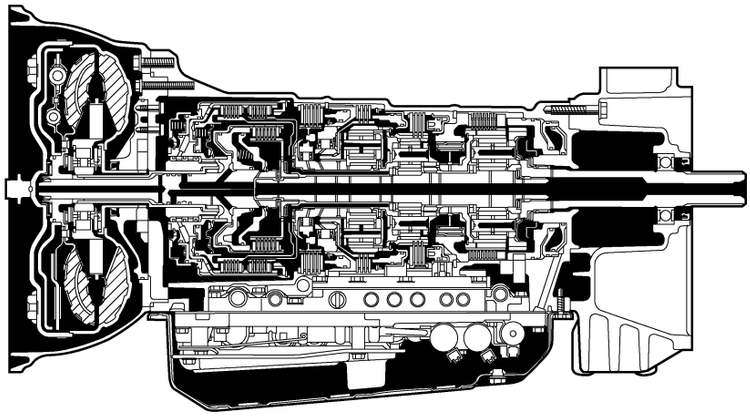
■A750F AUTOMATIC TRANSMISSION

1. General

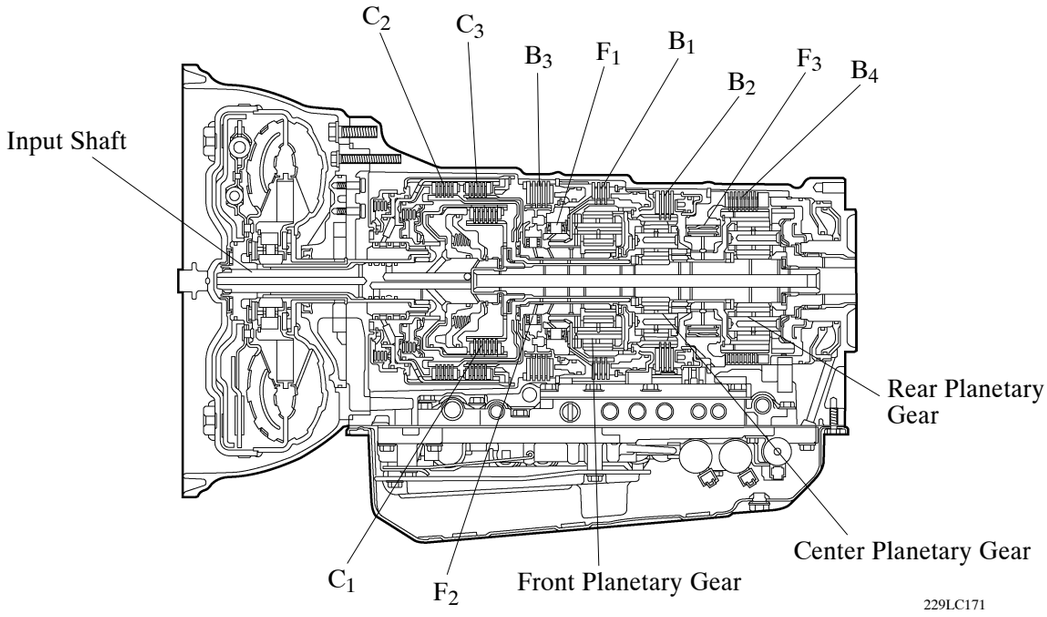
A newly developed A750F 5-speed automatic transmission [Super ECT (Electronically Controlled Transmission)] has been adopted.
In addition, the vehicle's fuel economy and driving performance have been improved by the change into a 5-speed.



229LC170

▶ Specification ◀

Model		'03 Model	'02 Model
Transmission Type		A750F	A343F
Gear Ratio	1st	3.520	2.804
	2nd	2.042	1.531
	3rd	1.400	1.000
	4th	1.000	0.754
	5th	0.716	—
	Reverse	3.224	2.393
Fluid Capacity Liters (US qts, Imp. qts)		10.8 (11.4, 9.5)	12.0 (12.7, 10.6)
Fluid Type		ATF Type T-IV	ATF D-II or equivalent
Dry Weight kg (lb)		79.9 (176.1)	78.6 (173.3)

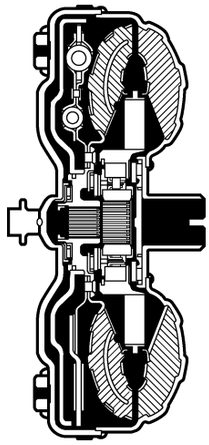


▶ **Specification** ◀

Model				A750F
C_1	No.1 Clutch	The No. of Discs		6
C_2	No.2 Clutch			5
C_3	No.3 Clutch			5
B_1	No.1 Brake			3
B_2	No.2 Brake			3
B_3	No.3 Brake			4
B_4	No.4 Brake			8
F_1	No.1 One-Way Clutch	The No. of Sprags		24
F_2	No.2 One-Way Clutch			25
F_3	No.3 One-Way Clutch			26
Front Planetary Gear		The No. of Sun Gear Teeth		40
		The No. of Pinion Gear Teeth	Inner	22
			Outer	21
		The No. of Ring Gear Teeth		91
Center Planetary Gear		The No. of Sun Gear Teeth		31
		The No. of Pinion Gear Teeth		23
		The No. of Ring Gear Teeth		77
Rear Planetary Gear		The No. of Sun Gear Teeth		25
		The No. of Pinion Gear Teeth		19
		The No. of Ring Gear Teeth		63

2. Torque Converter

- A compact, lightweight and high-capacity torque converter has been adopted.
- Compared to the '02 model, this torque converter offers improved transmission efficiency and a more compact and lightweight construction by optimizing the fluid passages and the impeller configuration.
- The torque converter clutch supports flex lock-up clutch control, thus improving the fuel economy.



229LC172

▶ **Specification** ◀

Model	A750F	A343F
	2UZ-FE	2UZ-FE
Type	3-Element, 1-Step, 2-Phase	←
Stall Torque Ratio	1.80	←
Dry Weight kg (lb)	15.2 (33.5)	16.2 (35.7)

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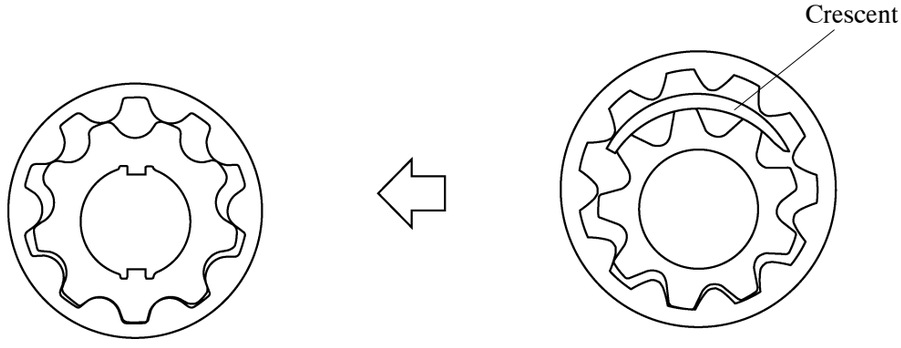
3. Oil Pump

A new type oil pump is used in which the shape of the teeth in the oil pump have been changed and the crescent has been discontinued. As a result, the oil pump has been made more compact, and the driving torque has been reduced, thus attaining excellent volumetric efficiency during low-speed operation.



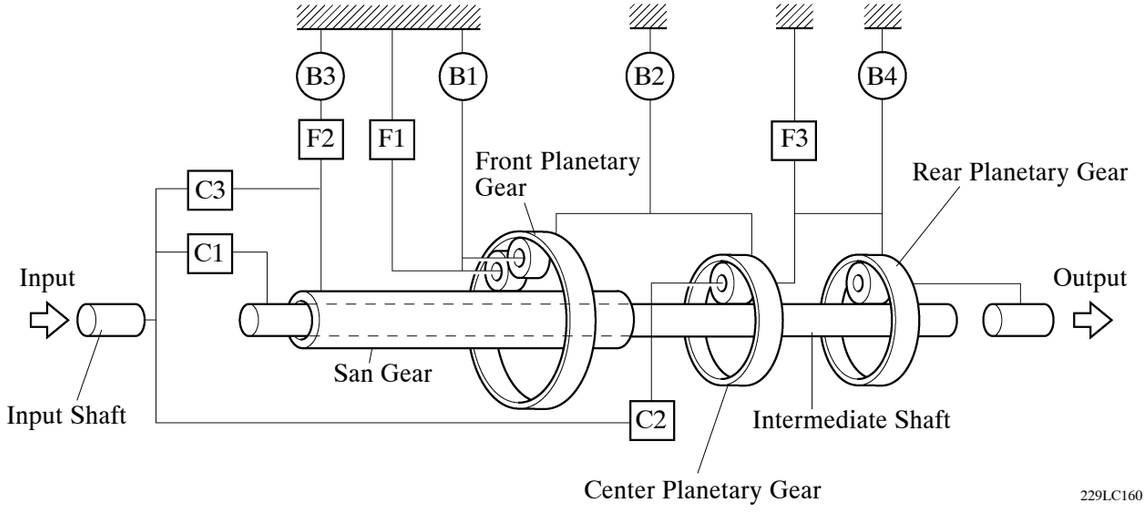
A750F **Conventional**

165CH10

4. Planetary Gear Unit

Construction

- The 5-speed configuration has been achieved without increasing the number of planetary gears, thus creating a 5-speed automatic transmission, practically the same as the previous 4-speed automatic transmission.
- The front planetary carrier is made of aluminum to reduce the weight.
- A centrifugal fluid pressure canceling mechanism has been adopted in the C_1, C_2, and C_3 clutches that are applied when shifting from 2nd to 3rd, from 3rd to 4th and from 4th to 5th. For details, refer to page 157.



Function of Component

Component		Function
C_1	No.1 Clutch	Connects input shaft and intermediate shaft.
C_2	No.2 Clutch	Connects input shaft and center planetary carrier.
C_3	No.3 Clutch	Connects input shaft and front sun gear.
B_1	No.1 Brake	Prevents front planetary carrier from turning either clockwise or counterclockwise.
B_2	No.2 Brake	Prevents front and center ring gear from turning either clockwise or counterclockwise.
B_3	No.3 Brake	Prevents outer race of F2 from turning either clockwise or counterclockwise.
B_4	No.4 Brake	Prevents rear ring gear from turning either clockwise or counterclockwise.
F_1	No.1 One-Way Clutch	Prevents front planetary carrier from turning counterclockwise.
F_2	No.2 One-Way Clutch	When B3 is operating, prevents planetary sun gear from turning counterclockwise.
F_3	No.3 One-Way Clutch	Prevents center planetary carrier and rear ring gear from turning counterclockwise.
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.

