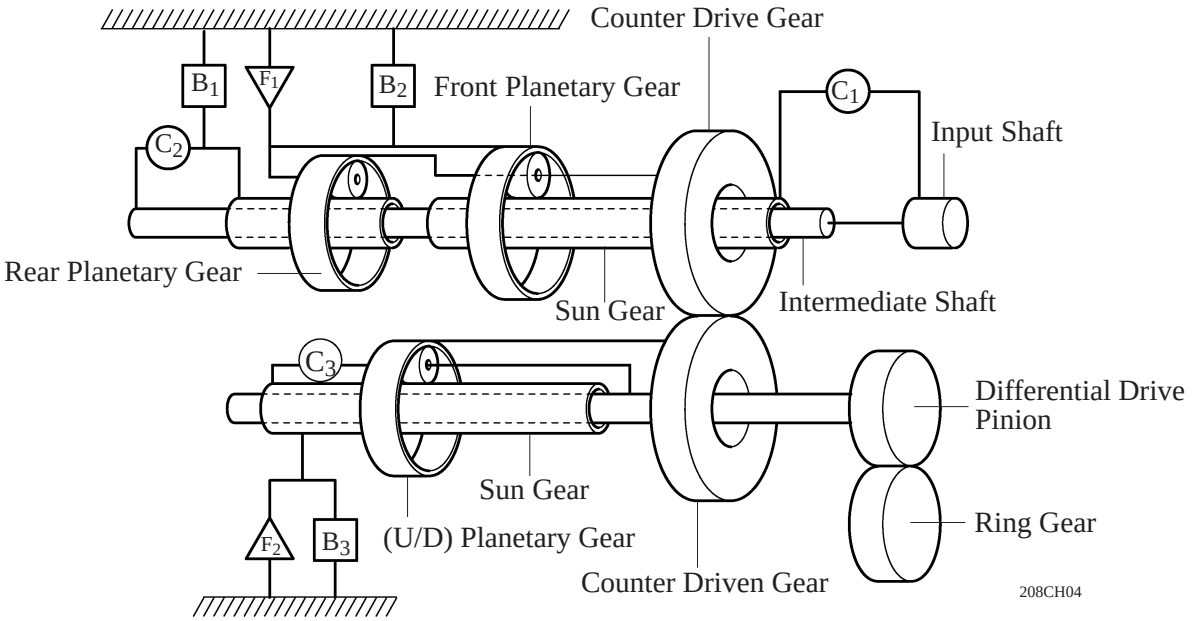
■PLANETARY GEAR UNIT

1. Construction

- The counter drive and driven gears are placed in front of the front planetary gear and the under drive (U/D) planetary gear unit is placed above the counter shaft. Furthermore, the force transmission method has been changed by eliminating the brake and the one-way clutch. As a result, a torque capacity that accommodates the high output engine has been attained, while realizing a compact gear unit.
- A centrifugal fluid pressure canceling mechanism has been adopted in the C_2 and C_3 clutches that are applied when shifting from 2nd to 3rd and from 3rd to 4th.



