SECTION MWI
METER, WARNING LAMP & INDICATOR

CONTENTS

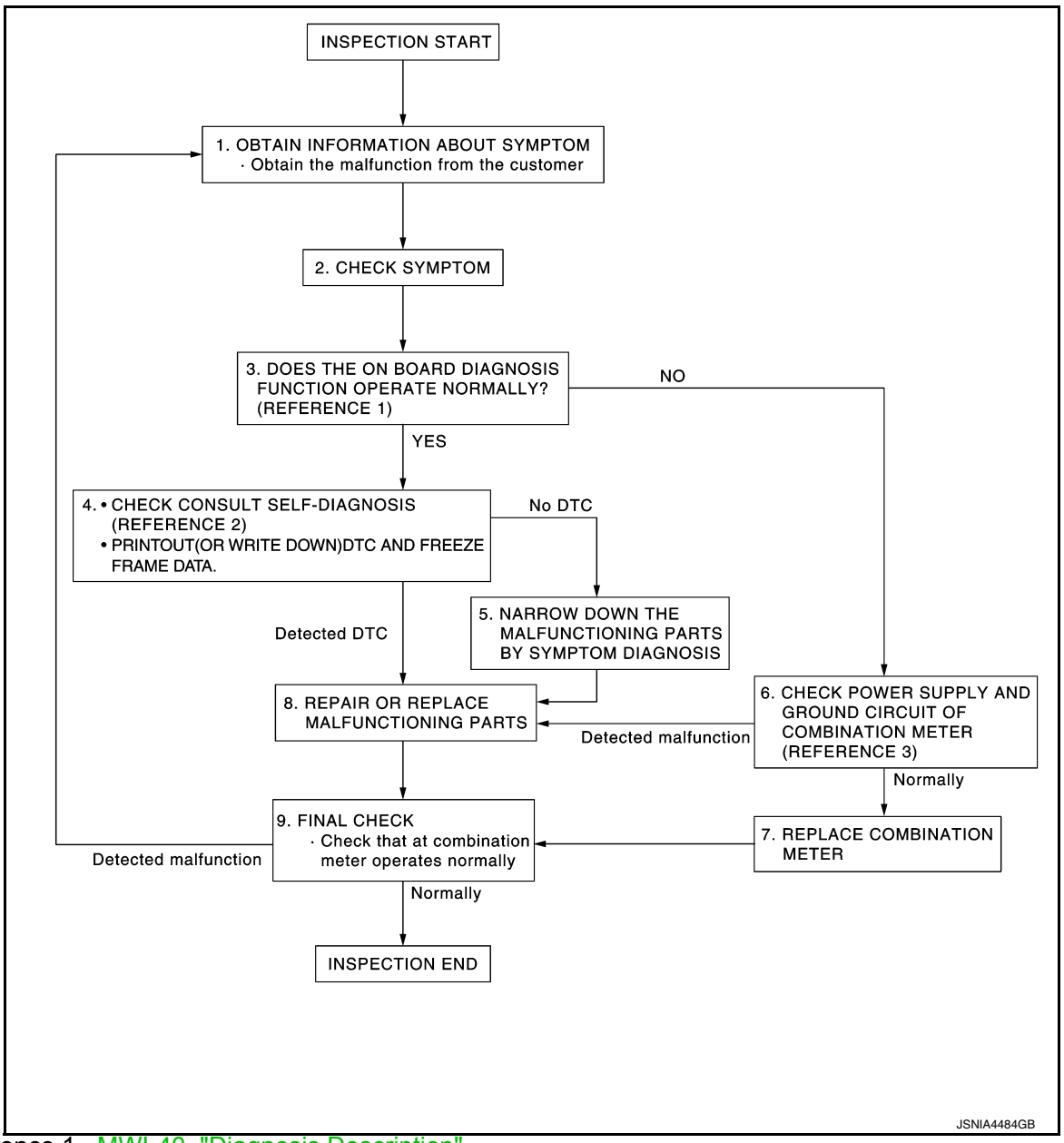
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work flow

INFOID:0000000010597172

OVERALL SEQUENCE



- Reference 1···MWI-40, "Diagnosis Description".
- Reference 2···MWI-109, "DTC Index".
- Reference 3···MWI-55, "COMBINATION METER : Diagnosis Procedure".

DETAILED FLOW

1.OBTAIN INFORMATION ABOUT SYMPTOM

Interview the customer to obtain as much information as possible about the conditions and environment under which the malfunction occurred.

>> GO TO 2.

2.CHECK SYMPTOM

- Check the symptom based on the information obtained from the customer.
- Check that any other malfunctions are present.

>> GO TO 3.

3.CHECK ON BOARD DIAGNOSIS OPERATION

Check that the on board diagnosis function operates. Refer to MWI-40, "Diagnosis Description".

Does the on board diagnosis function operate normally?

YES >> GO TO 4.
NO >> GO TO 6.

4.CHECK CONSULT SELF-DIAGNOSIS RESULTS

1. Connect CONSULT and perform self-diagnosis. Refer to MWI-109, "DTC Index".
2. When DTC is detected, follow the instructions below:

- Record DTC and Freeze Frame Data.

Are self-diagnosis results normal?

YES >> GO TO 5.
NO >> GO TO 8.

5.NARROW DOWN THE MALFUNCTIONING PARTS BY SYMPTOM DIAGNOSIS

Perform symptom diagnosis and narrow down the malfunctioning parts.

>> GO TO 8.

6.CHECK COMBINATION METER POWER SUPPLY AND GROUND CIRCUITS

Inspect combination meter power supply and ground circuits. Refer to MWI-55, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 8.

7.REPLACE COMBINATION METER

Replace combination meter.

>> GO TO 9.

8.REPAIR OR REPLACE MALFUNCTIONING PARTS

Repair or replace the malfunctioning parts.

NOTE:
If DTC is displayed, erase DTC after repair or replace malfunctioning parts.

>> GO TO 9.

9.FINAL CHECK

Check that the combination meter operates normally.

Do they operate normally?

YES >> INSPECTION END
NO >> GO TO 1.

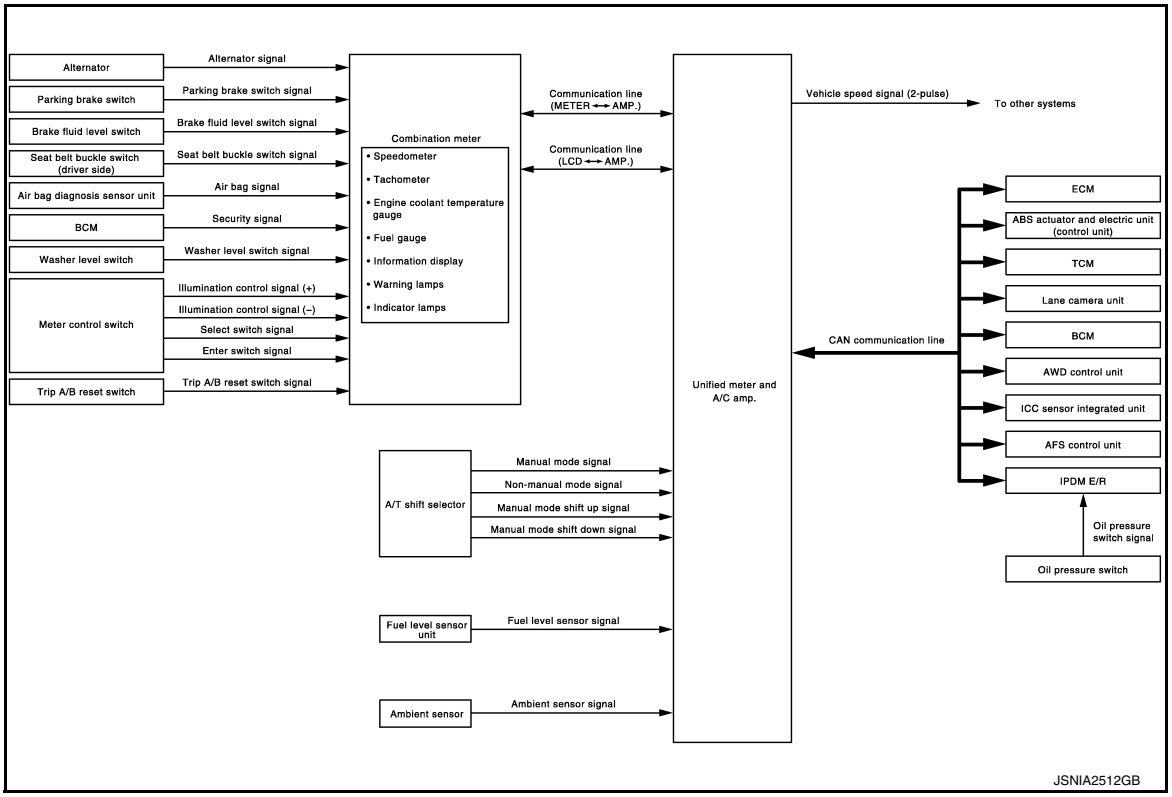
SYSTEM DESCRIPTION

METER SYSTEM

METER SYSTEM

METER SYSTEM : System Diagram

INFOID:0000000010597173



METER SYSTEM : System Description

INFOID:0000000010597174

COMBINATION METER

- The combination meter retrieves the information required for controlling the operations of the meters, indicator lamps/warning lamps and information display from the communication signals from the unified meter and A/C amp. and the signals from various switches and sensors.
- The combination meter incorporates a trip computer that displays warnings and messages on the information display according to the information received from various units.
- The combination meter incorporates a buzzer function that sounds an audible alarm with the integrated buzzer device. Refer to WCS-5, "WARNING CHIME SYSTEM : System Description" for further details.
- The combination meter integrates the meter circuit check function and the segment check function that checks the information display operation.

UNIFIED METER AND A/C AMP.

- Receives information required by the combination meter from various units via CAN communication line and transmits it to the combination meter with communication line.
- The unified meter and A/C amp. incorporates a power saving control function that reduces the power consumption according to the vehicle status. Refer to BCS-16, "System Description" for details.
- The unified meter and A/C amp. incorporates a diagnosis function that allows the technician to perform diagnoses with CONSULT.

Between unified meter and A/C amp. and combination meter.

Unit	Communication line	Input from combination meter	Output to combination meter
Unified meter and A/C amp.	Communication line (METER <-> AMP.)	• Parking brake switch signal • Washer level switch signal • Meter day/night condition signal • Illumination control switch signal • Refuel status signal • Low fuel warning lamp signal • Odo data signal	• Vehicle speed signal • Turn indicator signal • High beam request signal • Position light request signal • Engine speed signal • Fuel level sensor signal • Engine coolant temperature signal • A/T CHECK indicator signal • Oil pressure switch signal • Door switch signal • Buzzer output signal • AFS OFF indicator lamp signal • TPMS malfunction warning lamp signal • AWD warning lamp signal • VDC OFF indicator lamp signal • VDC warning lamp signal • ABS warning lamp signal • Brake warning lamp signal • Malfunctioning indicator lamp signal • Master warning signal • ICC warning lamp signal • Lane departure warning lamp signal • LDP ON indicator lamp signal • IBA OFF indicator lamp • BSW warning lamp signal • Front fog lights request signal
	Communication line (LCD <-> AMP.)	• Average fuel consumption reset signal • Travel time reset signal • Possible driving distance reset signal • Average vehicle speed reset signal • Select switch signal • Enter switch signal • Trip A/B reset switch signal • Ambient air temperature display signal	• Shift position signal • Manual mode indicator signal • Manual mode shift refusal signal • Meter display signal • Door switch signal • Fuel level sensor signal • Parking brake switch signal • Washer level switch signal • Charge warning signal • Instantaneous fuel consumption display signal • Ambient air temperature display signal • Average fuel consumption display signal • Average vehicle speed display signal • Possible driving distance display signal • Engine speed signal • Vehicle speed signal • Low tire pressure warning lamp signal • Fuel filler cap warning display signal

IPDM E/R

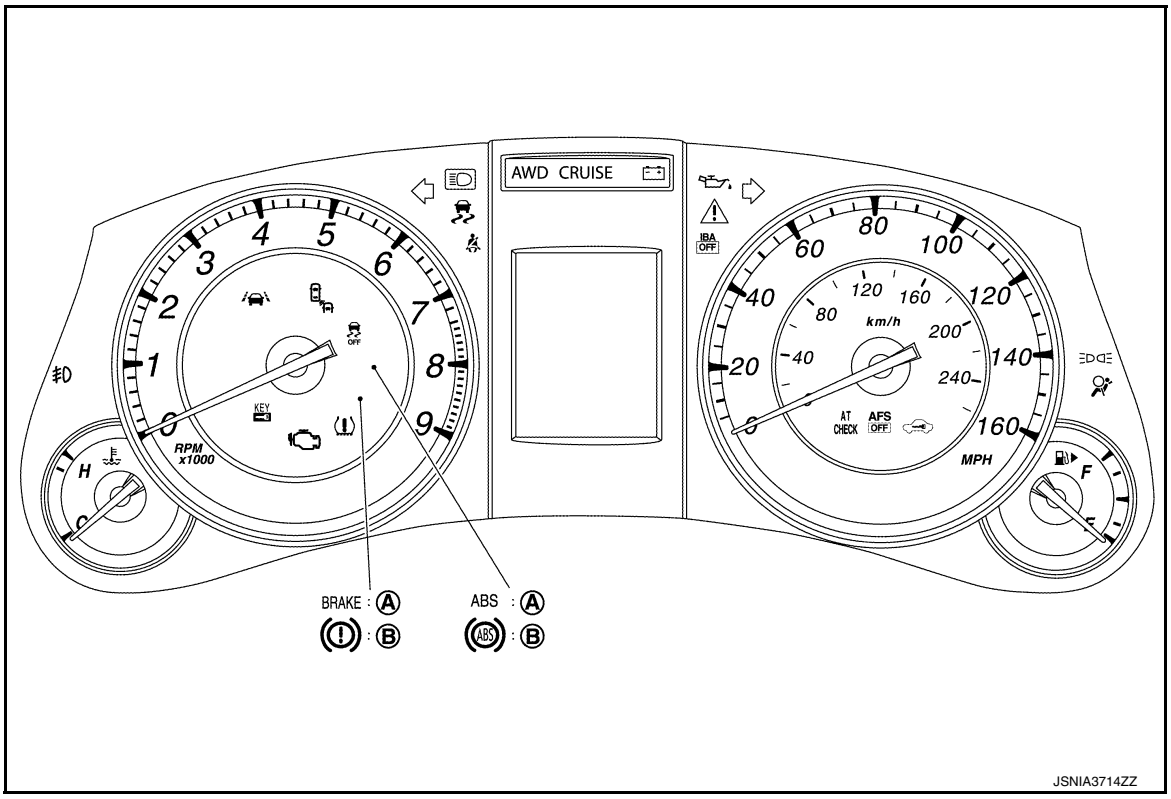
- IPDM E/R reads the ON/OFF signals of the oil pressure switch and transmits the oil pressure switch signal to the unified meter and A/C amp. via BCM with the CAN communication line.
- IPDM E/R is equipped with the diagnosis function. It can perform the operation check of oil pressure warning lamp with the auto active test and the diagnosis with CONSULT.

METER CONTROL FUNCTION LIST

X: Applicable

System		Description	Signal source	Via unified meter and A/C amp.
Meter/gauge	Speedometer	Receives vehicle speed signal and indicates vehicle speed.	ABS actuator and electric unit (control unit)	X
	Tachometer	Receives engine speed signal and indicates engine speed.	ECM	X
	Fuel gauge	Receives fuel level sensor signal and indicates fuel level.	Fuel level sensor unit	X
	Engine coolant temperature gauge	Receives engine coolant temperature signal and indicates coolant temperature.	ECM	X
Warning lamp/ indicator lamp	Oil pressure warning lamp	Receives oil pressure warning lamp signal and illuminates warning lamp.	IPDM E/R	X
	Master warning	Illuminates according to warning output on information display.	—	X
Information display	Door open warning	Receives door switch signals and displays warning.	BCM	X
	Parking brake release warning	Receives parking brake switch signal and vehicle speed signal and displays warnings.	Parking brake switch	
			ABS actuator and electric unit (control unit)	X
	Low fuel warning	Receives fuel gauge signal and displays warning if fuel level decreases to 14 ℓ (3-3/4 US gal, 3-1/8 Imp gal) or less.	Fuel level sensor unit	X
	Low washer fluid warning	Receives washer level switch signal and displays warning.	Washer level switch	
	Low outside temperature warning	Monitors ambient sensor signal and displays warning if ambient temperature decreases to 3°C (37°F) or less. (If enabled)	Ambient sensor	X
	Low tire pressure warning	Receives low tire pressure warning lamp signal and displays warning.	BCM	X
	Fuel filler cap warning	Receives fuel filler cap warning display signals and displays warning.	ECM	X
	Instantaneous fuel consumption	Calculates instantaneous fuel consumption based on received vehicle speed signals and fuel consumption monitor signal and displays it.	ECM	X
			ABS actuator and electric unit (control unit)	X
	Average fuel consumption	Calculates average fuel consumption in a reset-to-reset interval based on received vehicle speed signals and fuel consumption monitor signal and displays it.	ECM	X
			ABS actuator and electric unit (control unit)	X
	Average vehicle speed	Calculates average vehicle speed in a reset-to-reset interval based on received vehicle speed signals and displays it.	ABS actuator and electric unit (control unit)	X
	Travel time	Displays accumulated key switch ON time from reset to reset.	—	X
	Travel distance	Calculates accumulated travel distance in a reset-to-reset interval based on received vehicle speed signals and displays it.	ABS actuator and electric unit (control unit)	X
	Possible driving distance	Calculates possible driving distance based on received fuel consumption monitor signal, vehicle speed signals and fuel level sensor signal and displays it.	ECM	X
			ABS actuator and electric unit (control unit)	X
			Fuel level sensor unit	X
	Ambient air temperature	Corrects ambient air temperature value based on received ambient sensor signals and displays it.	Ambient sensor	X

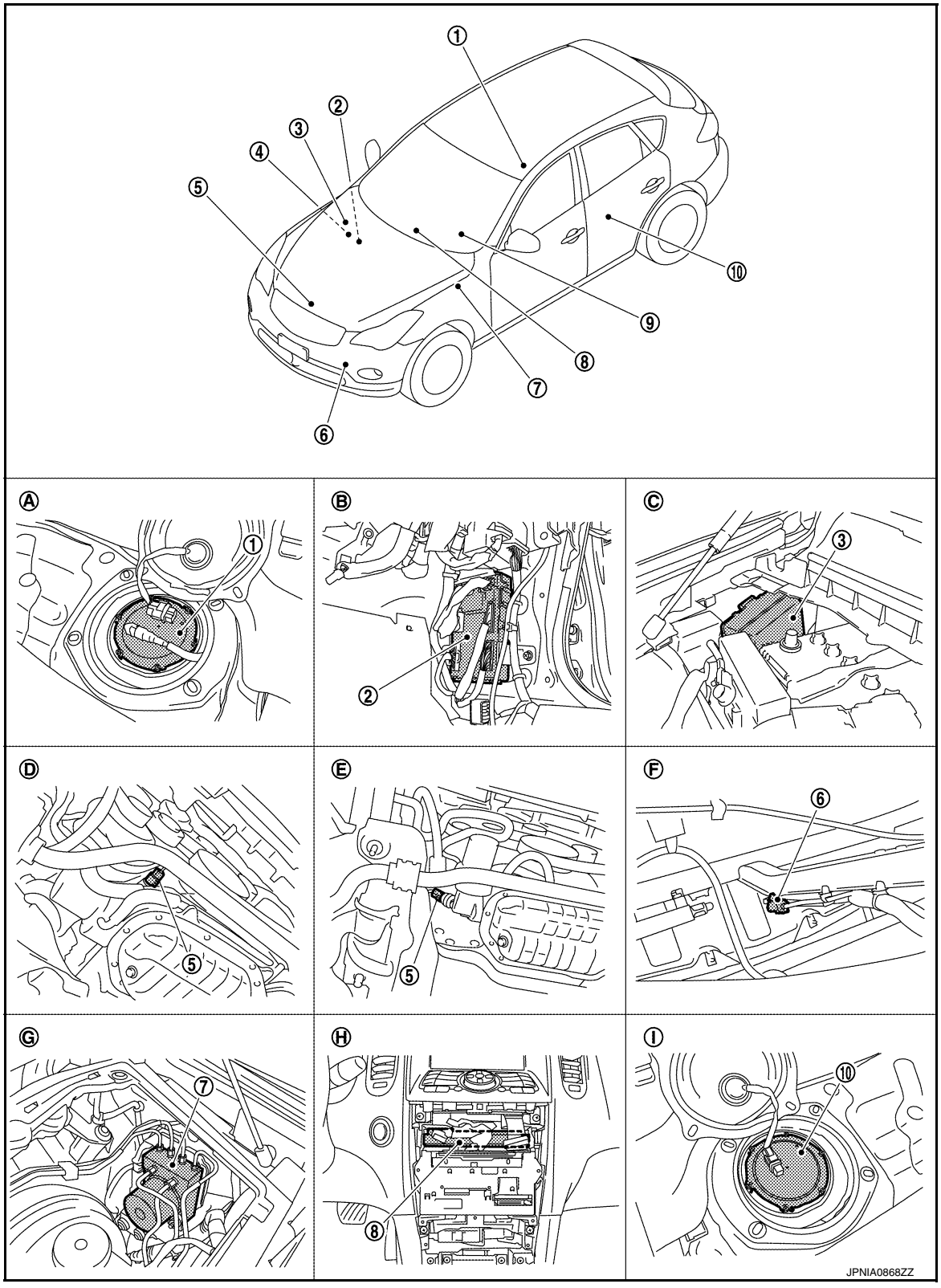
ARRANGEMENT OF COMBINATION METER



A. U.S.A. B. Canada

METER SYSTEM : Component Parts Location

INFOID:0000000010597175



1. Fuel level sensor unit and fuel pump (main)
2. BCM
3. IPDM E/R
4. ECM
   Refer to EC-39, "Component Parts Location".
5. Oil pressure switch
6. Ambient sensor

7. ABS actuator and electric unit (control unit)
8. Unified meter and A/C amp.
9. Combination meter
10. Fuel level sensor unit (sub)
A. Rear seat (inside right)
B. Dash side finisher (passenger side)
C. Hoodledge cover (RH)
D. 2WD [oil pan (upper) RH side]
E. AWD (oil filter bracket part)
F. Condenser (front)
G. Hoodledge cover (LH)
H. Behind cluster lid C
I. Rear seat (inside left)

METER SYSTEM : Component Description

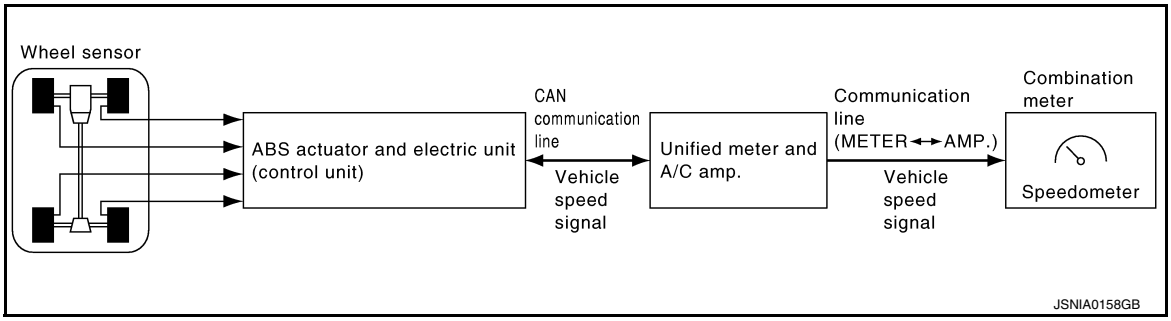
INFOID:0000000010597176

Unit	Description
Combination meter	Controls the following with the signals from the unified meter and A/C amp, switches and sensors. • Speedometer • Tachometer • Engine coolant temperature gauge • Fuel gauge • Warning lamps • Indicator lamps • Information display • Warning chime
Unified meter and A/C amp.	• The combination meter receives the necessary information from various units via CAN communication line and transmits them to the unified meter and A/C amp. with the communication line that connects both of them. • Transmits the fuel gauge signal from the fuel gauge unit with the communication line that connects the unified meter and A/C amp. and the combination meter. • Reads the signals from the A/T shift selector transmits them to TCM with CAN communication line.
IPDM E/R	IPDM E/R reads the ON/OFF signals of the oil pressure switch and transmits the oil pressure switch signal to the unified meter and A/C amp. via BCM with CAN communication line.
Fuel level sensor unit	Refer to MWI-58, "Description".
Oil pressure switch	Refer to MWI-66, "Description".
ECM	Transmits the following signals to the unified meter and A/C amp. with CAN communication line. • Engine speed signal • Engine coolant temperature signal • Fuel consumption monitor signal • Fuel filler cap warning display signal
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the unified meter and A/C amp. with CAN communication line.
BCM	• Transmits signals provided by various units to the unified meter and A/C amp. with CAN communication line. • Transmits the security signal and low tire pressure warning lamp signal to the combination meter.
A/T shift selector	Transmits the following signals to the unified meter and A/C amp. • Manual mode signal • Non-manual mode signal • Manual mode shift up signal • Manual mode shift down signal
TCM	Transmits shift position signal, manual mode indicator signal and manual mode shift refusal signal to the unified meter and A/C amp.
Meter control switch	Refer to MWI-62, "Description".
Trip A/B reset switch	Refer to MWI-64, "Description".
Washer level switch	Transmits the washer level signal to the combination meter.
Brake fluid level switch	Transmits the brake fluid level switch signal to the combination meter.
Parking brake switch	Refer to MWI-67, "Description".

SPEEDOMETER

SPEEDOMETER : System Diagram

INFOID:0000000010597177



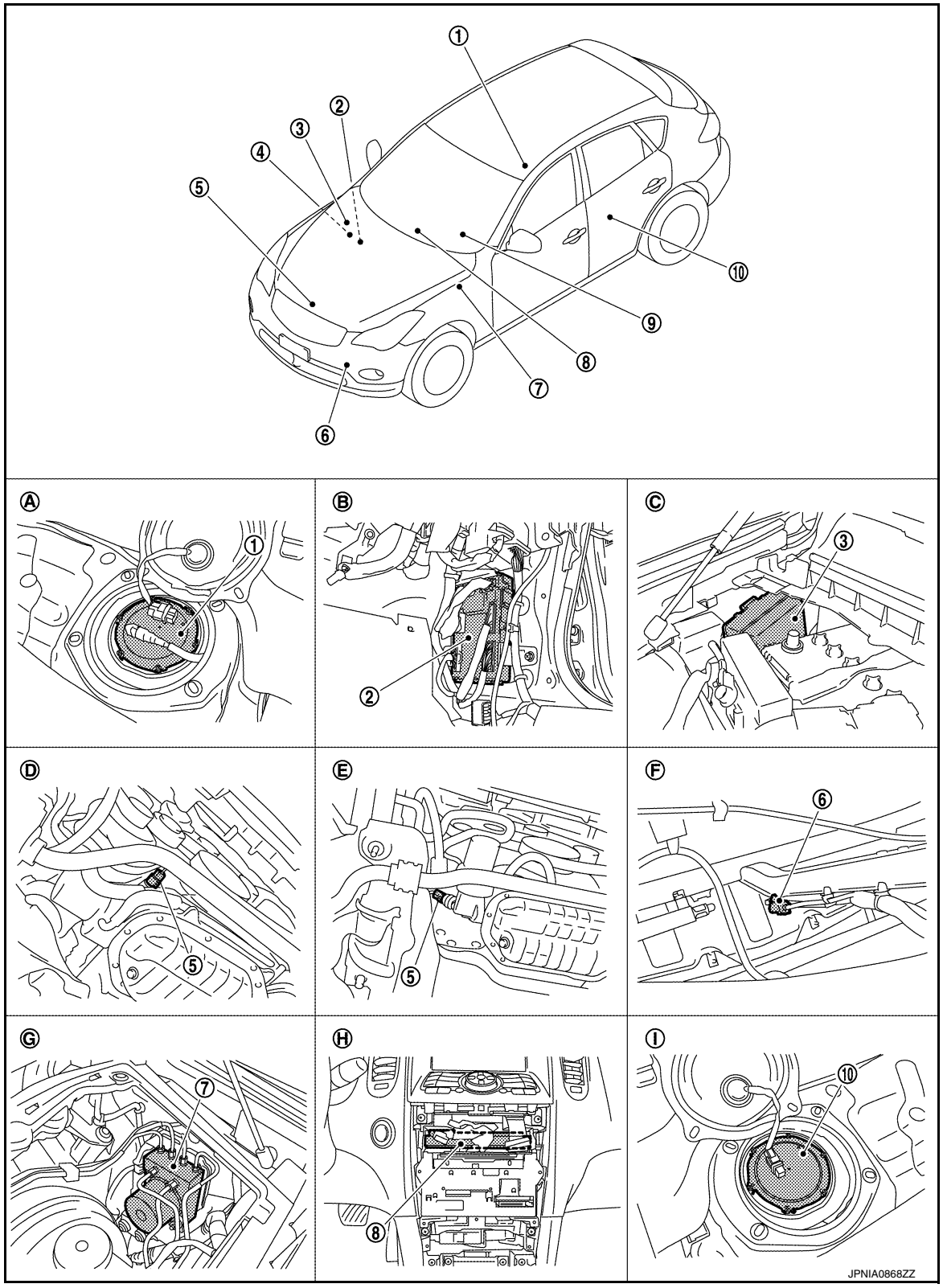
SPEEDOMETER : System Description

INFOID:0000000010597178

- The ABS actuator and electric unit (control unit) converts the pulse signal provided by the wheel sensor to a vehicle speed signal and transmits it to the unified meter and A/C amp. with CAN communication line.
- The unified meter and A/C amp. receives the vehicle speed signal from the ABS actuator and electric unit (control unit) with CAN communication line and transmits it to the combination meter by means of communication line.
- The combination meter indicates the vehicle speed according to the vehicle speed signal received from the unified meter and A/C amp. by means of communication line.

SPEEDOMETER : Component Parts Location

INFOID:0000000010597179



1. Fuel level sensor unit and fuel pump (main)
2. BCM
3. IPDM E/R
4. ECM
   Refer to EC-39, "Component Parts Location".
5. Oil pressure switch
6. Ambient sensor

7.	ABS actuator and electric unit (control unit)	8.	Unified meter and A/C amp.	9.	Combination meter
10.	Fuel level sensor unit (sub)				
A.	Rear seat (inside right)	B.	Dash side finisher (passenger side)	C.	Hoodledge cover (RH)
D.	2WD [oil pan (upper) RH side]	E.	AWD (oil filter bracket part)	F.	Condenser (front)
G.	Hoodledge cover (LH)	H.	Behind cluster lid C	I.	Rear seat (inside left)

SPEEDOMETER : Component Description

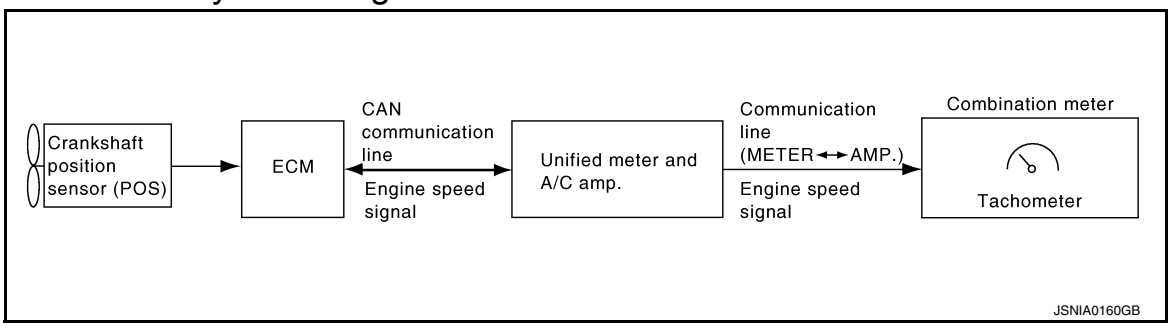
INFOID:0000000010597180

Unit	Description
Combination meter	Indicates the vehicle speed according to the vehicle speed signal received from the unified meter and A/C amp. by means of communication line.
Unified meter and A/C amp.	Transmits the vehicle speed signal received from ABS actuator and electric unit (control unit) with CAN communication line to the combination meter by means of communication line.
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the unified meter and A/C amp. with CAN communication line.

TACHOMETER

TACHOMETER : System Diagram

INFOID:0000000010597181



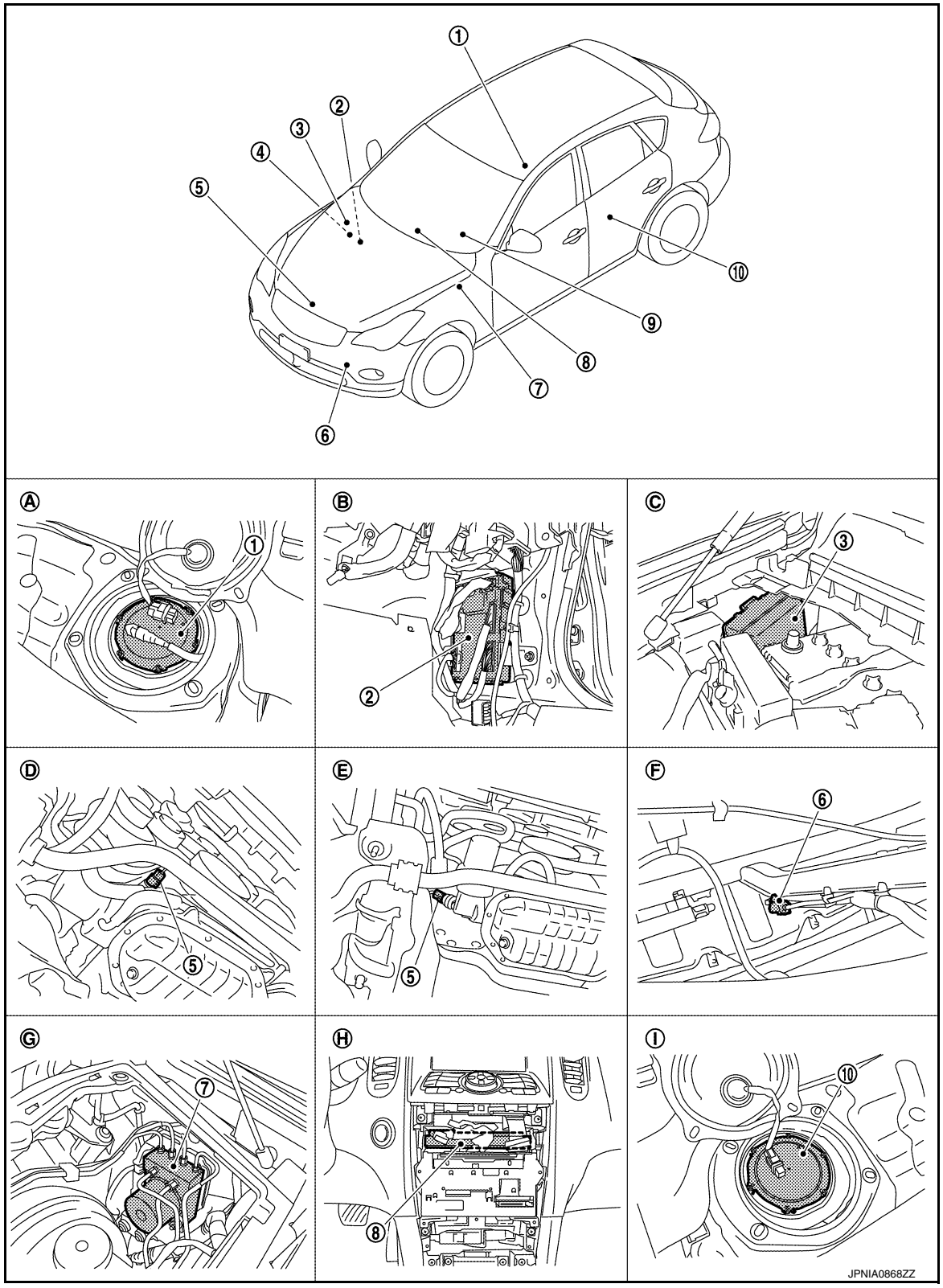
TACHOMETER : System Description

INFOID:0000000010597182

- ECM converts the pulse signal provided by the crankshaft position sensor to an engine speed signal and transmits it to the unified meter and A/C amp. with CAN communication line.
- The unified meter and A/C amp. receives the engine speed signal from ECM with CAN communication line and transmits it to the combination meter by means of communication line.
- Combination meter converses engine speed signal to the angle signal, and commands to tachometer.

TACHOMETER : Component Parts Location

INFOID:0000000010597183



1. Fuel level sensor unit and fuel pump (main)
2. BCM
3. IPDM E/R
4. ECM
   Refer to EC-39, "Component Parts Location".
5. Oil pressure switch
6. Ambient sensor

7.	ABS actuator and electric unit (control unit)	8.	Unified meter and A/C amp.	9.	Combination meter
10.	Fuel level sensor unit (sub)				
A.	Rear seat (inside right)	B.	Dash side finisher (passenger side)	C.	Hoodledge cover (RH)
D.	2WD [oil pan (upper) RH side]	E.	AWD (oil filter bracket part)	F.	Condenser (front)
G.	Hoodledge cover (LH)	H.	Behind cluster lid C	I.	Rear seat (inside left)

TACHOMETER : Component Description

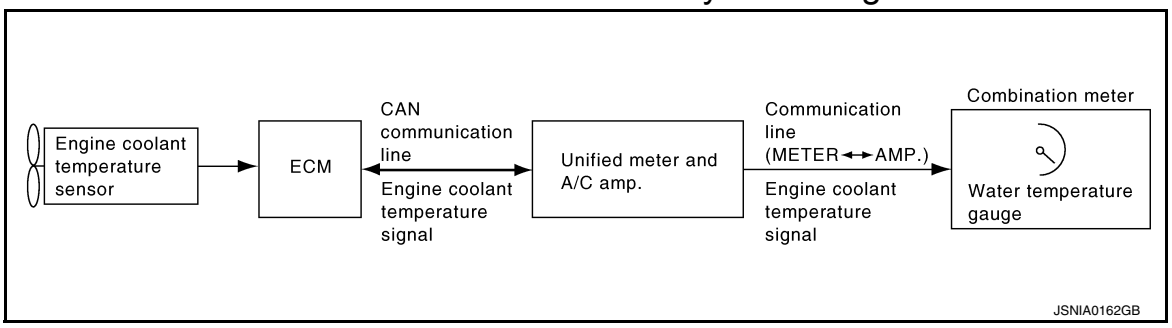
INFOID:0000000010597184

Unit	Description
Combination meter	Indicates the engine speed according to the engine speed signal received from the unified meter and A/C amp. by means of communication line.
Unified meter and A/C amp.	Transmits the engine speed signal received from ECM with CAN communication line to the combination meter by means of communication line.
ECM	Transmits the engine speed signal to the unified meter and A/C amp. with CAN communication line.

