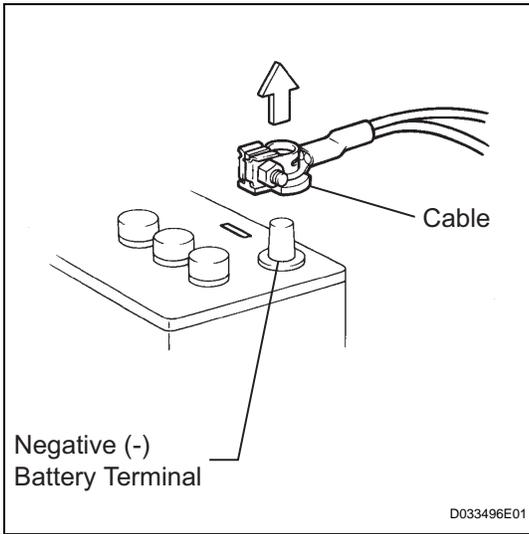


# METER / GAUGE SYSTEM

## PRECAUTION



### 1. DISCONNECT AND RECONNECT CABLE OF NEGATIVE BATTERY TERMINAL

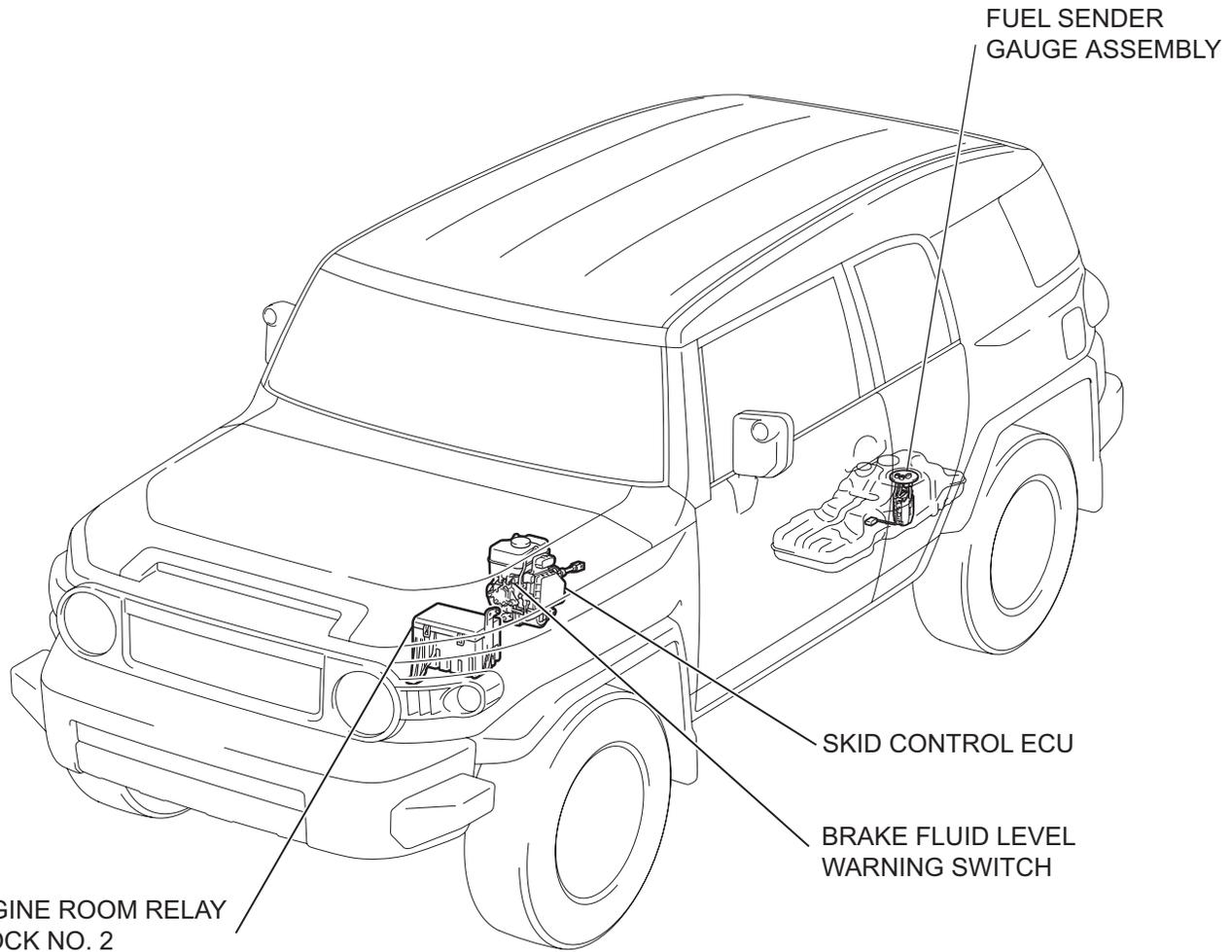
- (a) Before performing electronic work, disconnect the cable from the negative (-) battery terminal in order to prevent it from shorting and burning out.
- (b) Before disconnecting and reconnecting the battery cable, turn the ignition switch OFF and the headlight dimmer switch OFF. Then loosen the terminal nut completely. Do not damage the cable or terminal.
- (c) When the battery cable is disconnected, the clock and radio settings and stored DTCs are erased. Therefore, before disconnecting the battery cable, make a note of them.

### NOTICE:

**When the cable is disconnected from the negative (-) battery terminal, initialize the following system(s) after the cable is reconnected.**

System name	See procedure
METER / GAUGE SYSTEM	ME-10

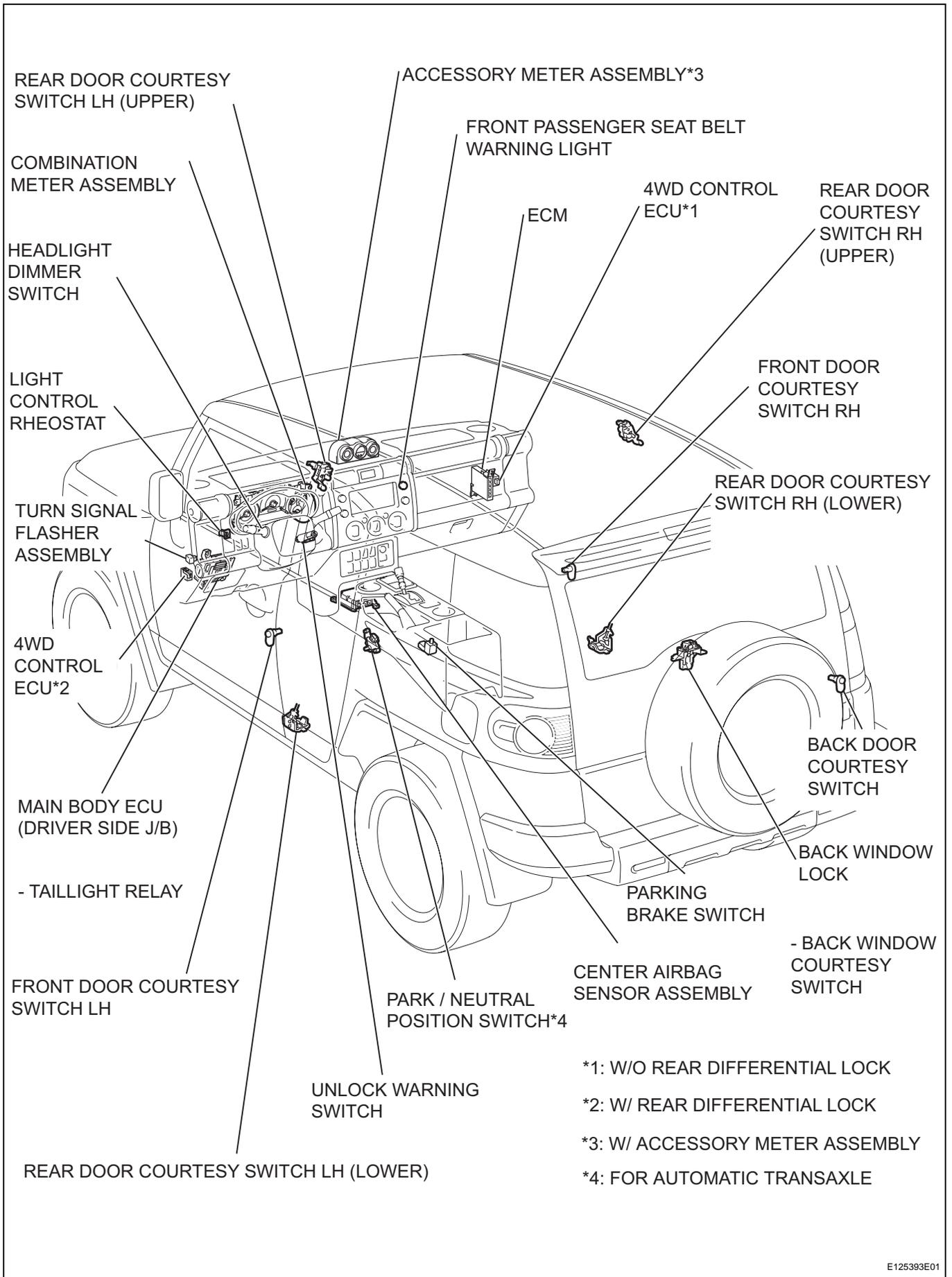
# PARTS LOCATION



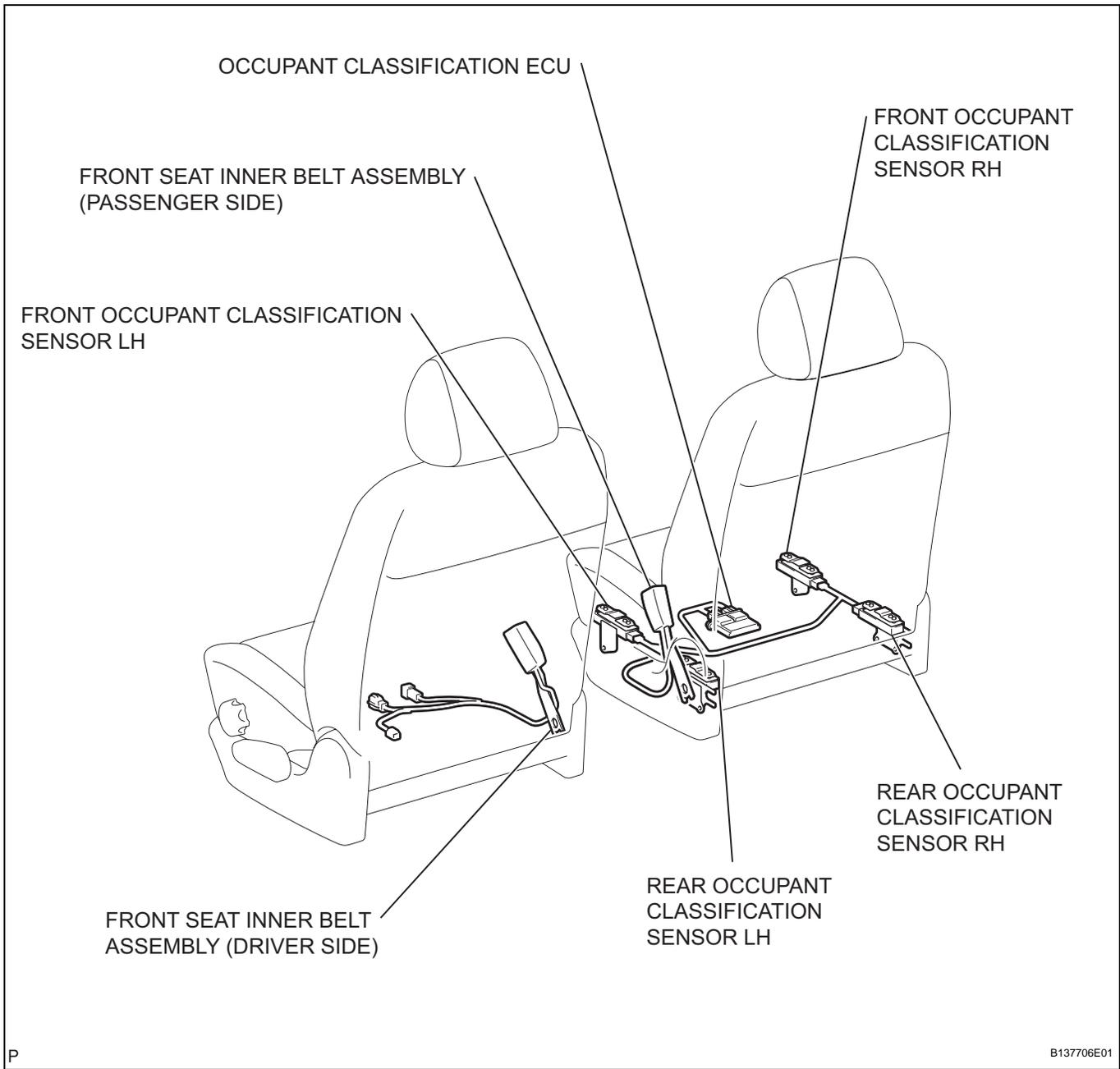
ME

ENGINE ROOM RELAY  
BLOCK NO. 2

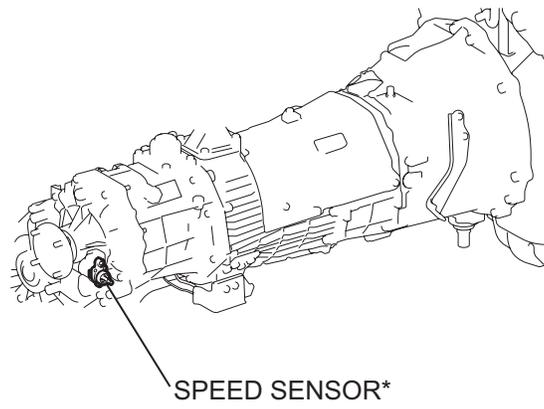
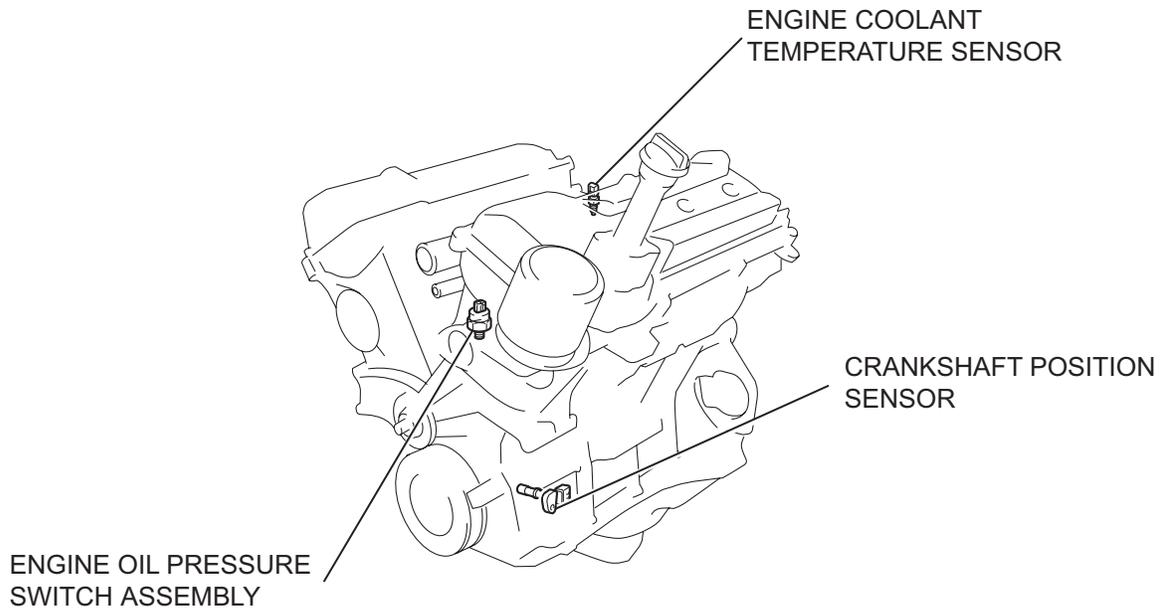
- AM2 FUSE
- DOME FUSE



ME



ME

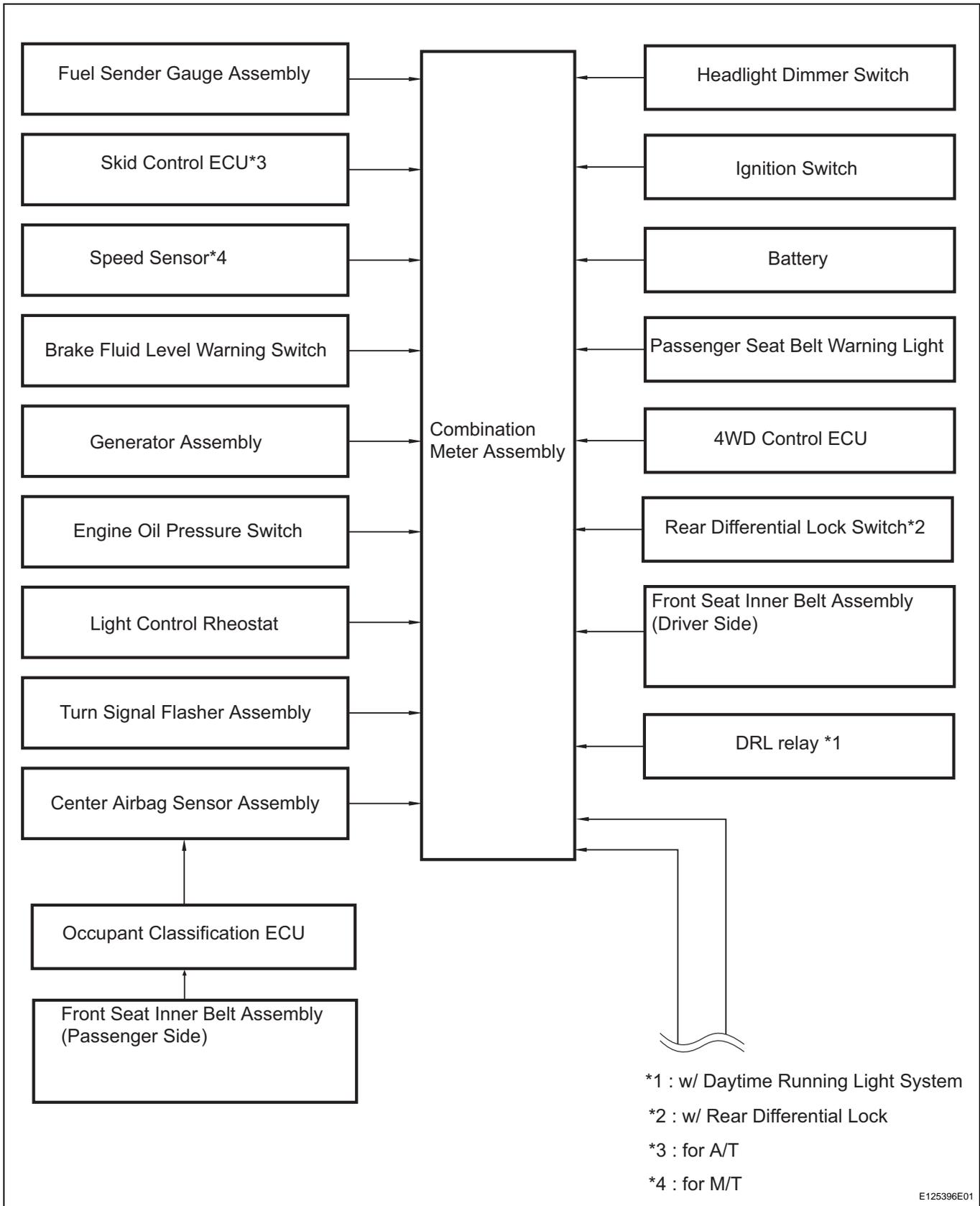


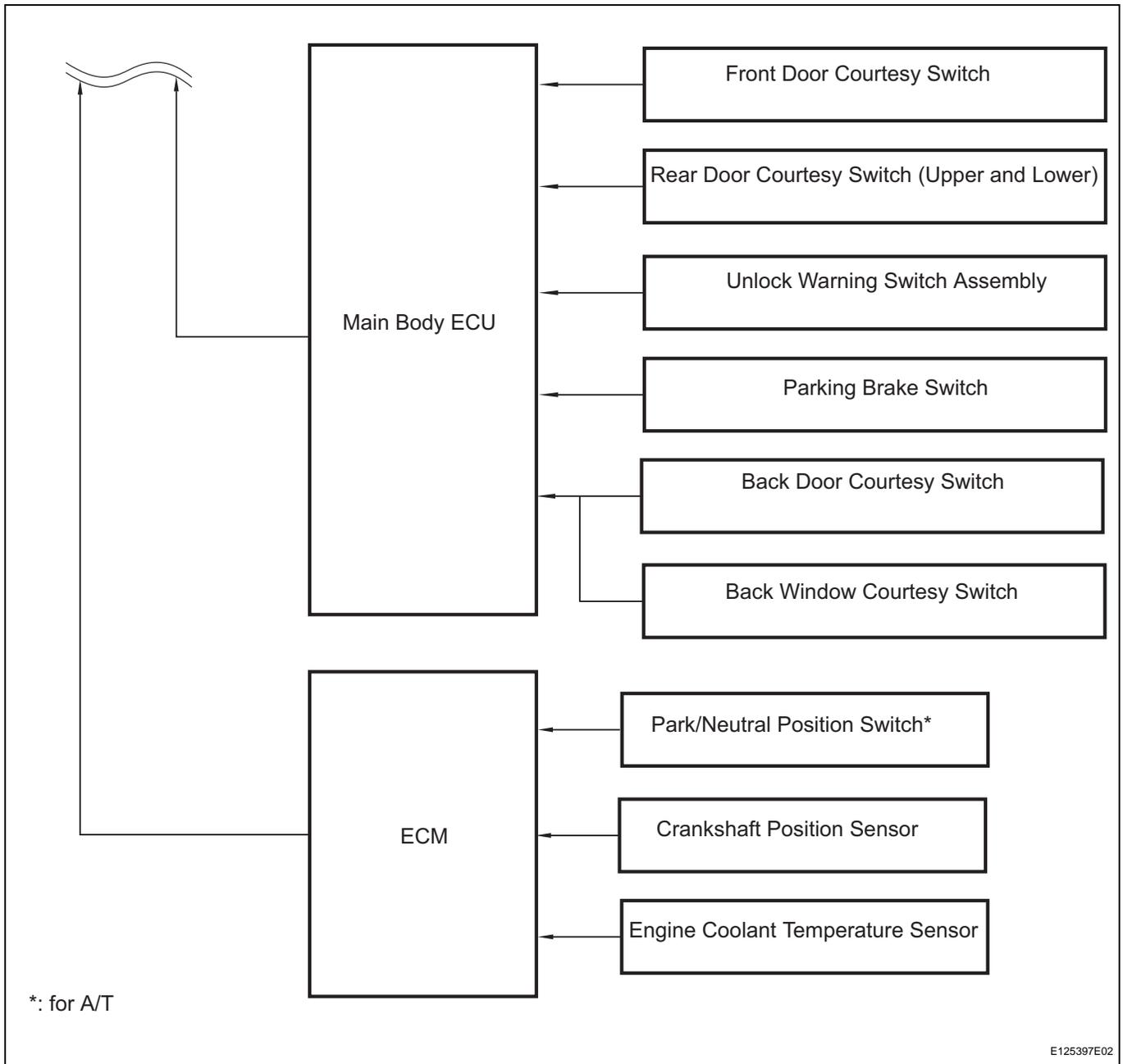
\*: FOR M/T

ME

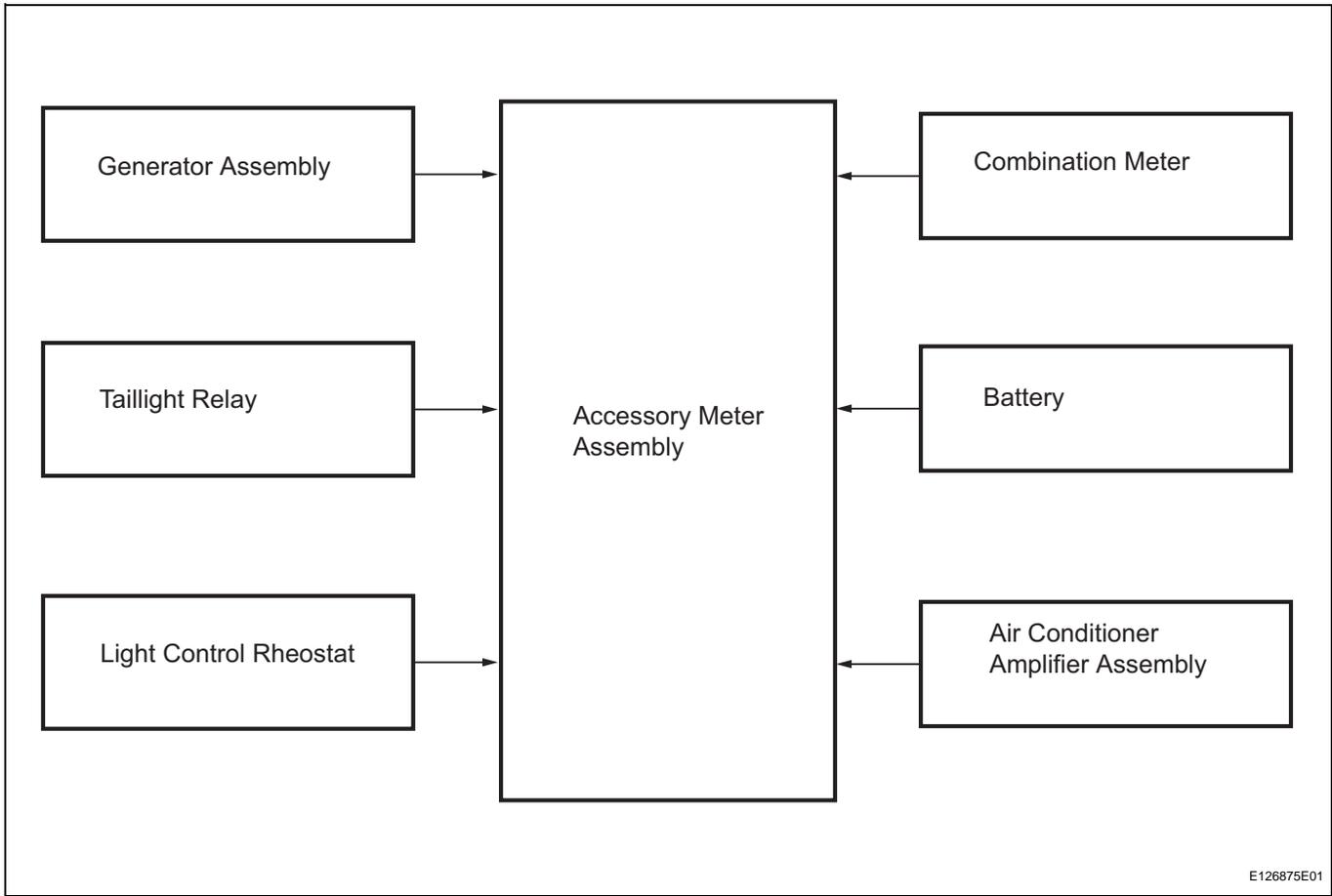
# SYSTEM DIAGRAM

## 1. COMBINATION METER ASSEMBLY





2. ACCESSORY METER ASSEMBLY



E126875E01

## SYSTEM DESCRIPTION

### 1. METER GAUGE AND WARNING INDICATOR

#### GAUGE

Item	Signal Description
Speedometer	Indicates vehicle speed based on signals received from speed sensor (Direct line)
Tachometer	Indicates engine speed based on signals from ECM (Direct line)
ODO / TRIP meter	Calculates accumulated total vehicle travel distance and vehicle travel distance since trip meter knob pressed
Fuel Gauge	Indicates fuel level in accordance with signals received from fuel sender gauge (Direct line)
Engine Coolant Temperature Gauge	Indicates engine coolant temperature in accordance with signal from ECM (Direct line)
Volt Gauge	Indicates vehicle voltage according to voltage from IG terminal (Direct line)

