40.Steering System

In the steering system, the front wheels of a vehicle are steered by turning the steering wheel.

Types of steering system

1.Rack-and-pinion type

It Changes the rotational movement of the steering wheel into the left or right movement of steering rack. The construction is simple and lightweight. The steering is solid, and the steering wheel response is very sharp.

Parts Of Rack-and-pinion type Steering System

1.Steering wheel

It is the part that changes the direction of the front wheel according to the driver's intention. Maintenance items include the inspection of the steering wheel free play.

Main Parts

1.Steering wheel,Steering main shaft,Column tube

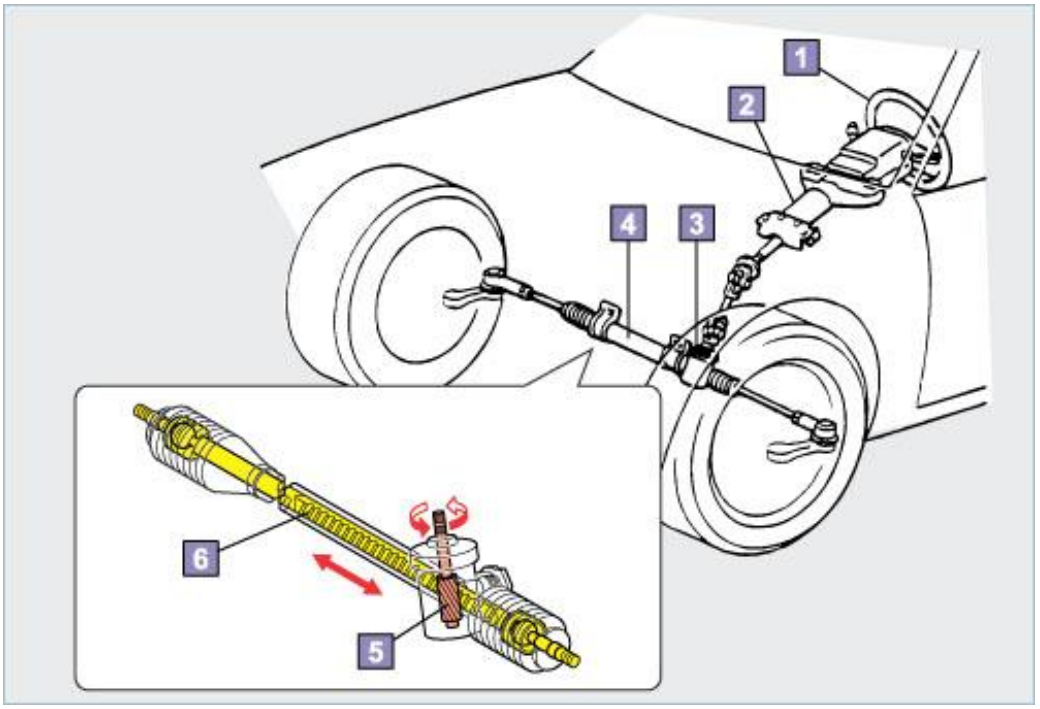
2.Steering main shaft & column tube

3.Steering gear

4.Steering rack housing

5.Pinion

6.Rack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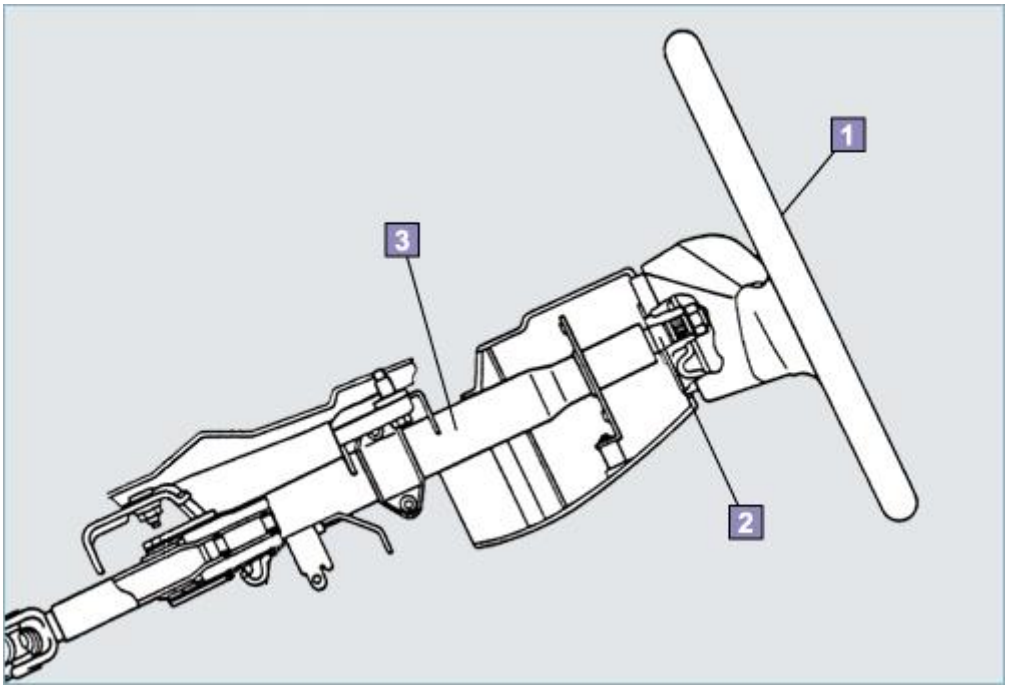
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2.Recirculating-ball type