Transmission Power Flow

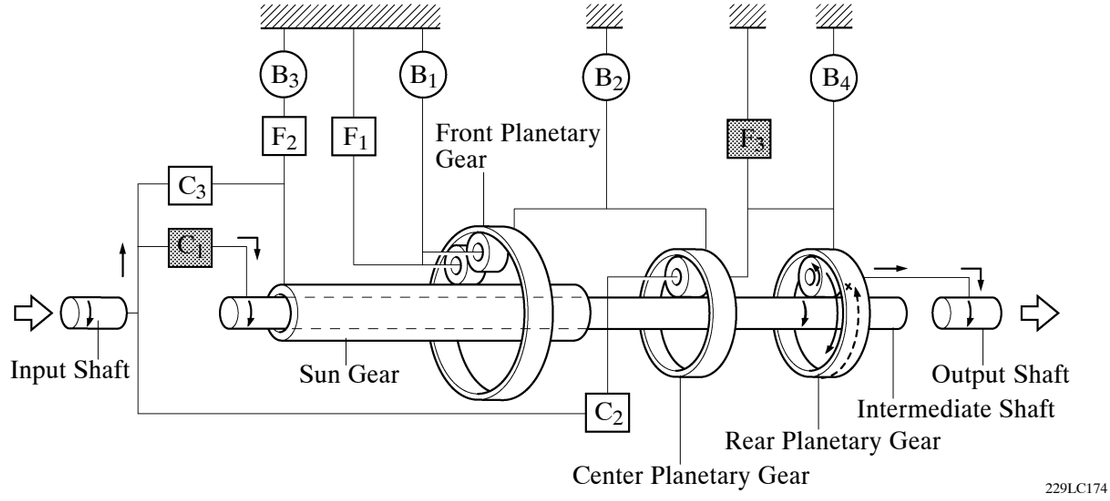
Shift Lever Position	Gear	Solenoid Valve						Clutch			Brake				One-way Clutch		
		S1	S2	SR	SL1	SL2	SLU	C_1	C_2	C_3	B_1	B_2	B_3	B_4	F_1	F_2	F_3
P	Park	ON				ON											
R	Reverse*	ON				ON				○	○			○	○		
N	Neutral	ON				ON											
D	1st	ON				ON		○									○
	2nd	ON	ON			ON		○					○		○	○	
	3rd		ON			ON		○		○			●		○		
	4th					ON	ON	○	○	●			●				
	5th			ON	ON		ON		○	○	○		●				
4	1st	ON				ON		○									○
	2nd	ON	ON			ON		○					○		○	○	
	3rd		ON			ON		○		○			●		○		
	4th					ON	ON	○	○	●			●				
3	1st	ON				ON		○									○
	2nd	ON	ON			ON		○					○		○	○	
	3rd*		ON					○		○	○		●				
2	1st	ON				ON		○									○
	2nd*	ON	ON	ON				○				○	○				
L	1st*	ON						○						○			

○: Operation

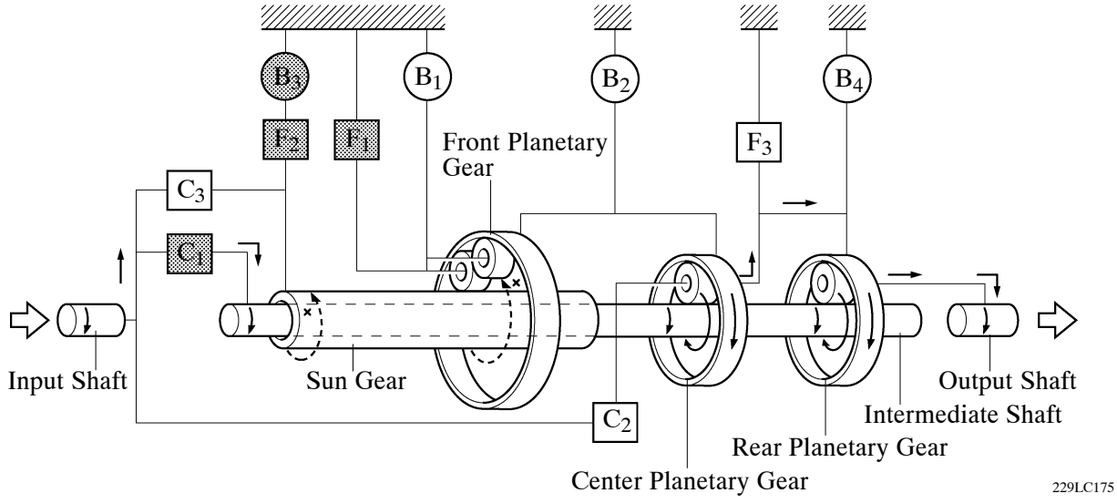
●: Operate but is not related to power transmission

* : with Engine Brake

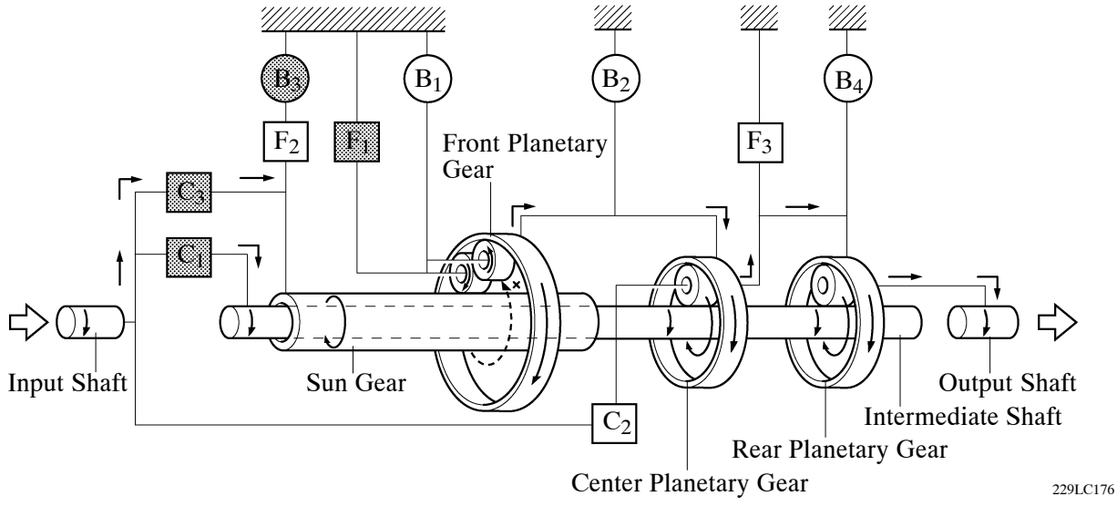
1st Gear (D, 4, 3 or 2 Position)



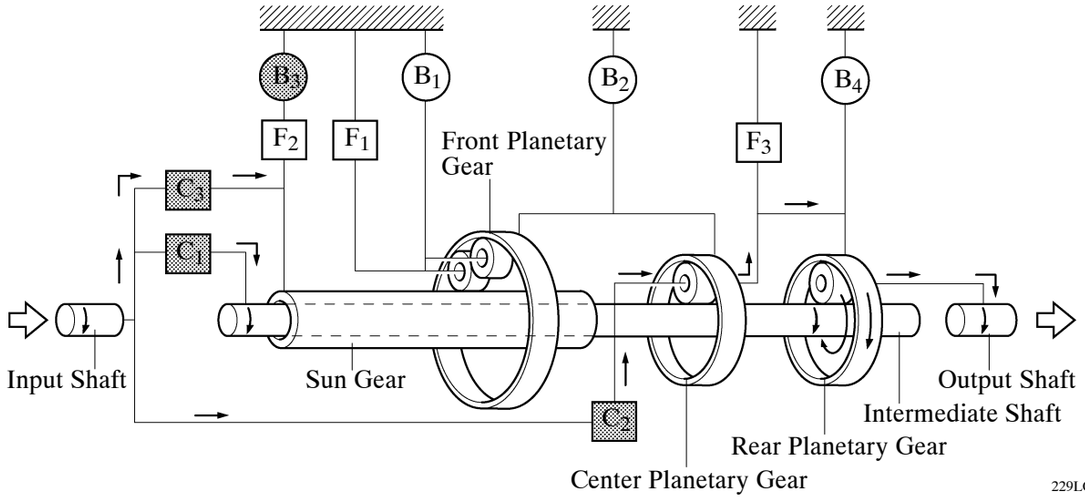
2nd Gear (D, 4 or 3 Position)



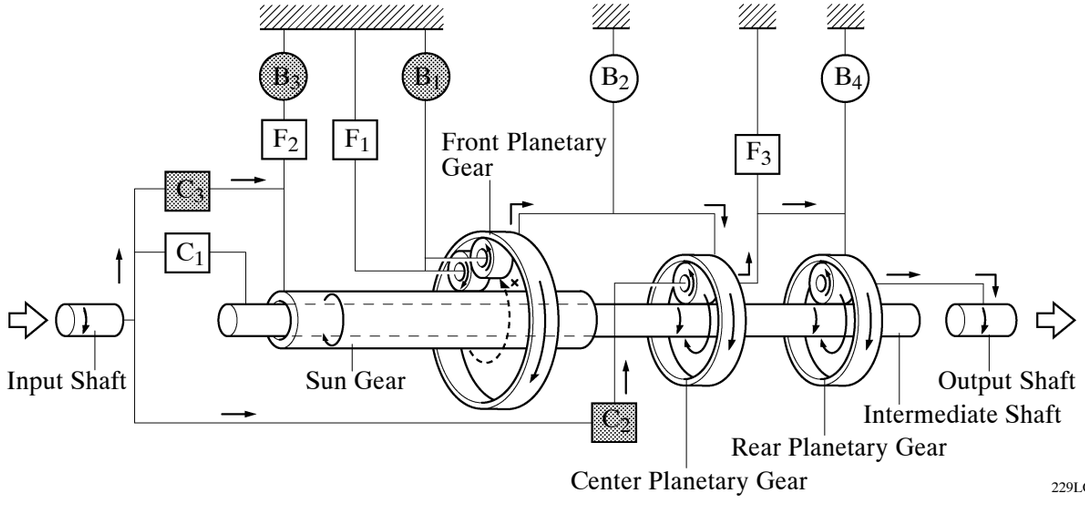
3rd Gear (D or 4 Position)



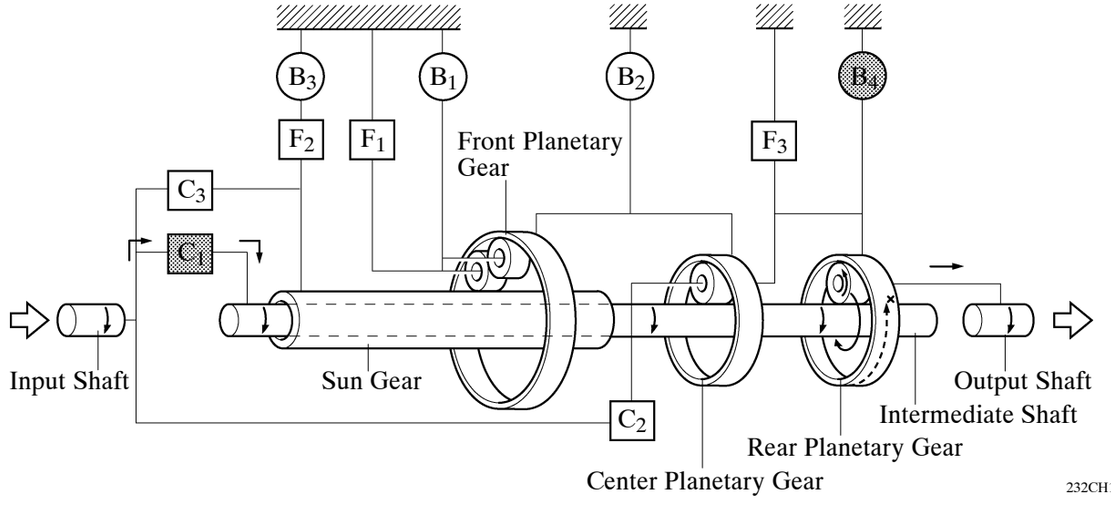
4th Gear (D or 4 Position)