2. Function of Component

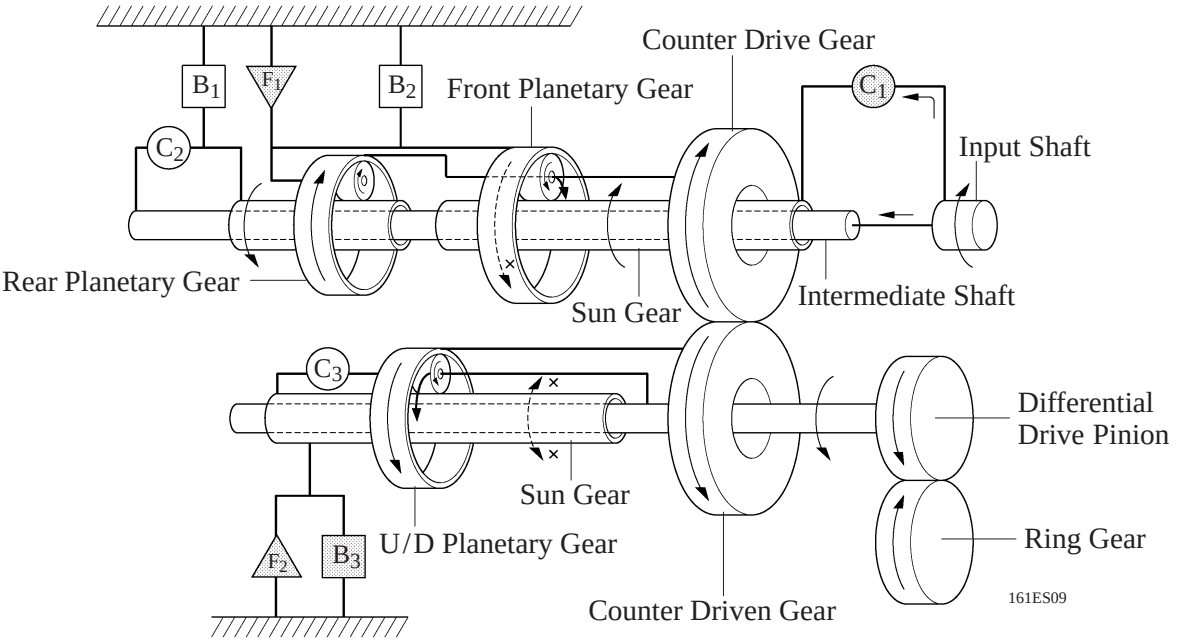
Component		Function
C_1	Forward Clutch	Connects input shaft and front planetary sun gear.
C_2	Direct Clutch	Connects input shaft and rear planetary sun gear.
C_3	U/D Direct Brake	Connects U/D sun gear and U/D planetary carrier.
B_1	2nd Brake	Prevents rear planetary carrier from turning either clockwise or counterclockwise.
B_2	1st & Reverse Brake	Prevents rear planetary carrier and front planetary ring gear from turning either clockwise or counterclockwise.
B_3	U/D Brake	Prevents U/D sun gear from turning either clockwise or counterclockwise.
F_1	No. 1 One-Way Clutch	Prevents rear planetary carrier from turning counterclockwise.
F_2	U/D One-Way Clutch	Prevents U/D planetary sun gear from turning clockwise.
Planetary Gears		These gears change the route through which driving force is transmitted, in accordance with the operation of each clutch and brake, in order to increase or reduce the input and output speed.

3. Motive Power Transaxle

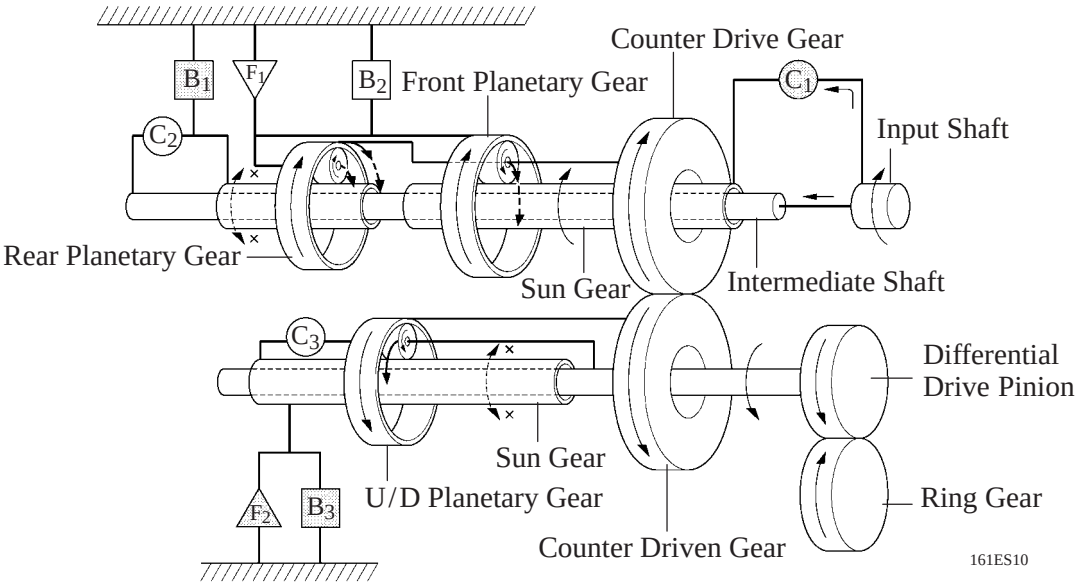
Shift Lever Position	Gear	Solenoid Valve				C_1	C_2	C_3	B_1	B_2	B_3	F_1	F_2
		SL1	SL2	S4	DSL								
P	Park	ON	ON	OFF	OFF						○		
R	Reverse	ON	OFF	OFF	OFF		○			○	○		
N	Neutral	ON	ON	OFF	OFF						○		
D	1st	ON	ON	OFF	OFF	○					○	○	○
	2nd	OFF	ON	OFF	OFF	○			○		○		○
	3rd	OFF	OFF	OFF	OFF/ON*	○	○				○		○
	4th	OFF	OFF	ON	OFF/ON*	○	○	○					
2	1st	ON	ON	OFF	OFF	○					○	○	○
	2nd	OFF	ON	OFF	OFF	○			○		○		○
L	1st	ON	ON	OFF	ON	○				○	○	○	○

