

STEERING

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GENERAL INFORMATION

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GENERAL INFORMATION

STEERING SYSTEM AND COMPONENT DESCRIPTION

This vehicle is available either with standard power steering or with an optional speed-sensitive variable-assist power steering system.

The power steering system consists of these six major components. Power Steering Pump, Power Steering Gear, Power Steering Reservoir, Power Steering Supply and Pressure Hoses, and Power Steering Fluid Return Hose. Turning of the steering wheel is converted into linear travel through the meshing of the helical 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.

Available as an option on this vehicle, is a speed-sensitive variable-assist power steering system. This system is an electronically controlled, variable-assist type of power steering system. Speed-proportional, variable-assist power steering provides additional assist while the vehicle is stationary and at slow driving speeds. This additional power steering assist reduces the steering effort required by the driver for slow speed driving and parking maneuvers. Speed-proportional variable-assist power steering then provides less steering assist at highway speeds, to maintain the firm, responsive feel of the standard

non speed-proportional variable-assist power steering system.

Road feel is controlled by the diameter of a torsion bar which initially steers the vehicle. As steering effort increases as in a turn, the torsion bar twists, causing relative rotary motion between the rotary valve body and valve spool. This movement directs oil behind the integral rack piston, which in turn, builds up hydraulic pressure and assists in the turning effort.

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.

DIAGNOSIS AND TESTING (Continued)

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 front suspension 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. Loose strut assembly to body attaching bolts or nuts. 6. Power steering fluid pressure hose touching the body of the vehicle. 7. Noise internal to power steering gear. 8. Damaged front suspension crossmember.	1. Check steering gear to front suspension 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. Check tie rod pivot points for wear. Replace worn/loose parts as required. 4. Tighten control arm mounting bolts to the specified torques. 5. Check upper strut mount to body attaching bolts or nuts for looseness. If required tighten to the specified torques. 6. Adjust hose to proper position by loosening, repositioning, and tightening fitting to specified torque. Do not bend tubing. 7. Replace steering gear assembly. 8. Replace front suspension crossmember.
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.	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.
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. 2. Check for lack of grease on steering column dash panel to lower coupler seal. 1. 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. 4. Incorrect steering gear supplied.	1. Verify that tire size on vehicle is the same as originally supplied. 2. Correct as necessary. 3. Correct as necessary. 4. Replace steering gear with correct steering gear for specific vehicle.

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 upper or 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. Steering column coupler binding. 10. Binding upper or lower ball joint. 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. Lubricate ball joints if ball joints are not a lubricated for life type ball joint. If ball joint is a lubricated for life ball joint, replace ball joint or control arm. 4. Replace the upper or lower control arm. 5. Lubricate tie rod ends if they are not a lubricated for life type. If tie rod end is a lubricated for life type, 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. Realign the steering column to eliminate the binding condition. 10. Replace the upper or the lower control arm. 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 jam nut 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 upper or lower ball joint. 6. Low power steering pump pressure. 7. High internal leak in steering gear assembly.	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. Lubricate ball joints if ball joints are not a lubricated for life type ball joint. If ball joint is a lubricated for life ball joint, replace ball joint or control arm. 5. Replace the upper and/or lower control arm. 6. Verify cause using the Power Steering System Test Procedure. Replace the power steering pump or steering gear as necessary. 7. Check steering system using the Power Steering System Test Procedure. If steering gear is defective replace steering gear.

DIAGNOSIS AND TESTING (Continued)

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. Steering column U-joints misaligned. 5. Mispositioned dash cover. 6. Steering wheel rubbing. 7. Damaged, mis-positioned or un-lubricated steering column coupler to dash seal. 8. Binding upper strut bearing. 9. Tight shaft bearing in steering column assembly. 10. Excessive friction in steering column coupler. 11. Excessive friction in steering gear.	1. Inflate tires to specified pressure. 2. Check and adjust as necessary. 3. Lubricate ball joints if ball joints are not a lubricated for life type of ball joint. If ball joint is a lubricated for life ball joint, replace ball joint or control arm. 4. Realign steering column U-joints. 5. Reposition dash cover. To evaluate items 6 and 7, disconnect the intermediate shaft. Turn the steering wheel and feel or listen for internal rubbing in steering column. 6. Adjust steering column shrouds to eliminate rubbing condition. 7. Determine condition which exists and correct. 8. Correct binding condition in strut bearing. 9. Replace the steering column assembly. 10. Replace steering column coupler. 11. 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 front suspension crossmember. 3. Worn, broken or loose steering column to steering gear coupler. 4. Free play in steering column. 5. Loose front suspension control arm ball joints. 6. Loose steering knuckle to ball joint stud pinch bolt. 7. Front wheel bearings loose or worn. 8. Loose outer tie rod ends. 9. Loose inner tie rod ends. 10. 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 front suspension crossmember mounting bolts. Tighten to specified torque if found to be loose. 3. Check for worn universal joint, broken isolator or loose fasteners. 4. Check components of the steering system and repair or replace as required. 5. Check and or replace the ball joint or control arm as required. 6. Check pinch bolts and tighten if required to specified torque. 7. Tighten hub nut to specified torque or replace with new parts as necessary. 8. Check free play of outer tie rod ends and replace if required. 9. Replace steering gear assembly. 10. 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. Rotate tires as recommended in the Tire And Wheel Group of this service manual. 2. Align the front suspension as required. Refer to the Wheel Alignment Procedure in the Suspension Group of this service manual for the required wheel alignment procedure. 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. LOW FLUID LEVEL WITH: VISIBLE LEAK ON STEERING GEAR, POWER STEERING PUMP, FLOOR OR ANYWHERE ELSE.	1. Overfilled power steering pump fluid reservoir. 2. Power steering hose connections at the power steering pump or steering gear. 3. Power steering pump or power steering gear leaking.	1. Adjust the power steering fluid fill to the correct level. 2. 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. 3. 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 PUMP

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DESCRIPTION AND OPERATION

POWER STEERING PUMP OPERATION

On all vehicles equipped with power steering, the hydraulic pressure for operation of the power steering gear is provided by a belt driven power steering pump (Fig. 1). The TTA power steering pump is a constant flow rate and displacement, vane type pump.

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

All vehicles equipped with power steering use a remote mounted reservoir for the power steering fluid. The power steering fluid remote reservoir on the 2.0 ltr. and 2.4 ltr. engine is mounted to the rear of the cylinder head on the passenger side of the vehicle. The power steering fluid remote reservoir on the 2.5 ltr. engine is mounted to the front side of the engine between the cylinder heads.

The service procedures for the TTA power steering pump are limited to the areas and components listed below. **No repair procedures are to be done on internal components of the TTA power steering pumps.**

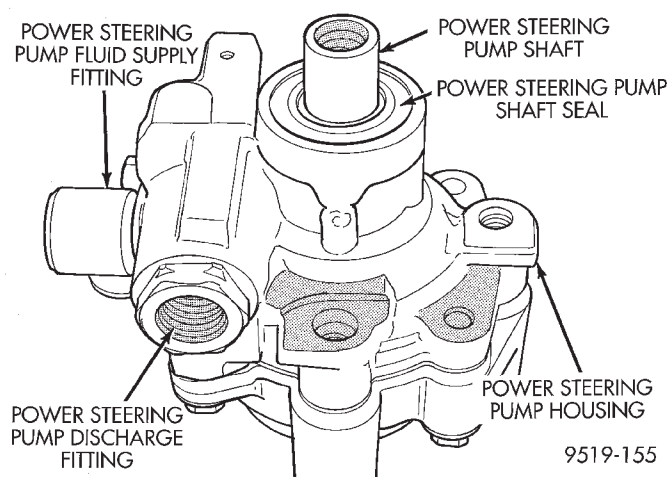


Fig. 1 Power Steering Pump Assembly

- Repair of power steering fluid leaks from areas of the power steering pump sealed by O-rings is allowed (See Pump Leak Diagnosis). However power steering pump shaft seal leakage will require replacement of the pump.

DESCRIPTION AND OPERATION (Continued)

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

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

Hydraulic pressure is provided for operation of the power steering gear by the belt driven power steering pump. It is a constant displacement, vane type pump. The power steering pump is connected to the steering gear by a power steering fluid pressure hose, return hose and the remote power steering fluid reservoir.

Rectangular pumping vanes in the shaft driven rotor, move power steering fluid from the intake to the cam ring pressure cavities of the power steering pump. 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.

As the high pressure area is filled, oil flows under the vanes in the rotor slots, forcing the vanes to follow the inside 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 when the wheels are turned against the stops. The pressure built up in the steering gear exerts pressure on the spring end of the flow control valve. The 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, pressure requirements of the pump are below maximum, causing the pressure relief valve to remain closed.

POWER STEERING FLUID PRESSURE SWITCH

On some vehicles equipped with power steering, a power steering pressure switch (Fig. 2) is used to improve the vehicle's idle quality. The pressure switch improves vehicle idle quality, by maintaining required engine idle speed when necessary, do to increased pressure in the power steering system. This increased pressure will slow down the power steering pump which will decrease engine idle speed.

The pressure switch functions by signaling the power train control module, that the power steering system is putting additional load on the engine. 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. When this condition is sensed by the power train control module, through a signal from the power steering pressure switch, engine idle speed will be maintained. The maintained engine idle speed compensates for the additional load, thus maintaining the require engine idle speed and idle quality.

The power steering pressure switch is mounted directly to the power steering gear on vehicle's requiring its usage (Fig. 2).

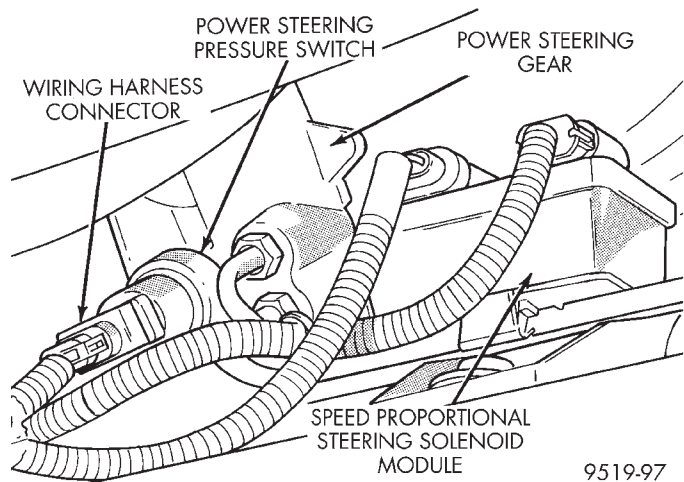


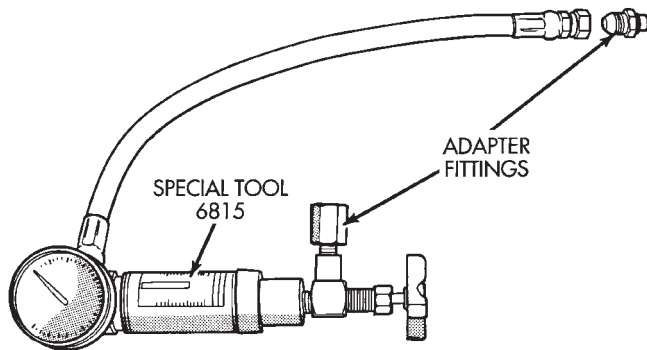
Fig. 2 Power Steering Pressure Switch Location On Steering Gear

DIAGNOSIS AND TESTING**POWER STEERING PUMP FLOW RATE AND PRESSURE TEST**

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 pressure and

DIAGNOSIS AND TESTING (Continued)

flow test is performed using Pressure/Flow Tester, Special Tool 6815 (Fig. 3).



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Fig. 3 Power Steering Pump Flow/Pressure Tester
POWER STEERING PUMP FLOW AND PRESSURE TEST PROCEDURE

(1) Check power steering pump drive belt tension and adjust as necessary.

(2) Disconnect power steering fluid pressure hose (Fig. 4), at power steering pump. Use a container for dripping fluid.

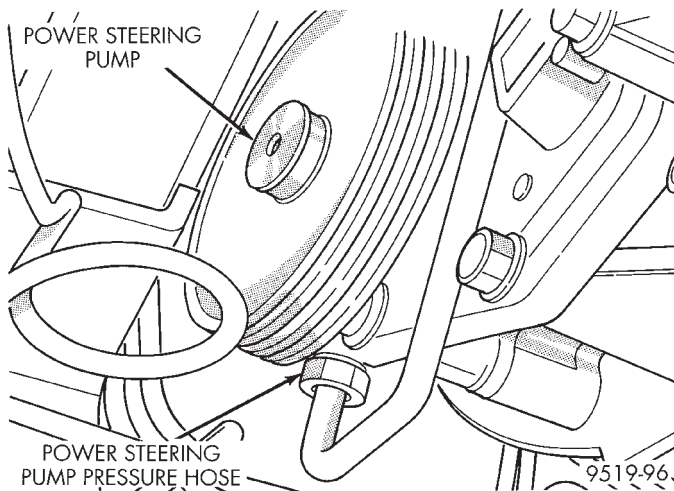


Fig. 4 Power Steering Pump Pressure Hose

(3) Connect inlet hose on Pressure Gauge, Special Tool 6815 using required adapter, to the pressure fitting on the power steering pump. Connect the pressure hose which was removed from the power steering pump, using required adapter fitting, to the outlet port of Pressure Gauge, Special Tool 6815. **Pressure Gauge, Special Tool 6815 is to be installed in series with power steering pressure hose, between power steering pump and steering gear. It must also be installed so it is in correct direction of the fluid flow.**

(4) Completely open valve on Special Tool 6815.

(5) Start engine and let idle long enough to circulate power steering fluid through flow/pressure test and get air out of fluid. Then shut off engine.

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

(7) Pressure gauge should read below 862 kPa (125 psi), if above, inspect the hoses for restrictions and repair as necessary. The initial pressure reading should be in the range of 345-552 kPa (50-80 psi). The flow meter should read between 1.3 and 1.4 GPM

CAUTION: The following test procedure involves testing power steering pump maximum pressure output and flow control valve operation. Do not leave valve closed for more than 5 seconds as the pump could be damaged.

(8) 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 8240 to 8920 kPa (1195 to 1293 psi.).

- If power steering pump pressures above specifications but not within 345 kPa (50 psi) of each other, then replace power steering pump.

- If pressures within 345 kPa (50 psi) of each other but below specifications, then replace power steering pump.

CAUTION: Do not force the pump to operate against the stops for more than 5 seconds at a time because, pump damage will result.

(9) Open test valve. Turn steering wheel to the extreme left and right positions until against the stops, recording the highest indicated pressure at each position. Compare pressure gauge readings to power steering pump specifications. If highest output pressures are not the same against either stop, the steering gear is leaking internally and must be replaced.

SERVICE PROCEDURES

POWER STEERING SYSTEM 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.

SERVICE PROCEDURES (Continued)

Wipe reservoir filler cap free of dirt. Then check fluid level. The dipstick should indicate **COLD** when fluid is at normal ambient temperature, approximately 21°C to 27°C (70°F to 80°F). In all pumps add fluid as necessary, use only **Mopar Power Steering Fluid, or equivalent. DO NOT USE ANY TYPE OF AUTOMATIC TRANSMISSION FLUID.**

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 filler cap clean, then check the fluid level. The dipstick should indicate **FULL COLD** when the fluid is at normal temperature of approximately 21°C to 27°C (70°F to 80°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.

(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.

POWER STEERING PUMP FLOW CONTROL VALVE SEAL

DISASSEMBLE

The power steering pump does not require removal from the engine for removal and replacement of the flow control valve fitting O-Ring.

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

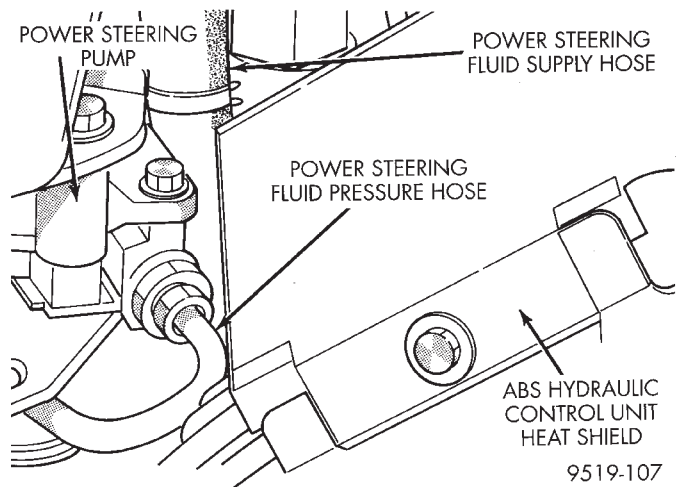


Fig. 5 Power Steering Pump Pressure Hose

(2) Remove the power steering pump discharge/flow control valve fitting (Fig. 6) from the power steering pump housing. **Use care to prevent the flow control valve and spring from sliding out of the discharge/flow control valve fitting.**

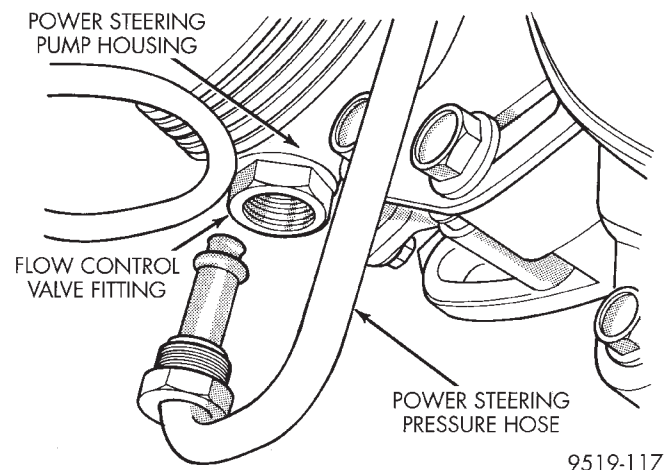


Fig. 6 Pump Discharge And Flow Control Valve Fitting

SERVICE PROCEDURES (Continued)

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

ASSEMBLE

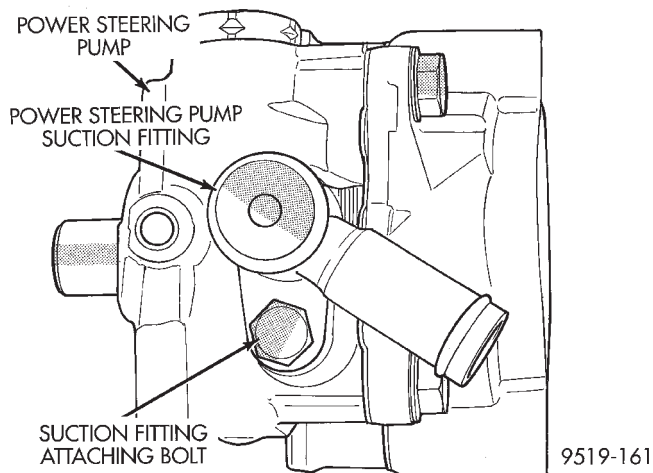
- (1) If necessary, clean and install flow control valve and spring in pump housing bore.
- (2) Install new O-ring seal on fitting.
- (3) Install the discharge/flow control valve fitting (Fig. 6) into the power steering pump. Tighten the discharge/flow control valve to a torque of 75 N·m (55 ft. lbs.)
- (4) Install power steering fluid pressure hose on flow control valve fitting (Fig. 5). Tighten the tube nut to a torque of 31 N·m (275 in. lbs.).

POWER STEERING PUMP SUCTION PORT FITTING

The power steering pump will require removal from the engine for removal and replacement of the suction port O-Ring seal. Refer to Power Steering Pump Service in this group of the service manual for the required removal and replacement procedure for the power steering pump.

DISASSEMBLE

- (1) Remove power steering fluid supply hose from power steering pump suction port fitting.
- (2) Remove bolt attaching the power steering pump suction port fitting (Fig. 7) to the power steering pump.

**Fig. 7 Power Steering Pump Suction Fitting**

- (3) Remove the suction port fitting from the power steering pump.
- (4) Remove and discard O-ring seal from suction port fitting.

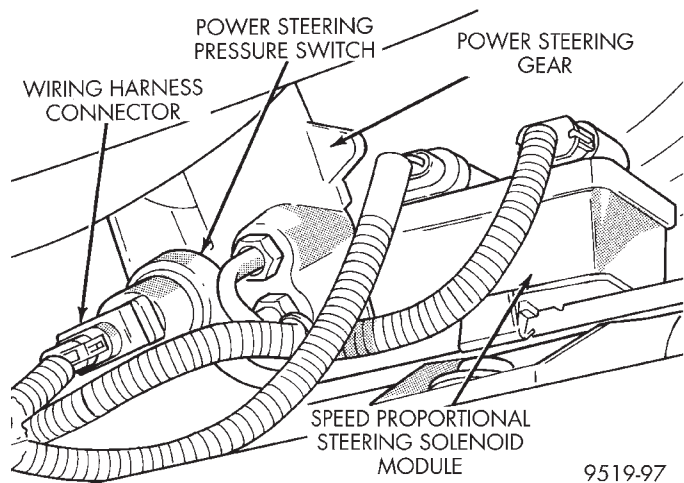
ASSEMBLE

- (1) Install new O-ring seal on suction fitting.
- (2) Install suction port fitting in power steering pump. Install and securely tighten the suction port fitting attaching bolt (Fig. 7).

- (3) Install power steering fluid supply hose on suction port fitting, being sure hose clamp is installed on hose past upset bead on suction port fitting.

REMOVAL AND INSTALLATION**POWER STEERING FLUID PRESSURE SWITCH****REMOVE**

- (1) Disconnect negative battery cable from the negative post of the battery. Be sure cable is isolated from negative post on battery.
- (2) Raise vehicle.
- (3) Locate power steering pressure switch (Fig. 8) on the back side of the power steering gear.

**Fig. 8 Power Steering Pressure Switch Location On Steering Gear**

- (4) Remove the vehicle's wiring harness connector (Fig. 8) from the power steering pressure switch.
- (5) Using a crow foot and long extension, remove power steering pressure switch, from power steering gear.

INSTALL

CAUTION: When tightening the power steering pressure switch after installation in steering gear, do not exceed the torque specification shown in step 1 below. Over-tightening may result in stripping the threads out of the pressure switch port on the steering gear.

- (1) Install power steering pressure switch into power steering gear by hand until fully seated. Then using a crow foot and extension, tighten power steering pressure switch to a torque of 16 N·m (12 ft. lbs.).
- (2) Install vehicle wiring harness connector onto power steering pressure switch. Be sure latch on wir-

REMOVAL AND INSTALLATION (Continued)

ing harness connector is fully engaged with locking tab on power steering pressure switch.

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

(3) Fill power steering reservoir to correct fluid level.

(4) Connect negative cable back on negative post of battery.

(5) 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.

POWER STEERING FLUID PRESSURE HOSE

Service all power steering hoses with the vehicle raised on a hoist. Cap all open ends of hoses, power steering pump fittings and steering gear ports to prevent the entry of foreign material into the components.

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

REMOVE

NOTE: To service the power steering pressure hose on this vehicle, the front suspension crossmember and steering gear will need to be lowered away from the body and frame of the vehicle. This is required for access to the power steering hose connections on the side of the steering gear. Refer to the steering gear service procedure in this group of the service manual for the required procedure for removal of the front suspension crossmember.

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

CAUTION: When lowering the front suspension crossmember, its installed position on the vehicle's body must be marked on the crossmember before it is lowered. Use procedure for the removal and replacement of the steering gear that is in this group of the service manual for the required procedure to locate and lower crossmember.

(2) Lower the front suspension crossmember far enough to gain access to the high and low pressure ports on the steering gear.

(3) Disconnect the power steering pressure hose (Fig. 9) at the power steering gear. Drain power steering fluid from power steering pump and hose through open end of hose.

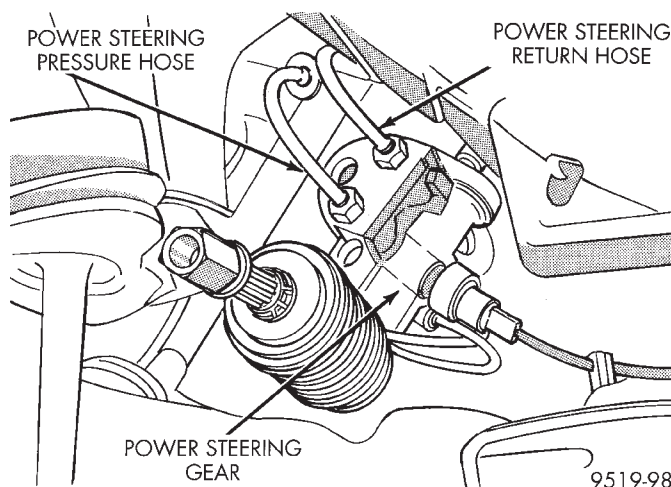


Fig. 9 Power Steering Hose Connections At Steering Gear

(4) If vehicle is equipped with a 2.0 or 2.4 liter engine, remove power steering pressure hose routing bracket from the power steering return hose bracket on rear of engine (Fig. 10). Then remove the nut attaching the power steering pressure hose routing bracket to stud on side of cylinder head (Fig. 11).

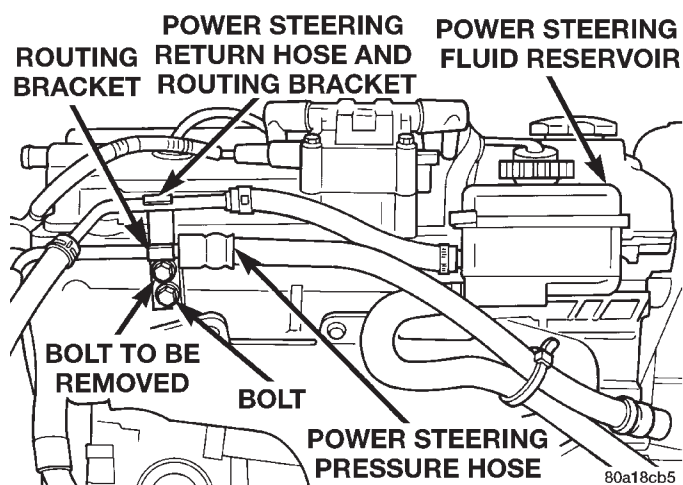


Fig. 10 2.0 And 2.4 Liter Power Steering Hose Routing

REMOVAL AND INSTALLATION (Continued)

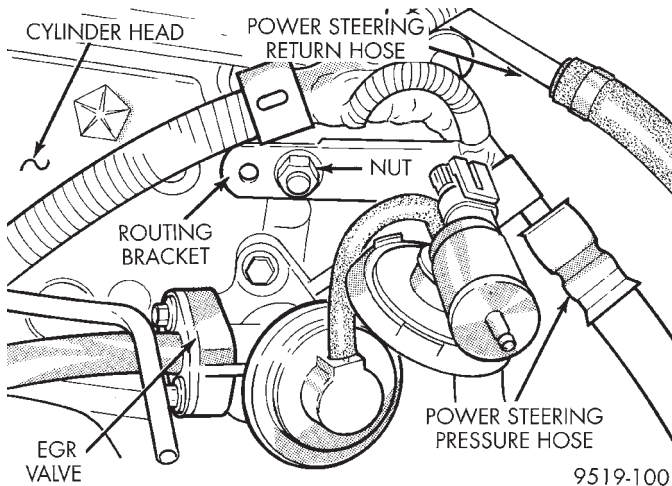


Fig. 11 Power Steering Hose Routing Bracket Attachment To Cylinder Head

(5) If vehicle is equipped with a 2.5 liter engine, remove the 2 routing brackets (Fig. 12) attaching the power steering return hose to the power steering pressure hose routing brackets. Then remove the 2 bolts attaching the power steering pressure hose routing brackets to the cylinder head (Fig. 12).