5th Gear (D Position)



1st Gear (L Position)



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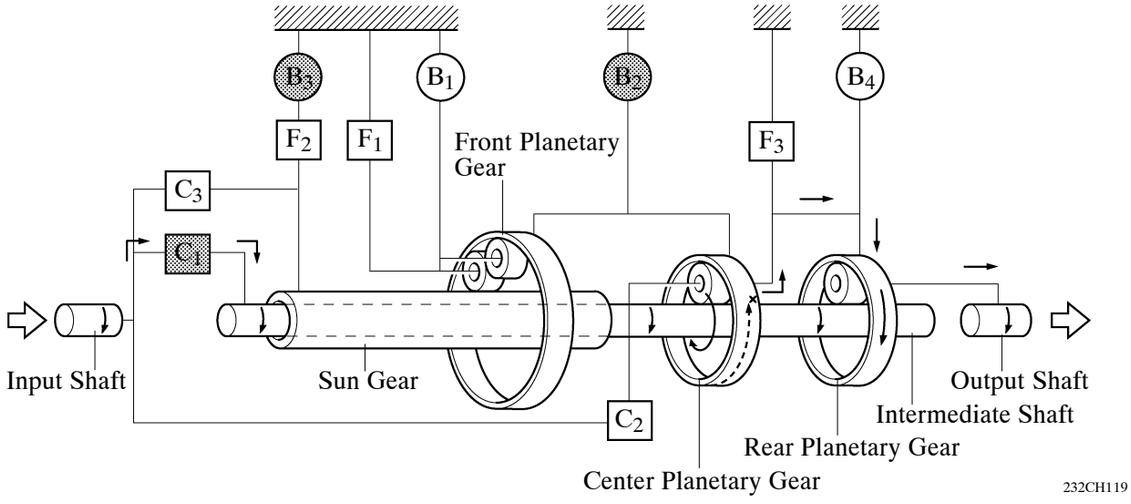
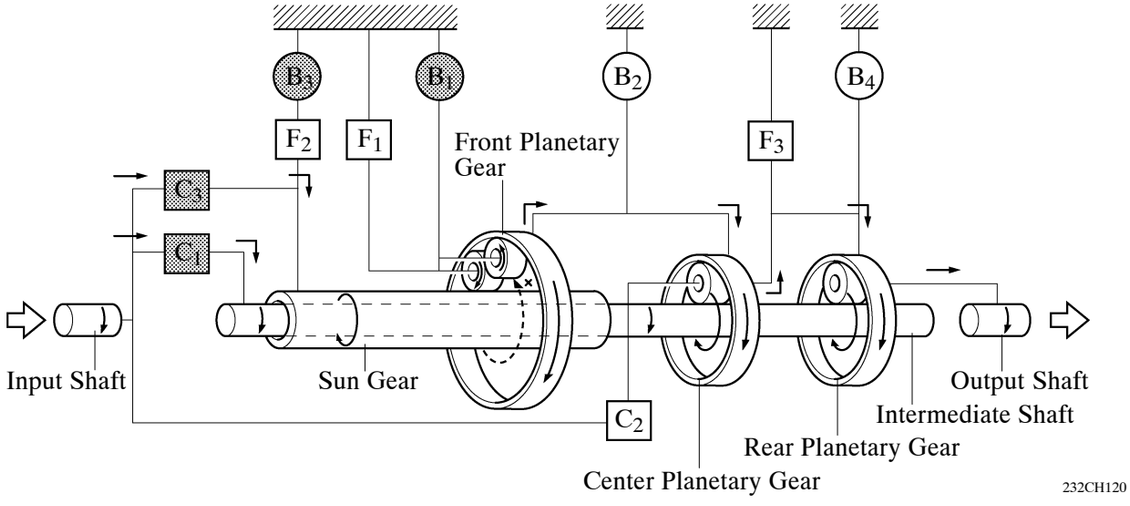
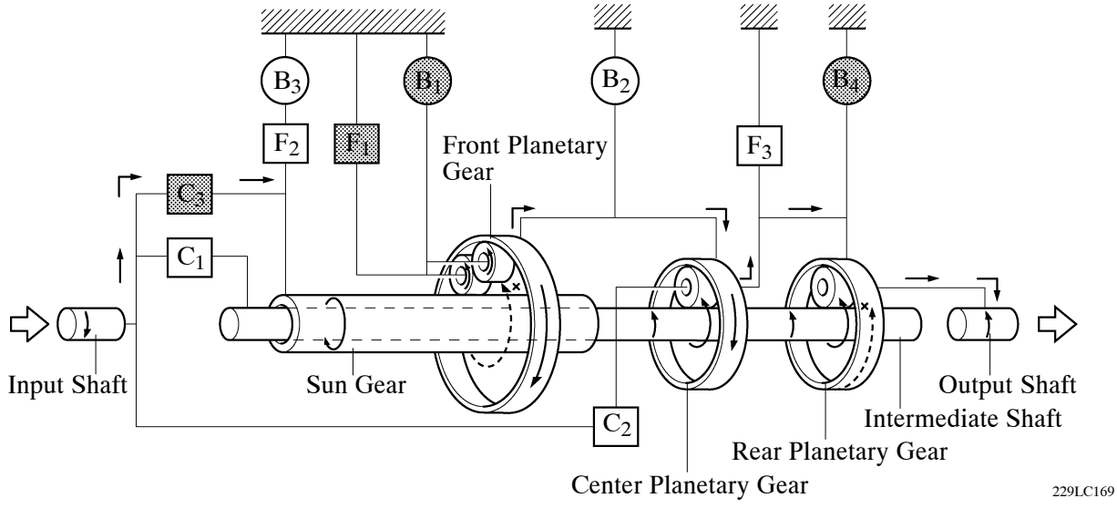
2nd Gear (2nd Position)



3rd Gear (3rd Position)



Reverse Gear (R Position)

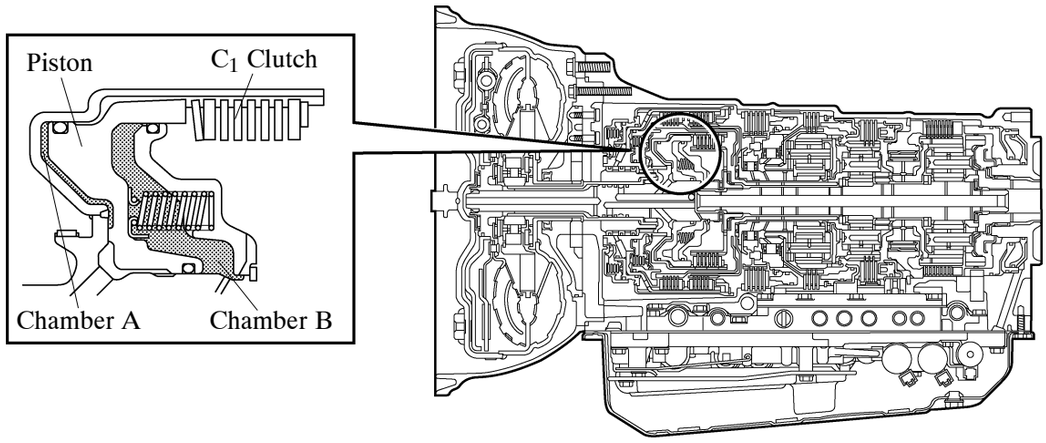


Centrifugal Fluid Pressure Canceling Mechanism

There are two reasons for improving the conventional clutch mechanism:

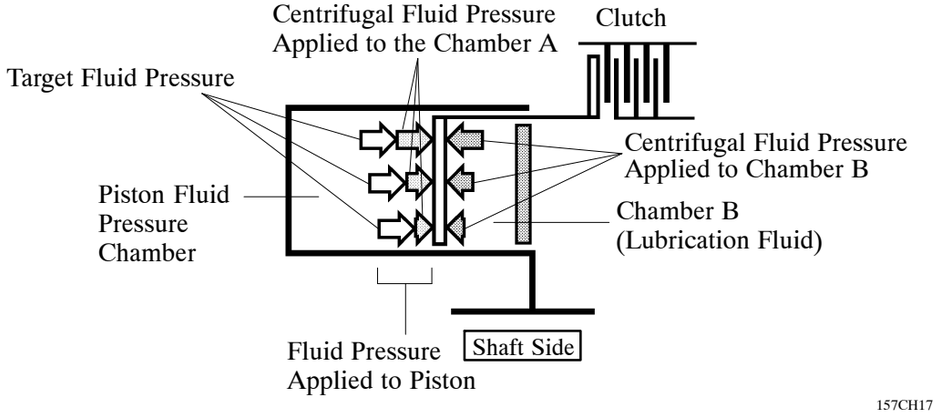
- To prevent the generation of pressure by centrifugal force applied to the fluid in the piston fluid pressure chamber (hereafter referred to as “gchamber A”) when the clutch is released, a check ball is provided. Therefore, before the clutch could be subsequently applied, it took time to fill chamber A.
- During shifting, in addition to the original clutch pressure that is controlled by the valve body, centrifugal pressure acts on the fluid in the chamber A exerting increased pressure depending on RPM.

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



229LC168

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.



