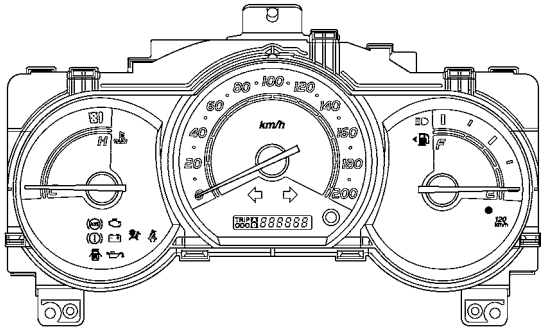
METER

■ COMBINATION METER

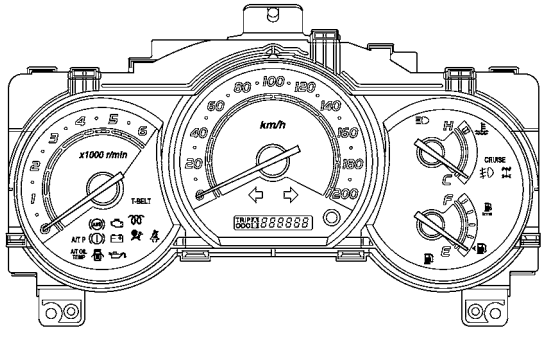
1. General

- The new Hilux uses an Optitron display type or an analog display type combination meter.
- The Optitron display type meter achieves 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 dial.
- A step motor is used for actuating the indicator of the speedometer and the tachometer.
- An odometer and trip meter using an LCD (Liquid Crystal Display) is used.
- The combination meter has a built-in meter ECU and a buzzer.
- An engine oil change reminder light is provided in the combination meter on the models for Europe.
- A sub-tank warning light function is used on the models with 2TR-FBE engine.
- A fuel system warning light is provided in the combination meter on the models with the diesel engine.



