

SECTION **MWI**

METER, WARNING LAMP & INDICATOR

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000001080234

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 if 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-24, "Diagnosis Description"](#).

Does the on board diagnosis function operate normally?

YES >> GO TO 4.

NO >> Repair or replace the malfunctioning part and go to 6.

4.CHECK CONSULT-III SELF-DIAGNOSIS RESULTS

Connect CONSULT-III and perform self-diagnosis. Refer to [MWI-24, "CONSULT-III Function \(METER/M&A\)"](#).

Are self-diagnosis results normal?

YES >> GO TO 5.

NO >> Repair or replace the malfunctioning part and go to 6.

5.NARROW DOWN THE MALFUNCTIONING PARTS BY SYMPTOM DIAGNOSIS

Perform symptom diagnosis and repair or replace the identified malfunctioning parts.

>> GO TO 6.

6.FINAL CHECK

Check that the combination meter operates normally.

Does it operate normally?

YES >> INSPECTION END

NO >> GO TO 1.

METER SYSTEM

< FUNCTION DIAGNOSIS >

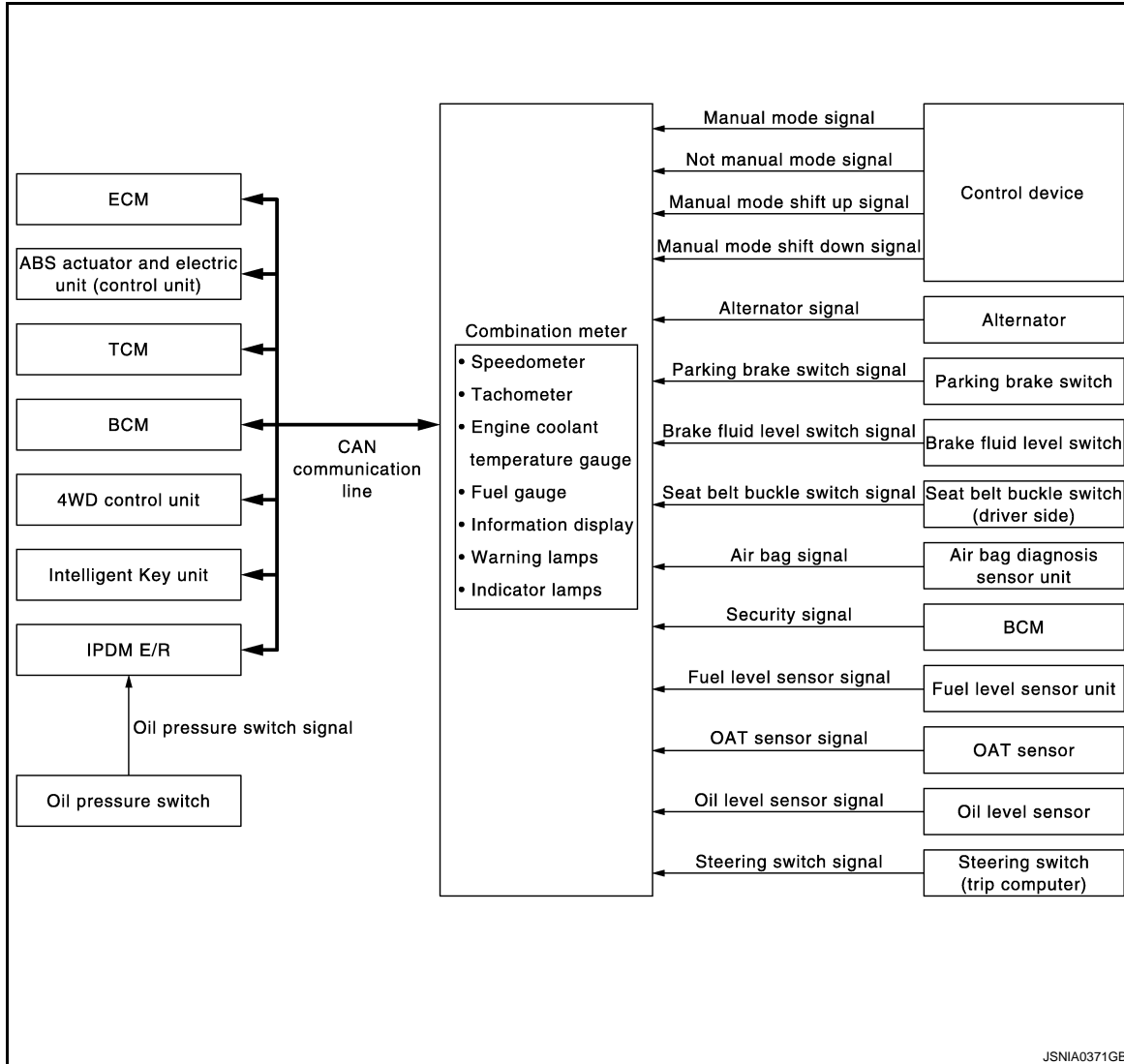
FUNCTION DIAGNOSIS

METER SYSTEM

METER SYSTEM

METER SYSTEM : System Diagram

INFOID:000000001080235



JSNIA0371GB

METER SYSTEM : System Description

INFOID:000000001080236

COMBINATION METER

- The combination meter receives the information required to control the operation of each gauge, indicator/warning lamp, and information display via CAN communication from each unit, each switch, and sensor.
- The combination meter incorporates a trip computer that displays 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-4. "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.

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 combination meter via BCM with CAN communication.
- 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-III.

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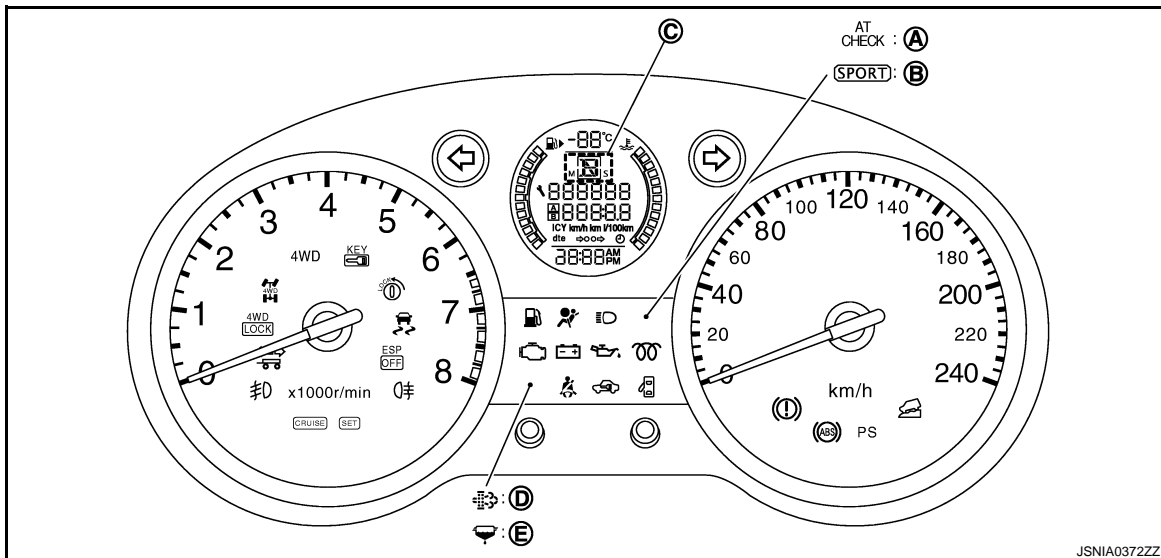
METER SYSTEM

< FUNCTION DIAGNOSIS >

METER CONTROL FUNCTION LIST

System	Description	Signal source	
Meter	Speedometer	Receives vehicle speed signal and indicates vehicle speed.	
	Tachometer	Receives engine speed signal and indicates engine speed.	
Warning lamp	Oil pressure warning lamp	Receives oil pressure warning lamp signal and illuminates warning lamp.	
Information display	Fuel gauge	Receives fuel level sensor signal and indicates fuel level.	
	Engine coolant temperature gauge	Receives engine coolant temperature signal and indicates coolant temperature.	
	Maintenance	The remaining distance from the set distance is displayed for 5 seconds after the ignition switch is turned ON.	
	Oil level	The oil level is displayed according to the oil level sensor signal for 5 seconds after the maintenance display.	
	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
			ABS actuator and electric unit (control unit)
	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
			ABS actuator and electric unit (control unit)
	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)
	Travel time	Displays accumulated key switch ON time from reset to reset.	—
Odo/trip meter	Calculates accumulated travel distance based on received vehicle speed signals and displays it.	ABS actuator and electric unit (control unit)	
Ambient air temperature	Corrects ambient air temperature value based on received OAT sensor signals and displays it.	OAT sensor	
Clock	Time is displayed.	—	

ARRANGEMENT OF COMBINATION METER



METER SYSTEM


< FUNCTION DIAGNOSIS >

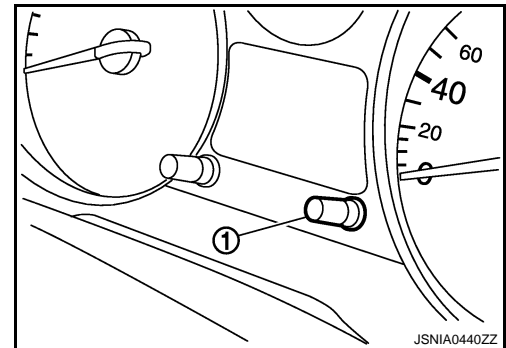
Unit	Description
ECM	Transmits the following signals to the combination meter with CAN communication line. <ul style="list-style-type: none"> • Engine speed signal • Engine coolant temperature signal • Fuel consumption monitor signal
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the combination meter with CAN communication line.
BCM	Transmits signals provided by various units to the combination meter with CAN communication line.
Control device	Transmits the following signals to the combination meter. <ul style="list-style-type: none"> • Manual mode signal • Not manual mode signal • Manual mode shift up signal • Manual mode shift down signal
TCM	Transmits shift position signal to the combination meter.
Brake fluid level switch	Transmits the brake fluid level switch signal to the combination meter.

METER SYSTEM : Operation Description


INFOID:000000001080239

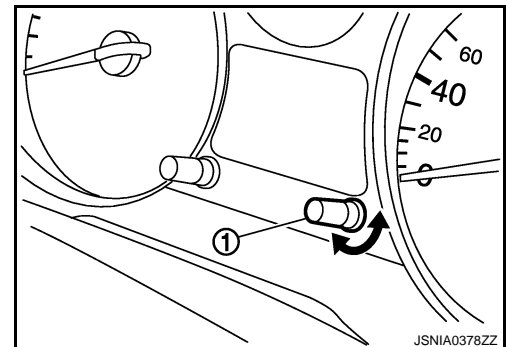
TRIP COMPUTER

- The display switches in the following order when pressing the  switch (1) of the combination meter.
 - Trip A → Trip B → Possible driving distance → Average fuel consumption → Average vehicle speed → Travel time → Trip A.
- The items other than “odo meter” and “possible driving distance” can be reset when pressing and holding the trip switch for 1 second or more.
- All items other than “odo meter”, “trip A” and “possible driving distance” can be reset when pressing and holding the trip switch for 3 seconds or more.



MAINTENANCE

1. Turn ignition switch ON from OFF.
2. Press and hold the  switch (1) for 3 seconds or more while displaying the maintenance information to the information display (for approximately 5 seconds after the ignition switch is turned ON).
3. The maintenance information is flashed and the system enters in the set/reset mode.
4. The set/reset can be performed with the following operation during flashing.



 switch

- Pressed : Reset
- Turn right : Increase the set distance
- Turn left : Decrease the set distance

CLOCK

METER SYSTEM

< FUNCTION DIAGNOSIS >

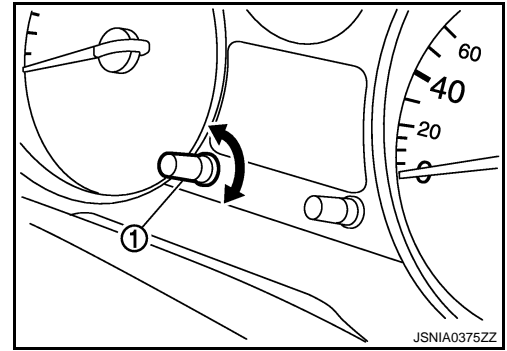
- The display switches between 12-hour time display mode and 24-hour time display mode with pressing the clock switch (1) of the combination meter.
- The “hour” display of clock is flashed when pressing and holding the clock switch for 3 seconds or more, and then the clock switches to the time adjustment mode.

Clock switch

Pressed : Changing adjustment “hour” and “minute”

Turn right : Go

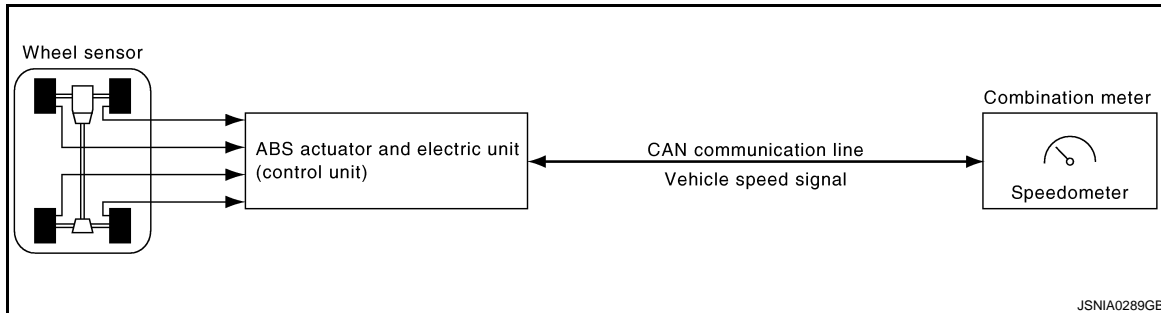
Turn left : Back



SPEEDOMETER

SPEEDOMETER : System Diagram

INFOID:0000000011080240



SPEEDOMETER : System Description

INFOID:0000000011080241

- The ABS actuator and electric unit (control unit) converts the rectangular wave signal provided by the wheel sensor to a vehicle speed signal and transmits it to the combination meter via CAN communication.
- The combination meter indicates the vehicle speed to the speedometer according to the vehicle speed signal received via CAN communication.

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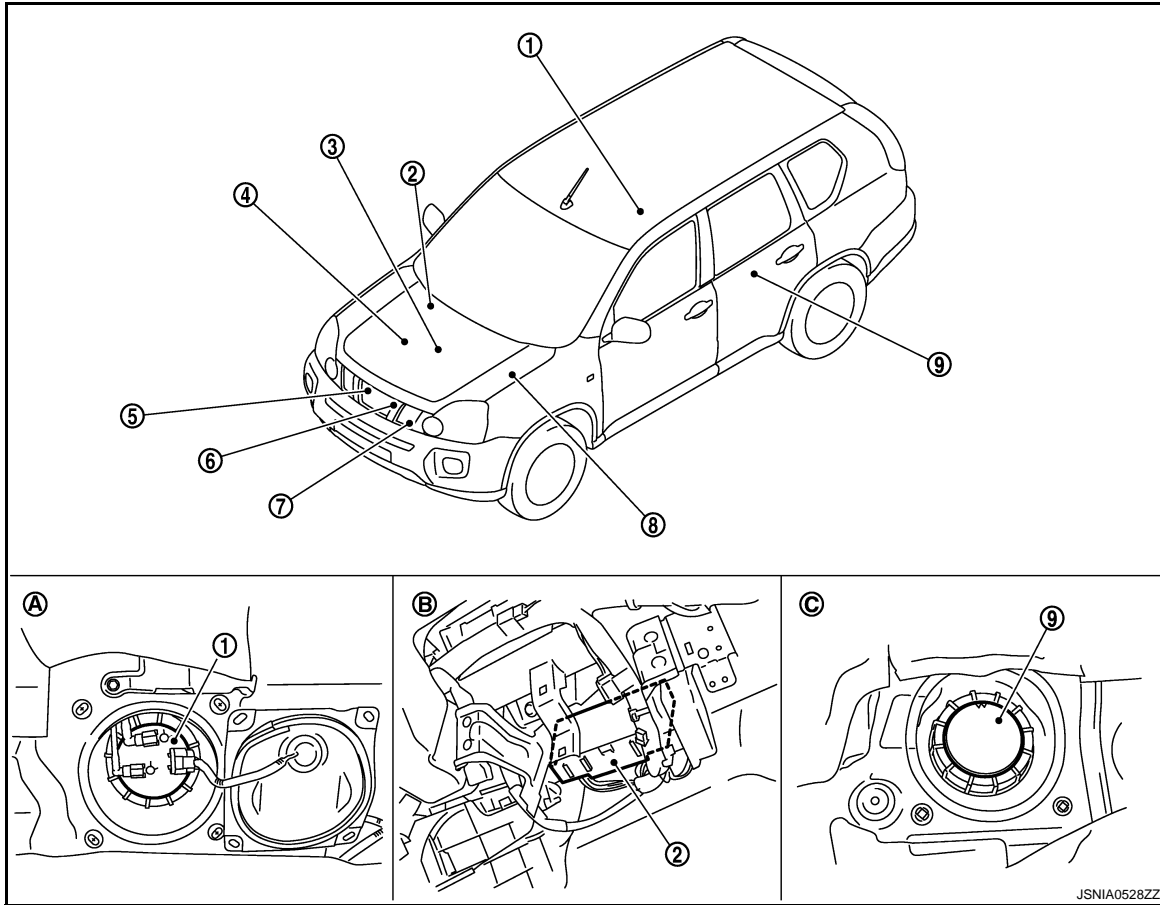
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METER SYSTEM

< FUNCTION DIAGNOSIS >

SPEEDOMETER : Component Parts Location

INFOID:000000001081130



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|--------------------------------------|--------------------------------------|---------------------------------|
| 1. Fuel level sensor unit (main) | 2. BCM | 3. Oil pressure switch (QR25DE) |
| 4. Oil level sensor (M9R) | 5. Oil pressure switch (MR20DE, M9R) | 6. OAT sensor |
| 7. Oil level sensor (MR20DE, QR25DE) | 8. IPDM E/R | 9. Fuel level sensor unit (sub) |
| A. Lower right side of rear seat | B. Over the glove box | C. Lower left side of rear seat |

SPEEDOMETER : Component Description

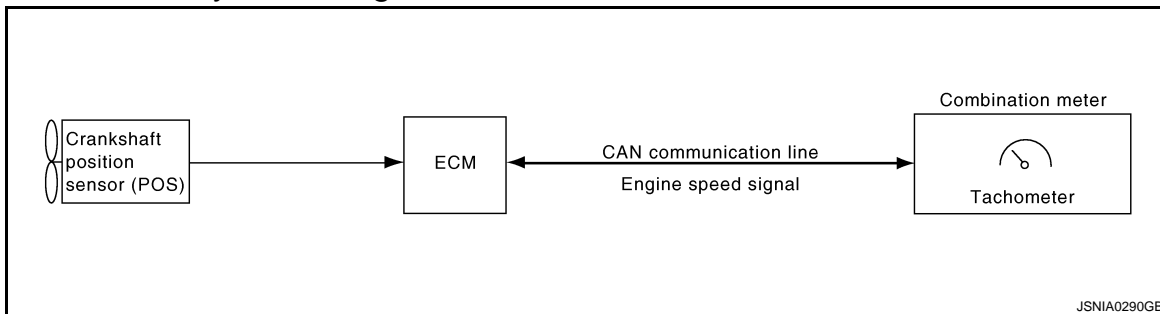
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Unit	Description
Combination meter	Indicates the vehicle speed to the speedometer according to the vehicle speed signal received from ABS actuator and electric unit (control unit) via CAN communication.
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the combination meter with CAN communication line.

TACHOMETER

TACHOMETER : System Diagram

INFOID:000000001080243



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METER SYSTEM

< FUNCTION DIAGNOSIS >

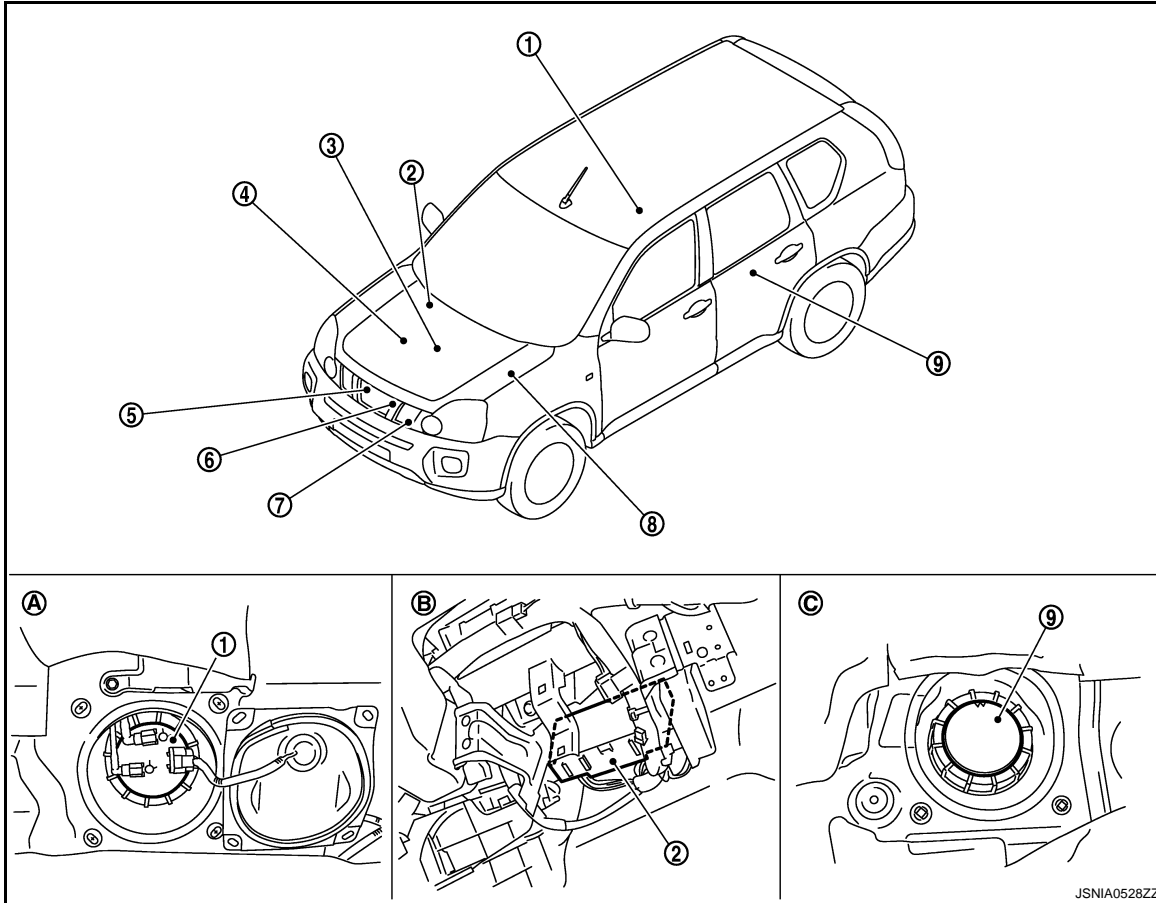
TACHOMETER : System Description

INFOID:000000001080244

- ECM converts the pulse signal provided by the crankshaft position sensor to an engine speed signal and transmits it to the combination meter with CAN communication line.
- The combination meter indicates the engine speed to the tachometer according to the engine speed signal received via CAN communication.

