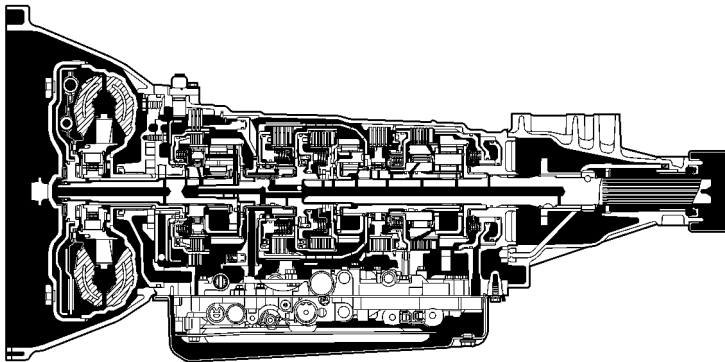


A340E AND A343E AUTOMATIC TRANSMISSIONS

DESCRIPTION

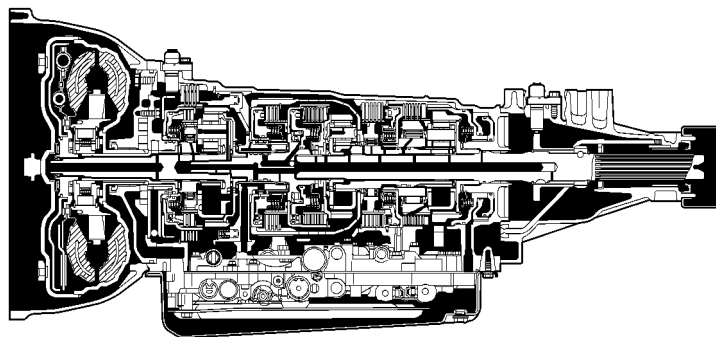
- The new Hiace uses the A340E and A343E automatic transmissions. These automatic transmissions are 4-speed ECT (Electronic Control Transmission).
- For the A340E automatic transmission that is used on the 2KD-FTV engine models, the engine ECU and the transmission control ECU are separated. The engine ECU and the transmission control ECU exchange information via CAN (Controller Area Network) communication.
- The automatic transmissions and their applications are indicated below.

Transmission	Engine Type	Control ECU
A340E	2KD-FTV	Transmission Control ECU
A343E	2TR-FE	Engine ECU



286CH05

A340E



A343E

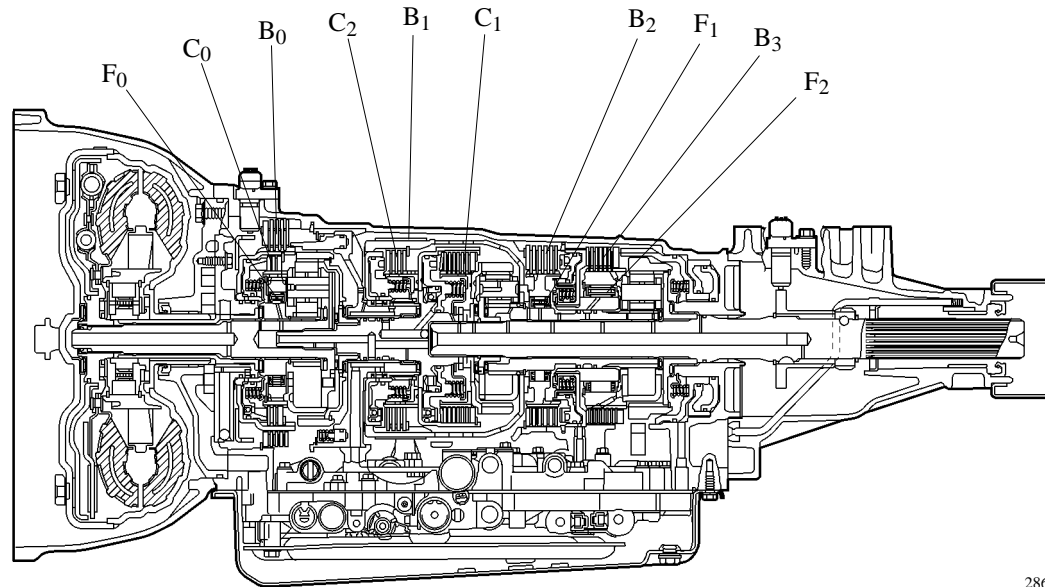
286CH04

Specifications

Transmission Type		A340E	A343E
Engine Type		2KD-FTV	2TR-FE
Gear Ratio	1st	2.804	←
	2nd	1.531	←
	3rd	1.000	←
	4th	0.705	0.753
	Reverse	2.393	←
Fluid Capacity	Liters (US qts, Imp.qts)	8.3 (8.8, 7.3)	←
Fluid Type		TOYOTA Genuine ATF Type T-IV	←
Weight (Reference)*	kg (lb)	79.5 (174.9)	79.7 (175.3)

*: Weight shows the figure with the fluid fully filled.

