

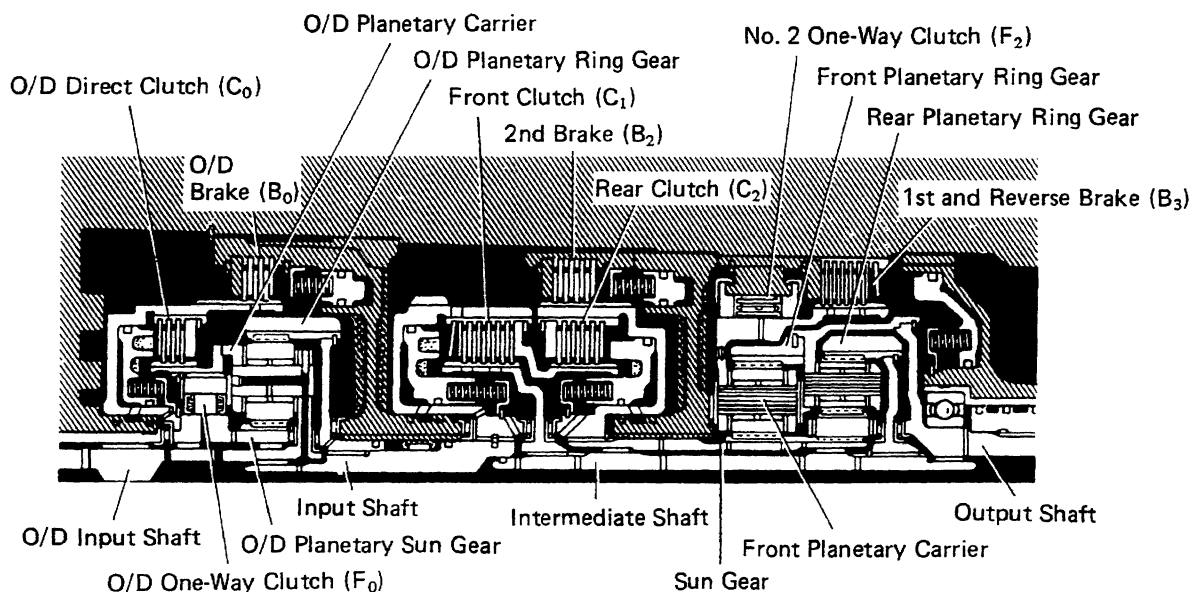
OPERATION

PLANETARY GEAR UNIT

The planetary gear unit is composed of three sets of planetary gears, three clutches which transmit power to the planetary gears, and three brakes and two one-way clutches which immobilize the planetary carrier and planetary sun gear.

Power from the engine transmitted the input shaft via the torque converter is then transmitted to the planetary gears by the operation of the clutches. By operation of the brakes and one-way clutches, either the planetary carrier or the planetary sun gear is immobilized, altering the speed of revolution of the planetary gear unit. Shift change is carried out by altering the combination of clutch and brake operation.

Each clutch and brake operates by hydraulic pressure; gear position is decided according to the throttle opening angle and vehicle speed, and shift change automatically occurs.



AT3918

OPERATION OF EACH ELEMENT

NOMENCLATURE	OPERATION
O/D Direct Clutch (C_0)	Connects overdrive sun gear and overdrive carrier
O/D Brake (B_0)	Prevents overdrive sun gear from turning either clockwise or counterclockwise
O/D One-Way Clutch (F_0)	When transmission is being driven by engine, connects overdrive sun gear and overdrive carrier
Front Clutch (C_1)	Connects input shaft and intermediate shaft
Rear Clutch (C_2)	Connects input shaft and front & rear planetary sun gear
2nd Brake (B_2)	Prevents front & rear planetary sun gear from turning either clockwise or counterclockwise
1st. & Reverse Brake (B_3)	Prevents front planetary carrier from turning either clockwise or counterclockwise
No.2 One-Way Clutch (F_2)	Prevents front planetary carrier from turning counterclockwise

