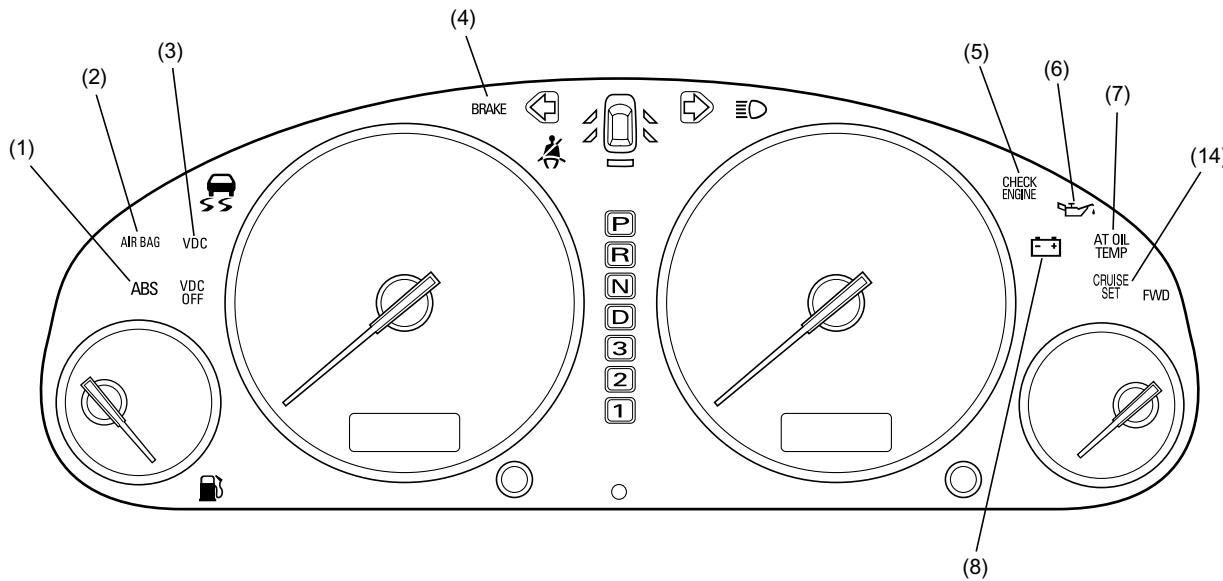


# COMBINATION METER

## INSTRUMENTATION/DRIVER INFO

### 1. Combination Meter

#### A: WARNING AND INDICATOR LIGHTS



IDI00117

(1) ABS warning light

This warning light illuminates if a fault occurs in any electrical component of the ABS (Anti-lock Brake System).

(2) AIR BAG system warning light

This warning light illuminates if a fault occurs in the airbag system.

(3) VDC warning light

This light illuminates when a fault occurs in any electrical component of the VDC (Vehicle Dynamics Control).

(4) Brake fluid level warning / parking brake indicator light

This light illuminates if the fluid level in the brake reservoir tank lowers below the specified level and/or when the parking brake is applied.

(5) CHECK ENGINE indicator light

This light illuminates if a fault occurs in the MFI (Multiple point Fuel Injection) system.

(6) Oil pressure warning light

This light illuminates when the engine oil pressure decreases below 14.7 kPa (0.15 kgf/cm<sup>2</sup>, 2.1 psi).

(7) AT OIL TEMP warning light

This warning light illuminates when the ATF temperature exceeds 150°C (302°F); it blinks when a fault occurs in the AT control system.

(8) Charge indicator light

This light illuminates if a fault occurs in the charging system while the engine is running.

## COMBINATION METER

### INSTRUMENTATION/DRIVER INFO

When everything is normal, the warning and indicator lights should be ON or OFF as shown below according to ignition switch positions.

Warning/Indicator light	Ignition switch position			
	LOCK/ACC	ON	ST	While engine is running
(1) ABS	OFF	*1	*1	*1
(2) AIR BAG	OFF	*2	*2	*2
(3) VDC	OFF	ON	ON	OFF
(4) Brake fluid level / parking brake	OFF	ON	ON	*3
(5) CHECK ENGINE	OFF	ON	ON	OFF
(6) Oil pressure	OFF	ON	ON	OFF
(7) AT OIL TEMP	OFF	ON	ON	OFF
(8) Charge	OFF	ON	ON	OFF

\*1:This light stays ON for about 2 seconds, and then goes out.

\*2:This light stays ON for about 6 seconds, and then goes out.

