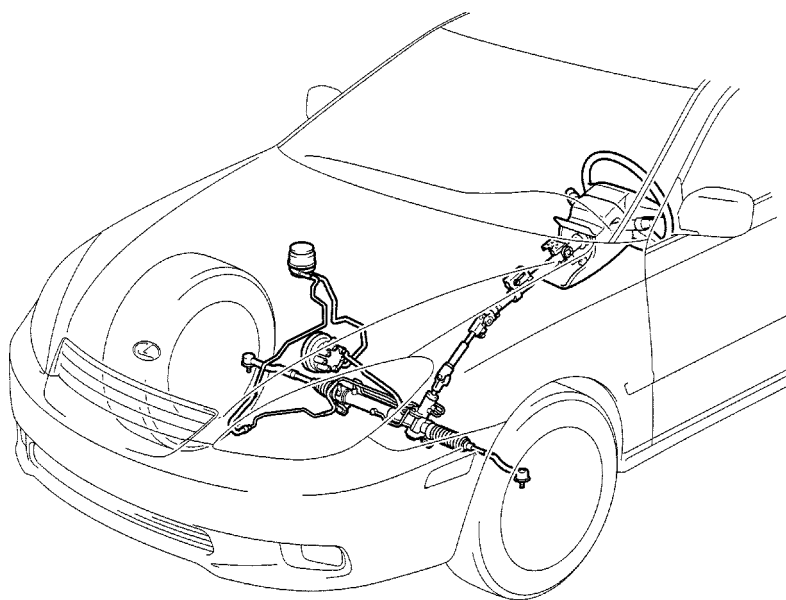


STEERING

■ DESCRIPTION

- As in the previous models, a rack and pinion type steering gear and an engine revolution sensing type power steering are used on all model.
- The power steering vane pump on '02 ES300 has newly adopted a pressure return type vane pump which makes the discharge pressure flow volume return at middle and high speed, thus secured the fine steering feeling.
- The stepless tilt steering is used on all models.
- The steering column has adopted an energy absorbing mechanism that uses energy absorbing plate.



211CH32

► Specification ◀

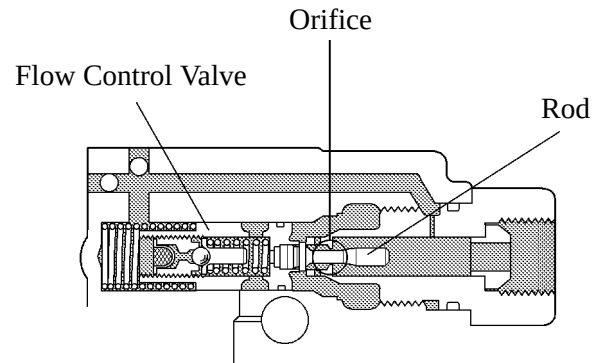
Gear Ratio (Overall)		16.0
No. to Turns Lock to Lock		3.06
Rack Stroke	mm (in.)	149.0 (5.87)
Fluid Type		ATF Type DEXRON®II or III

■ POWER STEERING VANE PUMP

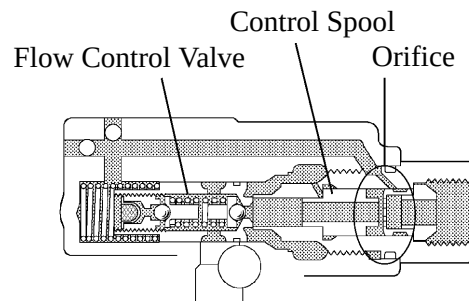
1. Construction

In this pump, the control spool to control the pump flow volume in the middle and high range of the pump speed has been discontinued and a rod for the flow control valve which decides the flow volume opening area has been established instead.

Other basic structure and operation are the same as '01 ES300.