OPERATING CONDITION FOR EACH GEAR

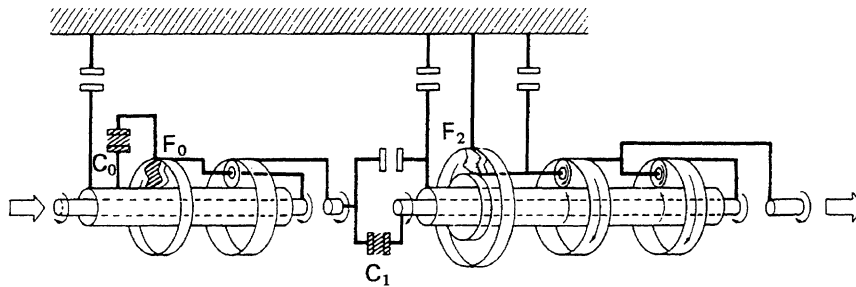
○....Operating

Shift lever position	Gear position	C ₀	C ₁	C ₂	B ₀	B ₂	B ₃	F ₀	F ₂
P	Parking	○						○	
R	Reverse	○		○			○	○	
N	Neutral	○						○	
D	1st.	○	○					○	○
	2nd		○			○		○	
	3rd	○	○	○				○	
	O/D		○	○	○				
3	1st.	○	○					○	○
	2nd		○			○		○	
	3rd	○	○	○				○	
2	2nd	○	○			○		○	
L	1st.	○	○				○	○	○

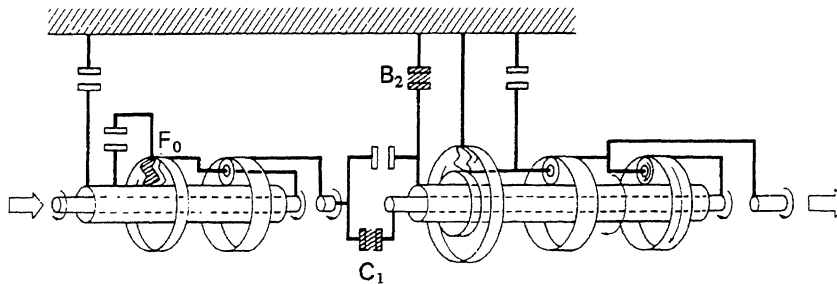
FUNCTION OF COMPONENTS

The conditions of operation for each gear position are shown on the following illustration:

D or 3 Range 1st. Gear

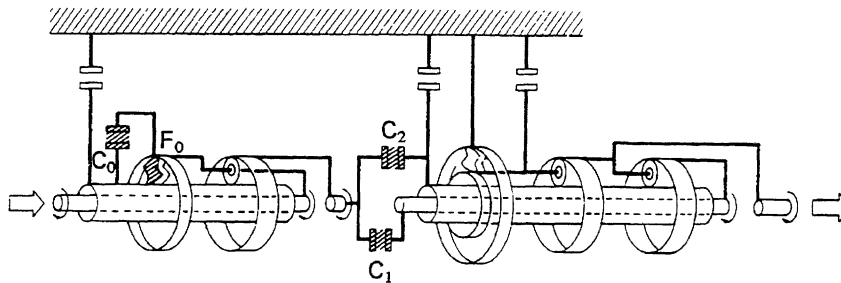


D or 3 Range 2nd Gear

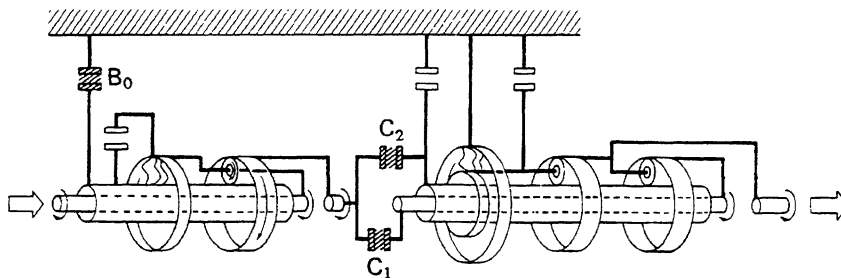


FUNCTION OF COMPONENTS (Cont'd)