*: Lock-up ON

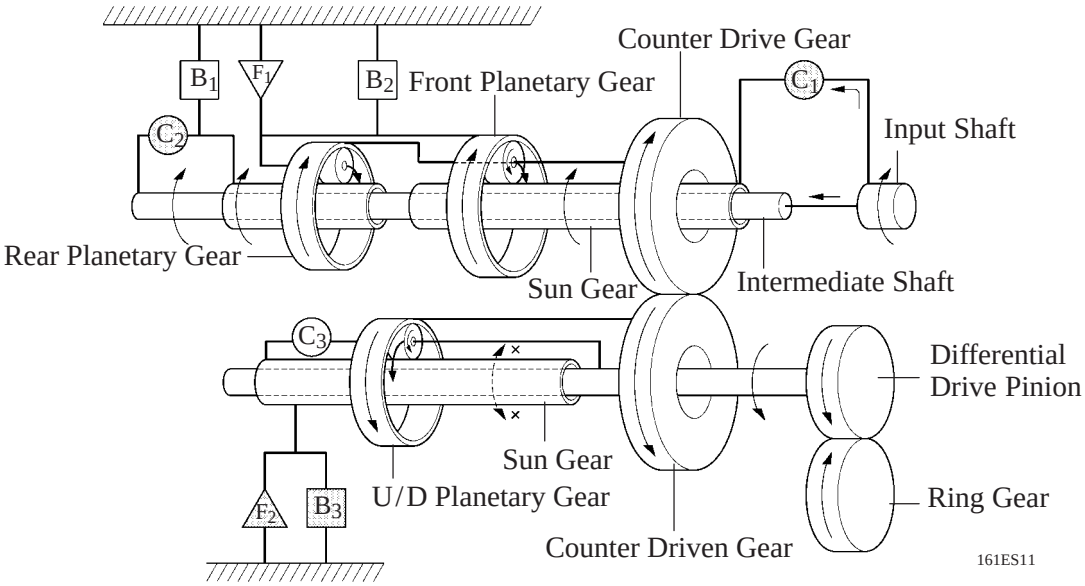
1st Gear (D or 2 Position)



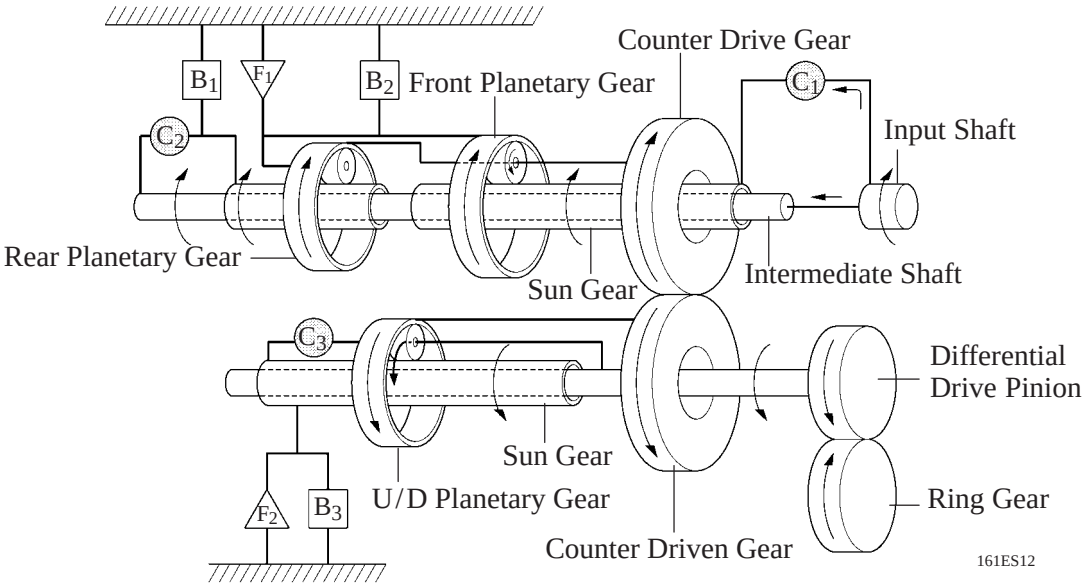
2nd Gear (D or 2 Position)



3rd Gear (D Position)

