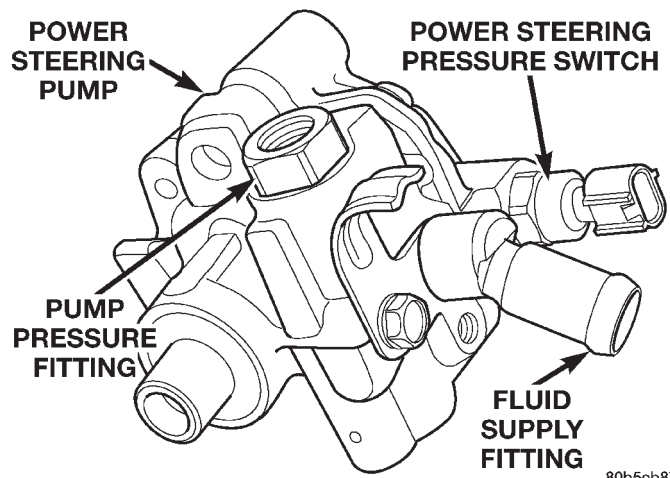
(1) Remove the power steering pump from the engine. Refer to the procedure in the Removal And Installation Section in this group of the service manual for the procedure to remove the power steering pump from the engine the vehicle is equipped with.

(2) Remove the power steering pump pressure fitting (Fig. 20) (Fig. 21) from the power steering pump. **Use care to prevent the flow control valve and the spring from sliding out of the discharge/flow control valve fitting.**



80b171d6

Fig. 20 Power Steering Pump Pressure Fitting (2.7L Engine)



80b5cb87

Fig. 21 Power Steering Pump Pressure Fitting (3.2L/3.5L Engine)

(3) Remove and discard the O-ring seal from the pressure fitting.

ASSEMBLE

(1) If necessary, clean and install flow control valve and spring in pump housing bore.

(2) Install a new O-ring seal on the pressure fitting.

(3) Install the pressure fitting into the power steering pump. Tighten the pressure fitting to a torque of 84 N·m (62 ft. lbs.).

(4) Install the power steering pump on the engine. Refer to the procedure in the Removal And Installation Section in this group of the service manual for the procedure to install the power steering pump on the engine the vehicle is equipped with.

SPECIFICATIONS**POWER STEERING PUMP FLOW SPECIFICATIONS**

Flow At 1500 RPM and

Minimum Pressure 8.0 to 9.5 Liters/Min
(2.1 to 2.5 GPM)

Control Valve Pressure Relief . . . 8618 to 9308 kPa
(1250 to 1350 psi)

POWER STEERING PUMP FASTENER TORQUE SPECIFICATIONS

DESCRIPTION	TORQUE
POWER STEERING PUMP:	
Discharge Fitting	84 N·m (62 ft. lbs.)
Mounting Bolts	28 N·m (250 in. lbs.)
Power Steering Pressure Switch	22 N·m (200 in. lbs.)

POWER STEERING FLUID HOSES:

Hose Tube Nuts 47 N·m (35 ft. lbs.)

POWER STEERING FLUID RESERVOIR:

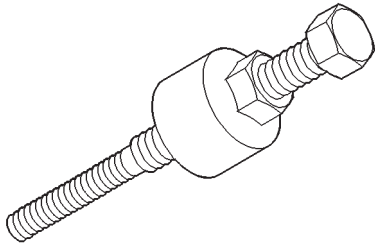
Mounting Bolt-2.7L Pulley Side 13 N·m
(115 in. lbs.)

Mounting Bolts-2.7L Rear . . 24 N·m (212 in. lbs.)

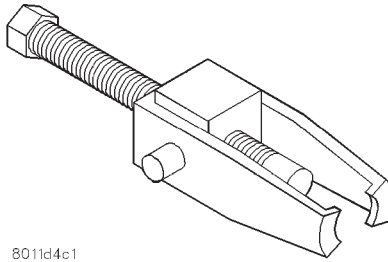
Mounting Screw-3.2L/3.5L . . 12 N·m (105 in. lbs.)

SPECIAL TOOLS

POWER STEERING PUMP



Installer C-4063B



8011d4c1

Puller C-4333

POWER STEERING GEAR

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OUTER TIE ROD	35		

GENERAL INFORMATION

STEERING GEAR

The power steering gear in this vehicle should NOT be serviced or adjusted. If a malfunction or a leak occurs, the complete steering gear should be replaced.

DIAGNOSIS AND TESTING

OUTER TIE ROD SOCKET END PLAY MEASUREMENT

NOTE: When measuring tie rod socket end play the total weight of the vehicle must be supported by the tires and suspension of the vehicle. Do not support the vehicle by other than a drive on hoist or an alignment rack.

(1) Position the vehicle on a drive on hoist or an alignment rack so that the tires are supporting the total weight of the vehicle.

(2) Raise hoist or alignment rack so that the tie rod is positioned at eye level.

(3) Mount a dial indicator to the front strut assembly (Fig. 1).

(4) Install a U-bolt having an inside dimension of 2 inches and a length of 3 inches (minimum) on the tie rod end and steering arm of strut as shown in (Fig. 1). Hand tighten nuts on U-bolt enough to just hold U-bolt in place.

(5) Position dial indicator in center of tie rod as shown in (Fig. 1). Zero the dial indicator gauge.

(6) Equally tighten both nuts on the U-bolt until a torque of 2.7 N·m (24 in. lbs.) is achieved on each nut. Listed is the allowable tie rod socket end play. New ball joint end play should not be greater than 0.100 inches. Ball joint in service end play should not be greater than 0.190.

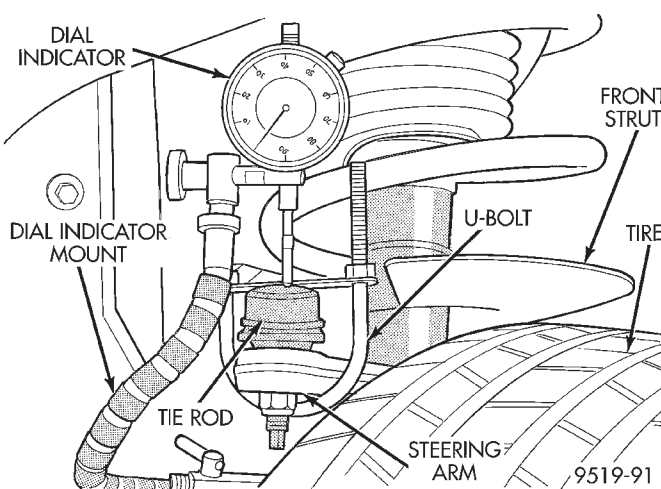


Fig. 1 Checking Tie Rod Socket End Play

(7) If end play for a ball joint in service is greater than the specification listed in Step 6 the ball joint will require replacement.

REMOVAL AND INSTALLATION

STEERING GEAR

REMOVE

(1) Remove the battery ground cable from the ground stud on the shock tower and isolate the ground cable by installing the cable isolator on the ground stud (Fig. 2).

(2) Position the front tires of the vehicle so that they are facing straight ahead.

(3) Raise the vehicle on a frame contact type hoist until the front tires of the vehicle are just off the floor. See Hoisting in the Lubrication and Maintenance section of this manual for the required lifting procedure to be used for this vehicle.

REMOVAL AND INSTALLATION (Continued)

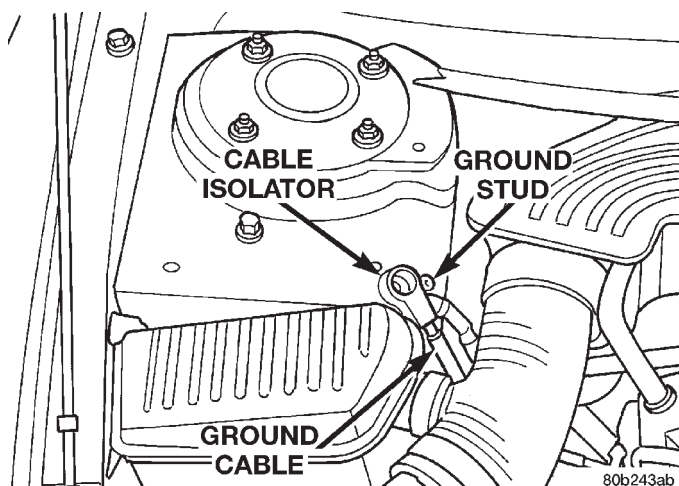


Fig. 2 Correctly Isolated Remote Ground Cable

(4) Remove caps from both wiper arms at the attachment to the pivots to expose the wiper arm attaching nut. Remove the nut (Fig. 3) attaching each wiper arm to its pivot.

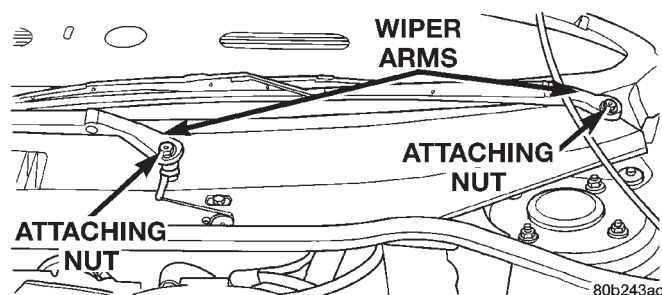


Fig. 3 Wiper Arm Attachment To Pivot

(5) Remove the wiper arms from the pivots. Wiper arms are removed from the pivots by rocking them back and force on the pivots until they can be pulled off the pivots.

(6) Remove the wiper module cover and cowl cover (Fig. 4) from the vehicle.

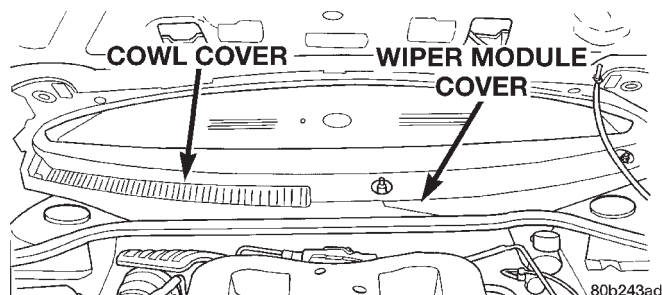


Fig. 4 Wiper Module And Cowl Cover

(7) Remove the 8 bolts, attaching the reinforcement (Fig. 5) to the strut towers and the 1 bolt (Fig. 5) attaching the wiper module to the reinforcement. Remove the reinforcement from the vehicle.

(8) Remove the in-line resonator and inlet hose (Fig. 6) from the throttle body and air let hose coming from the lid of the air cleaner housing.

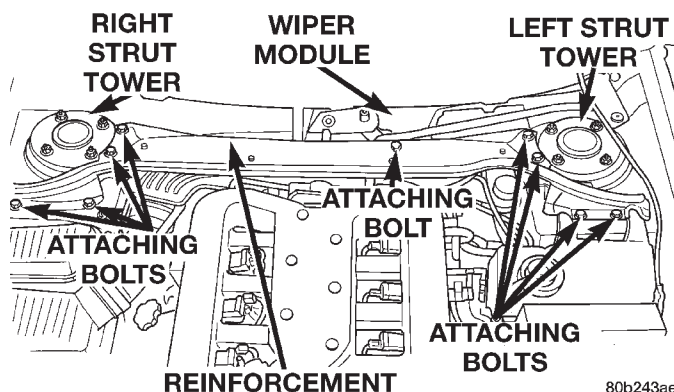


Fig. 5 Reinforcement Attachment To Vehicle

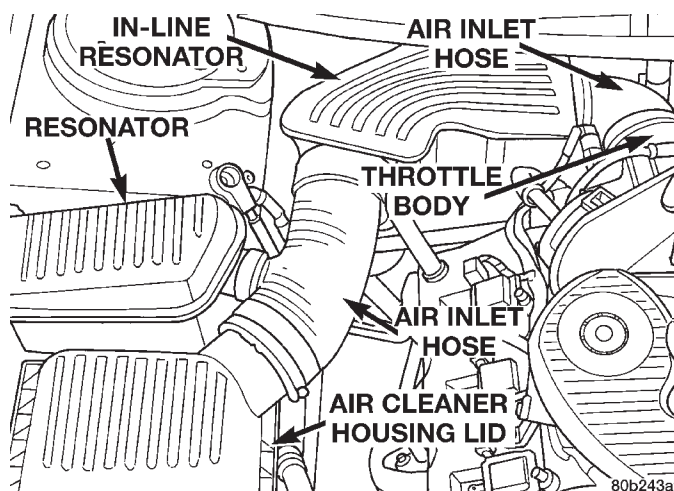


Fig. 6 In-Line Resonator And Air Inlet Hose

NOTE: When locking the steering wheel, the front tires of the vehicle are to be facing straight ahead.

(9) Using a steering wheel holding clamp, (Fig. 7) lock the steering wheel from rotating.

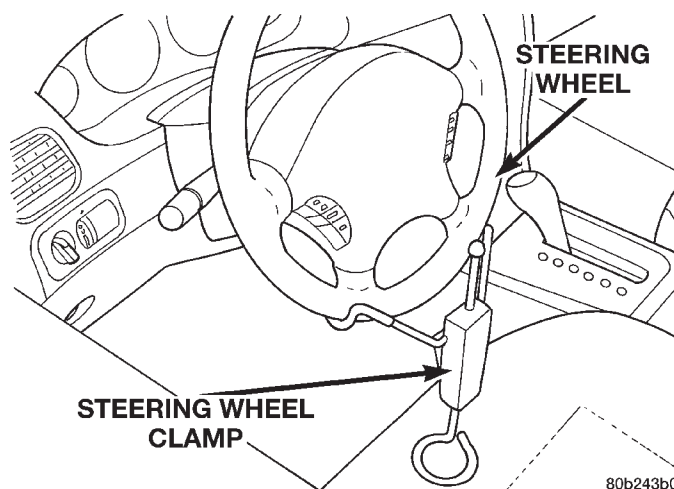


Fig. 7 Steering Wheel Holding Clamp Installed (Typical)

REMOVAL AND INSTALLATION (Continued)

CAUTION: Before removing the steering column coupler from the intermediated steering shaft be sure the steering wheel is locked from rotating (Fig. 7). If the steering wheel is allowed to rotate freely after it is disconnected from the intermediated shaft, the clockspring will be damaged and will need to be replaced.

(10) Remove the retaining pin and the coupler bolt from the steering column coupler (Fig. 8). Separate the intermediate steering shaft from the steering column coupler.

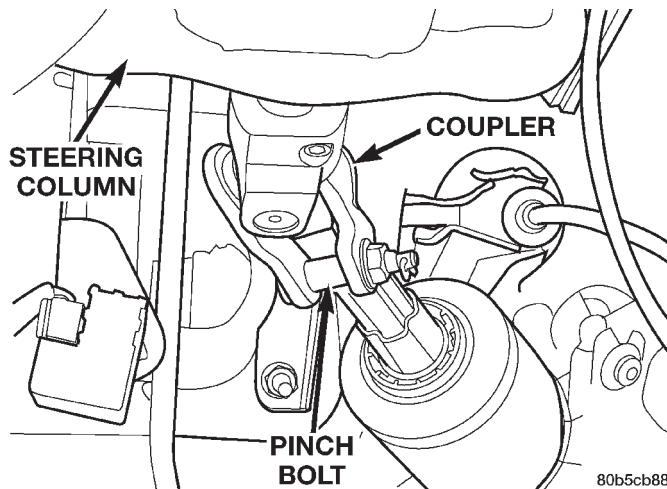


Fig. 8 Steering Column Coupler

(11) Bend back the retaining tabs on the mounting plate for the tie rod to steering gear mounting bolts (Fig. 9).