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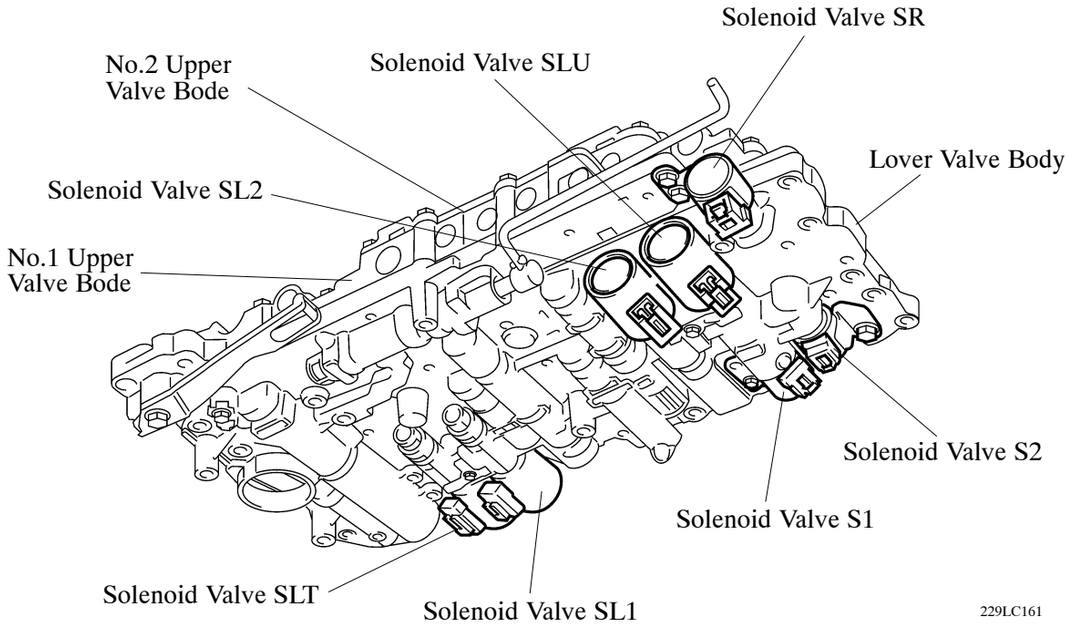
Fluid pressure applied to piston	–	Centrifugal fluid pressure applied to chamber B	=	Target fluid pressure (original clutch pressure)

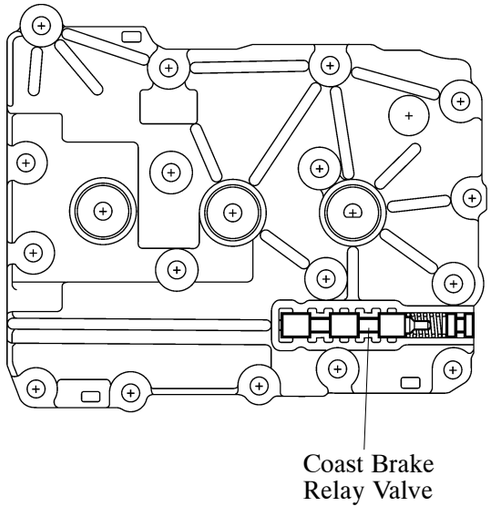
5. Valve Body Unit

General

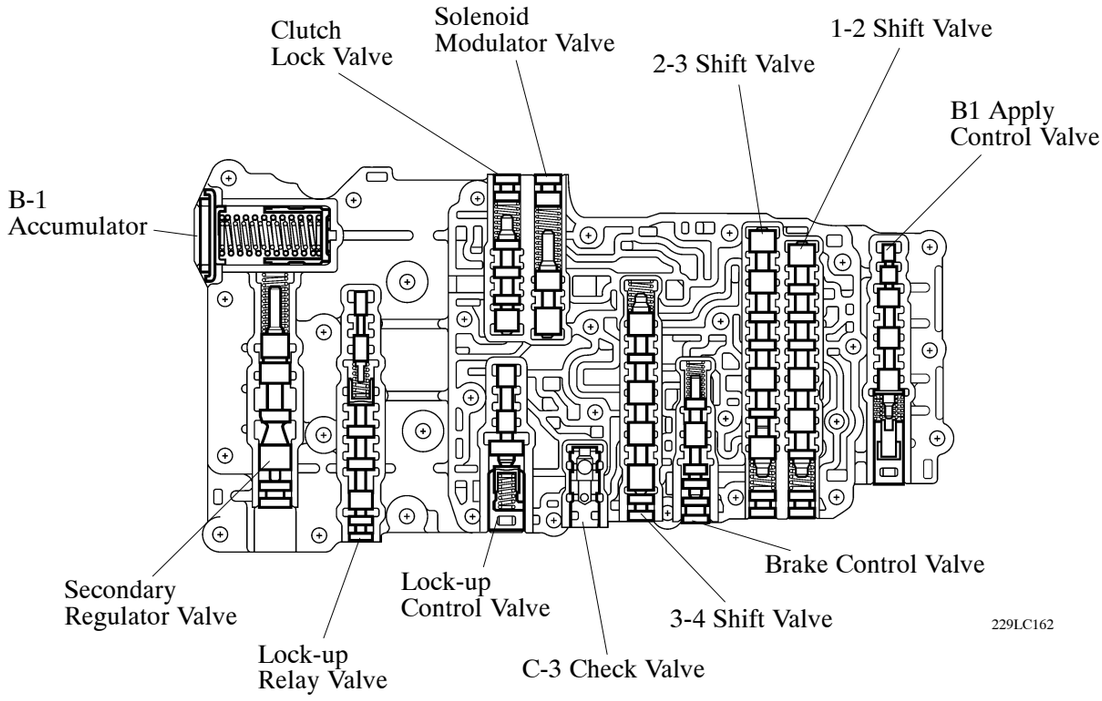
The valve body consists of the upper and lower valve bodies and 7 solenoid valves.



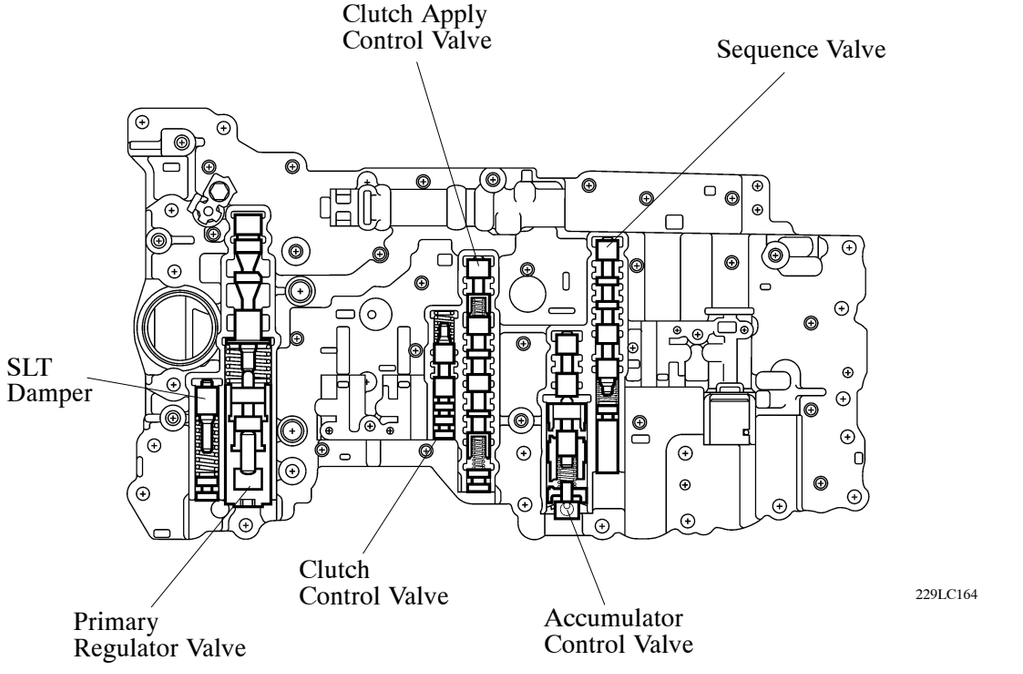
▶ No. 2 Upper Valve Body ◀



▶ No. 1 Upper Valve Body ◀



▶ Lower Valve Body ◀

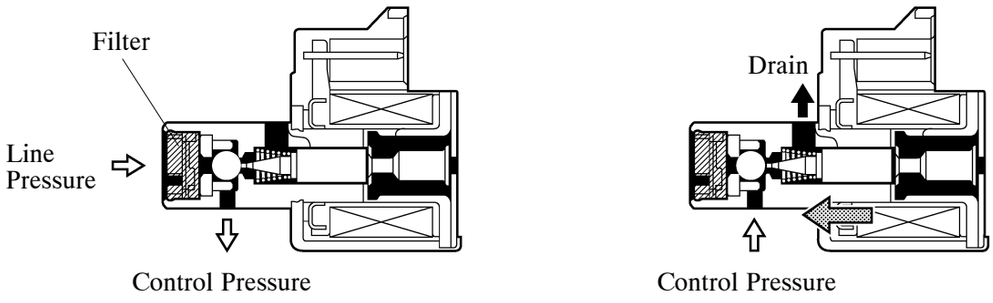


9

Solenoid Valve

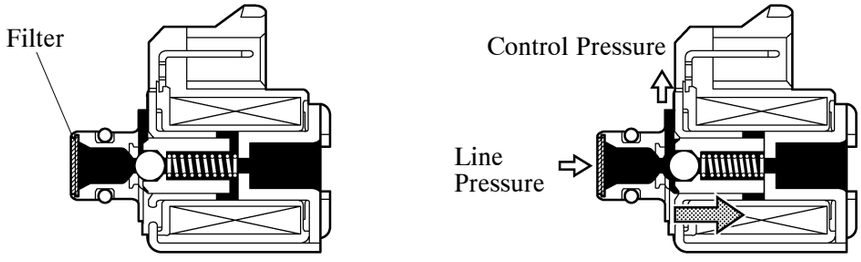
1) Solenoid Valve S1, S2 and SR

- Solenoid valves S1 and SR use a 3-way solenoid valve.
- Solenoid valve S2 uses a 2-way solenoid valve.
- A filter has been provided at the tip of the solenoid valve to further improve operational reliability.



Solenoid Valve S1 OFF **Solenoid Valve S1 ON**

229LC165



Solenoid Valve S2 OFF **Solenoid Valve S2 ON**

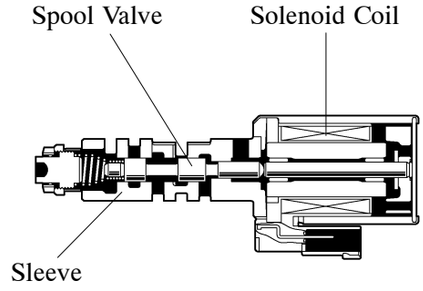
229LC166

▶ Function of Solenoid Valve S1, S2 and SR ◀

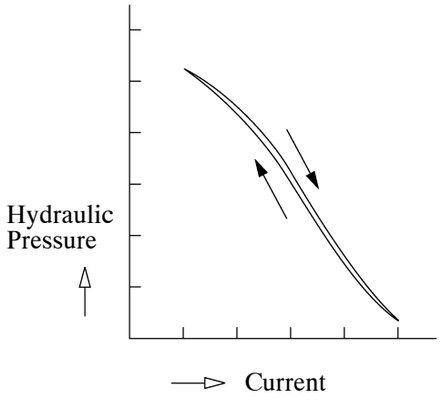
Solenoid Valve	Type	Function
S1	3-way	Switches the 2-3 shift valve.
S2	2-way	• Switches the 1-2 shift valve. • Switches the 3-4 shift valve.
SR	3-way	Switches the clutch apply control valve.

2) Solenoid Valve SL1, SL2, SLT and SLU

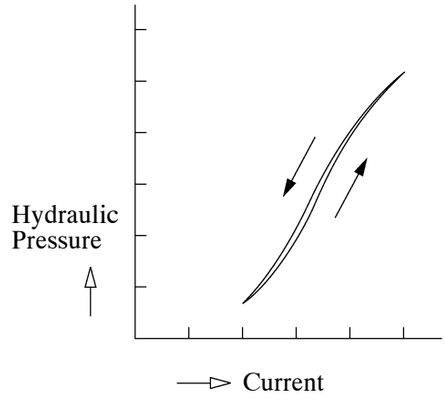
- In order to provided a hydraulic pressure that is proportion to current that flows to the solenoid coil, the solenoid valve SL1, SL2, SLT, and SLU linearly controls the line pressure and clutch and brake engagement pressure based on the signals it receives from the ECM.
- The solenoid valves SL1, SL2, SLT, and SLU have the same basic structure.