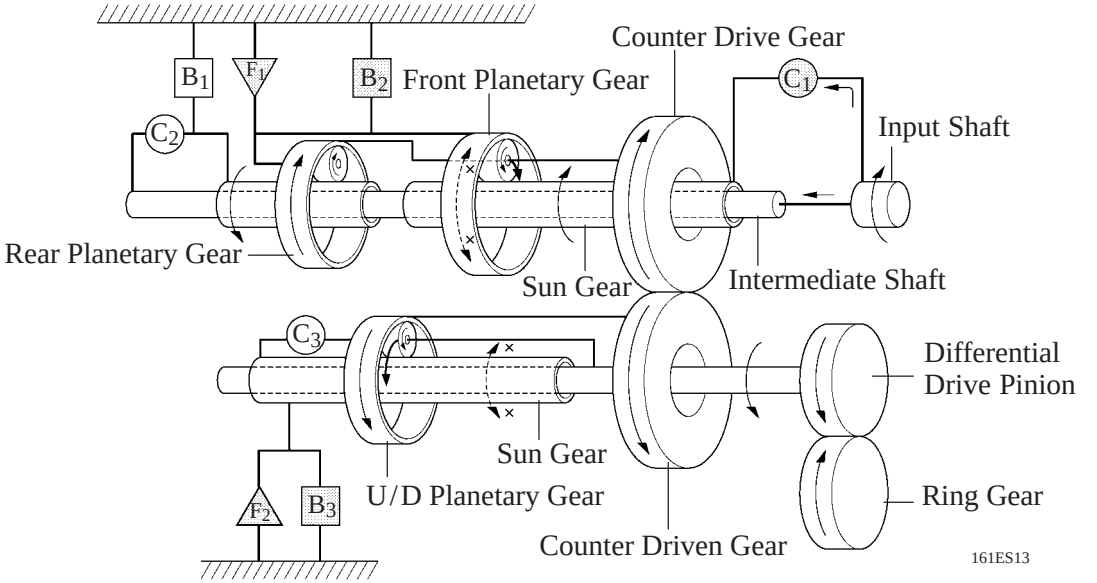


4th Gear (D Position)

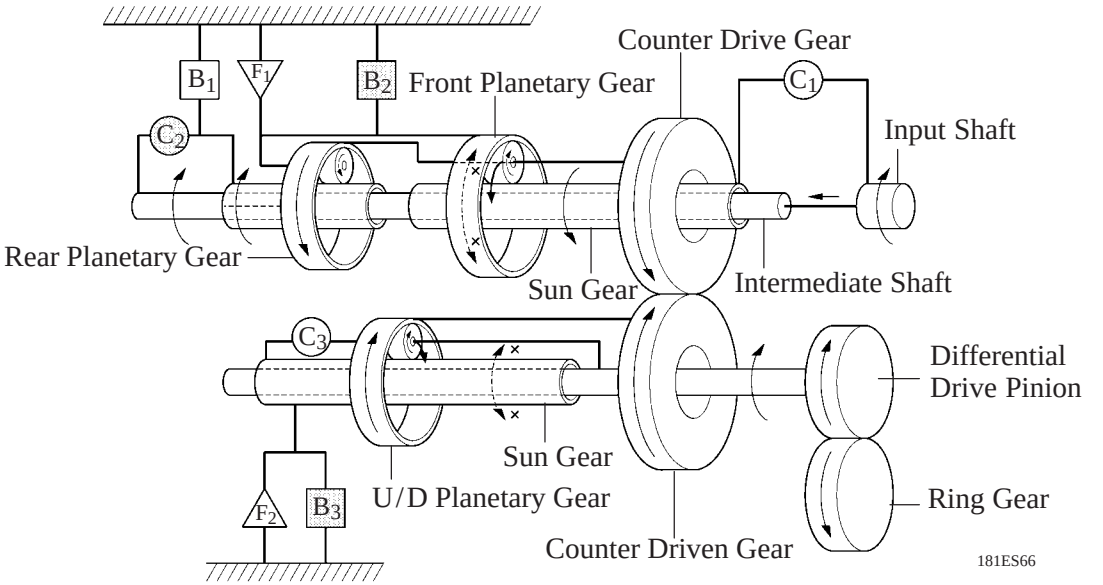


CH

1st Gear (L Position)



Reverse Gear (R Position)

