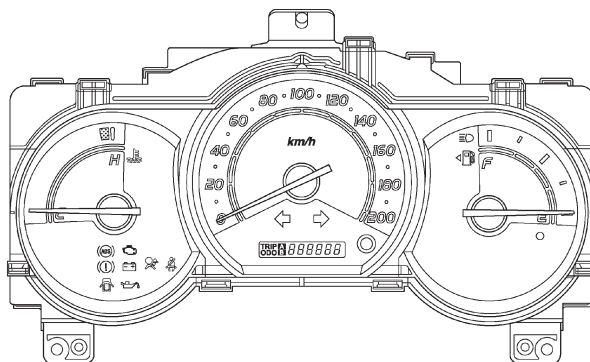


METER

■ COMBINATION METER

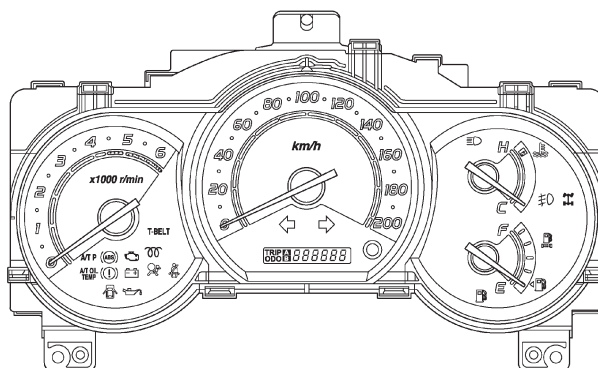
1. General

- An analog type combination meter is used as standard equipment.
- An optitron display type combination meter has been adopted as standard equipment for Australian SR grade 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 is very bright and has high contrast for illuminating the indicator and dial.
- The movement for actuating the indicator of the speedometer and the tachometer has been used a step-motor type.
- An odometer and trip meter that uses an LCD (Liquid Crystal Display) is used.
- The combination meter has a built-in meter ECU and buzzer.
- A fuel filter warning light is provided in the combination meter on the diesel engine model.



