

ECPS(ELECTRONIC CONTROL POWER STEERING)

4620-01

GENERAL

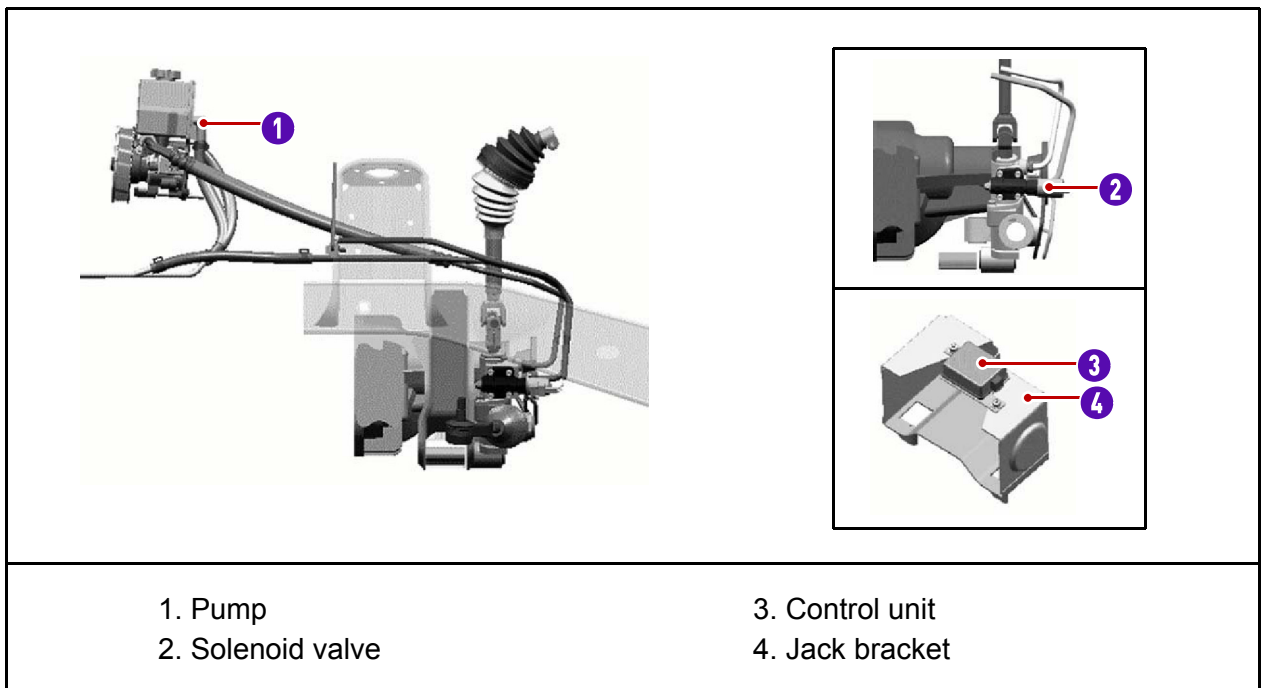
1. OVERVIEW

In traditional constant power assist steering system, the steerability gets lighter as vehicle speed rises, and this may cause dangerous situation. Where as having heavy steerability in high speed driving makes it difficult to manipulate the steering wheel when vehicle is in stop. This steering system solve this problem as the steerability is changed according to the vehicle speed, which is called Speed Sensitive Power Steering (SSPS).

SSPS, by providing appropriate steerability to driver according to the changes of vehicle speed, gives steering stability.