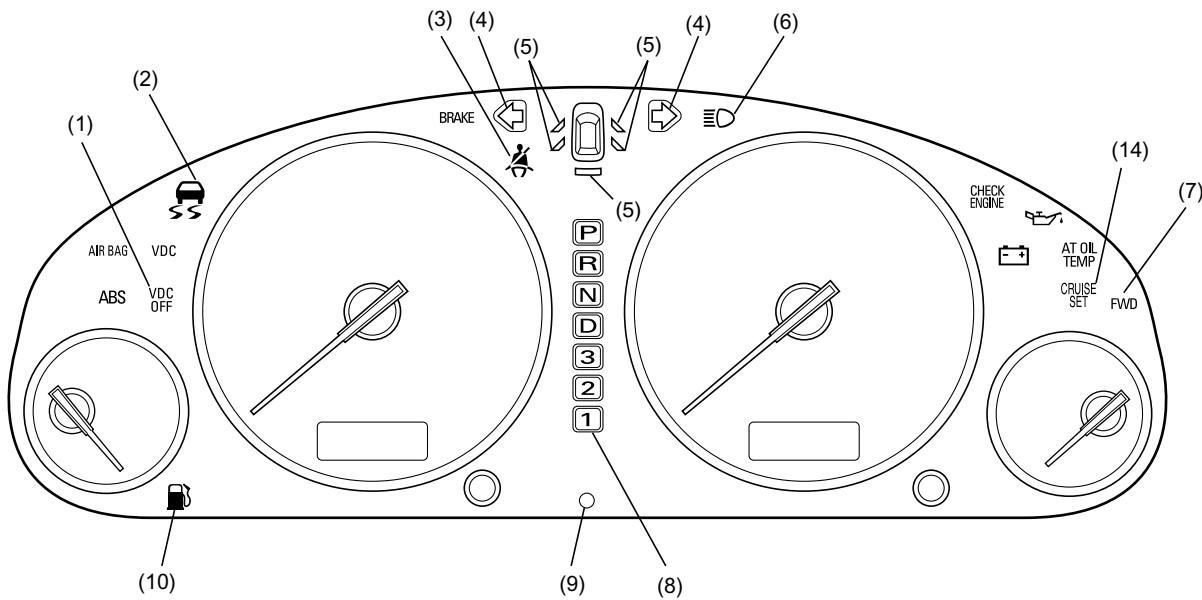
\*3:This light comes ON when the parking brake is applied.

# COMBINATION METER

## INSTRUMENTATION/DRIVER INFO

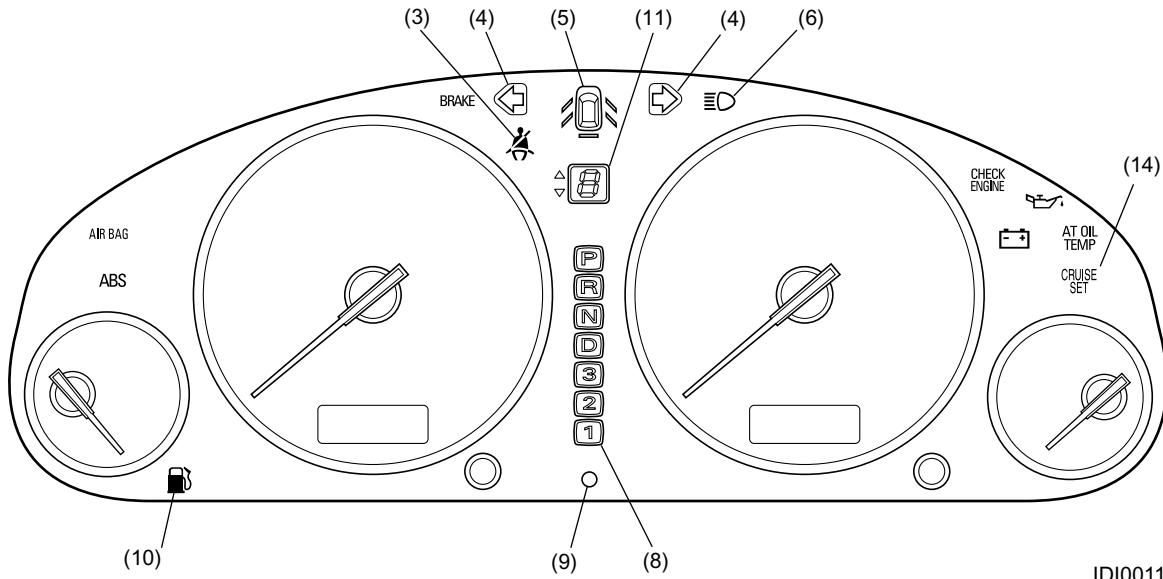
### B: TELLTALE (GRAPHIC MONITOR)