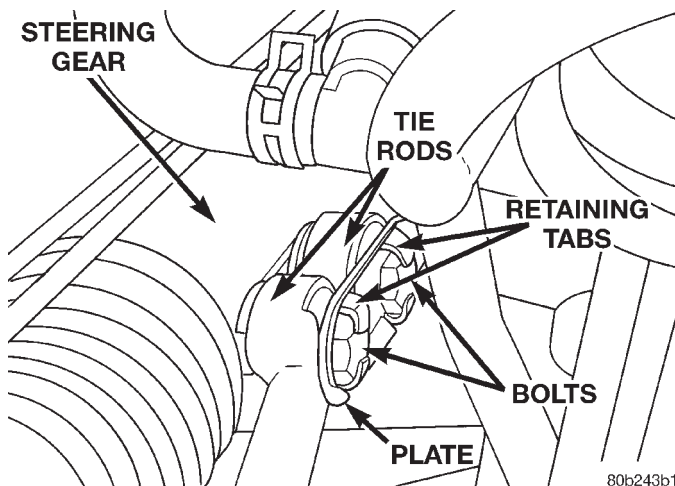


Fig. 9 Tie Rod Attachment Bolt Retaining Tabs

(12) Remove the bolts, mounting plate and washers (Fig. 10) attaching the tie rods to the steering gear. Lay the tie rods on top of the transaxle bell housing.

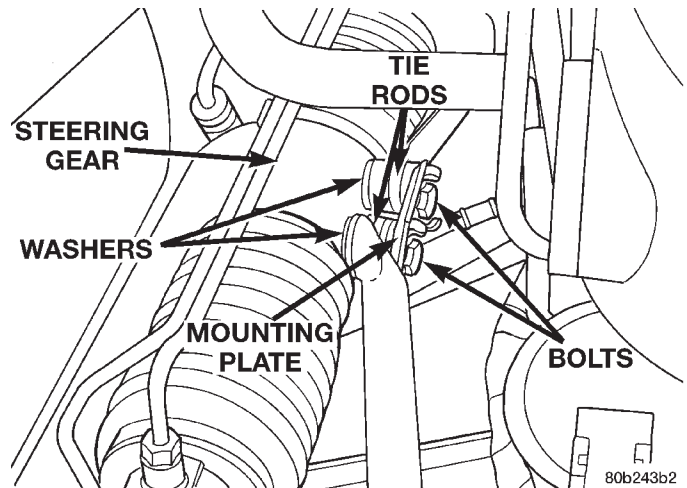


Fig. 10 Tie Rod To Steering Gear Attaching Bolts

NOTE: The following step should be done to prevent excessive spilling of power steering fluid when the power steering fluid lines are removed from the steering gear.

(13) Using a siphon pump, remove as much power steering fluid as possible from the power steering fluid reservoir.

(14) Remove the power steering fluid pressure hose and return hose (Fig. 11) from the steering gear.

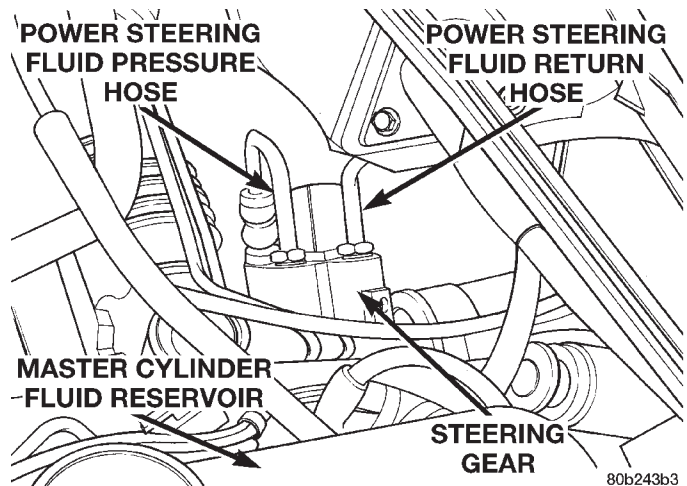


Fig. 11 Power Steering Hose Connections At Steering Gear

(15) If the steering gear being removed from the vehicle is a speed proportional steering gear, disconnect the wiring harness connector from the solenoid control valve electrical connector located on the steering gear end cap below the brake master cylinder. (Fig. 12).

(16) Remove the 2 nuts (Fig. 13) mounting the master cylinder to the vacuum booster.

REMOVAL AND INSTALLATION (Continued)

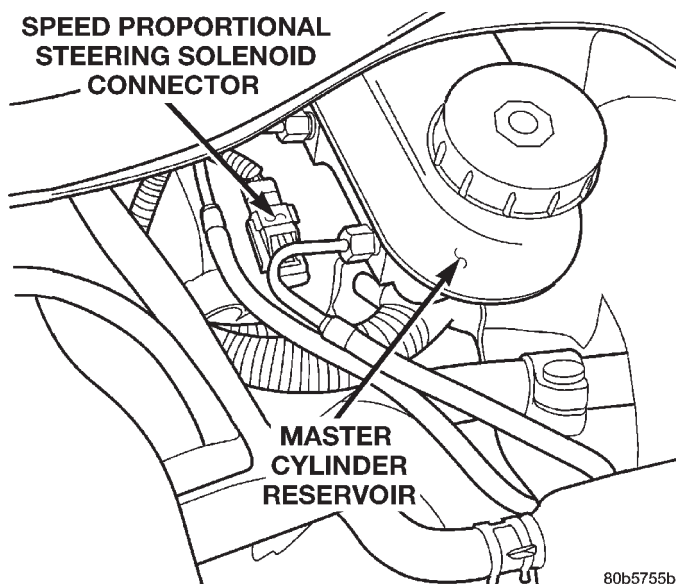


Fig. 12 Wiring Harness Connection

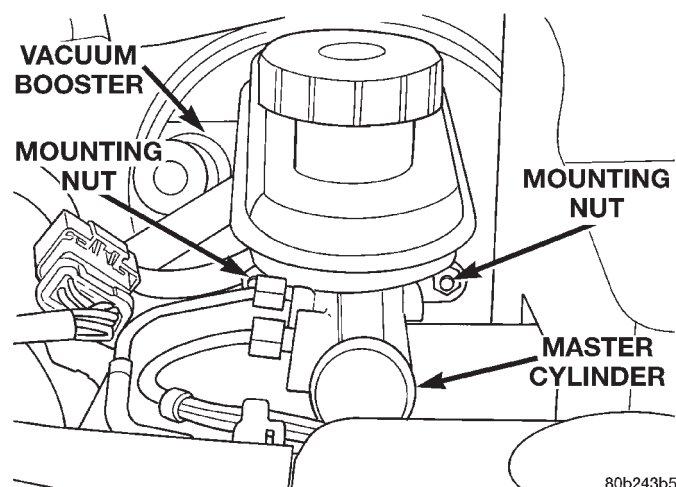


Fig. 13 Master Cylinder To Vacuum Booster Mounting

(17) Remove the master cylinder with the brake tubes connected, from the vacuum booster. Carefully position the master cylinder in an upright position on the left side valve cover of the engine.

(18) Remove the vacuum supply hose to the vacuum booster at the check valve in the vacuum booster. Position the vacuum hose out of the way.

(19) Remove the 2 bolts attaching the left side of the steering gear to the crossmember (Fig. 14).

(20) Remove the 2 bolts attaching the steering gear's right side mounting bracket (Fig. 15) to the crossmember.

NOTE: It may be necessary to loosen the 2 mounting bolts (Fig. 16) attaching the right mounting bracket to the steering gear in order to clear the air conditioning lines.

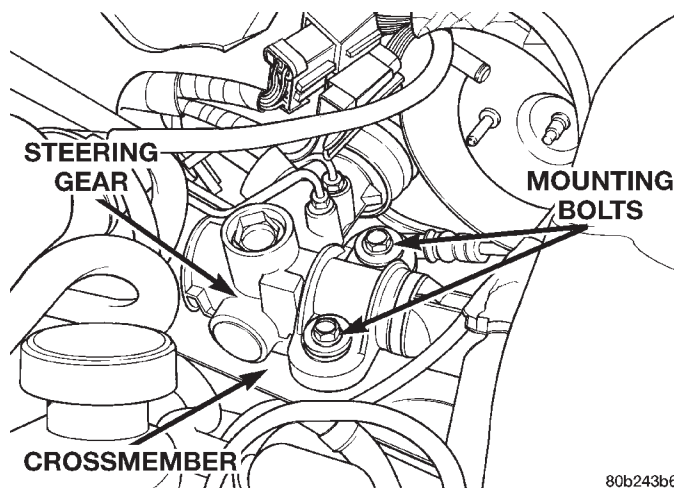


Fig. 14 Steering Gear Attachment To Crossmember (Left Side)

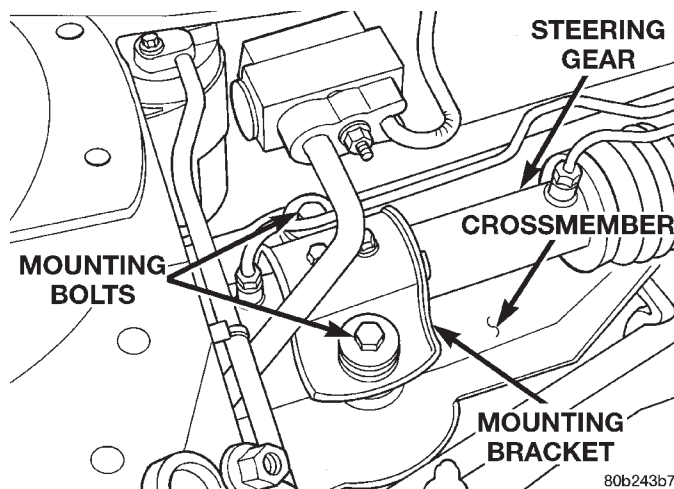


Fig. 15 Steering Gear Attachment To Crossmember (Right Side)

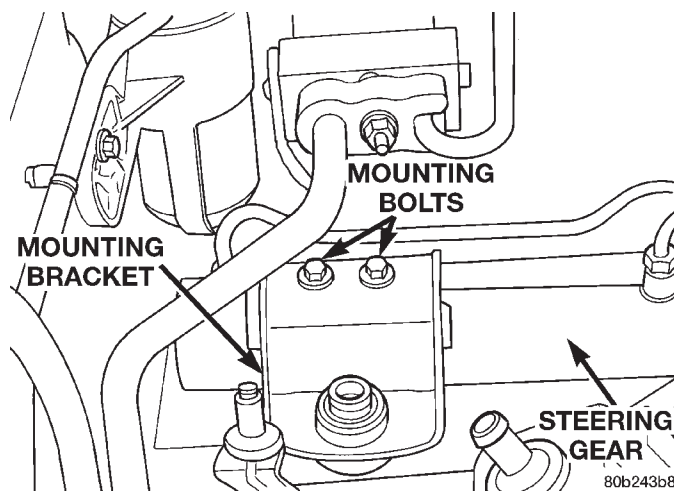


Fig. 16 Steering Gear Mounting Bracket

(21) Slide steering gear and intermediate shaft forward into the engine compartment to allow access to

REMOVAL AND INSTALLATION (Continued)

the roll pin retaining the intermediate shaft flex coupler to the steering gear shaft.

(22) Using roll pin remover, Special Tool 6831A, remove roll pin from flex joint of intermediate shaft (Fig. 17). Roll pin is removed from coupler using following procedure. Remove knurled nut from small end of removal tool. Insert small end of removal tool through center of roll pin and then install and hand tighten knurled nut. Position sleeve of removal tool on flex joint as shown in (Fig. 17). Holding threaded shaft of tool from turning tighten nut (Fig. 17) pulling roll pin out of flex joint.

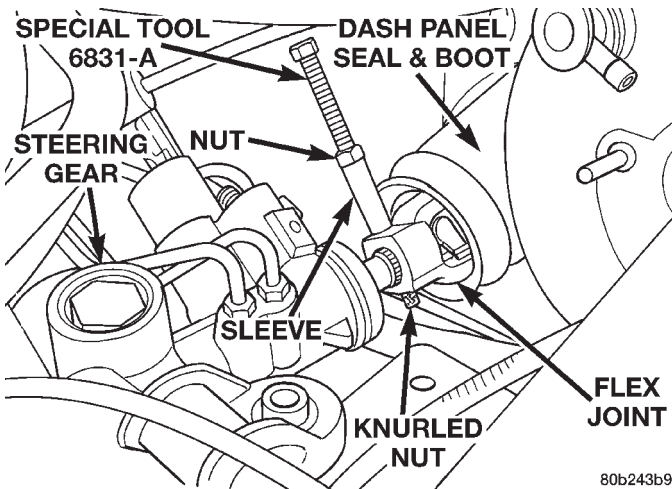


Fig. 17 Steering Coupler Roll Pin Removal

(23) Separate the intermediate steering shaft from the steering gear.

(24) Raise vehicle.

(25) Remove the right front tire/wheel.

(26) Remove the nut (Fig. 18) attaching the tie rod end to the steering arm on the right strut.

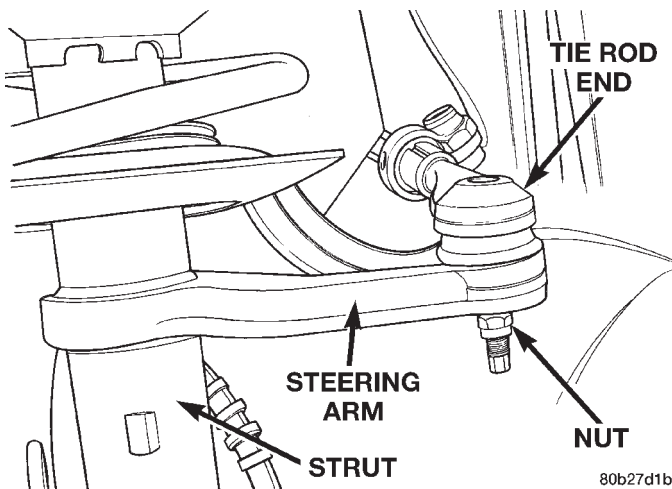


Fig. 18 Tie Rod End Attachment To Strut

(27) Remove the tie rod end from the steering arm of the strut using Puller, Special Tool C-3894-A (Fig. 19).