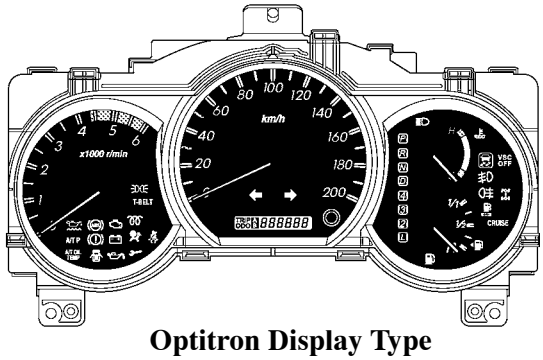
00LBE08Y

Analog Display Type without Tachometer



00LBE09Y

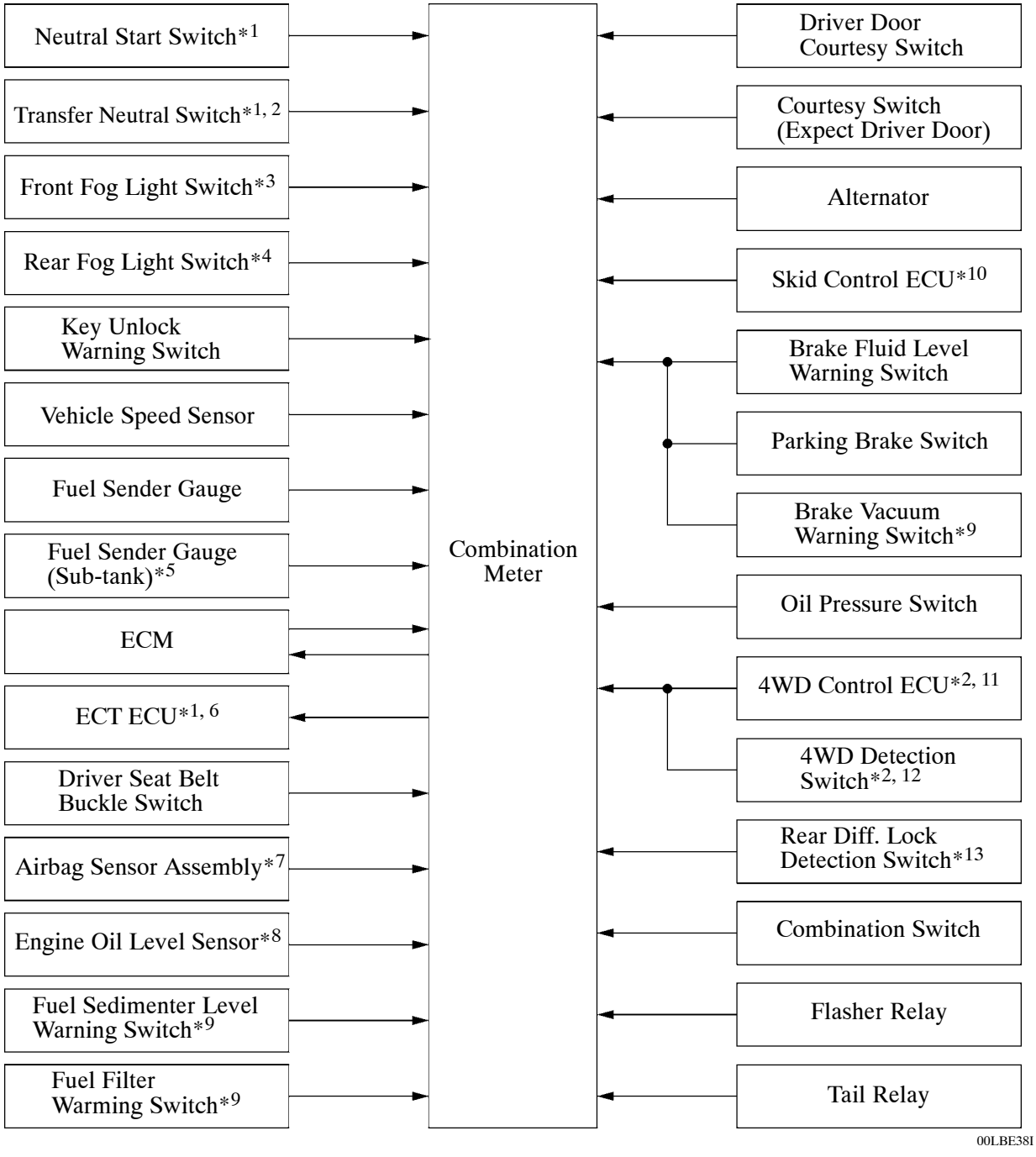
Analog Display Type with Tachometer



Optitron Display Type

00LBE07Y

2. System Diagram



*1: Models with automatic transmission
*2: 4WD models
*3: Models with front fog light
*4: Models with rear fog light
*5: Models with 2TR-FBE engine
*6: Models with 2KD-FTV engine
*7: Models with SRS airbag system
*8: Models for Europe or G.C.C. countries with 1KD-FTV or 2KD-FTV engine
*9: Models with diesel engine
*10: Models with ABS
*11: Models with automatic disconnecting differential
*12: Models without automatic disconnecting differential
*13: Models with rear differential lock system

To Combination Meter

Item	Signal Details
Neutral Start Switch*1	P position signal
Transfer Neutral Switch*1, 2	AT/P warning light signal (When P signal is input by neutral start switch)
Front Fog Light Switch*3	Front fog light indicator light signal
Rear Fog Light Switch*4	Rear fog light indicator light signal
Key Unlock Warning Switch	Ignition key presence signal (for key reminder system)
Vehicle Speed Sensor	Vehicle speed signal
Fuel Sender Gauge	Fuel level indication signal
Fuel Sender Gauge (Sub-tank)*5	Sub-tank fuel level indication signal
ECM	● Check engine warning light signal ● Water temperature signal ● Engine speed signal ● Automatic transmission oil temperature signal*1, 2 ● Glow indicator light signal*9 ● Soot volume calculation signal*14 ● Cruise control indicator light signal*15
Seat Belt Buckle Switch	Seattle reminder light signal
Airbag Sensor Assembly*7	SRS warning light signal
Courtesy Switch	Door warning light signal
Engine Oil Level Sensor*8	Engine oil level warning light signal
Fuel Sedimenter Level Warning Switch*9	Fuel system warning light blinking request signal
Fuel Filter Warning Switch*9	Fuel system warning light illumination request signal
Alternator	Discharge light signal
Skid Control ECU*10	● ABS warning light signal ● Slip indicator light signal ● VSC OFF indicator light signal
Brake Fluid Level Warning Switch	Brake system warning light signal
Parking Brake Switch	Brake system warning light signal
Brake Vacuum Warning Switch*9	Brake system warning light signal
Oil Pressure Switch	Oil pressure warning light signal
4WD Control ECU*2, 11 or 4WD Detection Switch*2, 12	4WD indicator light signal
Rear Diff. Lock Detection Switch*13	Rear diff. lock indicator light signal
Tail Relay	Meter illumination signal
Flasher Relay	Turn signal indicator light signal
Combination Switch	Headlight high beam indicator light signal