. There are many balls between the worm shaft and the nut at the sector shaft.

Main Parts

1.Steering wheel

2.Steering main shaft & column tube

3.Steering gear

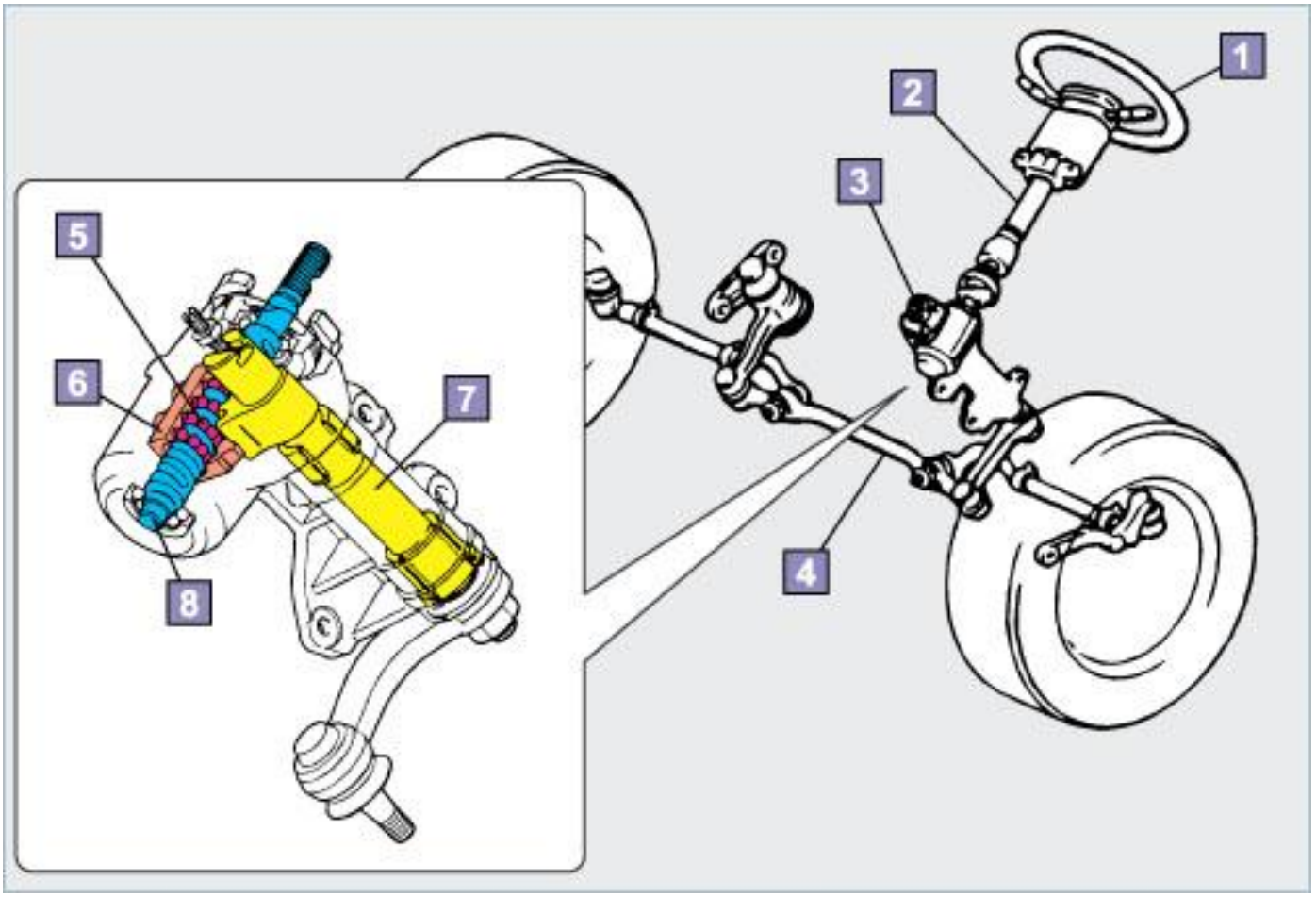
4.Steering linkage

5. Steel balls

6.Ball nut

7.Sector shaft

8.Worm shaft



Power Steering

. The device for the steering effort is installed in the steering mechanism to reduce the amount of steering effort exerted by the driver.

There are two types of the device for steering effort:

1.The hydraulic type

2.electric motor type.

Hydraulic power steering

. The power steering system uses the power of the engine to drive the vane pump that generates the hydraulic pressure. When the steering wheel is turned, an oil circuit is switched at the control valve. As oil pressure is applied to the power piston in the power cylinder, the power needed to operate the steering wheel is reduced. It is necessary to inspect

