FOREWORD

To assist you in your service activities, this manual explains the main characteristics of the 2006 PRIUS, in particular providing a technical explanation of the construction and operation of new mechanisms and new technology used.

Applicable models: NHW20 series

This manual is divided into 3 sections.

1. **Introduction** - Changed features and model line-up are explained.
2. **New Features** - Technical explanation of the construction and operation of each new system and component.
3. **Appendix** - Major technical specifications of the vehicle.

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.

For detailed service specifications and repair procedures, refer to the following Repair Manuals:

Manual Name	Pub. No.
▶2006 PRIUS Repair Manual	RM01R0U
▶2006 PRIUS Electrical Wiring Diagram	EM01R0U

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: Nov. 7, 2005 01-051107-00

INTRODUCTION

OUTLINE OF NEW FEATURES

1. Exterior

▶ The design of the headlights and the radiator grille has been changed.

▶ A new front spoiler has been provided as standard equipment.

▶ The design of the rear combination lights has been changed.

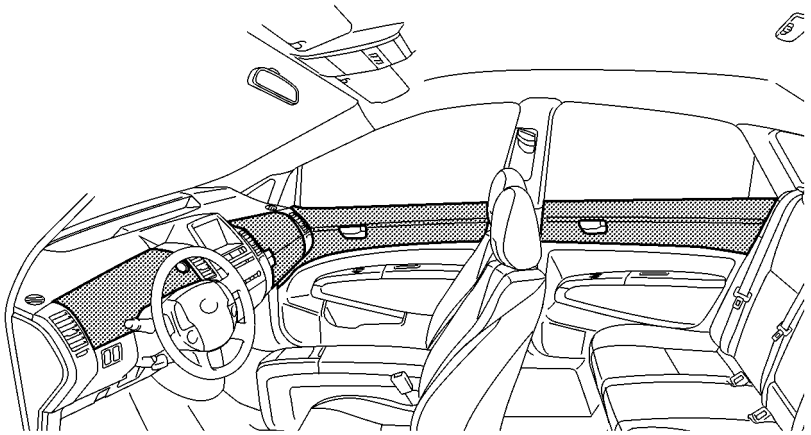
▶ The following exterior colors have been provided.

Color No.	Color Name	Note
040	Super White II	Carryover
1F7	**Silver Metallic**	**New**
1G3	**Gray Metallic**	**New**
202	Black	Carryover
3R3	**Red Mica Metallic**	**New**
4S2	Bronze Mica Metallic	Carryover
6U0	**Light Green Metallic**	**New**
8S2	Blue Mica Metallic	Carryover

2. Interior

Soft pads are used on the driver side mid panel of the instrument panel, on the front passenger side outer surface of the upper door and glove box, and on the upper door trims for enhanced feel and quality.

: Soft Pad Application Areas

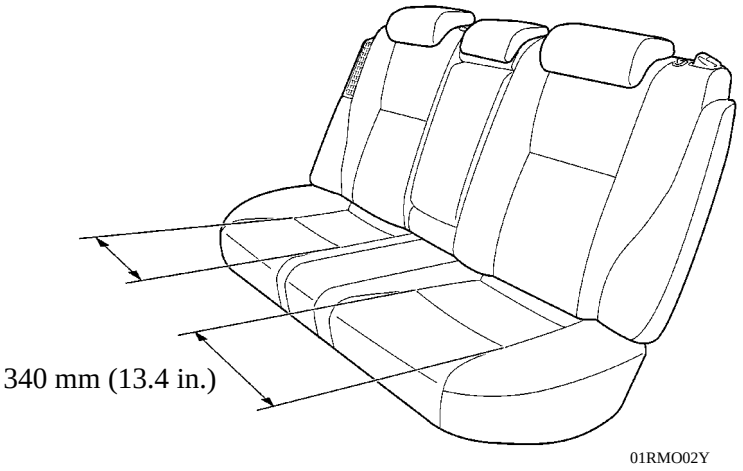


01RMO01Y

3. Rear Seat

▶ The surface width of the rear seat has been increased from 290 mm (11.4 in.) to 340 mm (13.4 in.) for enhanced ride comfort.

▶ The hip point has been lowered 6 mm (0.2 in.) to provide ample head clearance and enhance ergonomics.



4. THS (Toyota Hybrid System) Control System

The DTCs (Diagnostic Trouble Codes) for the following detection item have been changed in accordance with SAE requirements:

DTC		Detection Item
’06 Model	’05 Model	
P0AE7/224	P0AA1/224	Hybrid Battery Positive Contactor Circuit Stuck Closed
P0AE6/225	P0AA2/225	Hybrid Battery Positive Contactor Circuit Stuck Open
P0ADC/226	P0AA1/226	Hybrid Battery Positive Contactor Circuit Stuck Closed
P0ADB/227	P0AA2/227	Hybrid Battery Positive Contactor Circuit Stuck Open
P0AE0/228	P0AA4/228	Hybrid Battery Negative Contactor Circuit Stuck Closed
P0ADF/229	P0AA5/229	Hybrid Battery Negative Contactor Circuit Stuck Open

5. Hybrid Battery System

The DTCs for the following detection items have been changed in accordance with SAE requirements:

DTC		Detection Item
’06 Model	’05 Model	
P0AFA	P3030	Disconnection Between Battery and ECU

6. 1NZ-FXE Engine

- ▶The construction of the EVAP (evaporative emission) control system has been changed. The VSV (for Canister Closed Valve) used on the ’05 models has been discontinued, and a canister pump module is used on the ’06 models.
- ▶The EVAP service port provided on the ’05 models is removed from the ’06 models.
- ▶Along with the change in the construction of the EVAP control system, some DTCs have been added and changed.

7. Tire Pressure Warning System

A direct-sensing type tire pressure warning system has been newly provided as standard equipment.

8. Body

- ▶The reinforcements around the dash panel are optimized to help ensure body rigidity and drivability.
- ▶The reinforcements are optimally allocated to the installation portion of the rear shock absorber and around lower back panel, thus helping ensure body rigidity and drivability.
- ▶The damping material is provided on the interior side of the dash panel to dampen vibration of the dash panel, thus ensuring quietness.
- ▶The acoustic film is provided as the inner layer of the laminated glass for the front windshield glass, thus ensuring quietness.

9. Combination Meter

- ▶The size of the indication of the shift position indicator light has been increased from the ’05 model for enhanced visibility.
- ▶The READY indicator light has been relocated from the reflective virtual image display meter to the indicator area for enhanced visibility.
- ▶Along with the use of the tire pressure warning system, a new tire pressure warning light has been provided.

’06 Model

’05 Model

10. SRS Airbag System

On all models, no-contact type belt buckle switches are used on the right and left front seats, and a front passenger occupant classification system is used on the front passenger seat.

11. Navigation System with AV System

The navigation system with AV (Audio Visual) system contains an updated navigation system in which new functions have been added.

▶ The display color is made up from 32,000 colors, realizing the excellent design of the screen.

▶ The navigation voice guidance is available in three languages: English, French and Spanish.

12. TOYOTA Parking Assist System

A rear view monitor system is available as optional equipment on all models.

EXTERIOR APPEARANCE

01RMO04Y

01RMO05Y

MODEL CODE

NHW20 L - A H E E B A

1 2 3 4 5 6 7 8

1	**BASIC MODEL CODE** NHW20: With 1NZ-FXE Engine
2	**STEERING WHEEL POSITION** L: Left-hand Drive
3	**MODEL NAME** A: Prius
4	**BODY TYPE** H: 4-door Hatchback
5	**GEAR SHIFT TYPE** E: Automatic
6	**GRADE** E: Standard
7	**ENGINE SPECIFICATION** B: Atkinson
8	**DESTINATION** A: U.S.A. K: Canada

MODEL LINE-UP

DESTINATION	ENGINE	BODY TYPE	GRADE	TRANSAXLE
				P112 Automatic
U.S.A.	1NZ-FXE	4-door Hatchback	Standard	NHW20L-AHEEBA
Canada				NHW20L-AHEEBK

- MEMO -

NEW FEATURES

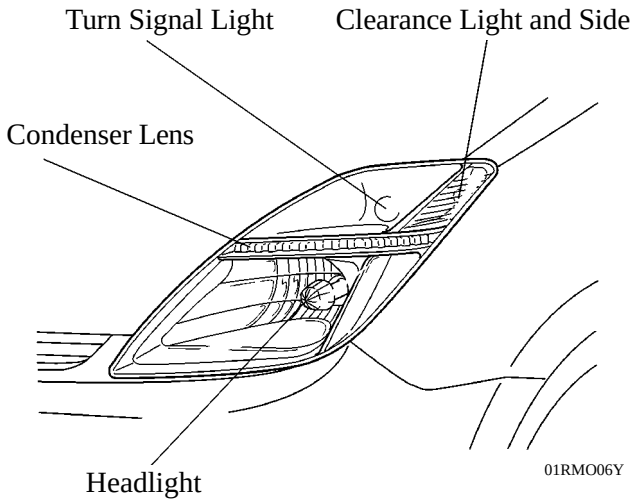
EXTERIOR

◀HEADLIGHT

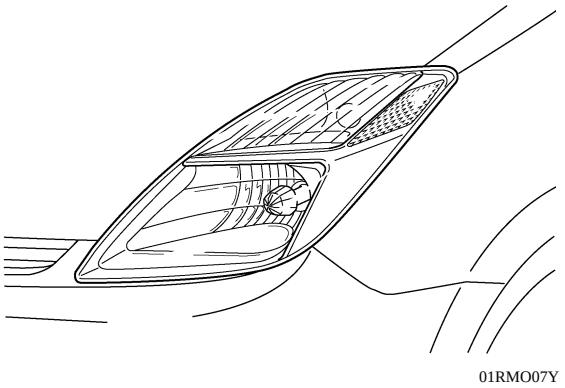
▶ A newly designed headlight that is integrated with a clearance light and a turn signal light is used.

▶ A condenser lens that also provides a light distribution function is used below the turn signal light in order to achieve an innovative look.

▶ A clear smoke paint has been provided on the extension area in order to provide a high quality appearance.



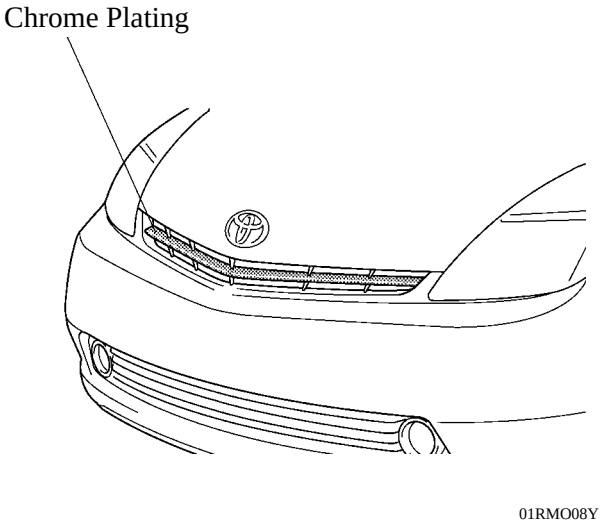
'06 Model



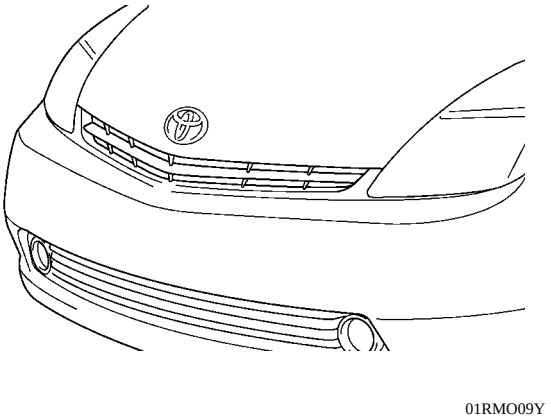
'05 Model

◀RADIATOR GRILLE

The exterior panel color of the horizontal bars of the radiator grille has been changed to chrome plating in order to provide a high quality appearance.



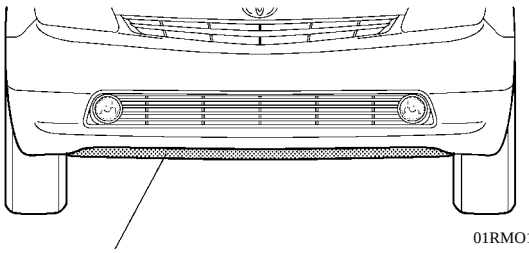
'06 Model



'05 Model

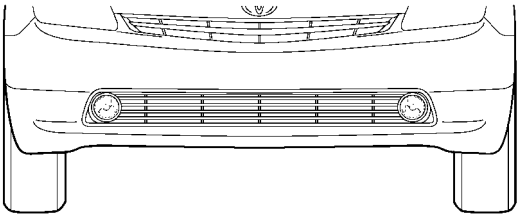
◀FRONT SPOILER

A new front spoiler, which is made of TSOP (Toyota Super Olefin Polymer) that excels in recyclability, has been provided under the front bumper for enhanced appearance.



01RMO10Y

’06 Model



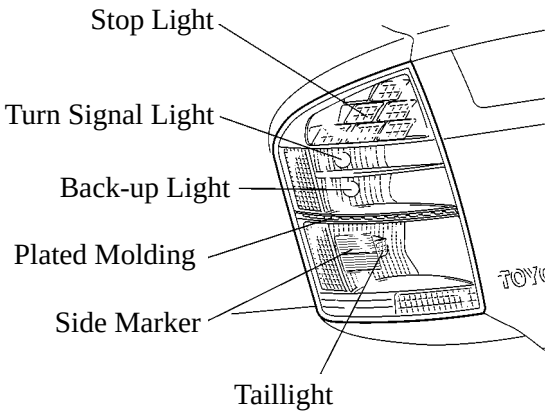
01RMO11Y

’05 Model

◀REAR COMBINATION LIGHT

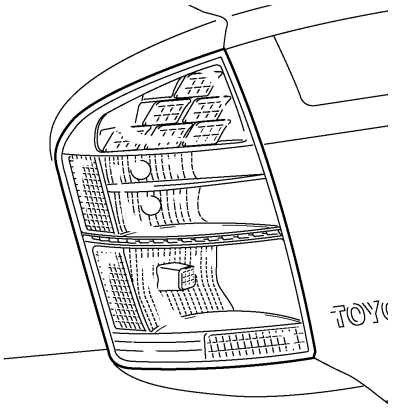
▶ A plated molding is used in the center of the rear combination light to provide a high quality appearance.

▶ The extension of the stop light portion has been changed from black to vapor deposition aluminum in order to provide a high quality appearance.



01RMO12Y

’06 Model



01RMO13Y

’05 Model

1NZ-FXE ENGINE

ENGINE CONTROL SYSTEM

1. General

The engine control system of the 1NZ-FXE engine on the ’06 models has following systems.

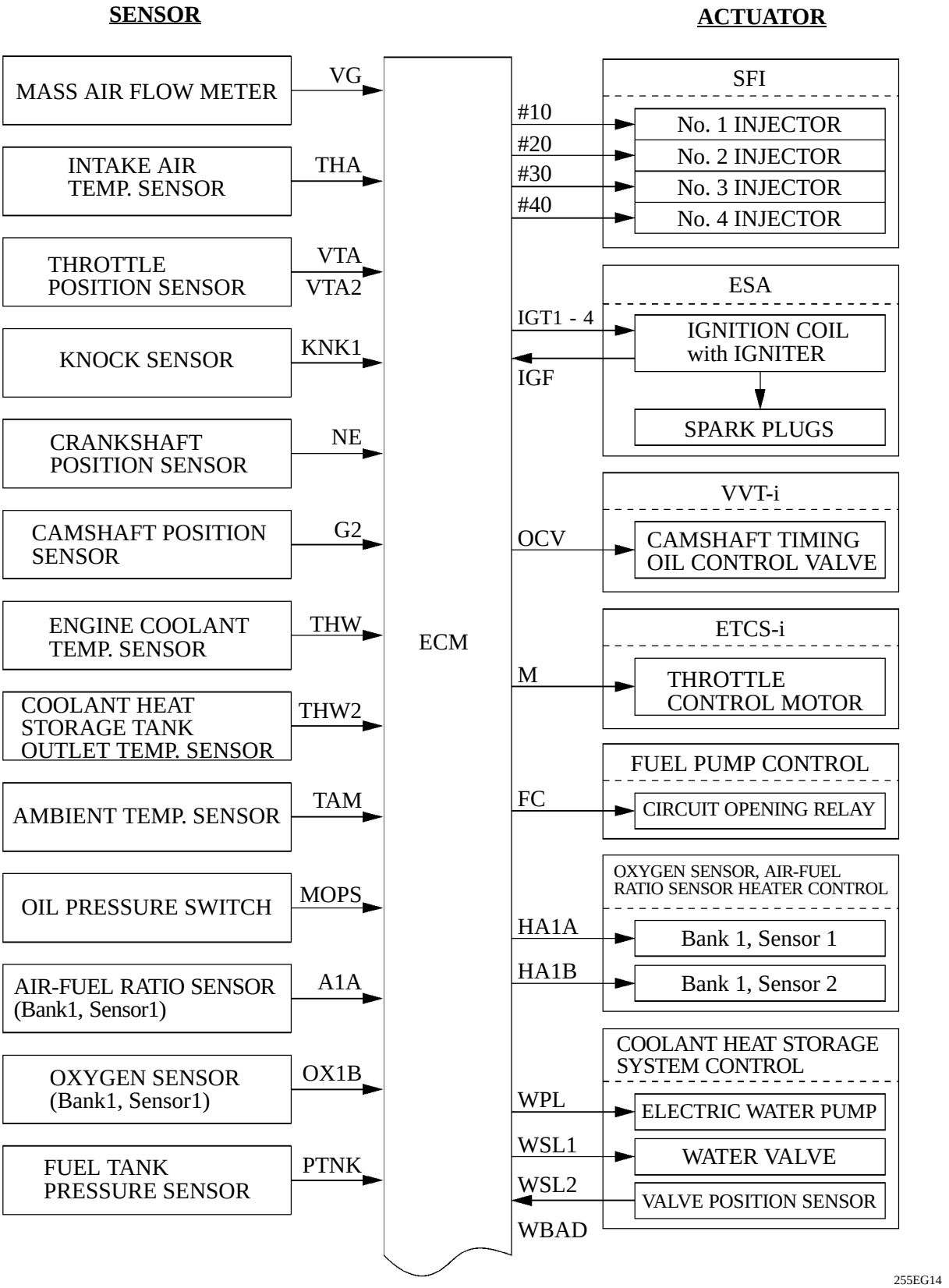
System	Outline	’06 Models	’05 Models
SFI (Sequential Multiport Fuel Injection)	An L-type SFI system directly detects the intake air mass with a hot wire type mass air flow meter.	○	○
ESA (Electronic Spark Advance)	Ignition timing is determined by the ECM based on signals from various sensors. The ECM corrects ignition timing in response to engine knocking.	○	○
ETCS-i (Electronic Throttle Control System-intelligent)	The ECM optimally controls the throttle valve opening in accordance with the engine conditions and the ETCS-i control request received from the HV ECU.	○	○
VVT-i (Variable Valve Timing-intelligent)	Controls the intake camshaft to an optimal valve timing in accordance with the engine conditions and the control request received from the HV ECU.	○	○
	The maximum retard closing timing of the intake valve has been changed from 115° to 105° ABDC (After Bottom-Dead-Center). As a result, the cold-starting performance of the engine has been improved.	○	○
Coolant Heat Storage System	The ECM actuates an electric water pump in the coolant heat storage system to recover the coolant heated by the engine, store the hot coolant in the coolant heat storage tank, and supply it to the engine before starting a cold engine. This optimizes the combustion performance of the engine during cold-starting and reduces HC exhaust emissions.	○	○
Air-fuel Ratio Sensor, Oxygen Sensor Heater Control	The temperature of the air fuel ratio sensor or oxygen sensor is maintained at an appropriate level to increase accuracy of detection of the oxygen concentration in the exhaust gas.	○	○
Fuel Pump Control	Fuel pump operation is controlled by signal from the ECM. A fuel cut control is used to stop the fuel pump when the airbag is deployed during front or side collision.	○	○
Cooling Fan Control	The ECM steplessly controls the speed of the fans in accordance with the engine coolant temperature, vehicle speed, engine speed, and air conditioning operating conditions. As a result, the cooling performance has been improved.	○	○