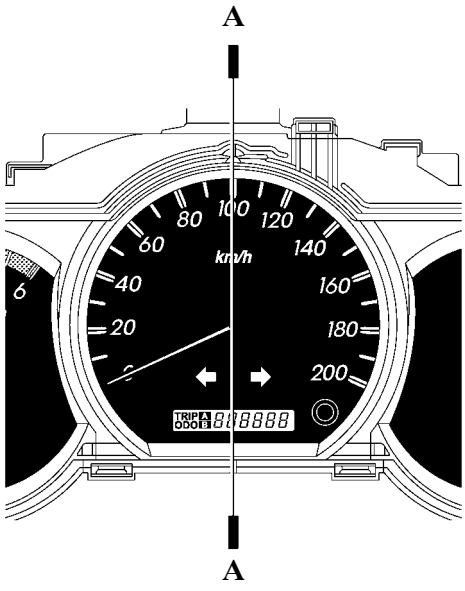
From Combination Meter

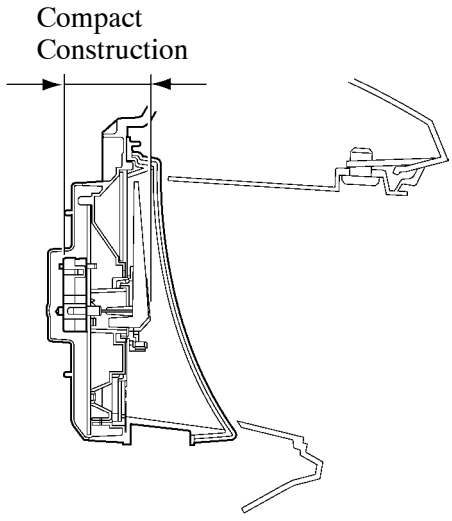
Item	Signal Details
ECM	Vehicle speed signal
ECT ECU*1, 6	Vehicle speed signal

*1: Models with automatic transmission
*2: 4WD models
*3: Models with front fog lights
*4: Models with rear fog lights
*5: Models with 2TR-FBE engine
*6: Models with 2KD-FTV engine
*7: Models with SRS airbag system
*8: Models for Europe or G.C.C. countries with 1KD-FTV or 2KD-FTV engine
*9: Models with diesel engine
*10: Models with ABS
*11: Models with automatic disconnecting differential
*12: Models without automatic disconnecting differential
*13: Models with rear differential lock system
*14: Models for Europe
*15: Models with cruise control system

3. Construction

- The indicator actuation movement for the speedometer and the tachometer has been changed from the cross coil type to the step-motor type. This has resulted in a thinner indicator actuation movement, thus achieving a lightweight and compact construction.
- When the power to the combination meter is turned on after the reconnection of the battery terminal, the step motor initializes once to identify its zero point.





A – A Cross Section

271BE10

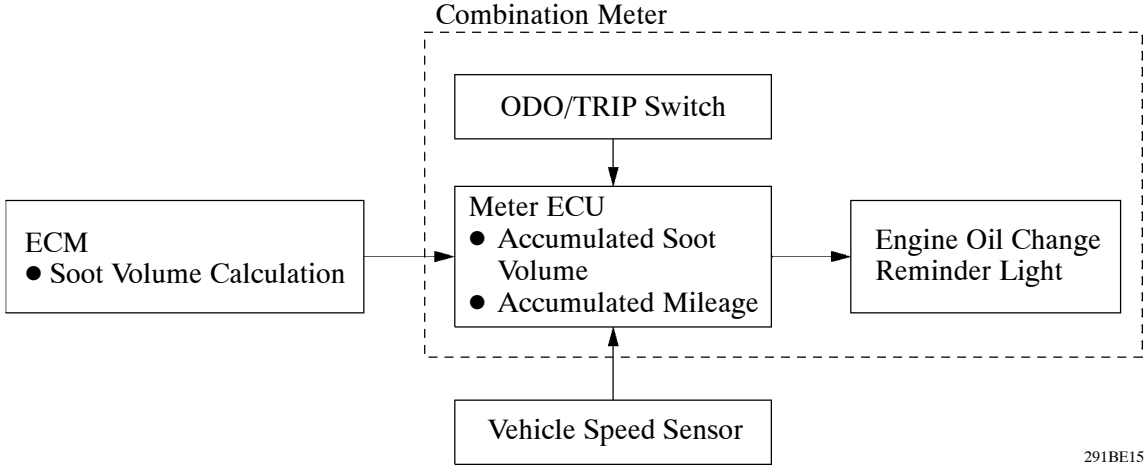
4. Engine Oil Change Reminder Light (Models for Europe)