#### WARNING / INDICATOR

Item	Signal Description
TURN SIGNAL	Receives turn signal from flasher relay (Direct line)
BEAM	Receives beam signal from headlight dimmer switch (BEAN)
CHARGE	Receives malfunction signal from generator (Direct line)
MIL	Receives malfunction check signal from ECM (Direct line)
DOOR	Open door indicator illuminates when receiving signal from main body ECU (BEAN)
D BELT	Receives driver seat belt signal (unfastened) from center airbag sensor assembly (BEAN)
BRAKE	Receives parking brake switch signal from main body ECU (Direct line) and fluid level warning signal from brake level switch (Direct line)
OIL PRESSURE	Receives malfunction signal from oil pressure switch (Direct line)
MAINT REQD*1	Blinks when about 4,500 miles driven since oil change. Illuminates when about 5,000 miles driven since oil change.
AIRBAG	Receives malfunction signal from center airbag sensor assembly (Direct line)
ABS	Receives malfunction signal from skid control ECU (Direct line)
P BELT	Blinks when front passenger seat belt switch ON (unfastened)
FUEL	Receives fuel empty signals from fuel sender gauge.
CRUISE*2	Receives malfunction signal from ECM (Direct line)
AUTO LSD*3	Receives signals from hydraulic brake booster while AUTO LSD is operating.
VSC TRAC	Receives malfunction signal from skid control ECU (Direct line)
VSC OFF*4	Receives malfunction signal from skid control ECU (Direct line)
SLIP	Receives malfunction signal from skid control ECU (Direct line)
ABS	Receives malfunction signal from skid control ECU (Direct line)
4WD*5	Receives signals from 4WD control ECU while 4WD is operating.
A-TRAC*5	Receives malfunction signal from skid control ECU (Direct line)
REAR DIFF. LOCK*4	Receives signals from 4WD control ECU while Rear Differential Lock is operating.

- \*1: U.S.A. only
- \*2: w/ Cruise Control
- \*3: for 2WD
- \*4: w/ Rear Differential Lock
- \*5: for 4WD

**Buzzer**

Item	Signal Description
Key Reminder	Buzzer ON when ignition switch OFF, key inserted and driver door open.
Manual Shift Reverse (6MT)	Buzzer ON when ignition switch ON and shift position is reverse.
Seat Belt Warning	Buzzer ON when vehicle speed exceeds 12.4mph (20km/h) and seat belt unfastened.

## HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the combination meter.
- Use an intelligent tester in steps 3 and 5.

**1** VEHICLE BROUGHT TO WORKSHOP

NEXT

**2** INSPECT BATTERY VOLTAGE

**Standard voltage:**

**11 to 14 V**

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

**3** PROBLEM SYMPTOMS TABLE

HINT:

Refer to the Problem Symptoms Table (See page [ME-15](#)).

**Result**

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

**B**

**Go to step 6**

**A**

**4** OVERALL ANALYSIS AND TROUBLESHOOTING

- Terminals of ECU (See page [ME-17](#))
- On-vehicle Inspection (See page [ME-29](#))

NEXT

**5** ADJUST, REPAIR OR REPLACE

NEXT

6	CONFIRMATION TEST
---	-------------------

NEXT

END
-----

## CALIBRATION

### 1. DESCRIPTION

#### NOTICE:

**Do not place magnetic or metal objects on or near the accessory meter.**

#### HINT:

The procedures described below are for vehicles equipped with an accessory meter.

- (a) The location of magnetic north differs depending on the vehicle location. Adjustment of the compass' magnetism is required to correct possible compass deviations from true north.
- (b) Compass function calibration is necessary when: 1) purchasing a vehicle; 2) disconnecting and reconnecting the cable of the negative (-) battery terminal; 3) replacing the vehicle battery; 4) driving the vehicle outside the set zone (see the zone map below); or 5) placing magnetic or metal objects near the accessory meter (the direction indication on the display blinks).

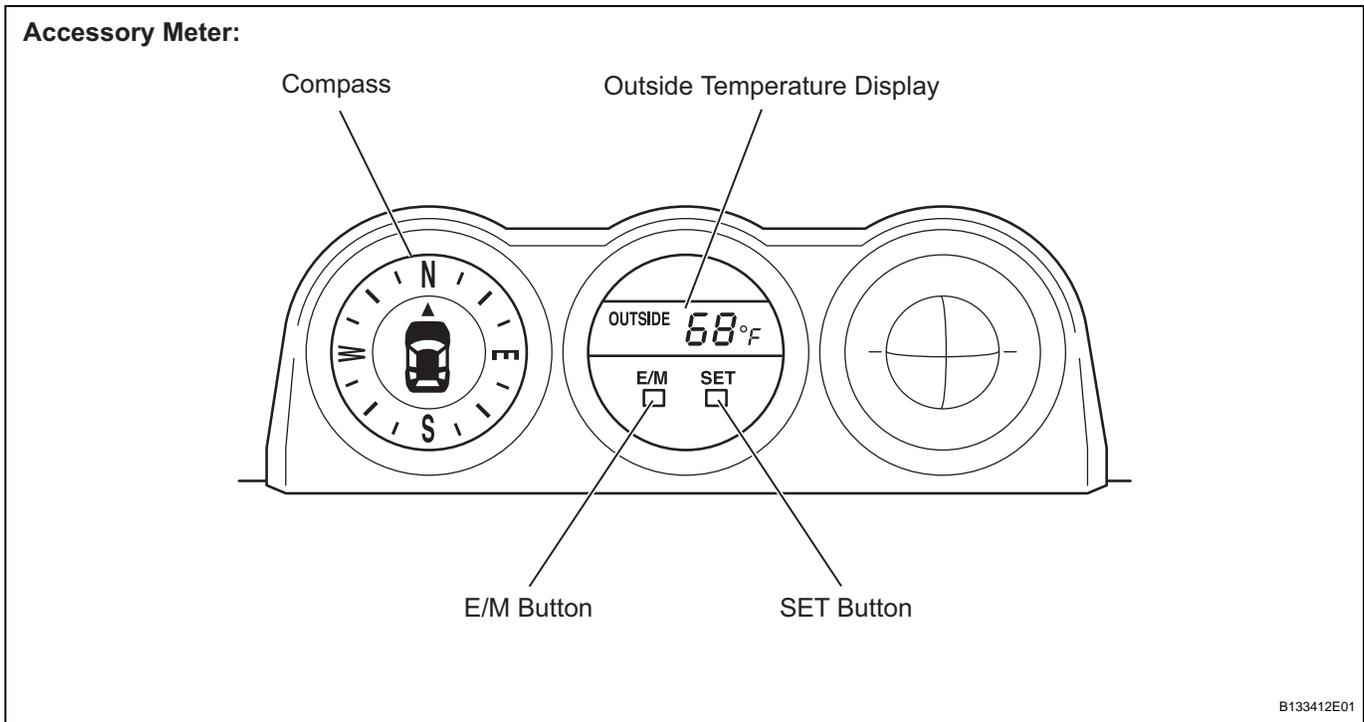
### 2. PERFORM CALIBRATION

#### CAUTION:

- **Strictly observe posted speed limits, traffic laws and road conditions.**
- **Make sure no people are near the vehicle.**

#### NOTICE:

- **Perform the circling calibration in a spacious area that does not have artificial magnetic influence. Calibration cannot be performed in underground parking lots, areas under steel towers and areas between tall buildings.**
- **When performing the calibration, do not operate the air conditioner, power windows, or any other electrical system.**
- **The compass may become magnetized during shipping by vessels or freight cars. Be sure to calibrate the compass by correctly performing the procedure described below. If the calibration cannot be completed despite the vehicle being driven in a circle several times, the vehicle's magnetic field may be interfering with the calibration. Demagnetize the vehicle using a demagnetizer and perform calibration again.**



## (a) DEVIATION CALIBRATION PROCEDURE:

- (1) Turn the ignition switch ON.

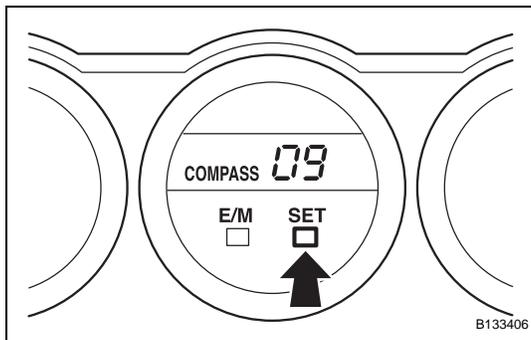
HINT:

When the initial circling calibration has not yet been performed, the COMPASS indicator in the outside temperature display blinks.

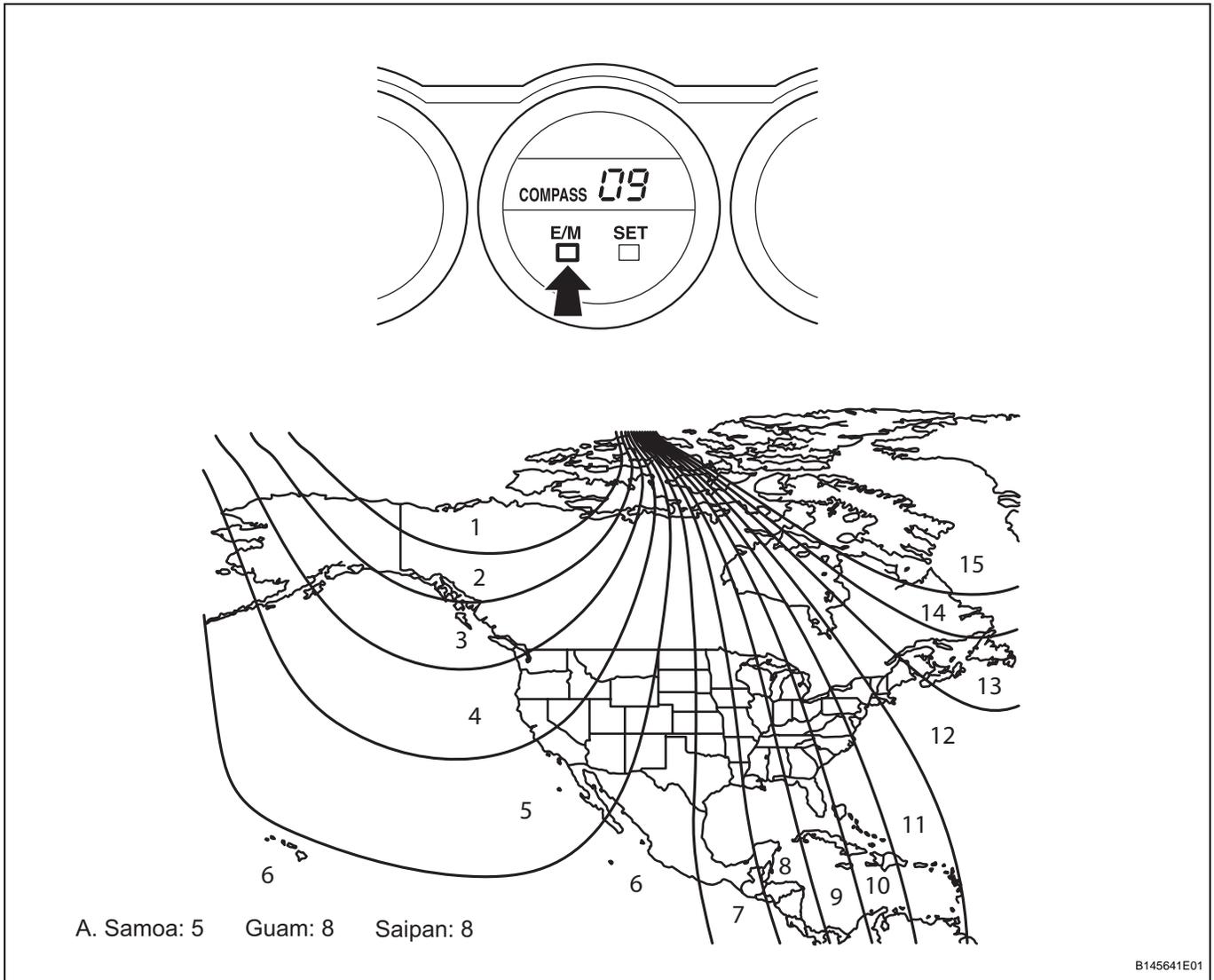
- (2) Switch the mode to compass correction mode by pushing the SET button for about 2 seconds, until the zone number appears in the outside temperature display.

HINT:

If no button operations occur for more than 6 seconds while in compass correction mode, the calibration is cancelled and the display returns to the outside temperature indication. To restart, perform the procedure from the first step again.



(3) Refer to the following map to determine the vehicle location and select the relevant zone number by pushing the E/M button.



ME

**HINT:**

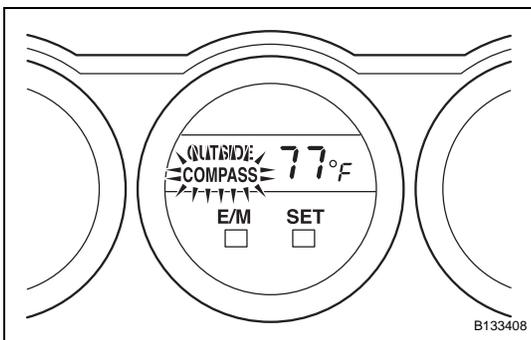
After DEVIATION CALIBRATION, leave the system for 6 seconds or push and hold the SET button for about 2 seconds. The display returns to the outside temperature display.

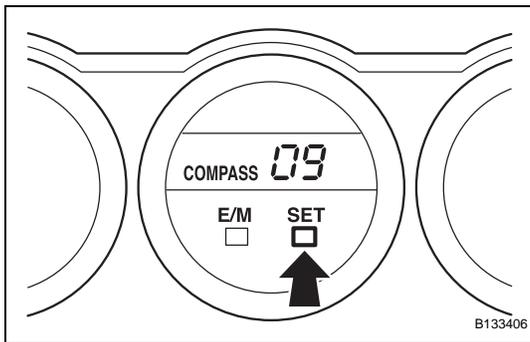
(b) **CIRCLING CALIBRATION PROCEDURE:**

(1) Start the engine.

**HINT:**

When the initial circling calibration has not yet been performed, the COMPASS indicator in the outside temperature display blinks.





- (2) Switch the mode to compass correction mode by pushing the SET button for about 2 seconds, until the zone number appears in the outside temperature display.

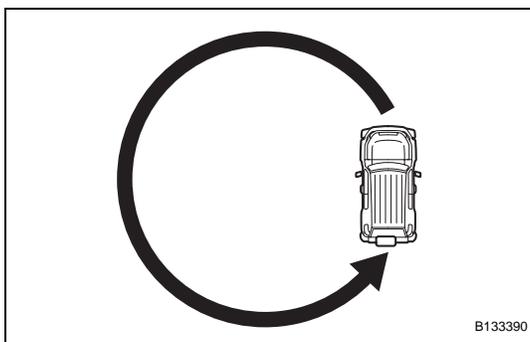
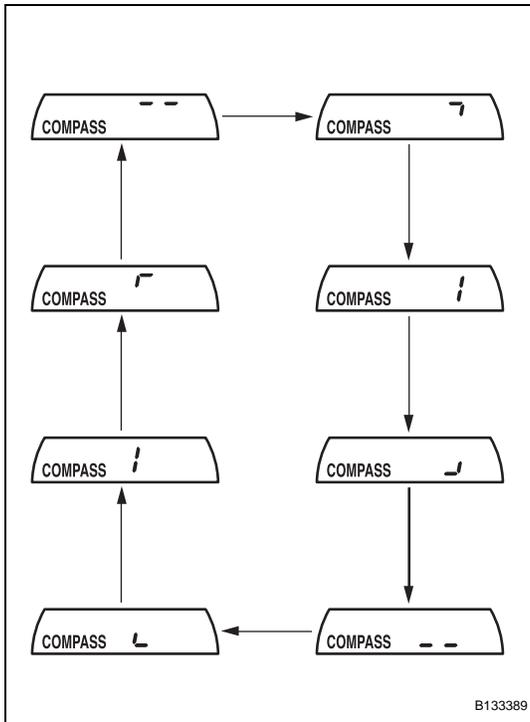
HINT:

If no button operations occur for more than 6 seconds while in compass correction mode, calibration is cancelled and the display returns to the outside temperature indication. To restart, perform the procedure from the first step again.

- (3) Push the SET button again to change the mode to turn correction mode.

HINT:

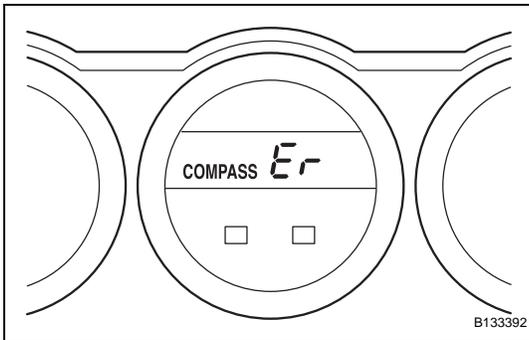
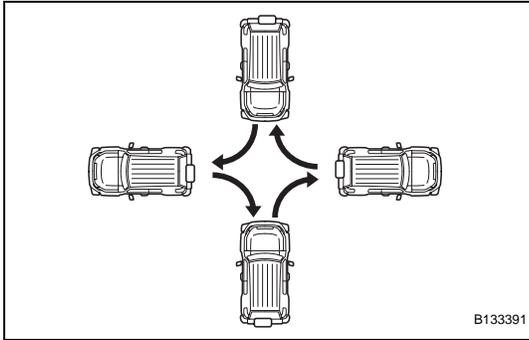
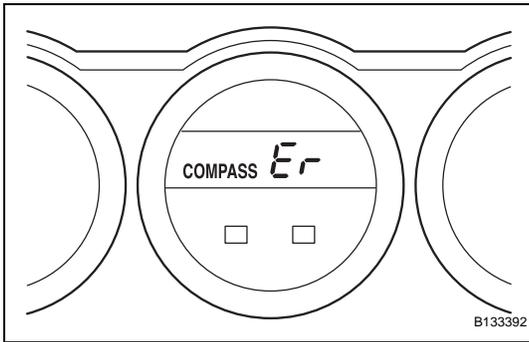
While in correction mode, the indication bars move as shown in the illustration.



- (4) If there is sufficient space to drive the vehicle in a circle, perform the following procedure:
1. Drive the vehicle in a full circle within 2 minutes, at a vehicle speed of 5mph (8km/h) or lower, as shown in the illustration.

**NOTICE:**

- Do not perform the circling calibration of the compass in a place where the earth's magnetic field is subject to interference by artificial magnetic fields (underground parking, under a steel tower, between buildings, roof parking, near a crossing, near a large vehicle, etc.).
- During the calibration, do not operate any electric systems (power window, etc.) as they may interfere with the calibration.



## HINT:

- When the compass display returns to the outside temperature display, the calibration is complete.
- When the circling calibration fails, "Er" is displayed for about 2 seconds and then the COMPASS indicator flashes.
- If the correct direction is not displayed after driving the vehicle as specified, change the vehicle location.
- To cancel the calibration before completion, push the SET button for about 2 seconds.

- (5) If enough space is not available to drive in a circle, perform the following:
1. Perform a four-point turn within 2 minutes, as shown in the illustration.

## NOTICE:

- **Do not perform the circling calibration of the compass in a place where the earth's magnetic field is subject to interference by artificial magnetic fields (underground parking, under a steel tower, between buildings, roof parking, near a crossing, near a large vehicle, etc.).**
- **During the calibration, do not operate any electric systems (power window, etc.) as they may interfere with the calibration.**

## HINT:

- When the compass display returns to the outside temperature display, the calibration is complete.
  - When the circling calibration fails, "Er" is displayed for about 2 seconds and then the COMPASS indicator flashes.
  - If the correct direction is not displayed after driving the vehicle as specified, change the vehicle location.
  - To cancel the calibration before completion, push the SET button for about 2 seconds.
- (6) Check that the COMPASS indicator is not blinking and that the compass is displayed normally.

## PROBLEM SYMPTOMS TABLE

### HINT:

Use the table below to help determine the causes of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected area in the order they are listed. Replace parts as necessary.