(Continued)

System	Outline	’06 Models	’05 Models
EVAP (Evaporative Emission) Control System [See page 16]	The ECM controls the purge flow of evaporative emission (HC) in the canister in accordance with engine conditions.	○	○
	Approximately five hours after the power source mode has been selected to OFF, the ECM operates the leak detection pump to detect any evaporative emission leakage occurring in the EVAP (evaporative emission) control system through changes in the system pressure.	○	—
HV Immobilizer	Fuel delivery, ignition, and starting of the hybrid system are prohibited if an attempt is made to start the hybrid system with an invalid key.	○	○
Diagnosis [See page 29]	When the ECM detects a malfunction, the ECM diagnoses and memorizes the failed section.	○	○
	All the DTCs (Diagnostic Trouble Codes) have been made to correspond to the SAE controlled codes.	○	○
Fail-safe	When the ECM detects a malfunction, the ECM stops or controls the engine according to the data already stored in the memory.	○	○

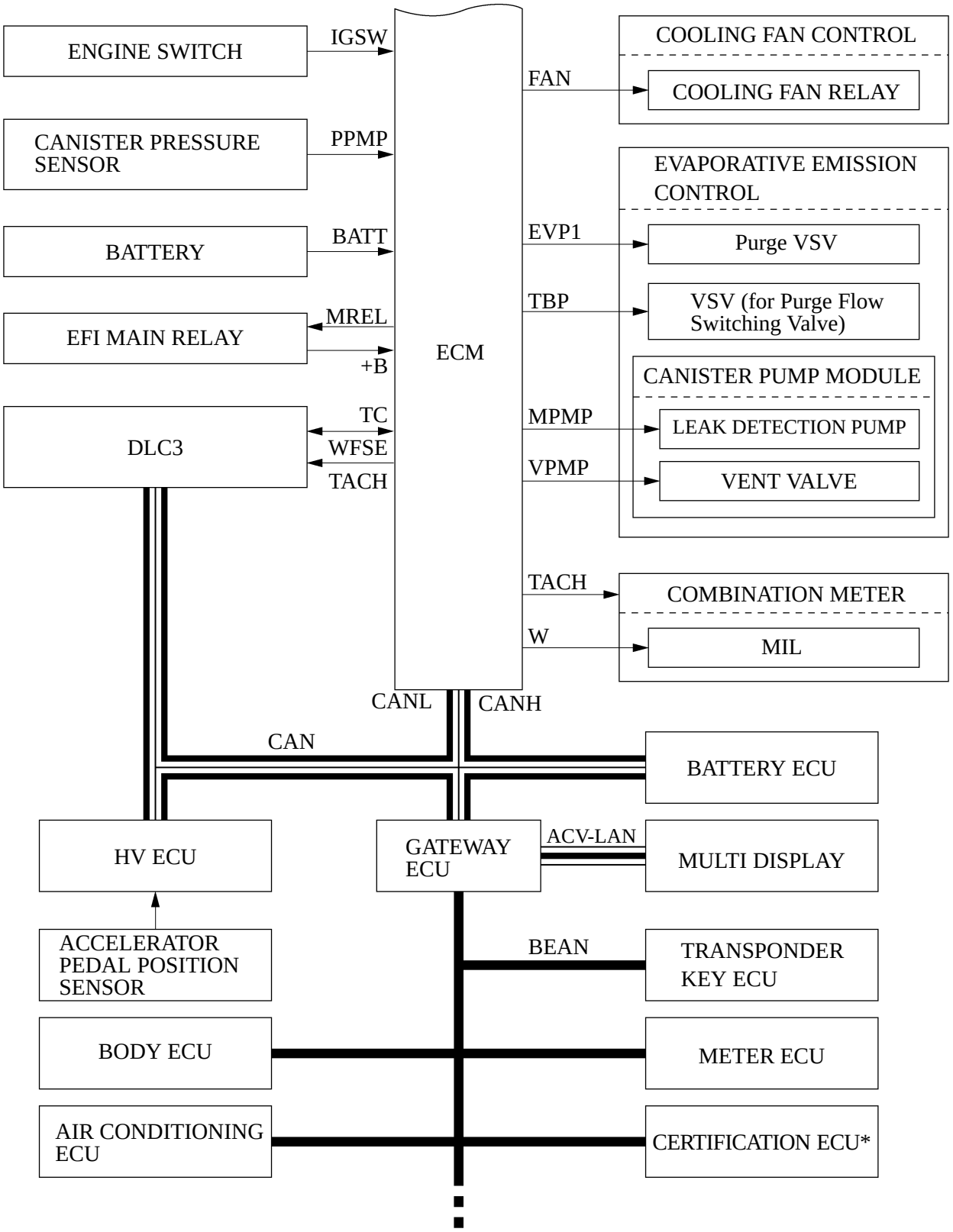
2. Construction

The configuration of the engine control system in the 1NZ-FXE engine is shown in the following chart.



255EG14

(Continued)



*: Models with Smart Key System

NF

3. EVAP (Evaporative Emission) Control System

General

The EVAP (evaporative emission) control system prevents the vapor gas that is created in the fuel tank from being released directly into the atmosphere.

The canister stores the vapor gas that has been created in the fuel tank.

The ECM controls the purge VSV in accordance with the driving conditions in order to direct the vapor gas into the engine, where it is burned.

In this system, the ECM checks the evaporative emission leak and outputs DTCs (Diagnostic Trouble Codes) in the event of a malfunction. An EVAP (evaporative emission) leak check consists of an application of a vacuum pressure to the system and monitoring the changes in the system pressure in order to detect a leakage.

This system consists of a purge VSV, VSV (for purge flow switching valve), canister, canister pump module, fuel tank pressure sensor, and ECM.

The ORVR (Onboard Refueling Vapor Recovery) function is provided.

The canister pressure sensor has been included in the canister pump module.

The canister filter has been provided on the fresh air line. This canister filter is maintenance-free.

The fuel tank pressure sensor detects the pressure in the fuel tank while the engine is running, and sends the resulting signal to the ECM. Based on this signal, the ECM detects any malfunction in the purge VSV and the VSV (for purge flow switching valve).

The following are the typical conditions for enabling an EVAP leak check:

Typical Enabling Condition	Five hours have elapsed after the engine has been turned OFF.* Altitude: Below 2400 m (8000 feet) Battery Voltage: 10.5 V or more Power Source Mode: OFF Engine Coolant Temperature: 4.4 to 35°C (35 to 95°F) Intake Air Temperature: 4.4 to 35°C (35 to 95°F)

Service Tip

The canister pump module performs the EVAP leak check. This check is done approximately five hours after engine is turned off.*
So you may hear sound coming from underneath the luggage compartment for several minutes. It does not indicate a malfunction.

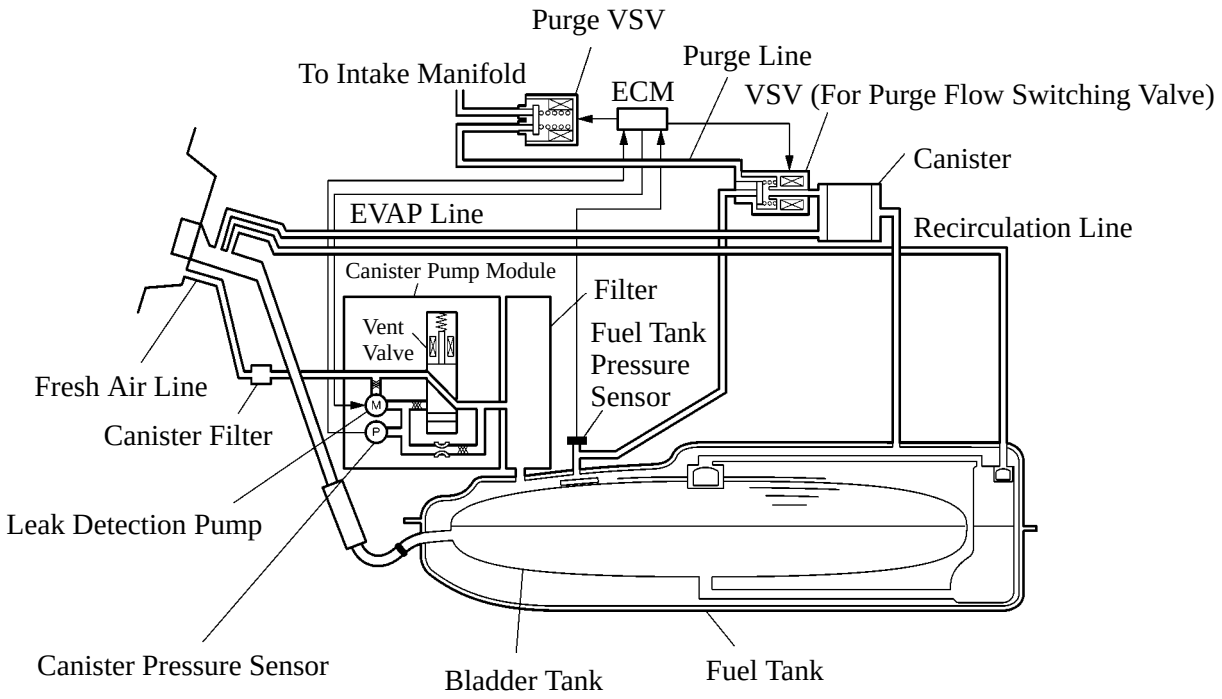
*: If engine coolant temperature does not drop below 35°C (95°F), this time should be extended to 7 hours. Even after that, if the temperature is not less than 35°C (95°F), the time should be extended to 9.5 hours.

The EVAP service port provided on the ’05 models is removed from the ’06 models.

NOTICE

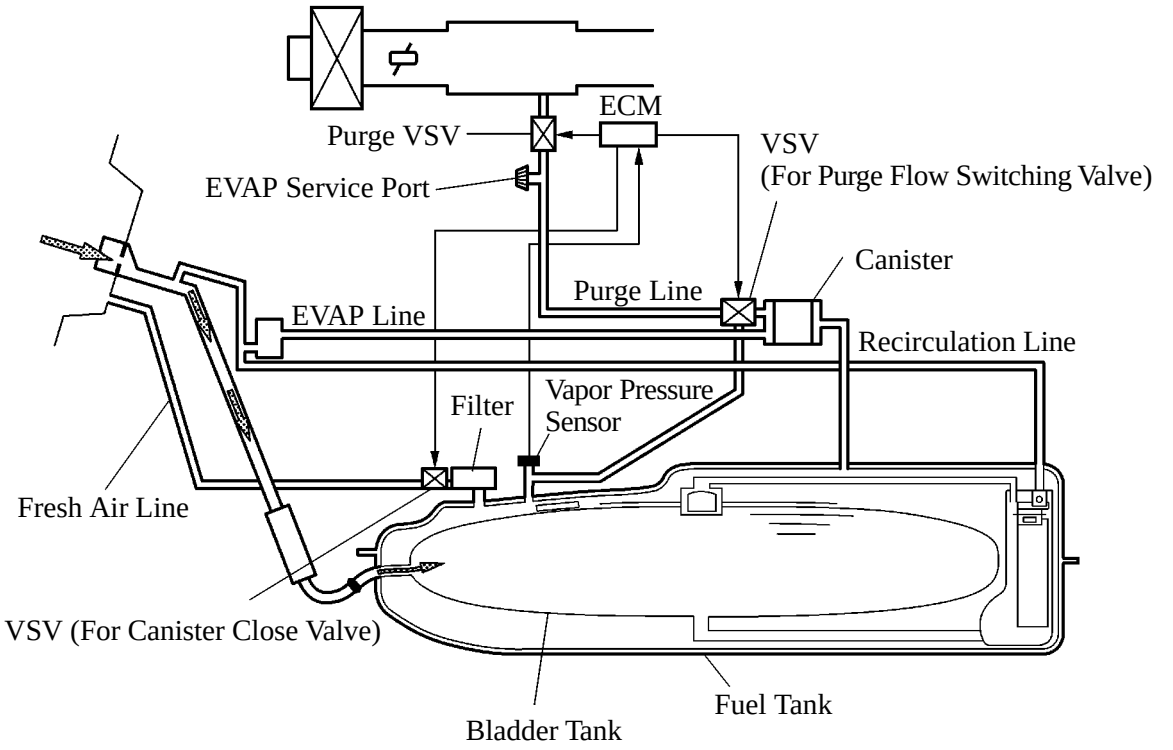
The pinpoint pressure test procedure is carried out by pressurizing the fresh air line that runs from the canister pump module to the fuel filler neck.
For details, refer to the 2006 Prius Repair Manual (Pub. No. RM01R0U).

System Diagram



01REG02Y

'06 Models



255EG12

'05 Models

NF

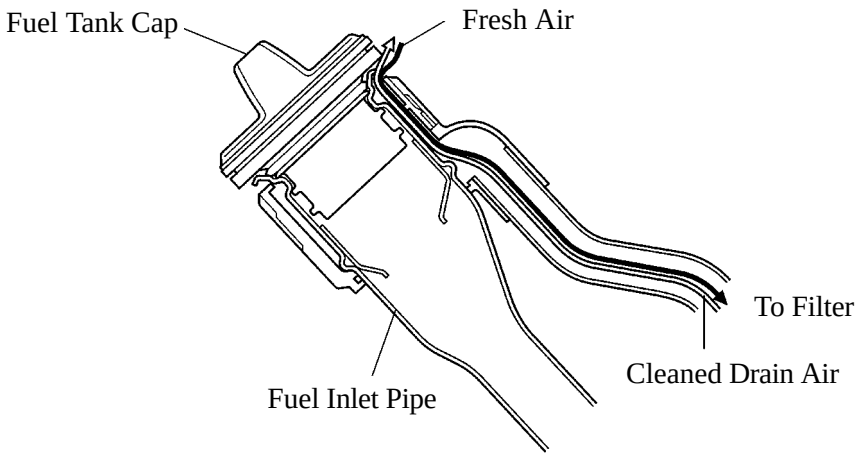
Function of Main Components

Component		Function
Canister		Contains activated charcoal to absorb the vapor gas that is created in the fuel tank.
Fresh Air Line		Fresh air goes into the canister and the cleaned drain air goes out into the atmosphere.
Canister Pump Module	Vent Valve	Opens and closes the fresh air line in accordance with the signals from the ECM.
	Leak Detection Pump	Applies vacuum pressure in the EVAP control system in accordance with the signals from the ECM.
	Canister Pressure Sensor	Detects the pressure in the EVAP control system and sends the signals to the ECM.
Purge VSV		Opens in accordance with the signals from the ECM when the system is purging, in order to send the vapor gas that was absorbed by the canister into the intake manifold. During the system monitoring mode, this valve controls the introduction of the vacuum into the fuel tank.
Canister Filter		Prevents dust and debris in the fresh air from entering the system.
VSV (For Purge Flow Switching Valve)		Switches the passages from the charcoal canister to the purge line and from the fuel tank to the purge line.
Fuel Tank Pressure Sensor		Detects the pressure in the fuel tank while the engine is running, and sends the resulting signal to the ECM.
ECM		Controls the canister pump module and the purge VSV in accordance with the signals from various sensors, in order to achieve a purge volume that suits the driving conditions. In addition, the ECM monitors the system for any leakage and outputs a DTC if a malfunction is found.

Construction and Operation

1) Fuel Inlet (Fresh Air Line Inlet)

The flesh air from the atmosphere and drain air cleaned by the canister will go in and out to the system through the passage shown below.



