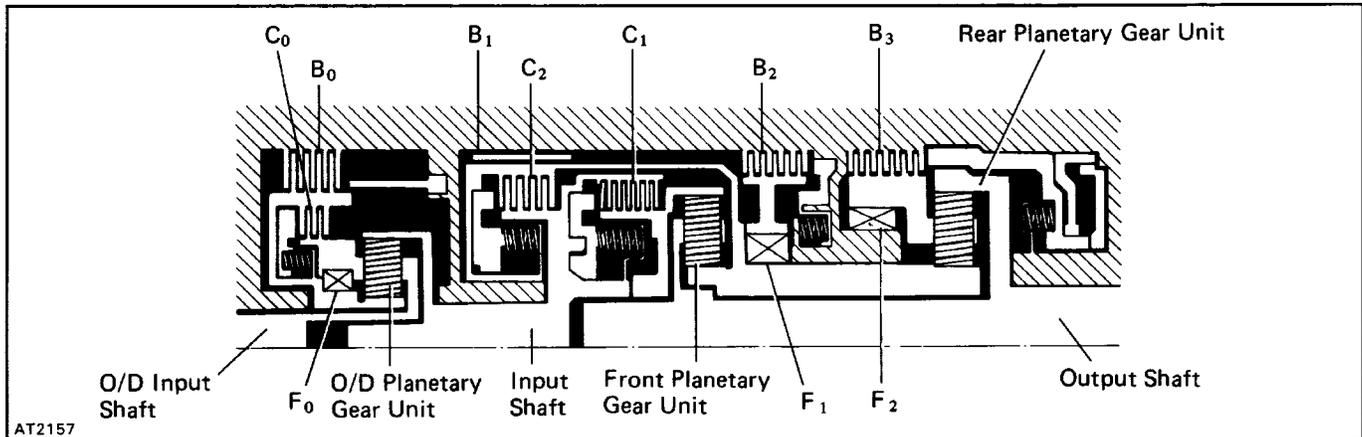


OPERATION

Mechanical Operation

OPERATING CONDITIONS

1. Transmission



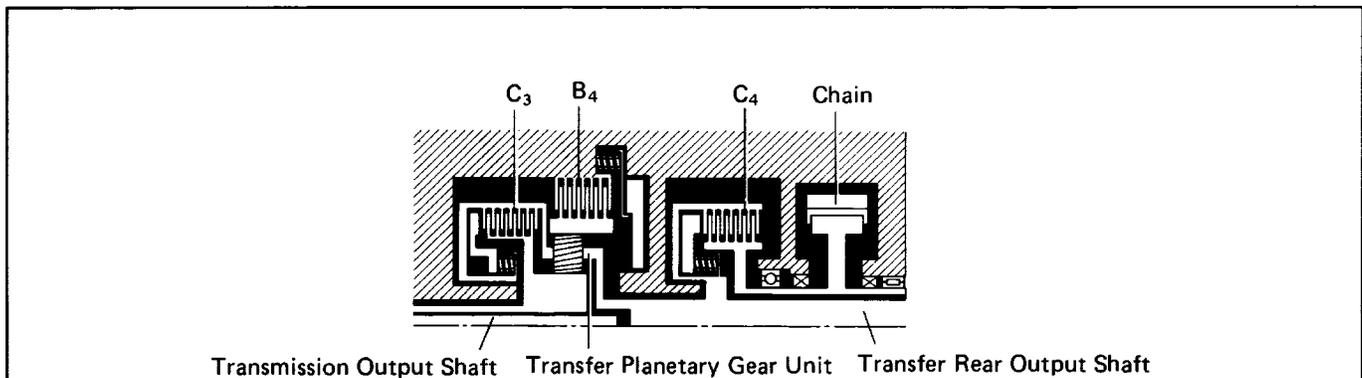
AT2157

Shift Level Position	Gear	No. 1 Solenoid Valve	No. 2 Solenoid Valve	C ₀	C ₁	C ₂	B ₀	B ₁	B ₂	B ₃		F ₀	F ₁	F ₂
										I.P.	O.P.			
P	Parking	ON	OFF	●										
R	Reverse	ON	OFF	●		●					●	●	●	
N	Neutral	ON	OFF	●										
D	1st	ON	OFF	●	●							●		●
	2nd	ON	ON	●	●				●			●	●	
	3rd	OFF	ON	●	●	●			●			●		
	O/D	OFF	OFF		●	●	●		●					
2	1st	ON	OFF	●	●							●		●
	2nd	ON	ON	●	●			●	●			●	●	
	3rd	OFF	ON	●	●	●			●			●		
L	1st	ON	OFF	●	●						●	●	●	●
	* 2nd	ON	ON	●	●			●	●			●	●	

* Down-shift only in the L position and 2nd gear—no up-shift.

