

STEERING GEAR - POWER

Article Text

1989 Volkswagen Golf

For Volkswagen Technical Site

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ARTICLE BEGINNING

1989-90 STEERING

Volkswagen - Power Rack & Pinion

Cabriolet, Golf, GTI, Jetta, Jetta GLI, Vanagon

DESCRIPTION

The system consists of a vane pump, rotary piston pinion gear assembly and an oil reservoir. The vane pump draws fluid from the reservoir and supplies it to the flow control valve. The control valve supplies fluid to the proper side of the rack-piston.

LUBRICATION SPECIFICATIONS

CAPACITY

Fluid capacity is 1 qt. (.95L).

FLUID TYPE

Recommended fluid type is ATF Dexron II.

FLUID LEVEL CHECK

Remove reservoir cover. Start engine and let idle. Fluid level should be at mark on upper inside of reservoir.

HYDRAULIC SYSTEM BLEEDING

1) Start engine and let idle. Ensure fluid is at proper level. Turn steering wheel lock-to-lock several times quickly.

2) Continue until fluid level remains at reservoir mark. Ensure no bubbles appear in reservoir when steering wheel is turned. Shut off engine. Ensure oil level does not rise more than 3/8" above mark.

OIL FILTER REPLACEMENT

Remove outer cover, gasket and spring from reservoir mark. Remove inner filter cover and filter insert. Install new filter, replace filter cover, spring, gasket, and top cover. Check fluid level.

NOTE: Oil filter insert must be replaced whenever repairs are made to power steering system.

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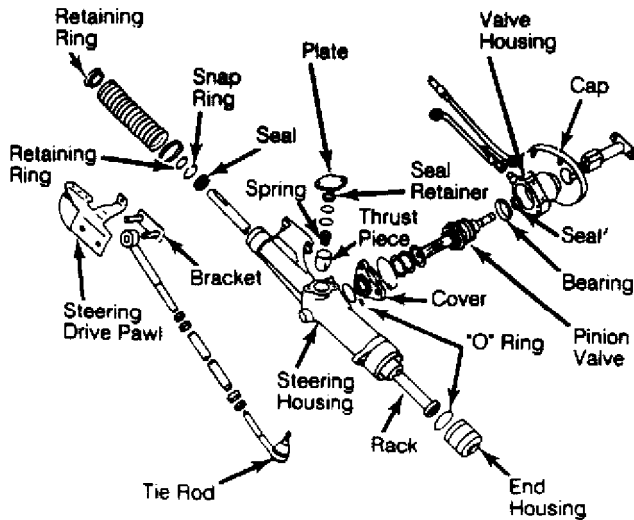


Fig. 1: Exploded View of Typical Power Steering Gear
Courtesy of Volkswagen United States, Inc.

POWER STEERING PUMP BELT TENSION ADJUSTMENT

Loosen nuts on pump mounting bracket. Turn adjusting bolt on bracket until belt deflection is 3/8" at center of belt. Tighten nuts to specification.

SYSTEM PRESSURE TEST

1) Install Pressure Gauge (US1074 B) between pressure hose and pressure pipe of valve housing. Open pressure gauge valve. Run engine at idle. Turn steering wheel lock-to-lock several times.

2) Pressure should be 1100-1200 psi (77.83-84.36 kg/cm²). If pressure is not within limits, check pump pressure. If pump is good, replace steering gear.

PUMP PRESSURE TEST

1) Install Pressure Gauge (US1074 B) between pressure hose and pressure pipe of valve housing. Start engine and let idle. Close valve (for no longer than 5 seconds). On Vanagon, pressure is 1668-1740 psi (117-122 kg/cm²). On all others, pressure is 1100-1200 psi (77.83-84.36 kg/cm²).

2) If pressure is not to specification, check limiting valve by inspecting bores in valve and piston for obstructions. Ensure piston moves freely in housing. Install new valve if necessary.