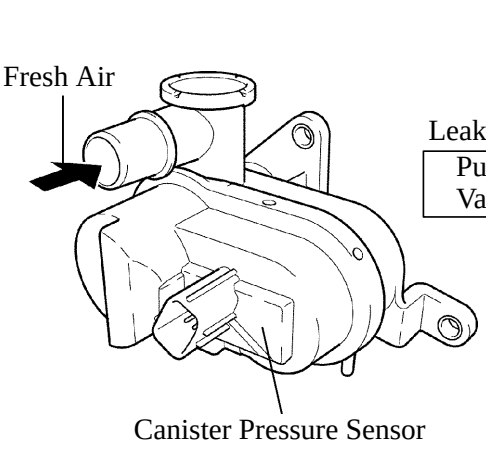
2) Canister Pump Module

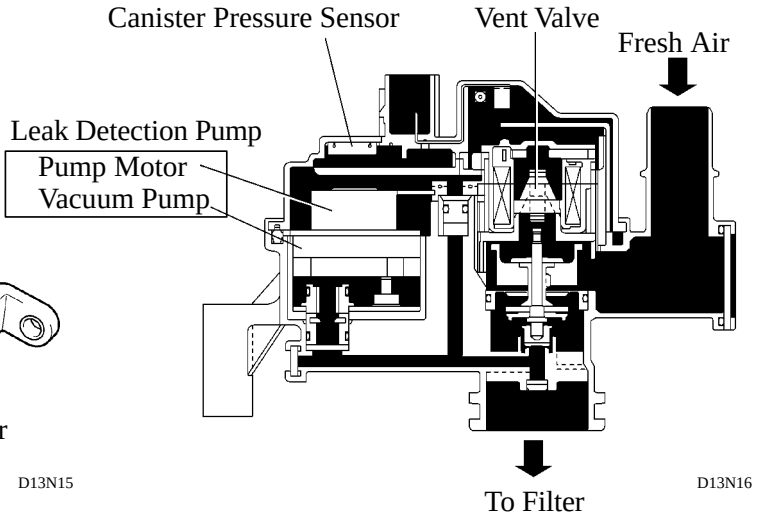
Canister pump module consists of the vent valve, canister pressure sensor, and leak detection pump.

The vent valve switches the passages in accordance with the signals received from the ECM.

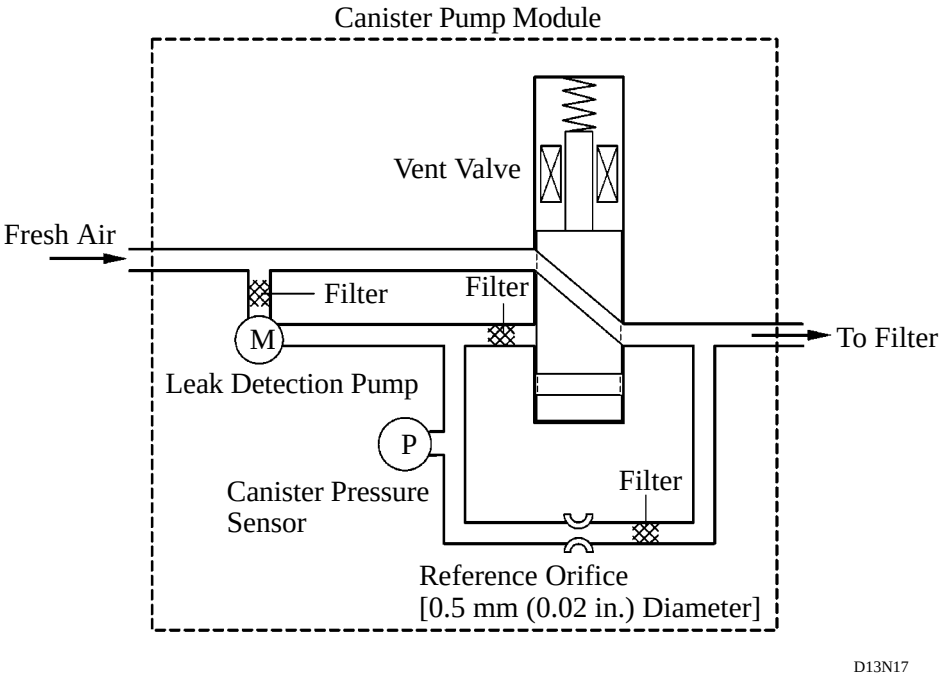
A DC type brush-less motor is used for the pump motor.

A vane type vacuum pump is used.





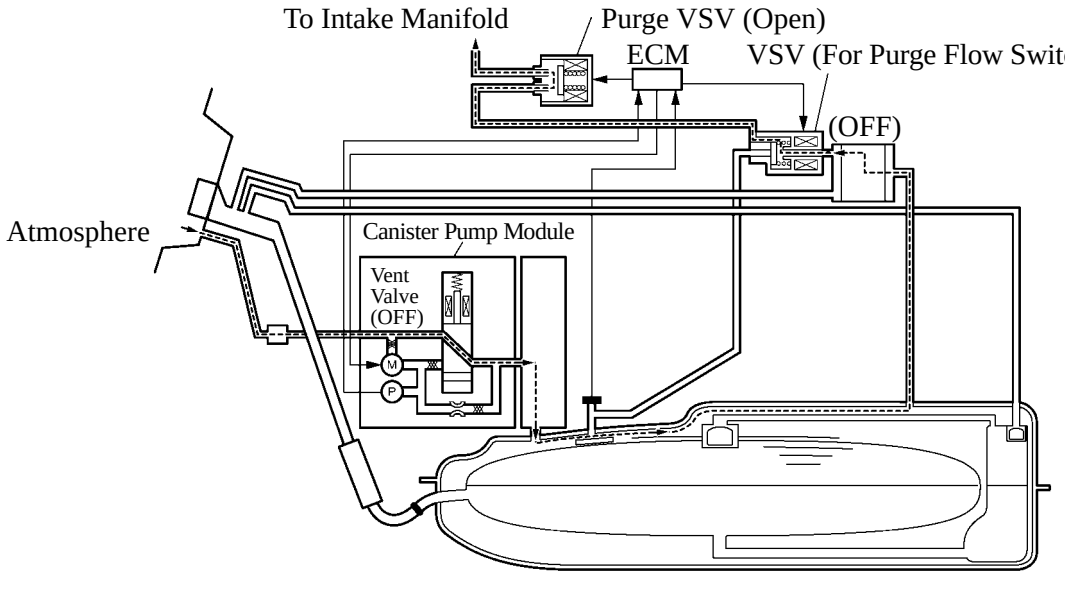
▶ Simple Diagram ◀



System Operation

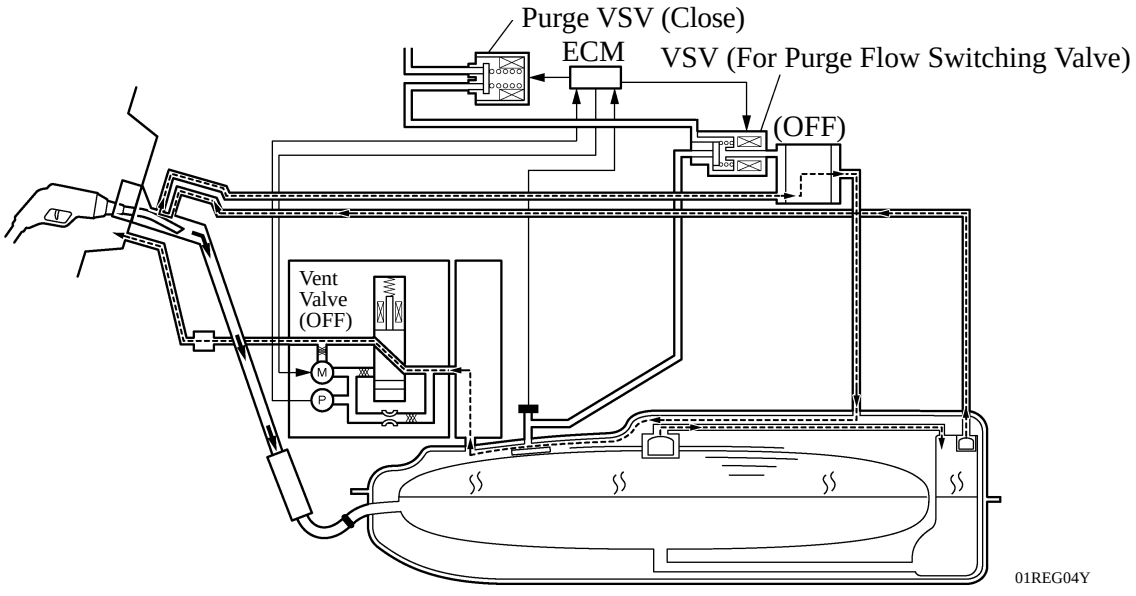
1) Purge Flow Control

When the engine has satisfied the predetermined conditions (closed loop, engine coolant temperature above 74°C (165°F), etc.), the stored vapor gas are purged from the canister whenever the purge VSV is opened by the ECM.
The ECM will change the duty ratio cycle of the purge VSV, thus controlling purge flow volume. Purge flow volume is determined by intake manifold pressure and the duty ratio cycle of the purge VSV. Atmospheric pressure is allowed into the canister to ensure that purge flow is constantly maintained whenever purge vacuum is applied to the canister.



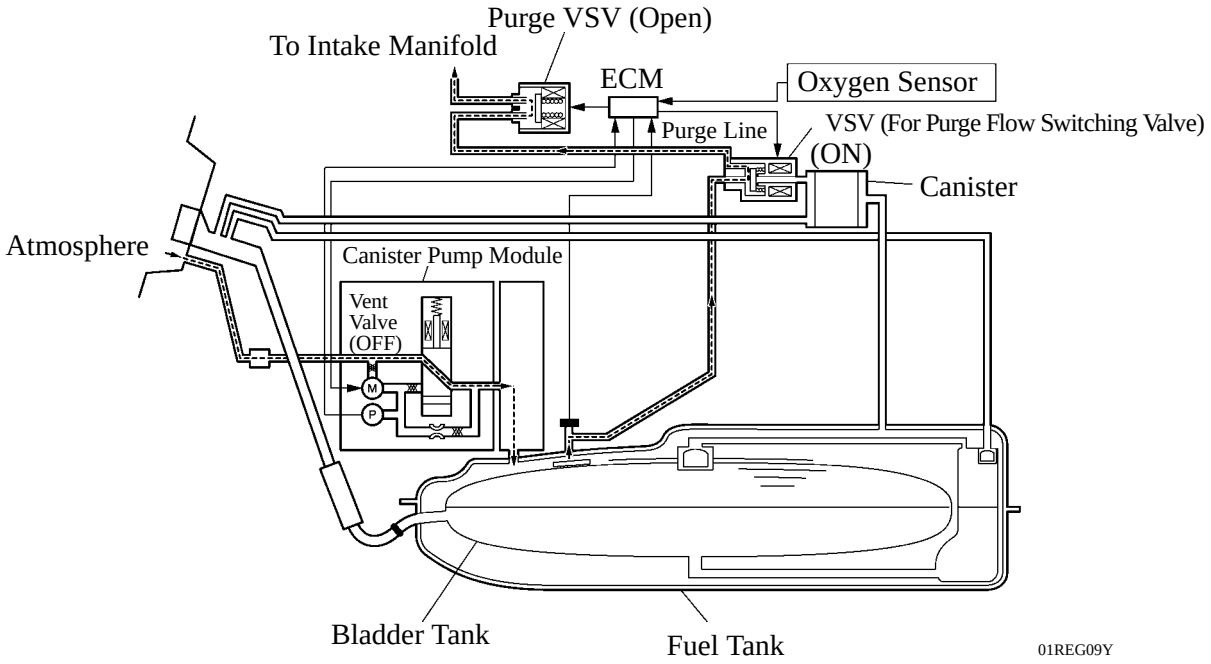
2) ORVR (On-board Refueling Vapor Recovery)

When the internal pressure of the fuel tank increases during refueling, the vapor gas enters the canister. Because the vent valve is always open (even when the engine is stopped) when the system is in a mode other than the monitoring mode, the air that has been cleaned through the canister is discharged outside the vehicle via the fresh air line. If the vehicle is refueled during the monitoring mode, the ECM will recognize the refueling by way of the canister pressure sensor, which detects the sudden pressure increase in the fuel tank, and will open the vent valve.



3) Bladder Tank Monitor

The vent valve and the purge VSV open, enabling the VSV (for purge flow switching valve) to keep the passage between the fuel tank and the purge line open. Then, the air in the fuel tank is drawn in by the vacuum of the intake manifold, and the density of HC in the exhaust gases is measured by the oxygen sensor. Based on the measured density, the ECM detects the leakage of the bladder tank.
If a leak is detected, the MIL illuminates to inform the driver. Also, the DTC can be accessed through the use of a hand-held tester.
For details, refer to the 2006 Prius Repair Manual (Pub. No. RM01R0U).

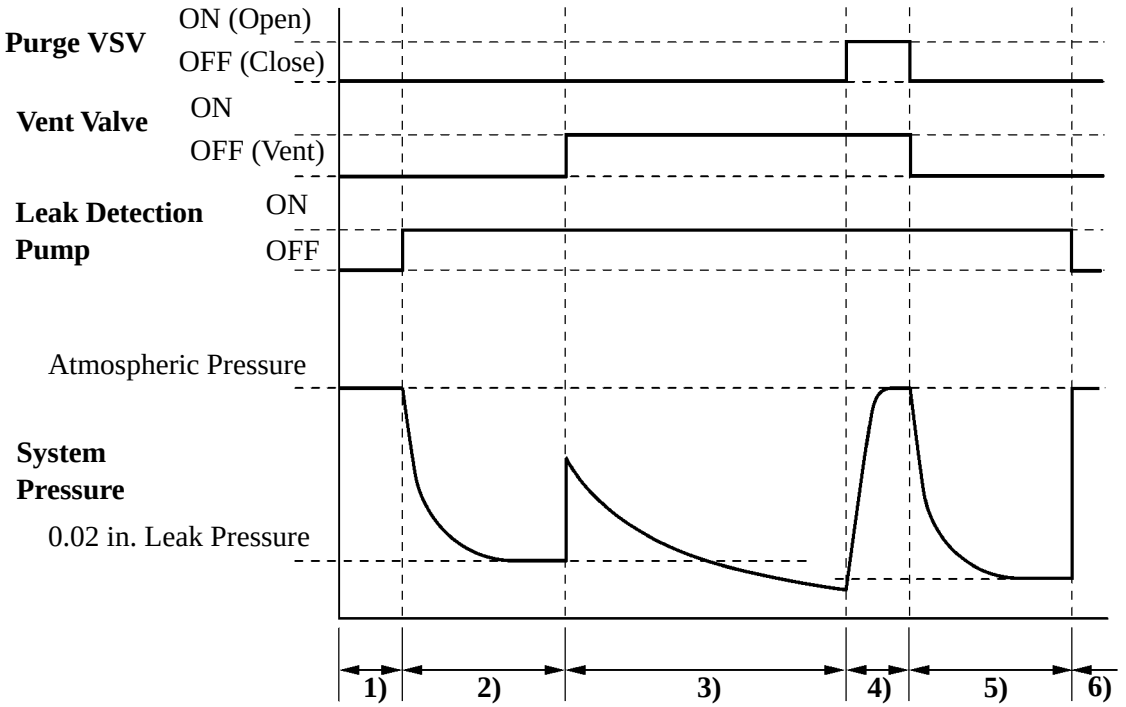


4) EVAP Leak Check

a. General

The EVAP leak check operates in accordance with the following timing chart:

▶ Timing Chart ◀



Order	Operation	Description	Time
1)	Atmospheric Pressure Measurement	ECM turns vent valve OFF (vent) and measures EVAP control system pressure to memorize atmospheric pressure.	10 sec.
2)	0.02 in. Leak Pressure Measurement	Leak detection pump creates negative pressure (vacuum) through 0.02 in. orifice and pressure is measured. ECM determines this as 0.02 in. leak pressure.	60 sec.
3)	Vacuum Introduction	Leak detection pump creates negative pressure (vacuum) in EVAP control system until the pressure stabilizing and measures and memorizes the stabilizing pressure. If EVAP control system pressure does not stabilize within 15 minutes, ECM cancels EVAP monitor.	Within 15 min.
4)	Purge VSV Monitor	ECM opens purge VSV and measures EVAP control system pressure increase. If increase is large, ECM interprets this as normal.	10 sec.
5)	Repeat 0.02 in. Leak Pressure Measurement	Leak detection pump creates negative pressure (vacuum) through 0.02 in. orifice and pressure is measured. ECM determines this as 0.02 in. leak pressure. ECM compares 0.02 in. leak pressure with pressure memorized in vacuum introduction, and detects any leakage.	60 sec.
6)	Final Check	ECM measures atmospheric pressure and records monitor result.	—

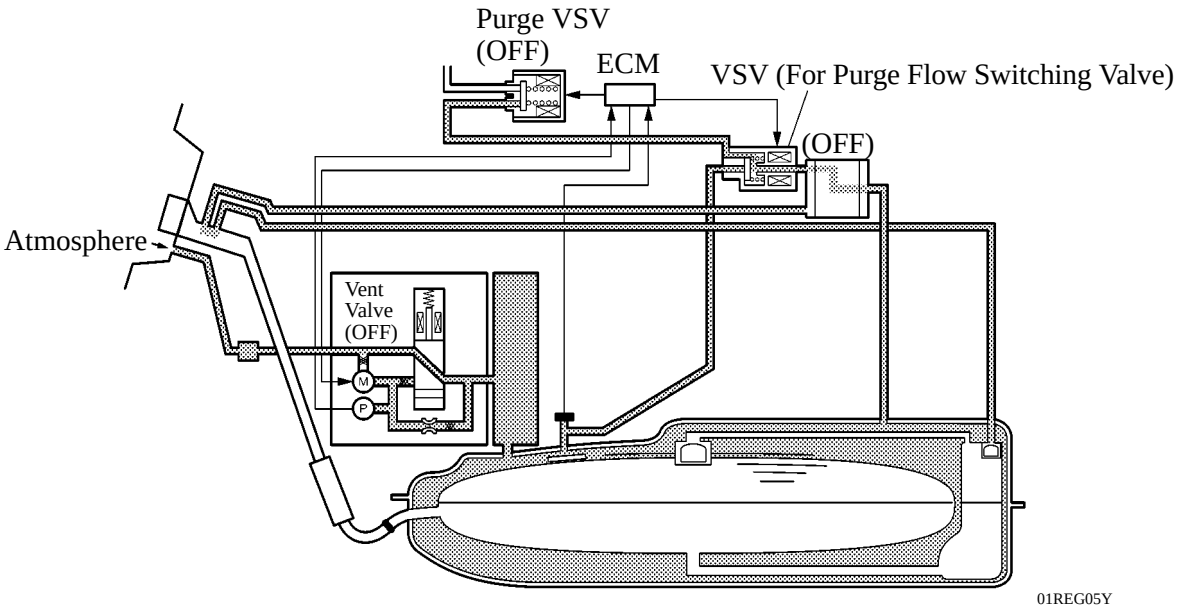
NF

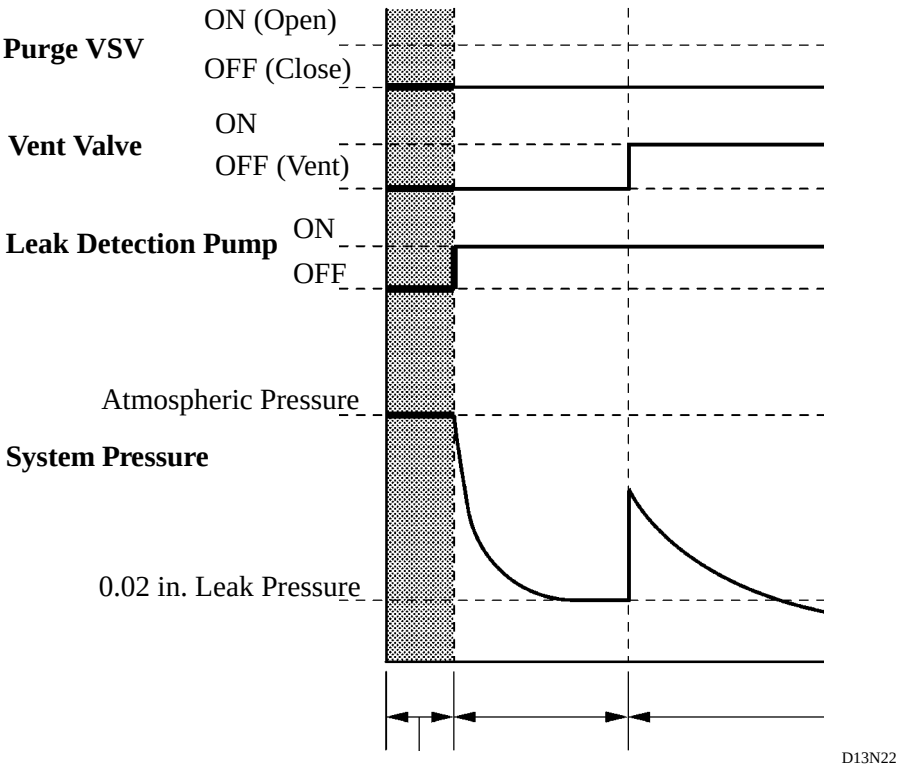
b. Atmospheric Pressure Measurement

1) When the power source mode is selected to OFF, the purge VSV and the vent valve are turned OFF. Therefore, the atmospheric pressure is introduced into the canister.

