SECTION MWI
METER, WARNING LAMP & INDICATOR

CONTENTS

PRECAUTION

PRECAUTIONS

FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000008280290

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

WARNING:

Always observe the following items for preventing accidental activation.

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

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

WARNING:

Always observe the following items for preventing accidental activation.

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

FOR MEXICO

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

INFOID:0000000008280291

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 AIR BAG” and “SEAT BELT” of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

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

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

WARNING:

Always observe the following items for preventing accidental activation.

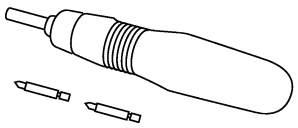
- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious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

PREPARATION

PREPARATION

Commercial Service Tools

INFOID:0000000008280292

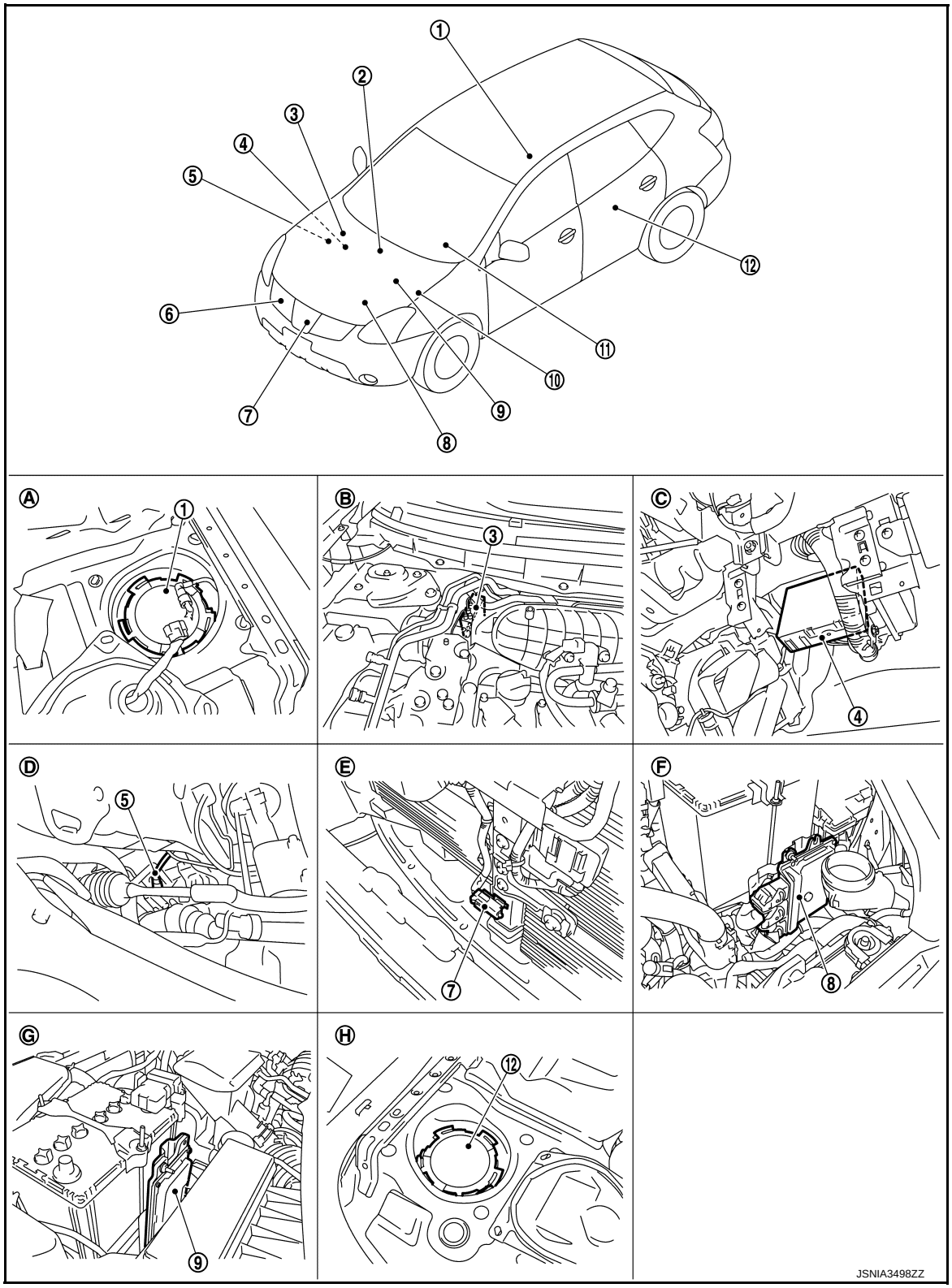
Tool name	Description
Power tool  PBIC0191E	Loosening screws

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000008280293



1. Fuel level sensor unit (main)
2. Auto amp.
3. ABS actuator and electric unit (control unit)
4. BCM
5. Oil pressure switch
6. Washer level switch
7. Ambient sensor
8. ECM
9. TCM
10. IPDM E/R
11. Combination meter
12. Fuel level sensor unit (sub)
A. Lower right side of rear seat
B. Left side of engine room
C. Over the glove box
D. Left side of engine room
E. Behind of front bumper center
F. Right side of engine room
G. Right side of engine room
H. Lower left side of rear seat