► Planetary Gear Unit Specification ◀



286CH06

► Specifications of the clutch, brake and gear train in the A340E and A343E ◀

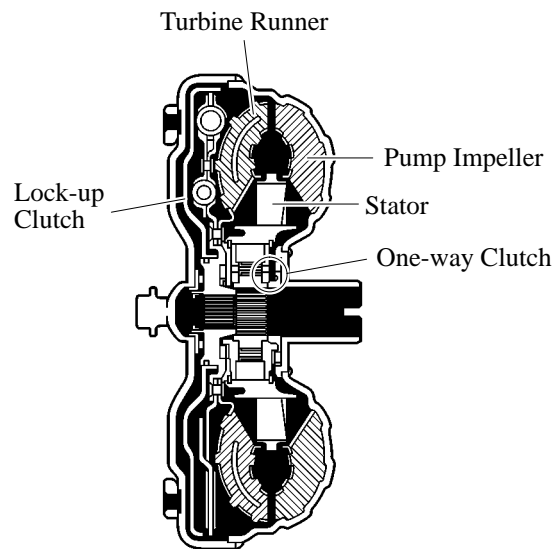
Transmission Type			Type		
			A340E	A343E	
C ₀	OD Direct Clutch	No. of Discs	2	←	
C ₁	Forward Clutch		5	←	
C ₂	Direct Clutch		4	3	
B ₀	OD Brake		3	4	
B ₁	2nd Coast Brake	Band Width	mm (in.)	40 (1.57)	←
B ₂	2nd Brake	No. of Discs	5	←	
B ₃	1st & Reverse Brake		6	←	
F ₀	OD One-Way Clutch		20	←	
F ₁	No.1 One-Way Clutch		18	←	
F ₂	No.2 One-Way Clutch		28	←	
Front Planetary Gear	No. of Sun Gear Teeth		42	←	
	No. of Pinion Gear Teeth		19	←	
	No. of Ring Gear Teeth		79	←	
Rear Planetary Gear	No. of Sun Gear Teeth		33	←	
	No. of Pinion Gear Teeth		23	←	
	No. of Ring Gear Teeth		79	←	
OD Planetary Gear	No. of Sun Gear Teeth		33	31	
	No. of Pinion Gear Teeth		23	32	
	No. of Ring Gear Teeth		79	95	

■ TORQUE CONVERTER

- A compact, lightweight and high-capacity torque converter is used.
- The torque converter clutch supports lock-up clutch control, thus improving the fuel economy.

► Specifications ◀

Type	3-Element, 1-Step, 2-Phase (with lock up mechanism)	
Stall Torque Ratio	2KD-FTV	1.90
	2TR-FE	1.90