2) The ECM measures the atmospheric pressure through the signals provided by the canister pressure sensor.

3) If the measurement value is out of standards, the ECM actuates the leak detection pump in order to monitor the changes in the pressure.

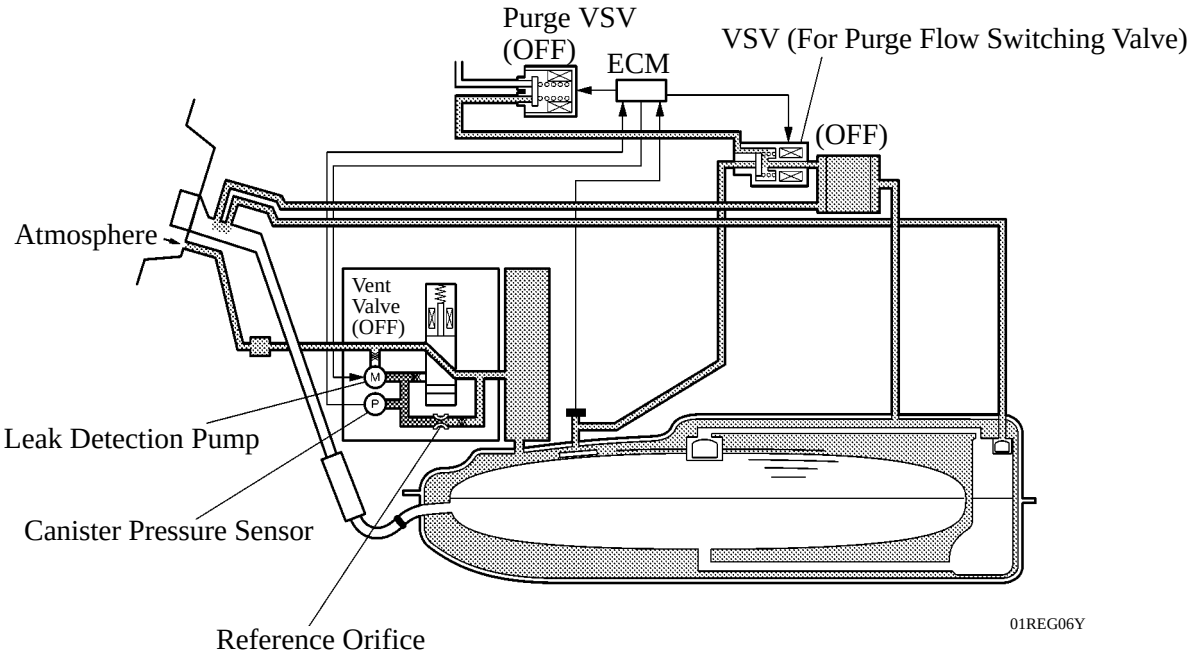


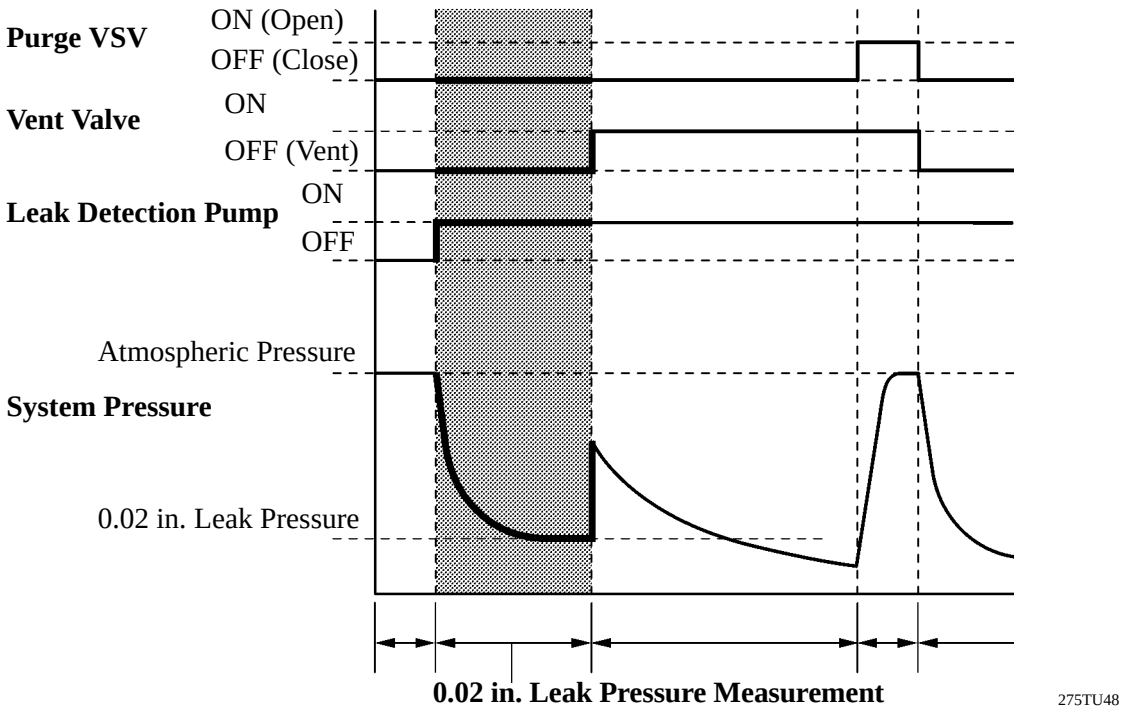


Atmospheric Pressure Measurement

c. 0.02 in. Leak Pressure Measurement

1) The vent valve remains OFF, and the ECM introduces atmospheric pressure into the canister and actuates the leak detection pump in order to create a negative pressure.
2) At this time, the pressure will not decrease beyond a 0.02 in. leak pressure due to the atmospheric pressure that enters through a 0.02 in. diameter reference orifice.
3) The ECM compares the logic value with this pressure, and stores it as a 0.02 in. leak pressure in its memory.
4) If the measurement value is below the standard, the ECM will determine that the reference orifice is clogged and store DTC (Diagnostic Trouble Code) P043E in its memory.
5) If the measurement value is above the standard, the ECM will determine that a high flow rate pressure is passing through the reference orifice and store DTCs P043F, P2401 and P2402 in its memory.

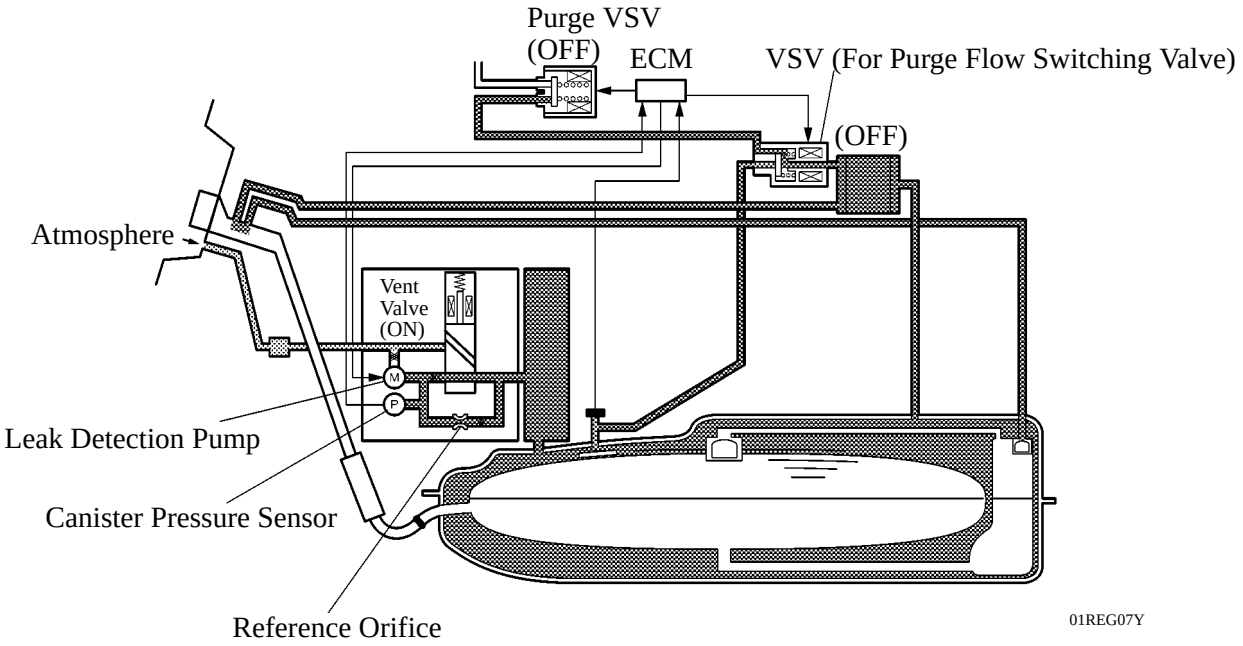


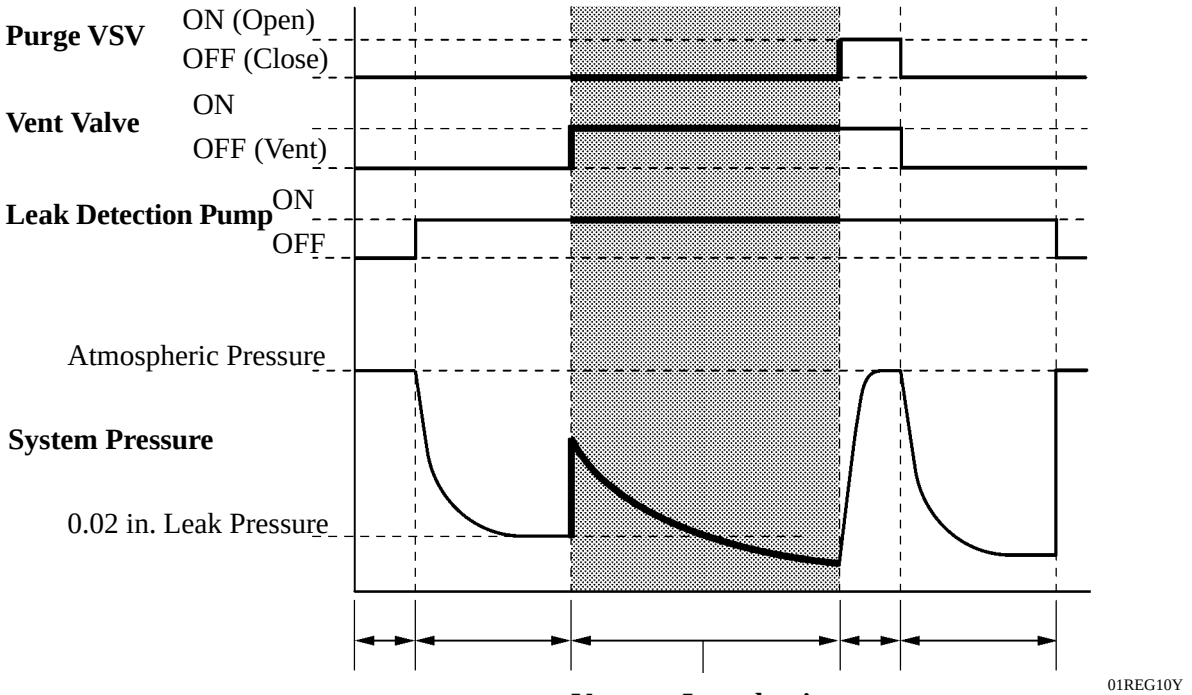


d. Vacuum Introduction

1) While the leak detection pump is actuated, the ECM turns ON the vent valve in order to introduce a vacuum into the canister.

2) When the pressure in the system stabilizes, the ECM measures and memorizes the pressure.





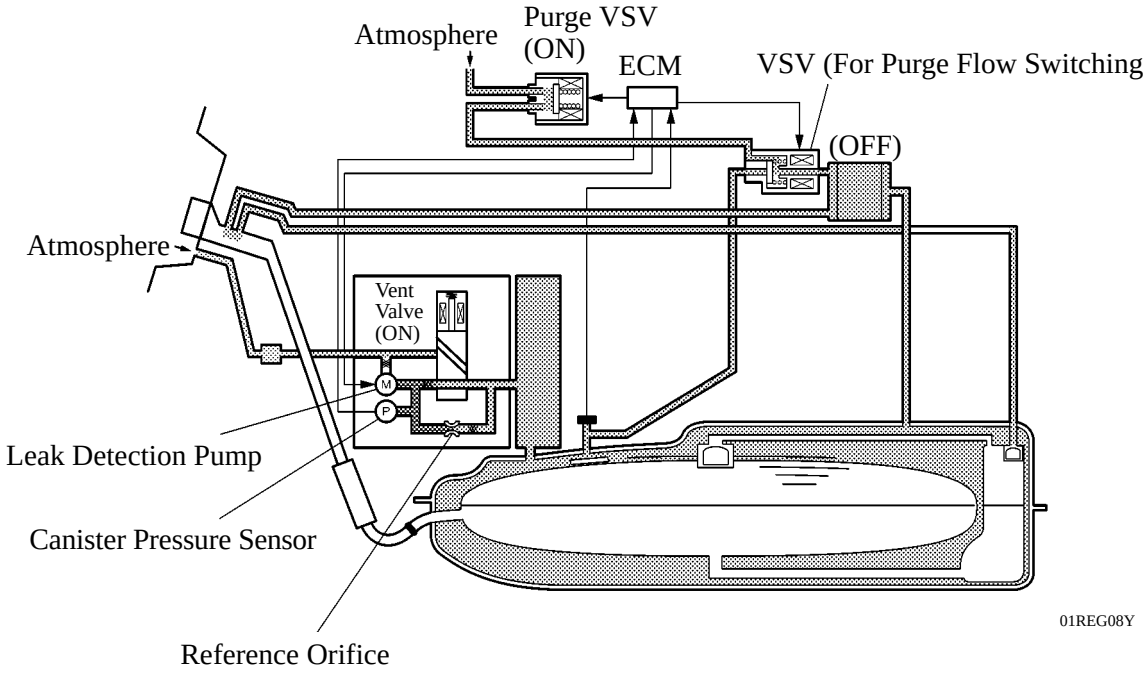
Vacuum Introduction

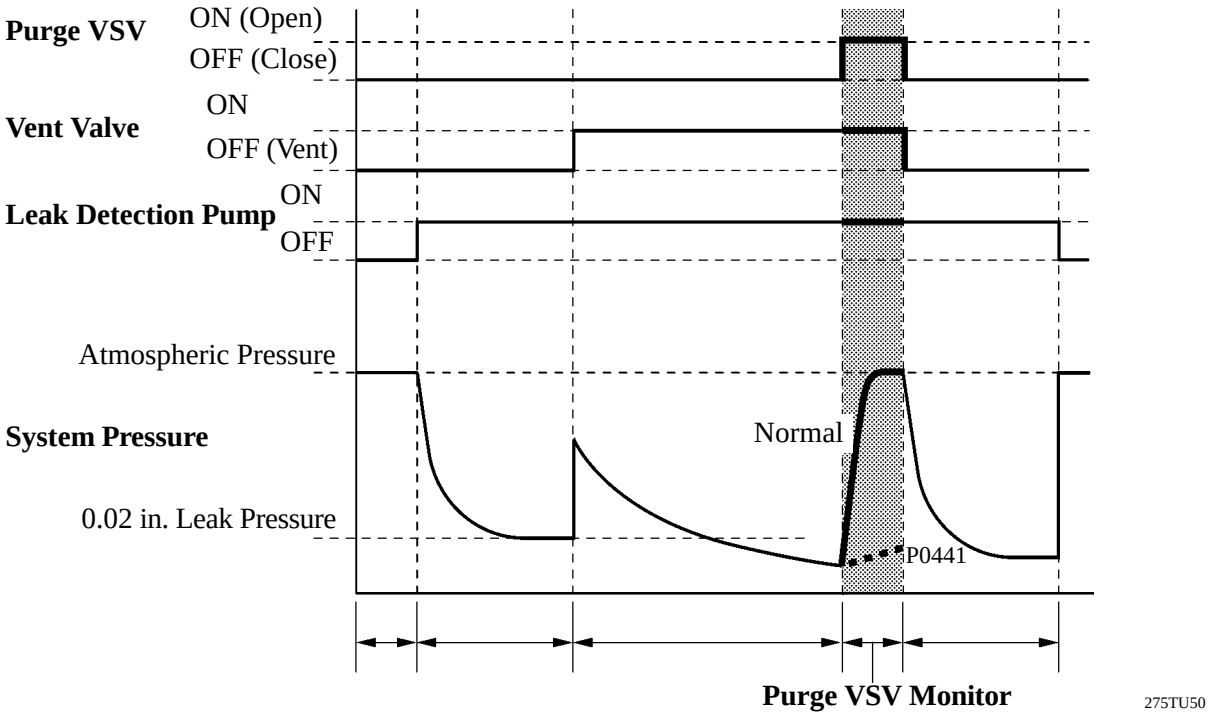
e. Purge VSV Monitor

1) After an EVAP leak check is completed, the ECM turns ON (open) the purge VSV with the leak detection pump actuated, and introduces the atmospheric pressure from the intake manifold to the canister.

