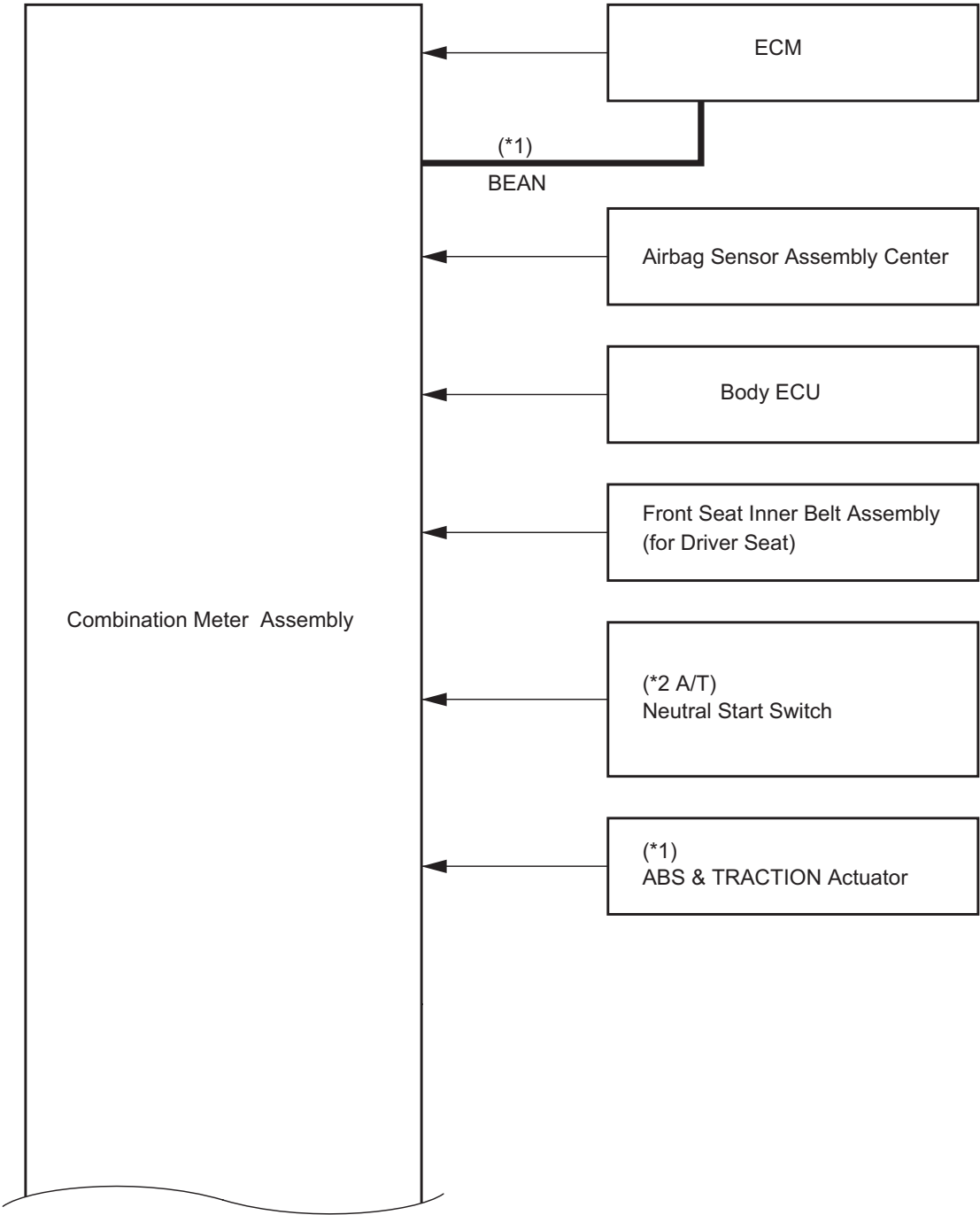


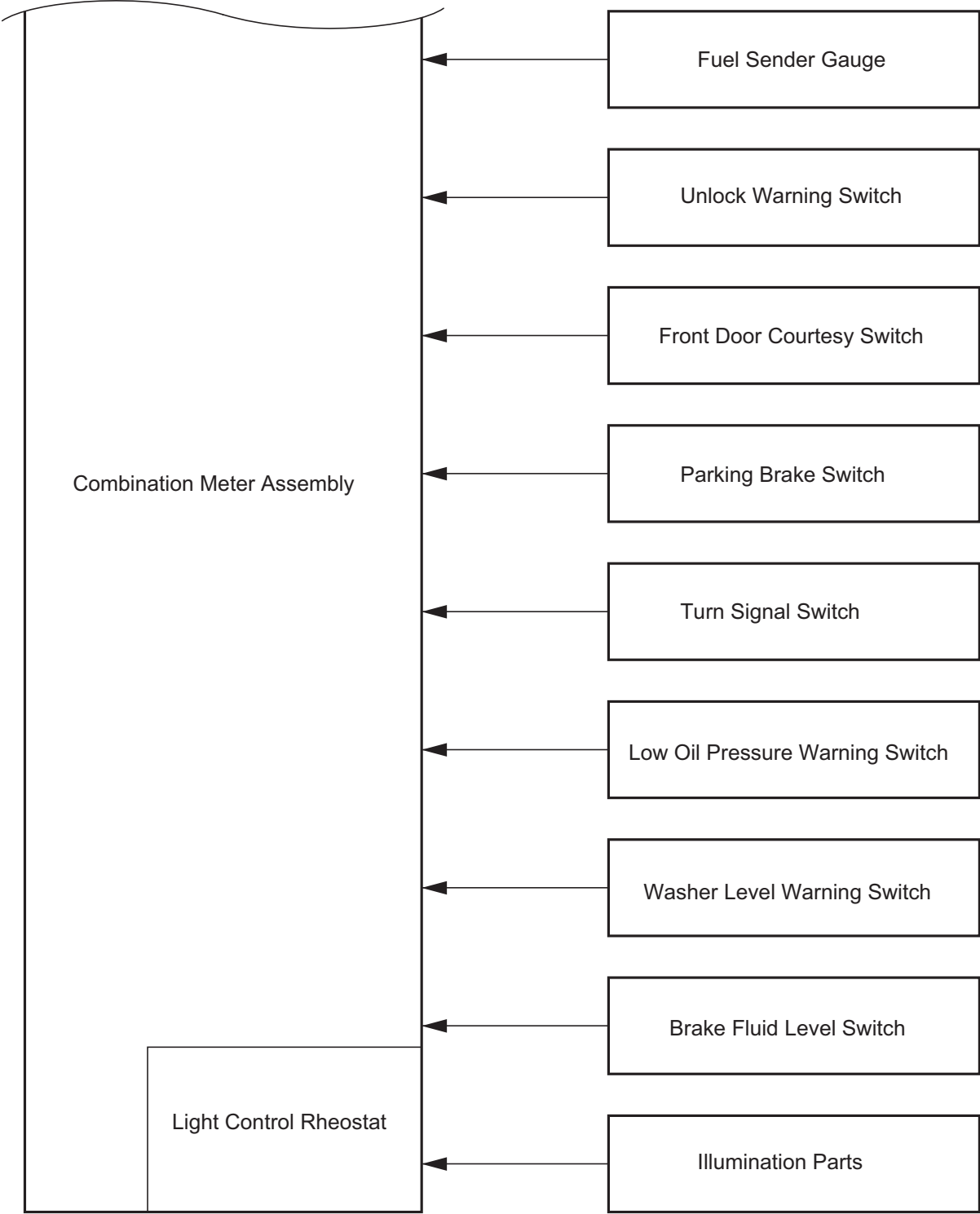
SYSTEM DIAGRAM

COMBINATION METER ASSEMBLY:



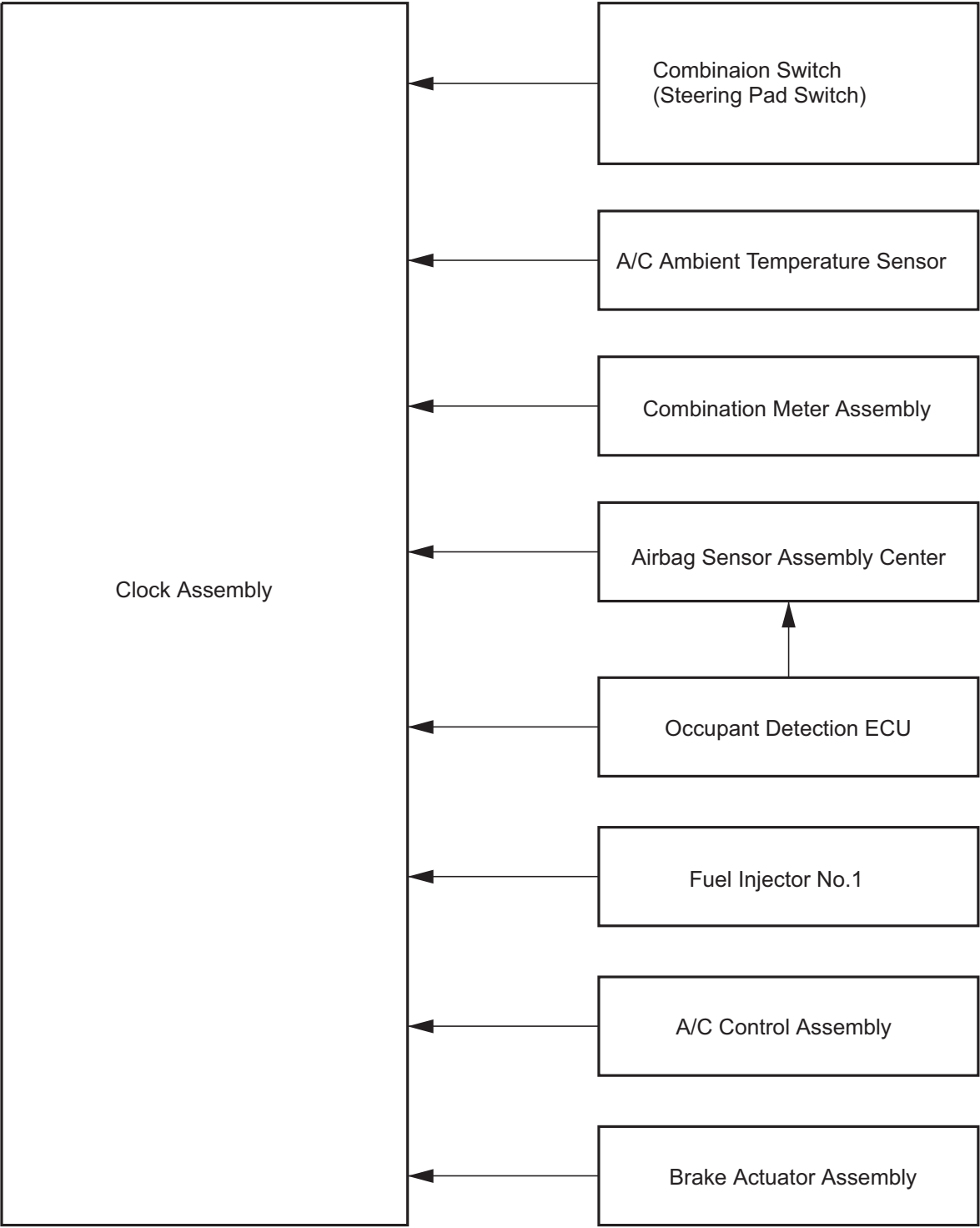
C

*1: 3MZ-FE
*2: 2AZ-FE



ME

CLOCK ASSEMBLY:



ME

SYSTEM DESCRIPTION

1. METER GAUGE AND WARNING/INDICATOR GAUGE:

Item	Signal Description
Speedometer (3MZ-FE)	Based on a signal received from the wheel speed sensor, the ABS & TRACTION actuator calculates vehicle speed and transmits the data to the meter .
Speedometer (2AZ-FE)	Vehicle speed sensor
Tachometer	ECM transmits engine speed to the meter to display .
ODO/TRIP Meter	Combination meter assembly
Fuel	Displays a fuel level receiving a signal from the fuel sender gauge (Direct line).
Water Temperature (3MZ-FE)	Displays water temperature receiving a signal from the ECM (BEAN).
Water Temperature (2AZ-FE)	Displays water temperature receiving a signal from the ECM (Direct line).

WARNING/INDICATOR:

Item	Signal Description
TURN	Turn signal switch is ON.
BEAM	Displays receiving a signal from the body ECU (Direct line).
CHARGE	Receives the malfunction signal from the alternator.
OIL PRESSURE	Warning is displayed when the oil pressure is low (The pressure switch is ON).
CHECK ENGINE	Receives the malfunction signal from the ECM.
DOOR	Open door indicator comes on receiving a signal from the body ECU (Direct line).
SEAT BELT	Driver's seat belt buckle switch is OFF (Unfastened).
BRAKE	Displays when the parking brake switch is ON or the brake fluid level warning switch is ON.
TIRE PRESSURE	Receives the low tire pressure signal from the ABS & TRACTION actuator (VSC) or brake actuator (ABS).
MAINT (Blinks)	Blinks when running 4,500 miles after ODO/TRIP switch is set.
MAINT (Comes on)	Comes on when running 5,000 miles after ODO/TRIP switch is set.
CRUISE	Receives the malfunction signal from the ECM.
AIRBAG	Receives the malfunction signal from the airbag ECU.
FUEL	Receives the fuel empty signal from the fuel sender gauge.
A/T P (3MZ-FE)	Receives the P signal from the ECM (BEAN).
A/T R (3MZ-FE)	Receives the R signal from the ECM (BEAN).
A/T N (3MZ-FE)	Receives the N signal from the ECM (BEAN).
A/T D (3MZ-FE)	Receives the D signal from the ECM (BEAN).
A/T S (3MZ-FE)	Receives the S signal from the ECM (BEAN).
A/T P (2AZ-FE)	Receives the P signal from the neutral start switch (Direct line).
A/T R (2AZ-FE)	Receives the R signal from the neutral start switch (Direct line).
A/T N (2AZ-FE)	Receives the N signal from the neutral start switch (Direct line).
A/T D (2AZ-FE)	Receives the D signal from the neutral start switch (Direct line).
A/T S (2AZ-FE)	Receives the S signal from the neutral start switch (Direct line).
SLIP (3MZ-FE)	Receives the malfunction signal from the skid control ECU.
TRAC OFF (3MZ-FE)	Receives the malfunction signal from the skid control ECU.
VSC (3MZ-FE)	Receives the malfunction signal from the skid control ECU.
WASHER LEVEL	Washer level warning switch is ON.

BUZZER:

Item	Signal Description
Key Reminder	Buzzer is ON: Ignition switch is OFF, key is inserted, and door is open.
Fasten Belt	Buzzer is ON: Ignition switch is ON and seat belt is unfastened.
Manual Shift Rejection (3MZ-FE)	Buzzer is ON: When driver request a gear that is not safe to shift into.

2. THE COMBINATION METER IN CAMRY SOLARA HAS THE FOLLOWING FEATURES:

- (a) Built-in buzzer for the reminder system (light, key, and seat belt)
- (b) Integrated rheostat, trip and odometer knobs.
 - Rotate knob to adjust interior illumination.
 - Press and release knob to scroll through trip "A", trip "B", and odometer features.
 - Press and hold the trip knob to reset trip meter functions.
- (c) Oil maintenance indicator
 - 4,500 miles after ODO/TRIP switch is set, the maintenance indicator begins to blink for 15 seconds after the ignition switch is turned to the ON position.
 - 5,000 miles after ODO/TRIP switch is set, the maintenance indicator comes on.
 - Press and hold the trip knob to reset the oil maintenance indicator.
- (d) Clock (Multifunction display)
 - The following are the features: Instant fuel consumption, Average fuel consumption, Distance to empty, Average speed, Elapsed time, Clock, Outside temperature
 - Press "H" and "M" buttons at the same time (within 240ms of each other) to switch between Fahrenheit and Celsius.
 - Press and release the "DISP" switch on the steering wheel to scroll through trip computer functions.
 - Press and hold the "DISP" switch on the steering wheel for 0.6 seconds or more to reset the stored values.

HOW TO PROCEED WITH TROUBLESHOOTING

1 VEHICLE BROUGHT TO WORKSHOP

NEXT

2 PROBLEM SYMPTOM CONFIRMATION

HINT:
See page [IN-26](#).

NEXT

3 CHECK MULTIPLEX COMMUNICATION SYSTEM

(a) Check for DTC outputs.



MULTIPLEX DTC OUTPUTS (PROCEED TO "BODY MULTIPLEX COMMUNICATION SYSTEM")



NO MULTIPLEX DTC OUTPUTS (GO TO STEP 5)

4 CIRCUIT INSPECTION

NEXT

5 REPAIR OR REPLACE

NEXT

6 CONFIRMATION TEST

NEXT

END

PROBLEM SYMPTOMS TABLE

MALFUNCTION SYSTEM:

Symptom	Suspected area	See page
Entire combination meter does not operate.	1. Refer to troubleshooting	ME-28
Operating light control rheostat does not change light brightness.	1. Refer to troubleshooting	ME-57
Warning buzzer does not sound.	1. Refer to troubleshooting	ME-45

METER GAUGES:

Symptom	Suspected area	See page
Malfunction in speedometer	1. Refer to troubleshooting	ME-32
Malfunction in tachometer	1. Refer to troubleshooting	ME-36
Malfunction in fuel receiver gauge	1. Refer to troubleshooting	ME-39

WARNING LIGHTS:

Symptom	Suspected area	See page
Check engine warning light does not come on.	1. ECM (2AZ-FE)	ES-1
	2. ECM (3MZ-FE)	ES-5
	3. Wire Harness or Connector	-
	4. Combination Meter Assembly	ME-59
Discharge warning light does not come on.	1. ECM (2AZ-FE)	ES-1
	2. ECM (3MZ-FE)	ES-5
	3. Wire Harness or Connector	-
	4. Combination Meter Assembly	ME-59
Brake warning light does not come on.	1. Brake Oil Level Switch	ME-24
	2. Wire Harness or Connector	-
	3. Combination Meter Assembly	ME-59
ABS warning light does not come on.	1. Brake Actuator Assembly (ABS)	BC-4
	2. Wire Harness or Connector	-
	3. Combination Meter Assembly	ME-59
SRS warning light does not come on.	1. Airbag Sensor Assembly Center	RS-27
	2. Wire Harness or Connector	-
	3. Combination Meter Assembly	ME-59
Open door warning does not come on.	1. Refer to troubleshooting	DL-5
	2. Wire Harness or Connector	-
	3. Combination Meter Assembly	ME-59
Fuel level warning light does not come on.	1. Refer to troubleshooting	ME-24
	2. Wire Harness or Connector	-
	3. Combination Meter Assembly	ME-59
Low oil pressure warning light does not come on.	1. Low Oil Pressure Warning Switch	ME-24
	2. Wire Harness or Connector	-
	3. Combination Meter Assembly	ME-59
Seat belt warning light for driver's seat does not operate.	1. Refer to troubleshooting	ME-50

INDICATOR LIGHTS:

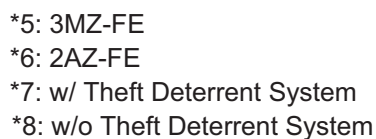
Symptom	Suspected area	See page
Turn indicator light does not come on.	1. Turn Signal Flasher Relay	LI-113
	2. Wire Harness or Connector	-
	3. Combination Meter Assembly	ME-59

Symptom	Suspected area	See page
High beam indicator light does not come on.	1. Headlight Dimmer Switch	LI-108
	2. Wire Harness or Connector	-
	3. Combination Meter Assembly	ME-59
Washer level indicator light does not come on.	1. Washer Level Warning Switch	ME-24
	2. Wire Harness or Connector	-
	3. Combination Meter Assembly	ME-59
Tire pressure indicator light does not come on.	1. Brake Actuator Assembly (ABS)	TW-8
	2. Wire Harness or Connector	-
	3. Combination Meter Assembly	ME-59
CRUISE indicator light does not come on.	1. ECM (2AZ-FE)	ES-1
	2. ECM (3MZ-FE)	ES-5
	3. Cruise Control Main Switch	CC-6
	4. Wire Harness or Connector	-
	5. Combination Meter Assembly	ME-59
All buzzers (key reminder, tail cancel, seat belt) do not operate.	1. Refer to troubleshooting	ME-45
	2. Combination Meter Assembly	ME-59

CLOCK ASSEMBLY:

Symptom	Suspected area	See page
Indicated "Distance to empty" is in excessive error (other meters operate normally).	1. Clock Assembly	IP-6
	2. Combination meter Assembly	ME-59
	3. ECM (2AZ-FE)	ES-1
	4. ECM (3MZ-FE)	ES-5
	5. Wire Harness or Connector	-
Indicated average fuel consumption and instantaneous fuel consumption are in excessive error (other meters operate normally).	1. Clock Assembly	IP-6
	2. ECM (2AZ-FE)	ES-1
	3. ECM (3MZ-FE)	ES-5
	4. Wire Harness or Connector	-
Incomplete display (The display does not indicate numbers or some digital segments are missing.)	1. Clock Assembly	IP-6
Outside temperature indicator shows "--".	1. Ambient Temperature Sensor	AC-2
	2. Clock Assembly	IP-6
	3. Wire Harness or Connector	-
Seat belt warning lamp for front passenger's seat does not operate.	1. Refer to troubleshooting	ME-53

WIRING DIAGRAM



1

CHECK BUZZER

- (a) Operate the buzzers and check that the buzzers for seat belt warning, key reminder warning and light reminder warning sound normally.