### MALFUNCTION SYSTEM

Symptom	Suspected area	See page
Entire combination meter assembly does not operate	Refer to troubleshooting	<a href="#">ME-34</a>
Operating light control rheostat does not change light brightness	Refer to troubleshooting	<a href="#">ME-54</a>

### METER GAUGES

Symptom	Suspected area	See page
Speedometer malfunction	Refer to troubleshooting	<a href="#">ME-37</a>
Tachometer malfunction	Refer to troubleshooting	<a href="#">ME-42</a>
Fuel gauge malfunction	Refer to troubleshooting	<a href="#">ME-44</a>
Engine coolant temperature gauge malfunction	Refer to troubleshooting	<a href="#">ME-47</a>

### WARNING/INDICATOR LIGHT

Symptom	Suspected area	See page
MIL does not come on	ECM	<a href="#">ES-404</a>
	Wire harness or connector	-
	Combination meter assembly	<a href="#">ME-17</a>
Charge warning light does not come on	Generator (alternator)	<a href="#">CH-13</a>
	ECM	<a href="#">ES-29</a>
	Wire harness or connector	-
Brake warning light does not come on	Combination meter assembly	<a href="#">ME-17</a>
	Brake fluid level warning switch	<a href="#">BC-165</a>
	Parking brake switch assembly	<a href="#">PB-24</a>
	Main body ECU	<a href="#">ME-17</a>
	Wire harness or connector	-
ABS warning light does not come on	Combination meter assembly	<a href="#">ME-29</a>
	Skid Control ECU	<a href="#">BC-154</a>
Airbag warning light does not come on	Combination meter assembly	<a href="#">ME-29</a>
	Center airbag sensor assembly	<a href="#">RS-234</a>
Engine oil pressure warning light does not come on	Combination meter assembly	<a href="#">ME-29</a>
	Engine oil pressure switch assembly	-
	Wire harness or connector	-
Driver side seat belt warning light does not operate	Combination meter assembly	<a href="#">ME-29</a>
	Front seat inner belt assembly LH	<a href="#">SB-32</a>
	Wire harness or connector	-
Turn indicator light does not come on	Combination meter assembly	<a href="#">ME-17</a>
	Turn signal flasher assembly	<a href="#">LI-123</a>
	Wire harness or connector	-
Beam indicator light does not come on	Combination meter assembly	<a href="#">ME-17</a>
	Headlight dimmer switch	<a href="#">LI-104</a>
	Wire harness or connector	-
MAINT REQD indicator light blinks or remains illuminated*1	Combination meter assembly	<a href="#">ME-17</a>
	Resetting procedure	<a href="#">ME-32</a>

Symptom	Suspected area	See page
Open door warning light does not come on	Door courtesy switch	LI-114
	Main body ECU	ME-17
	Wire harness or connector	-
	Combination meter assembly	ME-29
Fuel level warning light does not come on	Wire harness or connector	-
	Combination meter assembly	ME-17
A/T oil temperature warning light does not come on*2	ECM	ES-6
	Wire harness or connector	-
	Combination meter assembly	ME-17
CRUISE indicator light does not come on*3	ECM	ES-6
	Cruise control main switch	CC-7
	Wire harness or connector	-
	Combination meter assembly	ME-17
Rear differential lock indicator light does not come on*4	4WD control ECU	BC-6
	Wire harness or connector	-
	Combination meter assembly	ME-17
4WD indicator light does not come on*5	4WD control ECU	BC-6
	Wire harness or connector	-
	Combination meter assembly	ME-17
SLIP indicator light does not come on	Skid Control ECU	BC-175
	Wire harness or connector	-
	Combination meter assembly	ME-17
VSC OFF indicator light does not come on*4	Skid control ECU	BC-171
	Wire harness or connector	-
	Combination meter assembly	ME-17
VSC TRAC warning light does not come on	Skid control ECU	BC-159
	Wire harness or connector	-
	Combination meter assembly	ME-17
AUTO LSD indicator light does not come on*6	Skid control ECU	BC-180
	Wire harness or connector	-
	Combination meter assembly	ME-17
A-TRAC indicator light does not come on*5	Skid control ECU	BC-185
	Wire harness or connector	-
	Combination meter assembly	ME-17

- \*1: U.S.A. only
- \*2: for A/T
- \*3: w/ cruise control
- \*4: w/ rear differential lock
- \*5: for 4WD
- \*6: for 2WD

**BUZZER**

Symptom	Suspected area	See page
No buzzers sound	Wire harness or connector	-
	Combination meter assembly	ME-49
Seat belt warning buzzer does not sound	Front seat inner belt assembly	SB-32
	Center airbag sensor assembly	RS-27
	Occupant classification sensor	RS-250
	Wire harness or connector	-
	Combination meter assembly	ME-17

ME

Symptom	Suspected area	See page
Key reminder warning buzzer does not sound	Unlock warning switch assembly	<a href="#">DL-102</a>
	Main body ECU	<a href="#">ME-17</a>
	Wire harness or connector	-
	Combination meter assembly	<a href="#">ME-17</a>
Manual shift reverse warning does not sound*	Combination Meter Assembly	<a href="#">ME-17</a>

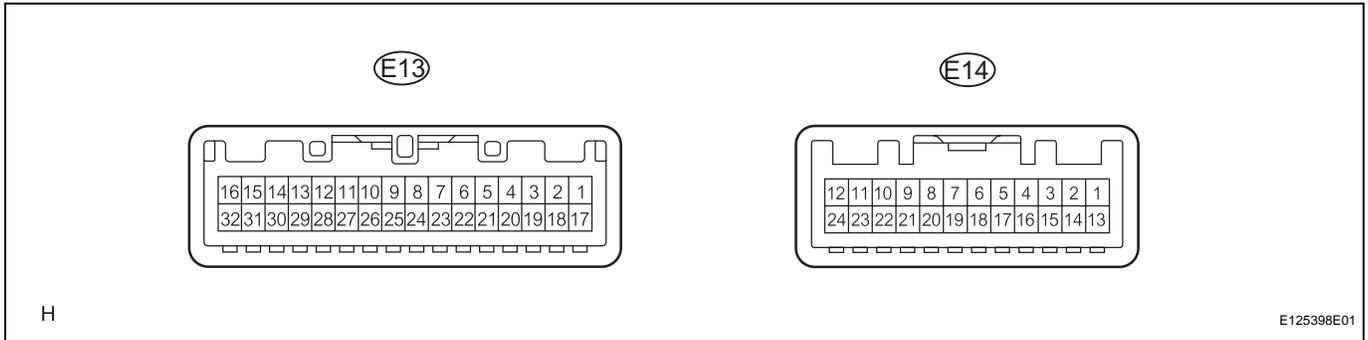
\*: for M/T

**ACCESSORY METER ASSEMBLY**

Symptom	Suspected area	See page
Illumination does not come on	Wire harness or connector	-
	Accessory meter assembly	-
Accessory meter does not operate	Wire harness or connector	-
	Accessory meter assembly	-
Ambient temperature does not display	Air conditioning amplifier	<a href="#">AC-5</a>
	Wire harness or connector	-
	Accessory meter assembly	-
Compass does not operate	Accessory meter assembly	-
Clinometer does not operate	Accessory meter assembly	-

# TERMINALS OF ECU

## 1. COMBINATION METER ASSEMBLY



- (a) Disconnect the E13 combination meter assembly connector.
- (b) Measure the voltage and resistance of the wire harness side connector.

**Standard:**

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
IG+ (E13-2) - Body ground	R-L - Body ground	Ignition switch signal	Ignition switch OFF → ON	Below 1 V → 11 to 14 V
B (E13-1) - Body ground	R - Body ground	Battery	Always	11 to 14 V
ES (E13-21) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

If the result is not as specified, there may be a malfunction in the wire harness.

- (c) Disconnect the E14 combination meter assembly connector.
- (d) Measure the voltage of the wire harness side connector.

**ME**

**Standard voltage:**

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
SE *1 (E13-4) - Body ground	W - Body ground	Vehicle speed signal (Output)	Driving at approx. 12 mph (20 km/h)	Pulse generation (See waveform 2)
E3 (E13-5) - Body ground	Y-B - Body ground	Fuel level signal	Ignition switch ON	11 to 14 V
SW (E13-6) - Body ground	B-Y - Body ground	Airbag signal	Airbag warning light ON → OFF	Below 1 V → 11 to 14 V
WRNP (E13-7) - Body ground	LG - Body ground	Passenger side seat belt warning light signal (Output)	Ignition switch ON Front passenger seat is occupied and its seat belt is unfastened	11 to 14 V → Below 1 V
			Ignition switch ON Front passenger seat is occupied and its seat belt is fastened	Below 1 V
L (E13-8) - Body ground	G-Y - Body ground	Seat belt condition signal (Driver side)	D-BELT indicator light ON	Below 1 V
			D-BELT indicator light OFF	11 to 14 V
KSW (E13-9) - Body ground	V-G - Body ground	Key switch condition signal	Key inserted	Below 1 V
			Key removed	11 to 14 V
PBKL (E13-10) - Body ground	L-R - Body ground	Front seat inner belt signal (Front passenger side)	Ignition switch ON Front seat belt is unfastened or fastened (Front passenger side)	Pulse generation
ILL- (E13-11) - Body ground	BR-W - Body ground	Light control rheostat signal	Ignition switch OFF → ON	Pulse generation (See waveform 1)

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
S (E13-12) - Body ground	B-W - Body ground	Tachometer signal	Idling	Pulse generation (See waveform 2)
SI (E13-13) - Body ground	R-Y*1 - Body ground	Vehicle speed signal (Input)	Driving at approx. 12 mph (20 km/h)	Pulse generation (See waveform 2)
	GR-R*2 - Body ground			
+S (E13-14) - Body ground	V-R - Body ground	Vehicle Speed signal (Input)	Ignition switch ON and wheel turning slowly	Pulse generation (See waveform 2)
TEMP (E13-15) - Body ground	BR-B - Body ground	Engine coolant temperature	Ignition switch ON Engine coolant temperature 90°C(194°F)	Pulse generation (See waveform 3)
L (E13-16) - Body ground	V-W - Body ground	Fuel level signal	Ignition switch ON	11 to 14 V
ESC (E13-17) - Body ground	LG-R - Body ground	ABS signal	ABS warning light ON → OFF	Below 1 V → 11 to 14 V
B (E13-18) - Body ground	P - Body ground	Turn signal RH signal	Ignition switch ON Turn signal RH indicator light OFF → ON → OFF	Below 1 V → 11 to 14 V → Below 1 V
B (E13-20) - Body ground	L-W - Body ground	Turn signal LH signal	Ignition switch ON Turn signal LH indicator light OFF → ON → OFF	Below 1 V → 11 to 14 V → Below 1 V
SW (E13-23) - Body ground	V-Y - Body ground	All door condition signal	All doors open → closed	Below 1 V → 11 to 14 V
+ (E13-26) - Body ground	R-W - Body ground	HEAD light signal	Light control switch OFF → ON	Below 1 V → 11 to 14 V
DOOR (E13-29) - Body ground	W-L - Body ground	Driver side door open	Driver side door open → closed	Below 1 V → 11 to 14 V
PKB (E13-31) - Body ground	B-L - Body ground	Brake fluid level warning light signal	Ignition switch ON Brake fluid level warning light ON → OFF	Below 1 V → 11 to 14 V
PRSW*8 (E14-1) - Body ground	L-Y - Body ground	Rear differential lock signal	Rear differential lock warning light ON → OFF	Below 1 V → 11 to 14 V
SW*4 (E14-2) - Body ground	R-L*3 - Body ground	4WD signal	4WD indicator OFF → ON	Below 1 V → 11 to 14 V
	GR*1 - Body ground			
CHG- (E14-3) - Body ground	GR - Body ground	Change signal	Ignition switch ON → OFF	11 to 14 V → Below 1 V
A/D*6 (E14-4) - Body ground	P-G - Body ground	Cruise signal	Cruise indicator ON → OFF	Below 1 V → 11 to 14 V
TROF*8 (E14-5) - Body ground	L-W - Body ground	VSC OFF signal	VSC OFF indicator ON → OFF	Below 1 V → 11 to 14 V
VSCW (E14-6) - Body ground	Y-R - Body ground	VSC TRAC signal	VSC TRAC indicator ON → OFF	Below 1 V → 11 to 14 V
SLIP (E14-7) - Body ground	R - Body ground	SLIP signal	SLIP warning light ON → OFF	Below 1 V → 11 to 14 V
CHK (E14-8) - Body ground	R-B - Body ground	Check engine warning light signal	Check engine warning light signal ON → OFF	Below 1V→11 to 14 V
ATRA*7 (E14-9) - Body ground	Y-V - Body ground	A-TRAC signal	A-TRAC indicator light ON → OFF	Below 1V→11 to 14 V
ALSD*5 (E14-10) - Body ground	BR-Y - Body ground	AUTO LSD signal	AUTO LSD indicator light ON → OFF	Below 1 V → 11 to 14 V
OILW*2 (E14-11) - Body ground	P - Body ground	A/T oil temperature signal	A/T OIL TEMP warning light ON → OFF	Below 1 V → 11 to 14 V
S (E14-12) - Body ground	LG-B - Body ground	Oil pressure signal	Oil pressure warning light ON → OFF	Below 1 V → 11 to 14 V
ILL+ (E14-13) - Body ground	G - Body ground	Taillight signal	Light control switch OFF → ON	Below 1 V→11 to 14 V
L*2 (E14-14) - Body ground	B-L - Body ground	A/T shift position signal (L)	A/T L indicator OFF → ON	Below 1 V→11 to 14 V
2*2 (E14-15) - Body ground	P-L - Body ground	A/T shift position signal (2)	A/T 2 indicator OFF → ON	Below 1 V→11 to 14 V

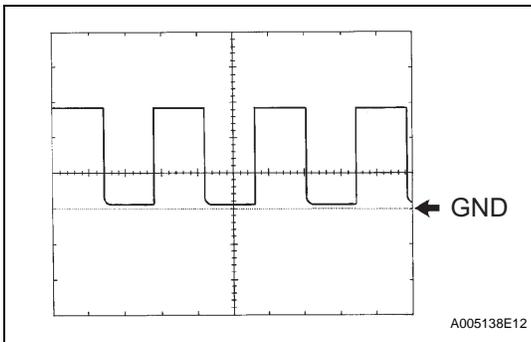
Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
3*2 (E14-16) - Body ground	W-R - Body ground	A/T shift position signal (3)	A/T 3 indicator OFF → ON	Below 1 V→11 to 14 V
4*2 (E14-17) - Body ground	B-O - Body ground	A/T shift position signal (4)	A/T 4 indicator OFF → ON	Below 1 V→11 to 14 V
D*2 (E14-18) - Body ground	R-G - Body ground	A/T shift position signal (D)	A/T D indicator OFF → ON	Below 1 V→11 to 14 V
N*2 (E14-19) - Body ground	G-W - Body ground	A/T shift position signal (N)	A/T N indicator OFF → ON	Below 1 V→11 to 14 V
R*2 (E14-20) - Body ground	R-Y - Body ground	A/T shift position signal (R)	A/T R indicator OFF → ON	Below 1 V→11 to 14 V
R*1 (E14-20) - Body ground	R-Y - Body ground	M/T shift position signal (R)	M/T shift warning buzzer OFF → ON	Below 1 V→11 to 14 V
P*2 (E14-21) - Body ground	Y-B - Body ground	A/T shift position signal (P)	A/T P indicator OFF → ON	Below 1 V→11 to 14 V
ATP*3 (E14-22) - Body ground	W - Body ground	Transfer indicator switch neutral position signal	A/T P indicator OFF → ON	Below 1 V→11 to 14 V

- \*1: for M/T
- \*2: for A/T (2WD and 4WD)
- \*3: for A/T (4WD only)
- \*4: for 4WD
- \*5: for 2WD
- \*6: w/ cruise control
- \*7: w/ active traction control (4WD only)
- \*8: w/ rear differential lock

**HINT:**

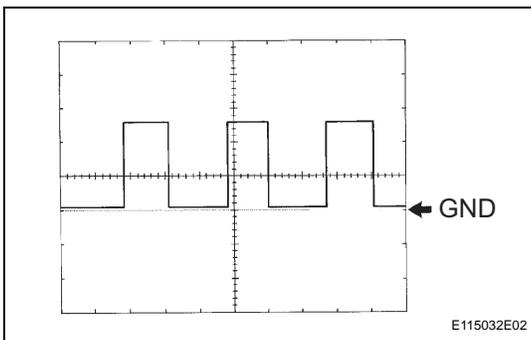
If the result is not as specified, the combination meter assembly may be malfunctioning.

(1) Waveform 1: Using an oscilloscope



Terminal Connections	ILL- (E13-11) - Body Ground
Tool Setting	5V / DIV, 50 ms / DIV
Condition	Ignition switch ON

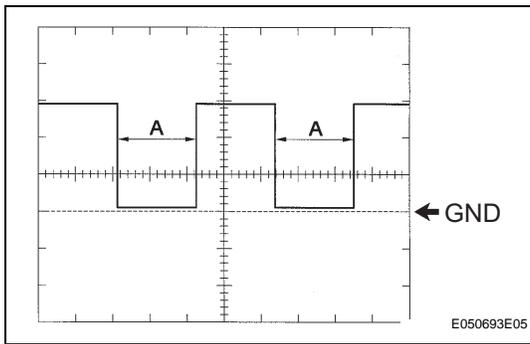
(2) Waveform 2: Using an oscilloscope



Terminal Connections	SE (E13-4) - Body Ground S (E13-12) - Body Ground SI (E13-13) - Body Ground +S (E13-14) - Body Ground
Tool Setting	5V / DIV, 20ms / DIV
Condition	Driving at approximately 12mph (20km/h)

**HINT:**

As the vehicle speed increases, the cycle of the signal waveform narrows.



(e) Waveform 3: Using an oscilloscope

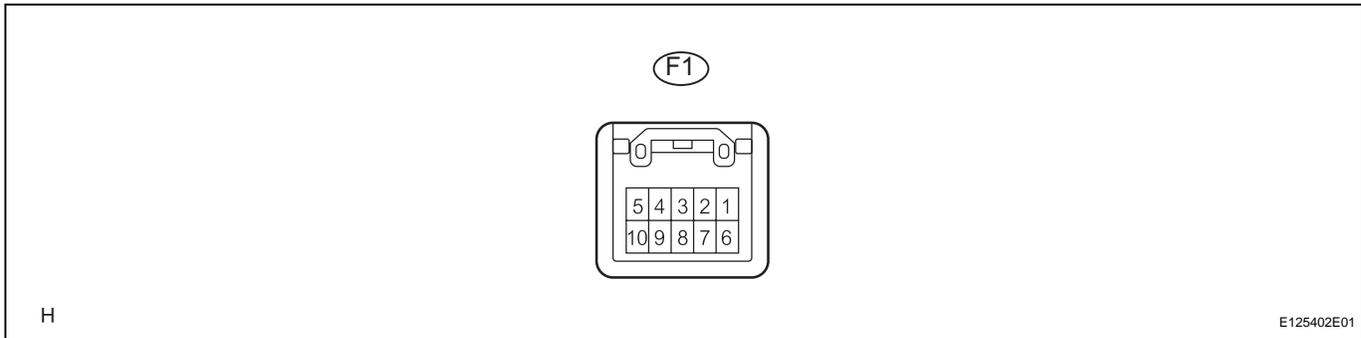
Tool setting	5 V/DIV., 0.1 sec./DIV
Vehicle condition	Ignition switch ON

**HINT:**

A changes in accordance with the engine coolant temperature.

Coolant temperature	Below 30°	Approximately 75°C	Above 90°
A	Approximately 16 ms	Approximately 204 ms	Approximately 262 ms

**2. ACCESSORY METER ASSEMBLY**



- (a) Disconnect the F1 accessory meter assembly connector.
- (b) Measure the voltage and resistance of the wire harness side connector.

**ME**

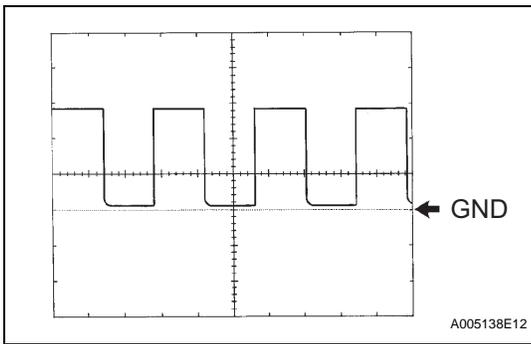
**Standard:**

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
+B (F1-1) - Body ground	R - Body ground	Battery	Always	11 to 14 V
ACC (F1-2) - Body ground	GR - Body ground	ACC	Ignition switch OFF → ACC	Below 1 V → 11 to 14 V
IG+ (F1-3) - Body ground	Y-R - Body ground	Ignition switch signal	Ignition switch OFF → ON	Below 1 V → 11 to 14 V
DMIN (F1-4) - Body ground	R-L - Body ground	Air conditioning amplifier signal	Ignition switch OFF → ON	Below 1 V → 11 to 14 V
ILL+ (F1-6) - Body ground	G - Body ground	Taillight signal	Light control switch OFF → ON	Below 1 V → 11 to 14 V
ILL- (F1-7) - Body ground	BR-W - Body ground	Light control rheostat signal	Ignition switch OFF → ON	Pulse generation (See waveform 1)
SI (F1-8) - Body ground	V-R - Body ground	Combination meter signal	Driving at approx. 3.1 mph (5 km/h)	1 V → 9 V → 1 V
E (F1-9) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

**HINT:**

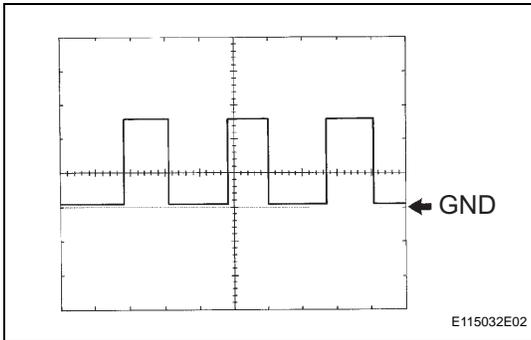
If the result is not as specified, the accessory meter assembly may be malfunctioning.

(1) Waveform 1: Using an oscilloscope



Terminal Connections	ILL- (F1-7) -Body Ground
Tool Setting	5V / DIV, 50 ms / DIV
Condition	Ignition switch ON

(2) Waveform 2: Using an oscilloscope

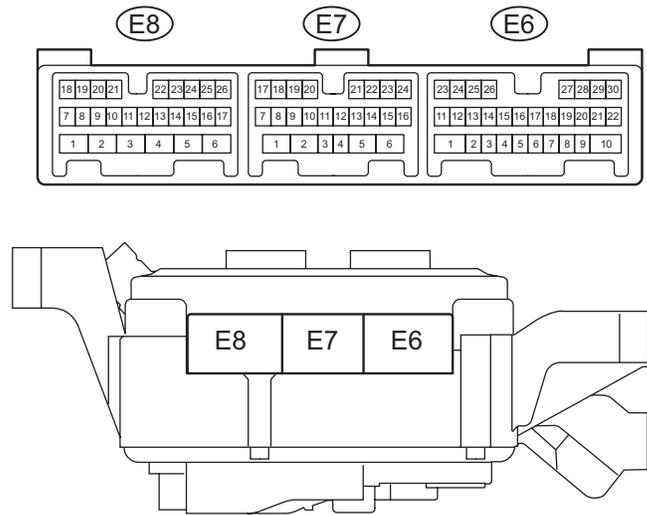


Terminal Connections	SI (F1-8) - Body Ground
Tool Setting	5V / DIV, 20 ms / DIV
Condition	Driving at approx. 3.1 mph (5 km/h)

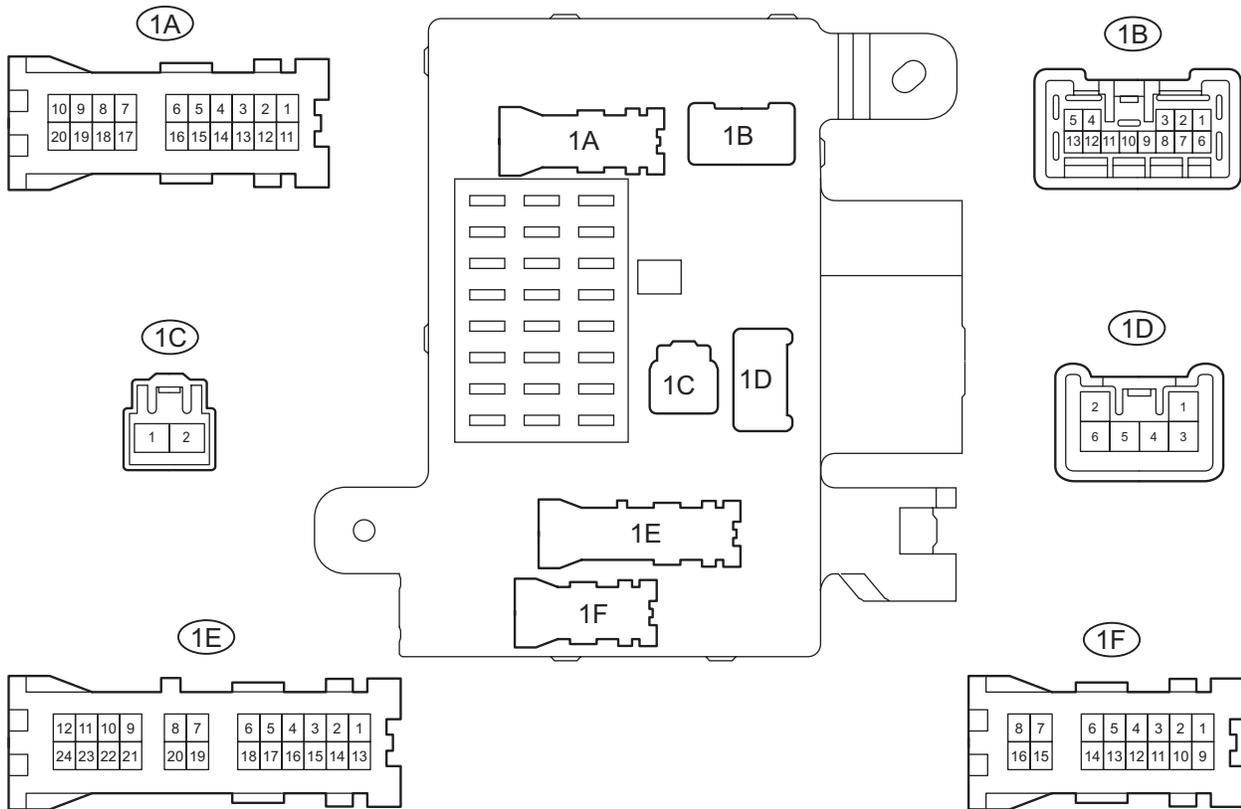
### 3. CHECK MAIN BODY ECU

Main Body ECU:

Left View:



Rear View:



ME

Y

B136051E01

(a) Disconnect the E7, E8 and 1A main body ECU connectors.