2) If the pressure change at this time is within the normal range, the ECM determines the condition to be normal.

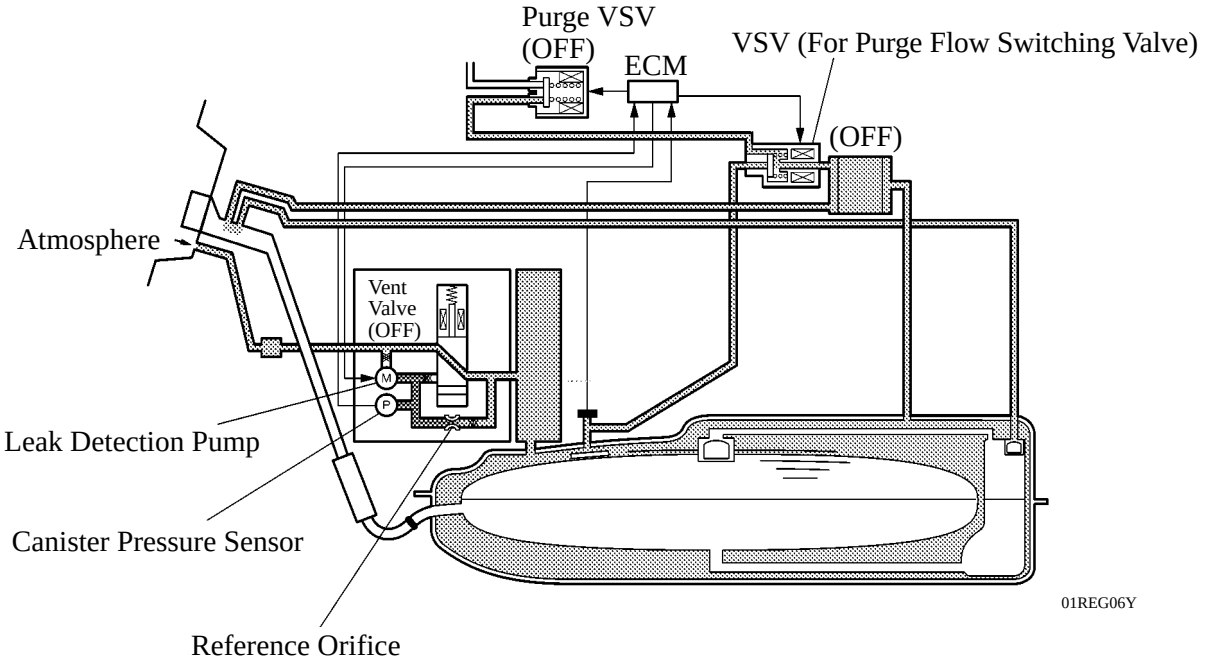
3) If the pressure is out of the normal range, the ECM will stop the purge VSV monitor and store DTC P0441 in its memory.

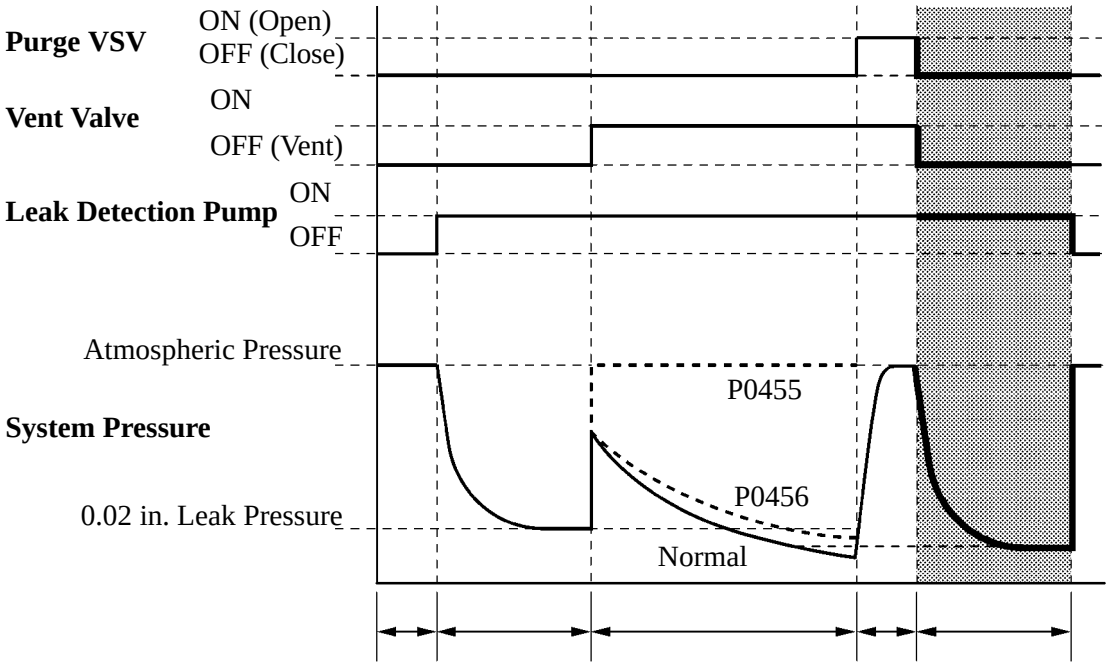




f. Repeat 0.02 in. Leak Pressure Measurement

1) While the ECM operates the vacuum pump, the purge VSV and vent valve turn OFF and a repeat 0.02 in. leak pressure measurement is performed.
2) The ECM compares the measured pressure with the pressure memorized in vacuum introduction.
3) If the pressure memorized in vacuum introduction is below the measured value, the ECM determines that there is no leakage.
4) If the pressure memorized in vacuum introduction is above the measured value and near atmospheric pressure, the ECM determines that there is a gross leakage (large hole) and stores DTC P0455 in its memory.
5) If the pressure memorized in vacuum introduction is above the measured value, the ECM determines that there is a small leakage and stores DTC P0456 in its memory.





Repeat 0.02 in. Pressure Measurement

4. Diagnosis

The following DTCs (Diagnostic Trouble Codes) are added.

DTC	Detection Item	DTC	Detection Item
P043E	Evaporative Emission Control System Reference Orifice Clog Up	P1453	Fuel Tank Pressure Sensor/Switch High Input
P043F	Evaporative Emission Control System Reference Orifice High Flow	P2401	Evaporative Emission System Leak Detection Pump Control Circuit Low
P0450	Evaporative Emission Control System Pressure Sensor/Switch	P2402	Evaporative Emission System Leak Detection Pump Control Circuit High
P1450	Fuel Tank Pressure Sensor Circuit	P2419	Evaporate Emission System Switching Valve Control Circuit Low
P1451	Fuel Tank Pressure Sensor/Switch Range/Performance	P2420	Evaporate Emission System Switching Valve Control Circuit High
P1452	Fuel Tank Pressure Sensor/Switch Low Input		

The detection items for the following DTCs have been changed.

DTC	Detection Item	
	’06 Model	’05 Model
P0451	Evaporative Emission Control System Pressure Sensor/Switch Range/Performance	Fuel Tank Pressure Sensor Circuit
P0452	Evaporative Emission Control System Pressure Sensor/Switch Low Input	Fuel Tank Pressure Sensor/Switch Low Input
P0453	Evaporative Emission Control System Pressure Sensor/Switch High Input	Fuel Tank Pressure Sensor/Switch High Input

TIRE PRESSURE WARNING SYSTEM

◀DESCRIPTION

▶A direct-sensing type tire pressure warning system has been newly provided as standard equipment.

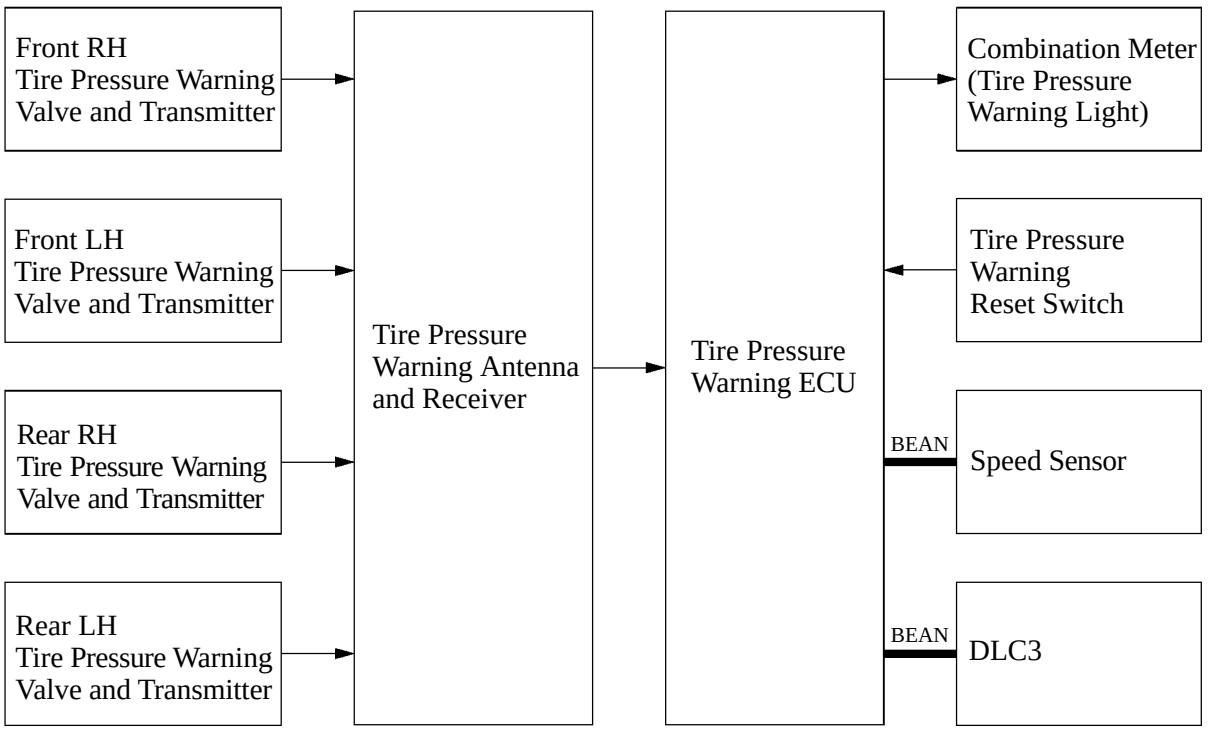
▶If the vehicle continues to be driven with one or more of the four tires inflated to a low tire pressure that could cause problems in driving, this system will illuminate the tire pressure warning light to inform the driver of the low tire pressure.

▶Furthermore, this system directly senses the each tire pressure through a tire pressure warning valve and transmitter that is attached to each wheel.

▶A tire pressure warning reset switch, which sets the standard tire pressure value, has been provided.

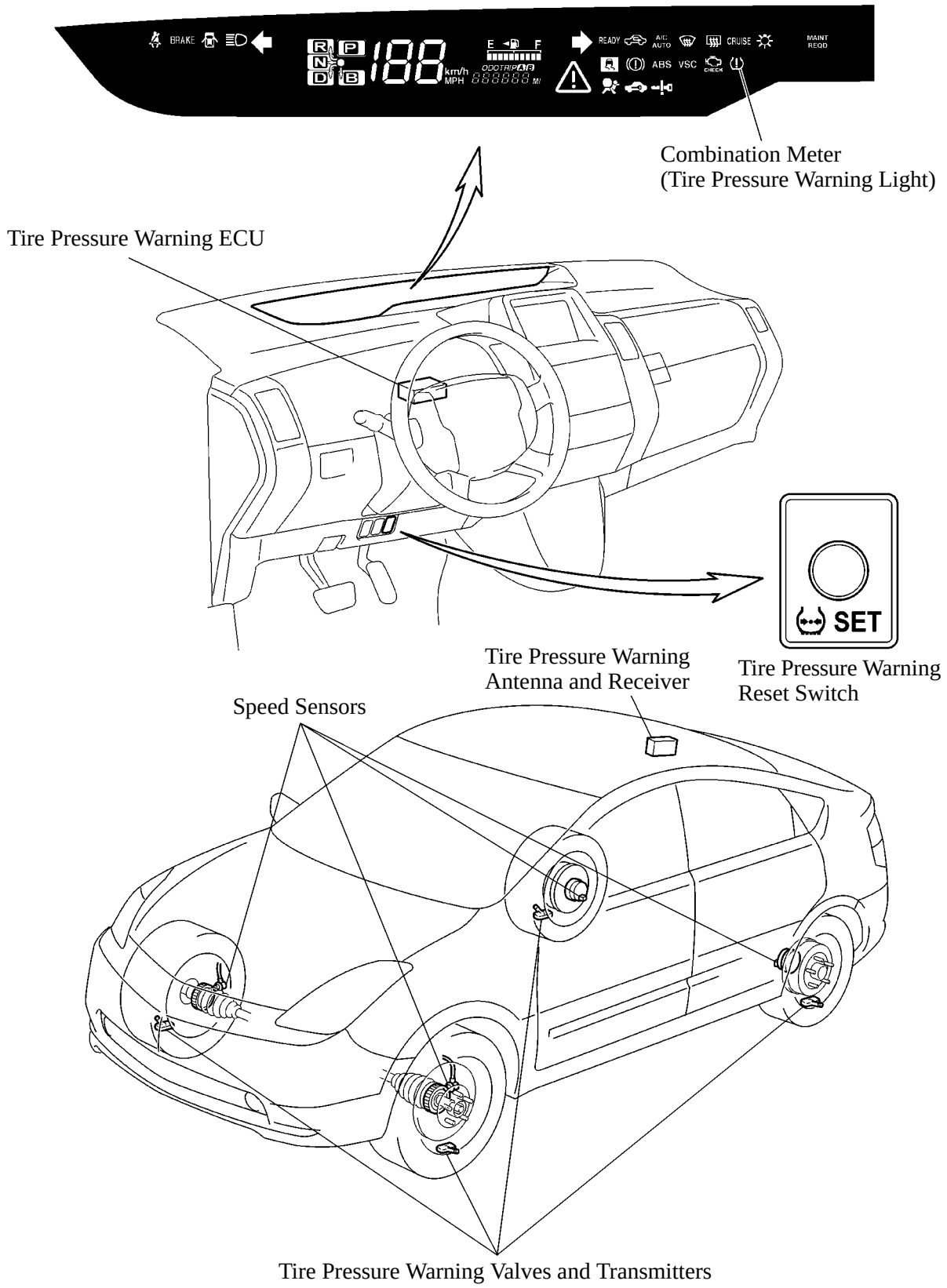
◀CONSTRUCTION AND OPERATION

1. System Diagram



01RCH02Y

2. Layout of Main Components



01RCH01Y

3. Function of Main Components

Component	Function
Tire Pressure Warning Valve and Transmitter	Integrated in the air valve on the disc wheel, this transmitter measures the tire pressure and transmits the measured value and an ID code for identifying the wheel.
Tire Pressure Warning Antenna and Receiver	Located inside the D pillar of right side, it receives signals from the transmitters, and transmits them to tire pressure warning ECU.
Tire Pressure Warning ECU	Recognizes that the signals are from the vehicle's own wheels, based on the received ID code signals. If the measured values exceed a specified value, this ECU transmits signals to illuminate the tire pressure warning light in the combination meter.
Speed Sensor	Detects the wheel speed of each wheel.
Tire Pressure Warning Light	Located in the combination meter, this light informs the driver of a low tire pressure or a system failure.
Tire Pressure Warning Reset Switch	If this switch is pressed continuously for 3 seconds or longer, the system will accept initialization.

4. Tire Pressure Warning System Composition

▶ The tire pressure warning system consists of the tire pressure warning valve and transmitter, tire pressure warning antenna and receiver, tire pressure warning ECU, tire pressure warning light, and tire pressure warning reset switch.

▶ The four tire pressure warning valves and transmitters measure the pressure of the respective tires, and transmit the ID codes of the transmitters and the measurement results through radio wave signals. The transmitted signals are received by tire pressure warning antenna and receiver, which is mounted inside D pillar of right side. The tire pressure warning ECU checks whether the received ID codes match those that are pre-registered. If the ID codes match, the tire pressure warning ECU compares the measurement results with the threshold values, and illuminates the tire pressure warning light in the combination meter if the pressures are below the threshold values.

5. Structure of Tire Pressure Warning Valve and Transmitter

▶ The tire pressure warning valve and transmitter is integrated in the air valve of a disc wheel.

▶ This transmitter operates with a lithium battery, which lasts approx. 10 years. If the battery voltage drops, the tire pressure warning ECU stores the DTC (Diagnostic Trouble Code) in its memory. If the voltage drops even further and the transmitter stops working, it stores the DTC in memory and illuminates the tire pressure warning light to alert the driver.

▶ Transmitters with four different ID code ranges are used on one vehicle.

▶ Each transmitter has a built-in semiconductor to directly measure the tire pressure.

▶ In addition to the measured pressure, the identification data of the transmitter is included in the data that is transmitted to the tire pressure warning antenna and receiver. This is to enable the tire pressure warning antenna and receiver to determine that the received data came from its own tires.

