

OPERATION (Continued)

When the steering wheel is turned, resistance of the wheels and the weight of the vehicle cause a torsion bar to deflect. This deflection changes the position of the valve spool and sleeve ports, directing pressurized fluid to the appropriate end of the power cylinder. The difference in pressure forces on the piston helps move the rack to assist turning effort. The piston is attached directly to the rack, and the housing functions as the power cylinder. The oil in the opposite end of the power cylinder is forced to the control valve and back to the pump reservoir.

When the driver stops applying steering effort, the valve is forced back to a centered position by the torsion bar. When this occurs, pressure is equalized on both sides of the piston, and the front wheels tend to return to a straight-ahead position.

DIAGNOSIS AND TESTING

The diagnosis charts provide procedures to resolve typical customer concerns encountered with the power steering system.

Follow the sequence indicated to save time during condition identification and corrective action.

Power Steering Diagnosis

Before any internal service is performed on the rack and pinion power steering, diagnosis of the condition must be performed. Ensure that the tire size is correct, with matched tires (front and rear), all inflated to specifications. The following conditions, possible sources and corrective action will assist in performing the proper service.

POWER STEERING DIAGNOSIS

CONDITION	POSSIBLE SOURCE	ACTION
<ul style="list-style-type: none"> Wander: Condition Where Vehicle Wanders Side-To-Side On The Roadway When Being Driven Straight Ahead While The Steering Wheel Is Held In A Firm Position. Evaluation Should Be Conducted On A Level Road (Little Road Crown). 	<ul style="list-style-type: none"> Loose tie rod ends. Inner ball housing loose or worn. Gear assembly mounting loose. Loose suspension struts or ball joints. Column intermediate shaft connecting bolts loose. Column intermediate shaft joints loose or worn. Improper wheel alignment. 	<ul style="list-style-type: none"> Replace tie rod end assemblies. Replace tie rod assemblies. Tighten mounting bolt to specification. Adjust or replace as required. Tighten bolts to specification. Replace intermediate shaft. Set alignment to specification.
<ul style="list-style-type: none"> Feedback—Rattle, Chuckle, Knocking Noises In The Steering Gear. Condition Where Roughness Is Felt In The Steering Wheel By The Driver When The Vehicle Is Driven Over Rough Pavement. 	<ul style="list-style-type: none"> Column U-joints loose. Loose tie rod ends. Loose / worn tie rod ball. Gear assembly mounting loose. Piston disengaged or loose on rack. Column intermediate shaft connecting bolts loose. Loose suspension struts or ball joints. 	<ul style="list-style-type: none"> Replace if damaged or worn. Replace tie rod end assemblies. Replace tie rod assemblies. Tighten mounting bolts to specification. Replace rack assembly. Tighten bolts to specification. Adjust or replace as necessary.