Condition	Proceed to
All warning buzzers do not sound.	A
Seat belt warning does not sound.	B
Key reminder warning does not sound.	C

HINT:
Key reminder buzzer: Ignition switch off, key is inserted, door is opened.
Seat belt buzzer: Ignition switch is on, seat belt is unfastened.

B

Go to step 2

C

Go to step 4

A

REPLACE COMBINATION METER ASSEMBLY

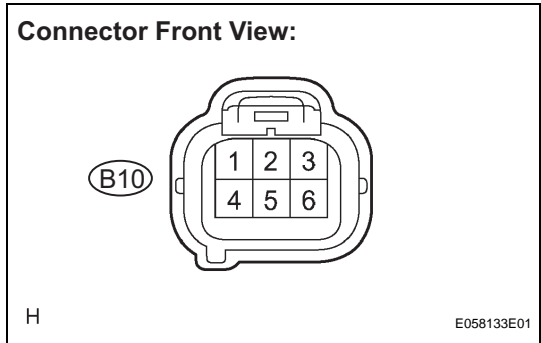
2

INSPECT FRONT SEAT INNER BELT ASSEMBLY (DRIVER SIDE)

- (a) Disconnect the connector from the front seat inner belt assembly (Driver Side).
- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Terminal No	Condition	Specified condition
B10-6 - B10-3	Seat belt is fastened	10 kΩ or higher
B10-6 - B10-3	Seat belt is unfastened	Below 1 Ω



NG

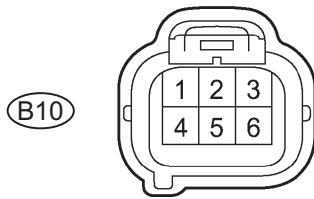
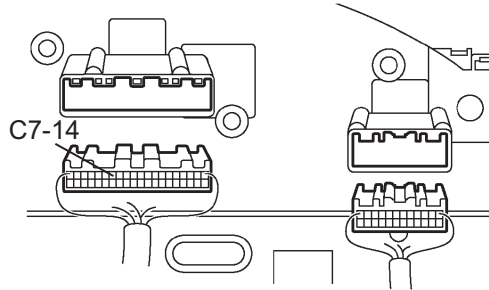
REPLACE FRONT SEAT INNER BELT ASSEMBLY (DRIVER SIDE)

OK

3

CHECK HARNESS AND CONNECTOR (BETWEEN FRONT SEAT INNER BELT AND COMBINATION METER)

- (a) Disconnect the C7 and B10 connectors.

**Front Seat Inner Belt Assembly
(Driver Side) Connector Front View:**

**Combination Meter Assembly
Wire Harness View:**


OK

- (b) Measure the resistance according to the value(s) in the table below.

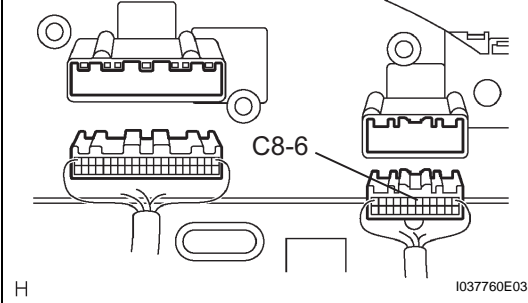
Standard Resistance:

Tester Connection	Specified Condition
C7-14 - B10-6	Below 1 Ω
C7-14 - Body ground	10 k Ω or higher
B10-3 - Body ground	Below 1 Ω

NG

**REPAIR OR REPLACE HARNESS OR
CONNECTOR**
REPLACE COMBINATION METER ASSEMBLY

4

INSPECT COMBINATION METER ASSEMBLY
Wire Harness View:


OK

- (a) Disconnect the combination meter connector.
(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester connection	Condition	Specified condition
C8-6 - Body ground	Ignition key is not inserted	10 k Ω or higher
C8-6 - Body ground	Ignition key is inserted	Below 1 Ω

NG

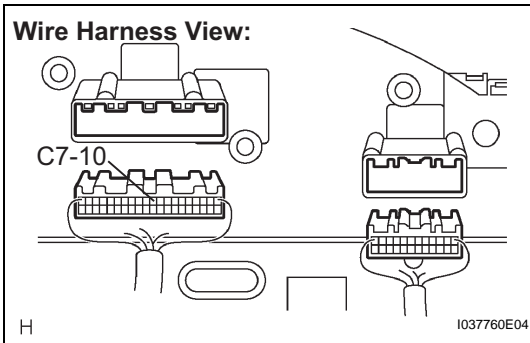
Go to step 6

5

INSPECT COMBINATION METER ASSEMBLY

- (a) Disconnect the combination meter connector.

ME



- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester connection	Condition	Specified condition
C7-10 - Body ground	Driver side door is closed	10 k Ω or higher
C7-10 - Body ground	Driver side door is open	Below 1 Ω

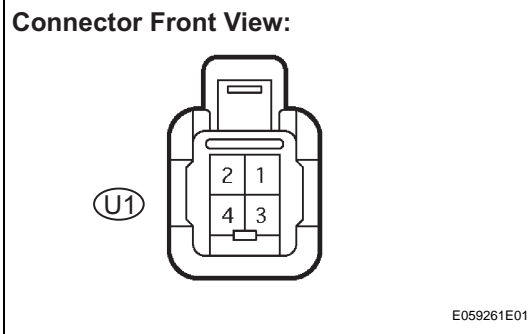
NG

Go to step 7

OK

REPLACE COMBINATION METER ASSEMBLY

6 INSPECT UNLOCK WARNING SWITCH ASSEMBLY



- (a) Disconnect the connector from the unlock warning switch assembly.
 (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Terminal No.	Condition	Specified condition
U1-1 - U1-2	Ignition key is not inserted	10 k Ω or higher
U1-1 - U1-2	Ignition key is inserted	Below 1 Ω

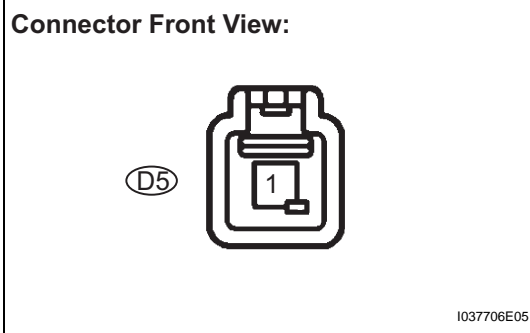
NG

REPLACE UNLOCK WARNING SWITCH ASSEMBLY

OK

REPAIR OR REPLACE HARNESS OR CONNECTOR (UNLOCK WARNING SWITCH CIRCUIT)

7 INSPECT FRONT DOOR COURTESY LIGHT SWITCH ASSEMBLY



- (a) Disconnect the connector from the front door courtesy light switch assembly.
 (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

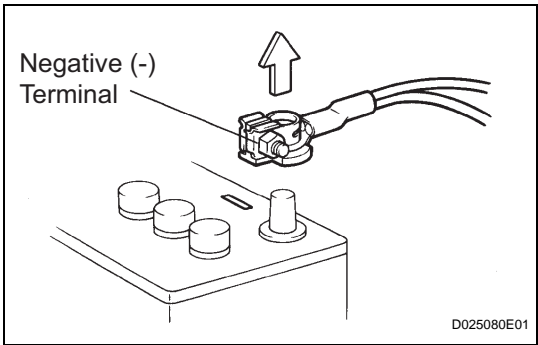
Terminal No.	Condition	Specified condition
D5-1 - Body ground	Driver side courtesy switch shaft is pushed in	10 k Ω or higher
D5-1 - Body ground	Driver side courtesy switch shaft is free	Below 1 Ω

NG

REPLACE FRONT DOOR COURTESY LIGHT SWITCH ASSEMBLY

OK

REPAIR OR REPLACE HARNESS OR CONNECTOR (DOOR COURTESY LIGHT SWITCH CIRCUIT)



METER / GAUGE SYSTEM

PRECAUTION

1. REMOVAL AND INSTALLATION OF BATTERY TERMINAL

- (a) Before performing electronic work, disconnect the battery negative (-) terminal cable in order to prevent it from shorting and burning out.
- (b) When disconnecting and reconnecting the battery cable, turn the ignition switch and lighting switch off and loosen the terminal nut completely. Perform operations without twisting or prying on the terminal.
- (c) When the battery terminal cable is removed, the memories of the clock, radio, DTCs, etc. are erased. So before removing it, check and make a note of them.

NOTICE:

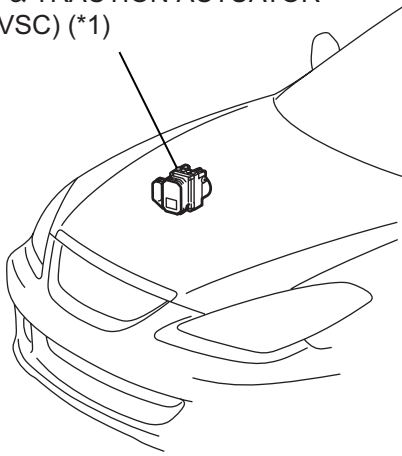
When disconnecting the battery negative (-) terminal, initialize the following systems after the terminal is reconnected.

System Name	See procedure
Power Window Control System	IN-24
Sliding Roof System	IN-24

PARTS LOCATION

COUPE:

ABS & TRACTION ACTUATOR
(W/ VSC) (*1)

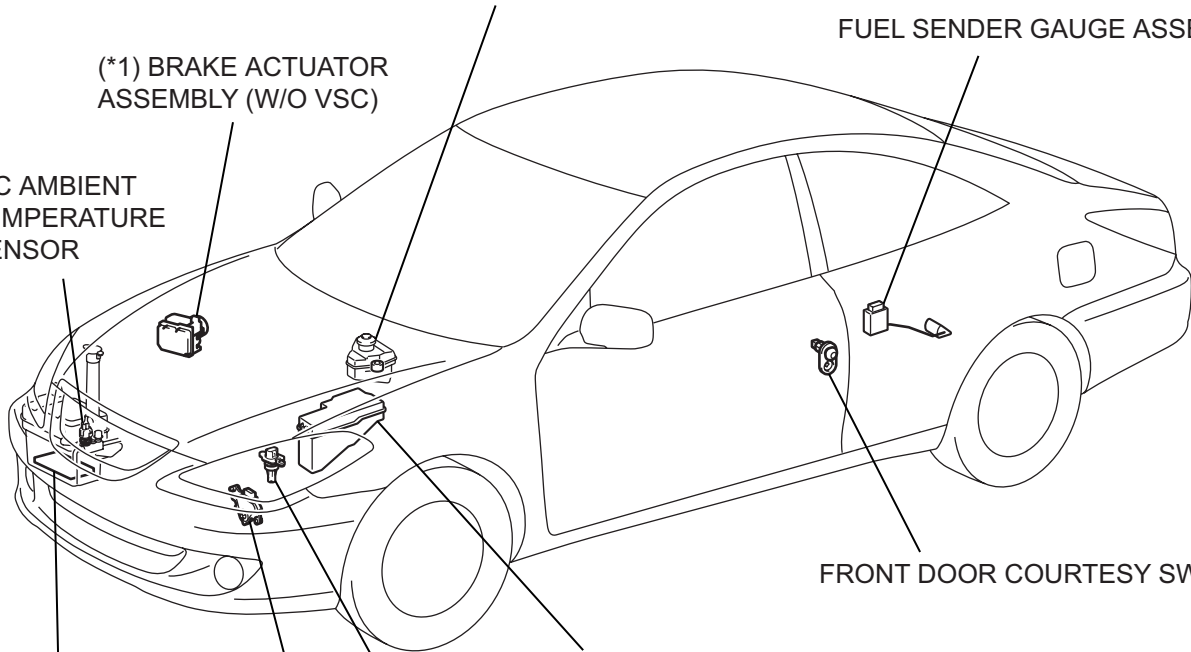


BRAKE FLUID LEVEL WARNING SWITCH

(*1) BRAKE ACTUATOR
ASSEMBLY (W/O VSC)

FUEL SENDER GAUGE ASSEMBLY

A/C AMBIENT
TEMPERATURE
SENSOR



FRONT DOOR COURTESY SWITCH

ENGINE ROOM J/B

VEHICLE SPEED SWITCH (*2)

WASHER LEVEL
WARNING SWITCH

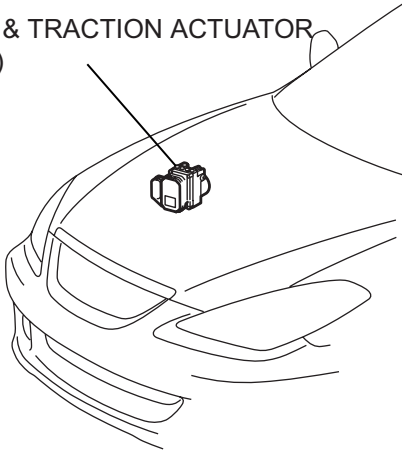
NEUTRAL START SWITCH

*1: 3MZ-FE

*2: 2AZ-FE

CONVERTIBLE:

(*1) ABS & TRACTION ACTUATOR
(W/ VSC)

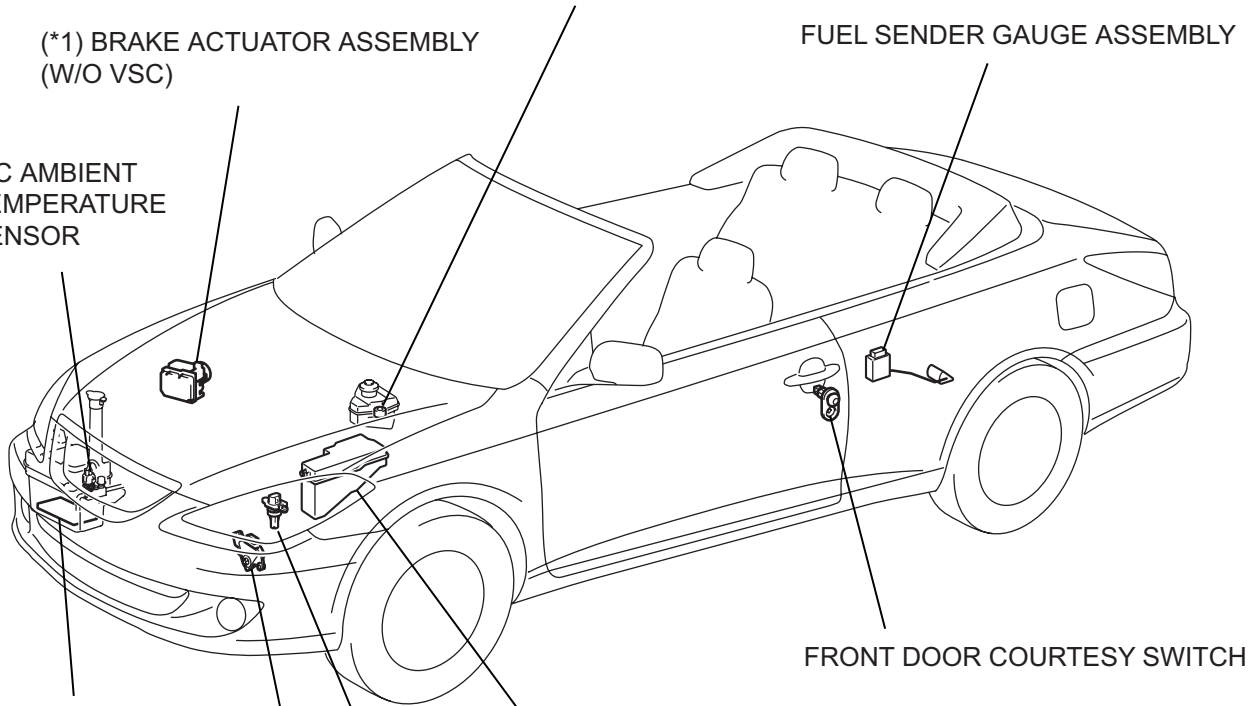


BRAKE FLUID LEVEL WARNING SWITCH

(*1) BRAKE ACTUATOR ASSEMBLY
(W/O VSC)

FUEL SENDER GAUGE ASSEMBLY

A/C AMBIENT
TEMPERATURE
SENSOR



WASHER LEVEL
WARNING SWITCH

FRONT DOOR COURTESY SWITCH

ENGINE ROOM J/B

VEHICLE SPEED SENSOR (*2)

NEUTRAL START SWITCH

*1: 3MZ-FE

*2: 2AZ-FE

H

ME

DRIVER SIDE J/B

- BODY ECU
- ECU-B FUSE
- ECU ACC FUSE
- GAUGE FUSE
- AM1 FUSE
- PANEL FUSE
- ACC FUSE
- IG1 FUSE
- TAIL FUSE

PASSENGER SIDE J/B

UNLOCK WARNING
SWITCH ASSEMBLY

A/C CONTROL ASSEMBLY

COMBINATION METER ASSEMBLY

- LIGHT CONTROL RHEOSTAT

CLOCK ASSEMBLY

ECM

TURN SIGNAL SWITCH

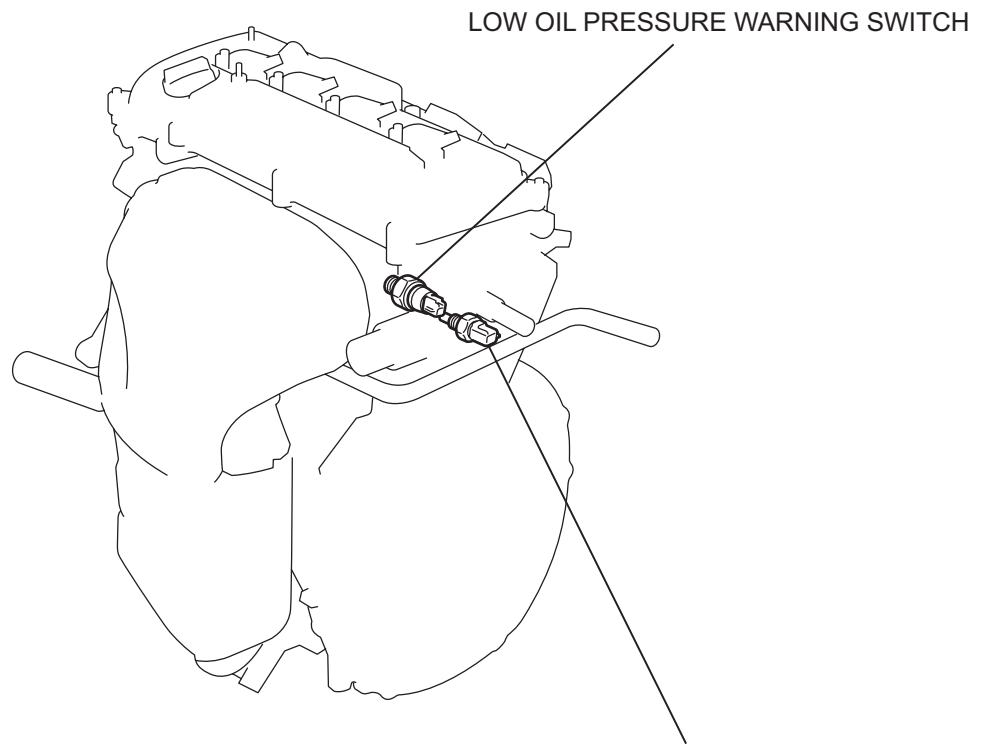
STEERING PAD SWITCH

PARKING BRAKE SWITCH

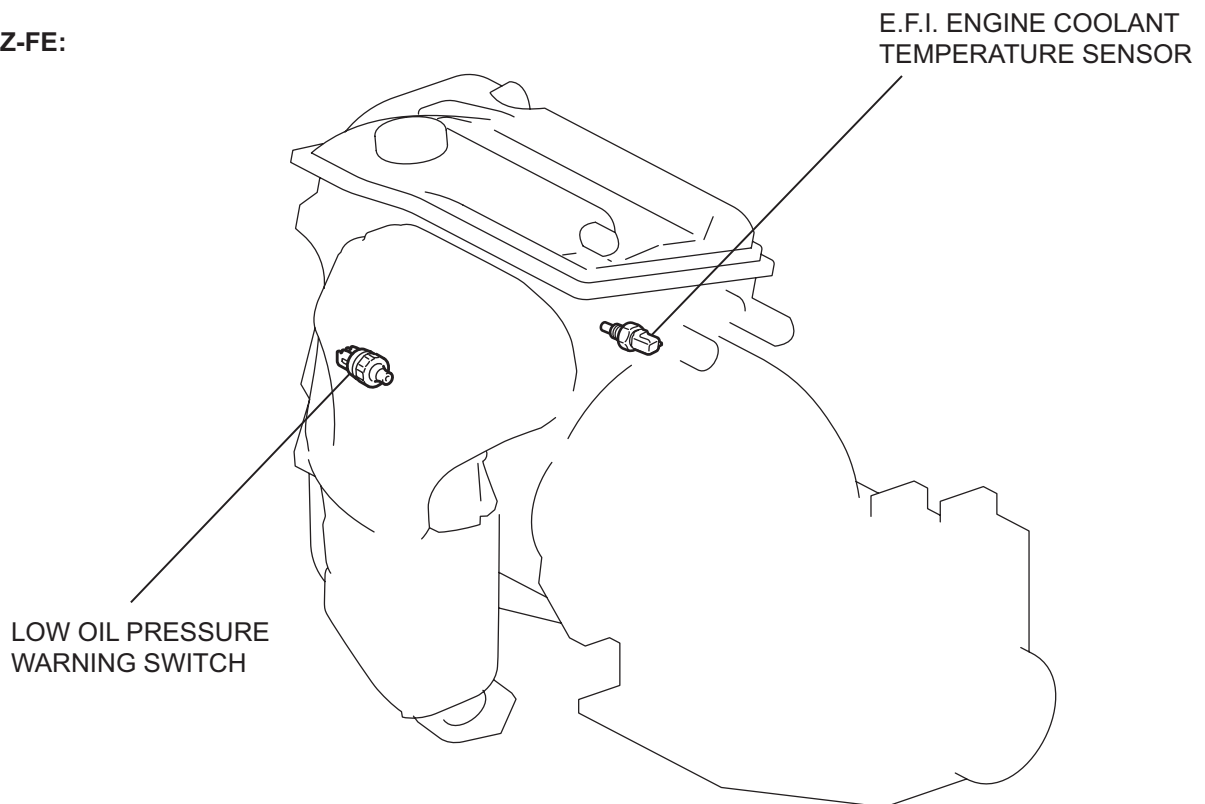
AIRBAG SENSOR ASSEMBLY CENTER

FRONT SEAT INNER BELT
ASSEMBLYOCCUPANT
DETECTION ECU

2AZ-FE:



3MZ-FE:

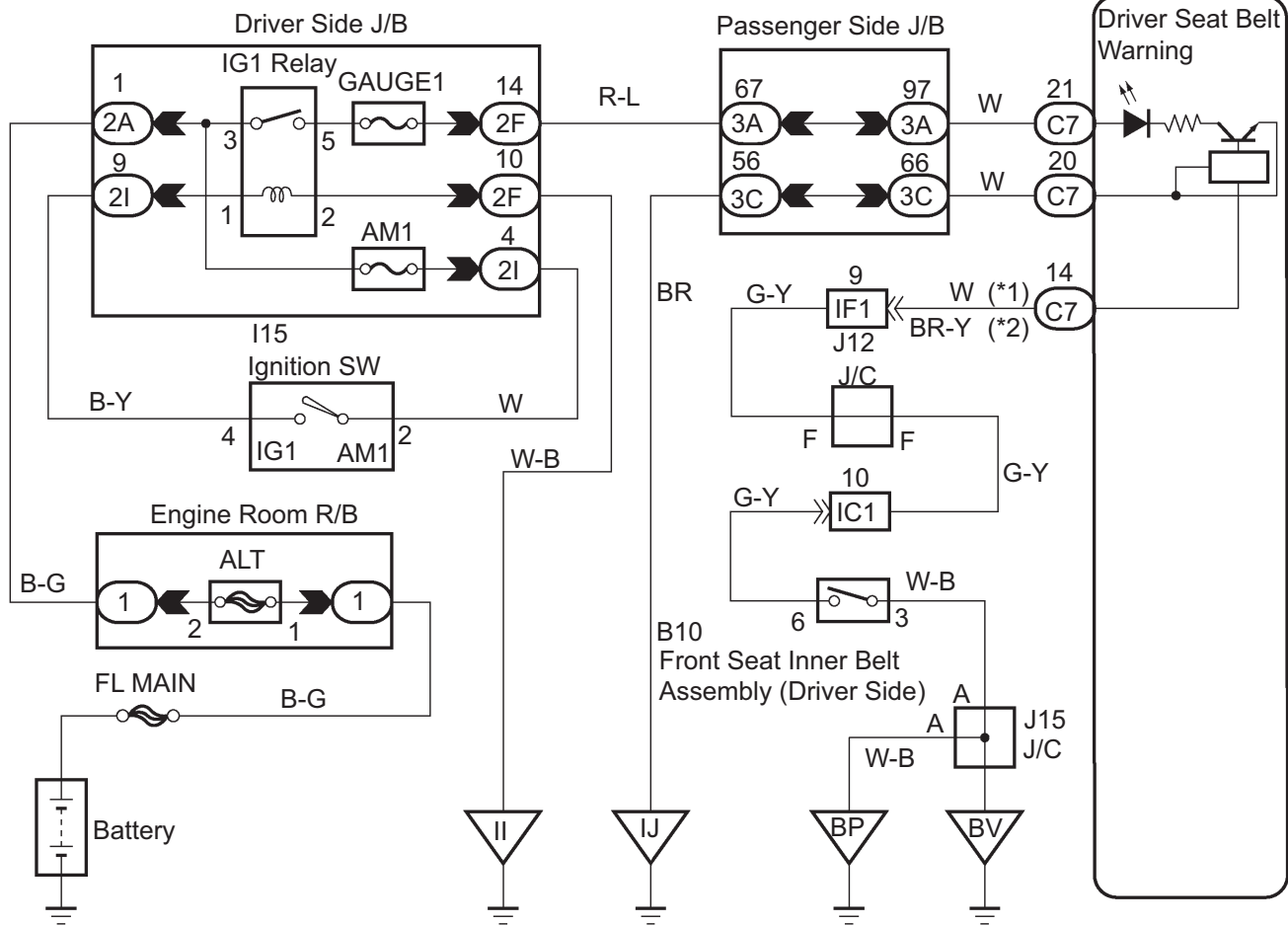


Seat Belt Warning Light for Driver Seat does not Operate

WIRING DIAGRAM

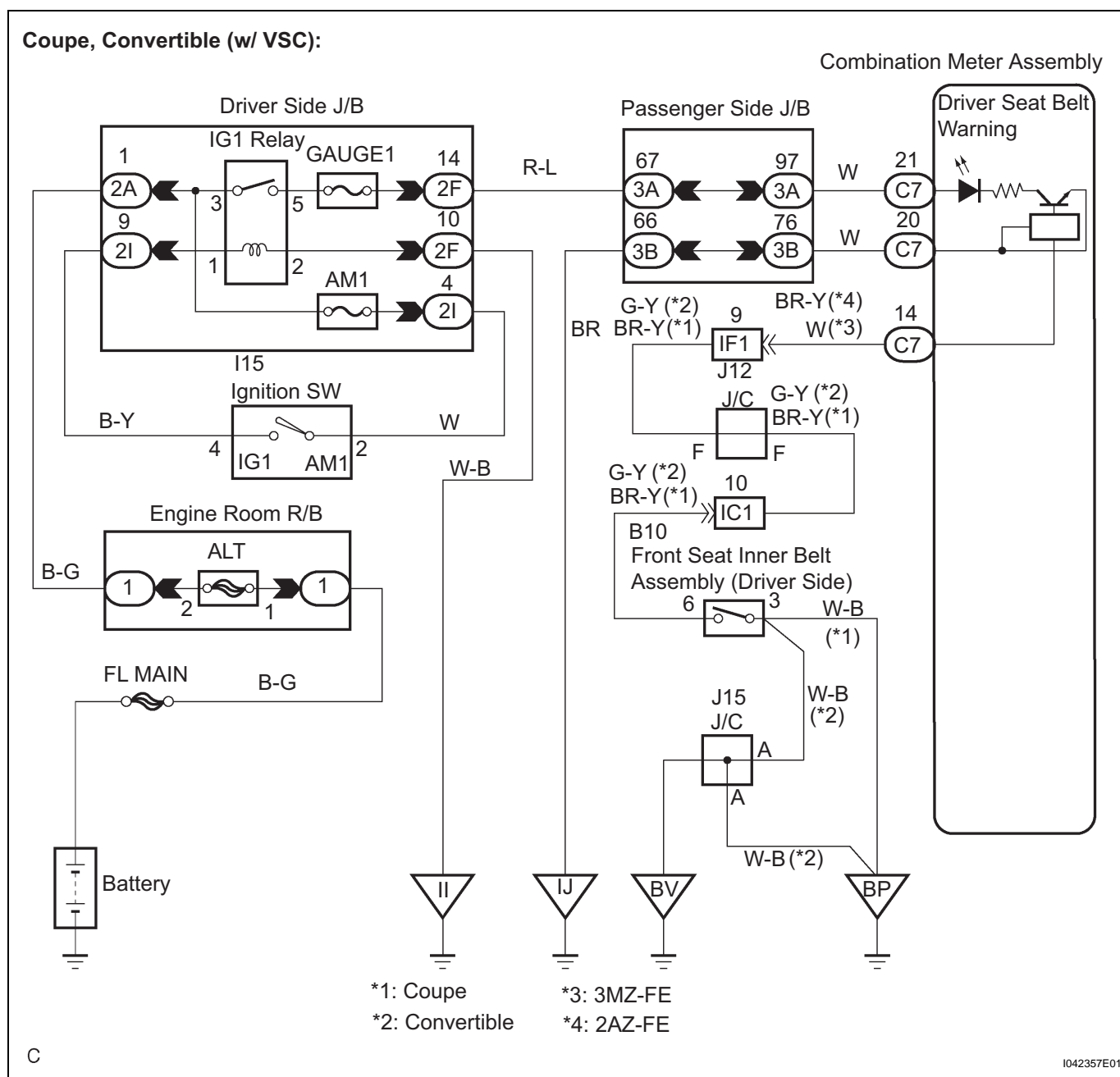
Convertible (w/o VSC):

Combination Meter Assembly



*1: 3MZ-FE
*2: 2AZ-FE

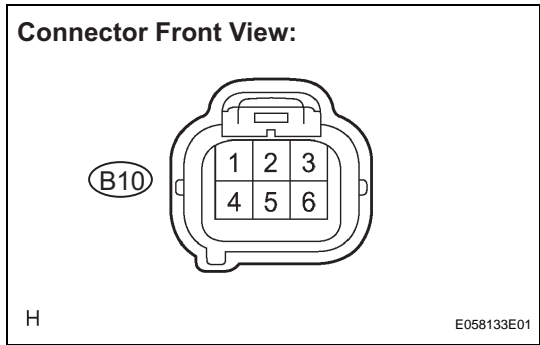
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**HINT:**

Confirm that other components such as indicators and meter gauges function normally before performing the following procedure.

1 INSPECT FRONT SEAT INNER BELT ASSEMBLY (DRIVER SIDE)

- (a) Disconnect the connector from the front seat inner belt assembly (Driver Side).



OK

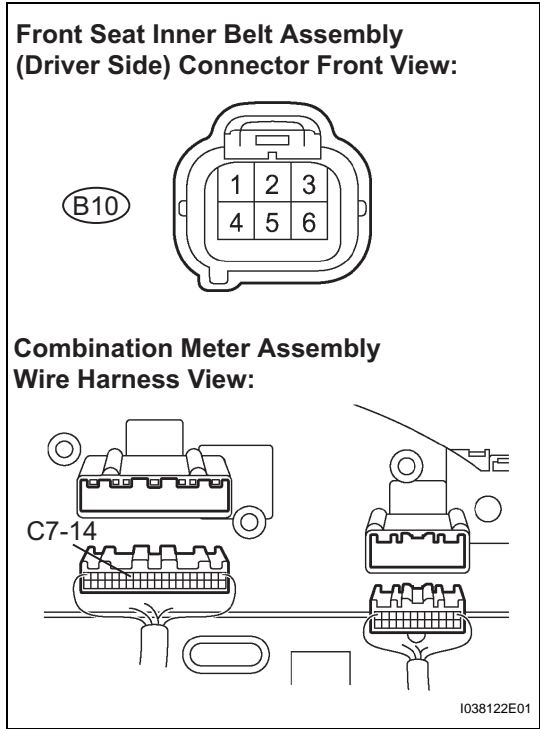
(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Terminal No	Condition	Specified condition
B10-3 - B10-6	Seat belt is fastened	10 k Ω ; or higher
B10-3 - B10-6	Seat belt is unfastened	Below 1 Ω

NG **REPLACE FRONT SEAT INNER BELT ASSEMBLY (DRIVER SIDE)**

2 CHECK HARNESS OR CONNECTOR (BETWEEN FRONT SEAT INNER BELT - COMBINATION METER ASSEMBLY)



OK

(a) Disconnect the C7 and B10 connectors.
(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

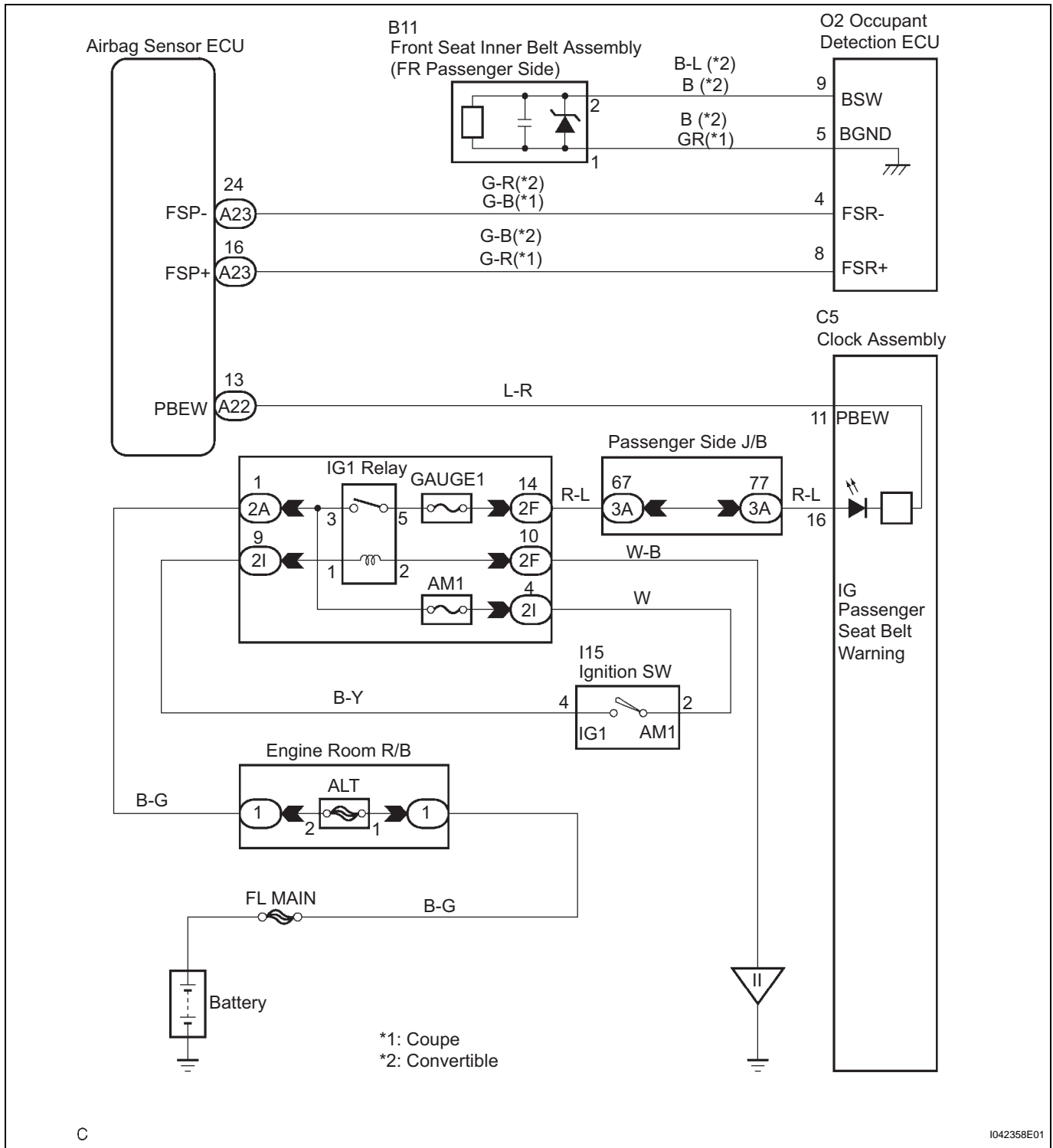
Tester Connection	Specified Condition
C7-14 - B10-6	Below 1 Ω
C7-14 - Body ground	10 k Ω ; or higher
B10-3 - Body ground	Below 1 Ω ;

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**

REPLACE COMBINATION METER ASSEMBLY

Seat Belt Warning Light for Passenger Seat does not Operate

WIRING DIAGRAM

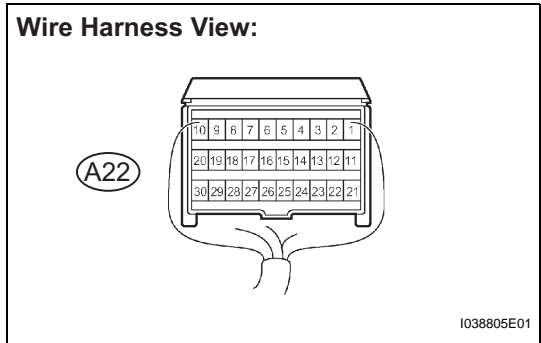


HINT:

If there is an open in the ground circuit (Airbag sensor ECU), the airbag sensor ECU outputs DTCs. Perform troubleshooting with the "Supplemental Restraint System" (See page [RS-27](#)).

1

INSPECT CENTER AIRBAG SENSOR ASSEMBLY



OK

- (a) Disconnect the A22 connector.
(b) Measure the voltage according to the value(s) in the table below.

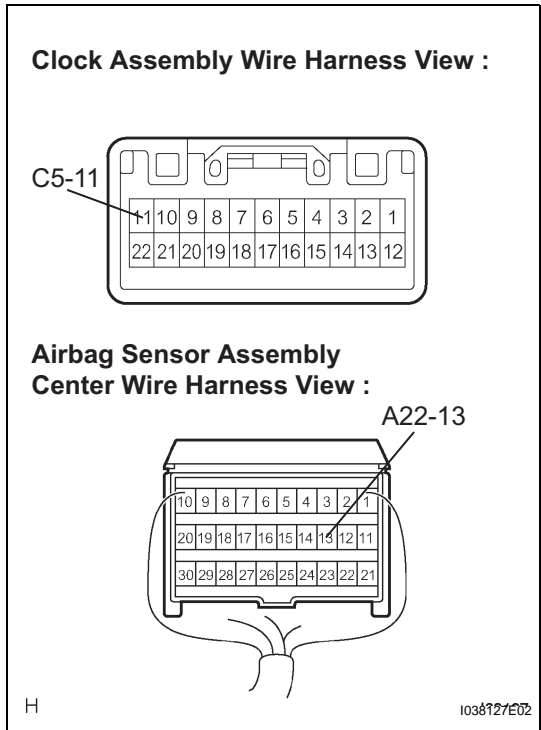
Standard Voltage:

Terminal No	Condition	Specified condition
A22-13 - Body ground	Ignition SW is ON	10 to 14 V

NG Go to step 3

2

CHECK HARNESS AND CONNECTOR (BETWEEN CLOCK ASSEMBLY AND AIRBAG SENSOR ASSEMBLY CENTER)



OK

- (a) Disconnect the A22 and C5 connectors.
(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Specified Condition
C5-11 - A22-13	Below 1 Ω
C5-11 - Body ground	10 k Ω or higher

NG REPAIR OR REPLACE HARNESS OR CONNECTOR

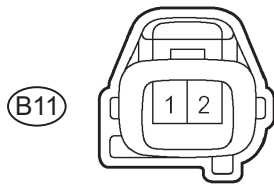
REPLACE CLOCK ASSEMBLY

3

INSPECT FRONT SEAT INNER BELT ASSEMBLY (PASSENGER SIDE)

- (a) Disconnect the connector from the front seat inner belt assembly (FR Passenger Side).

Connector Front View:



H

I038124E01

OK

- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Terminal No	Condition	Specified condition
B11-1 - B11-2	Seat belt is fastened	Below 1 Ω

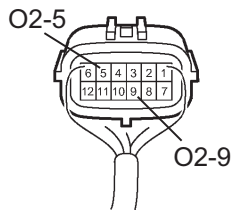
NG

REPLACE FRONT SEAT INNER BELT ASSEMBLY (PASSENGER SIDE)

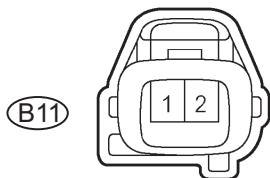
4

CHECK HARNESS AND CONNECTOR (BETWEEN FRONT SEAT INNER BELT AND OCCUPANT DETECTION ECU)

Occupant Detection ECU Wire Harness View:



Front Seat Inner Belt Assembly (FR Passenger Side) Connector Front View:



H

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OK

- (a) Disconnect the O2 and B11 connectors.
(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Specified Condition
O2-5 - B11-1	Below 1 Ω
O2-9 - B11-2	Below 1 Ω

NG

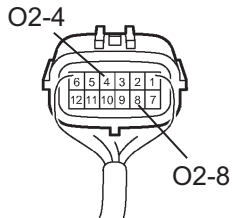
REPAIR OR REPLACE HARNESS OR CONNECTOR

5

CHECK HARNESS AND CONNECTOR (BETWEEN OCCUPANT DETECTION ECU AND AIRBAG SENSOR)

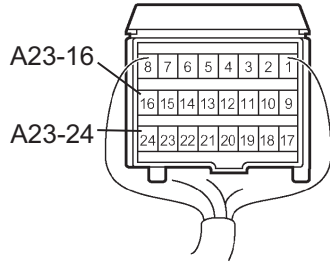
- (a) Disconnect the O2 and A23 connectors.