TACHOMETER : Component Parts Location

INFOID:000000001081131



- | | | |
|--------------------------------------|--------------------------------------|---------------------------------|
| 1. Fuel level sensor unit (main) | 2. BCM | 3. Oil pressure switch (QR25DE) |
| 4. Oil level sensor (M9R) | 5. Oil pressure switch (MR20DE, M9R) | 6. OAT sensor |
| 7. Oil level sensor (MR20DE, QR25DE) | 8. IPDM E/R | 9. Fuel level sensor unit (sub) |
| A. Lower right side of rear seat | B. Over the glove box | C. Lower left side of rear seat |

TACHOMETER : Component Description

INFOID:000000001080245

Unit	Description
Combination meter	Indicates the engine speed to the tachometer according to the engine speed signal received from ECM via CAN communication.
ECM	Transmits the engine speed signal to the combination meter with CAN communication line.

ENGINE COOLANT TEMPERATURE GAUGE

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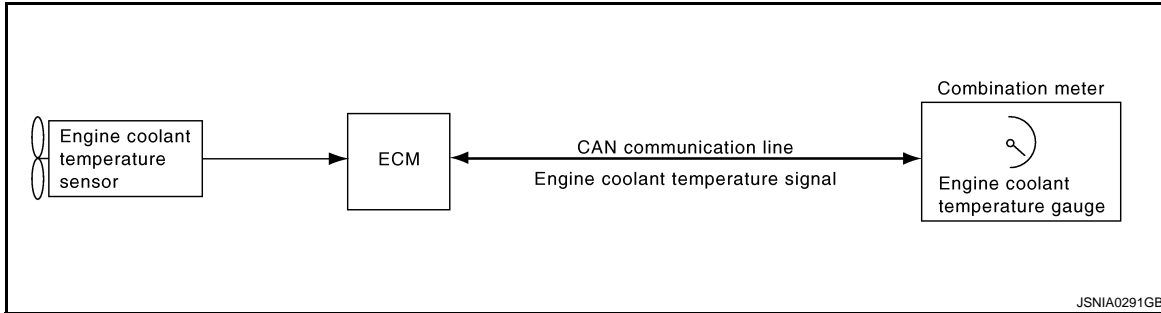
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METER SYSTEM

< FUNCTION DIAGNOSIS >

ENGINE COOLANT TEMPERATURE GAUGE : System Diagram

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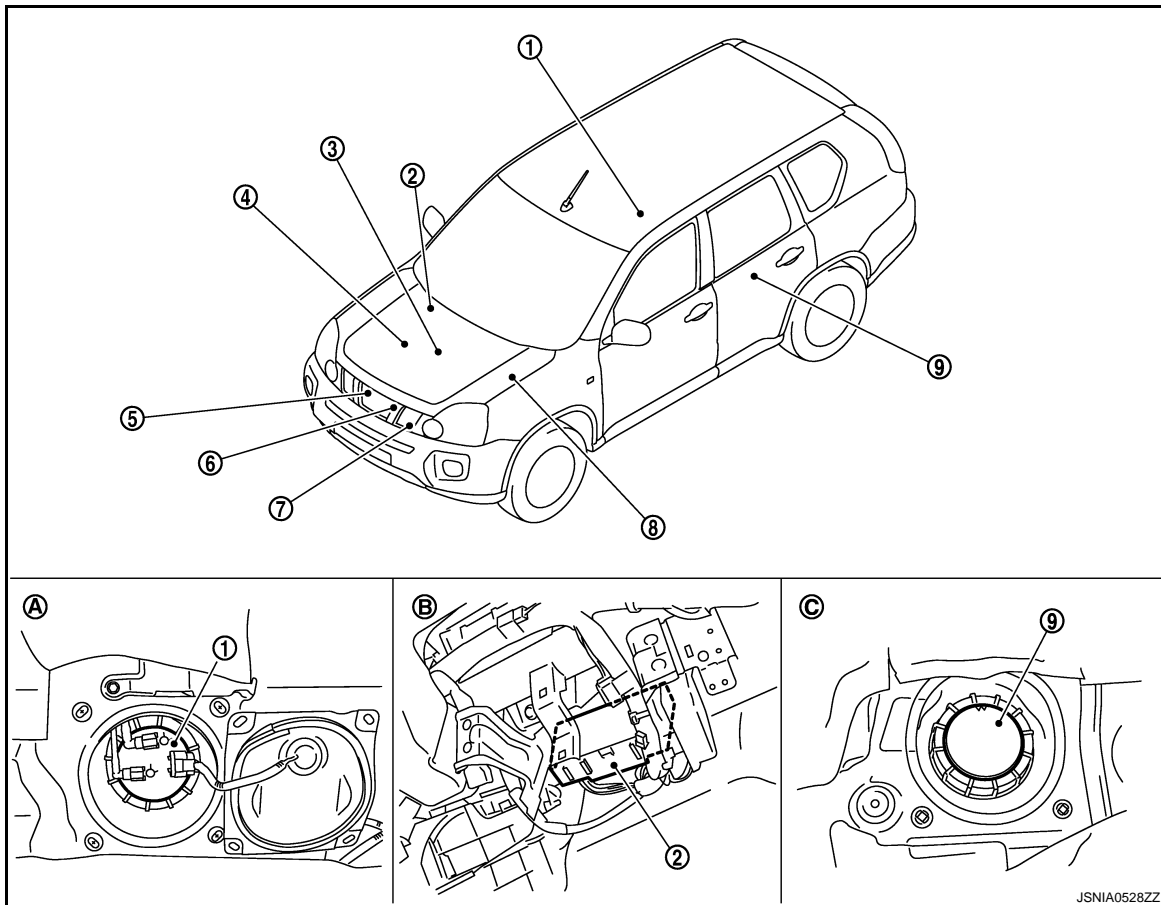
ENGINE COOLANT TEMPERATURE GAUGE : System Description

INFOID:000000001080247

- ECM reads the engine coolant temperature signal from the engine coolant temperature sensor and transmits the signal to the combination meter via CAN communication.
- The combination meter indicates the engine coolant temperature to the water temperature gauge according to the engine coolant temperature signal received via CAN communication.

ENGINE COOLANT TEMPERATURE GAUGE : Component Parts Location

INFOID:000000001081132



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- | | | |
|--------------------------------------|--------------------------------------|---------------------------------|
| 1. Fuel level sensor unit (main) | 2. BCM | 3. Oil pressure switch (QR25DE) |
| 4. Oil level sensor (M9R) | 5. Oil pressure switch (MR20DE, M9R) | 6. OAT sensor |
| 7. Oil level sensor (MR20DE, QR25DE) | 8. IPDM E/R | 9. Fuel level sensor unit (sub) |
| A. Lower right side of rear seat | B. Over the glove box | C. Lower left side of rear seat |

METER SYSTEM

< FUNCTION DIAGNOSIS >

ENGINE COOLANT TEMPERATURE GAUGE : Component Description

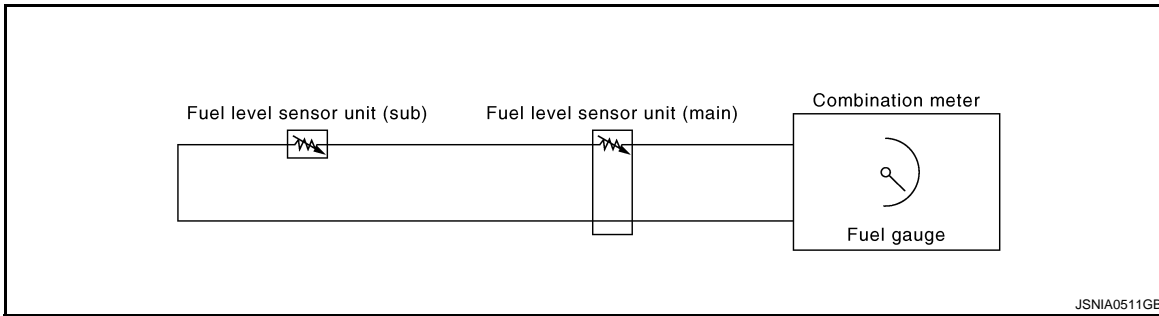
INFOID:000000001080248

Unit	Description
Combination meter	Indicates the engine coolant temperature to the water temperature gauge according to the engine coolant temperature signal received from ECM via CAN communication.
ECM	Transmits the engine coolant temperature signal to the combination meter via CAN communication.

FUEL GAUGE

FUEL GAUGE : System Diagram

INFOID:000000001080249



FUEL GAUGE : System Description

INFOID:000000001080250

CONTROL OUTLINE

The combination meter reads the fuel level sensor signal from the fuel level sensor unit and indicates the fuel level to the fuel gauge.

REFUEL CONTROL

The unit judges that the driver is refueling the vehicle and accelerates the fuel gauge segment movement if the fuel level changes by 15 ℓ (3 - 1/4 Imp gal) or more.

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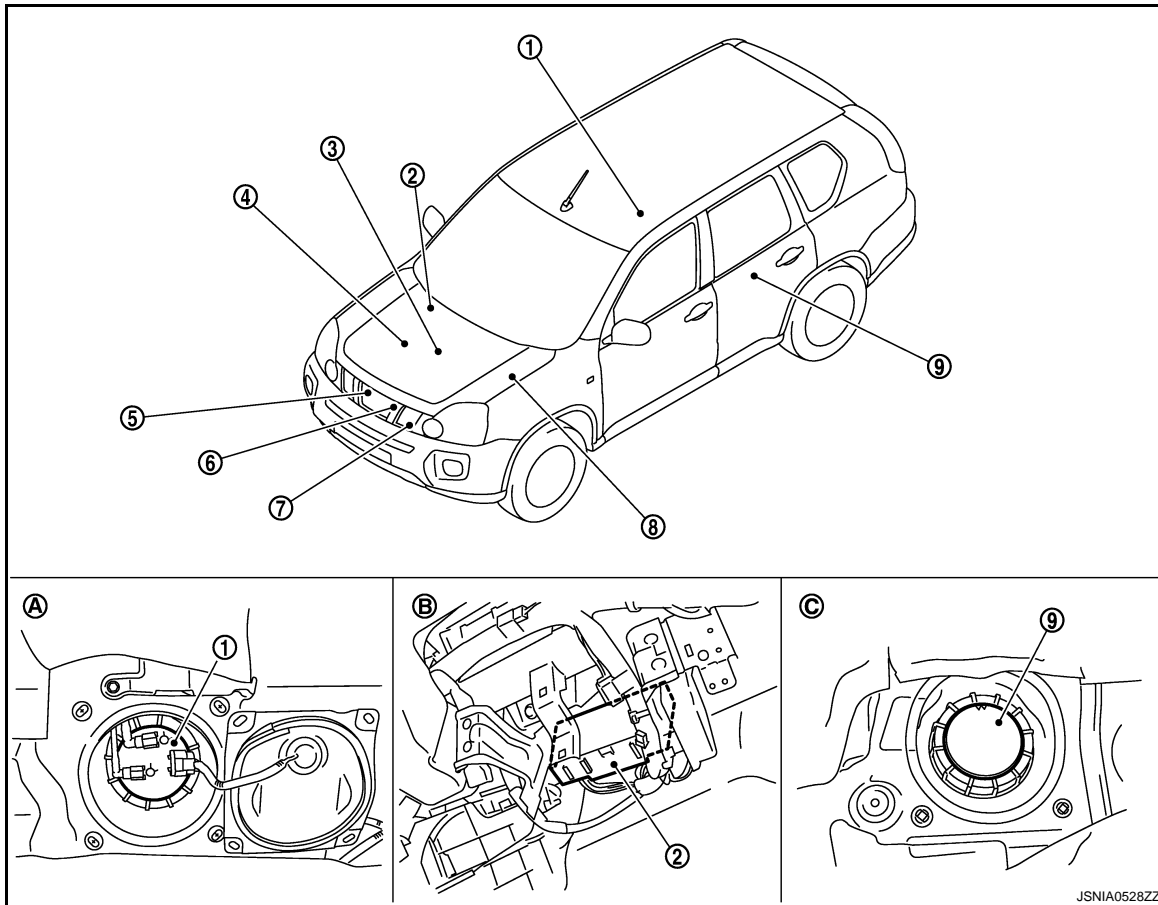
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METER SYSTEM

< FUNCTION DIAGNOSIS >

FUEL GAUGE : Component Parts Location

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|--------------------------------------|--------------------------------------|---------------------------------|
| 1. Fuel level sensor unit (main) | 2. BCM | 3. Oil pressure switch (QR25DE) |
| 4. Oil level sensor (M9R) | 5. Oil pressure switch (MR20DE, M9R) | 6. OAT sensor |
| 7. Oil level sensor (MR20DE, QR25DE) | 8. IPDM E/R | 9. Fuel level sensor unit (sub) |
| A. Lower right side of rear seat | B. Over the glove box | C. Lower left side of rear seat |

FUEL GAUGE : Component Description

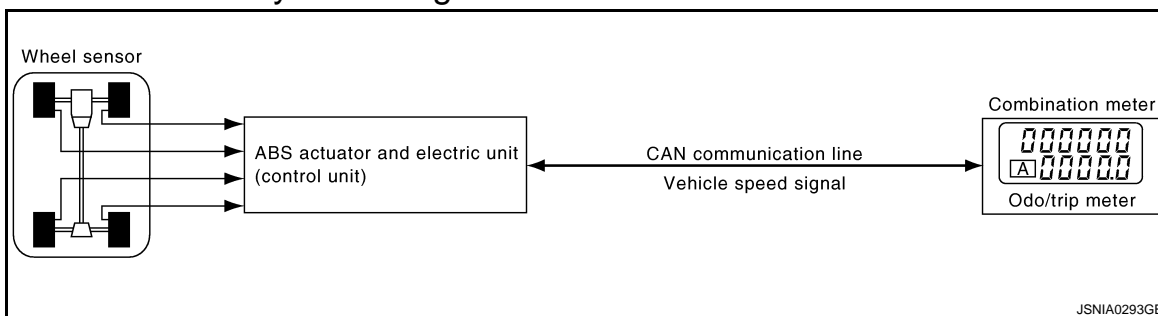
INFOID:000000001080251

Unit	Description
Combination meter	Indicates the fuel gauge according to the fuel level sensor signal received from the fuel level sensor unit.
Fuel level sensor unit	Refer to MWI-37, "Description" .

ODO/TRIP METER

ODO/TRIP METER : System Diagram

INFOID:000000001080252



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METER SYSTEM

< FUNCTION DIAGNOSIS >

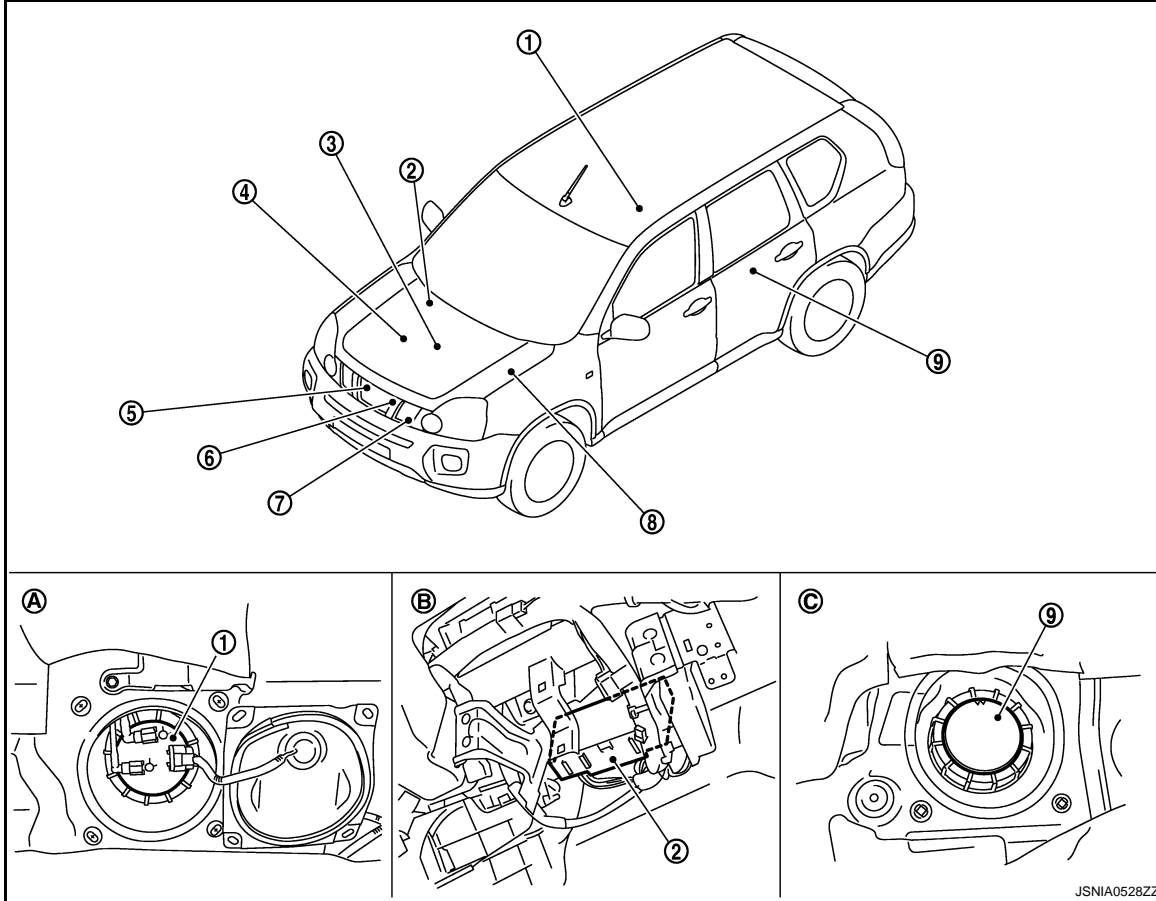
ODO/TRIP METER : System Description

INFOID:000000001080253

- The ABS actuator and electric unit (control unit) reads the rectangular wave signal provided by the wheel sensor and transmits the vehicle speed signal to the combination meter via CAN communication.
- The combination meter converts the vehicle speed signal received via CAN communication to mileage, and it displays the accumulated mileage to the odo/trip meter.

ODO/TRIP METER : Component Parts Location

INFOID:000000001081135



- | | | |
|--------------------------------------|--------------------------------------|---------------------------------|
| 1. Fuel level sensor unit (main) | 2. BCM | 3. Oil pressure switch (QR25DE) |
| 4. Oil level sensor (M9R) | 5. Oil pressure switch (MR20DE, M9R) | 6. OAT sensor |
| 7. Oil level sensor (MR20DE, QR25DE) | 8. IPDM E/R | 9. Fuel level sensor unit (sub) |
| A. Lower right side of rear seat | B. Over the glove box | C. Lower left side of rear seat |

ODO/TRIP METER : Component Description

INFOID:000000001080254

Unit	Description
Combination meter	Converts the vehicle speed signal received from the ABS actuator and electric unit (control unit) via CAN communication to mileage, and it displays the accumulated mileage to the odo/trip meter.
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the combination meter via CAN communication.

SHIFT POSITION INDICATOR

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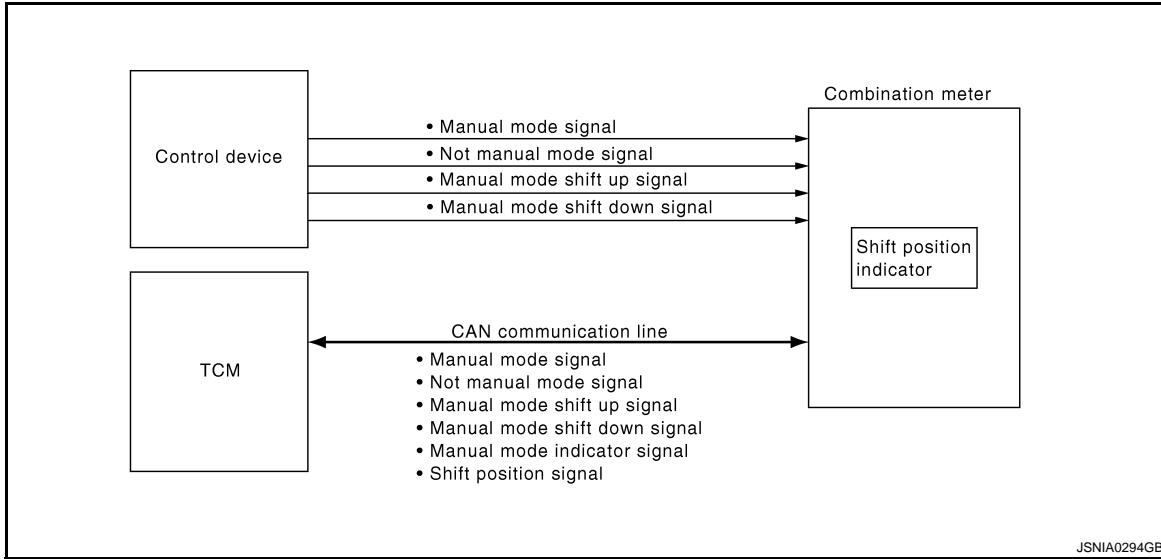
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METER SYSTEM

< FUNCTION DIAGNOSIS >

SHIFT POSITION INDICATOR : System Diagram

INFOID:000000001080255



SHIFT POSITION INDICATOR : System Description

INFOID:000000001080256

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

MANUAL MODE

- The combination meter receives the manual mode signal, not manual mode signal, manual mode shift up signal, and manual mode shift down signal from control device and transmits them to TCM via CAN communication.
- TCM recognizes the manual mode operation status according to the manual mode signal, not manual mode signal, manual mode shift up signal, and manual mode shift down signal received via CAN communication and transmits the manual mode indicator signal to the combination meter via CAN communication.
- The combination meter indicates shift position according to the manual mode indicator signal received via CAN communication.

NOT MANUAL MODE (AUTO MODE)

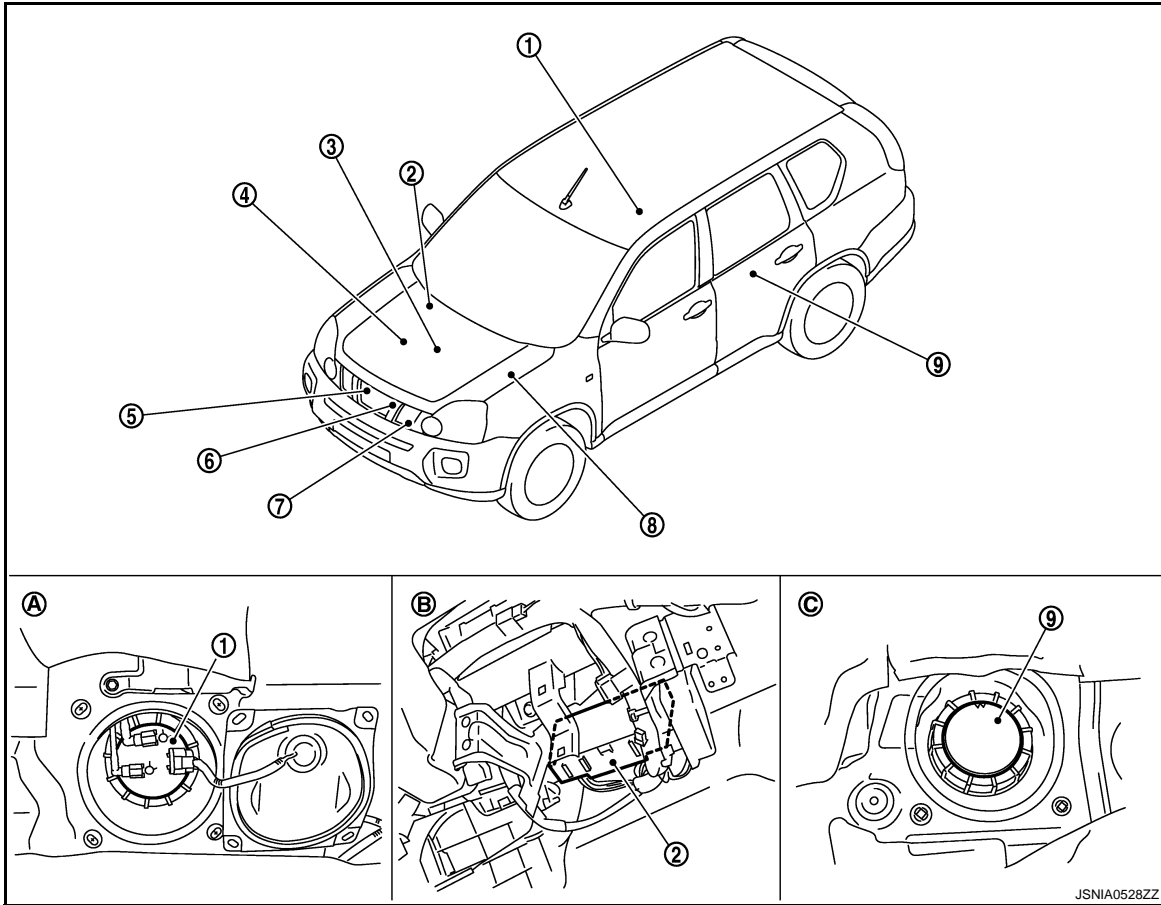
- TCM transmits the shift position signal to the combination meter via CAN communication.
- The combination meter indicates shift position according to the shift position signal received via CAN communication.