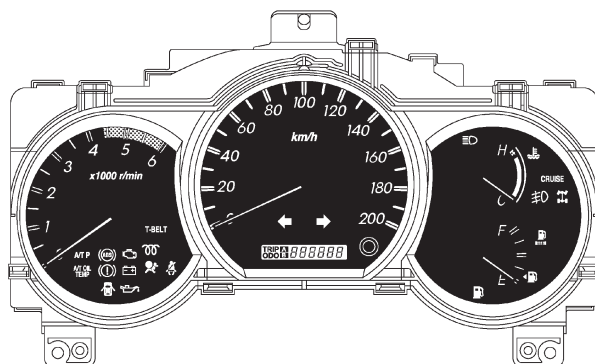
Normal Display Type without Tachometer

271BE06



Normal Display Type with Tachometer

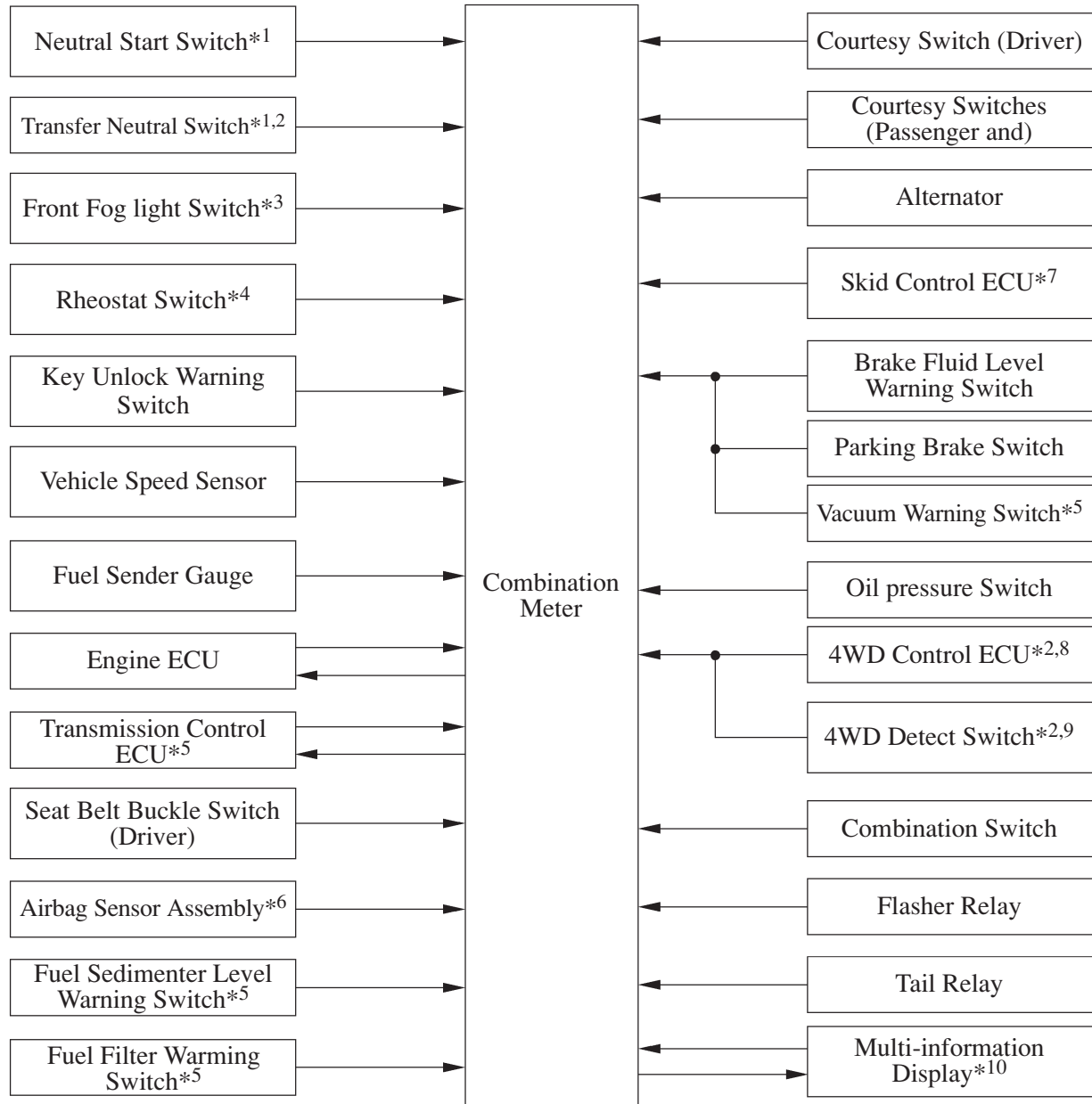
271BE07



Optitron Display Type

271BE08

2. System Diagram



271BE09

- *1: Only for Automatic Transmission Models
- *2: Only for 4WD Models
- *3: Only for Models with Fog Light
- *4: Only for Models with Optitron Display Meter
- *5: Only for Models with Diesel Engine
- *6: Only for Models with SRS Airbag System
- *7: Only for Models with ABS Brake Control System
- *8: Only for Models with A.D.D.
- *9: Only for Models without A.D.D.
- *10: Only for Models with Multi-information Display

