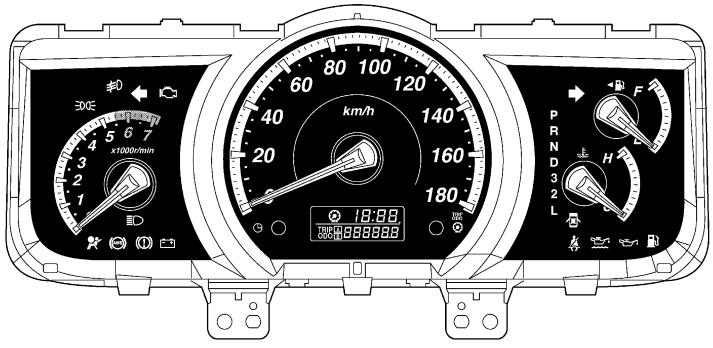
METER

■COMBINATION METER

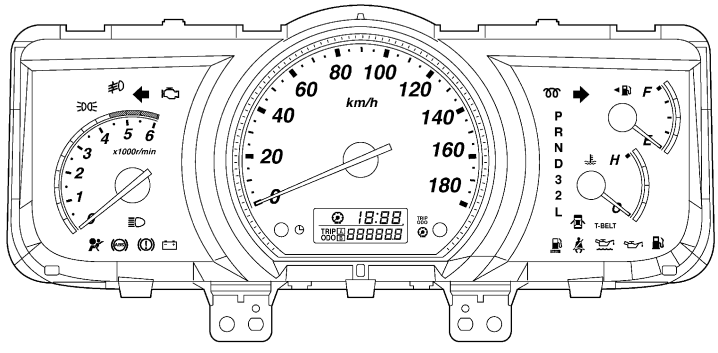
1. General

- The Optitron display type combination meter is used on the super wagon for Thailand as standard equipment. On other models, an analog type combination meter is used as standard equipment.
- The provision of these optitron display type varies by the grade. The optitron display type meter realizes excellent visibility through the use of smoke acrylic in the protective panel, and LEDs (Light Emitting Diodes) that is very bright and has high contrast for illuminating the indicator and dial.
- A step-motor type movement is used for actuating the indicators of the speedometer, tachometer, fuel gauge, and temperature gauge.
- An odometer and trip meter that uses an LCD (Liquid Crystal Display) is used.
- The combination meter has a built-in meter ECU and multi buzzer.
- A fuel filter warning light is provided in the combination meter on the diesel engine model.