METER SYSTEM

< FUNCTION DIAGNOSIS >

SHIFT POSITION INDICATOR : Component Parts Location

INFOID:000000001081136



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|--------------------------------------|--------------------------------------|---------------------------------|
| 1. Fuel level sensor unit (main) | 2. BCM | 3. Oil pressure switch (QR25DE) |
| 4. Oil level sensor (M9R) | 5. Oil pressure switch (MR20DE, M9R) | 6. OAT sensor |
| 7. Oil level sensor (MR20DE, QR25DE) | 8. IPDM E/R | 9. Fuel level sensor unit (sub) |
| A. Lower right side of rear seat | B. Over the glove box | C. Lower left side of rear seat |

SHIFT POSITION INDICATOR : Component Description

INFOID:000000001080257

Unit	Description
Combination meter	Displays the shift position on the information display with shift position signal and manual mode indicator signal received from TCM.
Control device	Transmits the following signals to the combination meter. <ul style="list-style-type: none"> • Manual mode signal • Manual mode shift up signal • Not manual mode signal • Manual mode shift down signal
TCM	Transmits the shift position signal and the manual mode indicator signal to the combination meter via CAN communication.

WARNING LAMPS/INDICATOR LAMPS

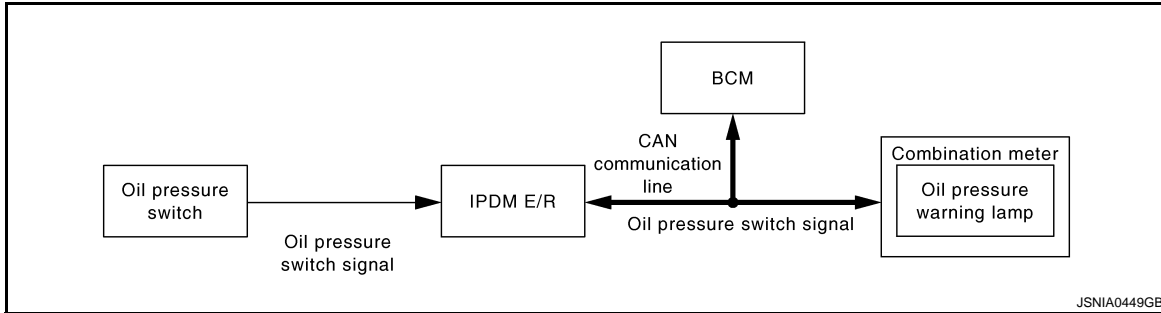
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METER SYSTEM

< FUNCTION DIAGNOSIS >

WARNING LAMPS/INDICATOR LAMPS : System Diagram

INFOID:000000001080258



JSNIA0449GB

WARNING LAMPS/INDICATOR LAMPS : System Description

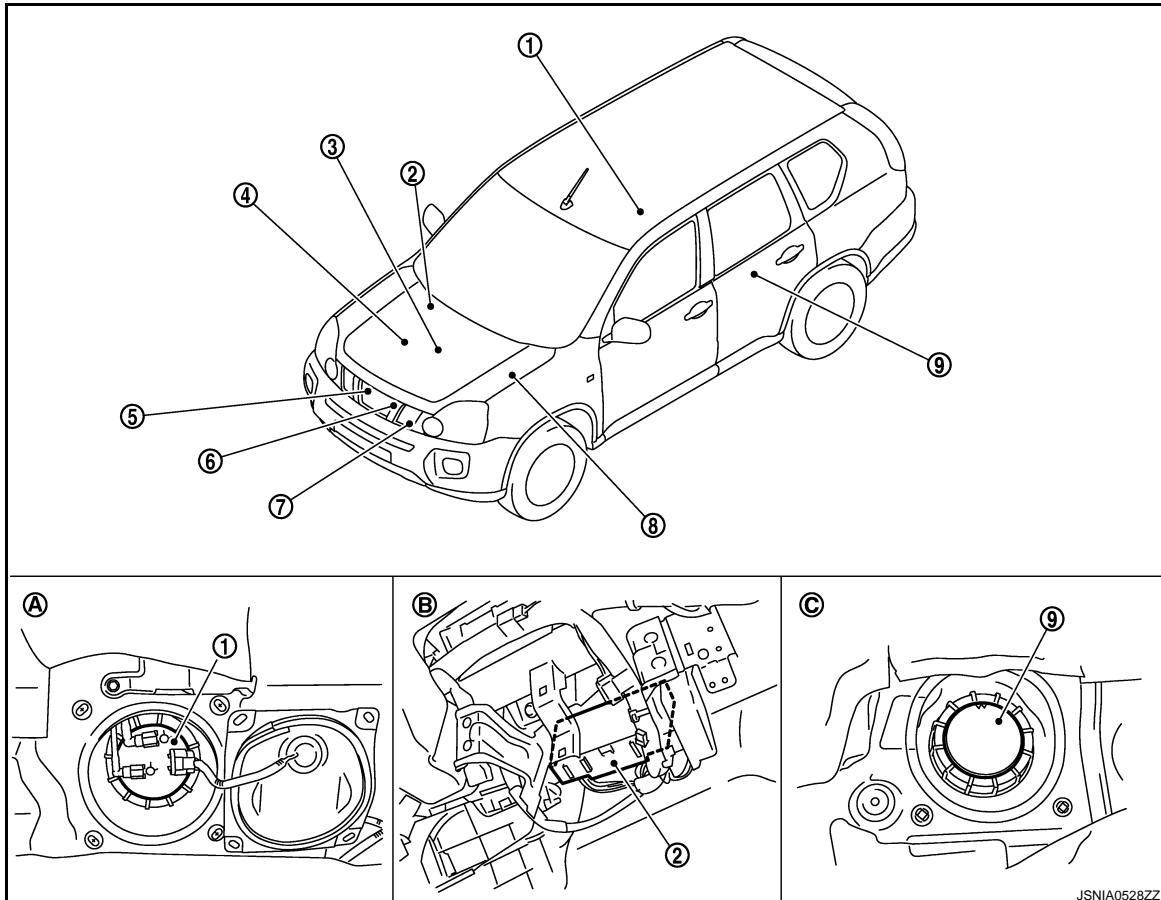
INFOID:000000001080259

OIL PRESSURE WARNING LAMP

- IPDM E/R reads the ON/OFF signals from the oil pressure switch and transmits the oil pressure switch signal to the combination meter via BCM with the CAN communication line.
- The combination meter turns the oil pressure warning lamp ON/OFF according to the oil pressure switch signal received via CAN communication.

WARNING LAMPS/INDICATOR LAMPS : Component Parts Location

INFOID:000000001081137



JSNIA0528ZZ

- | | | |
|--------------------------------------|--------------------------------------|---------------------------------|
| 1. Fuel level sensor unit (main) | 2. BCM | 3. Oil pressure switch (QR25DE) |
| 4. Oil level sensor (M9R) | 5. Oil pressure switch (MR20DE, M9R) | 6. OAT sensor |
| 7. Oil level sensor (MR20DE, QR25DE) | 8. IPDM E/R | 9. Fuel level sensor unit (sub) |
| A. Lower right side of rear seat | B. Over the glove box | C. Lower left side of rear seat |

METER SYSTEM

< FUNCTION DIAGNOSIS >

WARNING LAMPS/INDICATOR LAMPS : Component Description

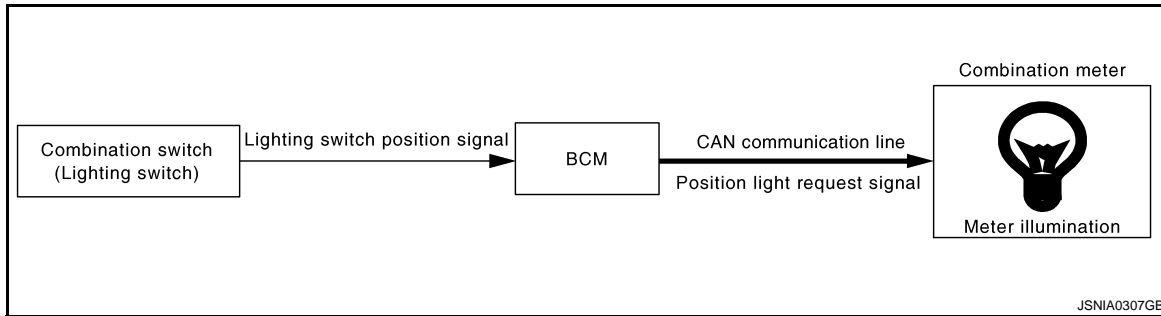
INFOID:000000001080260

Unit	Description
Combination meter	Turns the oil pressure warning lamp ON/OFF according to the oil pressure switch signal received from BCM by means of communication.
IPDM E/R	Reads the ON/OFF signals from the oil pressure switch and transmits the oil pressure switch signal to the combination meter via BCM with the CAN communication line.
Oil pressure switch	Refer to MWI-39, "Description" .
BCM	Transmits the oil pressure switch signal received from IPDM E/R via CAN communication to the combination meter via CAN communication.

METER ILLUMINATION CONTROL

METER ILLUMINATION CONTROL : System Diagram

INFOID:000000001080261



METER ILLUMINATION CONTROL : System Description

INFOID:000000001080262

The combination meter controls the meter illumination if the position light request signal transmitted from BCM via CAN communication.

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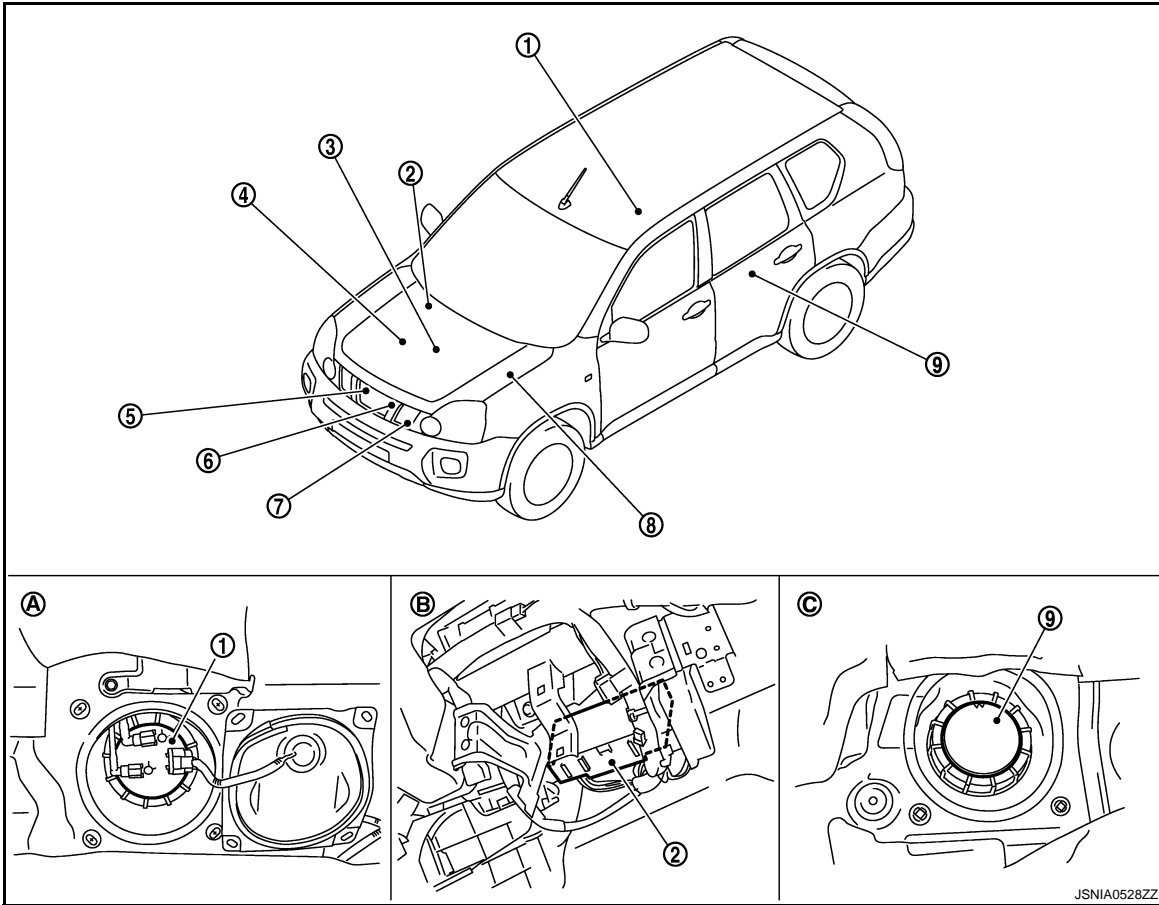
MWI

METER SYSTEM

< FUNCTION DIAGNOSIS >

METER ILLUMINATION CONTROL : Component Parts Location

INFOID:000000001081138



- | | | |
|--------------------------------------|--------------------------------------|---------------------------------|
| 1. Fuel level sensor unit (main) | 2. BCM | 3. Oil pressure switch (QR25DE) |
| 4. Oil level sensor (M9R) | 5. Oil pressure switch (MR20DE, M9R) | 6. OAT sensor |
| 7. Oil level sensor (MR20DE, QR25DE) | 8. IPDM E/R | 9. Fuel level sensor unit (sub) |
| A. Lower right side of rear seat | B. Over the glove box | C. Lower left side of rear seat |

METER ILLUMINATION CONTROL : Component Description

INFOID:000000001080263

Unit	Description
Combination meter	Controls the meter illumination if the position light request signal transmitted from BCM via CAN communication.
BCM	Transmits the position light request signal to the combination meter via CAN communication.

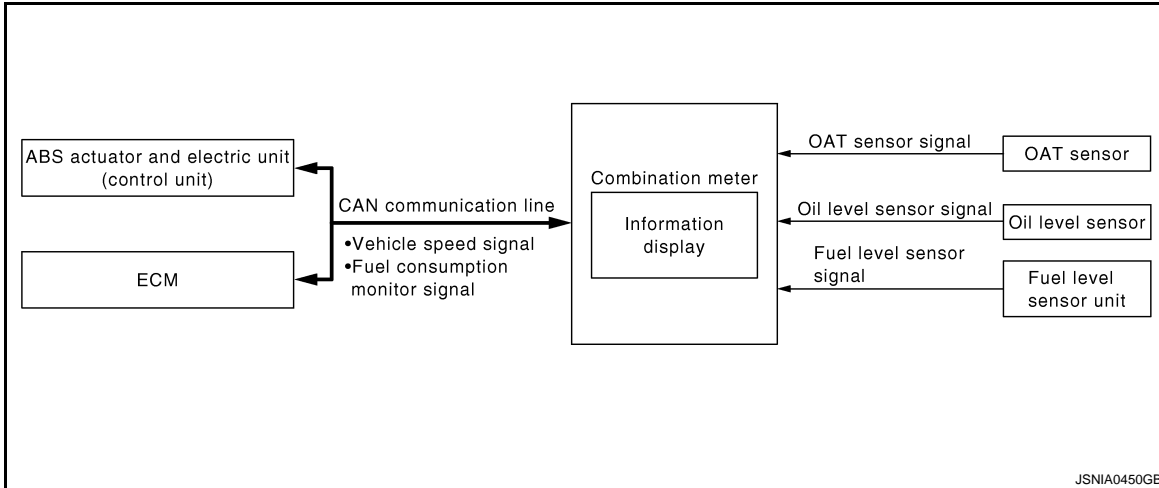
INFORMATION DISPLAY

METER SYSTEM

< FUNCTION DIAGNOSIS >

INFORMATION DISPLAY : System Diagram

INFOID:000000001080264



INFORMATION DISPLAY : System Description

INFOID:000000001080265

DESCRIPTION

The combination meter incorporates a trip computer that displays the information according to the signal received from various units.

MAINTENANCE

The remaining distance from the set maintenance distance is displayed.

Items	Setting range	Setting unit	Description
Maintenance	0 – 30000 km (0 – 18000 miles)	1000 km (500 miles)	The remaining distance from the set distance is displayed for 5 seconds after the ignition switch is turned ON.

OIL LEVEL

The combination meter displays it judged with the oil level sensor signal received from the oil level sensor.

NOTE:

Oil level is not displayed after installation/removal of battery or combination meter. To display the oil level again, follow the steps below.

1. More than 5 minutes after turning ignition switch OFF, open the driver's door.
2. Turn ignition switch ON.

CLOCK

Clock displays the time measured in the combination meter.

AVERAGE FUEL CONSUMPTION

- The combination meter receives the fuel consumption monitor signal from ECM and the vehicle speed signal from the ABS actuator and electric unit (control unit) via CAN communication.
- The combination meter indicates the average fuel consumption calculated by the signal received.
- The average fuel consumption displayed on the information display is updated at approximately 30-second intervals.

AVERAGE VEHICLE SPEED

- The combination meter receives the vehicle speed signal from the ABS actuator and electric unit (control unit) with the CAN communication line.
- The combination meter indicates the average vehicle speed according to the vehicle speed signal received and the time measured in the combination meter.
- The average vehicle speed displayed on the information display is updated at approximately 30-second intervals.

TRAVEL TIME

Measures the driving time (ignition switch ON time) in the combination meter and displays it.

ODO/TRIP METER

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METER SYSTEM

< FUNCTION DIAGNOSIS >

- The combination meter receives the vehicle speed signal from the ABS actuator and electric unit (control unit) with the CAN communication line.
- The combination meter indicates the travel distance calculated by the vehicle speed signal received.

POSSIBLE DRIVING DISTANCE

- Combination meter receives the fuel consumption signals from ECM and the vehicle speed signals from ABS actuator and electric unit (control unit) with the CAN communication line.
- Combination meter calculates the possible driving distance from the signals through CAN communication line and the fuel level signals from the fuel level sensor to display.

AMBIENT AIR TEMPERATURE

- The combination meter indicates the ambient air temperature calculated by the OAT sensor signal received from the OAT sensor.
- The indicated temperature is corrected by the ignition switch signal, the OAT sensor detection temperature, and the vehicle speed signal. It does not increase if the vehicle speed is less than 20 km/h (12.4 MPH).

Correction Process (Ignition Switch OFF → ON)

The OAT sensor detection temperature is not displayed in real time if all of the following conditions are fulfilled. The indicated temperature before the ignition switch OFF is displayed.

- The ignition switch OFF time is less than 3.5 hours.
- The OAT sensor detection temperature is higher than the indicated temperature before the ignition switch OFF.

Correction Process (Ignition Switch ON)

Perform the following correction if the OAT sensor detection temperature is higher than the indicated temperature when the vehicle speed is 20 km/h (12.4 MPH) or more.

- Increase the update rate of the indicated temperature according to the increase of the vehicle speed.

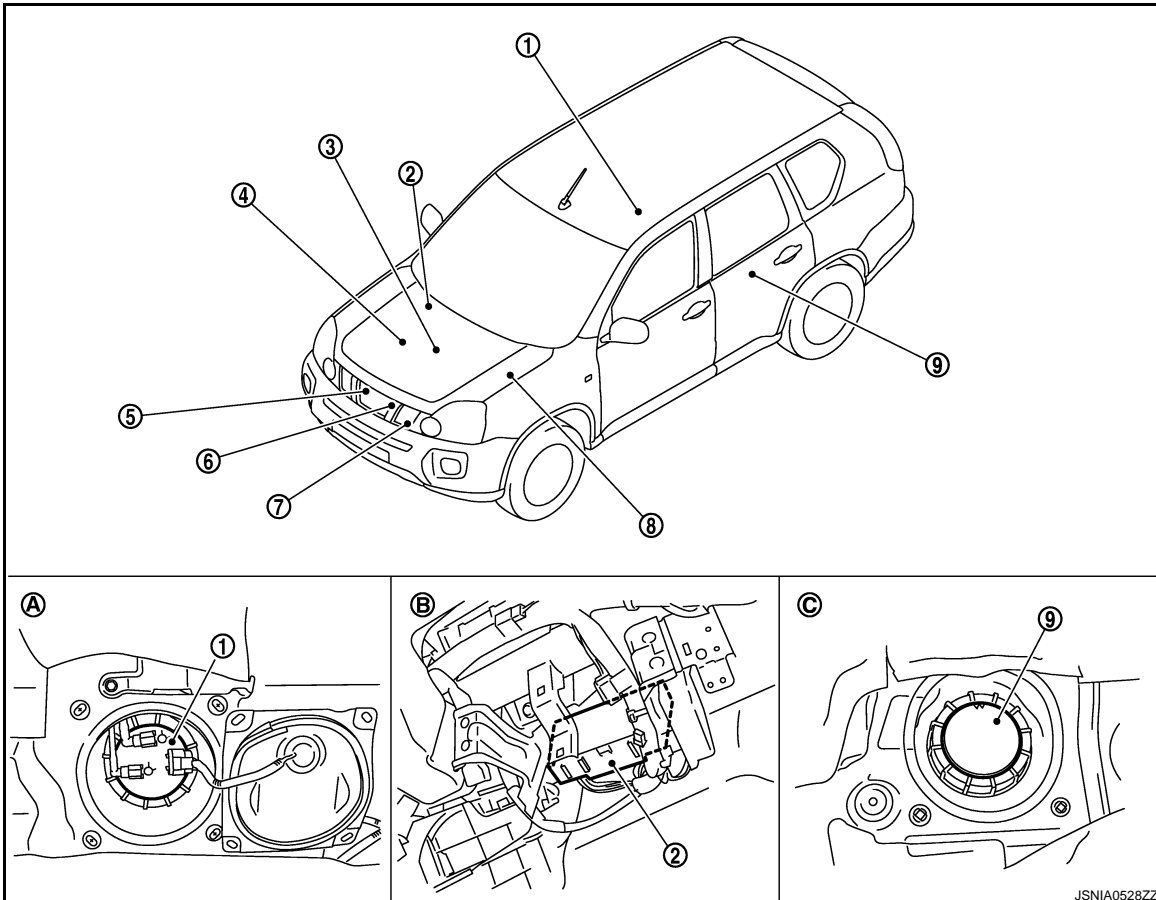
Load Ice Warning

When the ambient air temperature falls below 3°C (37°F), warning is indicated on the following segment of the information display.

- “°C” -Blinking for the first one minute, and then turned ON.