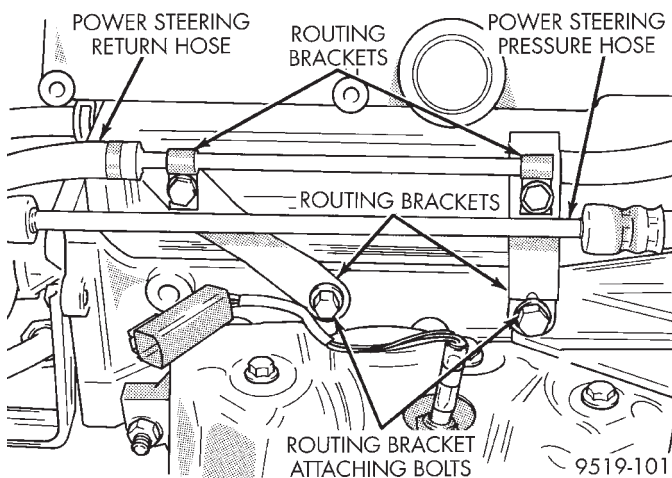


Fig. 12 2.5 Liter Power Steering Hose Routing

(6) Remove the tie-strap (Fig. 10) holding the power steering fluid supply hose to the power steering pressure hose.

(7) Remove the power steering pressure hose from the pressure fitting on power steering pump (Fig. 13).

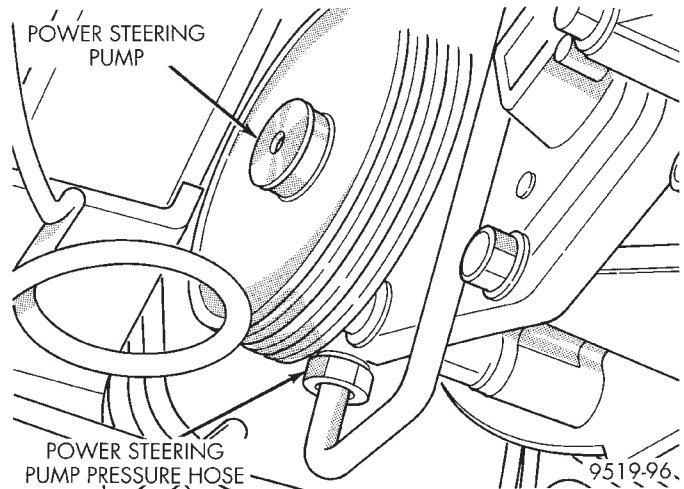


Fig. 13 Power Steering Pump Pressure Fitting

(8) Power steering fluid pressure hose is removed from the vehicle from the bottom rear of engine compartment.

(9) Discard all used O-rings located at ends of power steering pressure hose fittings.

INSTALL

(1) Install power steering pressure hose in vehicle from bottom of engine compartment using the reverse order of removal.

(2) Using a lint free towel, wipe clean all open power steering hose ends, and the power steering pump and steering gear ports.

(3) Install new O-rings on the power steering pressure hose fittings.

(4) Lubricate both O-rings using fresh clean power steering fluid.

(5) Attach power steering pressure hose to outlet fitting on power steering pump. **Do not tighten or torque pressure fitting at this time.**

CAUTION: Hoses must remain away from exhaust system, vehicle components and unfriendly surfaces causing possible damage to power steering hoses.

(6) Correctly route power steering pressure hose avoiding tight bends or kinking of the hose. Install power steering pressure hose routing brackets and attaching bolts on engine (Fig. 10), (Fig. 11) and (Fig. 12).

(7) Route power steering pressure hose to pressure port on power steering gear. Install power steering pressure hose, on steering gear and loosely install tube nut into steering gear. Then using a crow foot,

REMOVAL AND INSTALLATION (Continued)

(Fig. 14) tighten the power steering pressure hose tube nut to a torque of 31 N·m (275 in. lbs.).

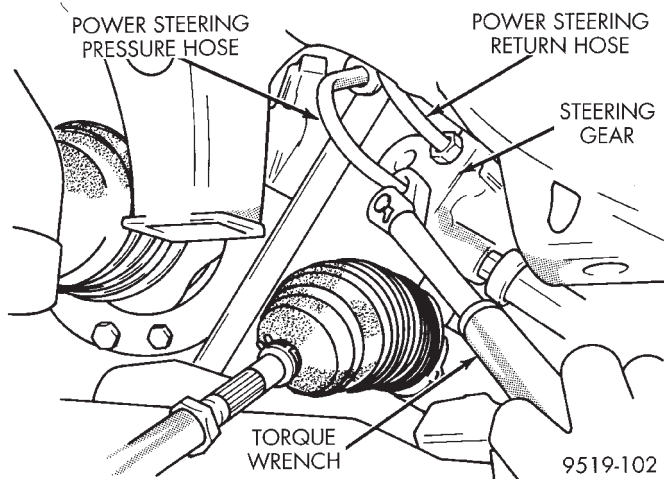


Fig. 14 Power Steering Pressure Hose TubeNut

CAUTION: When installing the front suspension crossmember, it must be installed back in the same location on the vehicle's body as when it was originally installed when the vehicle was built. Use procedure for installing the steering gear that is in this group of the service manual for the required procedure to install and locate crossmember.

(8) Raise the front suspension crossmember and steering gear back up into the vehicle. Refer to the steering gear service procedure in this group of the service manual for the required procedure to install the front suspension crossmember.

CAUTION: The tie strap must be installed on the power steering pressure hose and supply hose to ensure proper routing of the hoses.

(9) Install the tie-strap (Fig. 10) holding the power steering fluid supply hose to the power steering pressure hose.

(10) Lower vehicle.

(11) Start the engine and let run for a few seconds, then turn the engine off.

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

(13) Raise front wheels of vehicle off the ground.

(14) Start the engine. Slowly turn the steering wheel right and left, lightly contacting the wheel stops. Then turn the engine off.

(15) Add power steering fluid if necessary.

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

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

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

(19) After hose is installed, check for leaks at all hose connections.

POWER STEERING FLUID RETURN HOSE

Service all power steering hoses with the vehicle raised on a hoist. Cap all open ends of hoses, power steering pump fittings and steering gear ports to prevent the entry of foreign material into the components.

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

REMOVE

NOTE: To remove the power steering return hose on this vehicle, the front suspension crossmember and steering gear will need to be lowered away from the body of the vehicle. This is required for access to the power steering hose connections on the side of the steering gear. Refer to the steering gear service procedure in this group of the service manual for the required procedure to remove the front suspension crossmember.

(1) Siphon all power steering fluid from the power steering fluid reservoir.

CAUTION: Care must be used when removing power steering fluid return hose from power steering fluid reservoir. If excessive force is used when trying to remove hose from nipple on power steering fluid reservoir, nipple can break off of the reservoir.

REMOVAL AND INSTALLATION (Continued)

(2) Remove power steering fluid return hose from nipple on power steering fluid reservoir (Fig. 15) and (Fig. 16).

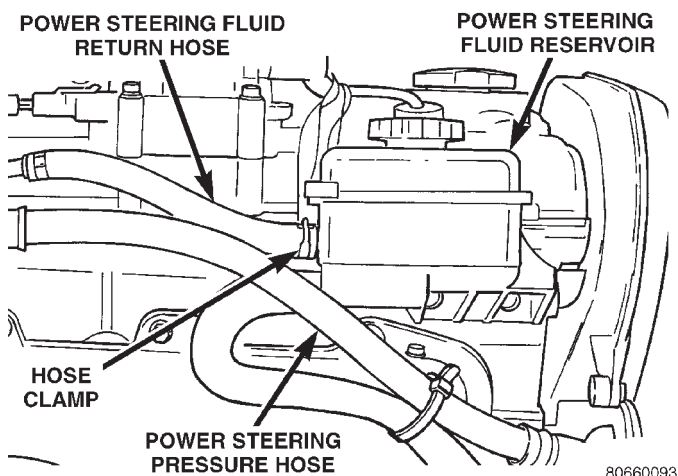


Fig. 15 Power Steering Fluid Return Hose At Reservoir 2.4 Liter

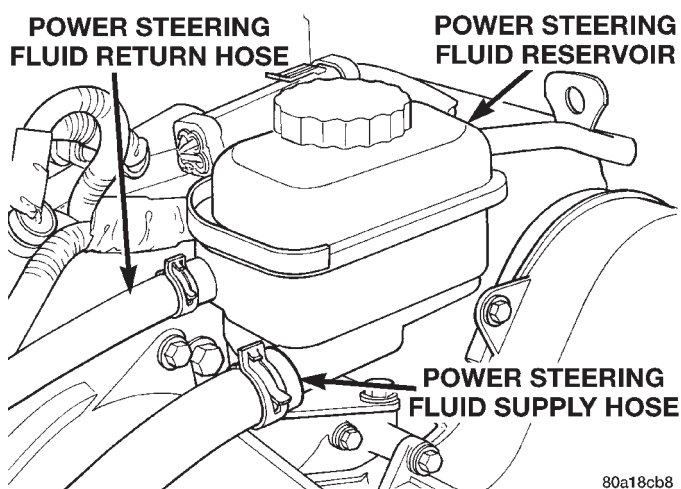


Fig. 16 Power Steering Fluid Return Hose At Reservoir 2.5 Liter

(3) Raise vehicle on jack stands or centered on a frame contact type hoist. See Hoisting in the Lubrication And Maintenance section in this manual, for the required lifting procedure to be used for this vehicle.

CAUTION: When lowering the front suspension crossmember, its installed position on the vehicle's body must be marked on the crossmember before it is lowered. Use procedure for the removal and replacement of the steering gear that is in this group of the service manual for the required procedure to locate and lower crossmember.

(4) Lower the front suspension crossmember far enough to gain access to the high and low pressure ports on the steering gear.

(5) Disconnect power steering fluid return hose at power steering cooler line (Fig. 17). Drain power steering fluid from hose.

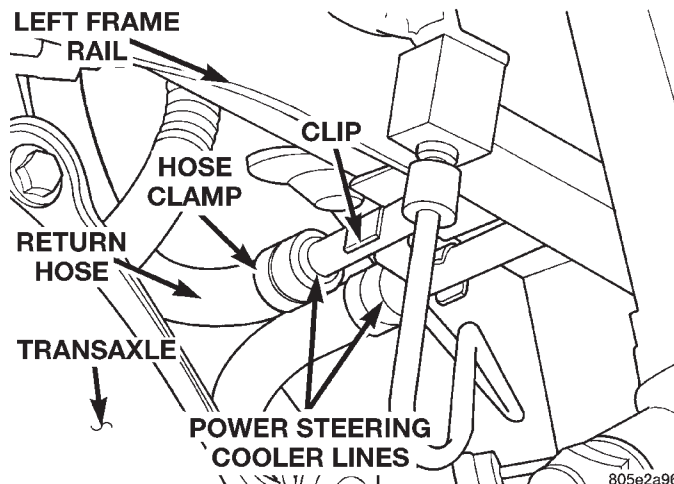


Fig. 17 Power Steering Hose Connections At Cooler Lines

(6) If vehicle is equipped with a 2.4 liter engine, remove power steering pressure hose routing bracket from the power steering return hose routing bracket on rear of engine (Fig. 18). Then remove the bolt (Fig. 18) attaching the power steering pressure hose routing bracket to the cylinder head.

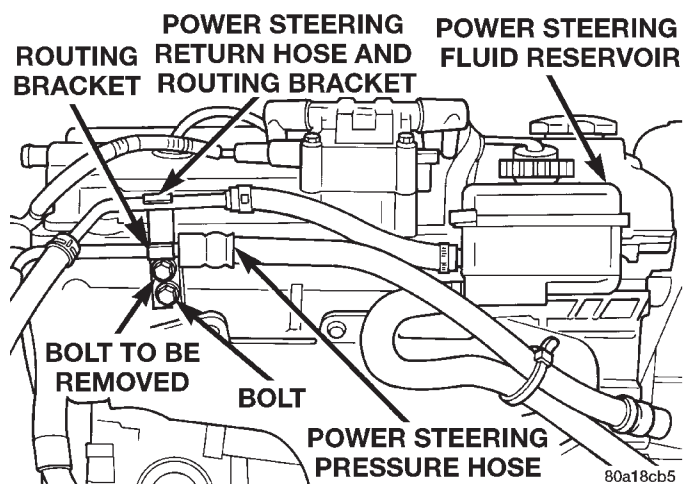


Fig. 18 2.4 Liter Power Steering Hose Routing

REMOVAL AND INSTALLATION (Continued)

(7) **If vehicle is equipped with a 2.5 liter engine,** remove the 2 routing brackets (Fig. 19) attaching the power steering return hose to the power steering pressure hose routing brackets.

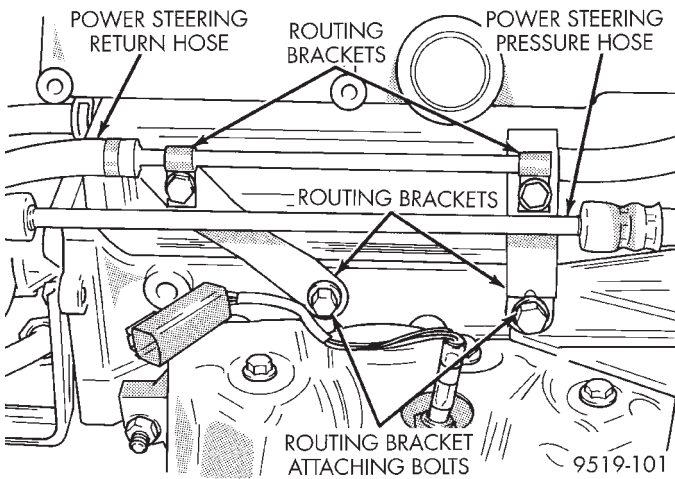


Fig. 19 2.5 Liter Power Steering Hose Routing

(8) Remove the power steering return hose from the vehicle. The power steering return hose is removed from the bottom of the engine compartment.

INSTALL

(1) Install power steering return hose on vehicle. Power steering return hose is installed from the bottom of the vehicles engine compartment using the reverse steps of removal..

(2) Using a lint free towel, wipe clean all open power steering hose ends, and the power steering gear port.

(3) Install a new O-ring on the power steering return hose to steering gear fitting.

(4) Lubricate O-ring using fresh clean power steering fluid.

(5) Install the power steering return hose, on the cooler lines (Fig. 17).

CAUTION: Hoses must remain away from exhaust system, vehicle components and unfriendly surfaces causing possible damage to power steering hoses.

(6) Correctly route power steering return hose up to the power steering fluid reservoir, avoiding tight bends or kinking of the hose.

(7) **If vehicle is equipped with a 2.4 liter engine,** install power steering return hose routing bracket on rear of cylinder head (Fig. 18) and securely tighten bolt. Then install the power steering pressure hose routing bracket on the return hose routing bracket (Fig. 18) and securely tighten attaching bolt.

(8) **If vehicle is equipped with a 2.5 liter engine,** install the 2 routing brackets (Fig. 19) attaching the power steering return hose to the power steering pressure hose routing brackets.

CAUTION: When installing the front suspension crossmember, it must be installed back in the same location on the vehicle's body as when it was originally installed when the vehicle was built. Use procedure for installing the steering gear that is in this group of the service manual for the required procedure to install and locate crossmember.

(9) Raise the front suspension crossmember and steering gear back up into the vehicle. Refer to the steering gear service procedure in this group of the service manual for the required procedure to install the front suspension crossmember.

(10) Lower vehicle.

CAUTION: Care must be used when installing power steering fluid return hose on power steering fluid reservoir. If excessive force is used when trying to install hose on nipple of power steering fluid reservoir, nipple can be broken off the reservoir.

(11) Install power steering return hose on power steering fluid reservoir fitting. Install hose clamp on power steering return hose at power steering fluid reservoir (Fig. 15) and (Fig. 16). **Be sure hose clamp is installed on return hose past upset bead on power steering fluid reservoir.**

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

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

(14) Raise front wheels of vehicle off the ground.

(15) Start the engine. Slowly turn the steering wheel right and left, lightly contacting the wheel stops. Then turn the engine off.

(16) Add power steering fluid if necessary.

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

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

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

(20) After hose is installed, check for leaks at all hose connections.

REMOVAL AND INSTALLATION (Continued)

**POWER STEERING FLUID SUPPLY HOSE
RESERVOIR TO POWER STEERING PUMP 2.0L
AND 2.4L ENGINE****REMOVE**

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

CAUTION: Care must be used when removing the power steering fluid supply hose from power steering fluid reservoir. If excessive force is used when trying to remove hose from nipple on power steering fluid reservoir, nipple can break off of the reservoir.

(2) Remove the tie-strap (Fig. 20) holding the power steering fluid supply hose to the power steering pressure hose.

(3) Remove hose clamp, attaching power steering fluid supply hose to power steering fluid reservoir (Fig. 20). Then remove power steering fluid supply hose from power steering fluid reservoir.

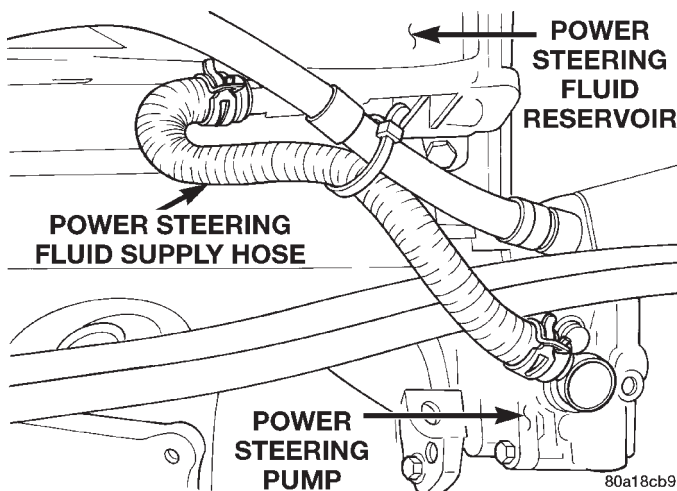


Fig. 20 Power Steering Fluid Supply Hose 2.0 And 2.4 Liter Engine

(4) Remove hose clamp, attaching power steering fluid supply hose to the power steering pump. Then remove power steering fluid supply hose from power steering pump fitting.

(5) Remove power steering fluid supply hose from engine.

INSTALL

(1) Install power steering fluid supply hose back on engine making sure it is correctly routed.

CAUTION: Care must be used when installing power steering fluid supply hose on power steering fluid reservoir. If excessive force is used when trying to install hose on nipple of power steering fluid reservoir, nipple can be broken off the reservoir.

(2) Install power steering fluid supply hose on power steering fluid reservoir fitting. Install hose clamp on power steering fluid supply hose at power steering fluid reservoir (Fig. 20). **Be sure hose clamp is installed on return hose past upset bead on power steering fluid reservoir.**

(3) Install power steering fluid supply hose on power steering pump fitting. Install hose clamp on power steering fluid supply hose at power steering pump fitting (Fig. 20). **Be sure hose clamp is installed on power steering fluid supply hose past upset bead on power steering pump fitting.**

CAUTION: The tie strap must be installed on the power steering pressure hose and supply hose to ensure proper routing of the hoses.

(4) Install the tie-strap (Fig. 20) holding the power steering fluid supply hose to the power steering pressure hose.

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

- (5) Fill power steering fluid reservoir.
- (6) Start the engine and let run for a few seconds. Then turn the engine off.
- (7) Add fluid if necessary. Repeat the above procedure until the fluid level remains constant after running the engine.
- (8) Raise front wheels of vehicle off the ground.
- (9) Start the engine. Slowly turn the steering wheel right and left, lightly contacting the wheel stops. Then turn the engine off.
- (10) Add power steering fluid if necessary.
- (11) Lower the vehicle and turn the steering wheel slowly from lock to lock.
- (12) Stop the engine. Check the fluid level and refill as required.
- (13) If the fluid is extremely foamy, allow the vehicle to stand a few minutes and repeat the above procedure.
- (14) After hose is installed, check for leaks at all hose connections.

REMOVAL AND INSTALLATION (Continued)

**POWER STEERING FLUID SUPPLY HOSE
RESERVOIR TO POWER STEERING PUMP 2.5L
ENGINE****REMOVE**

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

CAUTION: Care must be used when removing the power steering fluid supply hose from power steering fluid reservoir. If excessive force is used when trying to remove hose from nipple on power steering fluid reservoir, nipple can break off of the reservoir.

(2) Remove hose clamp, attaching power steering fluid supply hose to the power steering fluid reservoir. Then remove power steering fluid supply hose from power steering fluid reservoir (Fig. 21).

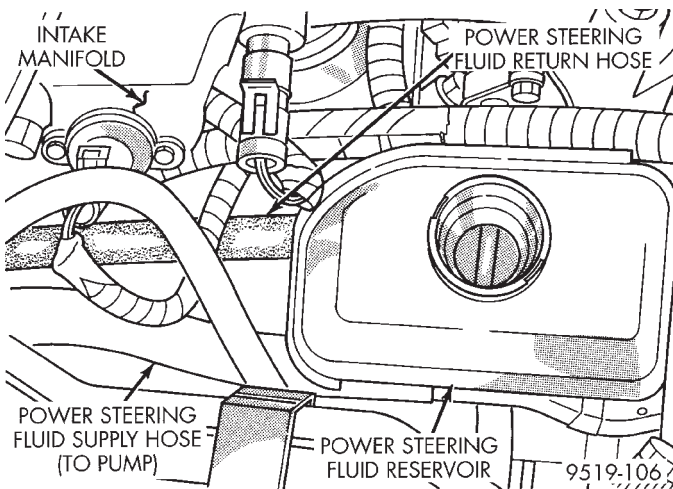


Fig. 21 Power Steering Fluid Supply Hose At Reservoir

(3) Raise vehicle.

(4) Remove hose clamp, attaching power steering fluid supply hose to the power steering pump. Then remove power steering fluid supply hose from power steering pump fitting (Fig. 22).

INSTALL

(1) Install power steering fluid supply hose on power steering pump fitting, making sure it is correctly routed up to the power steering fluid reservoir. Install hose clamp on power steering fluid supply hose at power steering pump fitting (Fig. 22). **Be sure hose clamp is installed on power steering fluid supply hose past upset bead on power steering pump fitting.**

(2) Lower vehicle.

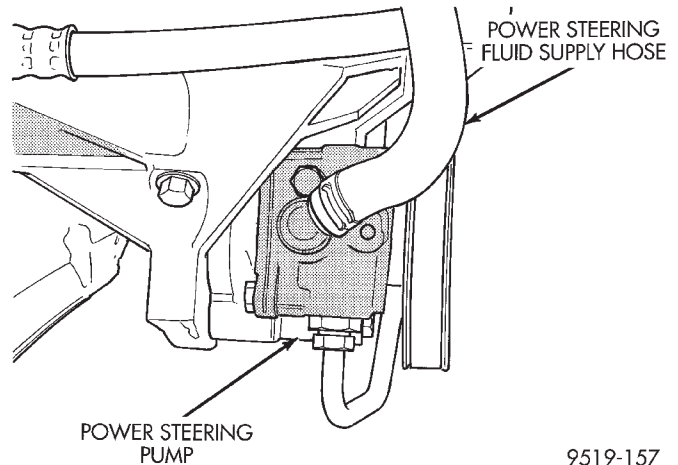


Fig. 22 Fluid Supply Hose At Power Steering Pump

CAUTION: Care must be used when installing power steering fluid supply hose on power steering fluid reservoir. If excessive force is used when trying to install hose on nipple of power steering fluid reservoir, nipple can be broken off the reservoir.

(3) Install power steering fluid supply hose on power steering fluid reservoir fitting (Fig. 21). Install hose clamp on power steering fluid supply hose at power steering fluid reservoir. **Be sure hose clamp is installed on return hose past upset bead on power steering fluid reservoir.**

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

(4) Fill power steering fluid reservoir.

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

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

(7) Raise front wheels of vehicle off the ground.

(8) Start the engine. Slowly turn the steering wheel right and left, lightly contacting the wheel stops. Then turn the engine off.

(9) Add power steering fluid if necessary.

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

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

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

(13) After hose is installed, check for leaks at all hose connections.

REMOVAL AND INSTALLATION (Continued)

POWER STEERING PUMP 2.0 AND 2.4 LTR ENGINE

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

REMOVE

- (1) Remove battery cable from (-) negative post on battery and isolate cable.
- (2) Siphon as much power steering fluid as possible out of the remote power steering fluid reservoir.
- (3) Raise vehicle.
- (4) Remove right front tire from vehicle.
- (5) Remove accessory drive splash shield (Fig. 23) from the right front wheel well.

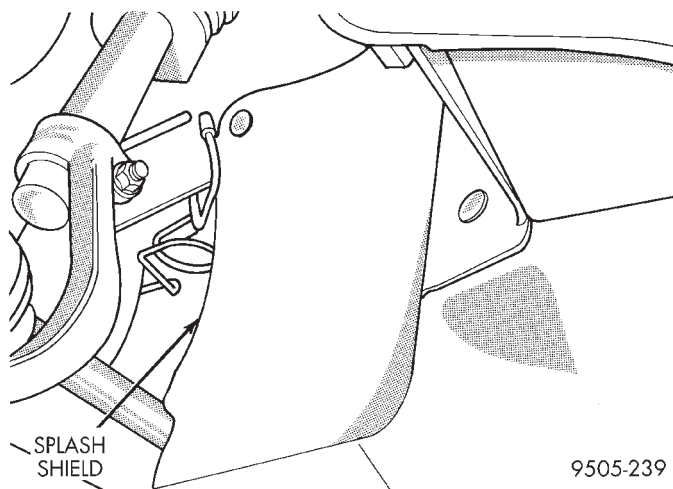


Fig. 23 Accessory Drive Splash Shield

- (6) Remove the power steering fluid pressure hose from the pressure fitting on power steering pump (Fig. 24). Let remaining power steering fluid drain out of the power steering fluid supply hose, power steering pump and power steering fluid pressure hose. **After power steering fluid has drained out of pump and hose, install a cap on the power steering pressure hose and a plug in the power steering pump pressure fitting.**

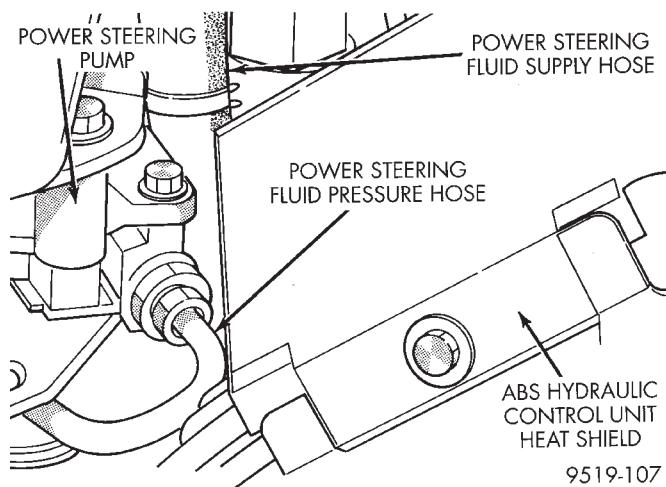


Fig. 24 Power Steering Fluid Pressure Hose Attachment To Pump

- (7) Remove hose clamp, attaching power steering fluid supply hose to the power steering pump suction fitting (Fig. 24). Then remove power steering fluid supply hose from fitting. **Install a cap on suction fitting of power steering pump.**

- (8) Remove bolt at adjustment slot, (Fig. 25) attaching front power steering pump mounting bracket to cast aluminum accessory drive bracket on engine.

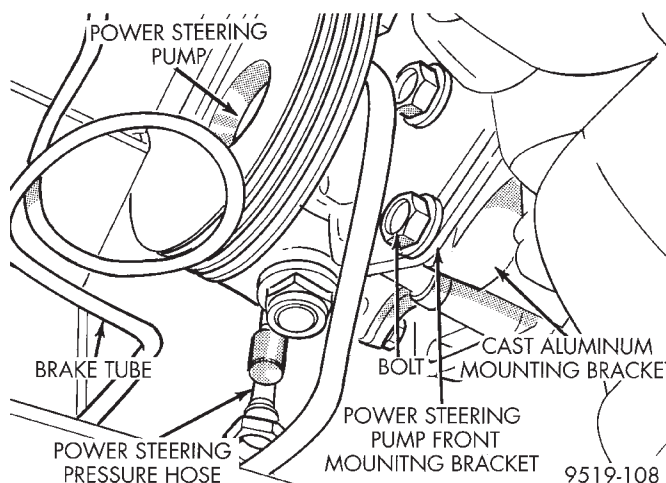


Fig. 25 Power Steering Pump Front Bracket Attachment

REMOVAL AND INSTALLATION (Continued)

(9) Remove bolt (Fig. 26) attaching the back of the power steering pump to the cast aluminum mounting bracket.