Solenoid Valve SLT



Solenoid Valve SL1, SL2 and SLT



Solenoid Valve SLU

229LC181

▶ Function of Solenoid Valve SL1, SL2, SLT and SLU ◀

Solenoid Valve	Function
SL1	• C_1 clutch pressure control • Accumulator back pressure control
SL2	B_1, B_2 and B_4 clutch pressure control
SLT	• Line pressure control • Accumulator back pressure control
SLU	• Lock-up clutch pressure control • Accumulator back pressure control

6. Electronic Control System

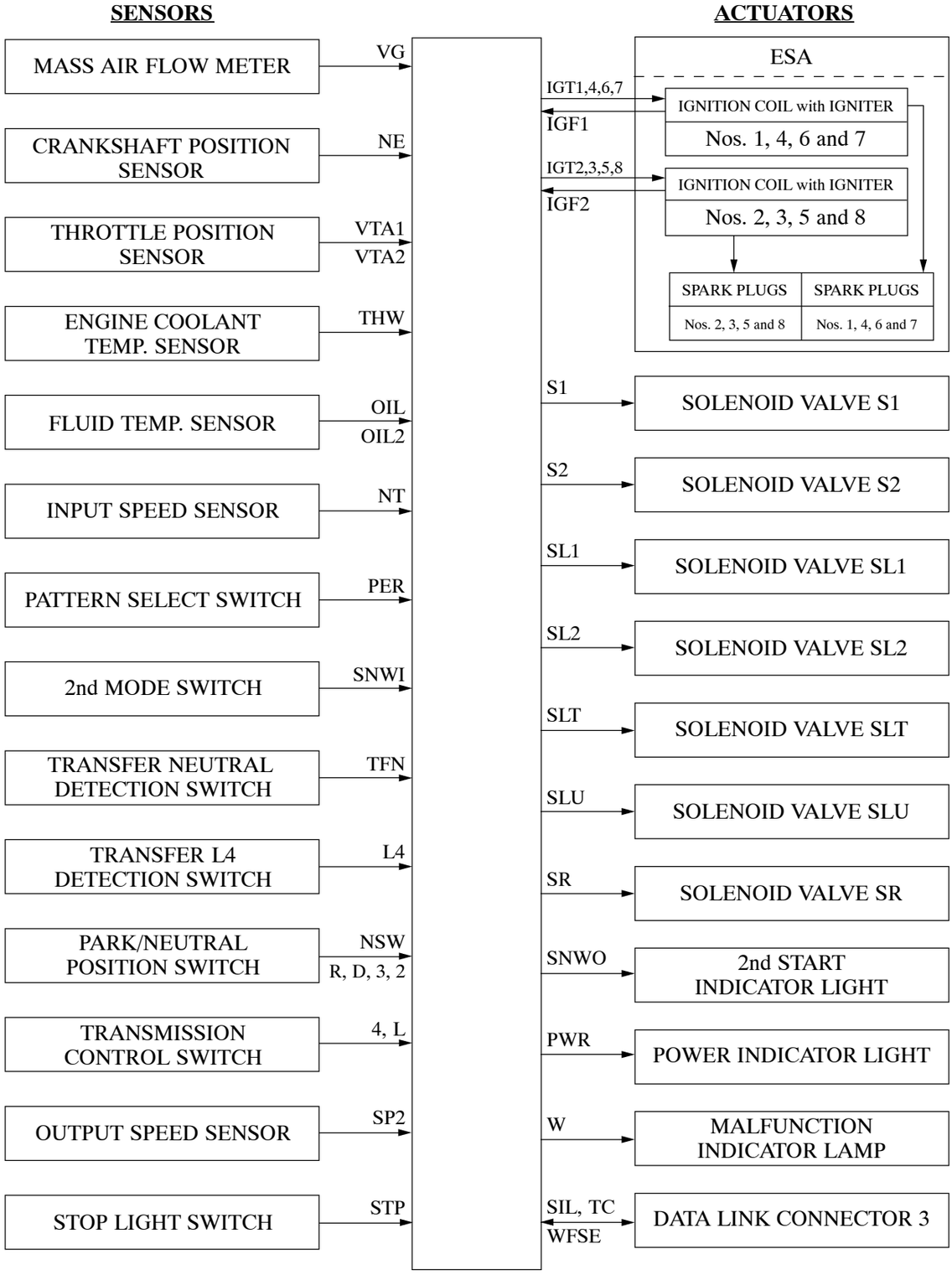
General

The electronic control system of the ’03 model’s A750F automatic transmission control and the ’02 model’s A343F are compared below.

System	Function	’03 Model A750F	’02 Model A343F
Clutch Pressure Control (See Page 166)	• Controls the pressure that is applied directly to B_1 brake and C_1 clutch by actuating the linear solenoid valves SL1 and SL2 in accordance with the ECM signals. • The solenoid valve SLT and SL1 minutely controls the clutch pressure in accordance with the engine output and driving conditions.	○	—
Line Pressure Optimal Control (See Page 167)	Actuates the solenoid valve SLT to control the line pressure in accordance with information from the ECM and the operating conditions of the transmission.	○	○
Engine Torque Control	Retards the engine ignition timing temporarily to improve shift feeling during up or down shifting.	○	○
Shift Timing Control	The ECM sends current to the solenoid valve S1, S2 and/or SR based on signals from each sensor and shifts the gear.	○	—
	The ECM sends current to the solenoid valve No.1 and/or No.2 based on signals from each sensor and shifts the gear.	—	○
Flex Lock-up Clutch Control (See Page 168)	Controls the solenoid valve SLU, provides an intermediate mode between the ON/OFF operation of the lock-up clutch, and increase the operating range of the lock-up clutch to improve fuel economy.	○	—
Lock-up Timing Control	The ECM sends current to the shift solenoid valve SLU based on signals from each sensor and engages or disengages the lockup clutch.	○	—
	The ECM sends current to the shift solenoid valve SL based on signals from each sensor and engages or disengages the lockup clutch.	—	○
“N” to “D” Squat Control	When the shift lever is shifted from “N” to “D” position, the gear is temporarily shifted to 2nd and then to 1st to reduce vehicle squat.	○	—
	When the shift lever is shifted from “N” to “D” position, the gear is temporarily shifted to 3rd and then to 1st to reduce vehicle squat.	—	○
2nd Start System	Enabling the vehicle to take off in the 2nd gear and thus make it easy to take off on snowy, sandy or muddy terrain.	○	○
AI (artificial Intelligence) -SHIFT (See Page 169)	Based on the signals from various sensors, the ECM determines the road conditions and the intention of the driver. Thus, the shift pattern is automatically regulated to an optimal level, thus improving drivability.	○	—
Diagnosis	When the ECM detects a malfunction, the ECM makes a diagnosis and memorizes the failed section.	○	○
	To increase the speed for processing the signals, the 32-bit CPU of the ECM has been adopted.	○	○
Fail-safe	Even if a malfunction is detected in the sensors or solenoids, the ECM effects fail-safe control to prevent the vehicle’s drivability from being affected significantly.	○	○

Construction

The configuration of the electronic control system in the ’03 model’s A750F is as shown in the following chart.



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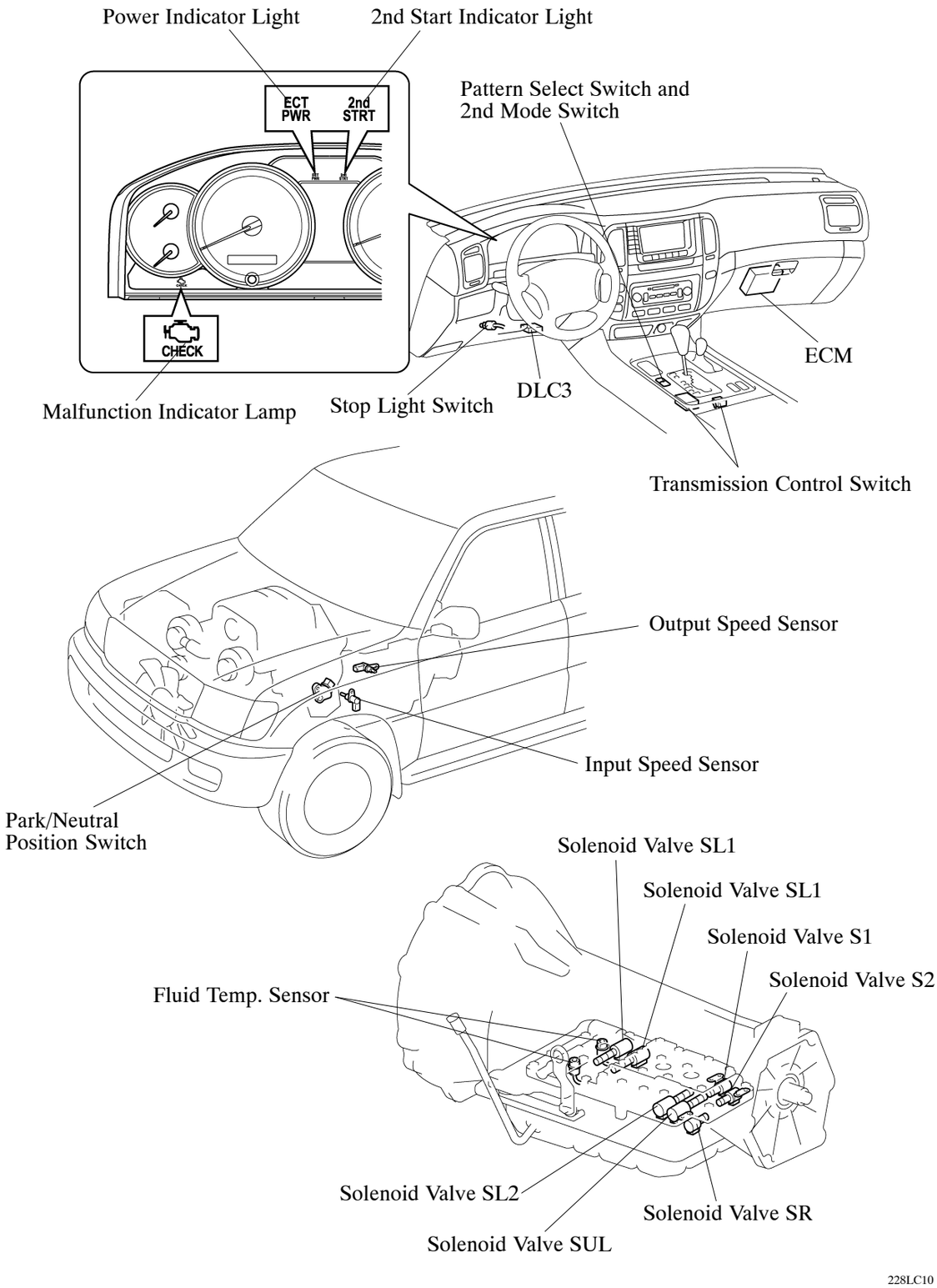
Layout of Component