#### Vehicles without sports shift



IDI00118

#### Vehicles with sports shift

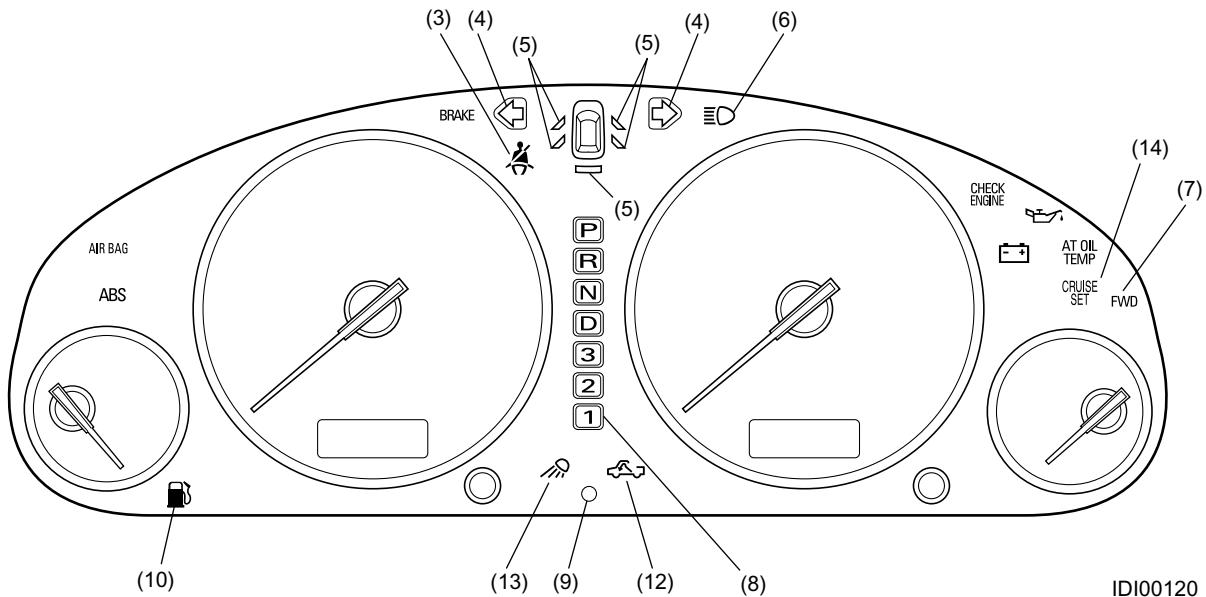


IDI00119

# COMBINATION METER

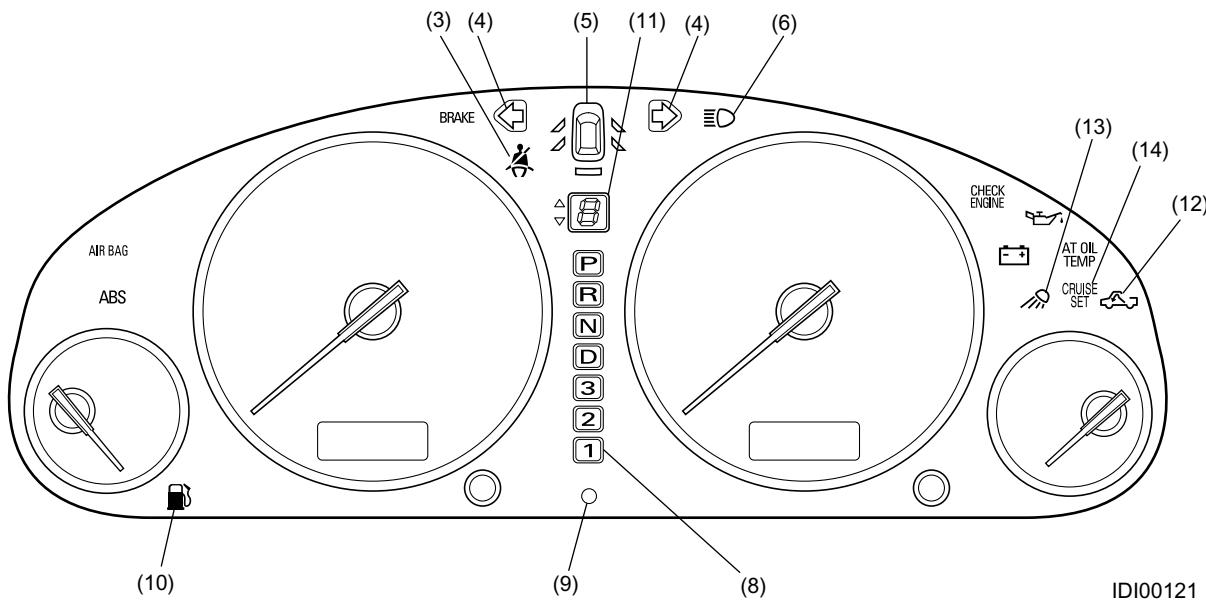
## INSTRUMENTATION/DRIVER INFO

### Pickup vehicles (non-turbo and turbo MT models)



IDI00120

### Pickup vehicles (turbo AT models)



IDI00121

## COMBINATION METER

### INSTRUMENTATION/DRIVER INFO

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- (1) VDC OFF indicator light  
This light illuminates when the VDC or TCS is deactivated.
- (2) VDC operation indicator light  
This light flashes when the VDC system is operating. It also illuminates when the TCS is operating.
- (3) Seat belt warning light  
This light stays illuminated for about 6 seconds after the ignition switch has been turned ON.
- (4) Turn signal indicator light  
This light blinks in unison with the corresponding turn signal lights when the turn signal switch or hazard warning switch is operated.
- (5) Door open warning light  
This warning light illuminates when one or more doors and/or rear gate are not completely closed.
- (6) Headlight beam indicator light  
This light illuminates when the headlights are in the high-beam position.
- (7) FWD indicator light  
This indicator illuminates when the drive mode is changed from AWD to FWD (with the fuse installed in the FWD switch).
- (8) AT selector lever position indicator  
The light corresponding to the present AT select lever position illuminates when the ignition switch is in any position other than ACC and LOCK.
- (9) Security indicator light  
This light illuminates when the security system is armed.
- (10) Low fuel warning light  
This light illuminates when the quantity of the fuel remaining in the tank has decreased to 10 ℥ (2.6 US gal, 2.2 Imp gal) or less.
- (11) Sports shift indicator  
This indicator indicates the current gear position when the AT selector lever is moved from the automatic mode (D range) to the sports shift mode and causes the D range light to turn off.
- (12) Switch back gate indicator light  
This light illuminates when the switch back gate is opened while the ignition switch is in the ON position. Also, this light blinks for 20 seconds and then turns off when the switch back gate is opened while the ignition switch is in the OFF position.
- (13) Cargo light indicator light  
This light illuminates when the cargo light switch is turned ON.
- (14) CRUISE SET indicator  