Component Description

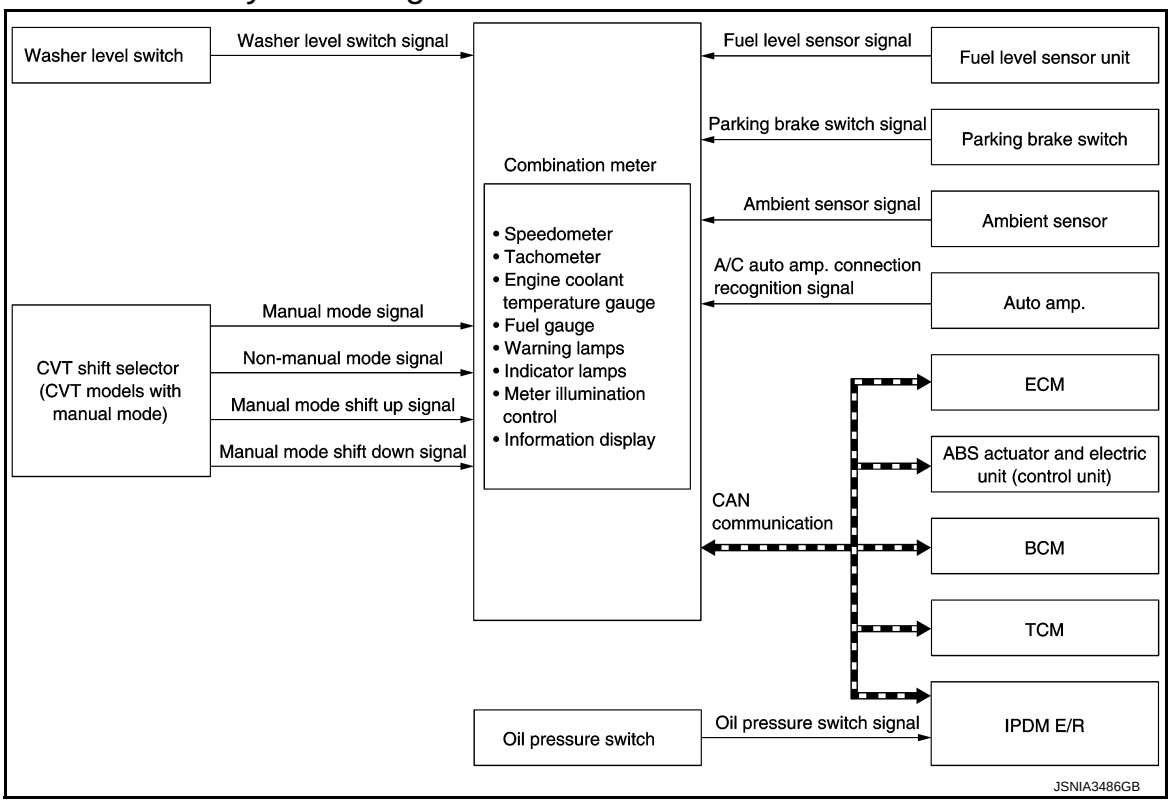
INFOID:0000000008280294

Unit	Description
Combination meter	Controls the following with the signals received from each unit via CAN communication and the signals from switches and sensors. • Speedometer • Tachometer • Engine coolant temperature gauge • Fuel gauge • Warning lamps • Indicator lamps • Meter illumination control • Information display
ECM	Transmits the following signals to the combination meter via CAN communication. • Engine speed signal • Engine coolant temperature signal • Fuel consumption monitor signal • Fuel filler cap warning display signal
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the combination meter via CAN communication.
IPDM E/R	Transmits the oil pressure switch signal to the BCM via CAN communication.
BCM	Transmits the following signals to the combination meter via CAN communication. • Oil pressure switch signal • Position light request signal • Door switch signal • Low tire pressure warning lamp signal
TCM	Transmits the shift position signal to the combination meter via CAN communication.
CVT shift selector (with manual mode)	Transmits the following signals to the combination meter. • Manual mode signal • Non-manual mode signal • Manual mode shift up signal • Manual mode shift down signal
Paddle shifter	Transmits the following signals to the combination meter. • Paddle shifter shift up signal • Paddle shifter shift down signal
Fuel level sensor unit	Transmits the fuel level sensor signal to the combination meter.
Oil pressure switch	Transmits the oil pressure switch signal to the IPDM E/R.
Ambient sensor	Transmits the ambient sensor signal to the combination meter.
Auto amp.	Transmits the A/C auto amp connection recognition signal to the combination meter.
Parking brake switch	Transmits the parking brake switch signal to the combination meter.
Washer level switch	Transmits the washer level switch signal to the combination meter.

SYSTEM (METER SYSTEM)
METER SYSTEM

METER SYSTEM : System Diagram

INFOID:0000000008280295



METER SYSTEM : System Description

INFOID:0000000008280296

COMBINATION METER

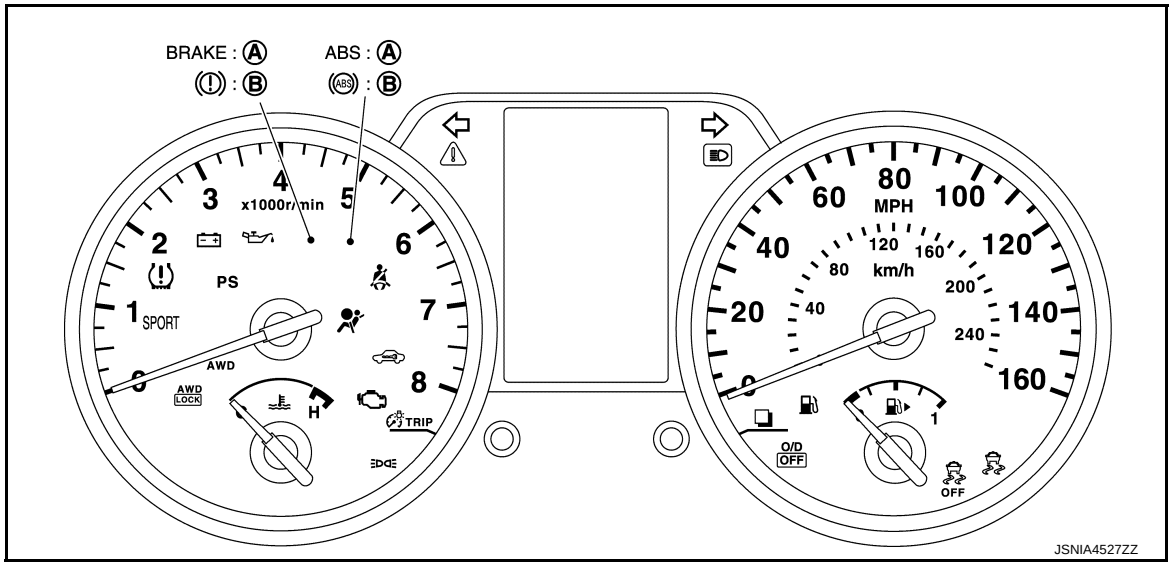
- The combination meter receives necessary signals from each unit, switch, and sensor to control the following functions.
  - Measuring instruments
  - Warning lamps
  - Indicator lamps
  - Meter illumination control
  - Information display
- The combination meter incorporates a buzzer function that sounds an audible alarm with the integrated buzzer device. Refer to WCS-5, "WARNING CHIME SYSTEM : System Description" for further details.
- The combination meter includes an on board diagnosis function.
- The combination meter can be diagnosed with CONSULT.

METER CONTROL FUNCTION LIST

System			Description	Reference
Measuring instruments	Speedometer		Indicates vehicle speed.	MWI-12, "SPEEDOMETER : System Description"
	Tachometer		Indicates engine speed.	MWI-12, "TACHOMETER : System Description"
	Engine coolant temperature gauge		Indicates engine coolant temperature.	MWI-12, "ENGINE COOLANT TEMPERATURE GAUGE : System Description"
	Fuel gauge		Indicates fuel level.	MWI-13, "FUEL GAUGE : System Description"
Warning lamp/ indicator lamp	Oil pressure warning lamp		The warning lamp turns ON or turns OFF, according to engine hydraulic pressure.	MWI-13, "OIL PRESSURE WARNING LAMP : System Description"
	Master warning lamp		Turns ON/OFF in synchronization with a warning indicated on the information display.	MWI-14, "MASTER WARNING LAMP : System Description"
Meter illumination control			Switches back and forth between daytime mode and nighttime mode, according to a light switch position.	MWI-14, "METER ILLUMINATION CONTROL : System Description"
Information display	Odo/trip meter		Displays mileage.	MWI-15, "INFORMATION DISPLAY : System Description"
	Shift position indicator		Displays shift position.	
	Clock		Displays time.	
	Trip computer	Current fuel consumption	Displays current fuel consumption.	
		Average fuel consumption	Displays average fuel consumption.	
		Range (Distance to empty)	Displays distance to empty.	
		Average vehicle speed	Displays average vehicle speed.	
		Elapsed time	Displays elapsed time.	
		Driving distance	Displays mileage.	
		Outside temperature	Displays outside temperature.	