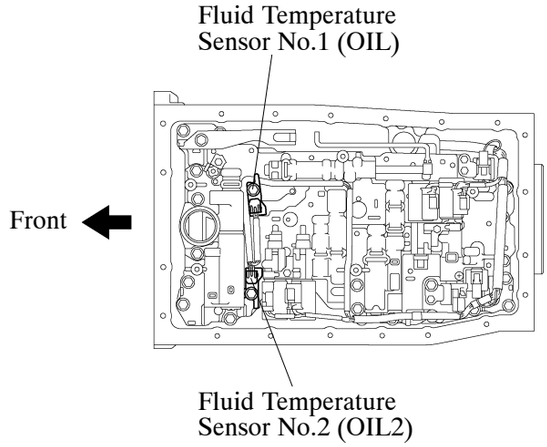


228LC10

Construction and Operation of Main Component

1) Fluid Temperature Sensor No.1 and No.2

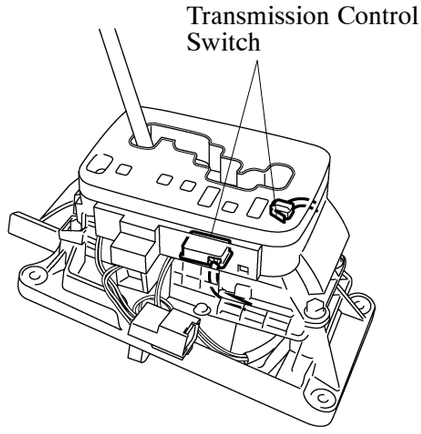
- Fluid temperature sensor No.1 (OIL) is used for hydraulic pressure control. This sensor is used for revision of clutches and brakes pressure to keep smooth shift quality every time.
- Fluid temperature sensor No.2 (OIL2) is used for the switching of the shift timing control of ECT when the fluid temperature is high and ATF temp. warning light control.



229LC132

2) Transmission Control Switch

The transmission control switch is installed inside shift lever assembly to detect the shift lever position (“4th” or “D” and “2nd” or “L”) and to inform ECM the shift position indicator light in the combination meter.



229LC133

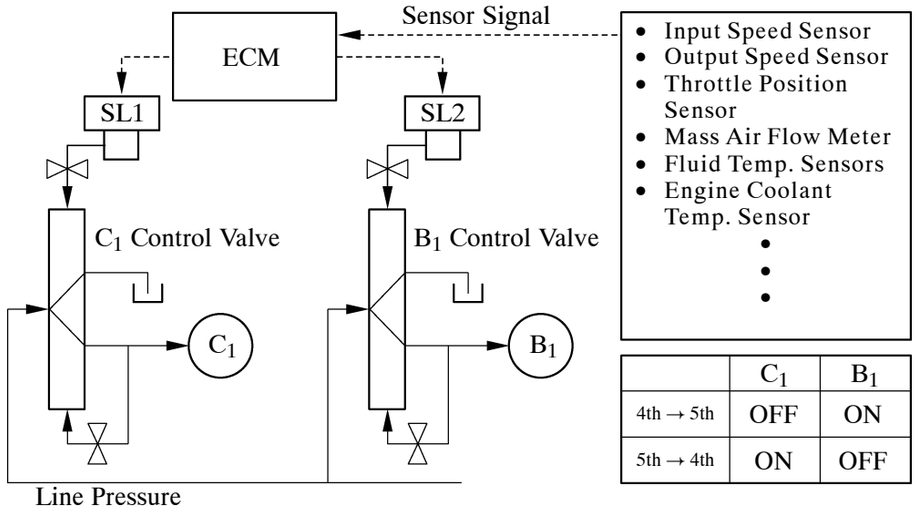
3) Output Speed Sensor and Input Speed Sensor

- A rotor is provided on the output shaft of the transmission, and the output speed sensor on the right side of the transmission case detects the speed and outputs it to the ECM.
- The input speed sensor detects the input speed of the transmission. The direct clutch drum is used as the timing rotor for this sensor.

Clutch Pressure Control

1) Clutch to Clutch Pressure Control

This control has been adopted for shifting from the 4th to 5th gear and from the 5th to 4th gear.
Actuates solenoid valves SL1 and SL2 in accordance with the signals from the ECM, and guides this output pressure directly to the control valves B_1 and C_1 in order to regulate the line pressure that acts on the B_1 brake and C_1 clutches.
As a result, high response and excellent shift characteristics have been realized.

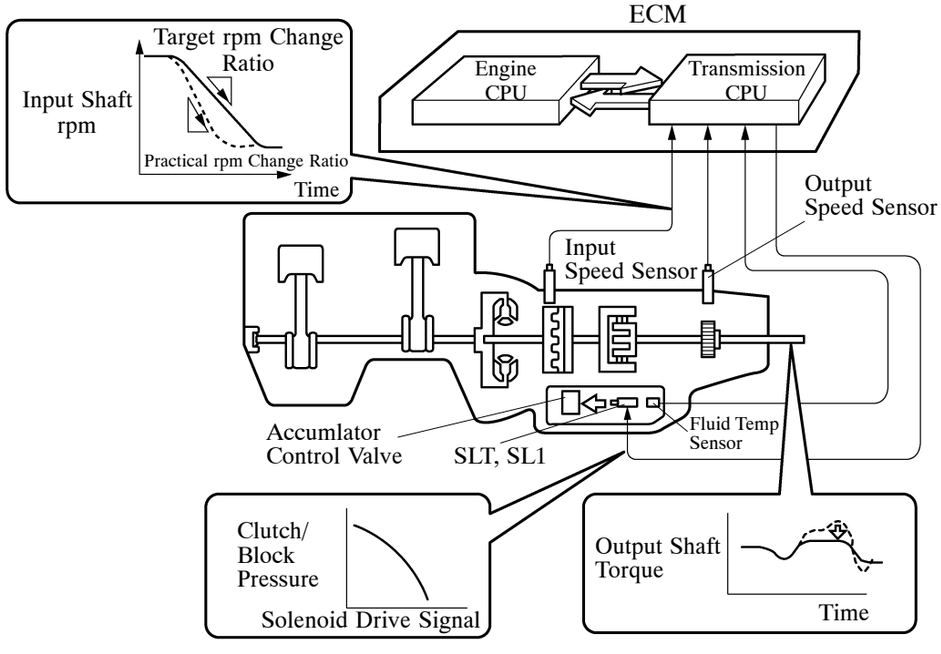


	C_1	B_1
4th → 5th	OFF	ON
5th → 4th	ON	OFF

229LC134

2) Clutch Pressure Optimal Control

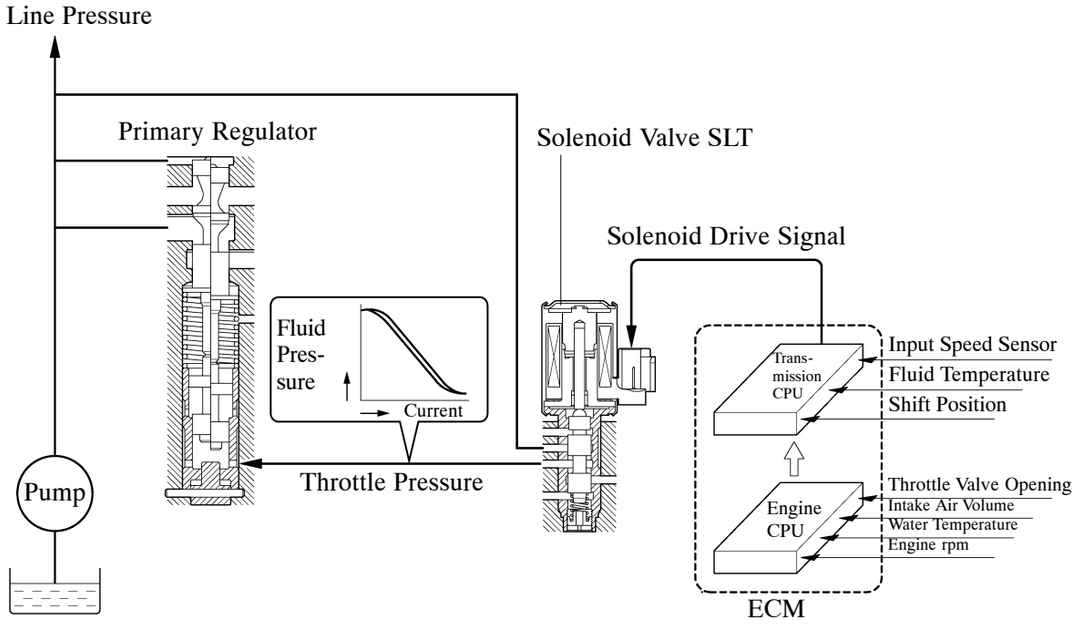
The ECM monitors the signals from various types of sensor such as the input turbine speed sensor, allowing shift solenoid valves SLT and SL1 to minutely control the clutch pressure in accordance with engine output and driving conditions.
As a result, smooth shift characteristics have been realized.



229LC135

Line Pressure Optimal Control

Through the use of the solenoid valve SLT, the line pressure is optimally controlled in accordance with the engine toque information, as well as with the internal operating conditions of the toque converter and the transmission.
Accordingly, the line pressure can be controlled minutely in accordance with the engine output, traveling condition, and the ATF temperature, thus realizing smooth shift characteristics and optimizing the work-load in the oil pump.