This indicator illuminates when the cruise control main switch is turned ON and the SET/COAST switch on the command switch is turned ON.

# COMBINATION METER

## INSTRUMENTATION/DRIVER INFO

When everything is normal, the telltales should be ON, OFF or in other states as shown below according to ignition switch position.

Telltale light	Ignition switch position			
	LOCK/ACC	ON	ST	While engine is running
(1) VDC OFF	OFF	ON	ON	*1
(2) VDC operation	OFF	*2	ON	OFF
(3) Seat belt	OFF	*3	*3	*3
(4) Turn signal	*4	Blink	Blink	Blink
(5) Door or rear gate open	• Open	ON	ON	ON
	• Closed	OFF	OFF	OFF
(6) Headlight beam	• High beam	OFF	ON	ON
	• Low beam	OFF	OFF	OFF
(7) FWD	• FWD	OFF	ON	ON
	• AWD	OFF	OFF	OFF
(8) AT selector lever position	OFF	ON	ON	ON
(9) Security	*5	OFF	OFF	OFF
(10) Low fuel level	OFF	*6	*6	*6
(11) Sports shift indicator	OFF	OFF	OFF	*7
(12) Switch back gate	*8	*8	*8	*8
(13) Cargo light	*9	*9	*9	*9

\*1: This light stays ON for about 4 seconds, and then goes out.

\*2: This light stays ON for about 2 seconds, and then goes out.

\*3: This light stays illuminated for about 6 seconds after the ignition switch has been turned ON.

\*4: This light blinks when the hazard warning switch is turned ON.

\*5: This light illuminates when the security system is armed.

\*6: This light illuminates when the quantity of the fuel remaining in the tank has decreased to 10 ℥ (2.6 US gal, 2.2 Imp gal) or less.

\*7: This light indicates the current gear position when the AT selector lever is moved from the D range to the sport shift mode.

\*8: This light illuminates when the switch back gate is opened while the ignition switch is ON, and blinks for 20 second and then goes OFF when the switch back gate opened while the ignition switch is OFF.

\*9: This light illuminates when the cargo light switch is turned ON.

# COMBINATION METER

## INSTRUMENTATION/DRIVER INFO

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### C: SPEEDOMETER

#### 1. DESCRIPTION

- The speedometer system is an electrical type that uses electric signals from the speed sensor in the MT model or the transmission control module (TCM) in the AT model.
- The vehicle speed sensor is installed on the manual transmission.
- Since the system does not use mechanical components such as rotating cable, there are no opportunities of occurring such problems as meter needle vibration and cable disconnection. Also, it does not constitute any means of mechanical noise transmission.

