

Power Steering

AUDI POWER-ASSISTED RACK & PINION

100

DESCRIPTION

A power-assisted rack and pinion steering gear is used as optional equipment on Audi 100 models. The rack and pinion gear gains power assist from a rotary piston pinion gear assembly, a high-pressure oil pump, and an oil reservoir. The pump is mounted on the front of the engine and is belt driven. The oil reservoir is mounted near the firewall and is connected to the pump and to the gear by hydraulic fluid hoses and lines.

CHECKING

OIL LEVEL

Before troubleshooting the steering system, check oil level. Insufficient oil may cause noise and other defects in system. Check oil level with engine running. Also check for leaks in system as follows: Turn wheel to stop and hold in this position to build system pressure, then check all hoses, lines, and components for leaks. Ensure proper belt tension at this time.

SYSTEM PRESSURE CHECK

Installing Pressure Gauge — Install a 0-1450 psi (0-100 atm) pressure gauge in line between power steering pump and piston rotary valve. Gauge must be equipped with a cutoff valve.

Checking Oil Pump — With engine running at idle, close cutoff valve and read gauge pressure. **CAUTION** — Do not close valve for longer than ten seconds or excessive heat buildup in pump will occur. Pressure reading on gauge must be 540-1166 psi (67-80 atm). If outside range, check operation of pressure and flow control valve. Repair or replace valve as required. If pressure is still too low, replace pump.

Checking Rotary Piston Valve — With engine at idle, turn wheel to right lock and then turn slightly farther until final wheel stop is attained (this will require a slight force on the steering wheel. Read gauge pressure. Repeat procedure and reading at left stop. If pressure reading at either side is less than previously measured maximum pump pressure, the oil discharge in the rotary piston valve or working cylinder is too high and one or both must be replaced.

REMOVAL & INSTALLATION

STEERING GEAR

Removal — 1) If vehicle is equipped with automatic transmission, perform the following in addition to regular removal procedures described below: Drain oil, disconnect lines at steering rack, and detach steering column at gear housing. Remove power brake unit (if vehicle is equipped with brake vent jets on both sides only). Detach brake hose at adaptors on transmission. Remove rear transmission crossmember. Detach front engine support bearing and lower engine (also remove stabilizer if necessary).