INFORMATION DISPLAY : Component Parts Location

INFOID:000000001081139



JSNIA0528ZZ

METER SYSTEM

< FUNCTION DIAGNOSIS >

- | | | |
|--------------------------------------|--------------------------------------|---------------------------------|
| 1. Fuel level sensor unit (main) | 2. BCM | 3. Oil pressure switch (QR25DE) |
| 4. Oil level sensor (M9R) | 5. Oil pressure switch (MR20DE, M9R) | 6. OAT sensor |
| 7. Oil level sensor (MR20DE, QR25DE) | 8. IPDM E/R | 9. Fuel level sensor unit (sub) |
| A. Lower right side of rear seat | B. Over the glove box | C. Lower left side of rear seat |

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INFORMATION DISPLAY : Component Description

INFOID:000000001080266

Unit	Description
Combination meter	Controls the information display according to the signal received from each unit.
Fuel level sensor unit	Refer to MWI-37, "Description" .
ECM	Transmits the following signals to the combination meter via CAN communication line. <ul style="list-style-type: none"> • Engine speed signal • Engine coolant temperature signal • Fuel consumption monitor signal
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the combination meter via CAN communication line.
BCM	Transmits signals provided by various units to the combination meter via CAN communication line.
OAT sensor	Refer to MWI-40, "Description" .
Oil level sensor	Refer to MWI-33, "Description" .

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DIAGNOSIS SYSTEM (METER)

< FUNCTION DIAGNOSIS >

DIAGNOSIS SYSTEM (METER)

Diagnosis Description

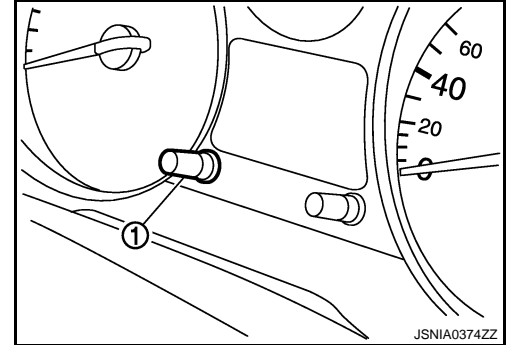
INFOID:000000001080267

ON BOARD DIAGNOSIS

- Information display LCD segment operation can be checked in on board diagnosis mode.
- On board diagnosis can check for the continuity between meter control circuit and each meter (speedometer and tachometer).

START-UP PROCEDURE OF ON BOARD DIAGNOSIS

1. Turn the ignition switch ON.
2. Turn the ignition switch OFF after setting the display to "trip A" or "trip B".
3. Turn the ignition switch to ON while pressing the clock switch (1).
4. Press the clock switch at least 3 times (Within 7 seconds after the ignition switch is turned ON).

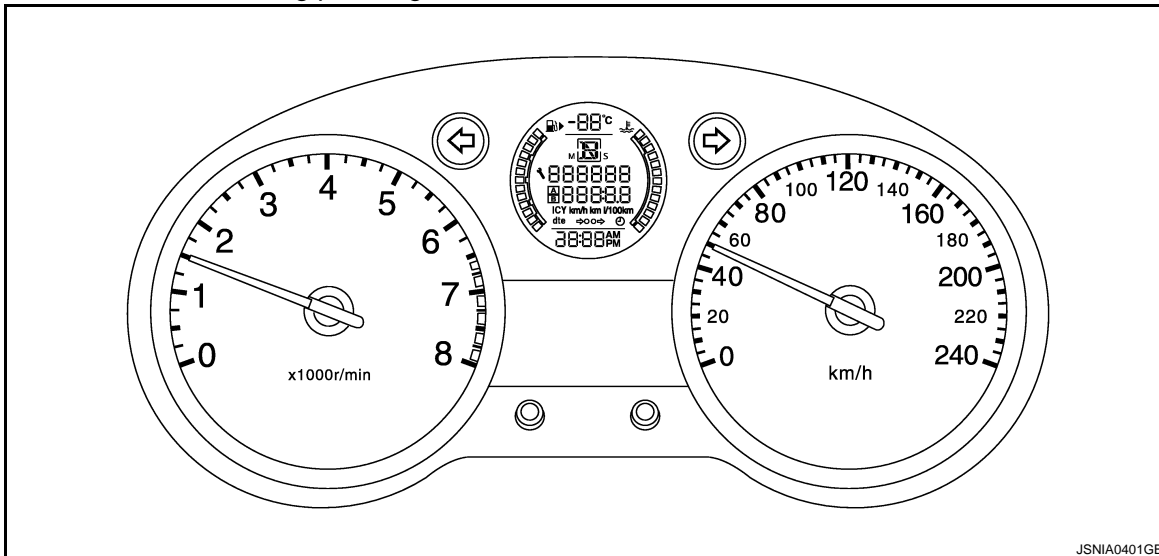


5. Illuminates all segments in the information display. At this time, the combination meter is turned to on board diagnosis mode.

NOTE:

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

6. Each meter activates during pressing clock switch.



NOTE:

Check the combination meter power supply and the ground circuit if the on board diagnosis does not start. Refer to [MWI-35. "COMBINATION METER : Diagnosis Procedure"](#).

CONSULT-III Function (METER/M&A)

INFOID:000000001080268

CONSULT-III FUNCTION (METER/M&A)

DIAGNOSIS SYSTEM (METER)

< FUNCTION DIAGNOSIS >

System	Diagnosis mode	Description
METER/M&A	Self Diagnostic Result	Combination meter checks the conditions and displays memorized error.
	Data Monitor	Displays combination meter input/output data in real time.

SELF DIAGNOSTIC RESULT

Refer to [MWI-64, "DTC Index"](#).

DATA MONITOR

Display Item List

X: Applicable

Display item [Unit]	MAIN SIGNALS	Description
SPEED METER [km/h]	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]	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 [lit.]	X	Fuel level indicated on combination meter.
W TEMP METER [°C]	X	Value of engine coolant temperature signal received from ECM with CAN communication line. NOTE: 215 is displayed when the malfunction signal is input.
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 ESP indicator lamp judged from ESP OFF indicator lamp signal received from ABS actuator and electric unit (control unit) with CAN communication line.
SLIP IND [On/Off]		Status of slip indicator lamp judged from slip indicator lamp signal received from ABS actuator and electric unit (control unit) with CAN communication line.
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 lamp 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 [On/Off]		Status of front fog lamp indicator lamp judged from front fog light request signal received from BCM with CAN communication line.
RR FOG IND [On/Off]		Status of rear fog lamp indicator lamp judged from rear fog lamp status signal received from BCM with CAN communication line.

DIAGNOSIS SYSTEM (METER)

< FUNCTION DIAGNOSIS >

Display item [Unit]	MAIN SIGNALS	Description
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 [On/Off]		Status of glow indicator lamp judged from glow indicator lamp signal received from ECM with the CAN communication line.
CRUISE IND [On/Off]		Status of CRUISE indicator judged from ASCD CRUISE lamp signal received from ECM with CAN communication line.
SET IND [On/Off]		Status of set indicator judged from ASCD SET indicator signal received from ECM with CAN communication line.
ATC/T-AMT W/L [On/Off]		Status of A/T check warning lamp judged from A/T CHECK indicator lamp signal received from TCM with the CAN communication line.
4WD W/L [On/Off]		Status of 4WD warning lamp judged from 4WD warning lamp signal received from 4WD control unit with CAN communication line.
4WD LOCK IND [On/Off]		Status of 4WD lock indicator judged from 4WD signal received from 4WD control unit with the CAN communication line.
FUEL W/L [On/Off]	X	Status of Low-fuel warning lamp judged from identified fuel level.
KEY G/Y W/L [On/Off]		Status of key warning lamp (G/Y) judged from key warning signal received from Intelligent Key unit with CAN communication line.
KEY R W/L [On/Off]		Status of key warning lamp (R) judged from key warning signal received from Intelligent Key unit with CAN communication line.
KEY KNOB W/L [On/Off]		Status of Key knob switch received from Intelligent Key unit with the CAN communication line.
EPS W/L [On/Off]		Status of EPS warning lamp judged from EPS warning lamp signal received from EPS control unit with the CAN communication line.
HDC W/L [On/Off]		Status of HDC warning lamp judged from HV system warning lamp signal received from ABS actuator and electric unit (control unit) with the CAN communication line.
SHIFT IND [P/ R/ N/ D/ M1/ M2/ M3/ M4/ M5/ M6]		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 [On/Off]		Status of O/D OFF switch.
A/T S MODE SW		Status of snow mode switch.
M RANGE SW [On/Off]	X	Status of mode select switch (manual).
NM RANGE SW [On/Off]	X	Status of mode select switch (auto).
AT SFT UP SW [On/Off]	X	Status of position select switch (up).
AT SFT DWN SW [On/Off]	X	Status of position select switch (down).
COMP F/B SIG [On/Off]		A/C compressor activation condition that ECM judges according to the water temperature and the acceleration degree.
PKB SW [On/Off]		Status of parking brake switch.
BRAKE OIL SW [On/Off]		Status of brake fluid level switch.
DISTANCE [km]	X	Value of possible driving distance calculated by combination meter.

DIAGNOSIS SYSTEM (METER)

< FUNCTION DIAGNOSIS >

Display item [Unit]	MAIN SIGNALS	Description	A
OUTSIDE TEMP [°C or °F]		Ambient temperature value converted from OAT sensor signal received from OAT 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 OAT sensor input value.)	B
FUEL LOW SIG [On/Off]		Status of fuel level low warning signal to output to AV control unit with CAN communication line.	C
BUZZER [On/Off]	X	Buzzer status (in the combination meter) judged with the buzzer output signal received from BCM via CAN communication and the warning output condition of the combination meter.	D

NOTE:

Some items are not available according to vehicle specification.

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U1000 CAN COMM CIRCUIT

< COMPONENT DIAGNOSIS >

COMPONENT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:000000001080269

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 2 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.

Refer to [LAN-25, "CAN Communication Signal Chart"](#).

DTC Logic

INFOID:000000001080270

DTC DETECTION LOGIC

DTC	Display contents of CONSULT-III	Diagnostic item is detected when ...	Probable malfunction location
U1000	CAN COMM CIRCUIT	When combination meter is not transmitting or receiving CAN communication signal for 2 seconds or more.	CAN communication system

Diagnosis Procedure

INFOID:000000001080271

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-13, "Trouble Diagnosis Flow Chart"](#).
NO >> Refer to [GI-39, "Intermittent Incident"](#).

U1010 CONTROL UNIT (CAN)

< COMPONENT DIAGNOSIS >

U1010 CONTROL UNIT (CAN)

Description

INFOID:000000001102361

Initial diagnosis of combination meter.

DTC Logic

INFOID:000000001102362

DTC DETECTION LOGIC

DTC	Display contents of CONSULT-III	Diagnostic item is detected when ...	Probable malfunction location
U1010	CONTROL UNIT (CAN)	Any malfunction is detected during initial diagnosis of combination meter CAN controller.	Combination meter

Diagnosis Procedure

INFOID:000000001102363

1. REPLACE COMBINATION METER

When DTC "U1010" is detected, replace combination meter.

>> INSPECTION END

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B2205 VEHICLE SPEED

< COMPONENT DIAGNOSIS >

B2205 VEHICLE SPEED

Description

INFOID:000000001080272

Vehicle speed signal is transmitted from ABS actuator and electric unit (control unit) via CAN communication line to combination meter.

DTC Logic

INFOID:000000001080273

DTC DETECTION LOGIC

DTC	Display contents of CONSULT-III	Diagnostic item is detected when ...	Probable malfunction location
B2205	VEHICLE SPEED	The abnormal vehicle speed signal is input from ABS actuator and electric unit (control unit) for 2 seconds or more.	<ul style="list-style-type: none">• Wheel sensor• ABS actuator and electric unit (control unit)

Diagnosis Procedure

INFOID:000000001080274

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

Perform "Self Diagnosis Result" of ABS actuator and electric unit (control unit), and repair or replace malfunctioning parts.

- >> • [BRC-17, "CONSULT-III Function \(ABS\)"](#) (Without ESP system)
- [BRC-104, "CONSULT-III Function \(ABS\)"](#) (With ESP system)

B2267 ENGINE SPEED

< COMPONENT DIAGNOSIS >

B2267 ENGINE SPEED

Description

INFOID:000000001102370

The engine speed signal is transmitted from ECM to the combination meter with CAN communication.

DTC Logic

INFOID:000000001102371

DTC DETECTION LOGIC

DTC	Display contents of CONSULT-III	Diagnostic item is detected when ...	Probable malfunction location
B2267	ENGINE SPEED	ECM continuously transmits abnormal engine speed signals for 2 seconds or more.	<ul style="list-style-type: none">• Crankshaft position sensor• ECM

Diagnosis Procedure

INFOID:000000001102372

1. PERFORM SELF DIAGNOSIS OF ECM

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

- >> • [ECM-87, "CONSULT-III Function"](#) (MR20DE)
- [ECQ-89, "CONSULT-III Function"](#) (QR25DE with EURO-OBD)
- [ECQ-432, "CONSULT-III Function"](#) (QR25DE without EURO-OBD)
- [ECR-97, "Diagnosis Description"](#) (M9R)

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B2268 WATER TEMP

< COMPONENT DIAGNOSIS >

B2268 WATER TEMP

Description

INFOID:000000001102373

The engine coolant temperature signal is transmitted from ECM to the combination meter via CAN communication.

DTC Logic

INFOID:000000001102374

DTC DETECTION LOGIC

DTC	Display contents of CONSULT-III	Diagnostic item is detected when ...	Probable malfunction location
B2268	WATER TEMP	ECM continuously transmits abnormal engine coolant temperature signals for 60 seconds or more.	<ul style="list-style-type: none">• Engine coolant temperature sensor• ECM

Diagnosis Procedure

INFOID:000000001102375

1. PERFORM SELF DIAGNOSIS OF ECM

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

- >> • [ECM-87, "CONSULT-III Function"](#) (MR20DE)
• [ECQ-89, "CONSULT-III Function"](#) (QR25DE with EURO-OBD)
• [ECQ-432, "CONSULT-III Function"](#) (QR25DE without EURO-OBD)
• [ECR-97, "Diagnosis Description"](#) (M9R)

B2321, B2322 OIL LEVEL SENSOR

< COMPONENT DIAGNOSIS >

B2321, B2322 OIL LEVEL SENSOR

Description

INFOID:000000001080290

Transmits the oil level sensor signal to the combination meter.

DTC Logic

INFOID:000000001399341

DTC DETECTION LOGIC

DTC	Display contents of CONSULT-III	Diagnostic item is detected when ...	Probable malfunction location
B2321	OIL LEV SEN OPEN	Combination meter judged that the oil level sensor unit signal circuit is open-circuited for 1 second or more.	<ul style="list-style-type: none">Oil level sensor circuitOil level sensor
B2322	OIL LEV SEN SHORT	Combination judged that the oil level sensor unit signal circuit is short-circuited for 1 second or more.	

Diagnosis Procedure (QR25DE Engine Models)

INFOID:000000001080291

1. CHECK OIL LEVEL SENSOR CIRCUIT

- Turn ignition switch OFF.
- Disconnect combination meter connector and oil level sensor unit connector.
- Check continuity between combination meter harness connector terminals 32, 33 and oil level sensor unit harness connector terminals 1, 3.

32 – 1 : Continuity should exist.

33 – 3 : Continuity should exist.

- Check continuity between combination meter harness connector terminal 32 and ground.

32 – Ground : Continuity should not exist.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

Diagnosis Procedure (Except QR25DE Engine Models)

INFOID:000000001399391

1. CHECK OIL LEVEL SENSOR CIRCUIT

- Turn ignition switch OFF.
- Disconnect combination meter connector and oil level sensor unit connector.
- Check continuity between combination meter harness connector terminals 32, 33 and oil level sensor unit harness connector terminals 1, 2.

32 – 1 : Continuity should exist.

33 – 2 : Continuity should exist.

- Check continuity between combination meter harness connector terminal 32 and ground.

32 – Ground : Continuity should not exist.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

Component Inspection (QR25DE Engine Models)

INFOID:000000001080292

1. CHECK OIL LEVEL SENSOR UNIT

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B2321, B2322 OIL LEVEL SENSOR

< COMPONENT DIAGNOSIS >

1. Turn ignition switch OFF.
2. Disconnect oil level sensor connector.
3. Check resistance between oil level sensor terminals 1 and 3.

1 - 3 : 3 - 20 Ω

Is inspection result OK?

- YES >> INSPECTION END
NO >> Replace oil level sensor.

Component Inspection (Except QR25DE Engine Models)

INFOID:000000001399392

1.CHECK OIL LEVEL SENSOR UNIT

1. Turn ignition switch OFF.
2. Disconnect oil level sensor connector.
3. Check resistance between oil level sensor terminals 1 and 2.

1 - 2 : 3 - 20 Ω

Is inspection result OK?

- YES >> INSPECTION END
NO >> Replace oil level sensor.

POWER SUPPLY AND GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT COMBINATION METER

COMBINATION METER : Diagnosis Procedure

INFOID:000000001080275

1.CHECK FUSE

Check for blown fuses.

Terminal No.	Signal name	Fuses No.
1	Battery power supply	9
2	Ignition signal	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 combination meter harness connector terminals 1, 2 and ground.

Terminals		Ignition switch position		
(+)			OFF	ON
Combination meter		(-)		
Connector	Terminal		OFF	ON
M34	1	Ground	Battery voltage	Battery voltage
	2		Approx. 0 V	Battery voltage

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 terminals 3, 23 and ground.

Combination meter		Ground	Continuity
Connector	Terminal		
M34	3		Existed
	23		

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:000000001367513

1.CHECK FUSIBLE LINK

Check that the following IPDM E/R fusible link is not blown.

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POWER SUPPLY AND GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

Terminal No.	Signal name	Fusible link No.
1	Battery power supply	C
2		E
6		K

Is the fusible link fusing?

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

2.CHECK POWER SUPPLY CIRCUIT

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

Terminals		(-)	Voltage (Approx.)
(+)	IPDM E/R		
Connector	Terminal	Ground	Battery voltage
E9	1		
	2		
E10	6		

Is the measurement value normal?

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

3.CHECK GROUND CIRCUIT

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E11	11		Exist
E13	25		

Does continuity exist?

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

FUEL LEVEL SENSOR SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

FUEL LEVEL SENSOR SIGNAL CIRCUIT

Description

INFOID:0000000001115162

The fuel level sensor (main) and the fuel level sensor (sub) detect the fuel level in the fuel tank and transmit the fuel level sensor signal to the combination meter.

Component Function Check

INFOID:0000000001115163

1. CHECK COMBINATION METER INPUT SIGNAL

Select the "Data Monitor" for the "METER/M&A" and compare the "FUEL METER" monitor value with the fuel gauge reading on the combination meter.

Fuel gauge indication position (segment illumination position)	Monitor value [lit]
13/13	Approx. 68
10/13	Approx. 51
7/13	Approx. 36
4/13	Approx. 21
0/13	Approx. 3

Does monitor value match fuel gauge reading?

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

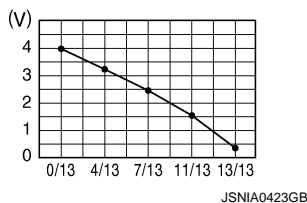
Diagnosis Procedure

INFOID:0000000001115164

1. CHECK COMBINATION METER INPUT SIGNAL

1. Turn ignition switch ON.
2. Check voltage between combination meter harness connector terminal 34 and ground.

34 – Ground :



Does it match fuel gauge reading?

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

2. CHECK FUEL LEVEL SENSOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect combination meter connector and fuel level sensor unit (main) connector.
3. Check continuity between combination meter harness connector terminal 34 and fuel level sensor unit (main) harness connector terminal 4.

34 – 4 : Continuity should exist.

4. Check continuity between combination meter harness connector terminal 34 and ground.

34 – Ground : Continuity should not exist.

Is the inspection result normal?

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

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FUEL LEVEL SENSOR SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

3. CHECK FUEL LEVEL SENSOR GROUND CIRCUIT

Check continuity between fuel level sensor unit (main) harness connector terminal 1 and combination meter harness connector terminal 24.

1 – 24 : Continuity should exist

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

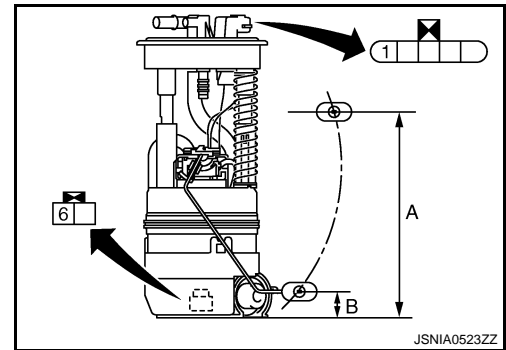
Component Inspection [Fuel Level Sensor Unit (Main)]

INFOID:000000001115165

1. CHECK FUEL LEVEL SENSOR UNIT (MAIN)

Check the resistance between fuel level sensor unit (main).

1 – 6
Full (A) : Approx. 2.5 Ω
Empty (B) : Approx. 79 Ω



Standard float position
Full [mm (in)] : Approx. 190 (7.48)
Empty [mm (in)] : Approx. 20 (0.79)

Is inspection result OK?

YES >> INSPECTION END

NO >> Replace fuel level sensor unit (main).

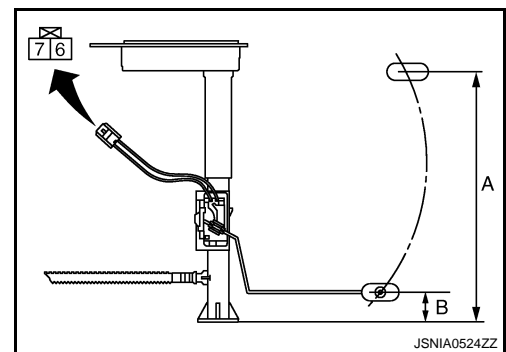
Component Inspection [Fuel Level Sensor Unit (Sub)]

INFOID:000000001115166

1. CHECK FUEL LEVEL SENSOR UNIT (SUB)

Inspect the resistance of fuel level sensor unit (sub).

6 – 7
Full (A) : Approx. 2.5 Ω
Empty (B) : Approx. 47 Ω



Standard float position
Full [mm (in)] : Approx. 222 (8.74)
Empty [mm (in)] : Approx. 25 (0.98)

Is inspection result OK?

YES >> INSPECTION END

NO >> Replace fuel level sensor unit (sub).

OIL PRESSURE SWITCH SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

OIL PRESSURE SWITCH SIGNAL CIRCUIT

Description

INFOID:000000001080293

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

Component Function Check

INFOID:000000001080294

1.CHECK COMBINATION METER 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:000000001080295

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 terminal 23 and oil pressure switch harness connector terminal 1.

23 – 1 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector terminal 23 and ground.

23 – Ground : Continuity should not exist.

Is the inspection result normal?

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

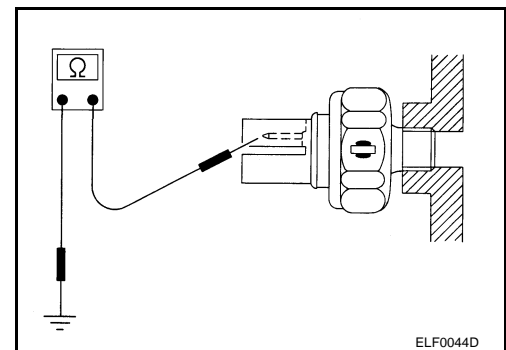
Component Inspection

INFOID:000000001080296

1.CHECK OIL PRESSURE SWITCH UNIT

Check continuity between oil pressure switch and ground.

