CAMRY

OUTLINE OF NEW FEATURES

The following changes have been made for the 2005 model year.

1. Exterior

- The design of the front bumper and the radiator grille has been changed.
- The design of the headlights, fog lights, and the fog hole covers has been changed.
- The design of the rear combination lights has been changed.
- Aluminum wheels with a new design have been added to the 16-inch aluminum wheels that are provided as optional equipment on the XLE grade model.
- New 17-inch aluminum wheels are provided as standard equipment on the SE grade models equipped with the 3MZ-FE engine.
- The design of the 15-inch wheel caps, which are provided on the LE grade model as standard equipment, has been changed.
- New exterior colors have been added as follows:

Add Color No.	Add Color Name
6R6	Grayish Green Mica Metallic
8S4	Light Blue Metallic
8P4	Dark Blue Mica Metallic

2. Interior

- The design of the front console box has been changed.
- The center cluster and the front console of the LE and SE grade models have been painted with metallic paint.
- The door side knobs and the automatic transaxle shift knob of the LE grade model have been chrome plated.
- The design of the heater control panel and the door switch bases of the SE grade model has been changed.
- The design of the steering wheel has been changed.

3. 2AZ-FE Engine

The position of the purge port on the throttle body for the California spec has been changed, and the throttle body for the 2AZ-FE engine model has been unified to one type.

4. Automatic Transaxle

On the ’05 Camry, the U241E 4-speed automatic transaxle has been changed to the U250E 5-speed automatic transaxle.

5. Suspension

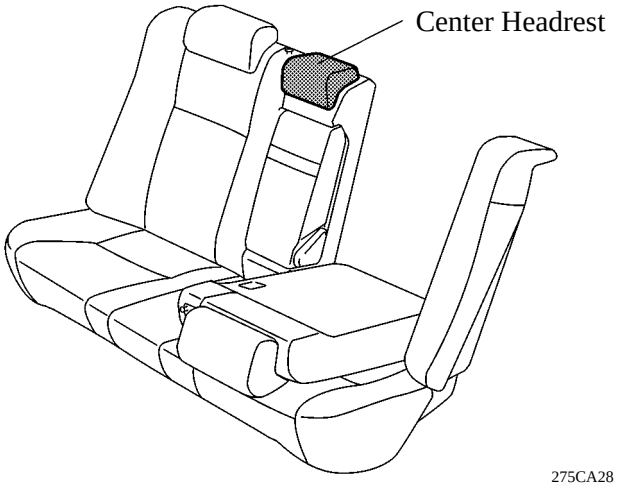
Along with the adoption of the 17-inch wheels on the MCV31L-CEASKA and MCV31L-AEASKA models, the damping force of the front and rear shock absorbers has been optimized in order to ensure both driving stability and ride comfort.
Along with the increased size of the wheels, the diameter of the stabilizer bar has been changed from ϕ0.7 in. (17 mm) to ϕ0.6 in. (15 mm) in order to realize the proper distribution of roll rigidity between the front and rear wheels.

6. Brake

- A VSC (Vehicle Stability Control) system has been provided as a new option on the models equipped with the 2AZ-FE engine. Models equipped with VSC are provided with the following functions: ABS with EBD (Electronic Brake force Distribution), Brake Assist, and TRAC (Traction Control) system.
- The diameter of the master cylinder has been changed from ϕ0.87 in. (22.22 mm) to ϕ0.93 in. (23.81 mm) on the 1MZ-FE and 3MZ-FE engine models with VSC.

7. Rear Seat

A headrest has been added to the rear center seat.



8. Multiplex Communication

The connection for the ECM and the skid control ECU has been changed from serial communication to CAN (Controller Area Network) on the 2AZ-FE engine model with VSC.

9. Lighting

The automatic light control system is provided as standard equipment on the models for the U.S.A.

10. Combination Meter

The design and the construction of the combination meter have been changed on all models.

11. Air Conditioning

The ECU that controls the compressor has been changed on the 2AZ-FE engine models.

12. Clean Air Filter

A pollen removal type clean air filter has been adopted on all models.

13. Cruise Control System

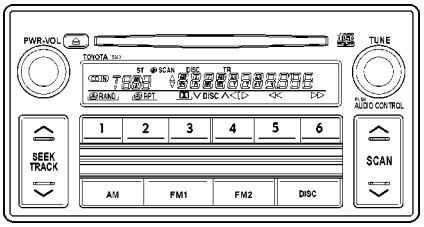
- The control of the low speed limit has been changed.
- In terms of the low speed limit, if the vehicle speed drops below 40 km/h (25 mph) while operating in the cruise control mode, the system stores the set speed in its memory. Therefore, if the vehicle speed drops below 40 km/h (25 mph) while operating in the cruise control mode, the driver can press the RES/+ switch in order to resume operating the vehicle at the speed that is stored in memory, thus effecting constant acceleration control.

14. Seat Belt Reminder System

A buzzer sound has been added as part of the methods for reminding the front passenger.

15. Audio System

- The audio systems listed below have been newly adopted as standard equipment on the LE grade model.

Design	Specifications
 275CA33	- AM/FM Tuner - CD Player - 6-speaker System - Manufacturer: Fujitsu TEN

- The steering pad switches have been made newly available as standard equipment on all models.

MODEL CODE

ACV30 L - A E M N K A

1 2 3 4 5 6 7 8

	BASIC MODEL CODE
1	ACV30: With 2NZ-FE Engine MVC30: With 1MZ-FE Engine MCV31: With 3MZ-FE Engine

	STEERING WHEEL POSITION
2	L: Left-Hand Drive

	MODEL NAME
3	A: Camry (Produced TMC*1) C: Camry (Produced TMMK*2)

	BODY TYPE
4	E: 4-Door Sedan

	GEAR SHIFT TYPE
5	M: 5-Speed Manual A: 5-Speed Automatic

	GRADE
6	N: LE G: XLE S: SE

	ENGINE SPECIFICATION
7	K: DOHC and SFI

	DESTINATION
8	A: U.S.A. and Canada

*1 TMC : Toyota Motor Corporation
*2 TMMK : Toyota Motor Manufacturing, Kentucky, Inc.

MODEL LINE-UP

DESTINATION	ENGINE	BODY TYPE	GRADE	TRANSAXLE		
				5-Speed Manual	5-Speed Automatic	
				E351	U250E	U151E
U.S.A. and Canada	2AZ-FE	4-Door Sedan	LE	ACV30L-AEMNKA	ACV30L-AEANKA ACV30L-CEANKA	
			XLE		ACV30L-AEAGKA ACV30L-CEAGKA	
			SE	ACV30L-AEMSKA	ACV30L-AEASKA ACV30L-CEASKA	
	1MZ-FE		LE			MCV30L-AEANKA MCV30L-CEANKA
			XLE			MCV30L-AEAGKA MCV30L-CEAGKA
	3MZ-FE		SE			MCV31L-AEASKA MCV31L-CEASKA

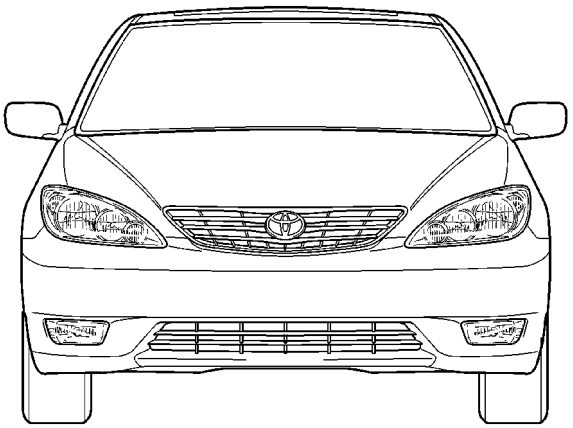
: NEW

NEW FEATURES

○EXTERIOR

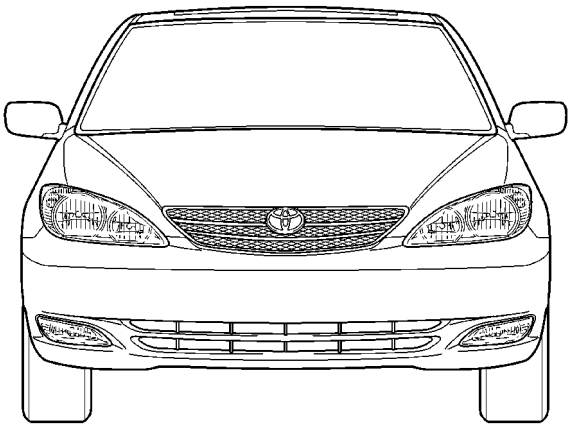
1. Front Design

- ◆ The front bumper has a three-dimensional shape that sweeps continuously outward to achieve a sporty and wide look.
- ◆ The radiator grille of the XLE and LE grade models consists of horizontal bars in the center and the grille frame at the top in order to achieve a simple and elegant expression.
- ◆ The radiator grille on the SE grade model has a three-dimensional composition to emphasize sportiness.
- ◆ The headlights have adopted spindle-shaped lamp graphics containing four cylinders, achieving a unique look. The headlights on the SE grade model have been blacked out to achieve a sporty look.
- ◆ The design of the fog lights on the XLE and SE grade models has been changed. Also, the design of the fog hole covers on the LE grade model has been changed.



275CA02

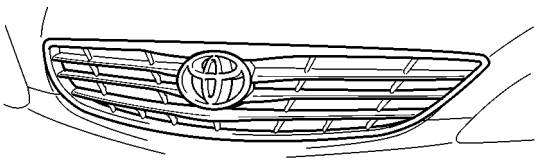
'05 Camry



275CA03

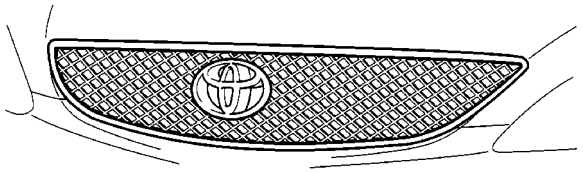
'04 Camry

◦ **Radiator Grille ◀**



275CA04

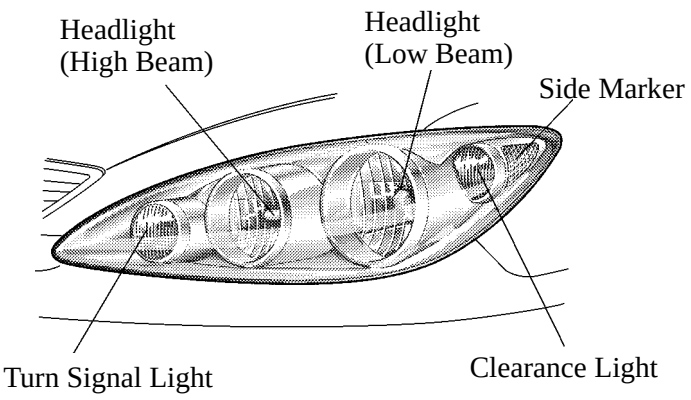
LE and XLE Grade



275CA05

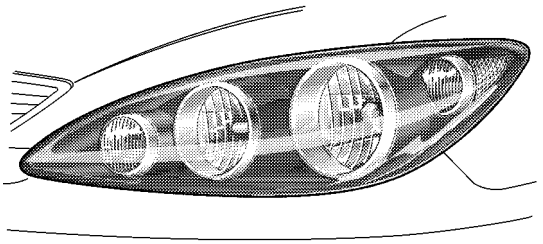
SE Grade

◦ **Headlight ◀**



275CA06

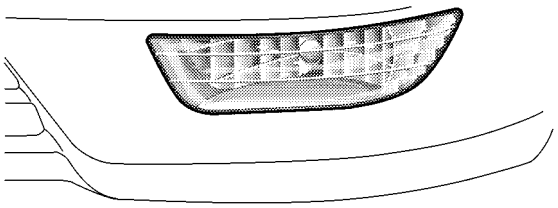
LE and XLE Grade



275CA07

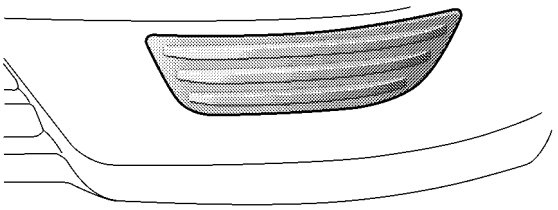
SE Grade

◦ **Fog Light and Hole Cover ◀**



275CA08

SE and XLE Grade

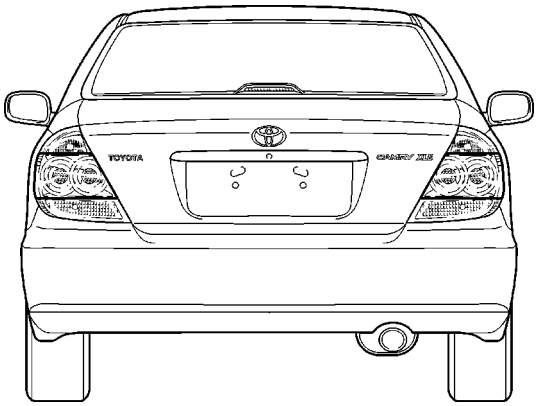


275CA09

LE Grade

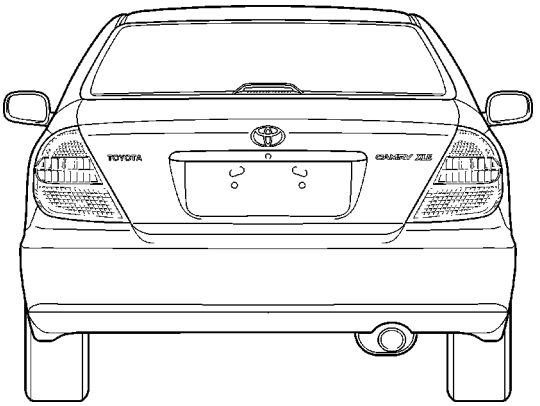
2. Rear Design

The taillights and stoplights have been placed in dual cylinders located in the vertical center of the rear combination lights, in order to achieve a unique look. On the SE grade model, the headlights have been blacked out to emphasize the dual cylinder lights, giving the vehicle a sporty look.



275CA10

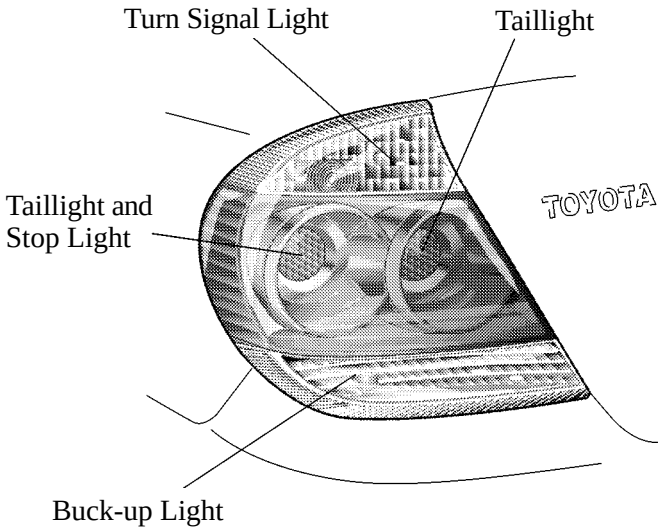
’05 Camry



275CA11

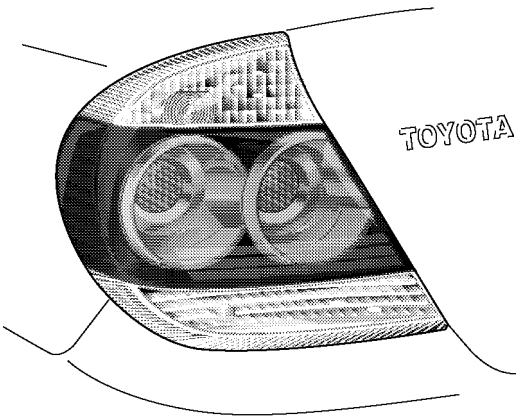
’04 Camry

◦ **Rear Combination Light ◀**



275CA12

LE and XLE Grade

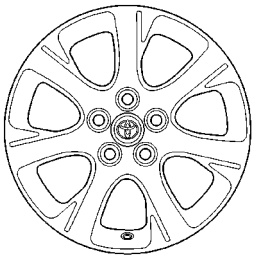
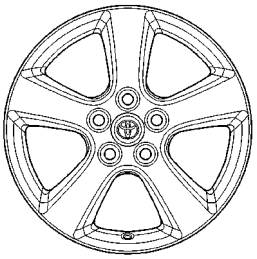
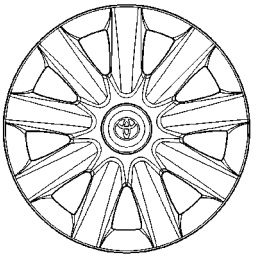


275CA13

SE Grade

3. Tire and Disc Wheel

- ◆ Aluminum wheels with a new design have been added to the 16-inch aluminum wheels that are provided as optional equipment on the XLE grade model.
- ◆ New 17-inch aluminum wheels are provided as standard equipment on the SE grade models equipped with the 3MZ-FE engine.
- ◆ The design of the 15-inch wheel caps, which are provided on the LE grade model, has been changed.

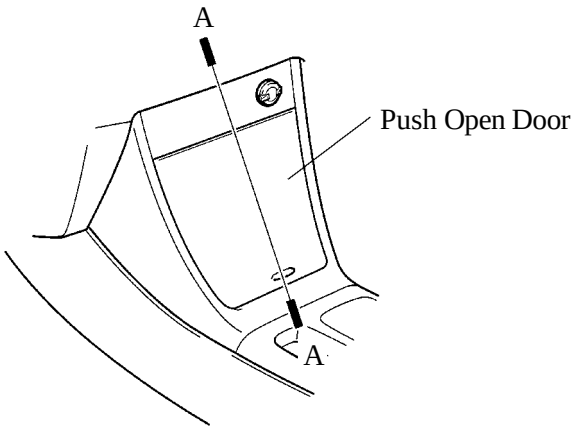
Grade	XLE	SE	LE
Tire Size	215/60R16	215/55R17	205/65R15
Disc Wheel Size	16 x $6^1/_2$ JJ	17 x 7 JJ	15 x $6^1/_2$ JJ
Disc Wheel Material	Aluminum	Aluminum	Steel
P.C.D.* mm (in.)	114.3 (4.5)	×	×
Offset mm (in.)	50 (2)	×	×
Wheel Design	Aluminum Wheel  275CA14	Aluminum Wheel  275CA15	Full Wheel Cap  275CA16

*: Pitch Circle Diameter

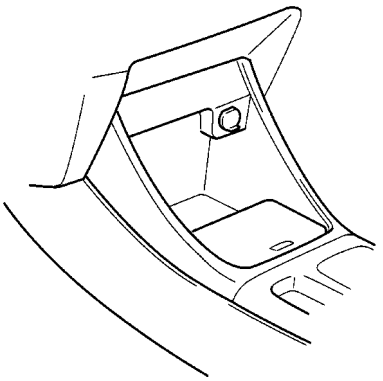
◀INTERIOR

1. Front Console Box

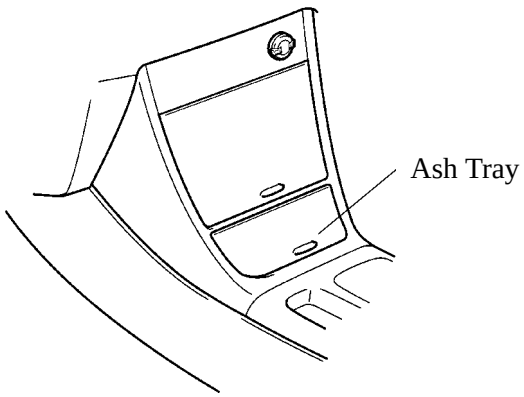
- The front console box has been changed to a type with a push-open door, thus achieving an elegant design.
- An ash tray has been provided as optional equipment.
- The upper end of the console has been raised 3.1 in. (80 mm) from the ’04 Camry, thus increasing its storage capacity.



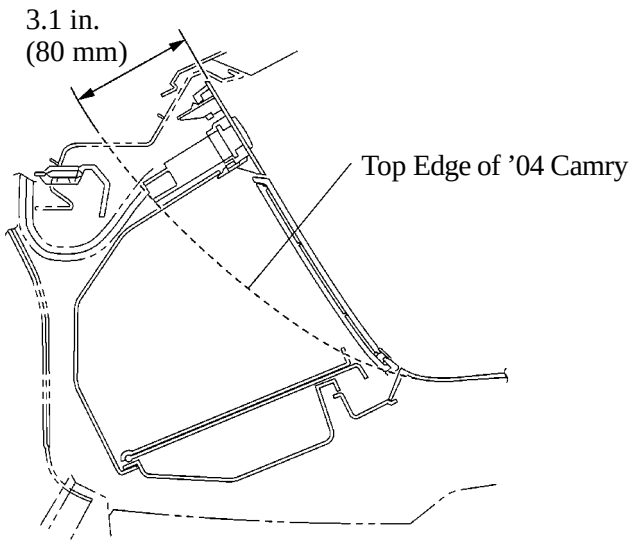
’05 Camry Standard



’04 Camry



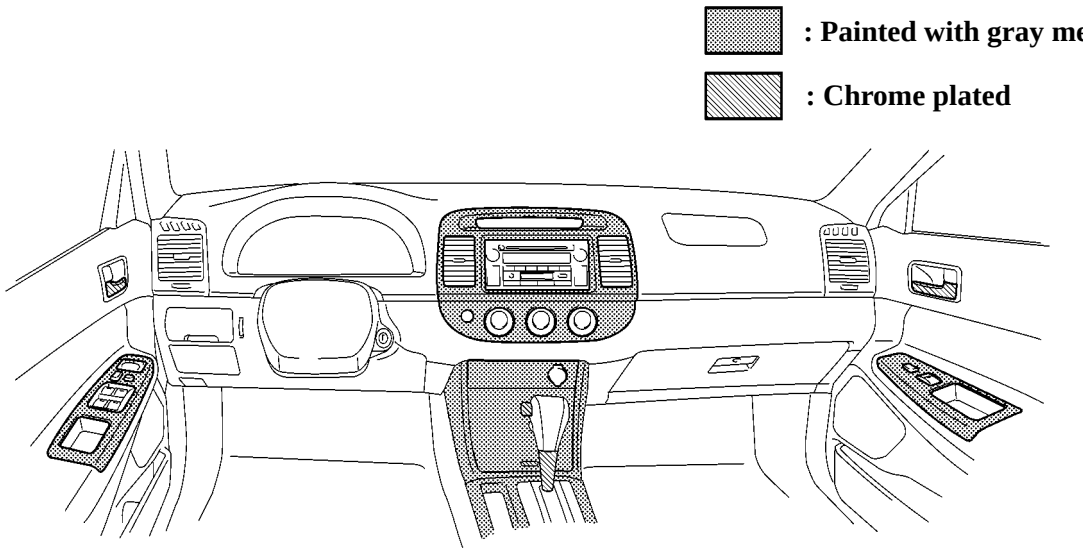
’05 Camry Option



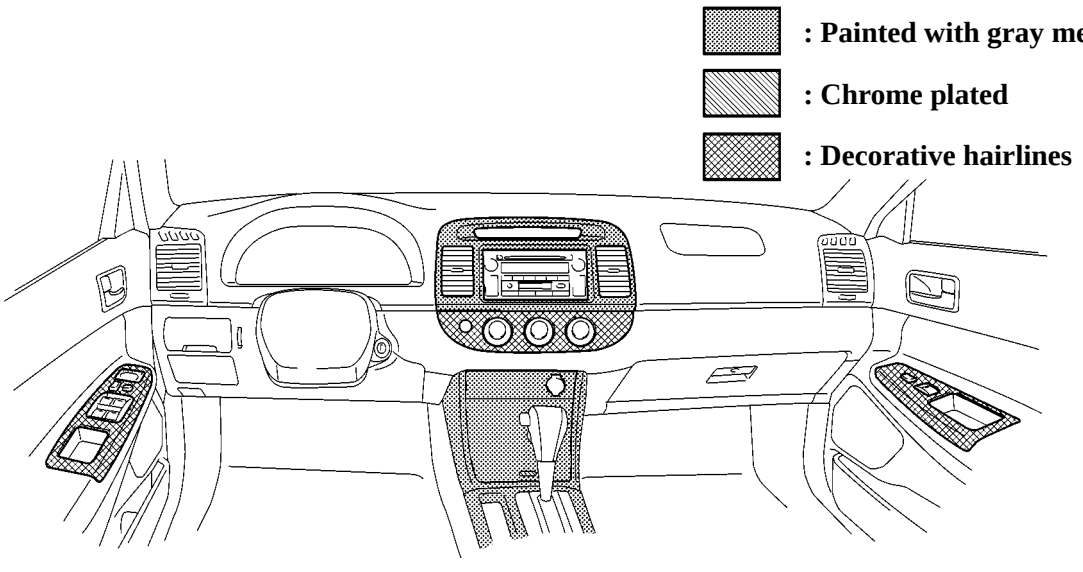
A - A Cross Section

2. Interior Design

- The center cluster and the front console of the LE and SE grade models have been painted with gray metallic paint for an improved look.
- The door side knobs and the automatic transaxle shift knob of the LE grade model have been chrome plated to achieve an elegant look.
- The heater control panel and the door switch bases of the SE grade model have been changed to a design with decorative hairlines in order to achieve a sporty look.



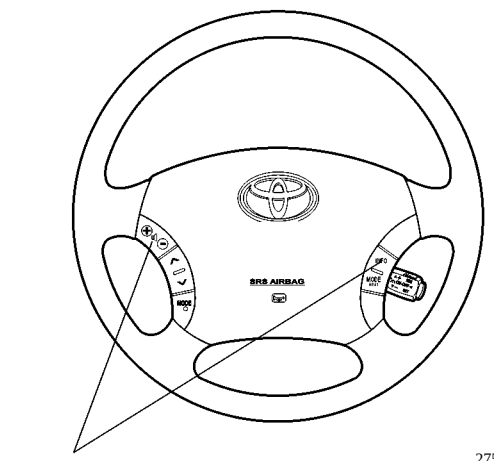
LE Grade



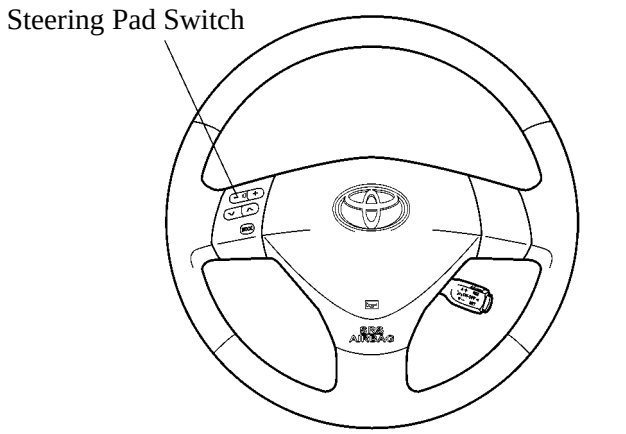
SE Grade

3. Steering Wheel

- Newly designed four-spoke and three-spoke steering wheels have been adopted.
- Along with the adoption of the four-spoke and three-spoke steering wheels, steering pad switches have been newly adopted for ease of use.



Four-spoke Steering Wheel



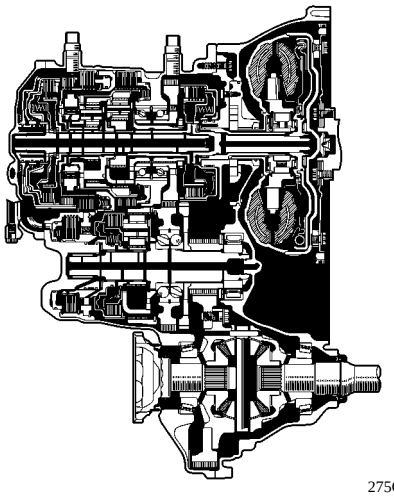
Three-spoke Steering Wheel

◆U250E AUTOMATIC TRANSAXLE

1. General

U250E automatic transaxle has been newly adopted on all the 2AZ-FE engine models. This automatic transaxle is newly developed, compact, lightweight, and high-capacity 5-speed Super ECT (Electronically Controlled Transaxle).