System				Description	Reference
Information display	Interrupt indication	Warning	Door open warning	Warns when a door is open.	MWI-15, "INFORMATION DISPLAY : System Description"
			Parking brake release warning	Warns if traveling when the parking brake is under operating condition.	
			Low fuel warning	Warns when being low on fuel.	
			Low washer fluid warning	Displayed/Hidden, depending on washer fluid level.	
			Low tire pressure warning	Warns, according to tire inflation pressure.	WT-9, "System Description"
			Fuel filler cap warning	Warns, according to the tightening condition of fuel filler cap.	EC-93, "System Description"
		Alert	Driver alert	Causes an interrupt when exceeding randomly set time.	MWI-15, "INFORMATION DISPLAY : System Description"
			Low ambient temperature	Causes an interrupt when ambient temperature reaches below 3°C (37°F).	
		Maintenance	Service	Causes an interrupt when exceeding randomly set distance.	
			Tire	Causes an interrupt when exceeding randomly set distance.	
			Other	Causes an interrupt when exceeding randomly set distance.	
		Meter illumination control		Indicates the brightness of the meter illumination in stages.	
	Settings	Clock		Clock-related items can be set.	
		Units		Unit can be set.	
		Maintenance		Maintenance-related items can be set.	
		Alarm		Alarm-related items can be set.	
		Language		Language can be selected.	
		Factory		Settings can be reset.	

ARRANGEMENT OF COMBINATION METER



A. For U.S.A. B. Except for U.S.A.

METER SYSTEM : Fail-safe

INFOID:0000000008280297

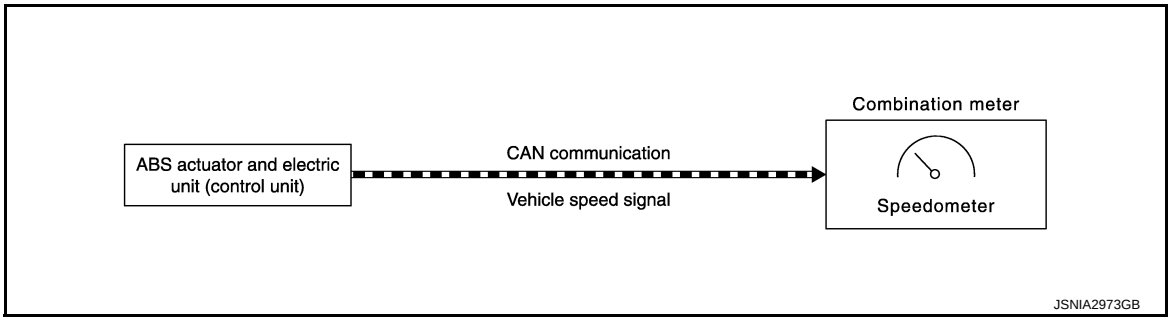
The combination meter activates the fail-safe control if the CAN communication lines between each unit are malfunctioning.

Function			Specifications
Speedometer			Reset to zero by suspending communication.
Tachometer			
Engine coolant temperature gauge			
Meter illumination control			When suspending communication, changes to nighttime mode.
Buzzer			Turned off by suspending communication.
Information display	Trip computer	Current fuel consumption	• When reception time of an abnormal signal is 2 seconds or less, the last received datum is used for calculation to indicate the result. • When reception time of an abnormal signal is more than 2 seconds, the last result calculated during normal condition is indicated.
		Average fuel consumption	
		Average vehicle speed	
		Range (Distance to empty)	
		Driving distance	An indicated value is maintained at communications blackout.
	Interrupt indication	Door open warning	The indicator turns OFF by suspending communication.
		Low tire pressure warning	
		Fuel filler cap warning	
	Odo/trip meter		An indicated value is maintained at communications blackout.
	Shift position indicator		The indicator turns OFF by suspending communication.
Warning lamp/ indicator lamp	ABS warning lamp		Turned on by suspending communication.
	Brake warning lamp		
	EPS warning lamp		
	VDC warning lamp		
	AWD warning lamp		
	Malfunction indicator lamp		
	VDC OFF indicator lamp		Turned off by suspending communication.
	SPORT mode indicator lamp		
	AWD LOCK indicator lamp		
	Oil pressure warning lamp		
	High beam indicator lamp		
	Turn signal indicator lamp		
	Position lamp indicator lamp		
	A/T CHECK indicator lamp		
	OD OFF indicator lamp		
	Low tire pressure warning lamp		After blinking for 1 minute, the lamp remains ON.

SPEEDOMETER

SPEEDOMETER : System Diagram

INFOID:0000000008280298



SPEEDOMETER : System Description

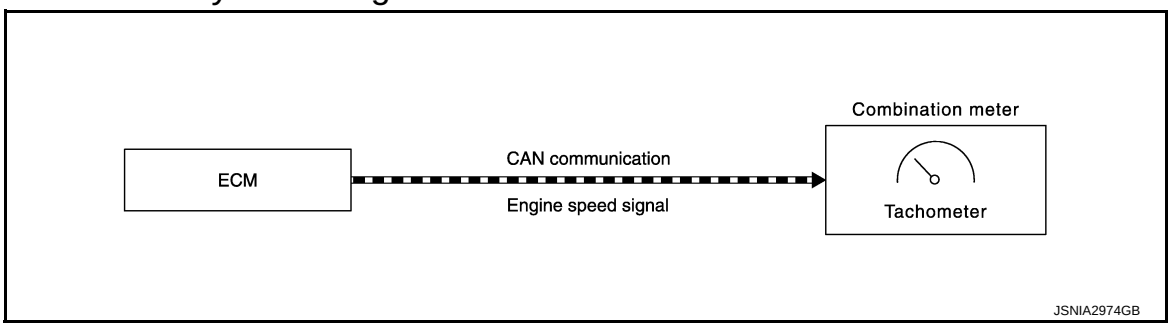
INFOID:0000000008280299

- 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.

TACHOMETER

TACHOMETER : System Diagram

INFOID:0000000008280300



TACHOMETER : System Description

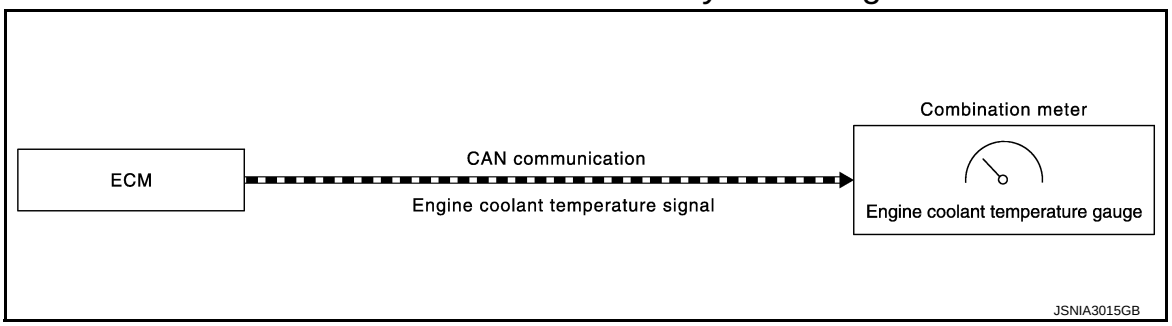
INFOID:0000000008280301

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

ENGINE COOLANT TEMPERATURE GAUGE

ENGINE COOLANT TEMPERATURE GAUGE : System Diagram

INFOID:0000000008280302



ENGINE COOLANT TEMPERATURE GAUGE : System Description

INFOID:0000000008280303

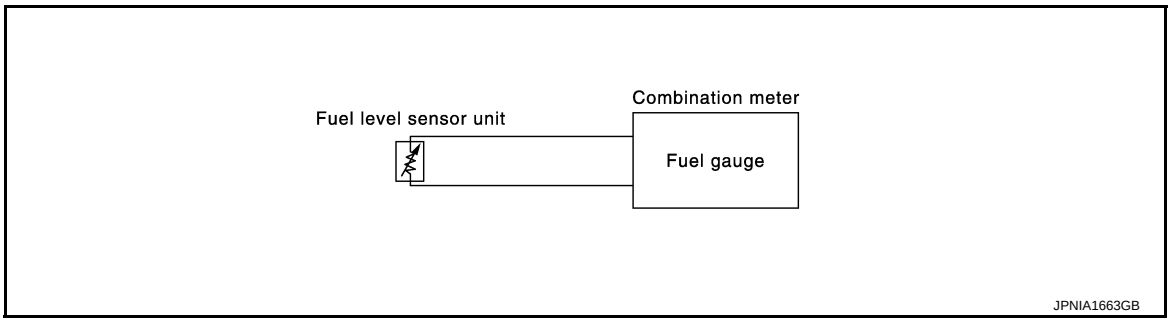
- ECM reads the engine coolant temperature signal from the engine coolant temperature sensor and transmits the signal to the combination meter via CAN communication.
- The combination meter indicates the engine coolant temperature to the engine coolant temperature gauge according to the engine coolant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