I.P. Inner Piston
O.P. Outer Piston

2. Transfer



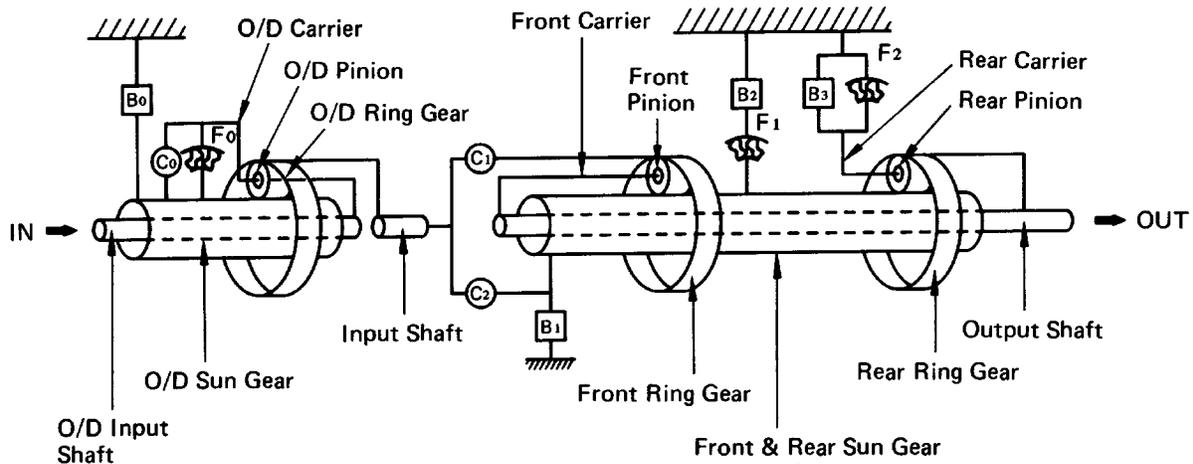
ND0045

Transfer gear position	No.4 solenoid valve	C ₃	C ₄	B ₄
H2	OFF	●		
H4	OFF	●	●	
L4	ON		●	●

FUNCTION OF COMPONENTS

1. Transmission

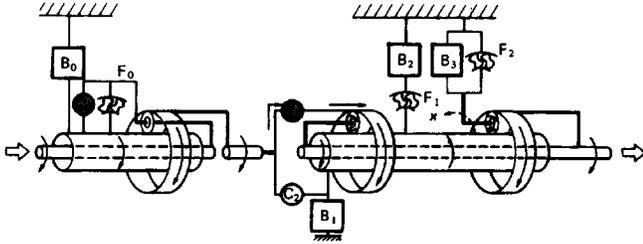
Component		Function
C ₁	Forward Clutch	Connects input shaft and front planetary ring gear.
C ₂	Direct Clutch	Connects input shaft and front & rear planetary sun gear.
C ₀	O/D Direct Clutch	Connects overdrive sun gear and overdrive planetary carrier.
B ₁	2nd Coast Brake	Prevents front & rear planetary sun gear from turning either clockwise or counterclockwise.
B ₂	2nd Brake	Prevents outer race of F, from turning either clockwise or counterclockwise thus preventing the front & rear planetary sun gear from turning counterclockwise.
B ₃	1 st & Reverse Brake	Prevents rear planetary carrier from turning either clockwise or counterclockwise.
B ₀	O/D Brake	Prevents overdrive sun gear from turning either clockwise or counterclockwise.
F ₁	No. 1 One-Way Clutch	When B ₂ is operating, this clutch prevents the front & rear planetary sun gear from turning counterclockwise.
F ₂	No.2 One-Way Clutch	Prevents rear planetary carrier from turning counterclockwise.
F ₀	O/D One-Way Clutch	When the transmission is being driven by the engine, this clutch connects the overdrive sun gear and overdrive planetary carrier.
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.