Developed items \ Target	Compact	Shift Quality	Fuel Economy	Accelerate Performance
Wide range 5 speed gear			○	○
High efficiency gear-train	○		○	
Clutch pressure optimal control system	○	○	○	
New developed high-efficiency torque converter			○	



275CA52

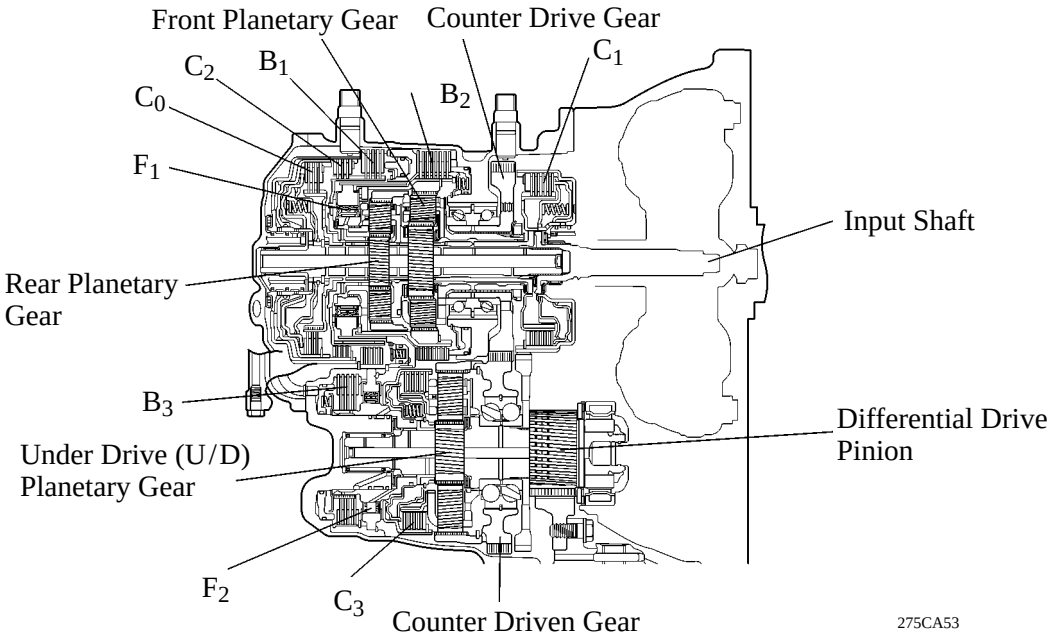
U250E Automatic Transaxle

◦ **Specifications ◀**

Model		’05 Camry	’04 Camry
Transaxle Type		U250E	U241E
Gear Ratio*1	1st	3.943	×
	2nd	2.197	×
	3rd	1.413	×
	4th	0.975	1.020
	5th	0. 703	—
	Reverse	3.145	×
Differential Gear Ratio		3.391	2.740
Fluid Capacity Liters (US qts, Imp. qts)		8.0 (8.5, 7.0)	8.2 (8.7, 7.2)
Fluid Type		ATF Type T-IV	×
Weight (Reference)*2 kg (lb)		93.0 (204.6)	89 (195.8)

*1: Counter gear ratio included

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

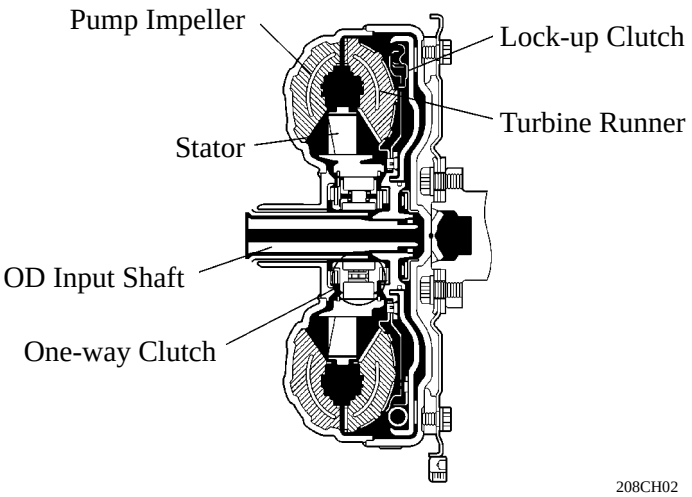


◦ **Specifications ◀**

Transaxle Type			U250E	U241E
C_1	Forward Clutch	The No. of Discs	5	×
C_2	Reverse Clutch		3	×
C_3	U/D Direct Clutch		3	×
C_0	Direct & O/D Clutch		3	—
B_1	2nd & O/D Brake		3	×
B_2	1st & Reverse Brake		5	×
B_3	U/D Brake		3	×
F_1	No.1 One-Way Clutch	The No. of Sprags	22	×
F_2	U/D One-Way Clutch		15	×
Front Planetary Gear		The No. of Sun Gear Teeth	43	×
		The No. of Pinion Gear Teeth	17	×
		The No. of Ring Gear Teeth	77	×
Rear Planetary Gear		The No. of Sun Gear Teeth	31	×
		The No. of Pinion Gear Teeth	19	×
		The No. of Ring Gear Teeth	69	×
U/D Planetary Gear		The No. of Sun Gear Teeth	32	×
		The No. of Pinion Gear Teeth	26	×
		The No. of Ring Gear Teeth	83	×
Counter Gear		The No. of Drive Gear Teeth	50	×
		The No. of Driven Gear Teeth	51	×

2. Torque Converter

- This torque converter has been optimally designed with new fluid passages and impeller configuration resulting in substantially enhanced transmission efficiency to achieve high starting, acceleration and fuel economy.
- Furthermore, a hydraulically operated lock-up mechanism which cuts power transmission losses due to slippage at medium and high speeds is used.

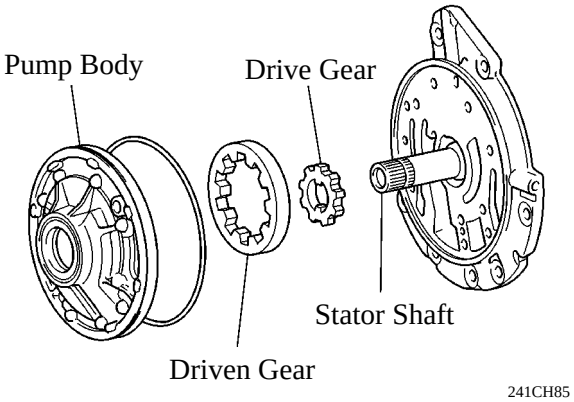


◦ **Specification ◀**

Type	3-Element, 1-Step, 2-Phase (with Lock-up Mechanism)
Stall Torque Ratio	1.8

3. Oil Pump

The oil pump is combined with torque converter, lubricates the planetary gear units and supplies operating pressure to the hydraulic control.



◦ **Specifications ◀**

Gear	Gear Teeth
Drive Gear	9
Driven Gear	10

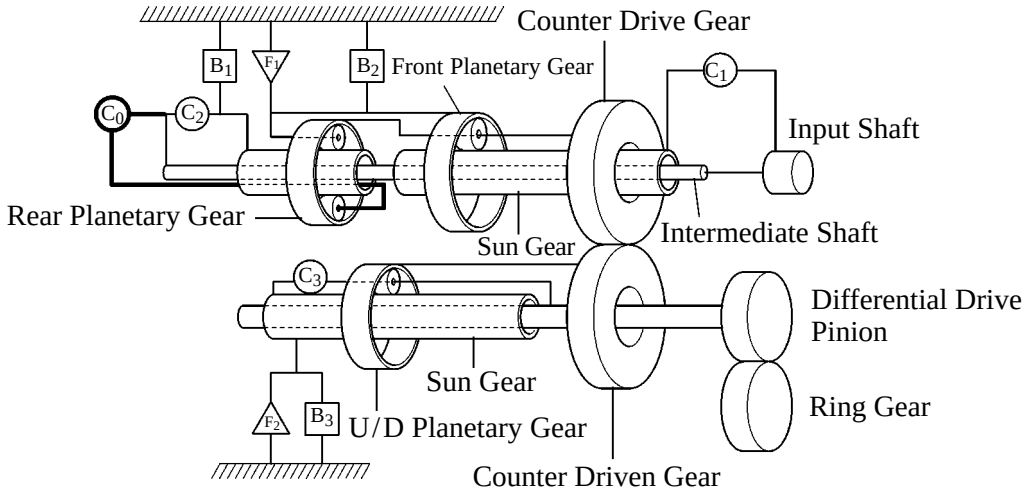
4. Planetary Gear Unit

Construction

- The gear layout of the U250E automatic transaxle is the same as that of the U241E automatic transaxle.
- 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 transaxle 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_0, C_2, C_3, and C_1 clutches that are applied when shifting from 2nd to 3rd and from 3rd to 4th. For detail, refer to Centrifugal Fluid Pressure Canceling Mechanism on page 21.

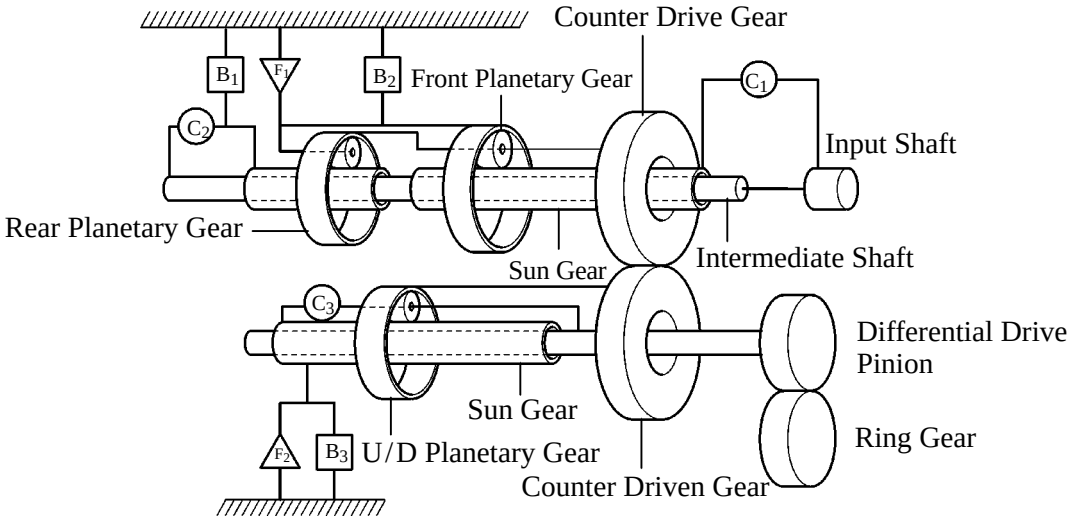
— Major difference between U250E automatic transaxle and U241E automatic transaxle —

- *Direct & O/D clutch (C_0) has been adopted.*
- *A centrifugal fluid pressure canceling mechanism has been adopted in the C_0 clutch.*
- *The operating gears for the C_2 clutch and the B_1 brake have been changed, and their names have been changed to the "reverse clutch" and "2nd & O/D brake", respectively.*



U250E Automatic Transaxle

275CA42



U241E Automatic Transaxle

275CA43

FUNCTION OF COMPONENT

Component		Function	'05 Camry U250E	'04 Camry U241E
C_1	Forward Clutch	Connects input shaft and front planetary sun gear.	◀	◀
C_2	Direct Clutch	Connects input shaft and rear planetary sun gear.	—	◀
	Reverse Clutch		◀	—
C_3	U/D Direct Clutch	Connects U/D sun gear and U/D planetary carrier.	◀	◀
C_0	Direct & O/D Clutch	Connects input shaft and rear planetary carrier.	◀	—
B_1	2nd Brake	Prevents rear planetary sun gear from turning either clockwise or counterclockwise.	—	◀
	2nd & O/D Brake		◀	—
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 planetary sun gear from turning either clockwise or counterclockwise.	◀	◀
F_1	No.1 One-Way Clutch	Prevents rear planetary carrier and front planetary ring gear 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.	◀	◀

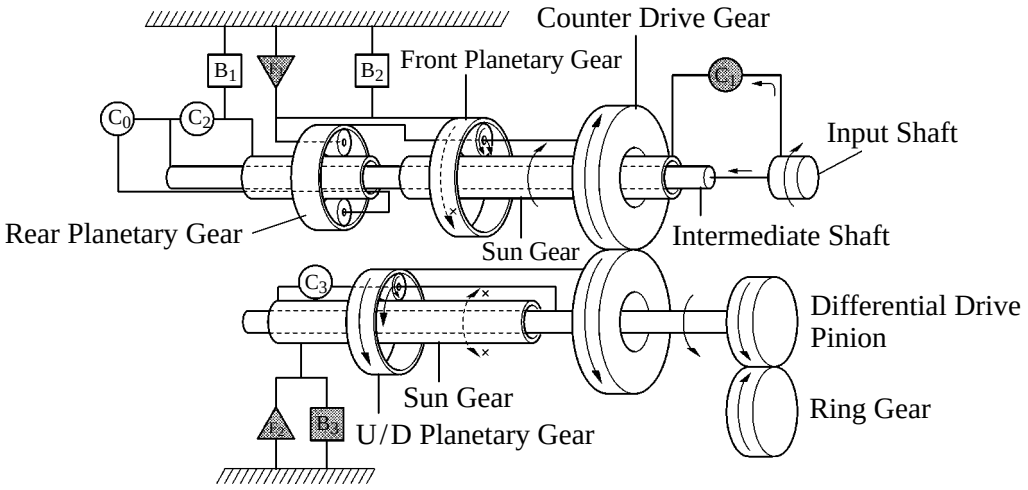
Transaxle Power Flow

Shift Lever Position	Gear	Solenoid Valve						Clutch				Brake			One-way Clutch	
		S4	SR	DSL	SL1	SL2	SL3	C_0	C_1	C_2	C_3	B_1	B_2	B_3	F_1	F_2
P	Park				◀	◀								◀		
R	Reverse				◀	◀				◀			◀	◀		
N	Neutral				◀	◀								◀		
D	1st				◀	◀			◀					◀	◀	◀
	2nd					◀			◀			◀		◀		◀
	3rd		◀	Δ*2	◀	Δ*2		◀	◀					◀		◀
	4th		◀	Δ*1◆		Δ*1◆	◀	◀				◀		◀		◀
	5th	◀	◀	Δ◆		Δ◆	◀	◀			◀	◀				
4	1st				◀	◀			◀					◀	◀	◀
	2nd					◀			◀			◀		◀		◀
	3rd		◀	Δ*2	◀	Δ*2		◀	◀					◀		◀
	4th		◀	Δ◆		Δ◆	◀	◀				◀		◀		◀
3	1st				◀	◀			◀					◀	◀	◀
	2nd					◀			◀			◀		◀		◀
	3rd		◀		◀			◀	◀					◀		◀
2	1st				◀	◀			◀					◀	◀	◀
	2nd					◀			◀			◀		◀		◀
L	1st			◀	◀	◀			◀				◀	◀	◀	◀

[◀ : ON D : Lock-up ON ◆ : Flex lock-up ON (during deceleration only)]

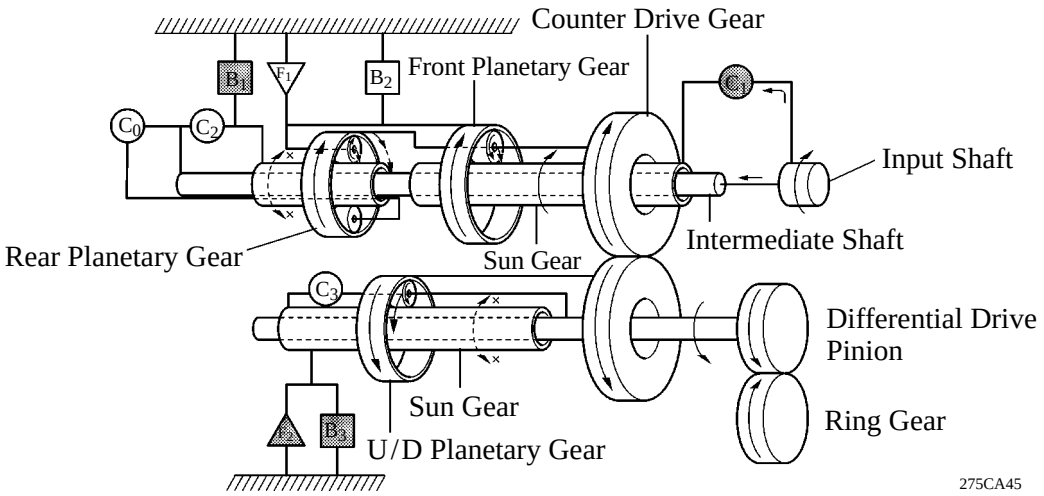
*1: Shift control operates only when 5th is prohibited while traveling uphill / downhill.
*2: Shift control operates only when 4th is prohibited while traveling uphill / downhill.

1) 1st Gear (Except L Position)

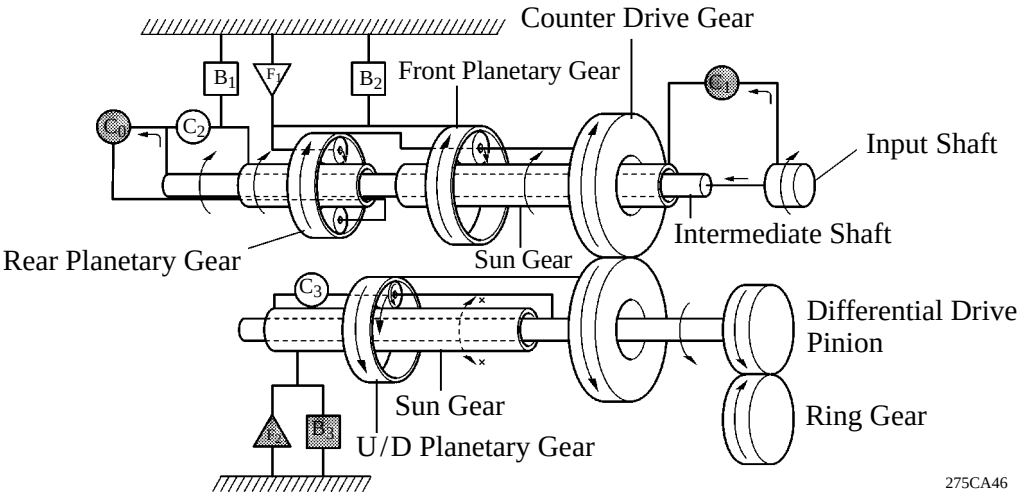


275CA44

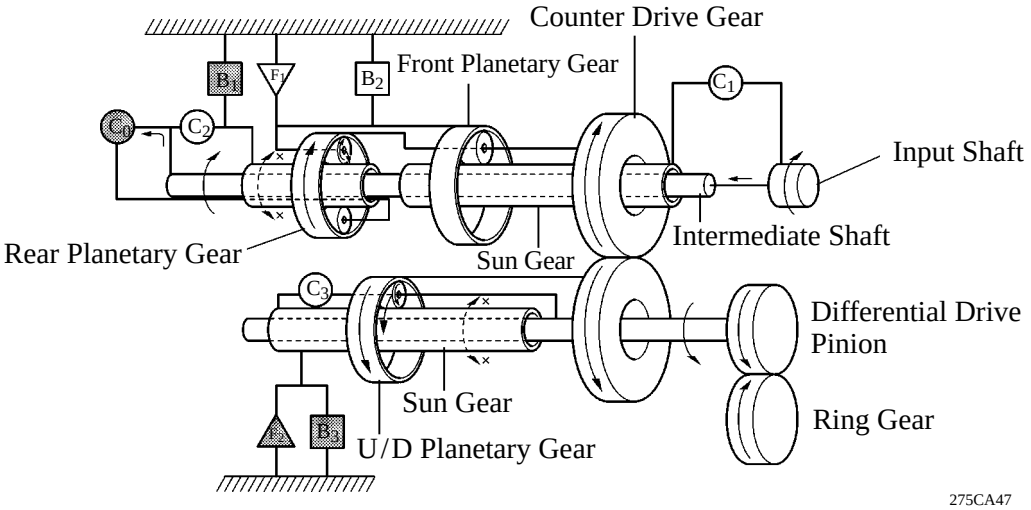
2) 2nd Gear



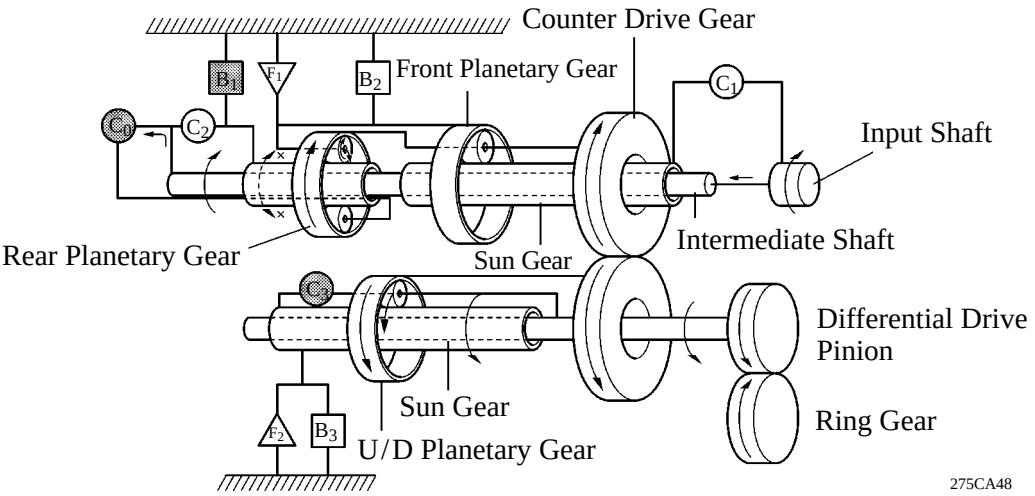
3) 3rd Gear



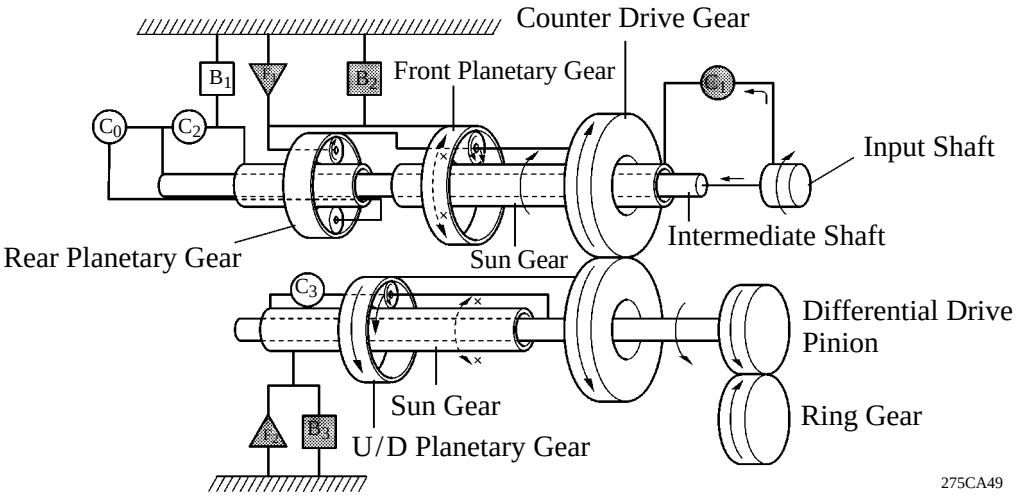
4) 4th Gear



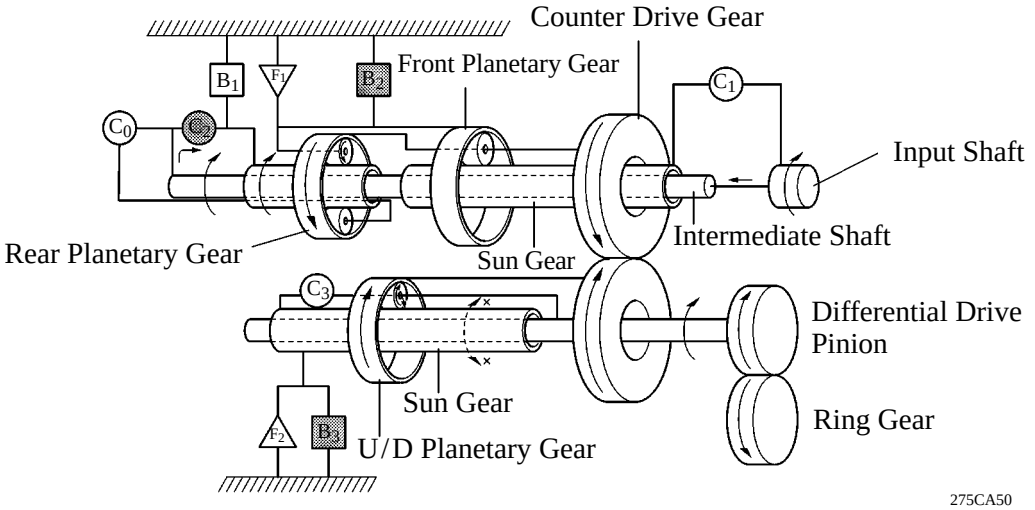
5) 5th Gear



6) 1st Gear (L Position)



7) Reverse Gear

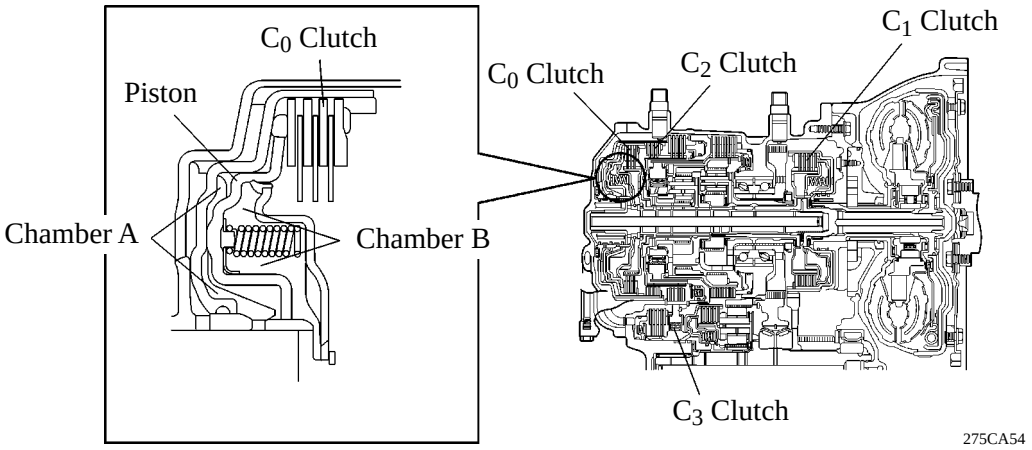


Centrifugal Fluid Pressure Canceling Mechanism

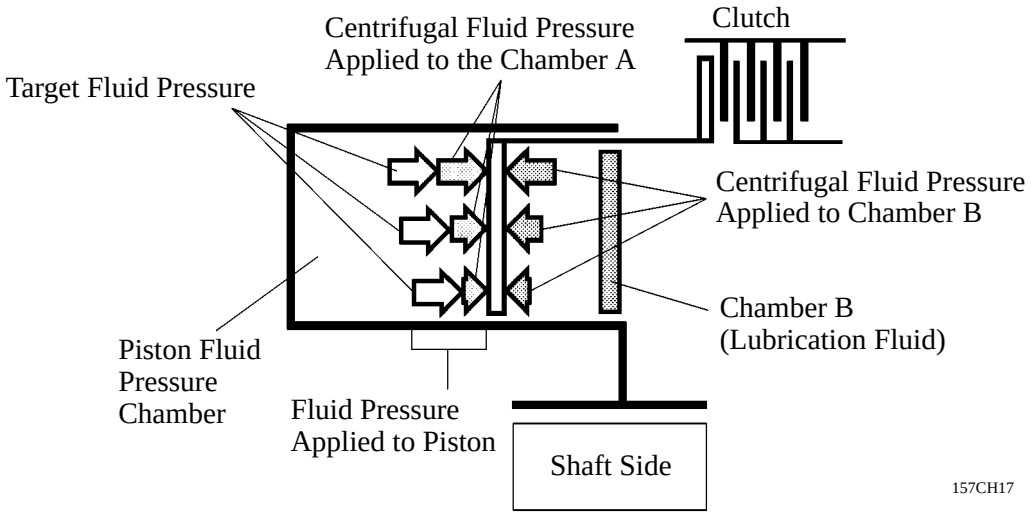
There are two reasons for improving the conventional clutch mechanism:

- 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.