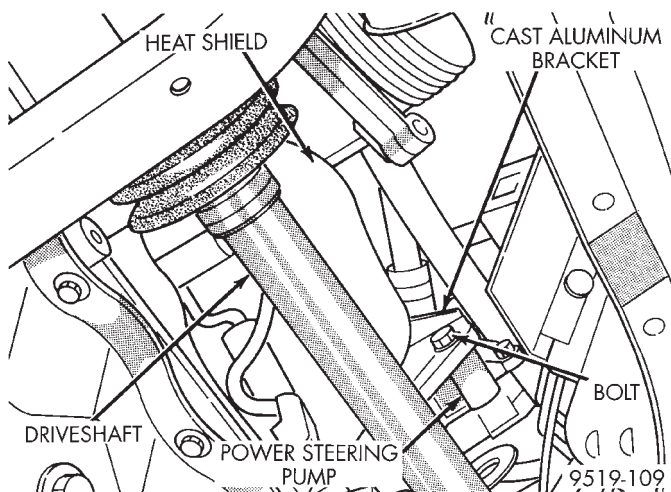


Fig. 26 Power Steering Pump Attachment To Rear Mounting Bracket

(10) Remove the antilock brakes hydraulic control unit heat shield (Fig. 24) from the hydraulic control unit mounting bracket.

(11) Remove retainer for wheel speed sensor cable grommet (Fig. 27) from right inner fender.

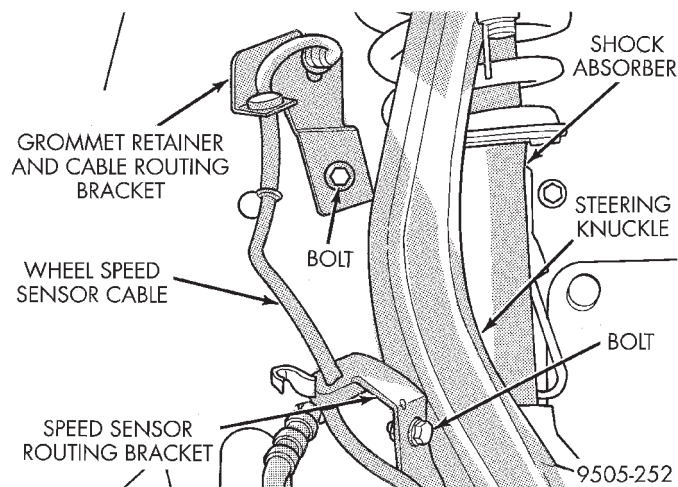


Fig. 27 Wheel Speed Sensor Cable Grommet Retainer

(12) On vehicles equipped with antilock brakes, remove speed sensor cable sealing grommet from inner fender (Fig. 28). Then disconnect the wheel speed sensor cable from the vehicle wiring harness (Fig. 28). Push vehicle wiring harness back through hole in inner fender and unclip wiring harness trough from frame rail.

(13) If vehicle is not equipped with antilock brakes, just a sealing plug will be installed in the wheel speed sensor cable routing hole. Remove the sealing plug from the hole.

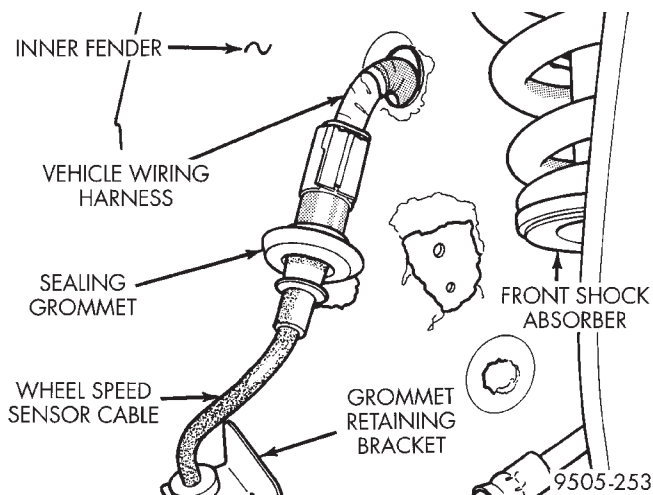


Fig. 28 Wheel Speed Sensor Cable Connection To Vehicle Wiring Harness

(14) Remove bolt attaching top of power steering pump front bracket to the cast aluminum mounting bracket. Access to the top bolt is through the wheel speed sensor cable routing hole (Fig. 29). To access the bolt use a long extension and a 15 mm flex socket.

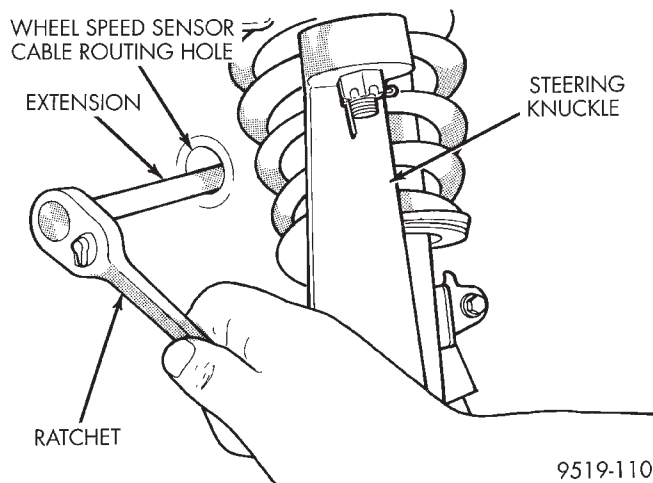


Fig. 29 Access To Top Mounting Bolt For Power Steering Pump

(15) Remove power steering pump drive belt from power steering pump pulley.

(16) Remove power steering pump and front mounting bracket as an assembly from the engine and vehicle. Pump and mounting bracket is removable by bringing it out through area between rear of engine, driveshaft and front suspension crossmember.

(17) Transfer required parts from removed power steering pump, to replacement power steering pump.

REMOVAL AND INSTALLATION (Continued)

INSTALL

(1) Install power steering pump and mounting bracket as an assembly back in vehicle, using reverse order of removal.

(2) Install power steering pump and front bracket on the cast aluminum accessory drive engine bracket (Fig. 25). Then loosely install the bolt at adjusting slot (Fig. 25) mounting pump bracket to accessory drive bracket.

(3) Loosely install the bolt mounting the power steering pump to its rear mounting bracket (Fig. 26).

(4) Loosely install bolt attaching top of power steering pump front bracket to the cast aluminum accessory drive bracket. Access to install the bolt is through the wheel speed sensor cable routing hole (Fig. 29).

(5) Using a lint free towel, wipe clean all open power steering hose ends, and power steering pump fittings.

(6) Install a new O-ring on end of power steering pressure hose fitting.

(7) Lubricate both O-rings using fresh clean power steering fluid.

(8) Install the power steering pressure hose on the power steering pump pressure fitting. Loosely install tube nut into pressure fitting on power steering pump. **Pressure hose must be installed between the front bracket of the power steering pump and power steering pump pulley.**

(9) Install power steering pump drive belt on power steering pump pulley.

(10) Install a 1/2 in. breaker bar in the square adjusting hole in the front power steering pump mounting bracket (Fig. 30). Then using breaker bar rotate power steering pump to obtain the correct drive belt tension. See Accessory Drive Belts in Group 7 Cooling System of this service manual for the correct drive belt tension specification. When correct drive belt tension is obtained first tighten the bottom 2 adjusting slot bolts at the power steering pump cast mounting bracket to a torque of 54 N·m (40 ft. lbs.). Then tighten the power steering pump mounting bracket top pivot bolt to a torque of 54 N·m (40 ft. lbs.). Access to tighten and torque the bolt is through the wheel speed sensor cable routing hole (Fig. 29).

(11) Install power steering supply hose on power steering pump suction fitting. Install hose clamp on hose, being sure hose clamp is installed on hose past upset bead on power steering pump tube.

(12) Position power steering pressure hose in outlet fitting of power steering pump, so hose is not contacting the pulley of power steering pump drive belt. The tighten tube nut to a torque of 31 N·m (275 in. lbs.).

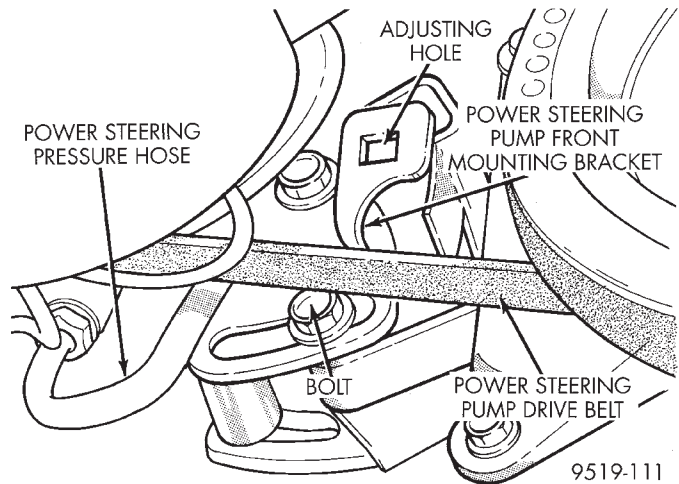


Fig. 30 Power Steering Pump Front Mounting Bracket Adjusting Hole

(13) Install heat shield on hydraulic control unit for the antilock brake system (Fig. 24).

(14) On a vehicle equipped with antilock brakes, clip the vehicle wiring harness back on the right frame rail. Then route wiring harness connector for the wheel speed sensor cable through routing hole in inner fender. Connect vehicle wiring harness to wheel speed sensor cable (Fig. 28).

(15) On a vehicle equipped with antilock brakes, install wheel speed sensor cable sealing grommet in routing hole. Install retainer for wheel speed sensor cable grommet (Fig. 27) on right inner fender.

(16) On a vehicle not equipped with antilock brakes, install sealing plug back in routing hole.

(17) Install accessory drive slash shield in right front inner fender.

(18) Install tire back on vehicle. Tighten the wheel lug nuts in proper sequence until all lug nuts are torqued to half specification. Then repeat tightening sequence to full specified torque of 129 N·m (95 ft. lbs.).

(19) Lower vehicle.

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

(20) Fill power steering reservoir to correct fluid level.

(21) Connect negative cable back on negative post of battery.

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

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

(24) Raise front wheels of vehicle off the ground.

REMOVAL AND INSTALLATION (Continued)

(25) Start engine, then slowly turn steering wheel right and left several times until lightly contacting the wheel stops. Then turn the engine off.

(26) Add power steering fluid if necessary.

(27) Lower the vehicle. Start engine again and turn the steering wheel slowly from lock to lock.

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

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

(30) After power steering pump is installed, check for leaks at all hose connections and power steering pump fittings.

POWER STEERING PUMP 2.5 L ENGINE

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

REMOVE

(1) Remove battery cable from (-) negative post on battery and isolate cable.

(2) Siphon as much power steering fluid as possible out of the remote power steering fluid reservoir.

(3) Remove the power steering fluid supply hose from the power steering fluid reservoir. Fluid supply hose will be removed with the power steering pump.

(4) Raise vehicle.

(5) Remove right front tire from vehicle.

(6) Remove accessory drive splash shield (Fig. 31) from the right front wheel well.

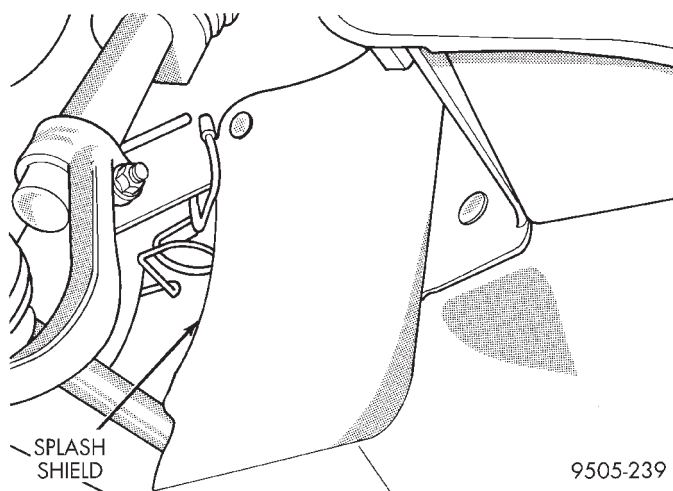


Fig. 31 Accessory Drive Splash Shield

(7) Remove the power steering fluid pressure hose from pressure fitting on power steering pump (Fig. 32). Let remaining power steering fluid drain out of the power steering fluid supply hose, power steering pump and power steering fluid pressure hose. **After power steering fluid has drained out of pump and hose, install a cap on the power steering pressure hose and a plug in the power steering pump pressure fitting.**

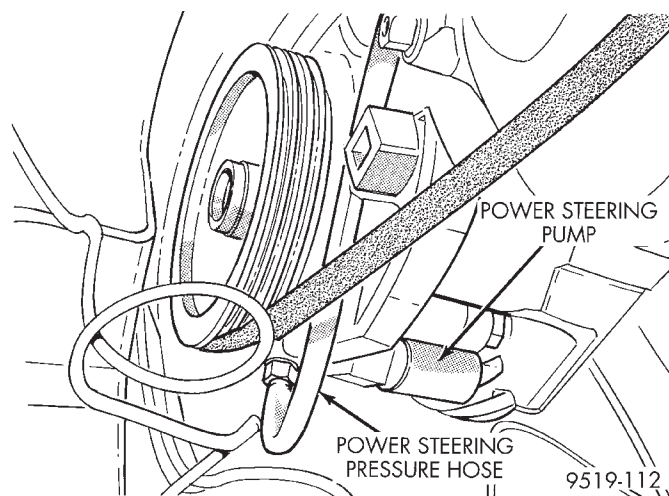


Fig. 32 Power Steering Fluid Pressure Hose Attachment To Pump

(8) Remove the antilock brakes hydraulic control unit heat shield (Fig. 33) from the hydraulic control unit mounting bracket.

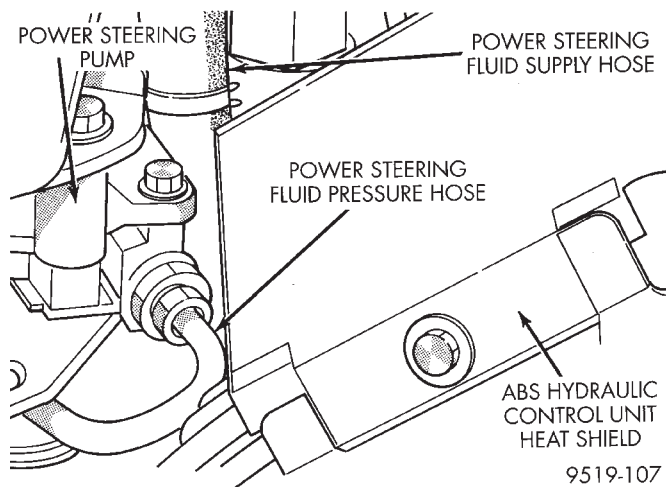


Fig. 33 Hydraulic Control Unit Heat Shield

REMOVAL AND INSTALLATION (Continued)

(9) Remove bolt at adjusting slot in accessory drive mounting bracket, (Fig. 34) attaching back of power steering pump to the bracket.

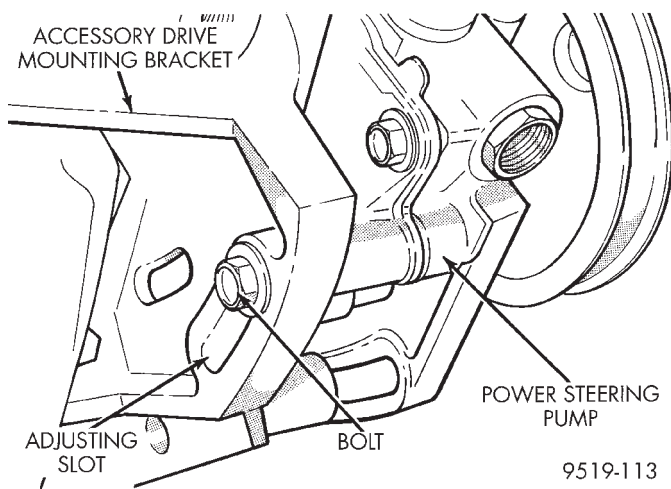


Fig. 34 Power Steering Pump Rear Mounting Bolt

(10) Remove bolt at adjustment slot, (Fig. 35) attaching the power steering pump front mounting bracket to cast aluminum accessory drive bracket on engine. Then remove bolt (Fig. 35) at top of power steering front mounting bracket, attaching it to the accessory drive bracket.

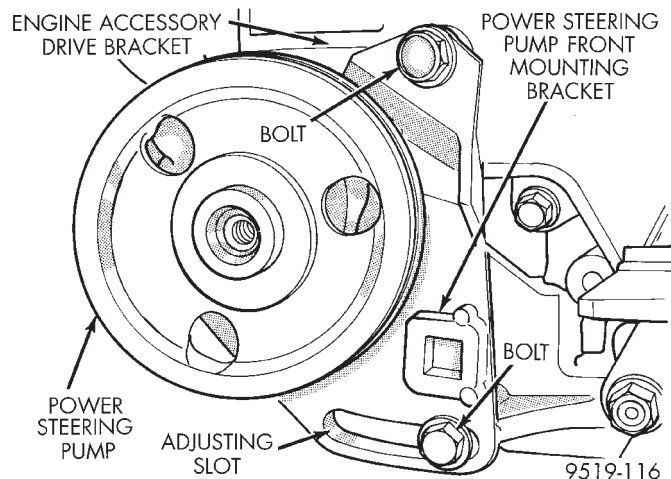


Fig. 35 Power Steering Pump Front Bracket Attachment

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

(12) Remove power steering pump, fluid supply hose and front mounting bracket as an assembly from the engine and vehicle. Pump, fluid supply hose and mounting bracket is removable by bringing it out through area between rear of engine, driveshaft and front suspension crossmember.

(13) Transfer required parts from removed power steering pump, to replacement power steering pump.

INSTALL

(1) Install power steering pump, mounting bracket and fluid supply hose as an assembly back in vehicle, using reverse order of removal. **Be sure power steering fluid supply hose is correctly routed up to the power steering fluid reservoir when installing power steering pump.**

(2) Install power steering pump and front bracket on the cast aluminum accessory drive engine bracket (Fig. 35). Then loosely install bolt at adjusting slot and top of power steering pump front bracket (Fig. 35) mounting pump bracket to accessory drive bracket.

(3) Loosely install the bolt mounting power steering pump to its rear mounting bracket (Fig. 34).

(4) Using a lint free towel, wipe clean all open power steering hose ends, and power steering pump fittings.

(5) Install a new O-ring on end of power steering pressure hose fitting.

(6) Lubricate both O-rings using fresh clean power steering fluid.

(7) Install the power steering pressure hose in the power steering pump pressure fitting. Loosely install tube nut into pressure fitting on power steering pump. **Pressure hose must be installed between the front bracket of the power steering pump and power steering pump pulley.**

(8) Install power steering pump drive belt on power steering pump pulley.

REMOVAL AND INSTALLATION (Continued)

(9) Install a 1/2 in. breaker bar in the square adjusting hole in the front power steering pump mounting bracket (Fig. 36) Then rotate pump to obtain the correct drive belt tension. See Accessory Drive Belts in Group 7 Cooling System of this service manual for the correct drive belt tension specification. When correct drive belt tension is obtained first tighten the bottom 2 adjusting slot bolts at the power steering pump cast mounting bracket to a torque of 54 N·m (40 ft. lbs.). Then tighten the power steering pump mounting bracket top pivot bolt to a torque of 54 N·m (40 ft. lbs.).

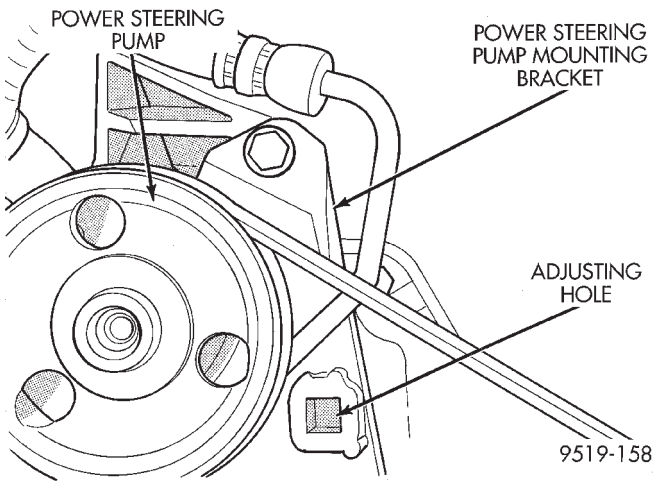


Fig. 36 Power Steering Pump Front Mounting Bracket Adjusting Hole

(10) Position power steering pressure hose in outlet fitting of power steering pump, so hose is not contacting the pulley of power steering pump drive belt (Fig. 32). The tighten tube nut to a torque of 31 N·m (275 in. lbs.).

(11) Install heat shield on hydraulic control unit for the antilock brake system (Fig. 33).

(12) Install accessory drive splash shield in right front inner fender (Fig. 31).

(13) Install tire back on vehicle. Tighten the wheel lug nuts in proper sequence until all lug nuts are torqued to half specification. Then repeat tightening sequence to full specified torque of 129 N·m (95 ft. lbs.).

(14) Lower vehicle.

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

(15) Install power steering fluid supply hose on power steering fluid reservoir fitting. Install hose clamp on hose, being sure hose clamp is installed on hose past upset bead on power steering fluid reservoir.

(16) Fill power steering reservoir to correct fluid level.

(17) Connect negative cable back on negative post of battery.

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

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

(20) Raise front wheels of vehicle off the ground.

(21) Start engine, then slowly turn steering wheel right and left several times until lightly contacting the wheel stops. Then turn the engine off.

(22) Add power steering fluid if necessary.

(23) Lower the vehicle. Start engine again and turn the steering wheel slowly from lock to lock.

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

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

(26) After power steering pump is installed, check for leaks at all hose connections and power steering pump fittings.

POWER STEERING OIL COOLER

REMOVE

(1) Raise vehicle using a frame contact type hoist or supported as required using jack stands. See Hoisting in the Lubrication And Maintenance group of this service manual for the required hoisting or jacking procedure to be used for this vehicle.

(2) Remove the front fascia and the grill as an assembly from the vehicle. Refer to Front Bumper/Fascia in Group 13 of this service manual for the proper procedure.

REMOVAL AND INSTALLATION (Continued)

(3) Remove the hose clamps (Fig. 37) from the power steering fluid hoses. Drain power steering fluid from the hoses and the power steering fluid cooler.

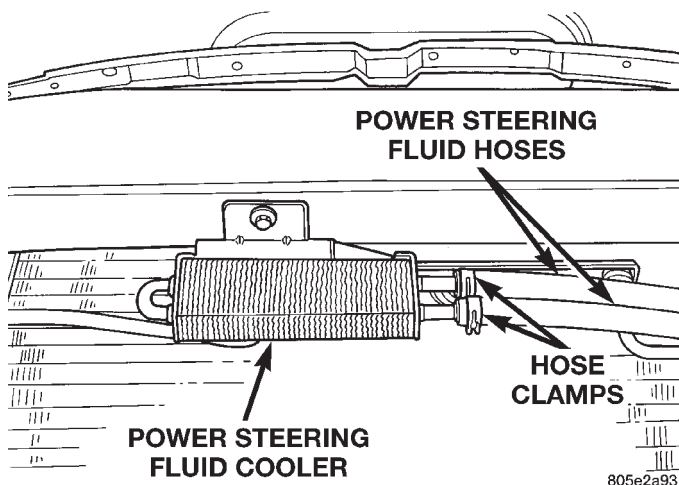


Fig. 37 Hose Clamps At Power Steering Fluid Cooler

(4) Remove bolt (Fig. 38) attaching the power steering fluid cooler to the bumper reinforcement (Fig. 38).

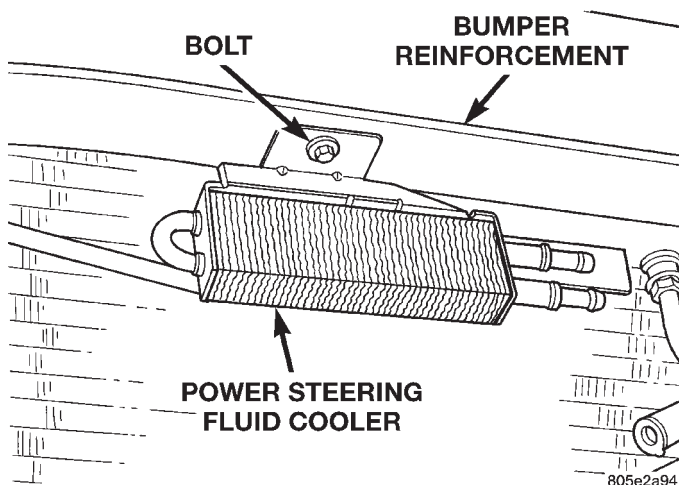


Fig. 38 Power Steering Fluid Cooler Attachment

INSTALL

(1) Install the power steering fluid cooler on the bumper reinforcement as shown in (Fig. 38).

(2) Install bolt (Fig. 38) attaching the power steering fluid cooler to the bumper reinforcement. Tighten the attaching bolt to a torque of 7 N·m (60 in. lbs.)

(3) Install power steering fluid hoses on the power steering fluid cooler. Install the hose clamps on the power steering fluid hoses. **Be sure hose clamps are installed on hose past the upset bead on the power steering oil cooler.**

(4) Install the front fascia and grill on the vehicle. Refer to Front Bumper/Fascia in Group 13 of this service manual for the proper procedure.

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

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

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

(8) Start the engine. Slowly turn the steering wheel right and left, lightly contacting the wheel stops.

(9) Add power steering fluid if necessary.

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

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

POWER STEERING FLUID COOLER LINES

REMOVE

(1) Remove intermediate steering shaft coupler (Fig. 39) from the steering gear shaft.

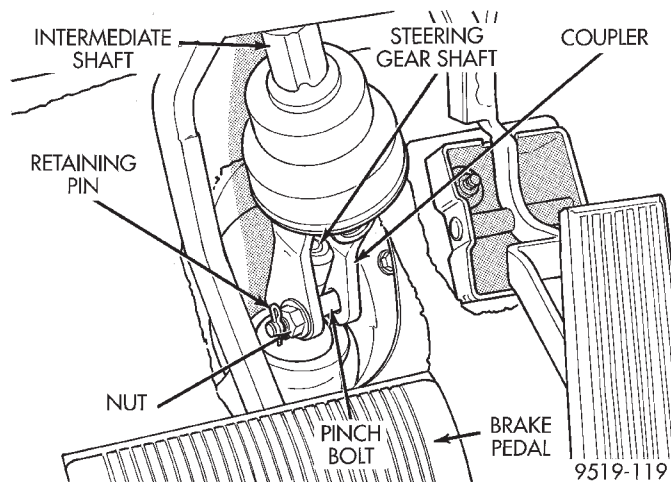


Fig. 39 Intermediate Shaft Coupler Attachment To Steering Gear

(2) Siphon as much power steering fluid as possible from the power steering fluid reservoir.

(3) Raise the vehicle using a frame contact type hoist or supported as required using jack stands. See Hoisting in the Lubrication and Maintenance group of this service manual for the required hoisting or jacking procedure to be used for this vehicle.

(4) Remove the left front wheel/tire.

(5) Remove the front fascia and the grill as an assembly from the vehicle. Refer to Front Bumper/Fascia in Group 13 of this service manual for the proper procedure.