ENGINE COOLANT TEMPERATURE GAUGE

ENGINE COOLANT TEMPERATURE GAUGE : System Diagram

INFOID:0000000010597185



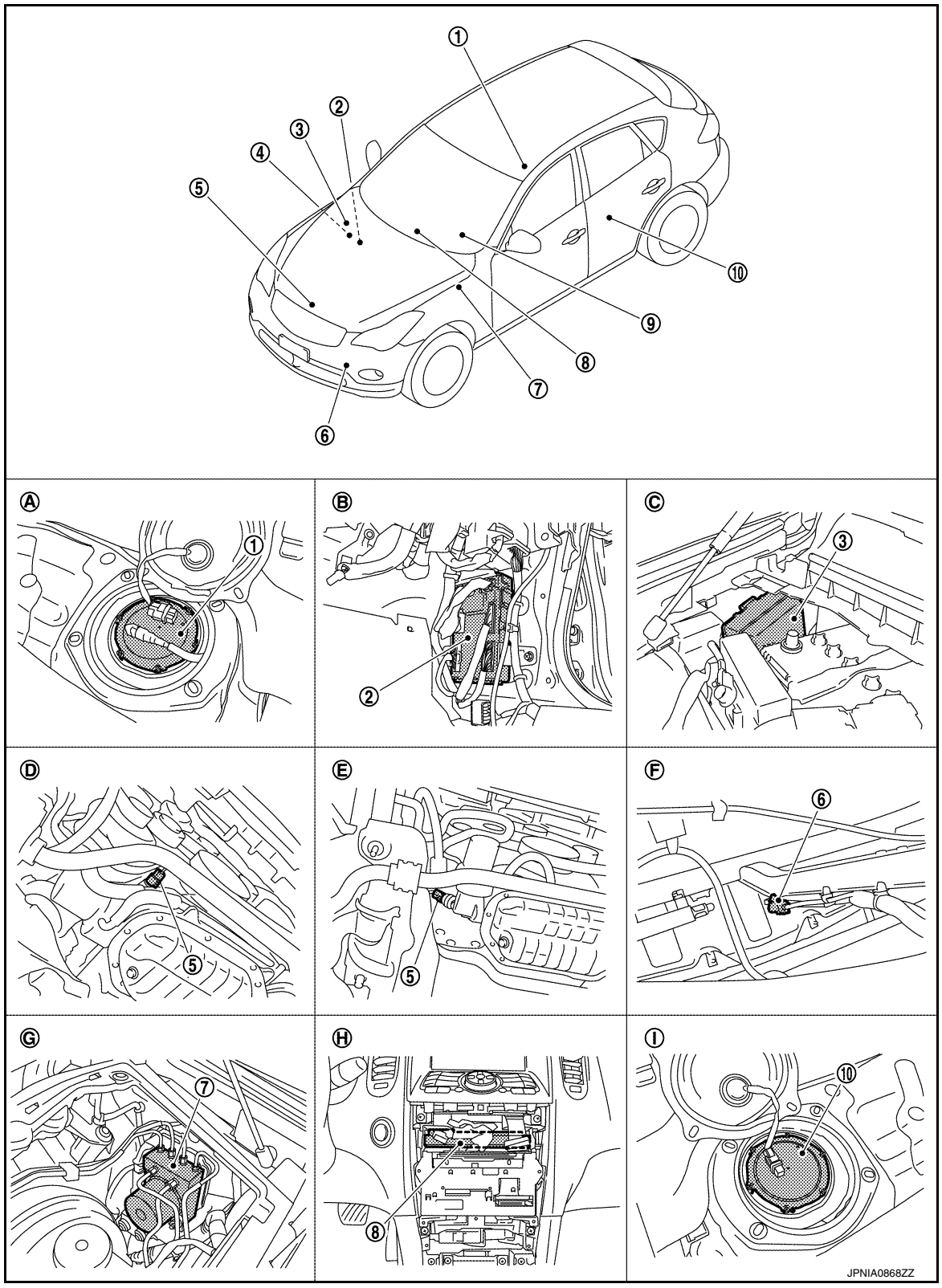
ENGINE COOLANT TEMPERATURE GAUGE : System Description

INFOID:0000000010597186

- ECM converses a signal from engine coolant temperature sensor to engine coolant temperature signal, and transmits to unified meter and A/C amp. with CAN communication line.
- Unified meter and A/C amp. transmits engine coolant temperature signal to combination meter with communication line.
- Combination meter converses engine coolant temperature signal to the angle signal, and commands to engine coolant temperature gauge.

ENGINE COOLANT TEMPERATURE GAUGE : Component Parts Location

INFOID:0000000010597187



1. Fuel level sensor unit and fuel pump (main)
2. BCM
3. IPDM E/R
4. ECM
   Refer to EC-39, "Component Parts Location".
5. Oil pressure switch
6. Ambient sensor

7.	ABS actuator and electric unit (control unit)	8.	Unified meter and A/C amp.	9.	Combination meter
10.	Fuel level sensor unit (sub)				
A.	Rear seat (inside right)	B.	Dash side finisher (passenger side)	C.	Hoodledge cover (RH)
D.	2WD [oil pan (upper) RH side]	E.	AWD (oil filter bracket part)	F.	Condenser (front)
G.	Hoodledge cover (LH)	H.	Behind cluster lid C	I.	Rear seat (inside left)

ENGINE COOLANT TEMPERATURE GAUGE : Component Description

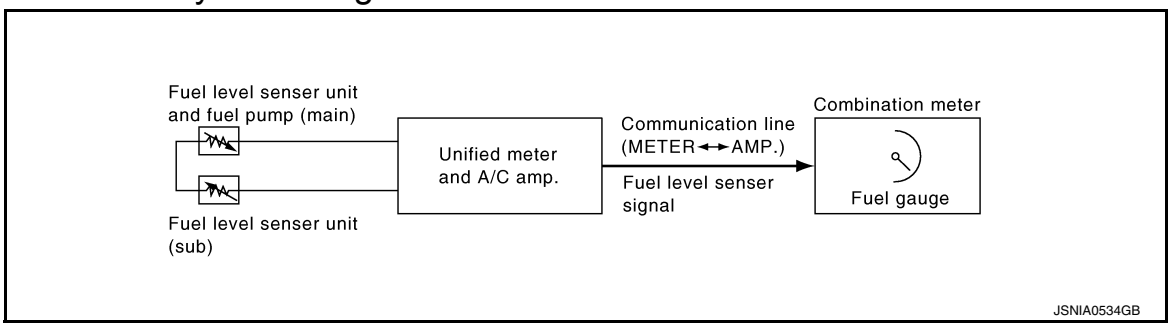
INFOID:0000000010597188

Unit	Description
Combination meter	Indicates the water temperature gauge according to the engine coolant temperature signal received from the unified meter and A/C amp. by means of communication line.
Unified meter and A/C amp.	Transmits the engine coolant temperature signal received from ECM with CAN communication line to the combination meter by means of communication line.
ECM	Transmits the engine coolant temperature signal to the unified meter and A/C amp. with CAN communication line.

FUEL GAUGE

FUEL GAUGE : System Diagram

INFOID:0000000010597189



FUEL GAUGE : System Description

INFOID:0000000010597190

CONTROL OUTLINE

- The unified meter and A/C amp. reads the fuel level sensor signal from the fuel gauge unit and transmits it to the combination meter with the communication line.
- The combination meter indicates the fuel level on the fuel gauge according to the received fuel level sensor signal.

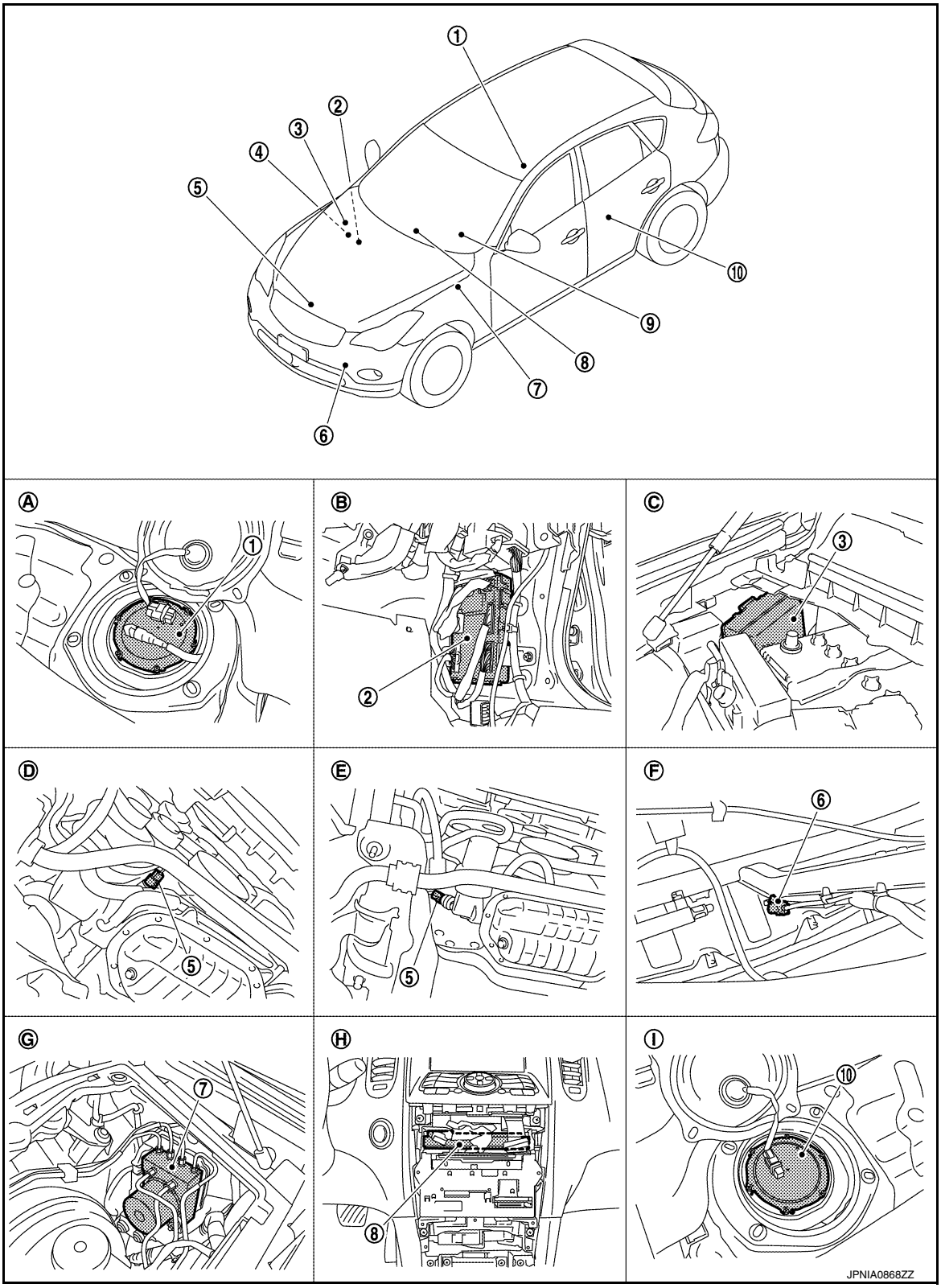
REFUEL CONTROL

The combination meter accelerates the fuel gauge segment if the all conditions listed below are met, or the ignition switch is ON from OFF.

- Ignition switch is ON position
- The vehicle is not moving
- The fuel level change by 15 ℓ (4 US gal, 3-3/10 Imp gal) or more

FUEL GAUGE : Component Parts Location

INFOID:0000000010597191



1. Fuel level sensor unit and fuel pump (main)
2. BCM
3. IPDM E/R
4. ECM
   Refer to EC-39, "Component Parts Location".
5. Oil pressure switch
6. Ambient sensor

7.	ABS actuator and electric unit (control unit)	8.	Unified meter and A/C amp.	9.	Combination meter
10.	Fuel level sensor unit (sub)				
A.	Rear seat (inside right)	B.	Dash side finisher (passenger side)	C.	Hoodledge cover (RH)
D.	2WD [oil pan (upper) RH side]	E.	AWD (oil filter bracket part)	F.	Condenser (front)
G.	Hoodledge cover (LH)	H.	Behind cluster lid C	I.	Rear seat (inside left)

FUEL GAUGE : Component Description

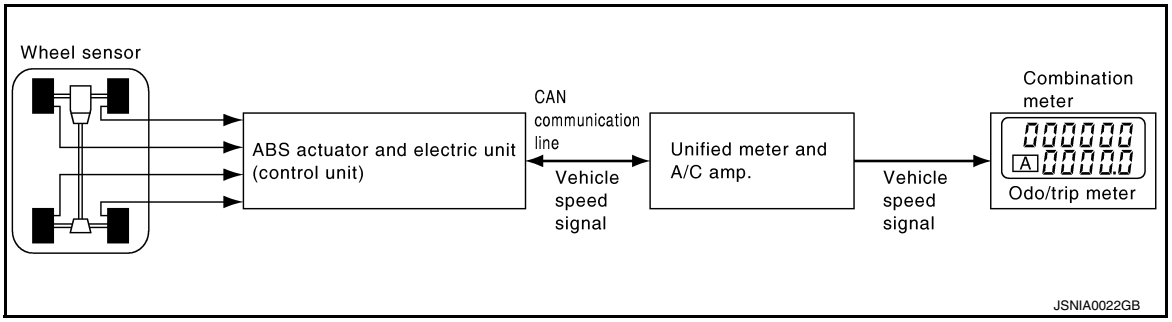
INFOID:0000000010597192

Unit	Description
Combination meter	Indicates the fuel gauge according to the fuel level sensor signal received from the unified meter and A/C amp. by means of communication line.
Unified meter and A/C amp.	Transmits the fuel level sensor signal from the fuel level sensor unit to the combination meter by means of communication line.
Fuel level sensor unit	Refer to MWI-58, "Description".

ODO/TRIP METER

ODO/TRIP METER : System Diagram

INFOID:0000000010597193



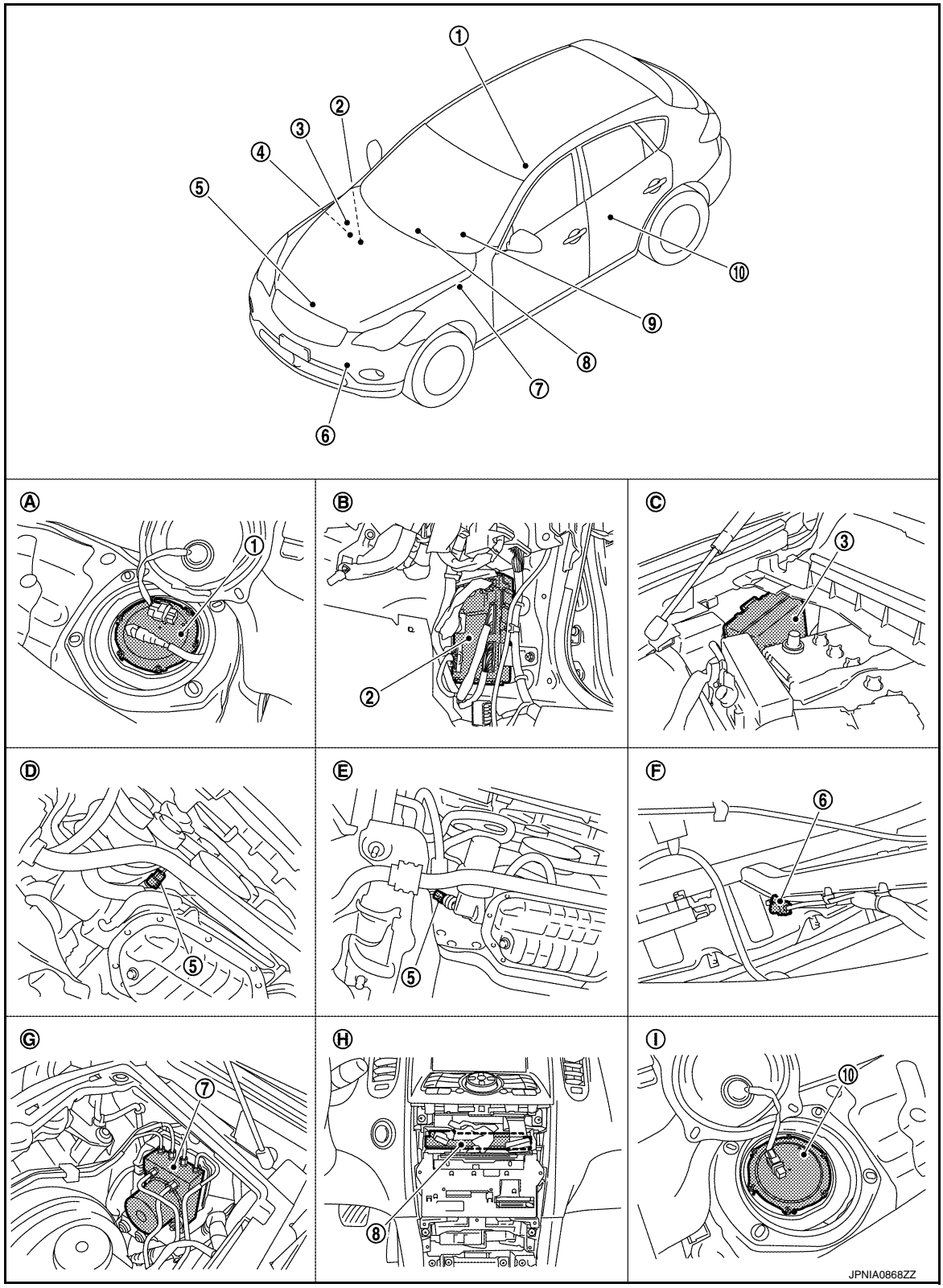
ODO/TRIP METER : System Description

INFOID:0000000010597194

- The unified meter and A/C amp. transmits the vehicle speed signal from ABS actuator and electric unit (control unit) to the combination meter.
- The combination meter calculates the vehicle distance according to the vehicle speed signal. The vehicle distance is displayed.

ODO/TRIP METER : Component Parts Location

INFOID:0000000010597195



1. Fuel level sensor unit and fuel pump (main)
2. BCM
3. IPDM E/R
4. ECM
   Refer to EC-39, "Component Parts Location".
5. Oil pressure switch
6. Ambient sensor

7.	ABS actuator and electric unit (control unit)	8.	Unified meter and A/C amp.	9.	Combination meter
10.	Fuel level sensor unit (sub)				
A.	Rear seat (inside right)	B.	Dash side finisher (passenger side)	C.	Hoodledge cover (RH)
D.	2WD [oil pan (upper) RH side]	E.	AWD (oil filter bracket part)	F.	Condenser (front)
G.	Hoodledge cover (LH)	H.	Behind cluster lid C	I.	Rear seat (inside left)

ODO/TRIP METER : Component Description

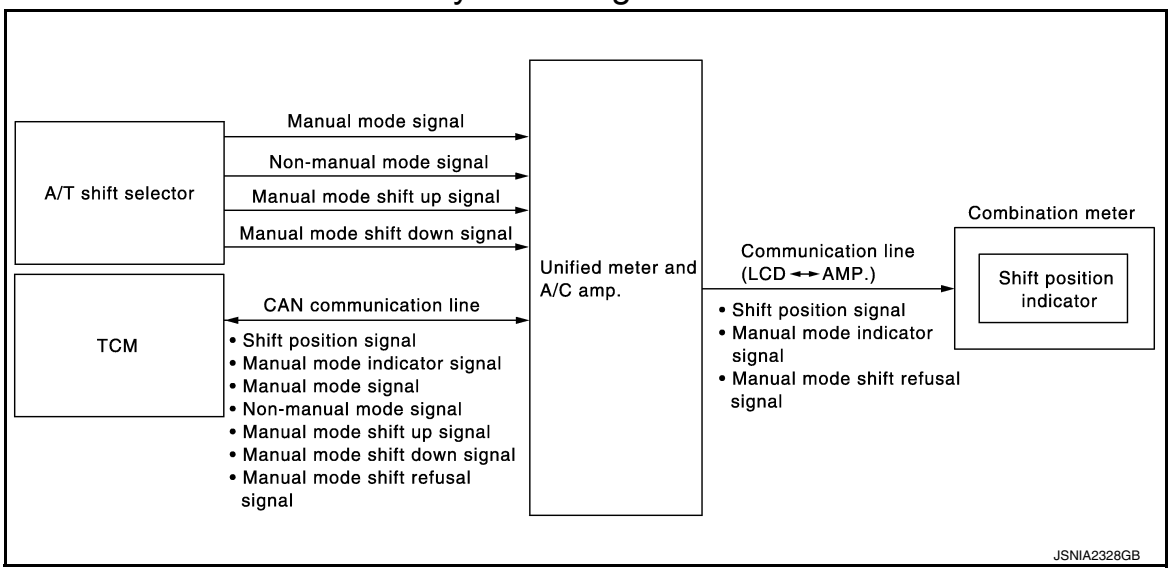
INFOID:0000000010597196

Unit	Description
Combination meter	The combination meter calculates the vehicle distance according to the vehicle speed signal. The vehicle distance is displayed.
Unified meter and A/C amp.	The unified meter and A/C amp. transmits the vehicle speed signal from ABS actuator and electric unit (control unit) to the combination meter.
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the unified meter and A/C amp. with CAN communication line.

SHIFT POSITION INDICATOR

SHIFT POSITION INDICATOR : System Diagram

INFOID:0000000010597197



SHIFT POSITION INDICATOR : System Description

INFOID:0000000010597198

Shift position is displayed in the information display LCD in the combination meter.

MANUAL MODE

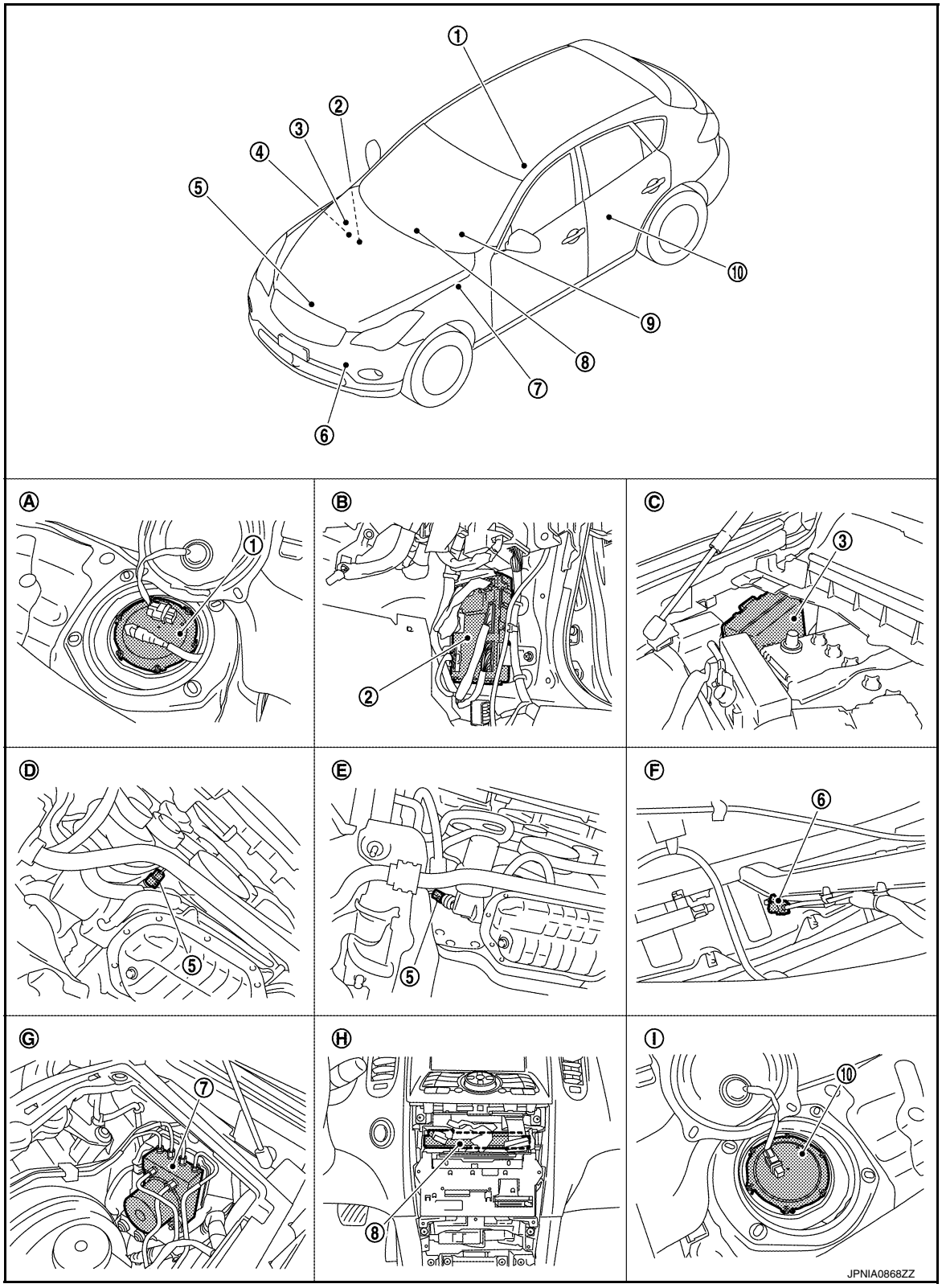
- Unified meter and A/C amp. inputs manual mode signal and shift-up/down signal from A/T shift selector (manual mode switch), and transmits the signals to TCM with CAN communication line.
- TCM processes manual mode signal and shift-up/down signal, and transmits manual mode indicator signal and shift position signal to unified meter and A/C amp. with CAN communication line.
- Unified meter and A/C amp. transmits manual mode indicator signal and shift position signal to combination meter with the communication line.
- Combination meter indicates A/T gear position and manual mode indicator, when receiving manual mode indicator signal and shift position signal.
- TCM transmits a manual mode shift refusal signal to the unified meter and A/C amp. via CAN communication line when gear shifting cannot be performed in manual mode.
- The unified meter and A/C amp. transmits a manual mode shift refusal signal to the combination meter via communication line.
- The combination meter blinks the shift position indicator and sounds a buzzer when receiving a manual mode shift refusal signal.

NON-MANUAL MODE

- Unified meter and A/C amp. inputs non-manual mode signal from A/T shift selector (manual mode switch), and transmits the signals to TCM with CAN communication line.
- TCM transmits shift position signal to unified meter and A/C amp. with CAN communication line.
- Unified meter and A/C amp. transmits shift position signal to combination meter with the communication line.
- Combination meter indicates A/T shift position when receiving shift position signal.

SHIFT POSITION INDICATOR : Component Parts Location

INFOID:0000000010597199



1. Fuel level sensor unit and fuel pump (main)
2. BCM
3. IPDM E/R
4. ECM
   Refer to EC-39, "Component Parts Location".
5. Oil pressure switch
6. Ambient sensor

7.	ABS actuator and electric unit (control unit)	8.	Unified meter and A/C amp.	9.	Combination meter
10.	Fuel level sensor unit (sub)				
A.	Rear seat (inside right)	B.	Dash side finisher (passenger side)	C.	Hoodledge cover (RH)
D.	2WD [oil pan (upper) RH side]	E.	AWD (oil filter bracket part)	F.	Condenser (front)
G.	Hoodledge cover (LH)	H.	Behind cluster lid C	I.	Rear seat (inside left)

SHIFT POSITION INDICATOR : Component Description

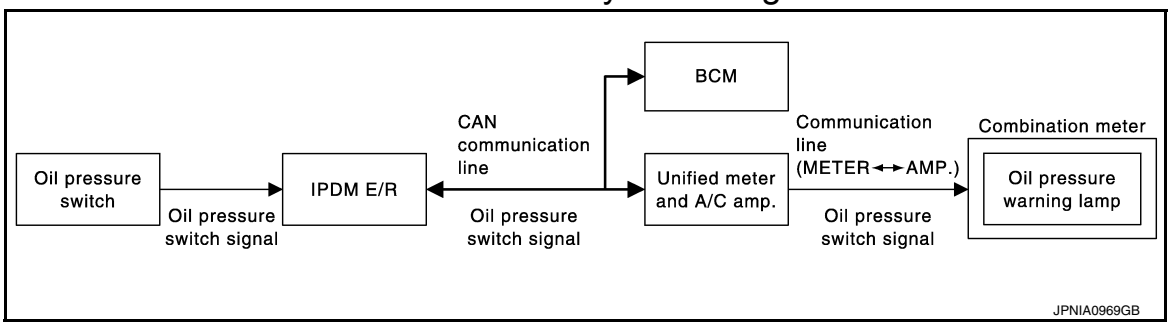
INFOID:0000000010597200

Unit	Description
Combination meter	Displays the shift position on the information display with shift position signal and manual mode indicator signal received from unified meter and A/C amp.
Unified meter and A/C amp.	• Transmits the signals from the A/T shift selector to TCM with CAN communication line. • Transmits shift position signal and manual mode indicator signal received from TCM with CAN communication line to the combination meter by means of communication line.
A/T shift selector	Transmits the following signals to the unified meter and A/C amp. • Manual mode signal • Non-manual mode signal • Manual mode shift up signal • Manual mode shift down signal
TCM	Transmits shift position signal, manual mode indicator signal and manual mode shift refusal signal to the unified meter and A/C amp.

WARNING LAMPS/INDICATOR LAMPS

WARNING LAMPS/INDICATOR LAMPS : System Diagram

INFOID:0000000010597201



WARNING LAMPS/INDICATOR LAMPS : System Description

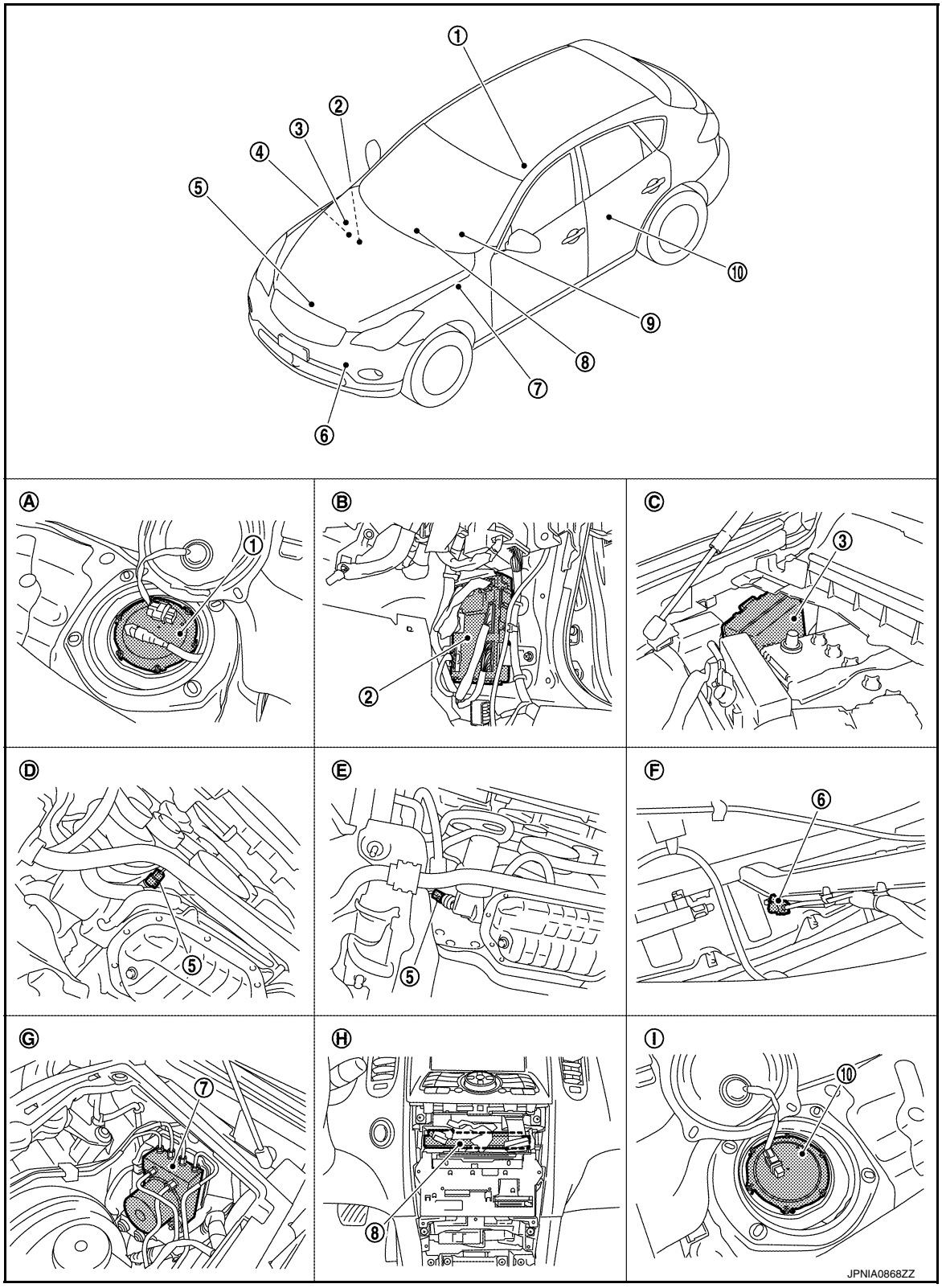
INFOID:0000000010597202

OIL PRESSURE WARNING LAMP

- IPDM E/R inputs oil pressure switch signal from oil pressure switch, and transmits the signal to unified meter and A/C amp. through BCM with CAN communication line.
- Unified meter and A/C amp. transmits oil pressure switch signal to combination meter with communication line.
- Let the combination meter turn oil pressure warning lamp ON with received oil pressure switch signal.

WARNING LAMPS/INDICATOR LAMPS : Component Parts Location

INFOID:0000000010597203



1. Fuel level sensor unit and fuel pump (main)
2. BCM
3. IPDM E/R
4. ECM
   Refer to EC-39, "Component Parts Location".
5. Oil pressure switch
6. Ambient sensor

7.	ABS actuator and electric unit (control unit)	8.	Unified meter and A/C amp.	9.	Combination meter
10.	Fuel level sensor unit (sub)				
A.	Rear seat (inside right)	B.	Dash side finisher (passenger side)	C.	Hoodledge cover (RH)
D.	2WD [oil pan (upper) RH side]	E.	AWD (oil filter bracket part)	F.	Condenser (front)
G.	Hoodledge cover (LH)	H.	Behind cluster lid C	I.	Rear seat (inside left)

WARNING LAMPS/INDICATOR LAMPS : Component Description

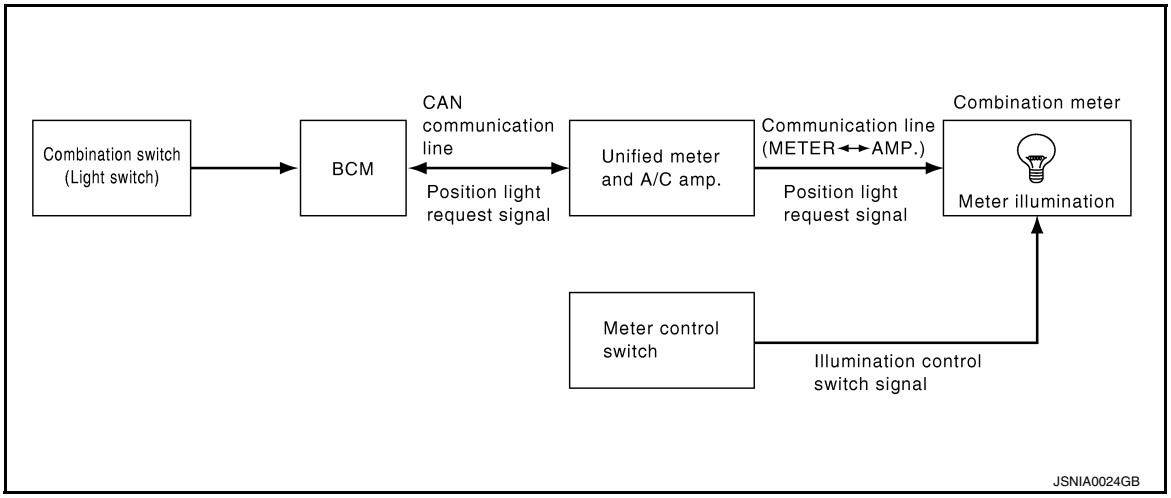
INFOID:0000000010597204

Unit	Description
Combination meter	Turns the oil pressure warning lamp ON/OFF according to the oil pressure switch signal received from the unified meter and A/C amp. by means of communication line.
Unified meter and A/C amp.	Transmits the oil pressure switch signal received from the IPDM E/R with BCM to the combination meter by means of communication line.
IPDM E/R	IPDM E/R reads the ON/OFF signals from the oil pressure switch and transmits the oil pressure switch signal to the unified meter and A/C amp. via BCM with the CAN communication line.
Oil pressure switch	Refer to MWI-66, "Description".
BCM	Transmits the oil pressure switch signal received from IPDM E/R via CAN communication to the unified meter and A/C amp. via CAN communication line.

METER ILLUMINATION CONTROL

METER ILLUMINATION CONTROL : System Diagram

INFOID:0000000010597205



METER ILLUMINATION CONTROL : System Description

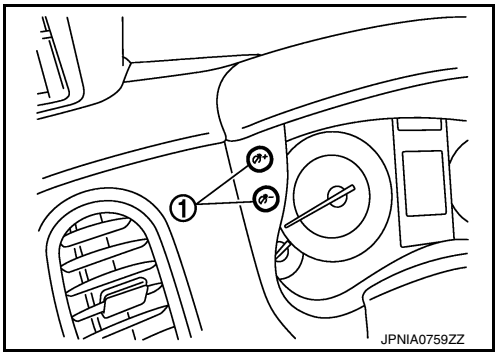
INFOID:0000000010597206

SYSTEM DESCRIPTION

The combination meter controls the meter illumination by the illumination control switch signal from the meter control switch and the position light request signal transmitted by BCM with unified meter and A/C amp.