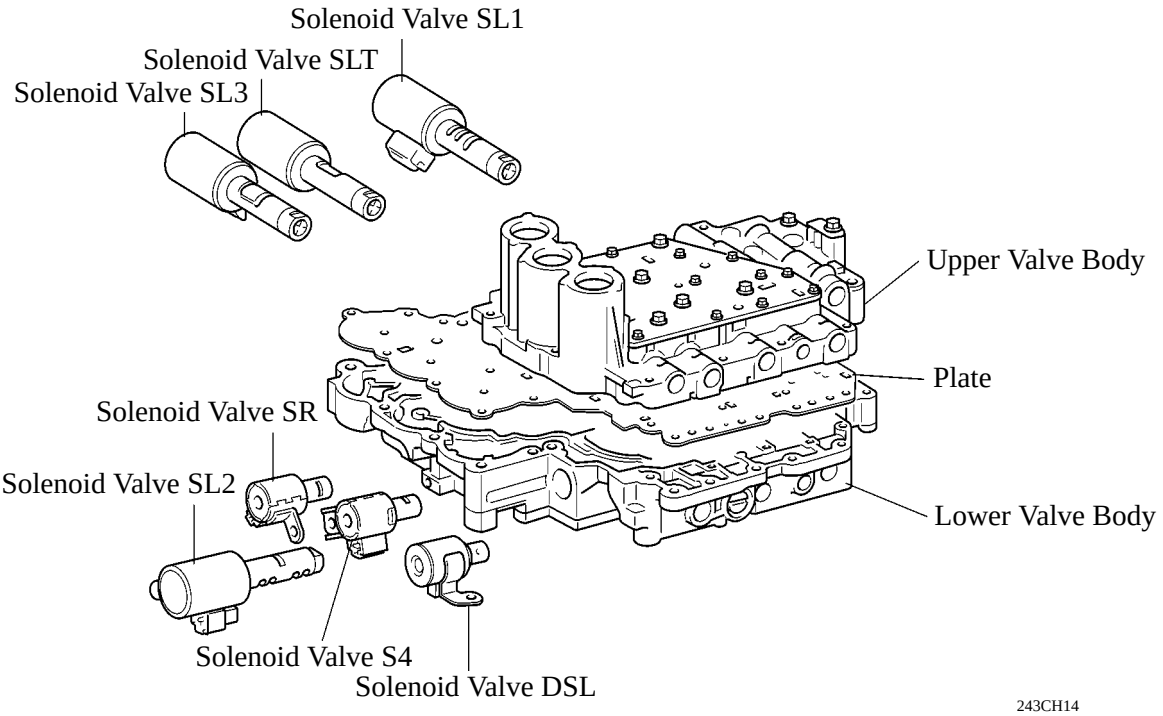


Fluid pressure applied to piston	—	Centrifugal fluid pressure applied to chamber B	=	Target fluid pressure (original clutch pressure)

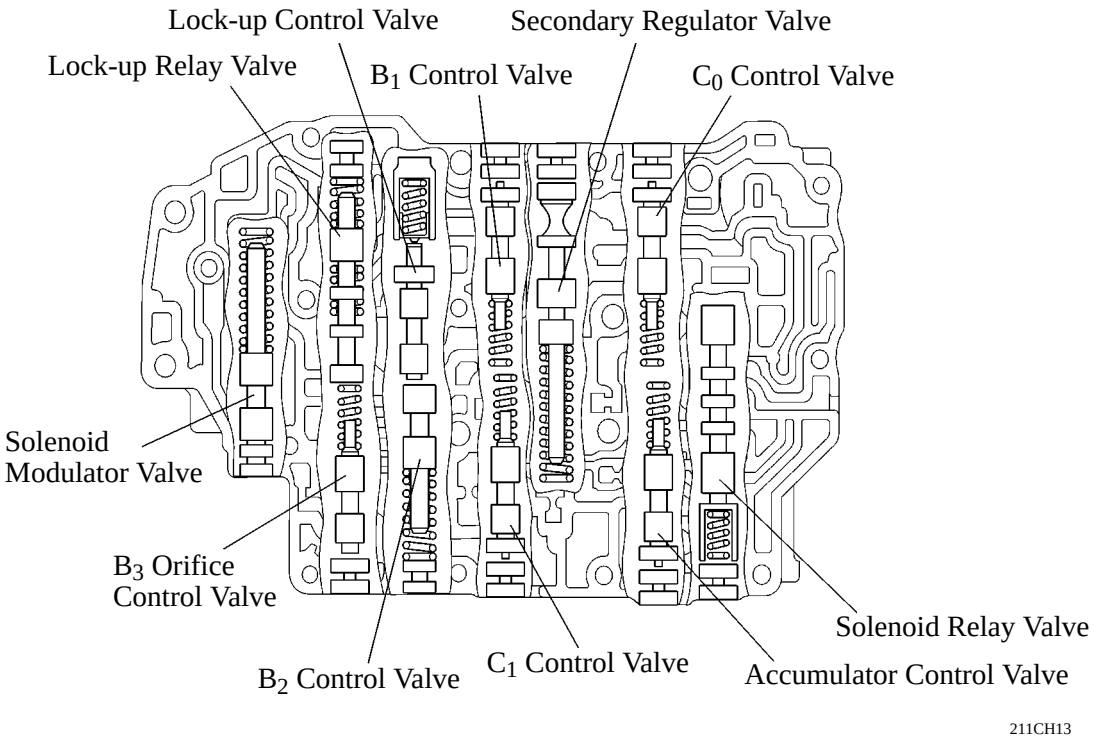
5. Valve Body Unit

General

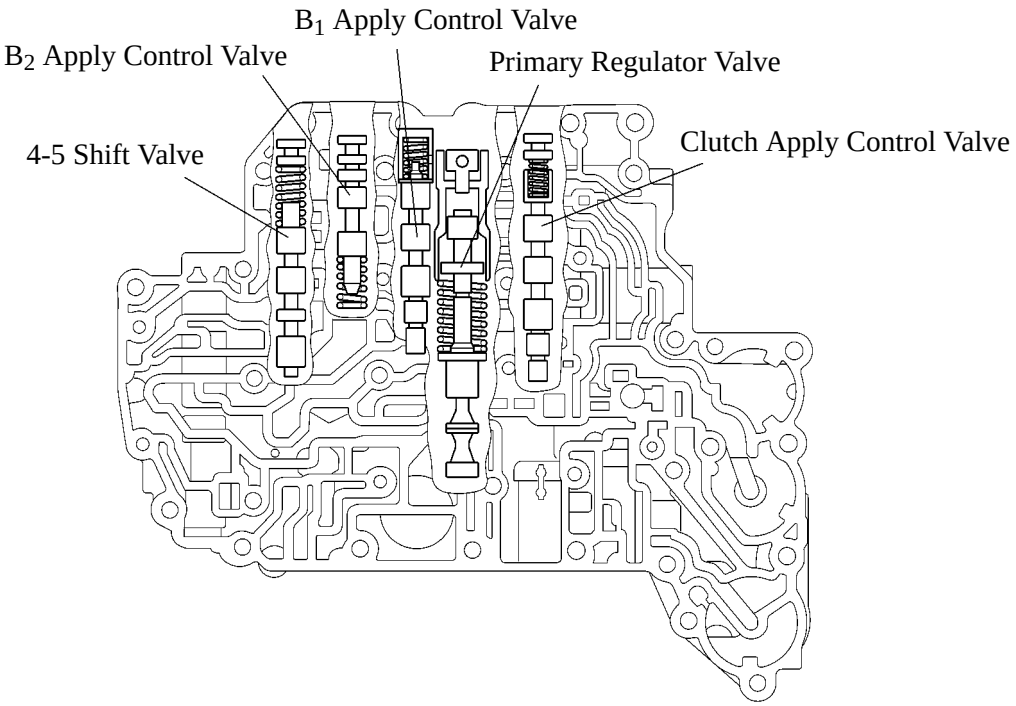
The valve body consists of the upper and lower valve bodies and 7 solenoid valves.
Apply orifice control, which controls the flow volume to the B_3 brake, has been adopted in this unit.



◦ **Upper Valve Body ◀**



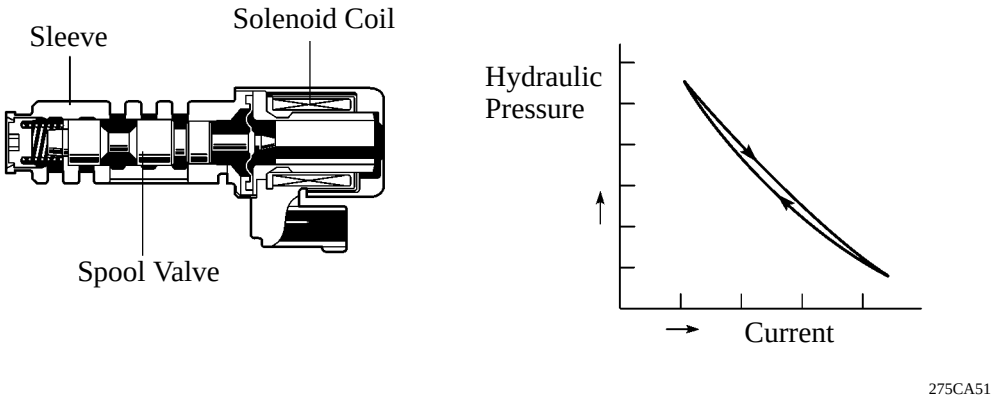
◦ **Lower Valve Body ◀**



Solenoid Valve

1) Solenoid Valves SL1, SL2, SL3, and SLT

In order to provide a hydraulic pressure that is proportion to current that flows to the solenoid coil, the solenoid valves SL1, SL2, SL3, and SLT linearly control the line pressure and clutch and brake engagement pressure based on the signals received from the ECM.
The solenoid valves SL1, SL2, SL3, and SLT have the same basic structure.

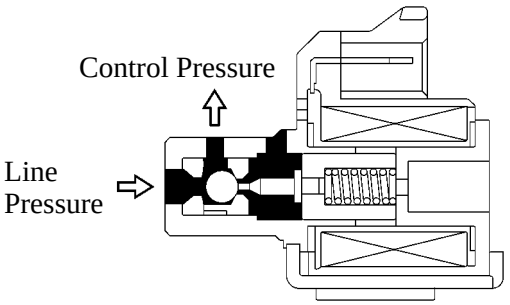


◦ **Function of Solenoid Valve SL1, SL2, SL3 and SLT ◀**

Solenoid Valve	Action	Function
SL1	For clutch and brake engagement pressure control	B_1 brake pressure control
SL2		◆ C_0 clutch pressure control ◆ Lock-up clutch pressure control
SL3		C_1 clutch pressure control
SLT	For line pressure control	◆ Line pressure control ◆ Secondary pressure control

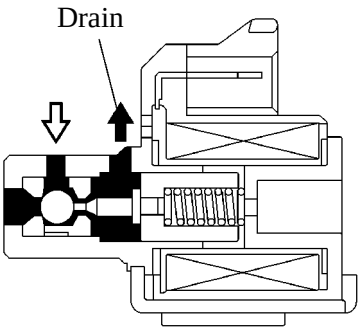
2) Solenoid Valves SR, S4, and DSL

The solenoid valves SR, S4, and DSL use a three-way solenoid valve.



Solenoid Valve ON

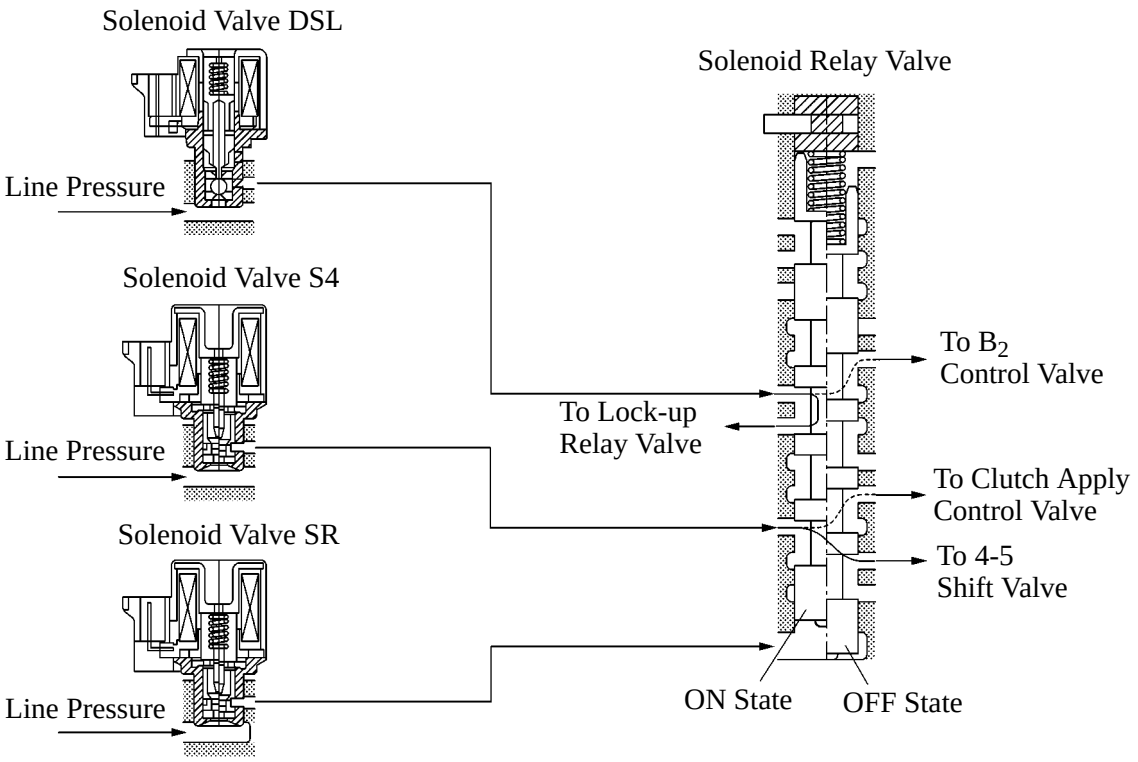
161ES65



Solenoid Valve OFF

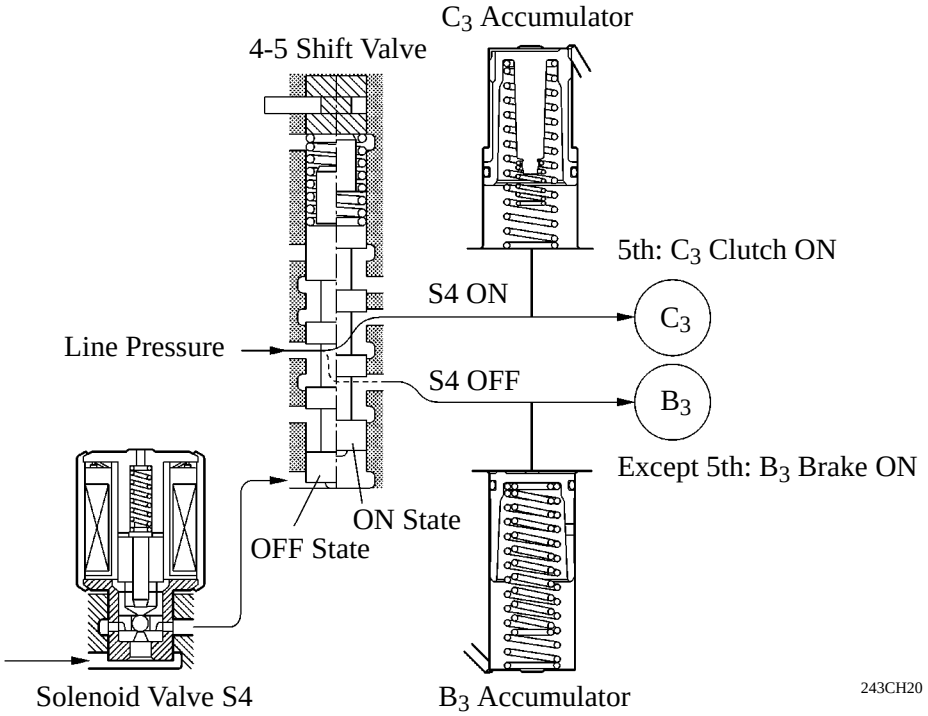
181CH12

The solenoid valve SR controls the solenoid relay valve. Accordingly, the fluid passages from the solenoid valve DSL and S4 have been changed.

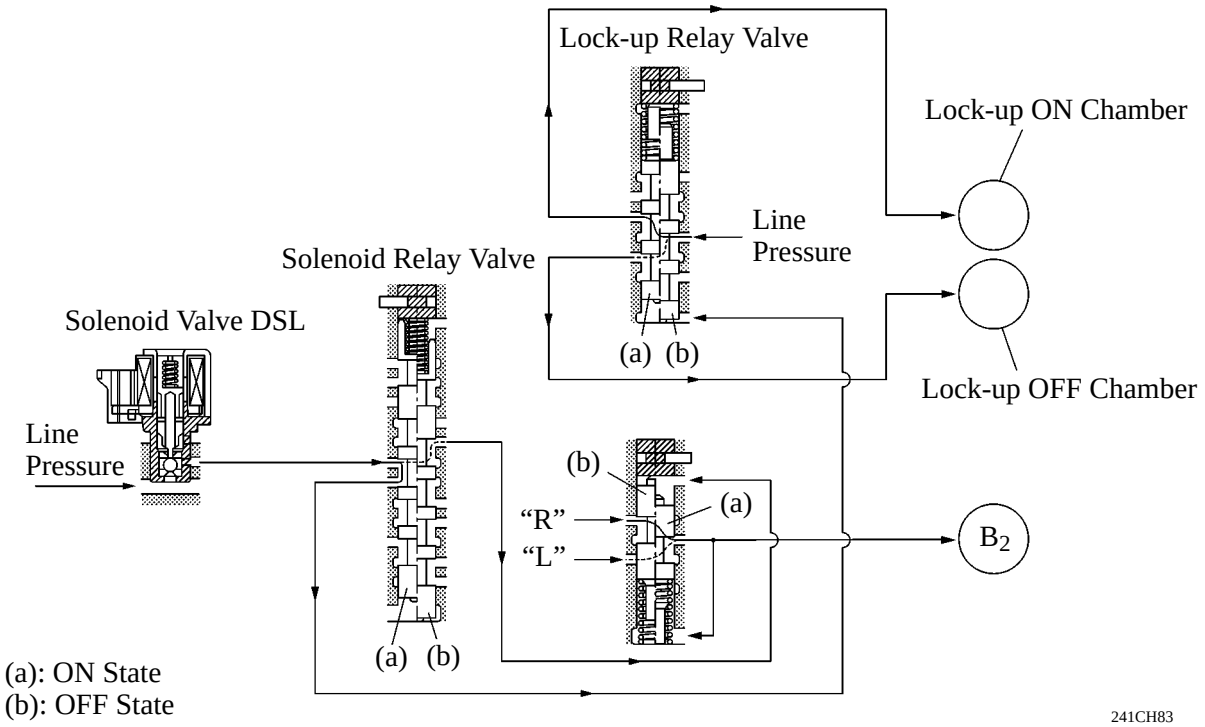


241CH81

The solenoid valve S4, when set to ON, controls the 4-5 shift valve to establish the 5th by changing over the fluid pressure applied to B_3 brake and C_3 clutch.

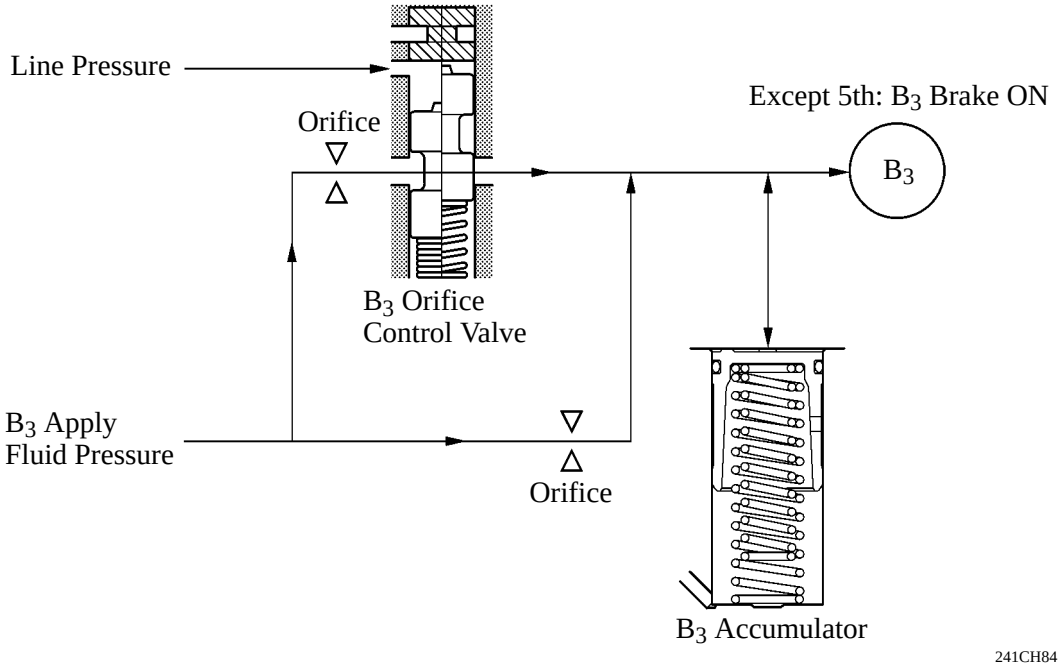


The solenoid valve DSL controls the B_2 control valve via the solenoid relay valve when the transaxle is shifted in the R or L position.
During lock-up, the lock-up relay valve is controlled via the solenoid relay valve.



Apply Orifice Control

This control is effected by the B_3 orifice control valve. The B_3 orifice control valve has been provided for the B_3 brake, which is applied when shifting from 5th to 4th. The B_3 orifice control valve is controlled by the amount of the line pressure in accordance with shifting conditions, and the flow volume of the fluid that is supplied to the B_3 brake is controlled by varying the size of the orifice in the control valve.



6. Electronic Control System

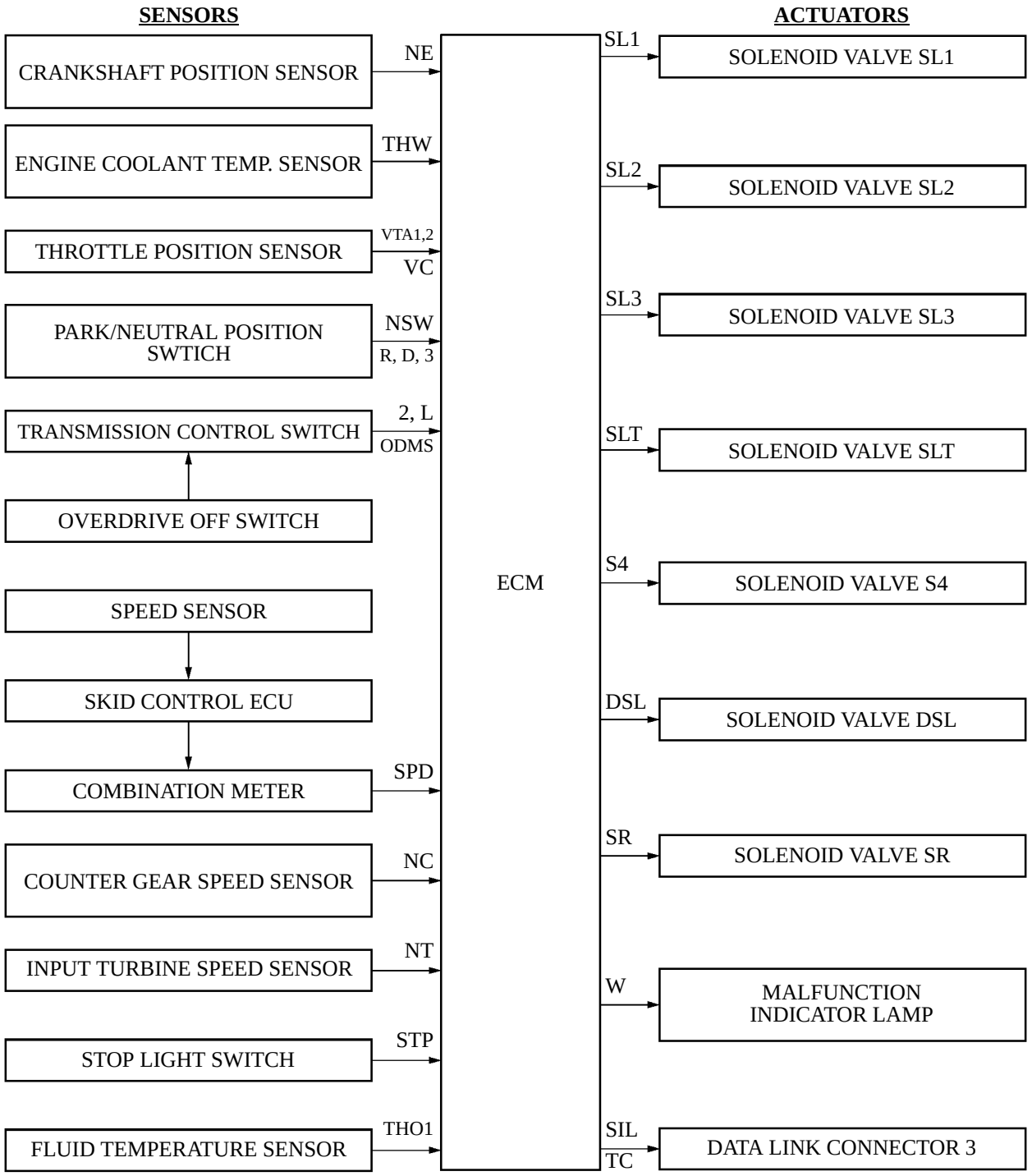
General

The electronic control systems of the U250E automatic transaxle consist of the control listed below.

System	Function
Clutch Pressure Control (See page 33)	◆ Controls the pressure that is applied directly to B_1 brake, C_0 and C_1 clutches by actuating 3 solenoid valves (SL1, SL2, and SL3) in accordance with ECM signals. ◆ 3 solenoid valves (SL1, SL2, and SL3) minutely control the clutch pressure in accordance with the engine output and driving conditions.
Line Pressure Optimal Control (See page 35)	Actuates the solenoid valve SLT to control the line pressure in accordance with information from the ECM and the operating conditions of the transaxle.
Engine Torque Control	Retards the engine ignition timing temporarily to improve shift feeling during up or down shifting.
Shift Control in Uphill/Downhill Traveling (See page 34)	Controls to restrict the 4th or 5th upshift or to provide appropriate engine braking by the ECM to determine whether the vehicle is traveling uphill or downhill.
Shift Timing Control	The ECM sends current to 3 solenoid valves (SL1, SL2, and SL3) based on signals from each sensor and shifts the gear.
Lock-up Timing Control	The ECM sends current to the solenoid valves DSL and SL2 based on signals from each sensor and engages or disengages the lock-up clutch.
“N” to “D” Squat Control	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.
Diagnosis (See page 37)	When the ECM detects a malfunction, the ECM makes a diagnosis and memorizes the failed section.
Fail-safe (See page 37)	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.

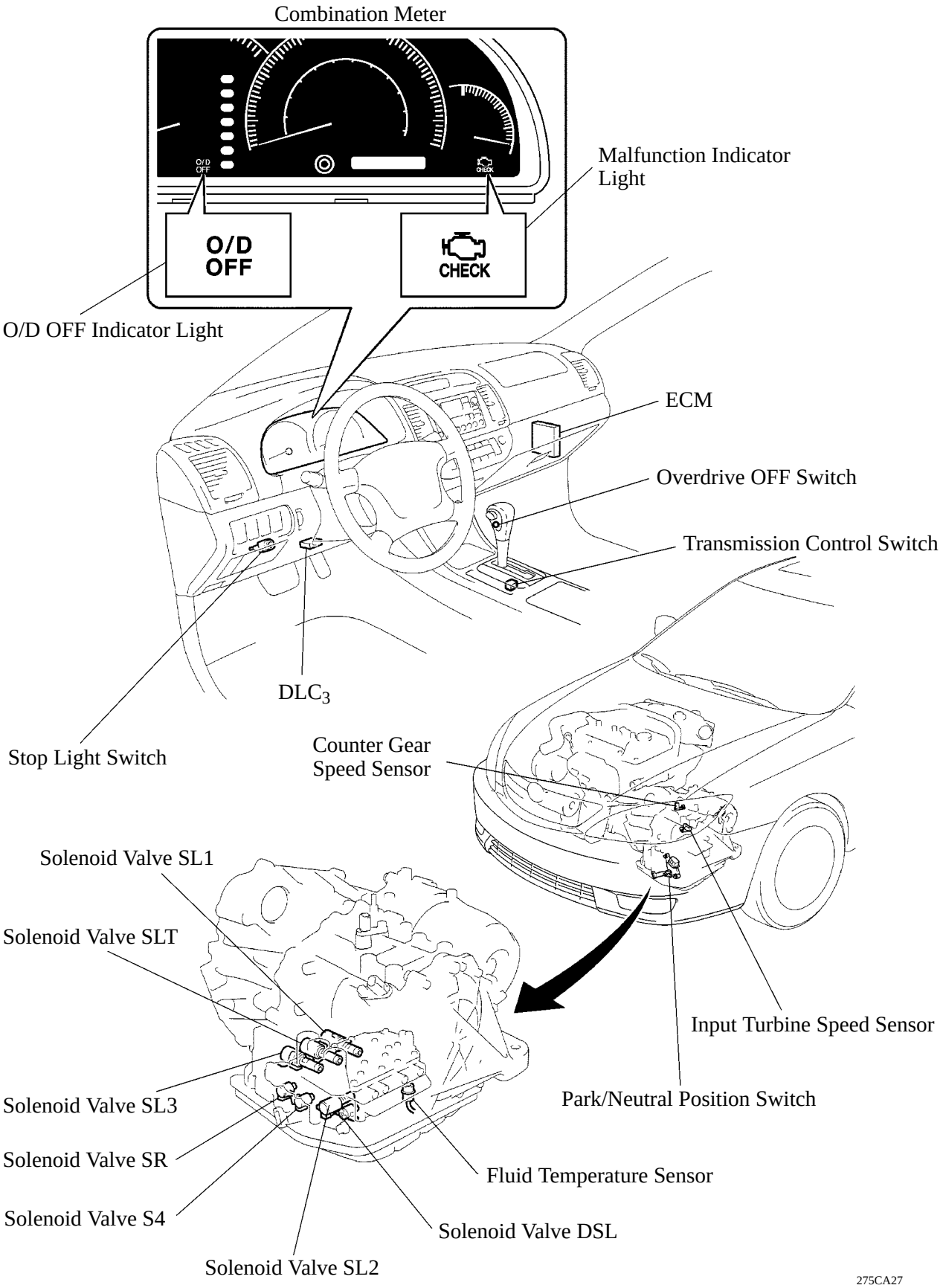
Construction

The configuration of the electronic control system in the U250E automatic transaxle is as shown in the following chart.



