

power steering [DIRAVI]

The hydraulic steering system on the Citroën CX may be divided into four main parts.

- *A* - The rack with its driving piston.
- *B* - The steering control unit.
- *C* - The steering wheel centering device.
- *D* - The steering centering pressure regulator, a plastic sphere mounted under the spare wheel.

The steering control unit [B] and The steering wheel centering device [C] are both in the steering control unit situated below and forward of the instrument panel. It gives the hissing sound when the steering wheel is turned towards the passenger side of the car.

- *A* - THE RACK WITH ITS DRIVING PISTON.

The piston is part of the rack and is made so that the surface on which pressure acts on the driver side (pink) is twice the area of the passenger (red) side. This means that to keep it stable there must be twice the hydraulic pressure on the red side as on the pink side (surface area * pressure must be equal). The red side is always at the full pressure of the cars main hydraulic system. The steering control unit (B) controls the pressure on the pink side.

- *B* - THE STEERING CONTROL UNIT.

The steering column is in two parts loosely connected by a coupling(3). This coupling has free play which is felt when there is no hydraulic pressure. Under normal circumstances the hydraulics keep this coupling in the middle of its free play, only with loss of power is the steering wheel directly connected to the rack for emergency steering. The steering control unit has two gears driven off the steering column, one(1) off the steering wheel part, the other(2) off the pinion part. Pivoted between these gears are a couple of levers connected to a slide valve. When the gear on the steering wheel end moves, the levers move the slide valve which supplies or drains the large pink side of the rack piston. This moves the rack which moves the pinion which moves the pinion end gear, thus keeping the two gears synchronized. When the steering control unit is draining LHM to the reservoir from the pink side of the rack piston, the red side simply fills directly from the main hydraulic system. As LHM is drained from the pink cylinder to the reservoir a hiss is heard as the oil passes through the control unit. When LHM is being fed from the steering control unit to the pink side of the rack piston, half the supply to the control unit comes directly from the main hydraulic system, the other half from the decreasing volume on the red side of the rack piston.

- *C* - THE STEERING WHEEL CENTERING DEVICE.

An eccentric cam geared to the steering wheel section of the steering column. The cam is geared to the steering column such that the cam turns less than a full turn lock to lock. A piston with a roller at its bottom is forced against the cam by hydraulic pressure so that the cam is stable only at its center position. The higher the hydraulic pressure the greater the centering force. The hydraulic pressure forcing the roller against the cam is controlled by the pressure regulator D.

- *D* - THE STEERING CENTERING PRESSURE REGULATOR.

A pair of weights that move out against springs as they spin, a bit like the automatic advance in a distributor. As they move out they open a slide valve that allows LHM from the main hydraulic system to flow to the steering centering device (C). They are rotated by a cable drive from the road wheel side of the gearbox. The faster the road wheels turn, the faster the weights spin, the more they move out, the more the slide valve opens, the more pressure is applied to the piston in C, the greater the centering force on the steering wheel.

The steering adjustment cam(4) allows adjustment of the pinion relative to the disk on the pinion end of the steering column. Toe in and straight ahead steering is set by adjusting the length of the track rods, which should be set to within a few millimeters of the same length. Fine adjustment of dead ahead steering is set by the steering adjustment cam or by slight adjustment of the track rods. ♣