FUNCTION OF COMPONENTS (Cont'd)

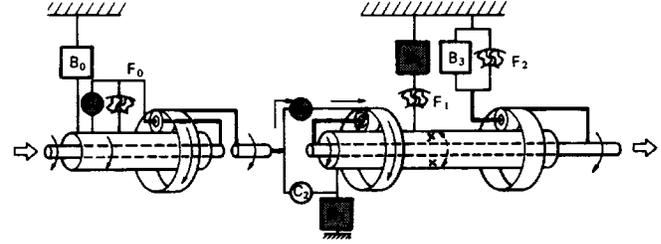
The conditions of operation for each gear position are shown in the following illustrations:

D or 2 Position 1st Gear



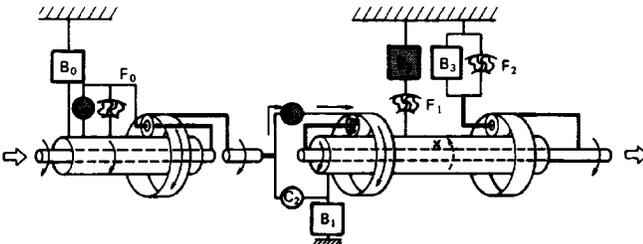
AT5854

2 or L Position 2nd Gear



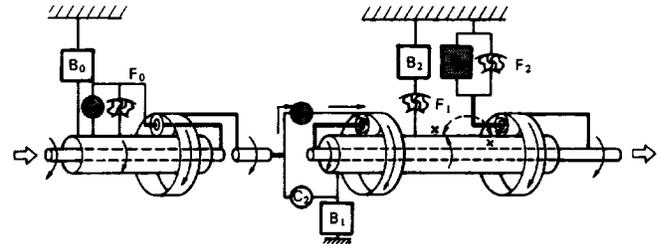
AT5854

D Position 2nd Gear



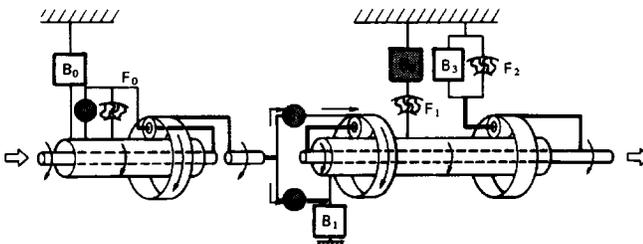
AT5854

L Position 1st Gear



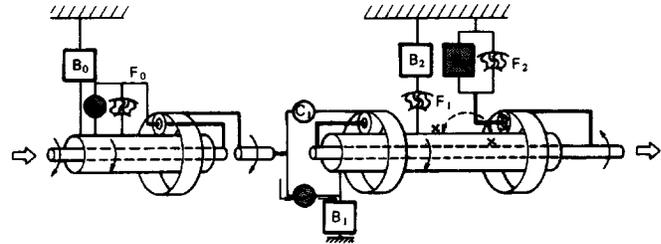
AT5854

D or 2 Position 3rd Gear



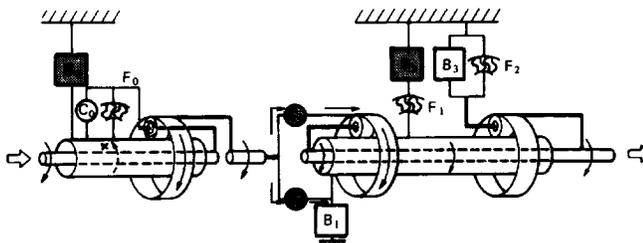