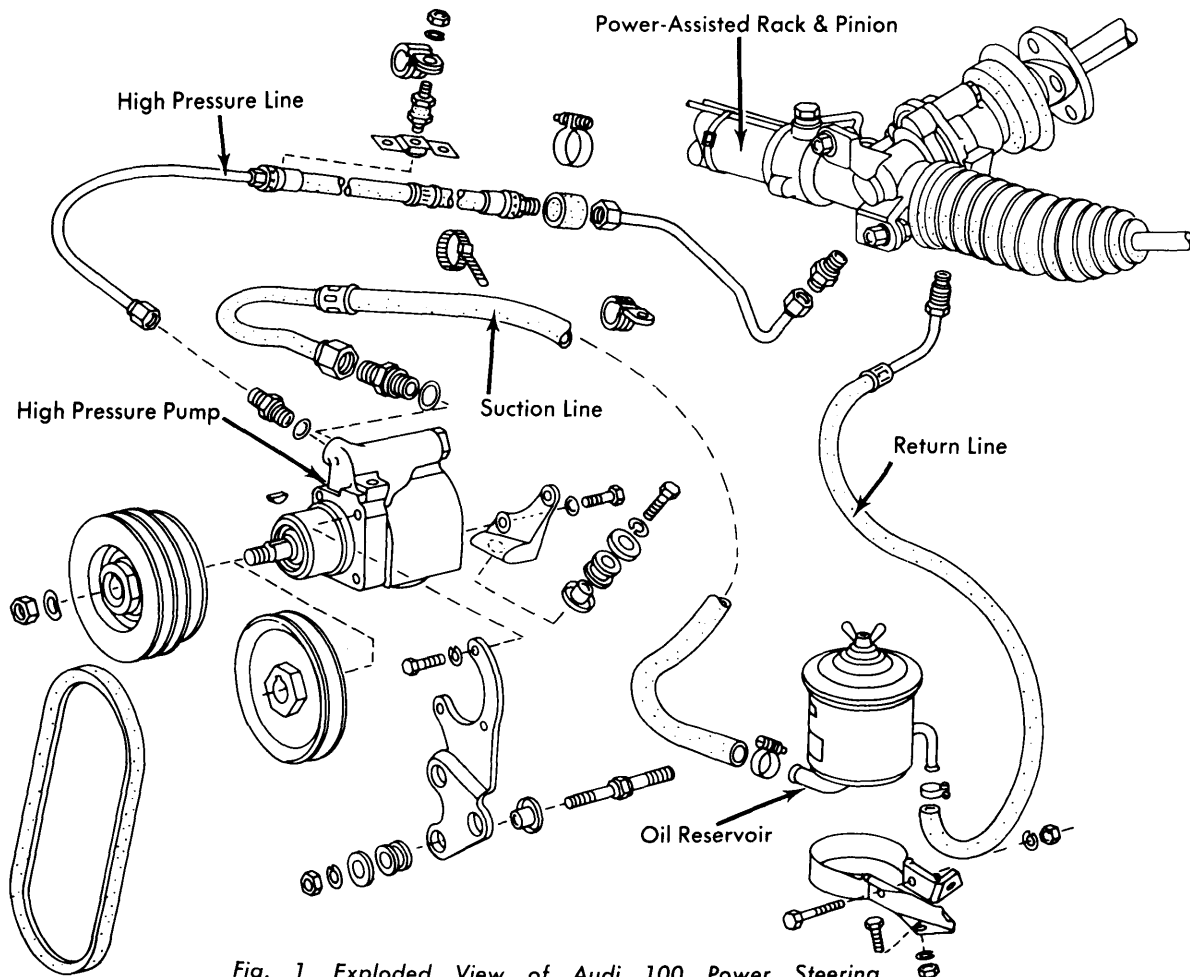


Fig. 1 Exploded View of Audi 100 Power Steering

AUDI POWER-ASSISTED RACK & PINION (Cont.)

2) For vehicles equipped with air conditioning, note the following additional procedures which must be performed (without disconnecting A/C hoses) before removal of gear assembly may be attempted: Disconnect activated carbon container, air cleaner, and other vacuum hoses obstructing work. Bend open or unscrew A/C hose mounting parts. Disconnect thermostat. Unscrew evaporator cover. Disconnect and remove blower motor. Pull temperature sensor out of evaporator. Remove evaporator (two screws on top, two screws inside). Place unit on carburetor. Detach accelerator linkage.

3) On vehicles without air conditioning and/or automatic transmission, or after having performed necessary operations as previously described, the following general removal procedure applies: Drain oil. Disconnect and plug pressure lines. Pry both tie rods from steering knuckles using suitable tool (VW 266 H). Detach steering from crossmember. Disconnect steering column from gear at flexible coupling. Loosen tube connection and pull off tube. Disconnect accelerator linkage connection. Slide gear assembly into right wheel housing, then up and out of vehicle.

Installation & Adjustment — To install, reverse removal procedure, then perform adjustment as follows: Bolt steering to outer steering tube. Attach gear to crossmember, but do not tighten bolts. Loosen upper control arm mounting bolts on both sides and install special steering gauge 41-102 so that gauge rests firmly on upper control arm (see Steering Gauge

Installation illustration). Turn rack until it rests on ruler of gauge. Adjust other side in same manner and tighten mounting bolts to 18 ft. lbs. (2.5 mkg).

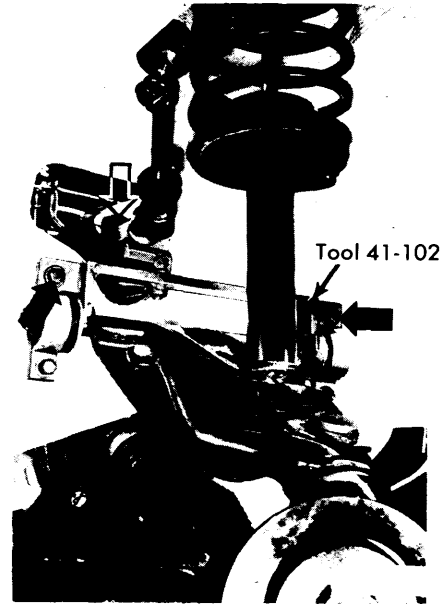


Fig. 2 Steering Gauge Installed on Upper Control Arm