

PUNTO eMANUAL

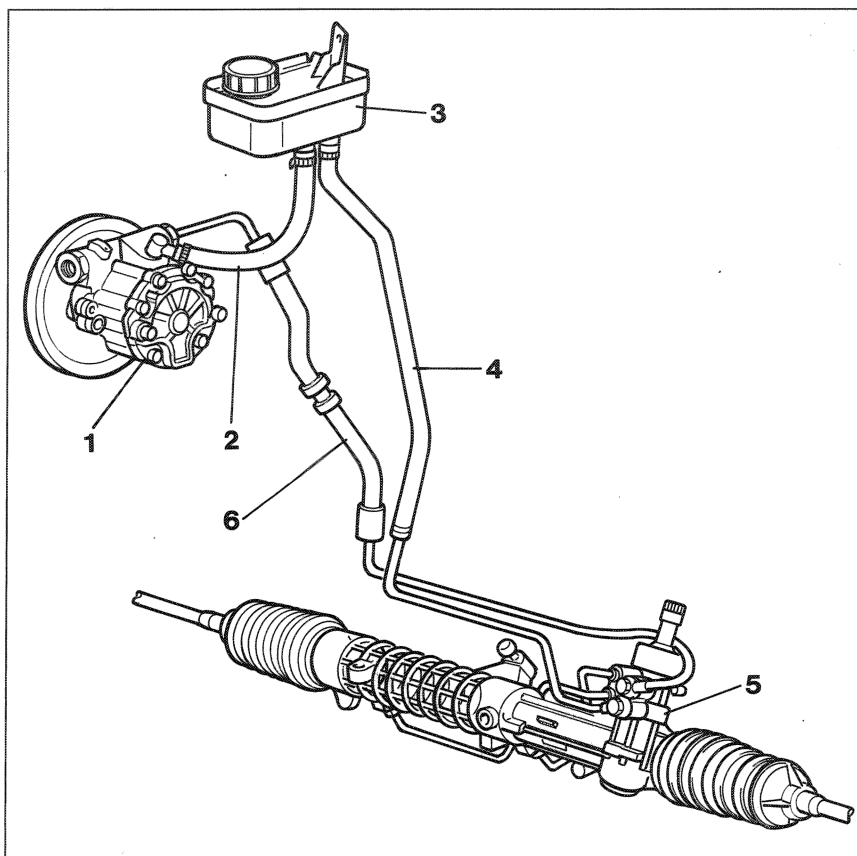
Steering

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DESCRIPTION AND OPERATION

The power-assisted steering system comprises:

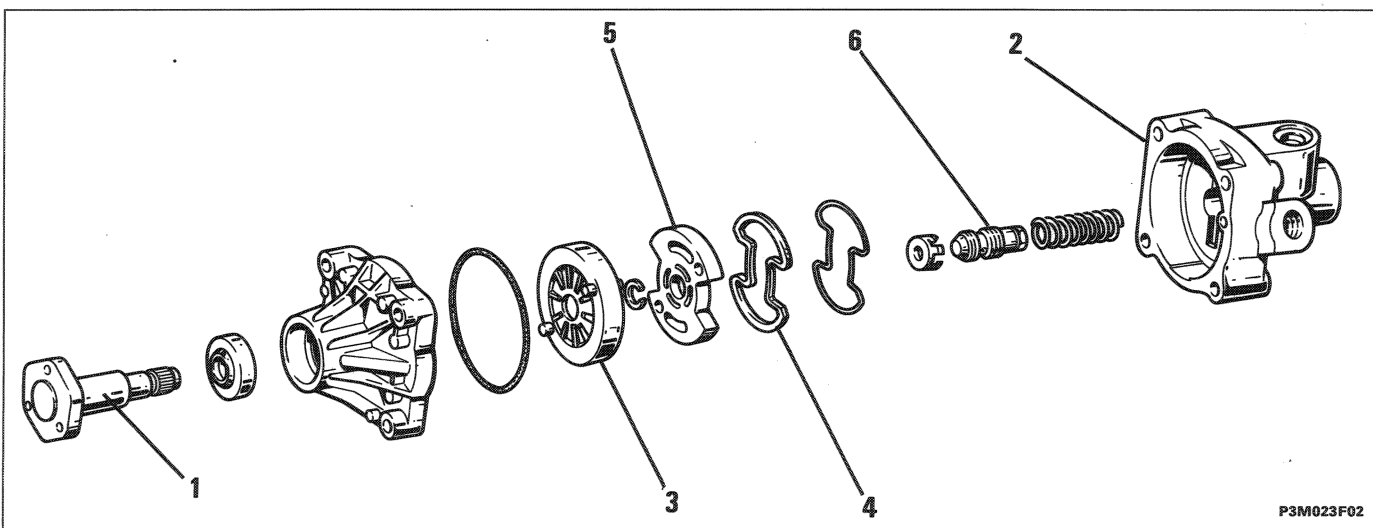
- a fluid reservoir located in the engine compartment;
- an engine-driven vane pump, with maximum flow rate and pressure valve;
- a series of connecting pipes between pump - distributor valve - actuating cylinder - reservoir;
- a rack-and-pinion hydraulic steering gear box.