Occupant Detection ECU Wire Harness View:



(Connector Front View)

Airbag Sensor Assembly Center Wire Harness View:



I038130E01

OK

- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

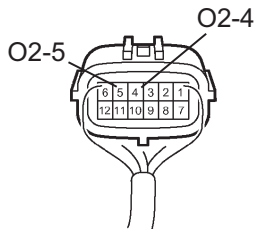
Tester Connection	Specified Condition
O2-4 - A23-24	Below 1 Ω
O2-8 - A23-16	Below 1 Ω
O2-4 - Body ground	10 k Ω or higher
O2-8 - Body ground	10 k Ω or higher

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

6 INSPECT OCCUPANT DETECTION ECU

Wire Harness View:



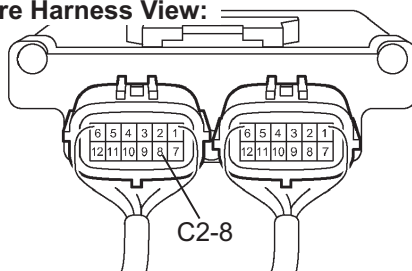
I038812E01

- (a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Terminal No	Condition	Specified condition
O2-5 - Body ground	Always	Below 1 Ω
O2-4 - Body ground	Always	Below 1 Ω

Wire Harness View:



H

I038125E01

- (b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Terminal No	Condition	Specified condition
O2-8 - Body ground	Seat belt is fastend	8 to 11 V
O2-8 - Body ground	Seat belt is unfastend	3 to 4.5 V

NG

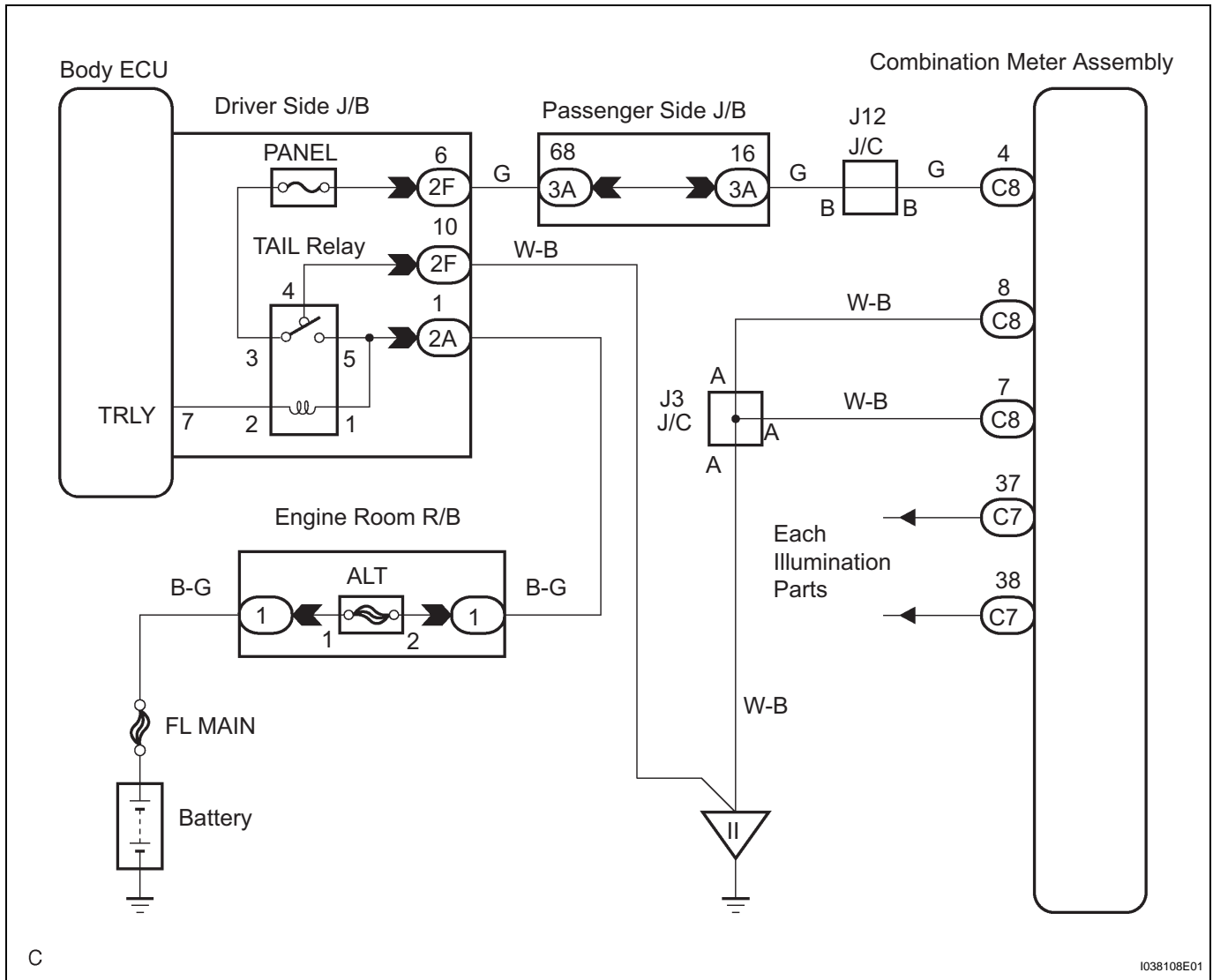
REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

GO TO AIRBAG SYSTEM

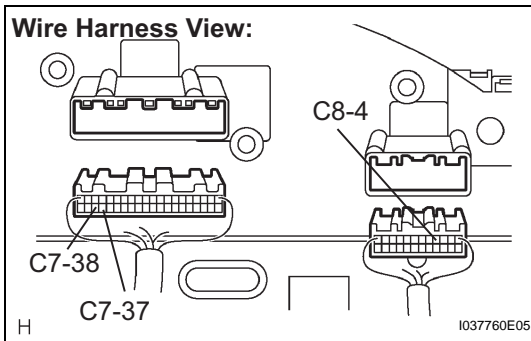
Operating Light Control Rheostat does not Change Light Brightness

WIRING DIAGRAM



1

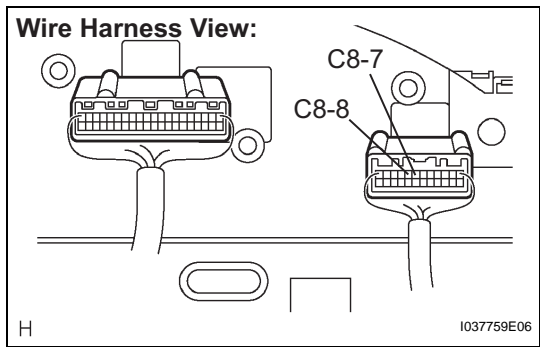
INSPECT COMBINATION METER ASSEMBLY



- Disconnect the combination meter connectors.
- Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Terminal No.	Condition	Specified condition
C8-4 - Body ground	Ignition SW is ON and combination SW position is TAIL or HEAD	10 to 14 V
C7-37 - Body ground	Ignition SW is ON and combination SW position is TAIL or HEAD	10 to 14 V
C7-38 - Body ground	Ignition SW is ON and combination SW position is TAIL or HEAD	10 to 14 V



(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Specified Condition
C8-7 - Body ground	Below 1 Ω
C8-8 - Body ground	Below 1 Ω

NG

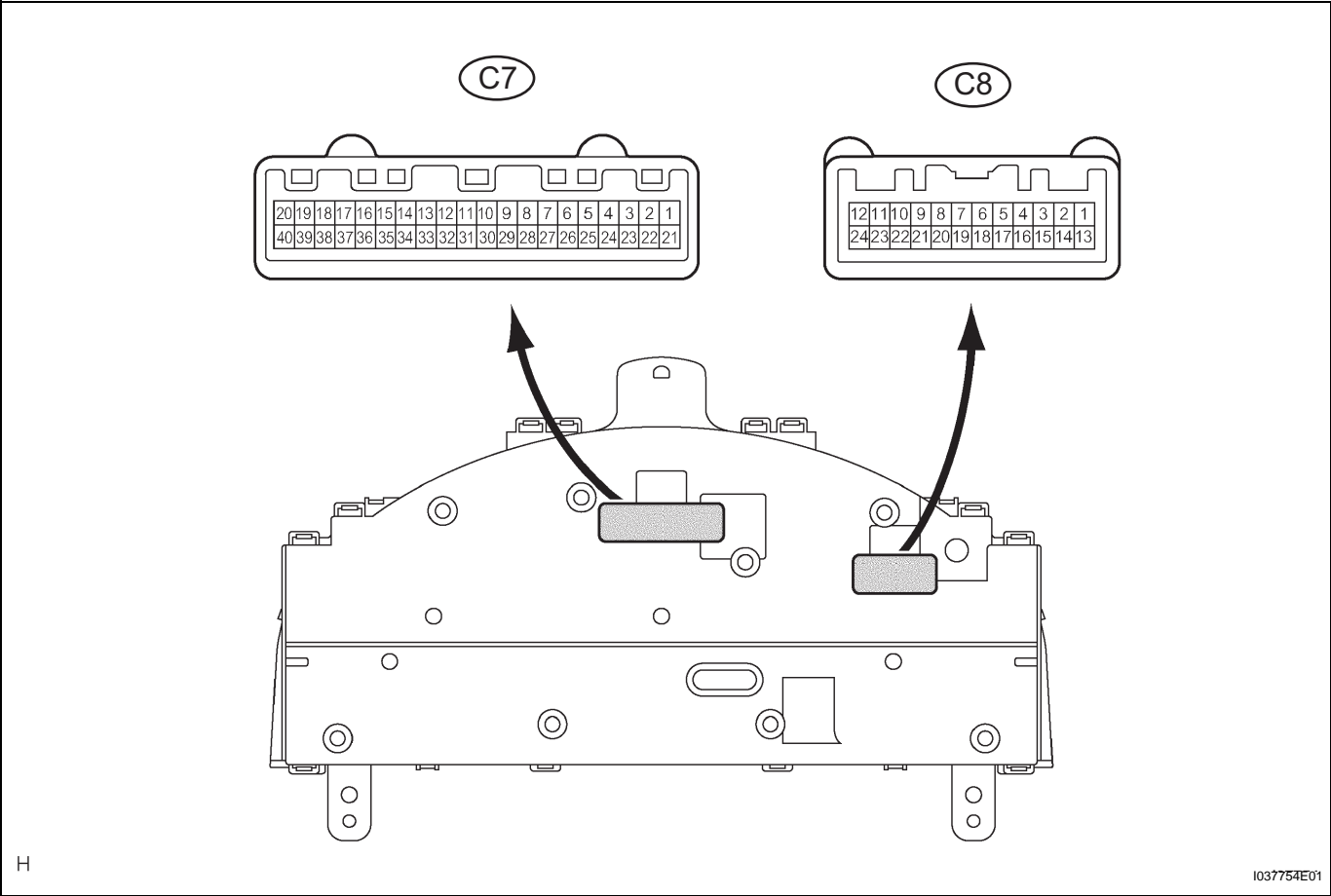
REPAIR OR REPLACE HARNESS OR CONNECTOR (COMBINATION METER ASSEMBLY - ENGINE ROOM R/B)

OK

REPLACE COMBINATION METER ASSEMBLY

TERMINALS OF ECU

1. CHECK COMBINATION METER ASSEMBLY



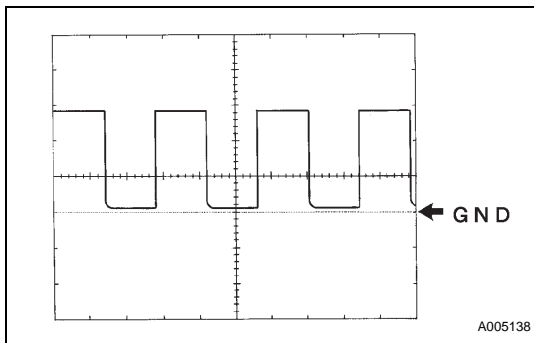
Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BATT (C7-1) - Body ground	W-R (W) - Body ground	Battery	Always	10 to 14 V
*1:A/T P (C7-2) - Body ground	G-W (W) - Body ground	A/T shift position signal (P)	A/T P indicator OFF → ON	Below 1 V → 10 to 14 V
TURN L (C7-3) - Body ground	G-B (SB) - Body ground	Turn signal L	Ignition switch ON, turn signal LH indicator OFF → ON	Below 1 V → 10 to 14 V
TURN R (C7-4) - Body ground	G-Y (SB) - Body ground	Turn signal R	Ignition switch ON, turn signal RH indicator OFF → ON	Below 1 V → 10 to 14 V
*1:A/T R (C7-5) - Body ground	R-B (W) - Body ground	A/T shift position signal (R)	A/T R indicator OFF → ON	Below 1 V → 10 to 14 V
DOOR AJAR (C7-6) - Body ground	G-R (W) - Body ground	Door condition signal	Each door OPEN → CLOSE	Below 1 V → 10 to 14 V
*2:BEAN (C7-9) - Body ground	Y (W) - Body ground	Multiplex communication signal	-	-
D-DOOR CTY (C7-10) - Body ground	R-G (W) - Body ground	Driver door condition signal	Driver door OPEN → CLOSE	Below 1 V → 10 to 14 V
TACHO (C7-11) - Body ground	B-O (W) - Body ground	Tachometer signal	Engine running	Pulse generation (See waveform 1)
*3:WATER TEMP (C7-12) - Body ground	Y-G (W) - Body ground	Coolant temperature signal	Ignition switch ON, coolant temperature is 90 °C (194 °F)	Below 1 V → 10 to 14 V
CRUISE (C7-13) - Body ground	P-L (W) - Body ground	CRUISE signal	CRUISE indicator light ON → OFF	Below 1 V → 10 to 14 V

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
D-BELT (C7-14) - Body ground	BR-Y (W) - Body ground	Seat belt condition signal (Driver side)	D-BELT indicator light ON → OFF	Below 1 V → 10 to 14 V
BRAKE LEVEL (C7-16) - Body ground	GR (W) - Body ground	Brake fluid level signal	Brake fluid level warning light ON → OFF	Below 1 V → 10 to 14 V
*3: SPEED EARTH (C7-19) - Body ground	P (W) - Body ground	Ground (Speed)	Always	Below 1 Ω
SIGNAL EARTH (C7-20) - Body ground	BR (W) - Body ground	Ground	Always	Below 1 Ω
IG + (C7-21) - Body ground	R-L (W) - Body ground	Ignition switch signal (ON)	Ignition switch OFF → ON	Below 1 V → 10 to 14 V
*1: A/T N (C7-22) - Body ground	R (W) - Body ground	A/T shift position signal (N)	A/T N indicator OFF → ON	Below 1 V → 10 to 14 V
*1: A/T D (C7-23) - Body ground	R (W) - Body ground	A/T shift position signal (D)	A/T D indicator OFF → ON	Below 1 V → 10 to 14 V
*1: A/T 3 (C7-24) - Body ground	V (W) - Body ground	A/T shift position signal (3)	A/T 3 indicator OFF → ON	Below 1 V → 10 to 14 V
*1: A/T 2 (C7-25) - Body ground	L-W (W) - Body ground	A/T shift position signal (2)	A/T 2 indicator OFF → ON	Below 1 V → 10 to 14 V
*1: A/T L (C7-26) - Body ground	Y (W) - Body ground	A/T shift position signal (L)	A/T L indicator OFF → ON	Below 1 V → 10 to 14 V
CHG + (C7-27) - Body ground	B-O (W) - Body ground	Charge signal	Engine running → Stopped	10 to 14 V → Below 1 V
CHG - (C7-29) - Body ground	Y-G (SB) - Body ground	Charge signal	Ignition switch OFF → ON	10 to 14 V → Below 1 V
AIR BAG (C7-30) - Body ground	B-Y (W) - Body ground	AIR BAG signal	AIR BAG warning light ON → OFF	Below 1 V → 8 to 14 V
FR (C7-31) - Body ground	G-W (W) - Body ground	Fuel level signal	Ignition switch ON, fuel level is FULL → EMPTY	Below 1 V → 4 to 7 V
FV (C7-32) - Body ground	Y-R (W) - Body ground	Power source for fuel sender gauge	Ignition switch ON, fuel level is FULL → EMPTY	Below 1 V → 4 to 7 V
OIL PRESSURE (C7-34) - Body ground	Y-B (W) - Body ground	Oil pressure signal	OIL/P warning light ON → OFF	Below 1 V → 10 to 14 V
SPEED SIGNAL (C7-35) - Body ground	L-O (W) - Body ground	Speed signal (Input)	Ignition switch ON and turn the wheel slowly	Pulse generation (See waveform 2)
4P OUT (C7-36) - Body ground	V-W (W) - Body ground	Speed signal (Output)	Ignition switch ON and turn the wheel slowly	Pulse generation
ILL OUT-1 (C7-37) - Body ground	W-G (W) - Body ground	Illumination signal	Ignition switch OFF → ON (Wake Up), Rheostat is MAX	Below 1 V → 10 to 14 V
ILL OUT-2 (C7-38) - Body ground	W-L (W) - Body ground	Illumination signal	Ignition switch OFF → ON (Wake Up), Rheostat is MAX	Below 1 V → 10 to 14 V
FE (C7-39) - Body ground	BR-W (W) - Body ground	Ground (Fuel sender gauge)	Always	Below 1 Ω
POWER EARTH (C7-40) - Body ground	W-B (SB) - Body ground	Ground	Always	Below 1 Ω
ABS (C8-2) - Body ground	R-B - Body ground	ABS signal	ABS warning light ON → OFF	6.7 to 12 V → Below 1 V
PKB (C8-3) - Body ground	R-Y - Body ground	Parking brake signal	Parking brake warning light ON → OFF	6.7 to 12 V → Below 1 V
TAIL (C8-4) - Body ground	G - Body ground	Tail light signal	Light control switch OFF → ON	Below 1 V → 10 to 14 V
KEY UNLOCK (C8-6) - Body ground	L - Body ground	Key switch condition signal	Key is inserted → Not inserted	Below 1 V → 10 to 14 V
ILL GND-2 (C8-7) - Body ground	W-B - Body ground	Ground (Illumination)	Always	Below 1 Ω
ILL GND-1 (C8-8) - Body ground	W-B - Body ground	Ground (Illumination)	Always	Below 1 Ω

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
A/T P OR N (C8-9) - Body ground	L-W - Body ground	A/T shift signal (P or N)	A/T shift position is D → P or N	Below 1 V → 10 to 14 V
ACC (C8-10) - Body ground	GR - Body ground	Ignition switch signal (ACC)	Ignition switch OFF → ACC	Below 1 V → 10 to 14 V
TIRE PRESSURE (C8-12) - Body ground	G-B - Body ground	Tire pressure signal	TIRE PRESSURE indicator light ON → OFF	6.7 to 12 V → Below 1 V
SLIP (C8-13) - Body ground	GR-B (*4), LG (*5) - Body ground	SLIP signal	SLIP indicator light ON → OFF	Below 1 V → 10 to 14 V
VSC FAIL (C8-14) - Body ground	R-L - Body ground	VSC signal	VSC indicator light ON → OFF	Below 1 V → 10 to 14 V
TRAC OFF (C8-15) - Body ground	GR (*4), L (*5) - Body ground	TRAC signal	TRAC OFF indicator light ON → OFF	Below 1 V → 10 to 14 V
CHECK E/G (C8-16)- Body ground	P - Body ground	CHECK ENGINE signal	CHECK ENGINE warning light ON → OFF	Below 1 V → 10 to 14 V
FUEL OUT (C8-17) - Body ground	LG-R - Body ground	Fuel level signal (Output)	Ignition switch ON, fuel level is FULL → EMPTY	Pulse generation
BEAM + (C8-20) - Body ground	LG (*4), R-L (*5) - Body ground	Hi-Beam signal	Hi-Beam OFF → ON	Below 1 V → 10 to 14 V
WASHER LEVEL (C8-23)- Body ground	P-L - Body ground	Washer level signal	WASH LVL indicator light ON → OFF	Below 1 V → 10 to 14 V

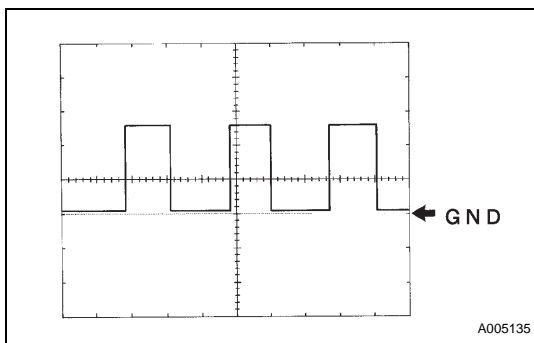
*1: 2AZ-FE Engine (A/T) *2: 3MZ-FE Engine *3: 2AZ-FE Engine *4: Coupe *5: Convertible