Daytime Mode

Meter illumination is adjusted to 5 steps by illumination control switch (1) in daytime mode.

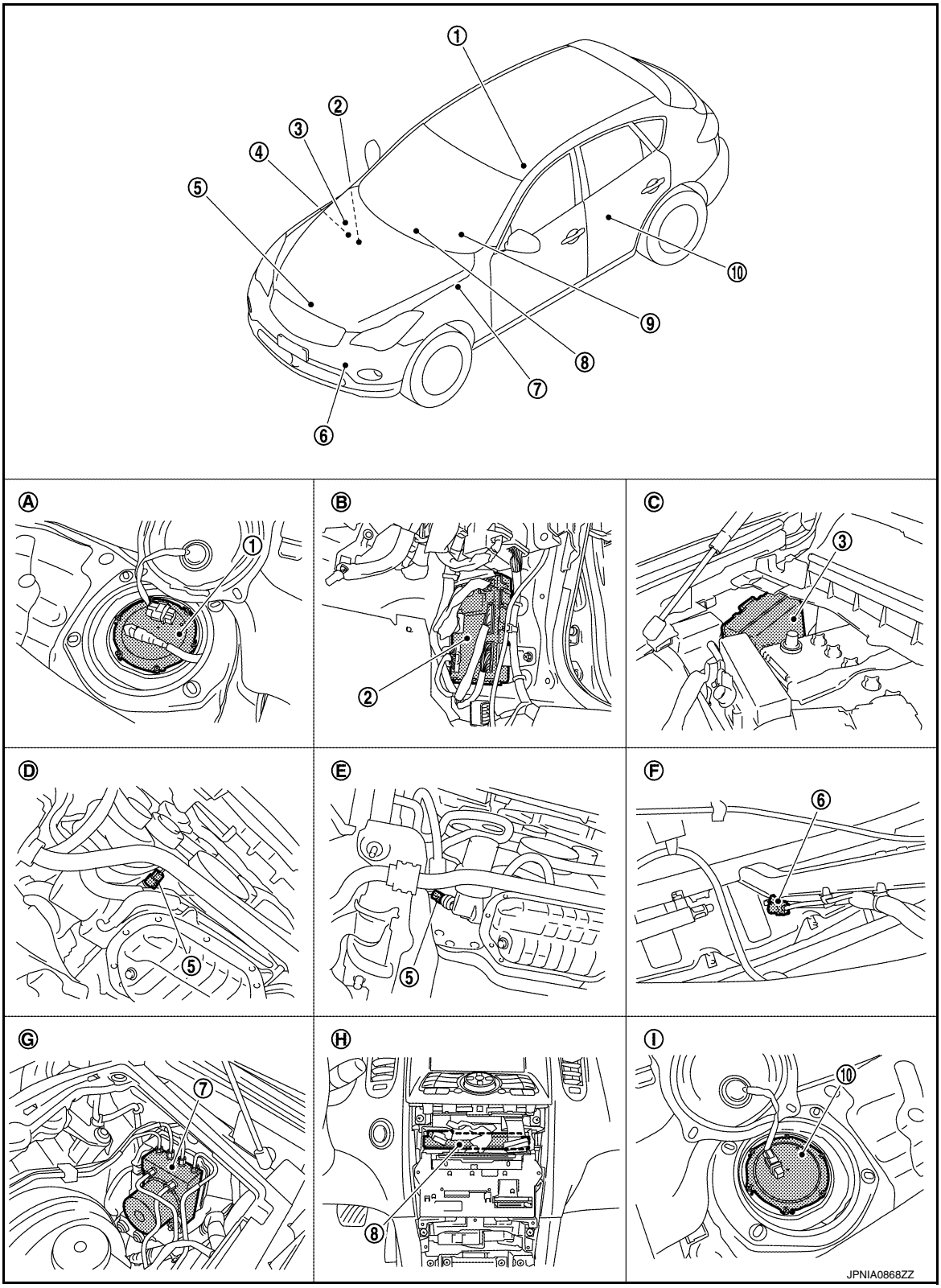


Nighttime Mode

- Combination meter is transferred to nighttime mode with position light request signal from BCM with CAN communication line.
- Meter illumination is adjusted to 22 steps by illumination control switch in nighttime.

METER ILLUMINATION CONTROL : Component Parts Location

INFOID:0000000010597207



1. Fuel level sensor unit and fuel pump (main)
2. BCM
3. IPDM E/R
4. ECM
   Refer to EC-39, "Component Parts Location".
5. Oil pressure switch
6. Ambient sensor

7.	ABS actuator and electric unit (control unit)	8.	Unified meter and A/C amp.	9.	Combination meter
10.	Fuel level sensor unit (sub)				
A.	Rear seat (inside right)	B.	Dash side finisher (passenger side)	C.	Hoodledge cover (RH)
D.	2WD [oil pan (upper) RH side]	E.	AWD (oil filter bracket part)	F.	Condenser (front)
G.	Hoodledge cover (LH)	H.	Behind cluster lid C	I.	Rear seat (inside left)

METER ILLUMINATION CONTROL : Component Description

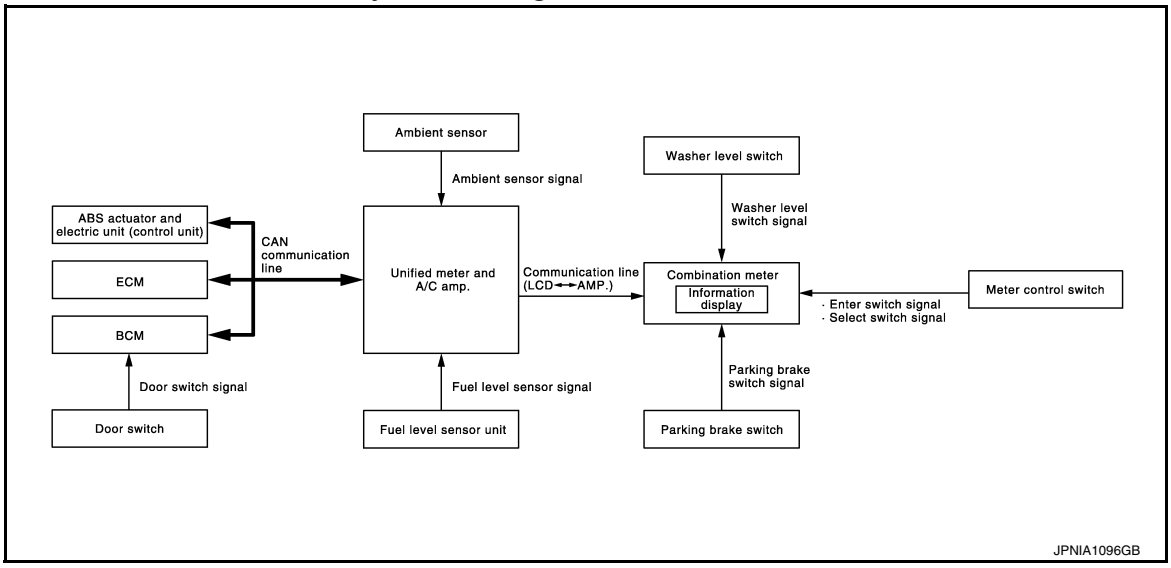
INFOID:0000000010597208

Unit	Description
Combination meter	Controls the meter illumination with the illumination control switch signal from the meter control switch and the position light request signal from unified meter and A/C amp.
Unified meter and A/C amp.	Transmits the position light request signal received from BCM via CAN communication to the combination meter by means of communication.
Meter control switch	Transmits the following signals to the combination meter. • Illumination control switch signal (+) • Illumination control switch signal (–)

INFORMATION DISPLAY

INFORMATION DISPLAY : System Diagram

INFOID:0000000010597209



INFORMATION DISPLAY : System Description

INFOID:0000000010597210

DESCRIPTION

- The combination meter retrieves the information required for controlling the operations of the information display from the communication signals from the unified meter and A/C amp., etc.
- The combination meter incorporates a trip computer that displays the warning / information according to the information received from various units.

PARKING BRAKE RELEASE WARNING

The combination meter indicates parking brake release warning judged with the vehicle speed signal received from the unified meter and A/C amp. by means of communication line and the parking brake switch signal from the parking brake switch.

Warning Operation Condition

Parking brake release warning is judged if all of the following conditions are fulfilled

- Vehicle speed is 7 km/h (4.3 MPH) or higher
- Parking brake switch ON

LOW FUEL WARNING

The combination meter indicates low fuel warning judged with the fuel level sensor signal received from the unified meter and A/C amp.

Warning Operation Condition

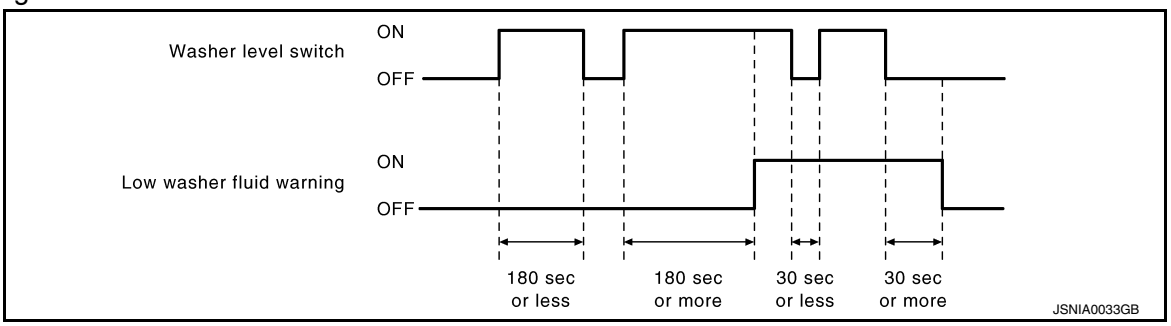
- Fuel level: Approx. 14 ℓ (3-3/4 US gal, 3-1/8 Imp gal) or less

LOW WASHER FLUID WARNING

The combination meter indicates low washer fluid warning judged with the signal from the washer level switch.

Warning Operation Condition

- Indicates the warning when it is in washer level switch ON condition for 180 seconds or more. Release the warning when it is in washer level switch OFF condition for 30 seconds or more.



LOW TIRE PRESSURE WARNING

- The unified meter and A/C amp. receives remaining low tire pressure warning lamp signal from the BCM with CAN communication line.
- The unified meter and A/C amp. transmits remaining low tire pressure warning lamp signal to the combination meter with communication line.
- The combination meter indicates low tire pressure warning when receiving remaining low tire pressure warning lamp signal.
- The combination meter indicates low tire pressure warning judged with the low tire pressure warning lamp signal received from the unified meter and A/C amp.

For details, refer to WT-8, "TIRE PRESSURE MONITORING SYSTEM : System Description".

FUEL FILLER CAP WARNING

- The unified meter and A/C amp. receives remaining fuel filler cap warning display signal from the ECM with CAN communication line.
- The unified meter and A/C amp. transmits remaining fuel filler cap warning display signal to the combination meter with communication line.
- The combination meter indicates fuel filler cap warning when receiving remaining fuel filler cap warning display signal.
- The combination meter indicates fuel filler cap warning judged with the fuel filler cap warning display signal received from the unified meter and A/C amp.

For details, refer to EC-108, "System Description".

DOOR OPEN WARNING

The combination meter indicates door open warning judged with each door switch signal received from the unified meter and A/C amp. by means of communication line.

INSTANTANEOUS FUEL CONSUMPTION

- The unified meter and A/C amp. receives the fuel consumption monitor signal from ECM and the vehicle speed signal from the ABS actuator and electric unit (control unit) with CAN communication line.
- The unified meter and A/C amp. calculates the instantaneous fuel consumption according to the fuel consumption monitor signal and the vehicle speed signal received with CAN communication line, and transmits it to the combination meter.

AVERAGE FUEL CONSUMPTION

- The unified meter and A/C amp. receives the fuel consumption monitor signal from ECM and the vehicle speed signal from the ABS actuator and electric unit (control unit) with CAN communication line.
- The unified meter and A/C amp. calculates the average fuel consumption according to the fuel consumption monitor signal and the vehicle speed signal received with CAN communication line, and transmits it to the combination meter.
- The average fuel consumption displayed on the information display is uploaded at approximately 30-second intervals.

NOTE:
When turning ON the ignition switch after triggering a reset or removing/installing the battery, "–––" is indicated until 30 seconds/500 m (0.31 miles) of driving.

AVERAGE VEHICLE SPEED

- The unified meter and A/C amp. receives the vehicle speed signal from the ABS actuator and electric unit (control unit) via CAN communication line.
- Measures the time during the ignition switch ON with the unified meter and A/C amp.
- The unified meter and A/C amp. calculates the average vehicle speed according to the above signals. These signals are transmitted to the combination meter with the communication line.
- The average vehicle speed displayed on the information display is uploaded at approximately 30-second intervals.

NOTE:
When turning ON the ignition switch after triggering a reset or removing/installing the battery, "–––" is indicated until 30 seconds/500 m (0.31 miles) of driving.

TRAVEL TIME

Measures the time during the ignition switch ON with the unified meter and A/C amp, and transmits it to the combination meter by means of communication line.

TRAVEL DISTANCE

- The unified meter and A/C amp. transmits the vehicle speed signal from ABS actuator and electric unit (control unit) to the combination meter.
- The combination meter calculates the vehicle distance according to the vehicle speed signal. The vehicle distance is displayed.

POSSIBLE DRIVING DISTANCE

The unified meter and A/C amp. calculates possible driving distance according to the vehicle speed signal and fuel consumption monitor signal transmitted via CAN communication and the fuel level sensor signal transmitted from the fuel level sensor. These signals are transmitted to the combination meter with the communication line.

NOTE:
- When turning ON the ignition switch after removing/installing the battery, "–––" is indicated until 30 seconds.
- "–––" is displayed for 30 seconds after the ignition switch is OFF → ON. It is displayed simultaneously until the vehicle drives approximately 500 m (0.31 mile).
- The indicated values may not match each other when filling the fuel with the ignition switch ON. Refer to MWI-133, "INFORMATION DISPLAY : Description".

AMBIENT AIR TEMPERATURE

- The unified meter and A/C amp. receives the ambient sensor signal from the ambient sensor.
- The unified meter and A/C amp. calculates the ambient temperature according to the ambient sensor signal, and transmits it to the combination meter.
- The indicated temperature does not increase if the vehicle speed is less than 20 km/h (12 MPH).

NOTE:
- The ambient sensor input value that is displayed on "Data Monitor" of CONSULT is the value before the correction. It may not match the indicated temperature on the information display.
- Ambient temperature may be indicated higher than an actual temperature, depending on heat in the engine, a road surface temperature, and so on.

SETTING

Setting item list

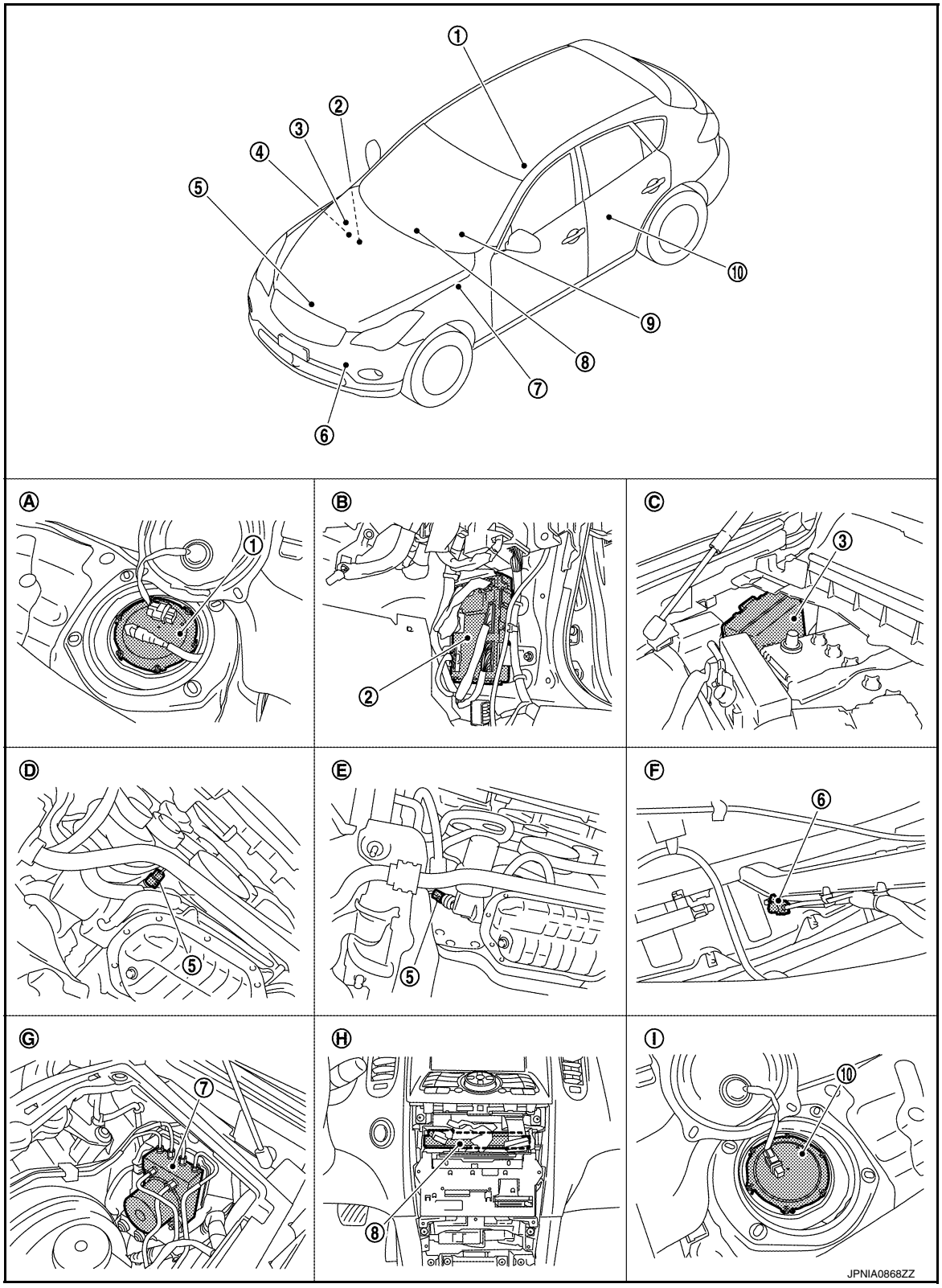
Items		Setting range	Setting unit	Description
ALERT	TIME TO REST	No setting - 6 hours	30 minutes, [60 minutes]*	Time to rest is displayed on the information display if the vehicle reached the set travel distance.
	ICY	ON/OFF	—	Low outside temp is displayed on the information display if the ambient temperature is 3°C (37°F) or less.

Items		Setting range	Setting unit	Description
MAINTENANCE	ENGINE OIL	No setting - 18,500 miles, (No setting - 30,000 km)	250 miles (500 km), [500 miles (1000 km)]*	The engine oil replacement interval is displayed on the information display if the vehicle reached the set distance.
	OIL FILTER	No setting - 18,500 miles, (No setting - 30,000 km)	250 miles (500 km), [500 miles (1000 km)]*	The oil filter replacement interval is displayed on the information display if the vehicle reached the set distance.
	TIRE	No setting - 18,500 miles, (No setting - 30,000 km)	250 miles (500 km), [500 miles (1000 km)]*	The tire replacement interval is displayed on the information display if the vehicle reached the set distance.
	OTHER	No setting - 18,500 miles, (No setting - 30,000 km)	250 miles (500 km), [500 miles (1000 km)]*	The other replacement interval is displayed on the information display if the vehicle reached the set distance.
DISPLAY	LANGUAGE	ENGLISH/FRANCAIS	—	Changing the language setting can be performed.
	UNIT	US/METRIC	—	Changing the unit setting can be performed.

*: Press and hold the switch (1 second or more).

INFORMATION DISPLAY : Component Parts Location

INFOID:0000000010597211



1. Fuel level sensor unit and fuel pump (main)
2. BCM
3. IPDM E/R
4. ECM
   Refer to EC-39, "Component Parts Location".
5. Oil pressure switch
6. Ambient sensor

7.	ABS actuator and electric unit (control unit)	8.	Unified meter and A/C amp.	9.	Combination meter
10.	Fuel level sensor unit (sub)				
A.	Rear seat (inside right)	B.	Dash side finisher (passenger side)	C.	Hoodledge cover (RH)
D.	2WD [oil pan (upper) RH side]	E.	AWD (oil filter bracket part)	F.	Condenser (front)
G.	Hoodledge cover (LH)	H.	Behind cluster lid C	I.	Rear seat (inside left)

INFORMATION DISPLAY : Component Description

INFOID:0000000010597212

Unit	Description
Combination meter	Controls the information display with the signals received from the unified meter and A/C amp. by means of communication and the signals from various switches and sensors.
Unified meter and A/C amp.	Transmits signals received from various units to the combination meter by means of communication.
Fuel level sensor unit	Refer to MWI-58, "Description".
ECM	Transmits the following signals to the unified meter and A/C amp. via CAN communication. • Engine speed signal • Fuel consumption monitor signal • Fuel filler cap warning display signal
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the unified meter and A/C amp. via CAN communication.
BCM	Transmits signals provided by various units to the unified meter and A/C amp. via CAN communication.
Meter control switch	Transmits the following signals to the combination meter. • Enter switch signal • Select switch signal
Washer level switch	Transmits the washer level signal to the combination meter.
Parking brake switch	Refer to MWI-67, "Description".
Door switch	Transmits the door switch signals to BCM.
Ambient sensor	Detects the ambient air temperature and transmits the ambient sensor signal to the unified meter and A/C amp.

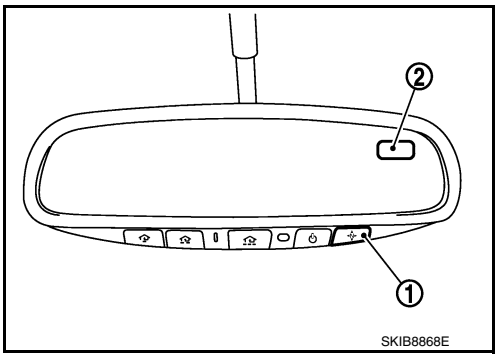
COMPASS

Description

INFOID:0000000010597213

DESCRIPTION

- This electronic compass is able to display 8 primary directions: N, NE, E, SE, S, SW, W, NW.
- The compass switch (1) is used to operate the compass.



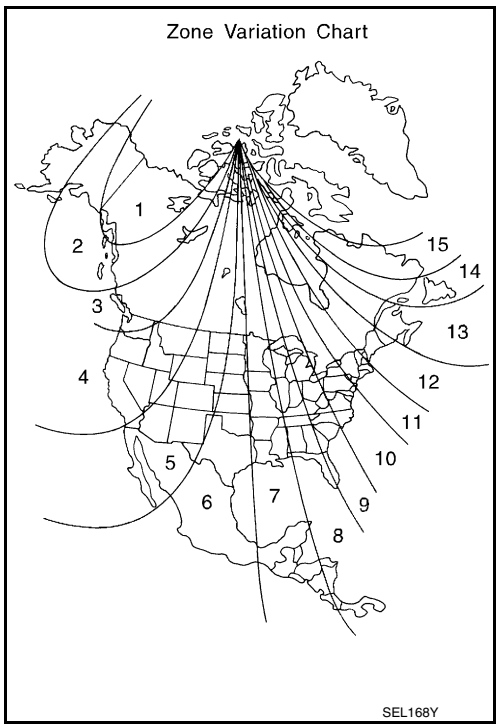
Switch Operation

Press	Compass is turned ON/OFF
Press and hold (for 3- 9 sec.)	Compass display (2) turns to zone variation change mode
Press and hold (for more than 9 sec.)	Compass display turns to calibration mode

- All standard compasses determine direction relative to magnetic north; however, this electronic compass is designed to display direction relative to true north.
- The difference between magnetic north and true north varies from place to place across the surface of the earth.
- This electronic compass must be “told” approximately where it is on the earth’s surface so that the magnetic north reading can be properly converted into a true north display.
- To tell the electronic compass where it’s at, the earth is separated into numbered “Zone Variances”. The zone variance number in which the compass is to function must be entered into this electronic compass.
- Each zone is magnetically about 4.2° wide. Typically, anything under 22.5° total zone change is not noticed on the electronic compass display. However, over 22.5°, a reading may be off by one or more primary directions.
- On long trips, a vehicle may leave its original zone and enter one or more new zones. Generally, you do not need to reset the compass zone if you travel between 3 or 4 zones, such as business travel or vacation. The typical driver will not notice any difference on the display within 3 or 4 zones. However, if the vehicle is “permanently” moved to a new location, it is recommended that the compass zone be reset.

ZONE VARIATION SETTING PROCEDURE

1. Press and hold the compass switch for 3 – 9 seconds.
2. The current zone setting appears on the compass display.
3. Find the current geographical location number in the zone variation chart.
4. Select the new zone number. (Press the compass switch until the new zone number appears on the compass display.)
5. After select the new zone number, the compass display will automatically shows a direction within a few seconds.
6. Perform the following calibration procedure for more accurate indications.



CALIBRATION PROCEDURE

NOTE:
The compass calibrates itself under normal driving conditions. However, occasional circumstances may cause the compass to operate inaccurately. Example: Driving from rural (wide open) areas to crowded city areas, or if an aftermarket (i.e., non original equipment) antenna with a magnetic base is attached to the vehicle. Calibrate the mirror compass if the display shows only one direction or a limited number of directions.

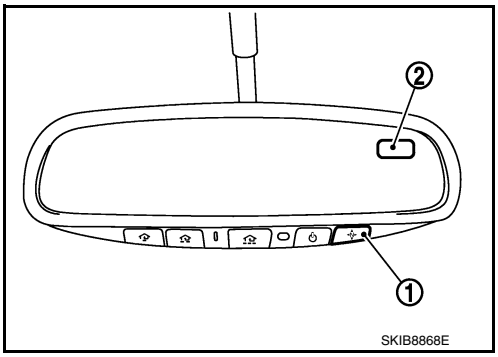
NOTE:
- If “magnetic hats” are used in the dealership for vehicle identification, remove the hat from the vehicle before performing the following steps. Do not put the hat back on the vehicle after the procedure is completed.
- Drive the vehicle to an open level area; away from large metallic objects, structures, and overhead power lines.
- Turn off “non-essential” electrical accessories (rear window defrost, heater/air conditioning, wipers) and close the doors.

1. Verify the correct compass zone setting for the geographical location.
2. Press and hold the compass switch for more than 9 seconds.
3. “C” is displayed on the compass display, when calibration starts.
4. Drive slowly [less than 8 km/h (5 MPH)] in a circle until the “C / CAL” is replaced with primary headings (N, NE, E, SE, S, SW, W, or NW).
   NOTE:
   This will require driving at least 2 complete 360 degree circles; 3 complete circles may be required.
5. The compass calibration procedure is now complete. The compass should operate normally.
   NOTE:
   If at any time the compass continually displays the incorrect direction or the reading is erratic or locked, repeat the calibration procedure.

Component Parts Location

INFOID:0000000010597214

1 : Compass switch
2 : Compass display



Special Repair Requirement

INFOID:0000000010597215

1.PERFORM ZONE VARIATION SETTING

Perform the zone variation setting. Refer to MWI-36, "Description".

>> GO TO 2.

2.PERFORM CALIBRATION

Perform the calibration. Refer to MWI-36, "Description".

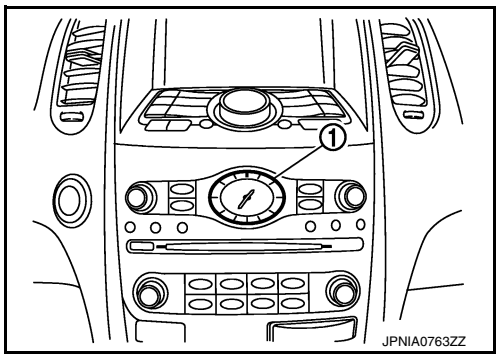
>> Setting completion

CLOCK

Component Parts Location

INFOID:0000000010597216

1 : Clock



DIAGNOSIS SYSTEM (METER)

Diagnosis Description

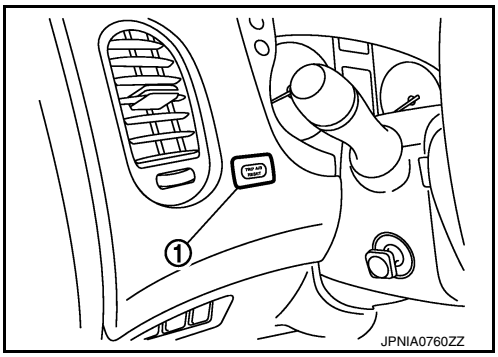
INFOID:0000000010597217

SELF-DIAGNOSIS MODE

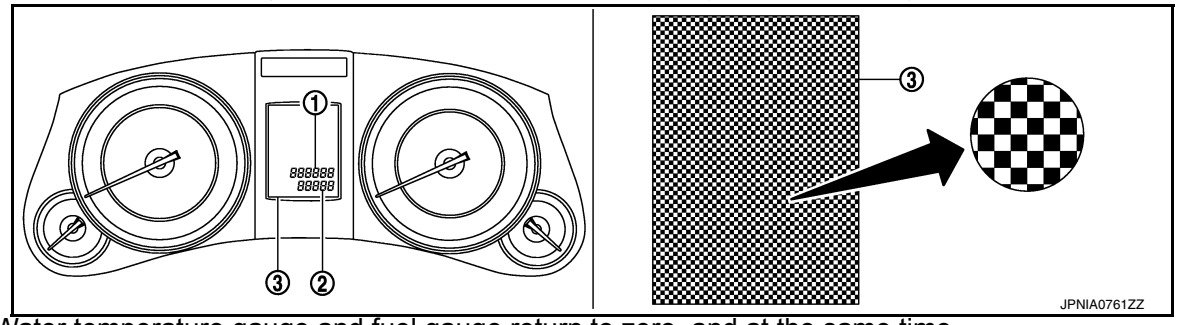
- Information display LCD segment operation can be checked in self-diagnosis mode.
- Meters/gauges can be checked in self-diagnosis mode.

OPERATION PROCEDURE

1. Turn ignition switch ON, and switch the trip meter to “trip A” or “trip B”.
   NOTE:
   If the diagnosis function is activated with “trip A” displayed, the mileage on “trip A” is reset to “0000.0”. (The same way for “trip B”.)
2. Turn ignition switch OFF.
3. While pressing the trip A/B reset switch (1), turn ignition switch ON again.
4. Make sure that the trip meter displays “0000.0”.
5. Press the trip A/B reset switch at least 3 times. (Within 7 seconds after the ignition switch is turned ON.)



6. The unified meter control unit is turned to self-diagnosis mode.
   - Displays "888888" (1) and "8888.8" (2) in the information display LCD (3) for approximately 5 seconds and then blinks the segment dots of the information display LCD alternately.

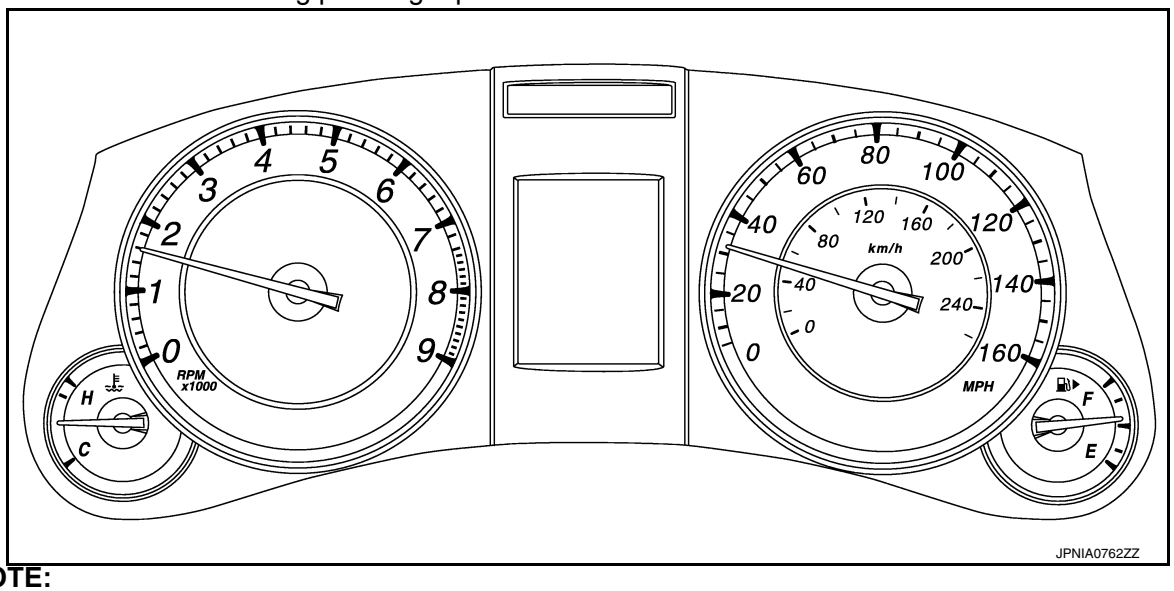


   - Water temperature gauge and fuel gauge return to zero, and at the same time.

NOTE:

- Check combination meter power supply and ground circuit when self-diagnosis mode of combination meter does not start. Replace combination meter if normal.
- If any of the segments is not displayed, replace combination meter.

7. Each meter activates during pressing trip A/B reset switch.



NOTE:
- If any of the meter and gages is not activated, replace combination meter.
- The figure is reference.

DIAGNOSIS SYSTEM (UNIFIED METER AND A/C AMP.)

CONSULT Function (METER/M&A)

INFOID:0000000010597218

CONSULT APPLICATION ITEMS

CONSULT can perform the following diagnosis modes with CAN communication with the unified meter and A/C amp.

System	Diagnosis mode	Description
METER/M&A	Self Diagnostic Result	Unified meter and A/C amp. checks the conditions and displays memorized error.
	Data Monitor	Displays unified meter and A/C amp. input/output data in real time.
	Ecu Identification	The unified meter and A/C amp. part number is displayed.

SELF DIAG RESULT

Refer to MWI-109, "DTC Index".

DATA MONITOR

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Display Item List

X: Applicable

Display item [Unit]	MAIN SIGNALS	Description
SPEED METER [km/h] or [mph]	X	Value of vehicle speed signal received from ABS actuator and electric unit (control unit) with CAN communication line. **NOTE:** 655.35 is displayed when the malfunction signal is received.
SPEED OUTPUT [km/h] or [mph]	X	Vehicle speed signal value transmitted to other units with CAN communication line. **NOTE:** 655.35 is displayed when the malfunction signal is received.
ODO OUTPUT [km/h] or [mph]		Odometer signal value transmitted to other units with CAN communication line.
TACHO METER [rpm]	X	Value of the engine speed signal received from ECM with CAN communication line. **NOTE:** 8191.875 is displayed when the malfunction signal is received.
FUEL METER [L]	X	Fuel level indicated on combination meter.
W TEMP METER [°C] or [°F]	X	Value of engine coolant temperature signal received from ECM with CAN communication line. **NOTE:** 215 is displayed when the malfunction signal is input.
FUEL CAP W/L [On/Off]		Status of fuel filler cap warning display detected from fuel filler cap warning display signal received from ECM via CAN communication.
ABS W/L [On/Off]		Status of ABS warning lamp judged from ABS warning lamp signal received from ABS actuator and electric unit (control unit) with CAN communication line.
VDC/TCS IND [On/Off]		Status of VDC OFF indicator lamp judged from VDC OFF indicator lamp signal received from ABS actuator and electric unit (control unit) with CAN communication line.
SLIP IND [On/Off]		Status of VDC warning lamp judged from VDC warning lamp signal received from ABS actuator and electric unit (control unit) with CAN communication line.

Display item [Unit]	MAIN SIGNALS	Description
BRAKE W/L [On/Off]		Status of brake warning lamp judged from brake warning lamp signal received from ABS actuator and electric unit (control unit) with CAN communication line. **NOTE:** Displays “Off” if the brake warning lamp is illuminated when the valve check starts, the parking brake switch is turned ON or the brake fluid level switch is turned ON.
DOOR W/L [On/Off]		Status of door warning judged from door switch signal received from BCM with CAN communication line.
HI-BEAM IND [On/Off]		Status of high beam indicator lamp judged from high beam request signal received from BCM with CAN communication line.
TURN IND [On/Off]		Status of turn indicator lamp judged from turn indicator signal received from BCM with CAN communication line.
FR FOG IND [Off]		Status of front fog light indicator lamp detected from front fog light request signal is received from BCM via CAN communication.
RR FOG IND [Off]		This item is displayed, but cannot be monitored.
LIGHT IND [On/Off]		Status of tail lamp indicator lamp judged from position light request signal received from BCM with CAN communication line.
OIL W/L [On/Off]		Status of oil pressure warning lamp judged from oil pressure switch signal received from IPDM E/R with CAN communication line.
MIL [On/Off]		Status of malfunction indicator lamp judged from malfunctioning indicator lamp signal received from ECM with CAN communication line.
GLOW IND [Off]		This item is displayed, but cannot be monitored.
C-ENG2 W/L [Off]		This item is displayed, but cannot be monitored.
CRUISE IND [On/Off]		Status of CRUISE indicator judged from ASCD status signal received from ECM with CAN communication line.
SET IND [On/Off]		• Status of SET indicator judged from ASCD status signal received from ECM with CAN communication line. • Status of SET indicator judged from meter display signal received from ICC sensor integrated unit with CAN communication line.
CRUISE W/L [On/Off]		Status of CRUISE warning lamp judged from ICC warning lamp signal received from ICC sensor integrated unit with CAN communication line.
BA W/L [Off]		Status of IBA OFF indicator lamp judged from IBA OFF indicator lamp signal received ICC sensor integrated unit with CAN communication line.
ATC/T-AMT W/L [On/Off]		Status of A/T check warning lamp judged from A/T check indicator signal received from TCM with CAN communication line.
4WD W/L [On/Off]		Status of AWD warning lamp judged from AWD warning lamp signal received from AWD control unit with CAN communication line.
4WD LOCK IND [Off]		This item is displayed, but cannot be monitored.
FUEL W/L [On/Off]		Low-fuel warning status judged by the identified fuel level.
WASHER W/L [On/Off]		Status of washer warning judged from washer level switch input to combination meter.
AIR PRES W/L [On/Off]		Status of low tire pressure warning lamp judged from TPMS malfunction warning lamp signal received from BCM with CAN communication line.
KEY G/Y W/L [On/Off]		Status of key warning lamp (G/Y) judged from key warning signal received from BCM with CAN communication line.
AFS OFF IND [On/Off]		Status of AFS OFF indicator lamp judged from AFS OFF indicator lamp signal received from AFS control unit with CAN communication line.
4WAS/RAS W/L [Off]		This item is displayed, but cannot be monitored.