Condition	Oil pressure [kPa (bar, kg/cm ² , psi)]	Continuity
Engine stopped	Less than 29 (0.3, 0.3, 4)	Yes
Engine running	29 or more (0.3, 0.3, 4)	No



Is the inspection result normal?

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

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OAT SENSOR SIGNAL CIRCUIT

< COMPONENT DIAGNOSIS >

OAT SENSOR SIGNAL CIRCUIT

Description

INFOID:0000000001161117

The OAT sensor is attached on the radiator core support (left side). It detects ambient temperature and converts it into a resistance value which is then input into the combination meter.

Diagnosis Procedure

INFOID:0000000001161118

1. CHECK OAT SENSOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect combination meter connector and OAT sensor connector.
3. Check continuity between combination meter harness connector terminal 19 and OAT sensor harness connector terminal 1.

19 – 1 : Continuity should exist.

4. Check continuity between combination meter harness connector terminal 19 and ground.

19 – Ground : Continuity should not exist.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2. CHECK OAT SENSOR GROUND CIRCUIT

1. Check continuity between combination meter harness connector terminal 20 and OAT sensor harness connector terminal 2.

20 – 2 : Continuity should exist.

2. Check continuity between combination meter harness connector terminal 20 and ground.

20 – Ground : Continuity should not exist.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair harness or connector.

Component Inspection

INFOID:0000000001403868

Refer to [HAC-81, "MR20DE/QR25DE : Component Inspection"](#).

COMBINATION METER

< ECU DIAGNOSIS >

ECU DIAGNOSIS COMBINATION METER

Reference Value

INFOID:000000001080297

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
SPEED METER [km/h]	Ignition switch ON	While driving	Equivalent to speedometer reading NOTE: 655.35 is displayed when the malfunction signal is received
SPEED OUTPUT [km/h]	Ignition switch ON	While driving	Equivalent to speedometer reading NOTE: 655.35 is displayed when the malfunction signal is received
ODO OUTPUT	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 [lit]	Ignition switch ON	—	Values according to fuel level
W TEMP METER [°C]	Ignition switch ON	—	Values according to engine coolant temperature NOTE: 215 is displayed when the malfunction signal is input
ABS W/L	Ignition switch ON	ABS warning lamp ON	On
		ABS warning lamp OFF	Off
VDC/TCS IND	Ignition switch ON	ESP OFF indicator lamp ON	On
		ESP OFF indicator lamp OFF	Off
SLIP IND	Ignition switch ON	SLIP indicator lamp ON	On
		SLIP indicator 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 lamp ON	On
		Door warning lamp OFF	Off
HI-BEAM IND	Ignition switch ON	High beam indicator lamp ON	On
		High beam indicator lamp OFF	Off
TURN IND	Ignition switch ON	Turn signal indicator lamp ON	On
		Turn signal indicator lamp OFF	Off
FR FOG IND	Ignition switch ON	Front fog lamp indicator lamp ON	On
		Front fog lamp indicator lamp OFF	Off
RR FOG IND	Ignition switch ON	Rear fog lamp indicator lamp ON	On
		Rear fog 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 indicator lamp ON	On
		Malfunction indicator lamp OFF	Off

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COMBINATION METER

< ECU DIAGNOSIS >

Monitor Item	Condition		Value/Status
GLOW IND	Ignition switch ON	Glow indicator lamp ON	On
		Glow indicator lamp OFF	Off
CRUISE IND	Ignition switch ON	Cruise indicator lamp ON	On
		Cruise indicator lamp OFF	Off
SET IND	Ignition switch ON	SET indicator lamp ON	On
		SET indicator lamp OFF	Off
ATC/T-AMT W/L	Ignition switch ON	TCM electronic control system warning lamp ON	On
		TCM electronic control system warning lamp OFF	Off
4WD W/L	Ignition switch ON	4WD warning lamp ON	On
		4WD warning lamp OFF	Off
4WD LOCK IND	Ignition switch ON	4WD LOCK indicator lamp ON	On
		4WD LOCK indicator lamp OFF	Off
FUEL W/L	Ignition switch ON	Low-fuel warning lamp ON	On
		Low-fuel warning lamp OFF	Off
KEY G/Y W/L	Ignition switch ON	KEY warning lamp (green/yellow) ON	On
		KEY warning lamp (green/yellow) OFF	Off
KEY R W/L	Ignition switch ON	KEY warning lamp (red) ON	On
		KEY warning lamp (red) OFF	Off
KEY KNOB W/L	Ignition switch ON	LOCK warning lamp ON	On
		LOCK warning lamp OFF	Off
EPS W/L	Ignition switch ON	EPS warning lamp ON	On
		EPS warning lamp OFF	Off
HDC W/L	Ignition switch ON	HDC warning lamp ON	On
		HDC warning lamp OFF	Off
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 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		
O/D OFF SW	Ignition switch ON	O/D OFF indicator lamp ON	On
		O/D OFF indicator lamp OFF	Off
AT S MODE SW	Ignition switch ON	Snow mode switch ON	On
		Snow mode switch OFF	Off
M RANGE SW	Ignition switch ON	MANUAL MODE	On
		Other than the above	Off
NM RANGE SW	Ignition switch ON	MANUAL MODE	Off
		Other than the above	On

COMBINATION METER

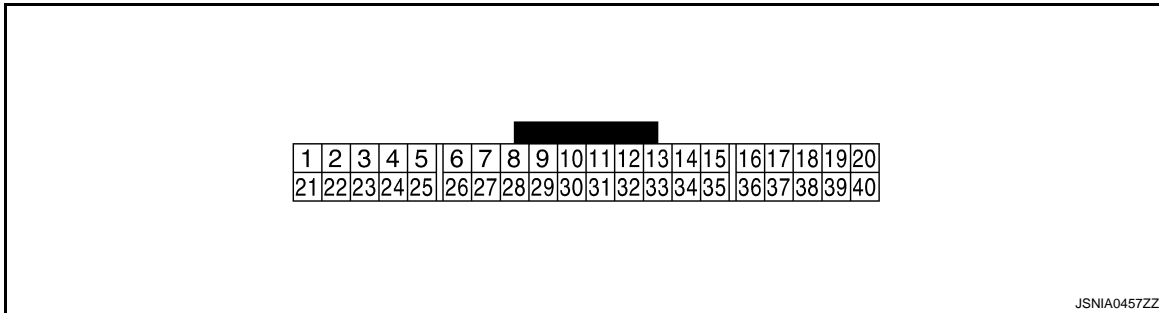
< ECU DIAGNOSIS >

Monitor Item	Condition		Value/Status
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
COMP F/B SIG	Ignition switch ON	A/C compressor activation condition	On
		A/C compressor deactivation condition	Off
PKB SW	Ignition switch ON	Parking brake switch ON	On
		Parking brake switch OFF	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 combination meter
OUTSIDE TEMP [°C or °F]	Ignition switch ON	—	Equivalent to ambient air temperature NOTE: This may not match the indicated value on the information display.
FUEL LOW SIG	Ignition switch ON	Low-fuel warning displayed	On
		Low-fuel warning not displayed	Off
BUZZER	Ignition switch ON	Buzzer ON	On
		Buzzer OFF	Off

NOTE:

Some items are not available according to vehicle specification.

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/Output			
1 (G)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
2 (P)	Ground	IGN signal	Input	Ignition switch ON	—	Battery voltage
3 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
8* (Y)	Ground	Fuel filter sensor signal	Input	Ignition switch ON	Fuel filter warning lamp ON	0 V
					Fuel filter warning lamp OFF	12 V

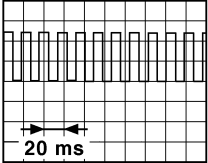
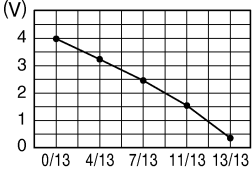
COMBINATION METER

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
9 (P)	Ground	O/D OFF switch signal	Input	Ignition switch ON	O/D OFF switch pressed	0 V
					O/D OFF switch not pressed	12 V
11 (W)	Ground	Steering switch (trip com- puter) signal	Input	Ignition switch ON	Press the steering switch (trip computer)	0 V
					Other than the above	5 V
15 (GR)	Ground	Air bag signal	Input	Ignition switch ON	Air bag warning lamp ON	4 V
					Air bag warning lamp OFF	0 V
19 (BR)	Ground	OAT sensor signal	Input	Ignition switch ON	—	<p style="text-align: right; font-size: small;">JSNIA0014GB</p>
20 (R)	Ground	OAT sensor ground	—	Ignition switch ON	—	0 V
21 (L)	—	CAN-H	—	—	—	—
22 (P)	—	CAN-L	—	—	—	—
23 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
24 (B)	Ground	Fuel level sensor signal ground	—	Ignition switch ON	—	0 V
25 (BR)	Ground	Alternator signal	Input	Ignition switch ON	Charge warning lamp ON	0 V
					Charge warning lamp OFF	12 V
26 (GR)	Ground	Parking brake switch signal	Input	Ignition switch ON	Parking brake ON	0 V
					Parking brake OFF	5 V
27 (LG)	Ground	Brake fluid level switch sig- nal	Input	Ignition switch ON	Brake fluid level is normal	5 V
					Brake fluid level is less than low level	0 V
28 (B)	Ground	Security signal	Input	Ignition switch ON	Security warning lamp ON	0 V
					Security warning lamp OFF	12 V

COMBINATION METER

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
31 (V)	Ground	Vehicle speed signal (8 pulse)	Output	Ignition switch ON	Vehicle speed is approxi- mately 40 km/h (25 MPH)	NOTE: The maximum voltage varies de- pending on the specification (destination unit).  <small>JSNIA0012GB</small>
32 (L)	Ground	Oil level sensor signal	Input	Ignition switch ON	—	Refer to MWI-33, "Component Inspection (QR25DE Engine Models)" or MWI-34, "Compo- nent Inspection (Except QR25DE Engine Models)" . NOTE: The measurement cannot be performed because the signal is input for a moment with the igni- tion switch ON.
33 (O)	Ground	Oil level sensor signal ground	—	Ignition switch ON	—	0 V
34 (G)	Ground	Fuel level sensor signal	Input	Ignition switch ON	—	 <small>JSNIA0423GB</small>
37 (Y)	Ground	Not manual mode signal	Input	Ignition switch ON	Manual mode	12 V
					Other than the above	0 V
38 (O)	Ground	Manual mode shift down signal	Input	Ignition switch ON	Selector lever (-) position	0 V
					Other than the above	12 V
39 (V)	Ground	Manual mode shift up sig- nal	Input	Ignition switch ON	Selector lever (+) position	0 V
					Other than the above	12 V
40 (LG)	Ground	Manual mode signal	Input	Ignition switch ON	Manual mode	0 V
					Other than the above	12 V

*: LHD models

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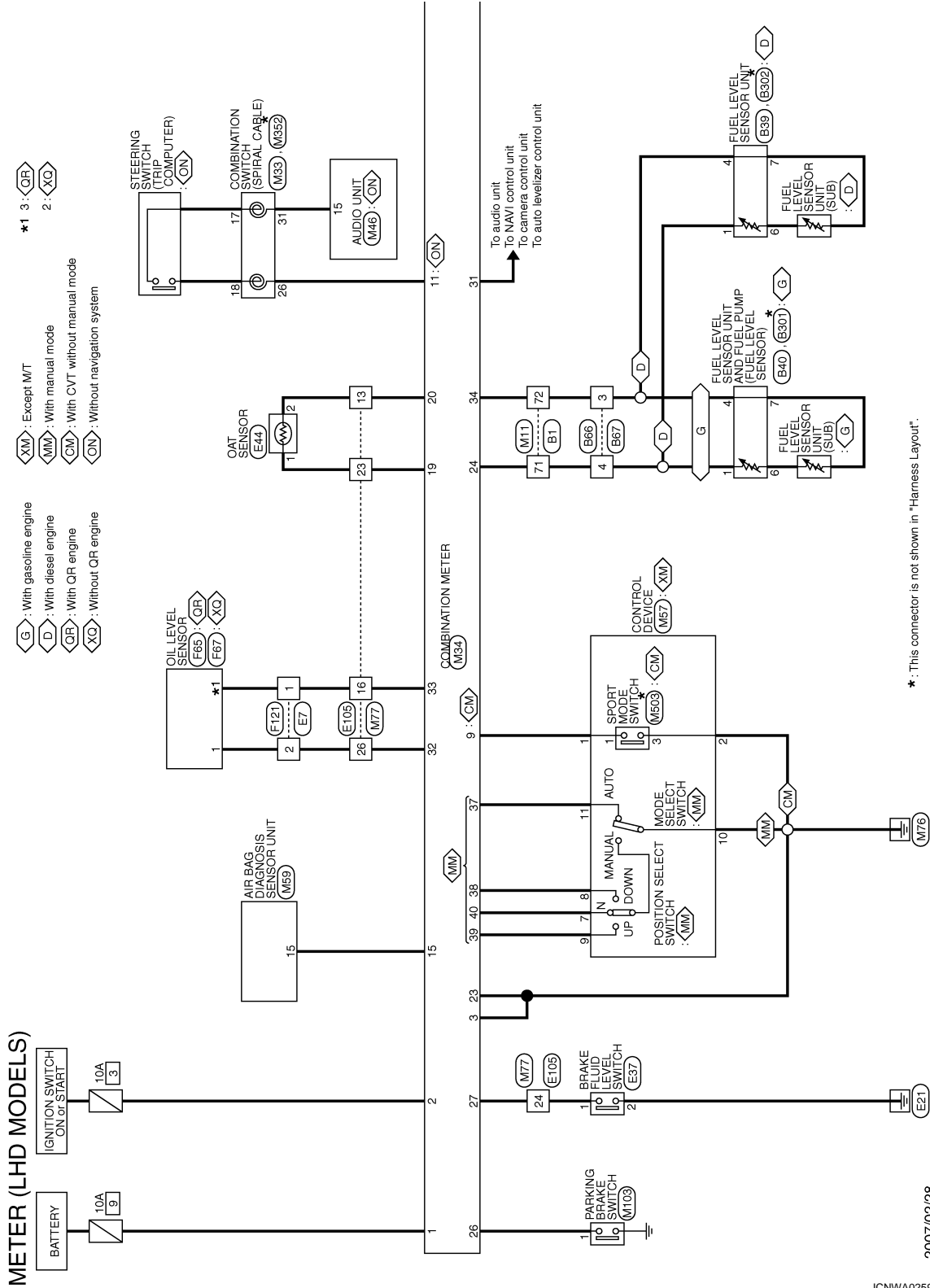
MWI

COMBINATION METER

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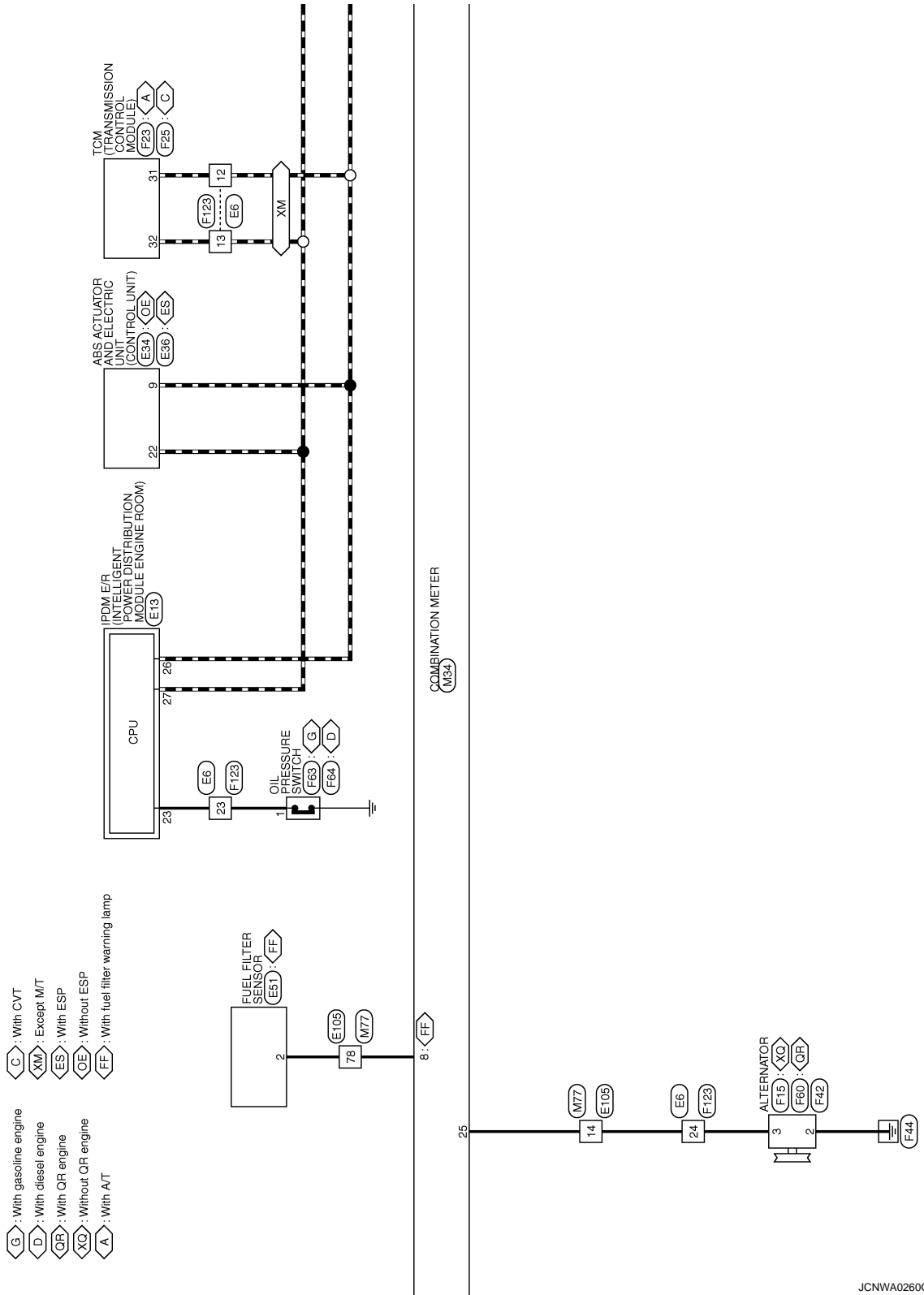
Wiring Diagram - METER (LHD MODELS) -

INFOID:000000001538051



COMBINATION METER

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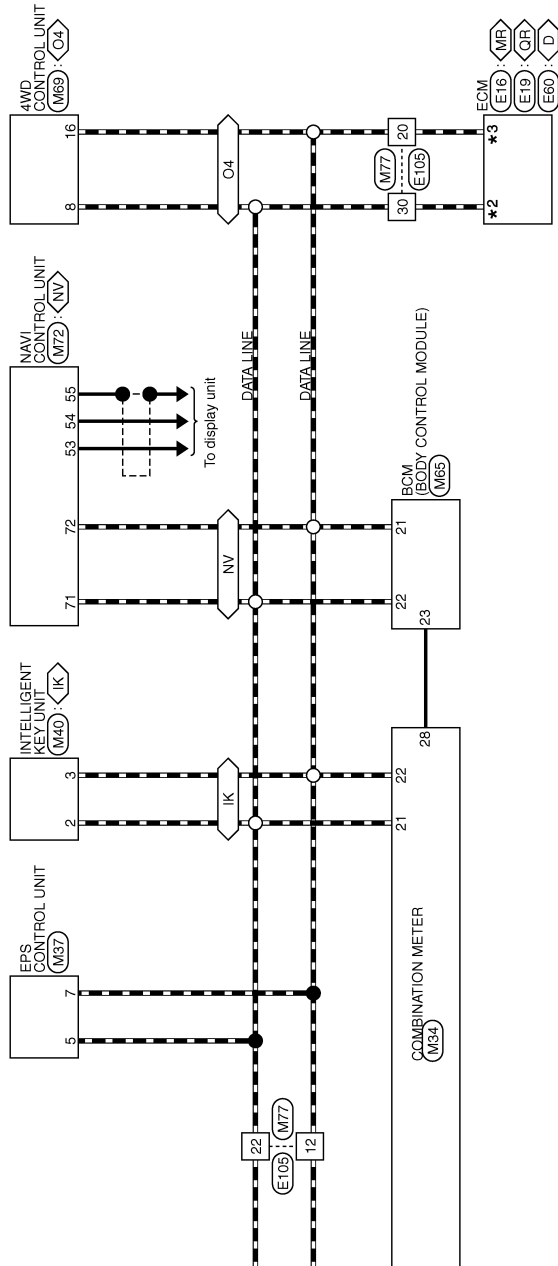
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COMBINATION METER

< ECU DIAGNOSIS >

- : With diesel engine
 - : With MR engine
 - : With QR engine
 - : 4WD models without ESP
 - : With navigation system
 - : With Intelligent Key
- *2 84:
- 82:
- 100:
- *3 83:
- 90:
- 99:



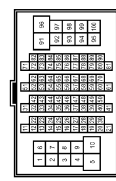

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COMBINATION METER

< ECU DIAGNOSIS >



METER (LHD MODELS)

Connector No.	B1	Connector No.	B68
Connector Name	WIRE TO WIRE	Connector Name	WIRE TO WIRE
Connector Type	TH80W-CS16-TM4	Connector Type	NS24FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
71	B	-
72	G	-

Connector No.	B40	Connector No.	E6
Connector Name	FUEL LEVEL SENSOR UNIT AND FUEL PUMP	Connector Name	WIRE TO WIRE
Connector Type	ED5FGY-RS	Connector Type	TK24MW-TV



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
4	G	-

Connector No.	B39	Connector No.	E6
Connector Name	FUEL LEVEL SENSOR UNIT	Connector Name	WIRE TO WIRE
Connector Type	ED5FGY-RS	Connector Type	TK24MW-TV



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
4	G	-

Connector No.	B301	Connector No.	E6
Connector Name	FUEL LEVEL SENSOR UNIT AND FUEL PUMP	Connector Name	WIRE TO WIRE
Connector Type	-	Connector Type	TK24MW-TV



Terminal No.	Color of Wire	Signal Name [Specification]
6	-	-
7	-	-

Connector No.	B67	Connector No.	E6
Connector Name	WIRE TO WIRE	Connector Name	WIRE TO WIRE
Connector Type	NS24MW-CS	Connector Type	TK24MW-TV



Terminal No.	Color of Wire	Signal Name [Specification]
3	G	-
4	B	-

Connector No.	B302	Connector No.	E6
Connector Name	FUEL LEVEL SENSOR UNIT	Connector Name	WIRE TO WIRE
Connector Type	-	Connector Type	TK24MW-TV

Terminal No.	Color of Wire	Signal Name [Specification]
6	-	-
7	-	-

Connector No.	B301	Connector No.	E6
Connector Name	FUEL LEVEL SENSOR UNIT AND FUEL PUMP	Connector Name	WIRE TO WIRE
Connector Type	-	Connector Type	TK24MW-TV

Terminal No.	Color of Wire	Signal Name [Specification]
6	-	-
7	-	-

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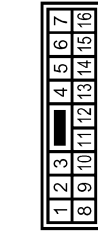
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COMBINATION METER

< ECU DIAGNOSIS >

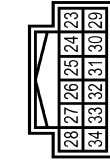
METER (LHD MODELS)

Connector No.	E7
Connector Name	WIRE TO WIRE
Connector Type	NS16MW-CS



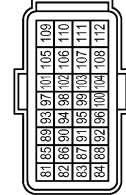
Terminal No.	Color of Wire	Signal Name [Specification]
1	G	- [With gasoline engine]
1	W	- [With diesel engine]
2	Y	- [With gasoline engine]
2	R	- [With diesel engine]

Connector No.	E13
Connector Name	IPDM E/R INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH