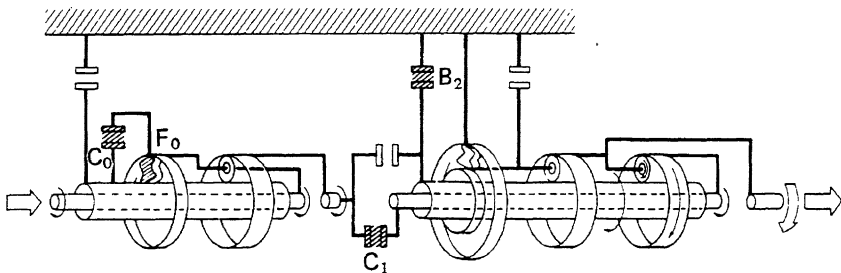
O or 3 Range 3rd Gear



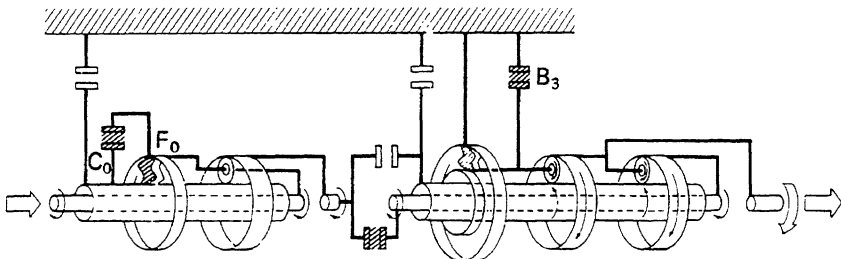
D Range O/D



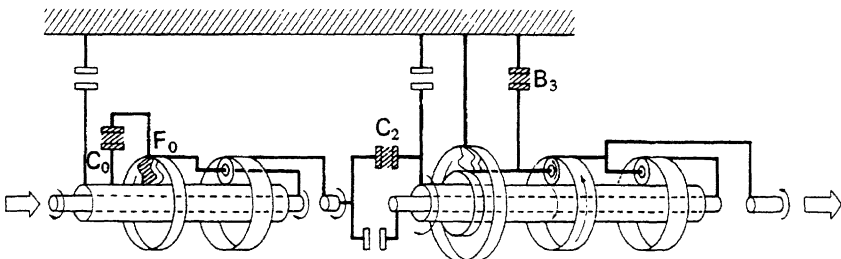
2 Range 2nd Gear



L Range 1st. Gear



R Range Reverse Gear



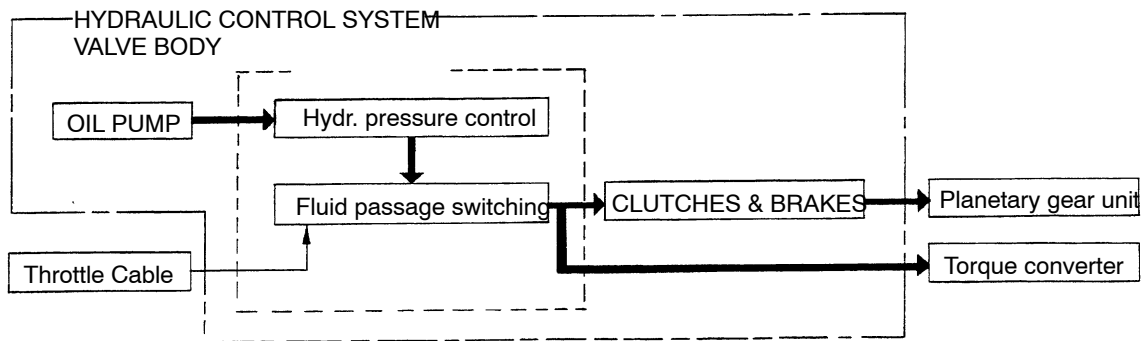
Hydraulic Control System

The hydraulic control system is composed of the oil pump, the valve body, the solenoid valve, the accumulators, the clutches and brakes, as well as the fluid passages which connect all of these components.