Display item [Unit]	MAIN SIGNALS	Description
DDS W/L [Off]		This item is displayed, but cannot be monitored.
LANE W/L [On/Off]		Status of lane departure warning lamp judged from lane departure warning lamp signal received from lane camera unit with CAN communication line.
LDP IND [On/Off]		Status of LDP ON indicator lamp judged from LDP ON indicator lamp signal received from lane camera unit with CAN communication line.
DCA IND [On/Off]		Status of DCA switch indicator judged from meter display signal received from ICC sensor integrated unit with CAN communication line.
BSW W/L [On/Off]		Status of BSW warning lamp judged from BSW warning lamp signal received from BSW control module with CAN communication line.
LCD [B&P N, B&P I, ID NG, ROTAT, SFT P, INSRT, BATT, NO KY, OUTKY, LK WN]		Displays status of Intelligent Key system warning judged from meter display signal received from BCM with CAN communication line.
ACC TARGET [On/Off]		Status of vehicle ahead detection indicator judged from meter display signal received from ICC sensor integrated unit with CAN communication line.
ACC DISTANCE [Off, SHORT, MID, LONG]		Status of set distance indicator judged from meter display signal received from ICC sensor integrated unit with CAN communication line.
ACC OWN VHL [On/Off]		Status of own vehicle indicator judged from meter display signal received from ICC sensor integrated unit with CAN communication line.
ACC SET SPEED		Status of set vehicle speed indicator judged from meter display signal received from ICC sensor integrated unit with CAN communication line.
ACC UNIT [On/Off]		Status of display unit judged from meter display signal received from ICC sensor integrated unit with CAN communication line.
SHIFT IND [P, R, N, D, L, M1, M2, M3, M4, M5, M6, M7]		Status of shift position indicator judged from shift position signal and manual mode indicator signal received from TCM with CAN communication line.
O/D OFF SW [Off]		This item is displayed, but cannot be monitored.
AT S MODE SW [On/Off]		Status of snow mode switch.
AT P MODE SW [Off]		This item is displayed, but cannot be monitored.
M RANGE SW [On/Off]		Status of manual mode switch.
NM RANGE SW [On/Off]		Status of non-manual mode switch.
AT SFT UP SW [On/Off]		Status of manual mode shift up switch.
AT SFT DWN SW [On/Off]		Status of manual mode shift down switch.
ST SFT UP SW [Off]		This item is displayed, but cannot be monitored.
ST SFT DWN SW [Off]		This item is displayed, but cannot be monitored.
COMP F/B SIG [On/Off]		A/C compressor activation condition that ECM judges according to the water temperature and the acceleration degree.
4WD LOCK SW [Off]		This item is displayed, but cannot be monitored.
PKB SW [On/Off]		Status of parking brake switch.
BUCKLE SW [On/Off]		Status of seat belt buckle switch (driver side).

Display item [Unit]	MAIN SIGNALS	Description
BRAKE OIL SW [On/Off]		Status of brake fluid level switch.
DISTANCE [km]		Value of possible driving distance calculated by unified meter and A/C amp.
OUTSIDE TEMP [°C] or [°F]		Ambient air temperature value converted from ambient sensor signal received from ambient sensor. **NOTE:** This may not match with the temperature value indicated on the information display. (Because the information display value is a corrected value from the ambient sensor input value.)
FUEL LOW SIG [On/Off]		Status of fuel level low warning signal to output to AV control unit with CAN communication line.
BUZZER [On/Off]	X	Buzzer status (in the combination meter) is judged with the buzzer output signal received from each unit with CAN communication line and the warning output condition of the combination meter.

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000010597219

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with two communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
CAN Communication Signal Chart. Refer to LAN-15, "How to Use CAN Communication Signal Chart".

DTC Logic

INFOID:0000000010597220

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when ...	Probable malfunction location
U1000	CAN COMM CIRCUIT	When unified meter and A/C amp. is not transmitting or receiving CAN communication signal for 2 seconds or more.	CAN communication system

Diagnosis Procedure

INFOID:0000000010597221

1.PERFORM SELF DIAGNOSTIC

1. Turn ignition switch ON and wait for 2 seconds or more.
2. Check “Self Diagnostic Result” of “METER/M&A”.

Is “CAN COMM CIRCUIT” displayed?

YES >> Refer to LAN-16, "Trouble Diagnosis Flow Chart".
NO >> Refer to GI-45, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000010597222

Initial diagnosis of unified meter and A/C amp.

DTC Logic

INFOID:0000000010597223

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when ...	Probable malfunction location
U1010	CONTROL UNIT (CAN)	If any malfunction is detected during initial diagnosis of unified meter and A/C amp. CAN controller	Unified meter and A/C amp.

Diagnosis Procedure

INFOID:0000000010597224

1.REPLACE UNIFIED METER AND A/C AMP.

When DTC “U1010” is detected, replace unified meter and A/C amp.

>> INSPECTION END

B2201 COMMUNICATION ERROR 1

Description

INFOID:0000000010597225

The communication line (LCD <-> AMP.) is used to communicate signals between the combination meter and the unified meter and A/C amp. in order to control the information display.

DTC Logic

INFOID:0000000010597226

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when ...	Probable malfunction location
B2201	COMM ERROR 1	If a communication error is present in the communication line (LCD <-> AMP.) for 2 seconds or more	Communication line (LCD <-> AMP.) circuit

Diagnosis Procedure

INFOID:0000000010597227

1.CHECK CONNECTOR

Check combination meter, unified meter and A/C amp. and terminals (combination meter side, unified meter and A/C amp. side, and harness side) for looseness or bent.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair terminal or connector.

2.CHECK CONTINUITY COMMUNICATION CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect combination meter connector and unified meter and A/C amp. connector.
3. Check continuity between combination meter harness connector and unified meter and A/C amp. harness connector.

Combination meter		Unified meter and A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M53	24	M66	14	Existed
	25		34	

4. Check continuity between combination meter harness connector and ground.

Combination meter		Ground	Continuity
Connector	Terminal		
M53	24		Not existed
	25		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair harness or connector.

3.CHECK UNIFIED METER AND A/C AMP. OUTPUT VOLTAGE

1. Connect unified meter and A/C amp. connector.
2. Turn ignition switch ON.
3. Check voltage between unified meter and A/C amp. harness connector and ground.

Terminals			Voltage (Approx.)
(+)		(-)	
Unified meter and A/C amp.			
Connector	Terminal	Ground	
M66	14		12 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace unified meter and A/C amp.

4. CHECK COMBINATION METER OUTPUT VOLTAGE

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Connect combination meter connector.
4. Turn ignition switch ON.
5. Check voltage between combination meter harness connector and ground.

Terminal			Voltage (Approx.)
(+)		(-)	
Combination meter			
Connector	Terminal	Ground	
M53	25		5 V

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace combination meter.

B2202 COMMUNICATION ERROR 2

Description

INFOID:0000000010597228

The communication line (METER <-> AMP.) is used to communicate signals between the combination meter and the unified meter and A/C amp. in order to control the combination meter.

DTC Logic

INFOID:0000000010597229

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when ...	Probable malfunction location
B2202	COMM ERROR 2	If a communication error is present in the communication line (METER <-> AMP.) for 2 seconds or more	Communication line (METER <-> AMP.) circuit

Diagnosis Procedure

INFOID:0000000010597230

1.CHECK CONNECTOR

Check combination meter, unified meter and A/C amp. and terminals (combination meter side, unified meter and A/C amp. side, and harness side) for looseness or bent.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair terminal or connector.

2.CHECK CONTINUITY COMMUNICATION CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect combination meter connector and unified meter and A/C amp. connector.
3. Check continuity between combination meter harness connector and unified meter and A/C amp. harness connector.

Combination meter		Unified meter and A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
M53	2	M66	27	Existed
	3		7	

4. Check continuity between combination meter harness connector and ground.

Combination meter		Ground	Continuity
Connector	Terminal		
M53	2		Not existed
	3		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair harness or connector.

3.CHECK UNIFIED METER AND A/C AMP. OUTPUT VOLTAGE

1. Connect unified meter and A/C amp. connector.
2. Turn ignition switch ON.
3. Check voltage between unified meter and A/C amp. harness connector and ground.

Terminals			Voltage (Approx.)
(+)		(-)	
Unified meter and A/C amp.			
Connector	Terminal	Ground	
M66	27		5 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace unified meter and A/C amp.

4. CHECK COMBINATION METER OUTPUT VOLTAGE

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Connect combination meter connector.
4. Turn ignition switch ON.
5. Check voltage between combination meter harness connector and ground.

Terminals			Voltage (Approx.)
(+)		(-)	
Combination meter			
Connector	Terminal	Ground	
M53	3		5 V

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace combination meter.

B2205 VEHICLE SPEED

Description

INFOID:0000000010597231

Vehicle speed signal is transmitted from ABS actuator and electric unit (control unit) via CAN communication to unified meter and A/C amp.

DTC Logic

INFOID:0000000010597232

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when ...	Probable malfunction location
B2205	VEHICLE SPEED	If the abnormal vehicle speed signal is input from ABS actuator and electric unit (control unit) for 2 seconds or more	• Wheel sensor • ABS actuator and electric unit (control unit)

Diagnosis Procedure

INFOID:0000000010597233

1.PERFORM SELF-DIAGNOSIS OF ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Perform “Self Diagnostic Result” of ABS actuator and electric unit (control unit), and repair or replace malfunctioning parts.

>> Refer to BRC-30, "CONSULT Function".

B2267 ENGINE SPEED

Description

INFOID:0000000010597234

The engine speed signal is transmitted from ECM to the unified meter and A/C amp. with CAN communication.

DTC Logic

INFOID:0000000010597235

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when ...	Probable malfunction location
B2267	ENGINE SPEED	If ECM continuously transmits abnormal engine speed signals for 2 seconds or more	• Crankshaft position sensor (POS) • ECM

Diagnosis Procedure

INFOID:0000000010597236

1.PERFORM SELF-DIAGNOSIS OF ECM

Perform “Self Diagnostic Result” of ECM, and repair or replace malfunctioning parts.

>> Refer to EC-146, "CONSULT Function".

B2268 WATER TEMP

Description

INFOID:0000000010597237

The engine coolant temperature signal is transmitted from ECM to the unified meter and A/C amp. via CAN communication.

DTC Logic

INFOID:0000000010597238

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when ...	Probable malfunction location
B2268	WATER TEMP	If ECM continuously transmits abnormal engine coolant temperature signals for 60 seconds or more	• Engine coolant temperature sensor • ECM

Diagnosis Procedure

INFOID:0000000010597239

1.PERFORM SELF-DIAGNOSIS OF ECM

Perform “Self Diagnosis Result” of ECM, and repair or replace malfunctioning parts.

>> Refer to EC-146, "CONSULT Function".

POWER SUPPLY AND GROUND CIRCUIT
COMBINATION METER

COMBINATION METER : Diagnosis Procedure

INFOID:0000000010597240

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Battery	6
Ignition switch ON or START	4

Is the inspection result normal?

YES >> GO TO 2.
NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

Check voltage between combination meter harness connector and ground.

Terminals				Ignition switch position	Value (Approx.)
(+)			(-)		
Combination meter	Terminal	Signal name			
M53	1	Battery power supply	Ground	OFF	Battery voltage
	21	Ignition signal		ON	

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check harness between combination meter and fuse.

3.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect combination meter connector.
3. Check continuity between combination meter harness connector and ground.

Combination meter			Continuity
Connector	Terminal		
M53	5	Ground	Existed
	15		
	22		

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair harness or connector.

UNIFIED METER AND A/C AMP.

UNIFIED METER AND A/C AMP. : Diagnosis Procedure

INFOID:0000000010597241

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Battery	6
Ignition switch ACC or ON	19
Ignition switch ON or START	3

Is the inspection result normal?

YES >> GO TO 2.
NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

Check voltage between unified meter and A/C amp. harness connector and ground.

Terminals				Ignition switch position	Value (Approx.)
(+)			(-)		
Unified meter and A/C amp.	Terminal	Signal name			
M67	54	Battery power supply	Ground	OFF	Battery voltage
	41	ACC power supply		ACC	
	53	Ignition signal		ON	

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check harness between unified meter and A/C amp. and fuse.

3.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between unified meter and A/C amp. harness connector and ground.

Unified meter and A/C amp.		Ground	Continuity
Connector	Terminal		
M67	55		Existed
	71		

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair harness or connector.

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) : Diagnosis Procedure

INFOID:0000000011095943

1.CHECK FUSES AND FUSIBLE LINK

Check that the following IPDM E/R fuses or fusible links are not blown.

Signal name	Fuses and fusible link No.
Battery power supply	C
	50
	51

Is the fuse fusing?

YES >> Replace the blown fuse or fusible link after repairing the affected circuit if a fuse or fusible link is blown.
NO >> GO TO 2.

2.CHECK POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check voltage between IPDM E/R harness connector and the ground.

Terminals			Voltage (Approx.)
(+)		(−)	
IPDM E/R			
Connector	Terminal	Ground	
E4	1		Battery voltage

Is the measurement value normal?

YES >> GO TO 3.
NO >> Repair the harness or connector.

3.CHECK GROUND CIRCUIT

Check continuity between IPDM E/R harness connectors and the ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E5	12		Existed
E6	41		

Does continuity exist?

YES >> INSPECTION END
NO >> Repair the harness or connector.

FUEL LEVEL SENSOR SIGNAL CIRCUIT

Description

INFOID:0000000010597243

The fuel level sensor unit and fuel pump (main) and the fuel level sensor unit (sub) detect the fuel level in the fuel tank and transmit the fuel gauge signal to the unified meter and A/C amp.

Component Function Check

INFOID:0000000010597244

1.PERFORM SELF-DIAGNOSIS OF UNIFIED METER AND A/C AMP.

Perform “Self Diagnosis” of unified meter and A/C amp. with CONSULT.

Is any DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunctioning parts. Refer to MWI-109, "DTC Index".

NO >> GO TO 2.

2.PERFORM COMPONENT FUNCTION CHECK (1)

1. Turn ignition switch OFF.
2. Disconnect fuel level sensor unit and fuel pump (main) connector and fuel level sensor unit (sub) connector.
3. Connect variable resistor between harness connector terminals located on the vehicle side of the fuel level sensor unit and fuel pump (main) and fuel level sensor unit (sub).

Fuel level sensor unit and fuel pump (main)		Fuel level sensor unit (sub)	
Connector	Terminals	Connector	Terminals
B22	5	B21	1

4. Set variable resistor according to the resistance value shown in the following table and turn ignition switch ON.

Resistance (Ω)* (Approx.)	Fuel gauge indication position (Approx.)
Less than 6.0	Full
25.5	3/4
45.5	2/4
66.0	1/4
More than 80.0	Empty

*: Reference resistance values used when the combination meter judges the indication position of the fuel gauge.

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 4.

3.PERFORM COMPONENT FUNCTION CHECK (2)

Check the fuel level sensor unit and fuel pump (main) and/or fuel level sensor unit (sub). Refer to MWI-60, "Component Inspection".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel level sensor unit and fuel pump (main) and/or fuel level sensor unit (sub). Refer to FL-6, "Removal and Installation".

4.CHECK DATA MONITOR OF UNIFIED METER AND A/C AMP.

Select “FUEL METER” that is the data monitor item of “METER/M&A”. Apply resistance according to the table below and check the monitor value.

Resistance (Ω) (Approx.)	Reference value of data monitor [L]
Less than 6.0	Approx. 72
25.5	Approx. 60
45.5	Approx. 42
66.0	Approx. 23
More than 80.0	Approx. 11

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-136, "Removal and Installation".
NO >> Refer to MWI-59, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000010597245

1.CHECK FUEL LEVEL SENSOR (SUB) CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector and fuel level sensor unit (sub) connector.
3. Check continuity between unified meter and A/C amp. harness connector and fuel level sensor unit (sub) harness connector.

Unified meter A/C amp.		Fuel level sensor unit (sub)		Continuity
Connector	Terminal	Connector	terminal	
M67	42	B21	1	Existed

4. Check continuity between unified meter and A/C amp. harness connector and ground.

Unified meter A/C amp.		Ground	Continuity
Connector	Terminal		
M67	42		Not existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK FUEL LEVEL SENSOR (MAIN-SUB) CIRCUIT

1. Disconnect fuel level sensor unit and fuel pump (main) connector.
2. Check continuity between fuel level sensor unit (sub) harness connector and fuel level sensor unit and fuel pump (main) harness connector.

Fuel level sensor unit (sub)		Fuel level sensor unit and fuel pump (main)		Continuity
Connector	Terminal	Connector	terminal	
B21	2	B22	2	Existed

3. Check continuity between fuel level sensor unit (sub) harness connector and ground.

Fuel level sensor unit (sub)		Ground	Continuity
Connector	Terminal		
B21	2		Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair harness or connector.

3.CHECK FUEL LEVEL SENSOR (MAIN) CIRCUIT

Check continuity between fuel level sensor unit and fuel pump (main) harness connector and unified meter and A/C amp. harness connector.

Fuel level sensor unit and fuel pump (main)		Unified meter A/C amp.		Continuity
Connector	Terminal	Connector	terminal	
B22	5	M67	58	Existed

Is the inspection result normal?

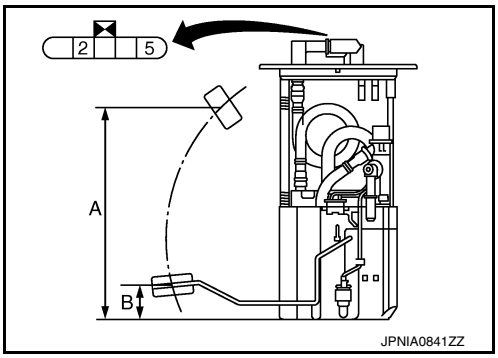
YES >> Replace unified meter and A/C amp. Refer to MWI-137, "Removal and Installation".
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010597246

1. CHECK FUEL LEVEL SENSOR UNIT AND FUEL PUMP (MAIN)

1. Remove the fuel level sensor unit and fuel pump (main). Refer to FL-6, "Removal and Installation".
2. Check the resistance between fuel level sensor unit and fuel pump (main).



Fuel level sensor unit and fuel pump (main)		Condition*	Resistance (Approx.)
Terminal			
2	5	Full (A)	2.5 Ω
		Empty (B)	81.5 Ω

*: When float rod is contact with stopper.

Standard float position

Float position [mm (in)]*	
Full (A)	Approx. 192 (7.56)
Empty (B)	Approx. 32 (1.26)

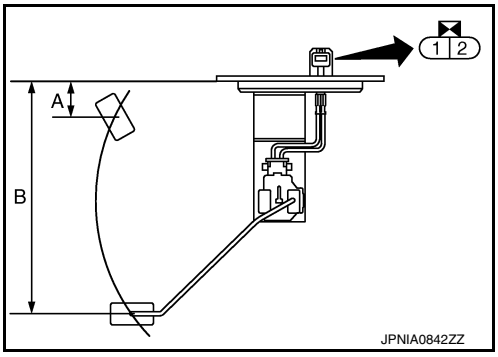
*: When float rod is contact with stopper.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace fuel level sensor unit and fuel pump (main). Refer to FL-6, "Removal and Installation".

2. CHECK FUEL LEVEL SENSOR UNIT (SUB)

1. Remove the fuel level sensor unit (sub). Refer to FL-6, "Removal and Installation".
2. Inspect the resistance of fuel level sensor unit (sub).



Fuel level sensor unit (sub)		Condition*	Resistance (Approx.)
Terminal			
1	2	Full (A)	2.5 Ω
		Empty (B)	42.5 Ω

*: When float rod is contact with stopper.

Standard float position

Float position [mm (in)]*	
Full (A)	Approx. 35 (1.38)
Empty (B)	Approx. 203 (7.99)

*: When float rod is contact with stopper.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace fuel level sensor unit (sub). Refer to FL-6, "Removal and Installation".

METER CONTROL SWITCH SIGNAL CIRCUIT

Description

INFOID:0000000010597247

Transmits the following signals to the combination meter.

- (Illumination control) switch signal (+)
- (Illumination control) switch signal (–)
- (select) switch signal
- (enter) switch signal

Diagnosis Procedure

INFOID:0000000010597248

1.CHECK METER CONTROL SWITCH INPUT SIGNAL

1. Turn ignition switch ON.
2. Measure voltage between the following terminals of the combination meter.

Combination meter			Condition	Voltage (Approx.)
Connector	Terminal (+)	Terminal (-)		
M53	36	16	When (select) switch is pressed	0 V
			Other than the above	5 V
	37	16	When (enter) switch is pressed	0 V
			Other than the above	5 V
	39	16	When (illumination control) switch is pressed	0 V
			Other than the above	5 V
	40	16	When (illumination control) switch is pressed	0 V
			Other than the above	5 V

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 2.

2.CHECK METER CONTROL SWITCH SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect the combination meter and meter control switch connectors.
3. Check continuity between combination meter harness connector and meter control switch harness connector.

Combination meter		Meter control switch		Continuity
Connector	Terminal	Connector	Terminal	
M53	16	M54	2	Existed
	36		6	
	37		7	
	39		3	
	40		1	

4. Check continuity between combination meter harness connector and ground.

Combination meter			Continuity
Connector	Terminal		
M53	16	Ground	Not existed
	36		
	37		
	39		
	40		

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010597249

1. CHECK METER CONTROL SWITCH UNIT

1. Turn ignition switch OFF.
2. Disconnect the meter control switch connector.
3. Check continuity between the following terminals of the meter control switch.

Combination meter			Operation and status	Continuity
Connector	Terminal			
M54	6	2	Press ● (select) switch	Existed
			Other than the above	Not existed
	7	2	Press ❑ (enter) switch	Existed
			Other than the above	Not existed
	3	2	Press (illumination control) switch	Existed
			Other than the above	Not existed
	1	2	Press (illumination control) switch	Existed
			Other than the above	Not existed

Is inspection result normal?

YES >> INSPECTION END
NO >> Replace meter control switch.

TRIP A/B RESET SWITCH SIGNAL CIRCUIT

Description

INFOID:0000000010597250

Transmits the trip A/B reset switch signals to the combination meter.

Diagnosis Procedure

INFOID:0000000010597251

1.CHECK TRIP A/B RESET SWITCH INPUT SIGNAL

1. Turn ignition switch ON.
2. Measure voltage between the combination meter harness connector terminals.

Combination meter			Condition	Voltage (Approx.)
Connector	Terminal (+)	Terminal (-)		
M53	38	16	When trip A/B reset switch is pressed	0 V
			Other than the above	5 V

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 2.

2.CHECK TRIP A/B RESET SWITCH SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect the combination meter and meter control switch connectors.
3. Check continuity between combination meter harness connector and trip A/B reset switch harness connector.

Combination meter		Trip A/B reset switch		Continuity
Connector	Terminal	Connector	Terminal	
M53	38	M56	1	Existed
	16		2	

4. Check continuity between combination meter harness connector and ground.

Combination meter		Ground	Continuity
Connector	Terminal		
M53	38		Not existed
	16		

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010597252

1.CHECK TRIP A/B RESET SWITCH UNIT

1. Turn ignition switch OFF.
2. Disconnect the trip A/B reset switch connector.
3. Check continuity between the trip A/B reset switch connector terminals.

Trip A/B reset switch		Operation and status	Continuity
Terminal			
1	2	Press trip A/B reset switch	Existed
		Other than the above	Not existed

Is inspection result normal?

YES >> INSPECTION END
NO >> Replace trip A/B reset switch.

OIL PRESSURE SWITCH SIGNAL CIRCUIT

Description

INFOID:0000000010597253

Detects the engine oil pressure and transmits the oil pressure switch signal to IPDM E/R.

Component Function Check

INFOID:0000000010597254

1.CHECK UNIFIED METER AND A/C AMP. INPUT SIGNAL

Select the “Data Monitor” for the “METER/M&A” and check the “OIL W/L” monitor value.

“OIL W/L”	
Ignition switch ON	: On
Engine running	: Off

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000010597255

1.CHECK OIL PRESSURE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and oil pressure switch connector.
3. Check continuity between IPDM E/R harness connector and oil pressure switch harness connector.

IPDM E/R		Oil pressure switch		Continuity
Connector	Terminal	Connector	Terminal	
E7	75	F37	1	Existed

4. Check continuity between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E7	75		Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair harness or connector.

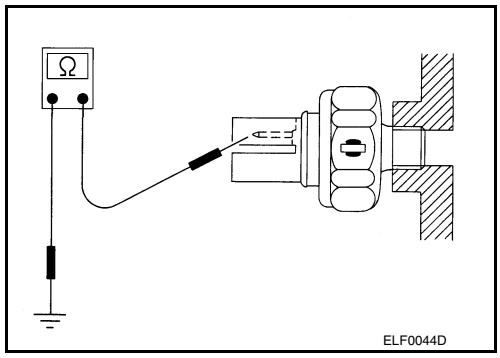
Component Inspection

INFOID:0000000010597256

1.CHECK OIL PRESSURE SWITCH UNIT

Check continuity between oil pressure switch and ground.

Condition	Continuity
Engine stopped	Existed
Engine running	Not existed



Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace oil pressure switch.

PARKING BRAKE SWITCH SIGNAL CIRCUIT

Description

INFOID:0000000010597257

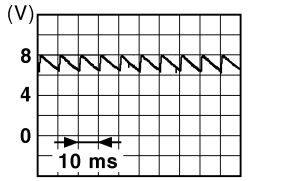
Transmits the parking brake switch signal to the combination meter.

Diagnosis Procedure

INFOID:0000000010597258

1.CHECK COMBINATION METER INPUT SIGNAL

1. Turn ignition switch ON.
2. Check the voltage and waveform between combination meter harness connector and ground.

Terminals			Condition	Voltage and waveform
(+)		(-)		
Combination meter				
Connector	Terminal			
M53	27	Ground	Parking brake applied	Approx. 0 V
			Parking brake released	 JSNIA0007GB

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 2.

2.CHECK PARKING BRAKE SWITCH SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect combination meter connector and parking brake switch connector.
3. Check continuity between combination meter harness connector and parking brake switch harness connector.

Combination meter		Parking brake switch		Continuity
Connector	Terminal	Connector	Terminal	
M53	27	E107	1	Existed

4. Check continuity between combination meter harness connector and ground.

Combination meter		Ground	Continuity
Connector	Terminal		
M53	27		Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010597259

1.CHECK PARKING BRAKE SWITCH

Check parking brake switch. Refer to BRC-121, "Component Inspection".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace parking brake switch.

WASHER LEVEL SWITCH SIGNAL CIRCUIT

Description

INFOID:0000000010597260

Transmits the washer level switch signal to the combination meter.

Diagnosis Procedure

INFOID:0000000010597261

1.CHECK WASHER LEVEL SWITCH SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect combination meter connector and washer level switch connector.
3. Check continuity between combination meter harness connector and washer level switch harness connector.

Combination meter		Washer level switch		Continuity
Connector	Terminal	Connector	Terminal	
M53	31	E32	1	Existed

4. Check continuity between combination meter harness connector and ground.

Combination meter		Ground	Continuity
Connector	Terminal		
M53	31		Not existed

5. Check continuity between washer level switch harness connector and ground.

Washer level switch		Ground	Continuity
Connector	Terminal		
E32	2		Existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair harness or connector.

Component Inspection

INFOID:0000000010597262

1.CHECK WASHER LEVEL SWITCH

1. Turn ignition switch OFF.
2. Disconnect washer level switch connector.
3. Check washer level switch.

Terminal		Condition	Continuity
1	2	Washer fluid level is low (washer level switch ON)	Existed
		Washer fluid level is normal (washer level switch OFF)	Not existed

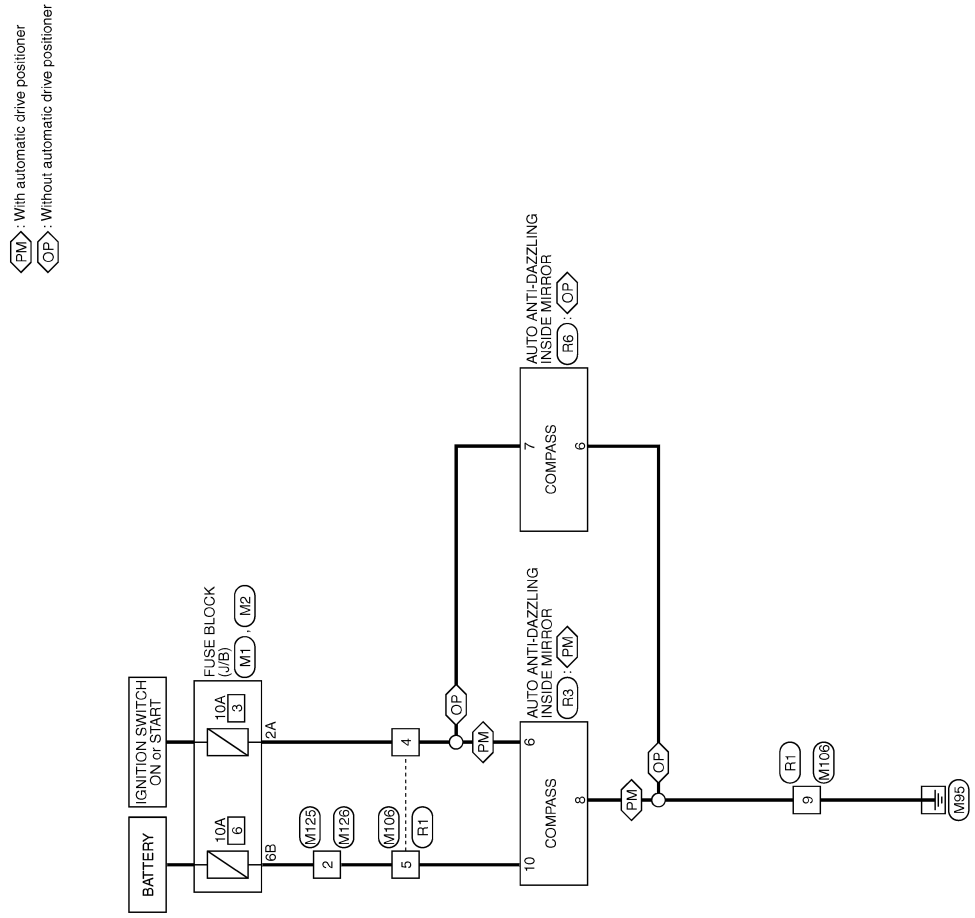
Is the inspection result normal?

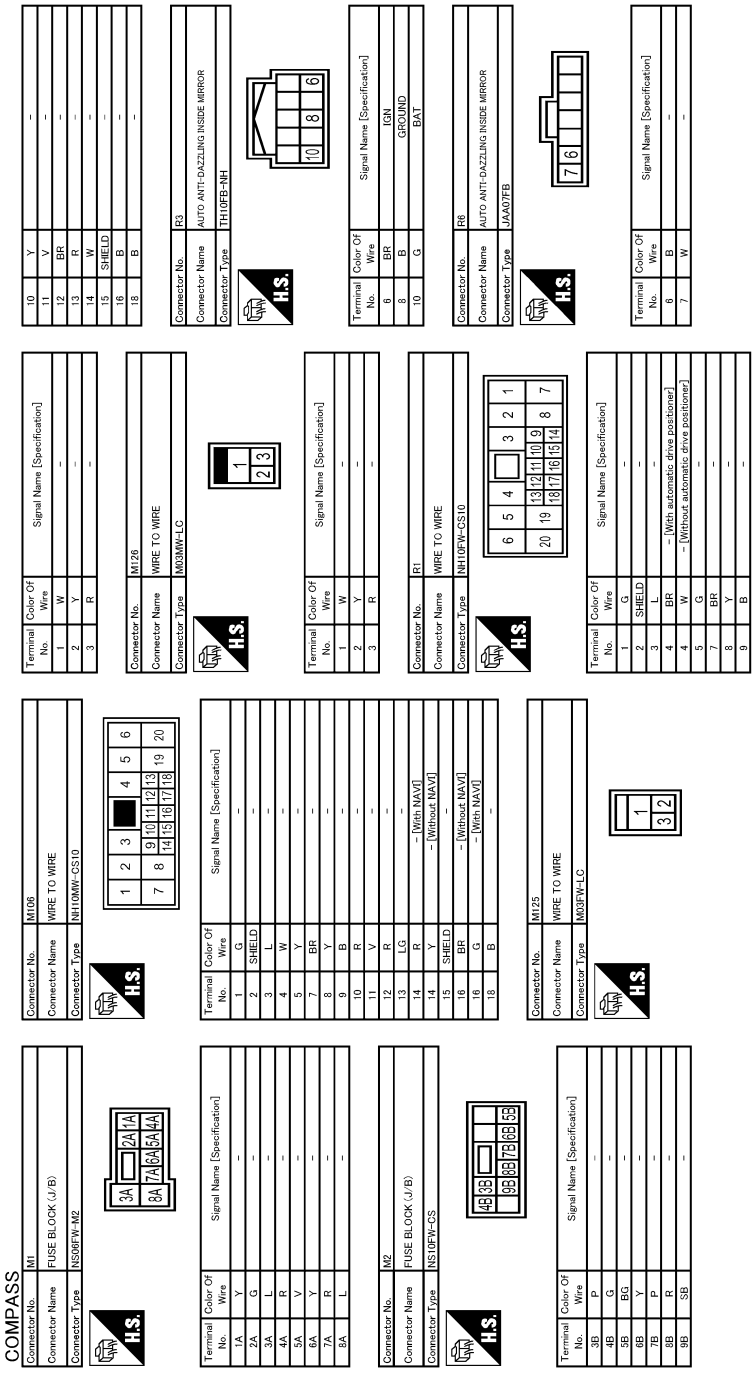
YES >> INSPECTION END
NO >> Replace washer level switch. Refer to WW-115, "Removal and Installation".

COMPASS

Wiring Diagram - COMPASS -

INFOID:0000000010597263



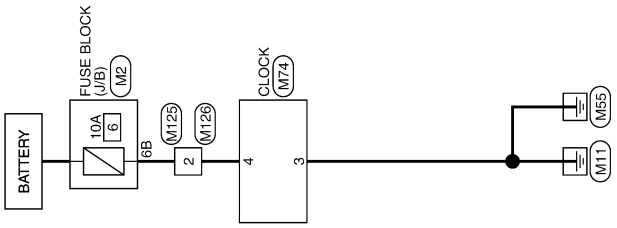


JRNWD4610GB

CLOCK

Wiring Diagram - CLOCK -

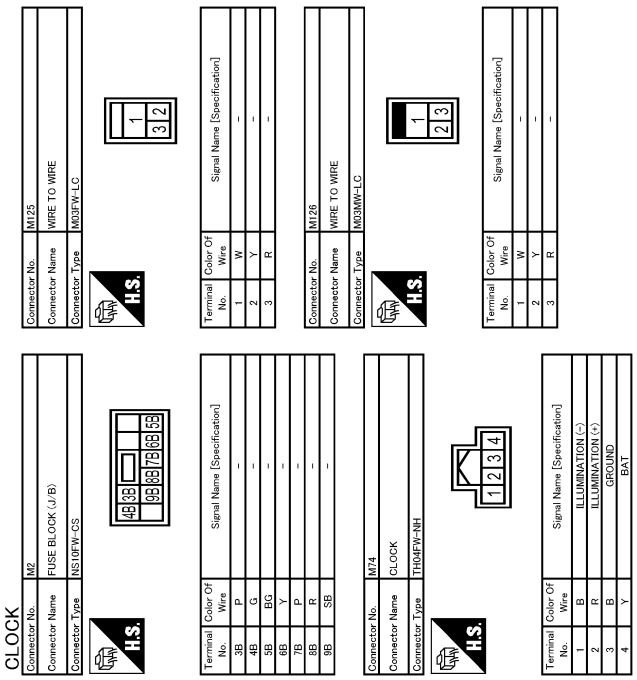
INFOID:0000000010597264



CLOCK

2013/02/11

JRNWC3427GB



JRNWD4611GB

ECU DIAGNOSIS INFORMATION

COMBINATION METER

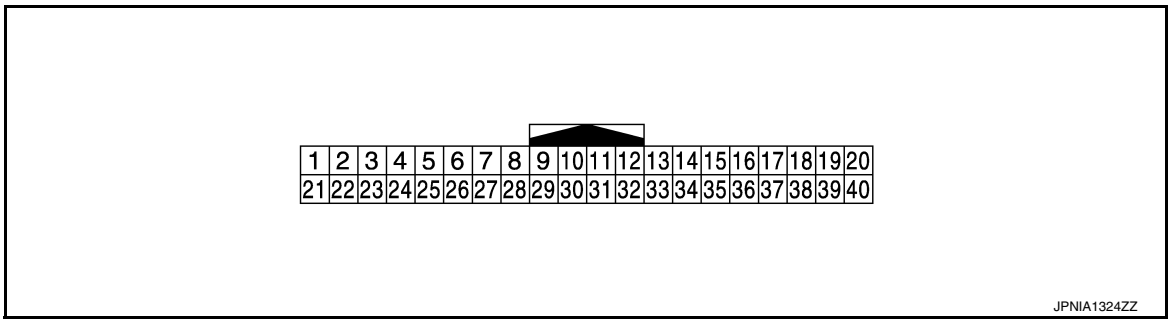
Reference Value

INFOID:0000000010597265

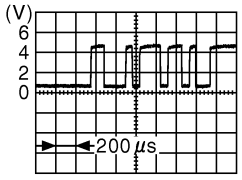
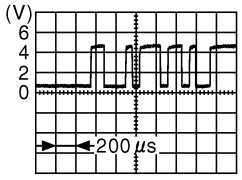
VALUES ON THE DIAGNOSIS TOOL

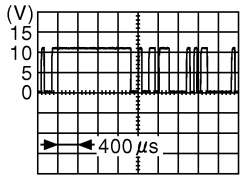
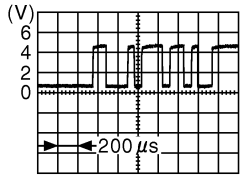
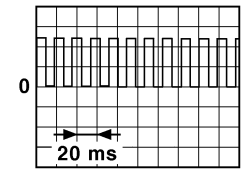
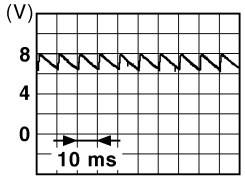
Refer to MWI-90, "Reference Value".