General

- An engine oil change reminder light is provided in the combination meter on the models for Europe.
- This light illuminates and blinks to indicate to the driver when it is time to change the engine oil.
- This light is a part of the oil maintenance management system which determines the deterioration level of the engine oil by indirectly estimating the volume of soot in the engine oil. For details regarding the oil maintenance management system, see page EG-224.
- The meter ECU receives the information of the soot volume calculated in the ECM and the mileage, and operates the engine oil change reminder light in accordance with the conditions described below:

Operating Conditions	Engine Oil Change Reminder Light
Either one of the following conditions, (1) or (2), is met. (1) After reset, when the following conditions are met: ● The vehicle has been driven for 5000 km (3000 miles) or more. ● The soot volume reaches the specified value. (2) The vehicle has been driven for 25000 km (15500 miles) or more but 30000 km (18500 miles) or less.	● Blinks for 12 seconds (then turns off) after valve check ● Illuminates when ignition switch is turned to ON
Either one of the following conditions, (1) or (2), is met. (1) After reset, when the following conditions are met: ● The vehicle has been driven for 5000 km (3000 miles) or more. ● The soot volume exceeds the specified value. (2) The vehicle has been driven for 30000 km (18500 miles) or more.	Illuminates

▶ System Diagram ◀



Reset Operation

The accumulated mileage stored in the ECM can be reset by conducting the following procedure:

1) Turn the ignition switch to ON.
2) Make sure that the LCD screen is in TRIP A.
3) Turn the ignition switch off.
4) While pressing the ODO/TRIP switch, turn the ignition switch to ON to enter reset mode. The LCD screen will show "–––––", and start the reset operation. The indicator counts up to 5 seconds, with the display changing every second.
5) When 5 seconds have elapsed after the reset operation has started, the ODO/TRIP meter shows "000000" for 1 second to indicate that the reset operation has been completed.
6) The LCD screen should change to TRIP A.
7) Release the ODO/TRIP switch.

5. Fuel System Warning Light (Models with Diesel Engine except Models for Europe)

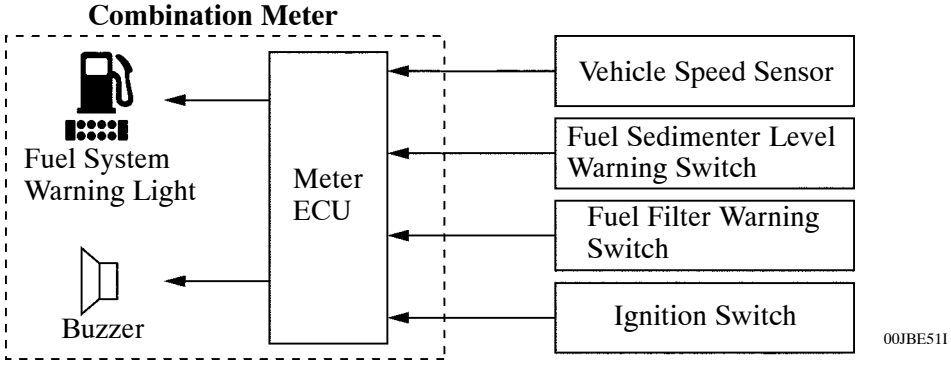
General

- While the fuel filter warning function is operating, the fuel system warning light illuminates to inform the driver of a failure when fuel filter clogging is detected by the fuel filter warning switch.
- While the fuel sedimenter warning function is operating, signals from the fuel sedimenter level warning switch cause the fuel system warning light to blink and the buzzer to sound simultaneously, thus informing the driver.
- The warning conditions vary depending on the functions indicated below:

Function	Fuel System Warning Light	Buzzer
Fuel Filter Warning	Illuminates	—
Fuel Sedimenter Warning	Blinks	Sounds

- If a failure is detected simultaneously from the fuel sedimenter level warning switch and the fuel filter warning switch, the system gives precedence to the fuel sedimenter warning function and causes the fuel system warning light to blink.
- This system is controlled by the meter ECU.