#### 2. OPERATION

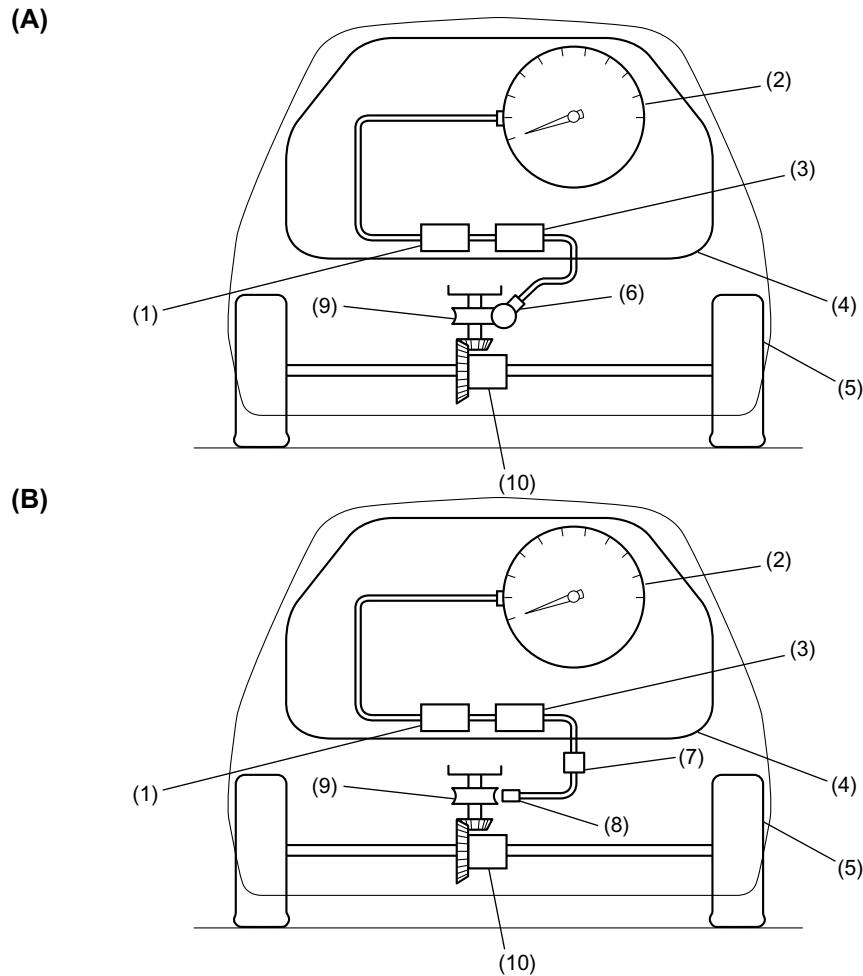
MT models: The vehicle speed sensor sends vehicle speed signals (4 pulses per rotation of speed sensor's driven shaft) to the speedometer drive circuit in the speedometer.

AT models: The TCM sends vehicle speed signals to the speedometer drive circuit in the speedometer.

#### NOTE:

Signals from the speed sensor or TCM are also used by the engine control module, automatic transmission control module, etc.

### 3. SYSTEM DIAGRAM



IDI00040

**(A)** MT models

**(B)** AT models

(1) Speedometer movement	(6) Speed sensor
(2) Speedometer	(7) TCM
(3) Speedometer drive circuit	(8) Electromagnetic pick-up
(4) Combination meter	(9) Gear for the speed sensor
(5) Front wheel	(10) Differentials

# COMBINATION METER

## INSTRUMENTATION/DRIVER INFO

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### 4. SPECIFICATIONS

Speedometer	Type	Electric pulse type
	Indication	Needle points to 60 km/h (37.3 MPH) when 2,548 pulses are input per minute.

### D: ODOMETER/TRIP METER

#### 1. DESCRIPTION

- The odometer and trip meter readings appear on a liquid crystal display (LCD).

#### 2. OPERATION

MT models: The vehicle speed sensor sends vehicle speed signals (4 pulses per rotation of speed sensors driven shaft) to the odometer/trip meter drive circuit in the speedometer.

AT models: The TCM sends vehicle speed signals to the odometer/trip meter drive circuit in the speedometer.

### 3. SPECIFICATIONS

Odometer	Type	Pulse count type
	Display	LCD/6 digits; 0 to 999,999 km (miles).
	Indication	Counts up 1 km per 2,548 pulses (1 mile per 4,104 pulses). (Count down is impossible.)
Trip meter	Type	Pulse count type
	Display	LCD/4 digits; 0 to 999.9 and 1000 to 9999 km (miles).
	Indication	Counts up 1 km per 2,548 pulses (1 mile per 4,104 pulses). (To change the trip meter from A to B or B to A, push the knob momentarily. To return the trip meter to zero indication, keep the knob pushed for more than 1 second.)

### E: VEHICLE SPEED SENSOR

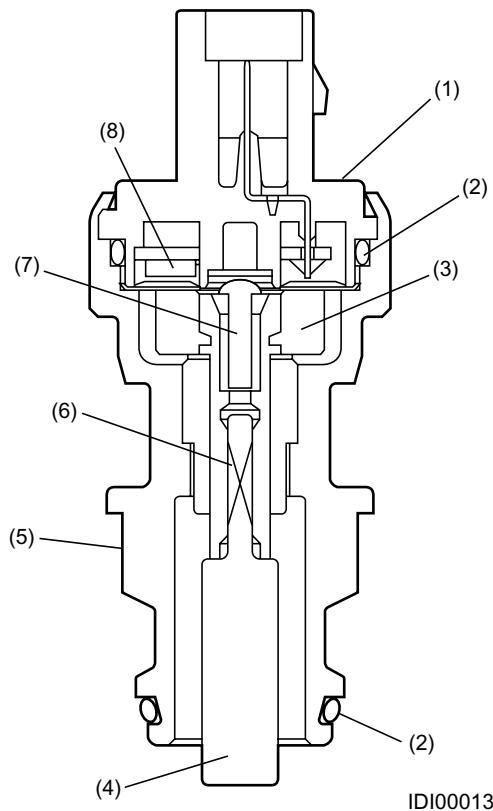
The vehicle speed sensor uses a Hall IC pick-up to generate speed signals. (MT models)

This sensor is installed on the transmission case and detects rotating speed of the transmission output gear.