FUEL GAUGE

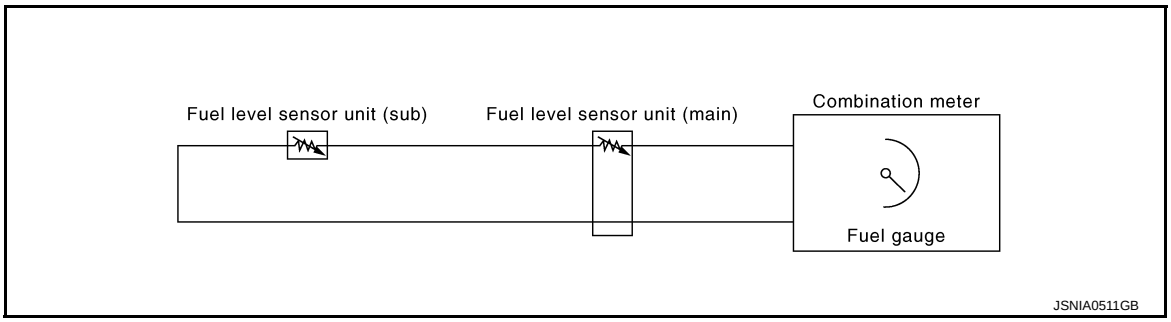
FUEL GAUGE : System Diagram

INFOID:0000000008280304

2WD MODELS FOR NORTH AMERICA



AWD MODELS FOR NORTH AMERICA/FOR MEXICO



FUEL GAUGE : System Description

INFOID:0000000008280305

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

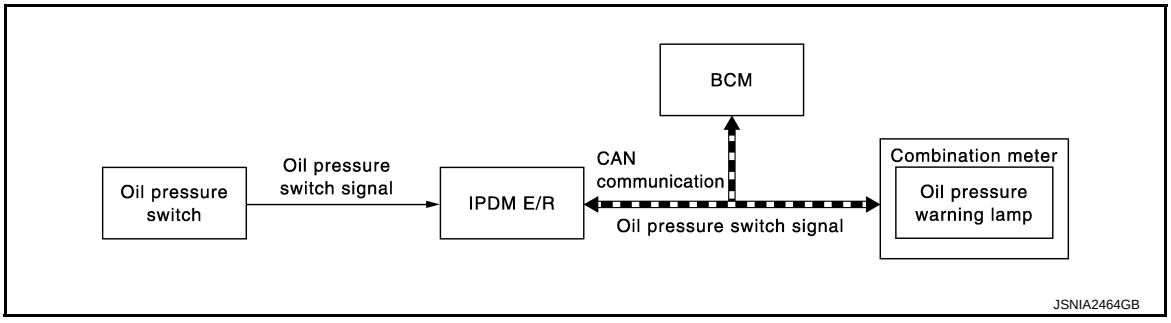
The combination meter accelerates the fuel gauge segment if the all conditions listed below are met, or the ignition switch is ON from OFF.

- Ignition switch is ON position.
- The vehicle is not moving.
- The fuel level change by 15 ℓ (4 US gal, 3-1/4 Imp gal) or more.

OIL PRESSURE WARNING LAMP

OIL PRESSURE WARNING LAMP : System Diagram

INFOID:0000000008280306



OIL PRESSURE WARNING LAMP : System Description

INFOID:0000000008280307

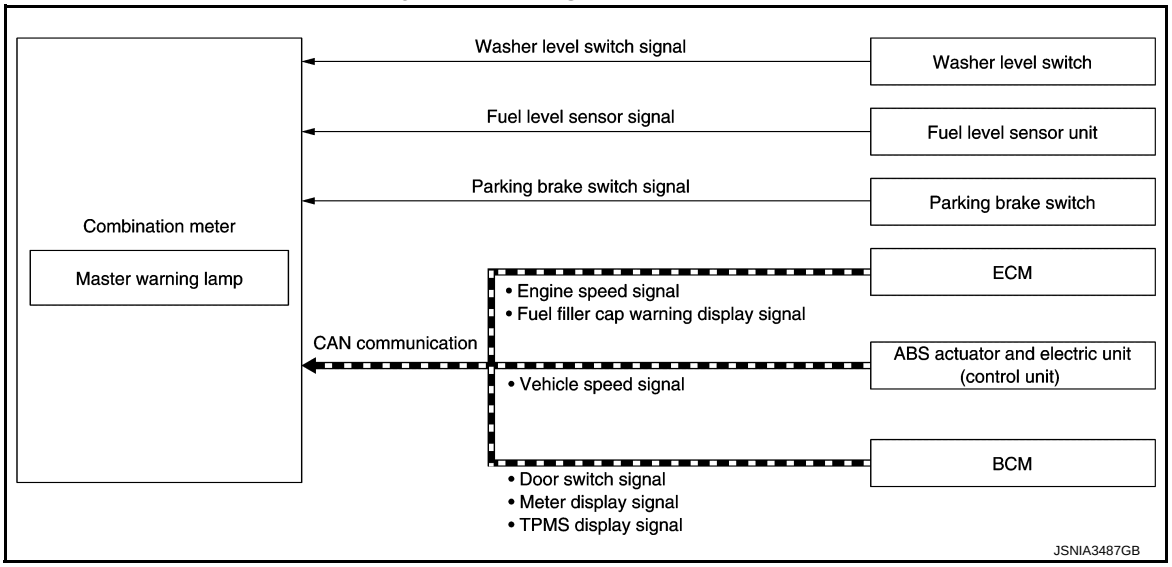
- IPDM E/R receives an oil pressure switch signal from the oil pressure switch and transmits the signal to BCM via CAN communication.
- BCM transmits the oil pressure switch signal received from IPDM E/R to the combination meter via CAN communication.

- The combination meter turns ON/OFF the oil pressure warning lamp, according to an oil pressure switch signal received from BCM via CAN communication.

MASTER WARNING LAMP

MASTER WARNING LAMP : System Diagram

INFOID:0000000008280308



MASTER WARNING LAMP : System Description

INFOID:0000000008280309

When receiving a signal from each unit, switch, or sensor, the combination meter turns ON/OFF the master warning lamp in synchronization with the following warnings on the information display.