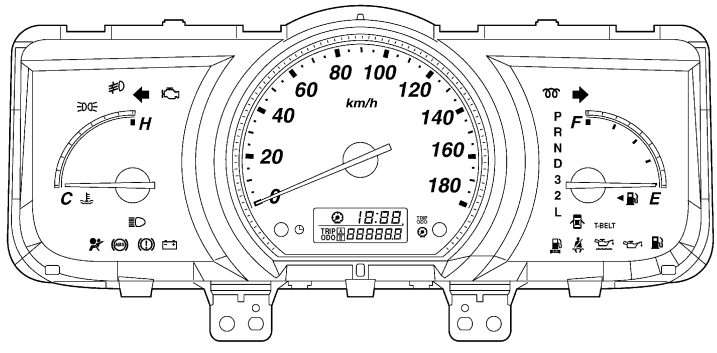
286BE01

Optitron Display Type



286BE02

Analog Display Type with Tachometer

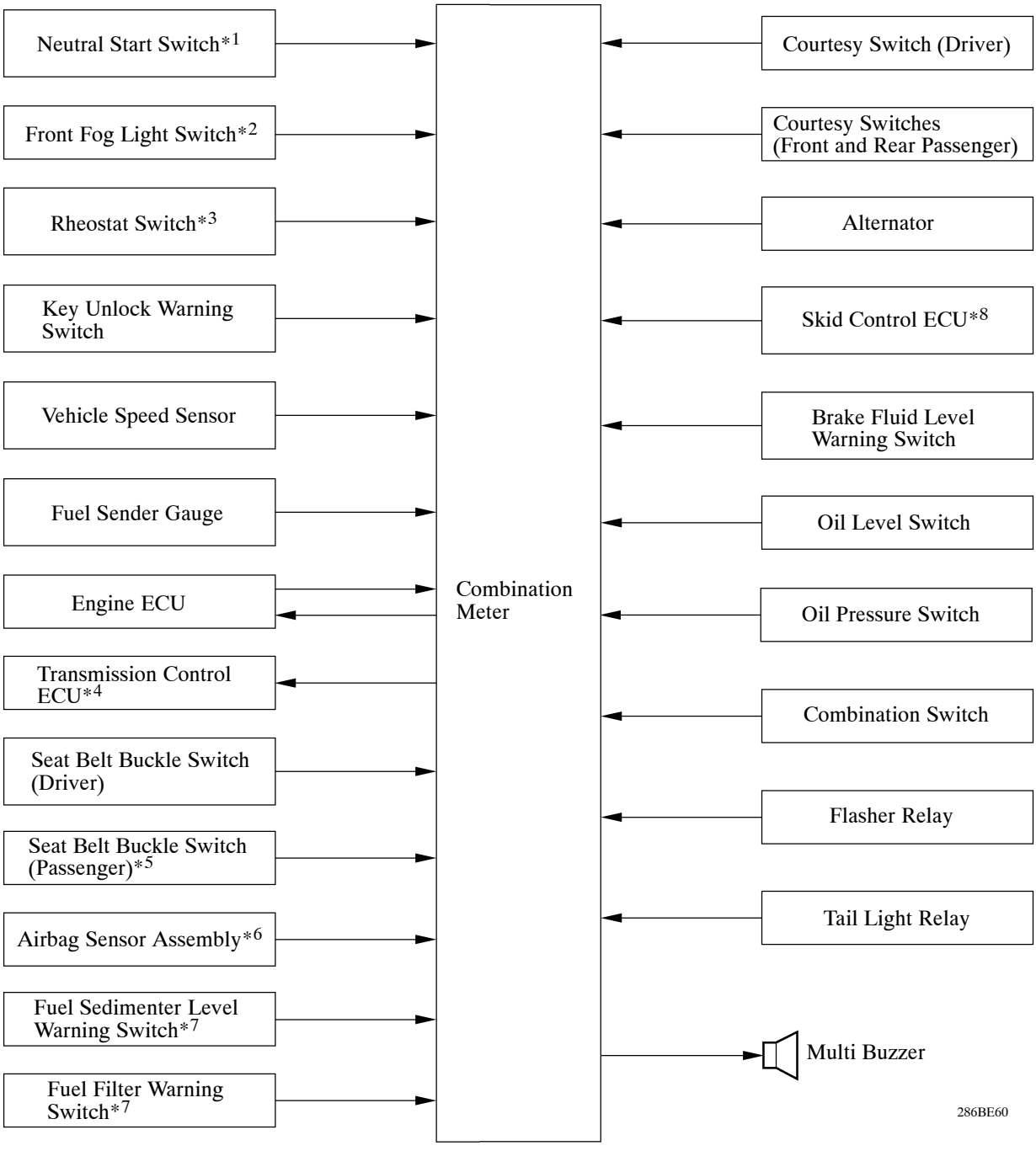


286BE03

Analog Display Type without Tachometer

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2. System Diagram



*1: Only for Automatic Transmission Models
*2: Only for Models with Fog Light
*3: Only for Models with Optitron Display Meter
*4: Only for Models with 2KD-FTV Engine
*5: Only for the Thailand model with super wagon
*6: Only for Models with SRS Airbag System
*7: Only for Models with Diesel Engine
*8: Only for Models with ABS Brake Control System