The sensor generates 4 pulses per rotation of the speed sensor driven shaft and send them to the speedometer.

#### 1. CONSTRUCTION

The speed sensor mainly consists of a Hall IC, magnet ring, driven shaft and spring.



(1) Upper case

(4) Driven key

(7) Rivet

(2) O-ring

(5) Lower case

(8) Hall IC

(3) Magnet ring

(6) Driven shaft

# COMBINATION METER

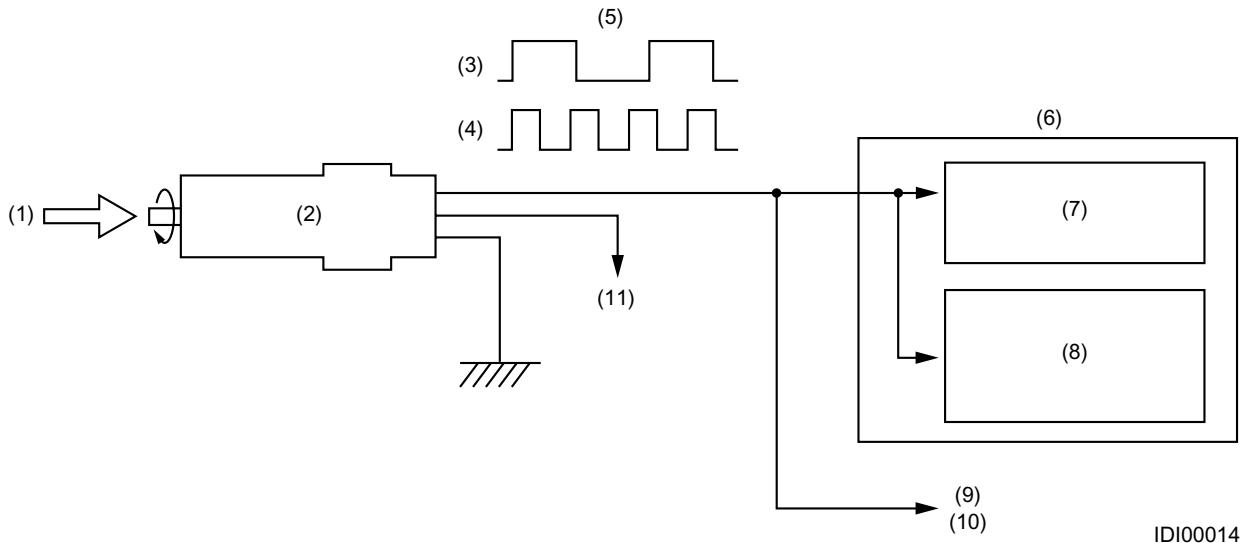
## INSTRUMENTATION/DRIVER INFO

### 2. OPERATION

As the driven key rotates, the magnet turns causing the magnetic field of the Hall IC to change.

The Hall IC generates a signal that corresponds to a change in the magnetic field.

One turn of the driven key in the speed sensor sends 4 pulses to the combination meter, engine control module and cruise control module.



- (1) Revolution of transmission output gear
- (2) Vehicle speed sensor
- (3) Low-speed
- (4) High-speed
- (5) Signal (4 pulses per revolution)
- (6) Combination meter

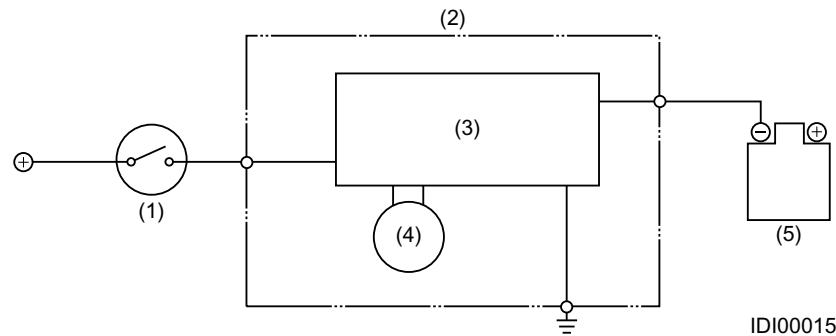
- (7) Speedometer drive circuit
- (8) Odometer and trip meter drive circuit
- (9) Engine control module
- (10) Cruise control module
- (11) Ignition switch

### F: TACHOMETER

The tachometer drive circuit is connected to the engine speed sensing circuit in the engine control module.