- Door open warning
- NO KEY warning
- Parking brake release warning
- Low fuel warning
- Low tire pressure warning
- Low washer fluid warning
- Fuel filler cap warning

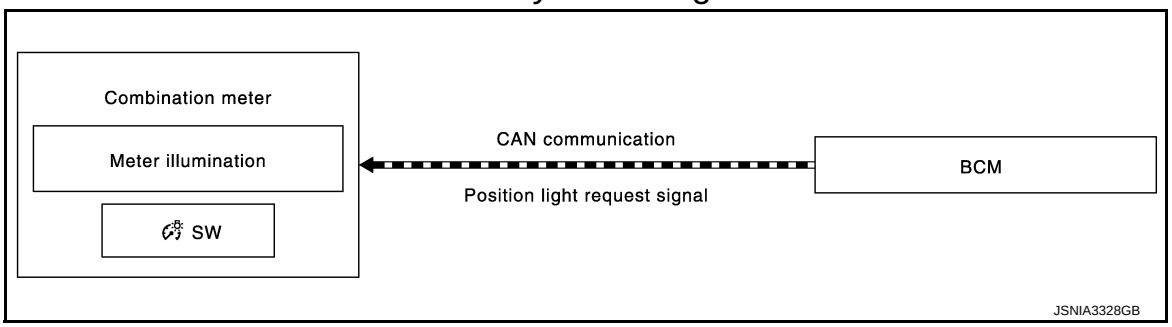
NOTE:

For details on warnings displayed on the information display, refer to MWI-15, "INFORMATION DISPLAY : System Description".

METER ILLUMINATION CONTROL

METER ILLUMINATION CONTROL : System Diagram

INFOID:0000000008280310



METER ILLUMINATION CONTROL : System Description

INFOID:0000000008280311

METER ILLUMINATION CONTROL FUNCTION

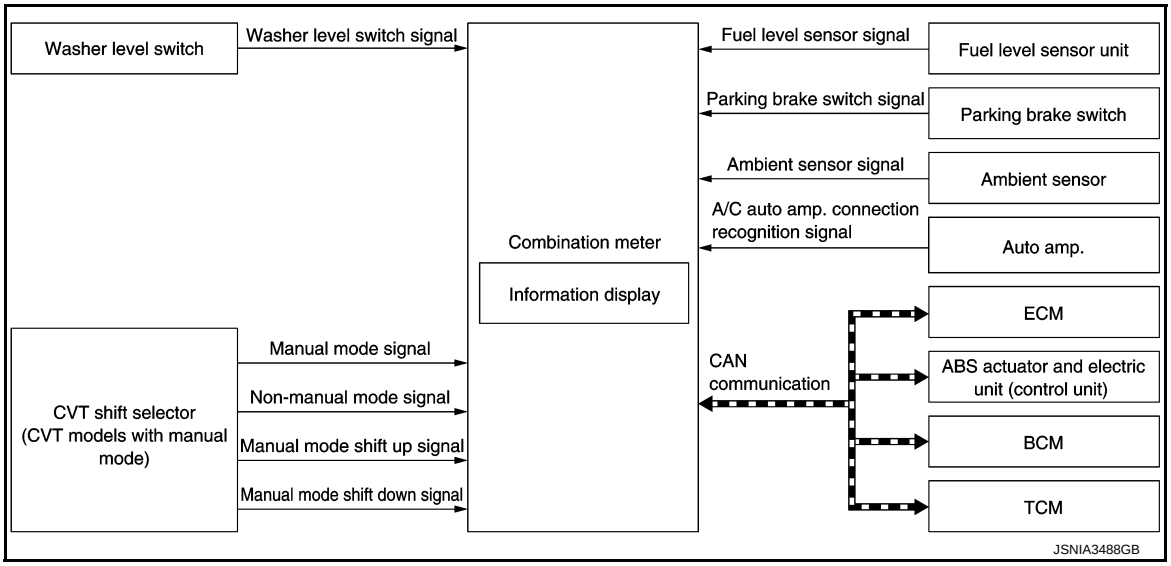
- Combination meter controls meter illumination, based on the following signal.
  - Position light request signal
- The operation of the illumination control switch allows the brightness adjustment of meter illumination.

Meter illumination	The number of adjustable steps
Daytime	Not adjustable
Nighttime	22 step

INFORMATION DISPLAY

INFORMATION DISPLAY : System Diagram

INFOID:0000000008280312



INFORMATION DISPLAY : System Description

INFOID:0000000008280313

DESCRIPTION

- The combination meter receives signals necessary for controlling the operation of the information display from each unit, sensor and switch.
- The combination meter incorporates a trip computer that displays the warning/information according to the information received from each unit, sensor and switch.
- The combination meter shows the following functions on the information display.

- Odo/trip meter
- Shift position indicator
- Clock
- Trip computer
- Interrupt indication
- Settings

ODO/TRIP METER

The combination meter calculates mileage, based on the following signals and displays the mileage on the information display.

Signal name	Signal path
Ignition signal	—
Vehicle speed signal	ABS actuator and electric unit (control unit) —CAN→ Combination meter

SHIFT POSITION INDICATOR

Manual Mode

WHEN OPERATED WITH CVT SHIFT SELECTOR

1. The combination meter receives the following signal and transmits the signal to TCM via CAN communication.

Signal name	Signal path
Manual mode signal	CVT shift selector → Combination meter (CAN) → TCM
Non-manual mode signal	
Manual mode shift up signal	
Manual mode shift down signal	

2. TCM judges a shift position, based on a signal received from the combination meter via CAN communication and transmits the following signals to the combination meter via CAN communication.

Signal name	Signal path
Shift position signal	TCM (CAN) → Combination meter

3. The combination meter activates the shift position indicator, and manual mode information, based on signals received from TCM via CAN communication.

WHEN OPERATED WITH PADDLE SHIFTER

1. The combination meter receives the following signal and transmits the signal to TCM via CAN communication.

Signal name	Signal path
Paddle shifter shift up signal	Paddle shifter → Combination meter (CAN) → TCM
Paddle shifter shift down signal	

2. TCM judges a shift position and manual mode information, based on a signal received from the combination meter via CAN communication and transmits the following signals to the combination meter via CAN communication.

Signal name	Signal path
Shift position signal	TCM (CAN) → Combination meter

3. The combination meter activates the shift position indicator based on signal received from TCM via CAN communication.

Non-manual Mode

- Combination meter inputs non-manual mode signal from CVT shift selector (manual mode switch), and transmits the signals to TCM with CAN communication line.
- TCM transmits shift position signal to combination meter with CAN communication line.
- Combination meter indicates shift position when receiving shift position signal.

TRIP COMPUTER

Current Fuel Consumption

The combination meter calculates current fuel consumption based on the following signals, and the calculated value is displayed on the information display.

Signal name	Signal path
Ignition signal	—
Fuel consumption monitor signal	ECM (CAN) → Combination meter
Vehicle speed signal	ABS actuator and electric unit (control unit) (CAN) → Combination meter

NOTE:

- Current fuel consumption on the information display is updated approximately every 0.1 seconds.
- Current fuel consumption on the information display shows 0 l/100km (0 mpg) when vehicle speed is 0 km/h (0 MPH).

Average Fuel Consumption

The combination meter calculates average fuel consumption based on the following signals, and the calculated value is displayed on the information display.

Signal name	Signal path
Ignition signal	—
Fuel consumption monitor signal	ECM —CAN→ Combination meter
Vehicle speed signal	ABS actuator and electric unit (control unit) —CAN→ Combination meter

NOTE:
- Average fuel consumption on the information display is updated approximately every 30 seconds.
- Soon after a reset or when the ignition switch is turned ON right after battery removal and installation, "–––" is displayed until after a travel of 30 seconds and approximately 500 m (0.31 mile).
- The numerical figure following after "ϕ" indicated on the vehicle information display shows average fuel consumption.

Range (Distance to Empty)

The combination meter calculates range based on the following signals, and the calculated value is displayed on the information display.