(b) Measure the voltage of the wire harness side connectors.

### Standard voltage

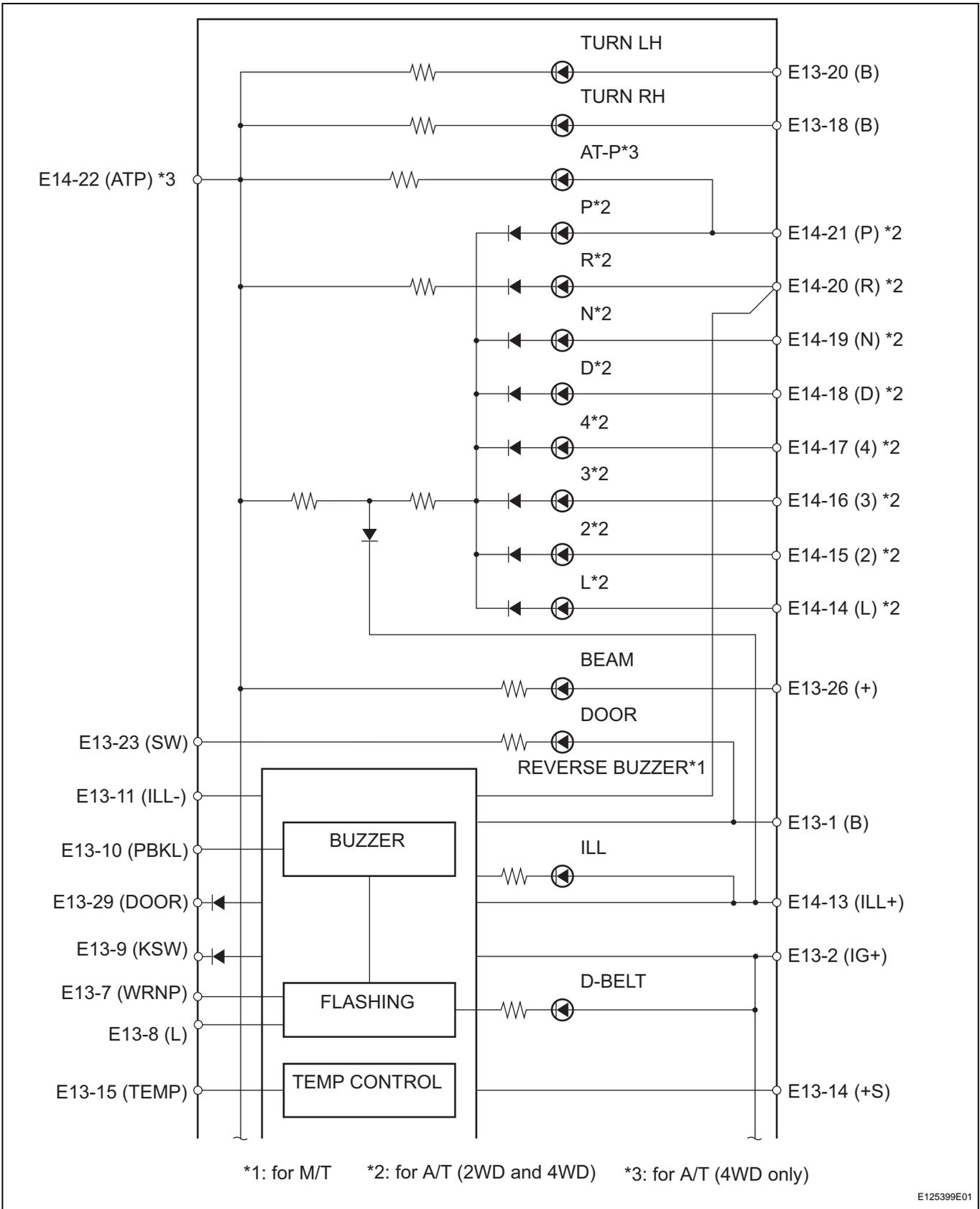
Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
PKB (E7-2) - Body ground	W-R* - Body ground	Parking brake signal	Parking brake warning light ON → OFF	Below 1 V → 11 to 14 V
BCTY (E7-7) - Body ground	W - Body ground	Back door courtesy switch and back window courtesy switch input	Back door CLOSED → OPEN	11 to 14 V → Below 1 V
RLCY (E7-11) - Body ground	P-B - Body ground	Rear door courtesy switch signal (LH)	Rear door (Driver side) CLOSED → OPEN	11 to 14 V → Below 1 V
RRCY (E7-12) - Body ground	P-L - Body ground	Rear door courtesy switch signal (RH)	Rear door (Front passenger side) CLOSED → OPEN	11 to 14 V → Below 1 V
DCTY (E7-23) - Body ground	R-B - Body ground	Front door courtesy switch signal (Driver side)	Driver door CLOSED → OPEN	11 to 14 V → Below 1 V
PCTY (E7-24) - Body ground	G-Y - Body ground	Front door courtesy switch signal (Passenger side)	Front passenger door CLOSED → OPEN	11 to 14 V → Below 1 V
KSW (E8-14) - Body ground	G-Y - Body ground	Key unlock switch condition signal	Key inserted → Removed	Below 1 V → 11 to 14 V
GND2 (1H-2) - Body ground	W - Body ground	Ground	Always	Below 1 V

\*: w/ daytime running light

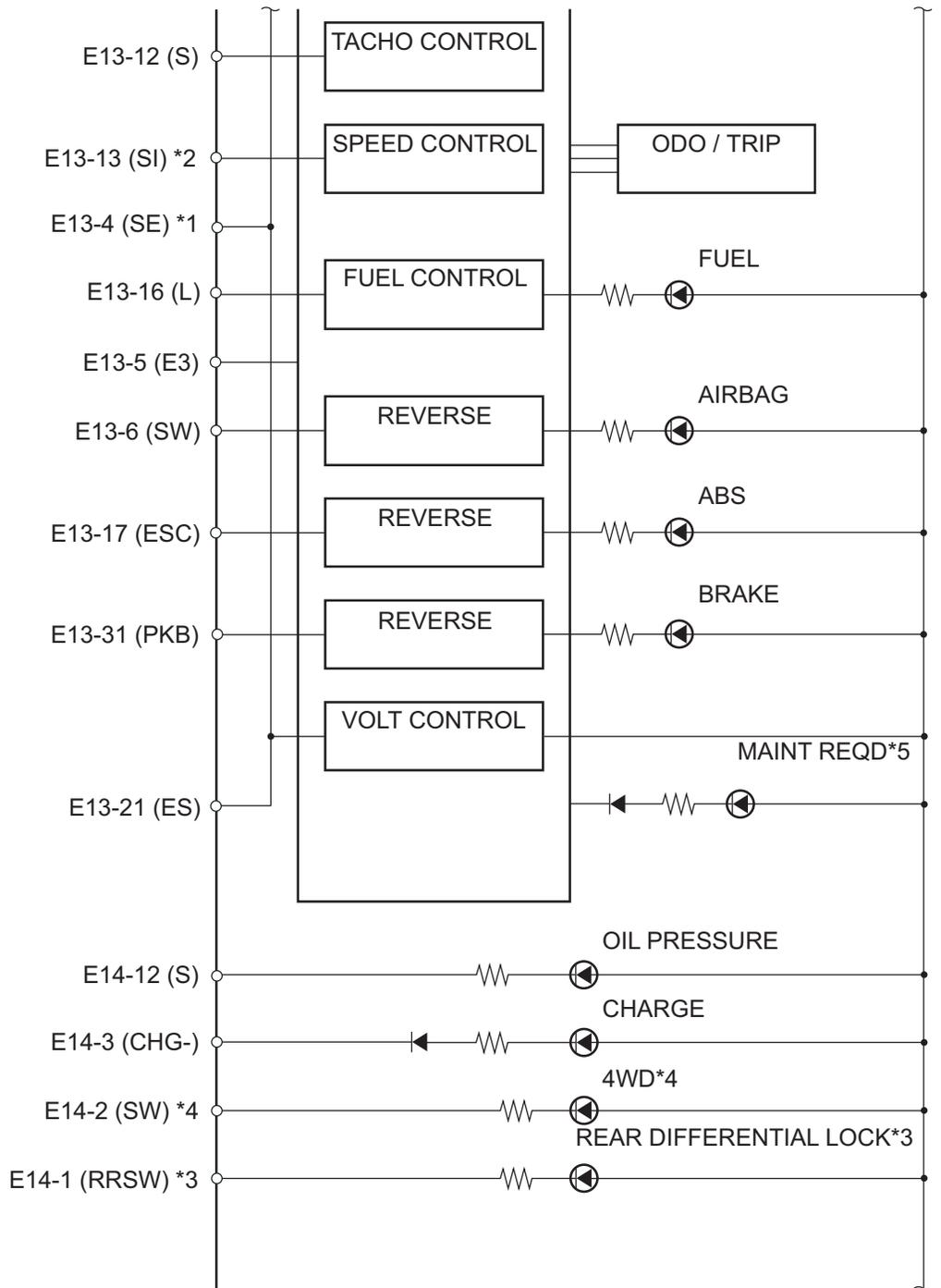
HINT:

If the result is not as specified, there may be a malfunction in the wire harness.

4. COMBINATION METER INTERNAL CIRCUIT



ME



\*1: for M/T

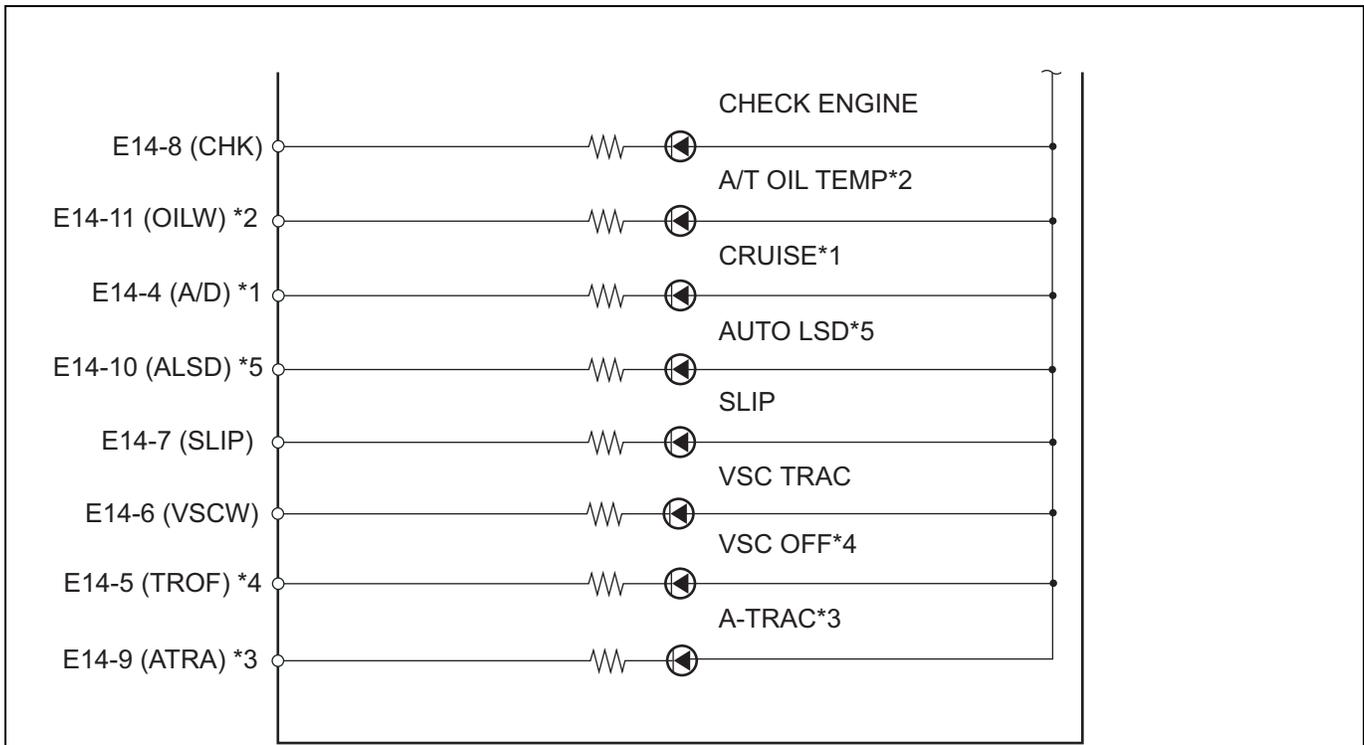
\*4: for 4WD

\*2: for A/T (2WD and 4WD)

\*5: U.S.A. only

\*3: w/ Rear Differential Lock

ME



\*1: w/ Cruise Control

\*3: w/ Active Traction Control (4WD only)

\*5: for 2WD

\*2: for A/T (2WD and 4WD)

\*4: w/ Rear Differential Lock

ME

Connectors

	Terminal No.	Wire Harness Side
E13	1	Battery
	2	Ignition Switch
	4	Speed Sensor *1
	5	Fuel Suction Pump and Gauge Assembly
	6	Center Airbag Sensor Assembly
	7	Passenger Seat Belt Warning Light
	8	Driver Seat Buckle Switch
	9	Key Unlock Warning Switch
	10	Center Airbag Sensor Assembly
	11	Light Control Rheostat
	12	Air Conditioning Amplifier
	13	Speed Sensor *1
		Skid Control ECU *2
	14	4P-OUT (Other Parts)
	15	ECM
	16	Fuel Suction Pump and Gauge Assembly
	17	Skid Control ECU
	18	Turn Signal Flasher Assembly
	20	Turn Signal Flasher Assembly
	21	Body Ground
	23	Main Body ECU
	26	Main Body ECU *3
Headlight Relay *4		
29	Main Body ECU	
31	Skid Control ECU	
E14	1	Rear Differential Lock Switch *8
	2	4WD Control ECU *1
		Transfer Indicator Switch *2
	3	Generator (Alternator)
	4	ECM *6
	5	Skid Control ECU *8
	6	Skid Control ECU
	7	Skid Control ECU
	8	ECM
	9	Skid Control ECU *7
	10	Skid Control ECU *5
	11	ECM *2
	12	Engine Oil Pressure Switch
	13	TAIL Fuse
	14	Transmission Control Switch *2
	15	Transmission Control Switch *2
	16	Transmission Control Switch *2
	17	Transmission Control Switch *2
	18	Transmission Control Switch *2
	19	Transmission Control Switch *2
	20	Back up Light Switch *1
	21	Park/Neutral Position Switch *2
22	Transfer Indicator Switch (Neutral Position) *3	

ME

- \*1: for M/T
- \*2: for A/T
- \*3: w/ Daytime Running Light
- \*4: w/o Daytime Running Light
- \*5: for 2WD
- \*6: w/ Cruise Control
- \*7: w/ Active Traction Control (4WD only)
- \*8: w/ Rear Differential Lock

## DATA LIST / ACTIVE TEST

### 1. DATA LIST

By reading the DATA LIST displayed on the intelligent tester, you can check values, including those of the switches, sensors, actuators without removing any parts. Reading the DATA LIST as the first step of troubleshooting is one method of shortening diagnostic time.

- (a) Warm up the engine.
- (b) Turn the ignition switch OFF.
- (c) Connect the intelligent tester to the DLC3.
- (d) Turn the ignition switch to the ON position.
- (e) Operate the intelligent tester according to the display on the tester screen and select DATA LIST.

### ECM:

Item	Measurement Item: Range (Display)	Normal Condition	Diagnostic Note
Vehicle SPD	Vehicle speed: Minimum: 0 mph (0km/h), Maximum: 153 mph (255 km/h)	Approximately equal to actual vehicle speed (When driving)	-
Engine SPD	Engine speed: Minimum: 0 rpm, Maximum: 16,383 rpm	Approximately equal to actual engine speed (With engine running)	-
Coolant Temp.	Coolant temperature: Minimum: -40°C (-40°F), Maximum: 140°C (284°F)	After warming up: 80° to 95 °C (176°F to 203°F)	If value -40°C (-40°F) or 140°C (284°F), sensor circuit open or shorted.

## ON-VEHICLE INSPECTION

### 1. INSPECT SPEEDOMETER

(a) Check the operation.

- (1) Using a speedometer tester, inspect the speedometer and confirm that the speedometer readings are within the acceptable range. Also check the odometer operation.

**Reference:**

**km/h (Canada)**

Standard Indication	Acceptable Range
20 km/h	17.5 to 21.5 km/h
40 km/h	38 to 42 km/h
60 km/h	58 to 63 km/h
80 km/h	78 to 84 km/h
100 km/h	98.5 to 104.5 km/h
120 km/h	119 to 125 km/h
140 km/h	139 to 146 km/h
160 km/h	159 to 167 km/h
180 km/h	179 to 188 km/h
200 km/h	199 to 209 km/h

**mph (U.S.A.)**

Standard Indication	Acceptable Range
20 mph	19 to 22 mph
40 mph	39 to 42.5 mph
60 mph	59.5 to 63.5 mph
80 mph	79.5 to 84 mph
100 mph	100 to 105 mph
120 mph	121 to 126.5 mph

**NOTICE:**

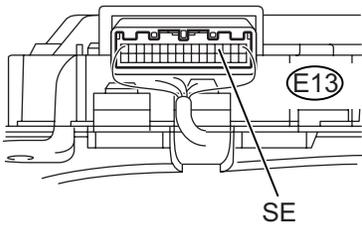
**Tire wear and excessively high or low tire pressure affect speedometer indications.**

- (2) Check the deflection of the speedometer indicator.

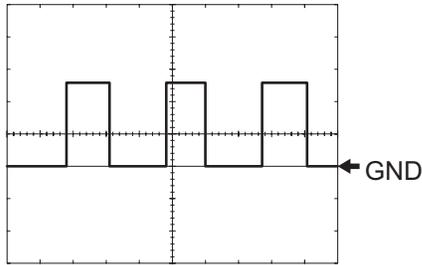
**Reference:**

**Below 0.3 mph (0.5 km/h)**

**Combination Meter Assembly Connector:**



**Waveform:**



E125403E01

**2. INSPECT SPEED SENSOR**

- (a) Check the output signal waveform.
  - (1) Remove the combination meter assembly, but do not disconnect the connector.
  - (2) Connect an oscilloscope to terminal E13-4 and to the body ground.
  - (3) Start the engine.
  - (4) Check the signal waveform according to the conditions in the table below.

Item	Contents
Terminal Connection	SE (E13-4) and Body Ground
Tool Setting	5V / DIV, 20ms / DIV
Condition	Driving at approximately 12mph (20km / h)

**OK:**

As shown in the illustration.

**NOTICE:**

As the vehicle speed increases, the cycle of the signal waveform narrows.

- (5) Reinstall the combination meter assembly.

**3. INSPECT TACHOMETER**

- (a) Check the operation.
  - (1) Connect the tune-up test tachometer and start the engine.

**NOTICE:**

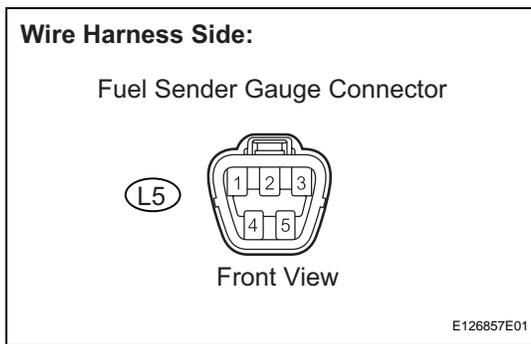
- Reversing the connection of the tachometer will damage the transistors and the insides of the diodes.
- When removing or installing the tachometer, be careful not to drop or strike it.

- (2) Compare the result of the test with the standard indication.

DC 13.5 V, at 25°C (77°F)

**Reference**

Standard Indication (USA) (RPM) Standard Indication (CANADA) (r/min) Data in ( ) are for reference	Acceptable Range (USA) (RPM) Acceptable Range (CANADA) (r/min) Data in ( ) are for reference
700	630 to 770
1,000	(900 to 1,100)
2,000	(1,850 to 2,150)
3,000	2,800 to 3,200
4,000	(3,800 to 4,200)
5,000	4,800 to 5,100
(6,000)	(5,750 to 6,250)



#### 4. INSPECT FUEL RECEIVER GAUGE

- (a) Disconnect the L5 fuel sender gauge connector.
- (b) Check the fuel receiver gauge operation when the ignition switch is turned to the ON position.

**OK:**

**Needle position is on EMPTY.**

- (c) Connect terminals 2 and 3 on the wire harness side connector of the fuel sender gauge.
- (d) Check the fuel receiver gauge operation when the ignition switch is turned from OFF to ON.

**OK:**

**Needle position is on FULL.**

- (e) Reconnect the fuel sender gauge connector.

#### 5. INSPECT FUEL LEVEL WARNING LIGHT

- (a) Disconnect the fuel sender gauge connector.
- (b) Turn the ignition switch to the ON position, then check that the fuel level needle indicates EMPTY and the fuel level warning light comes on.

**OK:**

**Fuel level warning light comes on.**

- (c) Reconnect the fuel sender gauge connector.

#### 6. INSPECT ENGINE OIL PRESSURE WARNING LIGHT

- (a) Disconnect the engine oil pressure switch connector.
- (b) Turn the ignition switch to the ON position.
- (c) Ground the terminal of the wire harness side connector, then check the engine oil pressure warning light.

**OK:**

**Engine oil pressure warning light illuminates.**

- (d) Reconnect the engine oil pressure switch connector.

#### 7. INSPECT BRAKE WARNING LIGHT

- (a) Inspect the parking brake warning light.
  - (1) Disconnect the parking brake switch connector.
  - (2) Turn the ignition switch to the ON position.
  - (3) Ground the terminal of the wire harness side connector, then check the parking brake warning light.

**OK:**

**Brake warning light illuminates.**

- (4) Reconnect the parking brake switch connector.
- (b) Inspect the brake fluid level warning light.
  - (1) Disconnect the brake fluid level warning switch connector.
  - (2) Turn the ignition switch to the ON position.
  - (3) Connect a terminal to the other terminal of the wire harness side connector, then check the brake fluid level warning switch.

**OK:**

**Brake warning light illuminates.**

- (4) Reconnect the brake fluid level warning switch connector.

**8. INSPECT BRAKE FLUID LEVEL WARNING SWITCH**

- (a) Remove the reservoir tank cap and strainer.
- (b) Disconnect the brake fluid level warning switch connector.
- (c) Measure the resistance between the terminals.  
**Standard resistance:**  
**Float inside reservoir tank is in high position (switch OFF): 10 k Ω or higher**
- (d) Use a syphon or a similar tool to drain fluid out of the reservoir tank.
- (e) Measure the resistance between the terminals.  
**Standard resistance:**  
**Float inside reservoir tank is in low position (switch ON): Below 1 Ω**
- (f) Pour the fluid back into the reservoir tank.
- (g) Reconnect the brake fluid level warning switch connector.
- (h) Reinstall the reservoir tank cap and strainer.

**9. OIL MAINTENANCE INDICATOR RESETTING PROCEDURE (U.S.A. only)**

Oil Maintenance Indicator	Condition	Specified State
Blinks	Vehicle has run 4,500 miles since previous setting	Indicator blinks for 15 seconds after ignition switch is turned ON (including 3 seconds for valve check)
Illuminates	Vehicle has run 5,000 miles since previous setting	Indicator illuminates after ignition switch is turned ON.

- (a) Set the window display located inside the combination meter to the Trip A indication.
- (b) Turn the ignition switch OFF.
- (c) While pressing the ODO/TRIP display change switch (reset switch) (for at least 5 seconds), turn the ignition switch ON.
- (d) When the reset procedure has been completed successfully, the MAINT REQD indicator light turns off and the ODO/TRIP meter indicates 0 (zero) and then returns to its regular display.