AT5854

R Position Reverse Gear



AT5854

D Position O/D

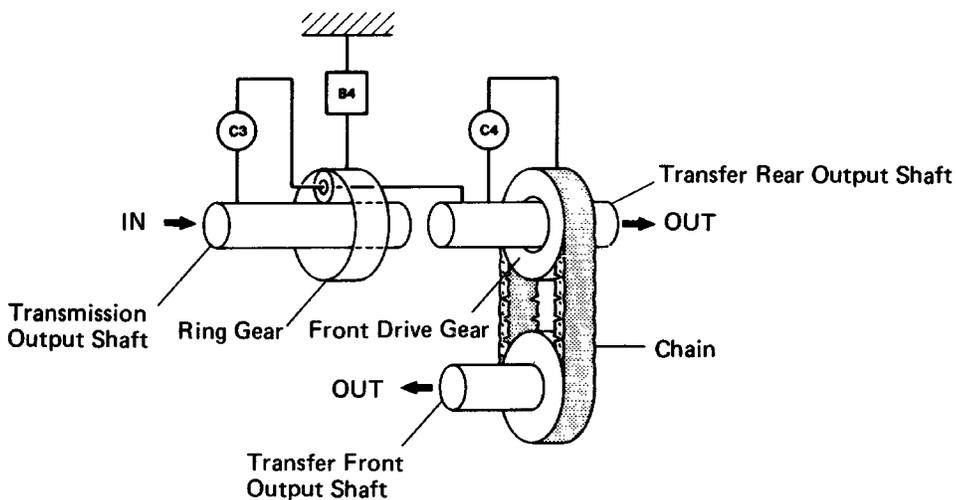


AT5854

FUNCTION OF COMPONENTS (Cont'd)

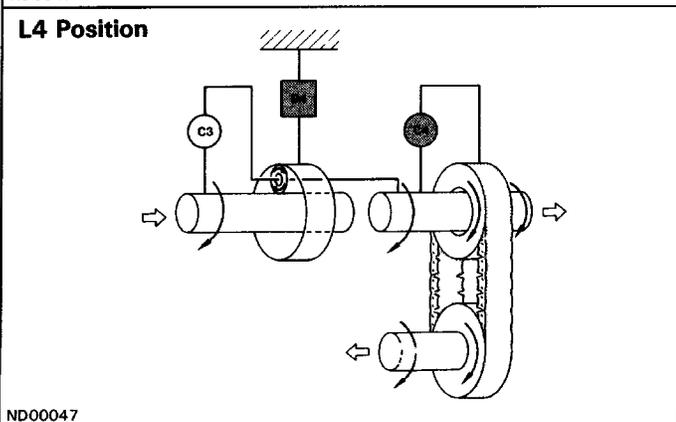
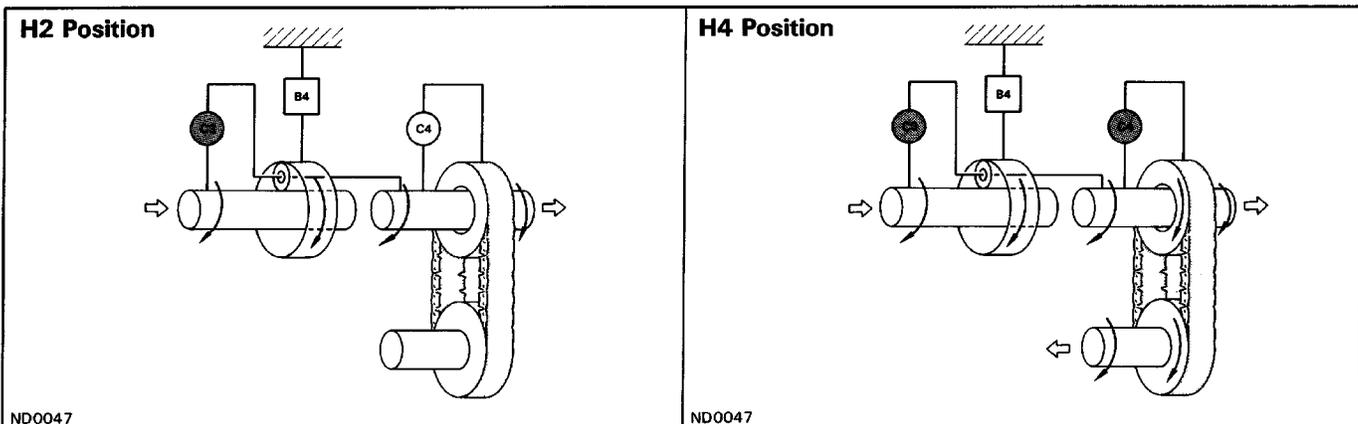
2. Transfer

Component		Function
C ₃	Forward Clutch	Connects transmission output shaft and transfer pinion gear.
C ₄	Direct Clutch	Connects transfer rear output shaft and front drive gear.
B ₄	O/D Direct Clutch	Prevents transfer ring gear from turning either clockwise or counterclockwise.