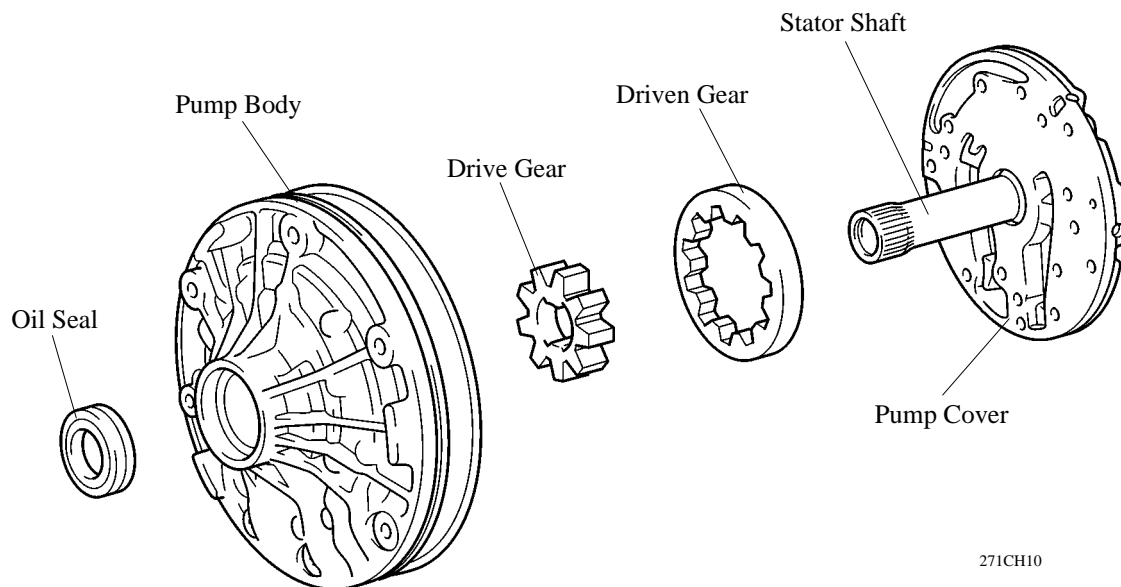
271CH09

■ OIL PUMP

The oil pump is combined with the torque converter, lubricates the planetary gear units and supplies operating pressure to the hydraulic control system. The drive gear of the oil pump is continually driven by the engine via the torque converter pump impeller. The pump has sufficient capacity to supply the necessary fluid pressure throughout all speed ranges, including the reverse.

► Specifications ◀

Gear	Gear Teeth
Drive Gear	9
Driven Gear	11

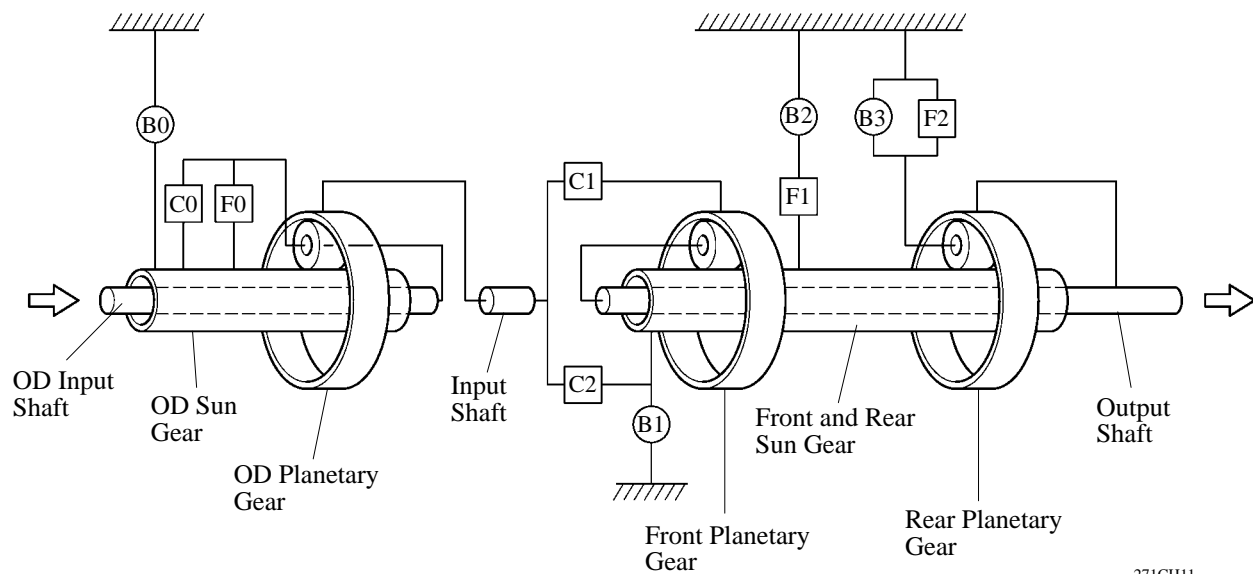


271CH10

■ PLANETARY GEAR UNIT

1. Construction

The gear train consists of three multi-plate clutches, three multi-plate brakes, a single band type brake, three one-way clutches, and three planetary gear sets each consisting of a sun gear, pinion gear and ring gear.