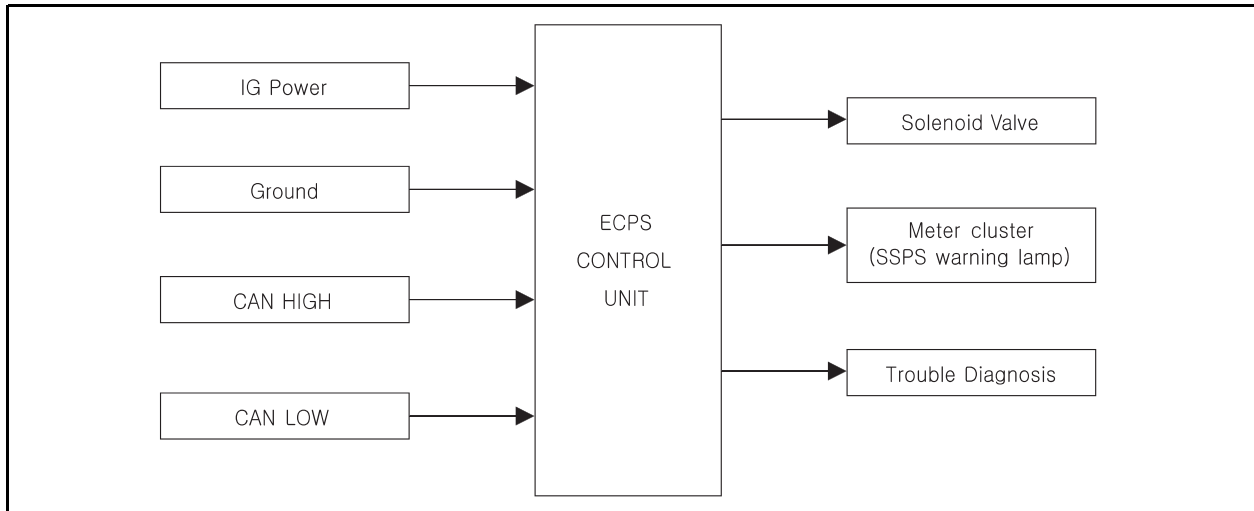
In other words, the steering wheel gets lighter by adjusting steerability in stop or low speed and provides steering stability by adjusting steering wheel to become heavier in high speed.

SSPS system applied in Rexton is ECPS (Electronic Control Power Steering: Hydraulic Pressure Reaction Force Control) type that allows to change the steerability according to the vehicle speed. The power steering control unit adjusts the hydraulic pressure to reaction plunger by controlling the pressure solenoid valve located in gear box to optimize the steerability.



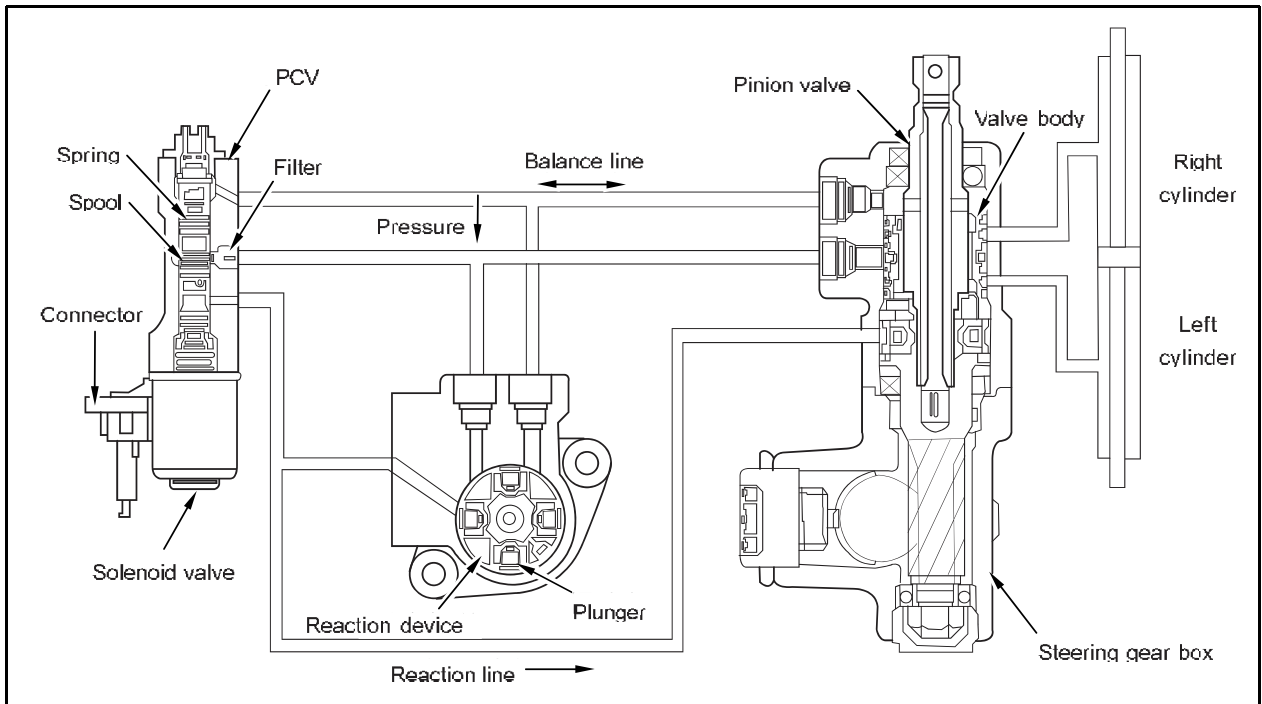
Modification basis	
Application basis	
Affected VIN	