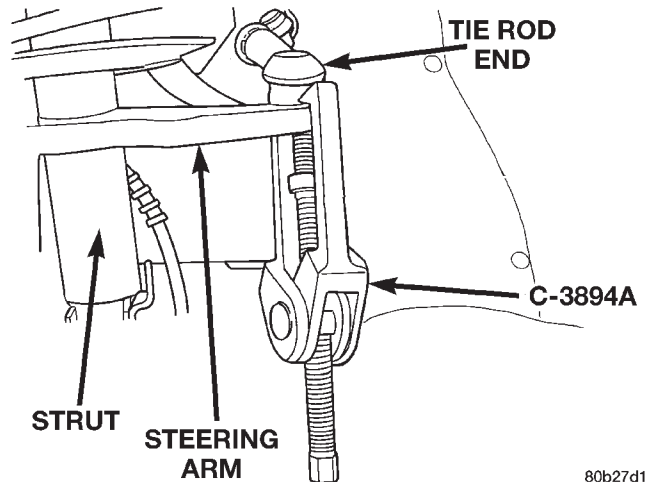


Fig. 19 Tie Rod End Removal From Steering Arm

(28) Remove the tie rod from the vehicle.

NOTE: If the vehicle is equipped with a 2.7 liter engine, rotate the front of the left front tire/wheel as far outward as possible (Fig. 20). This is necessary to have the required clearance to allow the removal of the steering gear from a vehicle with this engine application.

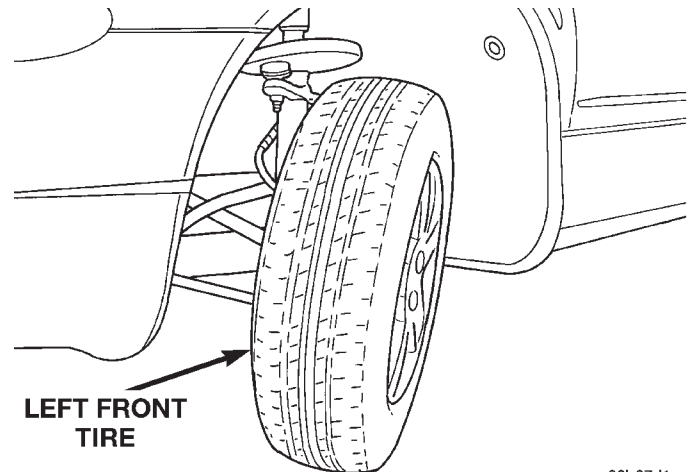


Fig. 20 Required Tire Position

(29) Remove the steering gear from the vehicle using the following steps.

(a) Slide the end of the steering gear through the tie rod hole in the right side inner fender (Fig. 21). Steering gear needs to be slid through tie rod hole until about half of the steering gear is through the hole (Fig. 21).

(b) Lift the left end of the steering gear upward, with the steering gear positioned as shown, between the back of the engine and the front of the cowl (Fig. 22).

(c) To remove the steering gear from the vehicle, pull the steering gear toward the passenger side of the vehicle out from between the cowl and the engine.

REMOVAL AND INSTALLATION (Continued)

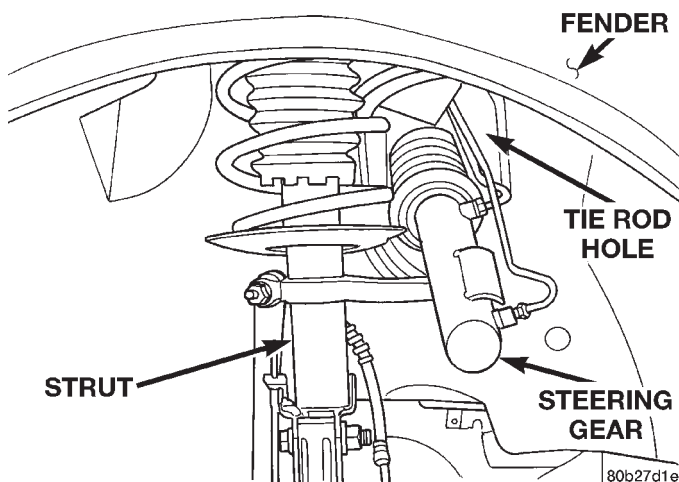


Fig. 21 Steering Gear Through Tie Rod Hole

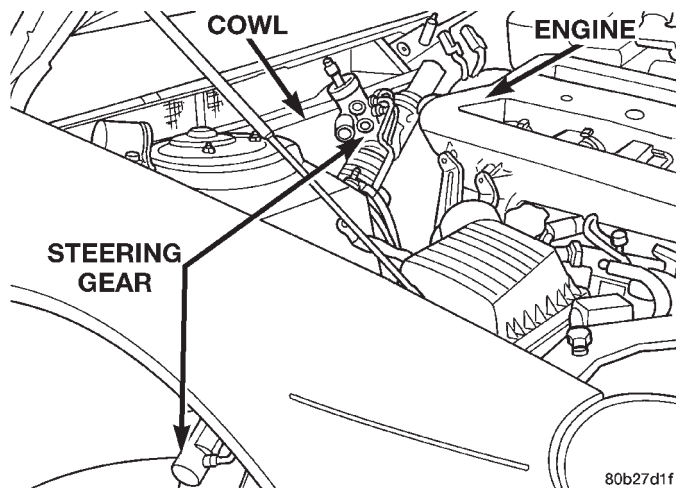


Fig. 22 Steering Gear Positioned For Removal

INSTALL

NOTE: When the original or a replacement steering gear is being installed in vehicle, be sure the tie rod attachment at the steering gear is in the center of steering gear travel.

(1) Install the steering gear in the vehicle using the reverse sequence of the removal steps.

NOTE: If the vehicle is equipped with a 2.7 Liter engine, position the left front tire so it is facing straight forward.

(2) Install the right tie rod through the tie rod hole in the inner fender.

(3) Install the outer tie rod on the steering arm of the right strut. Install the tie rod to steering arm attaching nut (Fig. 18). Tighten the attaching nut to a torque of 37 N·m (27 ft. lbs.).

(4) Install the right side tire/wheel.

(5) Install and tighten wheel mounting stud nuts in proper sequence until all nuts are torqued to half

specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(6) Lower the vehicle until the front tires are just clear of the floor.

(7) Install the intermediate steering shaft on the steering gear.

(8) Using roll pin installer, Special Tool 6831A, install the roll pin in the flex joint of the intermediate shaft (Fig. 23). Roll pin is installed in coupler using the following procedure. Remove knurled nut from small end of removal tool. Insert small end of removal tool through center of roll pin and then install and hand tighten knurled nut. Position sleeve of removal tool on flex joint as shown in (Fig. 23). Holding threaded shaft of tool from turning tighten nut (Fig. 23) pulling roll pin into flex joint. Roll pin must be equally spaced in flex joint.

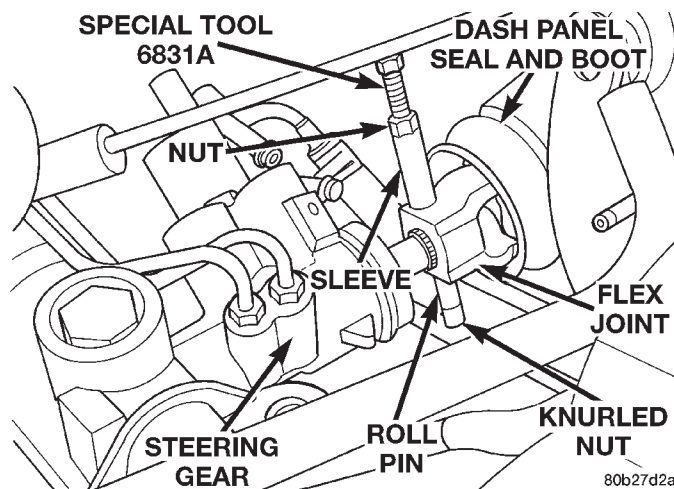


Fig. 23 Steering Coupler Roll Pin Installation

(9) Slide steering gear and intermediate shaft back into dash panel sealing boot. Align the steering gear mounting holes with its mounting holes in crossmember.

(10) Loosely install the bolts mounting the left side of the steering gear to the crossmember (Fig. 14).

CAUTION: Tightening the steering gear to crossmember mounting bolts to the proper torque is very important.

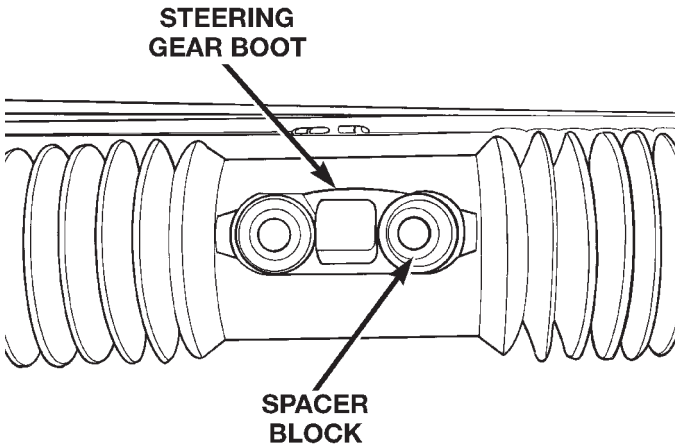
(11) Install the bolts mounting the right side mounting bracket for the steering gear to the crossmember (Fig. 15). Tighten the mounting bolts to a torque of 58 N·m (43 ft. lbs.).

(12) Tighten the bolts mounting the left side of the steering gear to the crossmember to a torque of 58 N·m (43 ft. lbs.).

(13) If previously loosened, tighten the bolts mounting the steering gear mounting bracket to the right side of the steering gear (Fig. 16) to a torque of 37 N·m (27 ft. lbs.).

REMOVAL AND INSTALLATION (Continued)

CAUTION: Before installing tie rods on steering gear be sure the tie rod spacer block inside the steering gear bellows (boot) (Fig. 24) is correctly aligned with the bolt holes in the rack of the steering gear and the steering gear bellows.



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Fig. 24 Tie Rod Spacer Block

(14) Attach power steering fluid pressure, and return lines into proper ports of the steering gear (Fig. 11). Tighten both power steering hose tube nuts to a torque of 47 N·m (35 ft. lbs.).

(15) If equipped with speed proportional steering, connect the wiring harness connector to the solenoid control valve electrical connector (Fig. 12).

(16) Align center take off on steering gear with the tie rod assemblies. Install tie rod attaching bolts and washers into steering gear assembly. **Be sure washers are installed between tie rods and steering gear (Fig. 25). Tighten the tie rod to steering gear bolts to a torque of 82 N·m (60 ft. lbs.).**

CAUTION: After tie rod attaching bolts are torqued, bend attaching bolt retaining tabs against heads of attaching bolts (Fig. 9).

(17) Install the vacuum hose for the vacuum booster on intake manifold vacuum port. Install hose clamp on vacuum hose.

(18) Install the master cylinder on the vacuum booster. Install the 2 nuts attaching the master cylinder to the vacuum booster. Tighten the master cylinder mounting nuts to a torque of 28 N·m (250 in. lbs.).

(19) Install the intermediate shaft onto the steering column shaft. Install steering column coupler pinch bolt (Fig. 8) and tighten to a torque of 28 N·m (21 ft. lbs.). Install the pinch bolt nut retaining pin in pinch bolt.

(20) Remove the holding clamp from the steering wheel (Fig. 7).

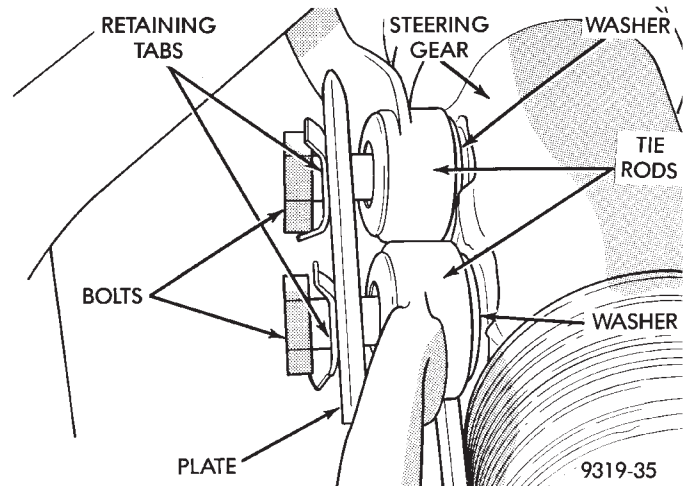


Fig. 25 Tie Rod Attachment To Steering Gear

(21) Install the reinforcement (Fig. 5) on the vehicle. Install the 8 bolts, attaching the reinforcement (Fig. 5) to the strut towers. Install the bolt (Fig. 5) attaching the wiper module to the reinforcement.

(22) Install the in-line resonator and inlet hose (Fig. 6) on the throttle body and air let hose coming from the lid of the air cleaner housing.

(23) Install the covers (Fig. 4) over the wiper module and the cowl. Install and securely tighten the attaching screws.

(24) Install the wiper arms (Fig. 3) on the pivots. Install and securely tighten the wiper arm to pivot attaching nuts. Install the caps on the wiper arms covering the pivot nuts.

(25) Install the battery ground cable onto the ground stud on the shock tower.

CAUTION: Do not use automatic transmission fluid. Use only the proper Mopar Power Steering Fluid or equivalent when filling the power steering fluid reservoir.

(26) Perform Power Steering Pump Initial Operation procedure which can be found in the Power Steering Pump section of this group, to properly refill and bleed power steering system.

(27) Lower vehicle.

(28) Adjust front toe. Refer to Suspension, Group 2, for the proper procedure.

OUTER TIE ROD

REMOVE

(1) Raise vehicle on jackstands or centered on a frame contact type hoist. See Hoisting in the Lubrication and Maintenance section of this manual for the required lifting procedure to be used for this vehicle.

REMOVAL AND INSTALLATION (Continued)

- (2) Remove tire and wheel assembly.
- (3) Loosen the pinch bolt (Fig. 26) at the outer to inner tie rod adjustment sleeve.

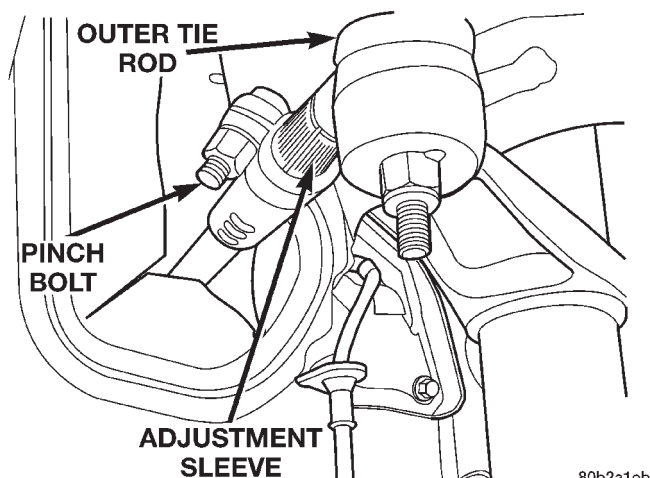


Fig. 26 Tie Rod Adjustment Sleeve Pinch Bolt

- (4) Remove the outer tie rod to strut steering arm attaching nut (Fig. 27).