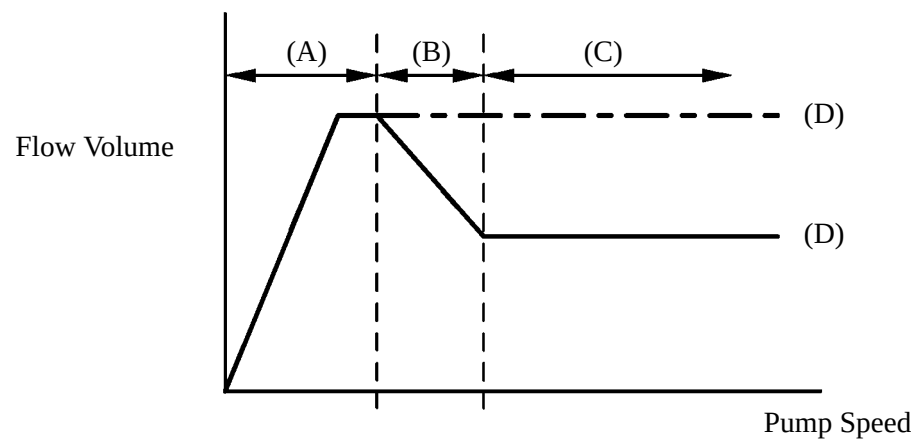
'02 ES300



'01 ES300

2. Operation

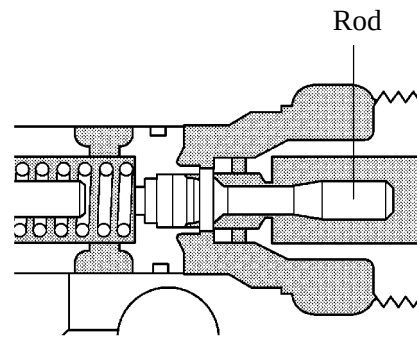
► Flow Volume Characteristics ◀



208CH45

Low Speed Range (A)

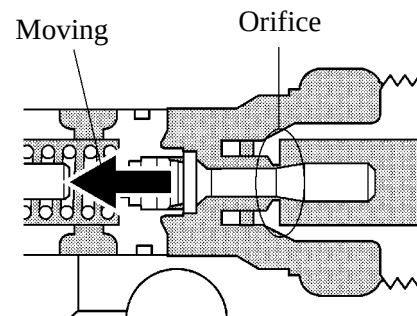
Flow volume increases in accordance with the increase of pump speed.



208CH41

Middle Speed Range without Steering (B)

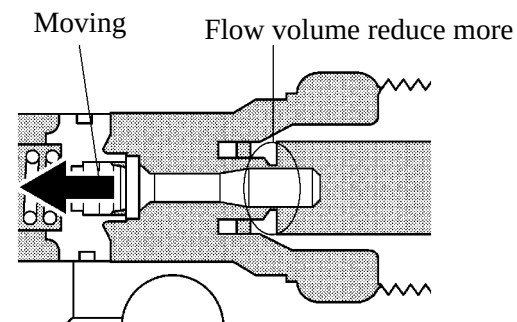
The flow control valve moves to the left and reduces the flow volume by drawing the orifice according to the change of the shaft diameter of the rod.



208CH42

High Speed Range without Steering (C)

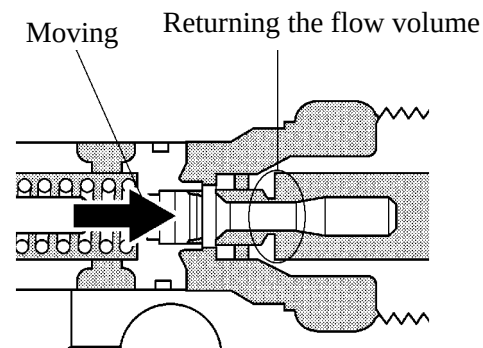
The flow control valves moves further left and with the maximum shaft diameter of the rod, the flow volume reduces more.



208CH43

During Pressure Loading (D → D')

If operating the steering in the middle and high speed range, the flow control valve moves to the right according to the pressure increase of the vane pump resulting in opening the orifice and returning the flow volume.