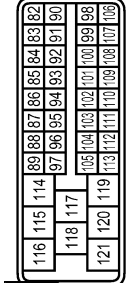
Terminal No.	Color of Wire	Signal Name [Specification]
23	W	-
26	P	-
27	L	-

Connector No.	E16
Connector Name	ECM
Connector Type	MAA24FB-MEA8-LH



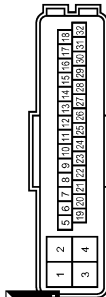
Terminal No.	Color of Wire	Signal Name [Specification]
83	P	CAN-LI
84	L	CAN-HI

Connector No.	E19
Connector Name	ECM
Connector Type	BAA32FB-AHY8



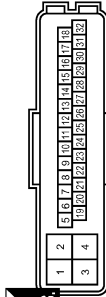
Terminal No.	Color of Wire	Signal Name [Specification]
82	L	VEHCAN-H
90	P	VEHCAN-L

Connector No.	E34
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	RH28FB-NU4-DH



Terminal No.	Color of Wire	Signal Name [Specification]
9	P	CAN-L
22	L	CAN-H

Connector No.	E36
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	RH28FB-NU4-DH



Terminal No.	Color of Wire	Signal Name [Specification]
9	P	CAN-L
22	L	CAN-H

Connector No.	E37
Connector Name	BRAKE FLUID LEVEL SWITCH
Connector Type	YV02FGY



Terminal No.	Color of Wire	Signal Name [Specification]
1	LG	-
2	B	-

Connector No.	E44
Connector Name	OAT SENSOR
Connector Type	RS02FB



Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	-
2	R	-

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COMBINATION METER

< ECU DIAGNOSIS >

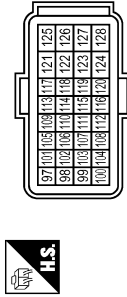
METER (LHD MODELS)

Connector No.	E51
Connector Name	FUEL FILTER SENSOR
Connector Type	BS03FB-AHY-S



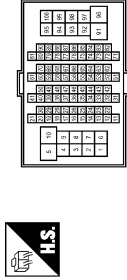
Terminal No.	Color of Wire	Signal Name [Specification]
2	Y	SIGNAL

Connector No.	E60
Connector Name	ECM
Connector Type	MAA40FB-MEA8-LH



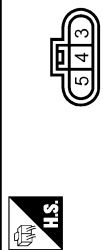
Terminal No.	Color of Wire	Signal Name [Specification]
99	P	MAIN CAN-L(BODY)
100	L	MAIN CAN-H(BODY)

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80FY-CS16-TM4



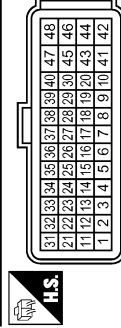
Terminal No.	Color of Wire	Signal Name [Specification]
12	P	-
13	R	-
14	O	-
16	G	[With gasoline engine]
18	W	[With diesel engine]
20	P	-
22	L	-
23	BR	-
24	LG	-
26	-	-
30	L	-

Connector No.	F15
Connector Name	ALTERNATOR
Connector Type	HS03FB



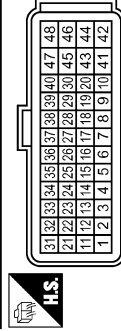
Terminal No.	Color of Wire	Signal Name [Specification]
3	L	L

Connector No.	F23
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	MAA40FB-MEA8-LH



Terminal No.	Color of Wire	Signal Name [Specification]
31	P	CAN-L
32	L	CAN-H

Connector No.	F25
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	MAA40FB-MEA8-LH



Terminal No.	Color of Wire	Signal Name [Specification]
31	P	CAN-L
32	L	CAN-H

Connector No.	F42
Connector Name	ALTERNATOR
Connector Type	-



Terminal No.	Color of Wire	Signal Name [Specification]
2	-	GND

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COMBINATION METER

< ECU DIAGNOSIS >

METER (LHD MODELS)

Connector No.	F60	Connector No.	F63	Connector No.	F64	Connector No.	F65
Connector Name	ALTERNATOR	Connector Name	OIL PRESSURE SWITCH	Connector Name	OIL PRESSURE SWITCH	Connector Name	OIL LEVEL SENSOR
Connector Type	X02FW	Connector Type	ED1FGY-RS-AR	Connector Type	RH02FB	Connector Type	RSC0F5B-GY

Terminal No.	3	Terminal No.	1	Terminal No.	1	Terminal No.	1
Color of Wire	L	Color of Wire	W	Color of Wire	W	Color of Wire	L
Signal Name [Specification]	L	Signal Name [Specification]	-	Signal Name [Specification]	-	Signal Name [Specification]	SEN(+)
							SEN(-)

Terminal No.	1	Terminal No.	1	Terminal No.	12	Terminal No.	71
Color of Wire	L	Color of Wire	W	Color of Wire	P	Color of Wire	B
Signal Name [Specification]	L	Signal Name [Specification]	-	Signal Name [Specification]	-[Except M/T]	Signal Name [Specification]	-
							G



Connector No.	F67	Connector No.	F121	Connector No.	F123	Connector No.	M11
Connector Name	OIL LEVEL SENSOR	Connector Name	WIRE TO WIRE	Connector Name	WIRE TO WIRE	Connector Name	WIRE TO WIRE
Connector Type	BS02FB-AHY-S	Connector Type	NS16FW-CS	Connector Type	TK24FW-IV	Connector Type	TH06FW-GS16-TM4

Terminal No.	1	Terminal No.	1	Terminal No.	1	Terminal No.	1
Color of Wire	Y	Color of Wire	W	Color of Wire	P	Color of Wire	L
Signal Name [Specification]	+ [With MR engine]	Signal Name [Specification]	-	Signal Name [Specification]	- [Except M/T]	Signal Name [Specification]	-
	+ [With diesel engine]						
2	G	2	Y	2	W	2	G
	- [With MR engine]		- [With MR engine]		- [With MR engine]		-
	- [With diesel engine]		- [Without MR engine]		- [Without MR engine]		

Terminal No.	1	Terminal No.	1	Terminal No.	12	Terminal No.	71
Color of Wire	Y	Color of Wire	W	Color of Wire	P	Color of Wire	B
Signal Name [Specification]	+ [With MR engine]	Signal Name [Specification]	-	Signal Name [Specification]	- [Except M/T]	Signal Name [Specification]	-
	+ [With diesel engine]						
2	G	2	Y	2	W	2	G
	- [With MR engine]		- [With MR engine]		- [With MR engine]		-
	- [With diesel engine]		- [Without MR engine]		- [Without MR engine]		



COMBINATION METER

< ECU DIAGNOSIS >

METER (LHD MODELS)

Connector No.	M33
Connector Name	COMBINATION SWITCH (SPIRAL CABLE)
Connector Type	TK08F-GY-1V



Terminal No.	Color of Wire	Signal Name [Specification]
26	W	-
31	GR	-

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	SAB40FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	G	BAT
2	P	IGN
3	B	GND
8	Y	FUEL FILTER SENS
9	P	O/D OFF SW
11	W	STRG SW
15	GR	AIR BAG
19	BR	OAT SENS
20	R	OAT SENS GND
21	L	CAN-H
22	P	CAN-L

Connector No.	M40
Connector Name	INTELLIGENT KEY UNIT
Connector Type	TH40FW-RH



Terminal No.	Color of Wire	Signal Name [Specification]
2	L	CAN-H
3	P	CAN-L

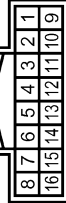
23	B	GND
24	B	FUEL LEVEL SENS GND
25	BR	ALTERNATOR
26	GR	PARKING BRAKE SW
27	LG	BRAKE FLUID LEVEL SW
28	B	SECURITY
31	V	VEHICLE SPEED (0-PULSE)
32	L	OIL LEVEL SENS
33	O	OIL LEVEL SENS GND
34	G	FUEL LEVEL SENS
37	Y	NOT MANUAL MODE SW
38	O	SHIFT DOWN
39	V	SHIFT UP
40	LG	MANUAL MODE SW

Connector No.	M37
Connector Name	EPS CONTROL UNIT
Connector Type	Molex 49545-0001



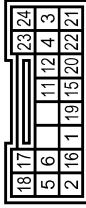
Terminal No.	Color of Wire	Signal Name [Specification]
5	L	-
7	P	-

Connector No.	M57
Connector Name	CONTROL DEVICE
Connector Type	TH18FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
1	P	-
2	B	-
7	LG	MANUAL MODE SW
8	R	SHIFT DOWN
9	W	SHIFT UP
10	B	GND
11	Y	NOT MANUAL MODE SW

Connector No.	M59
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT
Connector Type	TK20FY-EX-5G



Terminal No.	Color of Wire	Signal Name [Specification]
15	GR	A/B/W/L/LHD models

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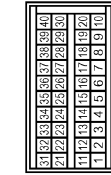
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COMBINATION METER

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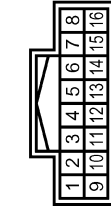
METER (LHD MODELS)

Connector No.	M65
Connector Name	BOM (BODY CONTROL MODULE)
Connector Type	AABA0FE



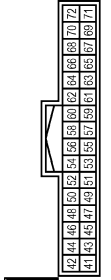
Terminal No.	Color of Wire	Signal Name [Specification]
21	P	CAN-L
22	L	CAN-H
23	V	SECURITY INDICATOR[LHD models]

Connector No.	M69
Connector Name	4WD CONTROL UNIT
Connector Type	TH16FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
8	L	CAN-H
16	P	CAN-L

Connector No.	M72
Connector Name	NAVI CONTROL UNIT
Connector Type	TH42FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
53	L	COMMUNICATION SIGNAL (CONT-DISP)
54	P	COMMUNICATION SIGNAL (DISP-CONT)
55	SHIELD	SHIELD
71	L	CAN-H
72	P	CAN-L

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
12	P	-
13	R	-
14	BR	-
16	-	-
20	P	-
22	L	-
23	BR	-
24	LG	-
26	-	-
30	L	-
78	GR	-

Connector No.	M103
Connector Name	PARKING BRAKE SWITCH
Connector Type	P01FE-A



Terminal No.	Color of Wire	Signal Name [Specification]
1	GR	-

Connector No.	M603
Connector Name	SPORT MODE SWITCH
Connector Type	HRP-03-S



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	SPORT MODE SW
3	W	GND

Connector No.	M352
Connector Name	COMBINATION SWITCH (SPIRAL CABLE)
Connector Type	TK08MGY-X



Terminal No.	Color of Wire	Signal Name [Specification]
17	-	-
18	-	-

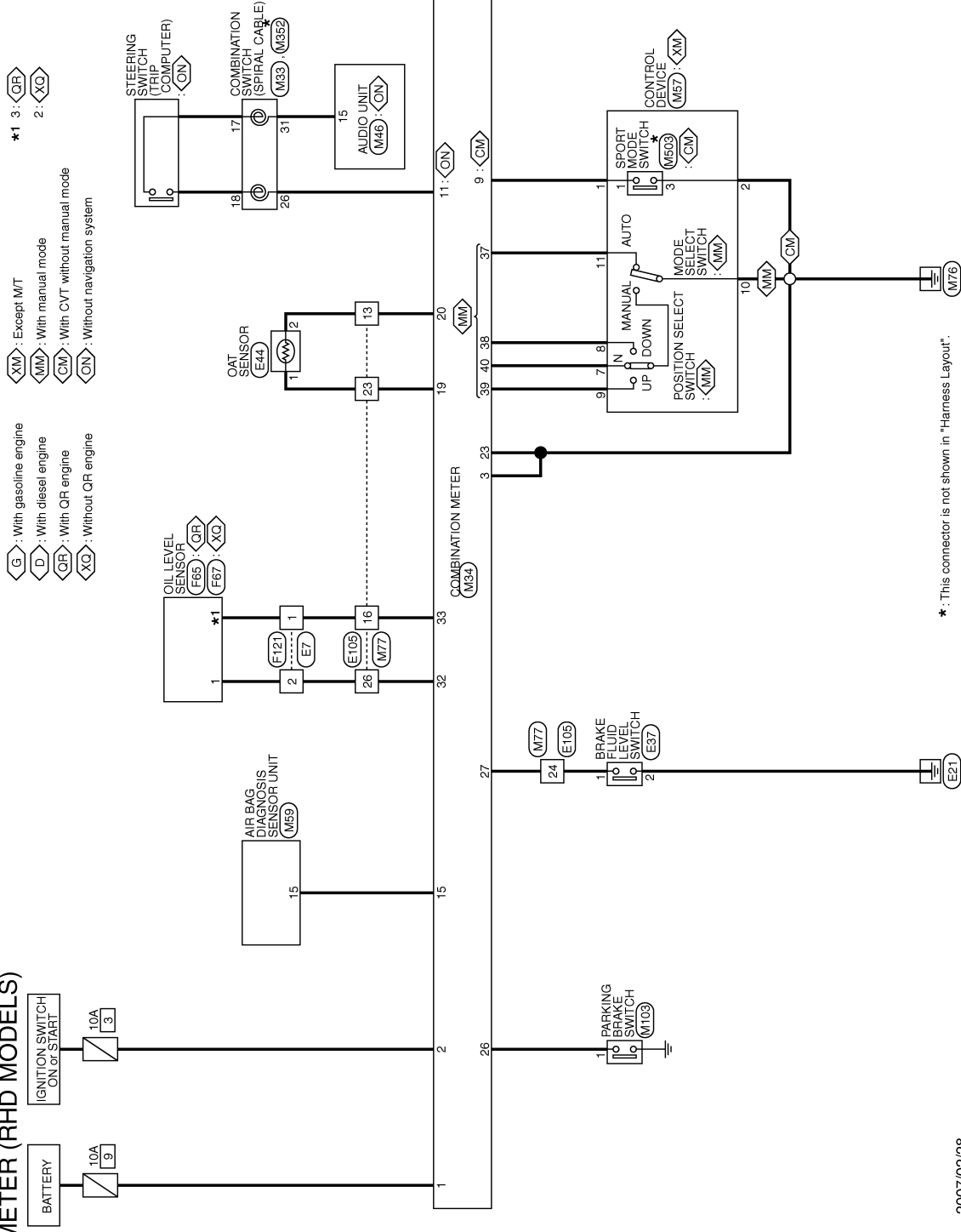
COMBINATION METER

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Wiring Diagram - METER (RHD MODELS) -

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METER (RHD MODELS)



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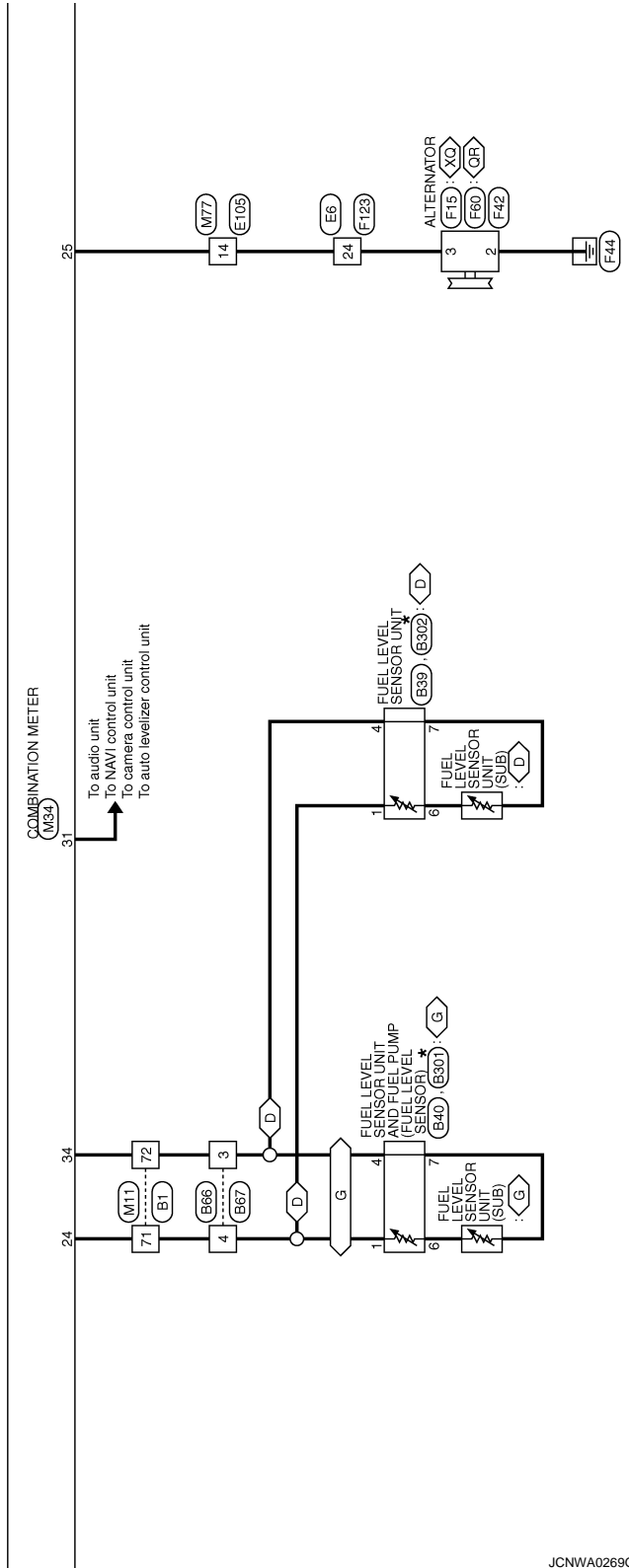
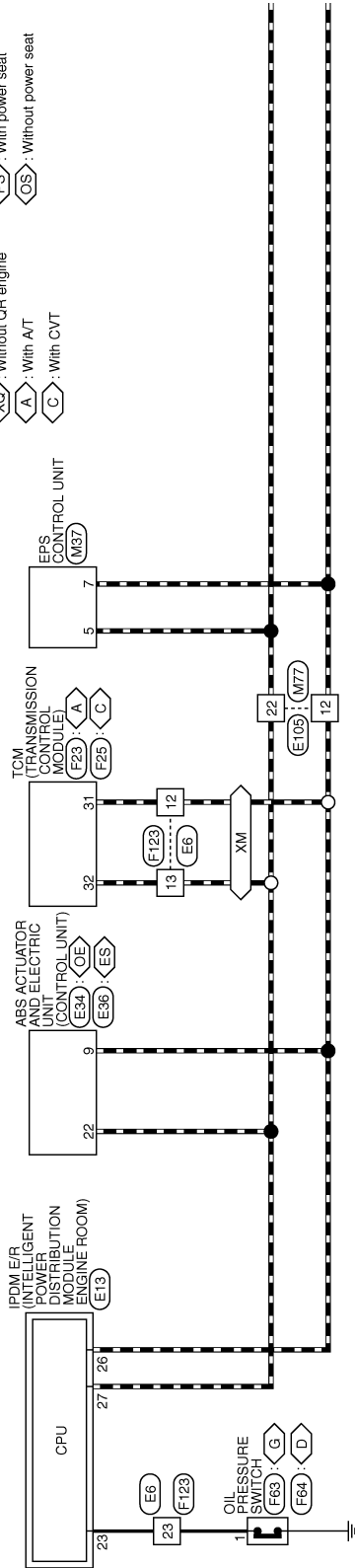
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COMBINATION METER

< ECU DIAGNOSIS >

- G : With gasoline engine
- D : With diesel engine
- QR : With QR engine
- XQ : Without QR engine
- A : With AT
- C : With CVT
- XM : Except M/T
- ES : With ESP
- OE : Without ESP
- PS : With power seat
- OS : Without power seat



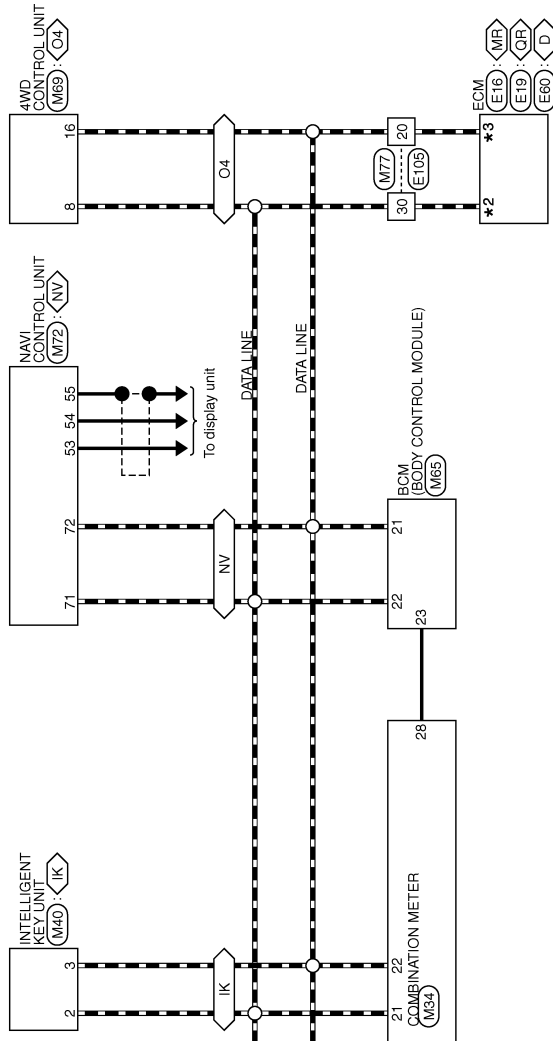
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COMBINATION METER

< ECU DIAGNOSIS >

- D** : With diesel engine
- MR** : With MR engine
- OR** : With OR engine
- O4** : 4WD models without ESP
- NV** : With navigation system
- IK** : With Intelligent Key

- *2 84: **ME**
- 82: **OR**
- 100: **D**
- *3 83: **ME**
- 90: **OR**
- 99: **D**



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COMBINATION METER

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METER (RHD MODELS)

Connector No.	B1
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4




Terminal No.	Color of Wire	Signal Name [Specification]
71	B	-
72	G	-

Connector No.	B39
Connector Name	FUEL LEVEL SENSOR UNIT
Connector Type	ED9FGY-RS




Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
4	G	-

Connector No.	B40
Connector Name	FUEL LEVEL SENSOR UNIT AND FUEL PUMP
Connector Type	ED9FGY-RS




Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
4	G	-

Connector No.	B68
Connector Name	WIRE TO WIRE
Connector Type	NS4FW-CS




Terminal No.	Color of Wire	Signal Name [Specification]
3	G	-
4	B	-

Connector No.	B67
Connector Name	WIRE TO WIRE
Connector Type	NS24MW-CS




Terminal No.	Color of Wire	Signal Name [Specification]
3	G	-
4	B	-

Connector No.	B301
Connector Name	FUEL LEVEL SENSOR UNIT AND FUEL PUMP
Connector Type	-




Terminal No.	Color of Wire	Signal Name [Specification]
6	-	-
7	-	-

Connector No.	B302
Connector Name	FUEL LEVEL SENSOR UNIT
Connector Type	-



Terminal No.	Color of Wire	Signal Name [Specification]
6	-	-
7	-	-

Connector No.	E6
Connector Name	WIRE TO WIRE
Connector Type	TK24MW-1V



Terminal No.	Color of Wire	Signal Name [Specification]
12	P	- [Except M.T]
13	L	- [Except M.T]
23	W	-
24	O	-

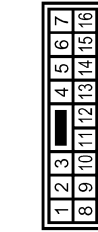
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COMBINATION METER

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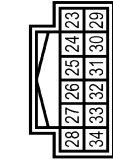
METER (RHD MODELS)

Connector No.	E7
Connector Name	WIRE TO WIRE
Connector Type	NS16MW-CS



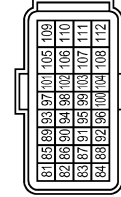
Terminal No.	Color of Wire	Signal Name [Specification]
1	G	-[With gasoline engine]
1	W	-[With diesel engine]
2	Y	-[With gasoline engine]
2	R	-[With diesel engine]