246CH04

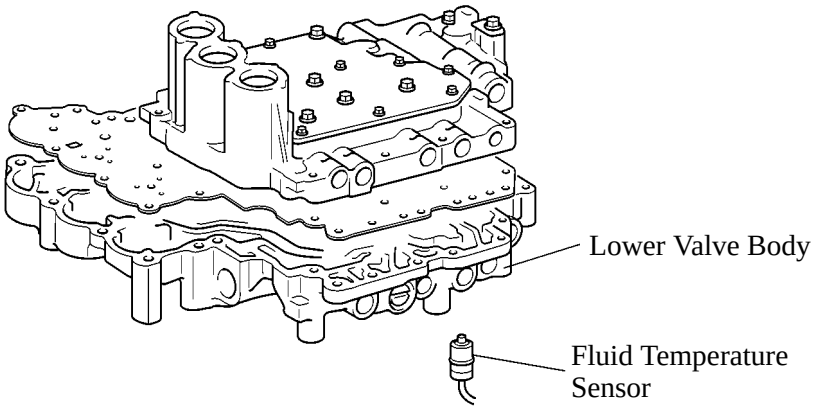
Layout of Main Components



Construction and Operation of Main Components

1) Fluid Temperature Sensor

A fluid temperature sensor is installed in the valve body for direct detection of the fluid temperature. Fluid temperature sensor is used for revision of clutches and brakes pressure to keep smooth shift quality every time.

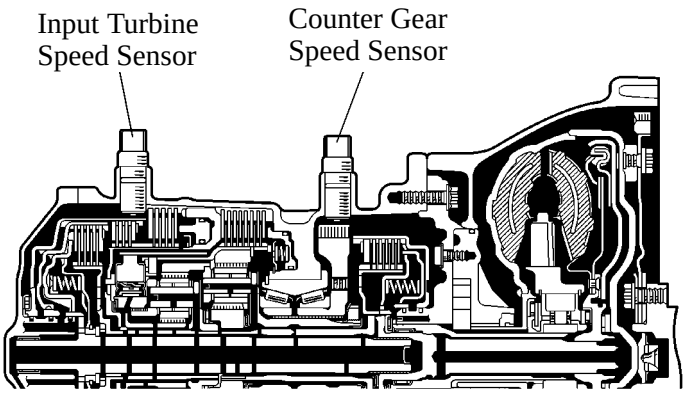


241CH87

2) Speed Sensors

The U250E automatic transaxle has adopted an input turbine speed sensor (for the NT signal) and a counter gear speed sensor (for the NC signal). Thus, the ECM can detect the timing of the shifting of the gears and appropriately control the engine torque and hydraulic pressure in response to the various conditions.

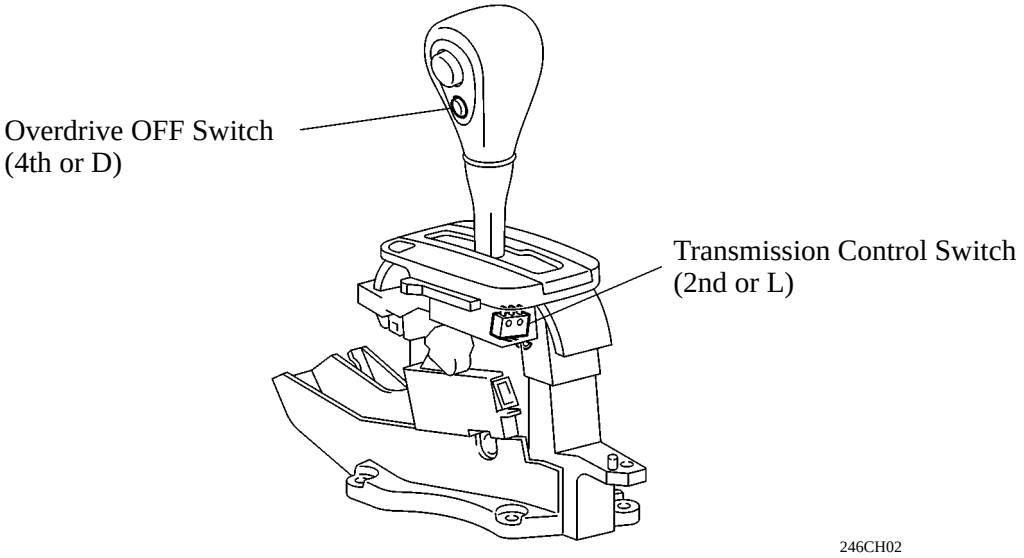
- The input turbine speed sensor detects the input speed of the transaxle. The direct clutch (C_2) drum is used as the timing rotor for this sensor.
- The counter gear speed sensor detects the speed of the counter gear. The counter drive gear is used as the timing rotor for this sensor.



211CH16

Transmission Control Switch and Overdrive OFF Switch

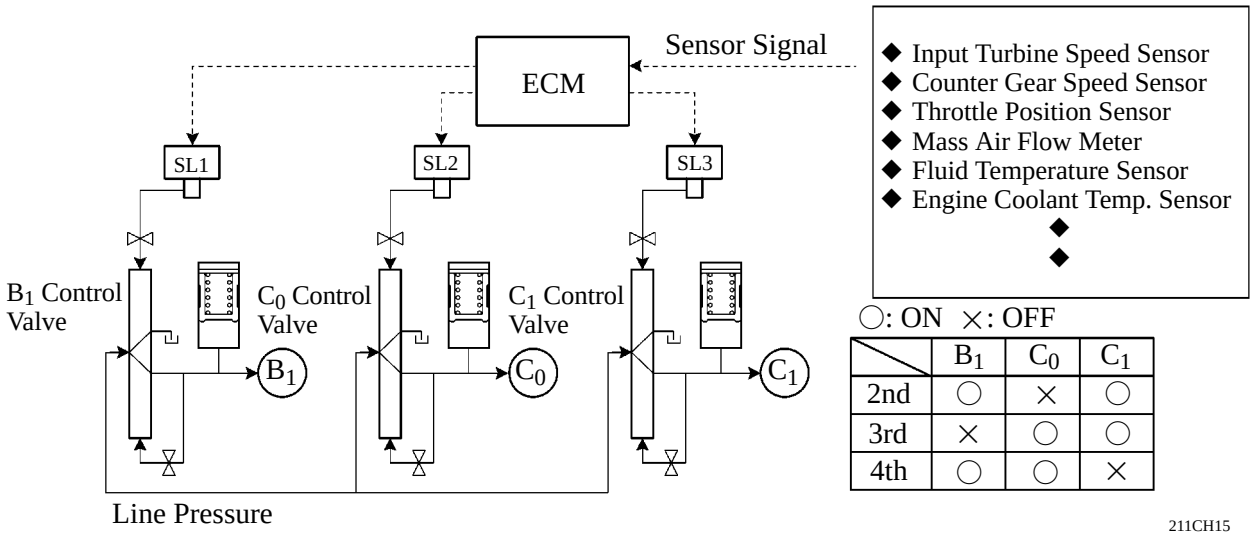
The transmission control switch and overdrive OFF switch are installed inside shift lever assembly to detect the shift lever position (“4th” or “D” and “2nd” or “L”) and to inform ECM the shift position for the indicator light in the combination meter.



Clutch Pressure Control

1) Clutch to Clutch Pressure Control

This control has been adopted for shifting from the 2nd to 3rd gear, and from the 3rd to 4th gear.
Solenoid valves actuate SL1, SL2, and SL3 in accordance with the signals from the ECM, and guides this output pressure directly to the control valves B_1, C_0, and C_1 in order to regulate the line pressure that acts on the B_1 brake, C_0, and C_1 clutches.
As a result, compact B_1, C_0, and C_1 accumulators without a back pressure chamber have been realized.

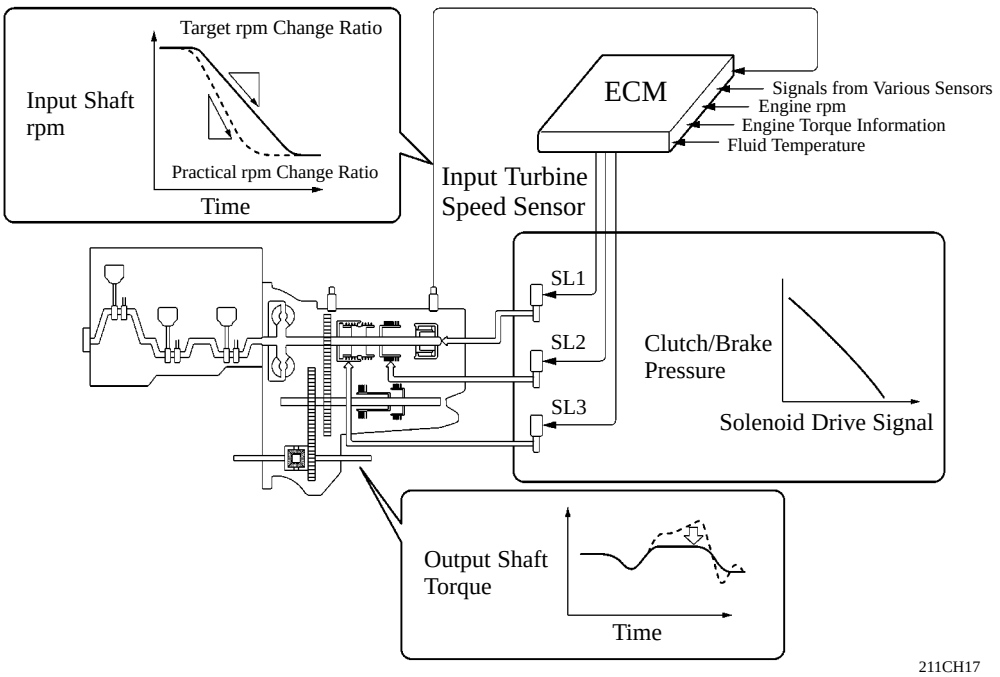


	B_1	C_0	C_1
2nd	○	×	○
3rd	×	○	○
4th	○	○	×

211CH15

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 SL1, SL2, and SL3 to minutely control the clutch pressure in accordance with engine output and driving conditions.
As a result, smooth shift characteristics have been realized.



211CH17

Shifting Control in Uphill/Downhill Traveling

1) General

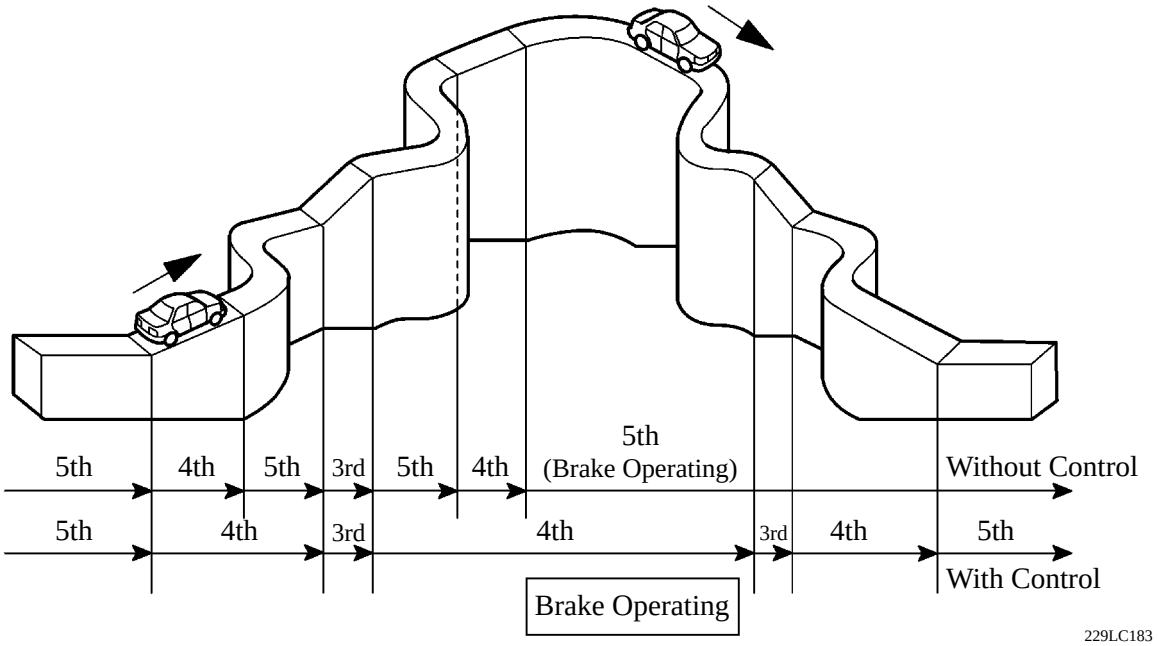
This control helps minimize the shifting of gears when the driver operates the accelerator pedal while driving on a winding road with ups and downs, in order to ensure a smooth drive.

2) Shift control in uphill traveling

When the ECM determines uphill travel, it prohibits the transaxle from shifting up into 5th after the transaxle has shifted down bellow 4th.
When the ECM determines uphill travel with a steeper grade, it prohibits the transaxle from shifting up into 4th after the transaxle has shifted down bellow 3rd.

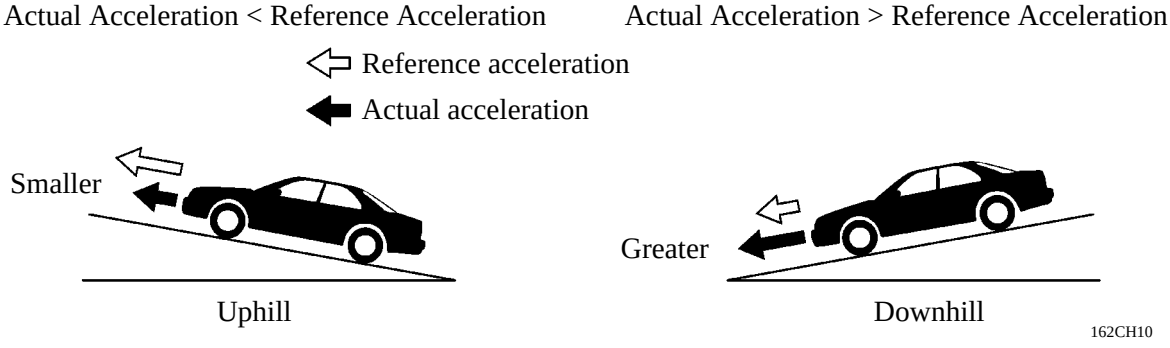
3) Shift control in downhill traveling

When the ECM determines downhill travel, it shifts down the transaxle from 5th to 4th in accordance with the brake operation signal that is input when the driver operates the brake pedal.
When the ECM determines downhill travel with a steeper grade, and a brake operation signal is input again, the ECM shifts the transaxle down from 4th to 3rd.



4) Uphill/Downhill Judgment

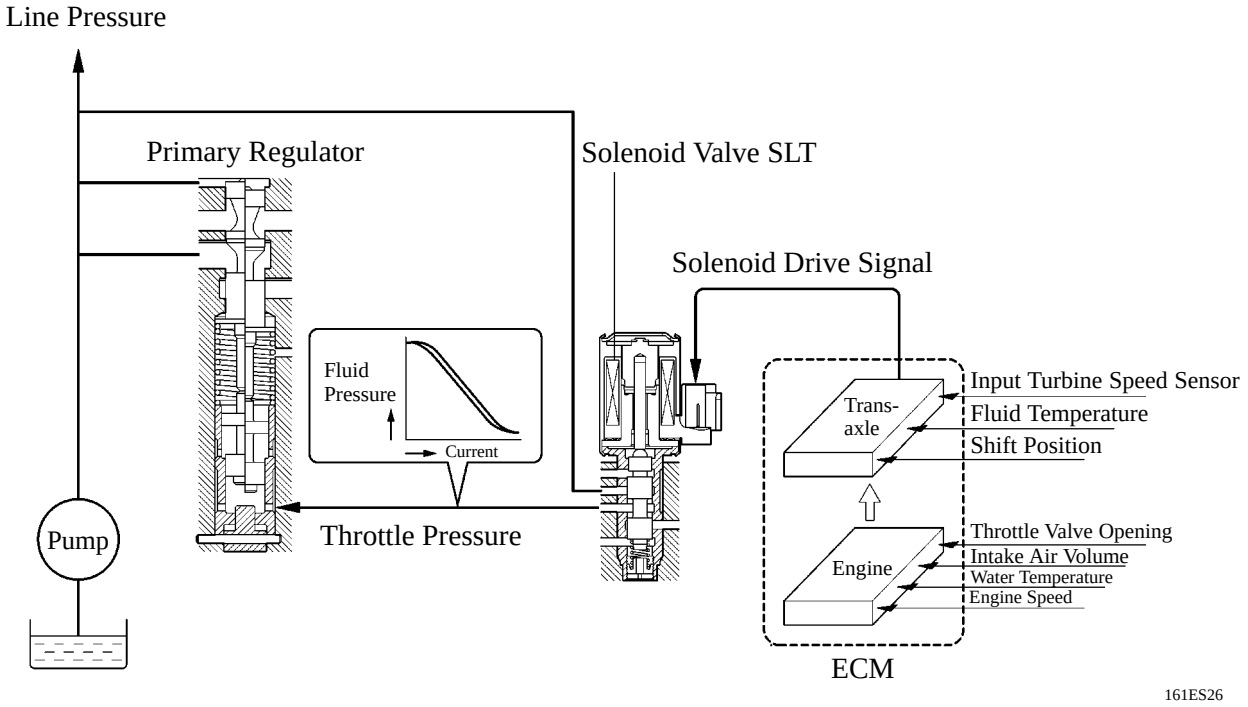
The actual acceleration calculated from the speed sensor signal is compared with the reference acceleration stored in the ECM to judge uphill or downhill traveling.



Line Pressure Optimal Control

Through the use of the solenoid valve SLT, the line pressure is optimally controlled in accordance with the engine torque information, as well as with the internal operating conditions of the torque converter and the transaxle.

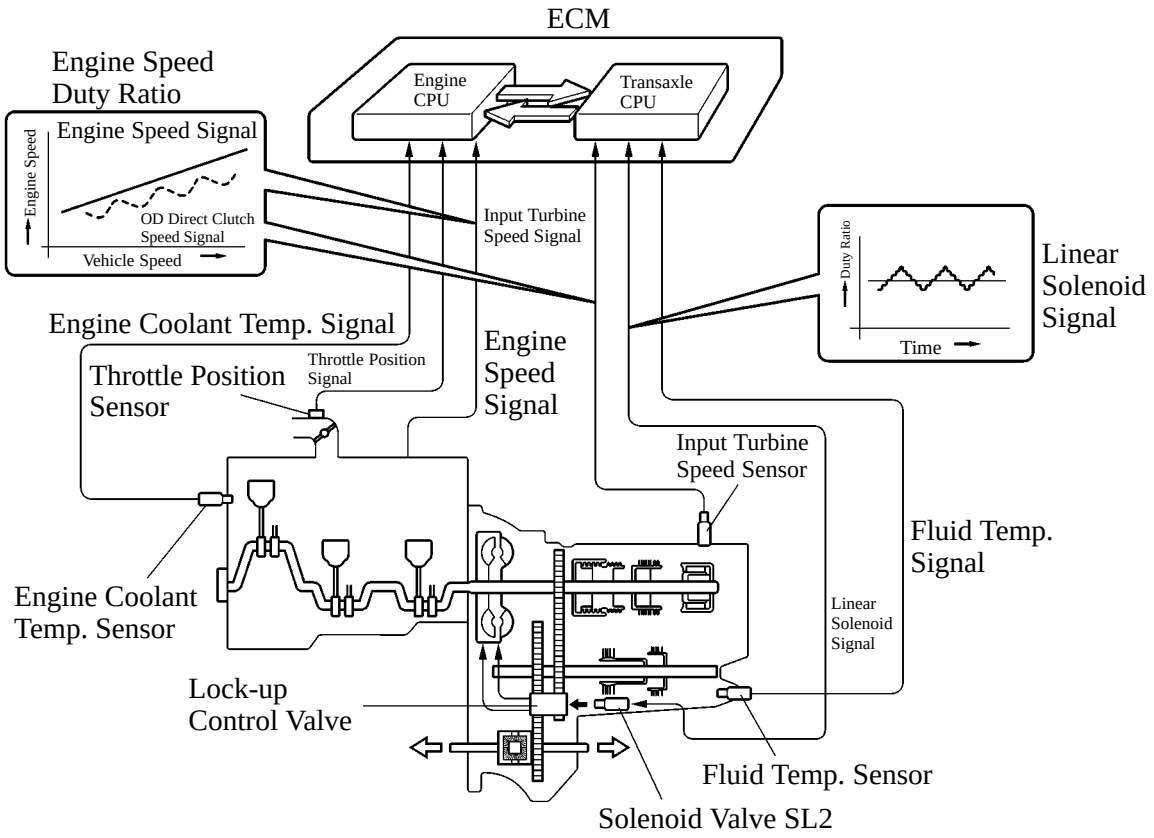
Accordingly, the line pressure can be controlled minutely in accordance with the engine output, traveling condition, and the ATF temperature, thus realizing smooth shift characteristics and optimizing the workload in the oil pump.



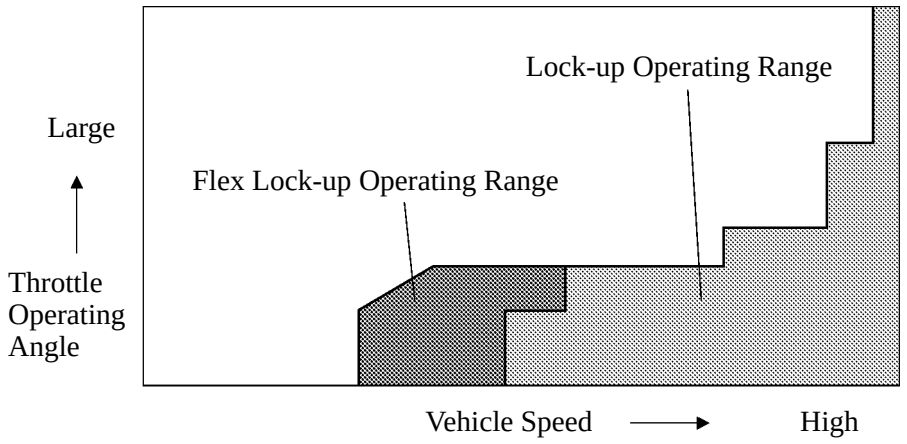
Flex Lock-up Clutch Control

In addition to the conventional lock-up timing control, flex lock-up clutch control is used.

- ◆ During the acceleration, the partition of the power transmission between the lock-up clutch and torque converter according to the driving conditions greatly boosts transmission efficiency and fuel-economy has been improved.
- ◆ During the deceleration, lock-up clutch is made to operation in low speed during vehicle slowdown. Therefore fuel-cut area has been expanded and fuel-economy has been improved.
- ◆ The flex lock-up clutch control operates during acceleration, in the 4th and 5th gear in the D range, and during deceleration, in the 4th and 5th gear in the D range, and in the 4th gear in the 4 range.



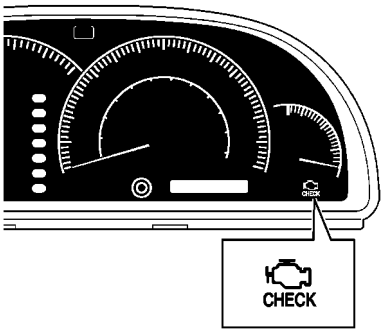
241CH08



151CH26

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 connecting a hand-held tester.



275CA26

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 helps minimize the loss of operation when any abnormality occurs in each sensor or solenoid.

◦ **Fail-Safe Control List ◀**

Malfunction Part	Function
Speed Sensor	During a speed sensor malfunction, the vehicle speed is detected through the signals from the counter gear speed sensor to effect normal control.
Fluid Temp. Sensor	During a fluid temp. sensor malfunction, 5th upshift is prohibited.
Counter Gear Speed Sensor	During a counter gear speed sensor malfunction, 5th upshift is prohibited.
Solenoid Valve SL1, SL2, SL3, and S4	The current to the failed solenoid valve is cut off and control is effected by operating other solenoid valves with normal operation. Shift control is effected as described in the table in the next page, depending on the failed solenoid. Even if the engine starts under this condition, the gear position remains where it was before.

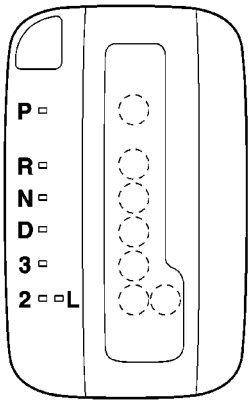
○: ON Δ: According to Flex Lock-up ×: OFF

Normal	Solenoid Valve	SL1	○	×	○	×	×
		SL2	○	○	×	Δ	Δ
		SL3	×	×	×	○	○
		S4	×	×	×	×	○
	Gear Position		1st	2nd	3rd	4th	5th
SL1 Malfunction (During driving at 1st or 2nd)	Solenoid Valve	SL1	×				
		SL2	○	○	○	○	○
		SL3	×	×	×	○ → ×	○ → ×
		S4	×	×	×	×	○ → ×
	Gear Position		1st → 2nd	2nd	3rd → 2nd	4th → 2nd	5th → 2nd
SL1 Malfunction (During driving at 3rd)	Solenoid Valve	SL1	×				
		SL2	○ → Δ	○ → Δ	Δ	Δ	Δ
		SL3	×	×	×	○ → ×	○ → ×
		S4	× → ○	× → ○	× → ○	×○ → ○	○
	Gear Position		1st → 4th	2nd → 4th	3rd → 4th	4th	5th → 4th
SL1 Malfunction (During driving at 4th or 5th)	Solenoid Valve	SL1	×				
		SL2	○ → Δ	○ → Δ	Δ	Δ	Δ
		SL3	× → ○	× → ○	× → ○	○	○
		S4	×	×	×	×	○
	Gear Position		1st → 4th	2nd → 4th	3rd → 4th	4th	5th
SL2 Malfunction	Solenoid Valve	SL1	○	× → ○	○	× → ○	× → ○
		SL2	×				
		SL3	×	×	×	○ → ×	○ → ×
		S4	× → ○	× → ○	× → ○	× → ○	○
	Gear Position		1st → 4th	2nd → 4th	3rd → 4th	4th	5th → 4th
SL3 Malfunction	Solenoid Valve	SL1	○	×	○	× → ○	× → ○
		SL2	○	○	×	Δ	Δ
		SL3	×				
		S4	×	×	×	× → ○	○
	Gear Position		1st	2nd	3rd	4th	5th → 4th
S4 Malfunction	Solenoid Valve	SL1	○	×	○	×	×
		SL2	○	○	×	Δ	Δ
		SL3	×	×	×	○	○
		S4	×				
	Gear Position		1st	2nd	3rd	4th	5th → 4th
SL1, SL2, SL3, and S4 Malfunction	Solenoid Valve	SL1	×				
		SL2	×				
		SL3	×				
		S4	×				
	Gear Position		1st → 4th	2nd → 4th	3rd → 4th	4th	5th → 4th

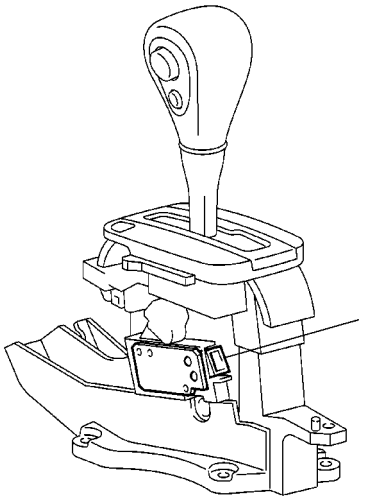
7. Shift Control Mechanism

General

- The L gate type shift lever that uses a shift control cable has been adopted in conjunction with the installation of the 5-speed automatic transaxle.
- As with the U241E automatic transaxle, the key interlock device and the shift lock mechanism are carried over in the shift lock system for the U250E automatic transaxle.