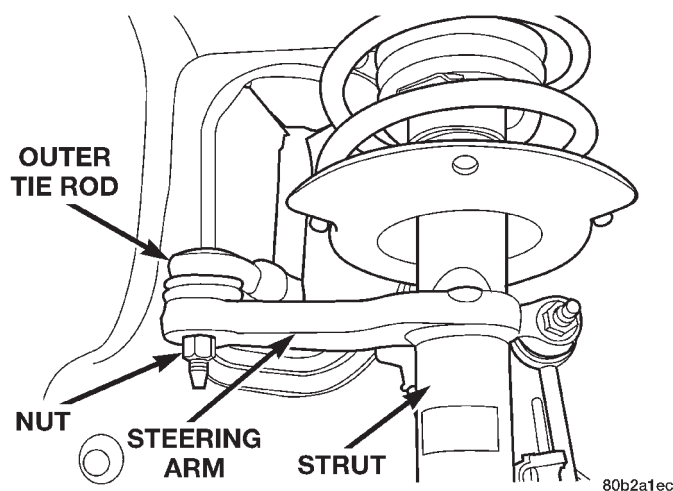
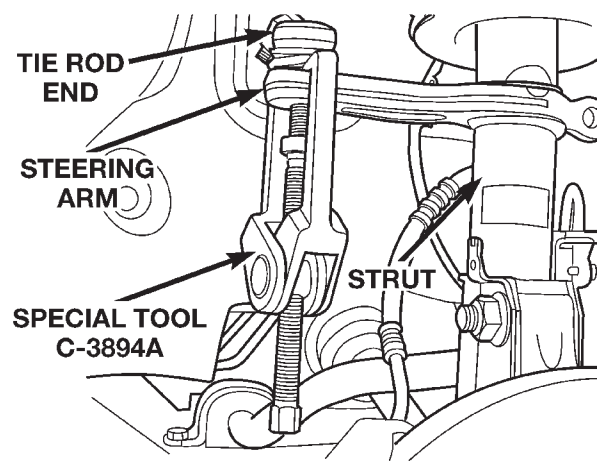


Fig. 27 Tie Rod Nut

- (5) Remove the outer tie rod from the steering arm using Puller, Special Tool C-3894-A (Fig. 28).
- (6) Remove outer tie rod from adjustment sleeve.

INSTALL

- (1) Install the outer tie rod into the adjustment sleeve. **Do not tighten the adjustment pinch bolt at this time.**
- (2) Install the outer tie rod into the steering arm on front strut. Install tie rod to steering arm attaching nut (Fig. 27). Tighten the attaching nut a torque of 37 N·m (27 ft. lbs.).
- (3) Install the tire and wheel assembly.
- (4) Install and tighten the wheel mounting nuts in proper sequence until all nuts are torqued to half



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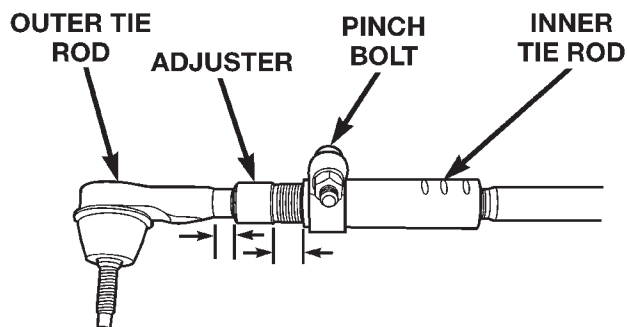
Fig. 28 Tie Rod Removal From Steering Arm

specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

- (5) Lower vehicle.

CAUTION: When setting the front Toe on the vehicle, the maximum dimension of exposed threads allowed on the adjuster and outer tie rod cannot exceed the distance shown in (Fig. 29). If the maximum distance is exceeded, inadequate retention of either the adjuster or the outer tie rod can result. This condition can cause separation of the outer tie rod end from the inner tie rod. Ensure that adjustment sleeve pinch bolts are torqued to the required specification when Toe setting procedure is completed.

- (6) Check the front wheel toe setting on vehicle and make required changes. **When making front wheel toe adjustments, be sure the maximum exposed thread requirements (Fig. 29) are not exceeded.**



ALLOWABLE THREADS EXPOSED ON OUTER TIE ROD AND ADJUSTER IS A MAXIMUM OF 20 MILLIMETERS. REFER TO AREA INDICATED ABOVE ON THE OUTER TIE ROD AND ADJUSTER.

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Fig. 29 Tie Rod Thread Engagement Requirements

REMOVAL AND INSTALLATION (Continued)

CAUTION: When torquing the adjuster pinch bolt, the following procedure must be followed to ensure adequate retention of the adjuster is obtained. Not following this procedure, could result in the Toe Setting Adjustment changing and/or the separation of the outer tie rod from the inner tie rod.

(7) After completion of the tie rod end installation and the toe adjustment procedure, tighten adjuster pinch bolt (Fig. 29) to a torque of 45 N·m (33 ft. lbs.). Make sure the outer tie rod maintains correct perpendicular orientation while tightening the adjuster pinch bolt.

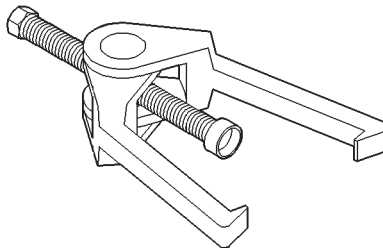
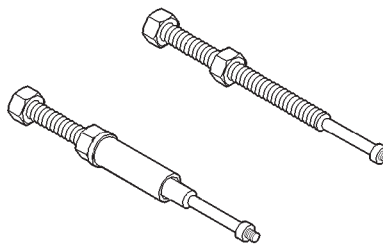
SPECIFICATIONS

STEERING GEAR FASTENER TORQUE SPECIFICATIONS

DESCRIPTION	TORQUE
POWER STEERING GEAR:	
Crossmember Bolts	58 N·m (43 ft. lbs.)
Tie Rod Steering Arm Nut . . .	37 N·m (27 ft. lbs.)
Tie Rod Steering Gear Bolt . . .	82 N·m (60 ft. lbs.)
Tie Rod Adjuster Pinch bolt . .	45 N·m (33 ft. lbs.)
POWER STEERING FLUID HOSES:	
Hose Tube Nuts	47 N·m (35 ft. lbs.)

SPECIAL TOOLS

POWER STEERING GEAR

*Puller C-3894-A**Remover / Installer, Steering Shaft Roll Pin 6831A*

SPEED PROPORTIONAL POWER STEERING GEAR

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DESCRIPTION AND OPERATION

SPEED PROPORTIONAL POWER STEERING GEAR

Available on certain models of this vehicle is an electronically controlled, speed-sensitive, variable-effort, better known as speed-proportional, rack and pinion power steering system. Speed proportional power steering reduces the steering effort required by the driver for low speed driving and parking maneuvers. Also, at higher speeds, more steering effort is required providing a more firm, responsive feel to the power steering system.

With the engine running and the vehicle speed between 0 mph (0 km/h) and approximately 20 mph (32 km/h), minimum steering effort is required. Between approximately 20 mph (32 km/h) and 60 mph (100 km/h), power steering effort will gradually

increase based upon vehicle speed. Above approximately 60 mph (100 km/h), maximum steering effort is required by the speed proportional steering system.

Variable-effort power steering is provided by controlling power steering fluid pressure at the power steering gear. A solenoid control valve located on the steering gear (Fig. 1) is used to control power steering gear return fluid pressure. The pressure is controlled by varying the size of an orifice.

The variable-assist speed-proportional solenoid control valve is controlled by the Body Control Module (BCM). The BCM receives the vehicle speed signal sent from the Powertrain Control Module (PCM). Upon receiving the vehicle speed signal from the PCM, the BCM converts that speed signal into an electrical current usable by the solenoid control valve for controlling the variable effort of the power steering system.

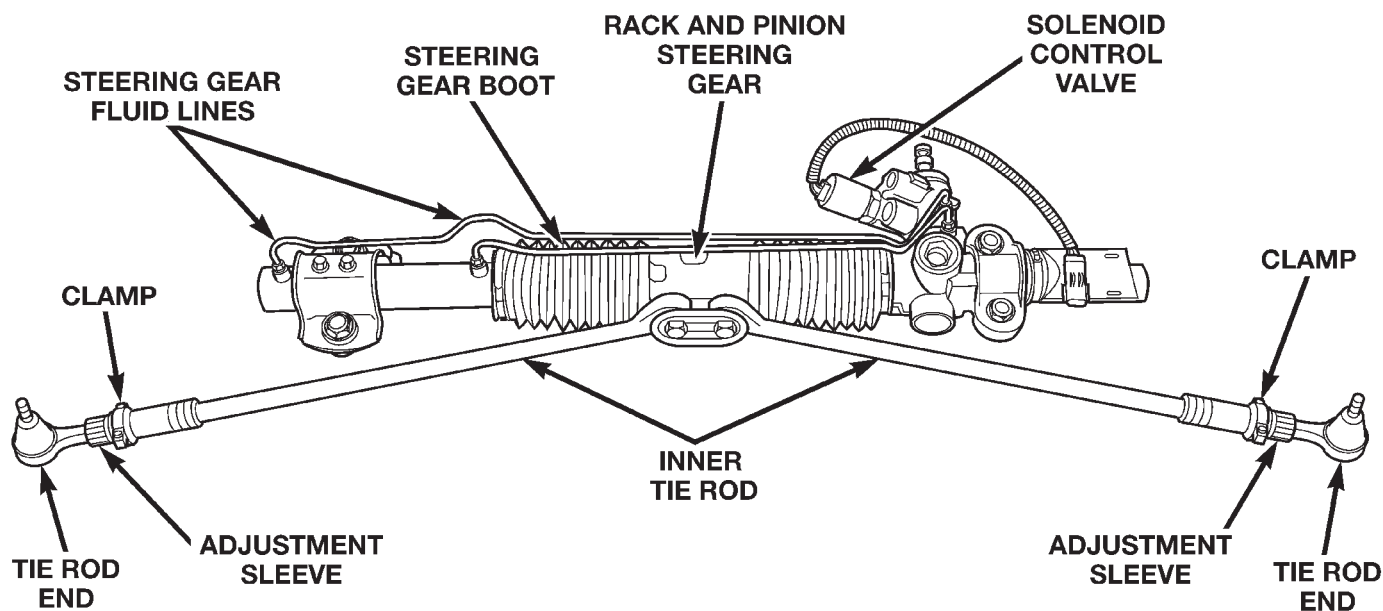


Fig. 1 Variable-Assist Speed-Proportional Power Steering Gear

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DESCRIPTION AND OPERATION (Continued)

The solenoid control valve is a serviceable component of the variable-effort, speed-proportional power steering gear assembly. It is replaceable without removal of the steering gear from the vehicle. Refer to the specific component service in the section for the required replacement procedures.

DIAGNOSIS AND TESTING

SPEED PROPORTIONAL STEERING SYSTEM

Diagnosis of the variable-effort speed-proportional power steering system, if suspected of not functioning properly, is done using the DRB scan tool. Refer to the Body Diagnostic Manual to properly test and diagnosis this steering system.

REMOVAL AND INSTALLATION

SPEED PROPORTIONAL POWER STEERING GEAR

If the variable-effort speed-proportional power steering gear requires removal from the vehicle, refer to the standard power steering gear removal procedure in this section of the service manual. The only difference in the removal and installation process is the need to disconnect and connect the solenoid control valve wiring harness connector.

SOLENOID CONTROL VALVE

REMOVE

(1) Disconnect the solenoid control valve electrical connector from the wiring harness at the power steering gear end cap below the brake master cylinder (Fig. 2).

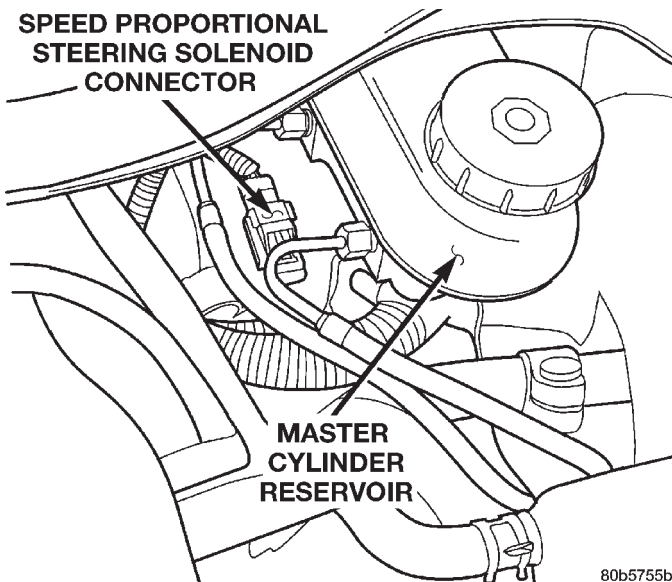


Fig. 2 Wiring Harness Connection

- (2) Unclip the connector from the gear end cap.
- (3) Remove the power steering pressure hose (Fig. 3) from the power steering gear.

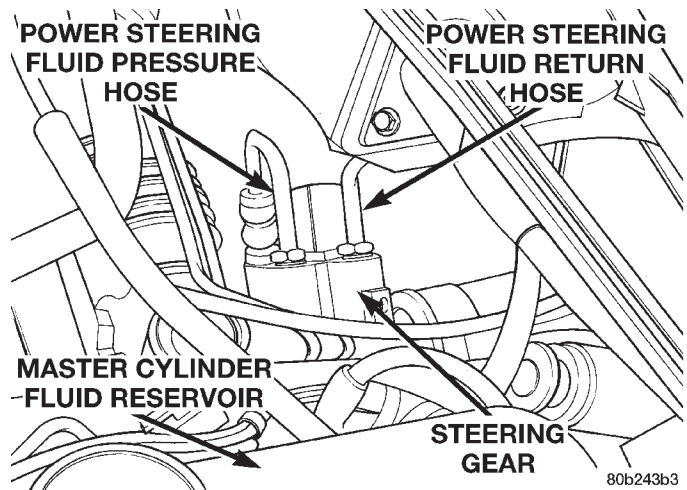


Fig. 3 Power Steering Hoses At Steering Gear

- (4) Remove the power steering return hose (Fig. 3) from the power steering gear.
- (5) Using a 1-5/16 inch crow foot, (Fig. 4) loosen the solenoid control valve. Then by hand, remove the solenoid control valve from the power steering gear.

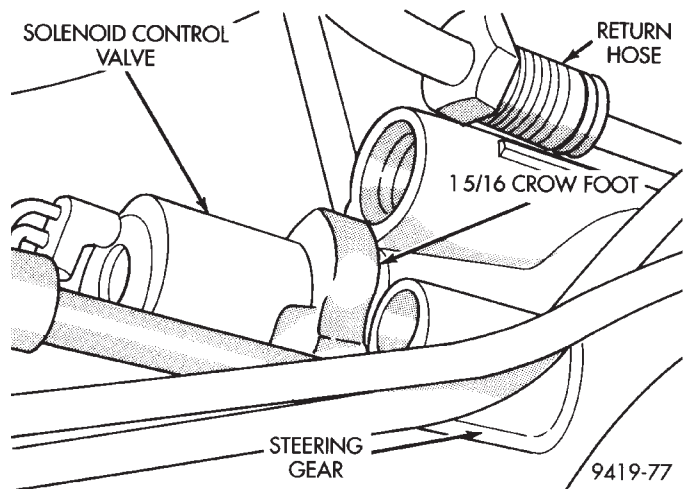


Fig. 4 Loosening Solenoid Control Valve

INSTALL

- (1) Inspect the O-ring seals on the solenoid control valve to be sure they are not damaged. If the O-rings are not damaged, moisten the O-rings using **only fresh clean Mopar Power Steering Fluid, or equivalent**.
- (2) Install the solenoid control valve into the steering gear by hand, until it is fully seated into the steering gear.
- (3) Using the 1-5/16 inch crow foot as shown in (Fig. 5) tighten the solenoid control valve to a torque of 14 N·m (124 in. lbs.).