(a) Waveform 1 (Reference):



Item	Contents
Tool setting	5 V/DIV, 10 ms/DIV
Vehicle condition	Engine idle speed

(b) Waveform 2 (Reference):

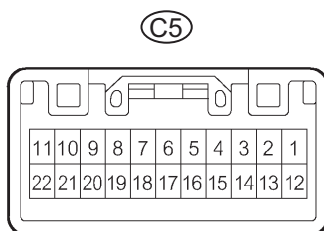


Item	Contents
Tool setting	5 V/DIV, 20 ms/DIV
Vehicle condition	Driving at approx. 20 km/h (12 mph)

HINT:

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

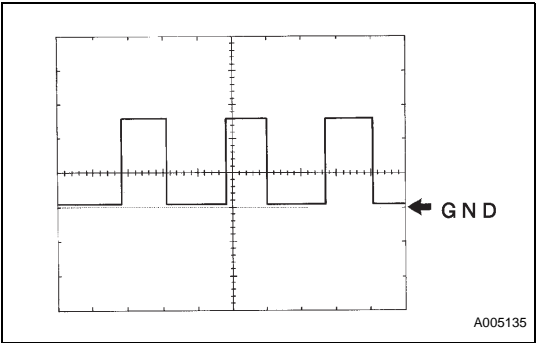
2. CHECK CLOCK ASSEMBLY



I038128E01

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND1 (C5-1) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
TH- (C5-2) - TH+ (C5-3)	B-W - G-R	Ambient temperature signal	Ignition switch OFF at 25 °C (77 °F)	1.7 k Ω \pm 85 Ω
SW1 (C5-4) - Body ground	R - Body ground	Mode switch signal (Steering pad switch)	Ignition switch ON, switch is operating	10 to 14 V
FUEL (C5-5) - Body ground	LG-R - Body ground	Fuel data signal	Ignition switch ON	Pulse generation
TAU (C5-6) - Body ground	L - Body ground	Injector signal	Ignition switch ON	Pulse generation
TAUB (C5-7) - Body ground	B-R - Body ground	Injector power signal	Ignition switch ON	10 to 14 V
TBD (C5-8) - Body ground	L-B - Body ground	Passenger airbag cut off signal	Ignition switch OFF \rightarrow ON	Below 1 V \rightarrow 10 to 14 V
*1:TX1 (C5-9) - Body ground	W-B - Body ground	Unit type signal 1	Always	Below 1 Ω
*2:TX2 (C5-10) - Body ground	W-B - Body ground	Unit type signal 2	Always	Below 1 Ω
PBEW (C5-11) - Body ground	L-R - Body ground	Passenger seat belt signal	Ignition switch OFF \rightarrow ON	Below 1 V \rightarrow 10 to 14 V
SPD (C5-12) - Body ground	V-W - Body ground	Speed signal (Input)	Ignition switch ON and turn the wheel slowly	Pulse generation (See waveform 1)
DATA (C5-13) - Body ground	G-Y - Body ground	Multifunction signal	Ignition switch ON	Pulse generation
P-AB (C5-14) - Body ground	V - Body ground	Airbag signal (ON / OFF)	Ignition switch ON, airbag indicator ON \rightarrow OFF	Below 1 V \rightarrow 10 to 14 V
TAIL (C5-15) - Body ground	G - Body ground	Illumination signal	Light control switch OFF \rightarrow ON	Below 1 V \rightarrow 10 to 14 V
IG (C5-16) - Body ground	R-L - Body ground	Ignition switch signal	Ignition switch OFF \rightarrow ON	Below 1 V \rightarrow 10 to 14 V
ACC (C5-17) - Body ground	GR - Body ground	ACC signal	Ignition switch OFF \rightarrow ON	Below 1 V \rightarrow 10 to 14 V
ILL- (C5-18) - Body ground	W-G - Body ground	Illumination signal	Light control switch OFF \rightarrow ON	Below 1 V \rightarrow 10 to 14 V
*3:TAMO (C5-19) - Body ground	G-R (*4), LG-R (*5) - Body ground	Ambient temperature data signal (Output)	Ignition switch ON	Pulse generation
+B (C5-22) - Body ground	R - Body ground	Ignition switch signal	Always	10 to 14 V

*1: 2AZ-FE Engine (A/T) *2: 3MZ-FE Engine *3: 2AZ-FE Engine *4: Coupe *5: Convertible



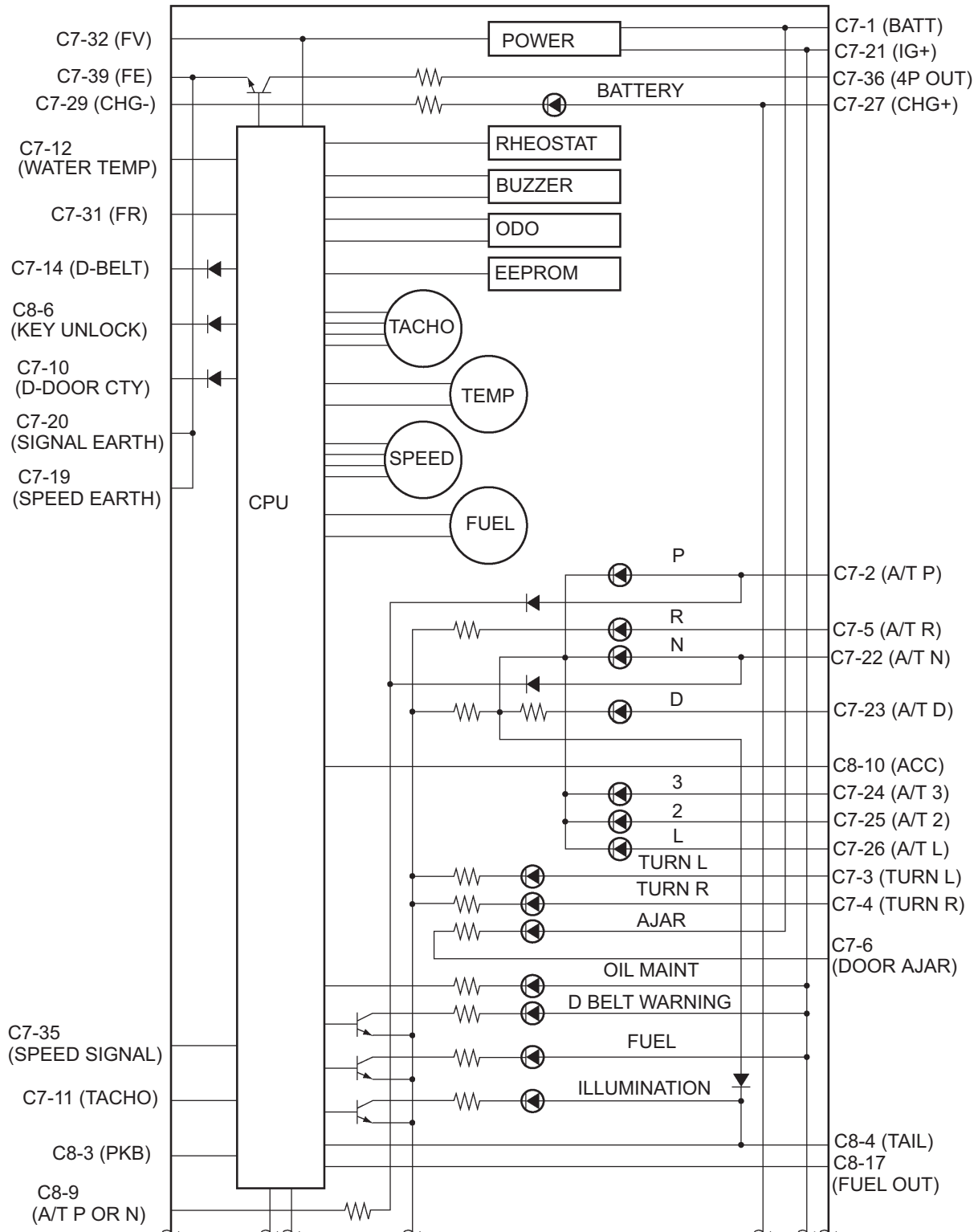
(a) Waveform 1 (Reference):

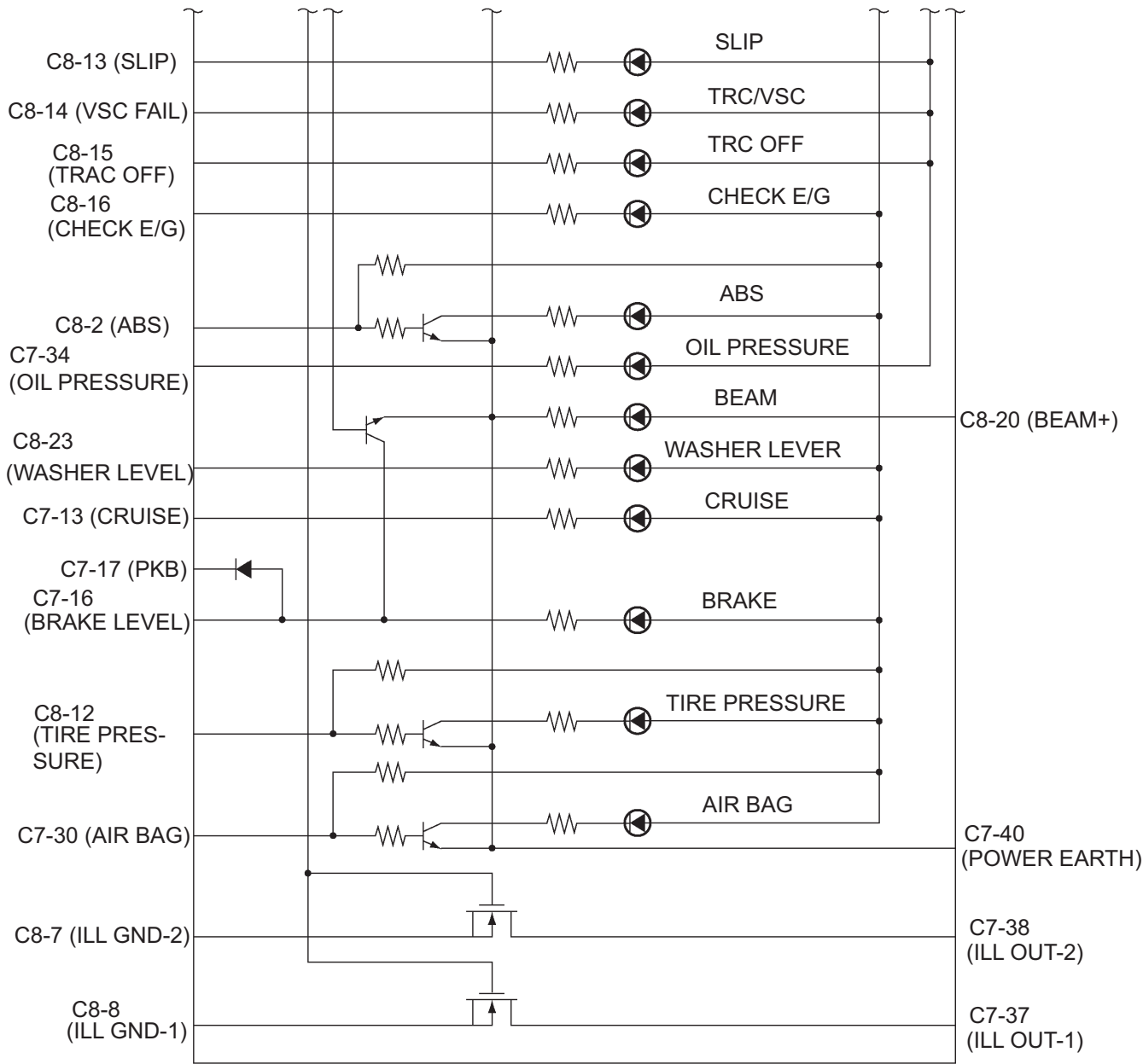
Item	Contents
Tool setting	5 V/DIV, 20 ms/DIV
Vehicle condition	Driving at approx. 20 km/h (12 mph)

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

3. CHECK COMBINATION INNER CIRCUIT

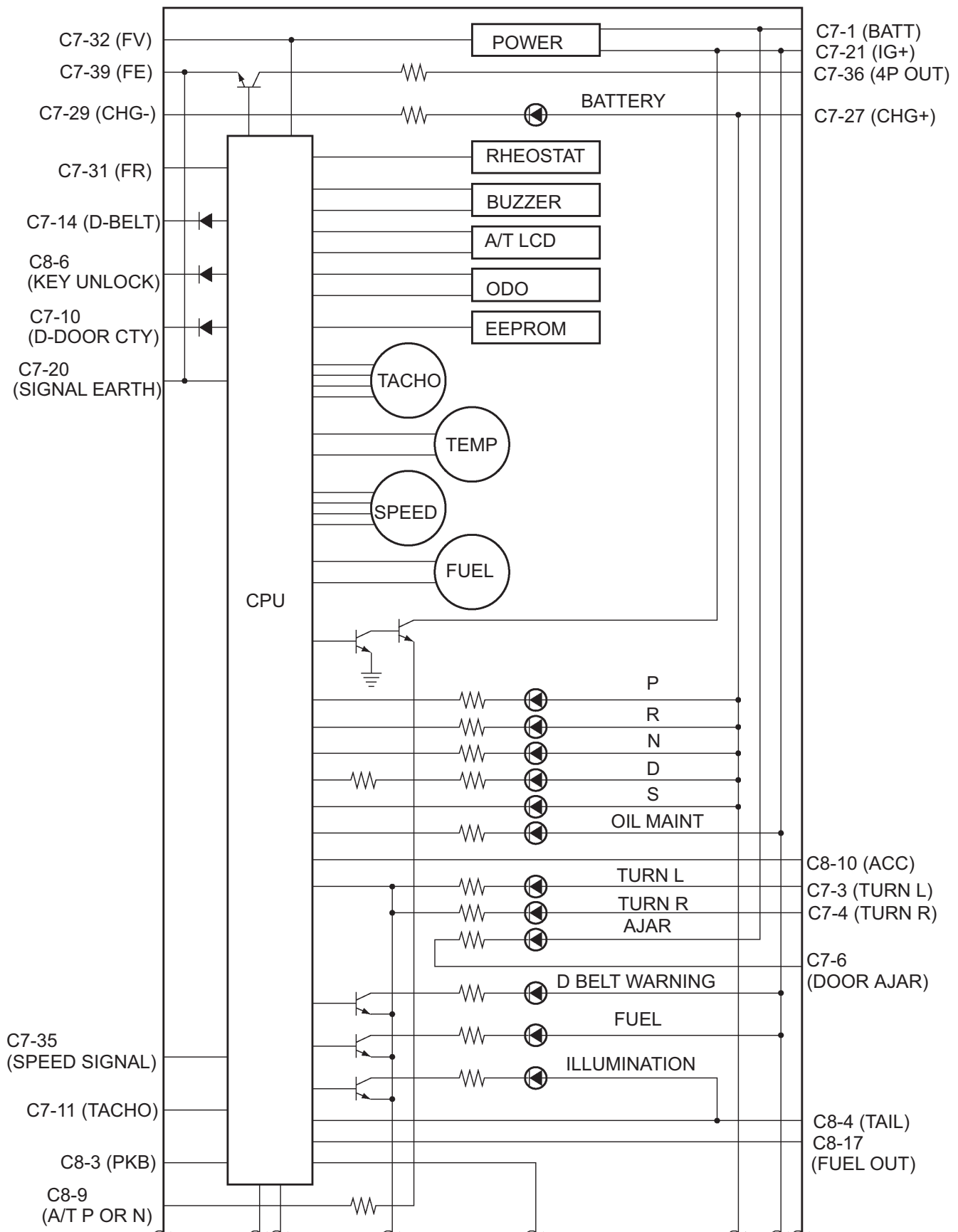
2AZ-FE:



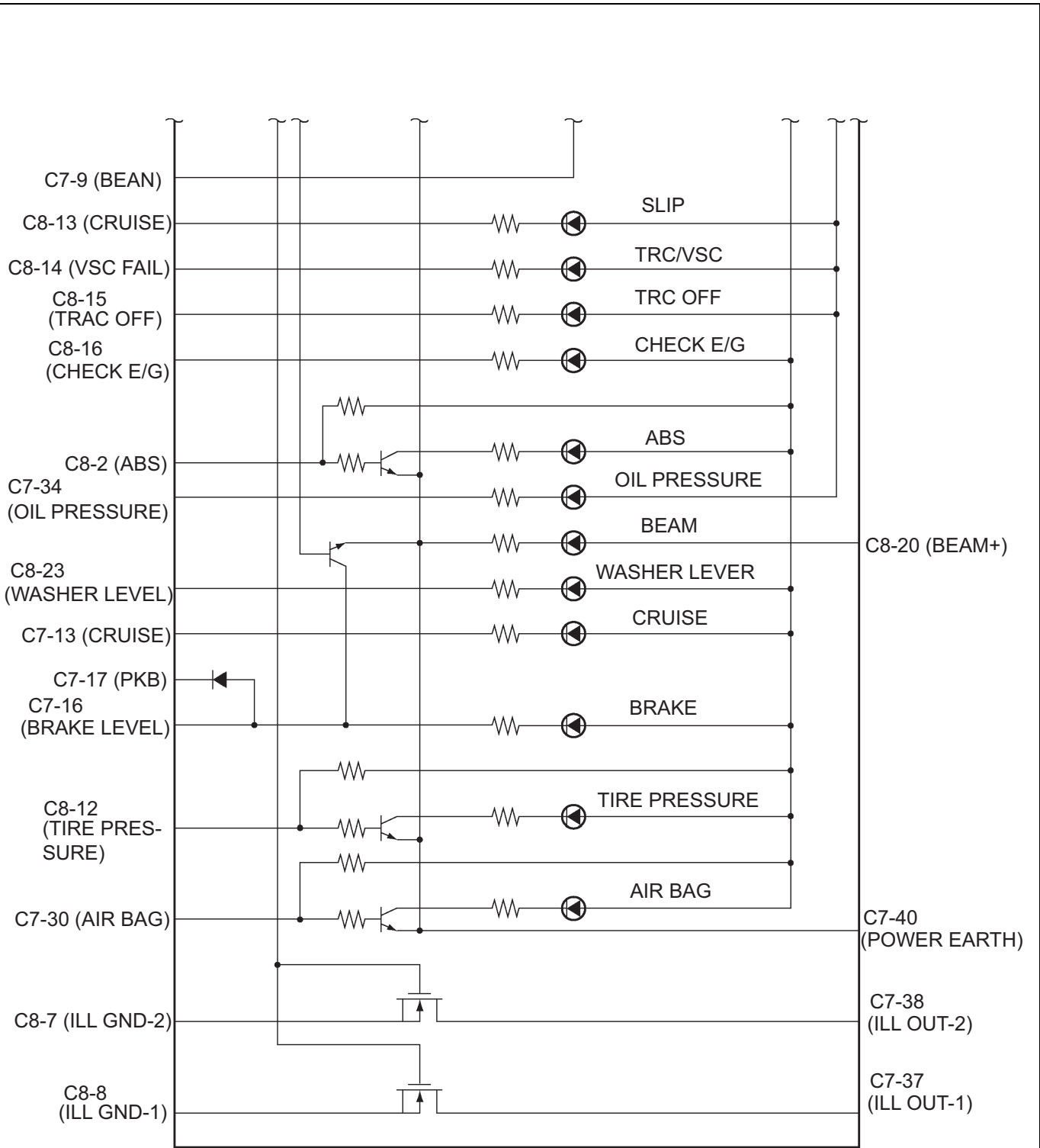


ME

3MZ-FE:



ME



ME

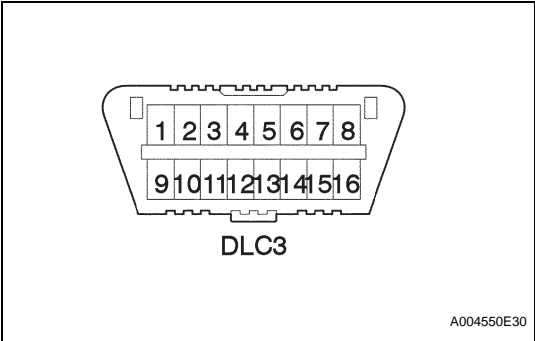
Terminal No.		Wire harness side
C7	1	ECU-B Fuse
	2	*2 Neutral Start Switch
	3	Flasher Relay
	4	Flasher Relay
	5	*2 Neutral Start Switch
	6	Body ECU
	9	*3 ECM
	10	Driver Door Courtesy Switch
	11	ECM
	12	*1 ECM
	13	ECM
	14	Driver Seat Belt Buckle Switch
	16	Brake Fluid Level Warning Switch
	17	Parking Brake Switch
	19	*1 Speed Sensor
	20	GND
	21	GAUGE Fuse
	22	*2 Neutral Start Switch
	23	*2 Neutral Start Switch
	24	*2 Neutral Start Switch
	25	*2 Neutral Start Switch
	26	*2 Neutral Start Switch
	27	IG2 Fuse
	29	Alternator
	30	Airbag Sensor Assembly Center
	31	Fuel Sender Gauge
	32	Fuel Sender Gauge
	34	Low Oil Pressure Warning Switch
	35	Speed Sensor
	36	4P-OUT (Other Parts)
	37	Illuminations
	38	Illuminations
	39	Fuel Sender Gauge
	40	GND

Terminal No.		Wire harness side
C8	2	Brake Actuator Assembly (ABS)
	3	Brake Actuator Assembly (ABS)
	4	PANEL Fuse
	6	Key Unlock Warning Switch
	7	GND
	8	GND
	9	Brake Actuator Assembly (ABS)
	10	ACC Fuse
	12	Brake Actuator Assembly (ABS)
	13	ABS & TRACTION Actuator (VSC)
	14	ABS & TRACTION Actuator (VSC)
	15	ABS & TRACTION Actuator (VSC)
	16	ECM
	17	Clock Assembly
	20	Body ECU
	23	Washer Level Warning Switch

HINT:
*1: 2AZ-FE Engine *2: 2AZ-FE Engine (A/T) *3: 3MZ-FE Engine

DIAGNOSIS SYSTEM

1. INSPECT THE DLC3
- The vehicle's ECM uses ISO 9141-2 for communication. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 9141-2 format. If there are any open or short circuits in the chart below, perform troubleshooting with the "SFI System" (See page [ES-1](#), [ES-5](#)).