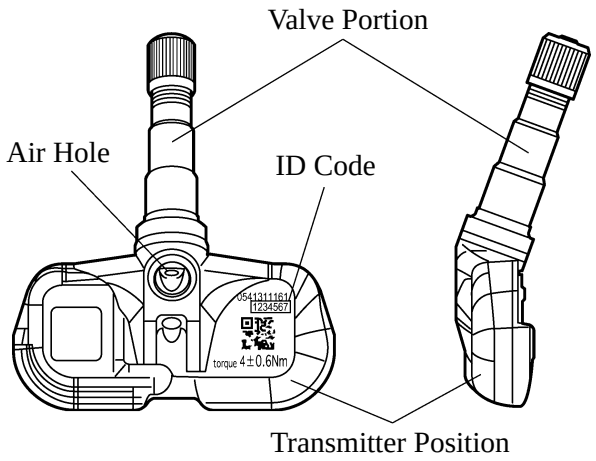
▶ Frequency of the sensor is 314.98 MHz.

— REFERENCE —

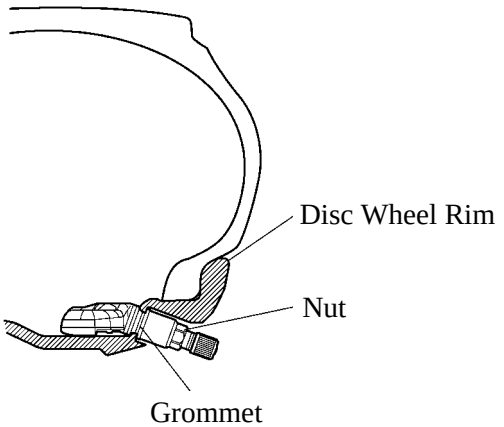
▶ *Make sure to install the tire pressure warning valves and transmitters to the disc wheels in accordance with the prescribed procedure. Failure to do so could result in the incorrect measurement of the tire pressure.*

▶ *Make sure to replace the tires in accordance with the prescribed procedure. Failure to do so could damage the tire pressure warning valves and transmitters.*

▶ *For further details regarding the above, refer to the 2006 PRIUS Repair Manual (Pub No. RM01R0U).*



01NCH125Y



01NCH126Y

Service Tip

▶ If the lithium battery is depleted, replace the entire tire pressure warning valve and transmitter assembly.

▶ When replacing the tire pressure warning valve and transmitter, select them so that all the four transmitters will have different ID codes.

▶ A new tire pressure warning valve and transmitter that is available as a service part is in the sleep mode in its initial state to prevent the battery from depleting. After the tire pressure warning valve and transmitter and the tire are correctly mounted on the disc wheel, inflating the tire to the specified pressure causes the sleep mode to cancel.

▶ For further details regarding the above, refer to the 2006 PRIUS Repair Manual (Pub No. RM01R0U).

6. Tire Pressure Warning Reset Switch

▶ By operating the tire pressure warning reset switch, the tire pressure warning ECU can be set to issue a warning at the tire pressure that corresponds to the type of tires. Therefore, the dealer must set the warning threshold to the proper value in order to comply with the local regulations.

▶ Operate the tire pressure warning reset switch only after the tire pressure of all 4 tires has been adjusted on the vehicle.

▶ To initialize the system, press and hold the tire pressure warning reset switch for 3 seconds or longer with the power source mode IG-ON. After the system has been initialized, the warning light blinks 3 times at 0.5Hz.

▶ During initialization, the tire pressure sensor measures the tire pressure, and registers the signals that are transmitted into the tire pressure warning ECU at a frequency of one per minute. The initialization process is completed when the signals from the 4 tires have been received.

Service Tip

▶ Since the initialized values are dependent upon the accuracy of the tire pressure gauge to be used, make sure to use a tire pressure gauge that has been properly calibrated.
▶ The system must be initialized in the following conditions:
1) New vehicle delivery
2) Tire pressure sensor replacement
3) Replacement with tires of different size (tire pressure)
4) Tire pressure warning ECU replacement

Caution

If the system is initialized with tires whose tire pressure deviates from the threshold pressure, the system will accept initialization at those values. Therefore, make sure to initialize only after the tires have been inflated to the specified tire pressure.

7. Tire Pressure Warning Light

▶ The tire pressure warning light is located in the combination meter.

▶ This warning light illuminates or blinks in accordance with signals from the tire pressure warning ECU if the vehicle's own tires are inflated with low pressure or if a malfunction occurs in the system.

▶ The output operations of the tire pressure warning light are listed below.

Condition	Outline
System check	Illuminates for 3 seconds (Power source mode selected to IG-ON, when system is normal)
Low tire pressure detected	Illuminates
Tire pressure initialization	Blinks 3 times at 0.5 Hz (When tire pressure warning reset switch is pressed for 3 seconds or longer)
System failure	After blinking for 1 minute, illuminates

8. Diagnosis

The new diagnostic system features improved serviceability. For details on the diagnostic methods and diagnostic items, refer to the 2006 PRIUS Repair Manual (Pub No. RM01R0U).

9. Fail-safe

In the event of the malfunction in the tire pressure warning valve and transmitter circuits or tire pressure warning ECU and receiver, the tire pressure warning system is prohibited, and the tire pressure warning light illuminates or blinks to inform the driver of the failure.

10. Precautions on Tire Pressure Warning System

- ▶ If the tire pressure warning light illuminates, reduce the vehicle speed as soon as possible.
- ▶ Avoid making sudden steering or braking maneuvers because low-pressure tires could negatively affect handling and braking performance.
- ▶ Make sure to use only the supplied valve caps (made of aluminum) on the tire pressure warning valve and transmitter. If a metal cap (made of brass) is used, the cap could become seized.
- ▶ Do not use a flat tire sealant as it could cause the tire pressure warning valve and transmitter to malfunction.
- ▶ To protect the tire pressure warning valve and transmitter from damage, make sure to follow the instructions in the Repair Manual to dismount a tire from a wheel.
- ▶ Perform pre-driving inspection and regular inspection in the same manner as for ordinary vehicles.
- ▶ If the tire pressure warning light blinks when the power source mode is selected to IG-ON, the tire pressure warning system is not working properly. The system will be disabled in the following conditions: (When the condition becomes normal, the system will work properly.)

Tires not equipped with tire pressure warning valves and transmitters are used.
The ID code on the tire pressure warning ECU is not registered.
Electric devices or facilities using similar radio wave frequencies are nearby.
If a radio set at similar frequencies is in use in the vehicle.
If a window tint that affects the radio wave signals is installed.
There is a lot of snow or ice on the vehicle, in particular around the wheels or wheel housings.
Non-genuine Toyota wheels are used.
If a special set of tires is used.
Tire chains are used.
The battery of the tire pressure warning valve and transmitter is depleted.
The tire pressure is extremely high (500 kPa or more).

SRS AIRBAG SYSTEM

FRONT PASSENGER OCCUPANT CLASSIFICATION SYSTEM

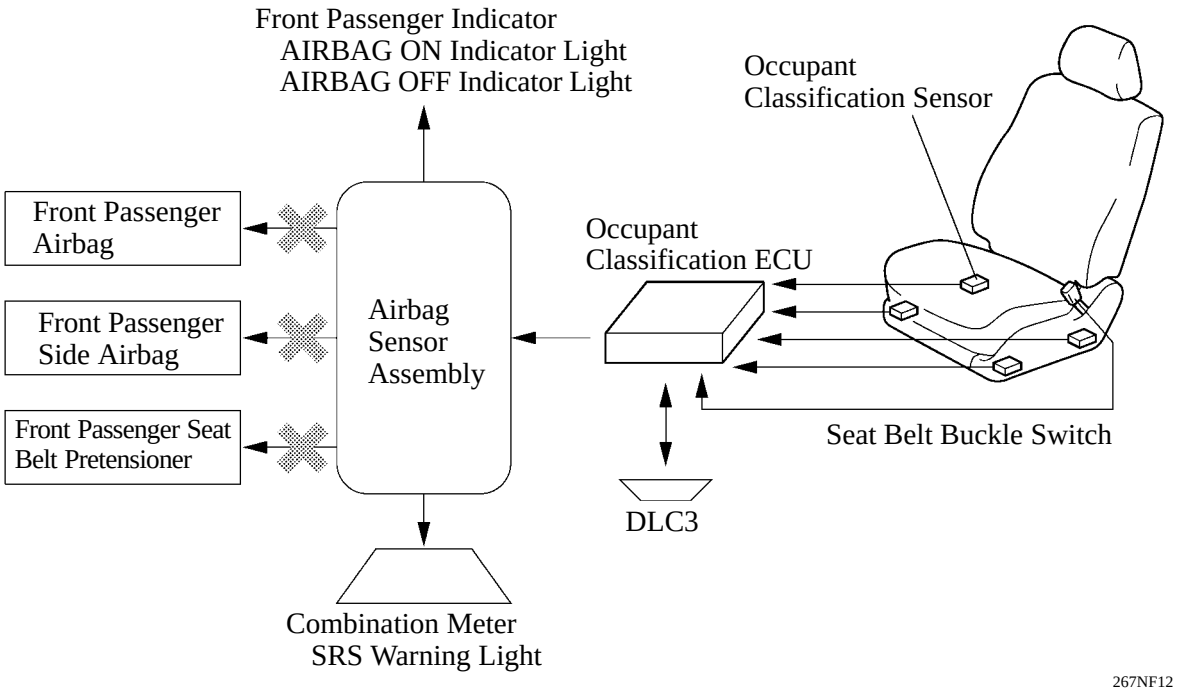
1. General

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.

▶ System Diagram ◀



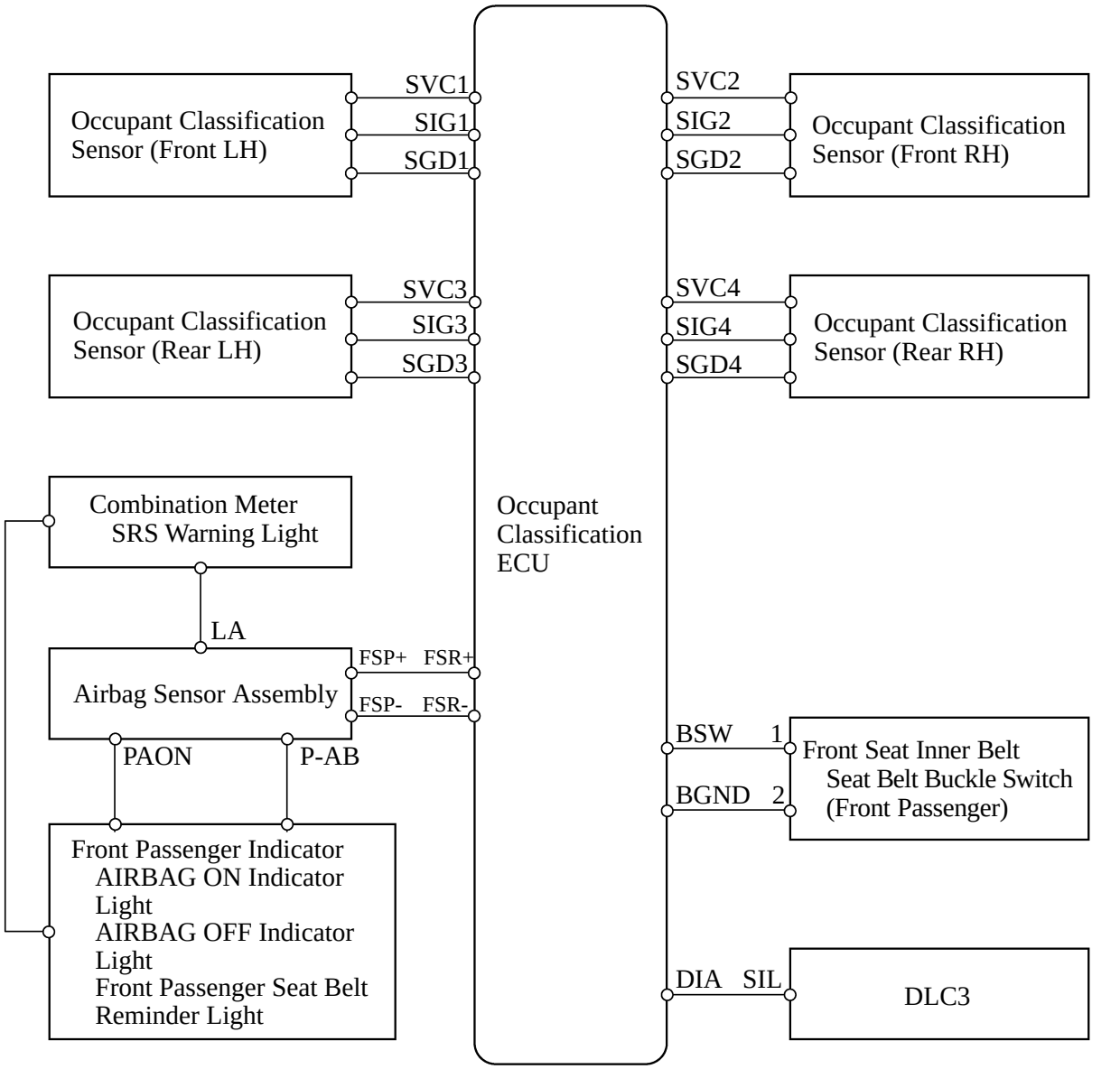
Service Tip

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.

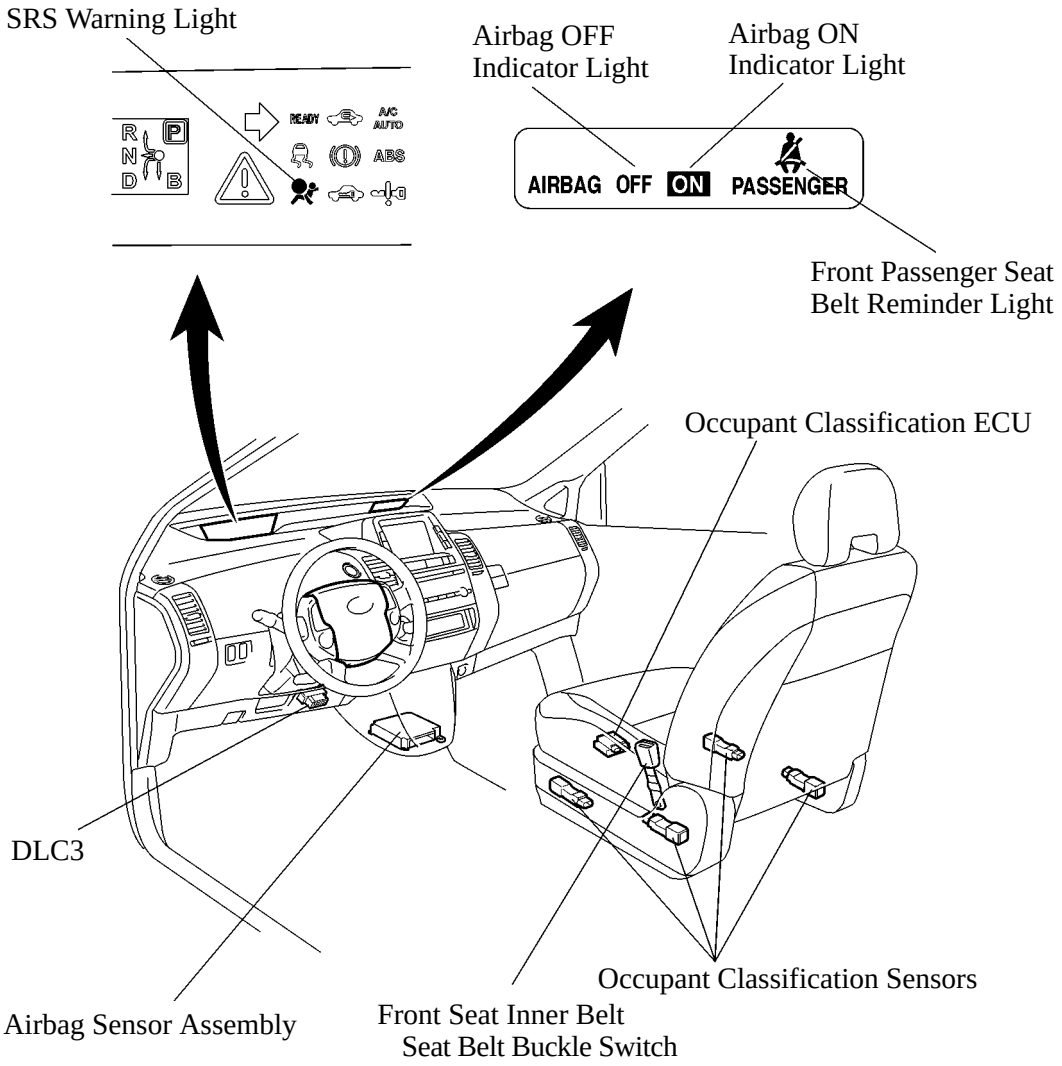
For details, see the 2006 Prius Repair Manual (Pub. No. RM01R0U).

2. Wiring Diagram



NF

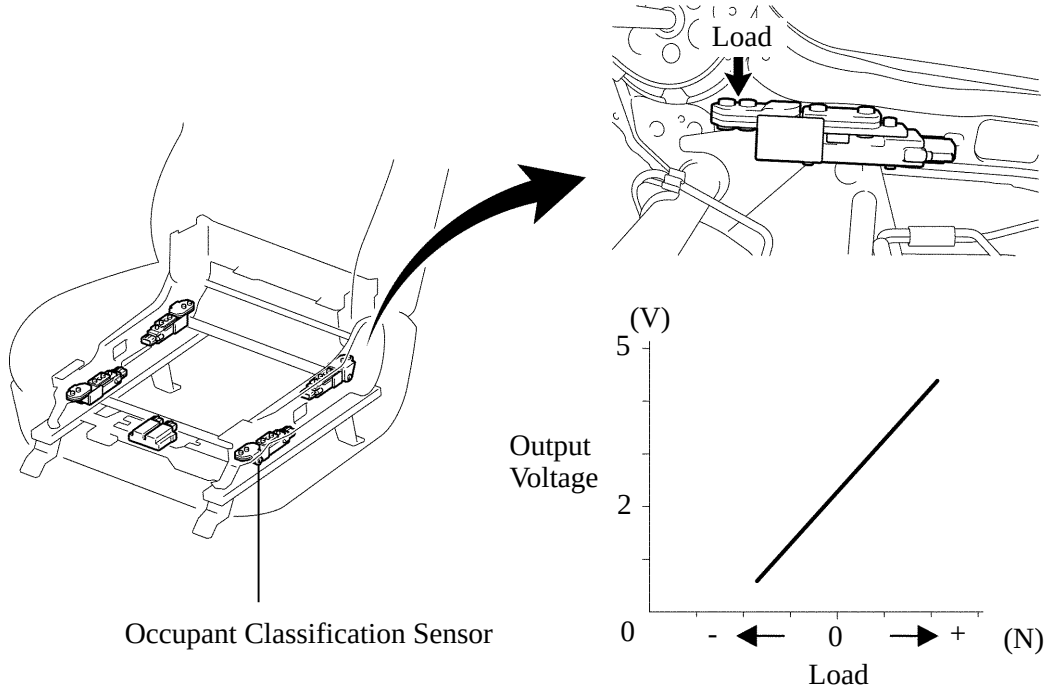
3. Layout of Main Components



01SBE03Y

2. 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.