2. Function of Components

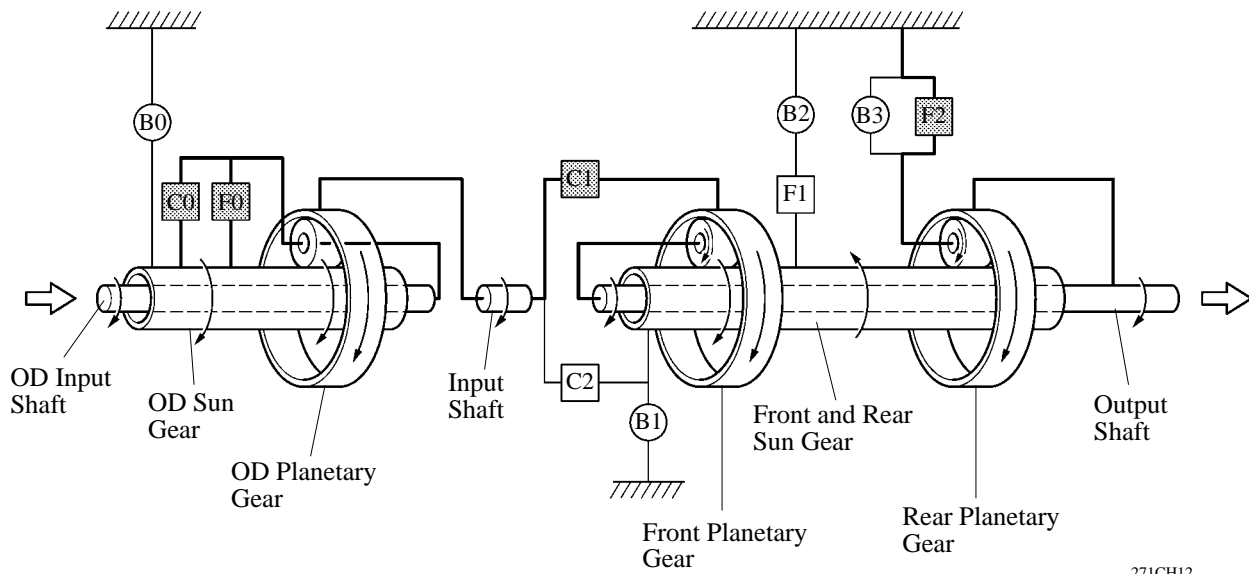
Components		Function
C ₀	OD Direct Clutch	Connects OD sun gear and OD planetary carrier.
C ₁	Forward Clutch	Connects input shaft and front planetary ring gear.
C ₂	Direct Clutch	Connects input shaft and front and rear sun gear.
B ₀	OD Brake	Prevents OD sun gear from turning either clockwise or counterclockwise.
B ₁	2nd Coast Brake	Prevents front and rear sun gear from turning either clockwise or counterclockwise.
B ₂	2nd Brake	Prevents outer race of F ₁ from turning either clockwise or counterclockwise, thus preventing front and rear sun gear from turning counterclockwise.
B ₃	1st & Reverse Brake	Prevents rear planetary carrier from turning either clockwise or counterclockwise.
F ₀	OD One-Way Clutch	When engine power is transmitted to OD input shaft, connects OD sun gear and planetary carrier.
F ₁	No.1 One-Way Clutch	When B ₂ is operating, prevents front and rear sun gear from turning counterclockwise.
F ₂	No.2 One-Way Clutch	Prevents rear planetary carrier from turning counterclockwise.
Planetary Gears		Change power transmission route according to clutch and brake operations, and increase or decrease output shaft revolution accordingly.