Tester connection	Condition	Specified condition
7 (Bus "+" Line) - 5 (Signal ground)	During communication	Pulse generation
4 (Chassis Ground) - Body	Always	Below 1 Ω
5 (Signal Ground) - Body	Always	Below 1 Ω
16 (B+) - Body	Always	9 to 14 V

HINT:
If the display shows **UNABLE TO CONNECT TO VEHICLE** when you have connected the cable of the OBD II scan tool or intelligent tester to the DLC3, turned the ignition switch to the ON position and operated the scan tool, there is a problem either on the vehicle side or tool side.

- If communication is normal when the tool is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still impossible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

DATA LIST / ACTIVE TEST

1. DATA LIST

- (a) According to the DATA LIST displayed by the intelligent tester, you can read the values of the switches, sensors, actuators and so on without parts removal. Reading the DATA LIST as the first step of troubleshooting is one method to shorten work time.
- (1) Warm up the engine.
 - (2) Turn the ignition switch off.
 - (3) Connect the intelligent tester to the DLC3.
 - (4) Turn the ignition switch to the ON position.
 - (5) Operate the intelligent tester according to the steps on the display and select "DATA LIST".

ECM:

Item	Measurement Item/ Range (Display)	Normal Condition	Diagnostic Note
VEHICLE SPEED	Vehicle speed/Min.: 0 km/h (0 mph), Max.: 255 km/h (158 mph)	Almost the same as the actual vehicle speed (When driving)	-
ENGINE SPD	Engine speed/Min.: 0 rpm, Max.: 16,383 rpm	Almost the same as the actual engine speed (When engine is running)	-
COOLANT TEMP	Coolant temperature/Min.: -40 °C (-40 °F), Max.: 140 °C (284 °F)	After warming up: 80 to 95 °C (176 to 203 °F)	If the value is "-40 °C (-40 °F)" or "140 °C (284 °F)", sensor circuit is open or shorted.

ABS:

Item	Measurement Item/ Range (Display)	Normal Condition	Diagnostic Note
SPD1	Vehicle speed/Min.: 0 km/h (0 mph), Max.: 255 km/h (158 mph)	Almost the same as the actual vehicle speed (When driving)	-

ON-VEHICLE INSPECTION

1. INSPECT SPEEDOMETER

- (a) Check the operation.
 - (1) Using a speedometer tester, inspect the speedometer for acceptable indication error and check the operation of the odometer.

Reference: km/h (Canada)

Standard indication	Acceptable range
20 km/h	17.5 to 21.5 km/h
40 km/h	38.0 to 42.0 km/h
60 km/h	58.0 to 63.0 km/h
80 km/h	78.0 to 84.0 km/h
100 km/h	98.5 to 104.5 km/h
120 km/h	119.0 to 125.0 km/h
140 km/h	139.0 to 146.0 km/h
160 km/h	159.0 to 167.0 km/h
180 km/h	179.0 to 188.0 km/h
200 km/h	199.0 to 209.0 km/h
220 km/h	219.0 to 230.0 km/h
240 km/h	239.0 to 251.0 km/h

Reference: mph (USA)

Standard indication	Acceptable range
20 mph	20.0 to 23.0 mph
40 mph	40.0 to 43.5 mph
60 mph	60.0 to 64.0 mph
80 mph	80.0 to 84.5 mph
100 mph	100.0 to 105.0 mph
120 mph	120.0 to 125.5 mph
140 mph	140.0 to 146.0 mph

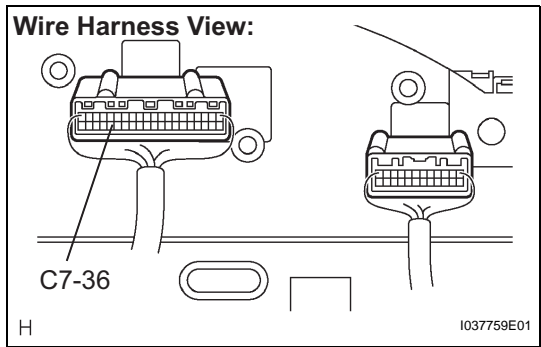
NOTICE:
Tire wear and over or under tire pressure will affect indication error.

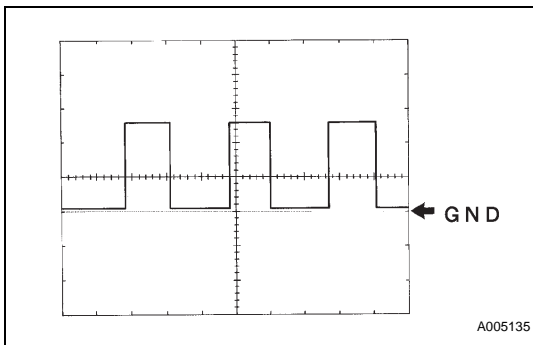
- (2) Check the deflection width of the speedometer indicator.

Reference:
Below 0.5 km/h (0.3 mph)

2. INSPECT OUTPUT OF VEHICLE SPEED

- (a) Check the output signal waveform.
 - (1) Remove the combination meter assembly.
 - (2) Connect the oscilloscope to terminal C7-36 and body ground.
 - (3) Start the engine.





- (4) Check the signal waveform according to the condition(s) in the table below.

Item	Condition
Tool setting	5 V/DIV, 20 ms/DIV
Vehicle condition	Driving at approx. 20 km/h (12 mph)

OK:

As shown in the illustration.

HINT:

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

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 subject it to heavy shocks..

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

DC 13.5 V, at 25°C (77°F)

Reference

Standard indication (r/min)	3MZ-FE: Acceptable range (r/min) Data in () are for reference	2AZ-FE: Acceptable range (r/min) Data in () are for reference
700	630 to 770	618 to 758
1,000	(900 to 1100)	883 to 1083
2,000	(1850 to 2150)	1817 to 2117
3,000	2800 to 3200	2750 to 3150
4,000	(3800 to 4200)	3733 to 4133
5,000	4800 to 5200	4717 to 5117
6,000	(5800 to 6200)	5650 to 6150
7,000	6800 to 7200	6583 to 7183

Connector Front View:



1e-5-1-A

1030899E04

4. INSPECT FUEL RECEIVER GAUGE

- (a) Disconnect the connector from the sender gauge.
(b) Turn the ignition switch to the ON position, then check the position of the receiver gauge needle.

OK:

Needle position is on (EMPTY).

- (c) Connect terminals 2 and 3 on the wire harness side connector of the fuel sender gauge.
(d) Turn the ignition switch to the ON position, then check the position of the receiver gauge needle.

OK:

Needle position is on (FULL).

5. INSPECT FUEL LEVEL WARNING

- (a) Disconnect the connector from the sender gauge.

- (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.

6. INSPECT LOW OIL PRESSURE WARNING LIGHT

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

OK:

Low oil pressure warning light comes on.

7. INSPECT BRAKE WARNING LIGHT

- (a) Inspect the parking brake warning light.
 - (1) Disconnect the connector from the parking brake switch.
 - (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 comes on.

- (b) Inspect the brake fluid level warning light.
 - (1) Disconnect the connector from the brake fluid level warning switch.
 - (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 comes on.

8. INSPECT BRAKE FLUID LEVEL WARNING SWITCH

- (a) Remove the reservoir tank cap and strainer.
- (b) Disconnect the connector.
- (c) Measure the resistance between the terminals.

Standard:

Float up (switch off): 10 k Ω or higher

- (d) Use a syphon, etc. to take fluid out of the reservoir tank.
- (e) Measure the resistance between the terminals.

Standard:

Float down (switch on): Below 1 Ω

- (f) Pour the fluid back in the reservoir tank.
- (g) Reconnect the connector.

9. INSPECT WASHER LEVEL WARNING SWITCH

- (a) Disconnect the connector from the washer level warning switch.
- (b) Turn the ignition switch to the ON position.

- (c) Ground the terminal of the wire harness side connector, then check the washer level warning light.

OK:

Washer level warning light comes on.

10. MAINTENANCE LIQUID RESETTING PROCEDURE

Indicator Condition:

State	Condition	Specified State
Blinking	The vehicle runs 4,500 miles after the previous setting	The indicator blinks for 15 seconds after the ignition switch is turned on (including 3 seconds for a valve check).
Continuously Illuminated	The vehicle runs 5,000 miles after the previous setting	The indicator is continuously illuminated after the ignition switch is turned on.

- (a) Set the display window to ODO.
(b) Turn the ignition switch off.
(c) Pressing the reset switch, turn the ignition switch to the ON position (keep pressing for at least 5 seconds).
(d) Reset procedure is completed.

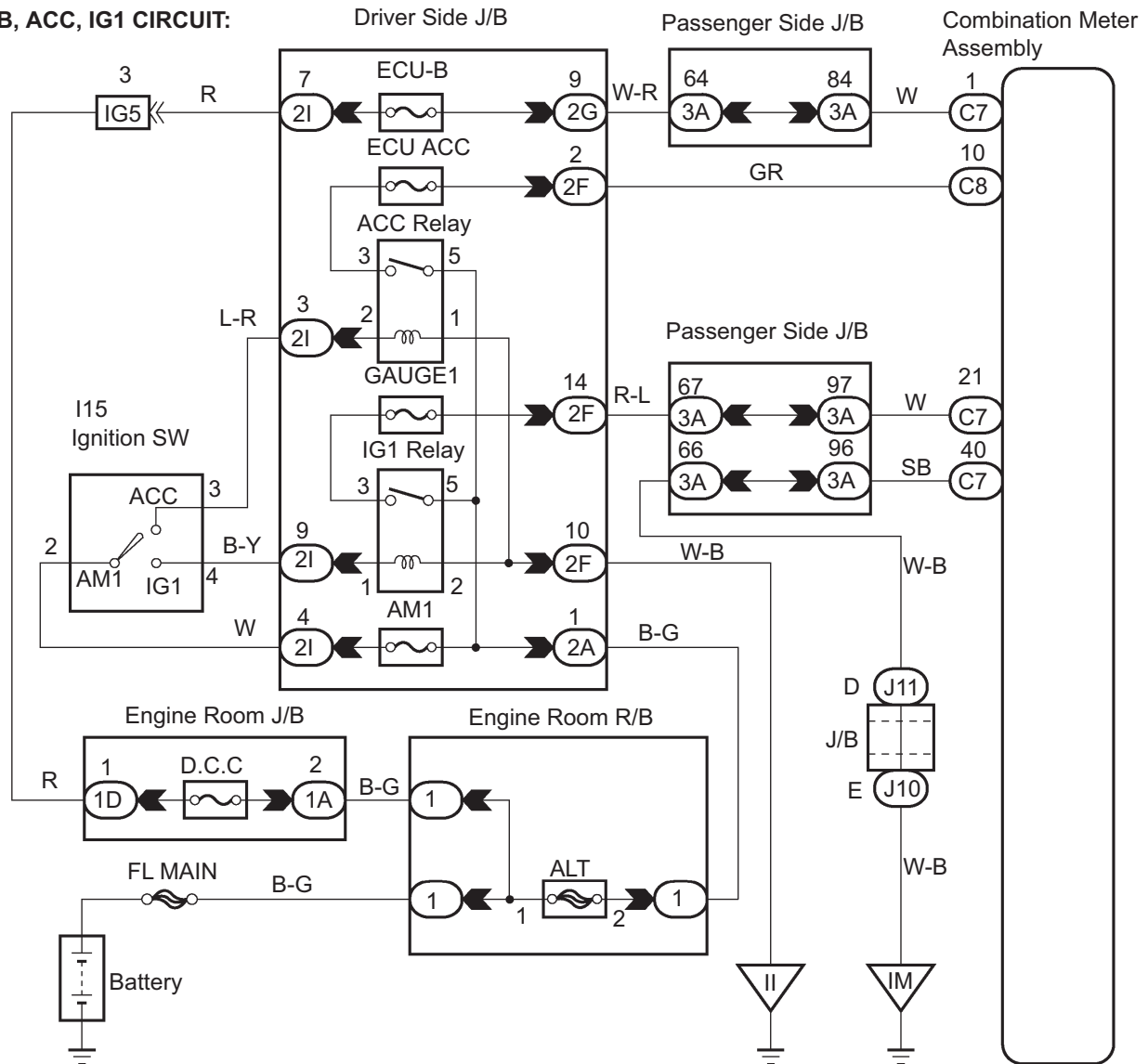
HINT:

- If the ignition switch is turned off during reset procedure, reset mode is canceled.
- If the reset switch is turned off during the reset procedure, reset mode is canceled and the display shows the condition prior to the reset procedure.

Entire Combination Meter does not Operate

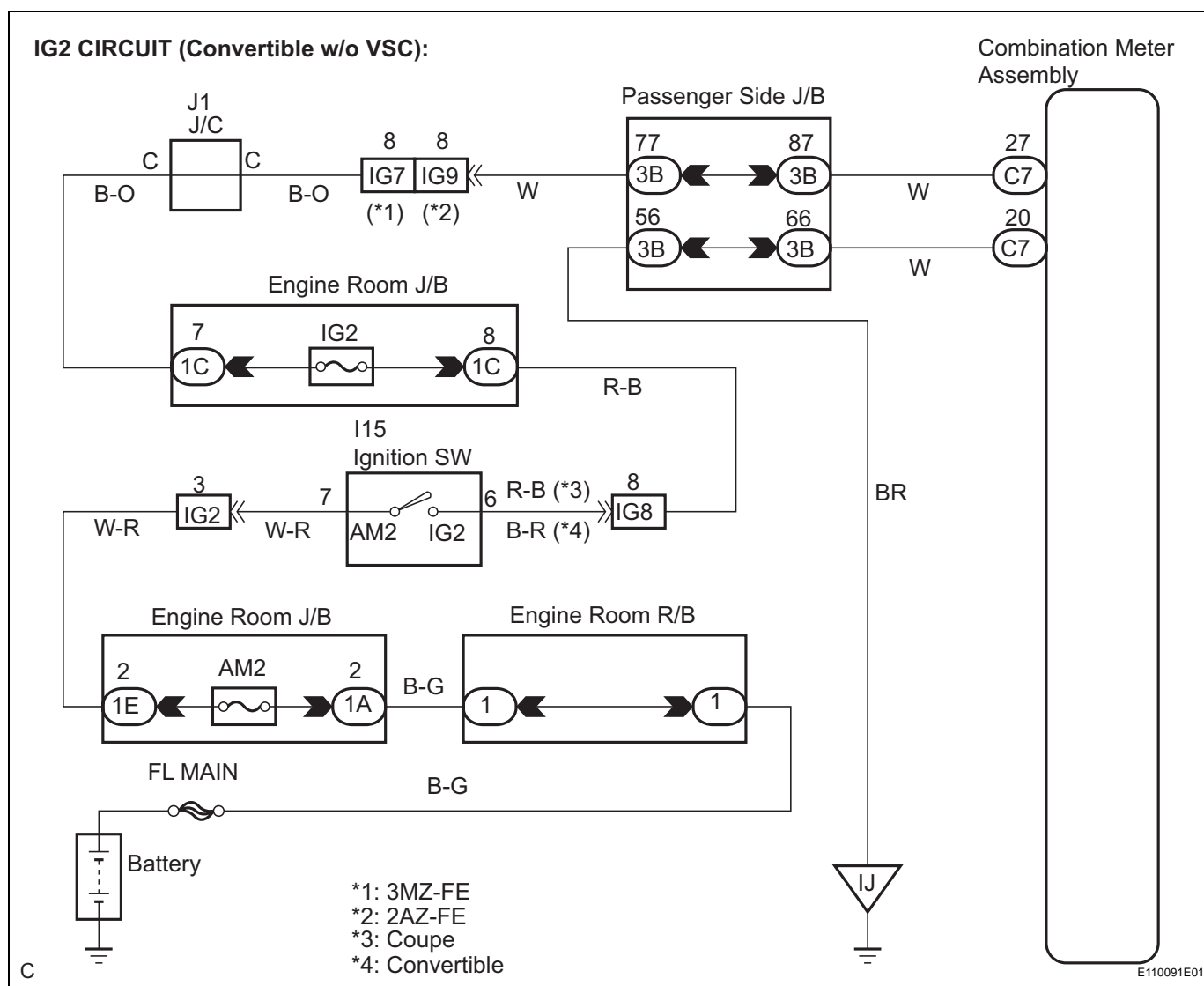
WIRING DIAGRAM

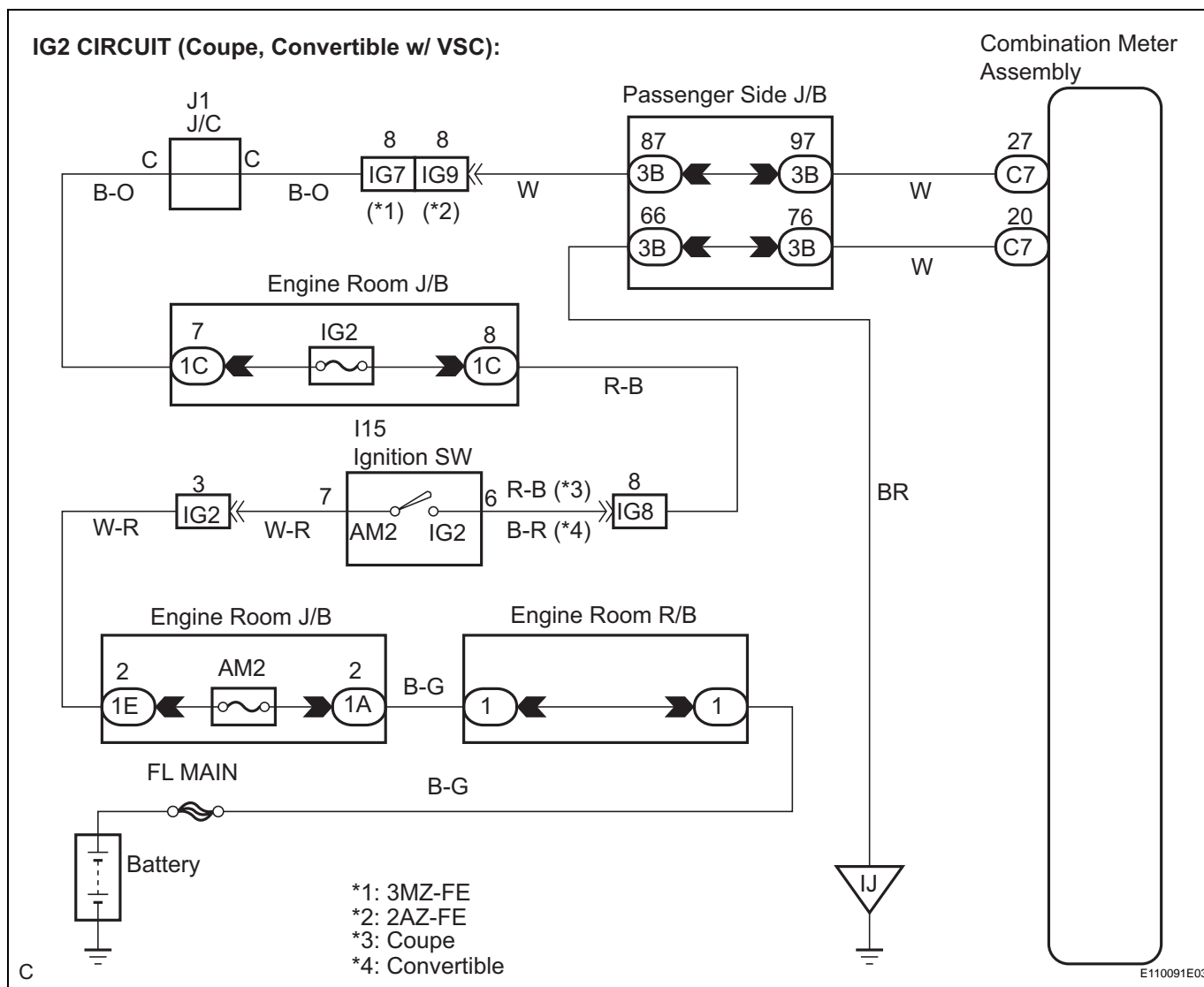
+B, ACC, IG1 CIRCUIT:



C

I038102E01





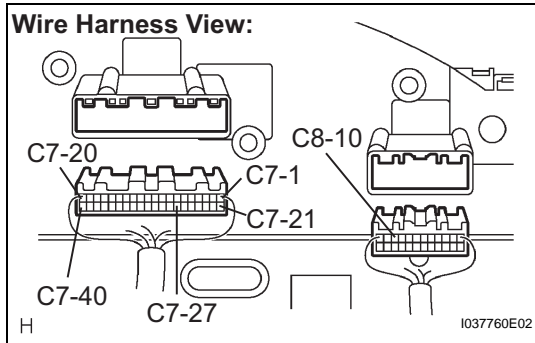
1 | CHECK FUSE

- (a) Inspect the ALT fuse in the engine room R/B.
Standard:
Below 1 Ω
- (b) Inspect the D.C.C fuse in the engine room J/B.
Standard:
Below 1 Ω
- (c) Inspect the ECU-B, ECU ACC, GAUGE 1 and AM1 fuses in the driver side J/B.
Standard:
Below 1 Ω

NG

**INSPECT FOR SHORT CIRCUIT IN HARNESS
AND ALL COMPONENTS CONNECTED TO
FUSE**

OK

2 INSPECT COMBINATION METER ASSEMBLY

- (a) Disconnect the combination meter connectors.
(b) Measure the resistance according to the value(s) in the table below.