REMOVAL AND INSTALLATION (Continued)

(6) Remove the hose clamps (Fig. 40) from the power steering fluid hoses. Drain power steering fluid from the hoses and the power steering fluid cooler.

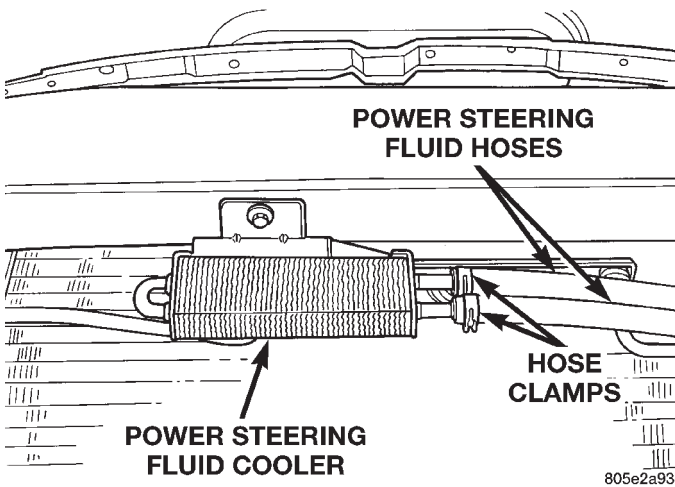


Fig. 40 Hose Clamps At Power Steering Fluid Cooler

(7) Remove the bracket attaching the power steering fluid cooler lines to the left front frame rail (Fig. 41).

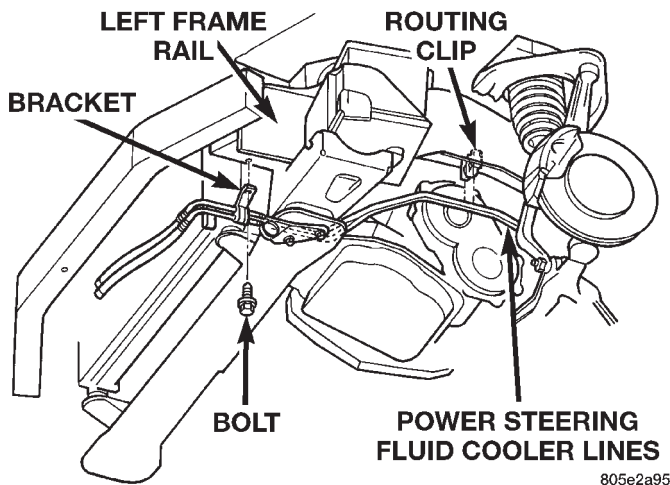


Fig. 41 Power Steering Cooler Line Attachment

(8) Lower the front suspension crossmember. Refer to the steering gear service procedures in this group of the service manual for the required procedure for the removal of the front suspension crossmember.

(9) Remove the clip (Fig. 42) holding the power steering fluid cooler lines together.

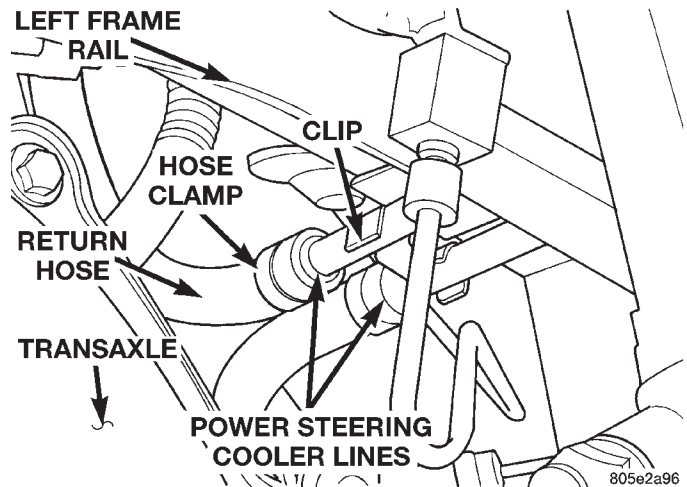


Fig. 42 Power Steering Cooler Line Clip

(10) Remove the hose clamp (Fig. 42) attaching the power steering fluid return hose from the engine, (Fig. 42) to the power steering fluid cooler lines.

(11) Remove the power steering fluid return hose (Fig. 43) from the power steering gear.

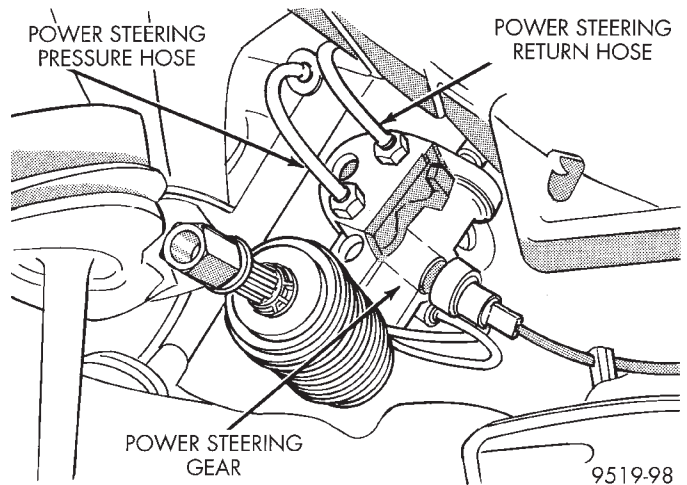


Fig. 43 Power Steering Hose Connections At Steering Gear

(12) Remove the power steering fluid cooler lines from the routing clip on the left front frame rail (Fig. 41).

(13) Separate the power steering cooler line assembly into 2 separate pieces.

(14) Remove each cooler line separately from the vehicle. The cooler lines are removed out through the front of the vehicle in the area between the radiator and the closure panel.

INSTALL

(1) Install the cooler lines individually using the reverse procedure of their removal.

REMOVAL AND INSTALLATION (Continued)

(2) Install the cooler lines in the routing clip on the left frame rail (Fig. 41).

(3) Install the power steering fluid return hose coming from the engine on the power steering cooler line (Fig. 42). Install the hose clamp on the power steering fluid hose. **Be sure hose clamp is installed on hose past the upset bead on the power steering cooler line.**

(4) Install the power steering fluid return hose on the steering gear. Then using a crow foot and torque wrench (Fig. 44) tighten the tube nut to a torque of 31 N·m (275 in. lbs.).

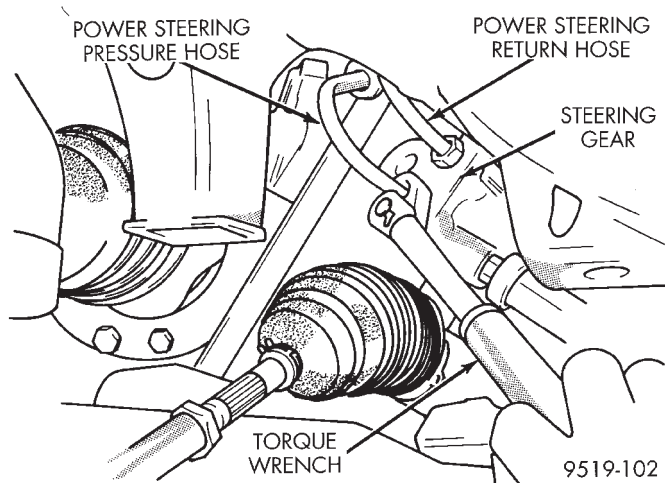


Fig. 44 Torquing Power Steering Fluid Hose/Tube Nuts

(5) Install the clip (Fig. 42) holding the 2 power steering fluid cooler lines together.

(6) Install the front suspension crossmember. Refer to the steering gear service procedures in this group of the service manual for the required procedure for the installation of the front suspension crossmember.

(7) Install the left front wheel/tire.

(8) Install the bracket attaching the power steering cooler lines to the left frame rail (Fig. 41). Install bracket attaching bolt and tighten to a torque of 7 N·m (60 in. lbs.).

(9) Install power steering fluid hoses on the power steering fluid cooler (Fig. 40). Install the hose clamps on the power steering fluid hoses. **Be sure hose clamps are installed on hose past the upset bead on the power steering oil cooler.**

(10) Install the front fascia and grill on the vehicle. Refer to Front Bumper/Fascia in Group 13 of this service manual for the proper procedure.

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

(12) Connect the steering column intermediate shaft on the shaft of the steering gear (Fig. 39). Install the coupler retaining pinch bolt and tighten to a torque of 27 N·m (240 in. lbs.). **Be sure to install the coupler retaining pinch bolt retention pin (Fig. 39).**

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

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

(15) Start the engine. Slowly turn the steering wheel right and left, lightly contacting the wheel stops.

(16) Add power steering fluid if necessary.

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

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

POWER STEERING SYSTEM FLUID RESERVOIR

REMOVE

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

(2) Raise vehicle.

(3) Remove hose clamp attaching power steering fluid supply hose to fitting on power steering pump. Let power steering fluid drain from supply hose and power steering fluid reservoir, until reservoir is empty.

(4) Lower vehicle.

CAUTION: Care must be used when removing and installing power steering fluid hoses on the power steering fluid reservoir. If excessive force is used when trying to remove or install hoses on nipples of power steering fluid reservoir, nipples can be broken off the reservoir.

(5) Remove power steering fluid return and supply hose, from power steering fluid reservoir.

REMOVAL AND INSTALLATION (Continued)

(6) Remove bolts attaching power steering fluid reservoir to engine (Fig. 45) or (Fig. 46).

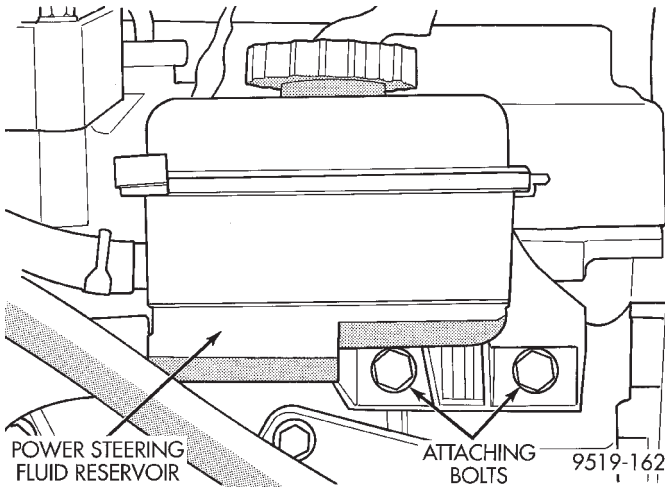


Fig. 45 Power Steering Fluid Reservoir Mounting 2.0 And 2.4 Ltr. Engine

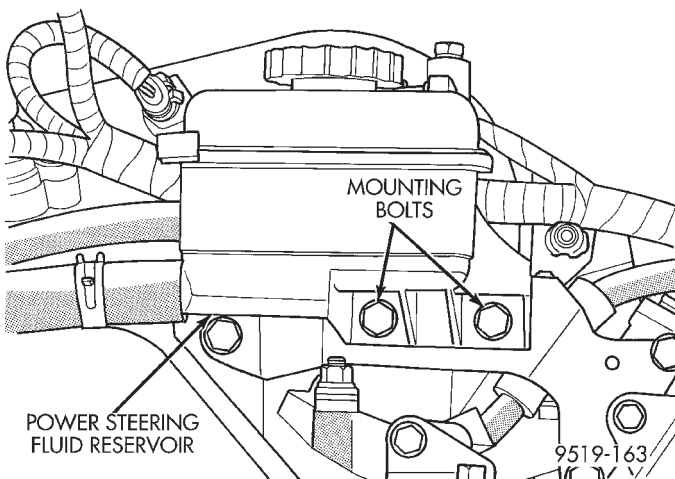


Fig. 46 Power Steering Fluid Reservoir Mounting 2.5 Liter Engine

(7) Remove power steering fluid reservoir from vehicle.

INSTALL

(1) Install power steering fluid reservoir on cylinder head. Install and securely tighten the power steering fluid reservoir attaching bolts (Fig. 45) or (Fig. 46).

(2) Install power steering fluid return and supply hose, on power steering fluid reservoir fittings. **Be sure both hose clamps are installed on hose past upset bead on power steering reservoir fittings.**

(3) Raise vehicle.

(4) Install power steering supply hose, on suction fitting of the power steering pump. **Be sure hose clamp is installed on hose past upset bead on power steering gear steel tube.**

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

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

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

(8) Raise front wheels of vehicle off the ground.

(9) Start the engine. Slowly turn the steering wheel right and left, lightly contacting the wheel stops. Then turn the engine off.

(10) Add power steering fluid if necessary.

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

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

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

DISASSEMBLY AND ASSEMBLY**POWER STEERING PUMP DRIVE PULLEY**

The power steering pump must be removed from the vehicle for removal of the power steering pump pulley. Refer to Power Steering Pump Removal in the Power Steering Pump Service Procedures section in this group of the service manual.

DISASSEMBLE

(1) Remove power steering pump from engine. Refer to Power Steering Pump Removal in the Power Steering Pump Service Procedures section in this group of the service manual for required procedure.

CAUTION: Do not hammer on power steering pump pulley or shaft to remove power steering pump pulley. This will damage the pulley and the power steering pump.

DISASSEMBLY AND ASSEMBLY (Continued)

(2) Mount Puller, Special Tool C-4333 or C-4068 on power steering pump pulley. Mount power steering pump and puller in a vise (Fig. 47) to keep shaft of power steering pump from turning when removing pulley.

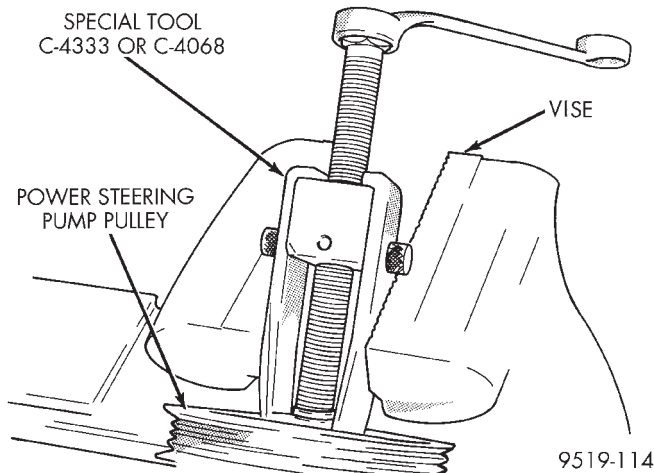


Fig. 47 Removing Pulley From Power Steering Pump Shaft

(3) Remove the drive pulley from the shaft of the power steering pump.

(4) Replace power steering pump pulley if bent, cracked, or loose.

ASSEMBLE

CAUTION: Do not hammer on power steering pump pulley or shaft to remove power steering pump pulley. This will damage the pulley and the power steering pump.

(1) Mount power steering pump in a vise using the power steering pump mounting bracket.

(2) Place power steering pump pulley squarely on end of power steering pump shaft (Fig. 48).

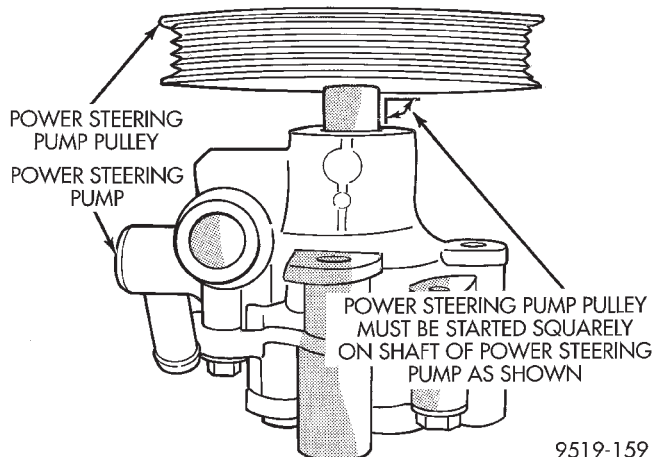


Fig. 48 Pulley Positioned On Shaft Of Power Steering Pump

(3) Place Installation Spacer, Special Tool 6936, (Fig. 49) on top of the power steering pump pulley.

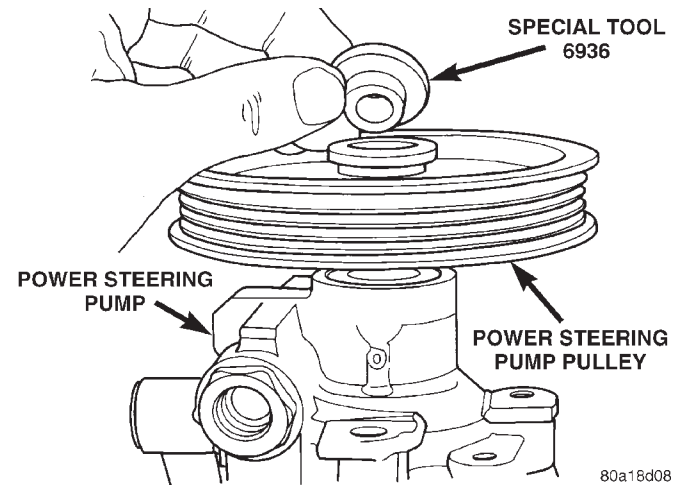


Fig. 49 Special Tool 6936 Correctly Installed On Power Steering Pump Pulley

(4) Mount Installer, Special Tool C-4063 in internal threads of the power steering pump shaft and against Special Tool 6936 on power steering pump pulley (Fig. 50).

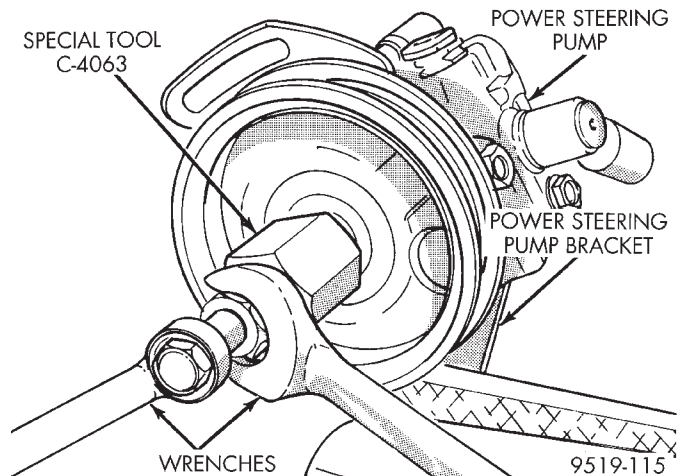


Fig. 50 Installing Pulley On Shaft Of Power Steering Pump

(5) Ensuring that special tool and pulley remain aligned with pump shaft, force pulley onto power steering pump shaft until Special Tool 6936 is against the end of the power steering pump shaft. **When Special Tool 6936 is against the shaft of the power steering pump Special Tool C-4063 will no longer be able to be turned.**

(6) Remove Installer, Special Tool C-4063 from power steering pump.

(7) Install power steering pump and mounting bracket back on engine. Refer to Power Steering Pump Installation in the Power Steering Pump Ser-

DISASSEMBLY AND ASSEMBLY (Continued)

vice Procedures section in this group of the service manual for required procedure.

POWER STEERING PUMP MOUNTING BRACKET

DISASSEMBLE

(1) Remove power steering pump from engine. Refer to Power Steering Pump Removal in the Power Steering Pump Service Procedures section in this group of the service manual for required procedure.

CAUTION: Do not hammer on power steering pump pulley or shaft to remove power steering pump pulley. This will damage the pulley and the power steering pump.

(2) Mount Puller, Special Tool C-4333 or C-4068 on power steering pump pulley. Mount power steering pump and puller in a vise (Fig. 51) to keep shaft of power steering pump from turning when removing pulley.

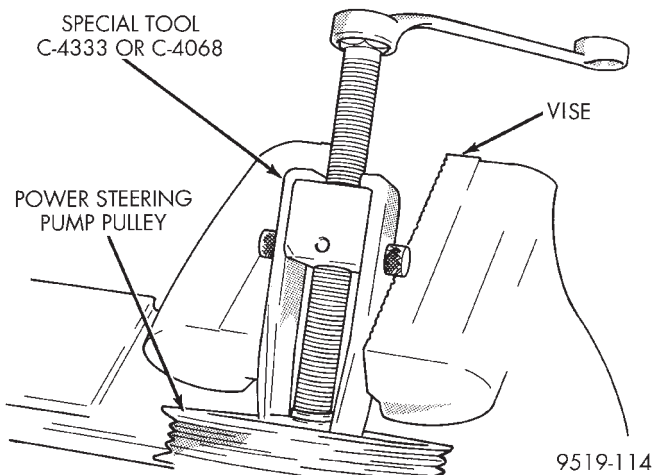


Fig. 51 Removing Pulley From Power Steering Pump Shaft

(3) Remove the drive pulley from the shaft of the power steering pump.

(4) Remove bolts attaching power steering pump to mounting bracket.

(5) Remove power steering pump from mounting bracket.

ASSEMBLE

(1) Install power steering pump on mounting bracket. Install the power steering pump to mounting bracket attaching bolts. Torque the mounting bolts to 54 N·m (40 ft. lbs).

CAUTION: Do not hammer on power steering pump pulley or shaft to remove power steering pump pulley. This will damage the pulley and the power steering pump.

(2) Place power steering pump pulley squarely on end of power steering pump shaft (Fig. 52).

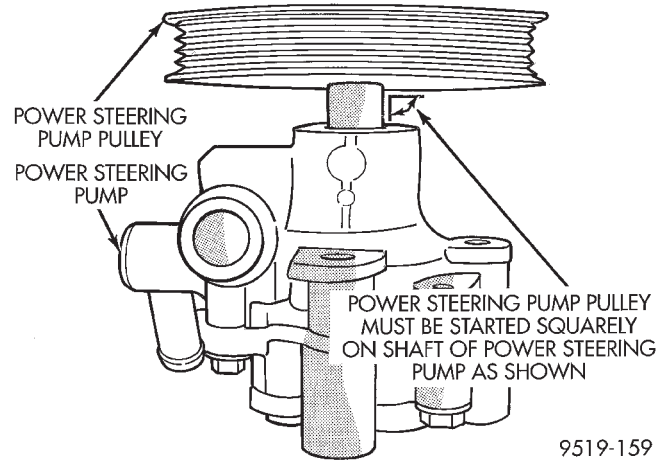


Fig. 52 Pulley Positioned On Shaft Of Power Steering Pump

(3) Place Installation Spacer, Special Tool 6936 on top of the power steering pump pulley (Fig. 53).

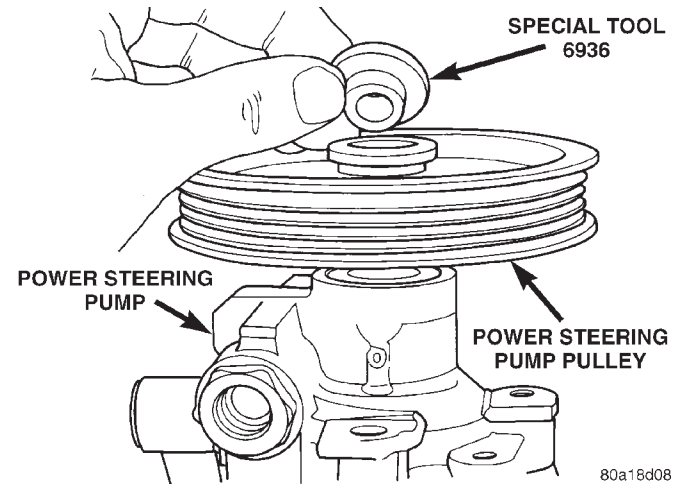


Fig. 53 Spacer Correctly Installed On Power Steering Pump Pulley

DISASSEMBLY AND ASSEMBLY (Continued)

(4) Mount Installer, Special Tool C-4063 in internal threads of the power steering pump shaft and against Special Tool 6936 on power steering pump pulley (Fig. 54).

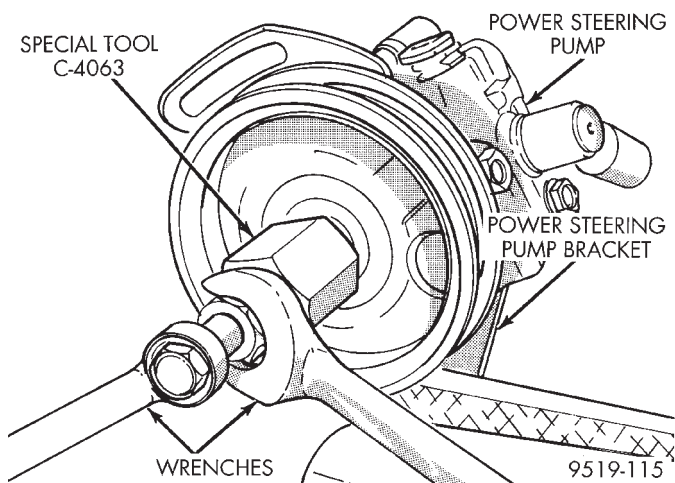


Fig. 54 Installing Pulley On Shaft Of PowerSteering Pump

(5) Ensuring that special tool and pulley remain aligned with pump shaft, force pulley onto power steering pump shaft until Special Tool 6936 is against the end of the shaft. **When Special Tool 6936 is against the shaft of the power steering pump, Special Tool C-4063 will no longer be able to be turned.**

(6) Remove Installer, Special Tool C-4063 from power steering pump.

(7) Install power steering pump and bracket assembly back on engine. Refer to Power Steering Pump Installation in the Power Steering Pump Service Procedures section in this group of the service manual for required procedure.

SPECIFICATIONS

POWER STEERING PUMP FLOW SPECIFICATIONS

Flow At 1500 RPM And Minimum Pressure . 4.9 to 5.3
Liters/Min (1.3 to 1.4 GPM)

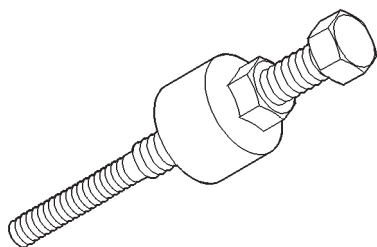
Control Valve Pressure Relief . 8240 to 8920 kPa (1195
to 1293 psi)

POWER STEERING PUMP FASTENER TORQUE SPECIFICATIONS

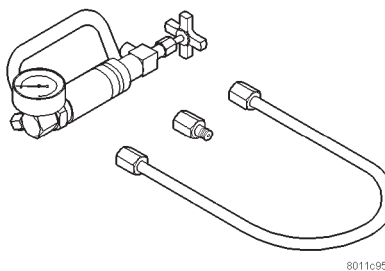
DESCRIPTION	TORQUE
POWER STEERING PUMP:	
Discharge Fitting	75 N·m (55 ft. lbs.)
To Rear Bracket Mounting	
Bolts	54 N·m (40 ft. lbs.)
To Front Bracket Mounting	
Bolts	54 N·m (40 ft. lbs.)
Bracket To Engine Mounting	
Bolts	54 N·m (40 ft. lbs.)
POWER STEERING FLUID HOSES:	
Hose Tube Nuts	31 N·m (275 in. lbs.)
Return Hose Bracket To	
Head 2.0 / 2.4L	28 N·m (21 ft. lbs.)
Pressure Hose To Return Hose	
Bracket	9 N·m (75 in. lbs.)
Pressure Hose To Cylinder	
Head 2.5L	54 N·m (40 ft. lbs.)
Return Hose To Pressure Hose	
Bracket 2.5L	9 N·m (75 in. lbs.)
POWER STEERING FLUID RESERVOIR:	
Reservoir To Mounting Bracket	
Or Engine	28 N·m (21 ft. lbs.)
Reservoir Bracket To Engine . .	28 N·m (21 ft. lbs.)