**HINT:**

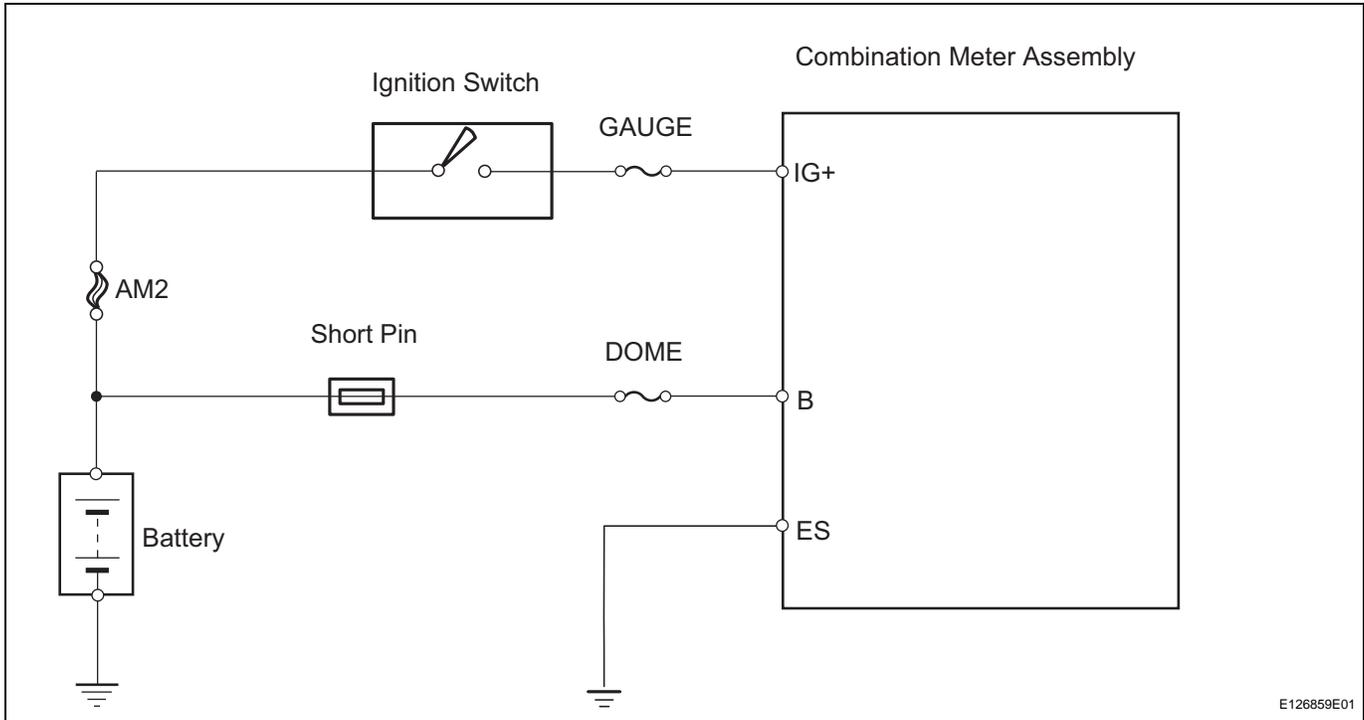
If the reset fails, the MAINT REQD indicator light remains illuminated. Perform the procedure again.

## Entire Combination Meter does not Operate

### DESCRIPTION

This circuit provides power to the combination meter assembly.

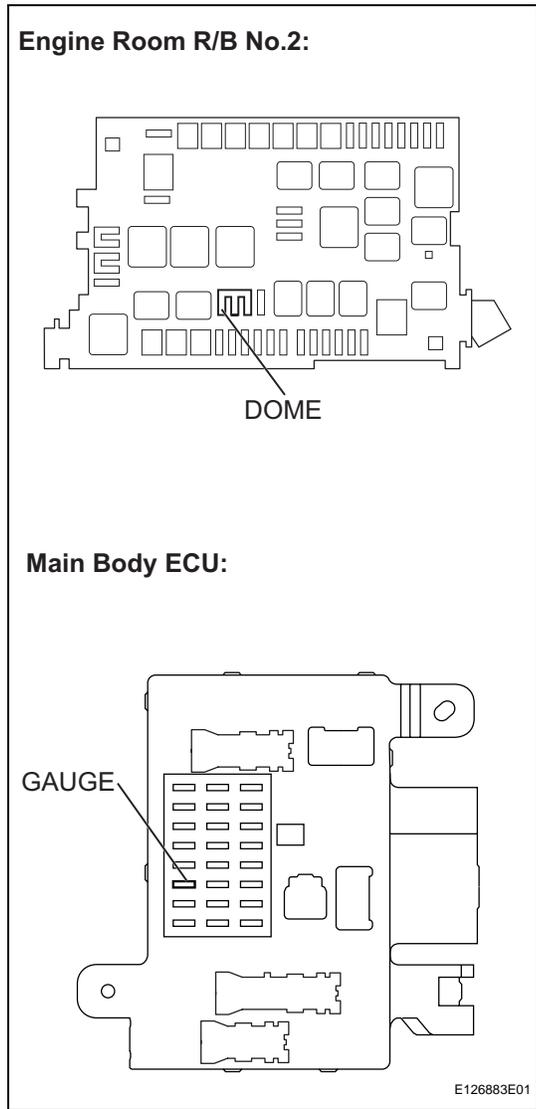
### WIRING DIAGRAM



ME

**INSPECTION PROCEDURE**

**1 CHECK FUSE (DOME, GAUGE)**



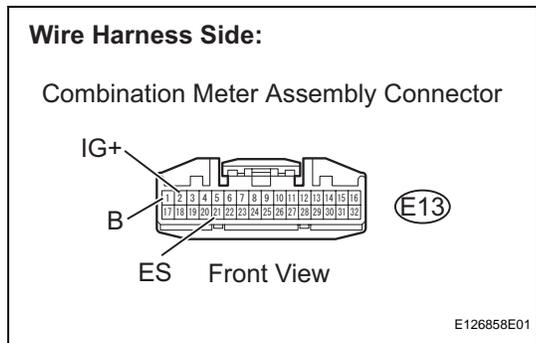
- (a) Remove the DOME fuse from engine room relay block No. 2.
- (b) Remove the GAUGE fuse from the main body ECU.
- (c) Measure the resistance.  
**Standard Resistance:**  
**Below 1Ω**
- (d) Reinstall the fuse.

**NG** CHECK SHORT CIRCUIT IN COMPONENTS AND WIRES CONNECTED TO FUSE

**OK**

**ME**

**2 INSPECT COMBINATION METER ASSEMBLY**



- (a) Disconnect the E13 combination meter connector.
- (b) Measure the resistance.  
**Standard resistance**

Terminal No.	Condition	Specified Condition
E13-21 (ES) - Body ground	Always	Below 1 Ω

- (c) Measure the voltage.  
**Standard voltage**

Terminal No.	Condition	Specified Condition
E13-2 (IG+) - Body ground	Ignition switch ON	11 to 14V

Terminal No.	Condition	Specified Condition
E13-1 (B) - Body ground	Always	11 to 14V

(d) Reconnect the combination meter connector.

**NG** **REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK**

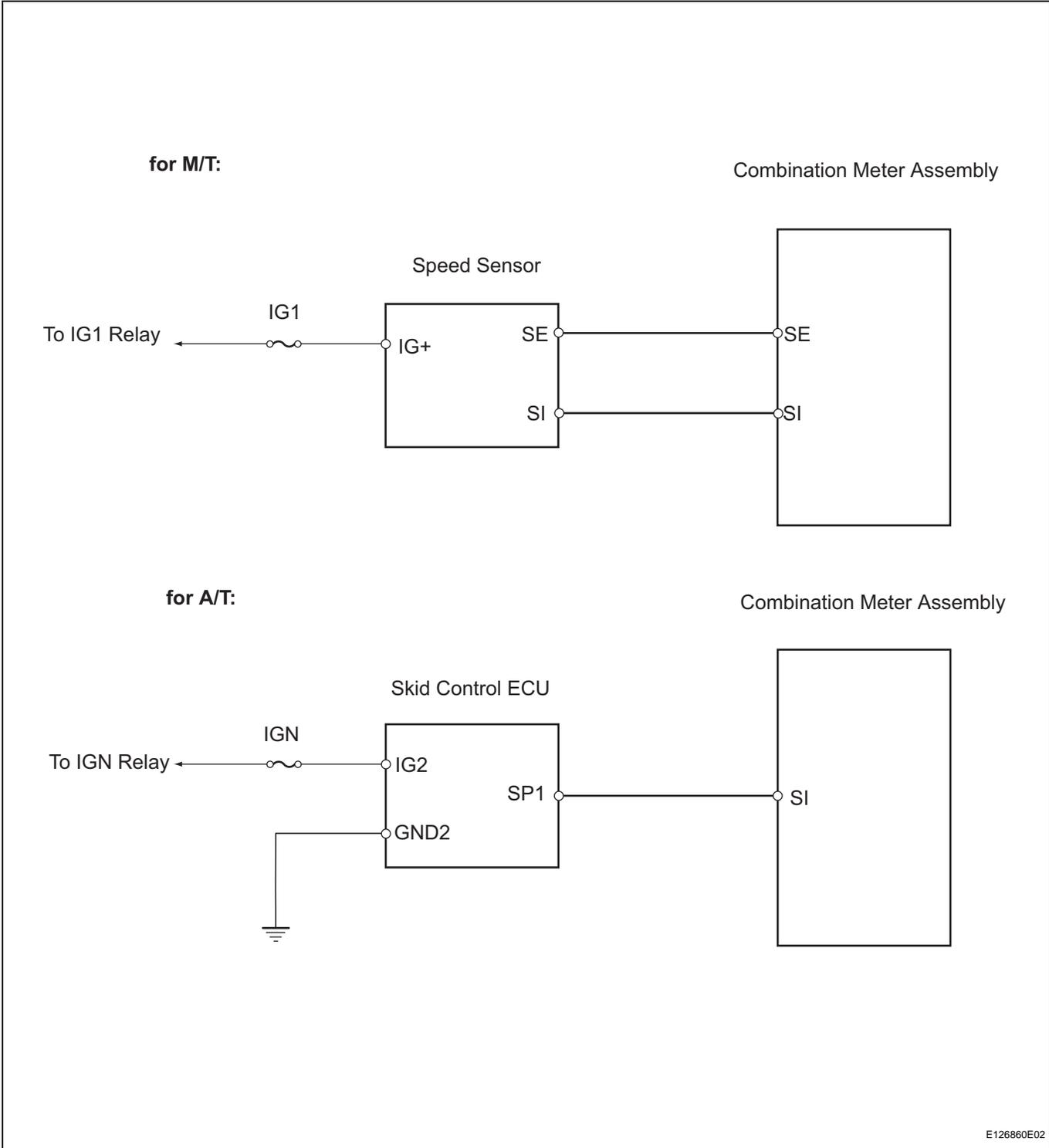
**REPLACE COMBINATION METER ASSEMBLY**

# Speedometer Malfunction

## DESCRIPTION

The combination meter assembly controls the speedometer in accordance with vehicle speed signals from the speed sensor or skid control ECU.

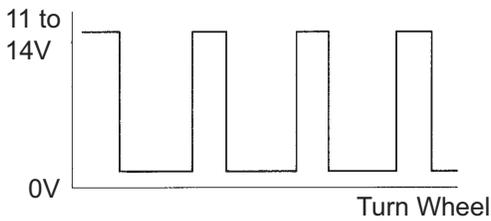
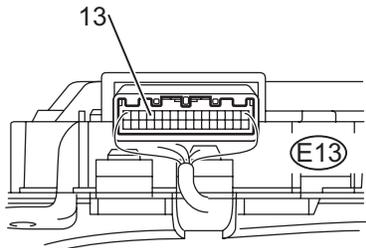
## WIRING DIAGRAM



**INSPECTION PROCEDURE**

**1 INSPECT COMBINATION METER ASSEMBLY**

Combination Meter Assembly Connector:



E126867E01

- (a) Shift the shift lever (M/T) or transmission gear selector lever (A/T) to the neutral position.
- (b) Jack up the vehicle.
- (c) Turn the ignition switch to ON.
- (d) Check the voltage while turning the wheel slowly.

**Standard**

Tester Connection	Specified Condition
E13-13 (SI) - Body ground	Voltage generated intermittently

**HINT:**

The output voltage should fluctuate up and down as shown in the diagram on the left when the wheel is turning slowly.

**OK** → **REPLACE COMBINATION METER ASSEMBLY**

**ME**

**NG**

**2 CHECK TRANSAXLE TYPE**

- (a) Check the vehicle's transaxle type.

**Result**

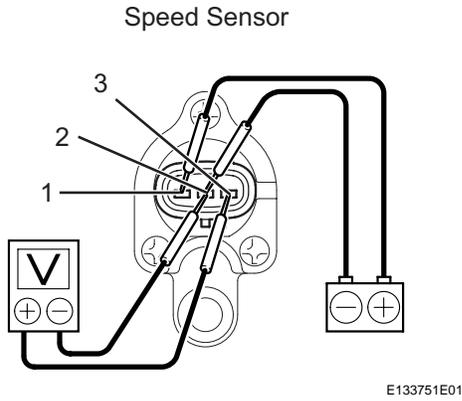
Transaxle Type	Proceed to
M/T	A
A/T	B

**A**

**B** → **Go to step 5**

**3 INSPECT SPEED SENSOR**

**Component Side:**



- (a) Remove the speed sensor.
- (b) Connect the positive (+) lead from the battery to terminal 1 and the negative(-) lead to terminal 2.
- (c) Connect the positive (+) lead from the tester to terminal 3 and the negative (-) lead to terminal 2.
- (d) Rotate the shaft.
- (e) Check that the voltage output between terminals 2 and 3 varies between 0V and 11V.
- (f) Reinstall the speed sensor.

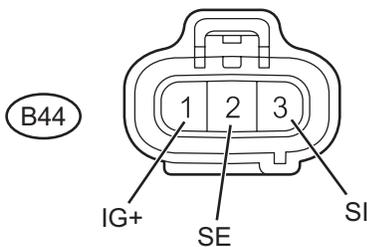
**NG** → **REPLACE SPEED SENSOR**

**OK**

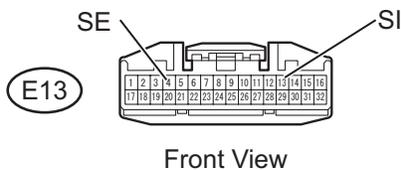
**4 CHECK HARNESS AND CONNECTOR (SPEED SENSOR - COMBINATION METER ASSEMBLY)**

**Wire Harness Side:**

Speed Sensor Connector



Combination Meter Assembly Connector



- (a) Disconnect the E13 combination meter assembly connector.
- (b) Disconnect the B44 speed sensor connector.
- (c) Measure the resistance  
**Standard resistance**

Tester Connection	Specified Condition
E13-13 (SI) - B44-3 (SI)	Below 1 Ω
B44-2 (SE) - E13-4 (SE)	Below 1 Ω

- (d) Reconnect the combination meter assembly connector.
- (e) Measure the voltage  
**Standard voltage**

Tester Connection	Condition	Specified Condition
B44-1 (IG+) - Body ground	Ignition switch ON	11 to 14V

- (f) Reconnect the speed sensor connector.

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**ME**

OK

**REPLACE COMBINATION METER ASSEMBLY****5 READ VALUE OF INTELLIGENT TESTER (SPEED METER)**

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the ignition switch ON and the tester ON.
- (c) Select the item below from the Data List, and read the value displayed on the intelligent tester.

**METER**

Item	Measurement Item / Range(Display)	Normal Condition	Diagnostic Note
SPEED METER	Vehicle speed / Min.: 0 mph (0 km/h), Max.: 158mph (255 km/h)	Approximately same as actual vehicle speed (When vehicle is driven)	-

**OK:**

Vehicle speed displayed on the tester is approximately the same as the actual vehicle speed.

NG

**GO TO BRAKE SYSTEM**

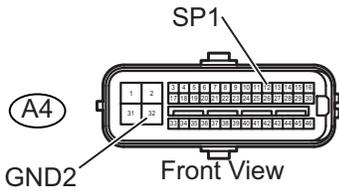
OK

**6 CHECK HARNESS AND CONNECTOR (SKID CONTROL ECU - COMBINATION METER ASSEMBLY)**

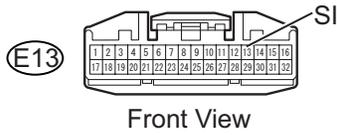
- (a) Disconnect the E13 combination meter assembly connector.
- (b) Disconnect the A4 skid control ECU connector.

Wire Harness Side:

Skid Control ECU Connector



Combination Meter Assembly Connector



E126869E01

(c) Measure the resistance.  
**Standard resistance**

Tester Connection	Specified Condition
E13-E13 (SI) - A4-12 (SP1)	Below 1 Ω
A4-32 (GND2) - Body ground	Below 1 Ω

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

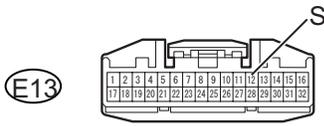
**REPLACE COMBINATION METER ASSEMBLY**



**2 CHECK WIRE HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - ECM)**

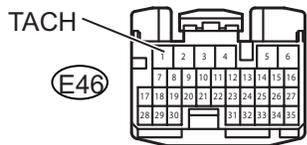
Wire Harness Side:

Combination Meter Assembly Connector



Front View:

ECM Connector



Front View:

E126864E01

- (a) Disconnect the E13 combination meter connector.
- (b) Disconnect the E46 ECM connector.
- (c) Measure the resistance.

**Standard resistance**

Tester Connection	Specified Condition
E13-12 (S) - E46-1 (TACH)	Below 1 $\Omega$
E13-12 (S) or E46-1 (TACH) - Body ground	10 k $\Omega$ or higher

- (d) Reconnect the ECM connector.
- (e) Reconnect the combination meter connector.

**NG** **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**ME**

**OK**

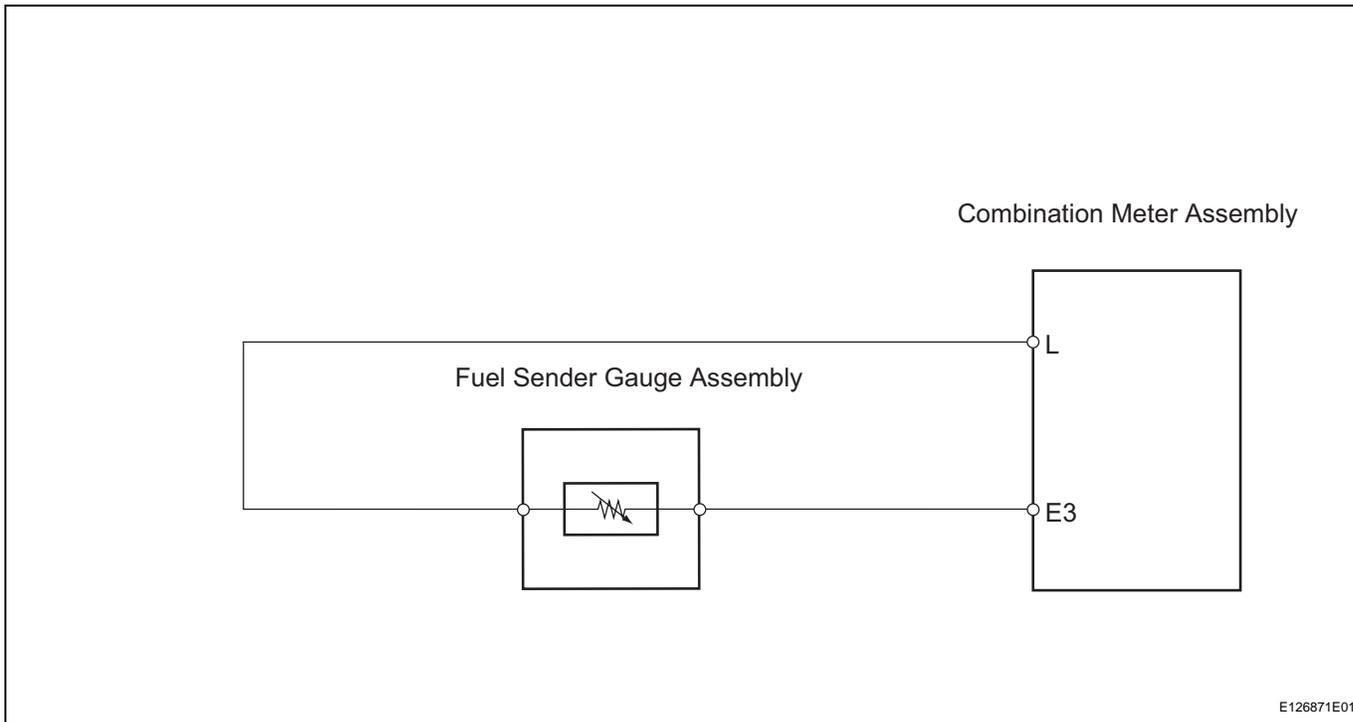
**REPLACE COMBINATION METER ASSEMBLY**

## Fuel Gauge Malfunction

### DESCRIPTION

The combination meter assembly controls the fuel receiver gauge in accordance with the resistance of the fuel sender gauge that varies depending on the fuel remaining amount in the fuel tank.

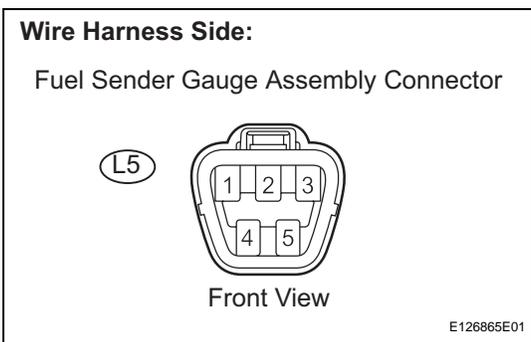
### WIRING DIAGRAM



ME

### INSPECTION PROCEDURE

#### 1 INSPECT HARNESS AND CONNECTOR



- (a) Disconnect the L5 fuel sender gauge assembly connector.
- (b) Check the meter indicator conditions.

**Standard**

Tester Connection	Condition	Specified Condition
L5-2 - L5-3	Short circuit (Ignition switch ON)	Fuel gauge indicates "F" or more (Combination meter)

**HINT:**

This inspection creates an intentional short circuit between the connector terminals, to check the meter indicator operation.

**NOTICE:**

**Perform the check quickly (within less than 10 seconds).**

- (c) Measure the voltage.

**Standard Voltage**

Tester Connection	Condition	Specified Condition
L5-2 - Body ground	Ignition switch ON	4 to 7V

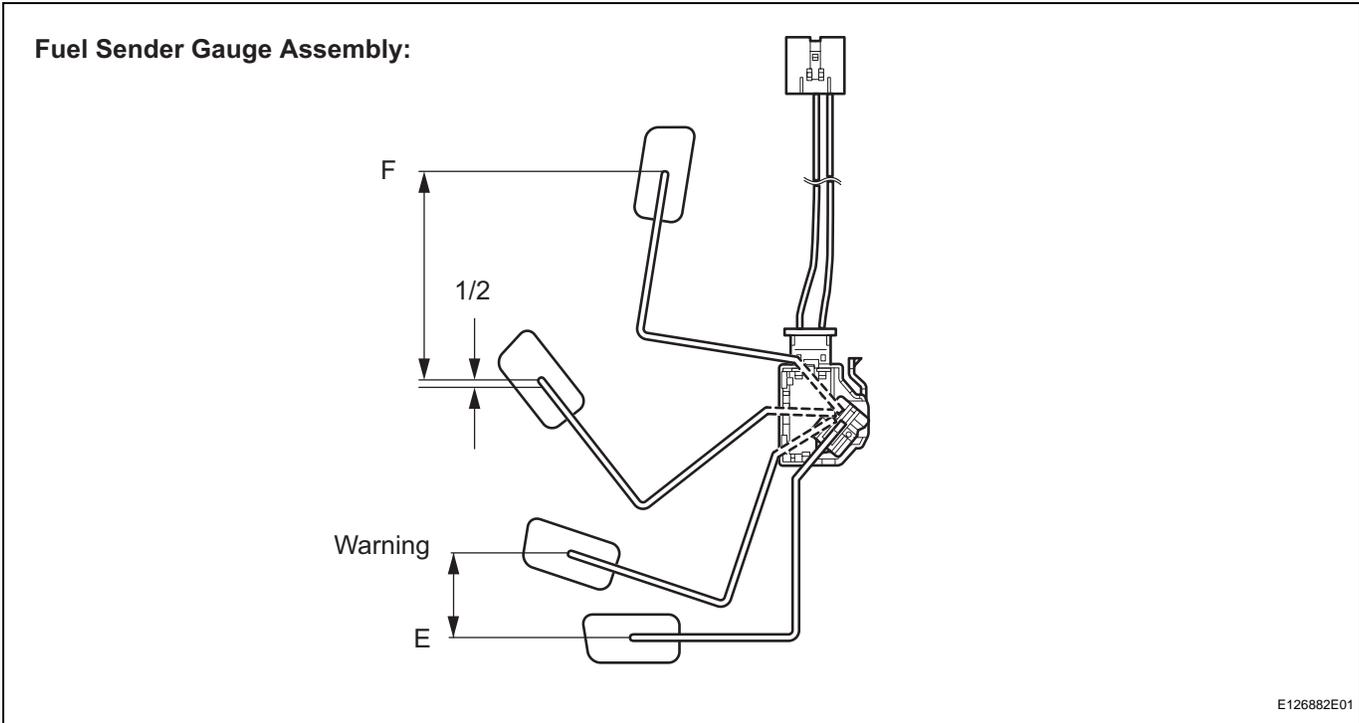
(d) Reconnect the fuel sender gauge assembly connector.