Standard:

Terminal No	Condition	Specified condition
C7-20 - Body ground	Always	Below 1 Ω
C7-40 - Body ground	Always	Below 1 Ω

- (c) Measure the voltage according to the value(s) in the table below.

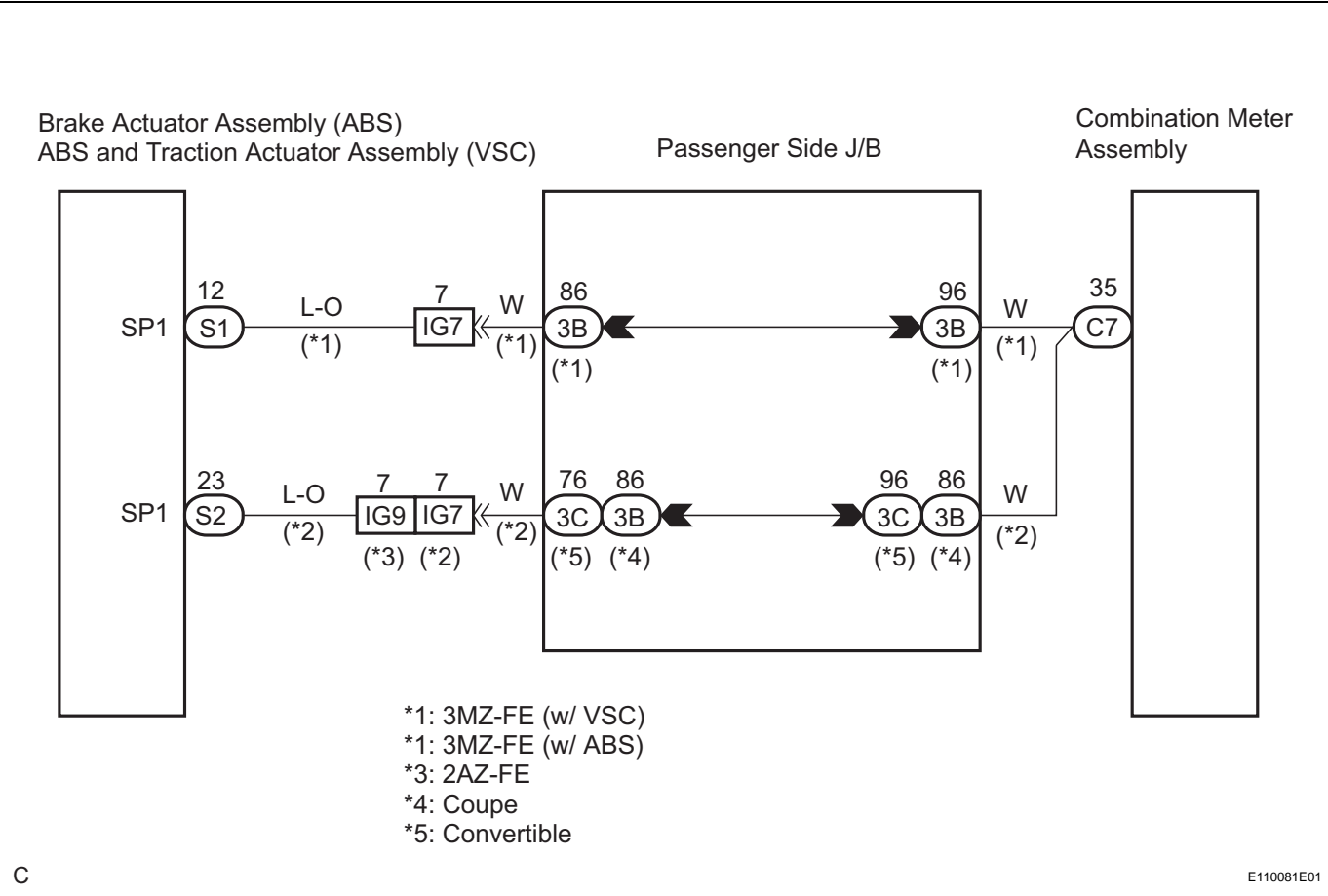
Standard:

Terminal No	Condition	Specified condition
C7-1 - Body ground	Always	10 to 14 V
C7-21 - Body ground	Ignition switch ON	10 to 14 V
C7-27 - Body ground	Ignition switch ON	10 to 14 V
C8-10 - Body ground	Ignition switch ACC, ON	10 to 14 V

NG**REPAIR OR REPLACE HARNESS OR CONNECTOR****OK****REPLACE COMBINATION METER ASSEMBLY**

Malfuction in Speedometer

WIRING DIAGRAM



1 READ VALUE OF INTELLIGENT TESTER (VEHICLE SPEED SIGNAL)

- (a) Operate the intelligent tester according to the steps on the display and select "DATA LIST".

ABS:

Item	Measurement Item/ Range (Display)	Normal Condition	Diagnostic Note
SPD1	Vehicle speed/Min.: 0 km/h (0 mph), Max.: 255 km/h (158 mph)	Almost the same as the actual vehicle speed (When driving)	-

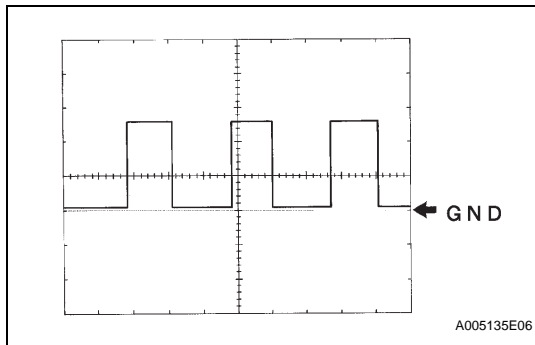
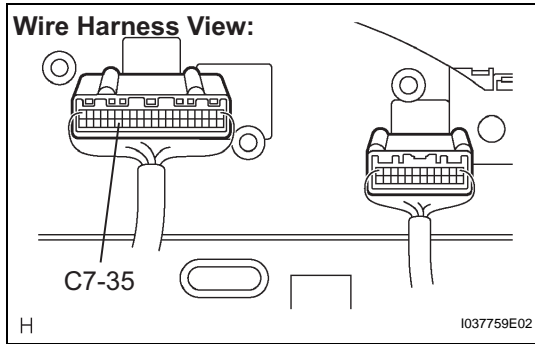
OK:
Vehicle speed displayed on the tester is almost the same as the actual vehicle speed.

NG GO TO BRAKE CONTROL SYSTEM

OK

2 INSPECT COMBINATION METER ASSEMBLY

- (a) Check the input signal waveform.



- (1) Remove the combination meter assembly with connector still connected.
- (2) Connect the oscilloscope to terminal C7-35 and body ground.

- (3) Check the signal waveform according to the condition(s) in the table below.

Item	Condition
Tool setting	5 V/DIV, 20 ms/DIV
Vehicle condition	Driving at approx. 20 km/h (12 mph)

OK:

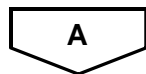
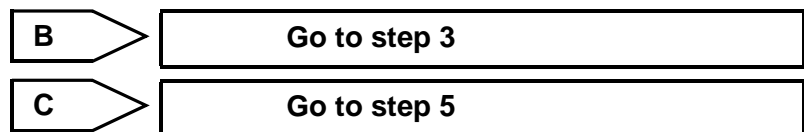
The waveform is displayed as shown in the illustration.

HINT:

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

Result

Result	Proceed to
OK	A
NG (w/ VSC)	B
NG (w/ ABS)	C



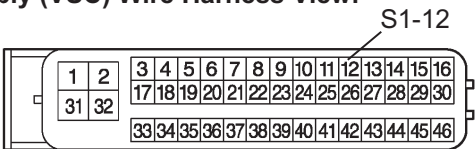
REPLACE COMBINATION METER ASSEMBLY

3

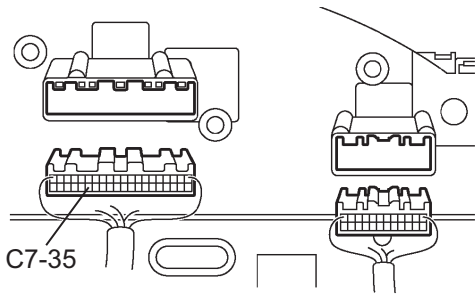
CHECK HARNESS AND CONNECTOR (BETWEEN ABS & TRACTION ACTUATOR AND COMBINATION METER)

- (a) Disconnect the C7 and S1 connectors.

ABS and Traction Actuator Assembly (VSC) Wire Harness View:



Combination Meter Assembly Wire Harness View:



1038776E01

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Specified Condition
C7-35 - S1-12	Below 1 Ω
C7-35 - Body ground	10 kΩ or higher

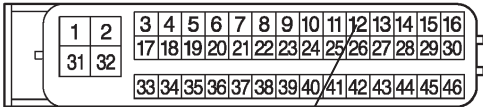
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

4 CHECK HARNESS AND CONNECTOR

ABS & Traction Actuator Wire Harness View:



T

G024767E11

(a) Disconnect S1 connector.

(b) Measure the voltage according to the value(s) in the table below.

Standard Resistance

Tester Connection	Specified Condition
S1-12 - Body ground	10 to 14 V

NG

REPLACE COMBINATION METER ASSEMBLY

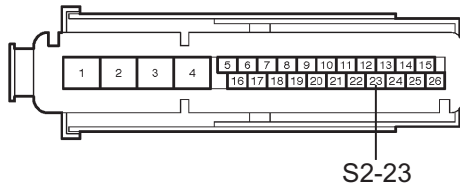
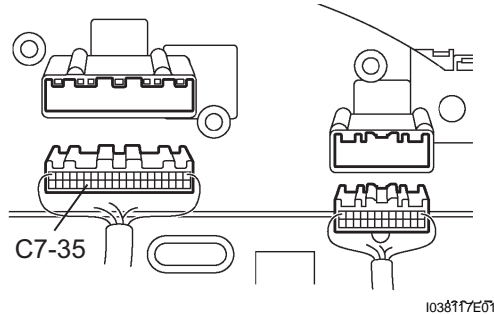
OK

ME

REPLACE ABS & TRACTION ACTUATOR

5 CHECK HARNESS AND CONNECTOR (BETWEEN BRAKE ACTUATOR AND COMBINATION METER)

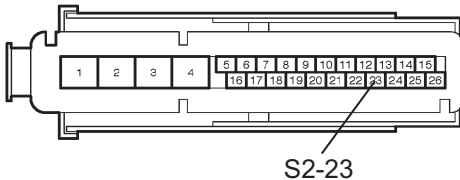
(a) Disconnect the C7 and S2 connectors.

**Brake Actuator Assembly (ABS)
Wire Harness View:**

**Combination Meter Assembly
Wire Harness View:**


- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Specified Condition
C7-35 - S2-23	Below 1 Ω
C7-35 - Body ground	10 k Ω or higher

NG
**REPAIR OR REPLACE HARNESS OR
CONNECTOR**
OK
6 CHECK HARNESS AND CONNECTOR
**Brake Actuator
Wire Harness View:**


N

1037928E11

- (a) Disconnect S2 connector.
(b) Measure the voltage according to the value(s) in the table below.

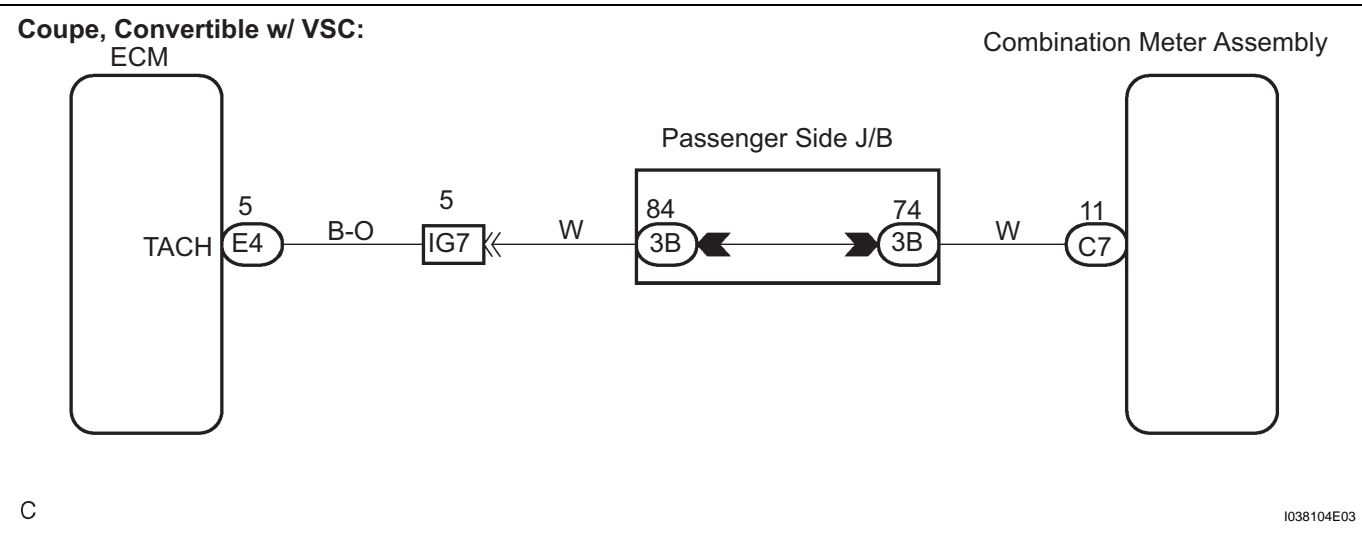
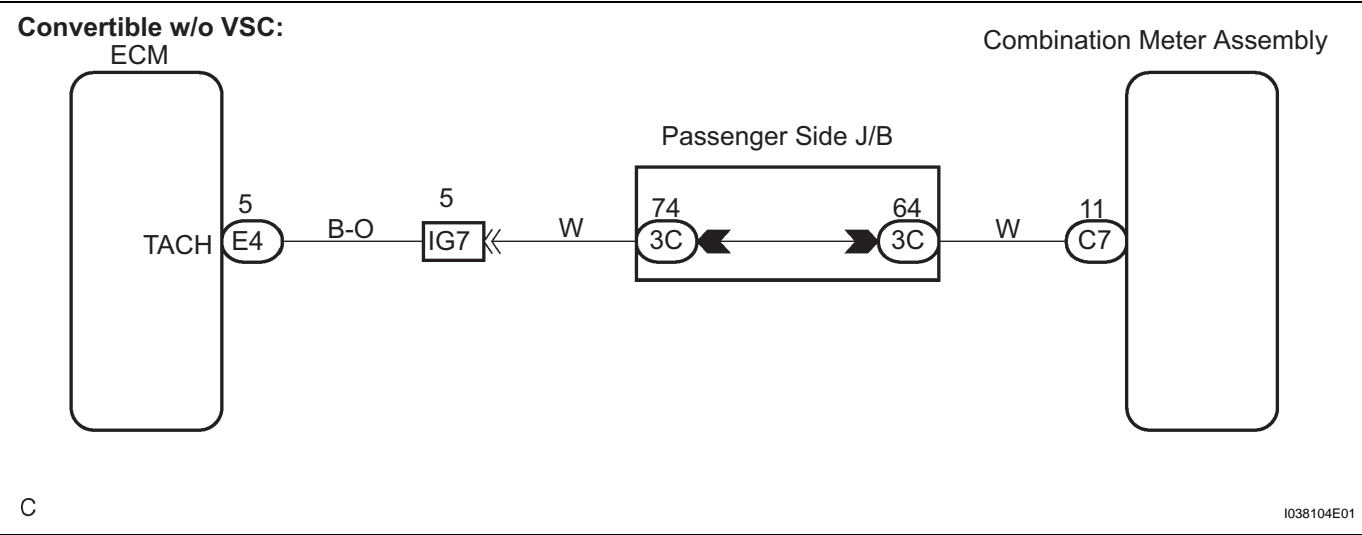
Standard Resistance

Tester Connection	Specified Condition
S2-23 - Body ground	10 to 14 V

NG
**REPLACE COMBINATION METER
ASSEMBLY**
OK
REPLACE BRAKE ACTUATOR
ME

Malfunction in Tachometer

WIRING DIAGRAM



HINT:

Start the inspection from step 1 when using the intelligent tester and start from step 2 when not using the intelligent tester.

ME

1 READ VALUE OF INTELLIGENT TESTER (ENGINE SPEED SIGNAL)

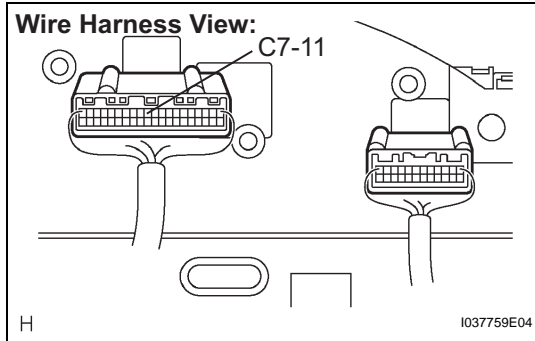
- (a) Operate the intelligent tester according to the steps on the display and select "DATA LIST".

ALL (ECM):

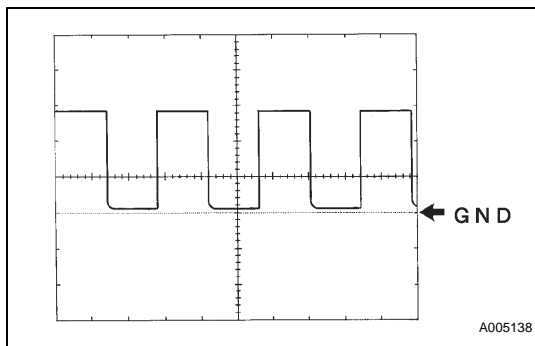
Item	Measurement Item/ Range (Display)	Normal Condition	Diagnostic Note
ENGINE SPD	Engine speed/Min.: 0 rpm, Max.: 16,383 rpm	Almost the same as the actual engine speed (When engine is running)	-

OK:

Engine speed displayed on the tester is almost the same as the actual engine speed.

NG**GO TO ENGINE CONTROL SYSTEM****OK****2****INSPECT COMBINATION METER ASSEMBLY**

- (a) Check the input signal waveform.
- (1) Remove the combination meter assembly.
 - (2) Connect the oscilloscope to terminal C7-11 and body ground.
 - (3) Start the engine.



- (4) Check the signal waveform according to the condition(s) in the table below.

Item	Condition
Tool setting	5 V/DIV, 10 ms/DIV
Vehicle condition	Engine idle speed

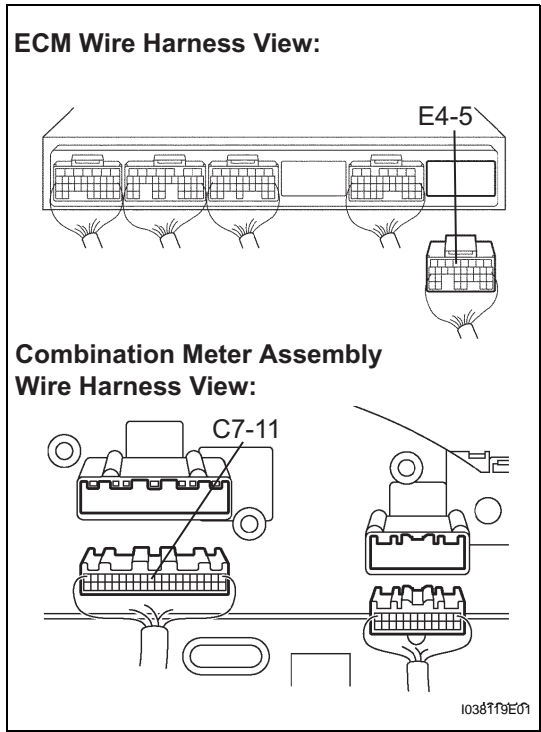
OK:

As shown in the illustration

NG**Go to step 3****OK****REPLACE COMBINATION METER ASSEMBLY****3****CHECK HARNESS AND CONNECTOR (BETWEEN ECM AND COMBINATION METER ASSEMBLY)**

- (a) Disconnect the C7 and E4 connectors.