REMOVAL AND INSTALLATION (Continued)

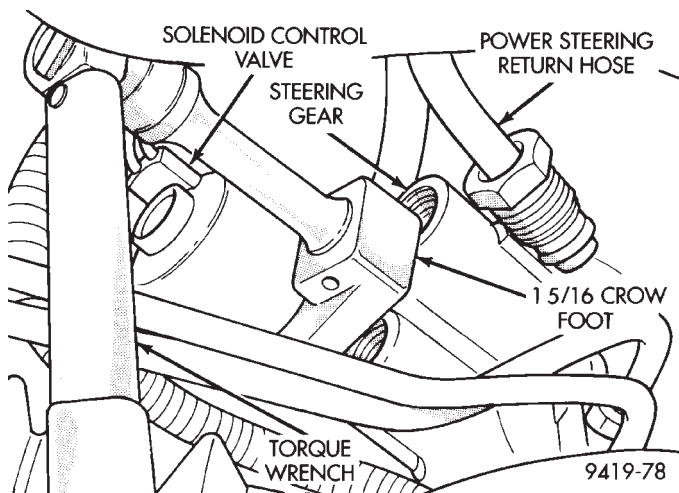


Fig. 5 Torquing Solenoid Control Valve

(4) Reconnect the power steering hoses at the gear (Fig. 3). Tighten both hose tube nuts to 31 N·m (275 in lbs.).

(5) Route the solenoid control valve wire harness over the top of the gear and clip it into place on the gear end cap.

(6) Connect the wiring harness connector. **Be sure the wiring harness connector seal is in good condition before installing the connector in the control module.**

(7) Road test vehicle, referring to the test indicated in the Body Diagnostic Manual, to confirm correct operation of the variable-assist speed-proportional power steering gear.

STEERING COLUMN

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DESCRIPTION AND OPERATION

STEERING COLUMN

The steering column (Fig. 1) used on this vehicle, has been designed to be serviced as an assembly; less wiring, switches, shifter assembly, ignition park interlock, shrouds and steering wheel, etc. Also, most steering column components can be serviced without removing the steering column from the vehicle.

DIAGNOSIS AND TESTING

STEERING COLUMN

For diagnosis of conditions relating to the steering column, refer to the steering system diagnosis charts in the diagnosis and testing section at the beginning of this group.

The steering column **MUST be replaced whenever any of the following conditions exist:**

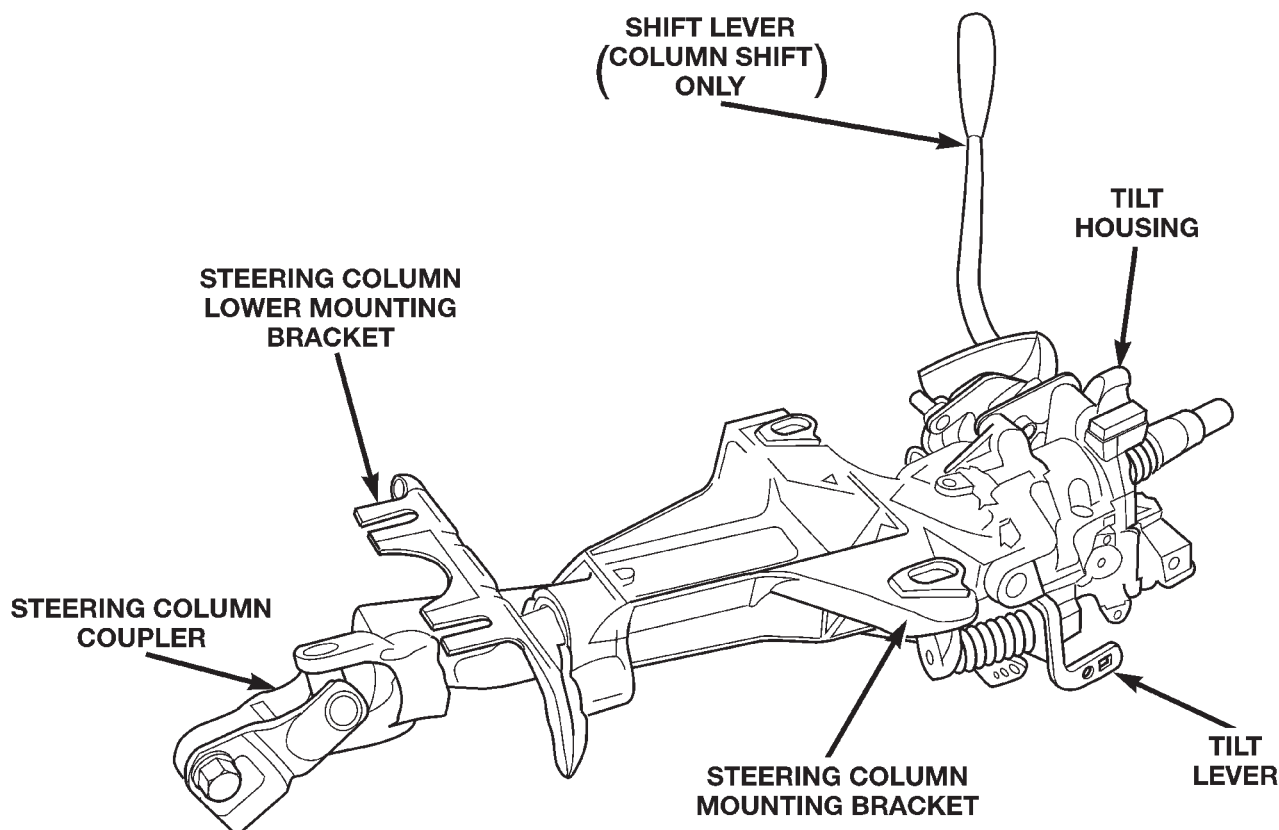


Fig. 1 Steering Column

DIAGNOSIS AND TESTING (Continued)

- The steering column must be replaced whenever a vehicle is involved in a collision which deploys the air bag, regardless of the extent of damage done to the vehicle.
- If a vehicle is involved in an impact of the vehicles front suspension or under carriage, which results in any type of damage to the front suspension crossmember.
- Under any conditions which result in the steering column assembly or steering column shaft receiving a force great enough to move the steering column or shaft forward or rearward in a vehicle.

STEERING COLUMN TO STEERING GEAR INTERMEDIATE SHAFT

The steering column to steering gear intermediate shaft has an integrated lower coupler and the assembly **MUST be replaced whenever any of the following conditions exist.**

- (1) Whenever a vehicle is involved in a collision which deploys the air bag, regardless of the extent of damage done to the vehicle.
- (2) If a vehicle is involved in an impact of the vehicles front suspension or under carriage, which results in any type of damage to the front crossmember.
- (3) Under any conditions which result in the steering column assembly or steering column shaft receiving a force great enough to move the steering column or shaft forward or rearward in a vehicle.

STEERING COLUMN SHAFT UPPER COUPLER

If the steering column shaft upper coupler is diagnosed to be defective due to any of the following conditions: seized bearing, loose bearing stake or a bearing not fully seated in the yoke of the coupler assembly, the coupler can be serviced as a separate component of the steering column assembly.

SERVICE PROCEDURES**STEERING COLUMN SERVICE PROCEDURE WARNINGS**

WARNING: BEFORE BEGINNING ANY SERVICE PROCEDURES THAT INVOLVES REMOVING THE AIR BAG. REMOVE AND ISOLATE THE NEGATIVE (-) BATTERY CABLE (GROUND) FROM THE VEHICLE BATTERY. THIS IS THE ONLY SURE WAY TO DISABLE THE AIR BAG SYSTEM. FAILURE TO DO THIS COULD RESULT IN ACCIDENTAL AIR BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

WARNING: THE AIR BAG SYSTEM IS A SENSITIVE, COMPLEX ELECTRO-MECHANICAL UNIT. BEFORE ATTEMPTING TO DIAGNOSE, REMOVE OR INSTALL THE AIR BAG SYSTEM COMPONENTS YOU MUST FIRST DISCONNECT AND ISOLATE THE BATTERY NEGATIVE (GROUND) CABLE. FAILURE TO DO SO COULD RESULT IN ACCIDENTAL DEPLOYMENT OF THE AIR BAG AND POSSIBLE PERSONAL INJURY. THE FASTENERS, SCREWS, AND BOLTS, ORIGINALLY USED FOR THE AIR BAG COMPONENTS, HAVE SPECIAL COATINGS AND ARE SPECIFICALLY DESIGNED FOR THE AIR BAG SYSTEM. THEY MUST NEVER BE REPLACED WITH ANY SUBSTITUTES. ANYTIME A NEW FASTENER IS NEEDED, REPLACE WITH THE CORRECT FASTENERS PROVIDED IN THE SERVICE PACKAGE OR FASTENERS LISTED IN THE PARTS BOOKS. BEFORE SERVICING A STEERING COLUMN EQUIPPED WITH AN AIR BAG, REFER TO GROUP 8M, ELECTRICAL FOR PROPER AND SAFE SERVICE PROCEDURES.

NOTE: Safety goggles should be worn at all times when working on steering columns.

CAUTION: Disconnect negative (ground) cable from the battery, before servicing any column component.

CAUTION: Do not attempt to remove the pivot pins to disassemble the tilting mechanism. Damage will occur.

SHIFTER/IGNITION INTERLOCK

For servicing and or adjustment of the shifter/ignition interlock system on either a floor or column shift vehicle. Refer to the Ignition Switch And Interlock Section of Group 8 for the required operation check and adjustment of the interlock system.

REMOVAL AND INSTALLATION**STEERING COLUMN**

WARNING: SAFETY GOGGLES SHOULD BE WORN AT ALL TIMES WHEN WORKING ON STEERING COLUMNS.

REMOVAL AND INSTALLATION (Continued)

NOTE: This procedure is to be used when replacing the steering column. It is written to reflect that objective. If the column is to be removed as one assembly, or without removing the steering wheel, the steering wheel must be turned from the straight ahead position to the **RIGHT 180°** and locked in place. Lock the column in this position by removing the key from the key cylinder. This **MUST** be performed before the steering coupler to the gear is disconnected. This is done to prevent the chance of damaging the clockspring. When reconnecting the steering coupler to the intermediate shaft, verify the front wheels have not moved from their position when column was removed. If during column reinstallation, any doubt is present as to whether the clockspring is properly centered, the clockspring centering procedure in step Step 17 **MUST** be performed prior to connecting the steering coupler.

REMOVE

(1) Remove remote ground cable from ground stud on shock tower and isolate ground cable from vehicle by installing isolator on stud (Fig. 2).

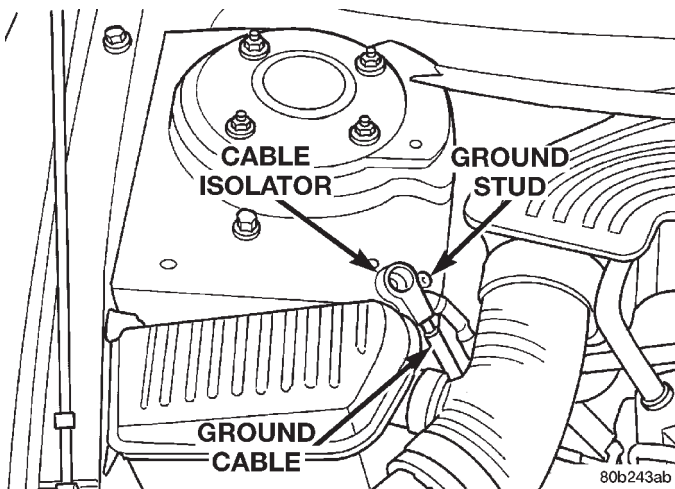


Fig. 2 Correctly Isolated Remote Ground Cable

(2) Remove the fuse panel cover from the left end of the instrument panel (Fig. 3).

(3) Remove the 2 screws behind the fuse panel cover, (Fig. 4) attaching the lower instrument panel cover to the instrument panel mounting bracket.

(4) Remove the lower instrument panel cover. The lower instrument panel cover is attached by retaining clips along the top and right edge.

(5) Remove the wiring harness connector from the trunk release switch in the lower instrument panel cover (Fig. 5).

(6) Remove the park brake release cable, from the park brake release handle in the lower instrument panel cover (Fig. 6).

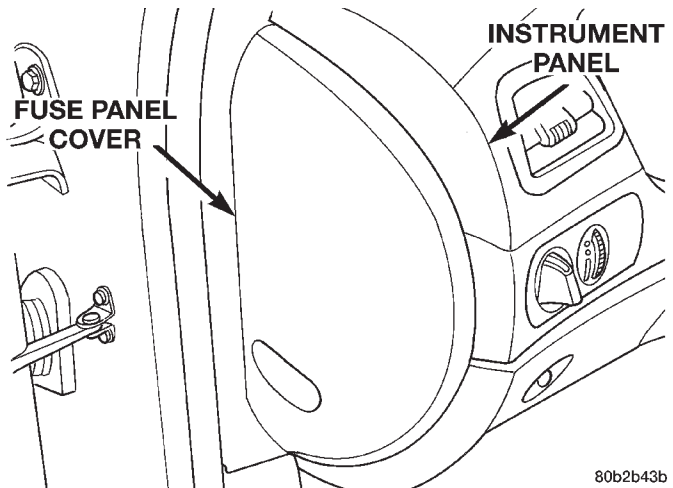


Fig. 3 Fuse Panel Cover

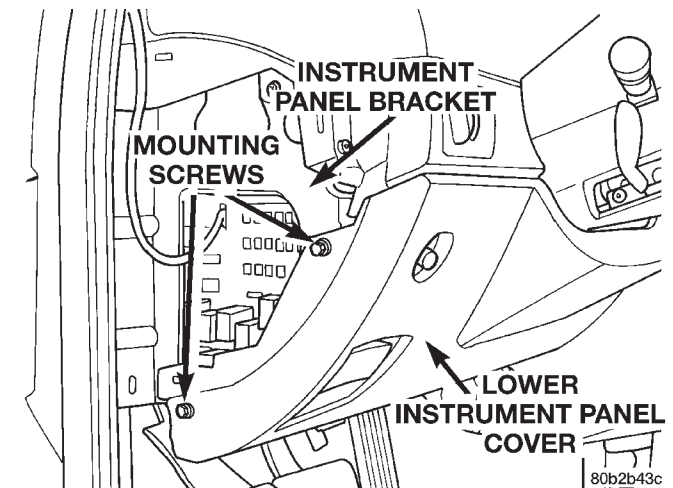


Fig. 4 Lower Instrument Panel Cover Mounting Screws

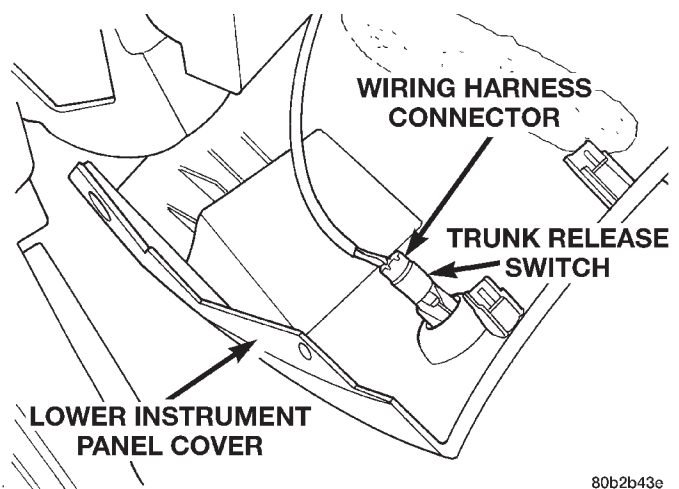
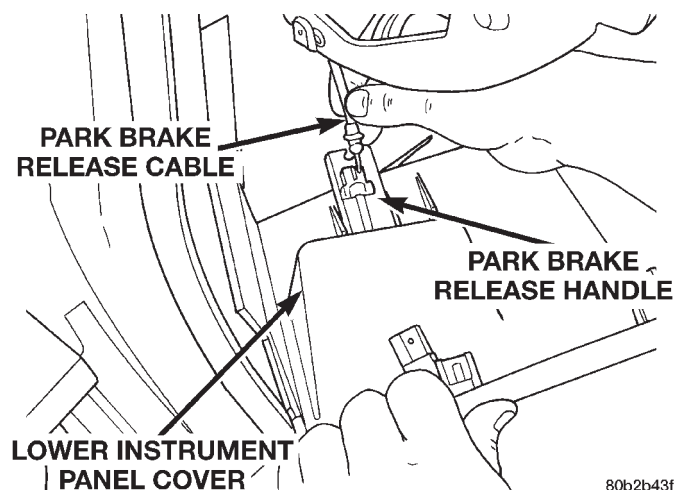