Shift Pattern



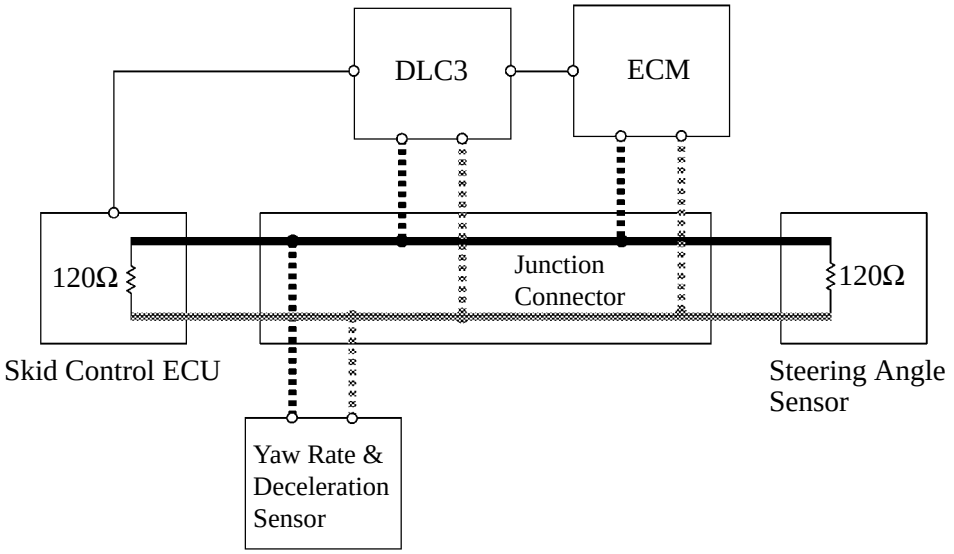
246CH03

◆MULTIPLEX COMMUNICATION

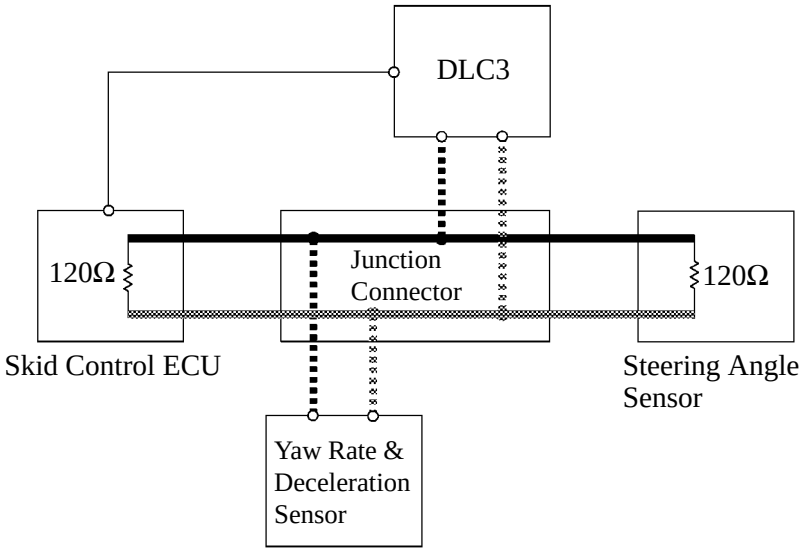
1. General

CAN consists of the ECM, skid control ECU, steering angle sensor, yaw rate & deceleration sensor and DLC3.

◦ **System Diagram ◀**



’05 Camry (2AZ-FE Engine Model Only)

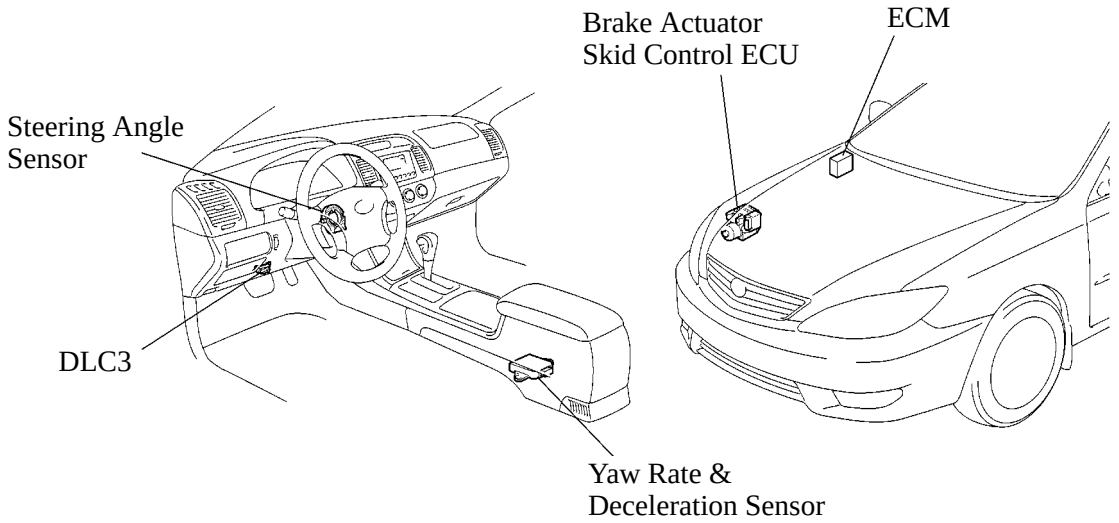


’04 Camry

CAN Main Bus Line (High)
CAN Main Bus Line (Low)
CAN Sub Bus Line (High)
CAN Sub Bus Line (Low)
Serial Communication

275CA31

2. Layout of Main Components



3. Diagnosis

Along with the CAN connection of the ECM, the following DTCs have been added.

◦ **DTC Combination Chart ◀** : New

DTC No.	Mode
U0073/94, U0100/65, U0123/62 U0124/95, U0126/63	Skid Control ECU communication stop mode
U0123/62, U0124/95	Yaw rate and deceleration sensor communication stop mode
U0126/63	Steering angle sensor communication stop mode

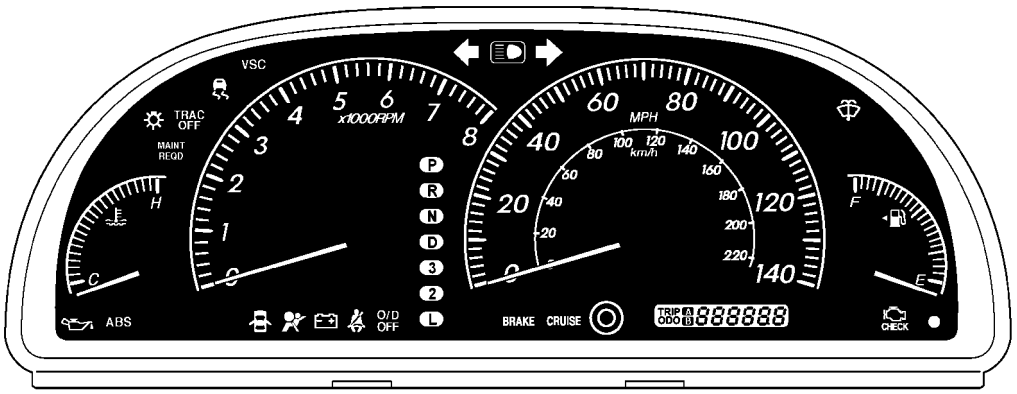
◦ **DTC Chart ◀** : New

DTC No.	Detection Item
U0073/94	Malfunction in CAN communication
U0100/65	Malfunction in CAN communication between skid control ECU and ECM
U0123/62	Malfunction in CAN communication with yaw rate sensor
U0124/95	Malfunction in CAN communication with deceleration sensor
U0126/63	Malfunction in CAN communication with steering angle sensor

◀COMBINATION METER

1. General

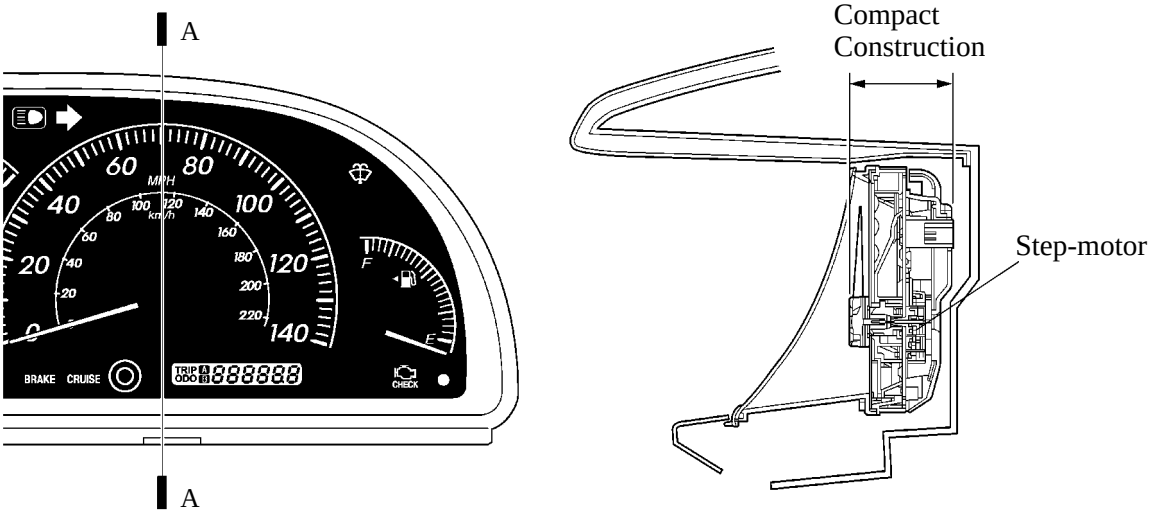
- An optitron display type combination meter has been newly provided as standard equipment on all models. The optitron display type meter realizes excellent visibility through the use of smoke acrylic in the protective panel, and LEDs (Light Emitting Diodes) that are very bright and have high contrast for illuminating the indicator and the dial.
- Amber-color backlighting has been adopted on the SE grade model to achieve a sporty look.
- The movement for actuating the indicators in the meter has been changed from the cross coil type to a step-motor type. This has resulted in space-savings and weight reduction.



275CA23

2. Construction and Operation

- The indicator actuation movement for the speedometer and the tachometer has been changed from the cross coil type to step-motor type. This has resulted in thinner indicator actuation movement, thus achieving a lightweight and compact construction.
- In the case of the step-motor type, when the power to combination meter is turned ON through the reconnection of the battery terminal, the step-motor is initialized once to recognize the zero point of the indicator in relation to step-motor. Also, the step-motor is initialized again each time the combination meter starts operating.



A - A Cross Section

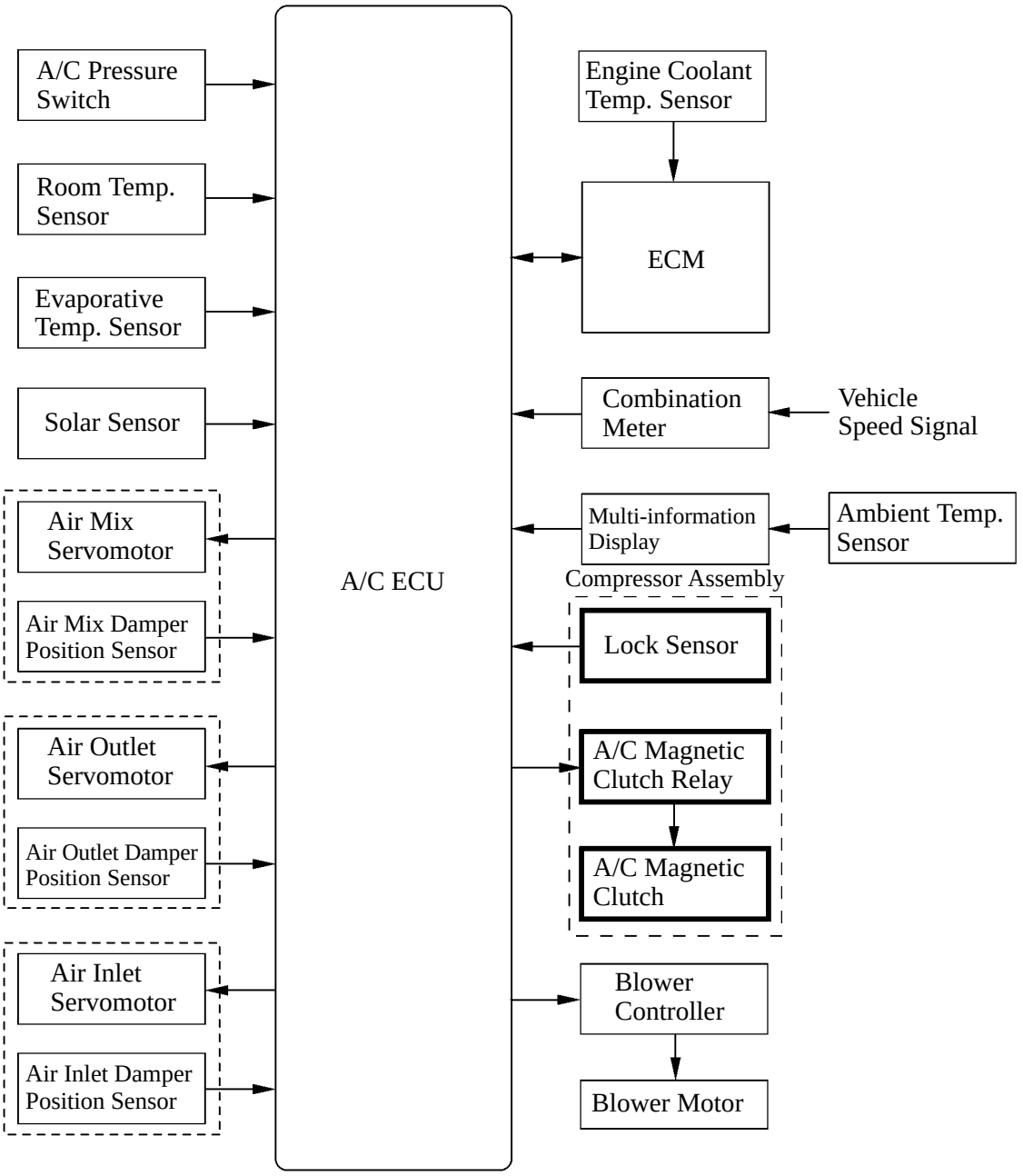
275CA30

◆AIR CONDITIONING

General

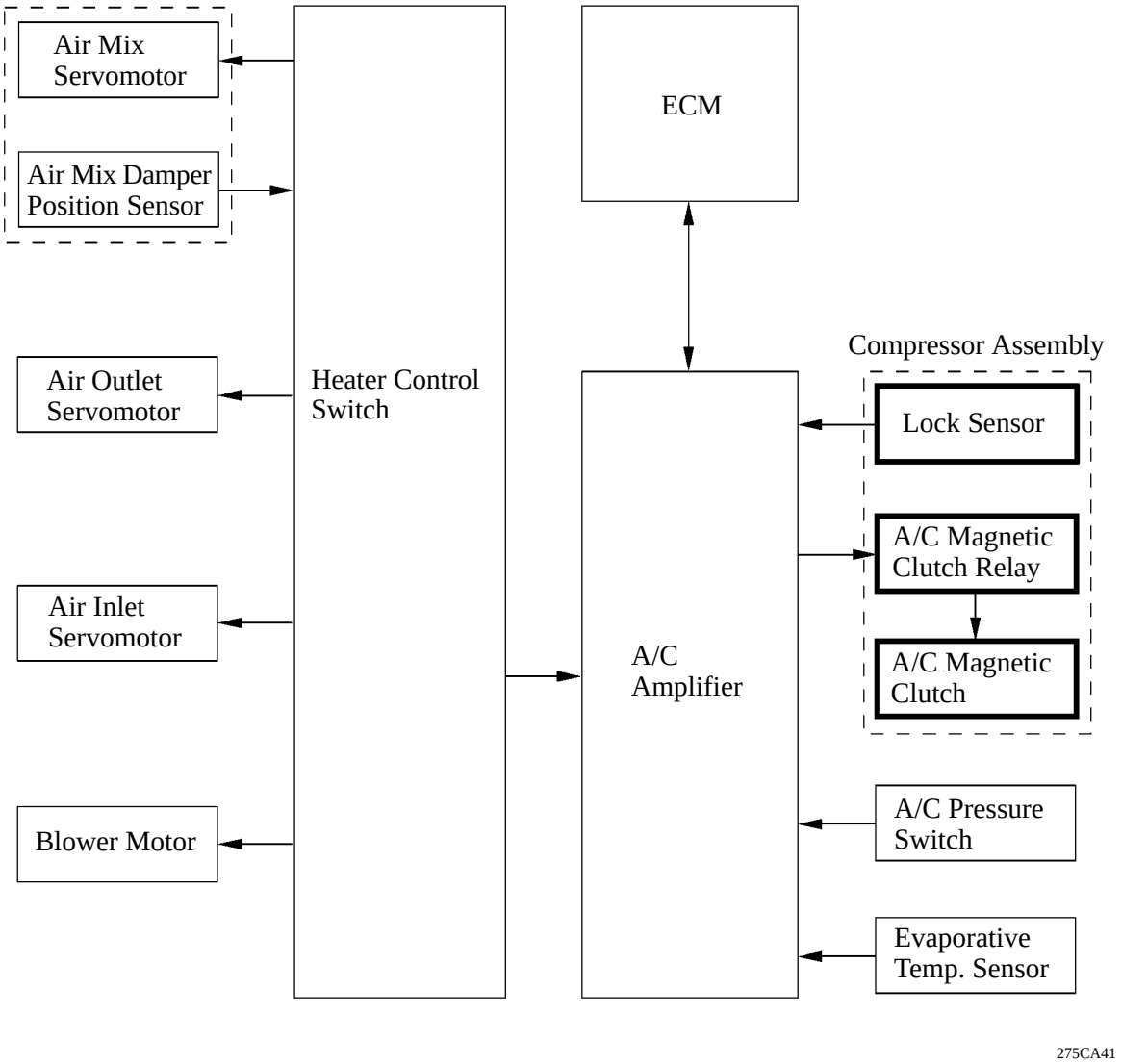
The ECU that controls the compressor has been changed on the models equipped with the 2AZ-FE engine. On the model with the automatic control air conditioning system, the ECM has been changed to the A/C ECU. On the model with the manual control air conditioning system, it has been changed to the A/C amplifier.

◦ **System Diagram (Automatic Control Air Conditioning System) ◀**



275CA34

◦ **System Diagram (Manual Control Air Conditioning System) ◀**

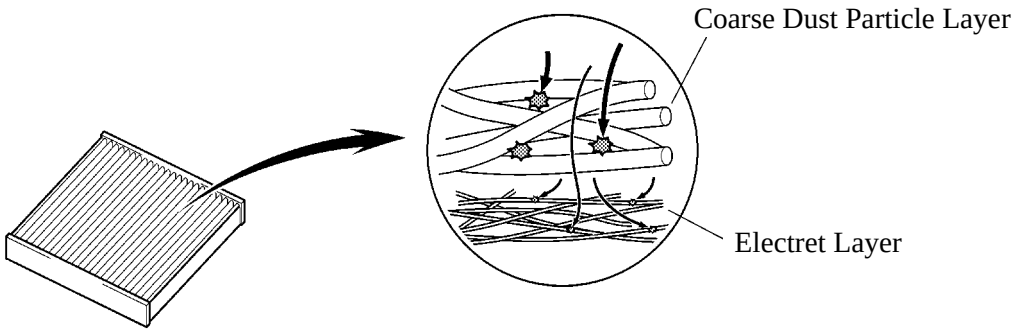


° CLEAN AIR FILTER

General

A coarse dust particle layer has been added to the clean air filter in order to improve the electrification of the electret layer.

Model	’05 Camry	’04 Camry
Clean Air Filter	Pollen Removal	High Efficiency



Service Tip

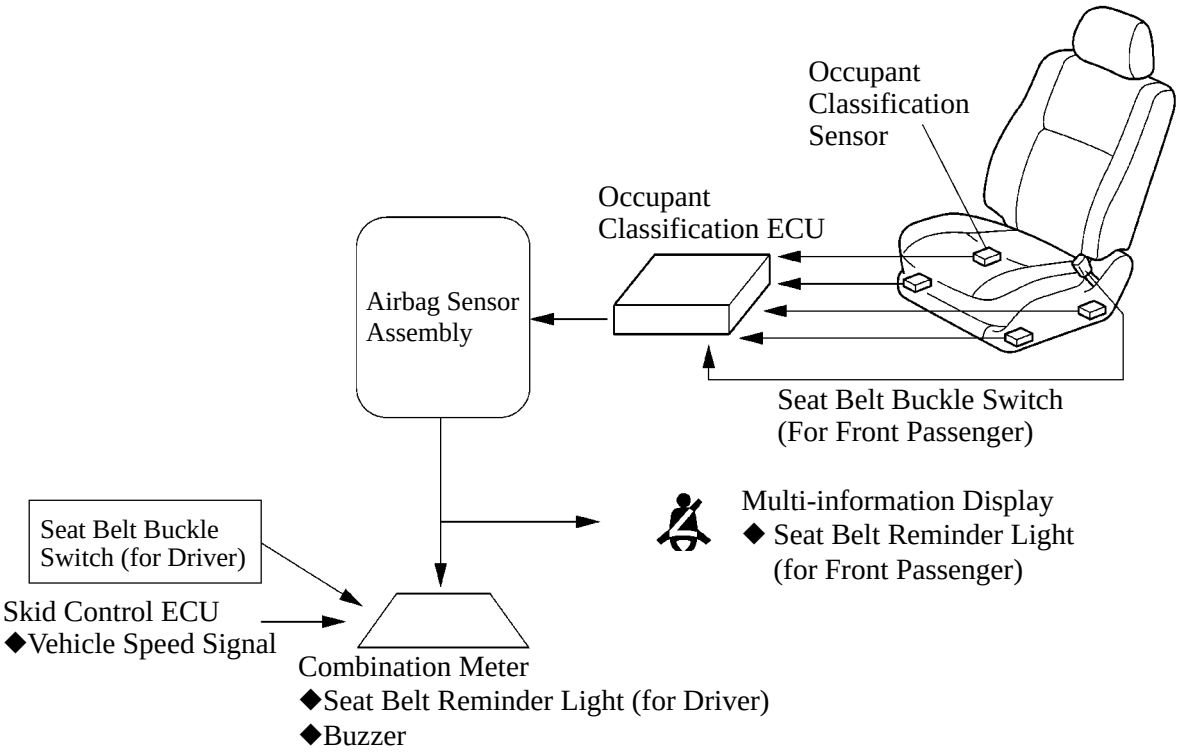
The clean air filter should be cleaned every 15,000 miles and replaced every 30,000 miles on the U.S.A. model. It should be cleaned every 8,000 km and replaced every 16,000 km on the Canada model. These intervals vary with the use conditions or environment.

○SEAT BELT REMINDER SYSTEM

1. General

Circuit of seat belt reminder system for front passenger has been changed.

◦ **System Diagram ◀**

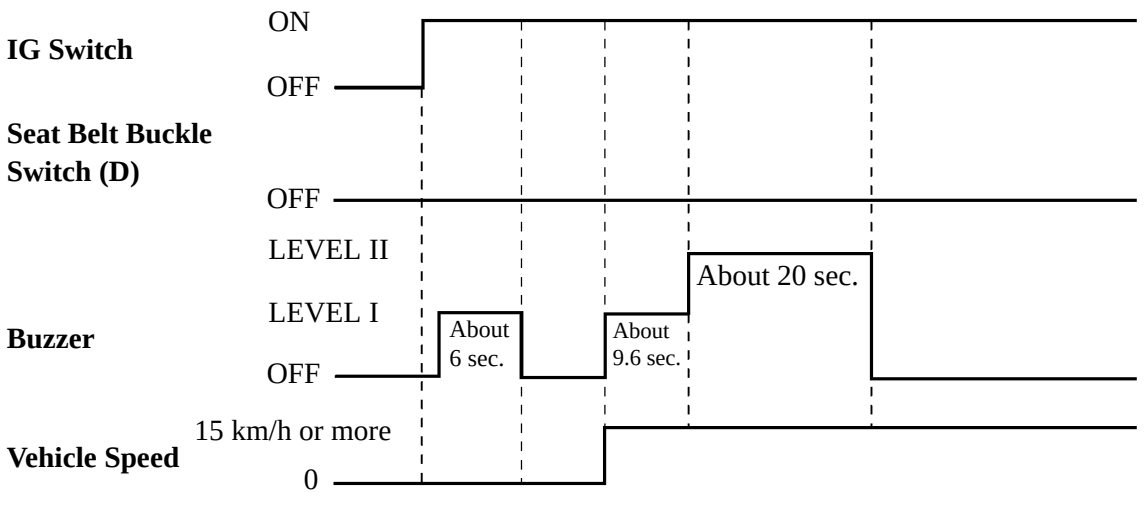


275CA35

2. Operation

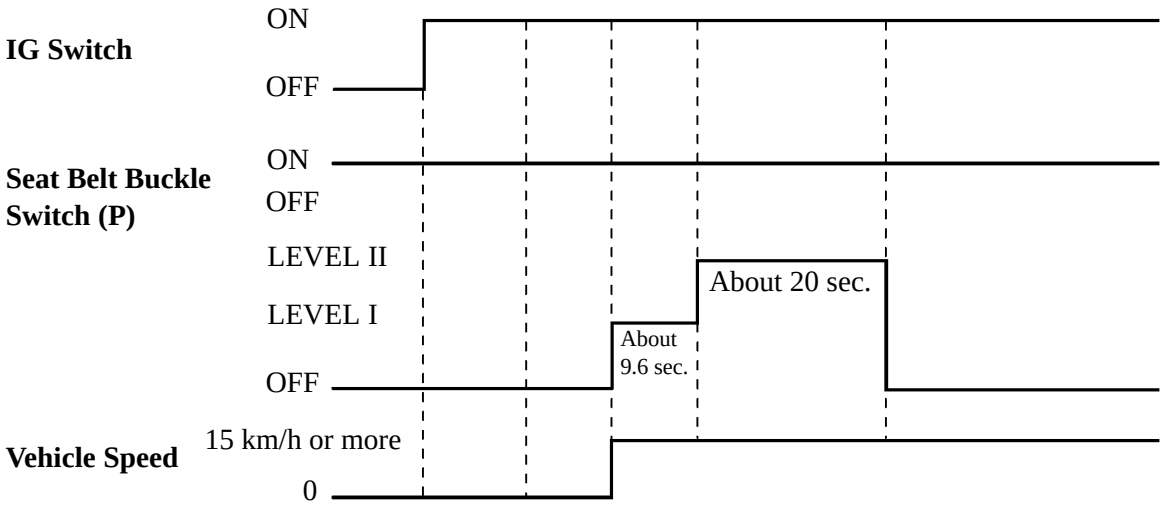
Reminder methods are slightly different between the driver and front passenger seats. The timing chart and details of the reminder methods are shown below.