2. INPUT/OUTPUT OF ECPS CONTROL UNIT



Modification basis	
Application basis	
Affected VIN	

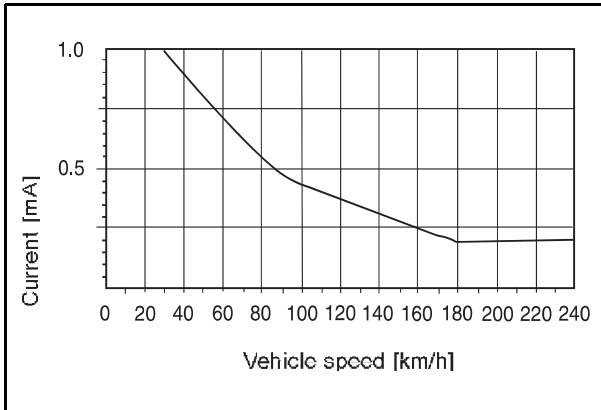
3. ECPS CONFIGURATION



- PCV (Pressure Control Valve)
This valve controls the hydraulic pressure supplied to reaction device by moving the spool valve according to the changes of solenoid valve.
- Reaction device
This device increases the steerability effect by binding the input shaft with supplied hydraulic pressure from PCV.
- Solenoid valve
This valve determines the valve spool position in PCV with the electric current supplied from ECPS control unit.

Modification basis	
Application basis	
Affected VIN	

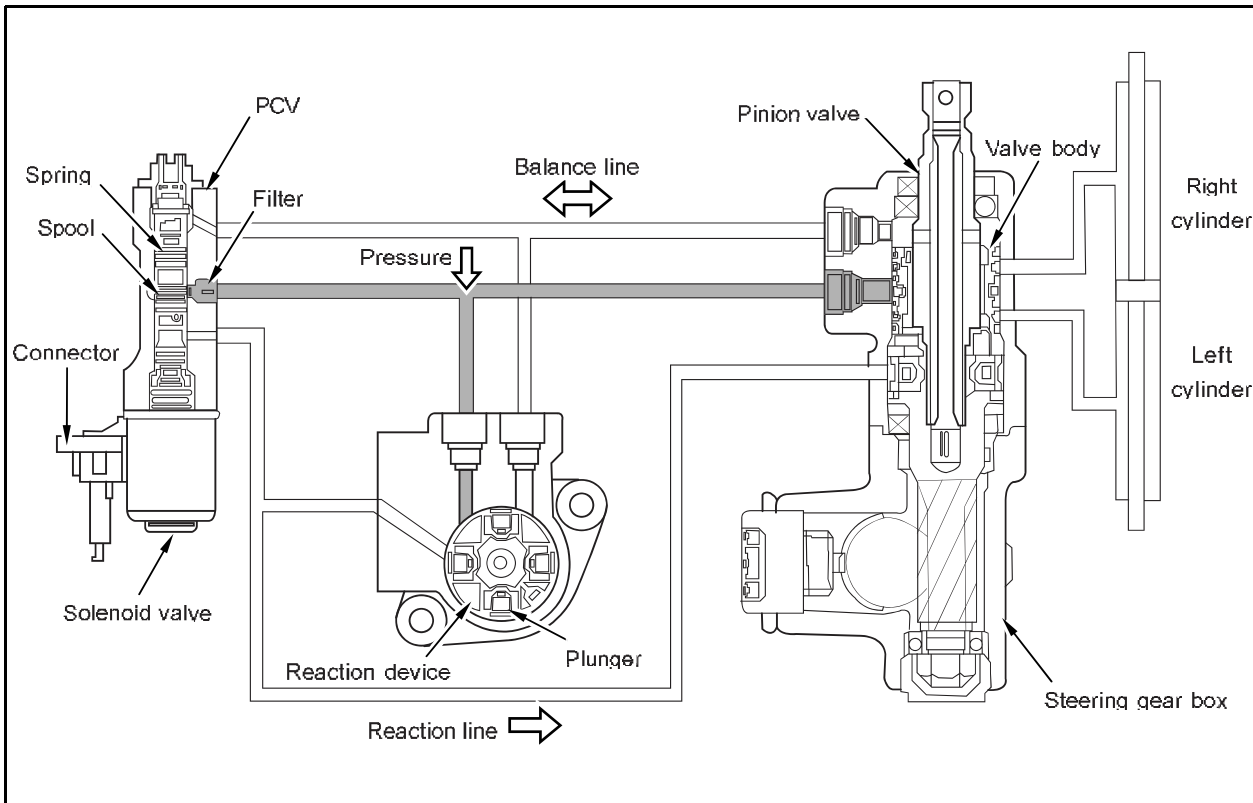
4. SYSTEM CONTROL



ECPS system, according to the vehicle speed, enables to achieve proper steering characteristics by controlling hydraulic pressure to reaction plunger located in input shaft of power steering gear box. In other words, ECPS control unit enhances the parking conveniences by controlling duty type current control. It provides heavy steerability with low current as the vehicle speed increases. And, it provides light steerability with high current as the vehicle speed decreases.