Fig. 5 Trunk Release Wiring

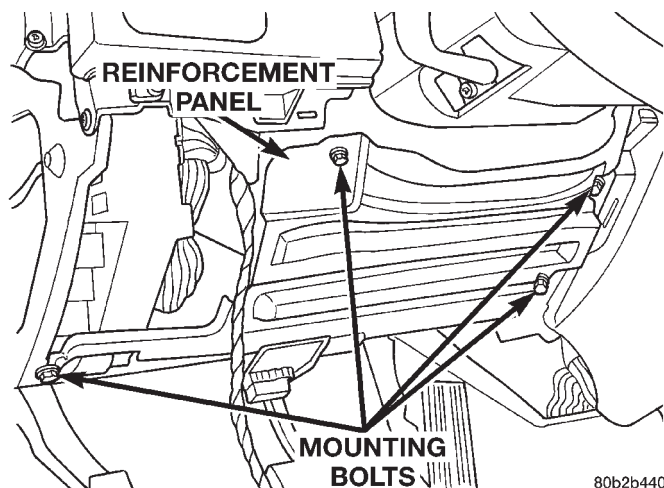
REMOVAL AND INSTALLATION (Continued)



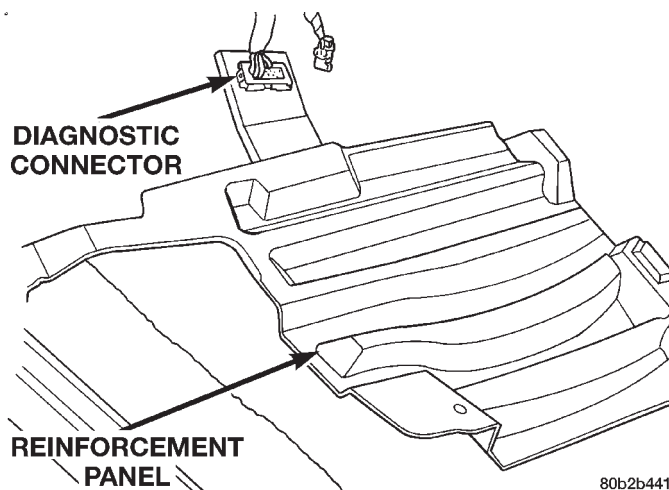
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Fig. 6 Park Brake Release Cable

(7) Remove the 4 bolts (Fig. 7) mounting the reinforcement (Fig. 7) to the instrument panel. Remove the reinforcement from the instrument panel. Remove the diagnostic connector (Fig. 8) from the reinforcement.



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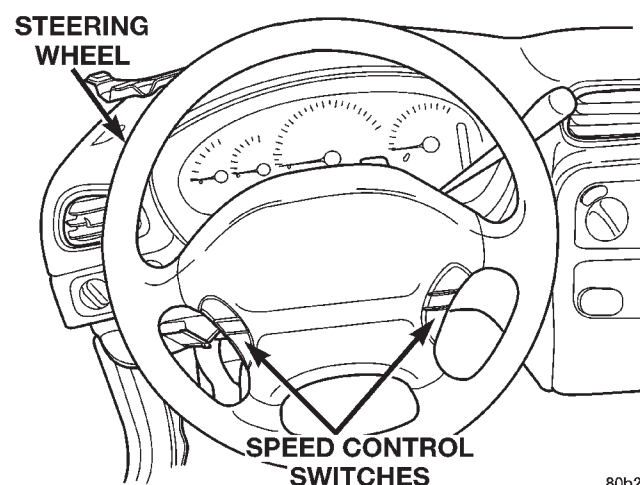
Fig. 7 Reinforcement Panel

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Fig. 8 Diagnostic Connector

(8) Before beginning removal of steering column assembly from vehicle, be sure front wheels of vehicle are in the **straight ahead position**.

(9) Remove the speed control switches (Fig. 9) from the steering wheel. **The speed control switches are mounted to the steering wheel by two screws (one screw, each switch) which are accessible from the back side of the steering wheel.**



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Fig. 9 Speed Control Switches

NOTE: Wait for a minimum of 2 minutes before starting to remove airbag from steering wheel. This will allow the airbag system capacitor to de-energize.

WARNING: WHEN AN UNDEPLOYED AIRBAG ASSEMBLY IS TO BE REMOVED FROM THE STEERING WHEEL, DISCONNECT BATTERY GROUND CABLE AND ISOLATE. ALLOW SYSTEM CAPACITOR TO DISCHARGE FOR TWO MINUTES, THEN BEGIN AIRBAG REMOVAL.

WARNING: WHEN HANDLING AN UNDEPLOYED AIRBAG MODULE DURING SERVICING OF THE STEERING COLUMN THE FOLLOWING PRECAUTIONS SHOULD BE OBSERVED. AT NO TIME SHOULD ANY SOURCE OF ELECTRICITY BE PERMITTED NEAR THE INFLATOR ON THE BACK OF THE AIRBAG MODULE. WHEN CARRYING A LIVE MODULE, THE TRIM COVER SHOULD BE POINTED AWAY FROM THE BODY TO MINIMIZE INJURY IF MODULE ACCIDENTLY DEPLOYS. IF AIRBAG MODULE IS PLACED ON A BENCH OR OTHER SURFACE, PLASTIC COVER SHOULD BE FACE UP TO MINIMIZE MOVEMENT IN CASE OF ACCIDENTAL DEPLOYMENT.

REMOVAL AND INSTALLATION (Continued)

(10) Remove the 2 bolts (Fig. 10) attaching the airbag module to the steering wheel.

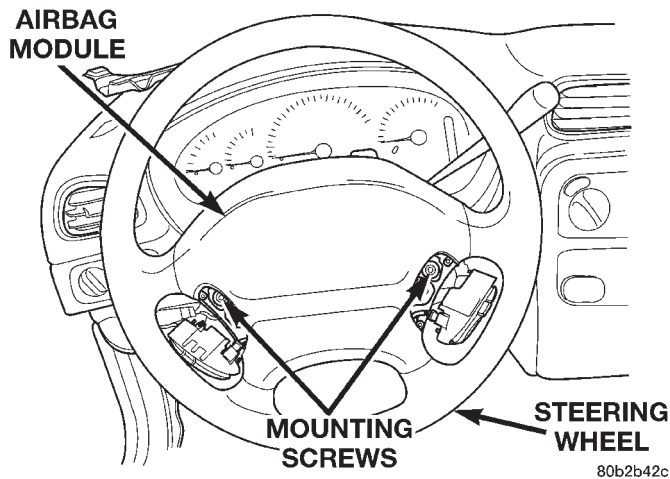


Fig. 10 Airbag Module Attaching Bolts

(11) Remove the airbag module from the steering wheel.

(12) Remove the connector lock from the airbag electrical lead connector (Fig. 11). Connector lock is removed by pulling it straight out of the airbag connector. **Do not twist the connector lock when removing it from the connector.**

(13) Disconnect the electrical connector (Fig. 11) from the back of the airbag module. Connector is removed by pulling it straight out of the airbag module. **Do not twist the connector when removing it from the airbag.**

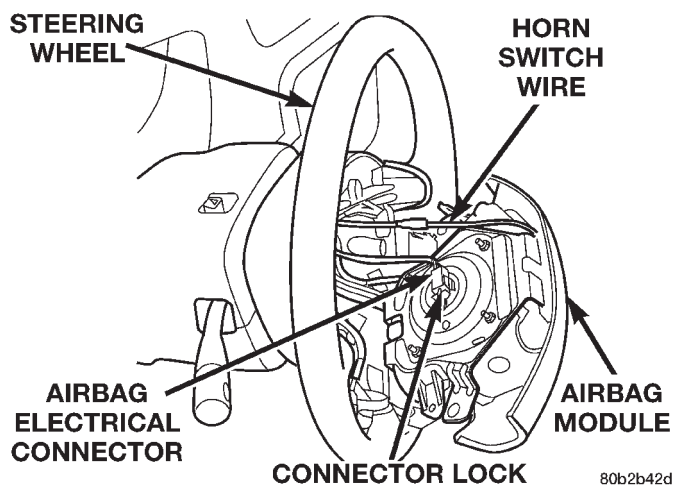


Fig. 11 Airbag Module Electrical Connections

(14) Remove the horn switch wire (Fig. 11) from the clockspring horn wire.

(15) Remove the steering wheel attaching nut (Fig. 12) from the steering column shaft.

CAUTION: When installing wheel puller on steering wheel, be sure puller bolts are fully seated in the

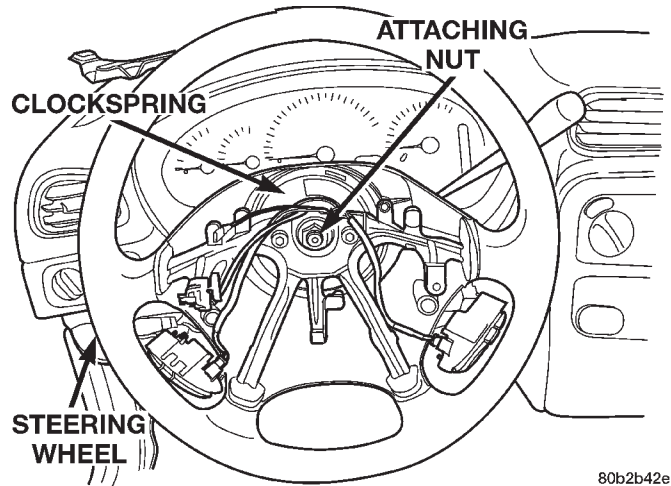


Fig. 12 Steering Wheel Attaching Nut

threaded holes in the steering wheel. If bolts are not fully seated in the threaded holes, threads may be stripped out when removing the steering wheel.

(16) Install Puller on steering wheel as shown (Fig. 13).

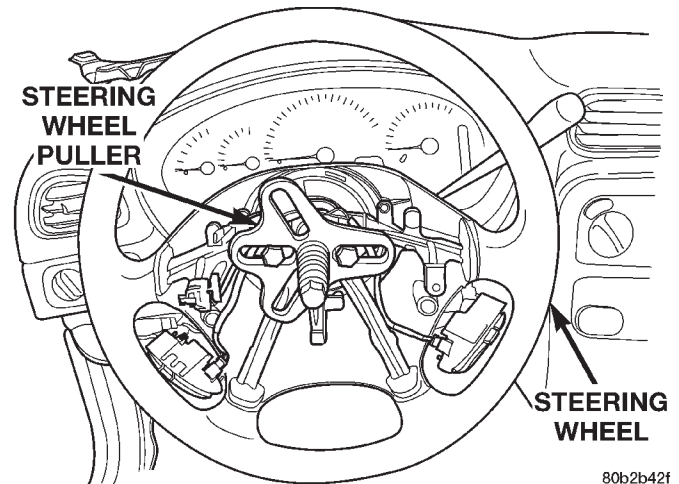


Fig. 13 Puller Installed On Steering Wheel

CAUTION: Do not bump or hammer on steering wheel or steering column shaft when removing steering wheel from steering column.

(17) Remove steering wheel from steering column shaft.

NOTE: The upper shroud on this steering column is retained to the steering column by a snap fit to the lower shroud. When removing the upper shroud from the steering column lower shroud, **DO NOT** use a hard or sharp tool. This will damage the shrouds. If a tool must be used, use a soft tool such as a trim stick.

(18) Remove the steering column upper shroud from the steering column using the following proce-

REMOVAL AND INSTALLATION (Continued)

ture. First, on the right seam between the upper and lower shrouds, push in on seam at the forward end. When the upper shroud unsnaps, pull the upper shroud upward away from the lower. Repeat this procedure on the opposite side of the column to release the upper shroud from the lower. Remove the upper shroud from the steering column.

(19) Remove the tilt lever (Fig. 14) from the steering column.

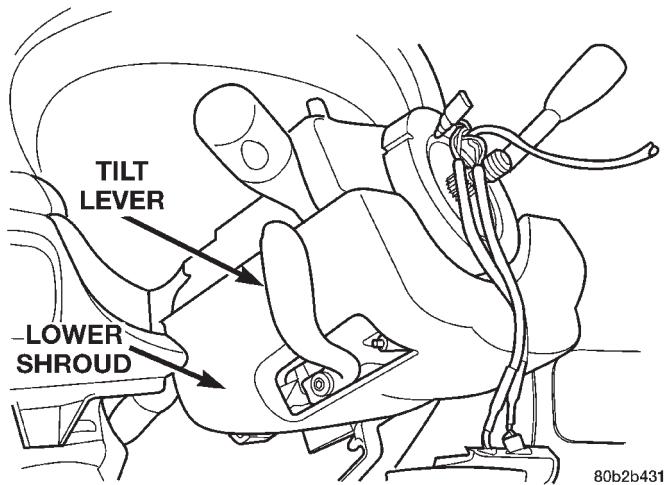


Fig. 14 Tilt Lever

(20) Remove the 2 screws attaching the lower shroud to the steering column (Fig. 15). Remove the lower shroud from the steering column.