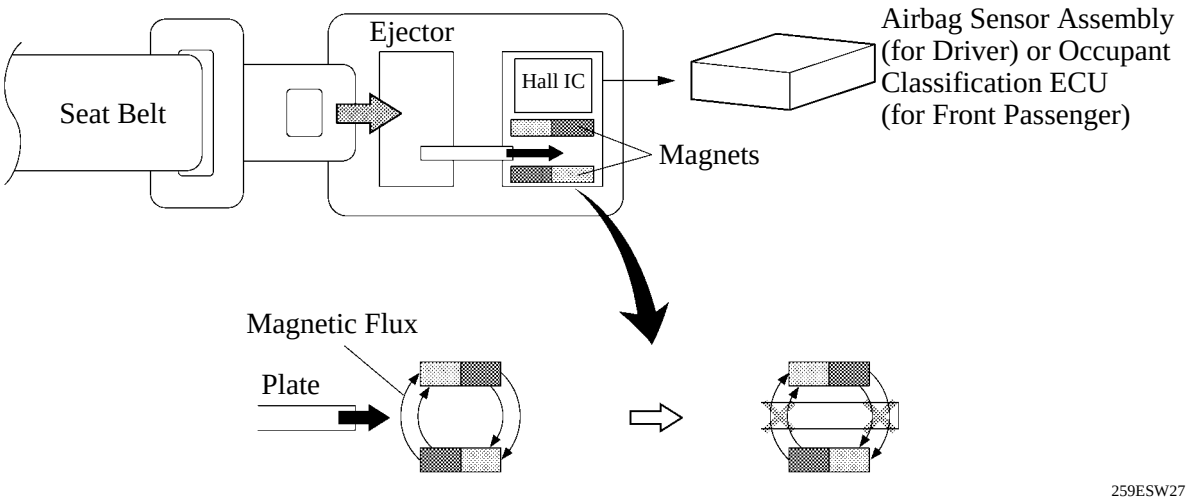


259ESW26

3. Seat Belt Buckle Switch

The seat belt buckle switch which consists of an ejector with a plate, a Hall IC, and two magnets is integrated in the front seat inner belt assembly.

The ejector with plate blocks the magnetic flux density between the two magnets. The Hall IC outputs this change to the airbag sensor assembly.



259ESW27

Seat belt not fastened **Seat belt fastened**

NF

4. System Operation

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 power source mode is IG-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 power source mode.

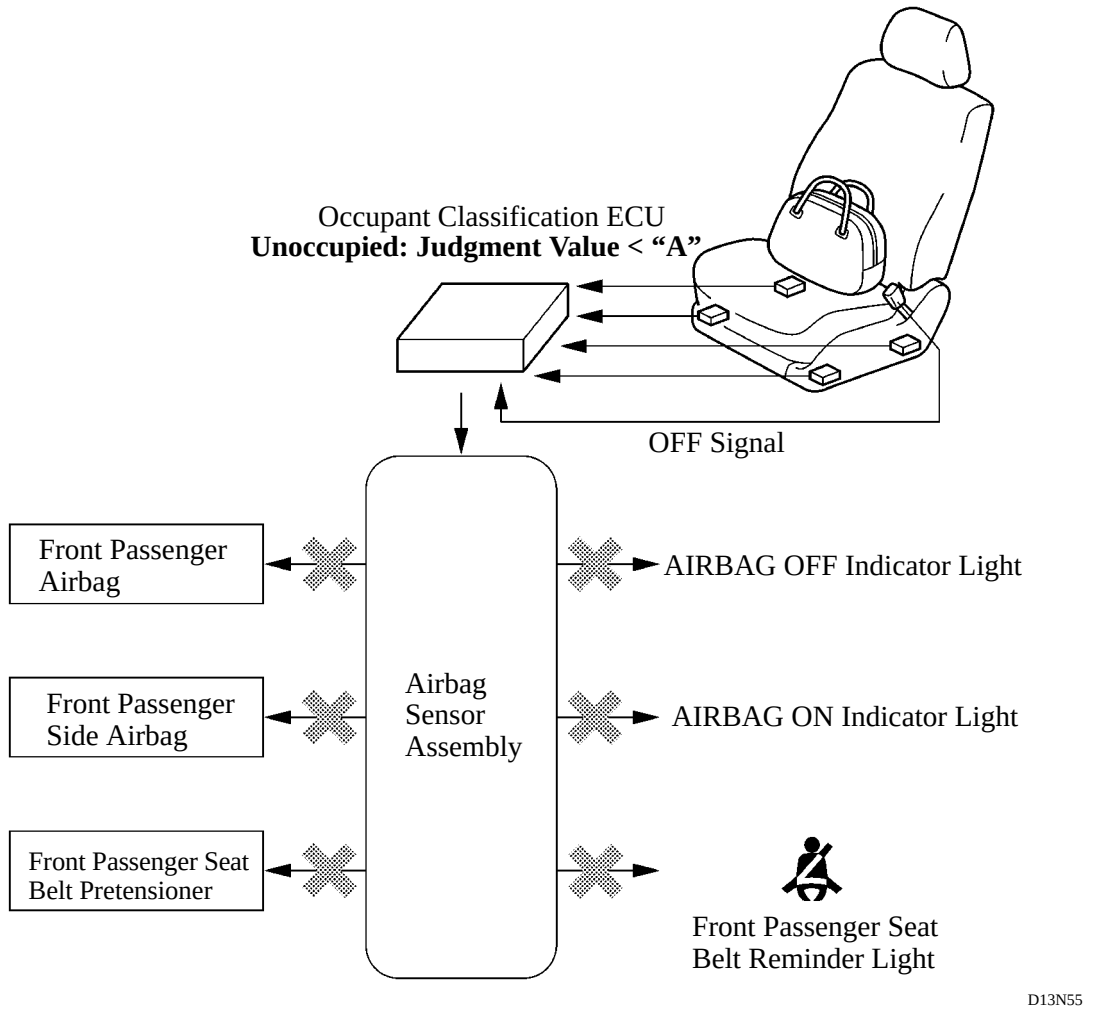
The occupant classification ECU contains criteria value “A” to judge whether the seat is being occupied by a child or a child seat in accordance with the signals from the four occupant classification sensors and seat belt buckle switch, and criteria value “B” to judge whether the occupant is an adult 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.

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 power source mode is selected to IG-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.

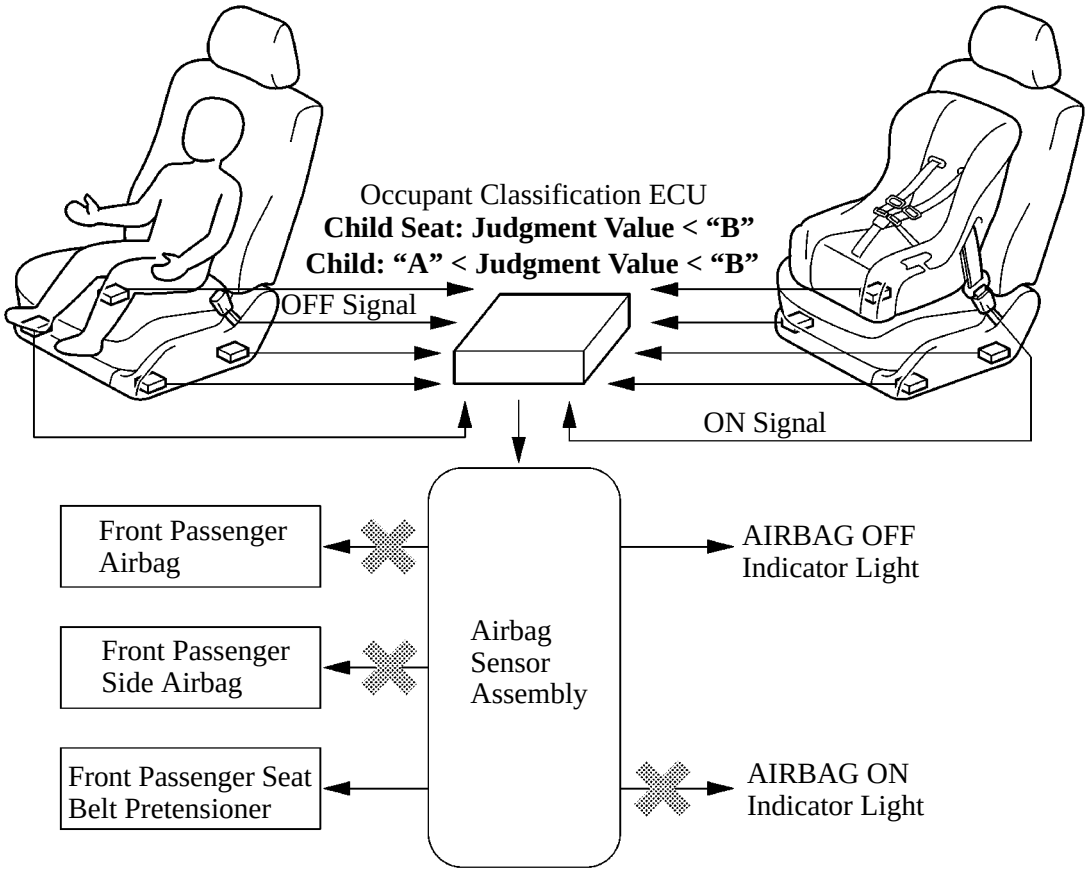


Child Seat or Child Judgment

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 power source mode is selected to IG-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 front passenger side airbag have been deactivated.

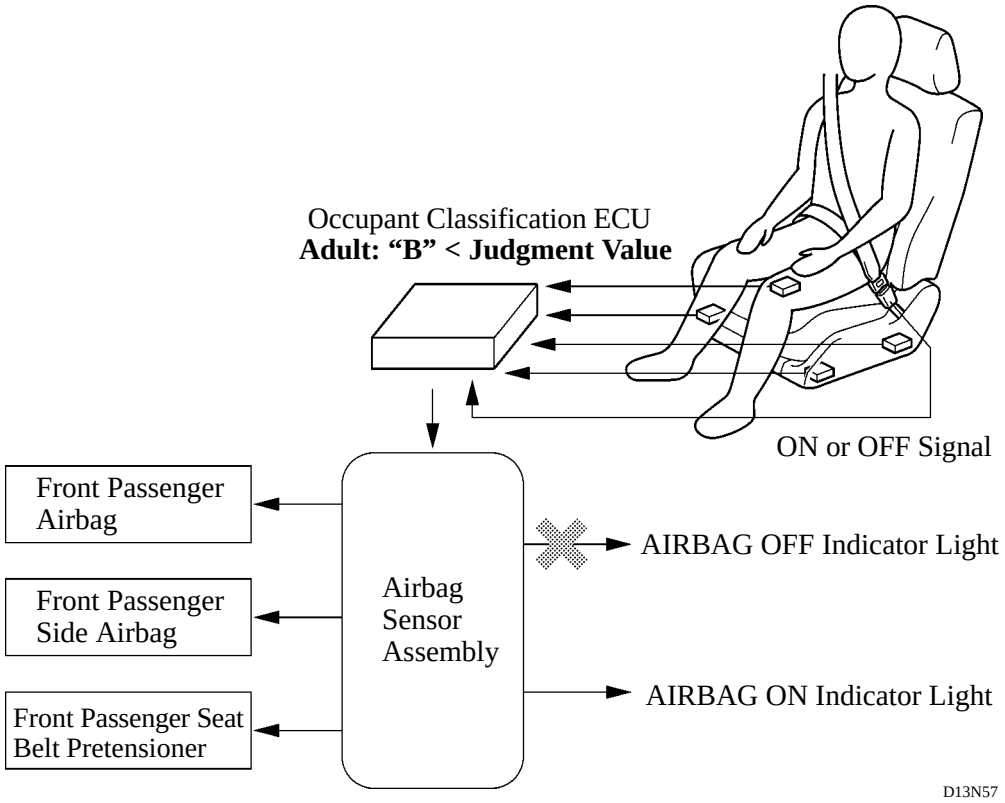


After the occupant classification ECU judges that child seat is installed, the AIRBAG OFF indicator light does not go OFF unless the seat belt buckle switch is turned OFF.

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.

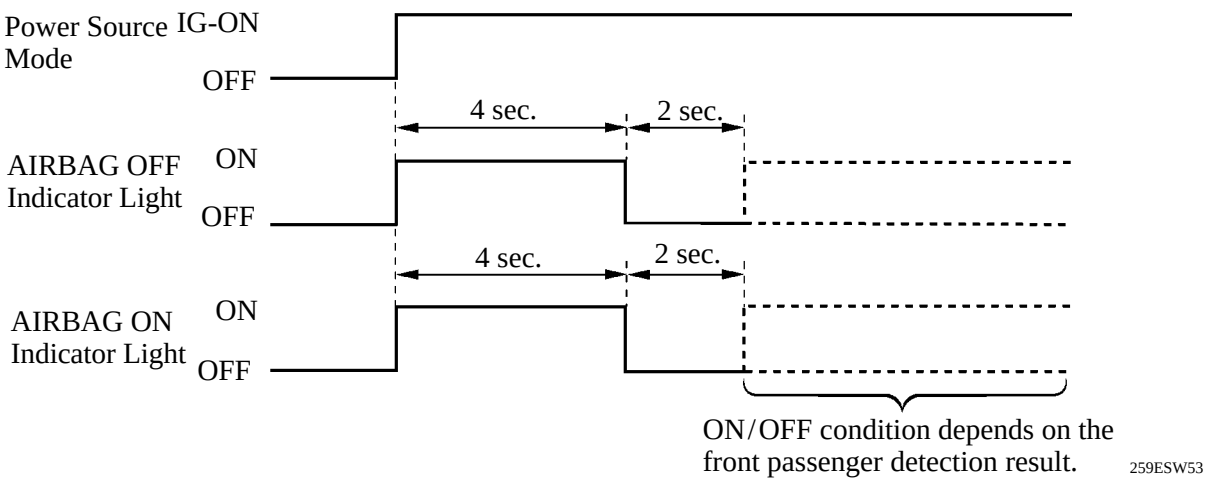
If the power source mode is selected to IG-ON in this state, the system performs an initial check and illuminates the AIRBAG ON indicator light, indicating that the front passenger airbag and front passenger side airbag are active.



After the occupant classification ECU judges that the occupant is as 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 10 seconds before switching the child judgment.

Initial Check

After the power source mode is selected to IG-ON, the airbag sensor assembly lights up the AIRBAG ON/OFF indicator lights based on the timing chart below in order to check the indicator light circuits.



5. 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 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 front passenger side airbag 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 seatback.

Do not put weight on the front passenger seat by putting your hands or feet on the front passenger 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 seatback so far that it touches a rear seat. This may cause the AIRBAG OFF indicator light to be illuminated, which indicates that the front passenger 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.

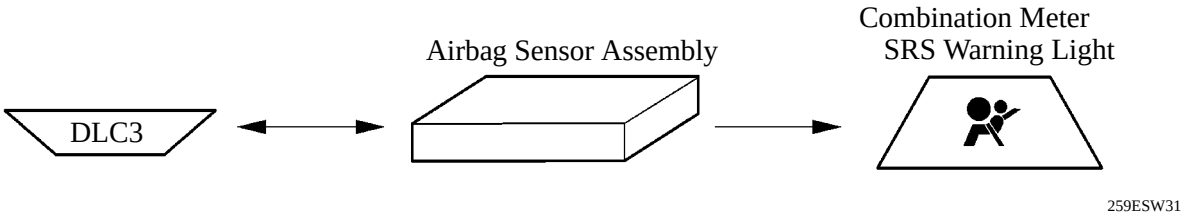
Child restraint systems installed on the rear seat should not contact the front seatbacks.

■DIAGNOSIS

1. General

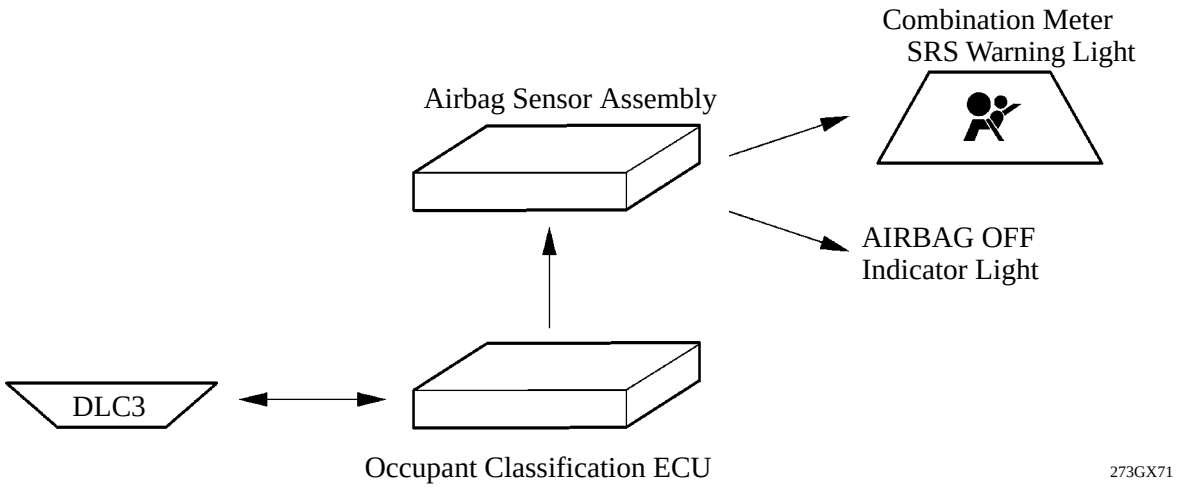
If the airbag sensor assembly detects a malfunction in the SRS airbag system, the airbag sensor assembly stores the malfunction data in memory, in addition to illuminating the SRS warning light.