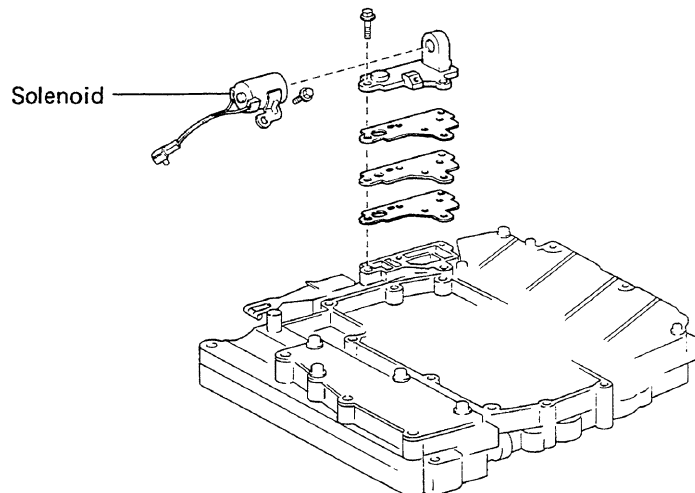
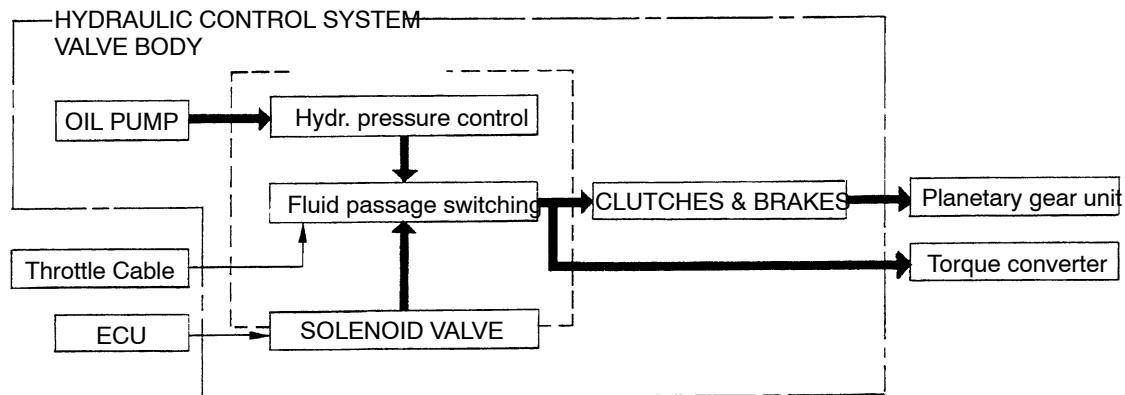
Based on the hydraulic pressure created by the oil pump, the hydraulic control system governs the hydraulic pressure acting on the torque converter, clutches and brakes in accordance with the vehicle driving conditions.

There is a solenoid valve on the valve body.

The solenoid valve accompany with the cruise control system is turned on and off by signals from the ECU to operate the 3-4 shift valve, and change the gear shift position.

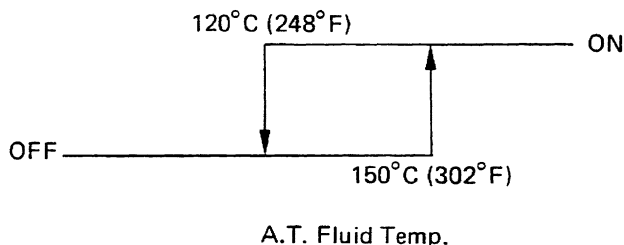
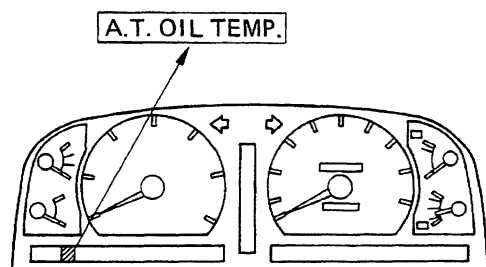


(w/ Cruise Control System)



A.T. FLUID TEMPERATURE WARNING SYSTEM

The ECU detects the A/T fluid temperature by means of a fluid temperature sensor fitted to the union. The A/T fluid may become extremely hot when the vehicle is under and extreme load, as when driving on sand or climbing uphill. Should the fluid temperature increase above 150°C (302°F), the ECU lights the warning light located in the combination meter. The light goes off when the temperature falls below 120°C (248°F).



A.T.P. (Automatic Transmission Parking) INDICATOR

The propeller shaft and wheels are free even when the transmission shift lever is set to "P" as long as the transfer shift lever is in "neutral" position. The A.T.P. indicator lights up to warn the driver that the propeller shaft and wheels are not locked. If the A.T.P. indicator light goes on, the transfer shift lever should be shifted to out of "N" position.