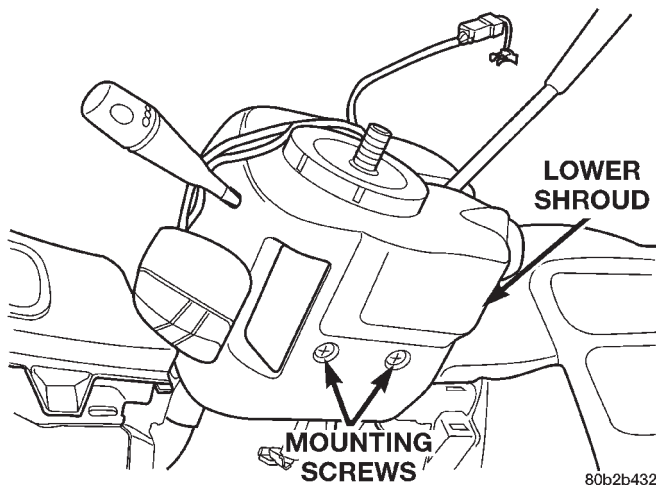


Fig. 15 Lower Shroud Attaching Screws

(21) Remove the wiring harness connectors (Fig. 16) from the clockspring.

(22) Remove the 2 screws (Fig. 17) mounting the clockspring to the steering column. Remove the clockspring from the steering column.

(23) Disconnect the wire harness connector at the SKIM module. Remove the mounting screw and unclip the module from the key cylinder halo bezel.

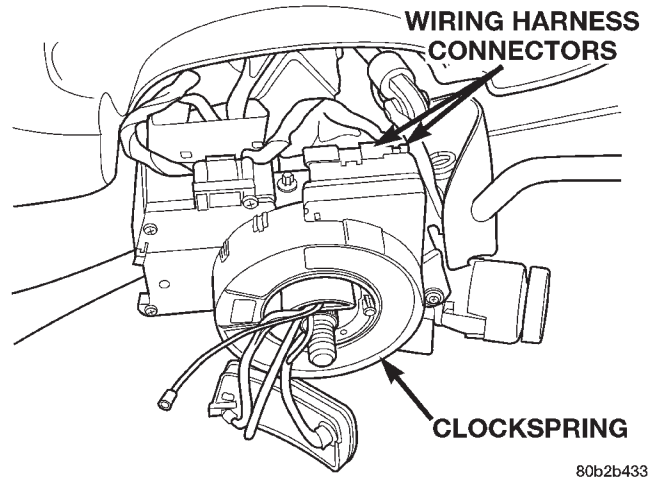


Fig. 16 Wiring Harness Connection To Clock Spring

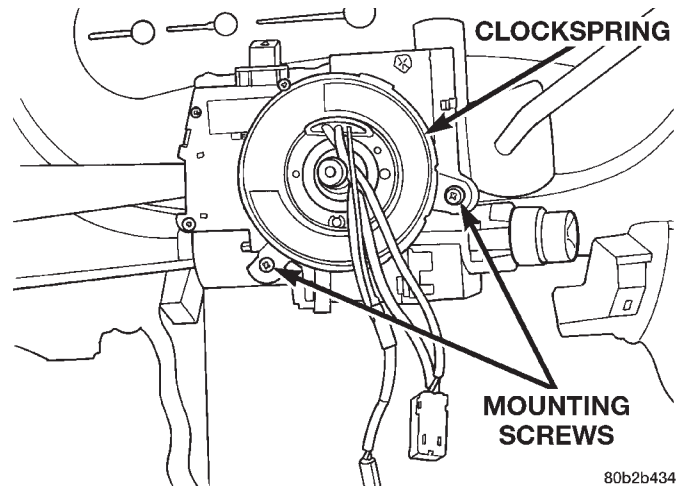


Fig. 17 Clockspring Mounting Screws

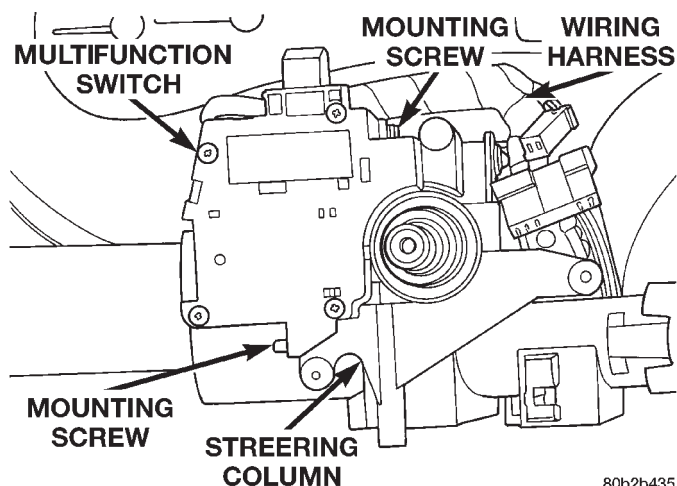
(24) Remove the wiring harness from the routing clip on the top of the multi-function switch. Remove the 2 screws (Fig. 18) mounting the multi-function switch to the steering column. Remove the multi-function switch, with the wiring harness attached, from the steering column.

(25) Remove the 2 screws (Fig. 19) mounting the ignition switch to the steering column. Remove the ignition switch, with the wiring harness attached, from the steering column.

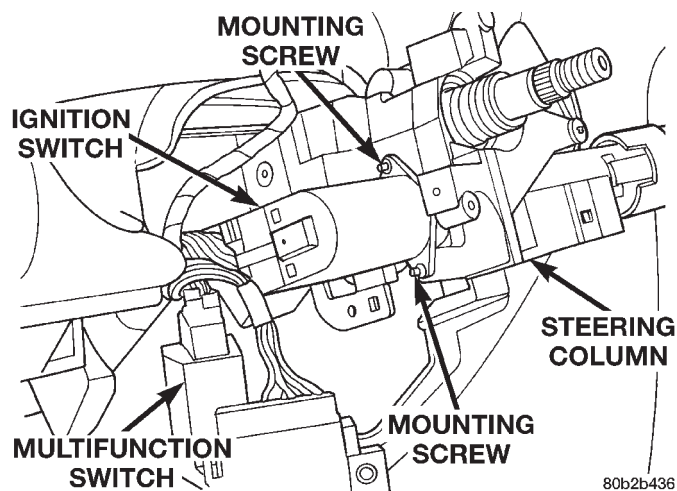
(26) If the vehicle is equipped with a floor mounted shifter, depress the locking tab on the shifter/ignition interlock cable (Fig. 20) and remove the cable from the key lock housing.

(27) If the vehicle is equipped with a steering column mounted shifter, remove the shift cable from the shifter mechanism. Unlock the cable lock, then, the shift cable is removed by inserting a screwdriver between the shift cable and the shifter mechanism and prying the cable off the pin (Fig. 21).

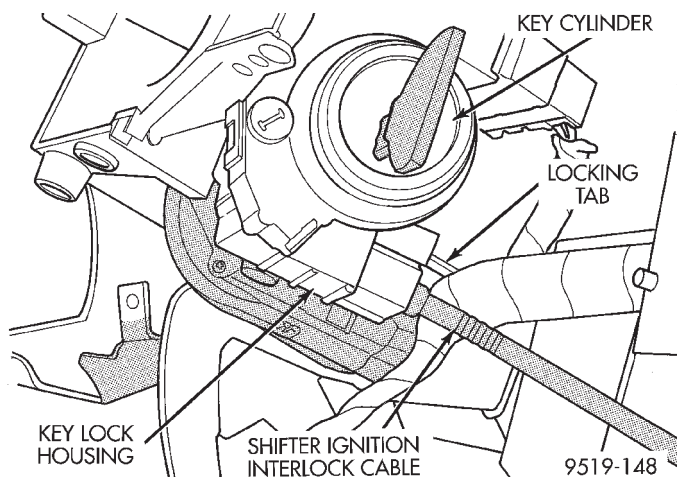
REMOVAL AND INSTALLATION (Continued)



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Fig. 18 Multi-Function Switch Mounting Screws

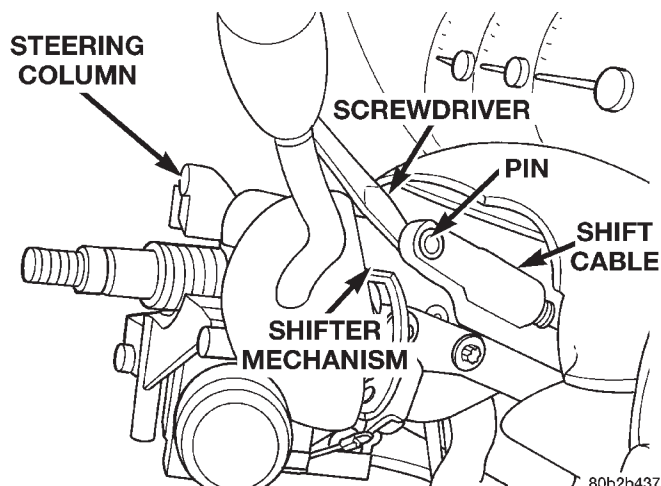
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Fig. 19 Ignition Switch Mounting Screws

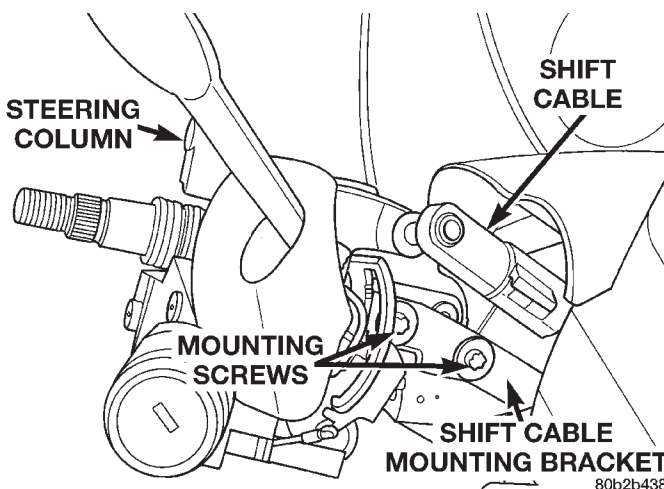
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Fig. 20 Shifter/Ignition Cable At Lock Cylinder Housing

(28) Remove the shift cable mounting bracket (Fig. 22) from the steering column. The shift cable mounting bracket is mounted to the steering column by the 2 mounting screws (Fig. 22).



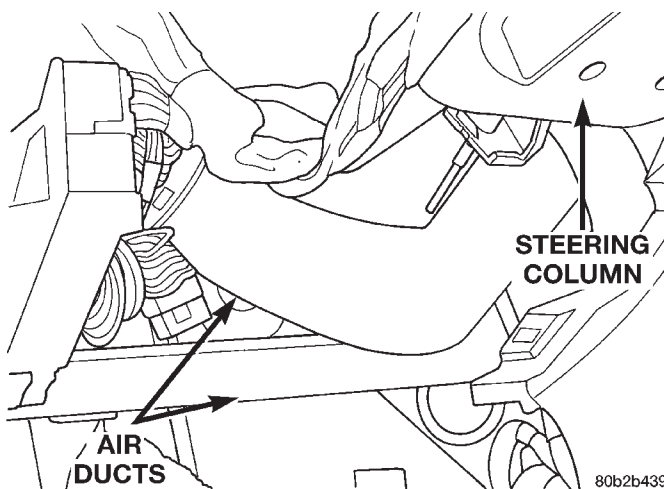
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Fig. 21 Shift Cable Removal

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Fig. 22 Shift Cable Bracket Mounting To Steering Column

(29) Remove the 2 air ducts (Fig. 23) from under the steering column.



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Fig. 23 Air Ducts

REMOVAL AND INSTALLATION (Continued)

(30) Remove retaining pin in steering column coupler pinch bolt (Fig. 24). Remove the pinch bolt from the steering column coupler. **Pinch bolt nut is caged to coupler and is not removable. Separate the steering column flex coupler from steering intermediate shaft.**

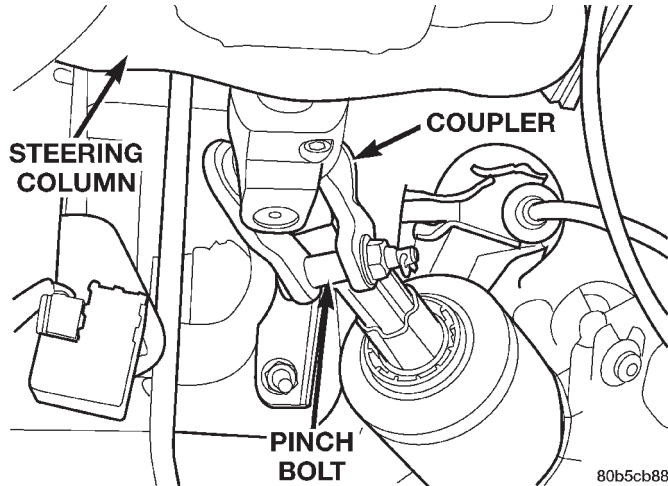


Fig. 24 Steering Column Coupler To Intermediate Shaft Attachment

(31) Remove the 2 steering column upper mounting bracket to support bracket nuts (Fig. 25). Then loosen the 2 bolts attaching the steering column lower mounting bracket to support bracket (Fig. 25).

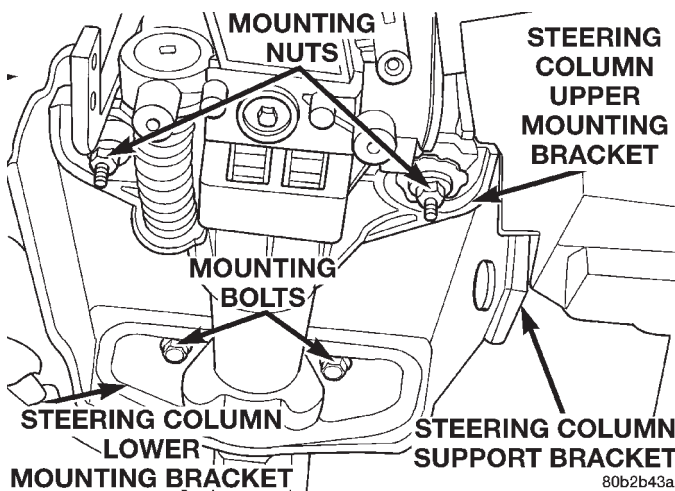


Fig. 25 Steering Column Mounting

(32) Remove the steering column from the support bracket by pulling it rearward, then out of the car.

INSTALL

(1) Install the steering column on the steering column support bracket. Loosely install the 2 steering column attaching nuts.

(2) Loosely tighten the 2 steering column upper mounting nuts (Fig. 25) to hold the steering column in place. Center the steering column in place, side to

side, then install the 2 lower mounting bolts (Fig. 25). Then equally tighten both steering column upper mounting nuts until upper steering column mounting bracket is seated against support bracket. Tighten the 4 steering column bracket to support bracket fasteners to 12 N·m (105 in. lbs.), tightening the upper mounting nuts first, then the lower mounting bolts.

(3) Assemble the intermediate steering shaft to the steering column flex coupler (Fig. 24). Tighten the coupler pinch bolt nut to a torque of 27 N·m (240 in. lbs.). **Be sure to install steering coupler pinch bolt retaining pin.**

(4) Install the 2 air ducts (Fig. 23) under the steering column.

(5) **If the vehicle is equipped with a floor shifter, install the shifter/ignition interlock cable (Fig. 20) in the lock cylinder housing.**

(6) Install the shift cable mounting bracket (Fig. 22) on the steering column. The shift cable mounting bracket is mounted to the steering column by the 2 mounting screws.