SPECIAL TOOLS

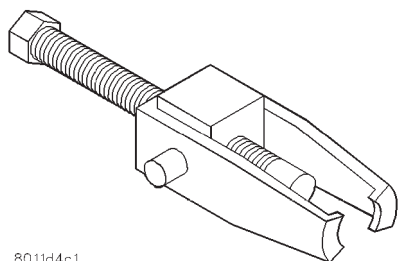
POWER STEERING PUMP



Installer C-4063B



P/S System Analyzer 6815



8011d4c1

Puller C-4333

POWER STEERING GEAR

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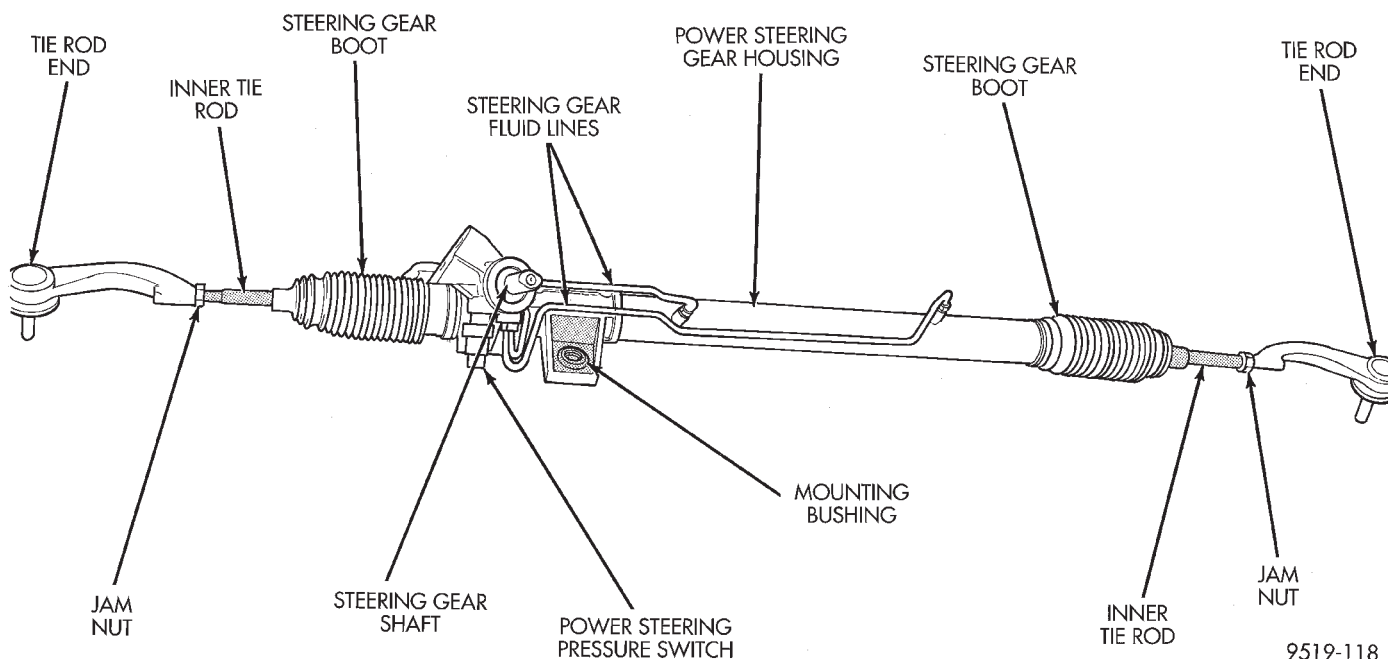
DESCRIPTION AND OPERATION

POWER STEERING GEAR

The power steering system consists of these six major components. Power Steering Pump, Power Steering Gear, (Fig. 1) Power Steering Reservoir, Power Steering Supply and Pressure Hoses, and Power Steering Fluid Return Hose. Turning of the steering wheel is converted into linear travel through the meshing of the helical pinion teeth with the rack teeth. Power assist steering is provided by an open center, rotary type control valve which directs oil from the pump to either side of the integral rack piston.

Road feel is controlled by the diameter of a torsion bar which initially steers the vehicle. This movement directs oil behind the integral rack piston, which, in turn, builds up hydraulic pressure and assists in the turning effort.

The drive tangs on the pinion of the power steering pump mate loosely with a stub shaft. This is to permit manual steering control to be maintained if the drive belt on the power steering pump should break. However, under these conditions, steering effort will be increased.



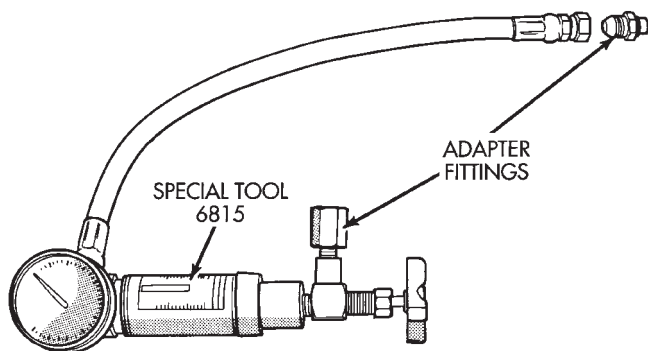
9519-118

Fig. 1 Power Steering Gear Assembly

DIAGNOSIS AND TESTING

POWER STEERING PUMP FLOW RATE AND PRESSURE TEST

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 pressure and flow test is performed using Pressure/Flow Tester, Special Tool 6815 (Fig. 2).



9519-1

Fig. 2 Power Steering Pump Flow/Pressure Tester

POWER STEERING PUMP FLOW AND PRESSURE TEST PROCEDURE

- (1) Check power steering pump drive belt tension and adjust as necessary.
- (2) Disconnect power steering fluid pressure hose (Fig. 3), at power steering pump. Use a container for dripping fluid.

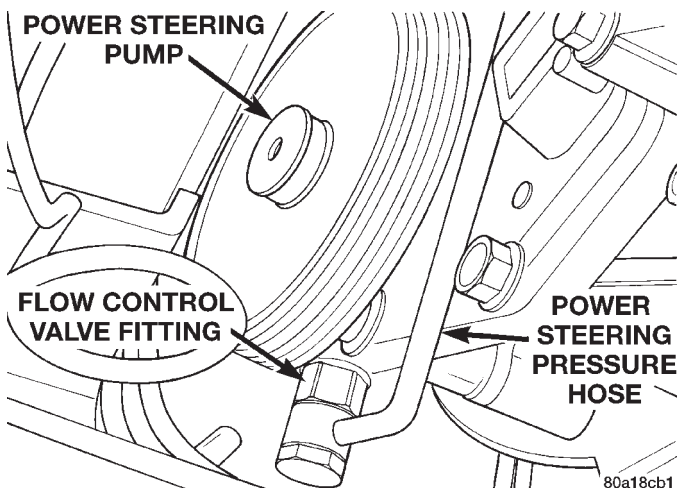


Fig. 3 Power Steering Pump Pressure Hose

(3) Connect the inlet hose on the Pressure Gauge, Special Tool 6815 using required adapter, Special Tool 6972 to the pressure fitting on the power steering pump. Connect the pressure hose which was removed from the power steering pump, using required adapter fitting, to the outlet port of Pressure Gauge, Special Tool 6815. **Pressure Gauge, Special Tool 6815 is to be installed in series with power steering pressure hose, between power steering pump and steering gear. It must also be installed so it is in correct direction of the fluid flow.**

- (4) Completely open valve on Special Tool 6815.
- (5) Start engine and let idle long enough to circulate power steering fluid through flow/pressure test and get air out of fluid. Then shut off engine.
- (6) Check power steering fluid level, and add fluid as necessary. Start engine again and let idle.
- (7) Pressure gauge should read below 862 kPa (125 psi). If above, inspect the hoses for restrictions and repair as necessary. The initial pressure reading should be in the range of 345-552 kPa (50-80 psi). The flow meter reading should be between 4.9 and 5.3 liters per minute (1.3 and 1.4 GPM).

CAUTION: The following test procedure involves testing power steering pump maximum pressure output and flow control valve operation. Do not leave valve closed for more than 5 seconds as the pump could be damaged.

- (8) 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 8240 to 8920 kPa (1195 to 1293 psi.).

- If power steering pump pressures are above specifications, but not within 345 kPa (50 psi) of each other, then replace power steering pump.
- If pressures are within 345 kPa (50 psi) of each other but below specifications, then replace power steering pump.

CAUTION: Do not force the pump to operate against the stops for more than 5 seconds at a time because pump damage will result.

- (9) Open test valve. Turn steering wheel to the extreme left and right positions until against the stops, recording the highest indicated pressure at each position. Compare pressure gauge readings to power steering pump specifications. If the highest output pressures are not the same against either

DIAGNOSIS AND TESTING (Continued)

stop, the steering gear is leaking internally and must be replaced.

REMOVAL AND INSTALLATION

POWER STEERING GEAR ASSEMBLY

REMOVE

(1) Remove remote ground cable (Fig. 4) from ground stud on shock tower. Then correctly isolate ground cable from vehicle by installing isolator on stud (Fig. 5).

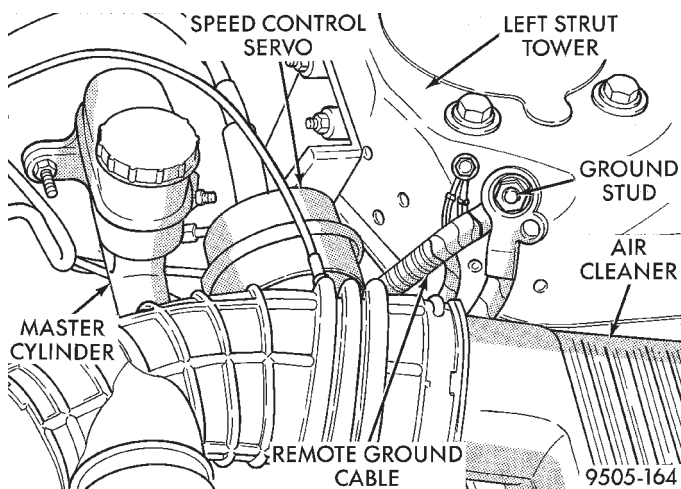


Fig. 4 Remote Ground Cable At Shock Tower

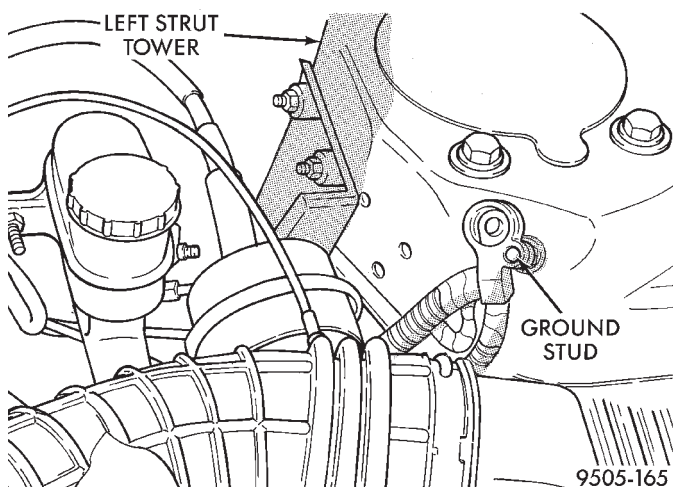


Fig. 5 Correctly Isolated Remote Ground Cable

(2) Siphon as much power steering fluid as possible from the remote power steering fluid reservoir.

(3) From interior of vehicle, remove the retaining pin from the intermediate shaft coupler pinch bolt (Fig. 6). Then remove the pinch bolt (Fig. 6) from the intermediate shaft coupler and the separate intermediate shaft coupler, from steering gear shaft.

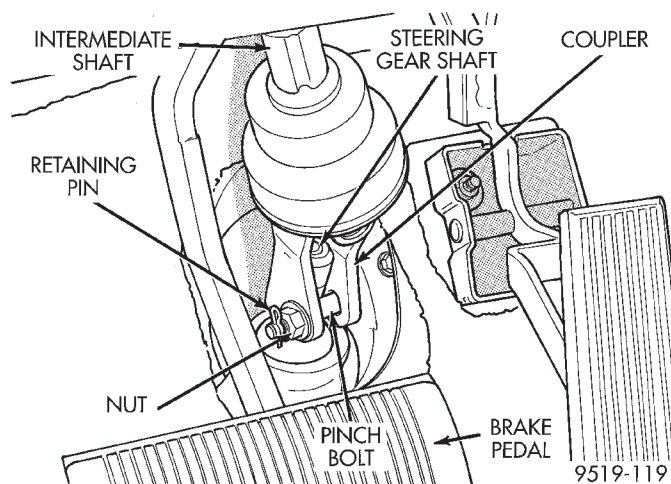


Fig. 6 Intermediate Shaft Coupler To Steering Gear Attachment

(4) Raise vehicle on jack stands 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.

(5) Remove both front wheel and tire assemblies from the vehicle.

(6) Remove nuts attaching both outer tie rod ends to the steering knuckles (Fig. 7). **Nuts are to be removed from tie rod ends using the following procedure, hold tie rod end stud with an 11/32 socket, while loosening and removing nut with wrench (Fig. 7).**

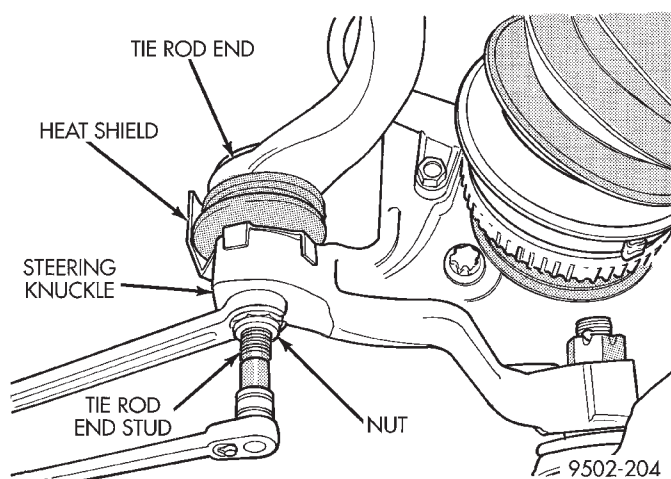


Fig. 7 Removing Tie Rod End Nut

REMOVAL AND INSTALLATION (Continued)

(7) Remove both tie rod end studs, from the steering knuckles, using Remover, Special Tool MB-991113 (Fig. 8).

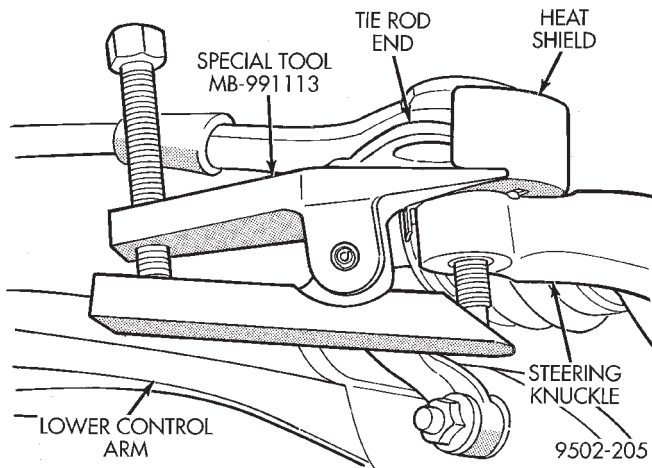


Fig. 8 Tie Rod End Removal From Steering Knuckle

CAUTION: This vehicles is designed and assembled using NET BUILD front suspension alignment settings. This means that front suspension alignment settings are determined as the vehicle is designed by the location of front suspension components in relation to the vehicle body. This process is carried out when building the vehicle, by accurately locating the front suspension crossmember to master gage holes located in the underbody of the vehicle. With this method of designing and building a vehicle, it is no longer necessary or possible to adjust a vehicles front suspension alignment settings. Consequently, whenever the front suspension crossmember is removed from a vehicle, it **MUST** be replaced in the same location on the body of the vehicle it was removed from. Front suspension Toe settings though are still adjustable by the outer tie rod ends.

CAUTION: Before removing the front suspension crossmember from the vehicle, locating marks for the front suspension crossmember **MUST** be scribed on the front suspension crossmember and body of vehicle. This must be done so front suspension crossmember can be located against body of vehicle, in the same location when it is installed back in vehicle. If location of front suspension crossmember to body of vehicle is not maintained when vehicle is assembled, NET BUILD front suspension alignment settings will not be obtained. This may lead to handling and or tire wear problems.

NOTE: Use the following procedure to mark the side to side and front to back installed location of the front suspension crossmember to the body of the vehicle.

(8) Using an awl, scribe a line on the body (Fig. 9) and (Fig. 10) marking the front to back installed location where the front suspension crossmember is mounted against the body of the vehicle. The line should be scribed at both the front and back of where the crossmember is mounted to the vehicle and on each side of the vehicle. In (Fig. 9) and (Fig. 10) the left side of the vehicle is shown.

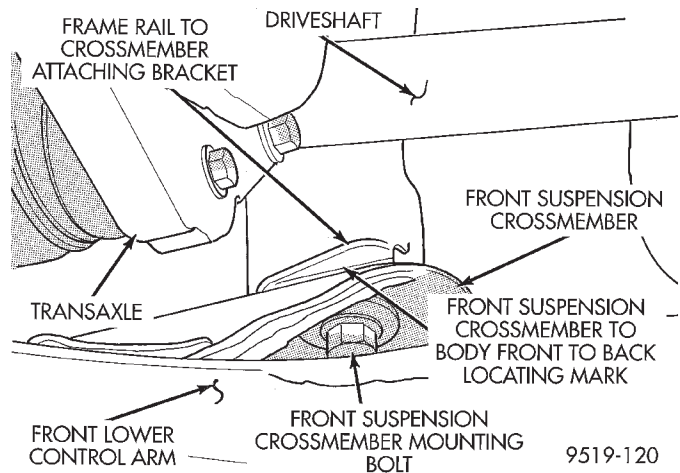


Fig. 9 Front Suspension Crossmember Front To Back Locating Mark (Left Side Front)

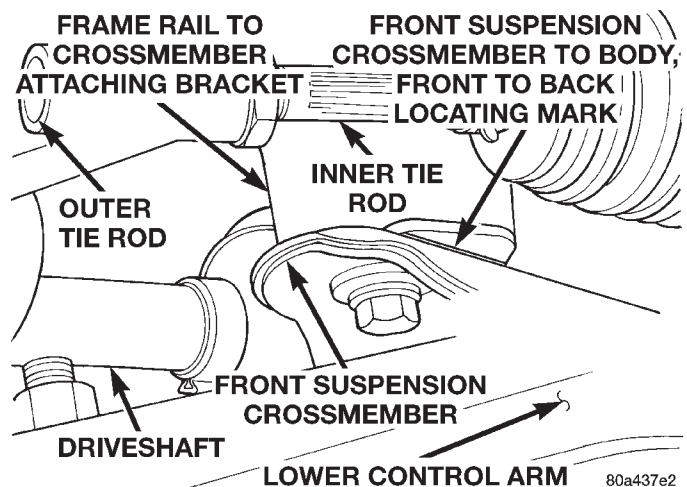


Fig. 10 Front Suspension Crossmember Front To Back Locating Mark (Left Side Rear)

(9) Using an awl, scribe a line on the front suspension crossmember (Fig. 11) marking the side to side installed location where front suspension crossmember is mounted against the body of the vehicle. The line should be scribed at the side of the frame rail locating bracket (Fig. 11) where the crossmember is mounted

REMOVAL AND INSTALLATION (Continued)

to the vehicle. The locating mark is to be marked the same on each side of the vehicle. In (Fig. 11) the left side of the vehicle is shown.

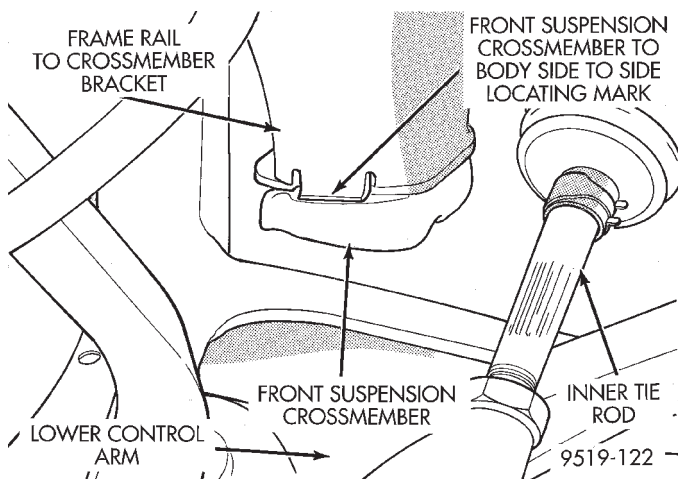


Fig. 11 Front Suspension Crossmember Side To Side Locating Mark

(10) Remove the stabilizer bar bushing clamp to body attaching bolts only (Fig. 12). The sway bar bushing clamp to front suspension crossmember bolts (Fig. 12) do not need to be removed

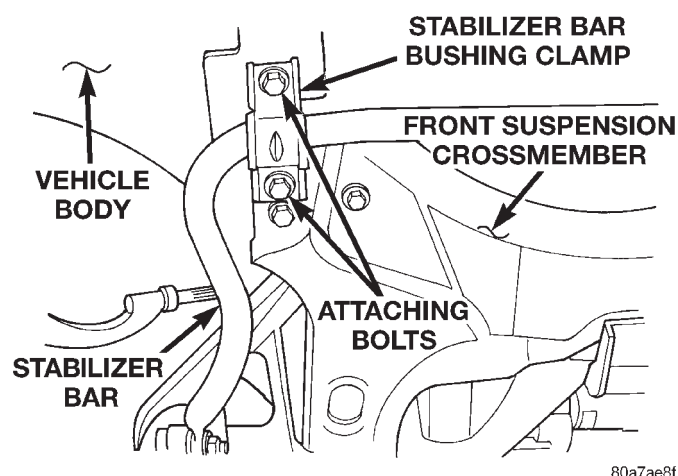


Fig. 12 Stabilizer Bar Bushing Clamp Attaching Bolts

(11) If vehicle is equipped with antilock brakes, the hydraulic control unit can not hang from the brake tubes when lowering front suspension crossmember. Using wire, tie the antilock brakes hydraulic control unit to the body and engine so the wire will support it when the crossmember is lowered.

(12) If vehicle is equipped with antilock brakes, remove the 3 bolts attaching the antilock brakes hydraulic control unit to the front suspension crossmember.

(13) Remove the bolts attaching the shock absorber clevis to the left and right lower control arms (Fig. 13).

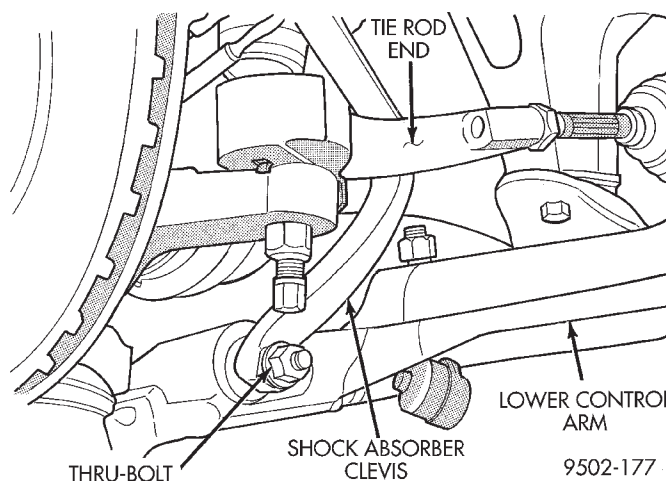


Fig. 13 Shock Clevis To Lower Control Arm Bolts

(14) Remove the 2 bolts attaching the under engine support bracket (Fig. 14) to the front edge of the front suspension crossmember.

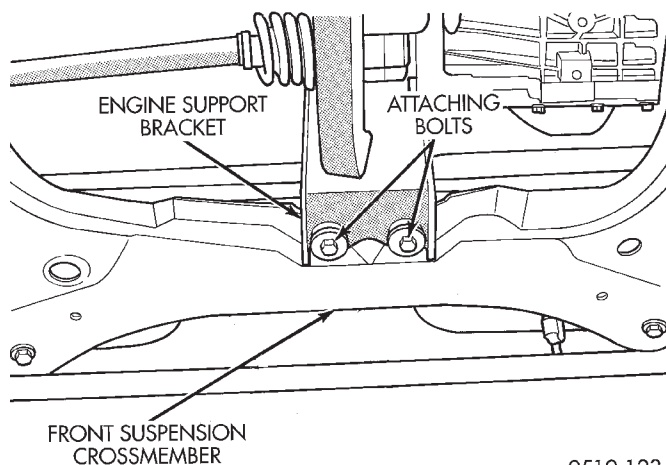


Fig. 14 Engine Support Bracket To Crossmember Attaching Bolts

REMOVAL AND INSTALLATION (Continued)

(15) Remove the 2 attaching bolts from the rear support bracket (Fig. 15) at the rear of the front suspension crossmember.

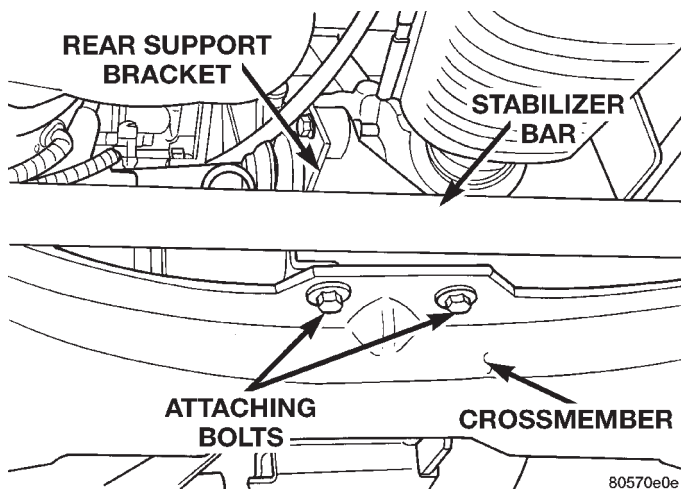


Fig. 15 Rear Support Bracket Attachment To Crossmember

(16) Remove bolt (Fig. 16) attaching engine support bracket to the transaxle mounting bracket.

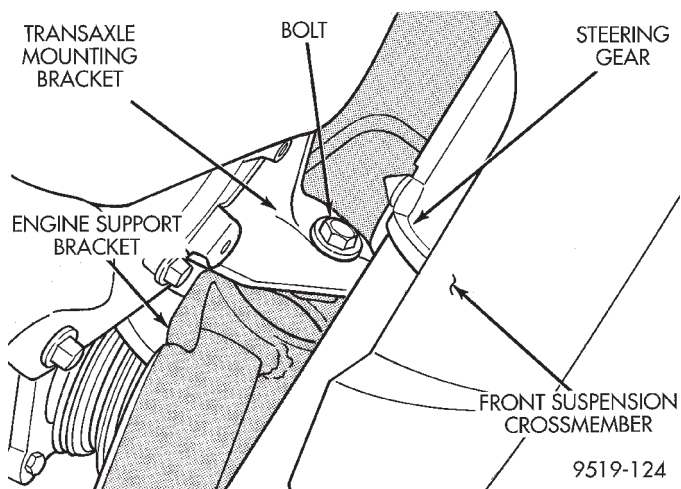


Fig. 16 Engine Support Bracket To Transaxle Bracket Bolt

(17) Position a transmission jack under the center of the front suspension crossmember. Transmission jack is used to lower, support and raise front suspension crossmember when removing steering gear assembly.

(18) From each side of the vehicle, remove the 2 bolts attaching the front and rear of the front suspension crossmember to the frame rails of vehicle (Fig. 17).