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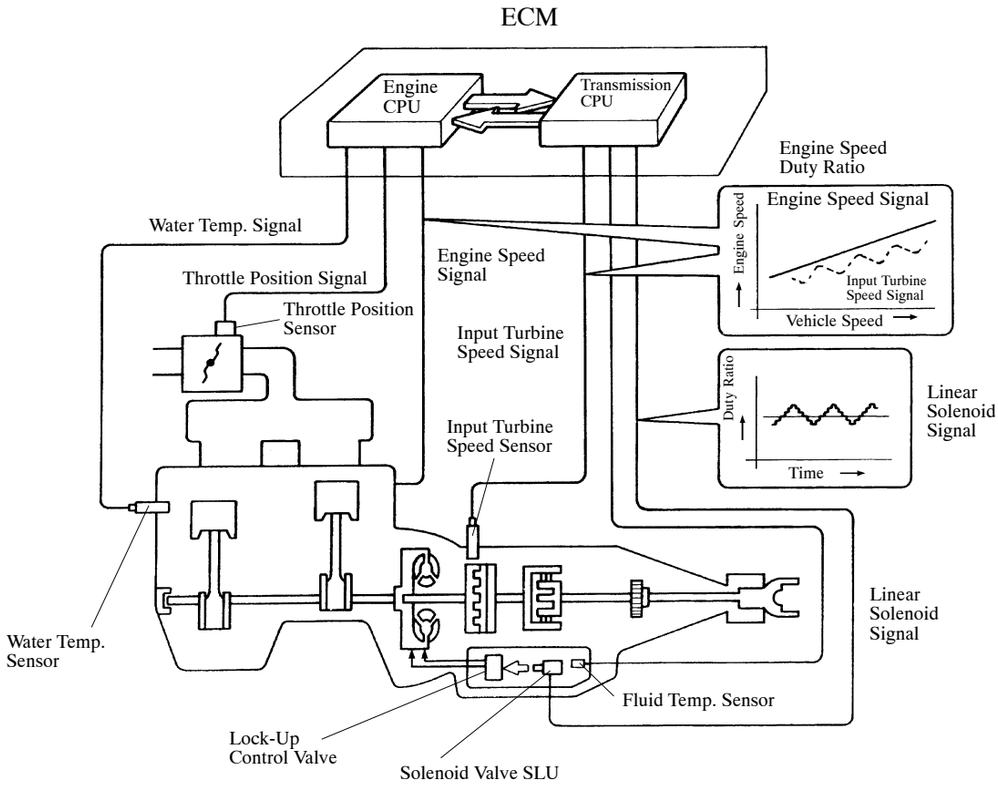
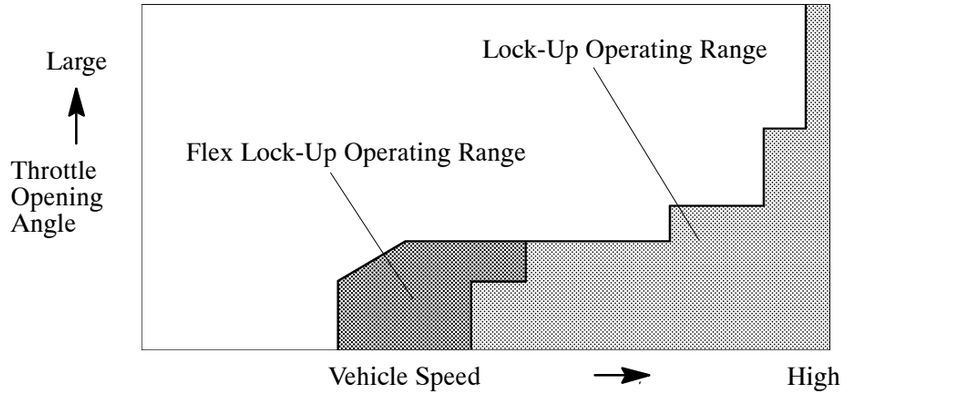
Flex Lock-up Clutch Control

In addition to the conventional lock-up timing control, a flex lock-up clutch control is used.
In the low-to mid-speed range, this flex lock-up clutch control regulates the solenoid valve SLU to provide an intermediate mode between the ON/OFF operation of the lock-up clutch in order to improve the energy transmitting efficiency in this range.
As a result, the operating range of the lock-up clutch has been increased and fuel economy has been improved. The flex lock-up clutch control operates in the 4th and 5th gears in the D range and 4th gear in the 4 range.

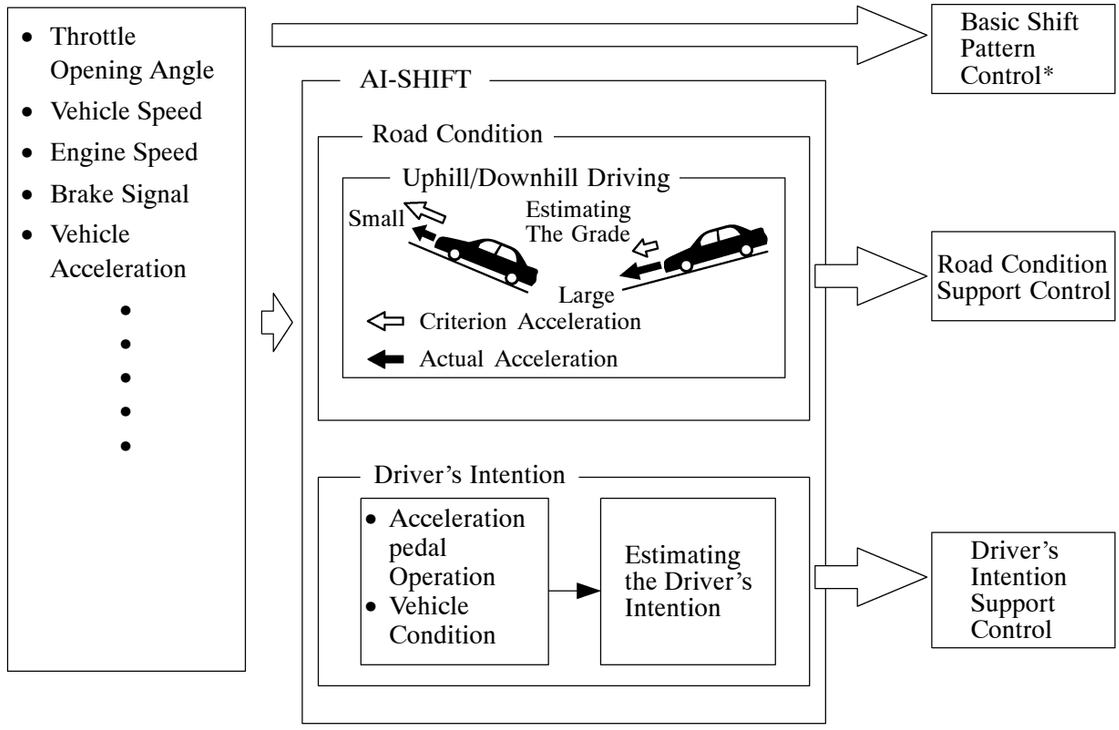




AI (Artificial Intelligence)- SHIFT Control

1) General

In addition to the switching of the shift pattern through the pattern select switch, the AI- SHIFT control enables the ECM to estimate the road conditions and the driver's intention in order to automatically switch the optimal shift pattern. As a result, comfortable ride has been realized at high levels.



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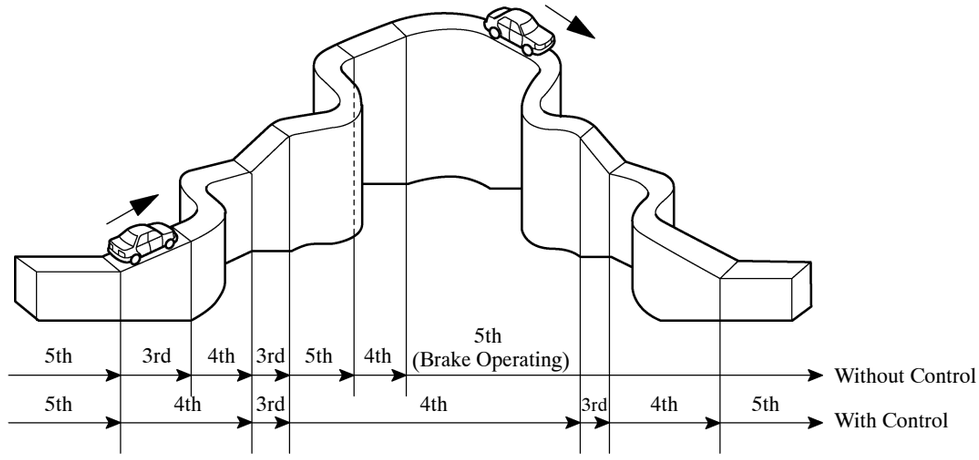
*: Shift control that is determined by the PWR or 2nd mode that is selected by the pattern select switch, or by the normal mode.

2) Road Condition Support Control

Under road condition support control, the ECM determines throttle valve opening angle and the vehicle speed whether the vehicle is being driven uphill or downhill.
To achieve an optimal drive force while driving uphill, this control prevents the transmission from upshifting to the 4th or 5th gear. To achieve an optimal engine brake effect while driving downhill, this control automatically downshifts the transmission to the 4th or 3rd gear.



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3) Driver's Intention Support Control

Estimates the driver's intention based on the accelerator operation and vehicle condition to switch to a shift pattern that is well-suited to each driver, without the need to operate the shift pattern select switch.

Diagnosis

- When the ECM detects a malfunction, the ECM makes a diagnosis and memorizes the failed section. Furthermore, the MIL (Malfunction Indicator Lamp) in the combination meter illuminates or blinks to inform the driver.
- At the same time, the DTCs (Diagnosis Trouble Codes) are stored in memory. The DTCs can be read by the SST (09843-18040) between the Tc and CG terminals DLC3 and observing the blinking of the check engine warning light, or by connecting a hand-held tester.

Service Tip

The length of time to clear the DTC by the battery terminal disconnection has been changed from the previous 10 seconds to 1 minute.

Fail Safe

This function minimizes the loss of operability when any abnormality occurs in each sensor or solenoid.

▶ Fail-Safe Control List ◀

Malfunction Part	Function
Output Speed Sensor (SP2)	During a output speed sensor malfunction, shift control is effected through the input speed sensor signal.
Fluid Temp. Sensor	During a fluid temperature sensor No.1 malfunction, 5th upshift and flex lock-up clutch control are prohibited.
Solenoid Valve S1, S2 and SR	The current to the failed solenoid valve is cut off and control is effected by operating the other solenoid valves with normal operation. Shift control is effected depending on the failed solenoid as described in the table on the next page.
Solenoid Valve SL1 and SL2	During a solenoid valve SL1 or SL2 malfunction, 5th upshift is prohibited.
Solenoid Valve SLU	During a solenoid valve SLU malfunction, the current to the solenoid valve is stopped. Because this stops lock-up control and flex lock-up control, fuel economy decreases.
Solenoid Valve SLT	During a solenoid valve SLT malfunction, the current to the solenoid valve is stopped. Because this stops line pressure optimal control, the shift shock increases. However, shifting is effected through normal clutch pressure control.

Position	Normal						Shift Solenoid Valve S1 Malfunction					
	Shift Solenoid					Gear	Shift Solenoid					Gear
	S1	S2	SR	SL1	SL2		S1	S2	SR	SL1	SL2	
D	ON	OFF	OFF	OFF	ON	1st	×	OFF →ON	OFF	OFF	ON	4th→ 3rd
	ON	ON	OFF	OFF	ON	2nd	×	ON	OFF	OFF	ON	3rd
	OFF	ON	OFF	OFF	ON	3rd	×	ON	OFF	OFF	ON	3rd
	OFF	OFF	OFF	OFF	ON	4th	×	OFF	OFF	OFF	ON	4th
	OFF	OFF	ON	ON	OFF	5th	×	OFF	ON	ON	OFF	5th
4	ON	OFF	OFF	OFF	ON	1st	×	OFF →ON	OFF	OFF	ON	4th→ 3rd
	ON	ON	OFF	OFF	ON	2nd	×	ON	OFF	OFF	ON	3rd
	OFF	ON	OFF	OFF	ON	3rd	×	ON	OFF	OFF	ON	3rd
	OFF	OFF	OFF	OFF	ON	4th	×	OFF	OFF	OFF	ON	4th
3	ON	OFF	OFF	OFF	ON	1st	×	OFF →ON	OFF	OFF	ON→ OFF	3rd→ 3rd (E/B)
	ON	ON	OFF	OFF	ON	2nd	×	ON	OFF	OFF	ON→ OFF	3rd→ 3rd (E/B)
	OFF	ON	OFF	OFF	OFF	3rd (E/B)	×	ON	OFF	OFF	OFF	3rd (E/B)
2	ON	OFF	OFF	OFF	ON	1st	×	OFF	OFF	OFF	ON	1st
	ON	ON	ON	OFF	OFF	2nd (E/B)	×	ON	ON	OFF	OFF	3rd (E/B)
L	ON	OFF	OFF	OFF	OFF	1st (E/B)	×	OFF	OFF	OFF	OFF	1st (E/B)