for leakage of power steering fluid periodically.

Main Parts

A.Reservoir tank

B.Vane pump

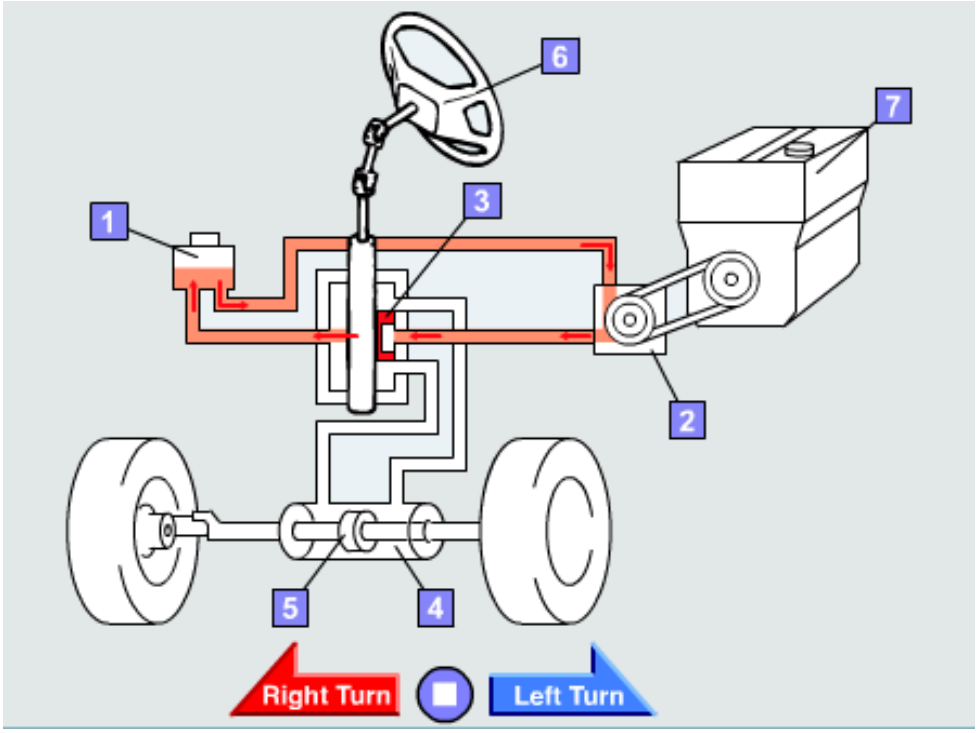
C.Control valve

D.Power cylinder

E.Power piston

F.Steering wheel

G.Engine



Electric Hydraulic Power Steering

. Generally, a power steering system uses the power of the engine to drive the vane pump that generates hydraulic pressure. However EHPS uses the motor, and reduces the power necessary to operate the steering wheel.

EMPS (Electric Motor Assist Power steering)

. EMPS assists the steering operation directly with the driving power of the DC motor, not the hydraulic pressure.

Main Parts-

A.Reservoir tank

B.Vane pump with motor

C.EMPS ECU (Electronic Control Unit)

D.DC motor