LEAK TEST

1) With engine idling, turn steering wheel to full lock and hold in position. Inspect all connections and tighten if necessary. If leak shows at steering pinion, replace housing seal and both

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intermediate cover seals.

2) If pinion shaft seal is leaking, fluid has entered gear housing. Check for fluid by loosening outer clamp on right steering boot and pushing boot in. If seal is leaking, disassemble steering gear and replace all seals.

REMOVAL & INSTALLATION

STEERING GEAR

Removal

1) Drain fluid from system. Disconnect hydraulic pipes from valve housing. Disconnect lower steering shaft from pinion shaft. Disconnect tie rods from bracket.

2) Remove steering gear-to-body bolts. Remove rear motor/transmission mount and exhaust pipe. Remove steering gear.

Installation

To install, reverse removal procedure. To install tie rods, install one tie rod to steering gear and tighten before installing the other tie rod.

POWER STEERING PUMP

Removal

Remove alternator and pump belts. Disconnect hydraulic lines from pump. Cap lines to prevent contamination. Remove bracket bolts. Remove pump. See Fig. 2.

Installation

To install, reverse removal procedure. Adjust belt tension. Start engine and check for leaks.

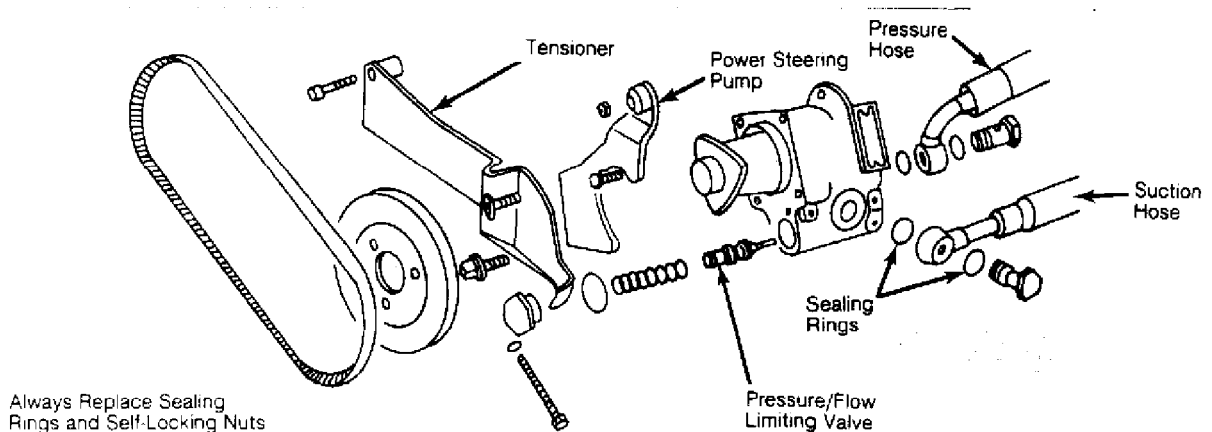


Fig. 2: Typical Vane Pump Assembly
Courtesy of Volkswagen United States, Inc.

STEERING GEAR OVERHAUL

STEERING GEAR - POWER

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1) Before disassembling steering gear, check output and system pressure. When overhauling steering gear, always use all parts in Repair Kit (811 498 020). Always use new self-locking nuts and "O" rings. Use exploded view of steering gear to assist in overhaul. See Fig. 1.

2) On all models, manufacturer recommends replacement of steering gear if pinion or piston-rod seals are leaking.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application		Ft. Lbs. (N.m)	
End Housing Bolt	.....	37	(50)
Pressure-Flow Limiting Valve Cap	.....	42	(57)
Pressure Pipe Fitting	.....	29	(39)
Return Pipe Fitting			
On Pump	.....	29	(39)
On Valve Housing	.....	22	(30)
Tie Rod-to-Steering Arm	.....	32	(44)
Valve Housing Bolt	.....	15	(20)

END OF ARTICLE