Connector No.	E13
Connector Name	IPDM E/R INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH



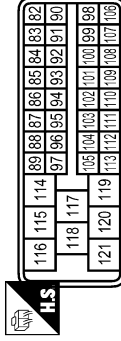
Terminal No.	Color of Wire	Signal Name [Specification]
23	W	-
26	P	-
27	L	-

Connector No.	E16
Connector Name	ECM
Connector Type	MAA24FB-MEA8-LH



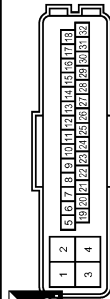
Terminal No.	Color of Wire	Signal Name [Specification]
83	P	CAN-L1
84	L	CAN-H1

Connector No.	E19
Connector Name	ECM
Connector Type	BAA23FB-AH18



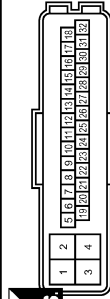
Terminal No.	Color of Wire	Signal Name [Specification]
82	L	VEHCAN-H
90	P	VEHCAN-L

Connector No.	E34
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	RH22FB-NU4-DH



Terminal No.	Color of Wire	Signal Name [Specification]
9	P	CAN-L
22	L	CAN-H

Connector No.	E36
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	RH22FB-NU4-DH



Terminal No.	Color of Wire	Signal Name [Specification]
9	P	CAN-L
22	L	CAN-H

Connector No.	E37
Connector Name	BRAKE FLUID LEVEL SWITCH
Connector Type	Y102FGY



Terminal No.	Color of Wire	Signal Name [Specification]
1	LG	-
2	B	-

Connector No.	E44
Connector Name	OAT SENSOR
Connector Type	RS22FB



Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	-
2	R	-

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COMBINATION METER

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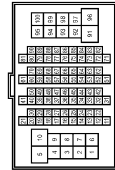
METER (RHD MODELS)

Connector No.	E80
Connector Name	ECM
Connector Type	MAA24FB-MEA8-LH




Terminal No.	Color of Wire	Signal Name [Specification]
99	P	MAIN CAN-L/BODY
100	L	MAIN CAN-H/BODY

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS1E-TM4



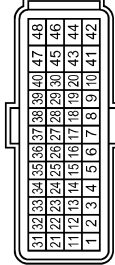
Terminal No.	Color of Wire	Signal Name [Specification]
12	P	-
13	R	-
14	O	-
16	G	- [With gasoline engine]
16	W	- [With diesel engine]
20	P	-
22	L	-
23	BR	-
24	LG	-
26	-	-
30	L	-

Connector No.	F15
Connector Name	ALTERNATOR
Connector Type	HS09FB



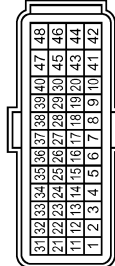
Terminal No.	Color of Wire	Signal Name [Specification]
3	L	L

Connector No.	F23
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	MAA4CFB-MEA8-LH




Terminal No.	Color of Wire	Signal Name [Specification]
31	P	CAN-L
32	L	CAN-H

Connector No.	F25
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	MAA40FB-MEA8-LH




Terminal No.	Color of Wire	Signal Name [Specification]
31	P	CAN-L
32	L	CAN-H

Connector No.	F42
Connector Name	ALTERNATOR
Connector Type	-




Terminal No.	Color of Wire	Signal Name [Specification]
2	-	GND

Connector No.	F80
Connector Name	ALTERNATOR
Connector Type	X02FW



Terminal No.	Color of Wire	Signal Name [Specification]
3	L	L

Connector No.	F83
Connector Name	OIL PRESSURE SWITCH
Connector Type	E01FGY-RS-AR



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	-

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COMBINATION METER

< ECU DIAGNOSIS >

METER (RHD MODELS)

Connector No.	F64
Connector Name	OIL PRESSURE SWITCH
Connector Type	RH02FB



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	-

Connector No.	F65
Connector Name	OIL LEVEL SENSOR
Connector Type	RS03FSB-GY



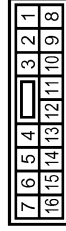
Terminal No.	Color of Wire	Signal Name [Specification]
1	L	SEN(+)
3	Y	SEN(-)

Connector No.	F67
Connector Name	OIL LEVEL SENSOR
Connector Type	BS02FEB-AHY-S



Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	-[With MR engine]
1	L	-[With CR engine]
2	G	-[With MR engine]
2	W	-[With diesel engine]

Connector No.	F121
Connector Name	WIRE TO WIRE
Connector Type	NS18FW-GS



Terminal No.	Color of Wire	Signal Name [Specification]
1	G	-[With MR engine]
1	Y	-[With CR engine]
1	W	-[With diesel engine]
2	Y	-[With MR engine]
2	L	-[Without MR engine]

Connector No.	F123
Connector Name	WIRE TO WIRE
Connector Type	TK2FW-TV



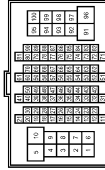
Terminal No.	Color of Wire	Signal Name [Specification]
12	P	-[Except M/T]
13	L	-[Except M/T]
23	W	-
24	L	-

Connector No.	M63
Connector Name	COMBINATION SWITCH (SPRAL CABLE)
Connector Type	TK08FGY-TV



Terminal No.	Color of Wire	Signal Name [Specification]
26	W	-
31	GR	-

Connector No.	M11
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS(F)-TMM



Terminal No.	Color of Wire	Signal Name [Specification]
71	B	-
72	G	-

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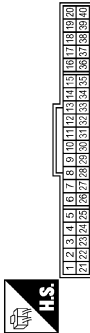
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COMBINATION METER

< ECU DIAGNOSIS >

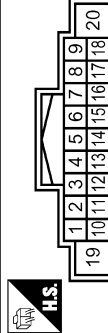
METER (RHD MODELS)

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	SAB40FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	G	BAT
2	P	IGN
3	B	GND
9	P	O/D OFF SW
11	W	STRG SW
15	GR	AIR BAG
19	BR	OAT SENS
20	R	OAT SENS GND
21	L	CAN-H
22	P	CAN-L
23	B	GND

Connector No.	M46
Connector Name	AUDIO UNIT
Connector Type	TH18FW-GS2



Terminal No.	Color of Wire	Signal Name [Specification]
15	GR	STRG SW GND

24	B	FUEL LEVEL SENS GND
25	BR	ALTERNATOR
26	GR	PARKING BRAKE SW
27	LG	BRAKE FLUID LEVEL SW
28	B	SECURITY
31	V	VEHICLE SPEED (8-PULSE)
32	L	OIL LEVEL SENS
33	O	OIL LEVEL SENS GND
34	G	FUEL LEVEL SENS
37	Y	NOT MANUAL MODE SW
38	O	SHIFT DOWN
39	V	SHIFT UP
40	LG	MANUAL MODE SW

Connector No.	M57
Connector Name	CONTROL DEVICE
Connector Type	TH18FW-NH



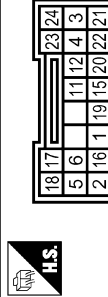
Terminal No.	Color of Wire	Signal Name [Specification]
1	P	-
2	B	-
7	LG	MANUAL MODE SW
8	R	SHIFT DOWN
9	W	SHIFT UP
10	B	GND
11	Y	NOT MANUAL MODE SW

Connector No.	M37
Connector Name	EPS CONTROL UNIT
Connector Type	Molex 98545-0001



Terminal No.	Color of Wire	Signal Name [Specification]
5	L	-
7	P	-

Connector No.	M59
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT
Connector Type	TK20FY-EX-SG



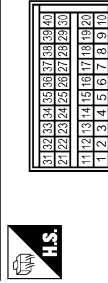
Terminal No.	Color of Wire	Signal Name [Specification]
15	SE	A/B W/L [RHD models]

Connector No.	M40
Connector Name	INTELLIGENT KEY UNIT
Connector Type	TH40FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
2	L	CAN-H
3	P	CAN-L

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	A4B40FB



Terminal No.	Color of Wire	Signal Name [Specification]
21	P	CAN-L
22	L	CAN-H
23	B	SECURITY INDICATOR [RHD models]

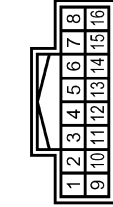
JCNWA0275GE

COMBINATION METER

< ECU DIAGNOSIS >

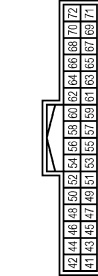
METER (RHD MODELS)

Connector No.	M69
Connector Name	4WD CONTROL UNIT
Connector Type	TH16FW-NH



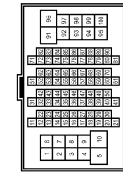
Terminal No.	Color of Wire	Signal Name [Specification]
8	L	CAN-H
16	P	CAN-L

Connector No.	M72
Connector Name	NAVI CONTROL UNIT
Connector Type	TH42FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
53	L	COMMUNICATION SIGNAL (CONT-DISP)
54	P	COMMUNICATION SIGNAL (DISP-COINT)
55	SHIELD	SHIELD
71	L	CAN-H
72	P	CAN-L

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
12	P	-
13	R	-
14	BR	-
16	-	-
20	P	-
22	L	-
23	BR	-
24	LG	-
26	-	-
30	L	-

Connector No.	M103
Connector Name	PARKING BRAKE SWITCH
Connector Type	F01FB-A



Terminal No.	Color of Wire	Signal Name [Specification]
1	GR	-

Connector No.	M332
Connector Name	COMBINATION SWITCH (SPIRAL CABLE)
Connector Type	TK6BMGY-X



Terminal No.	Color of Wire	Signal Name [Specification]
17	-	-
18	-	-

Connector No.	M503
Connector Name	SPORT MODE SWITCH
Connector Type	HRR-03-S



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	SPORT MODE SW
3	W	GND

Fail Safe

The combination meter activates the fail-safe control if the CAN communication lines between each unit are malfunctioning.

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COMBINATION METER

< ECU DIAGNOSIS >

Function		Specifications
Speedometer		Reset to zero by suspending communication.
Tachometer		
Meter illumination control		Change to nighttime mode.
Buzzer		Turned off by suspending communication.
Warning lamp/indicator lamp	ABS warning lamp	Turned on by suspending communication.
	Brake warning lamp	
	EPS OFF indicator lamp	
	ESP OFF indicator lamp	
	SLIP indicator lamp	
	4WD warning lamp	
	SPORT indicator lamp	Turned off by suspending communication.
	4WD indicator lamp	
	4WD LOCK indicator lamp	
	Oil pressure warning lamp	
	Door warning lamp	
	Malfunction indicator lamp	
	CRUISE indicator lamp	
	SET indicator lamp	
	Front fog lamp indicator lamp	
	Rear fog lamp indicator lamp	
	Glow indicator lamp	
	DPF warning lamp	
	HDC indicator lamp	
	KEY R/G warning lamp	
KEY LOCK warning lamp		
High beam indicator lamp		
Turn signal indicator lamp		

DTC Index

INFOID:000000001080300

Display contents of CONSULT-III	Time	Diagnostic item is detected when ...	Refer to
CAN COMM CIRCUIT [U1000]	CRNT, 1 - 39	Combination meter is not transmitting or receiving CAN communication signal for 2 seconds or more.	MWI-28
CONTROL UNIT (CAN) [U1010]	CRNT, 1 - 39	Detecting error during the initial diagnosis of CAN controller of combination meter.	MWI-29
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-30
ENGINE SPEED [B2267]	CRNT, 1 - 39	ECM continuously transmits abnormal engine speed signals for 2 seconds or more.	MWI-31
WATER TEMP [B2268]	CRNT, 1 - 39	ECM continuously transmits abnormal engine coolant temperature signals for 60 seconds or more.	MWI-32
OIL LEV SEN OPEN [B2321]	CRNT, 1 - 39	Combination meter judged that the oil level sensor signal circuit is open-circuited for 1 second or more.	• MWI-33 (QR25DE)
OIL LEV SEN SHORT [B2322]	CRNT, 1 - 39	Combination meter judged that the oil level sensor signal circuit is short-circuited for 1 second or more.	• MWI-33 (Except QR25DE)

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

< ECU DIAGNOSIS >

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

Reference Value

INFOID:000000001367515

VALUES ON THE DIAGNOSIS TOOL

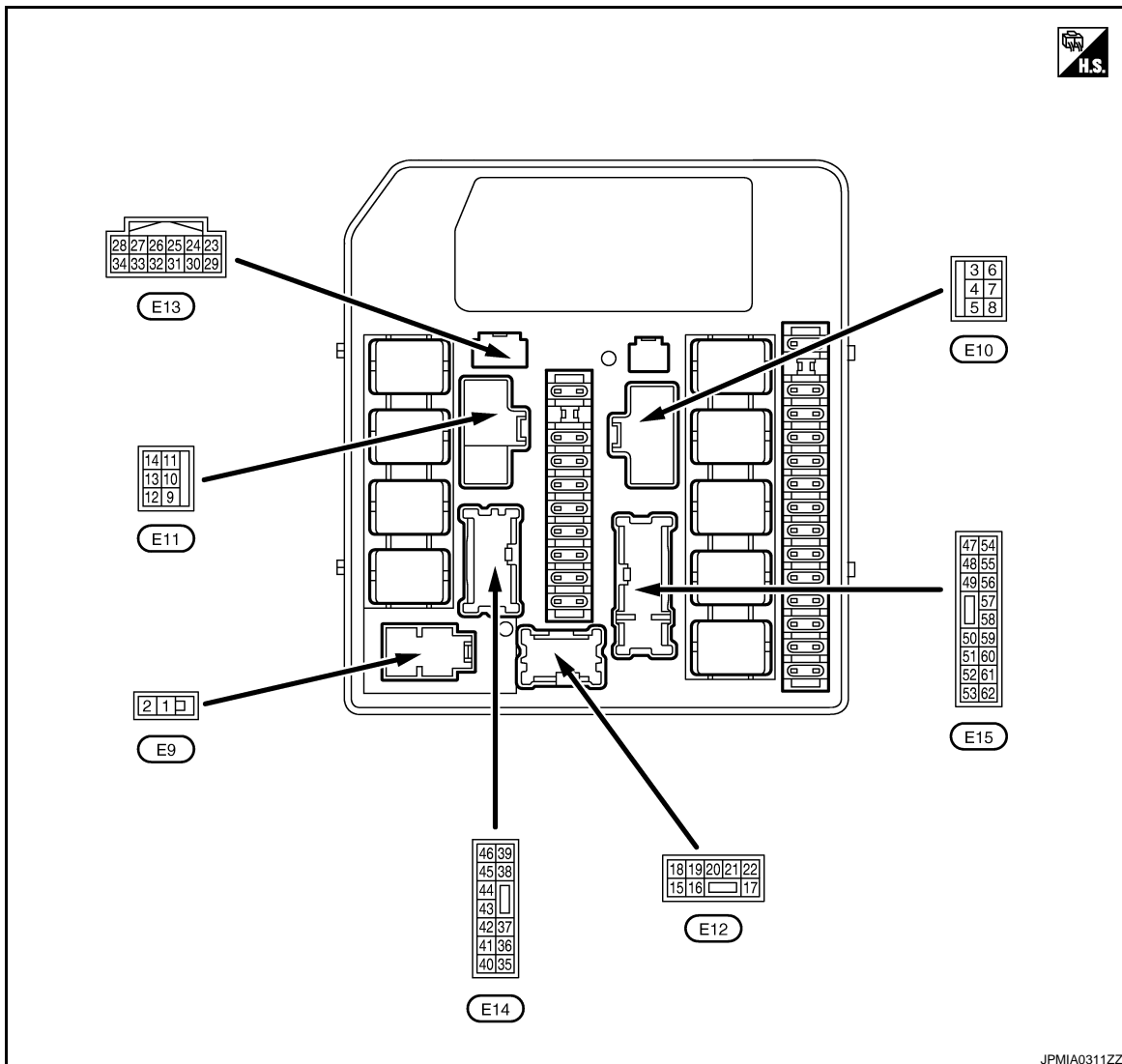
Monitor Item	Condition		Value/Status
MOTOR FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1 - 4
AC COMP REQ	Engine running	A/C switch OFF	Off
		A/C switch ON (Compressor is operating)	On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST, 2ND or AUTO (Light is illuminated)		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI (Light is illuminated)		On
FR FOG REQ	Lighting switch 2ND or AUTO (Light is illuminated)	Front fog lamp switch OFF	Off
		Front fog lamp switch ON	On
HL WASHER REQ NOTE: This item is monitored only on the vehicle with headlamp washer.	Ignition switch ON, and low beam headlamp is ON	Front washer switch OFF	Off
		Front washer switch ON (When headlamp washer is operating)	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
ST RLY REQ NOTE: Vehicle without Intelligent Key system indicates only "ON", and it does not change.	When Intelligent Key is outside the vehicle, and the push switch is pushed		Off
	When Intelligent Key is inside the vehicle, and the push switch is pushed		On
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
RR DEF REQ	Ignition switch ON	Rear window defogger switch OFF	Off
		Rear window defogger switch ON (Rear window defogger is operating)	On
OIL P SW	Ignition switch OFF, ACC or engine running		Open
	Ignition switch ON		Close

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

< ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
REV SW	NOTE: This item is indicated, but not monitored.	Off
DTRL REQ	Daytime running light system is not operated with lighting switch OFF.	Off
NOTE: This item is monitored only on the vehicle with the daytime running light system.	Any of the condition below	On
	<ul style="list-style-type: none"> Daytime running light system is operated. Lighting switch 1ST, 2ND or AUTO (Light is illuminated) 	On
HOOD SW	Close the hood	Off
NOTE: This item is monitored only on the vehicle with the vehicle security system.	Open the hood	On
	Not operation	Off
THFT HRN REQ	Not operation	Off
NOTE: This item is monitored only on the vehicle with the vehicle security system.	Horn is activated with vehicle security system.	On
	NOTE: This item is indicated, but not monitored.	Off

TERMINAL LAYOUT



PHYSICAL VALUES

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

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	-	Signal name	Input/ Output			
1 (G)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage	
2 (R)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage	
3 (O)*1 (BR)*2	Ground	Starter relay power supply	Output	When engine is clanking	Battery voltage	
				When engine is not clanking	0 V	
4 (W)	Ground	Cooling fan relay-1 power supply	Output	Cooling fan operation	OFF	0 V
					MID or HI	Battery voltage
5 (R)	Ground	Ignition switch START	Input	Ignition switch OFF, ACC or ON	0 V	
				Ignition switch START	Battery voltage	
6 (BR)	Ground	Battery power supply (Cooling fan relay)	Input	Ignition switch OFF	Battery voltage	
7 (P)	Ground	Cooling fan motor-2 (HI) ground	—	Cooling fan operation	OFF	Battery voltage
					HI	0 V
8 (G)	Ground	Cooling fan relay-2 power supply	Output	Cooling fan operation	OFF	0 V
					HI	Battery voltage
11 (B)	Ground	Ground	—	Ignition switch ON	0 V	
12 (O)*3 (G)*4	Ground	Rear window defogger relay power supply	Output	Ignition switch ON	Rear window defogger switch OFF	0 V
					Rear window defogger switch ON	Battery voltage
15*5 (SB)	Ground	Daytime running light relay control	Output	<ul style="list-style-type: none"> • Parking lamp • License plate lamp • Tail lamp 	Turn off	Battery voltage
					Turn on	0 V
16*6 (Y)	Ground	Front fog lamp (LH)	Output	Lighting switch 1ST	Front fog lamp switch OFF	0 V
					Front fog lamp switch ON	Battery voltage
17*6 (W)	Ground	Front fog lamp (RH)	Output	Lighting switch 1ST	Front fog lamp switch OFF	0 V
					Front fog lamp switch ON	Battery voltage
18 (L)	Ground	Headlamp LO (LH)	Output	Lighting switch OFF	0 V	
				Lighting switch 2ND	Battery voltage	
19*7 (R)	Ground	Headlamp aiming motor power supply	Output	Lighting switch OFF	0 V	
				Lighting switch 2ND	Battery voltage	
20 (SB)	Ground	Headlamp LO (RH)	Output	Lighting switch OFF	0 V	
				Lighting switch 2ND	Battery voltage	
21 (G)	Ground	Headlamp HI (LH)	Output	Lighting switch OFF	0 V	
				<ul style="list-style-type: none"> • Lighting switch 2ND and HI • lighting switch PASS 	Battery voltage	
22 (LG)	Ground	Headlamp HI (RH)	Output	Lighting switch OFF	0 V	
				<ul style="list-style-type: none"> • Lighting switch 2ND and HI • lighting switch PASS 	Battery voltage	
23 (W)	Ground	Oil pressure switch	Input	Ignition switch ON	Engine stopped	0 V
					Engine running	Battery voltage

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

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)	
+	-	Signal name	Input/ Output				
24 (Y)	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	
25 (B)	Ground	Ground	—	Ignition switch ON		0 V	
26 (P)	—	CAN-L	Input/ Output	—		—	
27 (L)	—	CAN-H	Input/ Output	—		—	
31 (V)	Ground	Cooling fan relay-4 control	Output	Cooling fan operation	OFF	Battery voltage	
					LO	0 V	
32*1 (LG)	Ground	ETC relay control	Input	After passing approximately 2 seconds or more after turning the ignition switch from ON to OFF		Battery voltage	
				<ul style="list-style-type: none"> Ignition switch ON For approximately 2 seconds after turning ignition switch from ON to OFF 		0 V	
33*1 (GR)	Ground	Fuel pump relay control	Input	Ignition switch OFF		0 V	
				Ignition switch ON	Engine stopped	Battery voltage	
					Engine running	0.8 V	
34*8 (Y)	Ground	Hood switch	Input	Close the hood		Battery voltage	
				Open the hood		0 V	
35*9 (W)	Ground	Headlamp washer relay control	Output	Ignition switch ON	When headlamp washer is not operating	Battery voltage	
					When headlamp washer is operating	0 V	
37 (R)	Ground	Tail, license plate lamps and illuminations	Output	Lighting switch OFF		0 V	
				Lighting switch 1ST		Battery voltage	
38*10 (O)*1 (GR)*2	Ground	Parking lamp (LH)	Output	Lighting switch OFF		0 V	
				Lighting switch 1ST		Battery voltage	
39*10 (GR)	Ground	Parking lamp (RH)	Output	Lighting switch OFF		0 V	
				Lighting switch 1ST		Battery voltage	
40 (V)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V	
				Ignition switch ON		Battery voltage	
41 (O)*1 (L)*2	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V	
				Ignition switch ON		Battery voltage	
42 (L)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0 V	
					Front wiper switch HI	Battery voltage	
43 (G)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0 V	
					Front wiper switch LO	Battery voltage	
45 (Y)	Ground	Starter relay power supply	Input	Ignition switch ON (Except M/T models)	Selector lever "P" or "N"	Battery voltage	
					Selector lever in any position other than "P" or "N"		0 V
					Ignition switch ON (M/T models)		Battery voltage