Position	Shift Solenoid Valve S2 Malfunction						Shift Solenoid Valve SR Malfunction					
	Shift Solenoid					Gear	Shift Solenoid					Gear
	S1	S2	SR	SL1	SL2		S1	S2	SR	SL1	SL2	
D	ON	×	OFF	OFF	ON	1st	ON	OFF	×	OFF	ON	1st
	ON→ OFF	×	OFF	OFF	ON	1st→ 4th	ON	ON	×	OFF	ON	2nd
	OFF	×	OFF	OFF	ON	4th	OFF	ON	×	OFF	ON	3rd
	OFF	×	OFF	OFF	ON	4th	OFF	OFF	×	OFF	ON	4th
	OFF	×	ON	ON	OFF	5th	OFF	OFF	×	ON	OFF	4th
4	ON	×	OFF	OFF	ON	1st	ON	OFF	×	OFF	ON	1st
	ON→ OFF	×	OFF	OFF	ON	1st→ 4th	ON	ON	×	OFF	ON	2nd
	OFF	×	OFF	OFF	ON	4th	OFF	ON	×	OFF	ON	3rd
	OFF	×	OFF	OFF	ON	4th	OFF	OFF	×	OFF	ON	4th
3	ON	×	OFF	OFF	ON	1st	ON	OFF	×	OFF	ON	1st
	ON→ OFF	×	OFF	OFF	ON→ OFF	1st→ 3rd (E/B)	ON	ON	×	OFF	ON	2nd
	OFF	×	OFF	OFF	OFF	3rd (E/B)	OFF	ON	×	OFF	OFF →ON	3rd (E/B) →3rd
2	ON	×	OFF	OFF	ON	1st	ON	OFF	×	OFF	ON	1st
	ON→ OFF	×	ON	OFF	OFF →ON	2nd (E/B) →4th	ON	ON	×	OFF	OFF	2nd
L	ON	×	OFF	OFF	OFF	1st (E/B)	ON	OFF	×	OFF	OFF	1st (E/B)

E/B: Engine Brake

Position	Shift Solenoid Valve S1 and S2 Malfunction						Shift Solenoid Valve S1 and SR Malfunction					
	Shift Solenoid					Gear	Shift Solenoid					Gear
	S1	S2	SR	SL1	SL2		S1	S2	SR	SL1	SL2	
D	×	×	OFF	OFF	ON	4th	×	OFF →ON	×	OFF	ON	4th→ 3rd
	×	×	OFF	OFF	ON	4th	×	ON	×	OFF	ON	3rd
	×	×	OFF	OFF	ON	4th	×	ON	×	OFF	ON	3rd
	×	×	OFF	OFF	ON	4th	×	OFF	×	OFF	ON	4th
	×	×	ON	ON	OFF	5th	×	OFF	×	ON→ OFF	OFF →ON	4th
4	×	×	OFF	OFF	ON	4th	×	OFF →ON	×	OFF	ON	4th→ 3rd
	×	×	OFF	OFF	ON	4th	×	ON	×	OFF	ON	3rd
	×	×	OFF	OFF	ON	4th	×	ON	×	OFF	ON	3rd
	×	×	OFF	OFF	ON	4th	×	OFF	×	OFF	ON	4th
3	×	×	OFF	OFF	ON→ OFF	3rd→ 3rd (E/B)	×	OFF →ON	×	OFF	ON	3rd
	×	×	OFF	OFF	ON→ OFF	3rd→ 3rd (E/B)	×	ON	×	OFF	ON	3rd
	×	×	OFF	OFF	OFF	3rd (E/B)	×	ON	×	OFF	OFF →ON	3rd (E/B) →3rd
2	×	×	OFF	OFF	ON	1st	×	OFF	×	OFF	ON	1st
	×	×	ON	OFF	OFF →ON	4th	×	ON	×	OFF	OFF	2nd
L	×	×	OFF	OFF	OFF	1st (E/B)	×	OFF	×	OFF	OFF	1st (E/B)

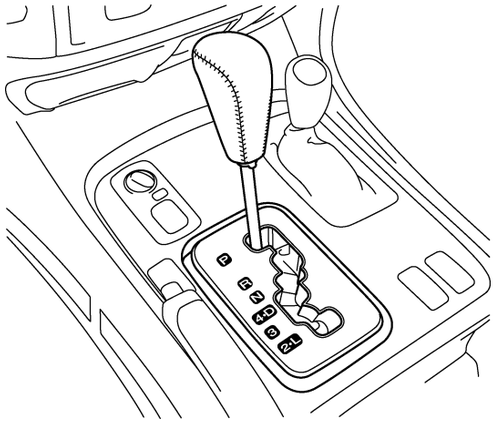
Position	Shift Solenoid Valve S2 and SR Malfunction						Shift Solenoid Valve S1, S2 and SR Malfunction					
	Shift Solenoid					Gear	Shift Solenoid					Gear
	S1	S2	SR	SL1	SL2		S1	S2	SR	SL1	SL2	
D	ON	×	×	OFF	ON	1st	×	×	×	OFF	ON	4th
	ON→ OFF	×	×	OFF	ON	1st→ 4th	×	×	×	OFF	ON	4th
	OFF	×	×	OFF	ON	4th	×	×	×	OFF	ON	4th
	OFF	×	×	OFF	ON	4th	×	×	×	OFF	ON	4th
	OFF	×	×	ON→ OFF	OFF →ON	4th	×	×	×	ON→ OFF	OFF →ON	4th
4	ON	×	×	OFF	ON	1st	×	×	×	OFF	ON	4th
	ON→ OFF	×	×	OFF	ON	1st→ 4th	×	×	×	OFF	ON	4th
	OFF	×	×	OFF	ON	4th	×	×	×	OFF	ON	4th
	OFF	×	×	OFF	ON	4th	×	×	×	OFF	ON	4th
3	ON	×	×	OFF	ON	1st	×	×	×	OFF	ON	3rd
	ON→ OFF	×	×	OFF	ON	1st→ 3rd	×	×	×	OFF	ON	3rd
	OFF	×	×	OFF	OFF →ON	3rd (E/B) →3rd	×	×	×	OFF	OFF →ON	3rd (E/B) →3rd
2	ON	×	×	OFF	ON	1st	×	×	×	OFF	ON	1st
	ON	×	×	OFF	OFF →ON	1st (E/B) →1st	×	×	×	OFF	OFF →ON	1st (E/B) →1st
L	ON	×	×	OFF	OFF	1st (E/B)	×	×	×	OFF	OFF	1st (E/B)

E/B: Engine Brake

7. Shift Control Mechanism

General

- A gate type shift lever has is used in conjunction with the installation of the 5-speed automatic transmission. With the gate type, the shift lever button and the overdrive switch of the straight type shift lever have been discontinued. Similar functions are achieved through a single-shift operation (fore-aft and side-to-side).
- The shift lock system consists of the key interlock device and shift lock mechanism.



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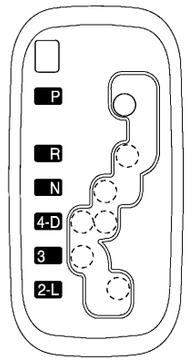

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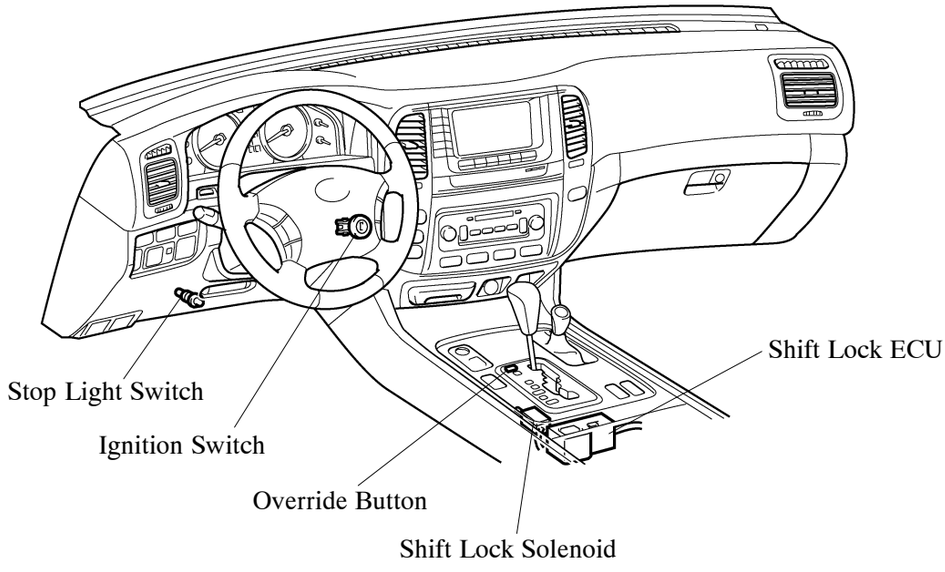
Shift Lock System

1) General

- A shift lock system with key interlock device and shift lock mechanism, that helps prevent the unintended operation of the shift lever has been provided.
- An electrical key interlock device and an electrical shift lock mechanism are used.



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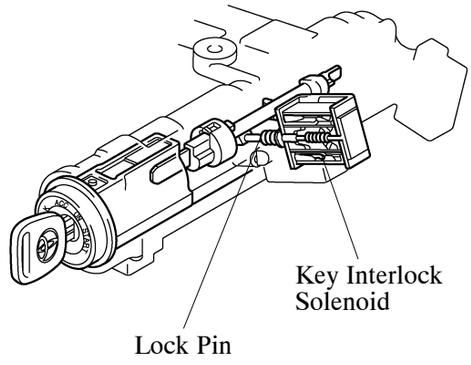
2) Key Interlock Device

The activation of the key interlock solenoid, mounted on the upper column bracket, moves the lock pin to restrict the movement of the key cylinder. Therefore, if the shift lever is shifted to any position other than “P”, the ignition key cannot be moved from “ACC” to the “LOCK” position.



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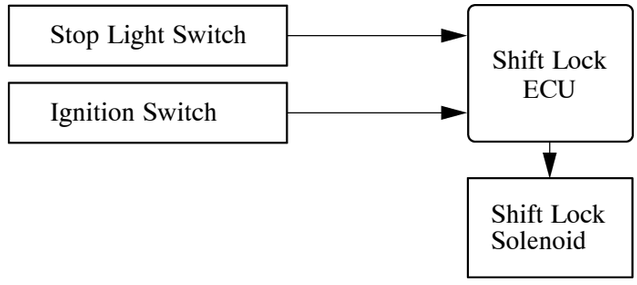
3) Shift Lock Mechanism

- The shift lock mechanism prevents the shift lever from being shifted out of the “P” position to any other position unless the ignition switch is turned ON and the brake pedal is pressed.
- A shift lock override button, which manually overrides the shift lock mechanism, is provided.

▶ System Diagram ◀



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