When the engine speed increases or decreases, the voltage of the circuit also increases or decreases, changing the magnetic force of the tachometer drive coil.

The tachometer needle then moves in accordance with change in the engine speed.



(1) Ignition switch

(4) Tachometer

(2) Combination meter

(5) ECU

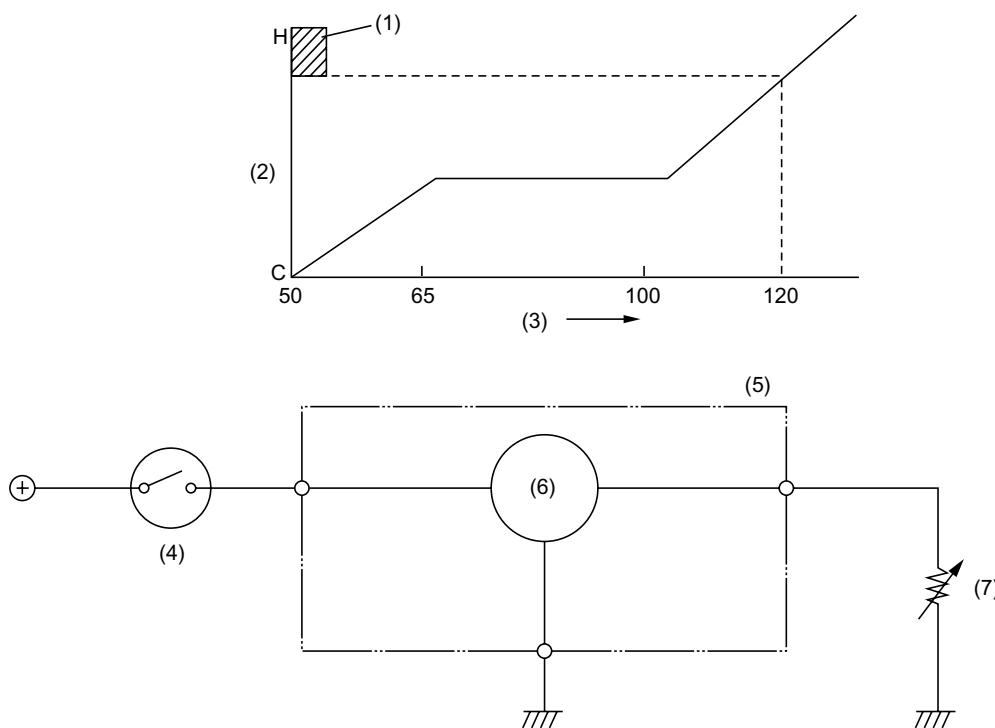
(3) Tachometer drive circuit

# COMBINATION METER

## INSTRUMENTATION/DRIVER INFO

### G: WATER TEMPERATURE GAUGE

- The water temperature gauge is a cross-coil type.
- The water temperature signal is sent from the thermo gauge located on the engine.
- The resistance of the thermo gauge changes according to the engine coolant temperature. Therefore, the current sent to the water temperature gauge also changes according to the engine coolant temperature. As the change in current causes the magnetic force of the coil to change, the gauge needle moves according to the engine coolant temperature.
- When the coolant is at a normal operating temperature of approx. 70 to 100°C (158 to 212°F), the gauge needle stays in the middle of the indication range as shown below.



IDI00016

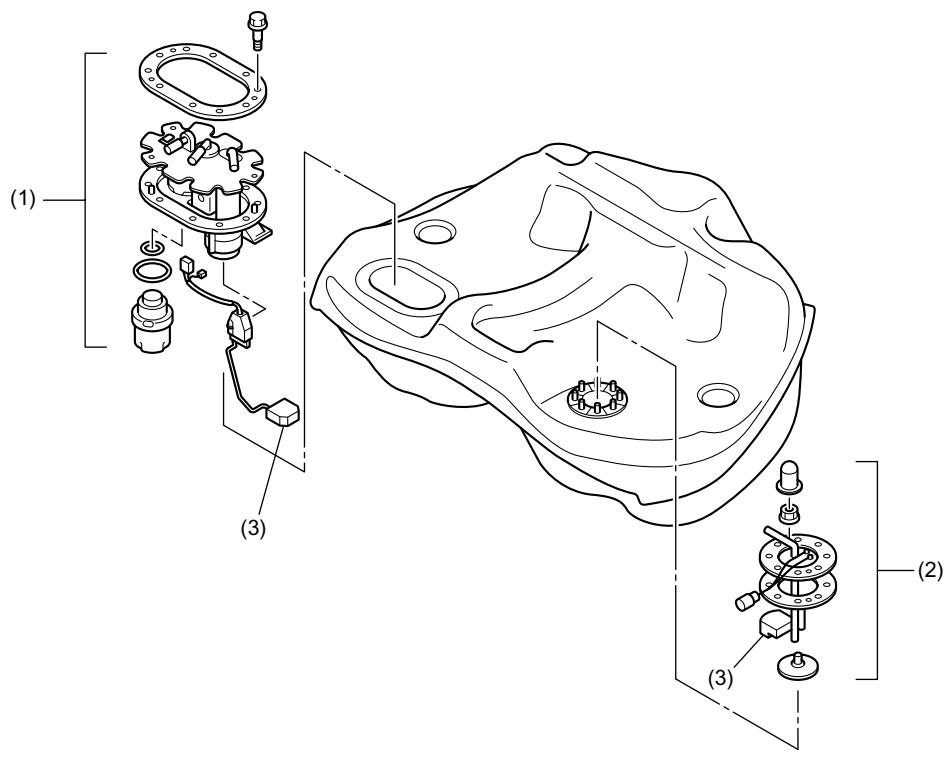
- (1) Red zone
- (2) Indication
- (3) Temperature (°C)
- (4) Ignition switch