1. During parking and low speed driving

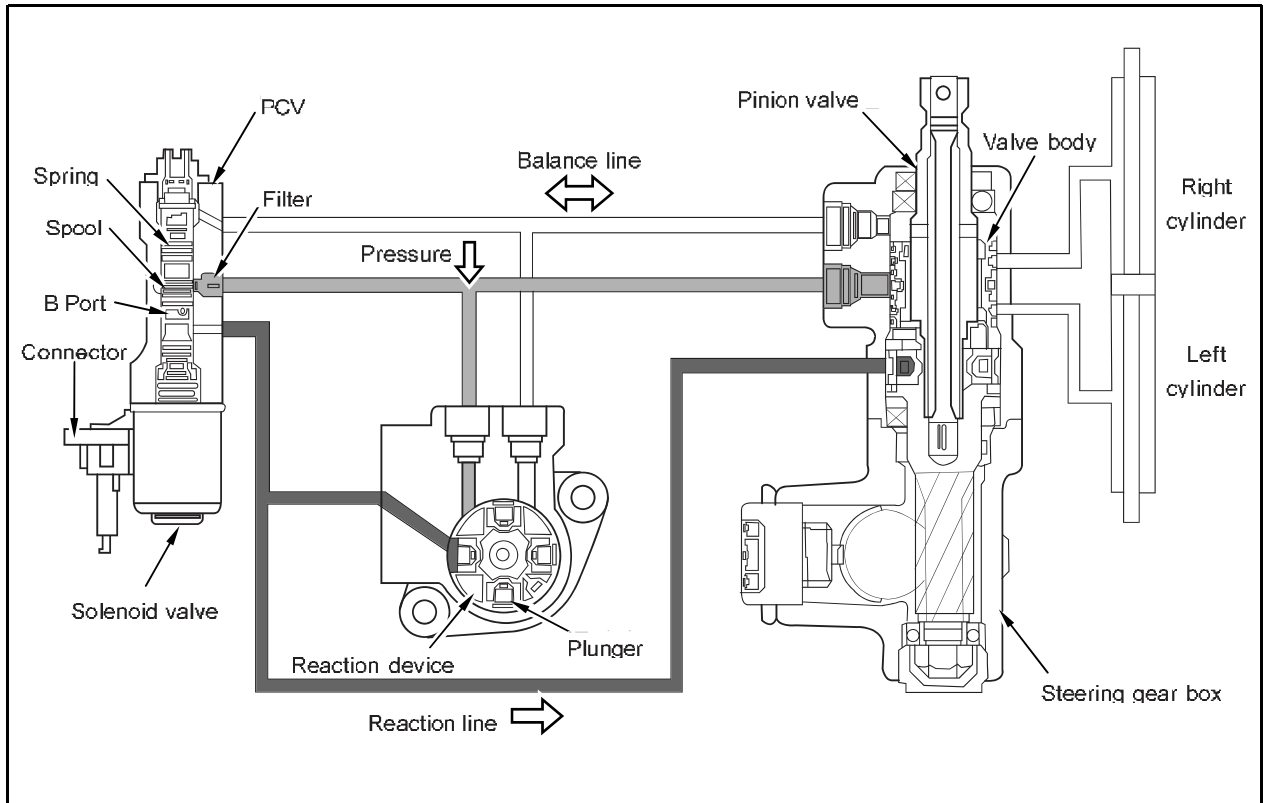
During parking and driving in low speed, the control unit supplies approx. 1 A of electric current to solenoid valve. Then, the spool located in PCV compresses the upper spring and elevates upward and, the working pressure from oil pump (A port) is not able to flow to the reaction plunger (C port). As a result, the pressing force from reaction plunger disappears and the steerability enhances.