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Components of the power-assisted steering system

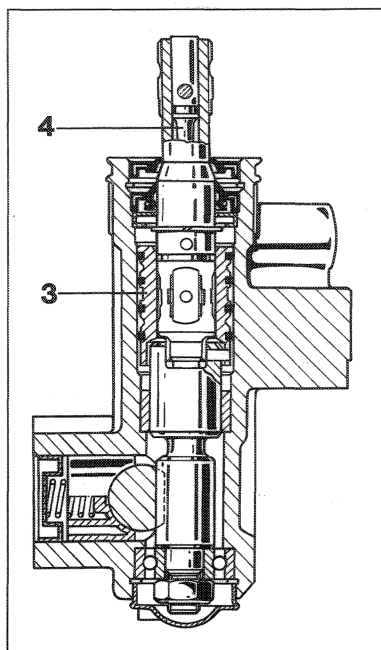
1. Pump
2. Fluid delivery pipe to the pump
3. Reservoir
4. Fluid return pipe to the reservoir
5. Steering gear box
6. Pressurized fluid delivery pipe



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Components of the power steering pump

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|---------------|-----------------------|------------------------|
| 1. Driveshaft | 3. Vane-type impeller | 5. Impeller side plate |
| 2. Pump body | 4. Seal | 6. Regulating valve |



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Power steering distributor valve

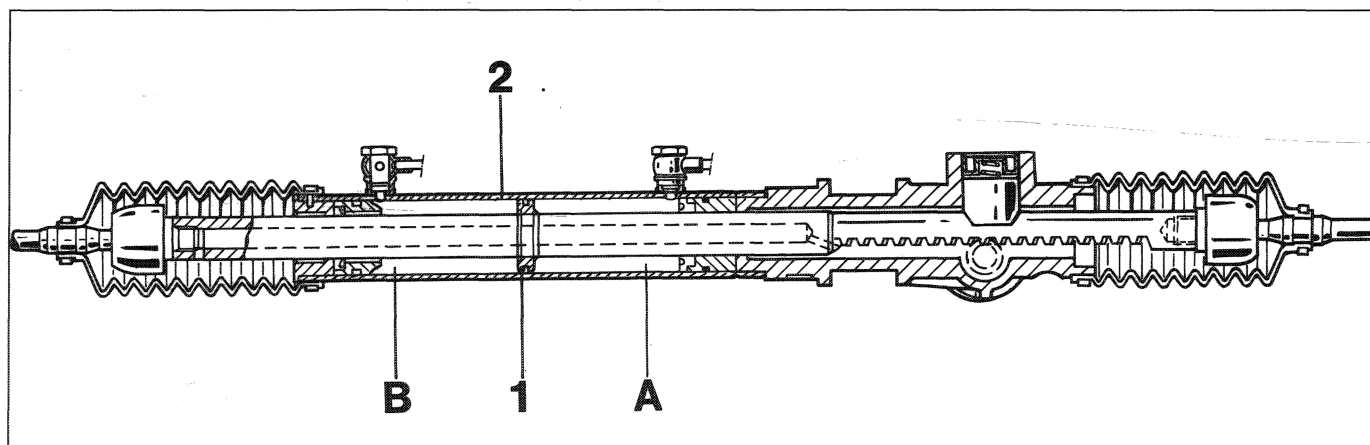
The power steering pump is driven by the engine via a belt, and can deliver a supply pressure varying from 3.5 bar in the "neutral" position to a maximum of 85 bar in the "full lock" position.