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

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	-	Signal name	Input/ Output			
46*1 (W)	Ground	Fuel pump relay power supply	Output	<ul style="list-style-type: none"> Ignition switch OFF or ACC After passing approximately 1 second or more after turning the ignition switch ON 	0 V	
				<ul style="list-style-type: none"> For approximately 1 second after turning the ignition switch ON Engine running 	Battery voltage	
47 (BR)*1 (G)*2	Ground	ECM relay power supply	Output	After passing approximately 20 seconds or more after turning the ignition switch from ON to OFF	0 V	
				<ul style="list-style-type: none"> Ignition switch ON For approximately 20 seconds after turning ignition switch from ON to OFF 	Battery voltage	
48 (R)*1 (V)*2	Ground	ECM relay power supply	Output	After passing approximately 20 seconds or more after turning the ignition switch from ON to OFF	0 V	
				<ul style="list-style-type: none"> Ignition switch ON For approximately 20 seconds after turning ignition switch from ON to OFF 	Battery voltage	
50 (G)	Ground	Cooling fan relay-5 control	Output	Cooling fan operation	OFF	
				MID or HI	0 V	
51 (W)	Ground	ECM relay control	Output	After passing approximately 20 seconds or more after turning the ignition switch from ON to OFF	Battery voltage	
				<ul style="list-style-type: none"> Ignition switch ON For approximately 20 seconds after turning ignition switch from ON to OFF 	0 V	
52*1 (P)	Ground	ETC relay power supply	Output	After passing approximately 2 seconds or more after turning the ignition switch from ON to OFF	0 V	
				<ul style="list-style-type: none"> Ignition switch ON For approximately 2 seconds after turning ignition switch from ON to OFF 	Battery voltage	
55 (O)	Ground	A/C relay power supply	Output	Engine stopped	0 V	
				Engine running	A/C switch OFF	0 V
					A/C switch ON (A/C compressor is operating)	Battery voltage
56 (L)	Ground	Ignition switch ON	Input	Ignition switch OFF or ACC	0 V	
				Ignition switch ON	Battery voltage	
57*8 (V)	Ground	Horn relay control	Output	The horn is not activated	Battery voltage	
				The horn is activated	0 V	
58 (Y)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC	0 V	
				Ignition switch ON	Battery voltage	
59 (GR)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC	0 V	
				Ignition switch ON	Battery voltage	
60 (SB)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC	0 V	
				Ignition switch ON	Battery voltage	
61 (O)	Ground	ECM power supply	Output	Ignition switch OFF	Battery voltage	

*1: MR engine and QR engine models

*2: M9R engine models

*3: MR engine models

*4: QR engine and M9R engine models

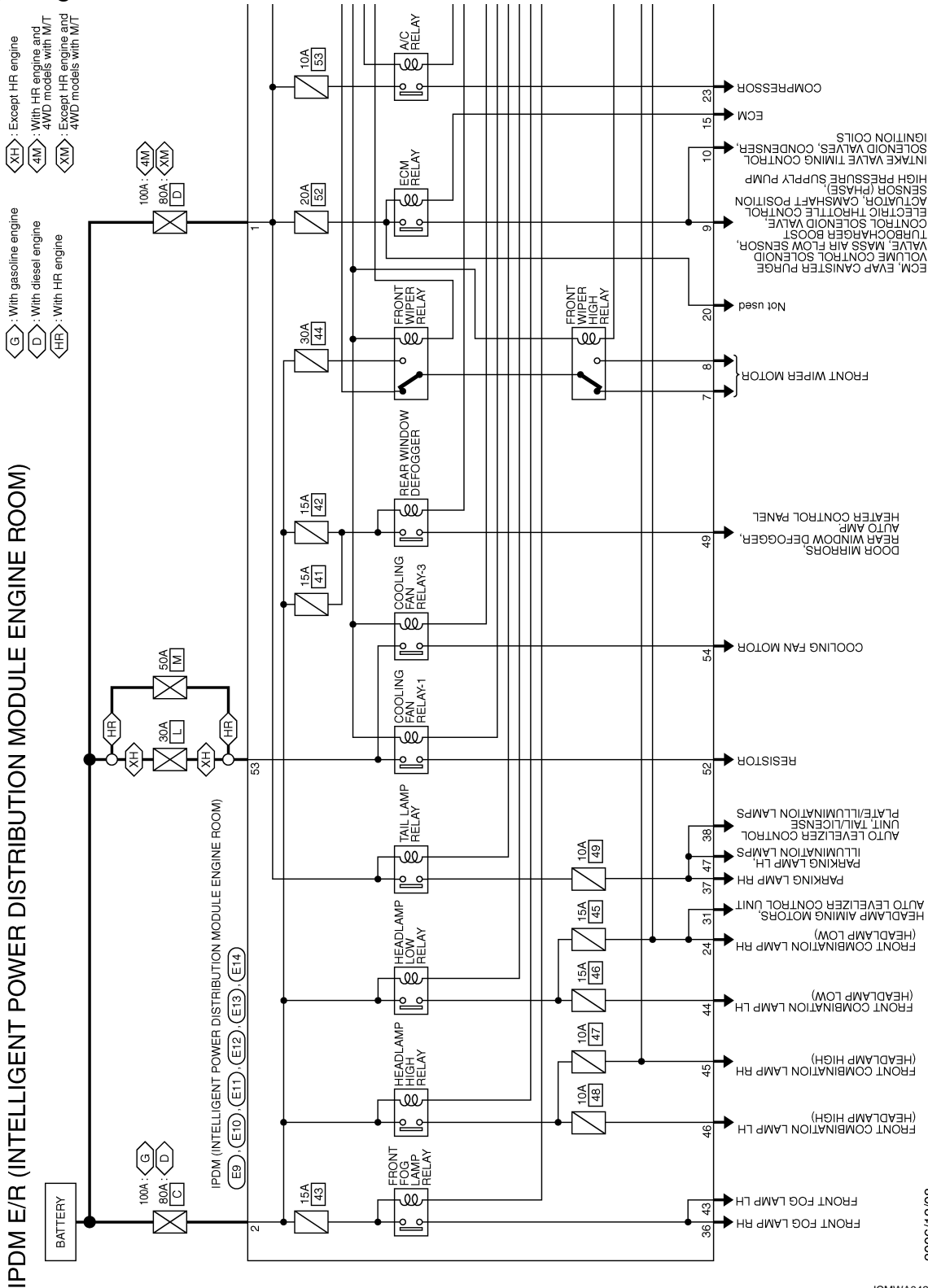
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

< ECU DIAGNOSIS >

- *5: With daytime running light system
- *6: With front fog lamp system
- *7: Halogen type headlamp
- *8: With vehicle security system
- *9: With headlamp washer system
- *10: Without daytime running light system

Wiring Diagram - IPDM E/R -

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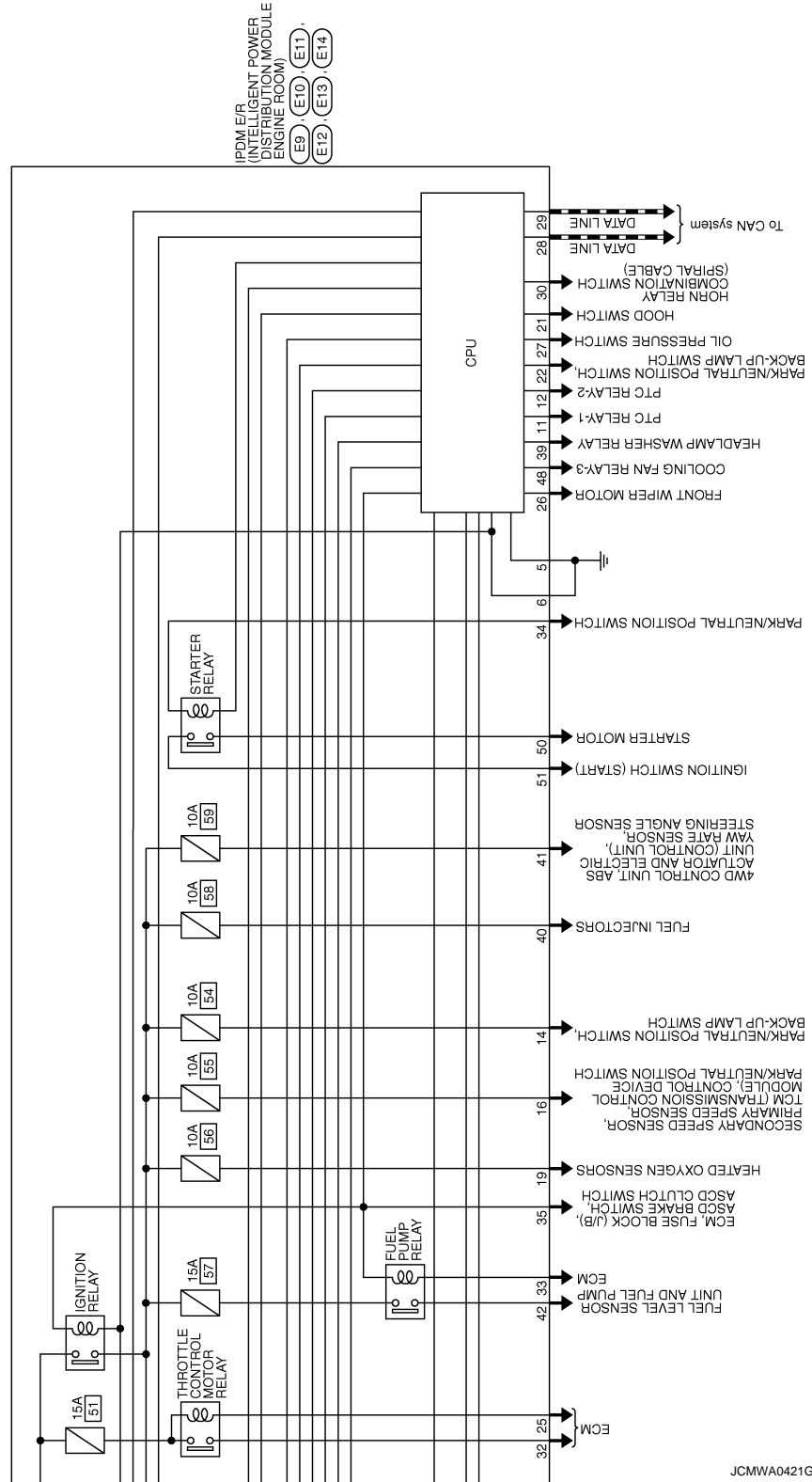


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IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

< ECU DIAGNOSIS >



IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
 (E9), (E10), (E11), (E12), (E13), (E14)

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

< ECU DIAGNOSIS >

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

Connector No.	E9
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	LD2FB-MC



1	2
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Terminal No.	Color of Wire	Signal Name [Specification]
1	G	
2	R	

Connector No.	E10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M08FB-LC



5	4	3
8	7	6

Terminal No.	Color of Wire	Signal Name [Specification]
5	B	
6	B	
7	Y	
8	Y/R	

Connector No.	E11
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS1ZFBR-CS



13	12	11	10	9		
20	19	18	17	16	15	14

Terminal No.	Color of Wire	Signal Name [Specification]
9	G	
10	L/R	
11	O	
12	G/Y	
14	R/B	
15	Y/L	-[With gasoline engine]
15	B/R	-[With diesel engine]
16	Y/R	
19	R/O	
20	-	

Connector No.	E12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS1ZPW-CS



25	24	23	22	21		
32	31	30	29	28	27	26

Terminal No.	Color of Wire	Signal Name [Specification]
21	GR	
22	Y/G	
23	Y/B	
24	R/Y	
25	G/L	
26	O	
27	W	
28	L	
29	P	
30	L	
31	R	

Connector No.	E13
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FPW-CS



39	38	37	36	35	34	33		
48	47	46	45	44	43	42	41	40

Terminal No.	Color of Wire	Signal Name [Specification]
33	B/O	
34	R/B	
35	W/L	
36	W	
37	R/W	
38	R/L	
39	GR	
40	SB	-[With MR engine]
40	BR/Y	-[With HR engine]
41	P	
42	B/Y	

43	W/B
44	L
45	L/W
46	G
47	R/L
48	Y

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

Connector No.	E14
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	YZK 7283-5391-40 F



Terminal No.	Color of Wires	Signal Name (Specification)
48	B	-
50	B/R	-
51	P	-
52	W	-
53	W/B	-
54	R	-

Fail Safe

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

JCMWA0423G1

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

< ECU DIAGNOSIS >

Control part	Fail-safe in operation
Cooling fan	<ul style="list-style-type: none"> The cooling fan relay-1, the cooling fan relay-2, the cooling fan relay-3 and the cooling fan relay-5 turn ON when the ignition switch is turned ON The cooling fan relay-1, the cooling fan relay-2, the cooling fan relay-3 and the cooling fan relay-5 turn OFF when the ignition switch is turned OFF Cooling fan relay-4 OFF
A/C compressor	A/C relay OFF

If no CAN communication is available with BCM

Control part	Fail-safe in operation
Headlamp	<ul style="list-style-type: none"> The headlamp low relay turns ON when the ignition switch is turned ON The headlamp low relay turns OFF when the ignition switch is turned OFF Headlamp high relay OFF
<ul style="list-style-type: none"> Parking lamps License plate lamps Tail lamps Illuminations 	<ul style="list-style-type: none"> The tail lamp relay and the daytime running light relay*¹ turn ON when the ignition switch is turned ON The tail lamp relay and the daytime running light relay*¹ turn OFF when the ignition switch is turned OFF
Front wiper	<ul style="list-style-type: none"> 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 front 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
Starter motor	Starter relay OFF
Rear window defogger	Rear window defogger relay OFF
Headlamp washer* ²	Headlamp washer relay OFF
Horn* ³	Horn relay OFF

NOTE:

- *1: With daytime running light system
- *2: With headlamp washer system
- *3: With vehicle security system

Ignition relay malfunction detection function

- IPDM E/R monitors status of ignition relay by the voltage at ignition relay contact circuit inside it.
- IPDM E/R judges that the ignition relay is error, if status of the ignition relay and ignition switch ON signal (CAN) *.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay and daytime running light relay* for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

DTC	Ignition switch	Ignition relay	Tail lamp relay and daytime running light relay*
—	ON	ON	—
—	OFF	OFF	—
—	OFF	ON	ON (10 minutes)
B2099: IGN RLY OFF	ON	OFF	—

NOTE:

- The tail lamp relay and the daytime running light relay* are turned OFF when the ignition switch is turned ON.
- *: With daytime running light system

Front wiper control

IPDM E/R detects the front wiper stop position with the front wiper auto stop signal.

When the front wiper auto stop signal is in the conditions listed below, IPDM E/R repeats a front wiper 10 seconds operation and 20 seconds stop five times.

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

< ECU DIAGNOSIS >

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

DTC Index

INFOID:000000001367518

CONSULT display	Fail-safe	Timing ^{NOTE}		Reference page
No DTC is detected. further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	PAST	PCS-13
B2099: IGN RELAY OFF	—	CRNT	PAST	PCS-14

NOTE:

The details of time display are as follows.

- CRNT: The malfunctions that are detected now.
- PAST: The number is indicated when it is normal at present and a malfunction was detected in the past.

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MWI

THE FUEL GAUGE DOES NOT MOVE

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

THE FUEL GAUGE DOES NOT MOVE

Description

INFOID:000000001117245

Fuel gauge segment does not move from a certain position.

Diagnosis Procedure

INFOID:000000001115170

1. CHECK COMBINATION METER INPUT SIGNAL

Connect CONSULT-III and check the combination meter input signal. Refer to [MWI-37, "Component Function Check"](#).

Is the inspection result normal?

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

2. CHECK FUEL LEVEL SENSOR SIGNAL CIRCUIT

Check the fuel level sensor signal circuit. Refer to [MWI-37, "Diagnosis Procedure"](#).

Is the inspection result normal?

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

3. CHECK FUEL LEVEL SENSOR UNIT (MAIN)

Perform a unit check for the fuel level sensor unit (main). Refer to [MWI-38, "Component Inspection \[Fuel Level Sensor Unit \(Main\)\]"](#).

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Replace fuel level sensor unit (main). Refer to [FL-5, "Removal and Installation"](#) (MR20DE/QR25DE) or [FL-19, "Removal and Installation"](#) (M9R).

4. CHECK FUEL LEVEL SENSOR UNIT (SUB)

Perform a unit check for the fuel level sensor unit (sub). Refer to [MWI-38, "Component Inspection \[Fuel Level Sensor Unit \(Sub\)\]"](#).

Is the inspection result normal?

- YES >> GO TO 5.
- NO >> Replace fuel level sensor unit (sub). Refer to [FL-5, "Removal and Installation"](#) (MR20DE/QR25DE) or [FL-19, "Removal and Installation"](#) (M9R).

5. 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 >> Replace combination meter.
- NO >> Repair or replace malfunctioning parts.

THE OIL PRESSURE WARNING LAMP DOES NOT TURN ON

< SYMPTOM DIAGNOSIS >

THE OIL PRESSURE WARNING LAMP DOES NOT TURN ON

Description

INFOID:000000001080306

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

Diagnosis Procedure

INFOID:000000001080307

1.CHECK OIL PRESSURE WARNING LAMP

Perform auto active test of IPDM E/R. Refer to [PCS-8, "Diagnosis Description"](#).

Is oil pressure warning lamp illuminated?

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-39, "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-39, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Replace oil pressure switch.

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MWI

THE OIL PRESSURE WARNING LAMP DOES NOT TURN OFF

< SYMPTOM DIAGNOSIS >

THE OIL PRESSURE WARNING LAMP DOES NOT TURN OFF

Description

INFOID:000000001080308

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

Diagnosis Procedure

INFOID:000000001080309

1. CHECK OIL PRESSURE WARNING LAMP

Perform auto active test of IPDM E/R. Refer to [PCS-8, "Diagnosis Description"](#).

Is oil pressure warning lamp illuminated?

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

2. CHECK IPDM E/R OUTPUT VOLTAGE

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

1 – Ground : 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-33, "Component Inspection \(QR25DE Engine Models\)"](#).

Is the inspection result normal?

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

4. CHECK OIL PRESSURE SWITCH SIGNAL CIRCUIT

check the oil pressure switch signal circuit. Refer to [MWI-33, "Diagnosis Procedure \(QR25DE Engine Models\)"](#).

Is the inspection result normal?

- YES >> Replace IPDM E/R.
- NO >> Repair harness or connector.

THE AMBIENT TEMPERATURE DISPLAY IS INCORRECT

< SYMPTOM DIAGNOSIS >

THE AMBIENT TEMPERATURE DISPLAY IS INCORRECT

Description

INFOID:000000001080310

- The ambient air temperature display flashes and the ambient air temperature is not displayed.
- The displayed air ambient temperature is higher than the actual temperature.
- The displayed air ambient temperature is lower than the actual temperature.

Diagnosis Procedure

INFOID:000000001080311

NOTE:

Check that the symptom is not applicable to the normal operating condition before starting diagnosis. Refer to [MWI-81, "INFORMATION DISPLAY : Description"](#).

1.CHECK OAT SENSOR SIGNAL CIRCUIT

Check the OAT sensor signal circuit. Refer to [MWI-40, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2.CHECK OAT SENSOR UNIT

Perform a unit check for the OAT sensor. Refer to [HAC-81, "MR20DE/QR25DE : Component Inspection"](#).

Is the inspection result normal?

YES >> Replace combination meter.

NO >> Replace OAT sensor. Refer to [VTL-20, "Removal and Installation"](#).

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THE OIL LEVEL DISPLAY IS INCORRECT

< SYMPTOM DIAGNOSIS >

THE OIL LEVEL DISPLAY IS INCORRECT

Description

INFOID:000000001080312

"oil Low" is displayed on the information display (engine oil amount is normal).

Diagnosis Procedure

INFOID:000000001080313

1.PERFORM SELF-DIAGNOSIS OF CONSULT-III

-
1. Connect COUNSULT-III and perform "Self Diagnostic Result" of combination meter.
 2. Check if DTC "B2321 OIL LEV SEN OPEN" or "B2322 OIL LEV SEN SHORT" is detected.

Is any DTC detected?

- YES >> GO TO 2.
NO >> GO TO 4.

2.CHECK OIL LEVEL SENSOR SIGNAL CIRCUIT

Check the oil level sensor signal circuit. Refer to [MWI-33, "Diagnosis Procedure \(QR25DE Engine Models\)"](#) or [MWI-33, "Diagnosis Procedure \(Except QR25DE Engine Models\)"](#).

Is the inspection result normal?

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

3.CHECK OIL LEVEL SENSOR UNIT

Perform a unit check for the oil level sensor. Refer to [MWI-33, "Component Inspection \(QR25DE Engine Models\)"](#) or [MWI-34, "Component Inspection \(Except QR25DE Engine Models\)"](#).

Is the inspection result normal?

- YES >> Replace combination meter.
NO >> Replace oil level sensor.

4.CHECK ENGINE OIL LEVEL

-
1. Check engine oil level.
 2. Replace combination meter if engine oil level is normal.

>> INSPECTION END

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION INFORMATION DISPLAY

INFORMATION DISPLAY : Description

INFOID:000000001080314

OIL LEVEL

Oil level is not displayed after installation/removal of battery or combination meter. To display the oil level again, follow the steps below.

1. More than 5 minutes after turning key switch OFF, open the driver's door.
2. Turn key switch ON.

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 OAT sensor signal by the combination meter. Refer to [MWI-21, "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 (3 - 1/4 Imp gal) or less. This is because the refuel control (moves the fuel gauge segment quicker than normal judging that the driver is refueling the vehicle) is not performed in such a case.

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PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

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

INFOID:000000001558760

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. Information necessary to service the system safely is included in the "SRS AIRBAG" and "SEAT BELT" of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which 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 the "SRS AIRBAG".
- Do not 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.

COMBINATION METER

< ON-VEHICLE REPAIR >

ON-VEHICLE REPAIR

COMBINATION METER

Exploded View

INFOID:000000001080316

Refer to [IP-11, "Exploded View"](#).

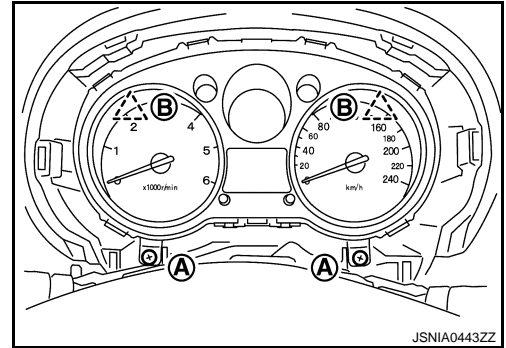
Removal and Installation

INFOID:000000001080317

Removal

1. Remove the cluster lid A. Refer to [IP-12, "Removal and Installation"](#).
2. Remove steering column cover upper. Refer to [IP-12, "Removal and Installation"](#).
3. Remove screw (A) and connector, and then remove combination meter.

B : Clip

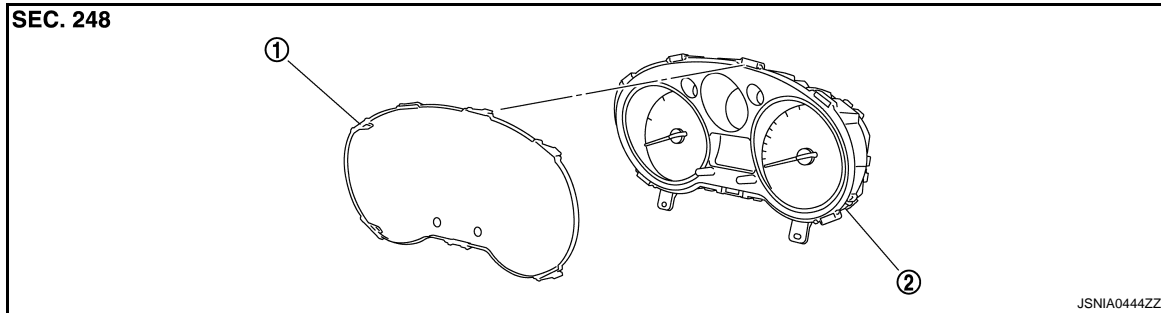


Installation

Install in the reverse order of removal.

Disassembly and Assembly

INFOID:000000001303476



1. Front cover
2. Unified meter control unit

DISASSEMBLY

Disengage the tabs to separate front cover.

ASSEMBLY

Assemble in the reverse order of disassembly.

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