▶ System Diagram ◀



Operation

1) Fuel Sedimenter Warning

- The fuel sedimenter level warning switch is located in the bottom of the fuel filter.
- When the amount of water that has accumulated in the sedimenter reaches a predetermined level, the fuel sedimenter level warning switch turns on.
- The meter ECU receives signals from the fuel sedimenter level warning switch, and causes the fuel system warning light to blink and the buzzer to sound at the same time.

2) Fuel Filter Warning

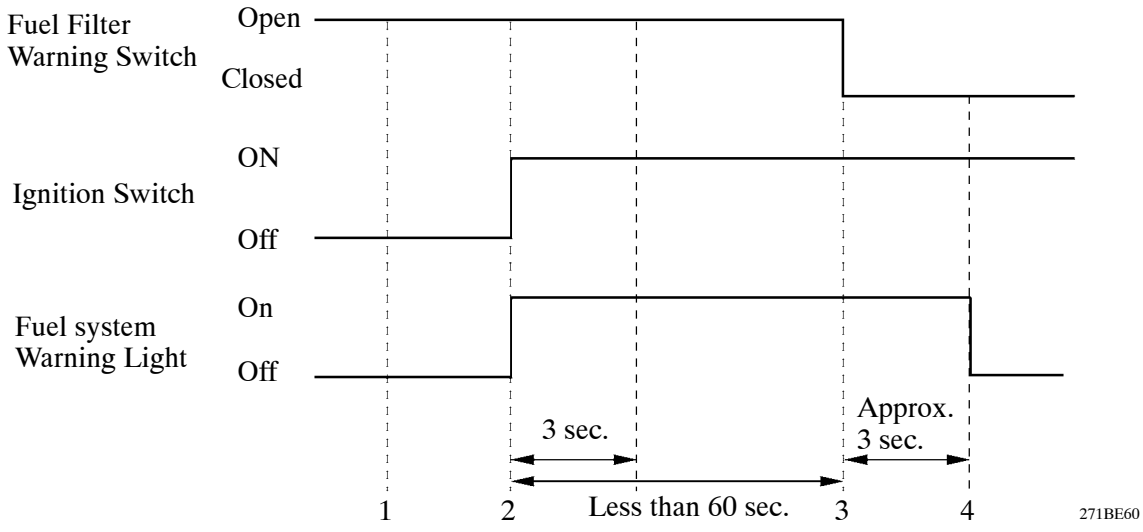
- The fuel filter warning switch is located in the upper area of the fuel filter.
- To prevent false alarms caused by a cold engine, the meter ECU starts its judgment function after a total of 30 minutes have elapsed since the input of vehicle speed signal information (minimum vehicle speed of 2.5 km/h).
- The fuel filter warning switch turns off when the vacuum in the fuel filter reaches a predetermined level.
- The meter ECU illuminates the fuel system warning light when the off signal from the fuel filter warning switch meets either of the following conditions:
  - Off signals from the fuel filter warning switch are input continuously for 10 minutes.
  - When the ignition switch is ON, an off signal (between 1 second and 10 minutes in duration) from the fuel filter warning switch is input twice with a minimum interval of 1 second.

Service Tip

When the fuel filter warning switch detects a failure, the meter ECU stores this information in memory, and continues to illuminate* the fuel system warning light. Therefore, after replacing the fuel filter, the illumination information stored in the meter ECU memory must be erased by carrying out the following procedure:

1. With the ignition switch off, disconnect the fuel filter warning switch connector.
2. Turn the ignition switch from off to ON.
3. After more than 3 seconds but less than 60 seconds have elapsed, reconnect the connector.
4. After approximately 3 seconds have elapsed with the fuel filter warning switch closed, the system confirms the deletion of the illumination information by turning off* the warning light.

*: The fuel system warning light will blink in case of a sedimenter failure.