The power-assisted steering assembly is similar to a rack and-pinion steering gear, except for the following differences:

- the steering box comprises an actuating cylinder (2) in which a double-acting piston (1) slides. This piston is joined to the rack;
- a distributor valve (3) is located in the seat of the worm screw, with the relevant pipes. It is controlled by a torsion device (4) located at the end of the worm screw.

Depending on the torsion transmitted by the steering wheel to the device, the pump fluid is sent either to the reservoir or to one of the 2 chambers A or B of the actuating cylinder.

The force generated by the fluid's pressure on the surface of the piston side causes the piston, and hence the rack, to move.



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Longitudinal section of rack-and-pinion power steering

Checking operation

Check the rolling torque of the steering wheel with the car stopped and the engine running. The torque must be between 0.6 daN with the engine idling and 0.75 daN with the engine at maximum rpm. If these values are exceeded, check the pressure of the system with the wheels on full lock. To do this, fit a pressure gauge with a suitable T-connector on the pressurized fluid delivery pipe to the steering box (from the pump) and turn the steering wheel to full lock on one side. When the steering wheel is forced even further, the pressure gauge reading should rise to about 85 bar. If this does not happen, there is a fault in the fluid pump or in the power-assisted steering valves.

This check should be performed with the engine running at 2000 - 4000 rpm.

NOTE The power-assisted steering and vane pump assembly should not be dismantled under any circumstances, but should be returned to the Manufacturer for overhaul.

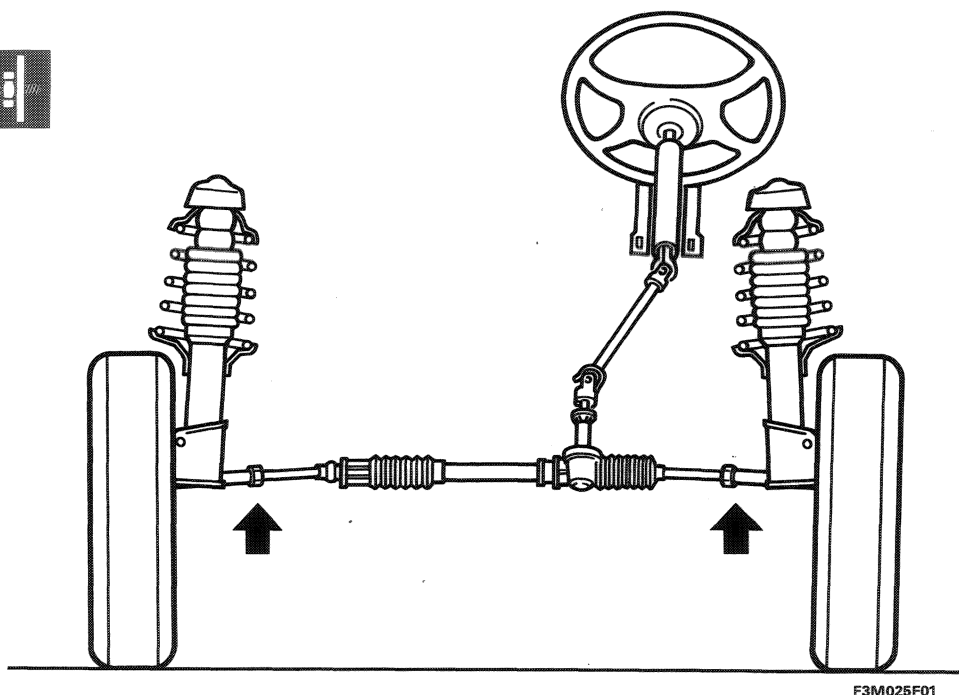
Checking fluid level: the fluid level should be checked with the engine operating, and topped up as necessary.



The power-assisted steering system is self-bleeding; bleeding is achieved by turning the steering wheel fully to the right and left with the engine running and car stopped. This procedure must be performed whenever the pipes are disconnected and reconnected.

NOTE *If the steering becomes hard, the pump drivebelt may be slipping or the fluid level may be low. If the pump, actuating cylinder or distributor valve are not working, the power-assisted steering will function as an ordinary mechanical steering gear.*

FRONT WHEEL TOE-IN



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On both models with mechanical steering gear and models with power-assisted steering, the toe-in is adjusted by slackening the tie-rod nut and screwing or unscrewing the tie-rod until the specified toe-in is obtained, without changing the position of the steering wheel spokes.