Modification basis	
Application basis	
Affected VIN	

2. During high speed driving

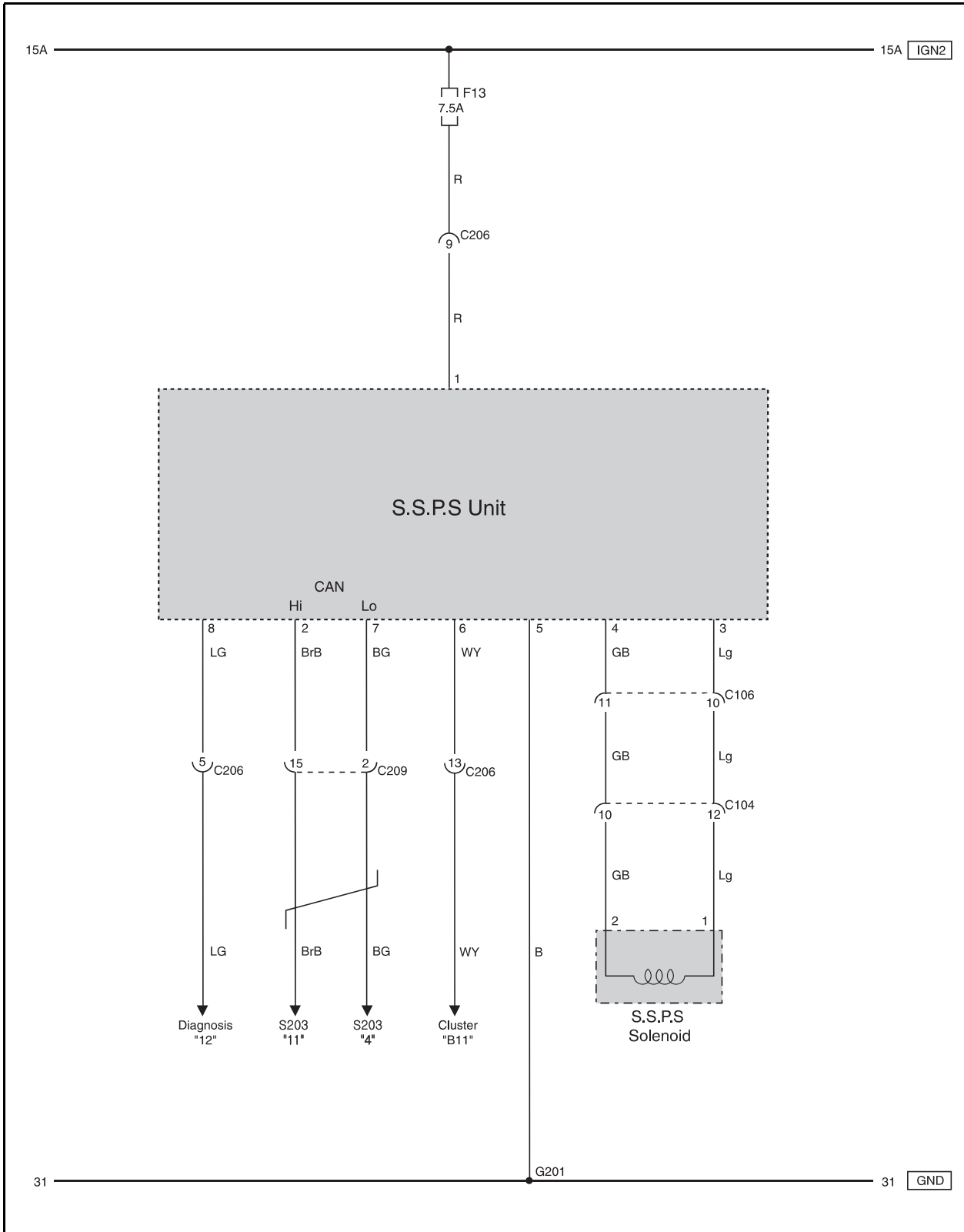
During high speed driving, the control unit supplies weak electric current to solenoid valve. Then, the spool located PCV moves from top to bottom, and the working pressure (A port) from oil pump is applied to reaction plunger (C port) through B port. As a result, the pressing force from reaction plunger against input shaft is increased and the steerability becomes heavier.



Modification basis	
Application basis	
Affected VIN	

- DC 5-SPEED
- TGS LEVER
- MANUAL TRANSMISSION
- CLUTCH
- PART TIME
- TORQUE ON
- ALL WHEEL
- IWE
- AXLE
- IO/IRDA AXLE
- PROPELLER
- STEERING
- SUSPENSION
- IRS SUSPENSION
- ELECTRONIC
- BRAKE SYSTEM
- ANTI-BRAKE

5. CIRCUIT DIAGRAM



Modification basis	
Application basis	
Affected VIN	