▶ Signal of Sensor or ECU ◀

To Combination Meter

Sensor or ECU	Signal
Neutral Start Switch*1	Shift position signal
Front Fog Light Switch*2	Front fog light indicator light signal
Rheostat Switch*3	Rheostat control 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
Engine ECU	• Check engine warning light signal • Water temperature signal • Engine speed signal • Grow indicator light signal*4
Seat Belt Buckle Switch (Driver)	Seat belt reminder light signal
Airbag Sensor Assembly*5	SRS airbag warning light signal
Courtesy Switches	Door warning light signal
Fuel Sedimenter Level Warning Switch*6	Warning light blinking request signal
Fuel Filter Warning Switch*6	Warning light illumination request signal
Alternator	Discharge light signal
Skid Control ECU*7	ABS warning light signal
Brake Fluid Level Warning Switch	Brake system warning light signal
Oil Pressure Switch	Oil pressure warning light signal
Oil Level Switch	Oil level warning light signal
Tail Light Relay	Meter illumination signal
Flasher Relay	Turn signal indicator light signal
Combination Switch	Headlight high beam indicator light signal

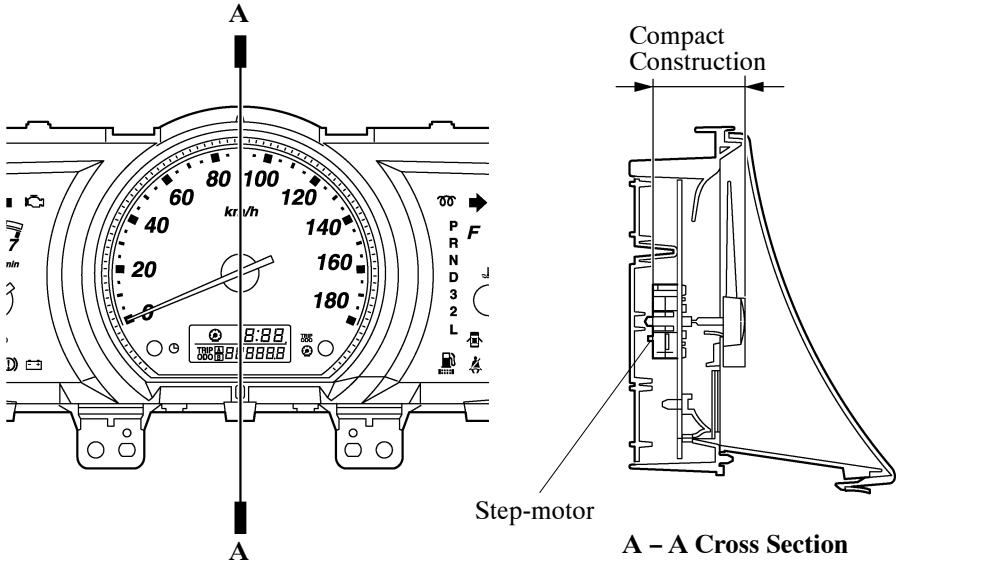
From Combination Meter

Sensor or ECU	Signal
Engine ECU	Vehicle speed signal
Transmission Control ECU*4	Vehicle speed signal
Multi Buzzer	Buzzer sound signal

*1: Only for Automatic Transmission Models
*2: Only for Models with Fog Lights
*3: Only for Models with Optitron Display Meter
*4: Only for 2KD-FTV Engine
*5: Only for Models with SRS Airbag System
*6: Only for Models with Diesel Engine
*7: Only for Models with ABS Brake Control System

3. Construction

- The pointer movement for the speedometer, tachometer, fuel gauge, and temperature gauge has been changed from the cross coil type to the step-motor type. This has resulted in a thinner pointer movement, thus achieving a lightweight and compact construction.
- In the case of the step-motor type, when the power to the combination meter is turned ON through the reconnection of the battery terminal, the step-motor initializes once to recognize the zero point of the indicator in relation to the step-motor. However, if the ignition switch is turned ON after 60 seconds or more have elapsed after the initialization, the step-motor initializes again.