208CH44

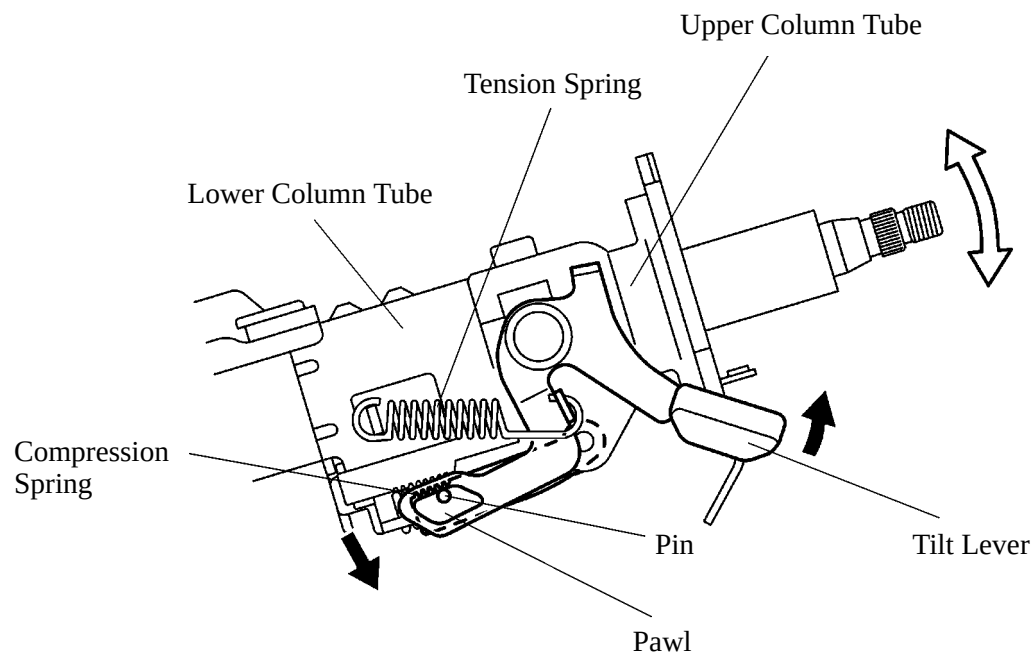
■ TILT STEERING

The tilt mechanism consists of a tilt lever, pawl, upper column tube, lower column tube, tension spring and compression spring.

A hole is provided at the tip of the tilt lever, into which the pawl pin is inserted.

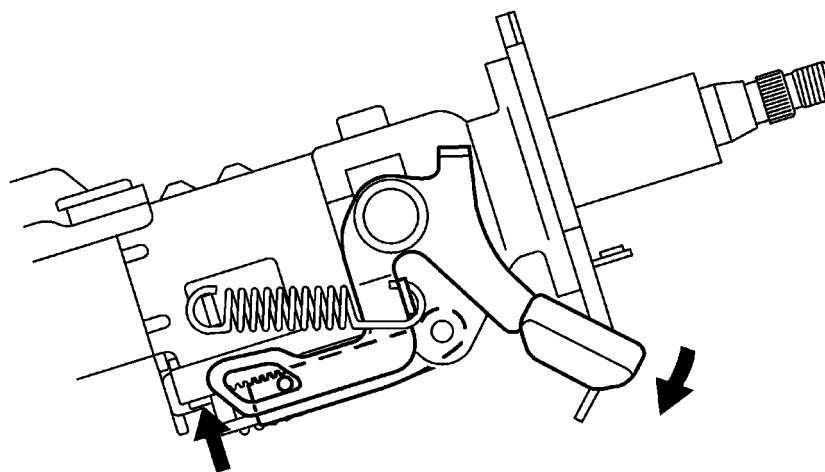
Because the pawl pin is inserted into the hole at the tip the lever, moving the tilt lever causes the pawl to move downward. As a result, the ratchet of the lower column tube and the ratchet of the pawl disengage from each other to release the tilt lock.

Releasing the tilt lever causes the lever (which is under spring tension) to return. Accordingly, the pawl is pushed upward, causing the ratchet of the column tube and the ratchet of the pawl to engage with each other, thus locking the tilt lock.



Free

211CH52



Lock

211CH53

■ ENERGY ABSORBING MECHANISM

The energy absorbing mechanism mainly consists of a lower bracket, energy absorbing plate, contractile main shaft and contractile intermediate shaft.

When an impact is transmitted to the steering wheel in a frontal collision (secondary collision), the lower bracket and the bracket spacer, causing the entire steering column to move forward.

At the same time, the energy absorbing plate in the lower bracket is deformed by the bracket spacer to and helps absorb the impact of the secondary collision.

Furthermore, the amount of forward movement of the entire steering column is absorbed by the contraction of the main shaft and the intermediate shaft.