Signal name	Signal path
Ignition signal	—
Fuel level sensor signal	Fuel level sensor unit → Combination meter
Fuel consumption monitor signal	ECM —CAN→ Combination meter
Vehicle speed signal	ABS actuator and electric unit (control unit) —CAN→ Combination meter

NOTE:
- Distance to empty on the information display is updated approximately every 30 seconds.
- When the ignition switch is turned from OFF to ON, "–––" is displayed until after a travel of approximately 500 m (0.31 mile).
- The indicated values may not match each other when refueling with the ignition switch ON.

Average Vehicle Speed

The combination meter calculates average vehicle speed based on the following signals, and the calculated value is displayed on the information display.

Signal name	Signal path
Ignition signal	—
Vehicle speed signal	ABS actuator and electric unit (control unit) —CAN→ Combination meter

NOTE:
- Average vehicle speed on the information display is updated approximately every 30 seconds.
- Soon after a reset or when the ignition switch is turned ON right after battery removal and installation, "–––" is displayed until after a 30 seconds.

Elapsed Time

The combination meter measures and displays elapsed time (ignition switch ON time).

Driving Distance

The combination meter calculates mileage, based on the following signals and displays the mileage on the information display.

Signal name	Signal path
Ignition signal	—
Vehicle speed signal	ABS actuator and electric unit (control unit) CAN Combination meter

Outside Temperature
- The combination meter corrects an indicated temperature, based on various signals.
- The combination meter calculates outside temperature based on the following signals, and the calculated value is displayed on the information display.

Signal name	Signal path
Ignition signal	—
Ambient sensor signal	Ambient sensor Combination meter
Vehicle speed signal	ABS actuator and electric unit (control unit) CAN Combination meter

Correction Process (Temperature indicated soon after the ignition switch ON)
- A temperature indicated soon after the ignition switch is turned ON depends on the time from the ignition switch OFF to ON and a temperature detected by the ambient sensor.

When any condition described below is met, an ambient sensor-detected temperature is indicated.
- Time from the ignition switch OFF to ON ≥ Predetermined time
- Sensor-detected temperature < Temperature at the last ignition switch OFF

Correction Process (Temperature at the Ignition switch ON)
- A temperature indicated when the ignition switch is ON depends on a vehicle speed, an ambient sensor-detected temperature, and traveling time.

The temperature on the information display is corrected to an ambient sensor-detected temperature when the following condition is met.
- Ambient sensor-detected temperature < Temperature on the information display

A temperature on the information display is not updated when the following condition is met.
- Ambient sensor-detected temperature ≥ Temperature on the information display
- Vehicle speed ≤ 20 km/h (12 MPH)

A temperature on the information display slowly rises to an ambient sensor-detected temperature when the following condition is met.
- Ambient sensor-detected temperature ≥ Temperature on the information display
- Vehicle speed ≥ 20 km/h (12 MPH)

A temperature on the information display rapidly rises to an ambient sensor-detected temperature when the following condition is met.
- Ambient sensor-detected temperature ≥ Temperature on the information display
- Vehicle speed ≥ 20 km/h (12 MPH)
- When driving more than set time

NOTE:
- After an ignition switch is turned ON, "——" is displayed until after a 2.5 seconds.
- The ambient sensor input value that is displayed on "Data Monitor" of CONSULT is the value before the correction. It may not match the indicated temperature on the information display.
- After removal and installation of the battery and combination meter, an ambient sensor-detected temperature is indicated on the information display.
- Depending on engine heat or heat on the road surfaces, an ambient temperature may be indicated higher than actual one.

INTERRUPT INDICATION
- The combination meter displays an interrupt regarding a warning, alert, and maintenance on the information display, based on signals received from each unit and switch.
- When conditions are satisfied, the normal screen switches to a warning screen to display an interrupt.

Door Open Warning

- When all the following operating conditions are satisfied, the combination meter displays a door open warning on the information display by an interrupt.

Operating condition	
Ignition switch	ON
Door	Any door is open

- The combination meter judges showing/hiding of “door open warning”, according to the signals below:

Signal name	Signal path
Ignition signal	—
Door switch signal	Door switch → BCM —CAN→ Combination meter

Parking Brake Release Warning

- When all the following operating conditions are satisfied, the combination meter displays a parking brake release warning on the information display by an interrupt.

Operating condition	
Ignition switch	ON
Parking brake	Applied
Vehicle speed	7 km/h (4.3 MPH) or more

- The combination meter judges showing/hiding of “parking brake release warning”, according to the signals below:

Signal name	Signal path
Ignition signal	—
Parking brake switch signal	Parking brake switch → Combination meter
Vehicle speed signal	ABS actuator and electric unit (control unit) —CAN→ Combination meter

Low Fuel Warning

- When all the following operating conditions are satisfied, the combination meter displays a low fuel warning on the information display by an interrupt.

Operating condition	
Ignition switch	ON
Fuel remaining quantity*	Approximately 11.2 ℓ (3 US gal, 2-1/2 Imp gal) or less (including fuel remained)

*: With the vehicle in a horizontal position

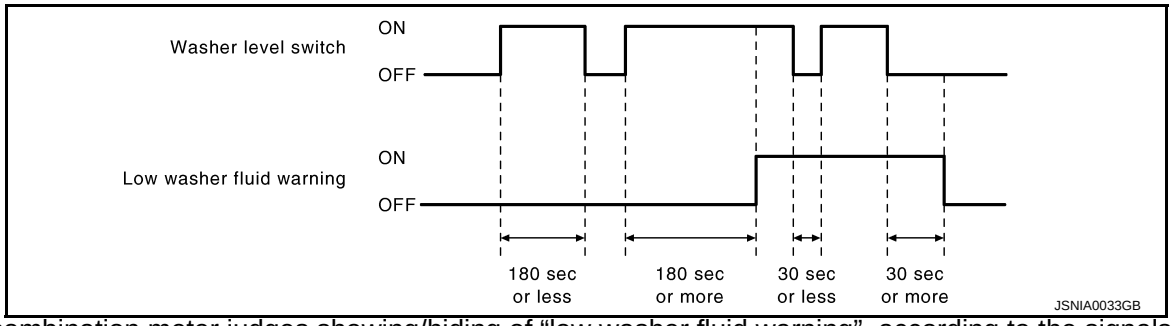
- The combination meter judges showing/hiding of “low fuel warning”, according to the signals below:

Signal name	Signal path
Ignition signal	—
Fuel level sensor signal	Fuel level sensor → Combination meter

Low washer fluid warning

- When all the following operating conditions are satisfied, the combination meter displays a low washer fluid warning on the information display by an interrupt.

Operating condition	
Ignition switch	ON
Washer level switch	Decrease in fluid level (washer level switch ON for 180 seconds or more)



- The combination meter judges showing/hiding of “low washer fluid warning”, according to the signals below:

Signal name	Signal path
Ignition signal	—
Washer level switch signal	Washer level switch → Combination meter

Low tire pressure warning

- The combination meter judges showing/hiding of “low tire pressure warning”, according to the signals below:

Signal name	Signal path
Ignition signal	—
Low tire pressure warning lamp signal	BCM —CAN→ Combination meter

- For further information, refer to WT-9, "System Description".

Fuel filler cap warning

- The combination meter judges showing/hiding of “fuel filler cap warning”, according to the signals below:

Signal name	Signal path
Ignition signal	—
Fuel filler cap warning display signal	ECM —CAN→ Combination meter

- For further information, refer to EC-93, "System Description".

Low Outside Temperature (Alert)

- When all the following operating conditions are satisfied, the combination meter displays a low ambient temperature on the information display by an interrupt.