ME



(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Specified Condition
C7-11 - E4-5	Below 1 Ω
C7-11 - Body ground	10 k Ω or higher

NG

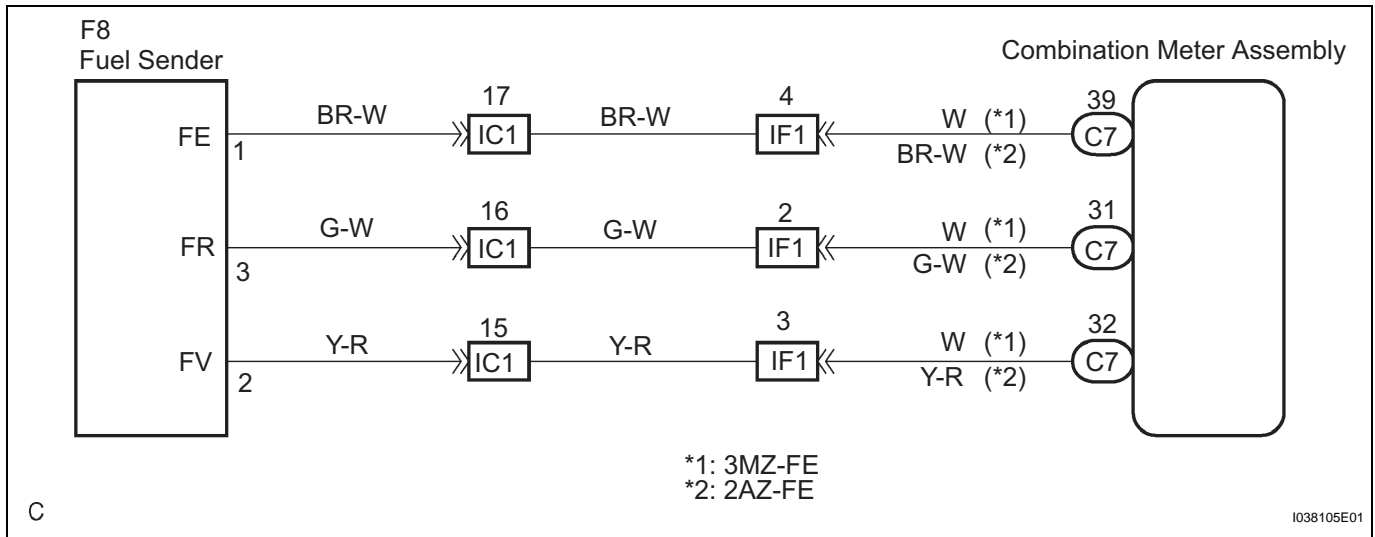
REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ECM

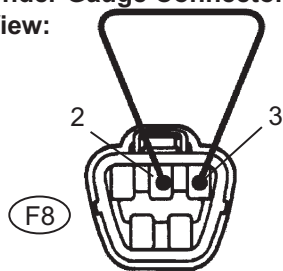
Malfunction in Fuel Receiver Gauge

WIRING DIAGRAM



1 INSPECT HARNESS OR CONNECTOR

Fuel Sender Gauge Connector
Front View:



- Disconnect the connector from the fuel sender gauge assembly.
- Check the meter indicator conditions according to the table below.

Standard:

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

- Measure the voltage according to the value(s) in the table below.

Standard Voltage:

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

NG

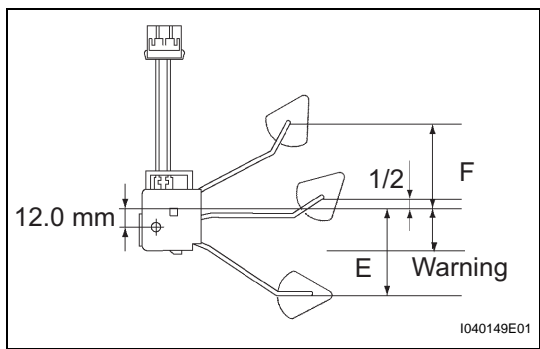
Go to step 3

OK

2 INSPECT FUEL SENDER GAUGE ASSEMBLY

- Remove the fuel sender gauge assembly.

ME



- (b) Check that the float position is between E and F.
- (c) Measure the voltage between terminals 2 and 3 of the connector according to the value(s) in the table below.

Standard Voltage:

Float level	Float position mm (in.)	Voltage (V)
F	73.4 (2.89) +- 3 (0.12)	4.5 to 4.75
1/2	12.9 (0.51) +- 3 (0.12)	2.48 +- 0.2
Warning	31.5 (1.24) +- 3 (0.12)	0.79 to 0.99
E	51.3 (2.02) +- 3 (0.12)	0.2 to 0.45

NG

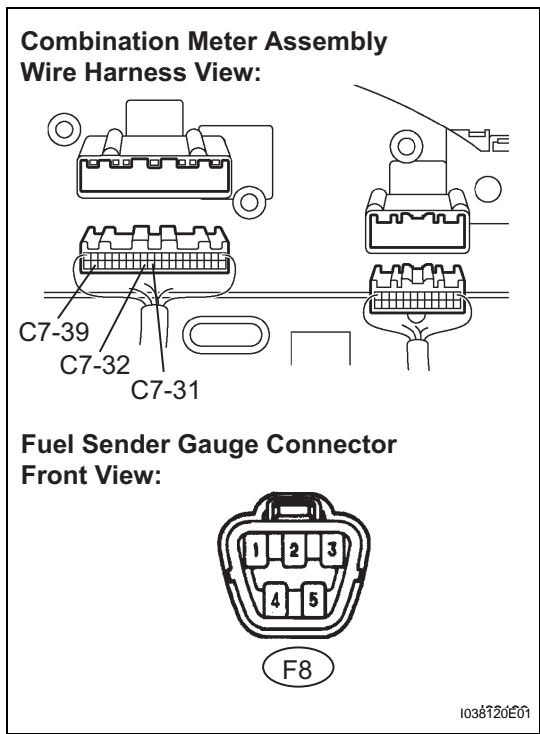
REPLACE FUEL SENDER GAUGE ASSEMBLY

OK

REPLACE COMBINATION METER ASSEMBLY

3

CHECK HARNESS AND CONNECTOR (BETWEEN FUEL SENDER GAUGE AND COMBINATION METER ASSEMBLY)



- (a) Disconnect the C7 and F8 connectors.
- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Specified Condition
C7-31 - F8-3	Below 1 Ω
C7-32 - F8-2	Below 1 Ω
C7-39 - F8-1	Below 1 Ω

NG

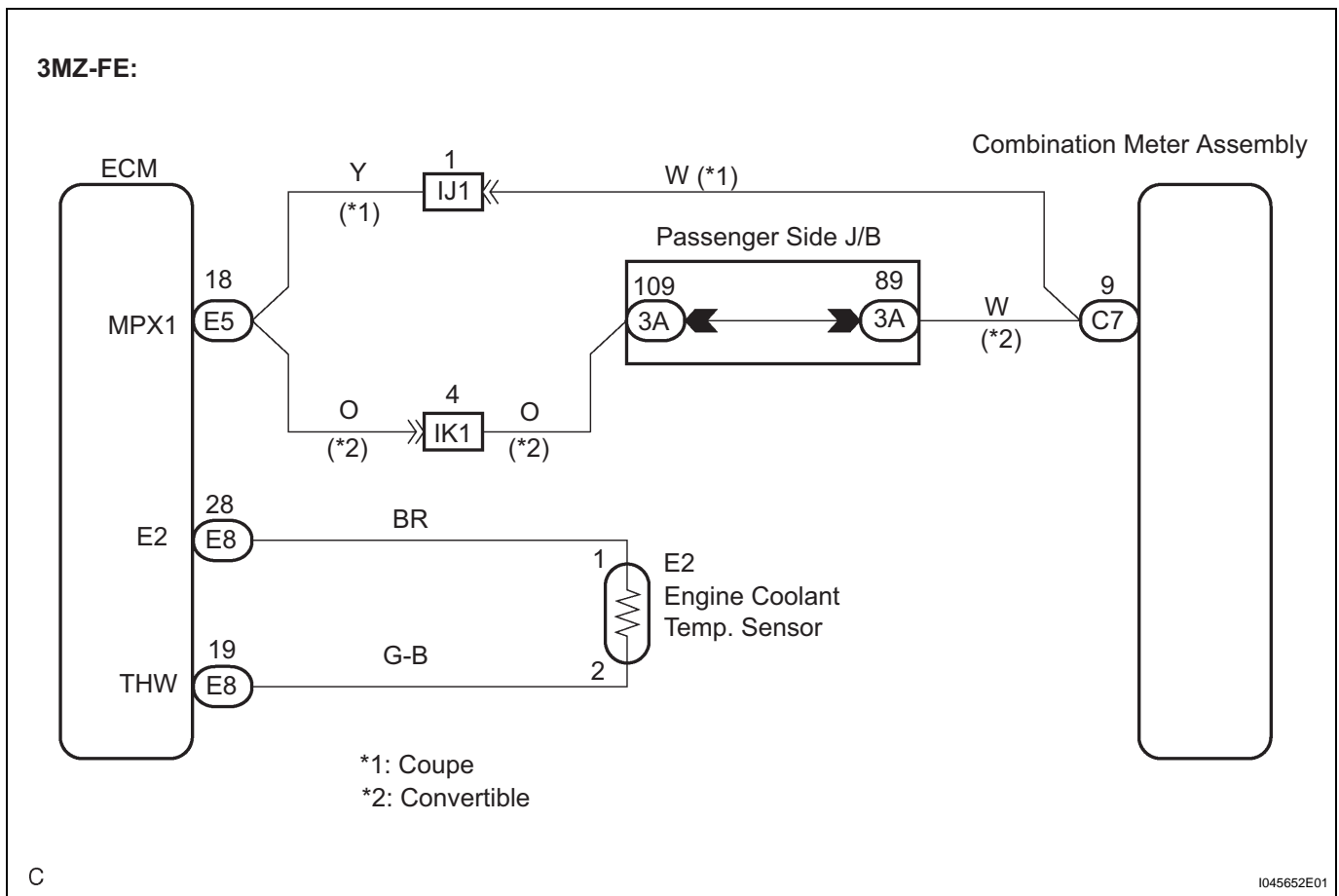
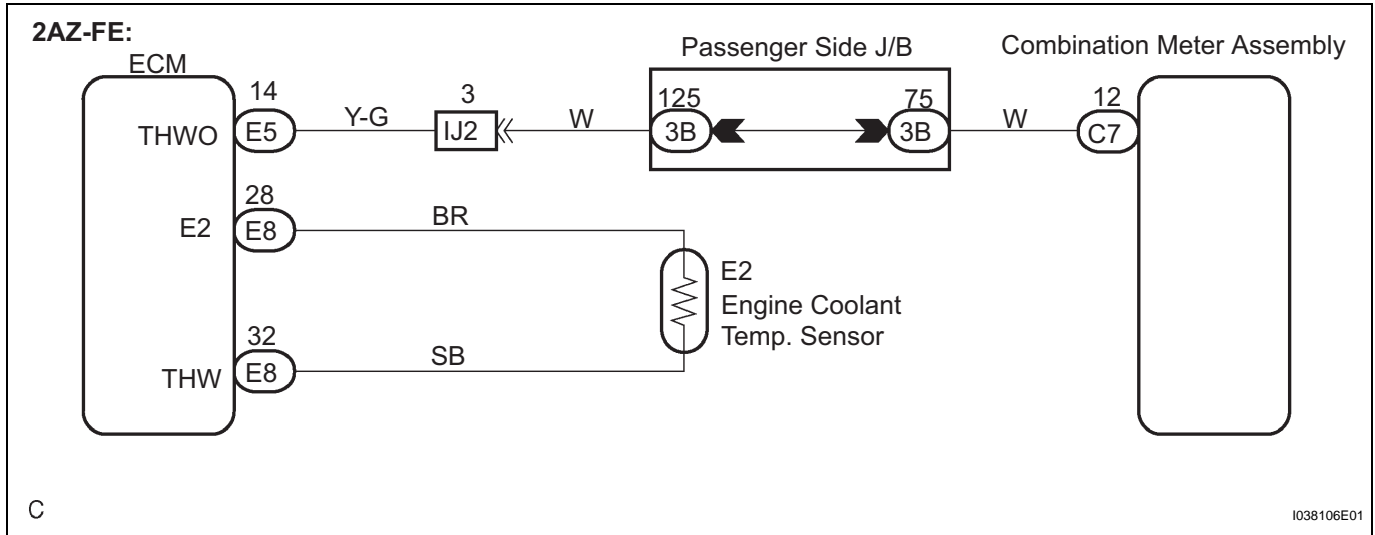
REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE COMBINATION METER ASSEMBLY

Malfunction in Water Temperature Warning Light

WIRING DIAGRAM



HINT:

- Start the inspection from step 1 when using the intelligent tester and start from step 2 when not using the intelligent tester.
- If there is an open or short in the engine coolant temperature sensor circuit, the ECM outputs DTCs. Perform troubleshooting with the "SFI System" (See page [ES-1](#), [ES-5](#)).

1 READ VALUE OF INTELLIGENT TESTER

- (a) Operate the hand-held tester according to the steps on the display and select "DATA LIST".

ECM:

Item	Measurement Item/ Range (Display)	Normal Condition	Diagnostic Note
COOLANT TEMP	Coolant temperature/Min.: -40 °C(-40 °F), Max.: 140 °C (284 °F)	After warming up: 80 to 95 °C (176 to 203 °F)	If the value is "-40 °C (-40 °F)" or "140 °C (284 °F)", sensor circuit is open or shorted.

OK:

Coolant temperature displayed on the tester is between 80 °C (176 °F) and 95 °C (203 °F) after warming up.

NG

GO TO ENGINE CONTROL SYSTEM

OK

2 CONFIRM ENGINE MODELS

- (a) Confirm the engine model.

Engine Model	Proceed to
3MZ-FE	A
2AZ-FE	B

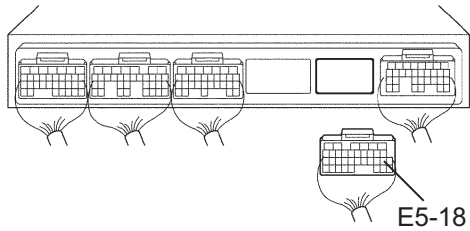
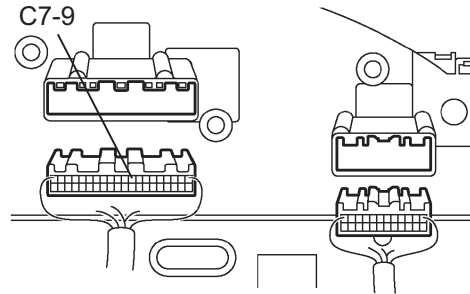
B

Go to step 5

A

3 CHECK HARNESS AND CONNECTOR (BETWEEN ECM AND COMBINATION METER ASSEMBLY)

- (a) Disconnect the C7 and E5 connectors.

ECM Wire Harness View:**Combination Meter Assembly Wire Harness View:**

I038121E01

OK

- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Specified Condition
E5-18 - C7-9	Below 1 Ω
C7-9 - Body ground	10 k Ω or higher

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

4 CHECK COMBINATION METER ASSEMBLY

OK:

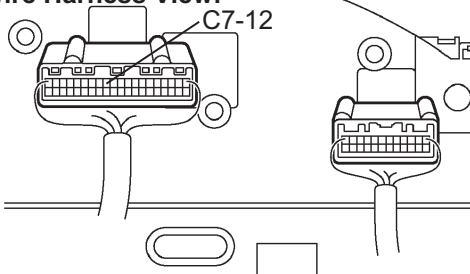
Normal operation

NG

GO TO ENGINE CONTROL SYSTEM

OK

END

5 INSPECT COMBINATION METER ASSEMBLY**Wire Harness View:**

H

I037759E05

- (a) Check the meter indicator conditions according to the table below.

Standard:

Signal Condition	Condition	Specified Condition
C7-12 - Body ground	Ignition switch ON, Coolant temperature is 90 °C (194 °F)	Below 1 V → 10 to 14 V

NG

Go to step 6

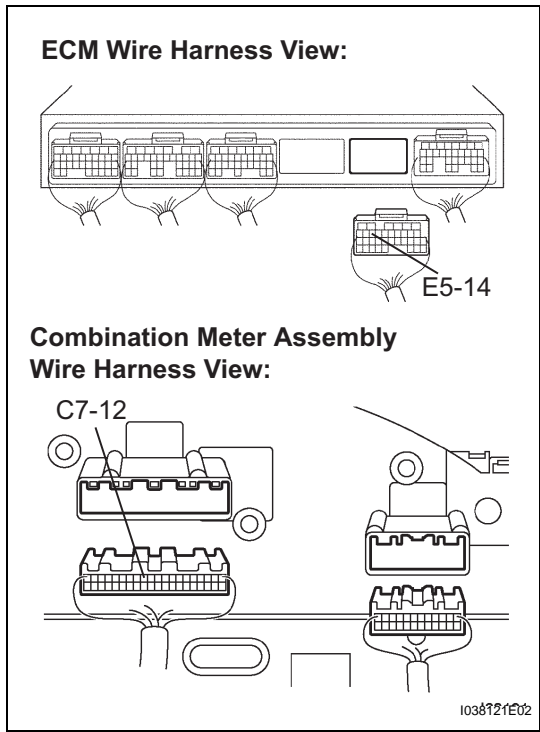
OK

REPLACE COMBINATION METER ASSEMBLY

ME

6

CHECK HARNESS AND CONNECTOR (BETWEEN ECM AND COMBINATION METER ASSEMBLY)



- (a) Disconnect the C7 and E5 connectors.
(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Specified Condition
E5-14 - C7-12	Below 1 Ω
C7-12 - Body ground	10 kΩ or higher

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ECM

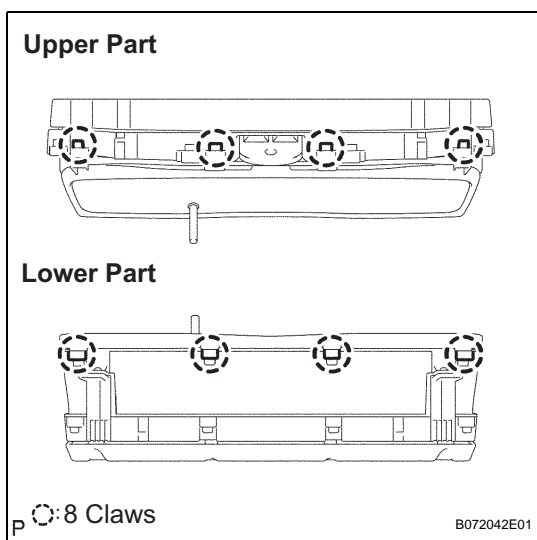
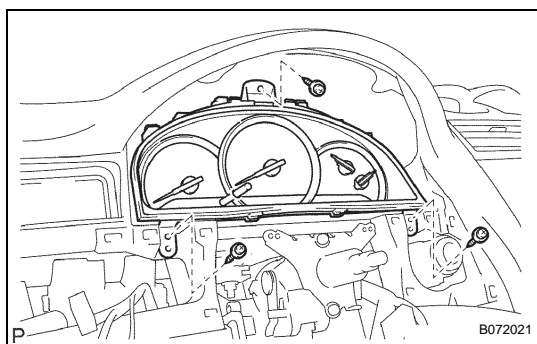
COMBINATION METER

REMOVAL

HINT:

- Installation is in the reverse order of removal.
- COMPONENTS (See page [IP-2](#))

1. REMOVE INSTRUMENT CLUSTER FINISH PANEL LOWER (See page [IP-7](#))
2. REMOVE INSTRUMENT PANEL FINISH PLATE
3. REMOVE INSTRUMENT PANEL FINISH PANEL LOWER (See page [IP-7](#))
4. REMOVE INSTRUMENT PANEL REGISTER ASSEMBLY NO.1 (See page [IP-8](#))
5. REMOVE INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY (See page [IP-8](#))
6. REMOVE COMBINATION METER ASSEMBLY
 - (a) Remove the 3 screws.
 - (b) Pull out the combination meter assembly, then disconnect the connectors.



7. REMOVE COMBINATION METER GLASS
 - (a) Disengage the 8 claws and remove the combination meter glass.

INSTALLATION

- 1. INSTALL COMBINATION METER GLASS**
- 2. INSTALL COMBINATION METER ASSEMBLY**
- 3. INSTALL INSTRUMENT CLUSTER FINISH PANEL
SUB-ASSEMBLY**
- 4. INSTALL INSTRUMENT PANEL REGISTER
ASSEMBLY NO.1**
- 5. INSTALL INSTRUMENT PANEL FINISH PANEL
LOWER**
- 6. INSTALL INSTRUMENT PANEL FINISH PLATE**
- 7. INSTALL INSTRUMENT CLUSTER FINISH PANEL
LOWER**