- (5) Combination meter
- (6) Water temperature gauge
- (7) Engine coolant temperature sensor

## H: FUEL GAUGE

### 1. GENERAL

- The fuel gauge unit consists of a float and a potentiometer whose resistance varies depending on movement of the float. It is located inside the fuel tank and forms an integral part of the fuel pump. The fuel gauge indicates the fuel level in the tank even when the ignition switch is in the LOCK position.
- All models are equipped with two fuel level sensors. These sensors are installed in the fuel tank, one on the right side and the other on the left side. Two sensors are necessary because the fuel tank is divided into main and sub tank compartments.



IDI00041

- (1) Main fuel level sensor
- (2) Sub fuel level sensor
- (3) Float

# COMBINATION METER

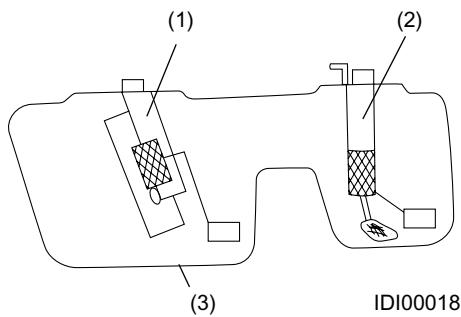
## INSTRUMENTATION/DRIVER INFO

### 2. OPERATION

The low fuel warning light operates as follows:

The combination meter CPU continually monitors the resistance signal from the fuel level sensor. It turns on the low fuel warning light in the combination meter if a resistance value corresponding to the critical fuel level (approx.  $76 \Omega$ ) is detected successively for about 10 minutes or the period spent for driving a distance of 10 km.

This monitoring time has been decided to avoid false operation of the warning light which may happen when a large part of remaining fuel is collected temporarily in the sub tank compartment.



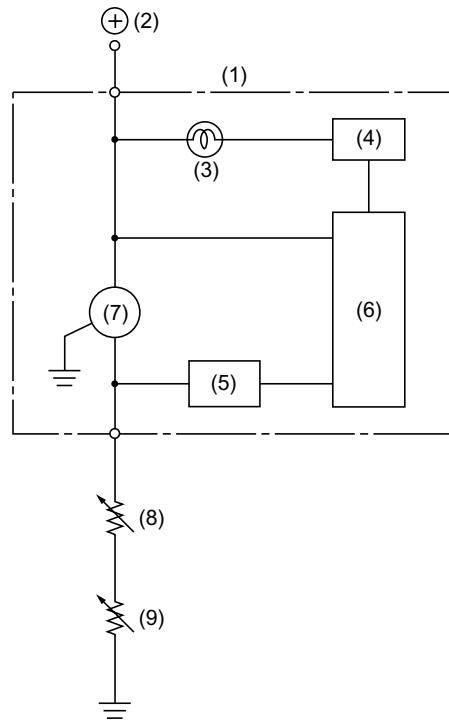
IDI00018

- (1) Main fuel level sensor
- (2) Sub fuel level sensor
- (3) Fuel tank

### 3. SPECIFICATIONS

	Fuel level	Resistance
Main fuel level sensor	Full	0.5 — $2.5 \Omega$
	1/2	18.5 — $22.5 \Omega$
	Empty	52.5 — $54.5 \Omega$
Sub fuel level sensor	Full	0.5 — $2.5 \Omega$
	1/2	23.6 — $27.6 \Omega$
	Empty	39.5 — $41.5 \Omega$

### 4. SCHEMATIC DRAWINGS



IDI00042

(1) Combination meter	(6) CUSTOM CPU
(2) Ignition switch	(7) Fuel gauge
(3) Low fuel warning light	(8) Sub fuel level sensor
(4) Driver circuit	(9) Main fuel level sensor
(5) Interface	