3. Transmission Power Flow

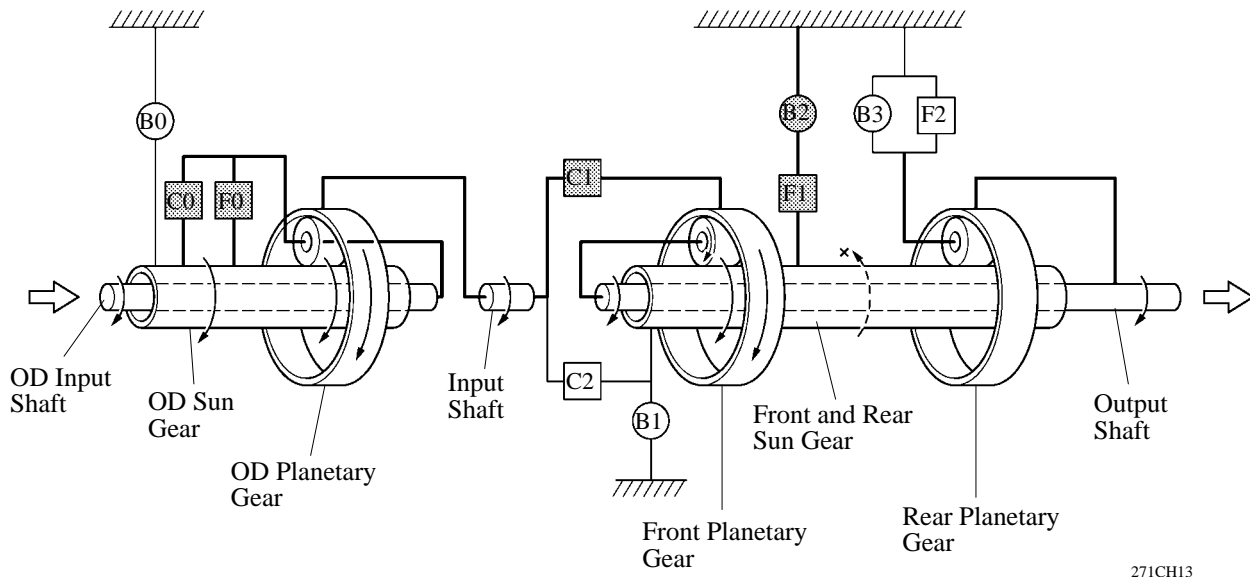
► Operating Conditions ◀

Shift Lever Position	Gear	Solenoid Valve S1	Solenoid Valve S2	Clutch			Brake				One-way Clutch			
				C ₀	C ₁	C ₂	B ₀	B ₁	B ₂	B ₃	F ₀	F ₁	F ₂	
P	Park	ON		○										
R	Reverse	ON		○		○					○	○		
N	Neutral	ON		○										
D	1st	ON		○	○						○			○
	2nd	ON	ON	○	○				○		○	○		
	3rd		ON	○	○	○			○		○			
	4th				○	○	○		○					
2	1st	ON		○	○						○			○
	2nd	ON	ON	○	○			○	○		○	○		
L	1st	ON		○	○						○	○		○

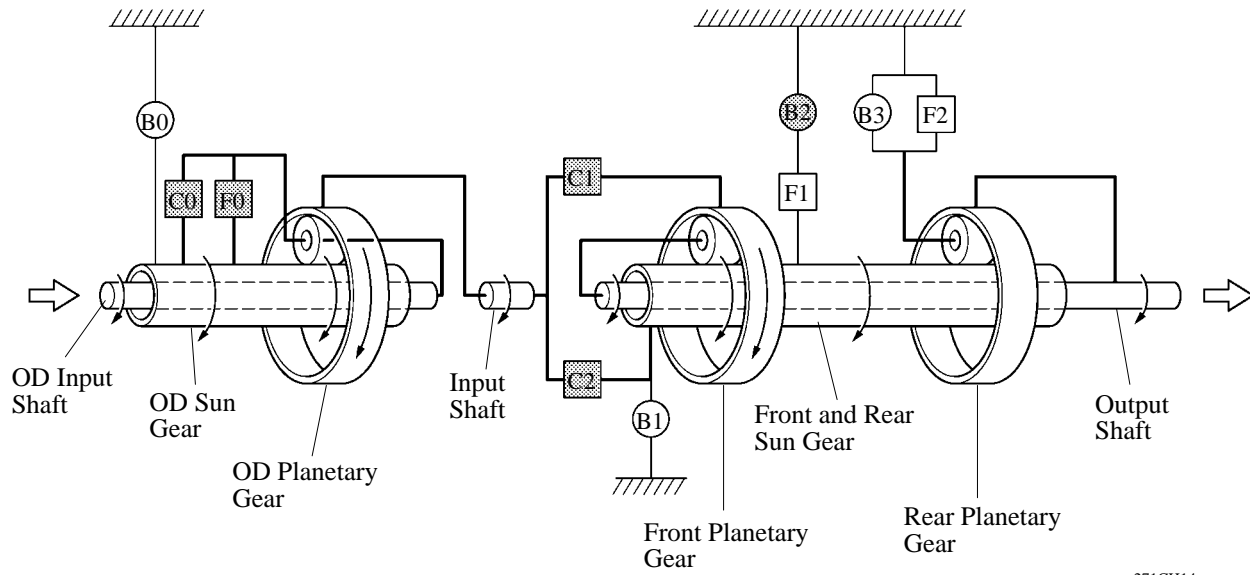
1st Gear (D or 2 Position)