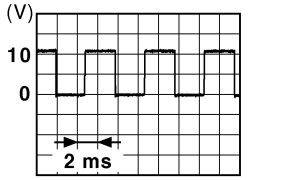
TERMINAL LAYOUT



PHYSICAL VALUES

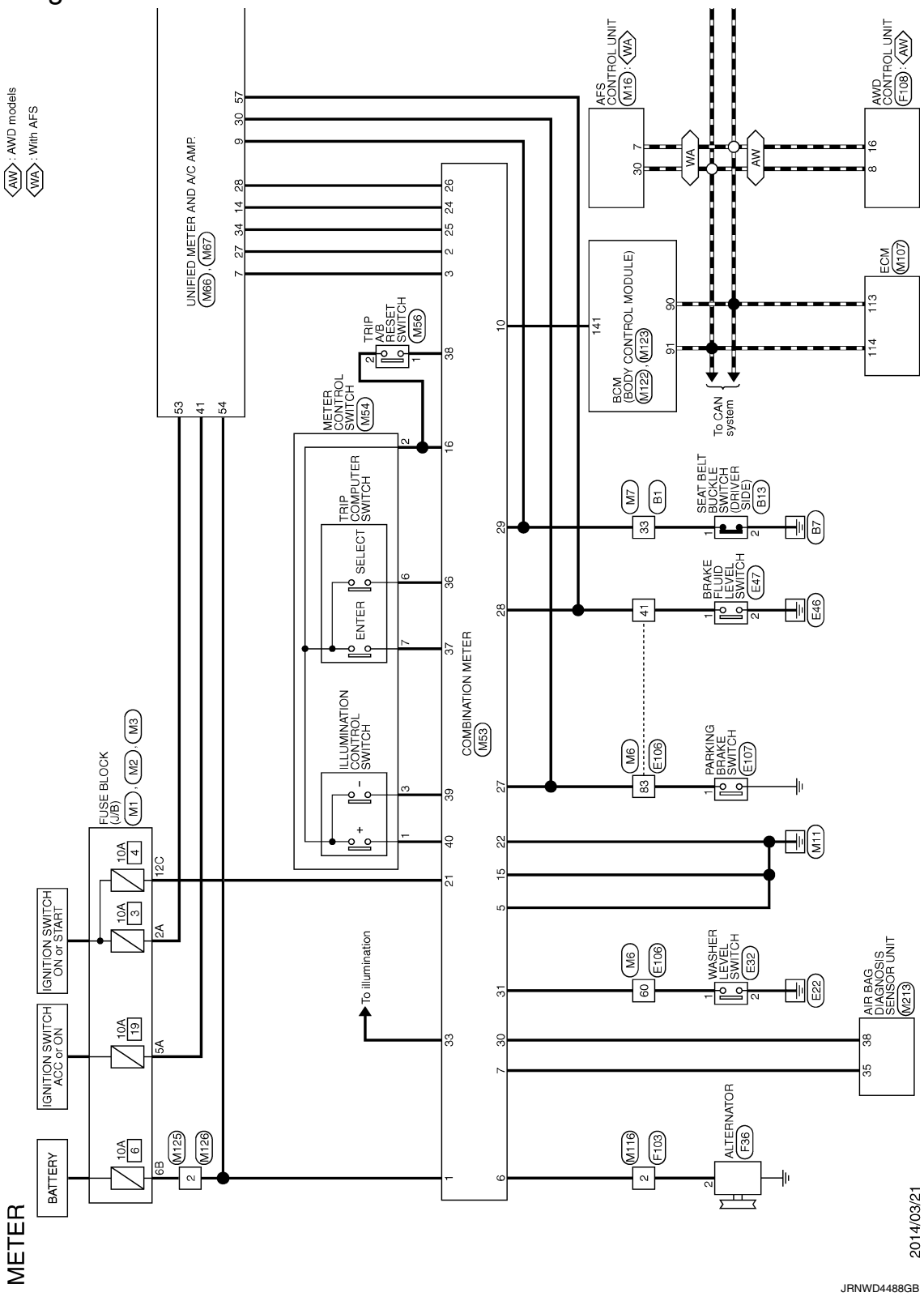
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (GR)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
2 (LG)	Ground	Communication signal (METER→ AMP.)	Output	Ignition switch ON	—	 JSNIA0027GB
3 (GR)	Ground	Communication signal (AMP.→ METER)	Input	Ignition switch ON	—	 JSNIA0027GB
5 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
6 (P)	Ground	Alternator signal	Input	Ignition switch ON	Charge warning lamp ON	0 V
					Charge warning lamp OFF	Battery voltage
7 (BR)	Ground	Air bag signal	Input	Ignition switch ON	Air bag warning lamp ON	4 V
					Air bag warning lamp OFF	0 V
10 (G)	Ground	Security signal	Input	Ignition switch OFF	Security warning lamp ON	0 V
					Security warning lamp OFF	12 V

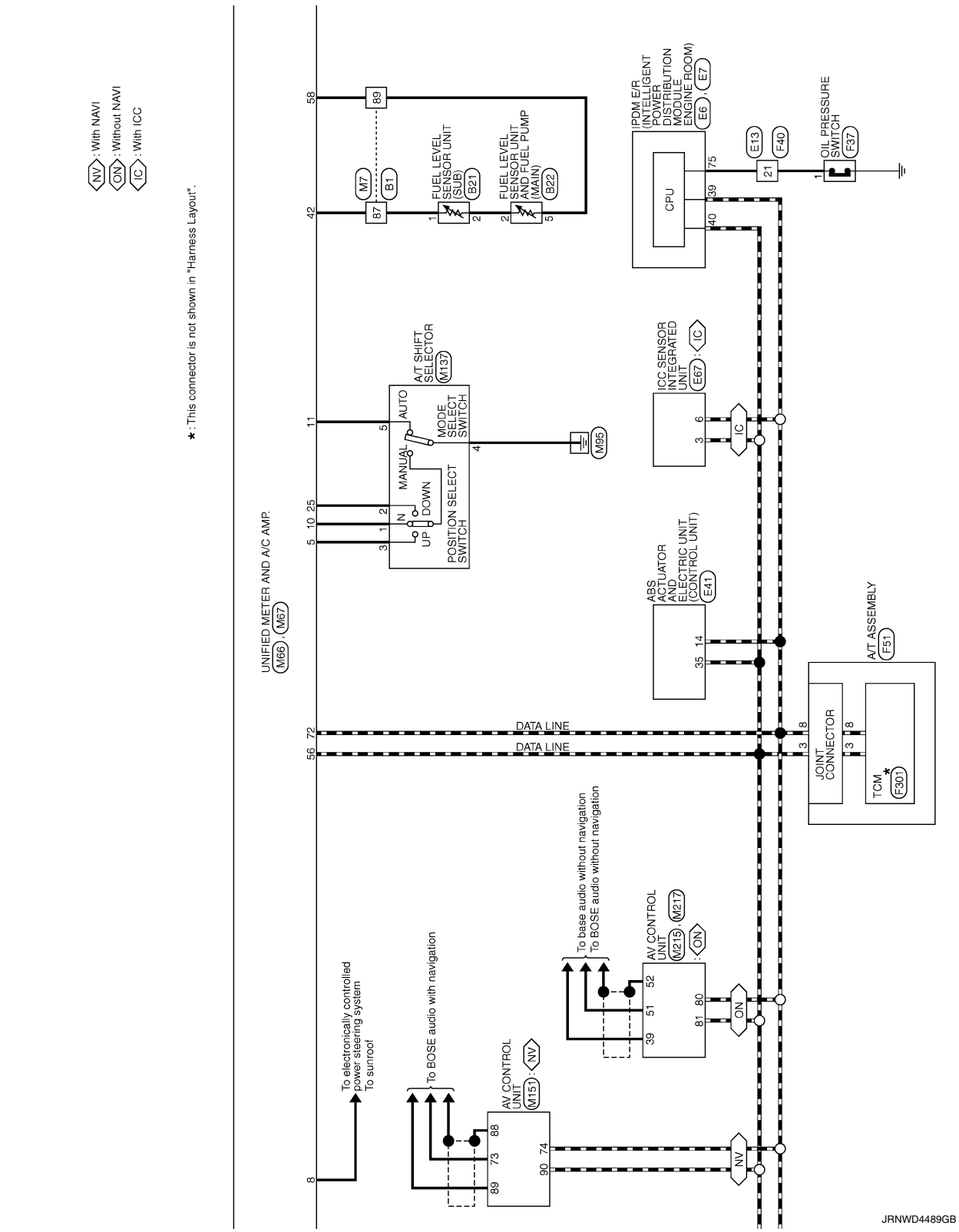
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
15 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
16 (B)	Ground	Meter control switch ground	—	Ignition switch ON	—	0 V
21 (BG)	Ground	Ignition signal	Input	Ignition switch ON	—	Battery voltage
22 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
24 (BR)	Ground	Communication signal (LCD→ AMP.)	Output	Ignition switch ON	—	 JSNIA0028GB
25 (Y)	Ground	Communication signal (AMP.→ LCD)	Input	Ignition switch ON	—	 JSNIA0027GB
26 (R)	Ground	Vehicle speed signal (8-pulse)	Input	Ignition switch ON	Speedometer operated [When vehicle speed is approx. 40 km/h (25 MPH)]	**NOTE:** The maximum voltage varies depending on the specification (destination unit).  JSNIA0012GB
27 (V)	Ground	Parking brake switch signal	Input	Ignition switch ON	Parking brake is applied	0 V
					Parking brake is released	 JSNIA0007GB
28 (W)	Ground	Brake fluid level switch signal	Input	Ignition switch ON	Brake fluid level is normal.	5 V
					The brake fluid level is lower than the low level	0 V

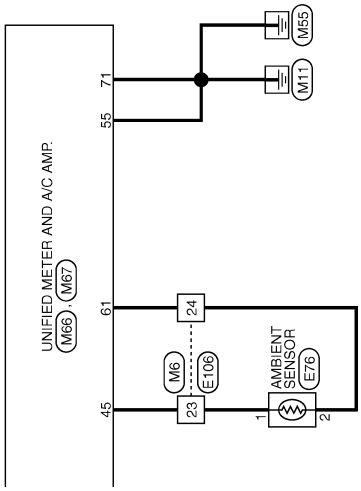
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
29 (SB)	Ground	Seat belt buckle switch signal (driver side)	Input	Ignition switch ON	When driver seat belt is fastened	12 V
					When driver seat belt is unfastened	0 V
30 (G)	Ground	Seat belt buckle switch signal (passenger side)	Input	Ignition switch ON	• When getting in the passenger seat • When passenger seat belt is fastened	12 V
					• When getting in the passenger seat • When passenger seat belt is unfastened	0 V
31 (L)	Ground	Washer level switch signal	Input	Ignition switch ON	Washer level switch ON	0 V
					Washer level switch OFF	5 V
33 (B)	Ground	Illumination control signal	Output	Ignition switch ON	Lighting switch ON, then operate the illumination control switch.	**NOTE:** When brightness level is midway  JSNIA0010GB
36 (LG)	16 (B)	Select switch signal	Input	Ignition switch ON	When ● is pressed	0 V
					Other than the above	5 V
37 (SB)	16 (B)	Enter switch signal	Input	Ignition switch ON	When ❑ is pressed	0 V
					Other than the above	5 V
38 (L)	16 (B)	Trip A/B reset switch signal	Input	Ignition switch ON	When trip A/B reset switch is pressed	0 V
					Other than the above	5 V
39 (P)	16 (B)	Illumination control switch signal (–)	Input	Ignition switch ON	When – switch is pressed	0 V
					Other than the above	5 V
40 (BG)	16 (B)	Illumination control switch signal (+)	Input	Ignition switch ON	When + switch is pressed	0 V
					Other than the above	5 V

Wiring Diagram - METER -

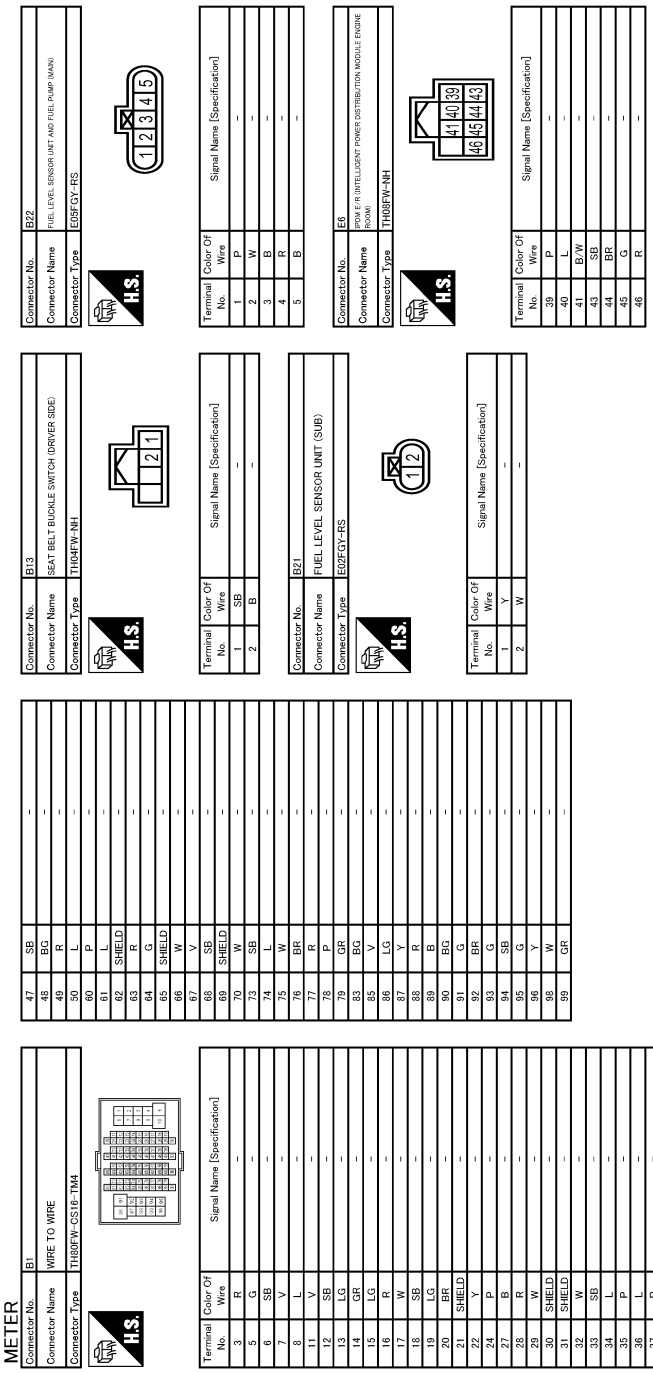
INFOID:0000000010597266



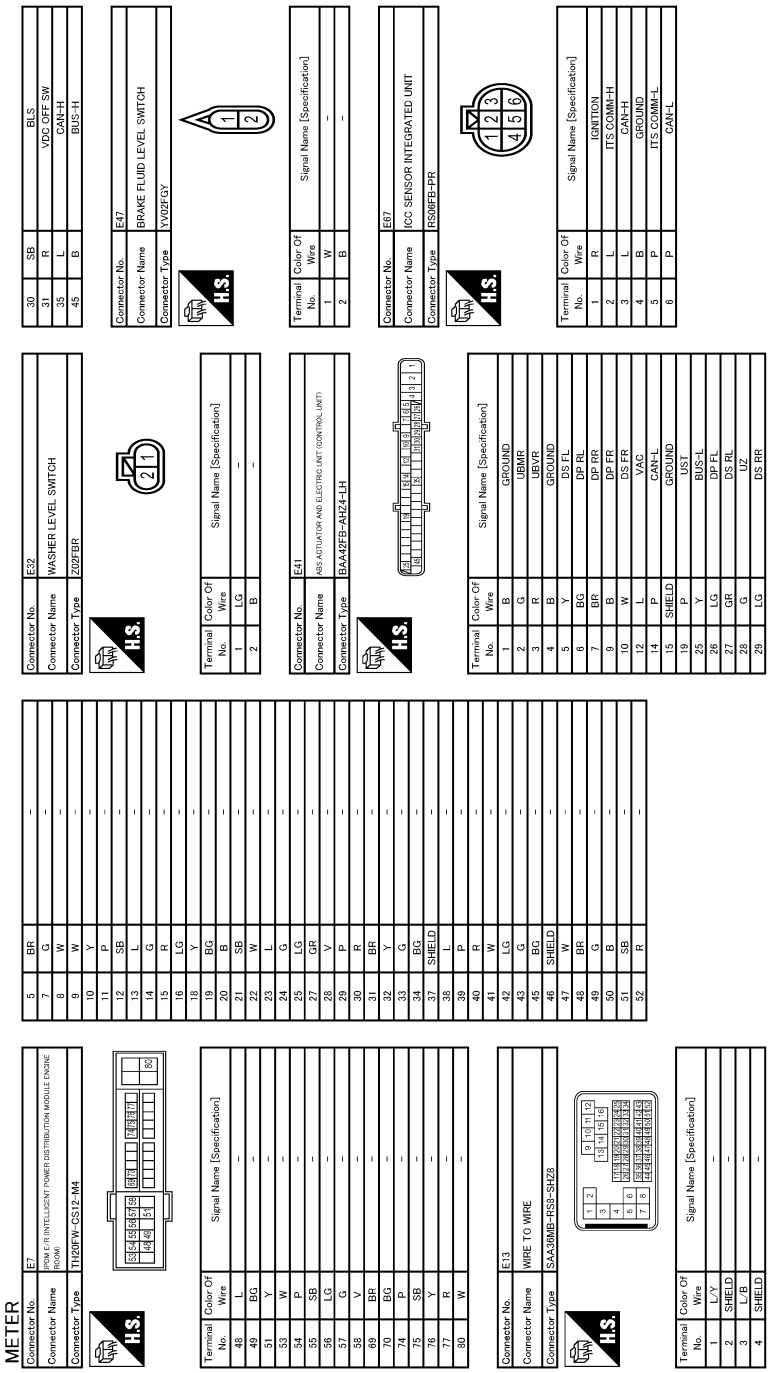

NV : With NAVI
ON : Without NAVI
IC : With ICC
*: This connector is not shown in "Harness Layout".
UNIFIED METER AND A/C AMP.
M66, M67
FUEL LEVEL SENSOR UNIT (SUB) B21
FUEL LEVEL SENSOR UNIT AND FUEL PUMP (MAIN) B22
M7
B1
89
87
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E6, E7
CPU
E13
F40
21
OIL PRESSURE SWITCH F37
A/T SHIFT SELECTOR M137
AUTO
MODE SELECT SWITCH
MANUAL
DOWN
UP
N
POSITION SELECT SWITCH
M95
ICC SENSOR INTEGRATED UNIT E67 : IC
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) E41
A/T ASSEMBLY F51
JOINT CONNECTOR
TCM* F301
DATA LINE
DATA LINE
AV CONTROL UNIT M215, M217 : ON
AV CONTROL UNIT M151 : NV
To base audio without navigation
To BOSE audio without navigation
To BOSE audio with navigation
To electronically controlled power steering system
To sunroof
JRNWD4489GB



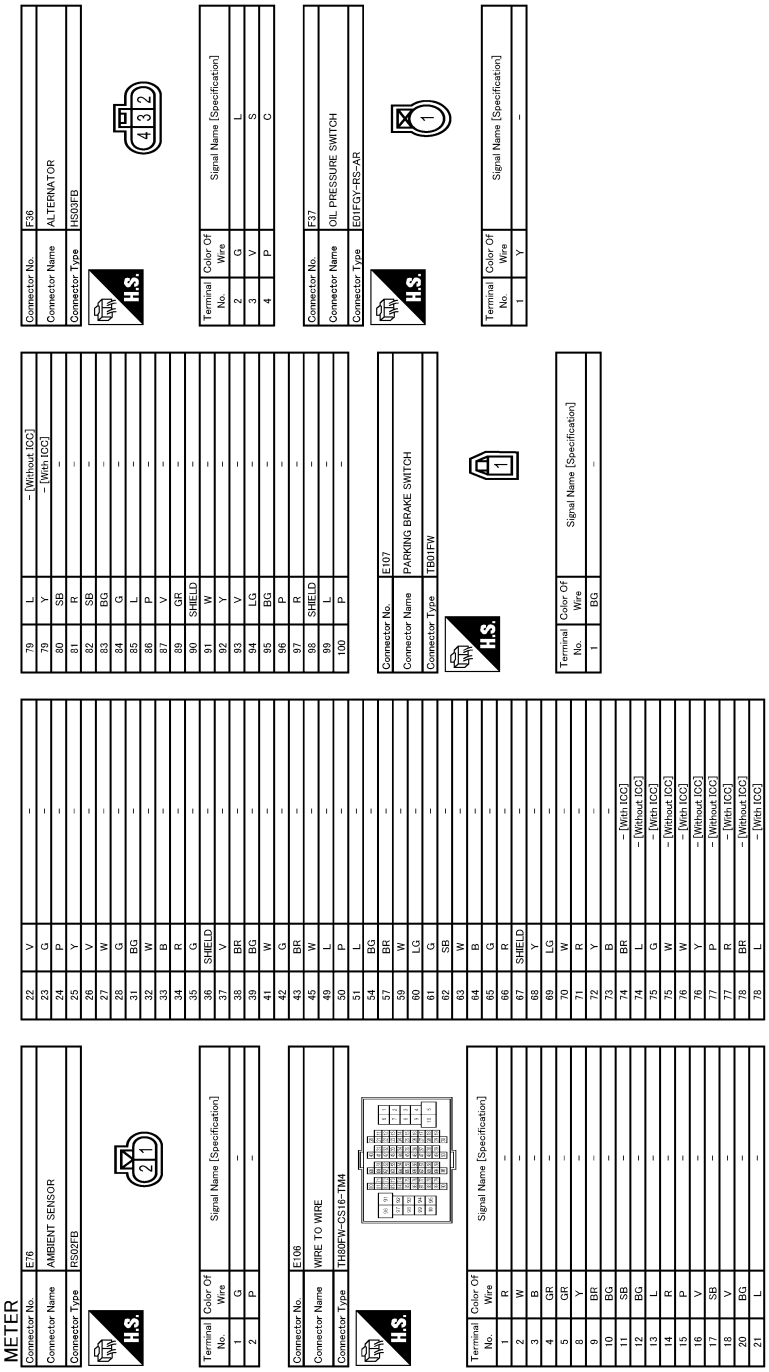
JRNWD4490GB



JRNWD4601GB



JRNWD4602GB



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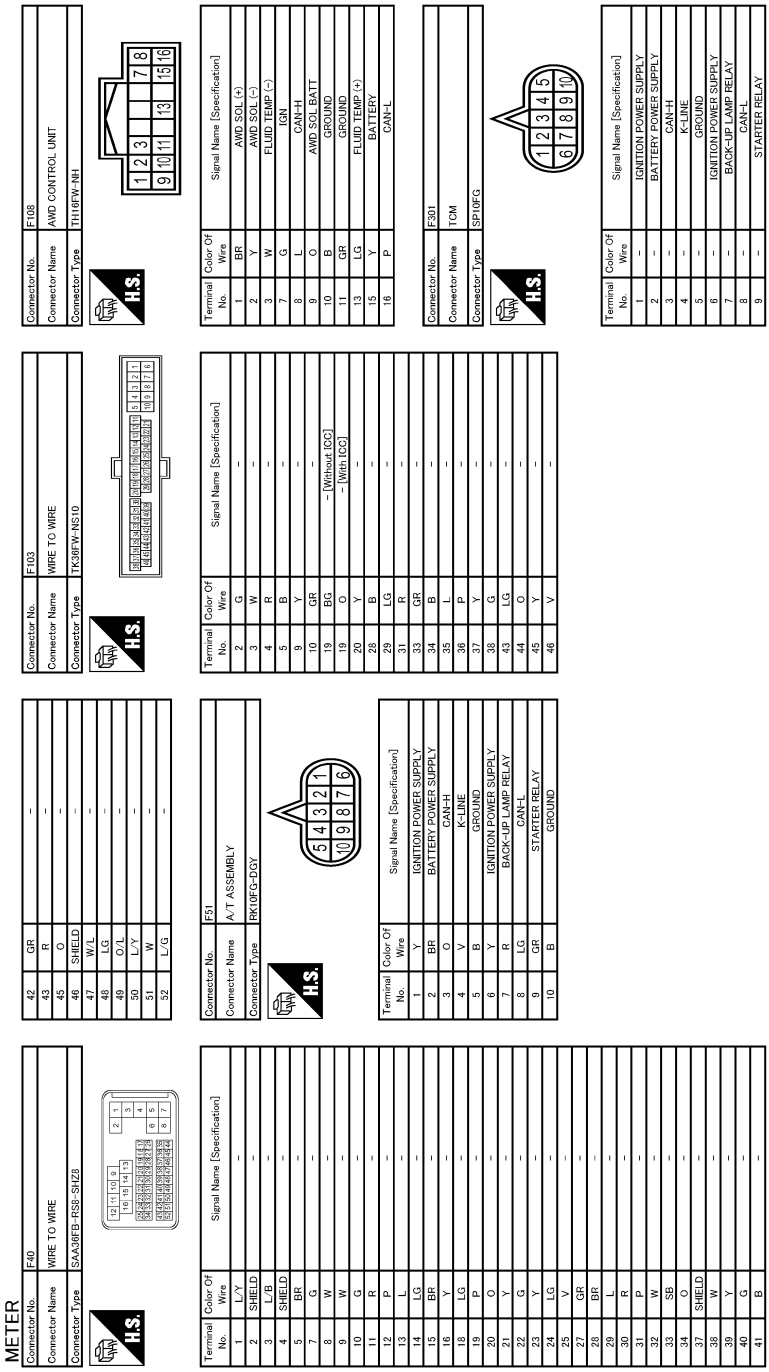

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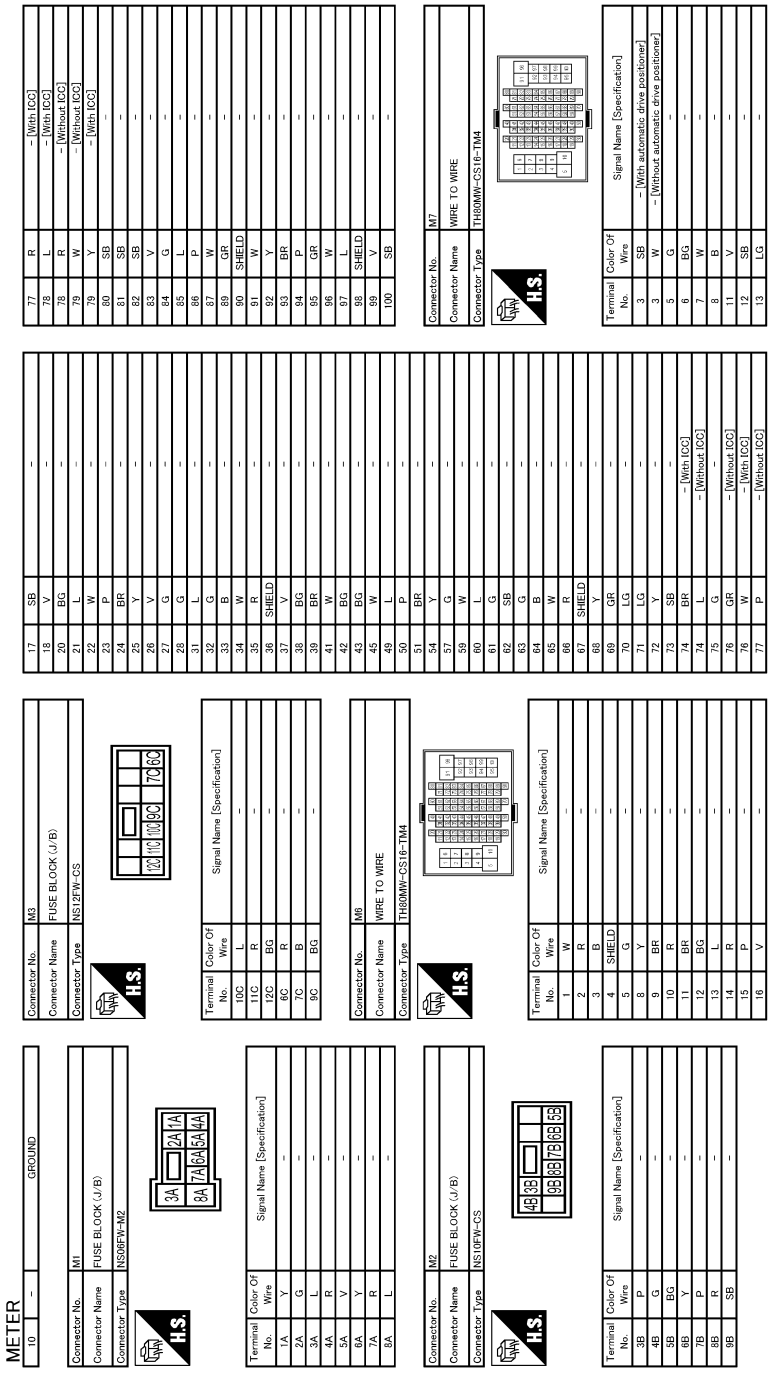

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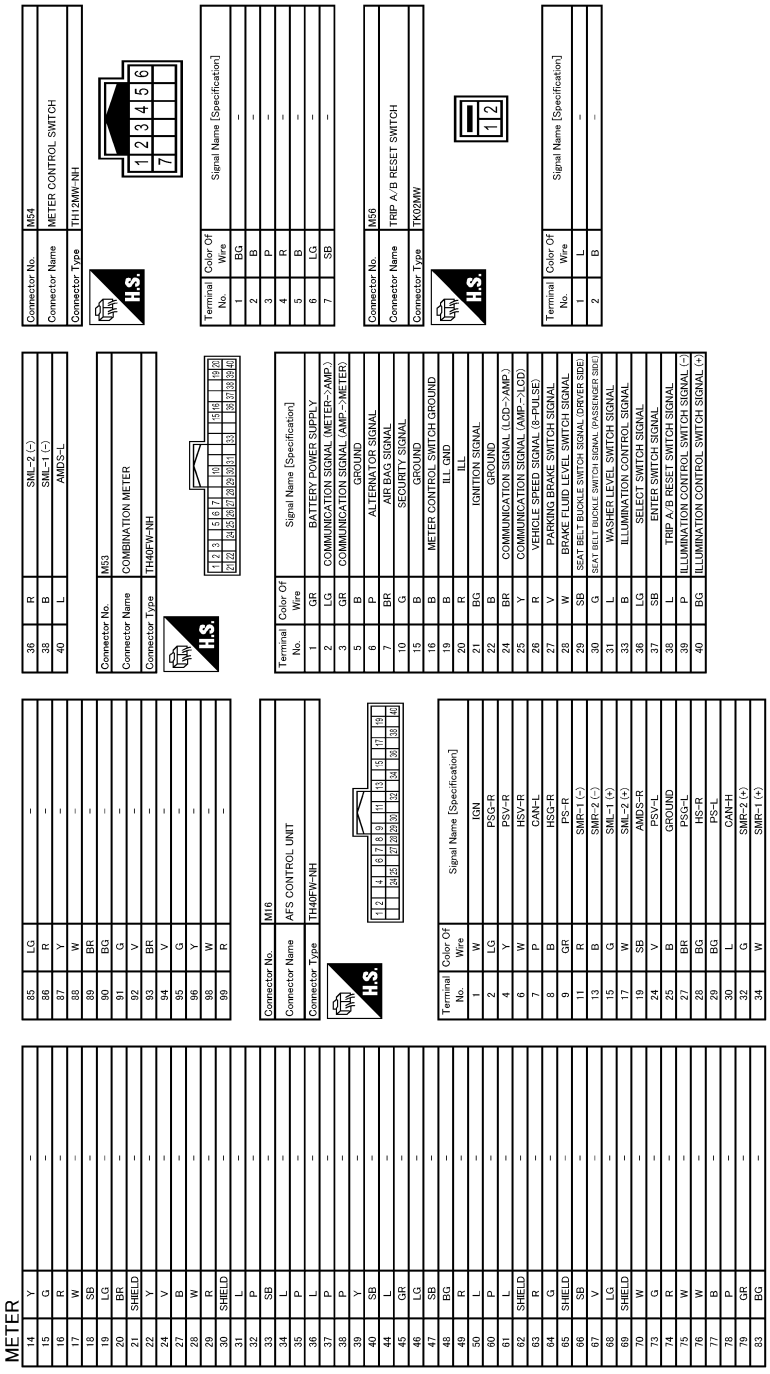


JRNWD4606GB

METER

Connector No.	M66
Connector Name	UNIFIED METER AND A/C AMP.
Connector Type	TH40FW-NH

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
5	L	MANUAL MODE SHIFT UP SIGNAL
7	GR	COMMUNICATION SIGNAL (AMP.->METER)
8	L	VEHICLE SPEED SIGNAL (2-PULSE)
9	SB	SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)
10	W	MANUAL MODE SIGNAL
11	G	NON-MANUAL MODE SIGNAL
14	BR	COMMUNICATION SIGNAL (LCD->AMP.)
20	L	IGN ON/OFF SIGNAL
23	Y	AT SNOW SWITCH SIGNAL
25	V	MANUAL MODE SHIFT DOWN SIGNAL
27	LG	COMMUNICATION SIGNAL (METER->AMP.)
28	R	VEHICLE SPEED SIGNAL (8-PULSE)
30	V	PARKING BRAKE SWITCH SIGNAL
34	Y	COMMUNICATION SIGNAL (AMP.->LCD)
38	P	BLOWER MOTOR CONTROL SIGNAL

Connector No.	M67
Connector Name	UNIFIED METER AND A/C AMP.
Connector Type	TH32FW-NH

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
41	V	ACC POWER SUPPLY
42	Y	FUEL LEVEL SENSOR SIGNAL
43	R	INTAKE SENSOR SIGNAL
44	LG	IN-VEHICLE SENSOR SIGNAL
45	P	AMBIENT SENSOR SIGNAL
46	BG	SUNLOAD SENSOR SIGNAL
47	G	EXHAUST GAS / OUTSIDE DOOR DETECTING SENSOR SIGNAL
53	G	IGNITION POWER SUPPLY
54	Y	BATTERY POWER SUPPLY
55	B	GROUND
56	L	CAN-H
57	W	BRAKE FLUID LEVEL SWITCH SIGNAL
58	BR	FUEL LEVEL SENSOR GROUND
59	GR	INTAKE SENSOR GROUND
60	L	IN-VEHICLE SENSOR GROUND
61	BR	AMBIENT SENSOR GROUND
62	SB	SUNLOAD SENSOR GROUND
63	R	-
65	BG	ECV SIGNAL
69	L	A/C LAN SIGNAL
70	R	EACH DOOR MOTOR POWER SUPPLY
71	B	GROUND
72	P	CAN-L

Connector No.	M107
Connector Name	ECM
Connector Type	RH24FGY-RZ8-R-LH-Z

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
97	R	ACCELERATOR PEDAL POSITION SENSOR 1
98	P	ACCELERATOR PEDAL POSITION SENSOR 2 [Without ICC]
98	Y	ACCELERATOR PEDAL POSITION SENSOR 2 [With ICC]
99	G	SENSOR POWER SUPPLY [With ICC]
99	L	SENSOR POWER SUPPLY [Without ICC]
100	W	SENSOR GROUND
101	SB	ASCD /ICC STEERING SWITCH
102	LG	EVAP CONTROL SYSTEM PRESS SENSOR
103	G	SENSOR POWER SUPPLY [Without ICC]
103	L	SENSOR POWER SUPPLY [With ICC]
104	BR	SENSOR GROUND [With ICC]
104	GR	SENSOR GROUND [Without ICC]
105	L	REFRIGERANT PRESS SENSOR
106	W	FUEL TANK TEMPERATURE SENSOR
107	BG	SENSOR POWER SUPPLY
108	Y	SENSOR GROUND
109	G	PNP SIGNAL
110	R	ENGINE SPEED OUTPUT SIGNAL
112	V	SENSOR GROUND
113	P	CAN COMMUNICATION LINE
114	L	CAN COMMUNICATION LINE
117	V	DATA LINK CONNECTOR
121	LG	EVAP CANISTER VENT CONTROL VALVE
122	P	STOP LAMP SWITCH
123	B	ECM GROUND
124	B	ECM GROUND
125	R	POWER SUPPLY FOR ECM
126	BR	ASCD /ICC BRAKE SWITCH
127	B	ECM GROUND
128	B	ECM GROUND

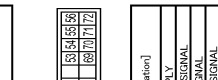
Connector No.	M116
Connector Name	WIRE TO WIRE
Connector Type	TK38MW-NS10

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
2	P	-
3	L	-
4	R	-
5	B	-
9	R	-
10	R	-
19	BG	-
20	Y	-
28	B	-
29	LG	-
31	W	-
33	B	-
34	B	-
35	L	-
36	P	-
37	Y	-
38	G	-
43	P	-
44	L	-
45	BR	-
46	BG	-

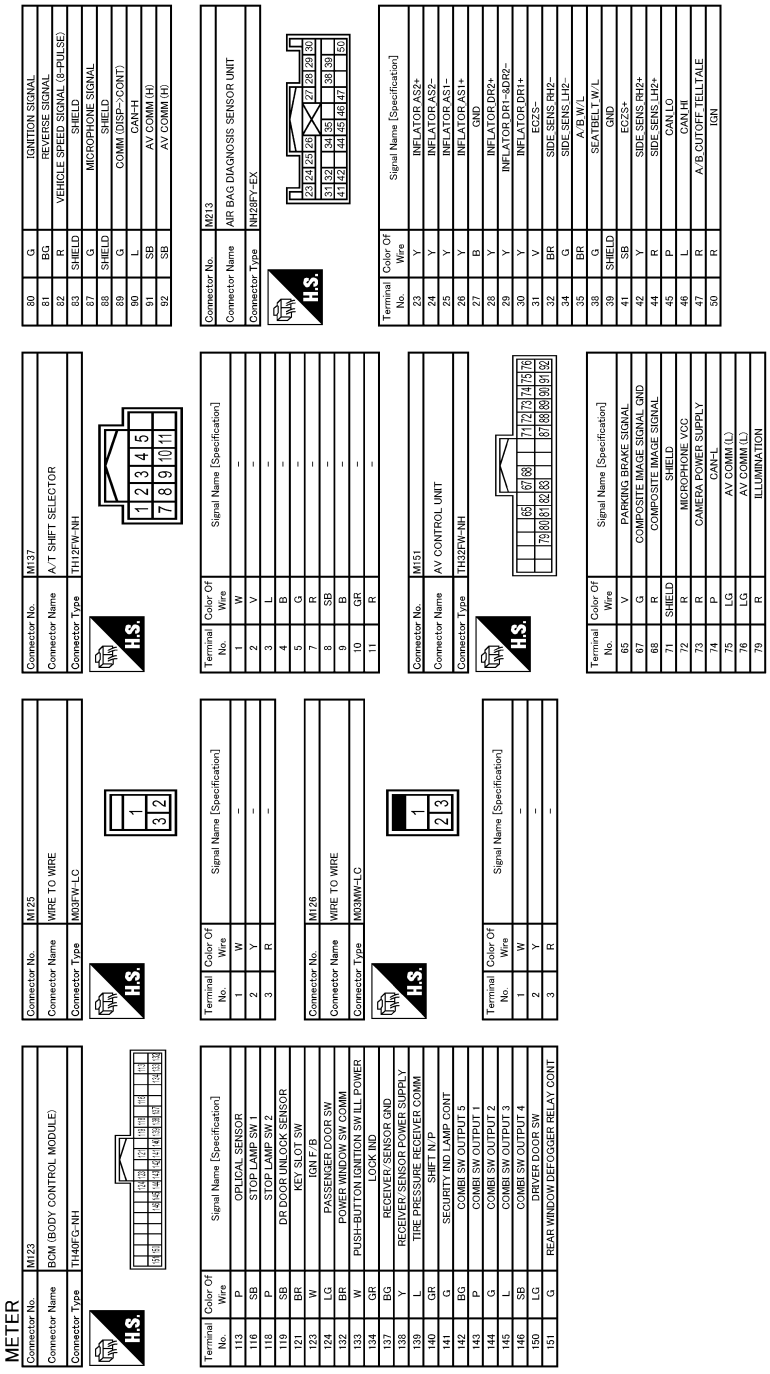
Connector No.	M122
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
74	SB	PASSENGER DOOR ANT-
75	GR	PASSENGER DOOR ANT+
76	V	DRIVER DOOR ANT-
77	LG	DRIVER DOOR ANT+
78	Y	ROOM ANT1-
79	BR	ROOM ANT1+
80	GR	NATS ANT AMP.
81	W	NATS ANT AMP.
82	R	IGN RELAY (F/B) CONT
83	Y	KEYLESS ENTRY RECEIVER COMM
87	BR	COMBI SW INPUT 5
88	V	COMBI SW INPUT 3
90	P	CAN-L
91	L	CAN-H
92	LG	KEY SLOT ILL CONT
93	V	ON IND
94	Y	PUDDLE LAMP CONT
95	BG	ACC RELAY CONT
96	GR	A/T SHIFT SELECTOR POWER SUPPLY
99	R	SHIFT P
100	G	PASSENGER DOOR REQUEST SW
101	SB	DRIVER DOOR REQUEST SW
102	BG	BLOWER FAN MOTOR RELAY CONT
103	LG	KEYLESS ENTRY RECEIVER POWER SUPPLY
107	LG	COMBI SW INPUT 1
108	R	COMBI SW INPUT 4
109	Y	COMBI SW INPUT 2
110	G	HAZARD SW

JRNWD4607GB



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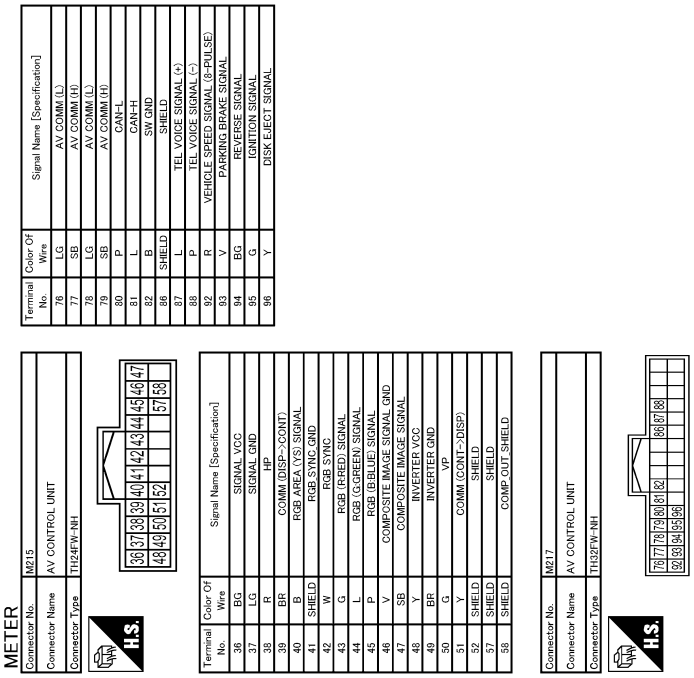


JRNWD4609GB

Fail-Safe

INFOID:0000000010597267

FAIL-SAFE

Combination meter performs fail-safe operation when unified meter and A/C amp. communication is malfunction.