**NG** REPAIR OR REPLACE HARNESS OR CONNECTOR

**OK**

**2 INSPECT FUEL SENDER GAUGE ASSEMBLY**

(a) Remove the fuel sender gauge assembly.

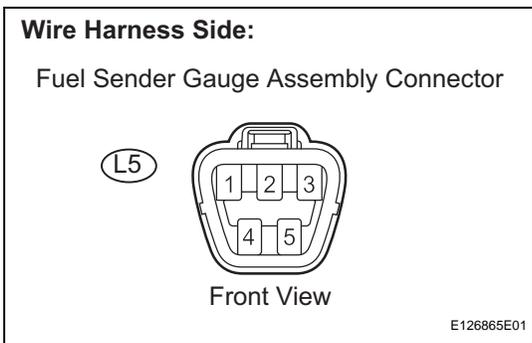


**ME**

- (b) Check that the float position is between E and F.
- (c) Measure the resistance between terminals 2 and 3 of the fuel sender gauge connector.

**Standard resistance**

Float Level	Float Position (mm (in.))	Specified Condition
F	77.3 (3.04) to 79.3 (3.12)	14.7 Ω to 15.3 Ω
1/2	1.6 (0.05)	212.5 Ω
Warning	34.8 (1.37)	375.4 Ω
E	75.0 (2.95) to 77.0 (3.03)	405 Ω to 415 Ω

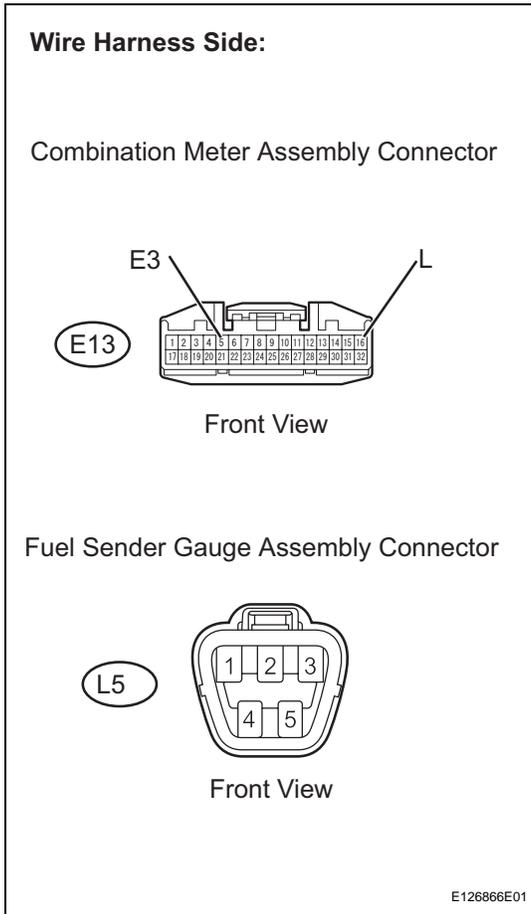


(d) Reinstall the fuel sender gauge assembly.

**NG** REPLACE FUEL SENDER GAUGE ASSEMBLY

**OK**

**3 CHECK WIRE HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - FUEL SENDER GAUGE ASSEMBLY)**



- (a) Disconnect the E13 combination meter assembly connector.
- (b) Disconnect the L5 fuel sender gauge assembly connector.
- (c) Measure the resistance.

**Standard resistance**

Tester Connection	Specified Condition
E13-16 (L) - L5-2	Below 1Ω
E13-5 (E3) - L5-3	Below 1Ω
E13-16 (L) or L5-2 - Body ground	10kΩ or higher
E13-5 (E3) or L5-3 - Body ground	10kΩ or higher

- (d) Reconnect the combination meter assembly and fuel sender gauge assembly connectors.

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

**REPLACE COMBINATION METER ASSEMBLY**

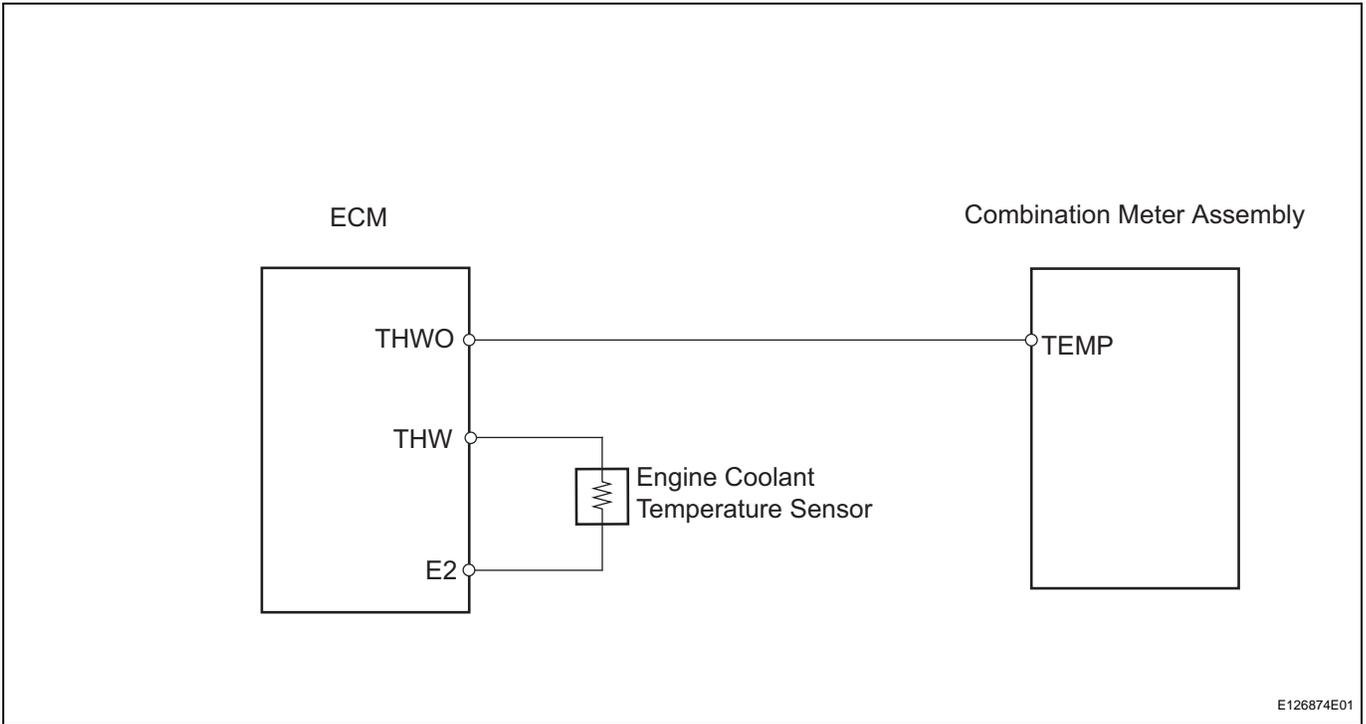
ME

## Malfunction in Water Temperature Warning Light

### DESCRIPTION

The combination meter assembly controls the engine coolant temperature gauge in accordance with engine coolant temperature signals from the ECM.

### WIRING DIAGRAM



**ME**

### INSPECTION PROCEDURE

<b>1</b>	<b>READ VALUE OF INTELLIGENT TESTER (ENGINE COOLANT TEMPERATURE)</b>
----------	--

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the ignition switch ON and turn the tester ON.
- (c) Select the item below from the Data List, and read the value displayed on the intelligent tester.

### METER

Item	Measurement Item/Range (Display)	Normal Condition	Diagnostic Note
COOLANT TEMP	Engine coolant temperature / Min.: 0°C, Max.: 127.5°C	After warming up: 75 to 105°C (167 to 221°F)	-

**HINT:**

- If the value is 0°C (32°F), the sensor circuit is open.
- If the value is 127.5°C (262°F), the sensor circuit is shorted.

**OK:**

**Coolant temperature displayed on the tester is between 75°C (167°F) and 105°C (221°F) after warming up.**

**NG** **GO TO SFI SYSTEM**

**OK**

**2 CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - ECM)**

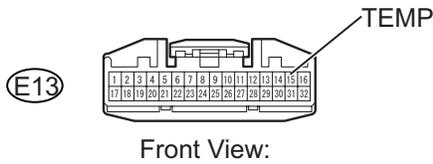
- (a) Disconnect the E13 combination meter connector.
- (b) Disconnect the E46 ECM connector.
- (c) Measure the resistance.

**Standard resistance**

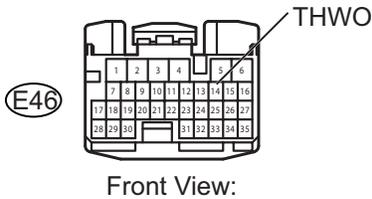
Tester Connection	Specified Condition
E13-15 (TEMP) - E46-14 (THWO)	Below 1 Ω
E13-15 (TEMP) or E46-14 (THWO) - Body ground	10kΩ or higher

**Wire Harness Side:**

Combination Meter Assembly Connector



ECM Connector



- (d) Reconnect the ECM connector.
- (e) Reconnect the combination meter connector.

**NG** **REPAIR OR REPLACE HARNESS AND CONNECTOR**

**ME**

**OK**

**REPLACE COMBINATION METER ASSEMBLY**

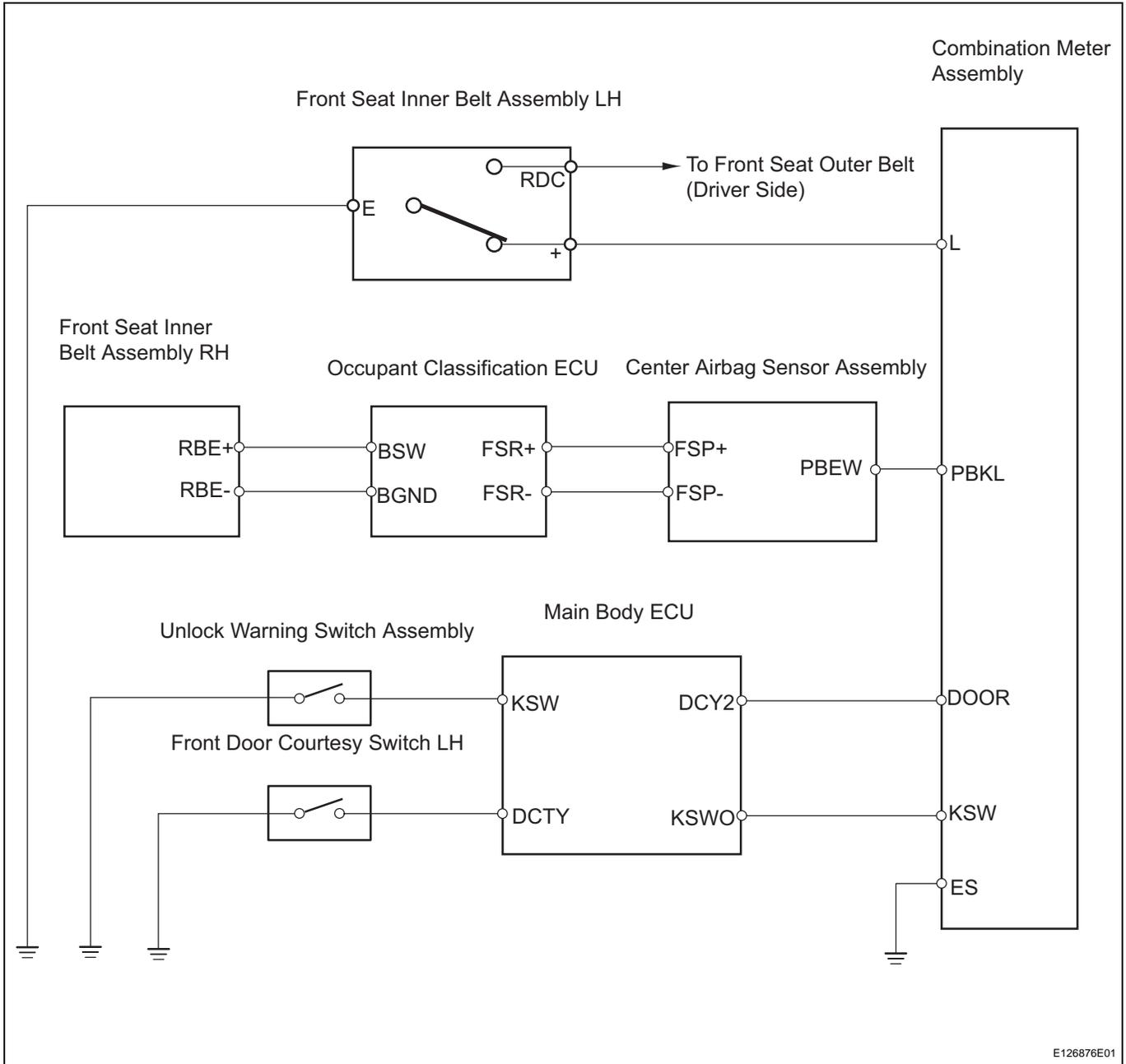
E126864E02

## Warning Buzzer does not Sound

### DESCRIPTION

The combination meter assembly controls the buzzers in accordance with signals from the front seat inner belt assembly LH, center airbag sensor assembly and the main body ECU.

### WIRING DIAGRAM



ME

### INSPECTION PROCEDURE

#### 1 CHECK BUZZER (SEAT BELT, KEY REMINDER)

- (a) Check that the seat belt and key reminder buzzers sound.

Result

Result	Proceed to
Seat belt warning buzzer does not sound (Driver side)	A
Seat belt warning buzzer does not sound (Passenger side)	B
Key reminder warning buzzer does not sound	C
No warning buzzers sound	D

HINT:

- Seat belt warning buzzer on: Ignition switch is ON, driver or front passenger seat belt is unfastened, and vehicle speed is 12.4mph (20 km/h) or more.
- Key reminder warning buzzer on: Ignition switch is OFF, key is in ignition key cylinder, and driver side door is open.

**B** → **Go to step 5**

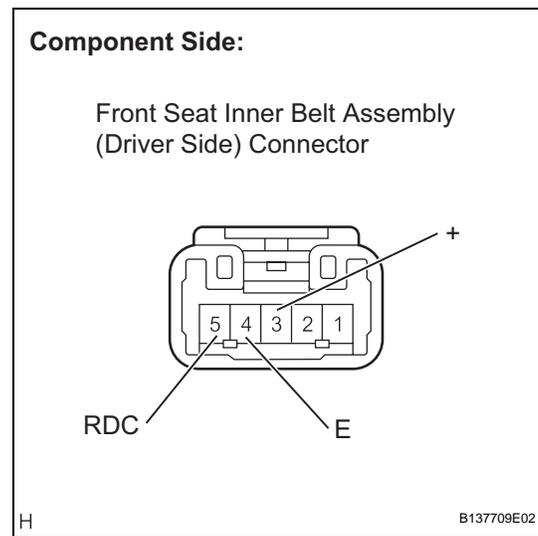
**C** → **GO TO KEY REMINDER WARNING SYSTEM**

**D** → **REPLACE COMBINATION METER ASSEMBLY**

**A**

**2 INSPECT FRONT SEAT INNER BELT ASSEMBLY (DRIVER SIDE)**

ME



- (a) Disconnect the L19 front seat inner belt assembly (driver side) connector.
- (b) Measure the resistance.
- Standard resistance**

Tester Connection	Condition	Specified Condition
+ - E	Tongue plate fastened	10 k $\Omega$ or higher
+ - E	Tongue plate unfastened	Below 1 $\Omega$

- (c) Reconnect the front seat inner belt assembly (driver side) connector.

**NG** → **REPLACE FRONT SEAT INNER BELT ASSEMBLY LH**

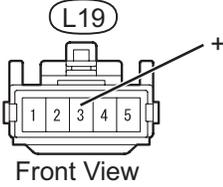
**OK**

**3 CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - FRONT SEAT INNER BELT ASSEMBLY)**

- (a) Disconnect the E13 combination meter assembly connector.
- (b) Disconnect the L19 front seat inner belt assembly (driver side) connector.

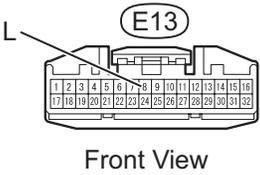
**Wire Harness Side:**

Front Seat Inner Belt Assembly (Driver Side) Connector



Front View

Combination Meter Assembly Connector



Front View

B137678E02

- (c) Measure the resistance.  
**Standard resistance**

Tester Connection	Specified Condition
E13-8 (L) - L19-3 (+)	Below 1 Ω

- (d) Reconnect the combination meter assembly connector.  
(e) Reconnect the front seat inner belt assembly (driver side) connector.

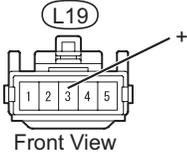
**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

**4 CHECK HARNESS AND CONNECTOR (FRONT SEAT INNER BELT ASSEMBLY - BODY GROUND)**

**Wire Harness Side:**

Front Seat Inner Belt Assembly (Driver Side) Connector



Front View

E133659E01

- (a) Disconnect the L19 front seat inner belt assembly (driver side) connector.  
(b) Measure the resistance.  
**Standard resistance**

Tester Connection	Specified Condition
L19-3 (+) - Body ground	Below 1 Ω

- (c) Reconnect the front seat inner belt assembly (driver side) connector.

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

**REPLACE COMBINATION METER ASSEMBLY**

**5 CHECK SUPPLEMENTAL RESTRAINT SYSTEM**

- (a) Connect the intelligent tester to the DLC3.  
(b) Turn the ignition switch ON and turn the tester ON.  
(c) Enter the following menus: DIAGNOSIS / SRS AIRBAG/ DTC INFO.

**ME**

**Result**

Result	Proceed to
No SRS DTCs are output	A
SRS DTCs are output	B

**B****GO TO SUPPLEMENTAL RESTRAINT SYSTEM****A****6****CHECK OCCUPANT CLASSIFICATION SYSTEM**

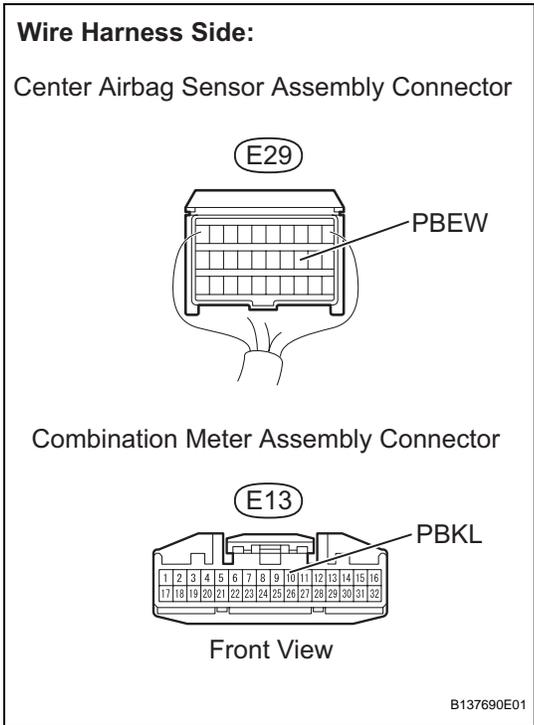
- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the ignition switch ON and turn the tester ON.
- (c) Enter the following menus: DIAGNOSIS / OCCUPANT DETECT /DTC INFO.

**Result**

Result	Proceed to
No occupant classification system DTCs are output	A
Occupant classification system DTCs are output	B

**B****GO TO OCCUPANT CLASSIFICATION SYSTEM****A****7****CHECK HARNESS AND CONNECTOR (CENTER AIRBAG SENSOR ASSEMBLY - COMBINATION METER ASSEMBLY)**

- (a) Disconnect the E29 center airbag sensor assembly connector.
- (b) Disconnect the E13 combination meter assembly connector.



- (c) Measure the resistance.  
**Standard resistance**

Tester Connection	Specified Condition
E29-13 (PBEW) - E13-10 (PBKL)	Below 1 Ω

- (d) Reconnect the center airbag sensor assembly connector.
- (e) Reconnect the combination meter assembly connector.

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

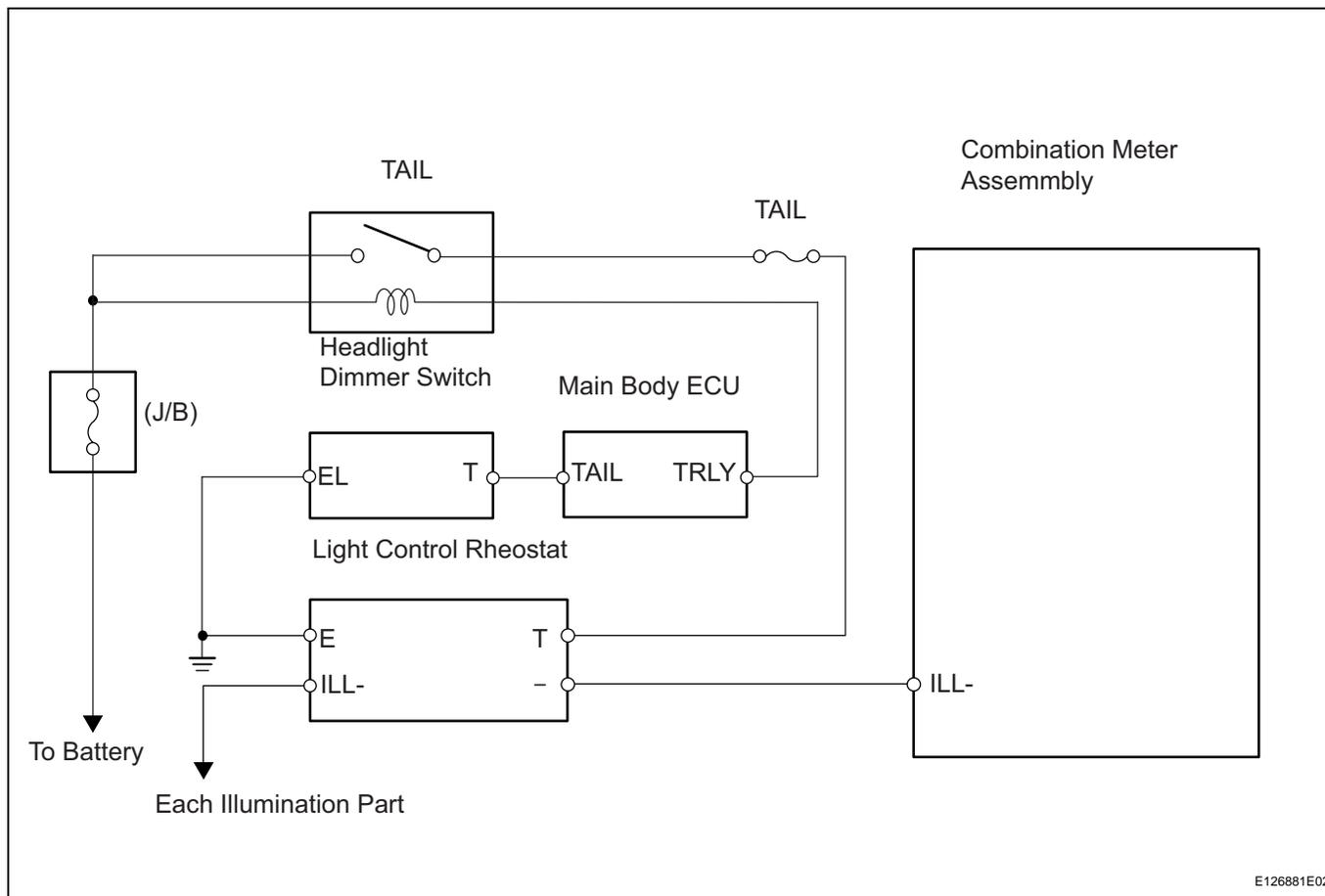
**REPLACE COMBINATION METER ASSEMBLY**

## Operating Light Control Rheostat does not Change Light Brightness

### DESCRIPTION

The combination meter assembly controls the combination meter illumination in accordance with the light control signals from the light control rheostat.