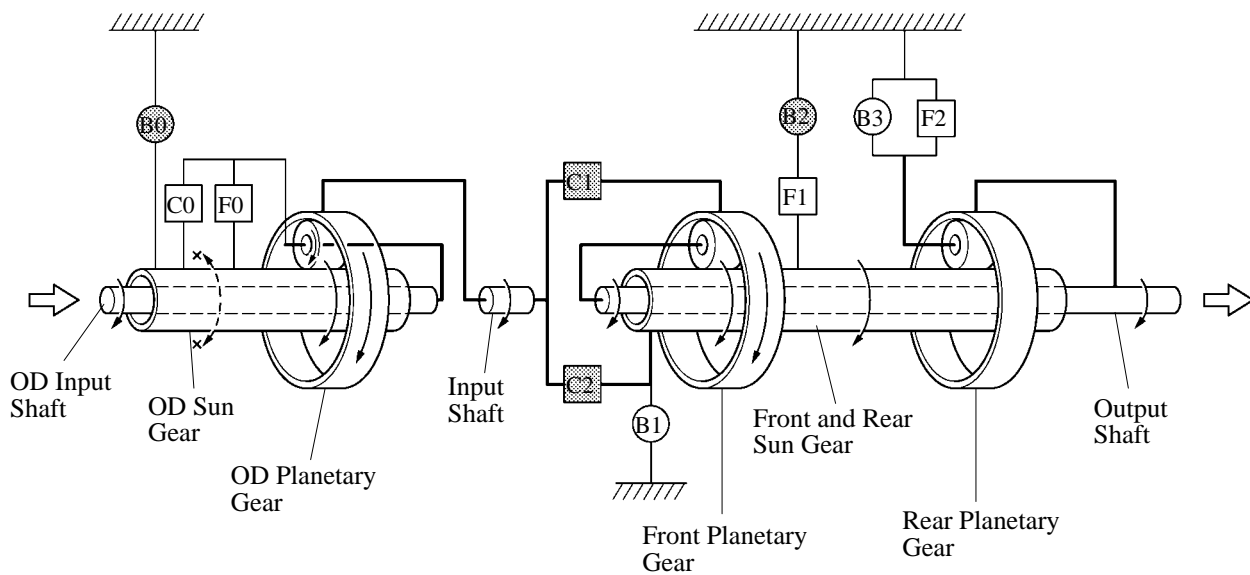
2nd Gear (D Position)



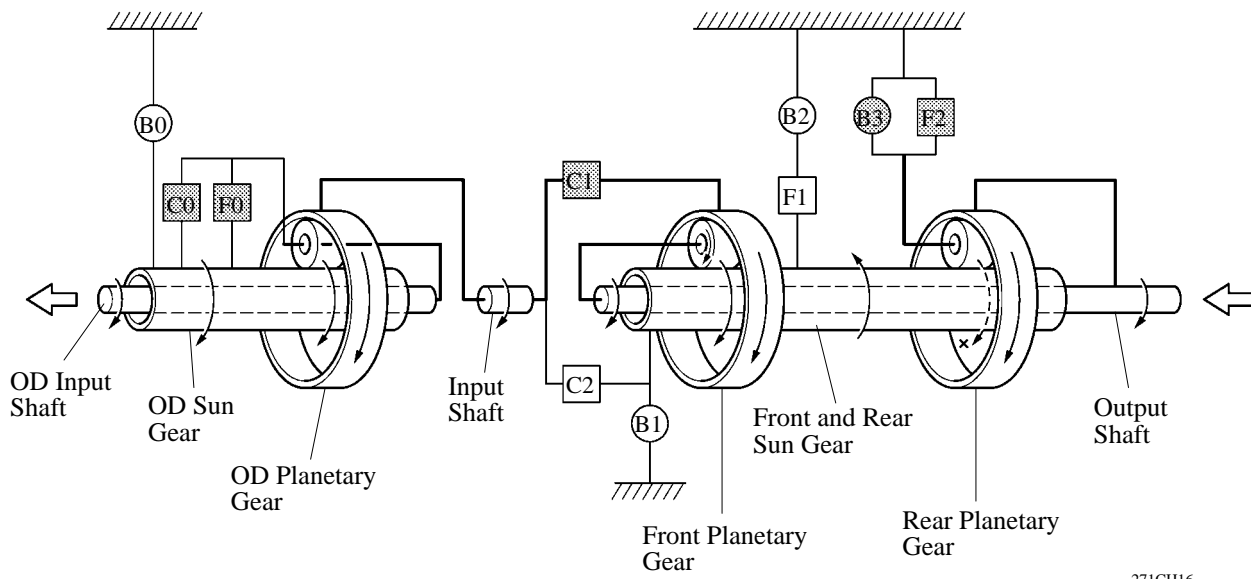
3rd Gear (D Position)



4th Gear (D Position)