◦ **Timing Chart ◀**



For Driver

275CA36



For Front Passenger

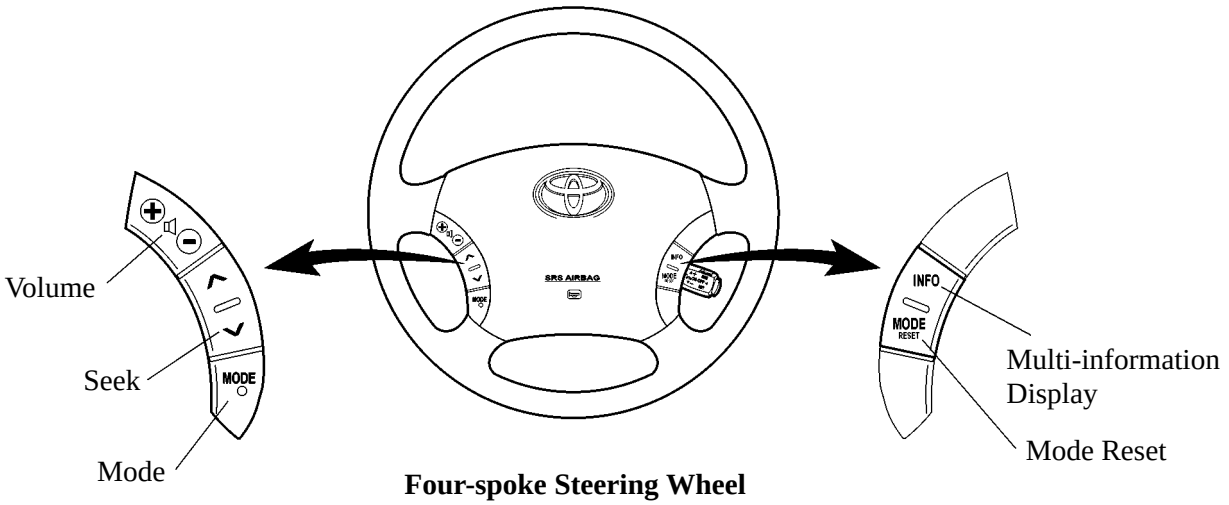
275CA37

Condition	Reminder Method	
	Drive	Front Passenger
The ignition switch is turned to ON with the seat belt not fastened.	◆ Seat belt reminder light flashes. ◆ Buzzer (about 800 Hz) sounds Unless the driver fastens the seat belt, the reminder light keeps flashing and the buzzer stops after about 6 seconds.	◆ Seat belt reminder light flashes. Unless the front passenger fastens the seat belt, the reminder light keeps flashing.
The vehicle speed exceeds 15 km/h (9 mph).	◆ Seat belt reminder light flashes. ◆ Buzzer (about 800 Hz/Level I) sounds for about 9.6 seconds.	
With the vehicle speed of 15 km/h (9 mph) or more, the seat belt is still unfastened.	◆ Seat belt reminder light flashes. ◆ Buzzer sounds from about 800 Hz/Level I to about 800 Hz/Level II for 20 seconds. If the vehicle speed drops below 15 km/h (9 mph), the buzzer sound will continue. To stop the buzzer, fasten the seat belt.	

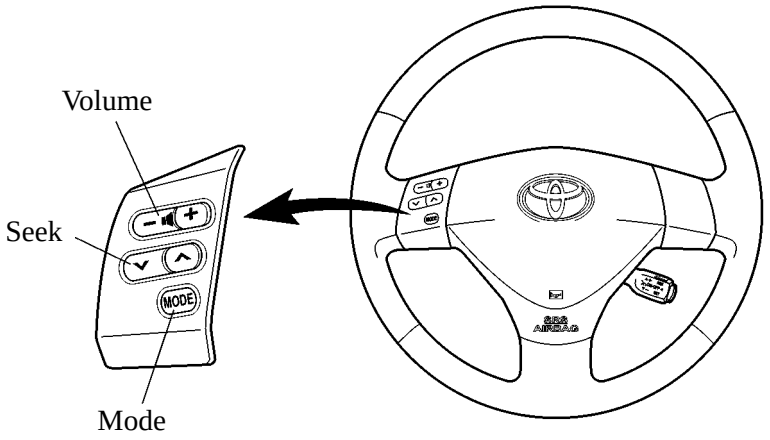
◆AUDIO SYSTEM

Steering Pad Switch

The audio control switches with high frequency use have been located on the steering wheel in the form of steering pad switch to improve the ease of use.



Four-spoke Steering Wheel



Three-spoke Steering Wheel

275CA29

◦ **Switch Function ◀**

Function			Push	Push and Hold
Audio	VOL		Audio Volume Up, Down	Continuous Increase or Decrease
	SEEK	AM/FM	Channel Up, Down	Seek Up, Down
		TAPE	Search FF, REW	FF, REW
		CD	Track Up, Down	Disc Up, Down
	MODE		Audio AM/FM, TAPE, CD Selection	Power OFF
Multi-Information display	INFO		Switching Multi-information display	—
	MODE RESET		—	Reset

MAJOR TECHNICAL SPECIFICATIONS

Item \ Area				U.S.A. and Canada			
Body Type				4-Door Sedan			
Vehicle Grade				LE		XLE	SE
Model Code				ACV30L-AEMNKA	ACV30L-A (C) EANKA	ACV30L-A (C) EAGKA	ACV30L-AEMSKA
Major Dimensions & Vehicle Weights	Overall	Length	mm (in.)	4805 (189.2)	4805 (189.2)	4805 (189.2)	4805 (189.2)
		Width	mm (in.)	1795 (70.7)	1795 (70.7)	1795 (70.7)	1795 (70.7)
		Height*	mm (in.)	1490 (58.7)	1490 (58.7)	1505 (59.3)	1505 (59.3)
	Wheel Base		mm (in.)	2720 (107.1)	2720 (107.1)	2720 (107.1)	2720 (107.1)
	Tread	Front	mm (in.)	1545 (60.8)	1545 (60.8)	1545 (60.8)	1545 (60.8)
		Rear	mm (in.)	1535 (60.4)	1535 (60.4)	1535 (60.4)	1535 (60.4)
	Effective Head Room	Front	mm (in.)	997 (39.9), 975 (38.4)*1	997 (39.9), 975 (38.4)*1	997 (39.9), 975 (38.4)*1	997 (39.9), 975 (38.4)*1
		Rear	mm (in.)	973 (38.3), 970 (38.2)*1	973 (38.3), 970 (38.2)*1	973 (38.3), 970 (38.2)*1	973 (38.3), 970 (38.2)*1
	Effective Leg Room	Front	mm (in.)	1053 (41.5)	1053 (41.5)	1053 (41.5)	1053 (41.5)
		Rear	mm (in.)	960 (37.8)	960 (37.8)	960 (37.8)	960 (37.8)
	Shoulder Room	Front	mm (in.)	1460 (57.5)	1460 (57.5)	1460 (57.5)	1460 (57.5)
		Rear	mm (in.)	1440 (56.7)	1440 (56.7)	1440 (56.7)	1440 (56.7)
	Overhang	Front	mm (in.)	945 (37.2)	945 (37.2)	945 (37.2)	945 (37.2)
		Rear	mm (in.)	1140 (44.9)	1140 (44.9)	1140 (44.9)	1140 (44.9)
	Min. Running Ground Clearance		mm (in.)	150 (5.9)	150 (5.9)	150 (5.9)	150 (5.9)
	Angle of Approach		degress	15°	15°	15.7°	15.7°
	Angle of Departure		degress	16.6°	16.6°	16.6°	16.6°
	Curb Weight	Front	kg (lb)	825 (1819)	855 (1885)*2, 860 (1896)*3	875 (1929)*2, 880 (1940)*3	835 (1841)
		Rear	kg (lb)	585 (1290)	580 (1896)	595 (1312)	600 (1323)
		Total	kg (lb)	1410 (3108)	1435 (3164)*2, 1440 (3175)*3	1470 (3241)*2, 1475 (3252)*3	1435 (3164)
	Gross Vehicle Weight	Front	kg (lb)	960 (2116)	990 (2183)	1000 (2205)	965 (2127)
		Rear	kg (lb)	920 (2028)	915 (2017)	925 (2039)	935 (2061)
		Total	kg (lb)	1880 (4145)	1905 (4200)	1925 (4244)	1900 (4189)
	Fuel Tank Capacity		ℓ (US.gal, Imp.gal)	70 (18.5, 15.4)	70 (18.5, 15.4)	70 (18.5, 15.4)	70 (18.5, 15.4)
	Luggage Compartment Capacity		m^3 (cu.ft.)	14.1 (497.9)	14.1 (497.9)	14.1 (497.9)	14.1 (497.9)
Performance	Max. Speed		km / h (mph)	190 (118)	190 (118)	190 (118)	190 (118)
	Max. Cruising Speed		km / h (mph)	—	—	—	—
	Acceleration	0 to 60 mph	sec.	8.9	9.9, 9.8*4	9.9, 9.8*4	8.9
		0 to 400 m	sec.	—	—	—	—
	Max. Permissible Speed	1st Gear	km / h (mph)	52 (32)	64 (40)	65 (41)	53 (33)
		2nd Gear	km / h (mph)	89 (55)	115 (71)	118 (73)	92 (57)
		3rd Gear	km / h (mph)	137 (85)	—	—	141 (88)
		4th Gear	km / h (mph)	189 (117)	—	—	194 (120)
	Turning Diameter (Outside Front)	Wall to Wall	m (ft.)	11.4 (37.4)	11.4 (37.4)	12.0 (39.4)	12.0 (39.4)
		Curb to Curb	m (ft.)	10.6 (34.8)	10.6 (34.8)	11.2 (36.7)	11.2 (36.7)
Engine	Engine Type			2AZ-FE	2AZ-FE	2AZ-FE	2AZ-FE
	Valve Mechanism			16-Valve, DOHC	16-Valve, DOHC	16-Valve, DOHC	16-Valve, DOHC
	Bore x Stroke		mm (in.)	88.5 x 96.0 (3.48 x 3.78)	88.5 x 96.0 (3.48 x 3.78)	88.5 x 96.0 (3.48 x 3.78)	88.5 x 96.0 (3.48 x 3.78)
	Displacement		cm^3 (cu.in.)	2362 (144.2)	2362 (144.2)	2362 (144.2)	2362 (144.2)
	Compression Ratio			9.6 : 1	9.6 : 1	9.6 : 1	9.6 : 1
	Fuel System			SFI	SFI	SFI	SFI
	Octane Rating			87 or Higher	87 or Higher	87 or Higher	87 or Higher
	Max. Output (SAE-NET)		kW / rpm (HP@rpm)	119 / 5700 (160@5700)	119/5700 (160@5700), 112/5600 (151@5600)*4	119/5700 (160@5700), 112/5600 (151@5600)*4	119 / 5700 (160@5700)
	Max. Torque (SAE-NET)		N·m / rpm (lb-ft@rpm)	221 / 4000 (163@4000)	221/4000 (163@4000), 218/4000 (161@4000)*4	221/4000 (163@4000), 218/4000 (161@4000)*4	221 / 4000 (163@4000)
Engine Electrical	Battery Capacity (5HR)		Voltage & Amp. hr.	12-48*5, 12-55*6	12-48*5, 12-55*6	12-48*5, 12-55*6	12-48*5, 12-55*6
	Alternator Output		Watts	1200	1200	1200	1200
	Starter Output		kW	1.6	1.6	1.6	1.6
Chassis	Clutch Type			Dry, Single Plate Diaphram	—	—	Dry, Single Plate Diaphram
	Transmission Type			E351	U250E	U250E	E351
	Transmission Gear Ratio*9	In First		3.538	3.943	3.943	3.538
		In Second		2.045	2.197	2.197	2.045
		In Third		1.333	1.413	1.413	1.333
		In Fourth		0.972	0.975	0.975	0.972
		In Fifth		0.731	0.703	0.703	0.731
		In Reverse		3.583	3.145	3.145	3.583
	Differential Gear Ratio			—	—	—	—
	Differential Gear Size		in.	3.944	3.391	3.391	3.944
	Brake Type	Front		Ventilated Disc	Ventilated Disc	Ventilated Disc	Ventilated Disc
		Rear		Drum	Drum	Solid Disc	Solid Disc
	Parking Brake Type			Leading Trailing	Leading Trailing	Duo-Servo	Duo-Servo
	Brake Booster Type and Size		in.	Single 10.5”	Single 10.5”	Single 10.5”	Single 10.5”
	Proportioning Valve type			Dual-P Valve*7	Dual-P Valve*7	—	Dual-P Valve*7
	Suspension Type	Front		MacPherson Strut	MacPherson Strut	MacPherson Strut	MacPherson Strut
		Rear		MacPherson Strut	MacPherson Strut	MacPherson Strut	MacPherson Strut
	Stabilizer Bar	Front		Standard	Standard	Standard	Standard
		Rear		Standard	Standard	Standard	Standard
	Steering Gear Type			Rack& Pinion	Rack& Pinion	Rack& Pinion	Rack& Pinion
	Steering Gear Ratio (Overall)			15.8 : 1	15.8 : 1	16.0 : 1	16.0 : 1
	Power Steering Type			Integral Type	Integral Type	Integral Type	Integral Type

*: Unladen Vehicle
*1: With Moon Roof
*2: Produced TMC
*3: Produced TMMK
*4: With California Spec.
*5: Set Option without Cold Area Spec.
*6: Set Option with Cold Area Spec.
*7: Without ABS
*8: 91 or higher recommended
*9: Counter Gear Ratio Included (Only for Models with Automatic Transaxle)

U.S.A. and Canada			
4-Door Sedan			
SE	LE	XLE	SE
ACV30L-A (C) EASKA	MCV30L-A (C) EANKA	MCV30L-A (C) EAGKA	MCV31L-A (C) EASKA
4805 (189.2)	4805 (189.2)	4805 (189.2)	4805 (189.2)
1795 (70.7)	1795 (70.7)	1795 (70.7)	1795 (70.7)
1505 (59.3)	1490 (58.7)	1505 (59.3)	1505 (59.3)
2720 (107.1)	2720 (107.1)	2720 (107.1)	2720 (107.1)
1545 (60.8)	1545 (60.8)	1545 (60.8)	1545 (60.8)
1535 (60.4)	1535 (60.4)	1535 (60.4)	1535 (60.4)
997 (39.3), 975 (38.4)*1	997 (39.3), 975 (38.4)*1	997 (39.3), 975 (38.4)*1	997 (39.3), 975 (38.4)*1
973 (38.3), 970 (38.2)*1	973 (38.3), 970 (38.2)*1	973 (38.3), 970 (38.2)*1	973 (38.3), 970 (38.2)*1
1053 (41.5)	1053 (41.5)	1053 (41.5)	1053 (41.5)
960 (37.8)	960 (37.8)	960 (37.8)	960 (37.8)
1460 (57.5)	1460 (57.5)	1460 (57.5)	1460 (57.5)
1440 (56.7)	1440 (56.7)	1440 (56.7)	1440 (56.7)
945 (37.2)	945 (37.2)	945 (37.2)	945 (37.2)
1140 (44.9)	1140 (44.9)	1140 (44.9)	1140 (44.9)
150 (5.9)	150 (5.9)	150 (5.9)	150 (5.9)
15.7°	15°	15.7°	15.7°
16.6°	16.6°	16.6°	16.6°
870 (1918)*2, 875 (1929)*3	930 (2050)*2, 935 (2061)*3	945 (2083)*2, 955 (2105)*3	955 (2105)*2, 965 (2127)*3
590 (1301)	585 (1290)	610 (1345)	610 (1345)
1460 (3219)*2, 1465 (3230)*3	1515 (3340)*2, 1520 (3351)*3	1555 (3428)*2, 1565 (3450)*3	1565 (3450)*2, 1575 (3472)*3
1000 (2205)	1065 (2348)	1080 (2381)	1090 (2402)
925 (2039)	920 (2028)	935 (2061)	940 (2072)
1925 (4244)	1985 (4376)	2015 (4442)	2030 (4475)
70 (18.5, 15.4)	70 (18.5, 15.4)	70 (18.5, 15.4)	70 (18.5, 15.4)
14.1 (497.9)	14.1 (497.9)	14.1 (497.9)	14.1 (497.9)
—	—	—	—
—	—	—	—
9.9, 9.8*4	8.1	8.1	7.2
—	—	—	—
65 (41)	49 (30.5)	51 (31.7)	47 (29.2)
118 (73)	89 (55.3)	92 (57.2)	85 (52.8)
—	140 (87)	144 (89.5)	133 (82.6)
—	—	—	—
12.0 (39.4)	11.4 (37.4)	12.0 (39.4)	12.0 (39.4)
11.2 (36.7)	10.6 (34.8)	11.2 (36.7)	11.2 (36.7)
2AZ-FE	1MZ-FE	1MZ-FE	3MZ-FE
16-Valve, DOHC	24-Valve, DOHC	24-Valve, DOHC	24-Valve, DOHC
88.5 x 96.0 (3.48 x 3.78)	87.5 x 83.0 (3.44 x 3.27)	87.5 x 83.0 (3.44 x 3.27)	92.0 x 83.0 (3.62 x 3.27)
2362 (144.2)	2995 (182.8)	2995 (182.8)	3311 (202.1)
9.6 : 1	10.5 : 1	10.5 : 1	10.8 : 1
SFI	SFI	SFI	SFI
87 or Higher	87 or Higher*8	87 or Higher*8	87 or Higher*8
119/5700 (160@5700), 112/5600 (151@5600)*4	156 / 5800 (210@5800)	156 / 5800 (210@5800)	168 / 5600 (225@5600)
221/4000 (163@4000), 218/4000 (161@4000)*4	298 / 4400 (220@4400)	298 / 4400 (220@4400)	179 / 3600 (240@3600)
12-48*5, 12-55*6	12-48*5, 12-55*6	12-48*5, 12-55*6	12-48*5, 12-55*6
1200	1200	1200	1200
1.6	1.6	1.6	1.7
—	—	—	—
U250E	U151E	U151E	U151E
3.943	4.235	4.235	4.235
2.197	2.360	2.360	2.360
1.413	1.517	1.517	1.517
0.975	1.047	1.047	1.047
0.703	0.756	0.756	0.756
3.145	3.378	3.378	3.378
—	1.096	1.096	1.096
3.391	3.291	3.291	3.291
Ventilated Disc	Ventilated Disc	Ventilated Disc	Ventilated Disc
Solid Disc	Solid Disc	Solid Disc	Solid Disc
Duo-Servo	Duo-Servo	Duo-Servo	Duo-Servo
Single 10.5”	Single 10.5”	Single 10.5”	Single 10.5”
Dual-P Valve*7	—	—	—
MacPherson Strut	MacPherson Strut	MacPherson Strut	MacPherson Strut
MacPherson Strut	MacPherson Strut	MacPherson Strut	MacPherson Strut
Standard	Standard	Standard	Standard
Standard	Standard	Standard	Standard
Rack & Pinion	Rack & Pinion	Rack & Pinion	Rack & Pinion
16.0 : 1	15.8 : 1	16.0 : 1	16.0 : 1
Integral Type	Integral Type	Integral Type	Integral Type

FOREWORD

To assist you in your sales and service activities, this manual explains the main characteristics of the 2005 model year vehicles, in particular providing a technical explanation of the construction and operation of new mechanisms and new technology used.

CAUTION, NOTICE, ***REFERENCE*** and **NOTE** are used in the following ways:

CAUTION	A potentially hazardous situation which could result in injury if instructions are ignored.
NOTICE	Damage to the vehicle or components may occur if instructions are ignored.
REFERENCE	Explains the theory behind mechanisms and techniques.
NOTE	Notes or comments not included under the above 3 titles.

All information contained herein is the most up-to-date at the time of publication. We reserve the right to make changes without prior notice.

TOYOTA MOTOR CORPORATION

First Printing: Jul. 09, 2004 01-040709-00

GENERAL 2005 FEATURES

GENERAL 2005 FEATURES

DESCRIPTION

The 2005 models have the following systems:

ENGINE

○ENGINE CONTROL

To comply with the OBD II (On-Board Diagnosis II) requirements, the ECM outputs the VIN (Vehicle Identification Number) to a hand-held tester.

◆ On the ’05 Prius, the VIN is stored in the HV ECU memory.
◆ This system has been provided on all models.

MULTIPLEX COMMUNICATION

1. General

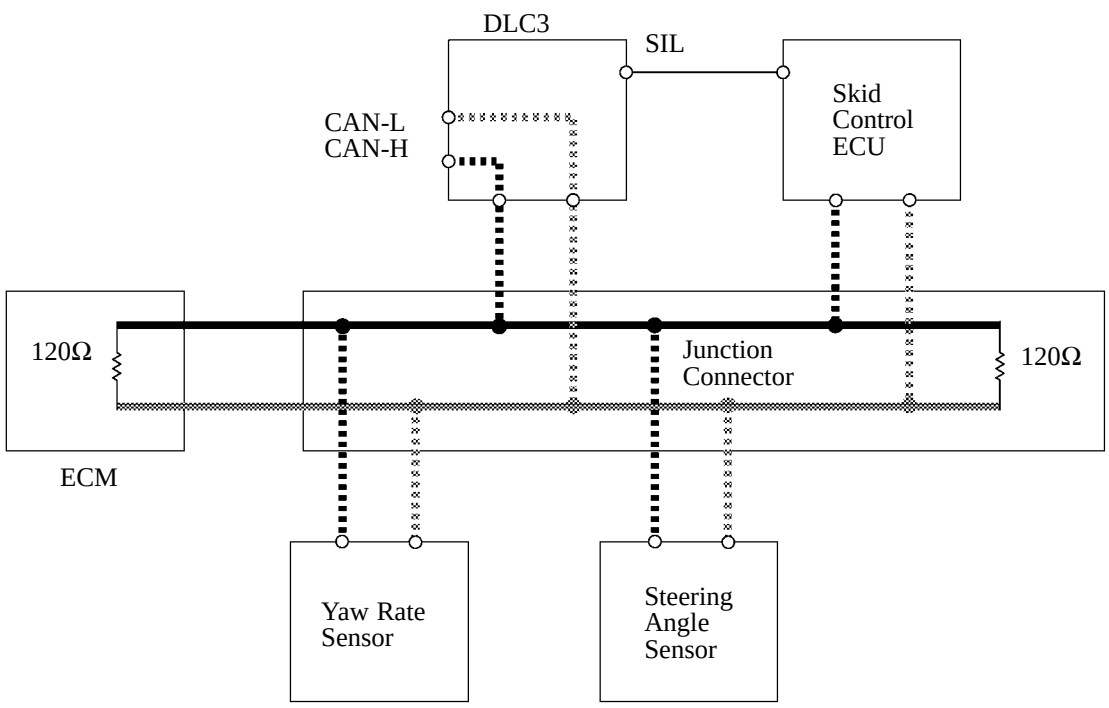
◆ CAN (Controller Area Network) communication has been adopted in the brake control system of the vehicles equipped with the VSC (Vehicle Stability Control) system.
◆ CAN is a type of on-vehicle multiplex communication system that performs excellent data communication and error detection between ECUs and sensors.
◆ CAN uses twisted-pair wires, consisting of two wires, CAN-H and CAN-L, which have different voltages to establish communication.
◆ On the ’05 Toyota Tundra and 4Runner, the CAN is connected to the skid control ECU, ECM, steering angle sensor, yaw rate & deceleration sensor, and DLC3 (Data Link Connector). However, the diagnosis information from the skid control ECU is output via the SIL line.
◆ The CAN in ’05 Sequoia is connected to the skid control ECU, ECM, suspension control ECU, translate ECU, and DLC3. However, the diagnosis information from the skid control ECU and suspension control ECU is output from the SIL line.
◆ This system has been provided on the ’05 Toyota Tundra, Sequoia, and 4Runner.

° **Characteristic ◀**

◆ The wiring harness routing is simplified because communication among all the ECUs connected to CAN is made possible through the use of a pair of communication wires.
◆ Its communication speed is faster than the BEAN (Body Electronics Area Network) used on other models.

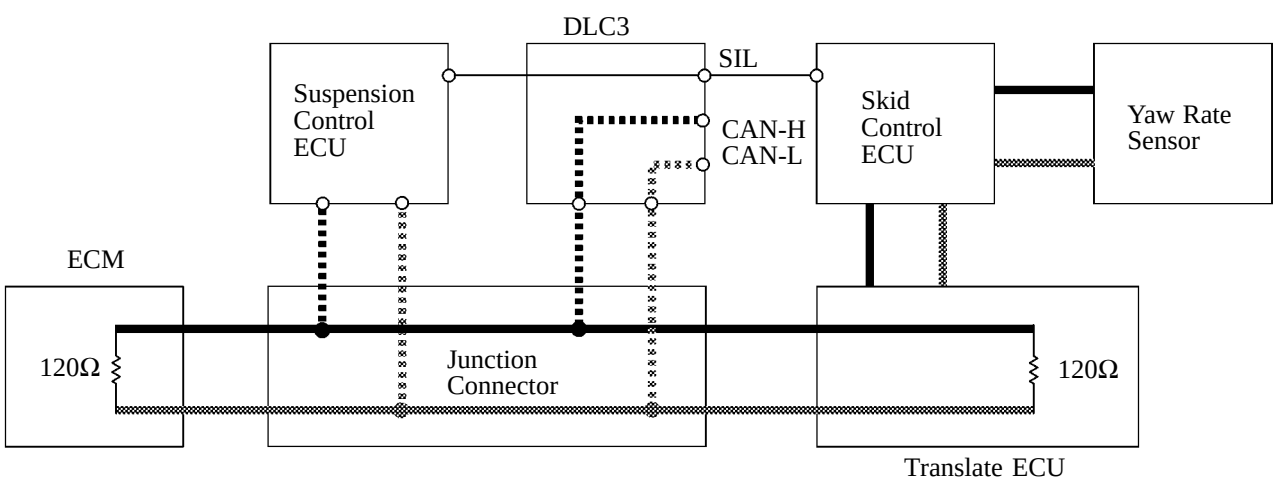
Communication Type	CAN	BEAN
Communication Speed	500 Kbps	MAX: 10 Kbps

° **System Diagram ◀**



275RN05

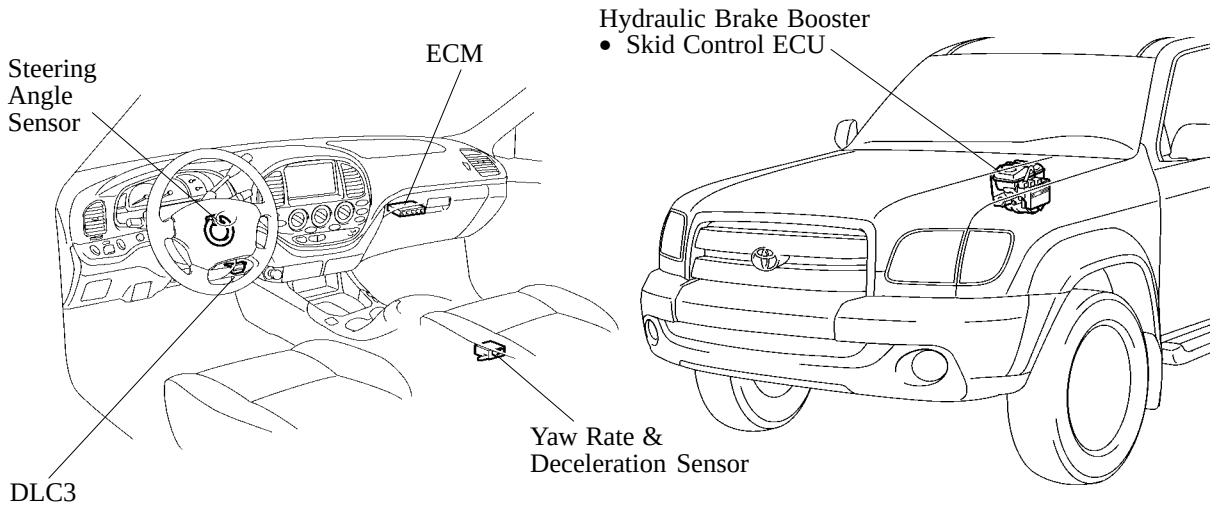
’05 Tundra and 4Runner Model



275SQ45

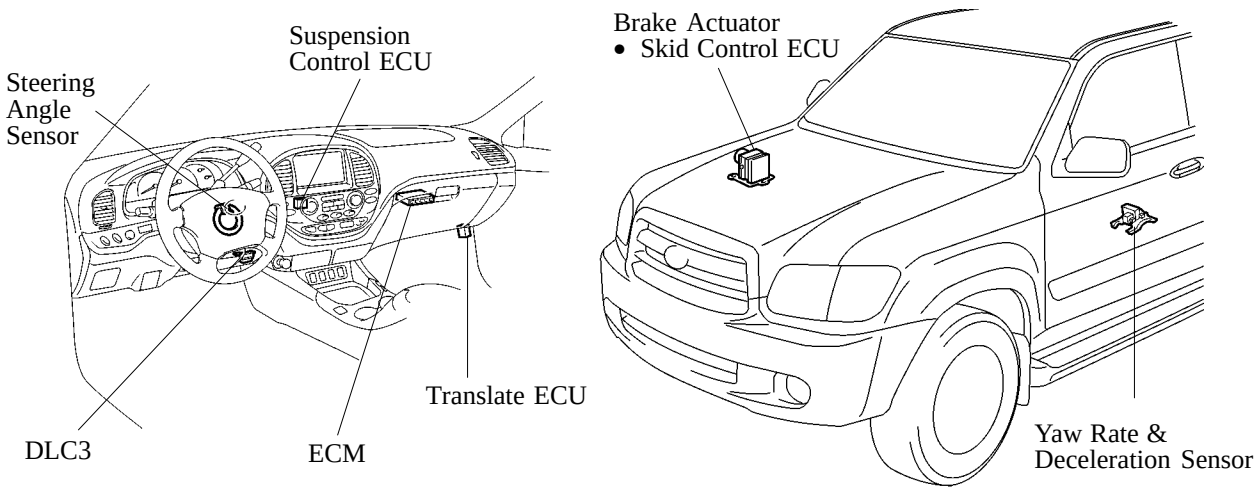
’05 Sequoia Model

2. Layout of Main Components



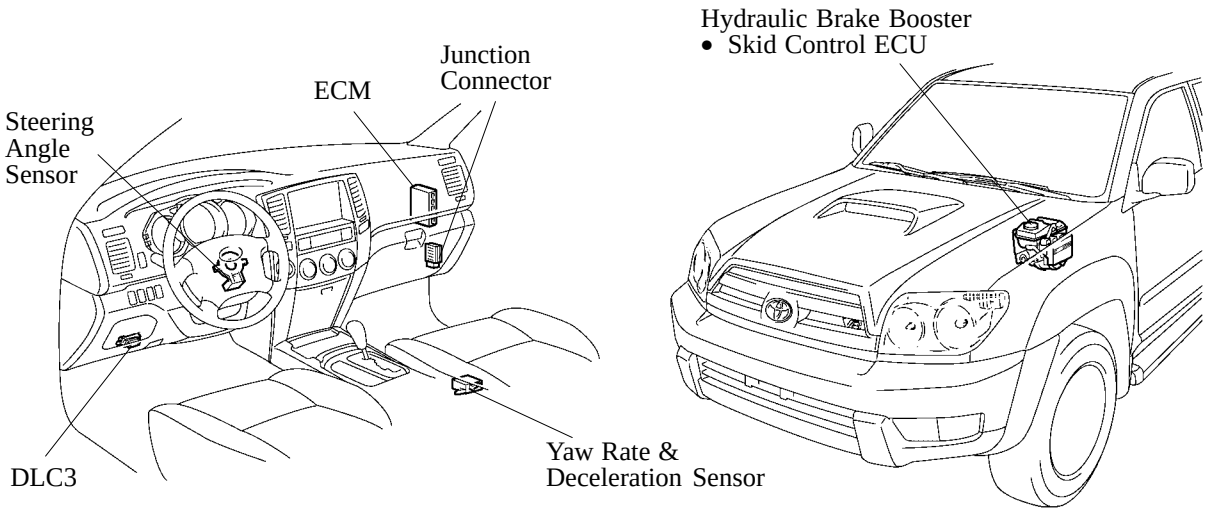
'05 Toyota Tundra Model

275TN79



'05 Sequoia Model

275SQ55



275RN06

'05 4Runner Model

3. Diagnosis

◆ If the CAN has a communication error at the ECU or a sensor, DTCs (Diagnostic Trouble Codes) are output simultaneously to indicate the malfunction location.