### WIRING DIAGRAM



### INSPECTION PROCEDURE

#### 1 INSPECT FUSE (TAIL)

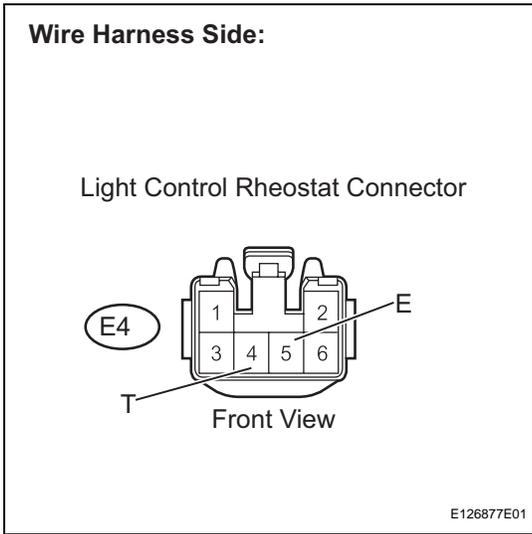
- Remove the TAIL fuse from the main body ECU.
- Measure the resistance.  
**Standard resistance:**  
**Below 1  $\Omega$**
- Reinstall the TAIL fuse.

NG

REPLACE FUSE

OK

**2 CHECK HARNESS AND CONNECTOR (FUSE (TAIL) - RHEOSTAT, RHEOSTAT - BODY GROUND)**



- (a) Disconnect the E4 light control rheostat connector.
- (b) Measure the voltage and resistance.

**Standard**

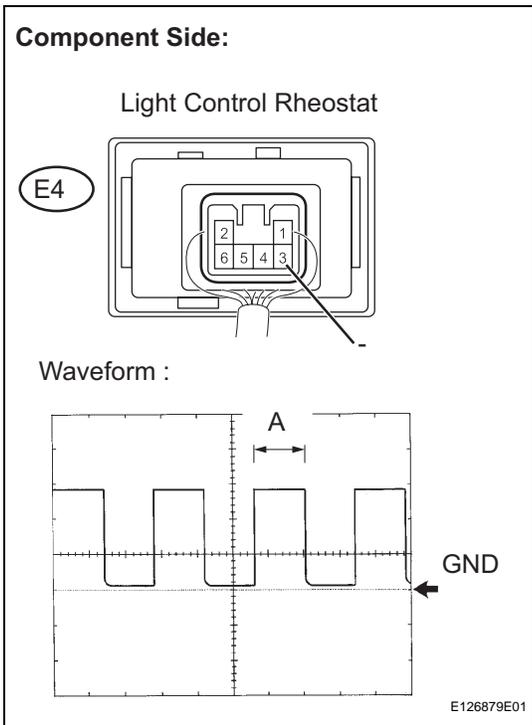
Tester Connection	Condition	Specified Condition
E4-4 (T) - Body ground	Tail light ON	11 to 14V
E4-5 (E) - Body ground	Always	Below 1 Ω

- (c) Reconnect the light control rheostat connector.

**NG** **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

**3 INSPECT LIGHT CONTROL RHEOSTAT**



- (a) Remove the light control rheostat but without disconnecting the connector.
- (b) Turn the ignition switch ON.
- (c) Using an oscilloscope, check the signal waveform of the light control rheostat.

Item	Contents
Terminal connection	E4-3 (-) - Body ground
Tool setting	5V / DIV, 50ms / DIV
Vehicle condition	Ignition switch ON

**OK:**

**Waveform is as shown in the illustration.**

**HINT:**

Duty ratio changes as the illumination dims. (A becomes longer)

- (d) Reinstall the light control rheostat.

**NG** **REPLACE LIGHT CONTROL RHEOSTAT**

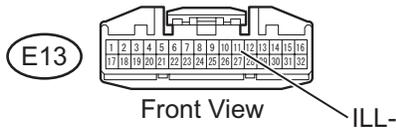
**OK**

**ME**

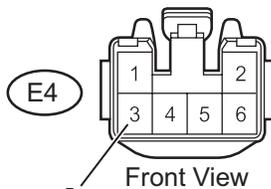
**4 CHECK HARNESS AND CONNECTOR (COMBINATION METER ASSEMBLY - @LIGHT CONTROL RHEOSTAT)**

Wire Harness Side:

Combination Meter Assembly Connector



Light Control Rheostat Connector



- (a) Disconnect the E13 combination meter assembly connector.
- (b) Disconnect the E4 light control rheostat connector.
- (c) Measure the resistance.  
**Standard resistance**

Tester Connection	Specified Condition
E13-11 (ILL-) - E4-3 (-)	Below 1 Ω

- (d) Reconnect the combination meter assembly connector.
- (e) Reconnect the light control rheostat connector.

**NG REPAIR OR REPLACE HARNESS OR CONNECTOR**

ME

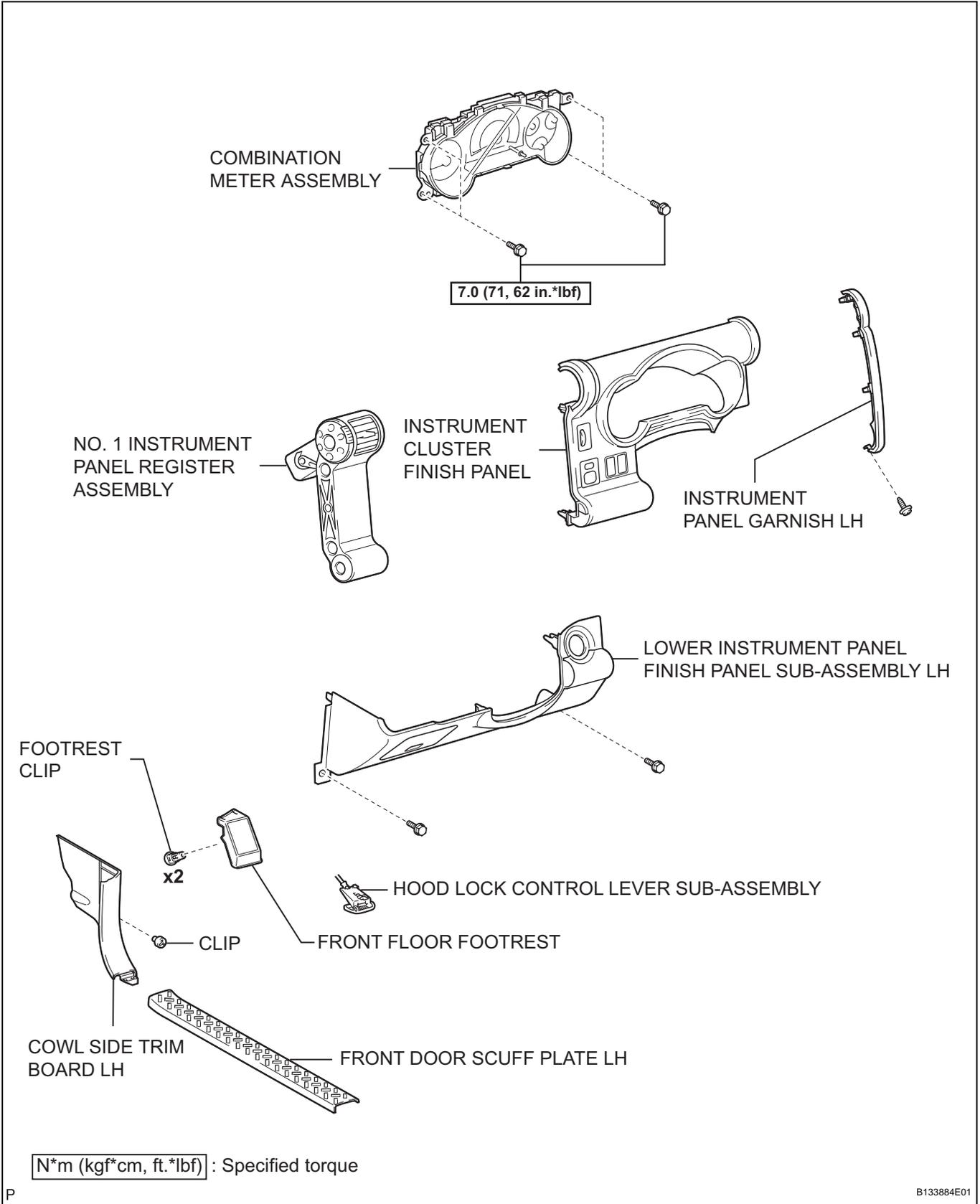
E126880E01

**OK**

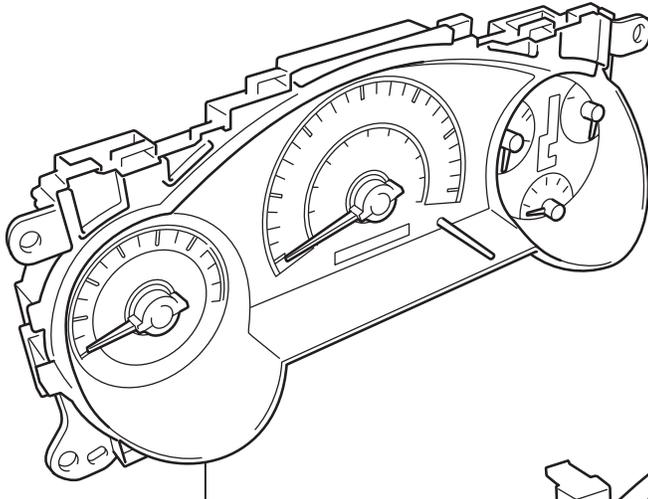
**REPLACE COMBINATION METER ASSEMBLY**

# COMBINATION METER

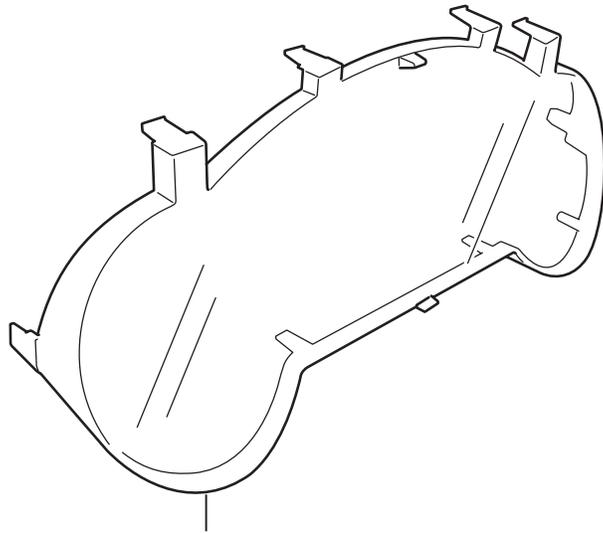
## COMPONENTS



ME



COMBINATION METER

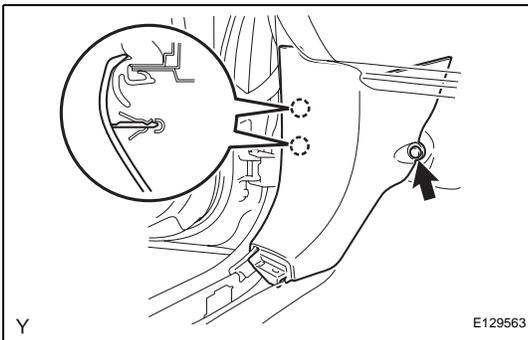
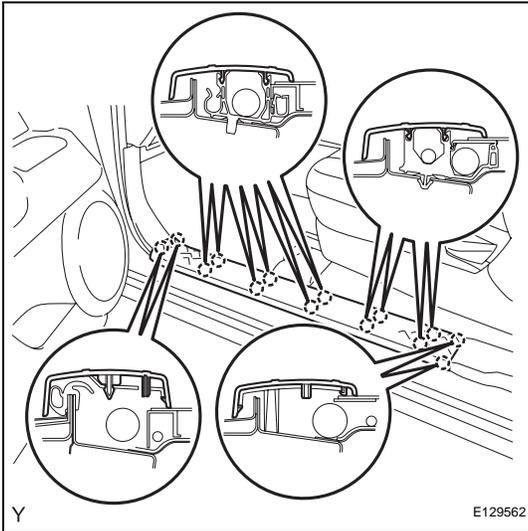


COMBINATION METER GLASS

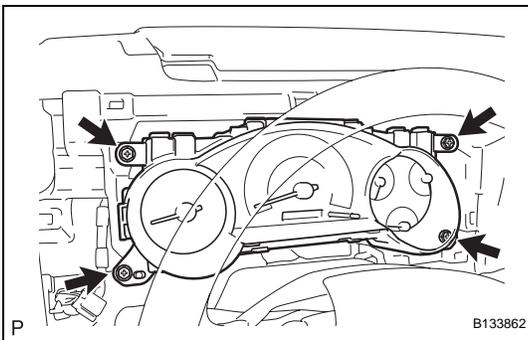
ME

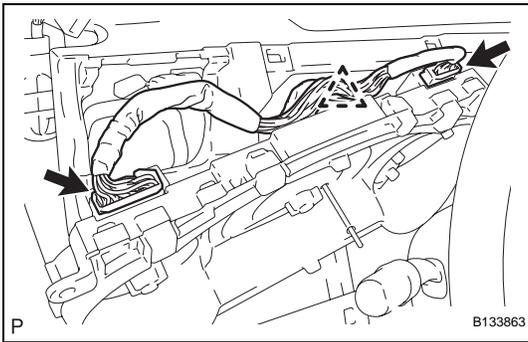
## REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE FRONT DOOR SCUFF PLATE LH**
  - (a) Disengage the 14 claws and remove the front door scuff plate.
3. **REMOVE FRONT FLOOR FOOTREST (See page IR-2)**
4. **REMOVE FOOTREST CLIP (See page IR-2)**



5. **REMOVE COWL SIDE TRIM BOARD LH**
  - (a) Remove the clip.
  - (b) Disengage the 2 claws and remove the cowl side trim board.
6. **REMOVE INSTRUMENT PANEL GARNISH LH (See page IP-10)**
7. **REMOVE NO. 1 INSTRUMENT PANEL REGISTER ASSEMBLY (See page IP-13)**
8. **REMOVE HOOD LOCK CONTROL LEVER SUB-ASSEMBLY (See page IP-13)**
9. **REMOVE LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY LH (See page IP-14)**
10. **REMOVE INSTRUMENT CLUSTER FINISH PANEL (See page IP-14)**
11. **REMOVE COMBINATION METER ASSEMBLY**
  - (a) Remove the 4 screws.



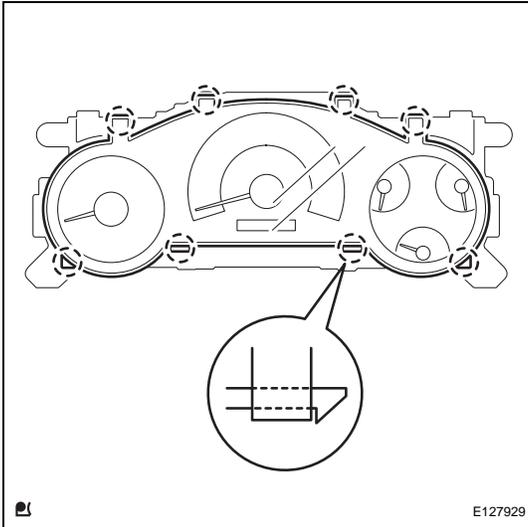


- (b) Disconnect the 2 connectors and clamp and remove the combination meter.

## DISASSEMBLY

### 1. REMOVE COMBINATION METER GLASS

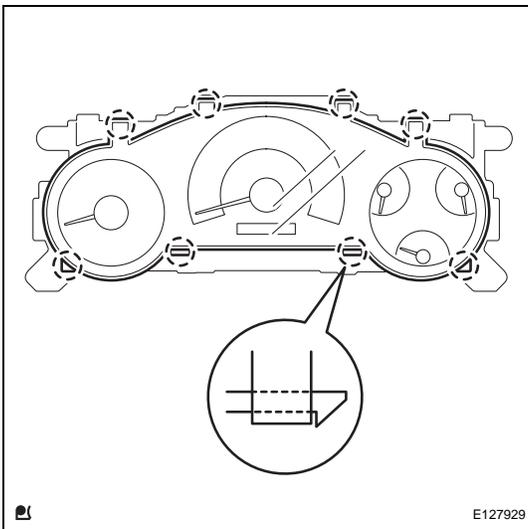
- (a) Disengage the 8 claws and remove the combination meter glass.



## REASSEMBLY

### 1. INSTALL COMBINATION METER GLASS

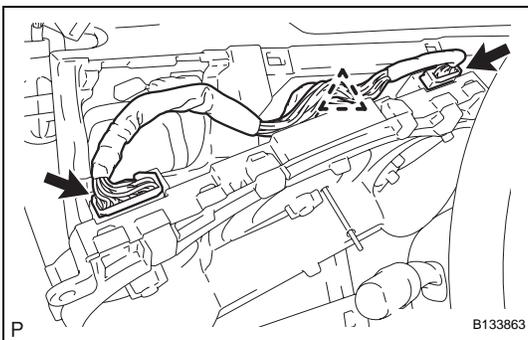
- (a) Engage the 8 claws and install the combination meter glass.

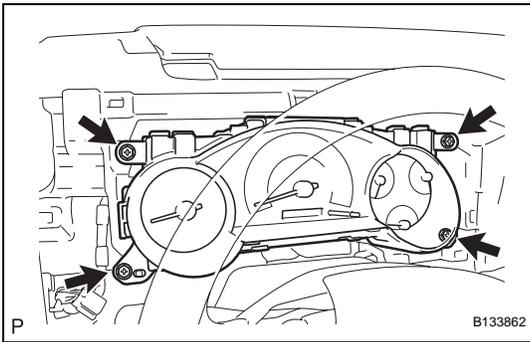


## INSTALLATION

### 1. INSTALL COMBINATION METER ASSEMBLY

- (a) Connect the 2 connectors and the clamp.

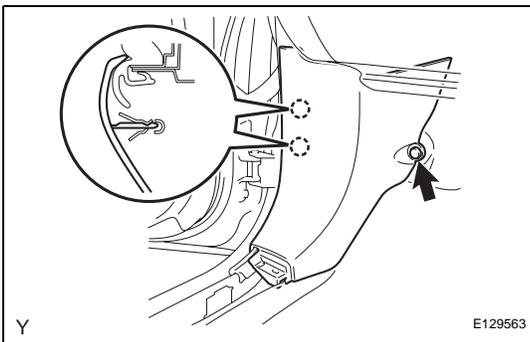




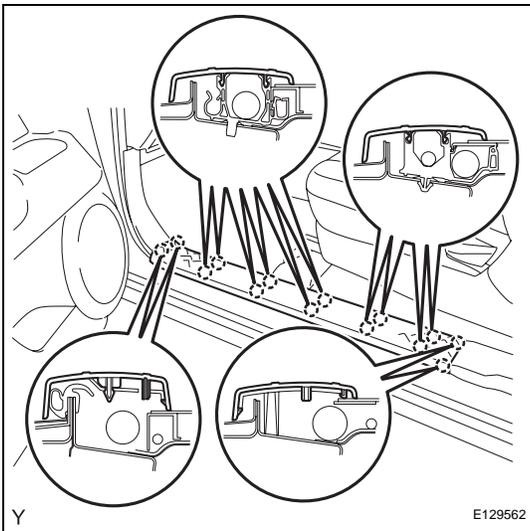
- (b) Install the combination meter assembly with the 4 screws.

**Torque: 7.0 N\*m (71 kgf\*cm, 62 in.\*lbf)**

2. **INSTALL INSTRUMENT CLUSTER FINISH PANEL**  
(See page [IP-29](#))
3. **INSTALL LOWER INSTRUMENT FINISH PANEL SUB-ASSEMBLY LH** (See page [IP-29](#))
4. **INSTALL HOOD LOCK CONTROL LEVER SUB-ASSEMBLY** (See page [IP-30](#))
5. **INSTALL NO. 1 INSTRUMENT PANEL REGISTER ASSEMBLY** (See page [IP-30](#))
6. **INSTALL INSTRUMENT PANEL GARNISH LH** (See page [IP-33](#))
7. **INSTALL COWL SIDE TRIM BOARD LH**
  - (a) Engage the 2 claws and install the cowl side trim board.
  - (b) Install the clip.
8. **INSTALL FOOTREST CLIP** (See page [IR-2](#))
9. **INSTALL FRONT FLOOR FOOTREST** (See page [IR-2](#))

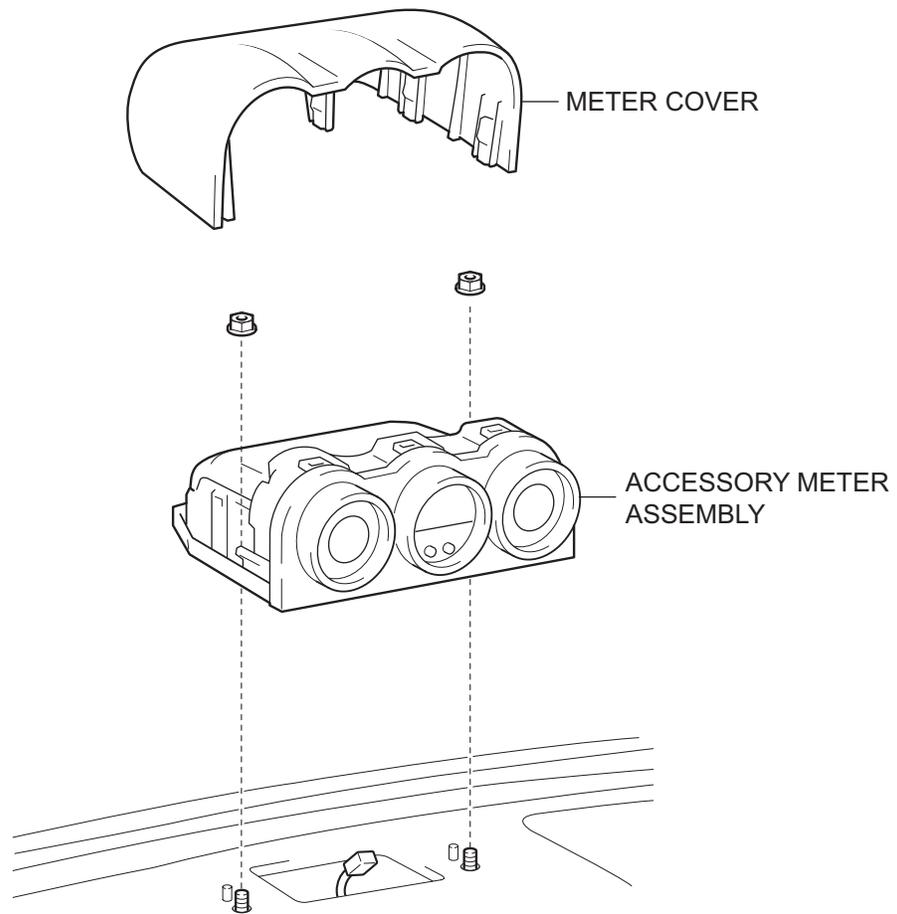


10. **INSTALL FRONT DOOR SCUFF PLATE LH**
  - (a) Engage the 14 claws and install the door scuff plate.
11. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**  
**Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)**



# ACCESSORY METER

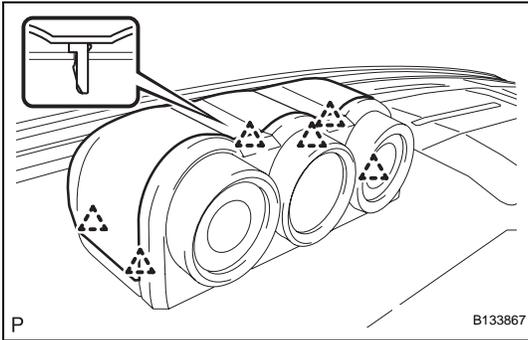
## COMPONENTS



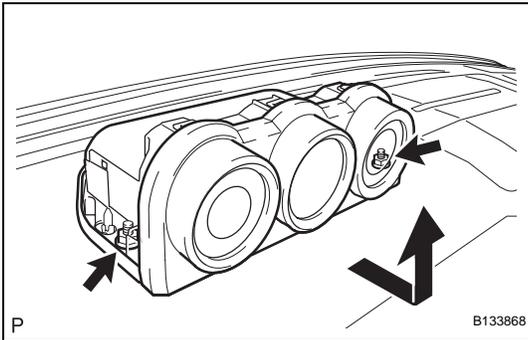
ME

## REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE METER COVER**
  - (a) Disengage the 6 clips and remove the meter cover.

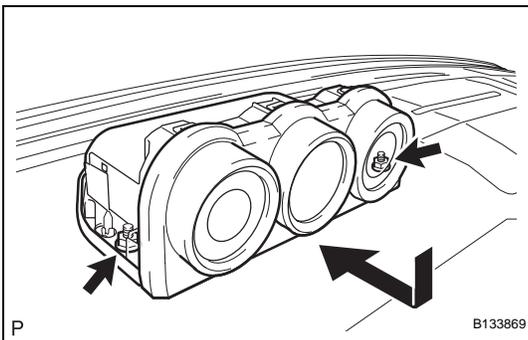


3. **REMOVE ACCESSORY METER ASSEMBLY**
  - (a) Remove the 2 nuts and remove the accessory meter.
  - (b) Disconnect the connector.