To Combination Meter

Sensor or ECU	Contents of Signal
Neutral Start Switch* ¹	Shift 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 lights indicator light signal
Rheostat Switch* ⁴	Rheostat control signal
Key Unlock Warning Switch	Ignition key presence signal (for key reminder system)
Speed Sensor	Vehicle speed signal
Fuel Sender	Fuel level indication signal
Engine ECU	● Check engine warning light signal ● Water temperature signal ● Engine speed signal ● Injection volume signal*¹⁰ ● Automatic transmission oil temperature signal*^{1,11} ● Grow indicator light signal*⁵ ● Cruise control indicator light signal*¹²
Transmission Control ECU* ^{1,5}	Automatic transmission oil temperature signal
Seat Belt Buckle Switch	Seat belt reminder light signal
Airbag Sensor Assembly* ⁶	SRS airbag warning light signal
Courtesy Switches	Door warning light signal
Fuel Sedimenter Level Warning Switch* ⁵	Warning light blinking request signal
Fuel Filter Warning Switch* ⁵	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
Parking Brake Switch	Brake system warning light signal
Vacuum Warning Switch* ⁶	Brake system warning light signal
Oil Pressure Switch	Oil pressure warning light signal
4WD Control ECU* ^{2,8} or 4WD Detect Switch* ^{2,9}	4WD indicator light signal
Tail Light Relay	Meter illumination signal
Flasher Relay	Turn signal indicator light signal
Combination Switch	Headlight high beam indicator light signal
Multi-information Display* ¹⁰	Receives multi-information display operation information through serial data link

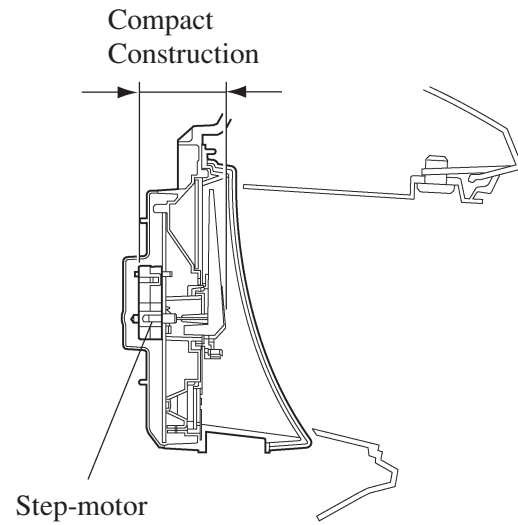
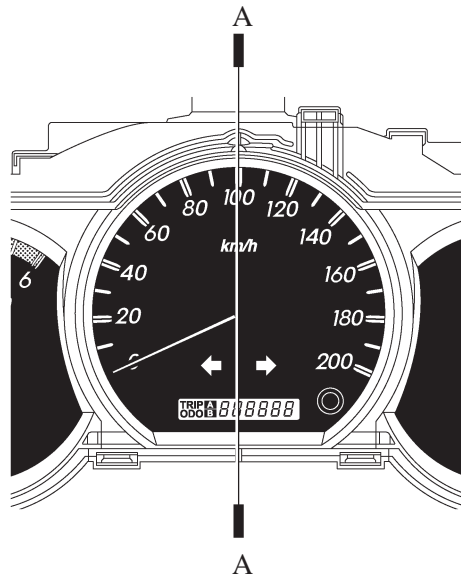
From Combination Meter

Sensor or ECU	Contents of Signal
Engine ECU	Vehicle speed signal
Transmission Control ECU* ^{1,5}	Vehicle speed signal
Multi-information Display* ¹⁰	Transmits the following information through serial data link: ● Transmits averaged vehicle speed information ● Transmits averaged fuel consumption information ● Transmits drivable distance information ● Transmits instant fuel consumption information

*¹: Only for Automatic Transmission Models*²: Only for 4WD Models*³: Only for Models with Fog Lights*⁴: Only for Models with Optitron Display Meter*⁵: Only for Diesel Engine Models*⁶: Only for Models with SRS Airbag System*⁷: Only for Models with ABS Brake Control System*⁸: Only for Models with Auto Disconnect Different*⁹: Only for Models without Auto Disconnect Different*¹⁰: Only for Models with Multi-information Display*¹¹: Except Diesel Engine Models*¹²: Only for Models with Cruise Control System*¹³: Only for Australia Models

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 recognize its zero point.