The airbag sensor assembly outputs malfunction data, 5-digit DTCs (Diagnostic Trouble Codes) or 2-digit DTCs, to the hand-held tester or the SRS warning light.



If the occupant classification ECU detects a malfunction in the occupant classification system, it stores the malfunction data in memory via the airbag sensor assembly, illuminating the SRS warning light and AIRBAG OFF indicator light.

The occupant classification ECU outputs 5-digit DTCs to the hand-held tester.



2. DTC of SRS Airbag System

There are 2 types of DTCs for the SRS airbag system: 5-digit and 2-digit.

The 5-digit DTC can be read by connecting a hand-held tester to the DLC3 terminal.

The 2-digit DTC can be read through the blinking of the SRS warning light with the SST(09843-18040) connected to the TC and CG terminals of the DLC3.

If the SRS airbag deploys, the airbag sensor assembly will turn ON the SRS warning light. However, it is different from the ordinary diagnosis function that a DTC will not be memorized. The SRS warning light can be turned OFF only by changing the airbag sensor assembly to a new one.

3. DTC of Occupant Classification System

There is only a 5-digit DTC for the occupant classification system.

The 5-digit DTC can be read by connecting a hand-held tester to the DLC3 terminal.
For details, see the 2006 Prius Repair Manual (Pub. No. RM01R0U).

TOYOTA PARKING ASSIST SYSTEM

REAR VIEW MONITOR SYSTEM

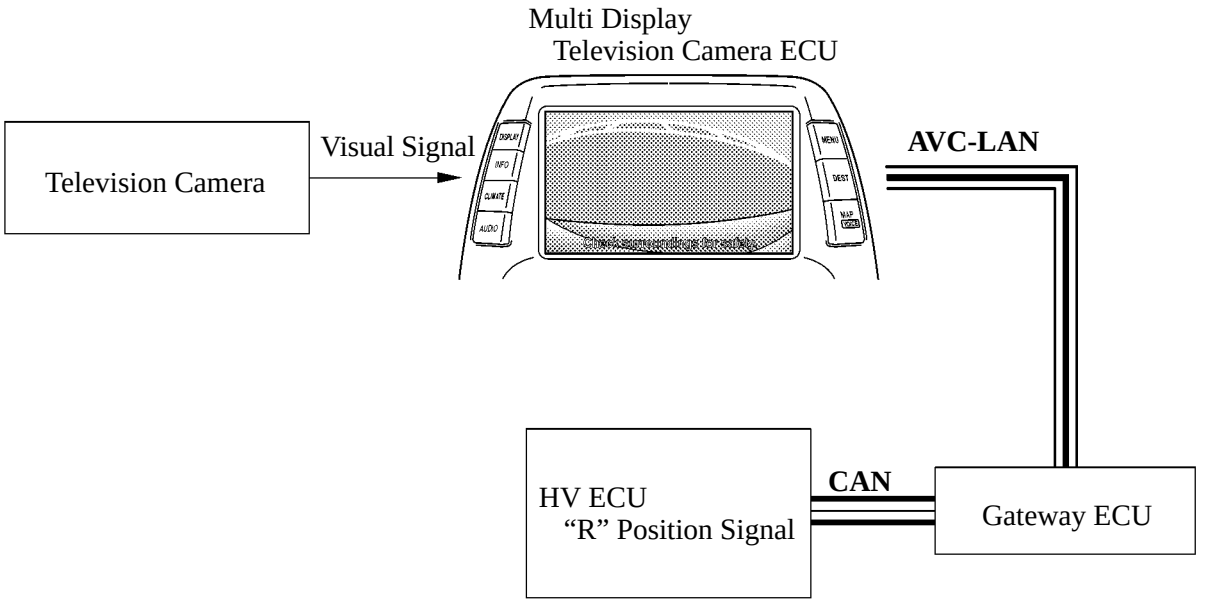
1. General

The rear view monitor system is available as optional equipment.

To assist the driver in parking the vehicle by monitoring the rear view, this system has a television camera mounted on the back door to display the rearview of the vehicle on the multi display.

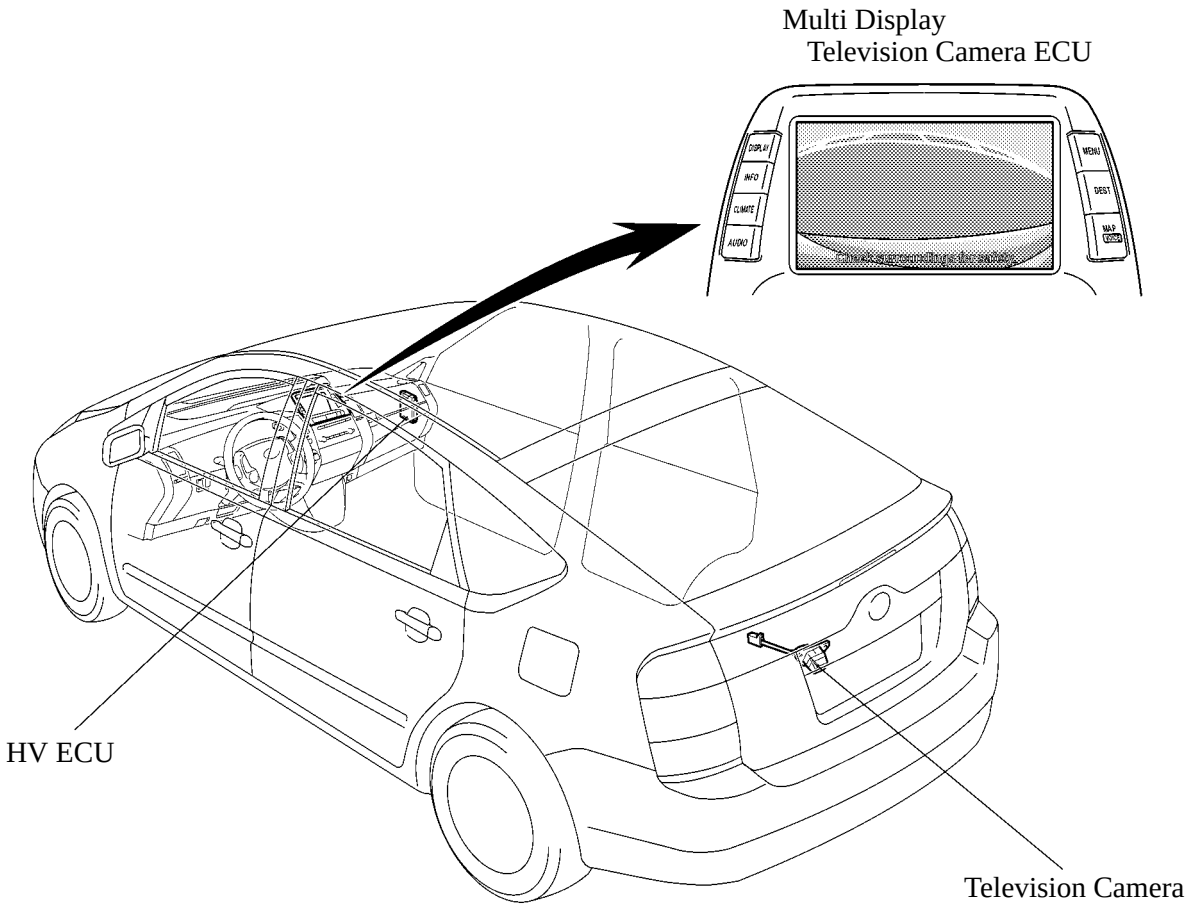
This system consists of the television camera and multi display.

▶ System Diagram ◀



01SBE01Y

2. Layout of Main Components



▶ Function of Main Components ◀

Item	Function
Television Camera	Mounted on the back door to transmit the rearview of the vehicle to the multi display. A color video camera that uses a CCD (Charge Coupled Device) and a wide-angle lens.
Multi Display Television Camera ECU	Receives visual signals containing a composite of the rear view of the vehicle from the television camera, and displays on the multi display. Effects control of the system by receiving the “R” position signal from the HV ECU.
HV ECU	Transmits an “R” position signal to the multi display.

3. Operation

General

With the power source mode IG-ON, if the driver moves the electronic shift lever to reverse, the display of the multi display switches to operate this system. In this state, if the driver moves the electronic shift lever to a position other than reverse, or selects the modes on the multi display, the rear view display switches to the previous mode or the mode selected on the multi display.

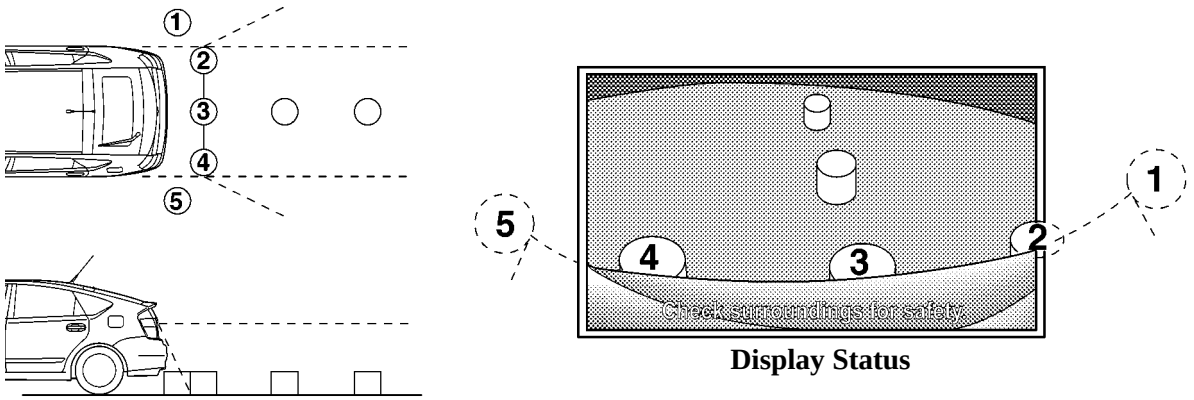
CAUTION

Do not rely entirely on the rear view monitor system. Use caution, just as you would when backing up any vehicle.
Never back up while looking only at the screen. The image on the screen may differ from actual conditions. If you back up while looking only at the screen, you may hit a vehicle or have an unexpected accident. When backing up, be sure to check visually behind and all around the vehicle, both directly and with mirrors, before proceeding.

Area Displayed on Screen

On the multi display, objects on the right of the vehicle appear on the right side of the display panel, and objects on the left of the vehicle appear on the left side of the display panel.

The television camera uses a wide-angle lens. The perceived distance from images that appear on the screen differs from the actual distance.



Display Status

01SBE04Y

NOTE: Area displayed on screen may vary according to vehicle status or road conditions.
The area covered by the television camera is limited. The television camera dose not show objects close to either corner of the bumper or under bumper.

Fail-safe

The table below indicates the conditions of detecting malfunctions in this system.

Malfunction Part	Detection Item	Function
Television Camera	Transmission of television camera malfunction signal	Stops signal reception and displays a dark screen.
Television Camera ECU	Malfunction of television camera ECU unit	Stops system operation.

Self-diagnosis

The rear view monitor system is equipped with a self-diagnosis system and can display the diagnosis menu.

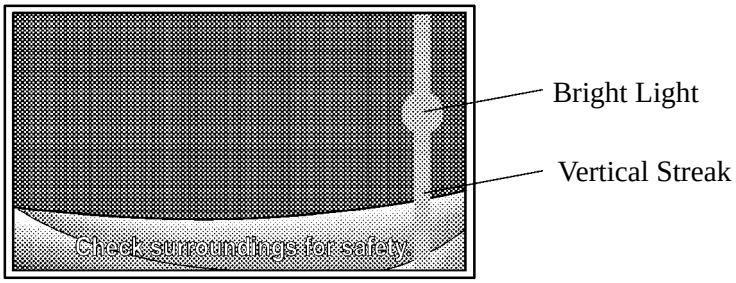
The method for starting the diagnosis menu screen is the same as in the navigation system. For details, refer to the 2006 Prius Repair Manual (Pub. No. RM01R0U).

4. Handling Precaution

In the following cases, it may become difficult to see the images on the screen, but this is not a malfunction.

- In the dark (for example, at night).
- When the temperature near the lens is very high or low.
- When water droplets are adhering to the television camera, or when humidity is high (for example, when it rains).
- When foreign matter (for example, mud) is adhering to the television camera lens.
- When the sun or the beam of headlights is shining directly into the television camera lens.

If a bright light (for example, sunlight reflected off the vehicle body) is picked up by the television camera, the smear effect*, peculiar to the CCD camera, may occur.



Smear Effect

241BE68

— REFERENCE —

**: Smear effect*

A phenomenon that occurs when a bright light is picked up by the television camera; when transmitted by the television camera, the light source appears to have a vertical streak above and below it.

MAJOR TECHNICAL SPECIFICATIONS

Item \ Area				U.S.A.	Canada
Body Type				4-door Hatchback	
Vehicle Grade				—	
Model Code				NHW20L-AHEEBA	NHW20L-AHEEBK
Major Dimensions & Vehicle Weights	Overall	Length	mm (in.)	4445 (175.0)	4445 (175.0)
		Width	mm (in.)	1725 (67.9)	1725 (67.9)
		Height*1	mm (in.)	1490 (58.7)	1490 (58.7)
	Wheel Base		mm (in.)	2700 (106.3)	2700 (106.3)
	Tread	Front	mm (in.)	1505 (59.3)	1505 (59.3)
		Rear	mm (in.)	1480 (58.3)	1480 (58.3)
	Effective Head Room	Front	mm (in.)	994 (39.1)	994 (39.1)
		Rear	mm (in.)	948 (37.3)	948 (37.3)
	Effective Leg Room	Front	mm (in.)	1065 (41.9)	1065 (41.9)
		Rear	mm (in.)	980 (38.6)	980 (38.6)
	Shoulder Room	Front	mm (in.)	1397 (55.0)	1397 (55.0)
		Rear	mm (in.)	1344 (52.9)	1344 (52.9)
	Overhang	Front	mm (in.)	885 (34.8)	885 (34.8)
		Rear	mm (in.)	860 (33.9)	860 (33.9)
	Min. Running Ground Clearance		mm (in.)	142 (5.6)	142 (5.6)
	Angle of Approach		degrees	14	14
	Angle of Departure		degrees	19	19
	Curb Weight	Front	kg (lb)	785 (1731)	785 (1731)
		Rear	kg (lb)	545 (1202)	545 (1202)
		Total	kg (lb)	1330 (2932)	1330 (2932)
	Gross Vehicle Weight	Front	kg (lb)	—	—
		Rear	kg (lb)	—	—
		Total	kg (lb)	1720 (3795)	1720 (3795)
	Fuel Tank Capacity		ℓ(US.gal., Imp.gal.)	45 (11.9, 9.9)	45 (11.9, 9.9)
	Luggage Capacity		m^3 (cu.ft.)	0.41 (14.4)	0.41 (14.4)
Performance	Max. Speed		km / h (mph)	165 (103)	165 (103)
	Max. Cruising Speed		km / h (mph)	165 (103)	165 (103)
	Acceleration	0 to 60 mph	sec.	10.1	10.1
		0 to 400 m	sec.	17.6	17.6
	Max. Permissible Speed	1st Gear	km/h (mph)	—	—
		2nd Gear	km/h (mph)	—	—
		3rd Gear	km/h (mph)	—	—
		4th Gear	km/h (mph)	—	—
		5th Gear	km/h (mph)	—	—
	Turning Diameter (Outside Front)	Wall to Wall	m (ft.)	11.0 (36.1)	11.0 (36.1)
		Curb to Curb	m (ft.)	10.4 (34.1)	10.4 (34.1)
Engine	Engine Type			1NZ-FXE	1NZ-FXE
	Valve Mechanism			16-valve, DOHC	16-valve, DOHC
	Bore x Stroke		mm (in.)	75.0 x 84.7 (2.95 x 3.33)	75.0 x 84.7 (2.95 x 3.33)
	Displacement		cm^3 (cu.in.)	1497 (91.4)	1497 (91.4)
	Compression Ratio			13.0 : 1	13.0 : 1
	Fuel System			SFI	SFI
	Octane Rating			87 or higher	87 or higher
	Max. Output (SAE-NET)		kW / rpm (HP@rpm)	57 / 5000 (76@5000)	57 / 5000 (76@5000)
	Max. Torque (SAE-NET)		N·m / rpm (lb-ft@rpm)	111 / 4200 (82@4200)	111 / 4200 (82@4200)
Engine Electrical	Battery Capacity (5HR)		Voltage & Amp. hr.	12 - 28, 12 - 36*2	12 - 28, 12 - 36*3
	Generator Output		Watts	—	—
	Starter Output		kW	—	—
Chassis	Clutch Type			—	—
	Transaxle Type			P112	P112
	Transmission Gear Ratio	In First		—	—
		In Second		—	—
		In Third		—	—
		In Fourth		—	—
		In Fifth		—	—
		In Reverse		—	—
	Differential Gear Ratio (Final)*4			4.113	4.113
	Differential Gear Size (Final)		in.	—	—
	Brake Type	Front		Ventilated Disc	Ventilated Disc
		Rear		Leading-trailing Drum	Leading-trailing Drum
	Parking Brake Type			Leading-trailing Drum	Leading-trailing Drum
	Brake Booster Type			—	—
	Proportioning Valve Type			—	—
	Suspension Type	Front		MacPherson Strut	MacPherson Strut
		Rear		Torsion Beam	Torsion Beam
	Stabilizer Bar	Front		Standard	Standard
		Rear		Standard	Standard
	Steering Gear Type			Rack & Pinion	Rack & Pinion
	Power Steering Type			Electric Motor	Electric Motor

*1: Unloaded Condition
*2: With Smart Key System and / or Navigation System
*3: With Smart Key System
*4: Include Counter Gear Ratio