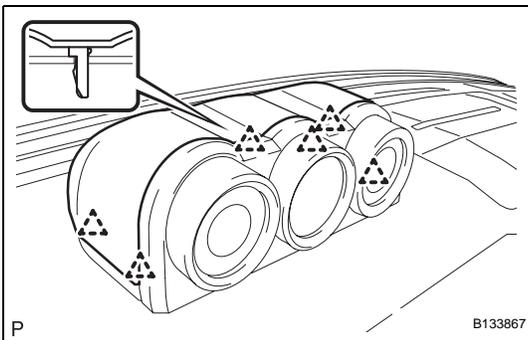


## INSTALLATION

1. **INSTALL ACCESSORY METER ASSEMBLY**
  - (a) Connect the connector.
  - (b) Install the accessory meter with the 2 nuts.

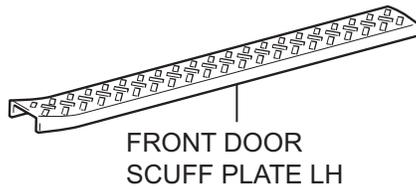
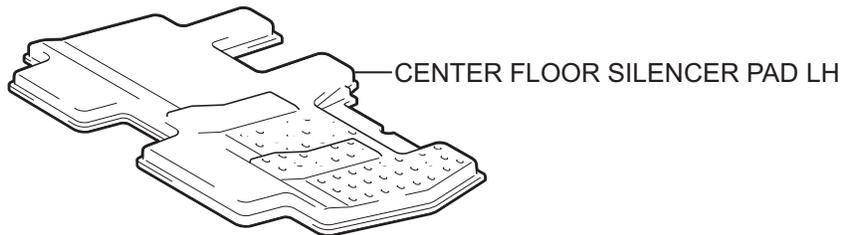
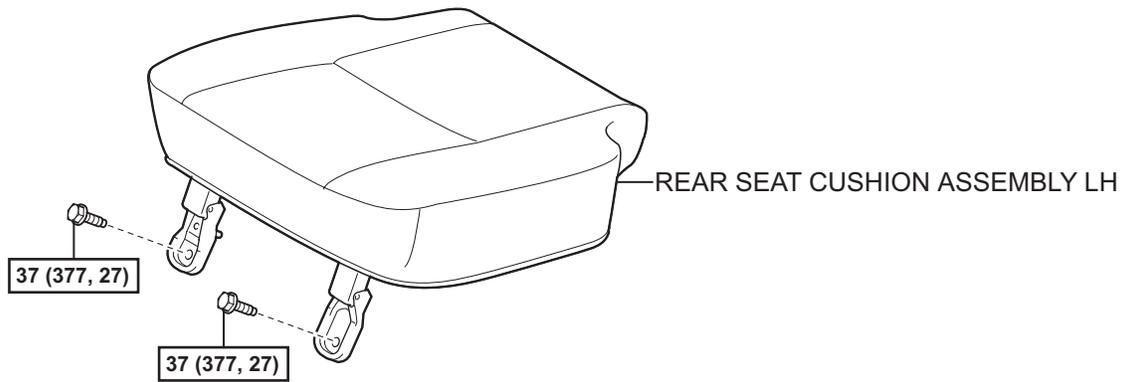


2. **INSTALL METER COVER**
  - (a) Engage the 6 clips and install the meter cover.
3. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**  
**Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)**



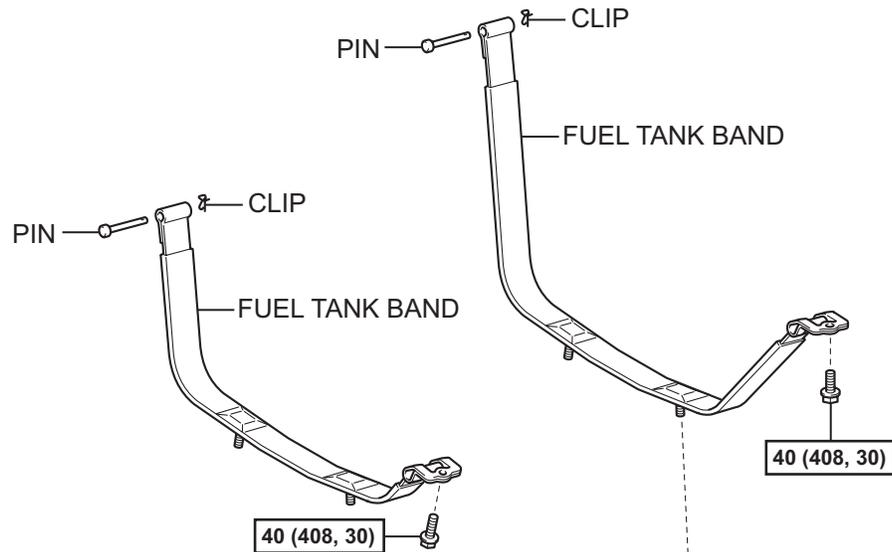
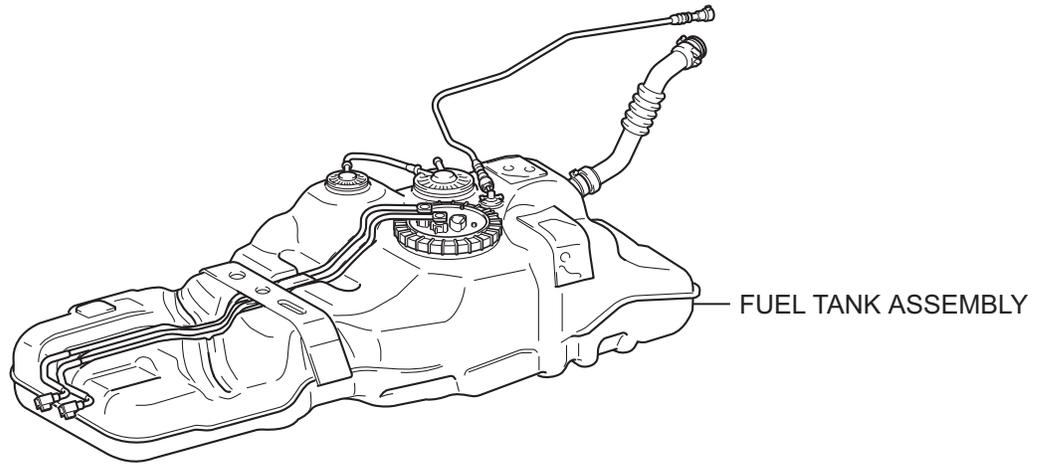
# FUEL SENDER GAUGE ASSEMBLY

## COMPONENTS

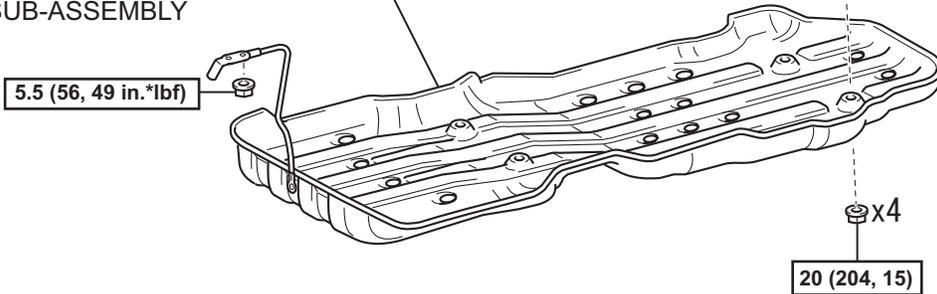


N\*m (kgf\*cm, ft\*lbf) : Specified torque

ME

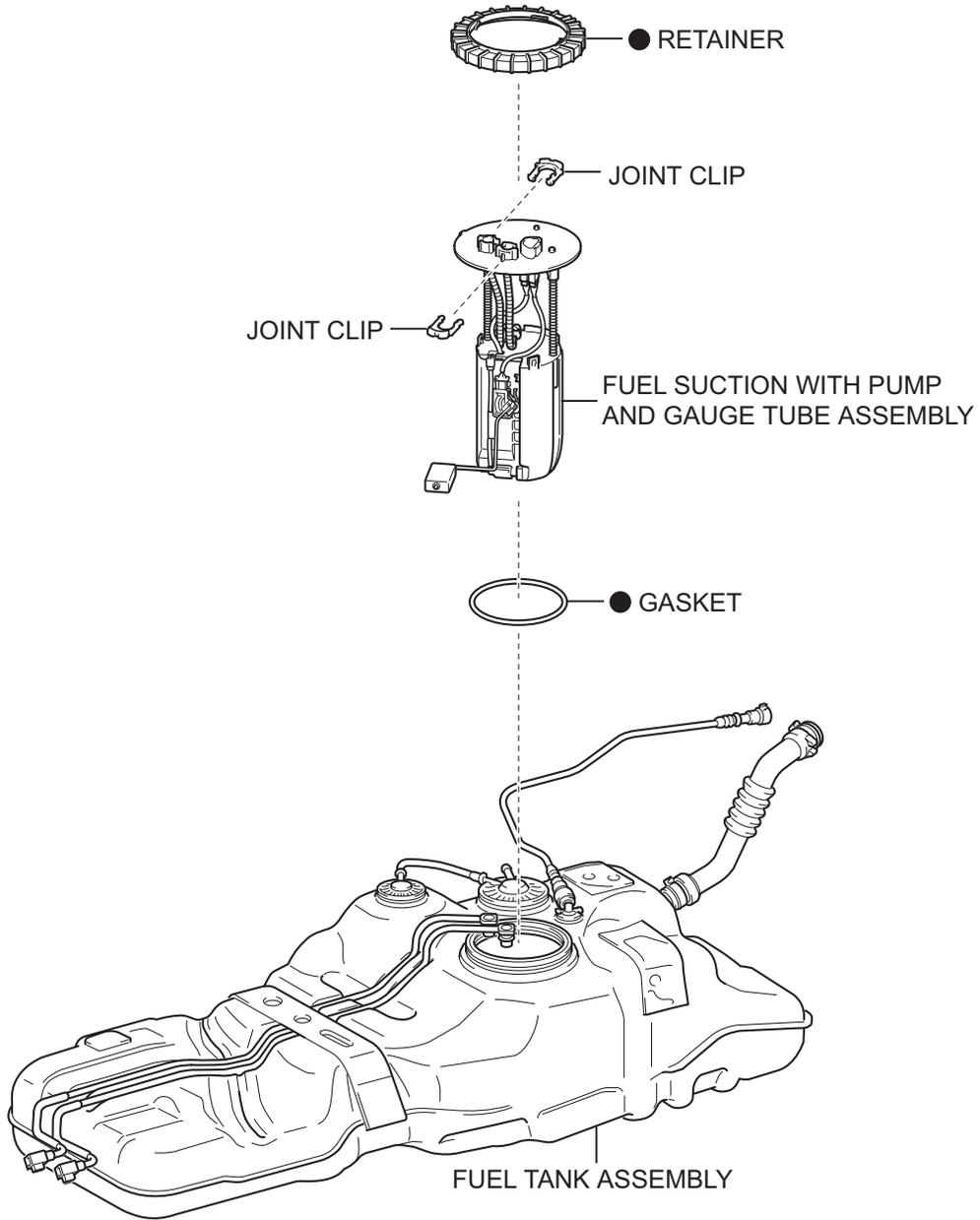


NO.1 FUEL TANK PROTECTOR SUB-ASSEMBLY



**N\*m (kgf\*cm, ft\*lbf)** : Specified torque

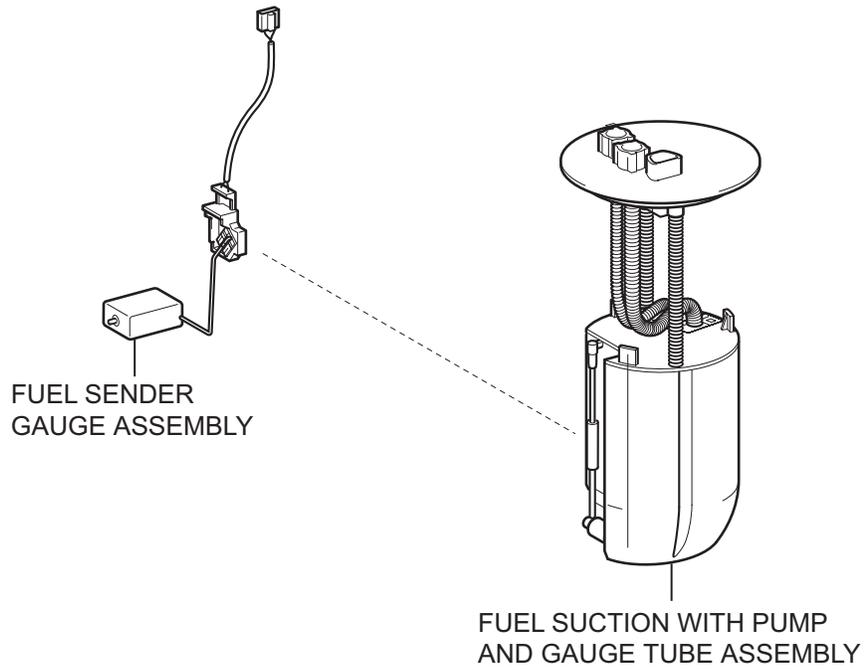
ME



ME

● Non-reusable part

Y

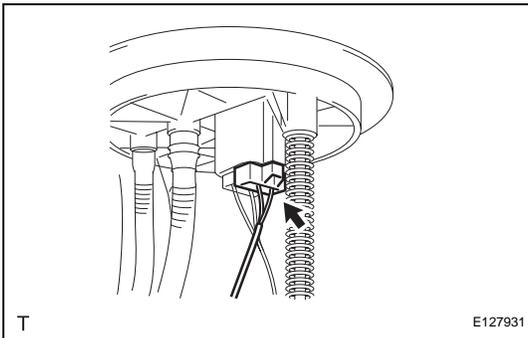


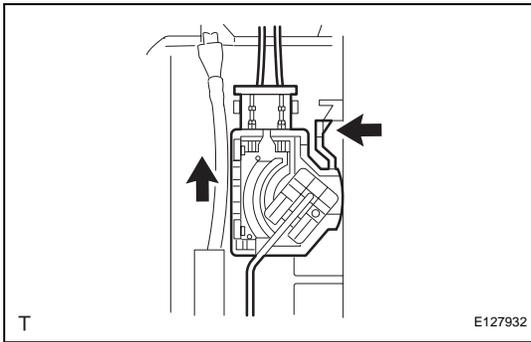
ME

T

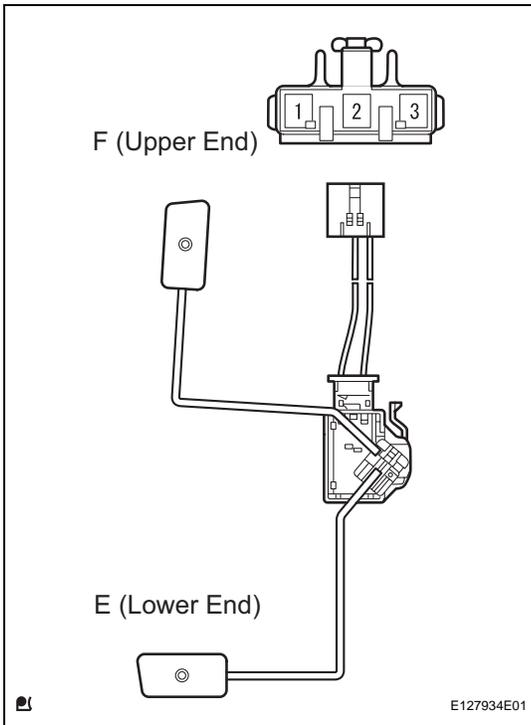
## REMOVAL

1. DISCHARGE FUEL SYSTEM PRESSURE (See page [FU-28](#))
2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
3. REMOVE FRONT DOOR SCUFF PLATE LH (See page [FU-42](#))
4. REMOVE REAR DOOR SCUFF PLATE LH (See page [FU-42](#))
5. REMOVE REAR SEAT CUSHION ASSEMBLY LH (See page [FU-42](#))
6. REMOVE REAR FLOOR SERVICE HOLE COVER (See page [FU-42](#))
7. DISCONNECT FUEL TANK TO FILLER PIPE HOSE (See page [FU-43](#))
8. DISCONNECT FUEL TANK BREATHER TUBE SUB-ASSEMBLY (See page [FU-44](#))
9. REMOVE NO. 1 FUEL TANK PROTECTOR SUB-ASSEMBLY (See page [FU-44](#))
10. DISCONNECT FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE (See page [FU-45](#))
11. DISCONNECT FUEL TANK VENT HOSE (See page [FU-45](#))
12. REMOVE FUEL TANK ASSEMBLY (See page [FU-45](#))
13. REMOVE FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE (See page [FU-47](#))
14. REMOVE FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY (See page [FU-29](#))
15. REMOVE FUEL SENDER GAUGE ASSEMBLY
  - (a) Disconnect the fuel sender gauge connector.





- (b) Unlock the fuel sender gauge, and slide and remove it.



## INSPECTION

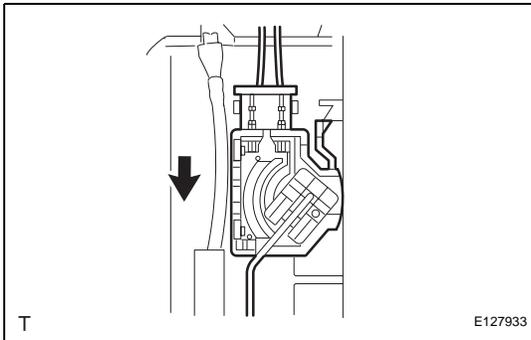
### 1. INSPECT FUEL SENDER GAUGE ASSEMBLY

- (a) Check the fuel sender gauge resistance.
- (1) Check that the float moves smoothly between the F level (upper end) and E level (lower end).
  - (2) Using an ohmmeter, measure the resistance.

#### Standard resistance

Tester Condition	Condition	Specified Condition
1 - 2	F (Upper End)	12.0 to 18.0 Ω
1 - 2	E (Lower End)	405.0 to 415.0 Ω

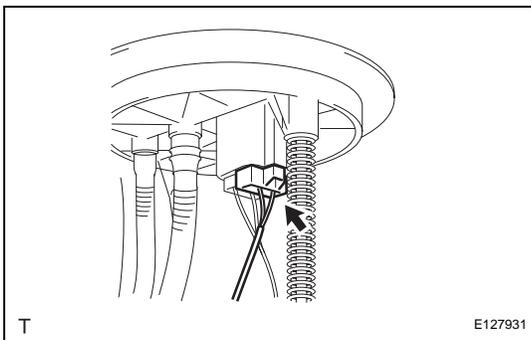
If the result is not as specified, replace the fuel sender gauge assembly.



## INSTALLATION

### 1. INSTALL FUEL SENDER GAUGE ASSEMBLY

- (a) Install the fuel sender gauge onto the fuel suction with pump and gauge tube.



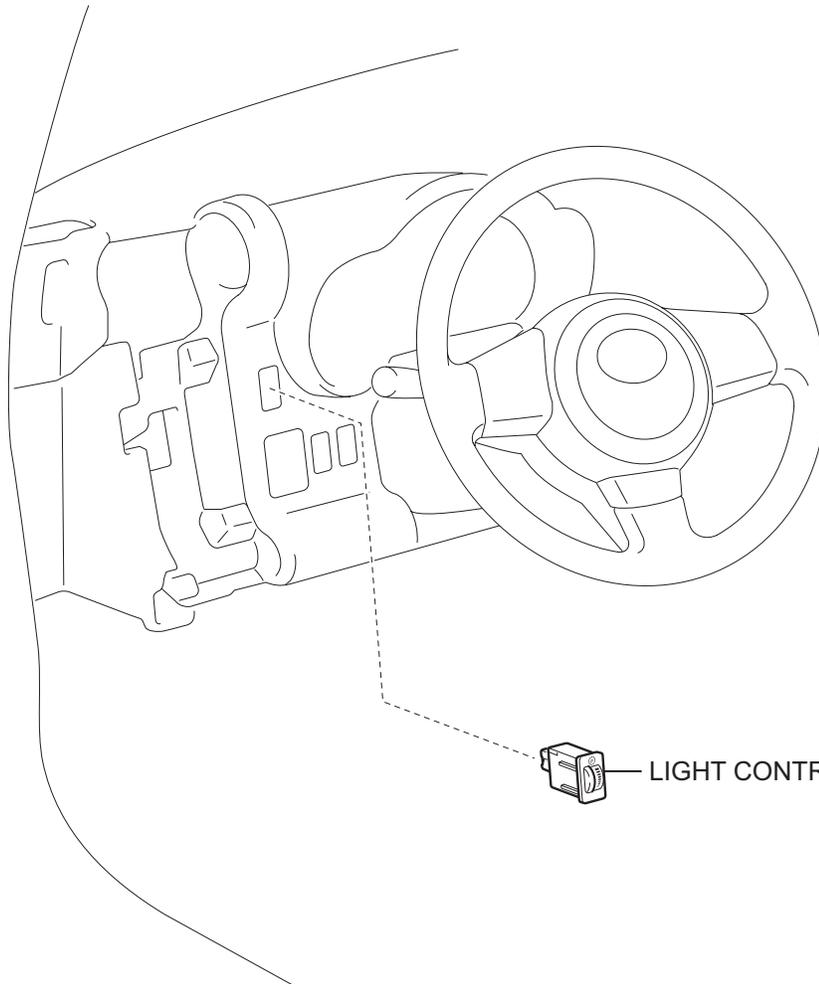
- (b) Connect the fuel sender gauge connector.

2. INSTALL FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY (See page [FU-34](#))
3. INSTALL FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE (See page [FU-49](#))
4. INSTALL FUEL TANK ASSEMBLY (See page [FU-50](#))
5. CONNECT FUEL TANK VENT HOSE (See page [FU-50](#))

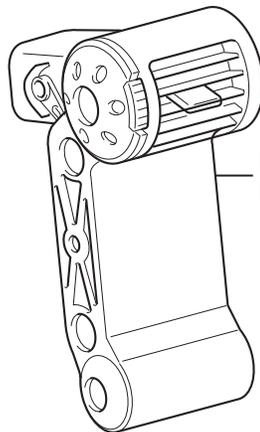
6. CONNECT FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE (See page [FU-49](#))
7. CONNECT FUEL TANK BREATHER TUBE SUB-ASSEMBLY (See page [FU-51](#))
8. CONNECT FUEL TANK TO FILLER PIPE HOSE (See page [FU-51](#))
9. INSTALL NO. 1 FUEL TANK PROTECTOR SUB-ASSEMBLY (See page [FU-51](#))
10. INSTALL REAR FLOOR SERVICE HOLE COVER (See page [FU-52](#))
11. INSTALL REAR SEAT CUSHION ASSEMBLY LH (See page [FU-53](#))
12. INSTALL REAR DOOR SCUFF PLATE LH (See page [FU-52](#))
13. INSTALL FRONT DOOR SCUFF PLATE LH (See page [FU-53](#))
14. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL  
Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)
15. CHECK FOR FUEL LEAKAGE (See page [FU-7](#))

# LIGHT CONTROL RHEOSTAT

## COMPONENTS



LIGHT CONTROL RHEOSTAT

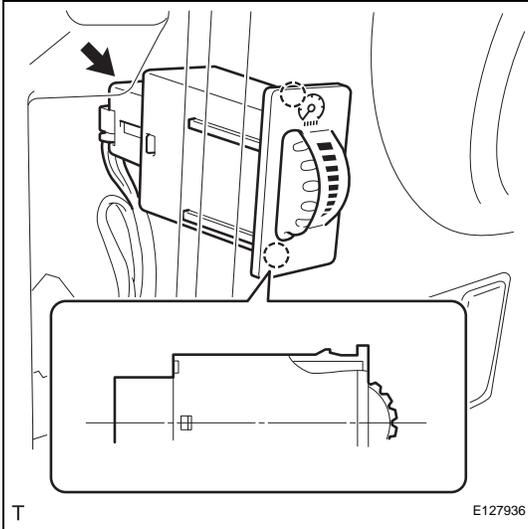


NO. 1 INSTRUMENT PANEL REGISTER ASSEMBLY

ME

## REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE NO. 1 INSTRUMENT PANEL REGISTER ASSEMBLY (See page [IP-13](#))**
3. **REMOVE LIGHT CONTROL RHEOSTAT**
  - (a) Disconnect the connector.
  - (b) Disengage the 2 claws and remove the light control rheostat.



## INSTALLATION

1. **INSTALL LIGHT CONTROL RHEOSTAT**
  - (a) Engage the 2 claws and install the light control rheostat.
  - (b) Connect the connector.
2. **INSTALL NO. 1 INSTRUMENT PANEL REGISTER ASSEMBLY (See page [IP-30](#))**
3. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**  
**Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)**