A – A Cross Section

271BE10

4. Fuel Filter Warning Light (Diesel Engine Model)

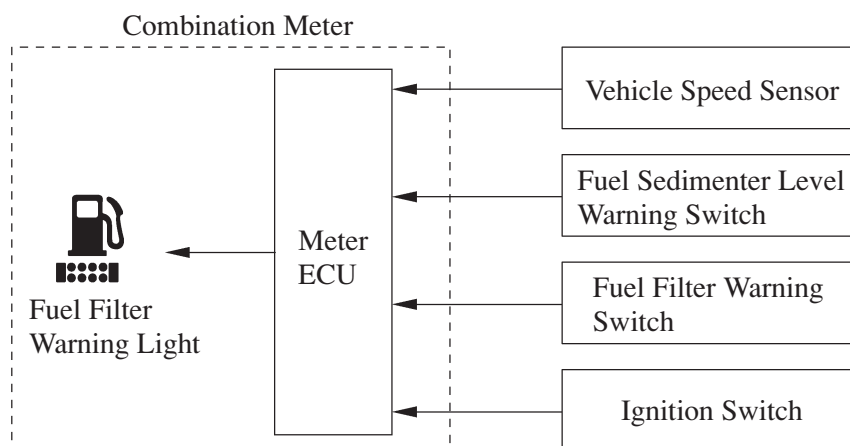
General

- 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 Sedimeter Warning	Blinking

- 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 to blink.
- This system is controlled by meter ECU.

► System Diagram ◀



271BE59

Operation

1) Fuel Sedimeter Warning

When the amount of water that has accumulated in the sedimenter reaches a predetermined 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 to blink.

2) Fuel Filter Warning

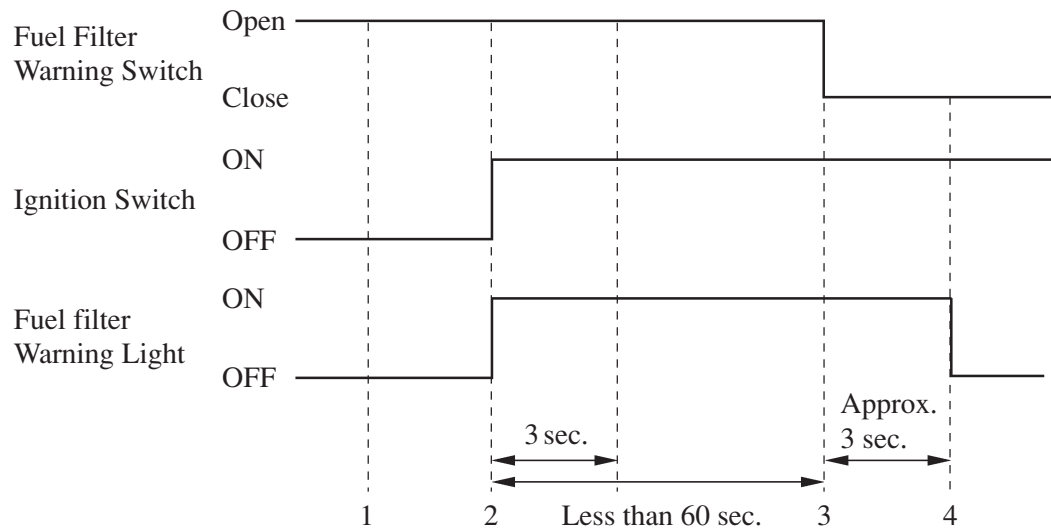
- The fuel filter warning switch is located in the upper area of the fuel filter.
- To prevent false alarms on a cold engine, the meter ECU starts its judgment function with the ignition switch turned ON, after a total of 30 minutes have elapsed with the input of vehicle speed signal information (minimum vehicle speed of 2.5 km/h).
- 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:
 - OFF signals from the fuel filter warning switch are input continuously for 10 minutes.
 - When the ignition switch is in the ON position, OFF signal (between 1 second and 10 minutes in duration) from the fuel filter warning switch is input twice with a minimum interval of one second.

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.



271BE60