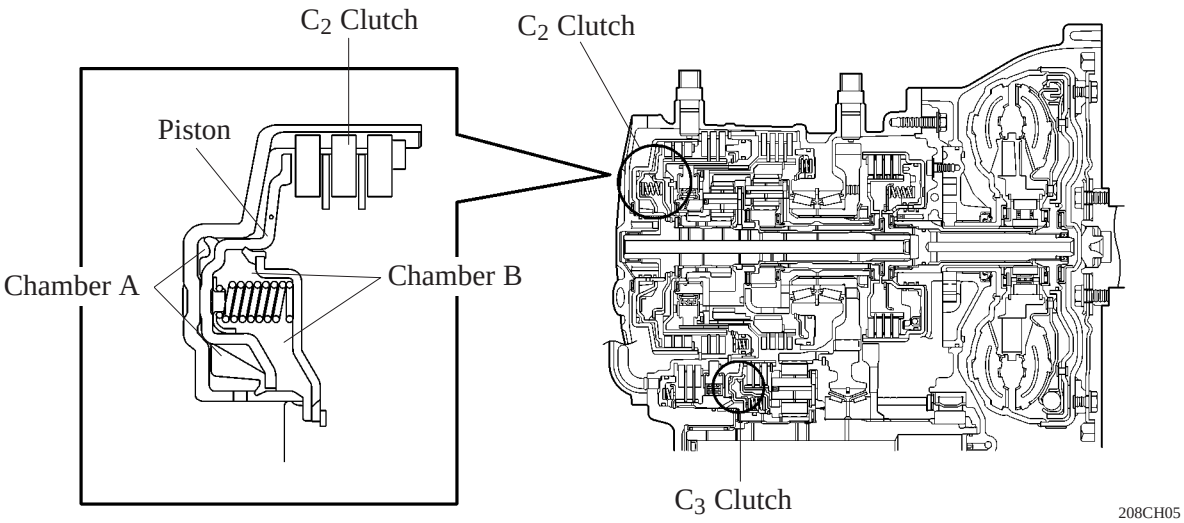


4. Centrifugal Fluid Pressure Canceling Mechanism

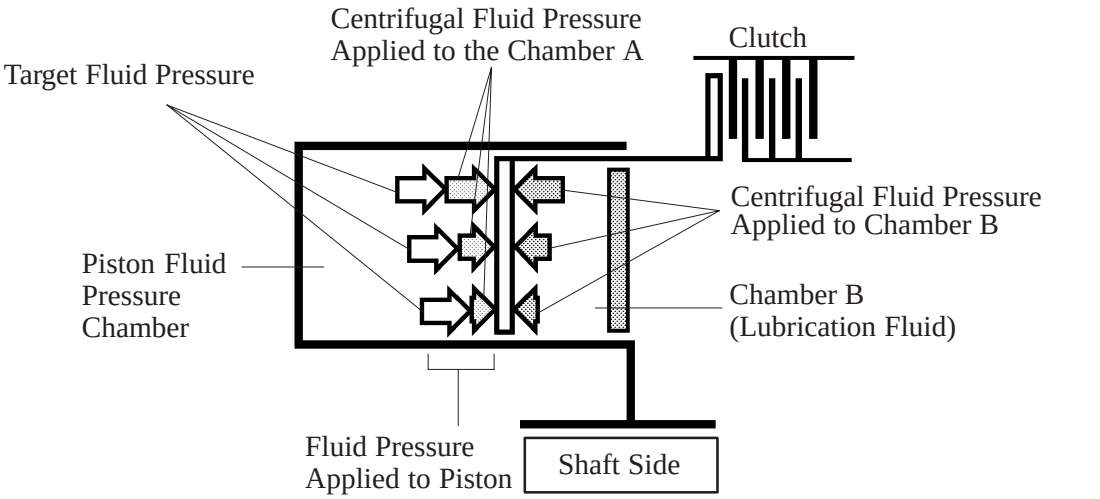
There are two reasons for improving the conventional clutch mechanism:

- To prevent the generation of pressure by the centrifugal force that applied to the fluid in piston fluid pressure chamber (hereafter referred to as "chamber A") when the clutch is released, a check ball is provided to discharge the fluid. Therefore, before the clutch can be subsequently applied, it took time for the fluid to fill the chamber A.
- During shifting, in addition to the original clutch pressure that is controlled by the valve body, the pressure that acts on the fluid in the chamber A also exerts influence, which is dependent upon revolution fluctuations.

To address these two needs for improvement, a canceling fluid pressure chamber (hereafter referred to as "chamber B") has been provided opposite chamber A.



By utilizing the lubrication fluid such as that of the shaft, the same amount of centrifugal force is applied, thus canceling the centrifugal force that is applied to the piston itself. Accordingly, it is not necessary to discharge the fluid through the use of a check ball, and a highly responsive and smooth shifting characteristic has been achieved.



Fluid pressure applied to piston	−	Centrifugal fluid pressure applied to chamber B	=	Target fluid pressure (original clutch pressure)