ND0047

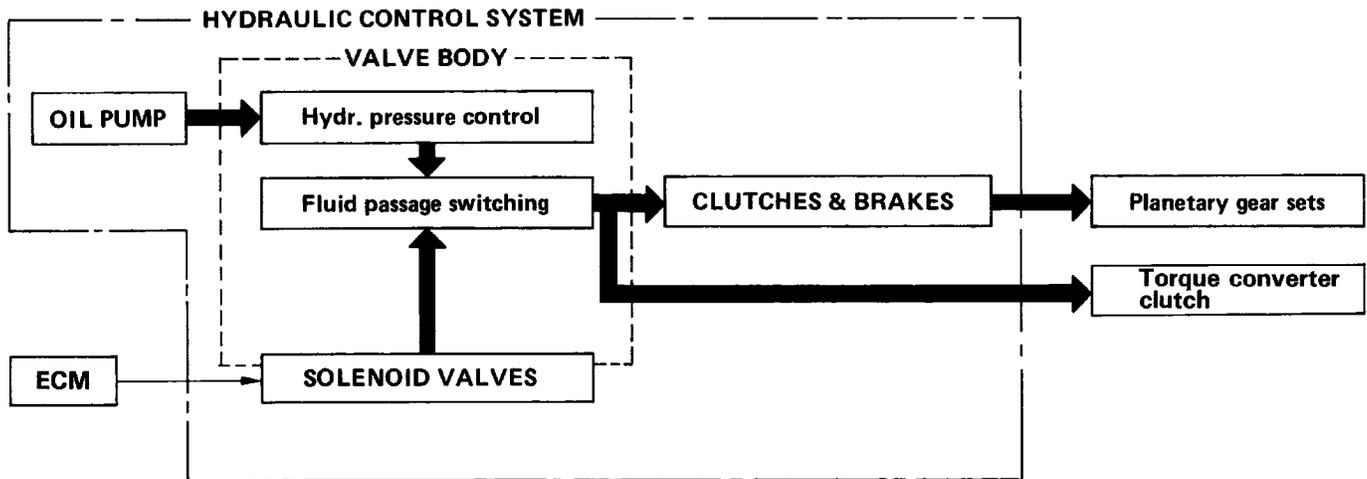
The conditions of operation for each gear position are shown in the following illustrations:



Hydraulic Control System

1. Transmission

The hydraulic control system is composed of the oil pump, the valve body, the solenoid valves, and the clutches and brakes, as well as the fluid passages which connect all of these components. Based on the hydraulic pressure created by the oil pump, the hydraulic control system governs the hydraulic pressure acting on the torque converter clutch, clutches and brakes in accordance with the vehicle driving conditions. There are three solenoid valves on the valve body. These solenoid valves are turned on and off by signals from the ECM to operate the shift valves. These shift valves then switch the fluid passages so that fluid goes to the torque converter clutch and planetary gear units.



2 Transfer

The hydraulic control system consists of a valve body, No.4 solenoid valve, a brake (B₄) and two clutches (C₃, C₄) and passages that connect these elements. It hydraulically controls the planetary gear unit either manually, or automatically by the ECM.

Electronic Control System

The electronic control system, which controls the transmission and transfer shift timing and the operation of the lock-up clutch, is composed of the following three parts:

1. Sensors

These sensors sense the vehicle speed, throttle opening and other conditions and send these data to the ECM in the form of electrical signals.

2. ECM

The ECM determines the transmission and transfer shift timing and lock-up timing based upon the signals from sensors, and controls the solenoid valves of the hydraulic control unit accordingly.

3. Actuators

These are four solenoid valves that control hydraulic pressure acting on the hydraulic valves to control shifting and lock-up timing.