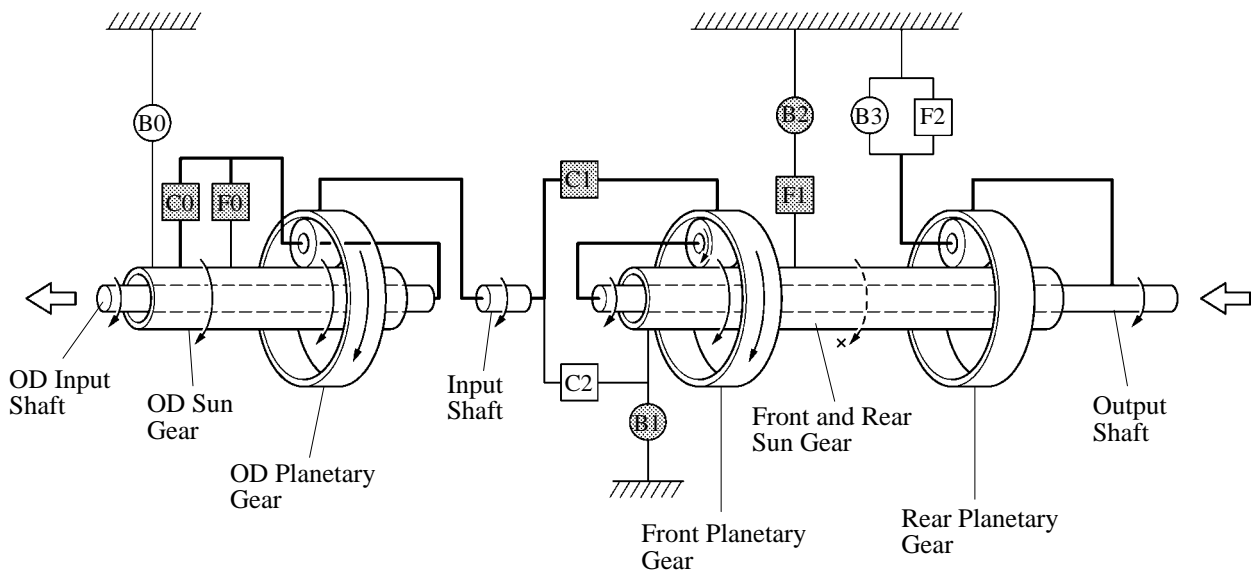


1st Gear (L Position), Engine Braking



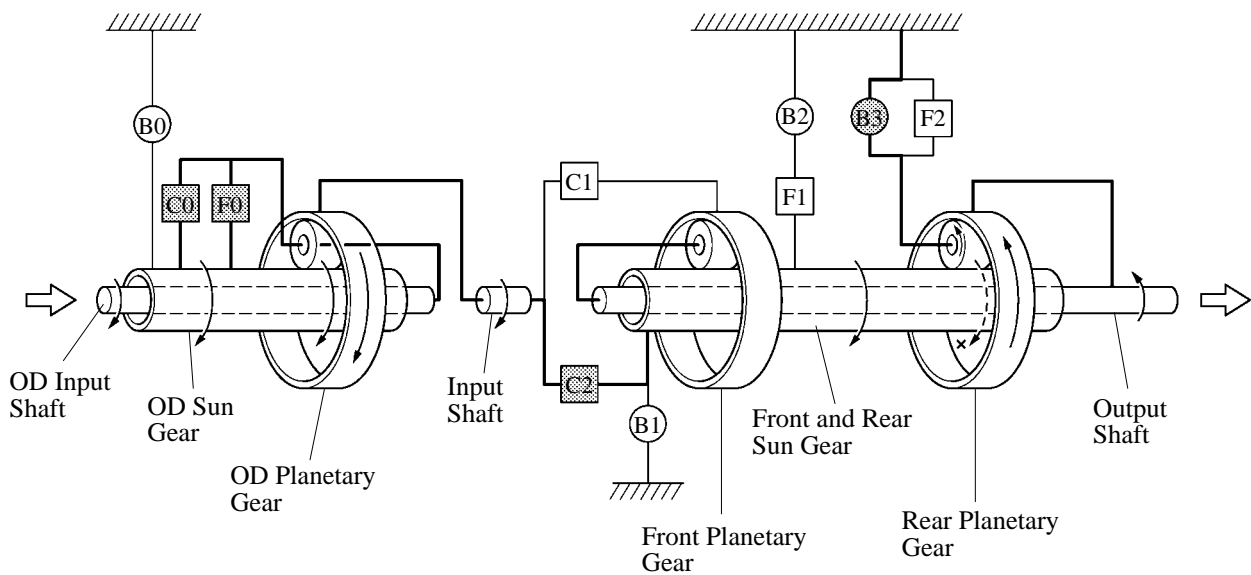
271CH16

2nd Gear (2 Position), Engine Braking



271CH17

Reverse Gear (R Position)