Solution for communication error between the unified meter and A/C amp. and combination meter.

Function		Specifications
Speedometer		Reset to zero by suspending communication.
Tachometer		
Fuel gauge		
Water temperature gauge		
Illumination control		When suspending communication, change to nighttime mode.
Information display		The display turns off by suspending communication.
Buzzer		The buzzer turns off by suspending communication.
Warning lamp/indicator lamp	ABS warning lamp	The lamp turns on by suspending communication.
	VDC warning lamp	
	Brake warning lamp	
	CRUISE warning lamp	
	IBA OFF indicator lamp	
	Malfunction indicator lamp	
	High beam indicator	The lamp turns off by suspending communication.
	Turn signal indicator lamp	
	Tail lamp indicator lamp	
	Oil pressure warning lamp	
	A/T CHECK warning lamp	
	AWD warning lamp	
	Low tire pressure warning lamp	
	Key warning lamp	
	VDC OFF indicator lamp	
	BSW warning lamp	
	AFS OFF indicator lamp	
	Lane departure warning lamp	
	LDP ON indicator lamp	
	Master warning lamp	

DTC Index

INFOID:0000000010597268

Refer to MWI-109, "DTC Index".

UNIFIED METER AND A/C AMP.

Reference Value

INFOID:0000000010597269

VALUES ON THE DIAGNOSIS TOOL

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

CONSULT MONITOR ITEM

Monitor Item	Condition		Value/Status
SPEED METER [km/h] or [mph]	Ignition switch ON	While driving	Equivalent to speedometer reading **NOTE:** 655.35 is displayed when the malfunction signal is received
SPEED OUTPUT [km/h] or [mph]	Ignition switch ON	While driving	Equivalent to speedometer reading **NOTE:** 655.35 is displayed when the malfunction signal is received
ODO OUTPUT [km/h] or [mph]	Ignition switch ON	—	Equivalent to odometer reading in combination meter
TACHO METER [rpm]	Ignition switch ON	While driving	Equivalent to tachometer reading **NOTE:** 8191.875 is displayed when the malfunction signal is received
FUEL METER [L]	Ignition switch ON	—	Values according to fuel level
W TEMP METER [°C] or [°F]	Ignition switch ON	—	Values according to engine coolant temperature **NOTE:** 215 is displayed when the malfunction signal is input
FUEL CAP W/L	Ignition switch ON	Fuel filler cap warning display ON	On
		Fuel filler cap warning display OFF	Off
ABS W/L	Ignition switch ON	ABS warning lamp ON	On
		ABS warning lamp OFF	Off
VDC/TCS IND	Ignition switch ON	VDC OFF indicator lamp ON	On
		VDC OFF indicator lamp OFF	Off
SLIP IND	Ignition switch ON	VDC warning lamp ON	On
		VDC warning lamp OFF	Off
BRAKE W/L	Ignition switch ON	Brake warning lamp ON	On
		Brake warning lamp OFF	Off
DOOR W/L	Ignition switch ON	Door warning displayed	On
		Door warning not displayed	Off
HI-BEAM IND	Ignition switch ON	Hi-beam indicator lamp ON	On
		Hi-beam indicator lamp OFF	Off
TURN IND	Ignition switch ON	Turn indicator lamp ON	On
		Turn indicator lamp OFF	Off
FR FOG IND	Ignition switch ON	Front fog light indicator lamp ON	On
		Front fog light indicator lamp OFF	Off
RR FOG IND	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off

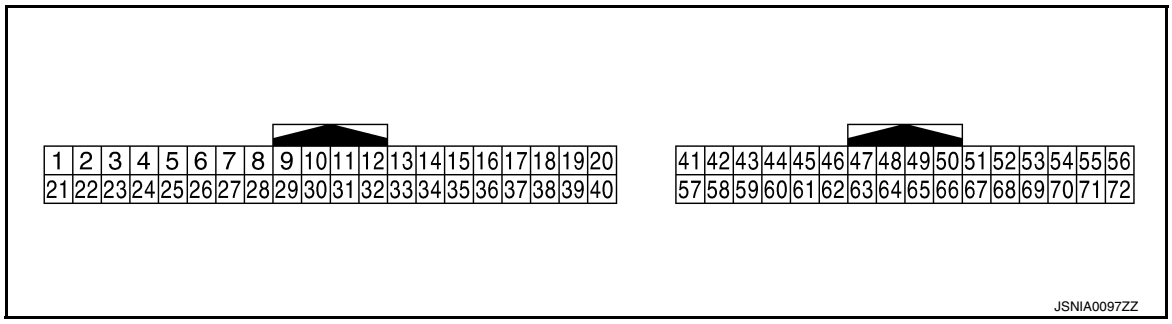
Monitor Item	Condition		Value/Status
LIGHT IND	Ignition switch ON	Tail lamp indicator lamp ON	On
		Tail lamp indicator lamp OFF	Off
OIL W/L	Ignition switch ON	Oil pressure warning lamp ON	On
		Oil pressure warning lamp OFF	Off
MIL	Ignition switch ON	Malfunction warning lamp ON	On
		Malfunction warning lamp OFF	Off
GLOW IND	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
C-ENG2 W/L	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
CRUISE IND	Ignition switch ON	CRUISE indicator displayed	On
		CRUISE indicator not displayed	Off
SET IND	Ignition switch ON	SET indicator lamp ON	On
		SET indicator lamp OFF	Off
CRUISE W/L	Ignition switch ON	CRUISE warning lamp ON	On
		CRUISE warning lamp OFF	Off
BA W/L	Ignition switch ON	IBA OFF indicator lamp ON	On
		IBA OFF indicator lamp ON	Off
ATC/T-AMT W/L	Ignition switch ON	A/T check warning lamp ON	On
		A/T check warning lamp OFF	Off
4WD W/L	Ignition switch ON	AWD warning lamp ON	On
		AWD warning lamp OFF	Off
4WD LOCK IND	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
FUEL W/L	Ignition switch ON	Low-fuel warning lamp displayed	On
		Low-fuel warning lamp not displayed	Off
WASHER W/L	Ignition switch ON	Washer warning displayed	On
		Washer warning not displayed	Off
AIR PRES W/L	Ignition switch ON	Low tire pressure warning lamp ON	On
		Low tire pressure warning lamp OFF	Off
KEY G/Y W/L	Ignition switch ON	Key warning lamp ON	On
		Key warning lamp OFF	Off
AFS OFF IND	Ignition switch ON	AFS OFF indicator lamp ON	On
		AFS OFF indicator lamp OFF	Off
4WAS/RAS W/L	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
DDS W/L	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
LANE W/L	Ignition switch ON	Lane departure warning lamp ON	On
		Lane departure warning lamp OFF	Off
LDP IND	Ignition switch ON	LDP ON indicator lamp ON	On
		LDP ON indicator lamp OFF	Off

Monitor Item	Condition		Value/Status
DCA IND	Ignition switch ON	DCA switch indicator displayed	On
		DCA switch indicator not displayed	Off
BSW W/L	Ignition switch ON	BSW warning lamp ON	On
		BSW warning lamp OFF	Off
LCD	Ignition switch ON	Engine start information display	B&P I
	Ignition switch ACC	Engine start information display	B&P N
	Ignition switch LOCK	Key ID warning display	ID NG
	Ignition switch LOCK	Steering lock information display	ROTAT
	Ignition switch LOCK	P position warning display	SFT P
	Ignition switch LOCK	Intelligent Key insert information display	INSRT
	Ignition switch LOCK	Intelligent Key low battery warning display	BATT
	Ignition switch ON	Take away warning display	NO KY
	Ignition switch LOCK	Key warning display	OUTKY
	Ignition switch ON	ACC warning display	LK WN
ACC TARGET	Ignition switch ON	Vehicle ahead detection indicator displayed	On
		Vehicle ahead detection indicator not displayed	Off
ACC DISTANCE	Ignition switch ON	When following distance set to “LONG”	LONG
		When following distance set to “MIDDLE”	MID
		When following distance set to “SHORT”	SHORT
		Set distance indicator not displayed	Off
ACC OWN VHL	Ignition switch ON	Own vehicle indicator displayed	On
		Own vehicle indicator not displayed	Off
ACC SET SPEED	Ignition switch ON	Set vehicle speed indicator not displayed	Off
		Set vehicle speed indicator displayed	Indicates the set vehicle speed
ACC UNIT	Ignition switch ON	Set vehicle speed indicator unit display ON	On
		Set vehicle speed indicator unit display OFF	Off

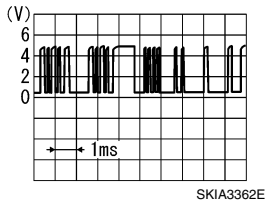
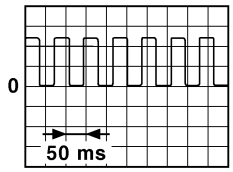
Monitor Item	Condition		Value/Status
SHIFT IND	Ignition switch ON	Shift position indicator P display	P
		Shift position indicator R display	R
		Shift position indicator N display	N
		Shift position indicator D display	D
		Shift position indicator DS display	L
		Shift position indicator M1 display	M1
		Shift position indicator M2 display	M2
		Shift position indicator M3 display	M3
		Shift position indicator M4 display	M4
		Shift position indicator M5 display	M5
		Shift position indicator M6 display	M6
		Shift position indicator M7 display	M7
O/D OFF SW	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
AT S MODE SW	Ignition switch ON	Snow mode switch ON	On
		Snow mode switch OFF	Off
AT P MODE SW	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
M RANGE SW	Ignition switch ON	Selector lever manual mode position	On
		Other than the above	Off
NM RANGE SW	Ignition switch ON	Selector lever manual mode position	Off
		Other than the above	On
AT SFT UP SW	Ignition switch ON	Selector lever + position	On
		Other than the above	Off
AT SFT DWN SW	Ignition switch ON	Selector lever – position	On
		Other than the above	Off
ST SFT UP SW	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
ST SFT DWN SW	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
COMP F/B SIG	Ignition switch ON	A/C compressor activation condition	On
		A/C compressor deactivation condition	Off
4WD LOCK SW	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
PKB SW	Ignition switch ON	Parking brake switch ON	On
		Parking brake switch OFF	Off
BUCKLE SW	Ignition switch ON	Driver seat belt not fastened	On
		Driver seat belt fastened	Off
BRAKE OIL SW	Ignition switch ON	Brake fluid level switch ON	On
		Brake fluid level switch OFF	Off
DISTANCE [km]	Ignition switch ON	—	Possible driving distance calculated by unified meter and A/C amp.

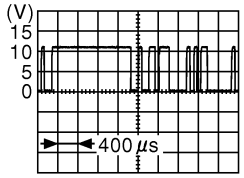
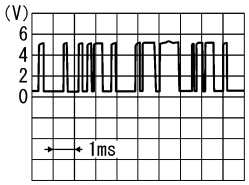
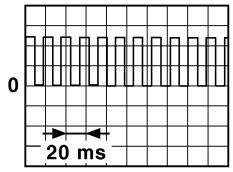
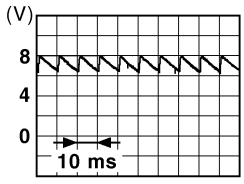
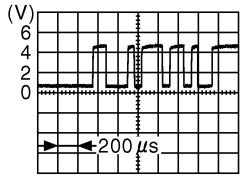
Monitor Item	Condition		Value/Status
OUTSIDE TEMP [°C] or [°F]	Ignition switch ON	—	Equivalent to ambient temperature **NOTE:** This may not match the indicated value on the information display.
FUEL LOW SIG	Ignition switch ON	Low-fuel warning signal output	On
		Low-fuel warning signal not output	Off
BUZZER	Ignition switch ON	Buzzer ON	On
		Buzzer OFF	Off

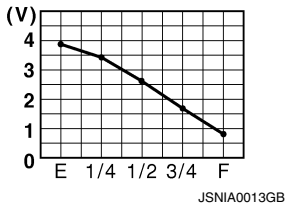
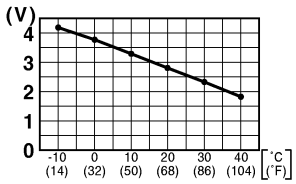
TERMINAL LAYOUT



PHYSICAL VALUES

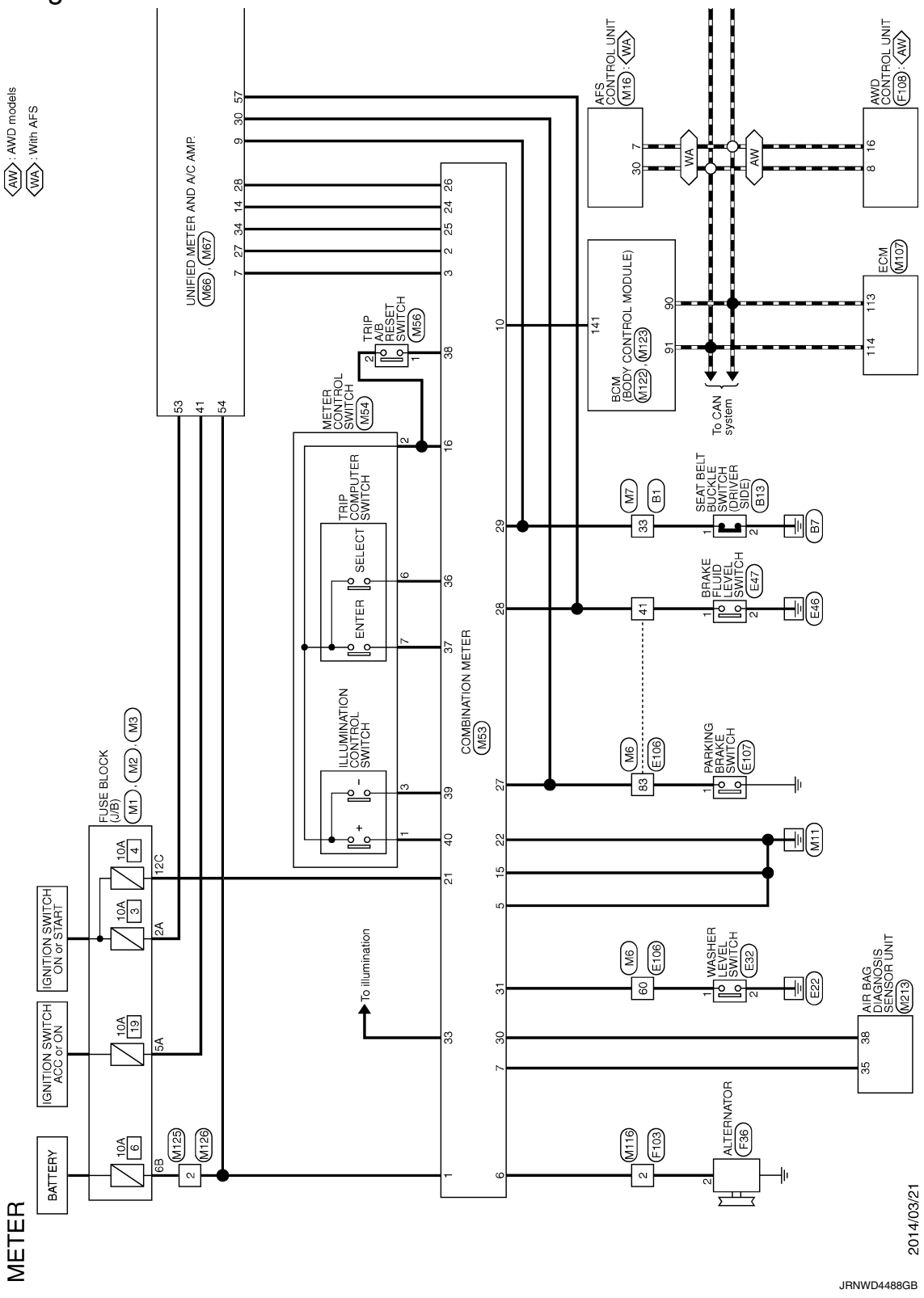
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
5 (L)	Ground	Manual mode shift up signal	Input	Ignition switch ON	Selector lever UP operation	0 V
					Other than the above	12 V
7 (GR)	Ground	Communication signal (AMP. → METER)	Output	Ignition switch ON	—	 SKIA3362E
8 (L)	Ground	Vehicle speed signal (2-pulse)	Output	Ignition switch ON	Speedometer operated [When vehicle speed is approx. 40 km/h (25 MPH)]	**NOTE:** The maximum voltage varies depending on the specification (destination unit).  JSNIA0015GB
9 (SB)	Ground	Seat belt buckle switch signal (driver side)	Input	Ignition switch ON	When seat belt is fastened	12 V
					When seat belt is not fastened	0 V
10 (W)	Ground	Manual mode signal	Input	Ignition switch ON	Selector lever DS position	0 V
					Other than the above	12 V

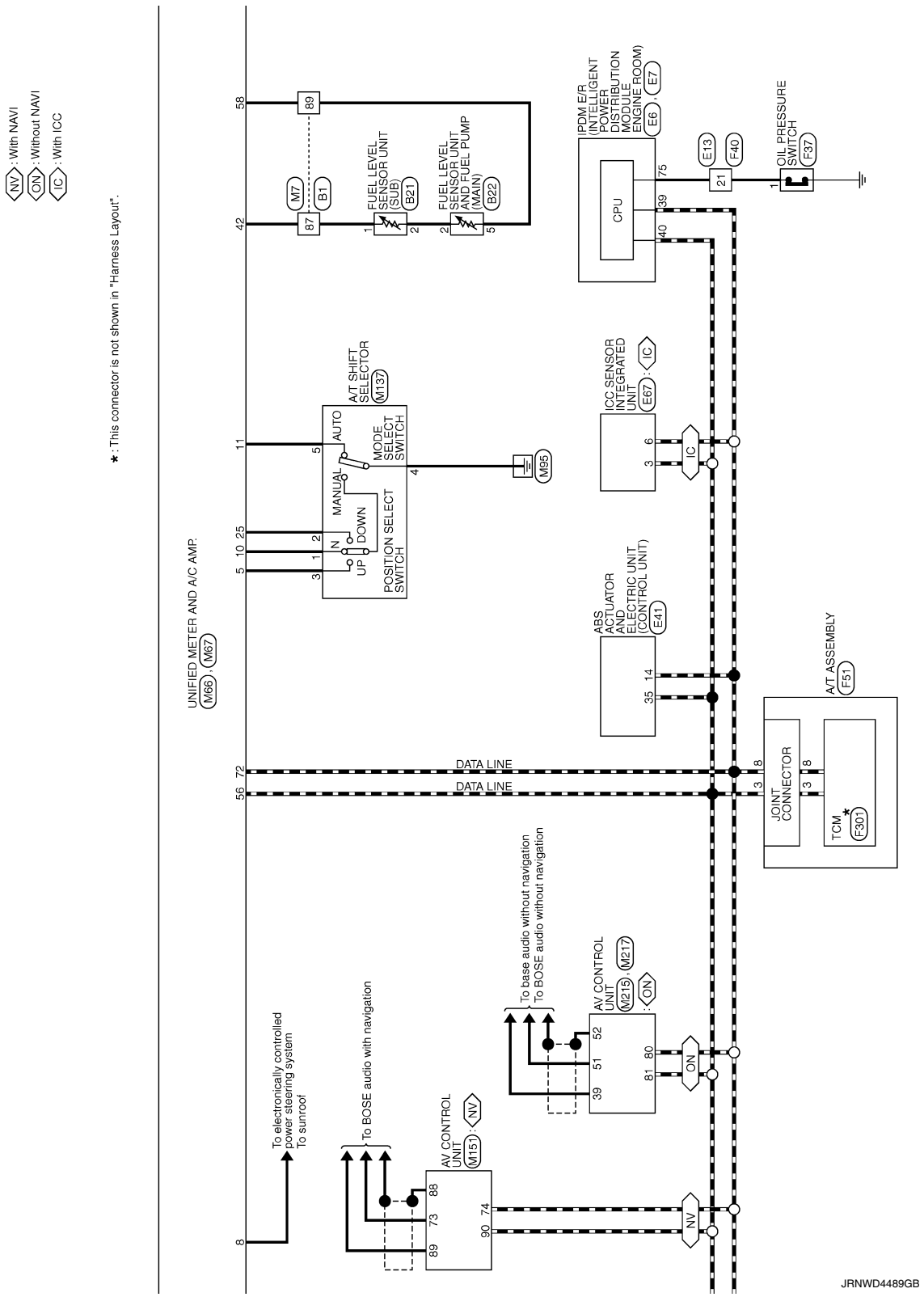
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
11 (G)	Ground	Non-manual mode signal	Input	Ignition switch ON	Selector lever DS position	12 V
					Other than the above	0 V
14 (BR)	Ground	Communication signal (LCD → AMP.)	Input	Ignition switch ON	—	 JSNIA0028GB
25 (V)	Ground	Manual mode shift down signal	Input	Ignition switch ON	Selector lever down operation	0 V
					Other than the above	12 V
27 (LG)	Ground	Communication signal (METER → AMP.)	Input	Ignition switch ON	—	 SKIA3361E
28 (R)	Ground	Vehicle speed signal (8-pulse)	Output	Ignition switch ON	Speedometer operated [When vehicle speed is approx. 40 km/h (25 MPH)]	**NOTE:** The maximum voltage varies depending on the specification (destination unit).  JSNIA0012GB
30 (V)	Ground	Parking brake switch signal	Input	Ignition switch ON	Parking brake is applied	0 V
					Parking brake is released	 JSNIA0007GB
34 (Y)	Ground	Communication signal (AMP. → LCD)	Output	Ignition switch ON	—	 JSNIA0027GB
41 (V)	Ground	ACC power supply	Input	Ignition switch ACC	—	Battery voltage

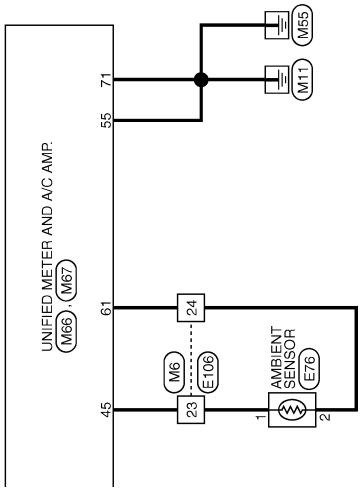
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
42 (Y)	Ground	Fuel level sensor signal	Input	Ignition switch ON	—	 JSNIA0013GB
45 (P)	Ground	Ambient sensor signal	Input	—	—	 JSNIA0014GB
53 (G)	Ground	Ignition power supply	Input	Ignition switch ON	—	Battery voltage
54 (Y)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
55 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
56 (L)	Ground	CAN-H	—	—	—	—
57 (W)	Ground	Brake fluid level switch signal	Input	Ignition switch ON	Brake fluid level is normal.	5 V
					The brake fluid level is lower than the low level	0 V
58 (BR)	Ground	Fuel level sensor ground	—	Ignition switch ON	—	0 V
61 (BR)	Ground	Ambient sensor ground	—	Ignition switch ON	—	0 V
71 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
72 (P)	Ground	CAN-L	—	—	—	—

Wiring Diagram - METER -

INFOID:0000000011009279




NV : With NAVI
ON : Without NAVI
IC : With ICC
*: This connector is not shown in "Harness Layout".
UNIFIED METER AND A/C AMP.
M66, M67
FUEL LEVEL SENSOR UNIT (SUB) B21
FUEL LEVEL SENSOR UNIT AND FUEL PUMP (MAIN) B22
M7
B1
87
89
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E6, E7
CPU
OIL PRESSURE SWITCH F37
E13
F40
A/T SHIFT SELECTOR M137
MODE SELECT SWITCH
AUTO
MANUAL
POSITION SELECT SWITCH
UP
DOWN
N
M95
ICC SENSOR INTEGRATED UNIT E67 : IC
IC
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) E41
A/T ASSEMBLY F51
JOINT CONNECTOR
TCM* F301
DATA LINE
DATA LINE
To base audio without navigation
To BOSE audio without navigation
AV CONTROL UNIT M215, M217 : ON
ON
To BOSE audio with navigation
AV CONTROL UNIT M151 : NV
NV
To electronically controlled power steering system
To sunroof
JRNWD4489GB



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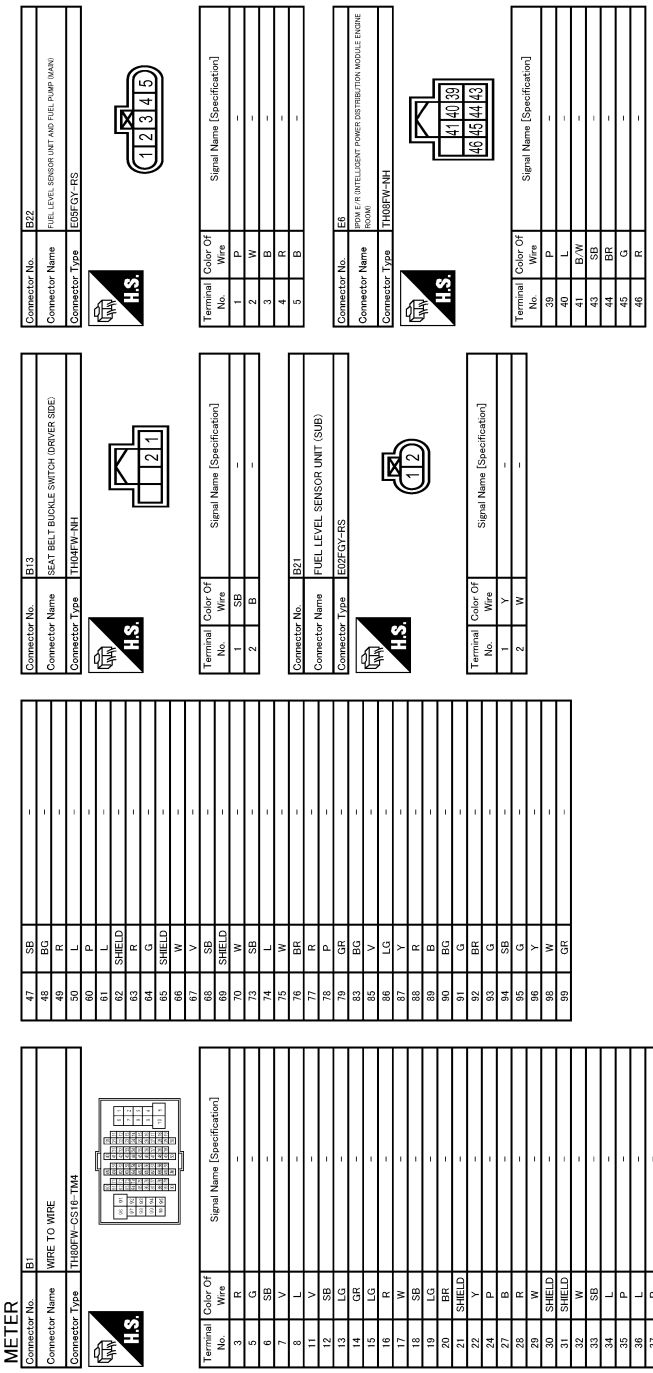

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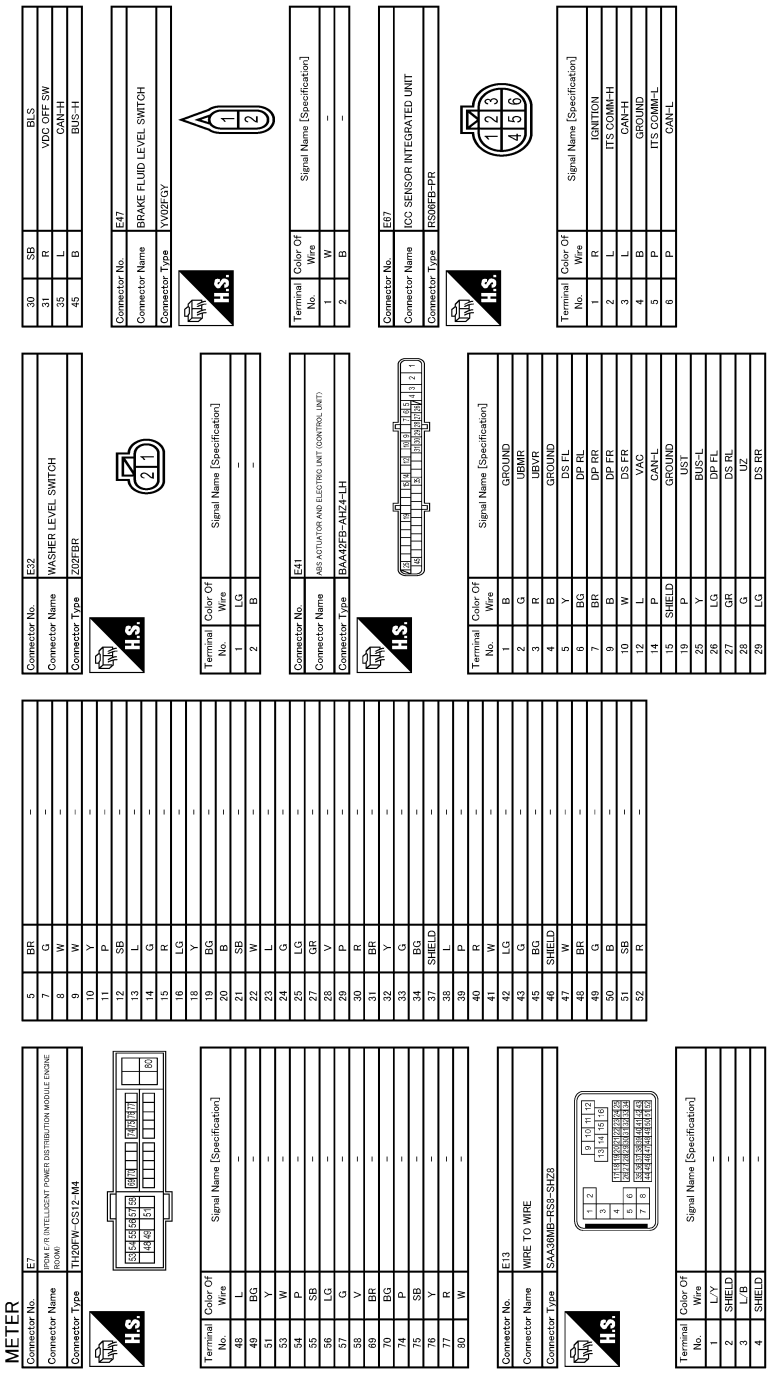

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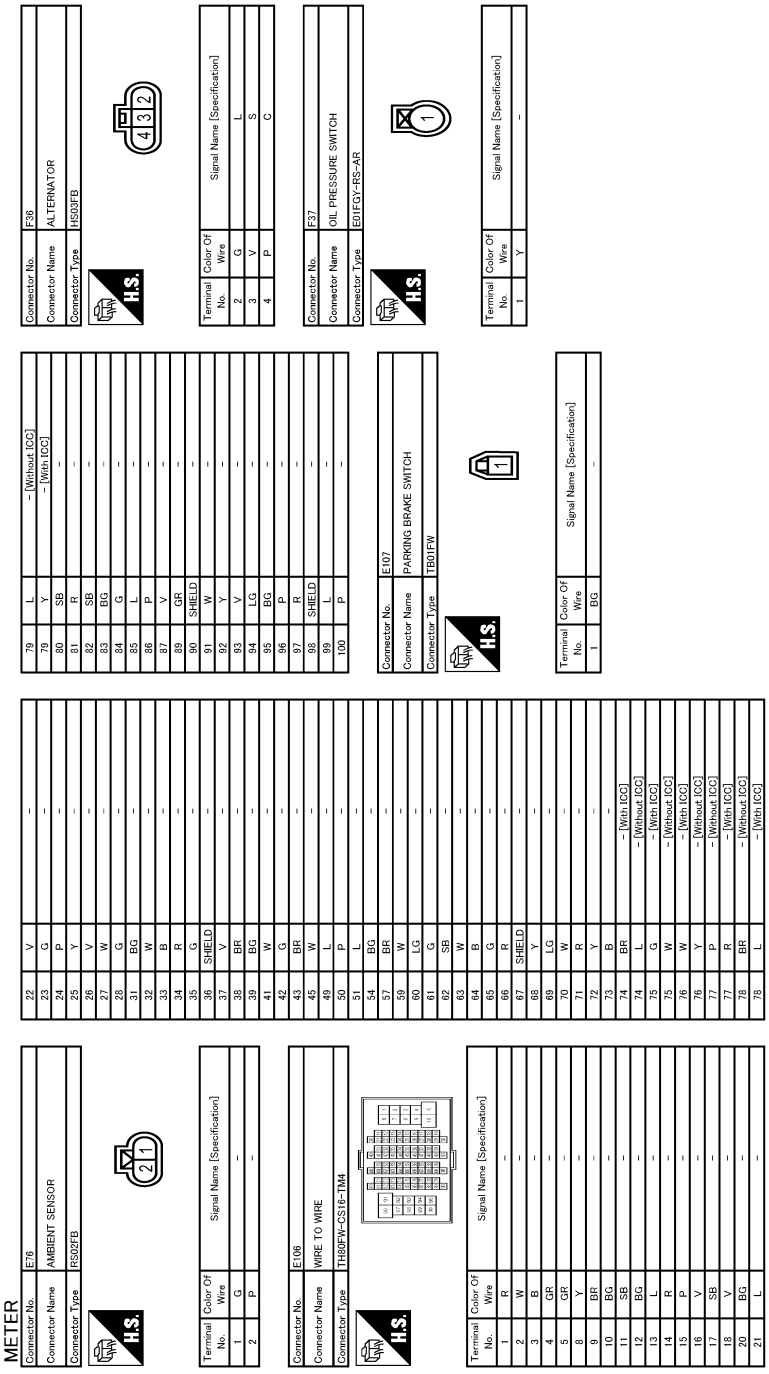