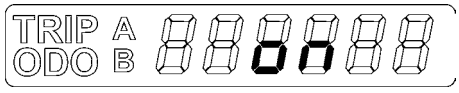
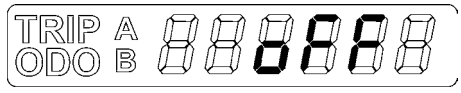


6. Sub-tank Warning Light Function (Models with 2TR-FBE Engine)

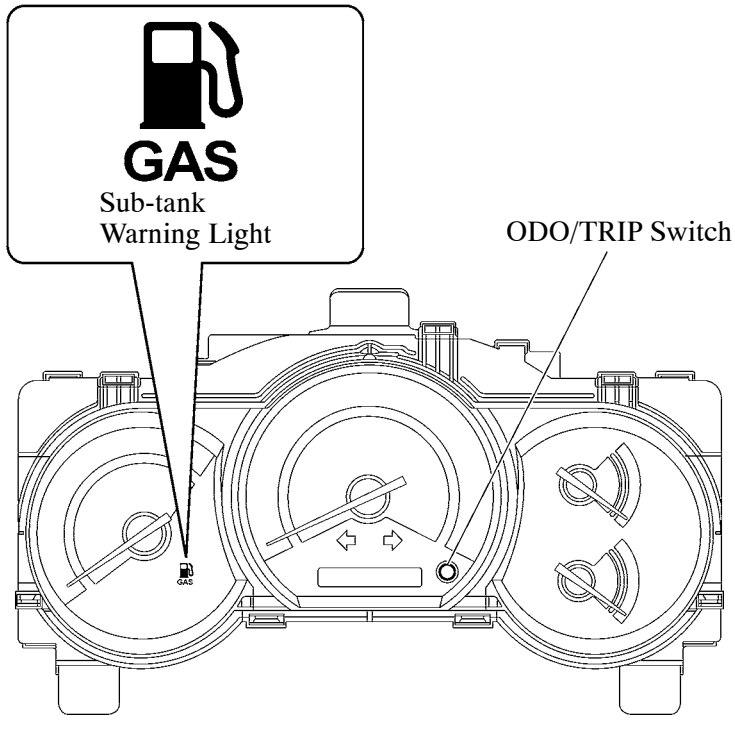
General

- When the meter ECU judges via the fuel sender gauge signal in the sub-tank that the remaining amount of gasoline in the sub-tank is below a certain level, the sub-tank warning light blinks to warn the driver that the amount of gasoline in the sub-tank has decreased.
- For drivers who do not use the sub-tank, the sub-tank warning light function can be turned off by the following procedure:

1. Turn the ignition switch off when TRIP B is shown.
2. Turn the ignition switch ON with the ODO/TRIP switch pressed.
3. Hold the ODO/TRIP switch for 10 seconds or more. During this, the sub-tank warning light will blink.
4. After 10 seconds, the sub-tank warning light function conditions are displayed as follows:

	Sub-tank Warning Light Function is on. (Default)	Sub-tank Warning Light Function is off.
Odo/trip Meter	 00MBE92I	 00MBE93I
Sub-tank Warning Light	Illuminates	Off

5. Pressing the ODO/TRIP switch switches between on and off.
6. After off has been displayed, the function can be set to off by leaving the ODO/TRIP switch for approximately 5 seconds.
7. When changing the setting to on, conduct the above procedure to set the sub-tank warning light function to on.



00MBE94I

BE

7. Buzzer

General

The table below shows the warning and reminder functions of the buzzer:

Function	Item
Warning	● Seat Belt Warning System (See page BE-76) ● Fuel System Warning (See page BE-15) ● Vehicle Speed Warning*1
Reminder	● Light Reminder System (See page BE-3) ● Key Reminder*2

*1: Models for G.C.C. countries

*2: Single cab models for Indonesia, deluxe grade of models for Philippines, export package of backup models for general countries, and models except models for South Africa

Vehicle Speed Warning

When the vehicle reaches a speed of approximately 120 km/h (74 mph) or more, the meter ECU sounds the buzzer for 6 seconds to warn the driver. At this time, the indicator light blinks.

Key Reminder

When the driver's door is opened with the ignition switch ACC or off position, the meter ECU sounds the buzzer to warn the driver that the ignition key has not been removed.