Operating condition	
Ignition switch	ON
Ambient temperature	3 °C (37 °F) or less
information display	“ON” is selected in “SETTING”

- The combination meter judges showing/hiding of “low outside temperature”, according to the signals below:

Signal name	Signal path
Ignition signal	—
Ambient sensor signal	Ambient sensor → Combination meter

Driver Alert (Alert)

- When all the following operating conditions are satisfied, the combination meter displays a driver alert on the information display by an interrupt.

Operating condition	
Ignition switch	Switch-ON time

- The combination meter judges showing/hiding of “driver alert”, according to the signal below:

Signal name	Signal path
Ignition signal	—

Service (Maintenance)

- When all the following operating conditions are satisfied, the combination meter displays a service warning on the information display by an interrupt.

Operating condition	
Ignition switch	ON
Mileage	More than value set in “SETTING”

- The combination meter judges showing/hiding of “service warning”, according to the signals below:

Signal name	Signal path
Ignition signal	—
Vehicle speed signal	ABS actuator and electric unit (control unit) —CAN→ Combination meter

Tire (Maintenance)

- When all the following operating conditions are satisfied, the combination meter displays a tire warning on the information display by an interrupt.

Operating condition	
Ignition switch	ON
Mileage	More than value set in “SETTING”

- The combination meter judges showing/hiding of “tire warning”, according to the signals below:

Signal name	Signal path
Ignition signal	—
Vehicle speed signal	ABS actuator and electric unit (control unit) —CAN→ Combination meter

Other (Maintenance)

- When all the following operating conditions are satisfied, the combination meter displays a other warning on the information display by an interrupt.

Operating condition	
Ignition switch	ON
Mileage	More than value set in “SETTING”

• The combination meter judges showing/hiding of “other warning”, according to the signals below:

Signal name	Signal path
Ignition signal	—
Vehicle speed signal	ABS actuator and electric unit (control unit) CAN Combination meter

Meter Illumination Control Indication
The level of brightness is displayed by operating the illumination control switch on the meter.

SETTING

Warning indication timing, unit, language, and time can be set.

Clock
This function is used for adjusting the clock and switching the clock display between Show and Hide, in addition to the display method between 12 hours and 24 hours.

Setting item			Setting range	
Clock	Set clock		24 Hr	0:00 - 23:59
			12 Hr	0:00 - 11:59
	24/12 Hr	24 Hr	—	
		12 Hr	—	
	Clock ON/OFF	ON	—	
		OFF	—	

Units
Setting values for unit items can be adjusted to meet the user's needs.

Setting item		
Unit	Temperature	Deg C
		Deg F
	Dist. / Fuel	Miles, MPG
		km, l/100 km
		km, km/l

Maintenance
Setting values for service, tire, and other maintenance items can be adjusted to meet the user's needs.

Setting item		Setting range
Maintenance	Service	No setting, 500 km - 30,000 km (No setting, 250 mile - 18,500 mile)
	Tire	No setting, 500 km - 30,000 km (No setting, 250 mile - 18,500 mile)
	Other	No setting, 500 km - 30,000 km (No setting, 250 mile - 18,500 mile)

Alert
Setting values for travel time, and low ambient temperature can be adjusted to meet the user's needs.

Setting item		Setting range	Setting unit
Alert	Driver alert	No setting, 30 min - 360 min	30 min
	Outside temp (Low temp)	ON/OFF	—

Language

Setting values for language items can be adjusted to meet the user's needs.

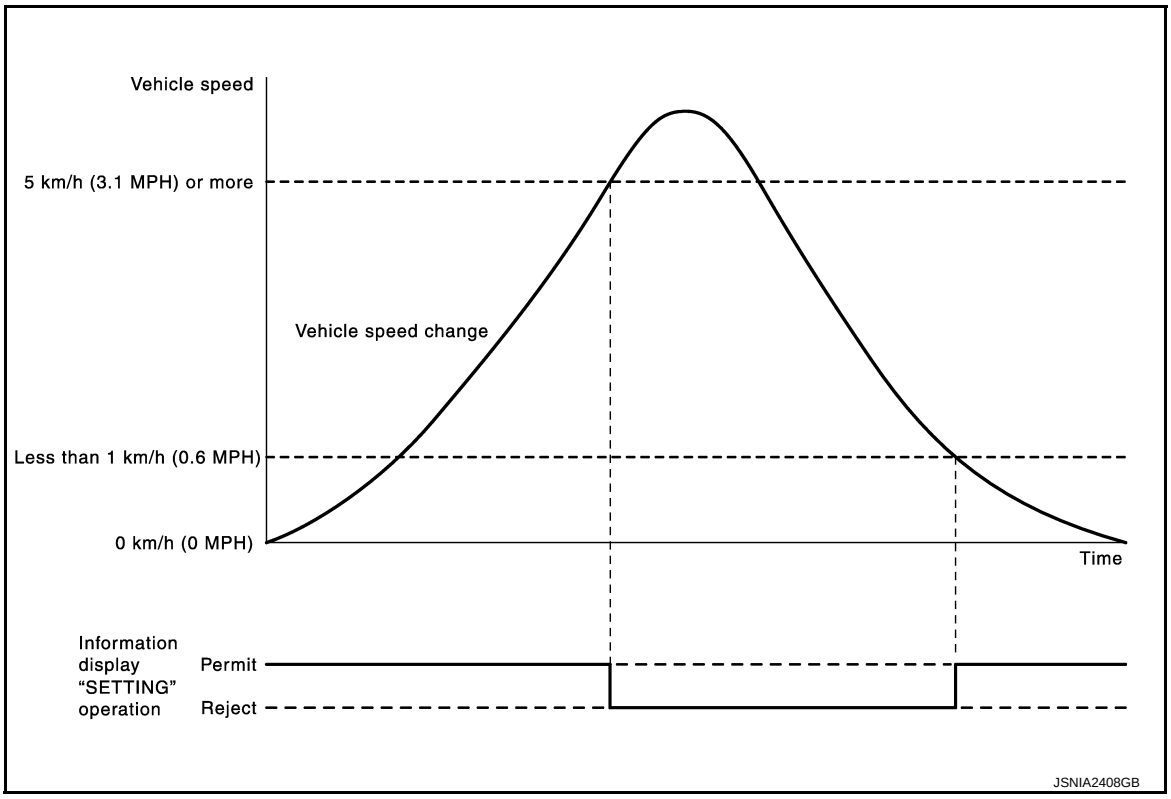
Setting item	
Language	English
	French
	Espanol

Factory
Settings can be reset.

Settings-reject Indication
- Regarding settings-reject indications, “SETTING CAN BE OPERATED WHEN STOPPED” is shown on the information display when indication conditions are satisfied.
- When reaching 5 km/h (3.1 MPH) after accelerating from a stopping condition, a settings-reject indication is displayed.
- When reaching less than 1 km/h (0.6 MPH) after decelerating from 5 km/h (3.1 MPH), a settings-reject indication is cancelled to allow settings.
- The combination meter judges a vehicle condition based on the following signals and displays a settings-reject indication on the information display.