286BE09

4. Fuel Filter Warning Light (Diesel Engine Model Only)

General

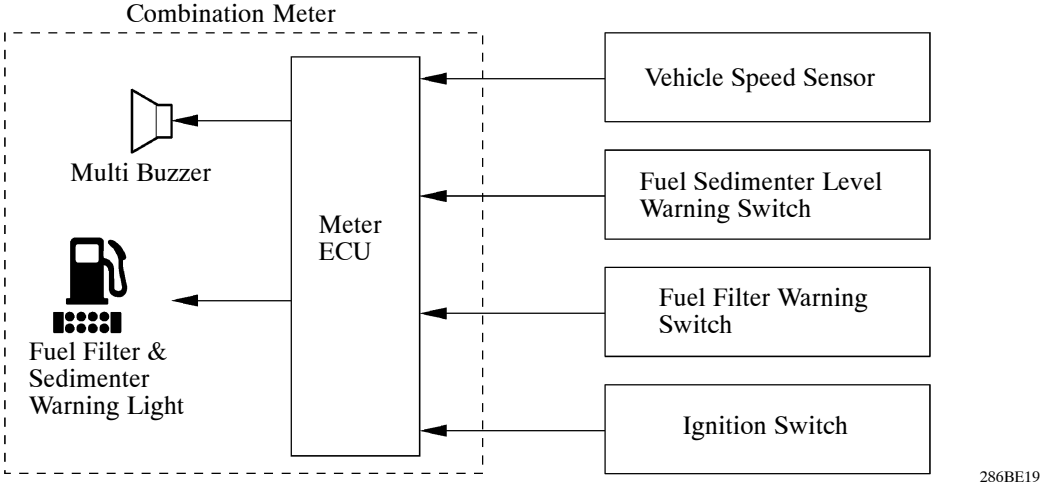
- In addition to the conventional fuel sedimenter warning functions, this light illuminates to inform the driver of a failure in case the clogging of the fuel filter is detected from the fuel filter warning switch.
- The illumination conditions of this light vary depending on the functions indicated below.

Function	Failure Activation
Fuel Filter Warning	Illumination
Fuel Sedimenter Warning	Blinking and Buzzer*1 or Blinking*2

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

	Door	Roof Type	Body Type	Vehicle Type	Panel or Glass	Grade	Engine	Steering Position
*1	4	Standard	Standard	Van	3, Panel	DX	2KD-FTV	RHD
	4	Standard	Standard	Commuter	12, Glass	DX	2KD-FTV	RHD
	4	High	Wide	Commuter	12, Glass	GL	2KD-FTV	RHD
*2	Diesel engine models other than those in *1							

▶ System Diagram ◀



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Operation

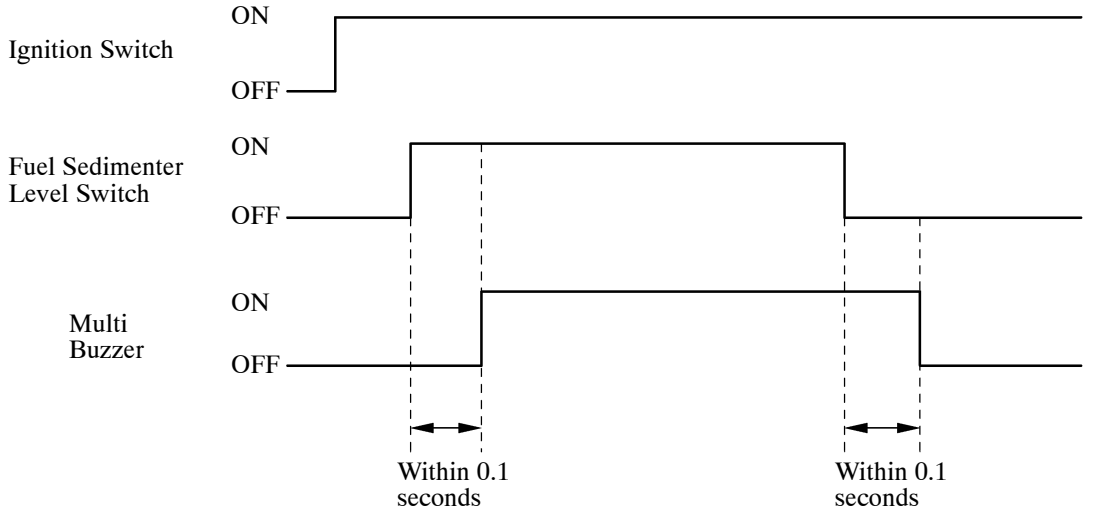
1) Fuel Sedimenter Warning

When the amount of water that has accumulated in the sedimenter reaches a pre-determined level, the fuel sedimenter level switch, which is located in the bottom of the fuel filter, turns ON. The meter ECU renders this signal as a fuel sedimenter warning and causes the fuel filter warning light blinking or blinking and the buzzer sounding.