◆ The DTCs for CAN communication concerning the brake control system can be read by connecting the SST 09843-18040 to the Tc and CG terminals of the DLC3 connector and observing the blinking of the ABS and VSC warning light (2-digit code) or by connecting a hand-held tester (5-digit code).
For details, see the repair manual for the respective vehicle model.
- ’05 Toyota Tundra Repair Manual (Pub. No.1150U)
- ’05 Sequoia Repair Manual (Pub. No.1146U)
- ’05 4Runner Repair Manual (Pub. No.1165U)

° **DTC Combination Chart ◀**

(For ’05 Toyota Tundra and 4Runner)

DTC Code Output (from skid control ECU)	Mode
U0073/94, U0100/65, U0123/62 U0124/95, U0126/63	Skid control ECU communication stop mode
U0100/65	ECM communication stop mode
U0123/62, U0124/95	Yaw rate and deceleration sensor communication stop mode
U0126/63	Steering angle sensor communication stop mode

(For ’05 Sequoia)

DTC Code Output	Mode
U0100/65 (from skid control ECU), U0100/65 (from suspension control ECU), 65, 94 (from translate ECU)	ECM communication stop mode
U0100/65, U0122/67, U0132/71 (from suspension control ECU)	Suspension control ECU communication stop mode
65, 94 (from translate ECU)	Junction connector and translate ECU communication stop mode

° **DTC Chart ◀**

(For ’05 Toyota Tundra and 4Runner)

DTC	Detection Item
U0073/94	Malfunction in CAN communication
U0100/65	Malfunction in CAN communication, between skid control ECU and ECM
U0123/62	Malfunction in CAN communication with yaw rate sensor
U0124/95	Malfunction in CAN communication with deceleration sensor
U0126/63	Malfunction in CAN communication with steering angle sensor

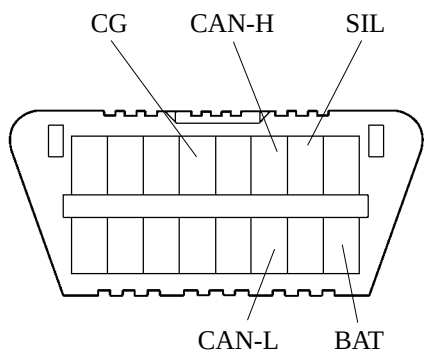
(For ’05 Sequoia)

DTC	Detection Item
U0100/65	Malfunction in CAN communication between ECM and translate ECU.
U0122/67	Malfunction in CAN communication with translate ECU.
U0132/71	Short circuit in CAN communication.

◆ DLC3 is equipped with CAN-H and CAN-L terminals for CAN diagnosis. It is possible to determine if there is an open or short on the main bus line by measuring the resistance value between these terminals. It is possible to determine if there is a short between the bus line - power supply/ground by measuring the resistance value between terminal CAN-H or CAN-L, and the BAT or CG terminal.

° **CAN-H - CAN-L Inspection ◀**

Resistance Value	Bus Line Status
Less than 54Ω	Short between lines
	Short between bus line and power or ground (DTC is output)
54Ω - 69Ω	Normal
	Sub bus line open (DTC is output)
	Short between bus line and power or ground (DTC is output)
More than 69Ω	Sub bus line open
	Main bus line open



DLC3

241BE110

° **Inspection for short between bus line - power supply/ground ◀**

Inspection Item	Resistance Value	Bus Line Status
CAN-H - BAT	more than 1 MΩ	Bus line is OK if no DTC is output
	less than 1 MΩ	Short between bus line and power or ground
CAN-L - BAT	more than 1 MΩ	Bus line is OK if no DTC is output
	less than 1 MΩ	Short between bus line and power or ground
CAN-H - CG	more than 3 kΩ	Bus line is OK if no DTC is output
	less than 3 kΩ	Short between bus line and power or ground
CAN-L - CG	more than 3 kΩ	Bus line is OK if no DTC is output
	less than 3 kΩ	Short between bus line and power or ground

◆ If a communication malfunction occurs between the skid control ECU and the steering angle sensor or the yaw rate & deceleration sensor, the skid control ECU stops control of the VSC.

◆ For details on the CAN diagnosis system, see the repair manual for the respective vehicle model.

Service Tip

The ECM of the ’05 model uses the CAN protocol for diagnostic communication. Therefore, a hand-held tester and a dedicated adapter [CAN VIM (Vehicle Interface Module)] are required for accessing diagnostic data. For details, see the repair manual for the respective vehicle model.

4. Fail-Safe

The fail-safe function provided for each system will operate if a failure occurs in the communication wire such as a short or an open circuit.

◆ On the ’05 model, the following fail-safe functions will operate if CAN communication is unavailable.

(For ’05 Toyota Tundra and 4Runner)

Location of Disabled Communication	Fail-Safe
Skid Control ECU, ECM, Yaw Rate, Deceleration Sensor, and Steering Angle Sensor	• Stops VSC/ABS functions • Illuminates VSC indicator light and ABS indicator light • Detects DTCs

(For ’05 Sequoia)

Location of Disabled Communication	Fail-Safe
ECM	• Illuminates MIL • Detects DTCs
Translate ECU	• Stops VSC/TRC functions • Illuminates VSC warning light
Suspension Control ECU	**Communication Fails with ECM** • Stops suspension control function (Cannot change vehicle height until IG switch is turn OFF)
	Communication Fails with Translate ECU • Vehicle height returns to normal height until IG switch is turn OFF

5. Customized Body Electrical System

On the ’05 Sequoia, the customized items listed below have been added, along with the addition of the dimming function of the combination meter, air conditioning control panel, etc.

◆ Use a hand-held tester to change the specifications of the systems and functions.

System	Hand-held tester Display Content	Content	Default	Selection
Light Control System	DISP EX ON SEN (Display extinction luminous intensity)	To change the brightness of lights such as the indicator light of the combination meter, accessory meter, air conditioning control panel and clock, using a dimming function.	0	-2/-1/ 0/ +1/+2
	DISP EX OFF SEN (Display extinction release luminous intensity)	To change the brightness of lights such as the indicator light of the combination meter, accessory meter, air conditioning control panel and clock, without using a dimming function.	0	-2/-1/ 0/ +1/+2

SRS AIRBAG SYSTEM

○FRONT PASSENGER OCCUPANT CLASSIFICATION SYSTEM

1. General

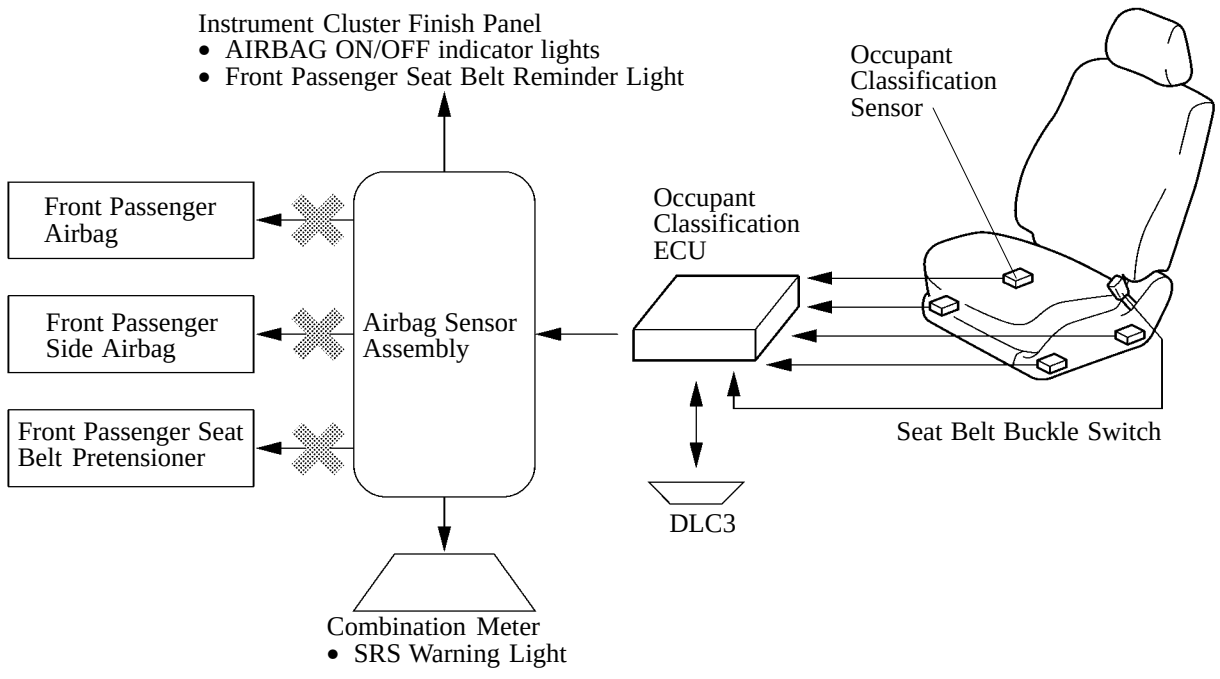
The front passenger occupant classification system judges whether the front passenger seat is occupied by an adult or child (with child seat) or is unoccupied, in accordance with the load that is applied to the front passenger seat and whether the seat belt is buckled. Thus, it restricts the deployment of the front passenger airbag, front passenger side airbag, and the front passenger seat belt pretensioner. In addition, the system informs the driver of the result of the judgment through the use of the AIRBAG ON/OFF indicator lights.

◆ This system consists of the occupant classification ECU, four occupant classification sensors, AIRBAG ON/OFF indicator lights, seat belt buckle switch, and airbag sensor assembly.

◆ Type of seat belt buckle switch has been changed from contact type to no-contact type.

◆ This system has been provided on the ’05 Toyota Tundra, Sequoia, 4Runner and Sienna.

° **System Diagram ◀**



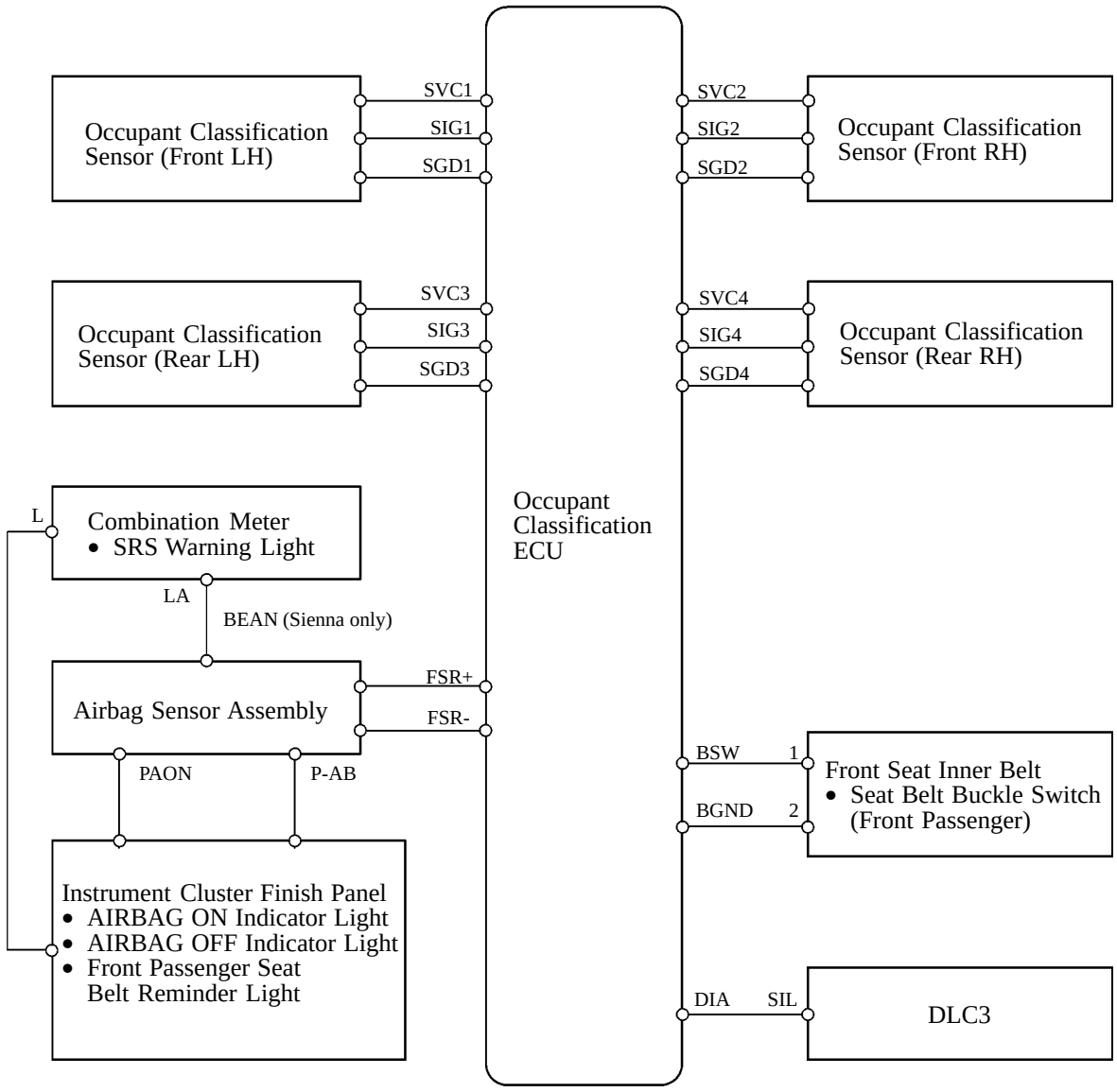
Service Tip

◆ When installing items to the front passenger seat or removing/installing the front passenger seat, connect the hand-held tester and be sure to perform a system check and perform a zero-point calibration of the sensor load value.

◆ If performing maintenance due to the SRS warning light being on constantly or due to a collision, in addition to the above item, check that the hand-held tester display value indicates within the range of 30 kg (66 lb) +/- 3 kg (6.6 lb) when a 30 kg (66 lb) weight is placed on the front passenger seat. For details, see the repair manual for the respective vehicle model.

- ’05 Toyota Tundra Repair Manual (Pub. No.1150U)
- ’05 Sequoia Repair Manual (Pub. No.1146U)
- ’05 4Runner Repair Manual (Pub. No.1165U)
- ’05 Sienna Repair Manual (Pub. No.1163U)

2. Wiring Diagram



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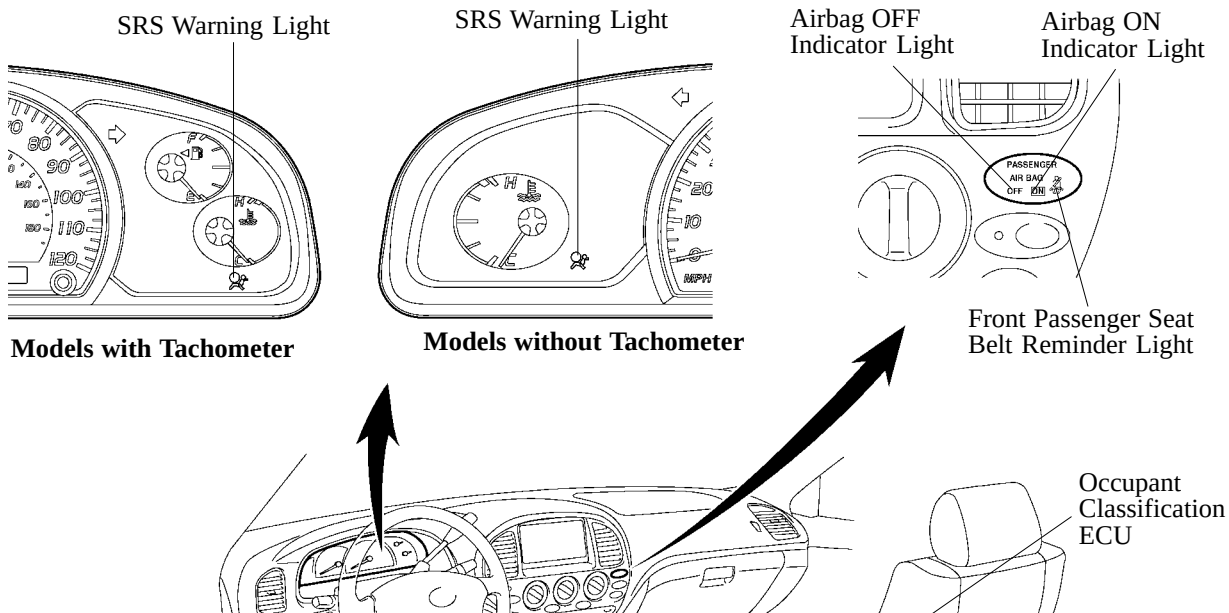
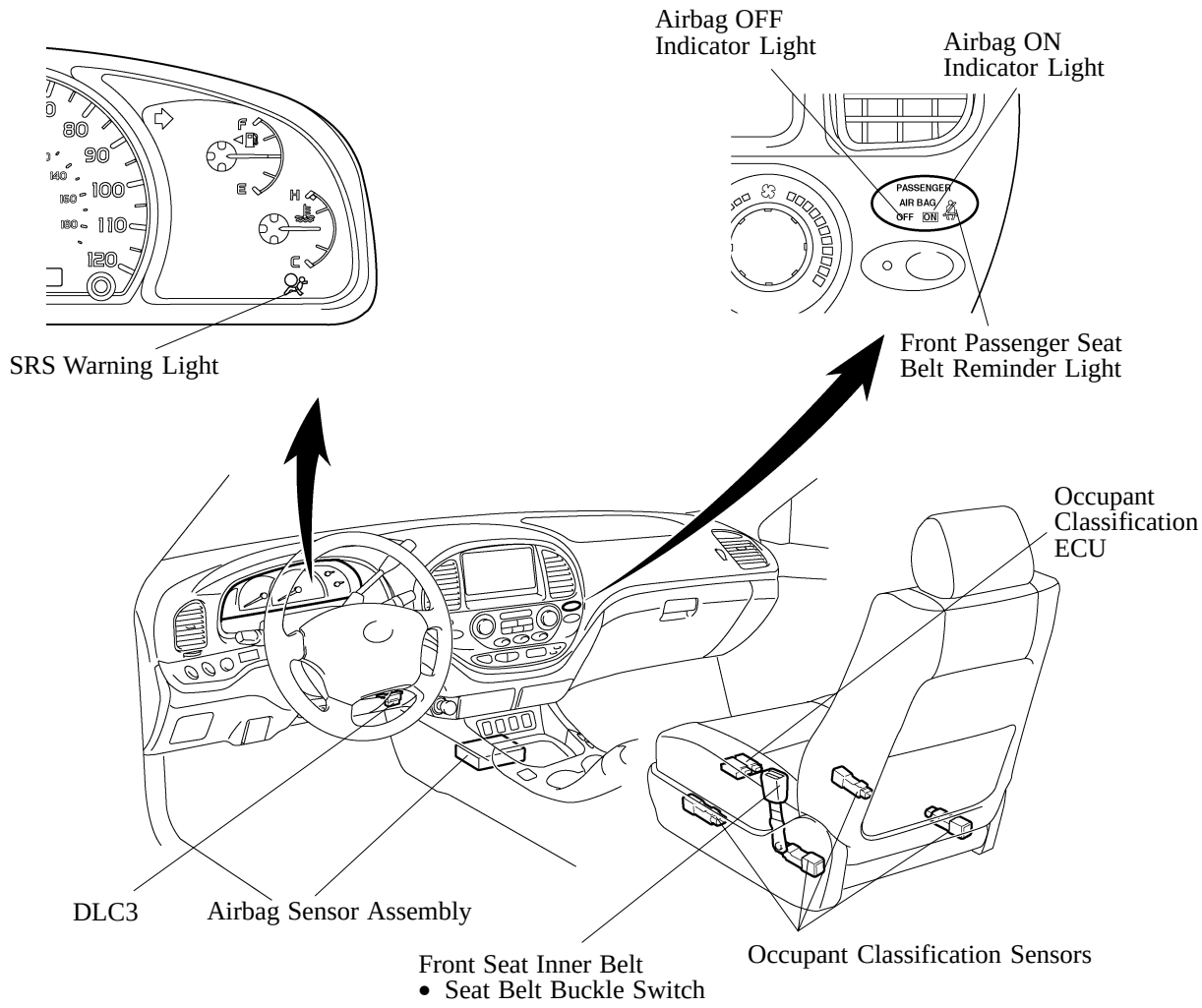
3. Layout of Main Components