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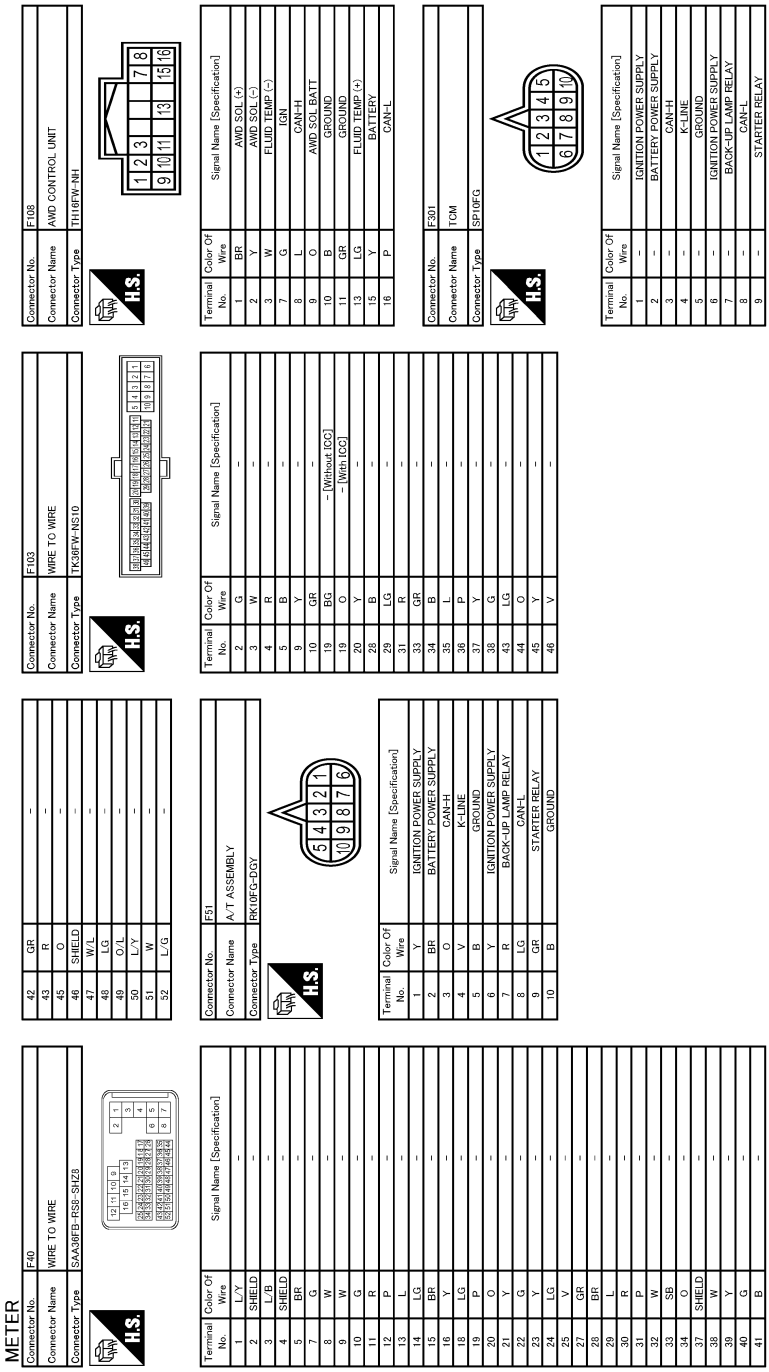

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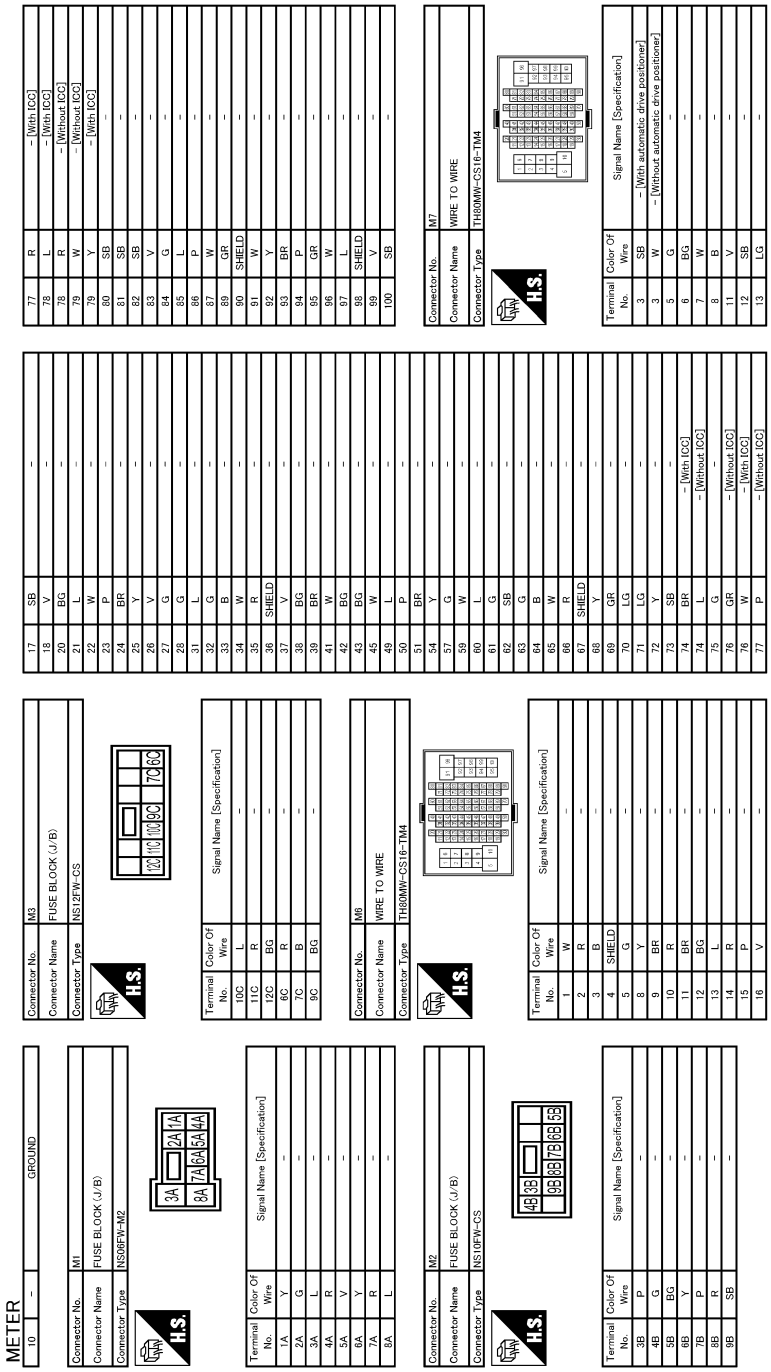

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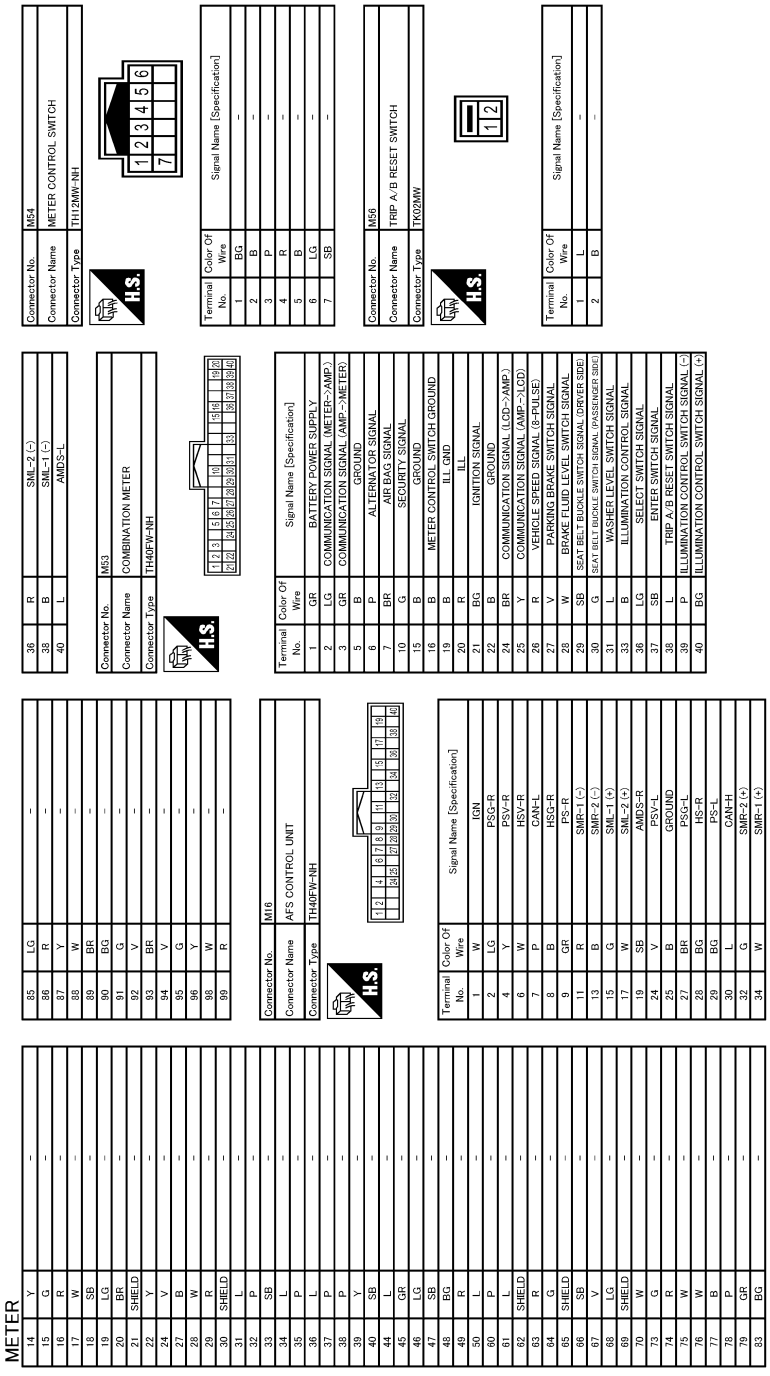

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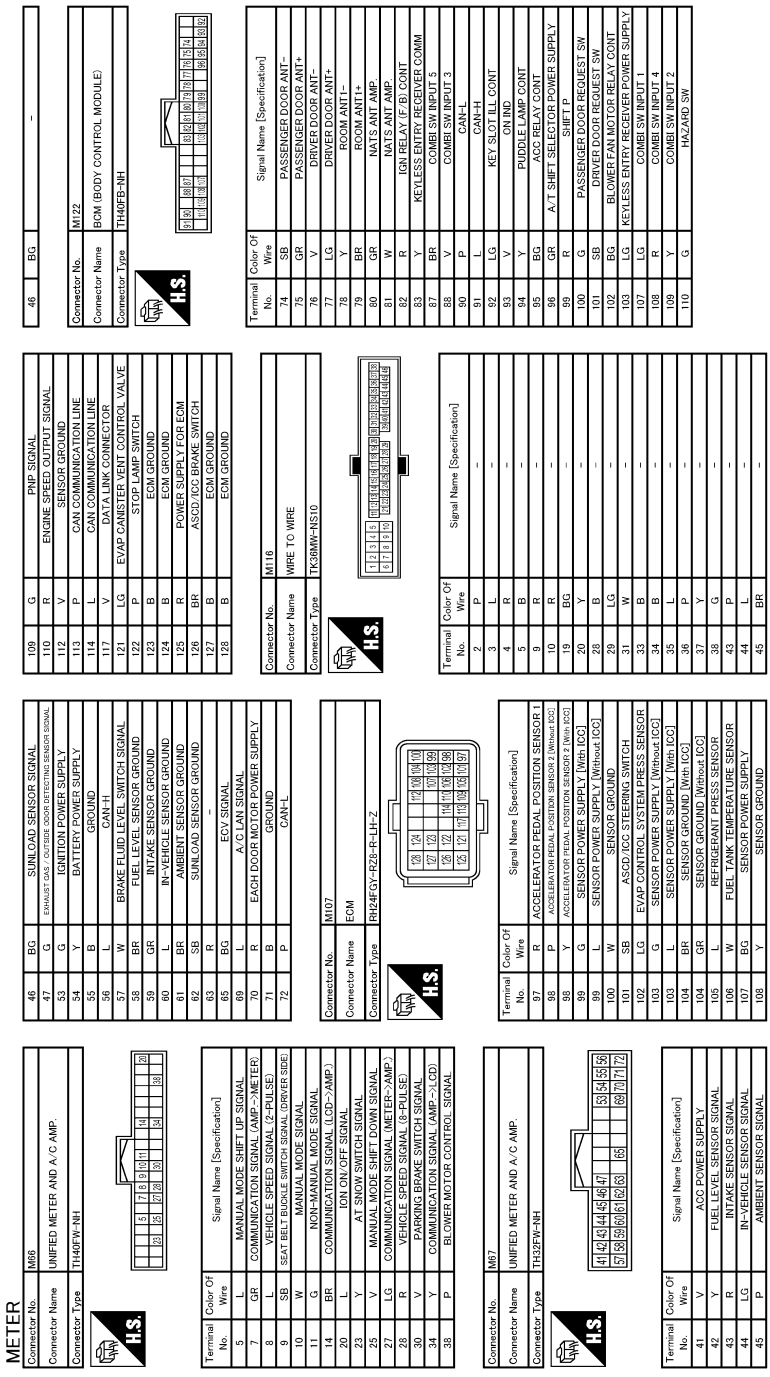

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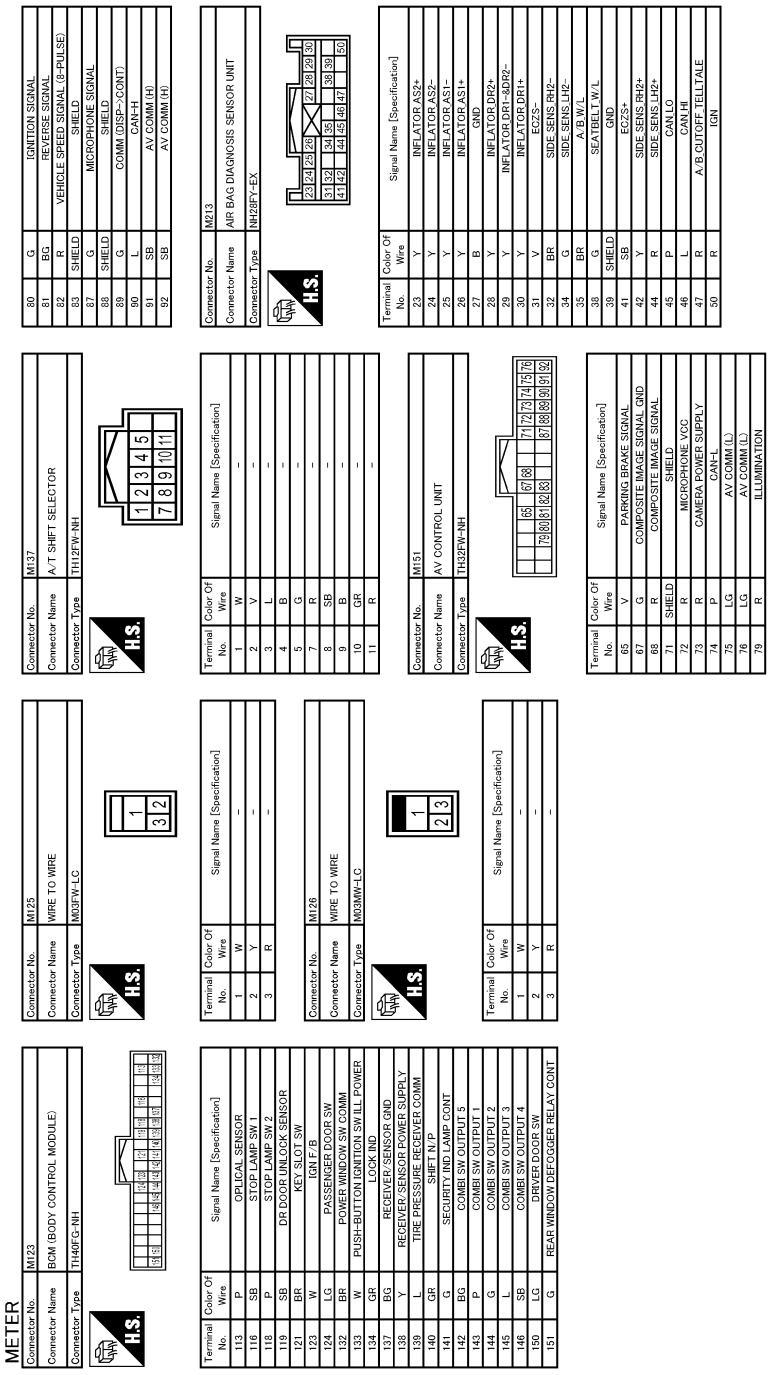

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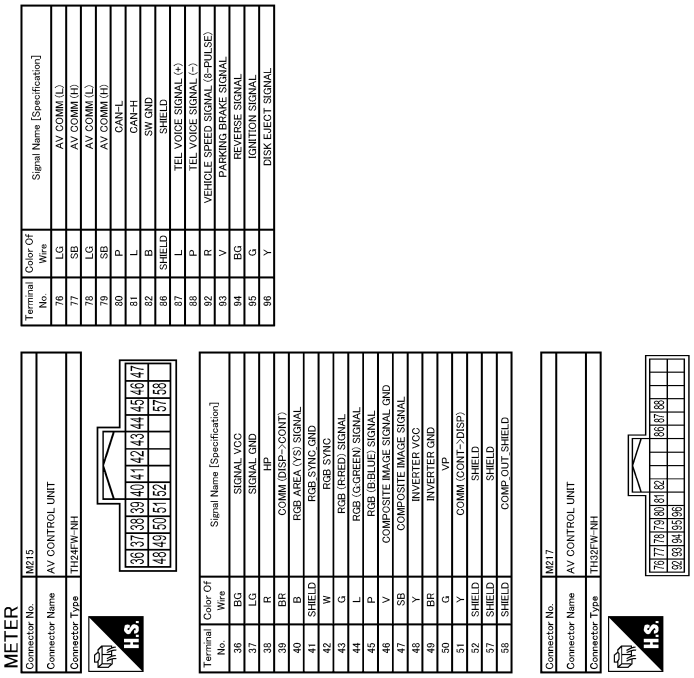


JRNWD4609GB

Fail-Safe

INFOID:0000000010597271

FAIL-SAFE

The unified meter and A/C amp. activates the fail-safe control if CAN communication with each unit is malfunctioning.

Function		Specifications
Speedometer		Reset to zero by suspending communication.
Tachometer		
Fuel gauge		
Water temperature gauge		
Illumination control		When suspending communication, change to nighttime mode.
Information display		The display turns off by suspending communication.
Buzzer		The buzzer turns off by suspending communication.
Warning lamp/indicator lamp	ABS warning lamp	The lamp turns on by suspending communication.
	VDC warning lamp	
	Brake warning lamp	
	CRUISE warning lamp	
	IBA OFF indicator lamp	
	AWD warning lamp	
	Low tire pressure warning lamp	
	Master warning lamp	
	AFS OFF indicator lamp	The lamp blinking caused by communication malfunction
	High beam indicator	The lamp turns off by suspending communication.
	Turn signal indicator lamp	
	Tail lamp indicator lamp	
	Oil pressure warning lamp	
	VDC OFF indicator lamp	
	BSW warning lamp	
	Malfunction indicator lamp	
	A/T CHECK warning lamp	
	Key warning lamp	
	Lane departure warning lamp	
	LDP ON indicator lamp	

DTC Index

INFOID:0000000010597272

Display contents of CONSULT	Time	Diagnostic item is detected when ...	Refer to
CAN COMM CIRCUIT [U1000]	CRNT, 1 - 39	When unified meter and A/C amp. is not transmitting or receiving CAN communication signal for 2 seconds or more.	MWI-46
CONTROL UNIT (CAN) [U1010]	CRNT, 1 - 39	When detecting error during the initial diagnosis of CAN controller of unified meter and A/C amp.	MWI-47
COMM ERROR 1 [B2201]	CRNT, 1 - 39	If a communication error is present in the communication line between unified meter and A/C amp. and combination meter for 2 seconds or more.	MWI-48
COMM ERROR 2 [B2202]	CRNT, 1 - 39	If a communication error is present in the communication line between unified meter and A/C amp. and combination meter for 2 seconds or more.	MWI-50
VEHICLE SPEED [B2205]	CRNT, 1 - 39	The abnormal vehicle speed signal is input from ABS actuator and electric unit (control unit) for 2 seconds or more.	MWI-52

Display contents of CONSULT	Time	Diagnostic item is detected when ...	Refer to
ENGINE SPEED [B2267]	CRNT, 1 - 39	If ECM continuously transmits abnormal engine speed signals for 2 seconds or more.	MWI-53
WATER TEMP [B2268]	CRNT, 1 - 39	If ECM continuously transmits abnormal engine coolant temperature signals for 60 seconds or more.	MWI-54

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

Reference Value

INFOID:0000000011095939

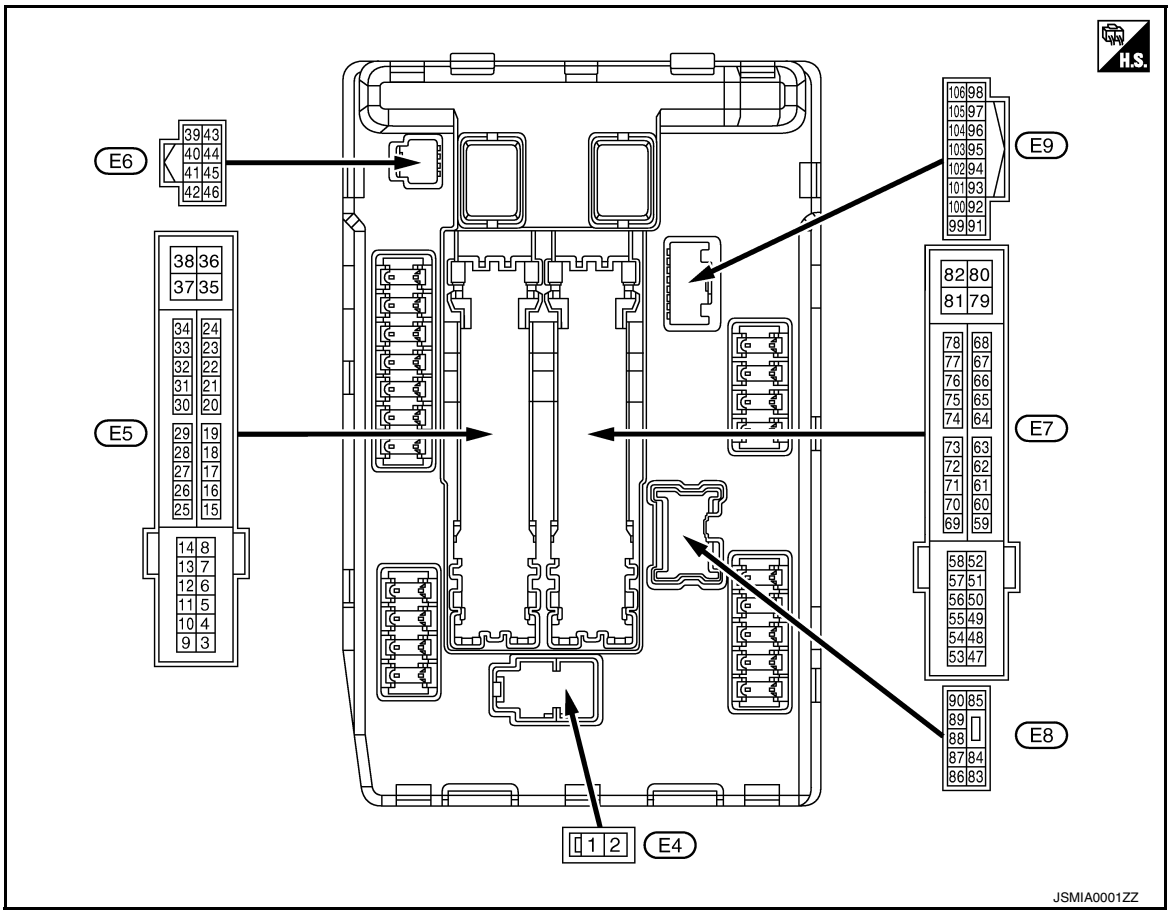
VALUES ON THE DIAGNOSIS TOOL

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item	Condition		Value/Status
RAD FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	0 – 100 %
AC COMP REQ	Engine running	A/C switch OFF	Off
		A/C switch ON (Compressor is operating)	On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST, 2ND, HI or AUTO (Light is illuminated)		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND HI or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI		On
FR FOG REQ	Lighting switch 2ND or AUTO (Light is illuminated)	Front fog lamp switch OFF	Off
		• Front fog lamp switch ON • Daytime running light activated (Only for Canada)	On
FR WIP REQ	Ignition switch ON	Front wiper switch OFF	Stop
		Front wiper switch INT	1LOW
		Front wiper switch LO	Low
		Front wiper switch HI	Hi
WIP AUTO STOP	Ignition switch ON	Front wiper stop position	STOP P
		Any position other than front wiper stop position	ACT P
WIP PROT	Ignition switch ON	Front wiper operates normally	Off
		Front wiper stops at fail-safe operation	BLOCK
IGN RLY1 -REQ	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
PUSH SW	Release the push-button ignition switch		Off
	Press the push-button ignition switch		On
INTER/NP SW	Ignition switch ON	Selector lever in any position other than P or N	Off
		Selector lever in P or N position	On
ST RLY CONT	Ignition switch ON		Off
	At engine cranking		On

Monitor Item	Condition		Value/Status
IHBT RLY -REQ	Ignition switch ON		Off
	At engine cranking		On
ST/INHI RLY	Ignition switch ON		Off
	At engine cranking		INHI ON → ST ON
	The status of starter relay or starter control relay cannot be recognized by the battery voltage malfunction, etc. when the starter relay is ON and the starter control relay is OFF		UNKWN
DETENT SW	Ignition switch ON	• Press the selector button with selector lever in P position • Selector lever in any position other than P	Off
	Release the selector button with selector lever in P position		On
S/L RLY -REQ	**NOTE:** The item is indicated, but not monitored.		Off
S/L STATE	**NOTE:** The item is indicated, but not monitored.		UNLOCK
DTRL REQ	**NOTE:** The item is indicated, but not monitored.		Off
OIL P SW	Ignition switch OFF, ACC or engine running		Open
	Ignition switch ON		Close
HOOD SW	Close the hood		Off
	Open the hood		On
HL WASHER REQ	**NOTE:** The item is indicated, but not monitored.		Off
THFT HRN REQ	Not operation		Off
	• Panic alarm is activated • Horn is activated with VEHICLE SECURITY (THEFT WARNING) SYSTEM		On
HORN CHIRP	Not operating		Off
	Door locking with Intelligent Key (horn chirp mode)		On
CRNRNG LMP REQ	**NOTE:** The item is indicated, but not monitored.		Off

TERMINAL LAYOUT

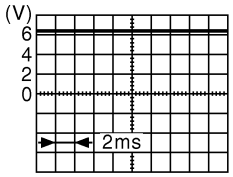
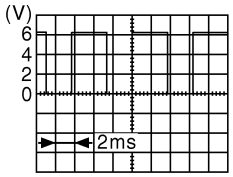
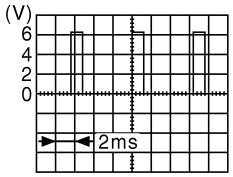


PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (W)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
2 (L)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
4 (V)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch LO	Battery voltage
5 (L)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch HI	Battery voltage
7 (R)	Ground	Tail, license plate lamps & interior lamps	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 1ST	Battery voltage
12 (B/W)	Ground	Ground	—	Ignition switch ON		0 V
13 (Y)	Ground	Fuel pump power supply	Output	Approximately 1 second or more after turning the ignition switch ON		0 V
				• Approximately 1 second after turning the ignition switch ON • Engine running		Battery voltage
16 (LG)	Ground	Front wiper auto stop	Input	Ignition switch ON	Front wiper stop position	0 V
					Any position other than front wiper stop position	Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
19 (W)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
25 (G)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
26* (R)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
27 (BG)	Ground	Ignition relay monitor	Input	Ignition switch OFF or ACC		Battery voltage
				Ignition switch ON		0 V
28 (L)	Ground	Push-button ignition switch	Input	Press the push-button ignition switch		0 V
				Release the push-button ignition switch		Battery voltage
30 (GR)	Ground	Starter relay control	Input	Ignition switch ON	Selector lever in any position other than P or N	0 V
					Selector lever P or N	Battery voltage
36 (G)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
39 (P)	—	CAN-L	Input/ Output	—		—
40 (L)	—	CAN-H	Input/ Output	—		—
41 (B/W)	Ground	Ground	—	Ignition switch ON		0 V
42 (Y)	Ground	Cooling fan relay control	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON		0.7 V
43 (SB)	Ground	A/T shift selector (Detention switch)	Input	Ignition switch ON	• Press the selector button (Selector lever P) • Selector lever in any position other than P	Battery voltage
					Release the selector button (selector lever P)	0 V
44 (BR)	Ground	Horn relay control	Input	The horn is deactivated		Battery voltage
				The horn is activated		0 V
45 (G)	Ground	Anti theft horn relay control	Input	The horn is deactivated		Battery voltage
				The horn is activated		0 V
46 (R)	Ground	Starter relay control	Input	Ignition switch ON	Selector lever in any position other than P or N	0 V
					Selector lever P or N	Battery voltage
48 (L)	Ground	A/C relay power supply	Output	Engine running	A/C switch OFF	0 V
					A/C switch ON (A/C compressor is operating)	Battery voltage
49 (BG)	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
51 (Y)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
53 (W)	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		Battery voltage
54 (P)	Ground	Throttle control motor relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		Battery voltage
55 (SB)	Ground	ECM power supply	Output	Ignition switch OFF		Battery voltage
56 (LG)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
57 (G)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
58 (V)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
69 (BR)	Ground	ECM relay control	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		Battery voltage
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		0 – 1.5 V
70 (BG)	Ground	Throttle control motor relay control	Output	Ignition switch ON → OFF		0 – 1.0 V ↓ Battery voltage ↓ 0 V
				Ignition switch ON		0 – 1.0 V
74 (P)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 V
				Ignition switch ON		Battery voltage
75 (SB)	Ground	Oil pressure switch	Input	Ignition switch ON	Engine stopped	0 V
					Engine running	Battery voltage

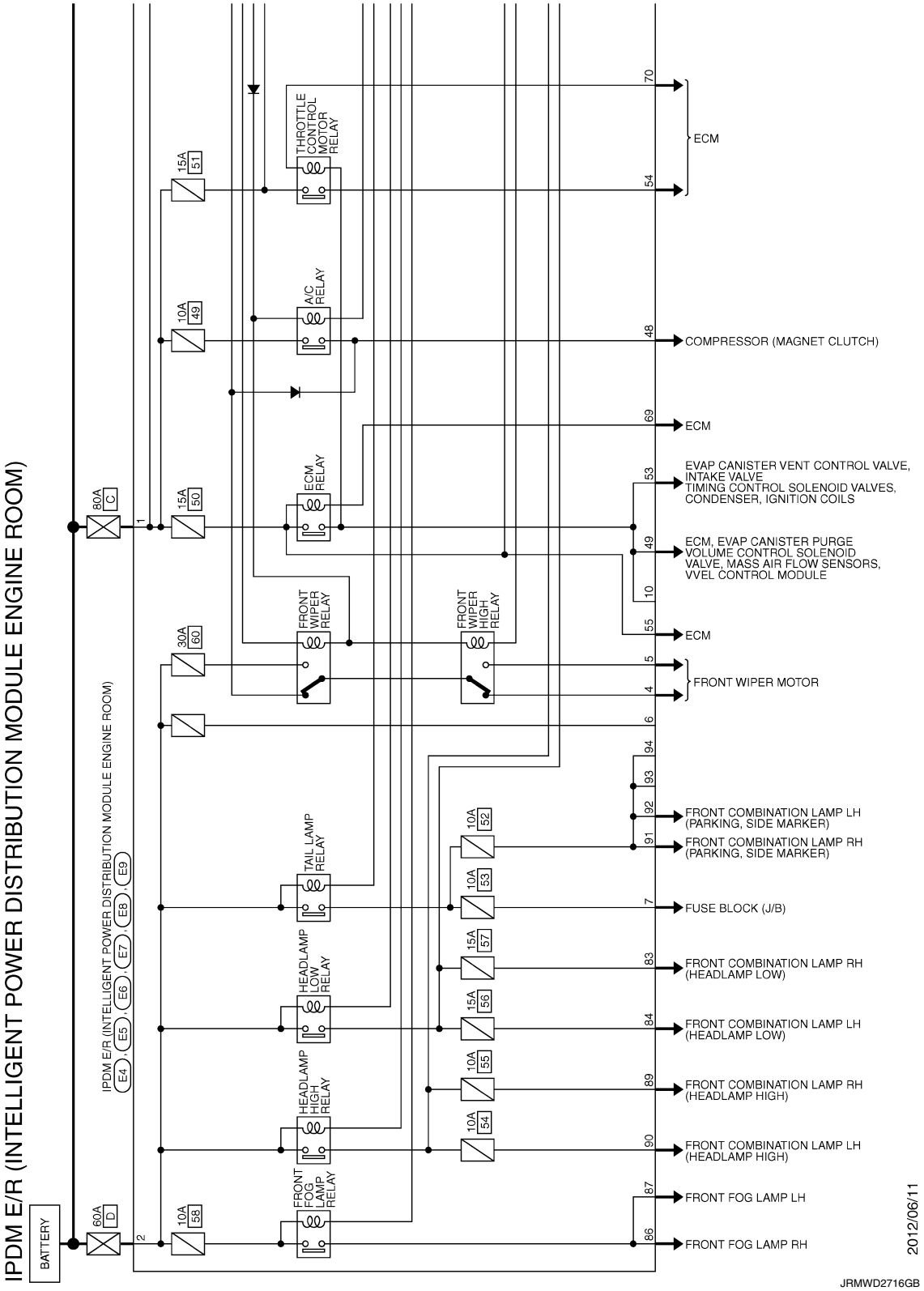
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
76 (Y)	Ground	Power generation command signal	Output	Ignition switch ON		 JPMIA0001GB 6.3 V
				40% is set on “ACTIVE TEST”, “ALTERNATOR DUTY” of “ENGINE”		 JPMIA0002GB 3.8 V
				80% is set on “ACTIVE TEST”, “ALTERNATOR DUTY” of “ENGINE”		 JPMIA0003GB 1.4 V
77 (R)	Ground	Fuel pump relay control	Output	• Approximately 1 second after turning the ignition switch ON • Engine running		0 – 1.0 V
				Approximately 1 second or more after turning the ignition switch ON		Battery voltage
80 (W)	Ground	Starter motor	Output	At engine cranking		Battery voltage
83 (BG)	Ground	Headlamp LO (RH)	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 2ND	Battery voltage
84 (V)	Ground	Headlamp LO (LH)	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 2ND	Battery voltage
86 (W)	Ground	Front fog lamp (RH)	Output	Lighting switch 2ND	Front fog lamp switch OFF	0 V
					• Front fog lamp switch ON • Daytime running light activated (Only for Canada)	Battery voltage
87 (L)	Ground	Front fog lamp (LH)	Output	Lighting switch 2ND	Front fog lamp switch OFF	0 V
					• Front fog lamp switch ON • Daytime running light activated (Only for Canada)	Battery voltage
88 (GR)	Ground	Washer pump power supply	Output	Ignition switch ON		Battery voltage