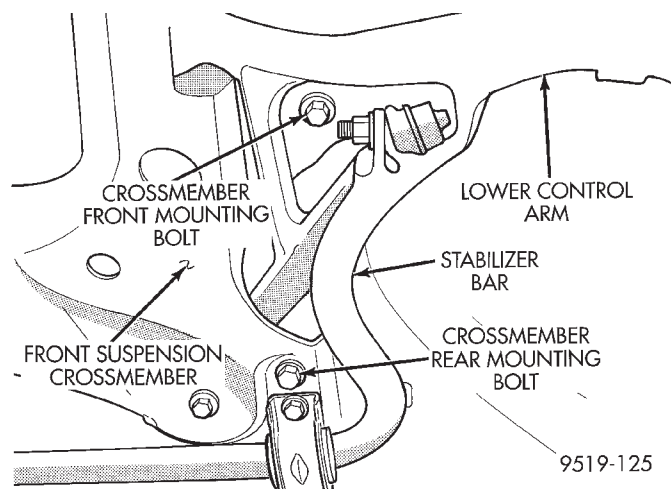


Fig. 17 Crossmember To Body Attaching Bolts

(19) Using transmission jack, lower front suspension crossmember enough to allow steering gear to be removed from crossmember. **When lowering front suspension crossmember, do not let crossmember hang from lower control arms, weight of crossmember must be supported by the transmission jack.**

(20) Remove power steering fluid, pressure and return hoses from the power steering gear assembly (Fig. 18).

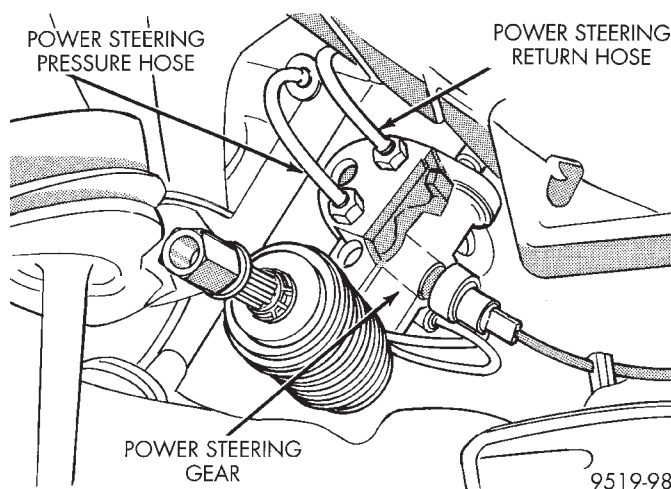


Fig. 18 Power Steering Pressure And Return Hose At Steering Gear

(21) Remove wiring harness connector, (Fig. 18) from the power steering fluid pressure switch.

(22) Remove the 2 bolts, at the isolators (Fig. 19) and (Fig. 20) attaching the steering gear assembly to front suspension crossmember. Then remove the 2 bolts attaching the steering gear saddle bracket (Fig.

REMOVAL AND INSTALLATION (Continued)

21) to the front suspension crossmember. Remove the steering gear assembly from the front suspension crossmember.

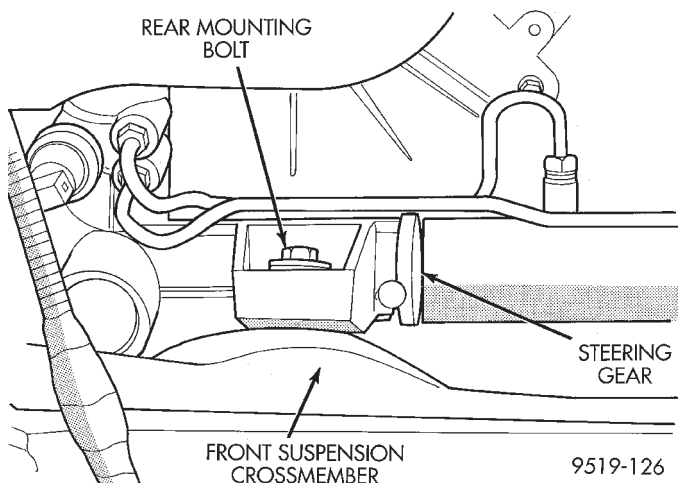


Fig. 19 Steering Gear Rear Mounting Isolator Bolt

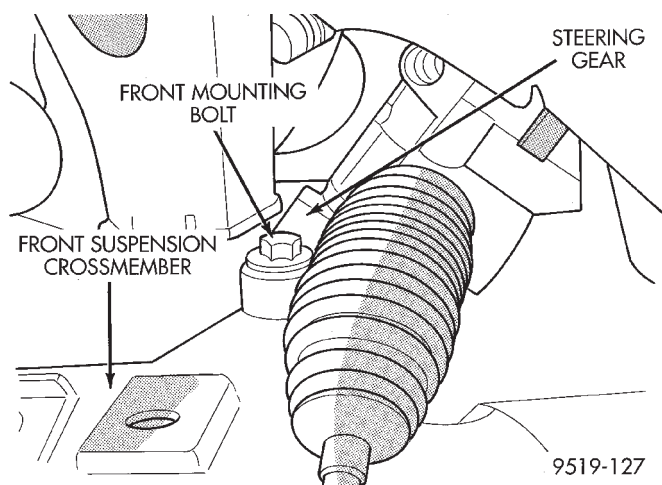


Fig. 20 Steering Gear Front Mounting Bolt

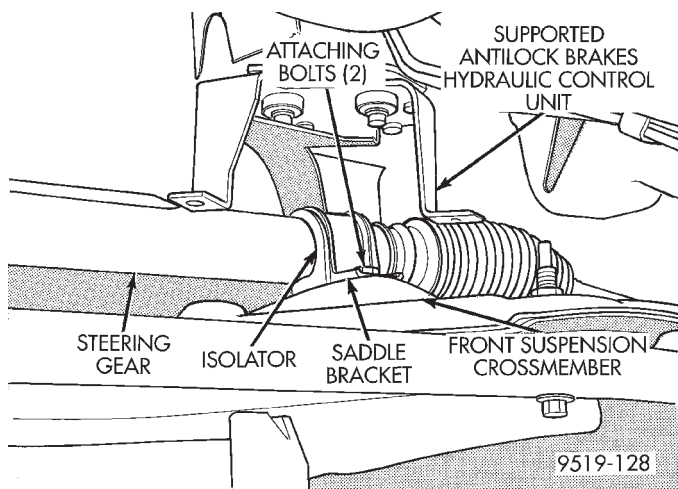


Fig. 21 Steering Gear Saddle Bracket Mounting Bolts

(23) Transfer required parts from removed steering gear assembly to the replacement steering gear, if a new steering gear is being installed.

INSTALL

(1) Install steering gear assembly on front suspension crossmember. Install the 2 long steering gear assembly to front crossmember mounting bolts (Fig. 19) and (Fig. 20) into the mounting isolators. Then install the 2 short bolts (Fig. 21) into the saddle bracket. Tighten the 4 steering gear mounting bolts to a torque of 68 N·m (50 ft. lbs.).

(2) Install the power steering fluid pressure and return lines on the ports of the power steering gear (Fig. 18). Tighten power steering fluid pressure and return lines to steering gear tube nuts (Fig. 18) to a torque of 31 N·m (275 in. lbs.).

(3) Using transmission jack, raise front suspension crossmember and steering gear against body of vehicle. Start the 2 rear bolts (Fig. 17) into tapping plates, attaching front suspension crossmember to body of vehicle. Then install the 2 front bolts, (Fig. 17) attaching front suspension crossmember to frame rails of vehicle. Tighten the 4 mounting bolts evenly, until front suspension crossmember is against body of vehicle at the 4 mounting points. Then torque the 4 mounting bolts to 2 N·m (20 in. lbs.) to hold front suspension crossmember in position.

CAUTION: When front suspension crossmember is installed back in vehicle, crossmember **MUST** be aligned with positioning marks previously scribed into body of vehicle. This **MUST** be done to maintain **NET BUILD** front suspension alignment settings.

(4) Using a soft face hammer, tap front suspension crossmember into position, until it is aligned with the previously scribed positioning marks on body of vehicle (Fig. 9), (Fig. 10) and (Fig. 11). When front suspension crossmember is correctly positioned, torque the 2 rear crossmember mounting bolts to 163 N·m (120 ft. lbs.). Then torque the 2 front crossmember to frame rail attaching bolts to 163 N·m (120 ft. lbs.).

(5) Install the engine support bracket on the front of the front suspension crossmember (Fig. 14). Install the 2 support bracket to suspension crossmember attaching bolts and tighten to a torque of 75 N·m (55 ft. lbs.).

(6) Install bolt (Fig. 16) attaching engine support bracket to transaxle mounting bracket. Tighten bolt to a torque of 75 N·m (55 ft. lbs.).

(7) Install the 2 bolts attaching the rear support bracket, for the under engine support bracket (Fig. 15), to the rear of the front suspension crossmember. Tighten bolts to a torque of 75 N·m (55 ft. lbs.).

REMOVAL AND INSTALLATION (Continued)

(8) Install vehicle wiring harness connector (Fig. 18) onto power steering fluid pressure switch on steering gear assembly. **Be sure locking tab on wiring harness connector is securely latched to pressure switch.**

(9) Install the antilock brakes hydraulic control unit mounting bracket on the front suspension cross-member. Install the 3 mounting bracket to crossmember attaching bolts and tighten to a torque of 28 N·m (250 in. lbs.).

(10) Loosely install the 2 shock absorber clevis to lower control arm attaching nuts and bolts (Fig. 13).

(11) Install tie rod seal boot heat shield (Fig. 8) on tie rod end.

(12) Install tie rod end into steering knuckle. Start tie rod end to steering knuckle attaching nut onto stud of tie rod end. While holding stud of tie rod end stationary, tighten tie rod end to steering knuckle attaching nut (Fig. 8). Then using a crowfoot and 11/32 socket, torque tie rod end attaching nut to 61 N·m (45 ft. lbs.) (Fig. 22).

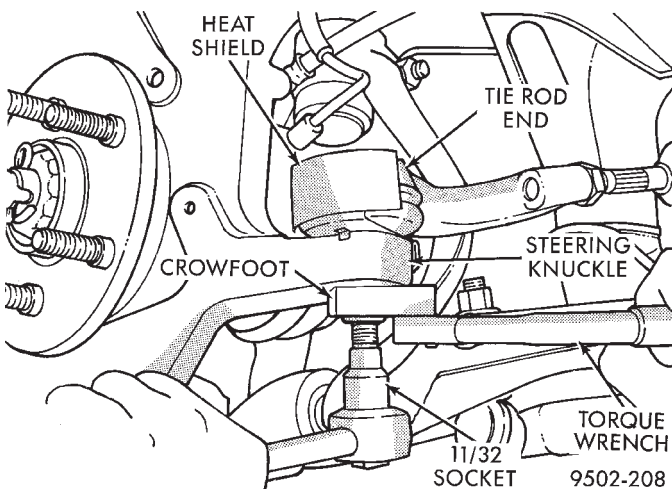


Fig. 22 Torquing Tie Rod End Attaching Nut

(13) Install the 2 stabilizer bar bushing clamp to body attaching bolts (Fig. 12) and securely tighten.

CAUTION: When supporting lower control arm with jack stand, do not position jack stand under the ball joint cap on the lower control arm. Position in area of lower control arm shown in (Fig. 23).

(14) Lower vehicle to the ground with a jack stand positioned under the lower control arm (Fig. 23). Continue to lower vehicle so the total weight of the vehicle is supported by the jack stand and lower control arm.

(15) Tighten the shock absorber clevis to lower control arm bushing thru-bolt (Fig. 13) to a torque of 92 N·m (68 ft. lbs.).

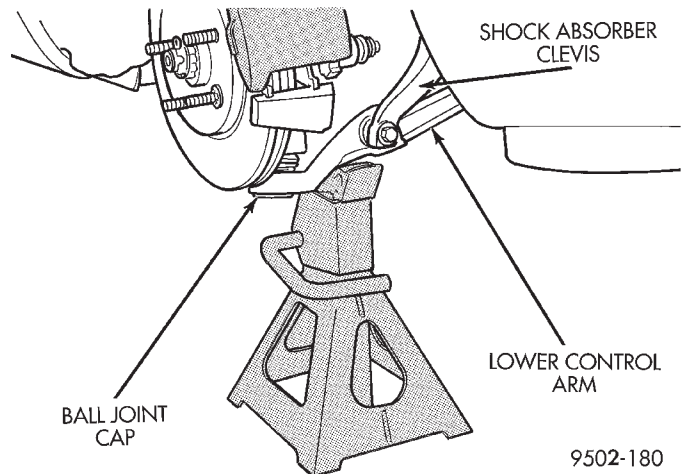


Fig. 23 Lower Control Arm Correctly Supported By Jack Stand

(16) Install the wheel and tire assemblies back on vehicle. Tighten the wheel nuts in proper sequence to a torque of 129 N·m (95 ft. lbs.) torque.

CAUTION: Before connecting steering column intermediate shaft coupler onto steering gear shaft, front wheels must be pointed straight ahead and steering wheel must be in center position.

(17) From interior of vehicle, reconnect the steering column intermediate shaft coupler on the steering gear shaft (Fig. 6). Install steering gear coupler retaining pinch bolt and torque to 27 N·m (240 in. lbs.). **Be sure to install the upper to lower steering coupler retaining bolt, retention pin.**

CAUTION: Do not use automatic transmission fluid.

(18) Fill power steering pump fluid reservoir to the (Full-Cold) proper level.

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

(20) Add fluid if necessary.

(21) Raise front wheels of vehicle off the ground.

(22) 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. **Fill pump reservoir to correct level with Mopar®, Power Steering Fluid, or equivalent.** See Checking Fluid Level.

(23) Lower front wheels of vehicle back on the ground.

CAUTION: During this procedure do not allow the steering gear inner tie rod boots to become twisted. (See Wheel Alignment in the suspension section of this service manual).

REMOVAL AND INSTALLATION (Continued)

(24) Check front alignment and adjust the front Toe setting on the vehicle. Refer to the Toe Setting Procedure in Front Suspension Service Procedures in this group of the service manual. Refer to the Specifications Section at the end of this group for the desired front Toe specification.

(25) Tighten tie rod jam nut to 74 N·m (55 ft.lbs.) torque.

(26) Adjust steering gear to tie rod boots at tie rods.

DISASSEMBLY AND ASSEMBLY

STEERING GEAR MOUNTING BOLT ISOLATOR

The removal and installation of the mounting bolt isolator must be performed with the steering gear assembly removed from the vehicle.

The steering gear mounting bolt isolators (Fig. 24) are a serviceable component of the steering gear assembly. Both isolator bushing are serviced using the same procedure listed below but only the rear mounting bushing is shown.

DISASSEMBLY

(1) Using a screwdriver, pry the sleeve out of the mounting bolt isolator (Fig. 24).

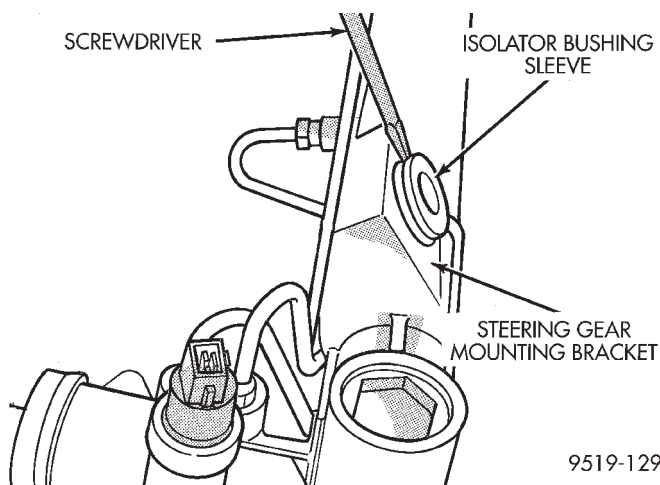


Fig. 24 Mounting Bolt Isolator Sleeve Removal

(2) Pry the mounting bolt isolator bushing from the steering gear mounting bracket.

ASSEMBLY

(1) Lubricate replacement mounting bolt isolator bushing using Mopar, Silicone Spray Lube or an equivalent.

(2) Install the mounting bolt isolator bushing into the steering gear mounting bracket from the bottom side of the bracket (Fig. 25).

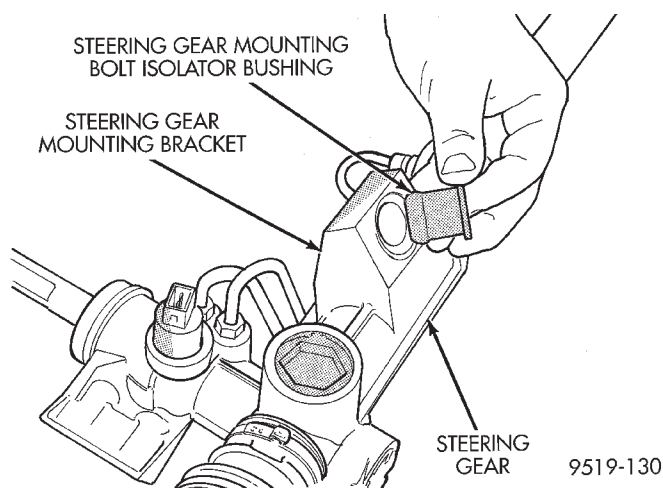


Fig. 25 Installing Mounting Bolt Isolator Bushing

(3) Install mounting bolt isolator bushing sleeve into isolator bushing by pressing the sleeve into the bushing by hand (Fig. 26).

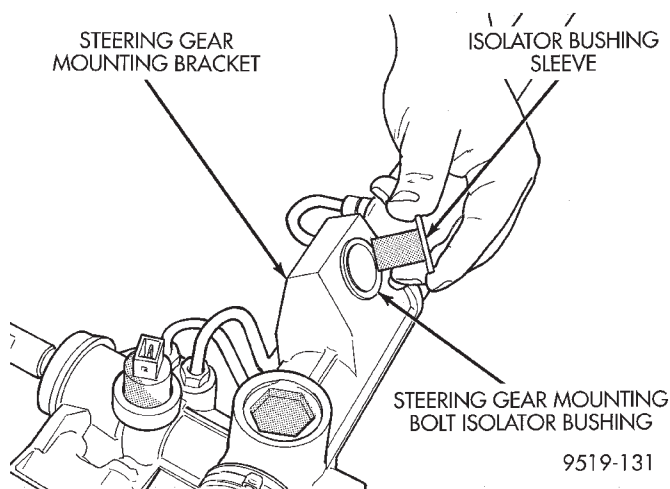


Fig. 26 Mounting Bolt Isolator Sleeve Installation

INNER TIE ROD BOOT

NOTE: The replacement of the inner tie rod to steering gear boot must be performed with the steering gear removed from the vehicle.

DISASSEMBLE

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

(2) Remove the front wheels and tires from the vehicle.

(3) Remove the steering gear from the vehicle. Refer to Power Steering Gear in the Removal And Installation Section in this group of the service manual for the required procedure.

DISASSEMBLY AND ASSEMBLY (Continued)

(4) Securely mount the steering gear in a vise or other appropriate holding fixture.

(5) Loosen the inner to outer tie rod jam nut (Fig. 27). Remove the outer tie rod from inner tie rod.

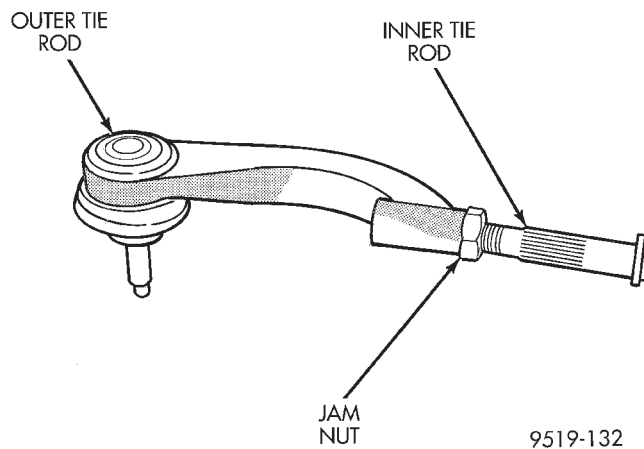


Fig. 27 Inner To Outer Tie Rod Jam Nut

(6) Remove jam nut (Fig. 27) from inner tie rod.

(7) Using pliers expand tie rod boot clamp, (Fig. 28) and remove from tie rod boot.

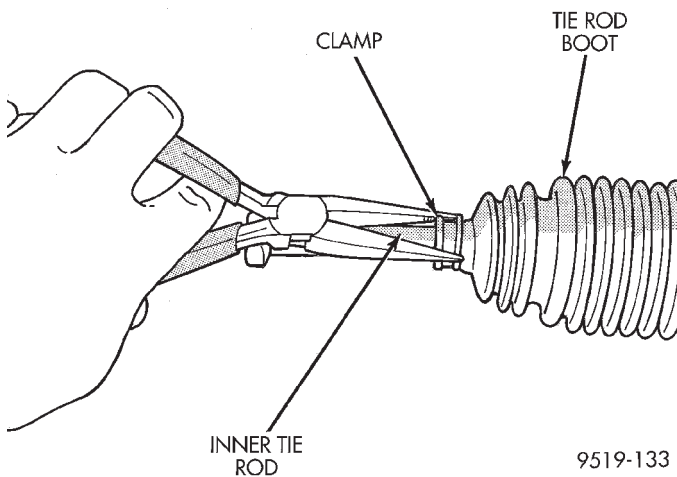


Fig. 28 Tie Rod Boot Clamp Removal

(8) Remove the tie rod boot to steering gear clamp (Fig. 29).

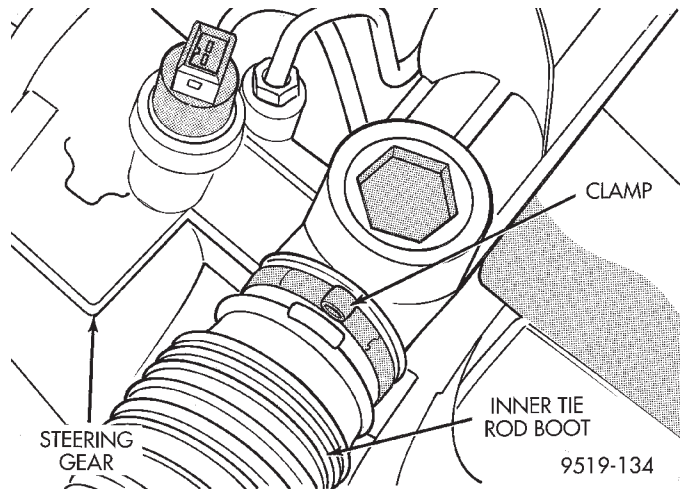


Fig. 29 Tie Rod Boot To Steering Gear Clamp

NOTE: After removing inner boot clamps. Use a very small screwdriver to lift boot from its retaining groove in steering gear. Then the boot can be removed from steering gear.

ASSEMBLE

(1) Install tie rod boot to steering gear clamp on tie rod boot. Then install tie rod boot on inner tie rod.

(2) Crimp inner tie rod boot to steering gear clamp on tie rod boot using Crimper, Special Tool, C4975-A (Fig. 30). When installing clamp, Special Tool C4975-A must have bottom bolt tightened until there is no gap between the 2 bars of the tool (Fig. 30).

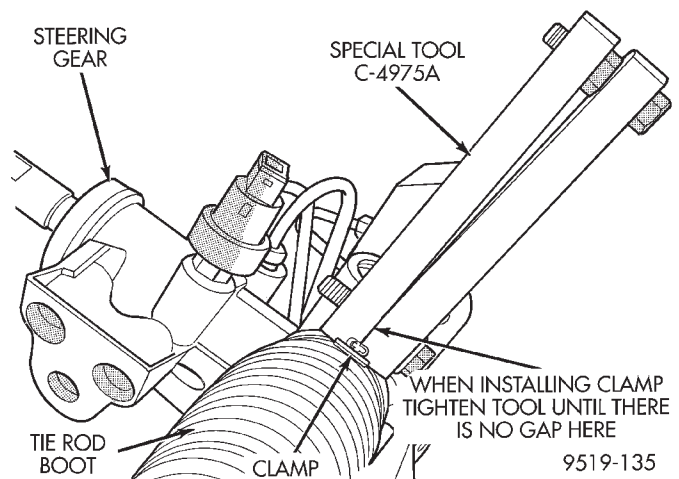


Fig. 30 Installing Tie Rod Boot To Steering Gear Clamp

DISASSEMBLY AND ASSEMBLY (Continued)

(3) Lubricate inner tie rod boot groove with silicone type lubricant, then install tie rod boot to inner tie rod clamp (Fig. 28). (Clamp will have to be loosened for toe adjustment.)

(4) Install inner to outer tie rod jam nut on inner tie rod (Fig. 27).

(5) Install outer tie rod on inner tie rod. Do not tighten jam nut.

(6) Install steering gear assembly back in the vehicle. Refer to Power Steering Gear in the Removal And Installation Section in this group of the service manual for the required procedure.

CAUTION: During this procedure do not allow the steering gear boot to become twisted. (See Wheel Alignment in the suspension section of this service manual).

(7) Make toe adjustment by turning inner tie rod.

(8) Tighten the inner to outer tie rod jam nut to 75 N·m (55 ft. lbs.) torque. Lubricate tie rod boot groove with silicone type lubricant, before installing outer boot clamp, making sure boot is not twisted.

OUTER TIE ROD END

DISASSEMBLE

(1) Loosen inner tie rod to outer tie rod jam nut (Fig. 31).

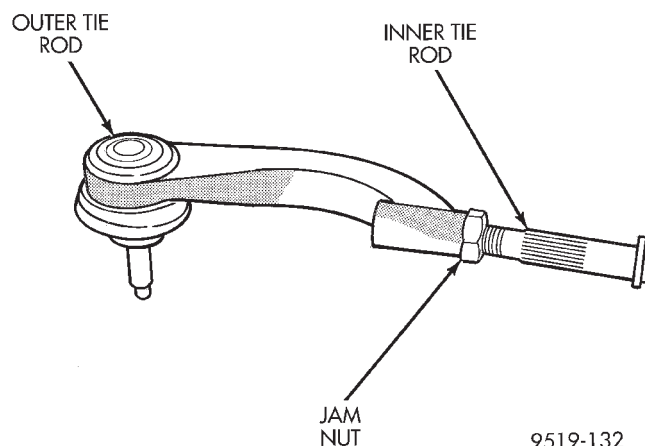


Fig. 31 Inner To Outer Tie Rod Jam Nut

(2) Remove nut attaching outer tie rod end to steering knuckle (Fig. 32). **Nut is to be removed from tie rod end using the following procedure, hold tie rod end stud with a 11/32 socket while loosening and removing nut with wrench.**

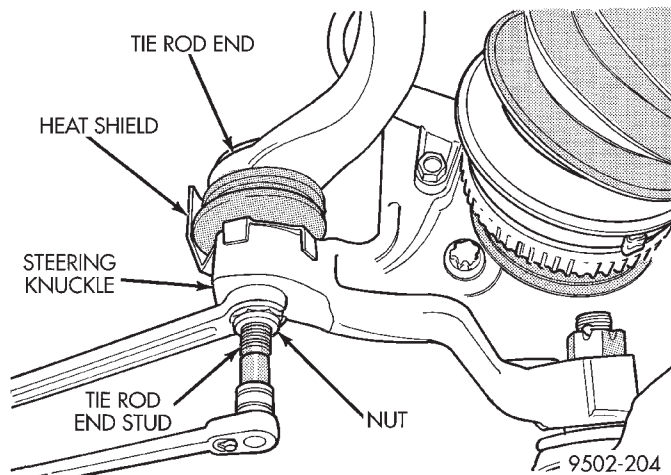


Fig. 32 Removing Tie Rod End Nut

(3) Remove tie rod end stud, from steering knuckle, using Remover, Special Tool MB-991113 (Fig. 33).

