

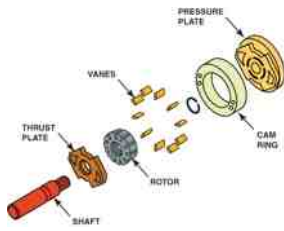
FIGURE 51.3 Typical power steering pump assemblies.



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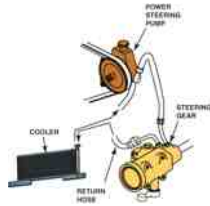
FIGURE 51.4 General Motors vane-type pump.



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FIGURE 51.5 The power steering fluid cooler, if used, is located in the return hose. Often the "cooler" is simply a length of return metal line that is arranged in a loop and routed near the front of the vehicle. The airflow past the return line helps reduce the temperature of the fluid.

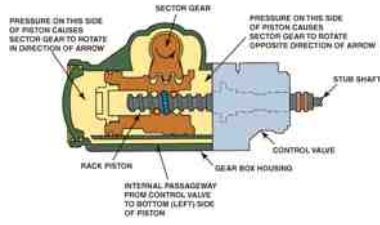


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Power-Assisted Steering Operation and Service

FIGURE 51.6 Forces acting on the rack piston of an integral power steering gear.

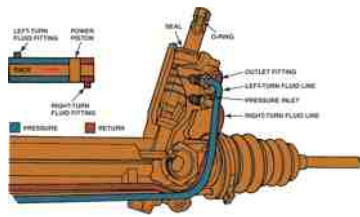


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FIGURE 51.7 During a left turn, the control valve directs pressure into the left-turn fluid line and the rack moves left. (See inset.) Fluid pushed out of the right-turn fluid chamber travels back through the right-turn fluid line and control valve to the return circuit.

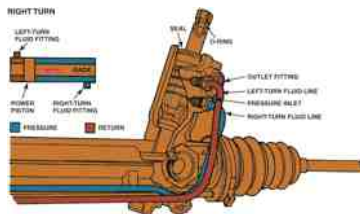


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FIGURE 51.8 The control valve routes high-pressure fluid to the left-hand side of the power piston, which pushes the piston and assists in moving the rack toward the right when the steering wheel is turned right.

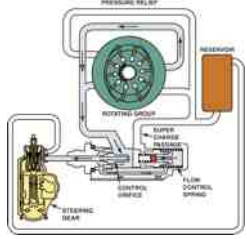


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FIGURE 51.9 Low-speed flow control.

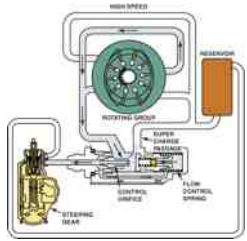


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FIGURE 51.10 High-speed flow control operation.

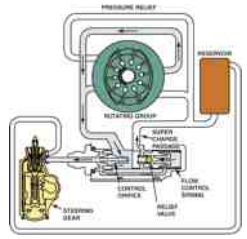


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Power-Assisted Steering Operation and Service

FIGURE 51.11 Pressure-relief mode. In this mode the steering gear has blocked the flow of fluid from the pump and the pressure rises, which unseats the pressure-relief valve. Now fluid flows back to the inlet through the pressure-relief orifice and passage.

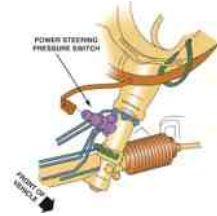


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FIGURE 51.12 The power steering pressure switch is often attached to the steering gear assembly.

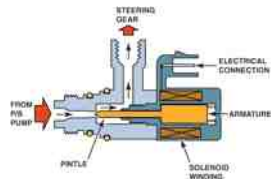


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FIGURE 51.13 EVO actuator assembly.



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FIGURE 51.14 A Toyota Prius EPS assembly.

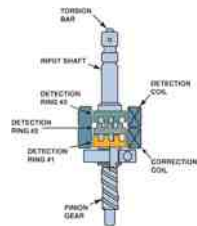


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FIGURE 51.15 The torque sensor converts the torque the driver is applying to the steering wheel into a voltage signal.

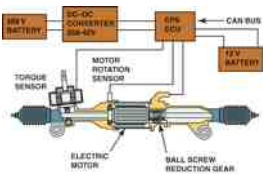


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FIGURE 51.16 The electric power steering in Toyota/Lexus SUVs uses a brushless DC motor around the rack of the unit and operates on 42 volts.

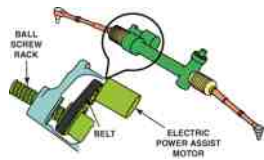


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FIGURE 51.17 A Ford Fusion electric power steering system that uses a mini toothed belt drive from the motor to the drive the rack.

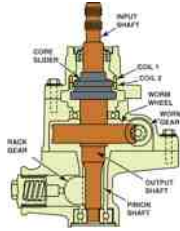


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FIGURE 51.18 A cross-sectional view of a Honda electric power steering gear.



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FIGURE 51.19 Honda electric power steering unit cutaway.

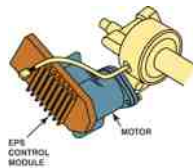


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FIGURE 51.20 The power steering control module is attached to the motor of the electric power steering assembly.

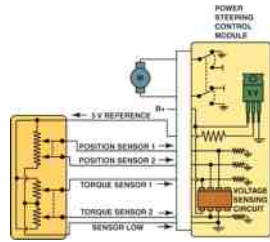


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FIGURE 51.21 Schematic showing the electric power steering and the torque/position sensor.



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CHART 51.1

SERPENTINE BELTS	
NUMBER OF RIBS USED	TENSION RANGE (LBS.)
3	45-60
4	60-80
5	75-100
6	90-125
7	105-145

CHART 51-1

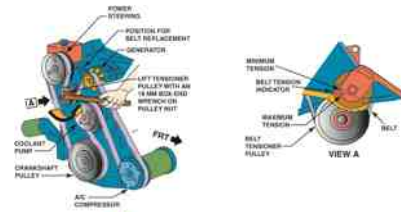
Belt tension is related to the number of ribs and usually falls within the range shown. Always check service information for the exact belt tension for the vehicle being serviced.

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FIGURE 51.22 A typical service manual illustration showing the method to use to properly tension the accessory drive belt.



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FIGURE 51.23 A check of the power steering fluid should include inspecting not only the level but the condition and color of the fluid, which could indicate a possible problem with other components in the steering system.



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Power-Assisted Steering Operation and Service

FIGURE 51.24 Some power steering fluid is unique to the climate, such as this cold climate fluid recommended for use in General Motors vehicles when temperatures are low.

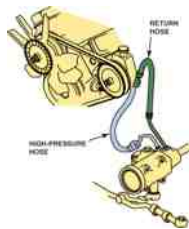


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FIGURE 51.25 Inspect both high-pressure and return power steering hoses. Make sure the hoses are routed correctly and not touching sections of the body to prevent power steering noise from being transferred to the passenger compartment.



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