2) Sedimenter Buzzer

- When the ignition switch is ON and the fuel sedimenter level switch is ON, the multi buzzer sounds and the fuel filter sedimenter warning light blinks to notify the driver that the water in the fuel sedimenter has reached the pre-determined amount.
- After the ON signal is input from the fuel sedimenter level switch, the meter ECU sounds the multi buzzer within approximately 0.1 seconds and continues to sound the multi buzzer as long as the fuel sedimenter level switch is ON. After the OFF signal is input, the meter ECU stops the multi buzzer within approximately 0.1 seconds.

▶ Timing Chart and Sound Pattern ◀



3) Fuel Filter Warning

- The fuel filter warning switch is located in the upper area of the fuel filter.
- To prevent false alarms on a cold engine, the meter ECU starts its judgment function with the ignition switch turned ON, after a total of 30 minutes have elapsed with the input of vehicle speed signal information (minimum vehicle speed of 2.5 km/h [1.6 mph]).
- The fuel filter warning switch turns OFF when the vacuum in the fuel filter reaches a predetermined level.
- The meter ECU illuminates the fuel filter warning light when the OFF signal from the fuel filter warning switch meets either of the following conditions:

- When the ignition switch is ON, and the cumulative driving time * is 30 minutes or more, and a fuel filter warning switch OFF signal for at least 1 second and less than 10 minutes has been detected twice
- When the ignition switch is ON, and the cumulative driving time * is 30 minutes or more, and a fuel filter warning switch OFF signal for 10 minutes or longer has been detected once
- When the ignition switch is ON, and the fuel filter & sedimenter warning light blinks before the ignition switch turned OFF

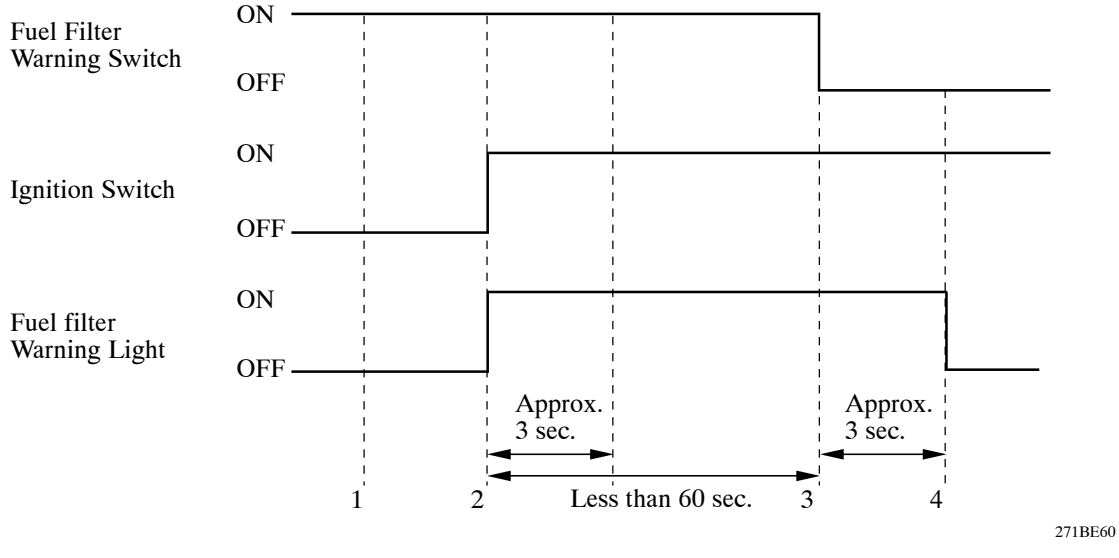
*: Integrates the time which the vehicle speed is at least 2.5 km/h (1.6 mph).

Service Tip

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

1. With the ignition switch turned 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 warning light will blink in case of a sedimenter failure.



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