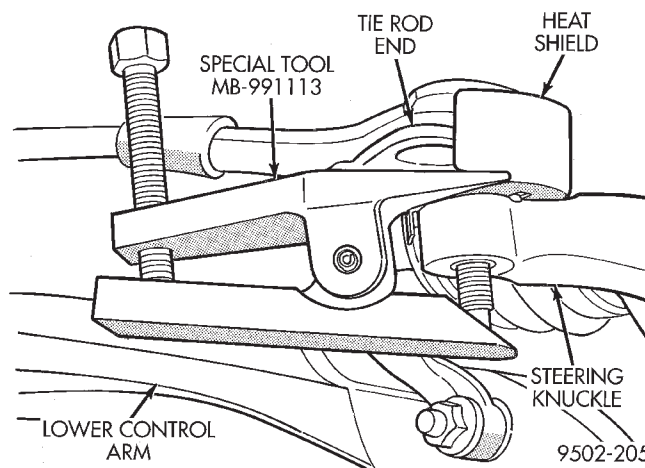


Fig. 33 Tie Rod End Removal From SteeringKnuckle

(4) Remove outer tie rod end from inner tie rod by un-threading it from the inner tie rod.

ASSEMBLE

(1) Install outer tie rod onto inner tie rod. **Make sure jam nut is on inner tie rod.**

(2) Do not tighten jam nut.

(3) Install tie rod end seal boot heat shield (Fig. 32) on the tie rod end.

DISASSEMBLY AND ASSEMBLY (Continued)

(4) Install tie rod end into the steering knuckle. Start tie rod end to steering knuckle attaching nut onto stud of tie rod end. While holding stud of tie rod end stationary, tighten tie rod end to steering knuckle attaching nut (Fig. 32). Then using a crow-foot and 11/32 socket, (Fig. 34) torque tie rod end attaching nut to 61 N·m (45 ft. lbs.).

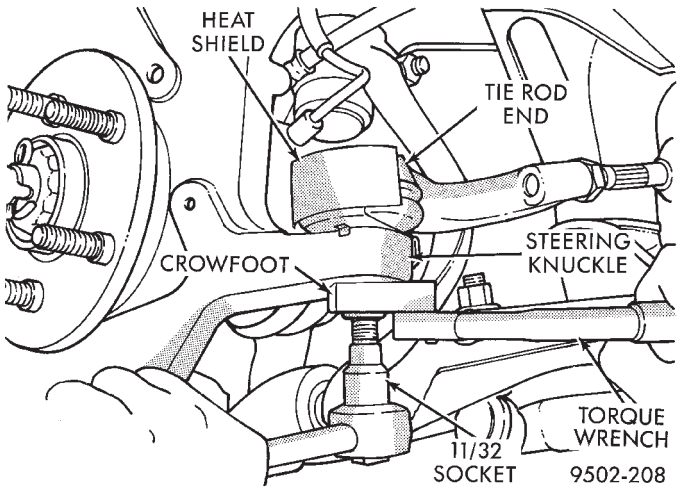


Fig. 34 Torquing Tie Rod End Attaching Nut

CAUTION: During this procedure do not allow the steering gear boot to become twisted. (See Wheel Alignment in the suspension section of this service manual).

(5) Adjust the front Toe setting on the vehicle. Refer to the Toe Setting Procedure in Front Suspension Service Procedures in this group of the service manual. Refer to the Specifications Section at the end of this group for the desired front Toe specification.

(6) Tighten tie rod jam nut (Fig. 31) to 75 N·m (55 ft. lbs.) torque.

(7) Adjust the steering gear to inner tie rod boots at inner tie rod if they became twisted during Toe adjustment.

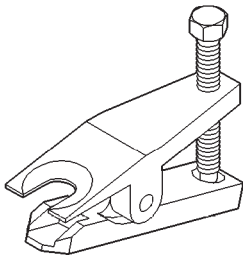
SPECIFICATIONS

STEERING GEAR FASTENER TORQUE SPECIFICATIONS

DESCRIPTION	TORQUE
STEERING GEAR:	
To Crossmember Bolts	68 N·m (50 ft. lbs.)
Tie Rod To Steering Knuckle Nut	61 N·m (45 ft. lbs.)
Outer To Inner Tie Rod Jam Nut	75 N·m (55 ft. lbs.)
Power Steering Hose Tube Nuts	31 N·m (275 in. lbs.)

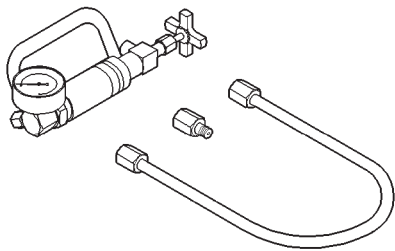
SPECIAL TOOLS

POWER STEERING GEAR



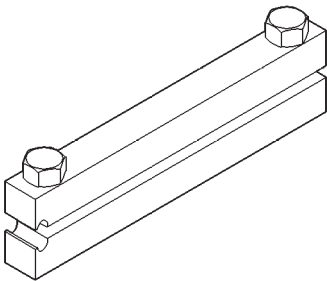
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Remover Tie Rod End MB-990635



8011c958

P/S System Analyzer 6815



Installer Boot Clamp C-4975A

SPEED PROPORTIONAL POWER STEERING GEAR

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DESCRIPTION AND OPERATION

SPEED PROPORTIONAL POWER STEERING GEAR

Available as an option or as standard equipment on certain vehicles is electronically controlled, variable-assist speed-proportional power steering (Fig. 1). Variable-assist speed-proportional power steering, provides additional steering assist while the vehicle is stationary and at slow driving speeds. This additional power steering assist reduces the steering effort required by the driver for low speed driving and parking maneuvers. Variable-assist speed-proportional power steering, then provides less power steering assist at highway speeds, to maintain the firm, responsive feel of the existing non variable-assist speed- proportional power steering system.

The operational range of the variable-assist speed-proportional power steering system, is from zero to approximately 60 mph. Maximum available power steering assist is provided at zero miles per hour. The power steering assist is then gradually reduced from vehicle speeds of greater than zero to a maxi-

imum speed of approximately 60 mph. The minimum-power steering assist available, is reached at a vehicle speed of approximately 60 mph.

Variable-assist power steering, is provided by controlling power steering fluid pressure at the power steering gear. The pressure is controlled, by regulating power steering fluid flow from the steering gear back to the power steering pump. A solenoid valve located on the steering gear (Fig. 1), is used to control power steering pressure, by varying the size of an orifice which the power steering fluid must flow through, from the steering gear back to the power steering pump.

The variable-assist speed-proportional solenoid control valve (Fig. 1) is controlled by the steering gear mounted electronic solenoid control module SCM (Fig. 1). The SCM receives the vehicle speed signal sent from the transmission control module TCM. Upon receiving the vehicle speed signal from the TCM, the SCM converts that speed signal into an electrical current usable by the solenoid control valve for controlling the variable assist of the power steering system.

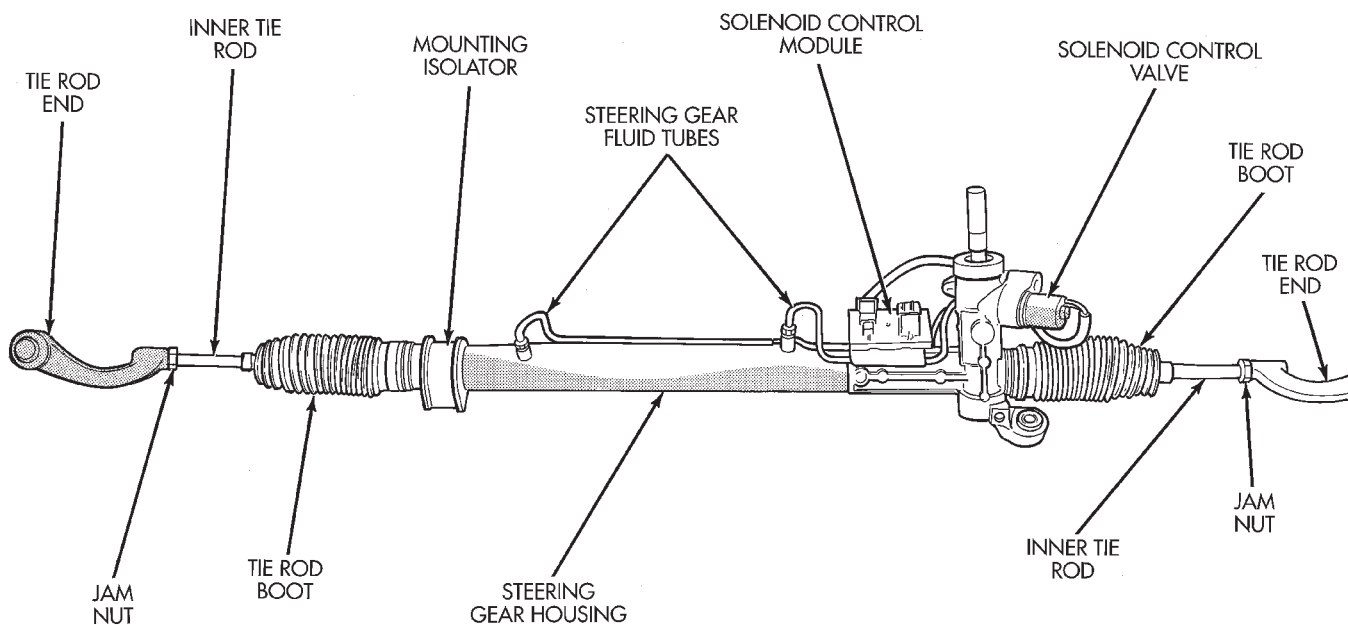


Fig. 1 Speed-Proportional Power Steering Gear Assembly

9519-136

DIAGNOSIS AND TESTING

SPEED PROPORTIONAL STEERING SYSTEM

The variable-assist speed-proportional power steering system, is diagnosed if suspected of not functioning properly, using the DRB scan tool. The test consists of checking available power steering assist, using the DRB scan tool, to create an electronically simulated vehicle speed of 0 and 60 mph. Refer to the 1996 M.Y. 41 TE Transaxle Diagnostic Procedures Manual for the specific testing procedure.

The solenoid control valve and solenoid control module are both serviceable components of the variable-assist speed-proportional power steering gear assembly. Both components are replaceable without requiring removal of the steering gear from the vehicle. Refer to the specific component service in the section for the required replacement procedures.

REMOVAL AND INSTALLATION

SOLENOID CONTROL VALVE CONTROL MODULE

The solenoid control module (Fig. 2) is mounted on the steering gear assembly fluid lines (Fig. 2) using attaching clips on back of module. The solenoid control module is removable from the steering gear for servicing, without removing steering gear from vehicle.

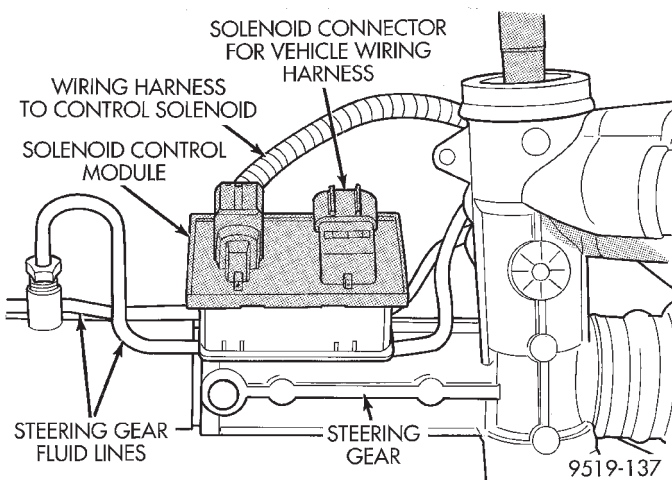


Fig. 2 Solenoid Control Module Location On Steering Gear

If the variable-assist speed-proportional power steering system is not functioning properly, refer to the 1995 M.Y. 41 TE Transaxle Diagnostic Procedures Manual for specific testing procedure, to properly determine failed component.

REMOVE

(1) Remove wiring harness connectors from solenoid control module (Fig. 2).

(2) Un-clip locking tab (Fig. 3) on bottom side of solenoid control module, holding control module to steering gear fluid lines. Then rotate control module upward and remove the upper 2 attaching clips from the steering gear fluid lines (Fig. 3).

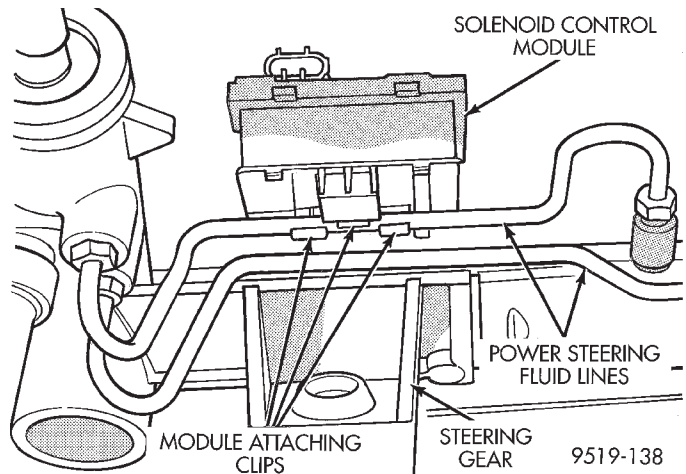


Fig. 3 Solenoid Control Module Mounting To Fluid Lines

INSTALL

(1) Hook upper tabs on solenoid control module onto upper steering gear fluid line (Fig. 3). Then rotate module downward until locking tab on bottom of module (Fig. 3) is locked on lower power steering gear fluid line.

(2) Connect wiring harness connectors onto solenoid control module (Fig. 2). **Be sure wiring harness connector seals are on connectors and in good condition before installing connectors on control module.**

SOLENOID CONTROL VALVE

If a solenoid control valve needs to be replaced on the speed proportional steering gear, the steering gear will need to be removed from the vehicle. Refer to Steering Gear Service in this section of the service manual for the required removal and replacement procedure.

REMOVAL AND INSTALLATION (Continued)

REMOVE

(1) Remove electrical connector to the solenoid control valve, at solenoid control module (Fig. 4).

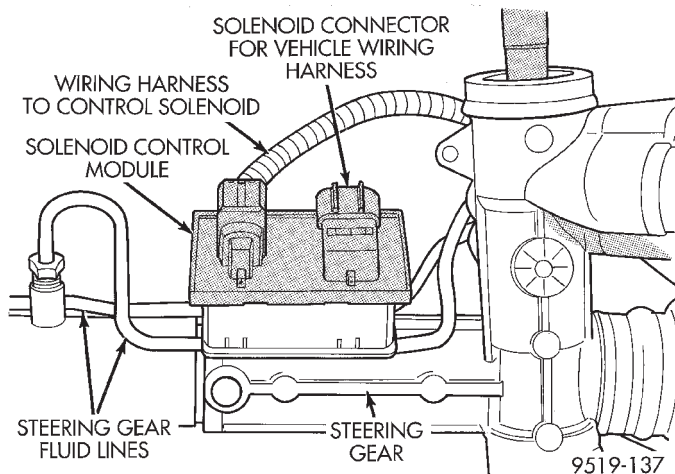


Fig. 4 Wiring Harness Connections To Solenoid Control Module

(2) Using a 1 5/16 inch crow foot loosen solenoid control valve from steering gear. Then remove solenoid control valve from power steering gear (Fig. 5).

INSTALL

(1) Inspect O-ring seals on solenoid control valve to be sure they are not damaged. If O-rings are not damaged, moisten O-rings using **only** fresh clean Mopar, Power Steering Fluid or equivalent.

(2) Install solenoid control valve into steering gear by hand, until solenoid is fully seated into the steering gear (Fig. 5).

(3) Using a 1 5/16 inch crow foot torque the solenoid control valve to 14 N·m (124 in. lbs.).

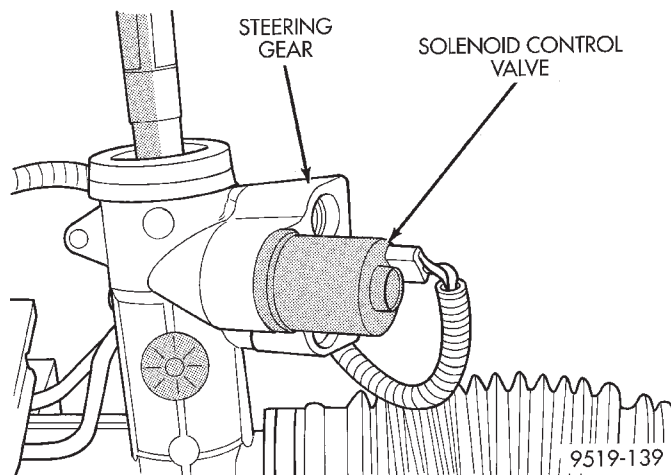


Fig. 5 Steering Gear Solenoid Control Valve

(4) Connect wiring harness connector from solenoid control valve onto solenoid control module (Fig. 4). **Be sure wiring harness connector seal are on connector is in good condition before installing connector on control module.**

(5) Road test vehicle or refer to the test using the DRB scan tool, to confirm correct operation of the variable-assist speed-proportional power steering gear.

SPEED PROPORTIONAL POWER STEERING GEAR

If the variable-assist speed-proportional power steering gear requires removal from the vehicle for servicing or replacement, refer to the standard power steering gear removal procedure in this section of the service manual.

STEERING COLUMN

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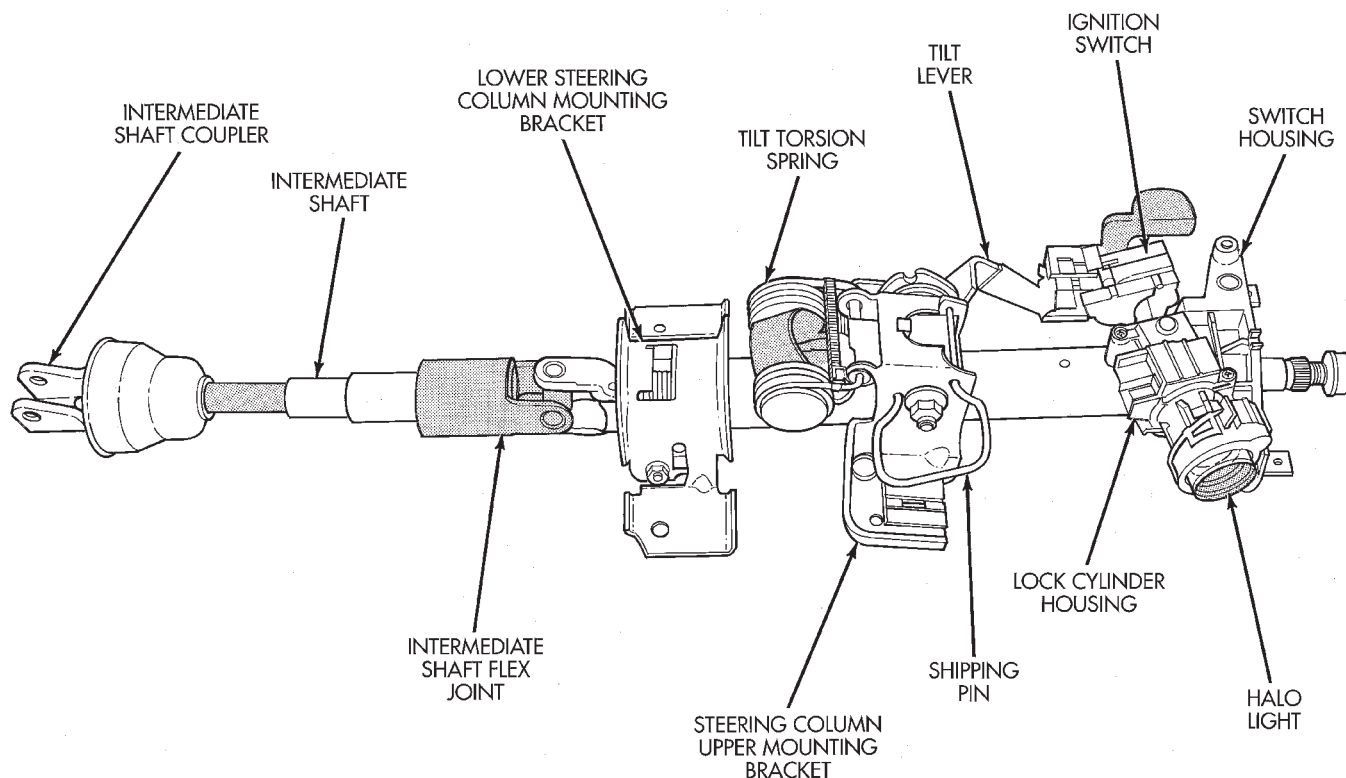
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DESCRIPTION AND OPERATION

STEERING COLUMN ASSEMBLY

The steering column used in this vehicle (Fig. 1) has been designed to be serviced only as a complete assembly if a component of the steering column is determined to be defective. The replaceable components of the steering column assembly, are the key

cylinder, ignition switch, multi-function switch, clock spring, speed control switches, halo lamp, trim shrouds, driver air bag and steering wheel. These replaceable components of the steering column, can be serviced without requiring removal of the steering column from the vehicle.



9519-140

Fig. 1 Tilt Steering Column Assembly

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.

STEERING GEAR TO STEERING COLUMN INTERMEDIATE COUPLER

The steering column coupler **MUST** be inspected whenever a vehicle is involved in an impact or whenever any of the following conditions exist.

(1) The steering column coupler must be inspected 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 vehicle's front suspension or under carriage, which results in any type of damage to the front suspension cross-member.

(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 FLEX COUPLER

If the steering column shaft flex 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.

The steering column assembly needs to be removed from the vehicle for replacement of the steering column shaft flex coupler 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.

REMOVAL AND INSTALLATION

STEERING COLUMN ASSEMBLY

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

REMOVAL AND INSTALLATION (Continued)

REMOVE

(1) Remove remote ground cable (Fig. 2) from ground stud on shock tower. Then correctly isolate ground cable from vehicle by installing isolator on stud (Fig. 3).

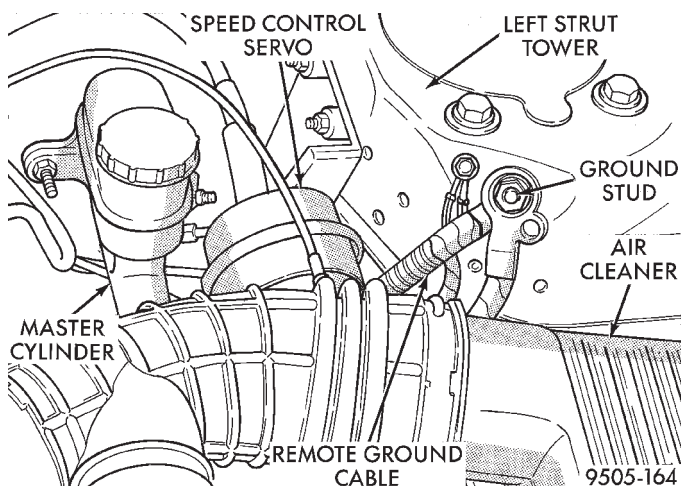


Fig. 2 Remote Ground Cable At Shock Tower

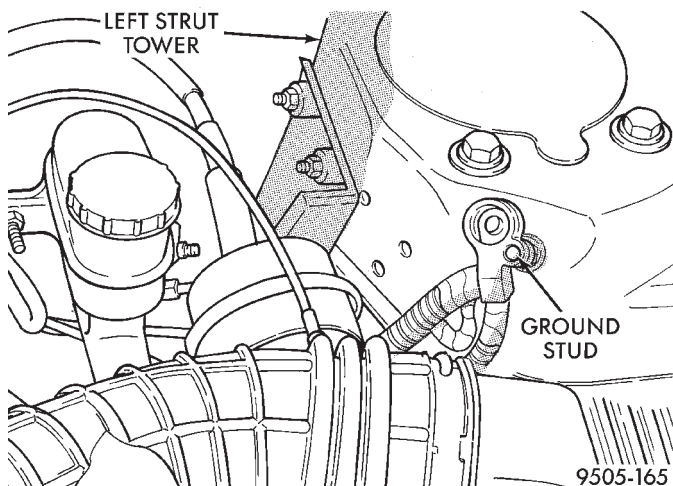


Fig. 3 Correctly Isolated Remote Ground Cable

(2) **Wait for a minimum of 2 minutes before starting to remove air bag from steering wheel. This will allow the airbag system capacitor to de-energize.**

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

(4) Remove fuse panel cover from left end of instrument panel (Fig. 4). Then remove the screw behind fuse panel cover, attaching the instrument panel top cover (Fig. 4).

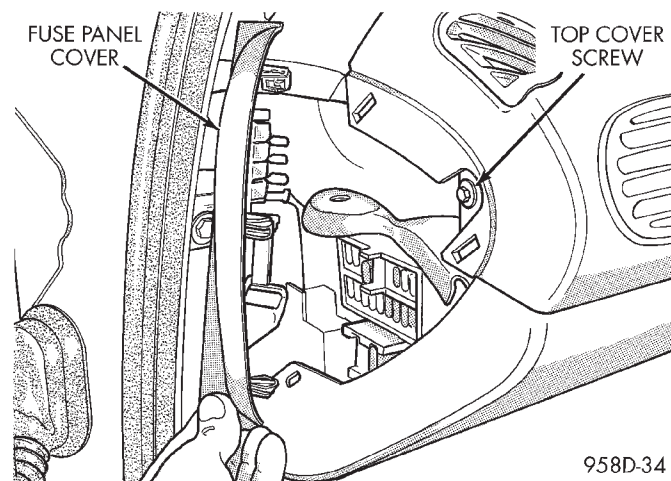


Fig. 4 Instrument Panel Top Cover Attaching Screw

(5) Remove center bezel surrounding radio and climate control panel from top cover of instrument panel (Fig. 5).

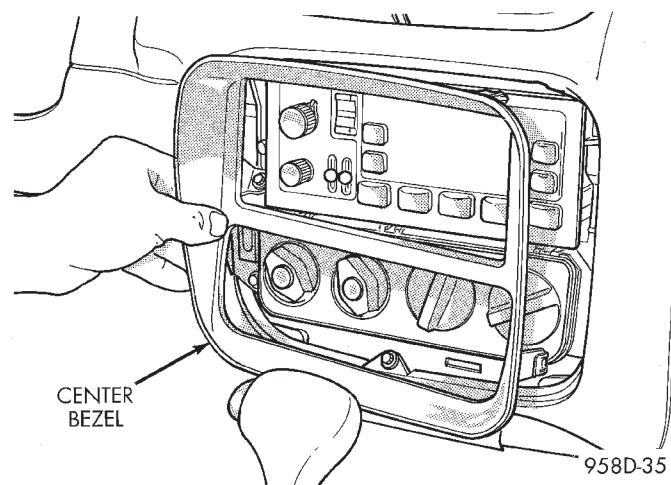


Fig. 5 Center Bezel

REMOVAL AND INSTALLATION (Continued)

(6) Remove screws attaching the instrument panel top cover to the instrument panel (Fig. 6).

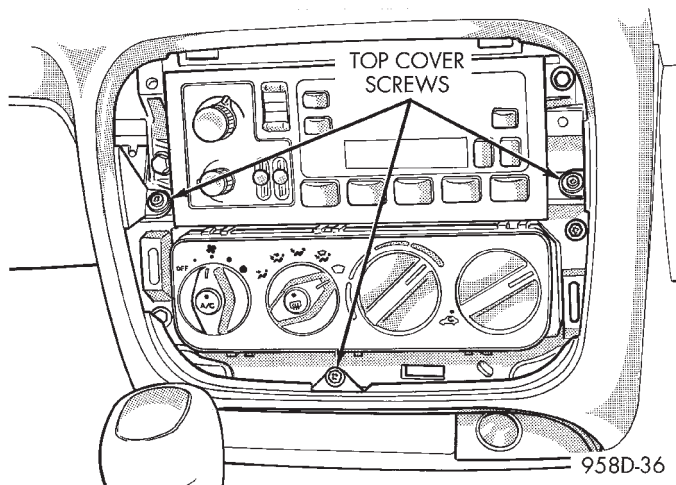


Fig. 6 Instrument Panel Top Cover Attaching Screws

(7) Remove top cover from instrument panel to gain access to knee bolster attaching screws.

(8) Remove screws attaching the knee bolster to the instrument panel (Fig. 7).