(7) **If the vehicle is equipped with a steering column mounted shifter, first verify that the shifter is locked in the park position. Then, install the shift cable on the shifter mechanism (Fig. 26). The shift cable must be fully inserted onto the pin of the shifter mechanism.**

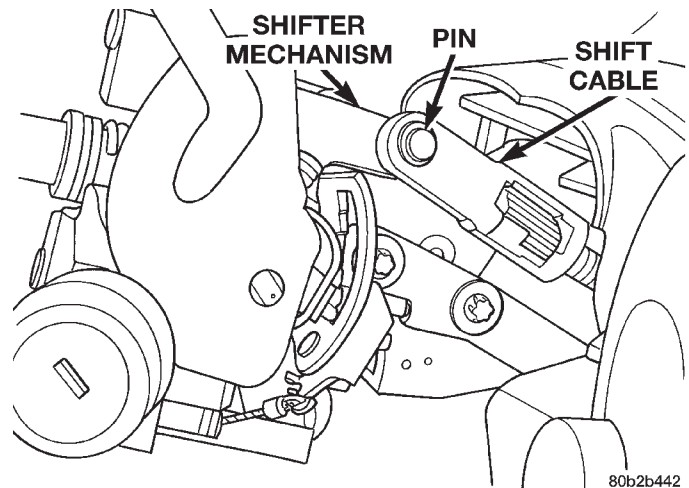


Fig. 26 Installed Shift Cable

(8) Install the ignition switch on the steering column. Install and securely tighten the 2 screws (Fig. 19) mounting the ignition switch to the steering column.

(9) Install the multi-function switch on the steering column. Install and securely tighten the 2 screws (Fig. 18) mounting the multi-function switch to the steering column. Install the clockspring wiring harness on the routing clip on the top of the multi-function switch.

(10) Clip the SKIM module over the key cylinder halo bezel and attach it to the steering column with

REMOVAL AND INSTALLATION (Continued)

its mounting screw. Connect the wiring harness to the module.

(11) Install the clockspring on the steering column. Install and securely tighten the 2 screws (Fig. 17) mounting the clockspring to the steering column.

(12) Install the wiring harness connectors (Fig. 16) on the clockspring.

(13) If removed, install the trim ring for the key cylinder on the lock cylinder housing.

(14) Install the lower shroud (Fig. 15) on the steering column. Install and securely tighten the 2 screws attaching the lower shroud to the steering column.

(15) Install the tilt lever (Fig. 14) on the steering column.

(16) Install the upper shroud on the steering column by snapping it onto the lower shroud.

CAUTION: If any doubt is present as to whether the clockspring is properly centered, This clockspring centering procedure **MUST** be performed prior to installing steering wheel assembly. If clockspring is not centered it may be overextended, causing clockspring assembly to become inoperative. The yellow centering indicator must be present in the centering window of the clockspring and the arrow on the clockspring must be pointing at the drive pin.

(17) Center the clock spring using the following procedure.

- Depress the plastic locking pin to disengage clockspring locking mechanism.
- Keeping locking mechanism disengaged, rotate the clockspring rotor in the **CLOCKWISE DIRECTION** to the end of the travel. Do not apply excessive torque.
- From the end of clockwise travel, slowly rotate the rotor in the counterclockwise direction until yellow appears in the centering window of clockspring. When yellow appears in the centering window the arrow on the clockspring will be pointing at the drive pin on clock spring rotor.
- Engage the clockspring locking mechanism.

CAUTION: Do not install steering wheel onto shaft of steering column assembly by driving it onto the shaft. Pull steering wheel down onto steering column shaft using **ONLY** the steering wheel retaining nut.

(18) Feed the clockspring wiring leads through the steering wheel (Fig. 12). Position steering wheel on shaft of steering column, making sure the master serration in the wheel hub and on the steering column shaft line up.

(19) Install steering wheel to steering column shaft retaining nut (Fig. 12) and tighten until the steering wheel is fully installed on the shaft. Tighten steering wheel retaining nut to a torque of 61 N·m (45 ft. lbs.).

(20) Turn the key cylinder to the unlock position, unlocking the steering column shaft.

(21) Connect the horn switch wiring lead from the clockspring to the airbag module horn switch wiring lead (Fig. 11).

(22) Install the airbag electrical lead into connector on back of airbag module (Fig. 11). Insert connector locking into airbag connector (Fig. 11). **Be sure electrical connector from clockspring is securely latched into airbag module connector.**

CAUTION: The fasteners, screws, and bolts, originally used for the airbag components are specifically designed for the airbag system. They must never be replaced with any substitutes. Anytime a new fastener is needed, replace only with correct fasteners provided in service packages or fasteners listed in the parts book.

NOTE: Make sure steering wheel and airbag module are in the right-side-up position before installing airbag module on steering wheel.

(23) Install the airbag module on steering wheel. Install **only the 2 original or correct replacement airbag module attaching bolts (Fig. 10). Torque the 2 airbag module attaching bolts to 8 N·m (75 in. lbs.).**

(24) Install the speed control switches in the steering wheel (Fig. 9). Install and tighten the screws attaching the speed control switches to the steering wheel to 1.5 N·m (13 in. lbs.).

(25) Install the diagnostic connector (Fig. 8) on the reinforcement.

(26) Install the reinforcement (Fig. 7) on the instrument panel. Install the 4 bolts (Fig. 7) mounting the reinforcement to the instrument panel.

(27) Install the park brake release cable, on the park brake release handle in the lower instrument panel cover (Fig. 6).

(28) Install the wiring harness connector on the trunk release switch in the lower instrument panel cover (Fig. 5).

(29) Install the lower instrument panel cover.

(30) Install the 2 screws behind the fuse panel cover, (Fig. 4) attaching the lower instrument panel cover to the instrument panel mounting bracket.

(31) Install the fuse panel cover on the left end of the instrument panel (Fig. 3).

REMOVAL AND INSTALLATION (Continued)

CAUTION: When reconnecting battery on a vehicle that has had the airbag module removed, ensure no occupants are in the vehicle and the following procedure is used.

(32) Using the following procedure, Reconnect the remote ground cable on the shock tower ground stud.

- Connect DRB scan tool to diagnostic connector below the column.

- Turn ignition key to ON position. Exit vehicle with the DRB scan tool. Install the latest version of the proper diagnostic cartridge into the DRB scan tool.

- Ensuring that there are no occupants in the vehicle, connect negative cable to negative post of the battery.

- Using the DRB scan tool read and record active fault codes. Also read and record any stored fault codes. Refer to the Passive Restraint Diagnostic Test Manual if any faults are found.

- Erase stored faults if there are no active fault codes. If problems remain, fault codes will not erase.

- From the passenger side of the vehicle, turn ignition key to OFF and then ON observing instrument cluster airbag lamp. It should go on for six to eight seconds, then go out. This will indicate that the airbag system is functioning normally.

- If airbag warning lamp fails to light, blinks on and off or goes on and stays on, there is an airbag system malfunction. Refer to the Passive Restraint Diagnostic Test Manual to diagnose the system malfunction.

(33) Test the operation of the horn, lights, and any other functions that are steering column operated. If applicable, reset the radio and the clock.

(34) Road test vehicle to ensure proper operation of the steering system and the speed control system.

GEARSHIFT LEVER ASSEMBLY

The gear shift lever assembly (if equipped) is a replaceable component of the steering column assembly.

The steering column assembly does not require removal from the vehicle to allow replacement of the shifter assembly.

REMOVE

(1) Remove the tilt lever and the upper and lower steering column shrouds from steering column assembly (Fig. 27). Then remove center outlet bezel.

(2) Remove the gear shift cable from the attaching pin on the gear shift assembly.

(3) Unlock shift cable adjuster.

(4) Remove the 3 Torx head screws attaching the shifter assembly to the steering column tilt housing (Fig. 28). Then remove shifter assembly from tilt

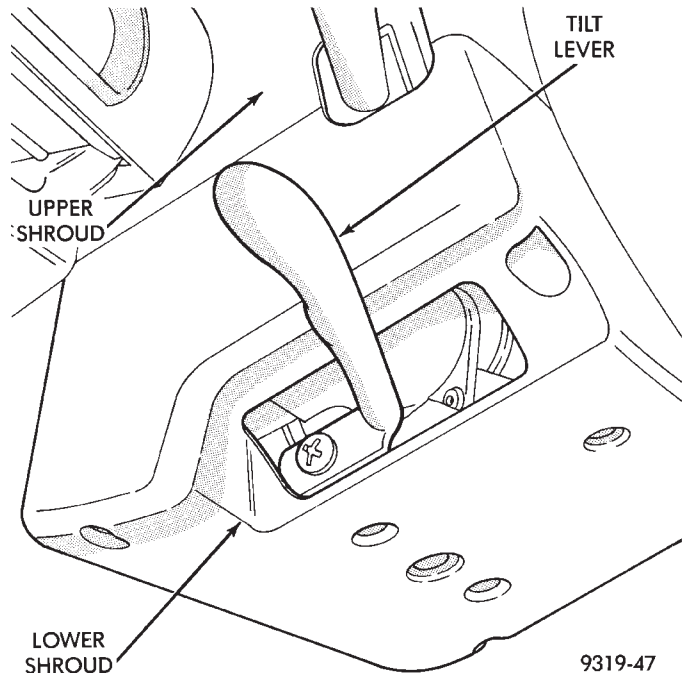


Fig. 27 Tilt Lever And Upper And Lower Shrouds

housing and unhook interlock cable from shifter assembly (Fig. 28).

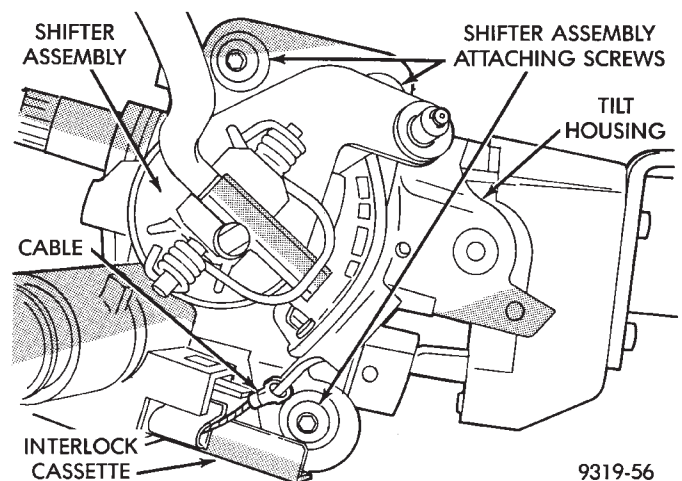


Fig. 28 Shifter Assembly Attachment To Tilt Housing

(5) Remove the interlock cassette from the steering column and discard. A new interlock cassette must be installed when a new shifter assembly is installed.

INSTALL

(1) Install new shifter assembly on tilt housing of steering column. Install and securely tighten the 3 Torx head screws attaching shifter assembly to tilt housing.

(2) Install cable from the new interlock cassette, onto the interlock lever of the shifter assembly (Fig. 28).

REMOVAL AND INSTALLATION (Continued)

(3) With shifter assembly in the park position and ignition key extracted from ignition switch. Install the new **NEW interlock cassette into steering column. Be sure interlock cassette locking tab is securely latched.**

(4) Install the gear shift cable onto the cable attaching pin on shifter assembly.

(5) Adjust interlock cassette. Refer to the Ignition Switch And Interlock Section of Group 8 for the required operation check and adjustment procedure of the interlock system.

(6) Lock the gear shift cable adjuster.

(7) Install upper and lower shroud on steering column assembly and tilt lever (Fig. 27).

STEERING COLUMN SHAFT UPPER COUPLER

REMOVE

(1) Remove steering column assembly from vehicle. Refer to the Steering Column Removal Section in this group of the service manual for the required removal procedure.

(2) Install Puller, Special Tool 6831-A, through center of roll pin in flex coupler and install knurled nut (Fig. 29).

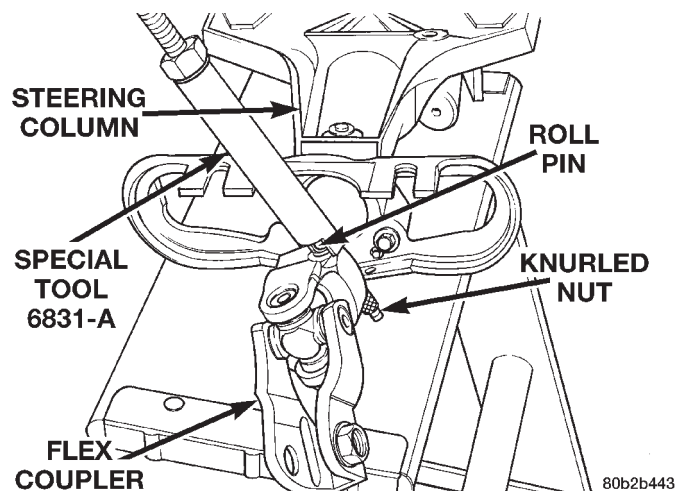


Fig. 29 Removing Roll Pin

(3) While holding hex on end threaded rod, tighten the nut on threaded rod of Puller, Special Tool 6831-A. This will pull the roll pin out of the coupler.

(4) Remove the coupler from the steering column shaft.

INSTALL

(1) Start roll pin into coupler prior to installing coupler on steering column shaft. Install roll pin into coupler just far enough to square roll pin to hole in flex coupler. If roll pin is installed too far, coupler will not slide onto steering column shaft.

(2) Install coupler on steering shaft until correctly positioned to allow roll pin to be installed in coupler.

(3) Install Puller, Special Tool 6831-A, through center of roll pin and install knurled nut (Fig. 30).

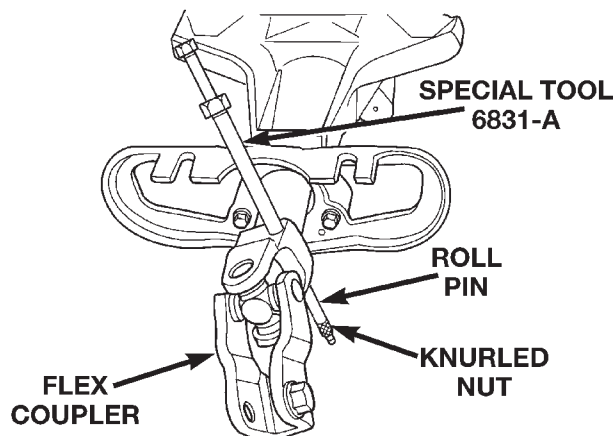


Fig. 30 Tool Set-Up For Installing Roll Pin

(4) Using Puller, Special Tool, 6831-A, (Fig. 30) install roll pin into the coupler until spring pin is fully installed through both sides of the coupler.

SPECIFICATIONS

STEERING COLUMN FASTENER TORQUE SPECIFICATIONS

DESCRIPTION	TORQUE
STEERING WHEEL:	
Retaining Nut	61 N·m (45 ft. lbs.)
Speed Control Switch Screws	1.5 N·m (13 in. lbs.)
STEERING COLUMN ASSEMBLY:	
Mounting Nuts	12 N·m (105 in. lbs.)
Mounting Bolts	12 N·m (105 in. lbs.)
Upper Coupler Pinch Bolt	27 N·m (240 in. lbs.)
Airbag Module Mounting Bolts	8 N·m (75 in. lbs.)