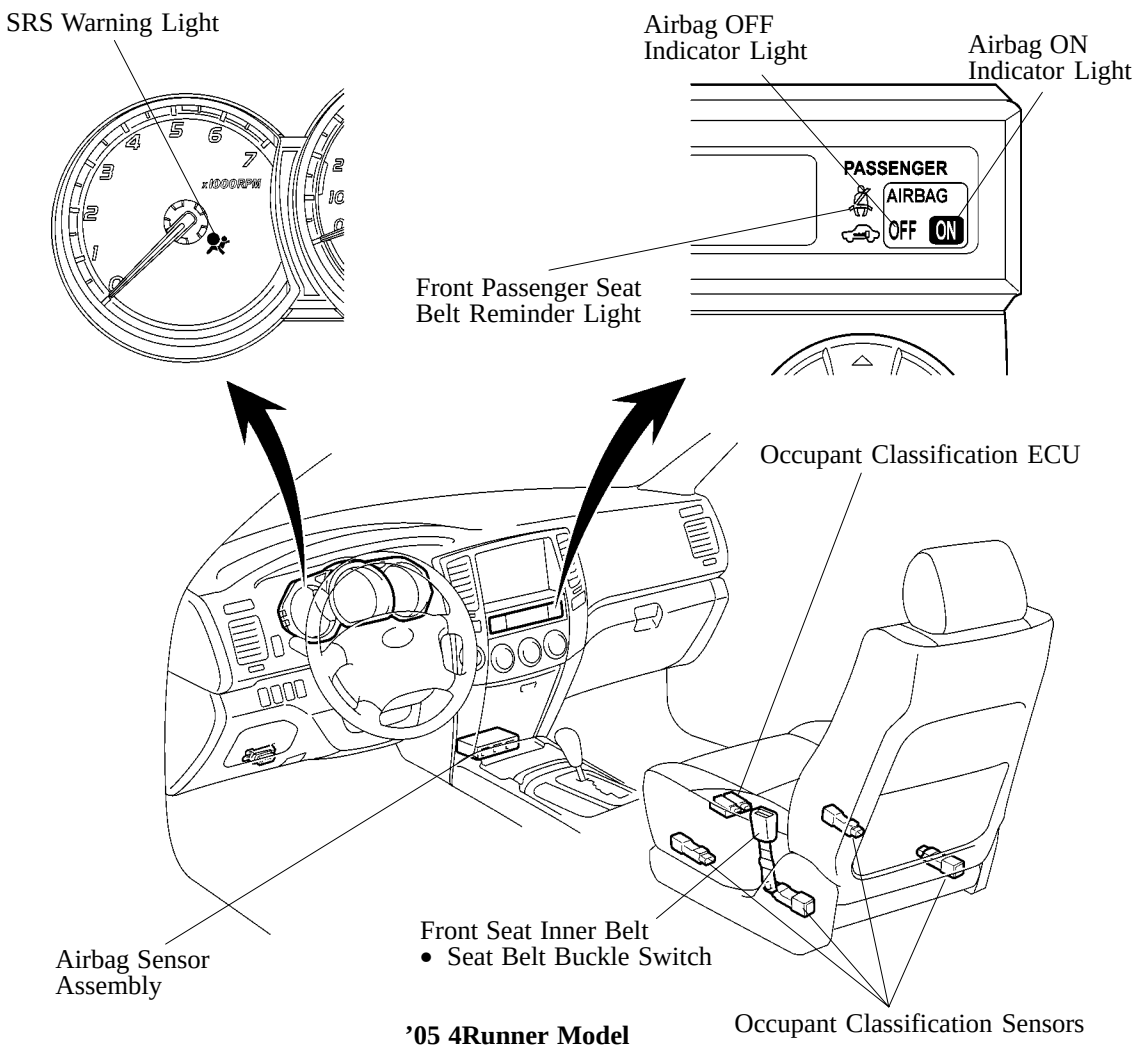


'05 Toyota Tundra Model



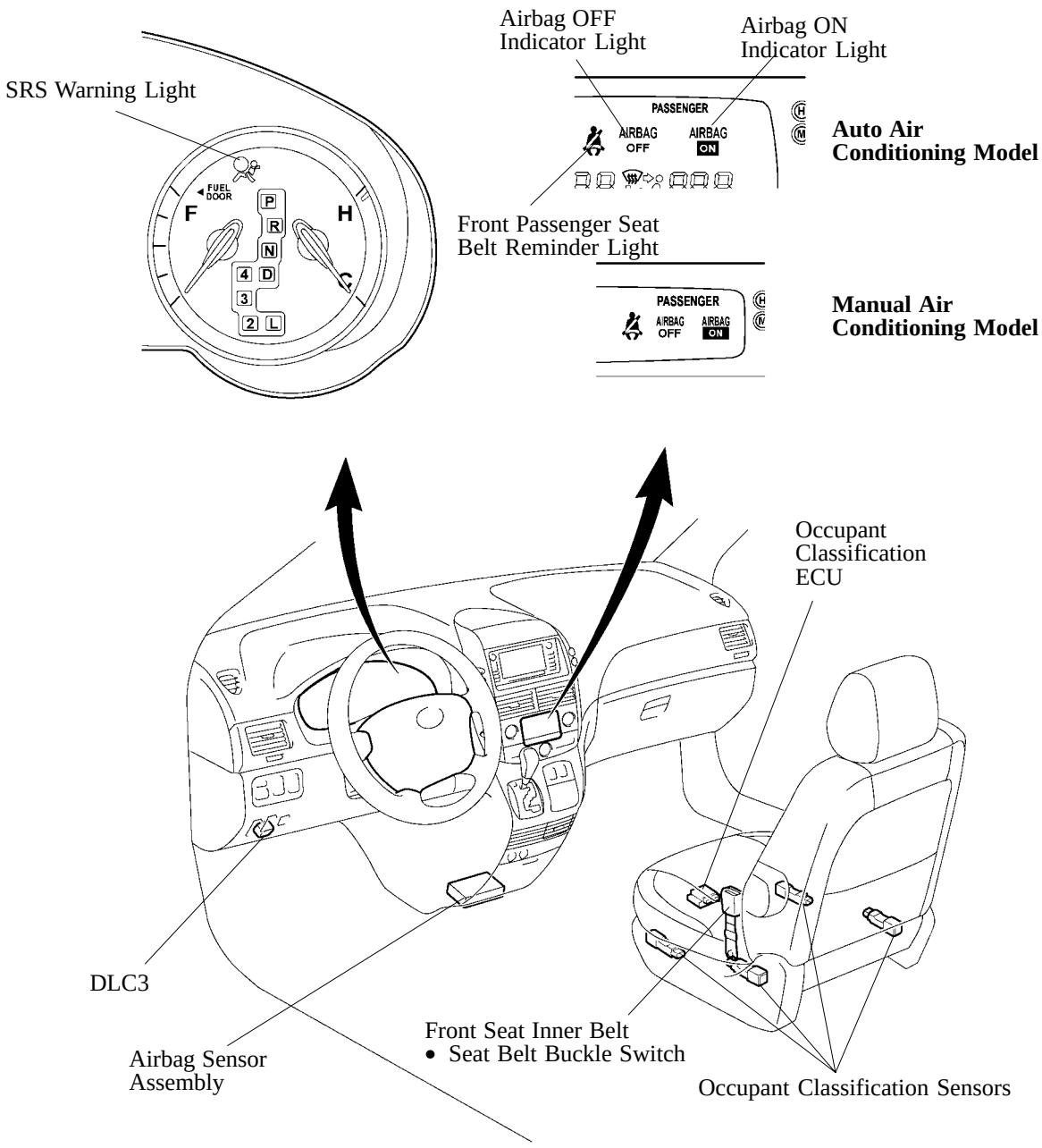
’05 Sequoia Model

275SQ56



’05 4Runner Model

275RN12

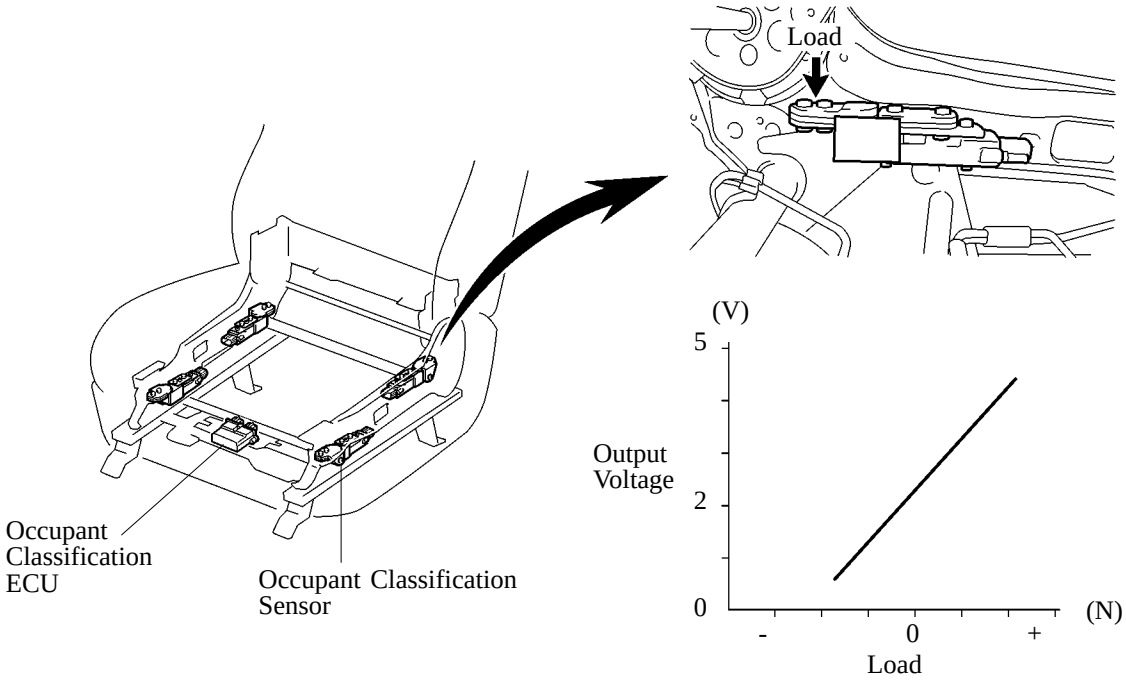


’05 Sienna Model

275SI10

4. Occupant Classification Sensor

The occupant classification sensors are installed on four brackets connecting the seat rail and the seat frame. The resistance values of these sensors, which vary in accordance with the distortion that acts on the brackets, are output to the occupant classification ECU.

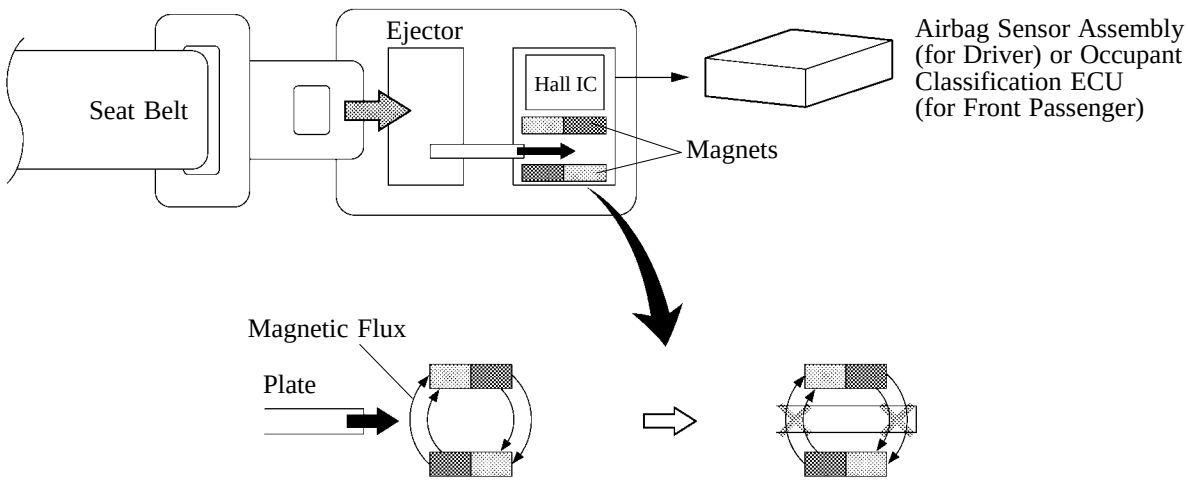


275TU53

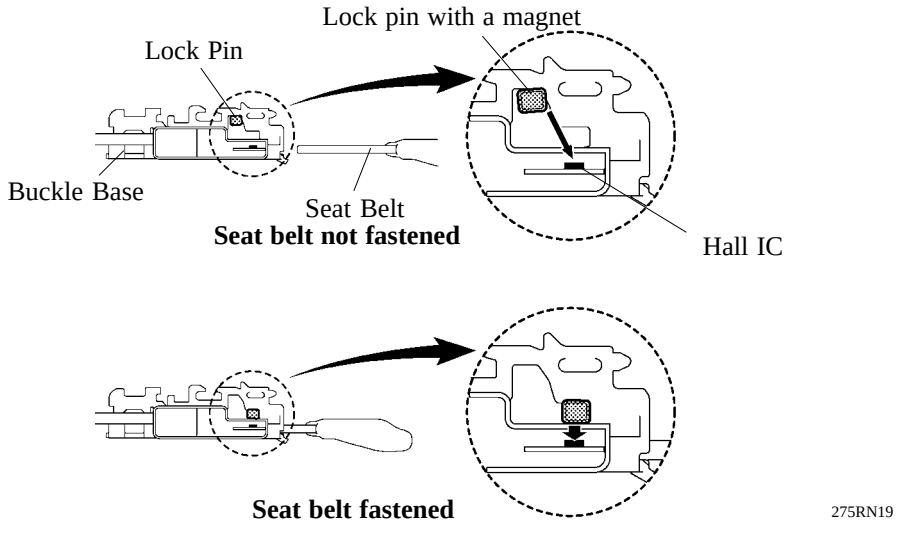
5. Seat Belt Buckle Switch

The seat belt buckle switch has been changed from the contact type to no-contact type.

◆ The seat belt buckle switch comprises a Hall IC and two magnets, installed into the front seat inner belt assembly.
- The ejector inside the front seat inner belt assembly and the plate installed to the ejector move when the seat belt is removed or applied. The movement of the plate cuts off the magnetic flux density of the magnet.
- The Hall IC detects the changes in the magnetic flux density as seat belt removed or applied, and outputs the signal to the airbag sensor assembly (for driver seat) and occupant classification ECU (for front passenger seat).
- This system has been provided on the ’05 Toyota Tundra, Sequoia and Sienna.



◆ The seat belt buckle switch comprises a Hall IC and a lock pin with a magnet, which is installed into the front seat inner belt assembly.
- During the removal of the seat belt, the lock pin with a magnet moves close to the Hall IC in the switch, thus changing the magnetic flux.
- When the seat belt is unbuckled, the magnetic flux is weak because the Hall IC and the magnet are located far apart. When the seat belt is buckled, the magnetic flux is stronger because the Hall IC and the magnet are close to each other. These changes in the magnetic flux are output in the form of signals to the airbag sensor assembly (for the driver) and the occupant classification ECU (for the front passenger).
- This system has been provided on the ’05 4Runner.



6. System Operation

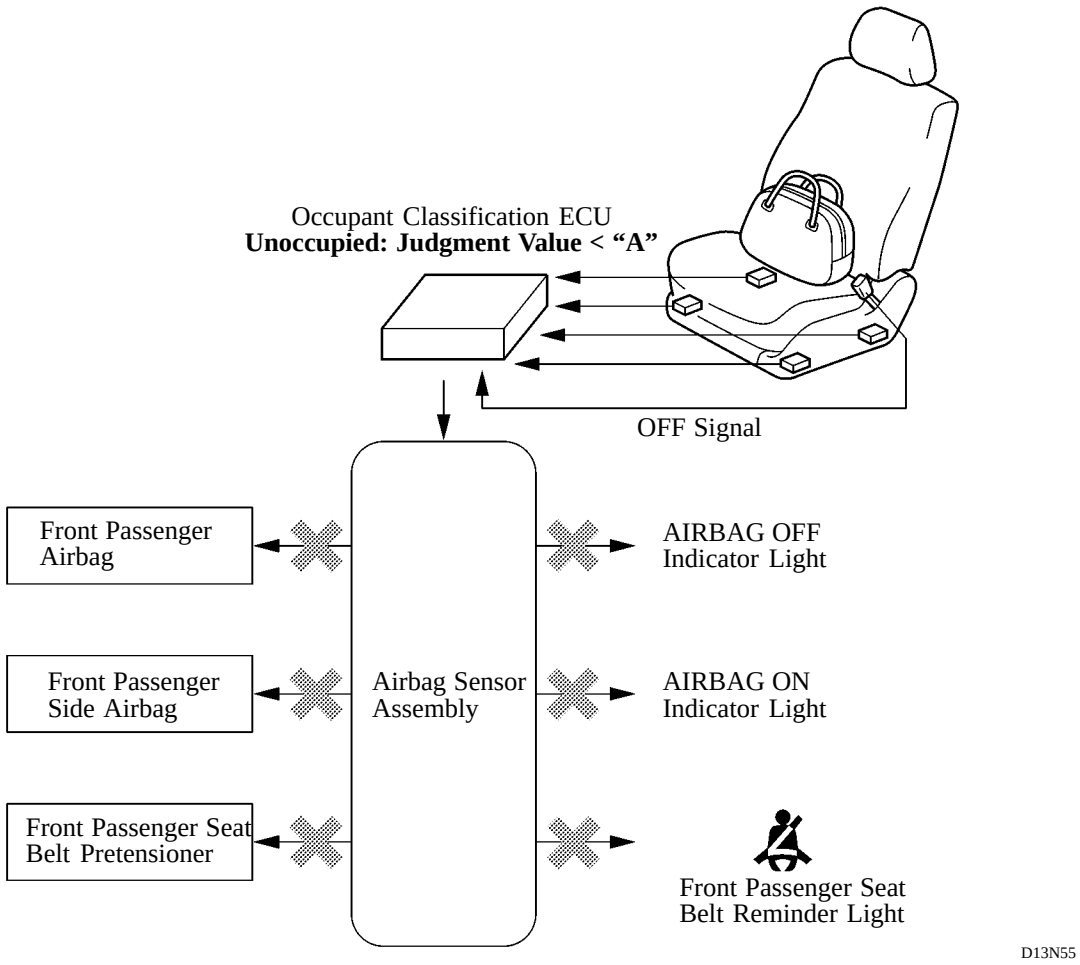
1) General

This system makes the following judgments: unoccupied judgment, child seat judgment, child judgment, and adult judgment. In addition, it performs an initial check to check the circuit of the AIRBAG ON/OFF indicator lights when the ignition switch is ON.

- ◆ The occupant classification ECU constantly monitors the weight of the front passenger seat, and makes a judgment in accordance with the signals from the occupant classification sensor and the state of the seat belt buckle switch, regardless of the position of the ignition switch.
- ◆ The occupant classification ECU contains criteria value “A” to judge whether the seat is being occupied by a child or a child seat in accordance with the signals from the four occupant classification sensors and seat belt buckle switch, and criteria value “B” to judge whether the occupant is an adult or child (with child seat).
- ◆ The occupant classification ECU makes an occupied or unoccupied judgment in accordance with the signals from the seat belt buckle switch.

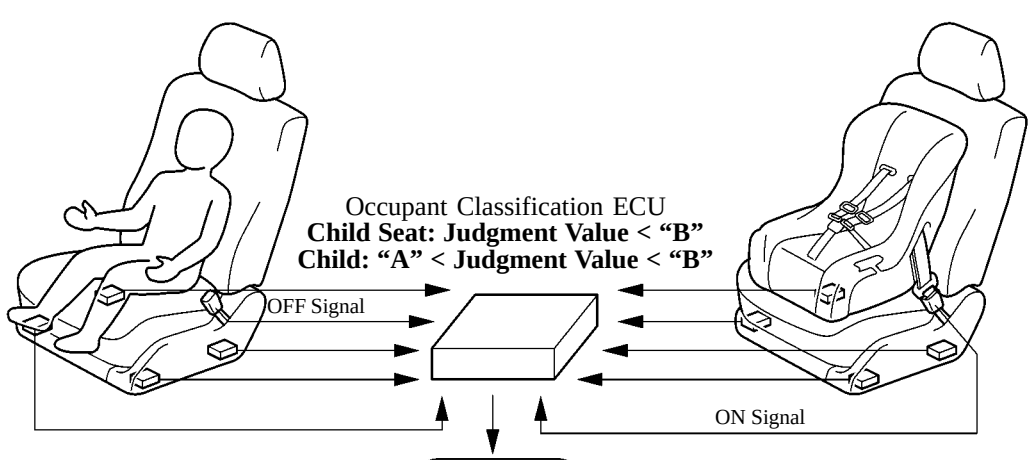
2) Unoccupied Judgment

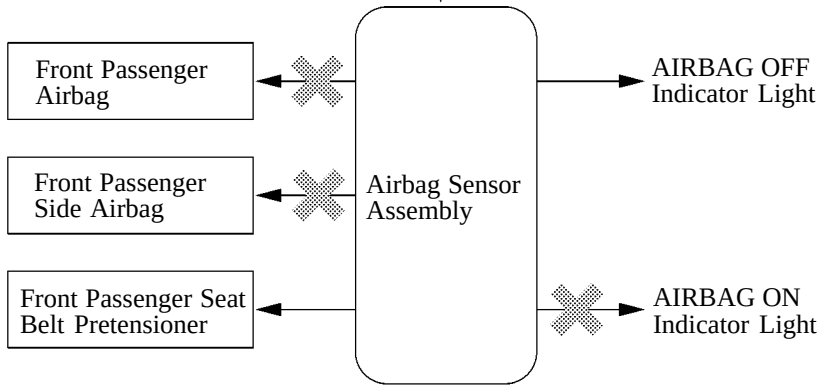
- ◆ The occupant classification ECU makes an unoccupied judgment when the judgment value is lower than criteria value “A” and the seat belt buckle switch is OFF.
- ◆ If the ignition switch is turned ON in this state, the system performs an initial check, and does not illuminate the AIRBAG ON/OFF indicator lights. Then, the system prohibits the deployment of the front passenger airbag, front passenger side airbag, and the front passenger seat belt pretensioner, and does not blink the seat belt reminder light.



3) Child Seat or Child Judgment

- ◆ If the judgment value is lower than criteria value “B” and the seat belt buckle switch is ON, the occupant classification ECU judges that a child seat is installed.
- ◆ If the judgment value is higher than criteria value “A”, but lower than criteria value “B”, and the seat belt buckle switch is OFF, the occupant classification ECU judges that the seat is being occupied by a child.
- ◆ When the ignition switch is turned ON under these conditions, the system performs an initial check and illuminates the AIRBAG OFF indicator light to indicate that the front passenger airbag and the front passenger side airbag have been deactivated.





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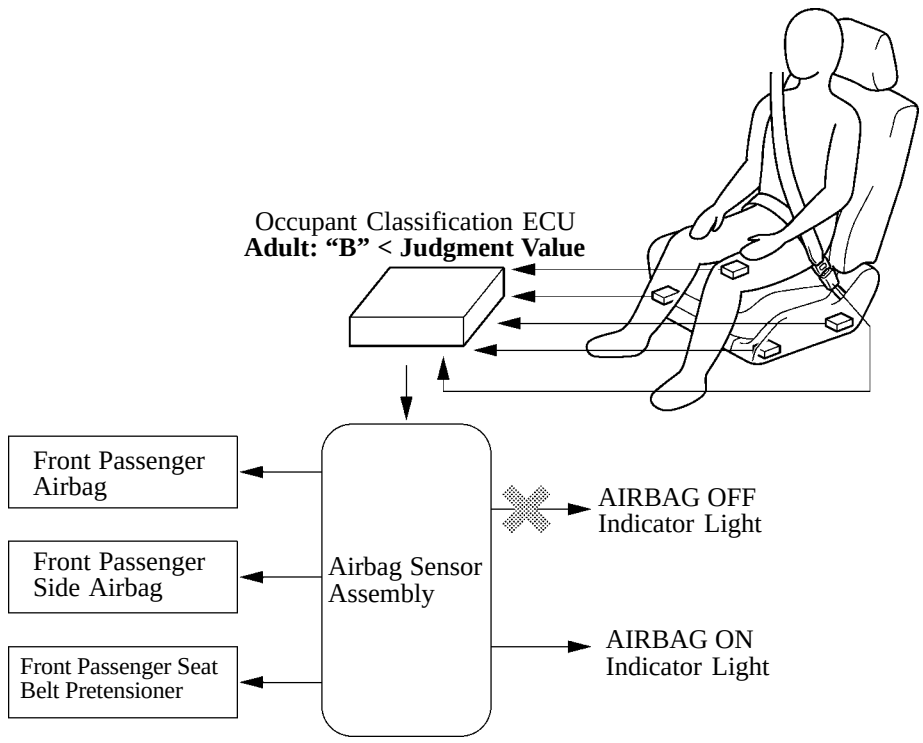
- ◆ After the occupant classification ECU judges that child seat is installed, the AIRBAG OFF indicator light does not go off unless the seat belt buckle switch is turned OFF.

4) Adult Judgment

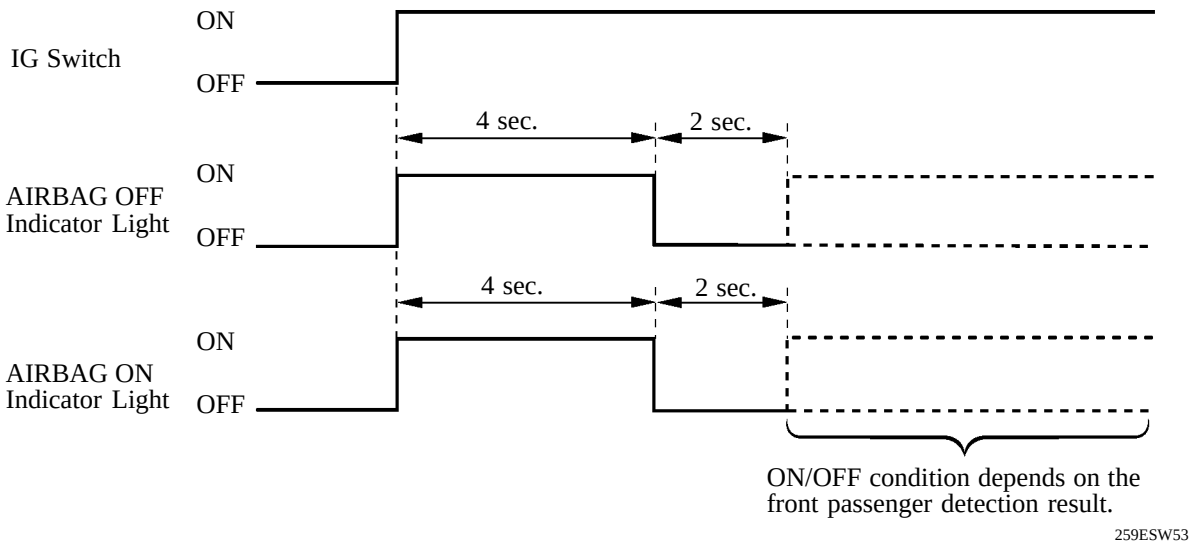
- ◆ When the judgment value is higher than criteria value “B”, the occupant classification ECU judges that the seat is being occupied by an adult.
- ◆ If the ignition switch is turned ON in this state, the system performs an initial check and illuminates the AIRBAG ON indicator light, indicating that the front passenger airbag, the front passenger side airbag and the front passenger seat belt pretensioner are active.



- ◆ After the occupant classification ECU judges that the occupant is an adult, and if the judgment value is determined as criteria value “B” or less according to occupant load movement, the ECU continues adult judgment for approximately ten seconds before switching the child judgment.

5) Initial Check

After the ignition switch is tuned ON, the airbag sensor assembly lights up the AIRBAG ON/ OFF indicator lights as the timing chart below in order to check the indicator light circuits based on the information from the occupant classification ECU.



7. Precaution for Occupant Classification System Operation

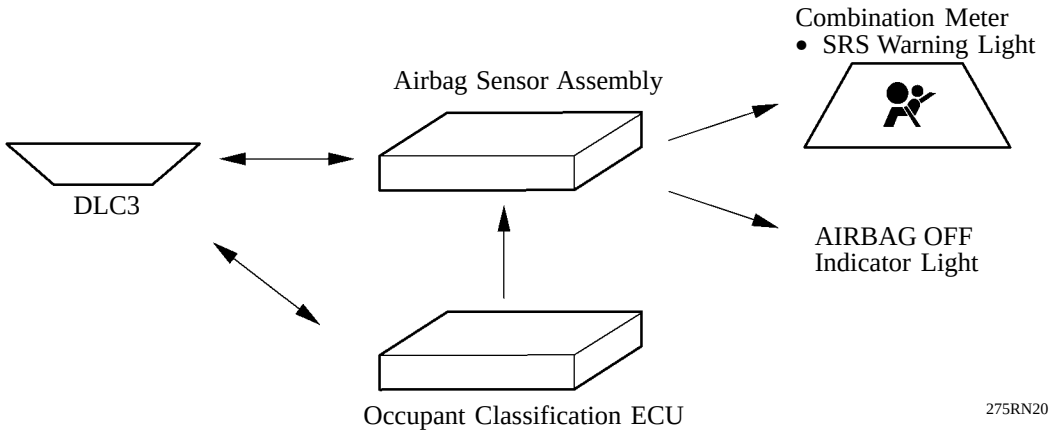
To avoid potential death or serious injury when the front passenger occupant classification system does not detect the conditions correctly, observe the following.

- ◆ Wear the seat belt properly.
- ◆ Make sure the front passenger's seat belt tab has not been left inserted into the buckle before someone sits in the front passenger seat.
- ◆ Make sure the AIRBAG ON indicator light is illuminated when using the seat belt extender for the front passenger seat. If the AIRBAG OFF indicator light is illuminated, disconnect the extender tongue from the seat belt buckle, then reconnect the seat belt. Reconnect the seat belt extender after making sure the AIRBAG ON indicator light is illuminated. If you use the seat belt extender while the AIRBAG OFF indicator light is illuminated, the front passenger airbag and side airbag on the front passenger side may not activate correctly, which could cause death or serious injury in the event of collision.
- ◆ Do not put a heavy load in the front passenger seatback pocket or attach a seatback table to the front passenger seat seatback.
- ◆ Do not put weight on the front passenger seat by putting your hands or feet on the front passenger seat seatback from the rear passenger seat.
- ◆ Do not let a rear passenger lift the front passenger seat with their feet or press on the seatback with their legs.
- ◆ Do not put objects under the front passenger seat.
- ◆ Do not recline the front passenger seat seatback so far that it touches a rear seat. This may cause the AIRBAG OFF indicator light to be illuminated, which indicates that the passenger's airbags will not deploy in the event of a severe accident. If the seatback touches the rear seat, return the seatback to a position where it does not touch the rear seat.
  Keep the front passenger seatback as upright as possible when the vehicle is moving. Reclining the seatback excessively may lessen the effectiveness of the seat belt system.
- ◆ Make sure the AIRBAG ON indicator light may be illuminated when an adult sits in the front passenger seat. If the AIRBAG OFF indicator light is illuminated, ask the passenger to sit properly with back upright and against the seat, with legs comfortably extended and wear the seat belt correctly. Nonetheless, if the AIRBAG OFF indicator light remains illuminated, let the passenger sit in the rear seat. When it is unavoidable to sit in the front passenger seat, ask the passenger to move the seat as far back as possible, remain properly seated.
- ◆ When it is unavoidable to install the forward-facing child restraint system on the front passenger seat, install the child restraint system on the front passenger seat in the proper order.
- ◆ Do not kick the front passenger seat or subject it to severe impact. Otherwise, the SRS warning light may come on to indicate a malfunction of the detection system.
- ◆ Child restraint systems installed on the rear seat should not contact the front seatbacks.

○DIAGNOSIS

The DTCs (Diagnostic Trouble Codes) of the occupant classification system are output by the occupant classification ECU.

◆ If the occupant classification ECU detects a malfunction in the occupant classification system, the occupant classification ECU stores the malfunction data in memory, in addition to illuminating the SRS warning light and AIRBAG OFF indicator light.
The DTC can be accessed by connecting a tester to the DLC3 terminal.



° **Added DTC Chart of SRS Airbag System ◀**

DTC No.	Detection Item	DTC No.	Detection Item
B1150/23*1	Occupant classification system Malfunction	B1650/32*2	Occupant classification system Malfunction
B1152/28*1	Passenger airbag ON/OFF indicator light circuit malfunction	B1660/43*2	Passenger airbag ON/OFF indicator light circuit malfunction

*1: For 4Runner and Sienna
*2: For Toyota Tundra and Sequoia

° **DTC Chart of Front Passenger Occupant Classification System ◀**

DTC No.	Detection Item	DTC No.	Detection Item
B1771	Passenger side buckle switch circuit malfunction	B1787	Occupant classification sensor rear LH collision detection
B1780	Occupant classification sensor front LH circuit malfunction	B1788	Occupant classification sensor rear RH collision detection
B1781	Occupant classification sensor front RH circuit malfunction	B1790	Airbag sensor assembly center communication circuit malfunction
B1782	Occupant classification sensor rear LH circuit malfunction	B1793	Occupant classification sensor power supply circuit malfunction
B1783	Occupant classification sensor rear RH circuit malfunction	B1794	Open in occupant classification ECU circuit (to +B)
B1785	Occupant classification sensor front LH collision detection	B1795	Occupant classification ECU malfunction
B1786	Occupant classification sensor front RH collision detection	B1796	Sleep operation failure of occupant classification ECU

CRUISE CONTROL SYSTEM

- In terms of the low speed limit, if the vehicle speed drops below 40 km/h (25 mph) while operating in the cruise control mode, the system stores the set speed in its memory. Therefore, if the vehicle speed drops below 40 km/h (25 mph) while operating in the cruise control mode, the driver can press the RES/+ switch in order to resume operating the vehicle at the speed that is stored in memory, thus effecting constant acceleration control.
- This system has been provided on the ’05 Camry, Toyota Tundra (1GR-FE engine model) and 4Runner.

— **MEMO** —