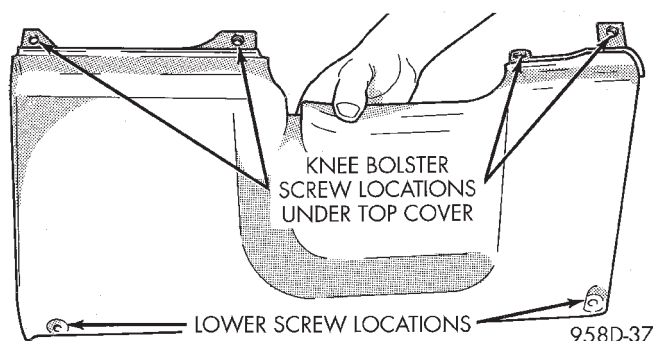


Fig. 7 Knee Bolster Attaching Screw Locations

WARNING: WHEN AN UNDEPLOYED AIR BAG 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 AIR BAG REMOVAL.

(9) Remove the 2 Torx-Head fasteners, 1 on each side of steering wheel, attaching air bag module to steering wheel.

WARNING: WHEN HANDLING AN UNDEPLOYED AIR BAG 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 AIR BAG MODULE. WHEN CARRYING A LIVE MODULE, THE TRIM COVER SHOULD BE POINTED AWAY FROM THE BODY TO MINIMIZE INJURY IF MODULE ACCIDENTLY DEPLOYS. IF AIR BAG MODULE IS PLACED ON A BENCH OR OTHER SURFACE, PLASTIC COVER SHOULD BE FACE UP TO MINIMIZE MOVEMENT IN CASE OF ACCIDENTAL DEPLOYMENT.

(10) Remove air bag module from center of steering wheel.

(11) Remove lock from clockspring air bag electrical lead connector (Fig. 8). Then disconnect clockspring electrical lead connector from the back of the air bag module (Fig. 8).

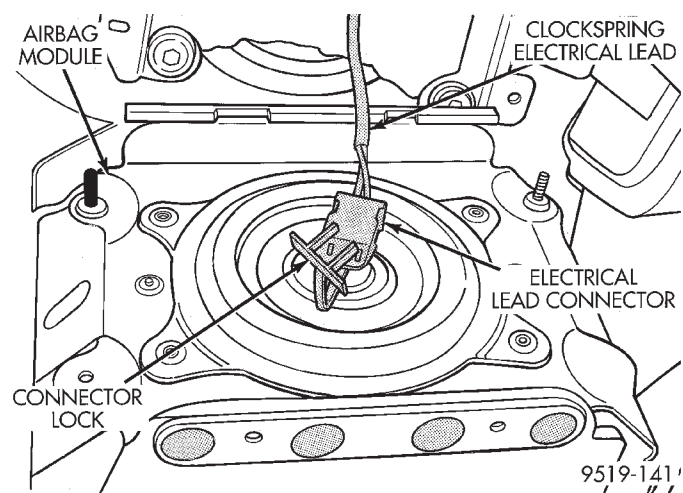


Fig. 8 Air Bag Module Electrical Lead

(12) Remove the screws on rear of steering wheel attaching the speed control switches to the steering wheel. Then remove speed control switches from steering wheel.

REMOVAL AND INSTALLATION (Continued)

(13) Disconnect the clockspring, horn ground wire from airbag mounting bracket in steering wheel (Fig. 9).

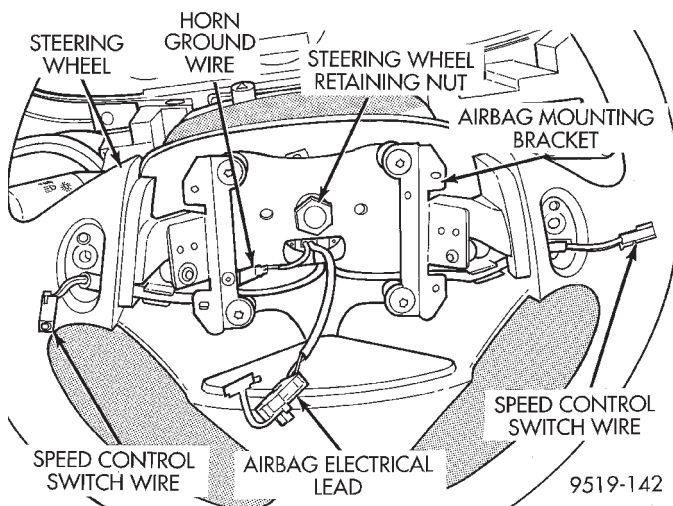


Fig. 9 Steering Wheel Wire Routing And RetainingNut

(14) Remove the steering wheel retaining nut (Fig. 9).

CAUTION: When installing Puller, Special Tool C-3428-B on steering wheel, be sure puller bolts are fully seated in the threaded puller holes in steering wheel. If bolts are not fully seated in threaded holes, threads may be stripped out of steering wheel when puller is tightened to remove steering wheel.

(15) Install Puller, Snap-On CJ2001P or an equivalent on steering wheel (Fig. 10).

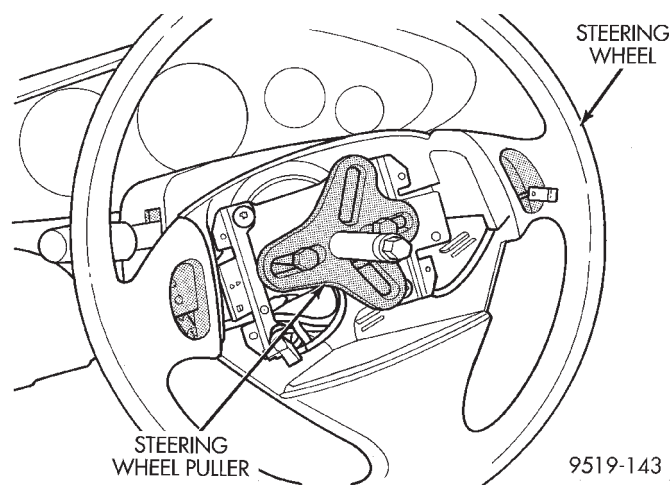


Fig. 10 Puller Installed On Steering Wheel

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

(16) Remove steering wheel assembly from steering column shaft using Puller, Snap-On CJ2001P or an equivalent.

(17) Remove the 2 screws attaching the upper and lower shrouds to the steering column (Fig. 11). First remove upper shroud from steering column, then release tilt lever and tilt steering column to its highest point. Then remove lower shroud from steering column.

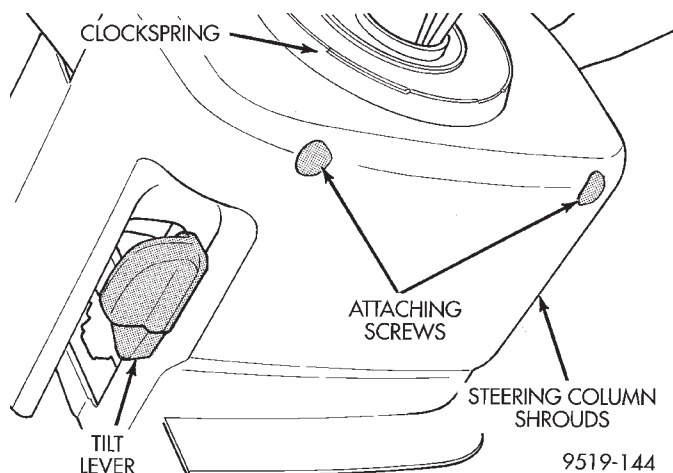


Fig. 11 Steering Column Shroud AttachingScrews

(18) Remove the 2 wiring harness connectors from the clockspring (Fig. 12). Then remove wiring harness connector from lock housing halo light (Fig. 12).

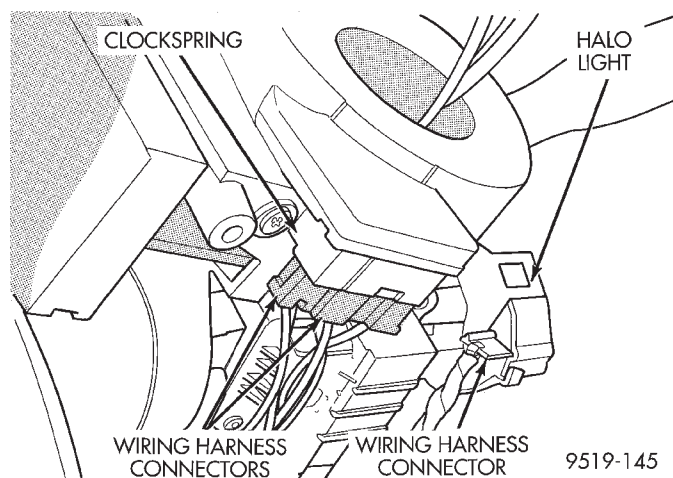


Fig. 12 Wiring Harness Connection To ClockSpring And Halo Light

REMOVAL AND INSTALLATION (Continued)

(19) Remove the multi and 2 wire wiring harness connectors from the back of the ignition switch (Fig. 13). Then remove the 2 wiring harness connector from the multi function switch (Fig. 13) and (Fig. 14).

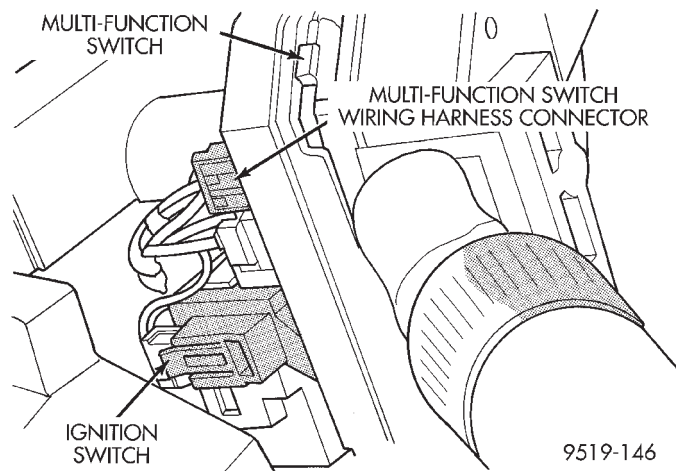


Fig. 13 Wiring Harness Connections To Ignition And Multi-Function Switch

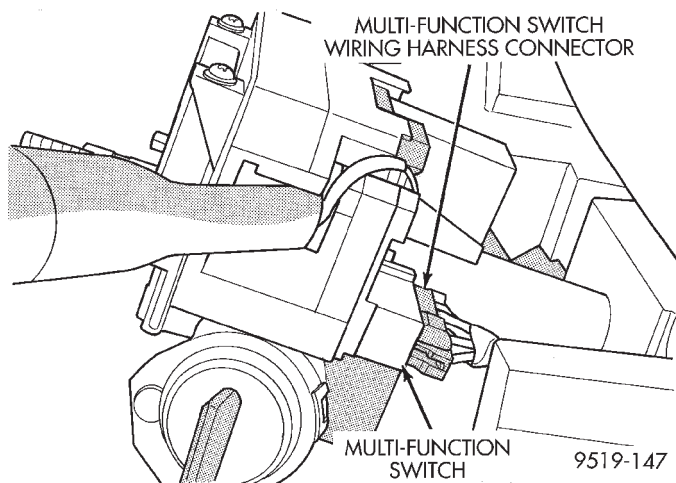


Fig. 14 Wiring Harness Connection To Multi-Function Switch

(20) If vehicle is equipped with an automatic transaxle, rotate the key cylinder to the off position. Depress locking tab on shifter/ignition interlock cable (Fig. 15) and remove the cable from the key lock housing.

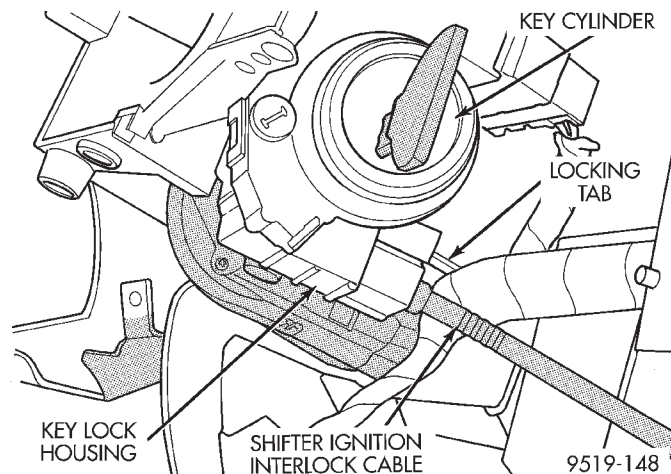


Fig. 15 Shifter/Ignition Cable At Lock Cylinder Housing

(21) Remove routing clip holding wiring harness to jacket of steering column.

(22) Remove retaining pin in steering column coupler pinch bolt (Fig. 16). Loosen the upper to lower steering coupler pinch bolt retaining nut and remove pinch bolt from steering coupler (Fig. 16). **Pinch bolt nut is caged to coupler and is not removable.** Then separate steering coupler from steering gear.

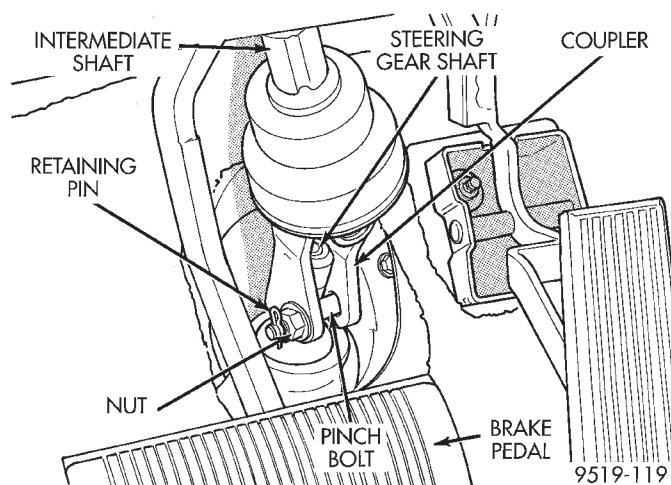


Fig. 16 Intermediate Shaft Coupler To Steering Gear Shaft

REMOVAL AND INSTALLATION (Continued)

CAUTION: Before loosening the upper and lower steering column mounting bracket attaching nuts, the following procedure to lock upper steering column mounting bracket from moving must be done. If upper steering column mounting bracket is not locked in its proper position before loosening the mounting nuts, the tilt steering column will not operate correctly when installed back in car. This is due to the alignment of the upper mounting bracket assembly slipping when the mounting bolts are loosened.

(23) Place steering column so it is positioned in the middle of its tilt range. Place the steering column assembly tilt lever in its fully locked position. Then insert a 5/32 inch drill bit in each locking pin hole on the upper steering column mounting bracket (Fig. 17).

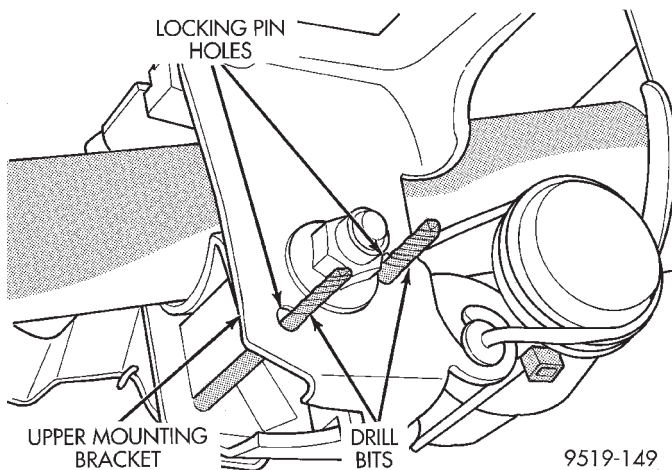


Fig. 17 Locking Pins Installed In Steering Column Bracket

(24) Remove the 2 upper steering column assembly mounting bracket to support bracket nuts. Then remove the 2 lower steering column assembly mounting bracket to support bracket nuts (Fig. 18).

(25) Remove steering column assembly from vehicle through the drivers door of the passenger compartment. Use care to avoid damaging the paint or interior trim.

INSTALL

(1) Install steering column on the studs in the steering column support bracket. Loosely install the 4 steering column assembly attaching nuts.

(2) Tighten the 2 lower steering column assembly mounting nuts to hold the steering column in place. Be sure both breakaway capsules are still fully seated in the slots of the upper steering column mounting bracket and the mounting studs are centered for and aft in the plastic capsules (Fig. 19). Then equally tighten both steering column mounting

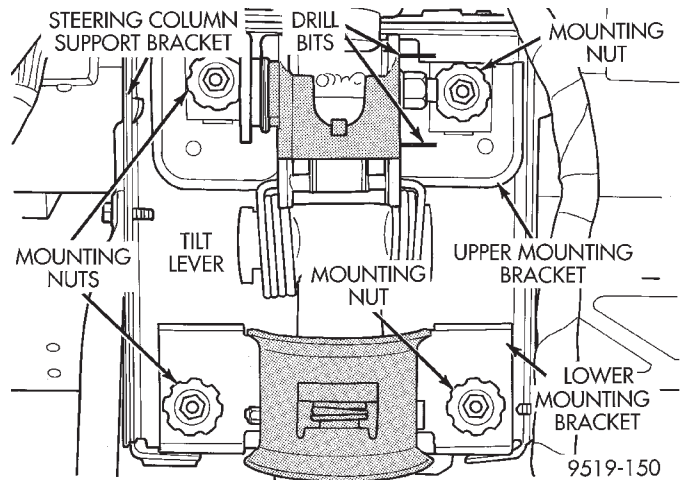


Fig. 18 Steering Column Upper And Lower Mounting Bracket Nuts

nuts, until upper steering column mounting bracket is seated against support bracket. Tighten the 4 steering column bracket to support bracket nuts to 12 N·m (105 in. lbs.).

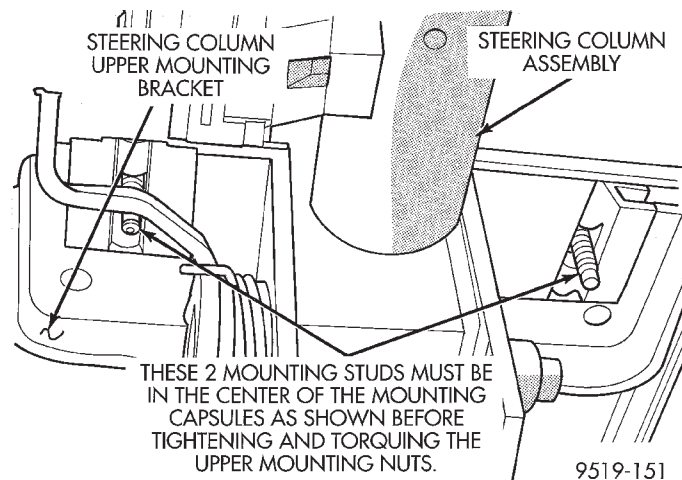


Fig. 19 Mounting Studs Correctly Positioned In Plastic Capsules

CAUTION: Be sure drill bits are removed from steering column upper mounting bracket.

(3) Remove the 2 drill bits (Fig. 17) from the steering column upper mounting bracket. **If a new steering column is being installed in the vehicle, remove the shipping (grenade) pin from steering column upper mounting bracket.**

(4) Ensure front wheels of vehicle are positioned straight-ahead, and steering wheel master serration in steering column shaft is positioned at 12 O Clock. Then assemble the lower intermediate shaft coupler to the steering gear input shaft. 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 (Fig. 16).**

REMOVAL AND INSTALLATION (Continued)

(5) If vehicle is equipped with an automatic transaxle, install the shifter/ignition interlock cable (Fig. 15) in the lock cylinder housing.

(6) Route wiring harness on steering column and install routing clip in bottom of steering column jacket.

(7) Install multi and 2 wire wiring harness connectors on the back of the ignition switch (Fig. 13). Then install the 2 wiring harness connectors on the multi function switch (Fig. 13) and (Fig. 14).

(8) Install clockspring on switch housing. Install the 2 wiring harness connectors on the clockspring (Fig. 12). Then install wiring harness connector on lock housing halo light (Fig. 12).

(9) Install the upper and lower steering column shrouds onto the lock housing of the steering column assembly. Install and securely tighten the 2 upper to lower steering column shroud to lock housing attaching screws (Fig. 11).

CAUTION: 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 rotor must be pointing at the centering window.

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

- Depress the 2 plastic locking pins 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 rotor will be pointing at yellow window on clock spring.
- 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.

(11) Feed clockspring wiring leads through hole in steering wheel (Fig. 9). Position steering wheel on shaft of steering column assembly, making sure to fit flats on hub of steering wheel with formations on inside of clockspring.

(12) Connect the horn ground wire from the clockspring on the airbag mounting bracket in steering wheel (Fig. 9).

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

(14) Correctly route the speed control switch wiring leads from the clockspring to switch openings in steering wheel (Fig. 9).

(15) Connect the clockspring electrical leads to the speed control switches. Install the speed control switches in the steering wheel. Install and securely tighten screws attaching the speed control switches to the steering wheel.

(16) Push the speed control wires into the wire retaining channels on the steering wheel (Fig. 9).

(17) Install air bag electrical lead from clockspring, into connector on back of air bag module. Insert locking tab into back of air bag connector (Fig. 8). **Be sure electrical connector from clockspring is securely latched into air bag module connector.**

CAUTION: The fasteners, screws, and bolts, originally used for the air bag components are specifically designed for the air bag 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.

(18) Install air bag module into center of steering wheel. Align air bag module locating pins with the mating hole and slot in the steering wheel. Install **only the 2 original or correct replacement** air bag module attaching bolts. Torque the 2 air bag module attaching bolts to 10 N·m (90 in. lbs.).

(19) Install key lock cylinder into lock housing. Key lock cylinder is installed by positioning key cylinder in the run position so retaining tab can be depressed and the pushing key cylinder into lock housing until retaining tab locks into key lock cylinder.

(20) Install lower instrument panel knee bolster onto the lower instrument panel. Install and securely tighten the knee bolster to instrument panel attaching screws (Fig. 7).

(21) Install the instrument panel top cover.

(22) Install screw behind fuse panel cover holding instrument panel top cover (Fig. 4). Install fuse panel cover on left end of instrument panel.

(23) Install screws holding instrument panel top cover to center of instrument panel (Fig. 6).

(24) Install center bezel surrounding radio and climate control panel from top cover of instrument panel (Fig. 5).

REMOVAL AND INSTALLATION (Continued)

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

(25) Reconnecting of the battery negative cable is to be done using the steps in the procedure listed below.

- Remove forward console or cover as necessary.
- Connect DRB scan tool to ASDM diagnostic 6-way connector, located at right side of the ASDM module.
- 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 air bag lamp. It should go on for six to eight seconds, then go out. This will indicate that the air bag system is functioning normally.

(26) **If air bag warning lamp fails to light, blinks on and off or goes on and stays on, there is an air bag system malfunction.** Refer to the Passive Restraint Diagnostic Test Manual to diagnose the system malfunction.

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

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

STEERING COLUMN SHAFT FLEX COUPLER

If lower steering column shaft coupler is diagnosed to be defective by showing any of the following conditions (seized bearing, loose bearing stake or a bearing not fully seated in yoke) the intermediate shaft can be serviced as a separate component of the steering column assembly.

The steering column assembly will need to be removed from the interior of the vehicle to allow for replacement of the steering column shaft coupler assembly.

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 joint and install knurled nut (Fig. 20).

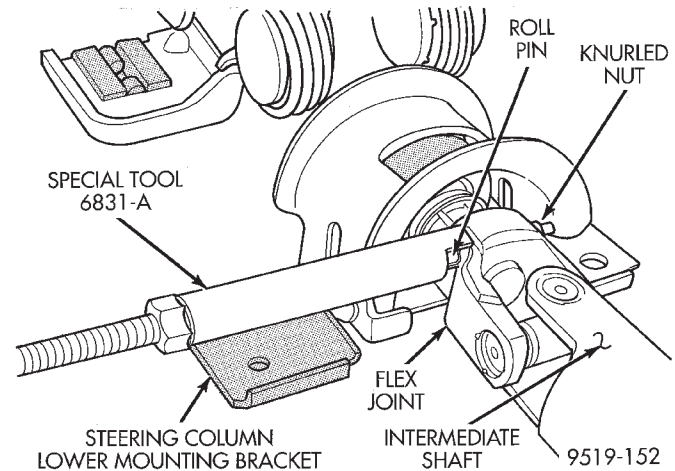


Fig. 20 Removing Roll Pin From Flex Joint

(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 flex joint.

(4) Using a screwdriver inserted between the flex joint and the steering column lower mounting bracket (Fig. 21) pry flex joint off steering column shaft.

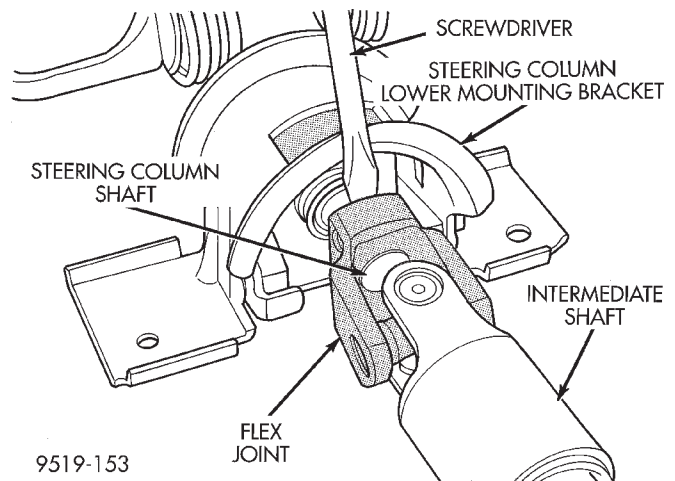


Fig. 21 Removing Flex Joint From Steering Column Shaft

INSTALL

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

REMOVAL AND INSTALLATION (Continued)

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

(3) Install Puller, Special Tool 6831-A through center of roll pin and install knurled nut (Fig. 22).

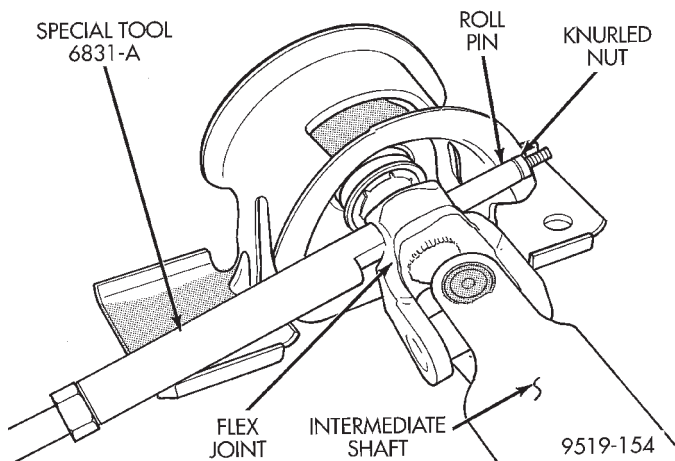


Fig. 22 Tool Set-Up For Installing Flex Joint Roll Pin

(4) Using Puller, Special Tool, 6831-A, (Fig. 22) install roll pin into the coupler until spring pin is fully installed through both sides of the coupler assembly.

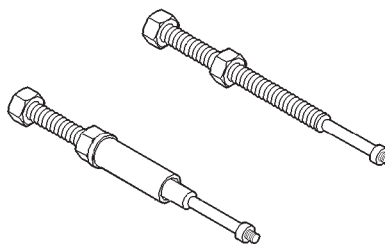
SPECIFICATIONS

STEERING COLUMN FASTENER TORQUE SPECIFICATIONS

DESCRIPTION	TORQUE
STEERING WHEEL:	
Retaining Nut	61 N·m (45 ft. lbs.)
STEERING COLUMN ASSEMBLY:	
Mounting Bracket Attaching Nuts	12 N·m (105 in. lbs.)
Flex Coupler Pinch Bolt	27 N·m (240 in. lbs.)
Airbag Module Attaching Nuts	10 N·m (90 in. lbs.)

SPECIAL TOOLS

STEERING COLUMN



Remover / Installer Steering Shaft Roll Pin 6831A