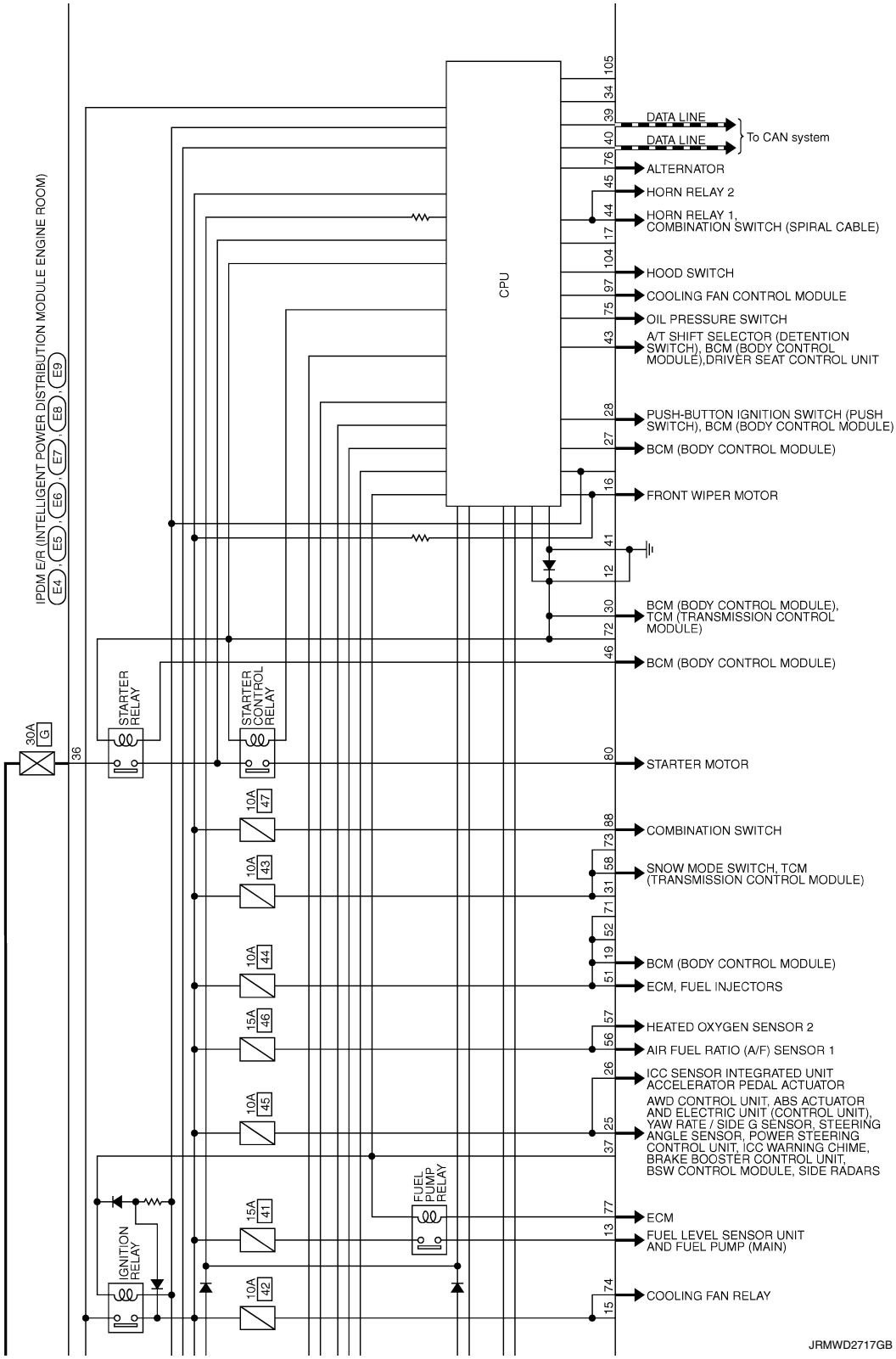
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
89 (BR)	Ground	Headlamp HI (RH)	Output	Ignition switch ON	Lighting switch OFF	0 V
					• Lighting switch HI • Lighting switch PASS	Battery voltage
90 (P)	Ground	Headlamp HI (LH)	Output	Ignition switch ON	Lighting switch OFF	0 V
					• Lighting switch HI • Lighting switch PASS	Battery voltage
91 (P)	Ground	Parking lamp (RH)	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 1ST	Battery voltage
92 (BG)	Ground	Parking lamp (LH)	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 1ST	Battery voltage
97 (V)	Ground	Cooling fan control	Output	Engine idling		0 – 5 V
104 (LG)	Ground	Hood switch	Input	Close the hood		Battery voltage
				Open the hood		0 V

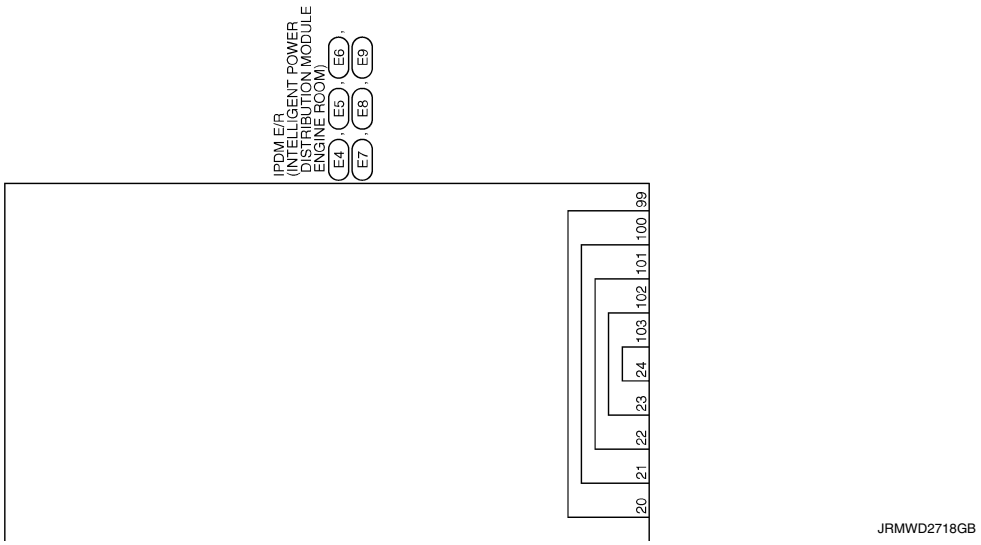
*: Only for the models with ICC system

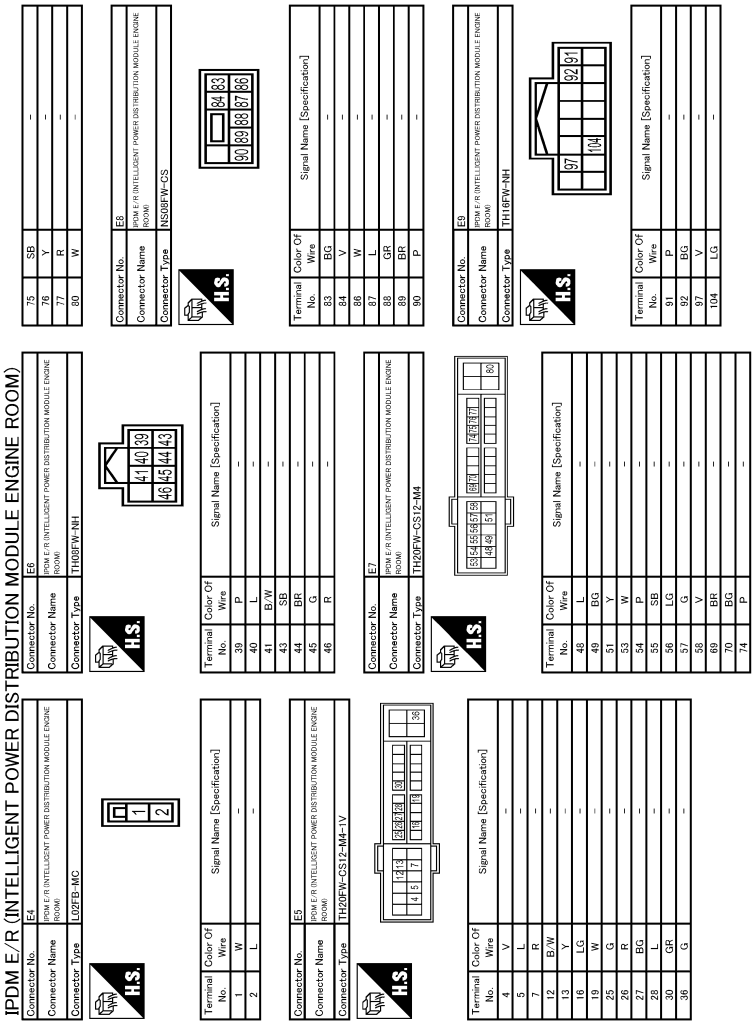
Wiring Diagram - IPDM E/R -

INFOID:0000000011095940




IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E4, E5, E6, E7, E8, E9
CPU
105
34
39
40
76
45
44
17
104
97
75
43
28
27
16
41
12
30
72
46
80
88
73
58
31
71
52
19
51
57
56
26
25
37
77
13
74
15
36
DATA LINE
DATA LINE
To CAN system
ALTERNATOR
HORN RELAY 2
HORN RELAY 1,
COMBINATION SWITCH (SPIRAL CABLE)
HOOD SWITCH
COOLING FAN CONTROL MODULE
OIL PRESSURE SWITCH
A/T SHIFT SELECTOR (DETENTION SWITCH), BCM (BODY CONTROL MODULE),DRIVER SEAT CONTROL UNIT
PUSH-BUTTON IGNITION SWITCH (PUSH SWITCH), BCM (BODY CONTROL MODULE)
BCM (BODY CONTROL MODULE)
FRONT WIPER MOTOR
BCM (BODY CONTROL MODULE),
TCM (TRANSMISSION CONTROL MODULE)
BCM (BODY CONTROL MODULE)
STARTER MOTOR
COMBINATION SWITCH
SNOW MODE SWITCH, TCM (TRANSMISSION CONTROL MODULE)
BCM (BODY CONTROL MODULE)
ECM, FUEL INJECTORS
HEATED OXYGEN SENSOR 2
AIR FUEL RATIO (A/F) SENSOR 1
ICC SENSOR INTEGRATED UNIT
ACCELERATOR PEDAL ACTUATOR
AWD CONTROL UNIT, ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT), YAW RATE / SIDE G SENSOR, STEERING ANGLE SENSOR, POWER STEERING CONTROL UNIT, ICC WARNING CHIME, BRAKE BOOSTER CONTROL UNIT, BSW CONTROL MODULE, SIDE RADARS
ECM
FUEL LEVEL SENSOR UNIT AND FUEL PUMP (MAIN)
COOLING FAN RELAY
30A G
STARTER RELAY
STARTER CONTROL RELAY
IGNITION RELAY
FUEL PUMP RELAY
10A 47
10A 43
10A 44
15A 46
10A 45
15A 41
10A 42
JRMWD2717GB


IPDM E/R
(INTELLIGENT POWER
DISTRIBUTION MODULE
ENGINE ROOM)
E4
E5
E6
E7
E8
E9
99
100
101
102
103
24
23
22
21
20
JRMWD2718GB



JRMWF4766GB

Fail-safe

INFOID:0000000011095941

CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

Control part	Fail-safe operation
Cooling fan	• Outputs the pulse duty signal (PWM signal) 100% when the ignition switch is turned ON • Outputs the pulse duty signal (PWM signal) 0% when the ignition switch is turned OFF
A/C compressor	A/C relay OFF
Alternator	Outputs the power generation command signal (PWM signal) 0%

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF
• Parking lamps • License plate lamps • Side maker lamps • Illuminations • Tail lamps	• Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF
Front wiper	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.
Front fog lamps	Front fog lamp relay OFF
Horn	Horn relay OFF
Ignition relay	The status just before activation of fail-safe is maintained.
Starter motor	Starter control relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Voltage judgment		IPDM E/R judgment	Operation
Ignition relay contact side	Ignition relay excitation coil side		
ON	ON	Ignition relay ON normal	—
OFF	OFF	Ignition relay OFF normal	—
ON	OFF	Ignition relay ON stuck	• Detects DTC “B2098: IGN RELAY ON” • Turns ON the tail lamp relay for 10 minutes
OFF	ON	Ignition relay OFF stuck	Detects DTC “B2099: IGN RELAY OFF”

FRONT WIPER CONTROL

IPDM E/R detects front wiper stop position by a front wiper stop position signal.
When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop five times.

Ignition switch	Front wiper switch	Front wiper stop position signal
ON	OFF	The front wiper stop position signal (stop position) cannot be input for 10 seconds.
	ON	The front wiper stop position signal does not change for 10 seconds.

NOTE:
This operation status can be confirmed on the IPDM E/R “Data Monitor” that displays “BLOCK” for the item “WIP PROT” while the wiper is stopped.

STARTER MOTOR PROTECTION FUNCTION

IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

DTC Index

INFOID:0000000011095942

NOTE:
- The details of time display are as follows.
- CRNT: A malfunction is detected now.
- PAST: A malfunction was detected in the past.
- IGN counter is displayed on FFD (Freeze Frame data).
- The number is 0 when is detected now.
- The number increases like 1 → 2 ··· 38 → 39 after returning to the normal condition whenever IGN OFF → ON.
- The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.

×: Applicable

CONSULT display	Fail-safe	Reference
No DTC is detected. further testing may be required.	—	—
U1000: CAN COMM CIRCUIT	×	PCS-14
B2098: IGN RELAY ON CIRC	×	PCS-15
B2099: IGN RELAY OFF CIRC	—	PCS-17
B210B: STR CONT RLY ON CIRC	—	SEC-77
B210C: STR CONT RLY OFF CIRC	—	SEC-78
B210D: STARTER RLY ON CIRC	—	SEC-80
B210E: STARTER RLY OFF CIRC	—	SEC-82
B210F: INTRLCK/PNP SW ON	—	SEC-84
B2110: INTRLCK/PNP SW OFF	—	SEC-86

SYMPTOM DIAGNOSIS

THE FUEL GAUGE POINTER DOES NOT MOVE

Description

INFOID:0000000010597277

Fuel gauge needle will not move from a certain position.

Diagnosis Procedure

INFOID:0000000010597278

1.CONDUCTING THE COMBINATION METER SELF-DIAGNOSIS MODE

Perform the self-diagnosis mode of combination meter, and then check that the fuel gauge operates normally. Refer to MWI-40, "Diagnosis Description".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace combination meter. Refer to MWI-136, "Removal and Installation".

2.CHECK FLOAT INTERFERENCE

Check that the float arm interferes with or binds to other components in the fuel tank.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace malfunctioning part.

3.CHECK FUEL LEVEL SENSOR SIGNAL CIRCUIT

Check the fuel level sensor signal circuit. Refer to MWI-58, "Component Function Check".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

THE METER CONTROL SWITCH IS INOPERATIVE

Description

INFOID:0000000010597279

If any of the following malfunctions is found for the meter control switch operation.
- All switches are inoperative.
- The specified switch cannot be operated.

Diagnosis Procedure

INFOID:0000000010597280

1.CHECK METER CONTROL SWITCH SIGNAL CIRCUIT

Check the meter control switch signal circuit. Refer to MWI-62, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK METER CONTROL SWITCH UNIT

Perform a unit check for the meter control switch. Refer to MWI-63, "Component Inspection".

Is the inspection result normal?

YES >> Replace combination meter.
NG >> Replace meter control switch.

THE TRIP A/B RESET SWITCH IS INOPERATIVE

Description

INFOID:0000000010597281

The trip A/B reset switch is inoperative.

Diagnosis Procedure

INFOID:0000000010597282

1.CHECK TRIP A/B RESET SWITCH SIGNAL CIRCUIT

Check the trip A/B reset switch signal circuit. Refer to MWI-62, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK TRIP A/B RESET SWITCH UNIT

Perform a unit check for the trip A/B reset switch. Refer to MWI-63, "Component Inspection".

Is the inspection result normal?

YES >> Replace combination meter.
NG >> Replace trip A/B reset switch.

THE OIL PRESSURE WARNING LAMP DOES NOT TURN ON

Description

INFOID:0000000010597283

The oil pressure warning lamp stays off when the ignition switch is turned ON.

Diagnosis Procedure

INFOID:0000000010597284

1.CHECK OIL PRESSURE WARNING LAMP

Perform auto active test. Refer to PCS-9, "Diagnosis Description".

Does oil pressure warning lamp blink?

YES >> GO TO 2.
NO >> Replace combination meter.

2.CHECK OIL PRESSURE SWITCH SIGNAL CIRCUIT

Check the oil pressure switch signal circuit. Refer to MWI-66, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair harness or connector.

3.CHECK OIL PRESSURE SWITCH UNIT

Perform a unit check for the oil pressure switch. Refer to MWI-66, "Component Inspection".

Is the inspection result normal?

YES >> Replace IPDM E/R.
NO >> Replace oil pressure switch.

THE OIL PRESSURE WARNING LAMP DOES NOT TURN OFF

Description

INFOID:0000000010597285

The oil pressure warning lamp remains illuminated while the engine is running (normal oil pressure).

Diagnosis Procedure

INFOID:0000000010597286

1.CHECK OIL PRESSURE WARNING LAMP

Perform auto active test. Refer to PCS-9, "Diagnosis Description".

Does oil pressure warning lamp blink?

YES >> GO TO 2.
NO >> Replace combination meter.

2.CHECK IPDM E/R OUTPUT VOLTAGE

1. Disconnect the oil pressure switch connector.
2. Turn ignition switch ON.
3. Check voltage between the oil pressure switch harness connector and ground.

Terminals			Voltage
(+)		(-)	
Oil pressure switch		Ground	
Connector	Terminal		
F37	1		Approx. 12 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 4.

3.CHECK OIL PRESSURE SWITCH UNIT

Perform a unit check for the oil pressure switch. Refer to MWI-66, "Component Inspection".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-35, "Removal and Installation".
NO >> Replace oil pressure switch.

4.CHECK OIL PRESSURE SWITCH SIGNAL CIRCUIT

Check the oil pressure switch signal circuit. Refer to MWI-66, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-35, "Removal and Installation".
NO >> Repair harness or connector.

THE PARKING BRAKE RELEASE WARNING CONTINUES DISPLAYING, OR DOES NOT DISPLAY

Description

INFOID:0000000010597287

- The parking brake warning is displayed during vehicle travel even though the parking brake is released.
- The parking brake warning is not displayed even though driving the vehicle with the parking brake applied.

Diagnosis Procedure

INFOID:0000000010597288

1.CHECK PARKING BRAKE WARNING LAMP OPERATION

1. Start engine.
2. Check the operation of the parking brake warning lamp when operating the parking brake.

Condition	Warning lamp status
Parking brake is applied	ON
Parking brake is released	OFF

Is the inspection result normal?

YES >> Replace combination meter.
NO >> GO TO 2.

2.CHECK PARKING BRAKE SWITCH SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Check the parking brake switch signal circuit. Refer to MWI-67, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NG >> Repair harness or connector.

3.CHECK PARKING BRAKE SWITCH UNIT

Perform a unit check for the parking brake switch. Refer to BRC-121, "Component Inspection".

Is the inspection result normal?

YES >> Replace combination meter.
NO >> Replace parking brake switch.

THE LOW WASHER FLUID WARNING CONTINUES DISPLAYING, OR DOES NOT DISPLAY

Description

INFOID:0000000010597289

- The warning is still displayed even after washer fluid is added.
- The warning is not displayed even though the washer tank is empty.

Diagnosis Procedure

INFOID:0000000010597290

1.CHECK WASHER LEVEL SWITCH SIGNAL CIRCUIT

Check the washer level switch signal circuit. Refer to MWI-69, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK WASHER LEVEL SWITCH UNIT

Perform a unit check for the washer level switch. Refer to MWI-69, "Component Inspection".

Is the inspection result normal?

YES >> Replace combination meter.
NO >> Replace washer level switch. Refer to WW-115, "Removal and Installation".

THE DOOR OPEN WARNING CONTINUES DISPLAYING, OR DOES NOT DISPLAY

Description

INFOID:0000000010597291

- The door ajar warning is displayed even though all of the doors are closed.
- The door ajar warning is not displayed even though a door is ajar.

Diagnosis Procedure

INFOID:0000000010597292

1.CHECK BCM INPUT/OUTPUT SIGNAL

Connect CONSULT and check the BCM input signals. Refer to DLK-63, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 3.

2.CHECK UNIFIED METER AND A/C AMP. INPUT SIGNAL

Select the “Data Monitor” for the “METER/M&A” and check the “DOOR W/L” monitor value.

“DOOR W/L”	
Door open	: On
Door closed	: Off

Is the inspection result normal?

YES >> Replace combination meter.
NO >> Replace BCM. Refer to BCS-97, "Removal and Installation".

3.CHECK DOOR SWITCH SIGNAL CIRCUIT

Check the door switch signal circuit. Refer to DLK-63, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair harness or connector.

4.CHECK DOOR SWITCH UNIT

Perform a unit check for the door switch. Refer to DLK-65, "Component Inspection".

Is the inspection result normal?

YES >> Replace combination meter.
NO >> Replace applicable door switch. Refer to DLK-272, "Removal and Installation".

THE AMBIENT TEMPERATURE DISPLAY IS INCORRECT

Description

INFOID:0000000010597293

- The displayed ambient air temperature is higher than the actual temperature.
- The displayed ambient air temperature is lower than the actual temperature.

Diagnosis Procedure

INFOID:0000000010597294

NOTE:
Check that the symptom is not applicable to the normal operating condition before starting diagnosis. Refer to MWI-133, "INFORMATION DISPLAY : Description".

1.CHECK AMBIENT SENSOR SIGNAL CIRCUIT

Check the ambient sensor signal circuit. Refer to HAC-67, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK AMBIENT SENSOR UNIT

Perform a unit check for the ambient sensor. Refer to HAC-68, "Component Inspection".

Is the inspection result normal?

YES >> Replace unified meter and A/C amp.
NO >> Replace ambient sensor. Refer to HAC-124, "Removal and Installation".

NORMAL OPERATING CONDITION

COMPASS

COMPASS : Description

INFOID:0000000010597295

COMPASS

- The electronic compass is highly protected from changes in most magnetic fields. However, some large changes in magnetic fields can affect it. Some examples are (but not limited to): high tension power lines, large steel buildings, subways, steel bridges, automatic car washes, large piles of scrap metal, etc. While this does not happen very often, it is possible.
- During normal operation, the Compass Mirror will continuously update the compass calibration to adjust for gradual changes in the vehicle's magnetic “remnant” field. If the vehicle is subjected to high magnetic influences, the compass may appear to indicate false headings, become locked, or appear that it is unable to be calibrated. If this occurs, perform the calibration procedure.
- If at any time the compass continually displays the incorrect direction or the reading is erratic or locked, verify the correct zone variance.

Symptom Chart

Symptom	Cause	Solution / Reference
The compass display reads “C”.	• Compass is not calibrated. • Incorrect zone variance setting. • Large change in magnetic field (Steel bridges, subways, concentrations of metal, carwashes, etc.) • Compass was calibrated incorrectly or in the presence of a strong magnetic field.	Perform calibration. Refer to MWI-36, "Description".
Compass shows the wrong direction.		
Compass does not change direction appears “Locked”.		
Compass does not show all the directions, one or more is missing.		
The compass was calibrated but it “loses” calibration.		
On long trips the compass shows the wrong direction.		Perform zone variation setting if correct reading is desired in that location. Refer toMWI-36, "Description".

INFORMATION DISPLAY

INFORMATION DISPLAY : Description

INFOID:0000000010597296

AMBIENT AIR TEMPERATURE

The displayed ambient air temperature on the information display may differ from the actual temperature because it is a corrected value calculated from the ambient sensor signal by the unified meter and A/C amp. Refer to MWI-30, "INFORMATION DISPLAY : System Description" for details on the correction process.

POSSIBLE DRIVING DISTANCE

The calculated possible driving distance may differ from the actual distance to empty if the refueling amount is approximately 15 ℓ (4 US gal, 3-3/10 Imp gal) or less. This is because the refuel control (moves the fuel gauge needle quicker than normal judging that the driver is refueling the vehicle) is not performed in such a case.

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000010597297

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the “SRS AIR BAG” and “SEAT BELT” of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see “SRS AIR BAG”.**
- **Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

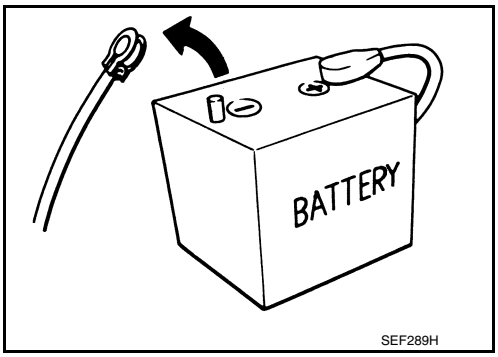
WARNING:

Always observe the following items for preventing accidental activation.

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.**

Precautions for Removing Battery Terminal

INFOID:0000000011009245



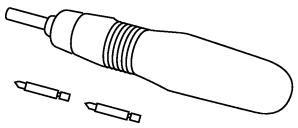
- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
  NOTE:
  ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.
  NOTE:
  If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.
- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.
  NOTE:
  The removal of 12V battery may cause a DTC detection error.

PREPARATION

PREPARATION

Commercial Service Tools

INFOID:0000000010597298

Tool name	Description
Power tool  PBIC0191E	Loosening screws

REMOVAL AND INSTALLATION

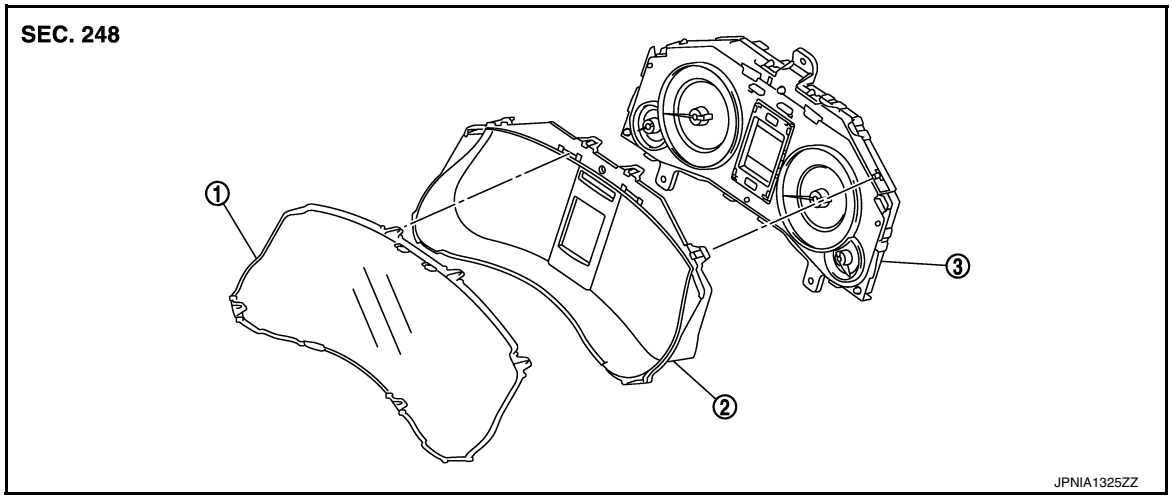
COMBINATION METER

Exploded View

INFOID:0000000010597299

REMOVAL
Refer to IP-12, "Exploded View".

DISASSEMBLY



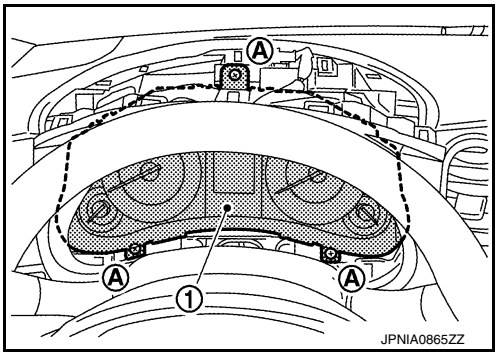
1. Front cover
2. Upper housing
3. Unified meter control unit

Removal and Installation

INFOID:0000000010597300

Removal

1. Remove the cluster lid A. Refer to IP-13, "Removal and Installation".
2. Remove screws (A) and connector, and then remove combination meter (1).



Installation
Install in the reverse order of removal.

Disassembly and Assembly

INFOID:0000000010597301

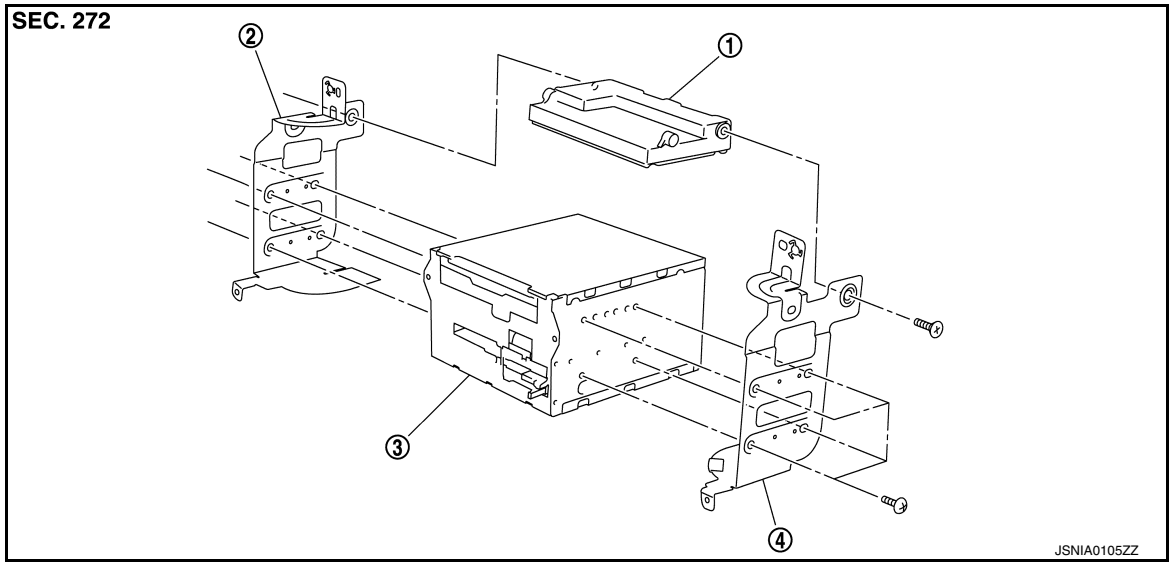
DISASSEMBLY
1. Disengage the tabs to separate the upper housing with the front cover from unified meter control unit.
2. Disengage the tabs to separate the front cover from upper housing.

ASSEMBLY
Assemble in the reverse order of disassembly.

UNIFIED METER AND A/C AMP.

Exploded View

INFOID:0000000010597302



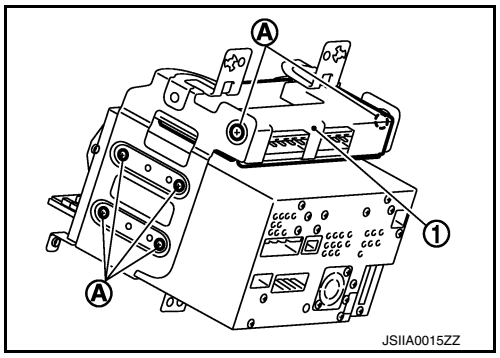
1. Unified meter and A/C amp.
2. Bracket (LH)
3. AV control unit
4. Bracket (RH)

Removal and Installation

INFOID:0000000010597303

REMOVAL

1. Remove AV control unit. Refer to AV-128, "Exploded View" (BASE AUDIO WITHOUT NAVIGATION), AV-316, "Exploded View" (BOSE AUDIO WITHOUT NAVIGATION) or AV-520, "Exploded View" (BOSE AUDIO WITH NAVIGATION).
2. Remove mounting screws (A), and then remove unified meter and A/C amp. (1).



INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

Since unified meter and A/C amp. connector and AV control unit connector have the same form, be careful not to insert them wrongly.

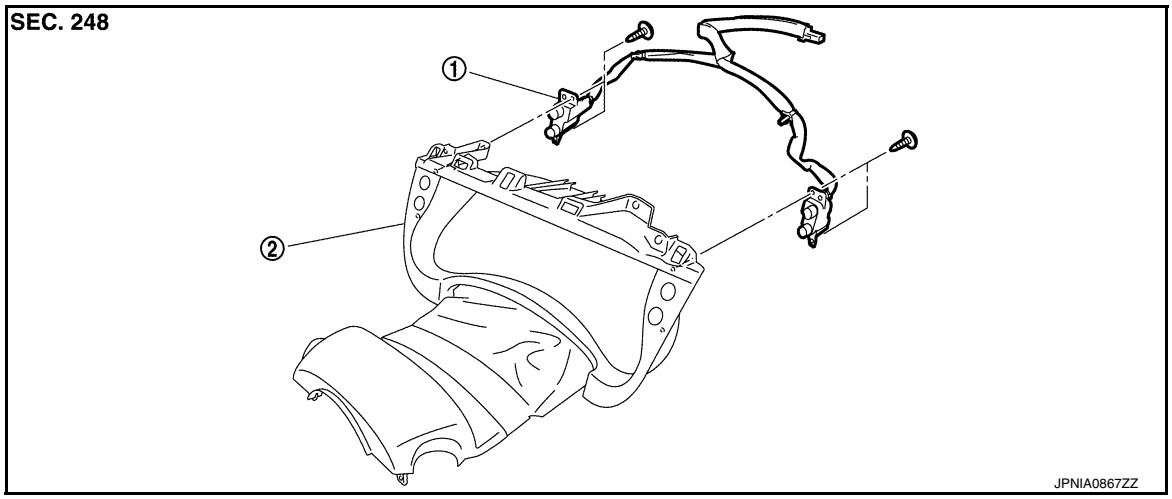
METER CONTROL SWITCH

Exploded View

INFOID:0000000010597304

REMOVAL
IP-12, "Exploded View"

DISASSEMBLY



1. Meter control switch
2. Cluster lid A

Removal and Installation

INFOID:0000000010597305

REMOVAL

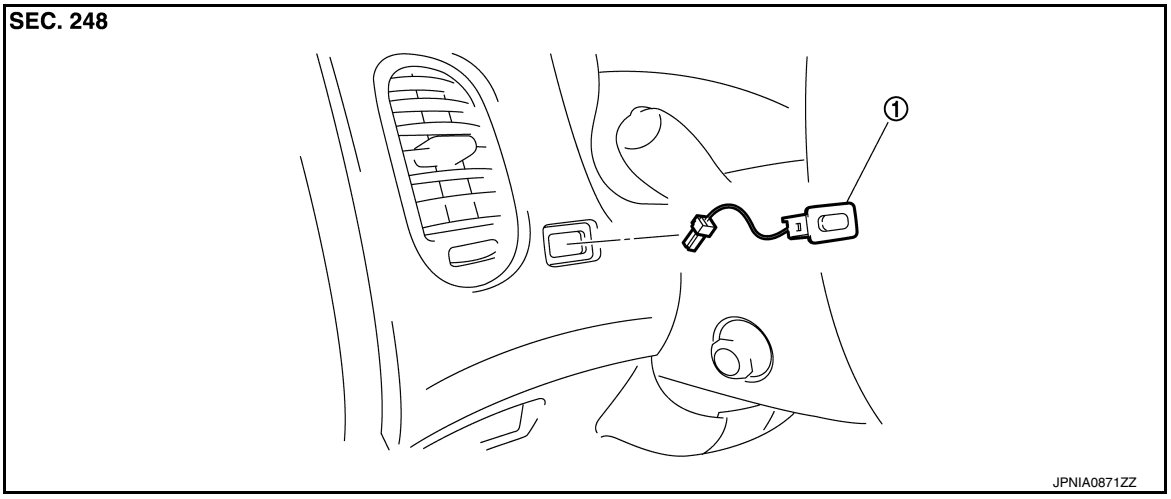
1. Remove cluster lid A. Refer to IP-13, "Removal and Installation".
2. Remove screws and remove meter control switch.

INSTALLATION
Install in the reverse order of removal.

TRIP A/B RESET SWITCH

Exploded View

INFOID:0000000010597306



1. Trip A/B reset switch

Removal and Installation

INFOID:0000000010597307

REMOVAL

1. Remove combination meter. Refer to MWI-136, "Removal and Installation".
2. Press pawls and remove trip A/B reset switch.

INSTALLATION

Install in the reverse order of removal.

COMPASS

Exploded View

INFOID:0000000010597308

Refer to MIR-121, "Exploded View" (with ADP) or MIR-142, "Exploded View" (without ADP).

Removal and Installation

INFOID:0000000010597309

Refer to MIR-121, "Removal and Installation" (with ADP) or MIR-142, "Removal and Installation" (without ADP).

CLOCK

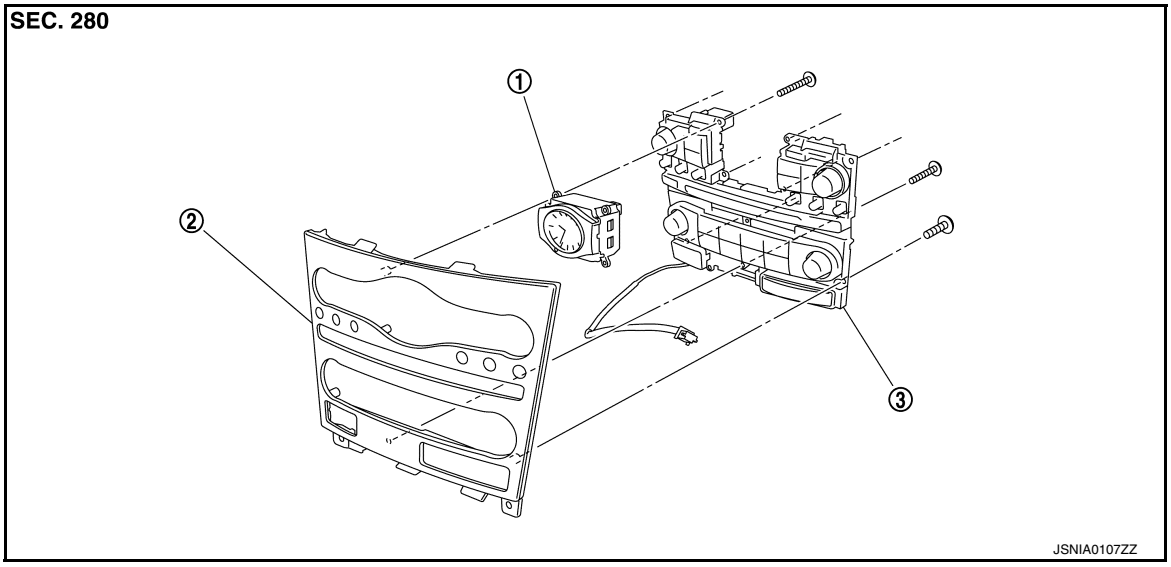
Exploded View

INFOID:0000000010597310

REMOVAL

Refer to IP-12, "Exploded View".

DISASSEMBLY



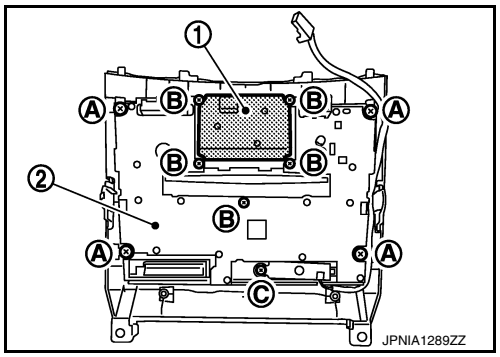
1. Clock
2. Cluster lid C
3. Preset switch

Removal and Installation

INFOID:0000000010597311

REMOVAL

1. Remove cluster lid C assembly. Refer to IP-13, "Removal and Installation".
2. Remove screws (A), (B), (C) and remove clock (1) in conjunction with preset switch (2) from cluster lid C.
3. Disengage the tabs to separate clock.



INSTALLATION

Install in the reverse order of removal.

NOTE:

Never confuse screws when installing.