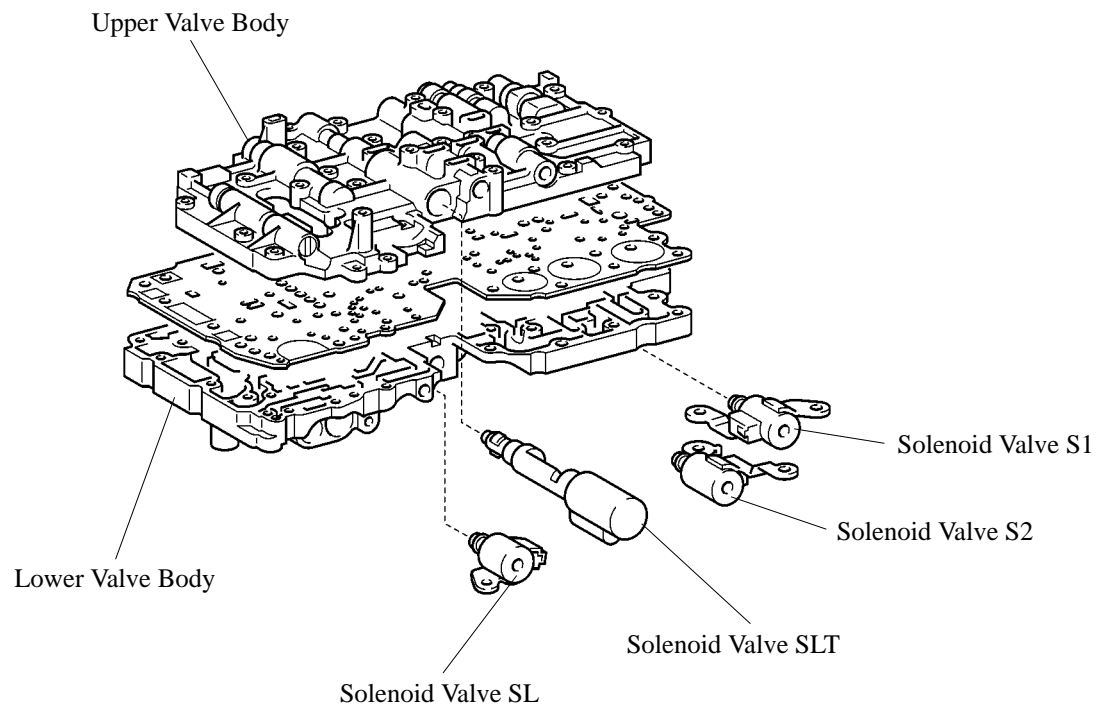


271CH18

■ VALVE BODY UNIT

1. General

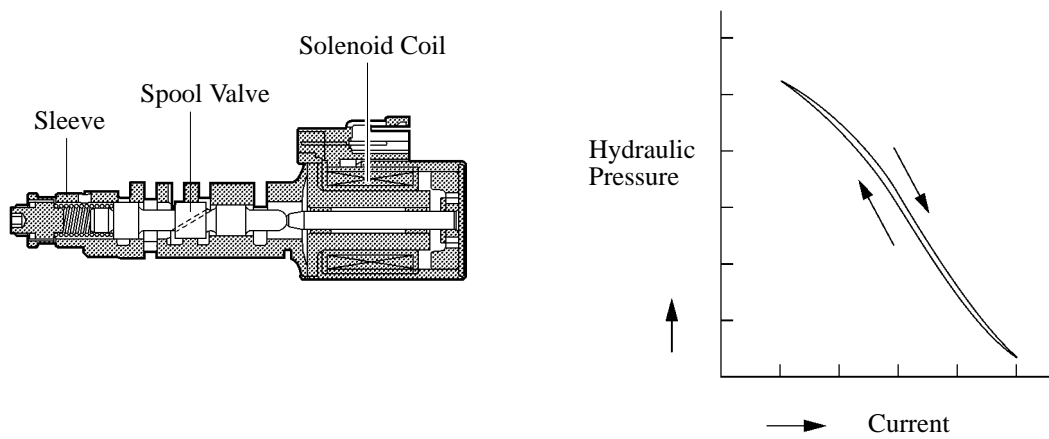
The valve body unit consists of the upper and lower valve bodies and 4 solenoid valves.



271CH19

2. Solenoid Valve SLT

In order to provide a hydraulic pressure that is proportion to current that flows to the solenoid coil, the solenoid valve SLT linearly controls the line pressure based on the signals received from the engine ECU (transmission control ECU).



237CH27

237CH28