Signal name	Signal path
Ignition signal	—
Vehicle speed signal	ABS actuator and electric unit (control unit) —CAN→ Combination meter

TIMING CHART



SYSTEM (COMPASS)

System Description

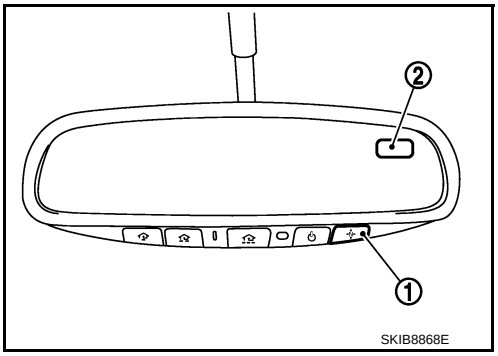
INFOID:0000000008280314

DESCRIPTION

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

Switch Operation

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



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

DIAGNOSIS SYSTEM (COMBINATION METER)

On Board Diagnosis Function

INFOID:0000000008280315

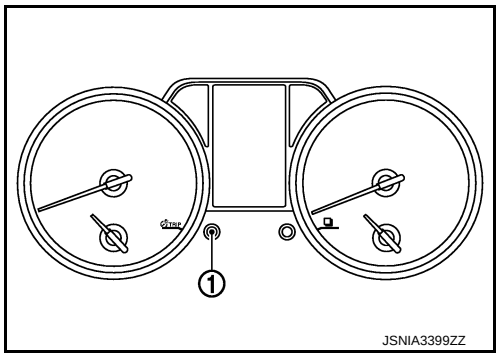
ON BOARD DIAGNOSIS ITEM

On board diagnosis allows the user to check the following items:

- Part number
- Meter drive circuits
- Meter readings recognized by the combination meter
- LCD [liquid crystal display] on the information display
- Lighting circuit of the warning lamp and the indicator lamp
- Internal circuit

METHOD OF STARTING

1. Turn ignition switch OFF.
2. Turn ON the ignition switch with the trip reset switch (1) pressed.



3. "TEST" is indicated in the top portion of the information display after a lapse of 6 seconds after the ignition switch is turned ON.
4. When the pressed trip reset switch is released within 3 seconds after the "TEST" indication, "WI code XX" is indicated in the top portion of the information display and On board diagnosis is started.
   NOTE:
   On board diagnosis does not start if the trip reset switch is pressed for 3 seconds or more.
5. The mode switches in the order shown below each time the trip reset switch is pressed.

Test order	Test item	Operation/Indication (Indicated in the top portion of Information Display)	Notes
1	Part No XXXXX	Part number is indicated.	—
2	Gauge sweep	Each gauge pointer sweeps.	• The pointers sweep for 10 seconds. • If any one of the pointers does not sweep, replace combination meter.
3	(All pixels illuminated)	All the dots of the information display illuminate.	If any dot does not illuminates, replace combination meter.
4	Telltales	All the warning lamps and indicator lamps turns ON.	If any one of the indicator lamps of warning lamps does not turn ON, replace combination meter.
5	ROM XXXX	"r XXXX" or "FAIL" is indicated.	If "FAIL" is indicated, replace combination meter.
6	N ROM XXXX	—	Not used
7	EE XX, FAIL	"EE XX" or "FAIL" is indicated.	If "FAIL" is indicated, replace combination meter.
8	Dtcs XXXXXX	—	Not used
9	Date XXXX	—	Not used
10	SCEM0 XX	—	Not used
11	SCEM1 XX	—	Not used
12	EprJmp XX	—	Not used
13	Market XX	—	Not used

Test order	Test item	Operation/Indication (Indicated in the top portion of Information Display)	Notes
14	TF a XXXX	—	Not used
15	TF b XXXX	—	Not used
16	OAT rad xxx	—	Not used
17	OAT xxx °C	—	Not used
18	DC Speed XXXX	—	Not used
19	Mph XXXXX	A vehicle speed signal value is indicated. (MPH)	• The “-----” indication means no signal reception. • The “99999” indication means the reception of an abnormal signal.
20	Kmh XXXXX	A vehicle speed signal value is indicated. (km/h)	• The “-----” indication means no signal reception. • The “99999” indication means the reception of an abnormal signal.
21	DC Tasho XXXX	—	Not used
22	Tacho XXXX	An engine speed signal value is indicated. (RPM)	The “-----” indication means no signal reception.
23	DC Fuel XXXX	—	Not used
24	Fuel rad XXX	A fuel gauge signal value is indicated.	• The “000” - “009” indications mean that the fuel gauge signal circuit is open. • The “010” - “254” indication mean that the fuel gauge signal circuit is normal. • The “255” indication means that the fuel gauge signal circuit is shorted. • “---” is indicated for 5 seconds.
25	Fuel % xxx	—	Not used
26	FPhyst xxx	—	Not used
27	DC Temp XXXX	—	Not used
28	Temp ect XXX	A water temperature signal value is indicated. (°C)	• The “--- C” indication means no signal reception. • The “999 C” indication means the reception of an abnormal signal.
29	Oil level xxxx	—	Not used
30	Batt XXX	—	Not used
31	Port A -XX	—	Not used
32	Port B -XX	—	Not used
33	Port C -XX	—	Not used
34	Port E -XX	—	Not used
35	Port L -XX	—	Not used
36	Port K -XX	—	Not used
37	Port M -XX	—	Not used
38	Port P -XX	—	Not used
39	Port S -XX	—	Not used
40	Port T -XX	—	Not used
41	Port U -XX	—	Not used
42	Port V -XX	—	Not used
43	Port W -XX	—	Not used
44	A00 XXX	—	Not used
45	A01 XXX	—	Not used
46	A02 XXX	—	Not used
47	A03 XXX	—	Not used

Test order	Test item	Operation/Indication (Indicated in the top portion of Information Display)	Notes
48	A04 XXX	—	Not used
49	A05 XXX	—	Not used
50	A06 XXX	—	Not used
51	A07 XXX	—	Not used
52	A08 XXX	—	Not used
53	A09 XXX	—	Not used
54	A10 XXX	—	Not used
55	A11 XXX	—	Not used
56	A12 XXX	—	Not used
57	A13 XXX	—	Not used
58	A14 XXX	—	Not used
59	A15 XXX	—	Not used
60	WI code XX	—	Not used

NOTE:
"X" in the table shows a variable.

CONSULT Function

INFOID:0000000008280316

CONSULT APPLICATION ITEMS

CONSULT can perform the following diagnosis modes via CAN communication and the combination meter.

System	Diagnosis mode	Description
METER/M&A	Self Diagnostic Result	The combination meter checks the conditions and displays memorized errors.
	Data Monitor	Displays the combination meter input/output data in real time.
	Warning History	Lighting history of the warning lamp and indicator lamp can be checked.

SELF DIAG RESULT

Refer to MWI-40, "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) via CAN communication. **NOTE:** 655.35 is displayed when the malfunction signal is received.
SPEED OUTPUT [km/h]	X	Vehicle speed signal value transmitted to other units via CAN communication. **NOTE:** 655.35 is displayed when the malfunction signal is received.
ODO OUTPUT [km/h or mph]		Odometer signal value transmitted to other units via CAN communication.
TACHO METER [rpm]	X	Value of the engine speed signal received from ECM via CAN communication. **NOTE:** 8191.875 is displayed when the malfunction signal is received.
FUEL METER [L]	X	Fuel level indicated on combination meter.

Display item [Unit]	MAIN SIGNALS	Description
W TEMP METER [°C]	X	Value of engine coolant temperature signal is received from ECM via CAN communication. **NOTE:** 215 is displayed when the malfunction signal is input.
ABS W/L [On/Off]		Status of ABS warning lamp detected from ABS warning lamp signal is received from ABS actuator and electric unit (control unit) via CAN communication.
VDC/TCS IND [On/Off]		Status of VDC OFF indicator lamp detected from VDC OFF indicator lamp signal is received from ABS actuator and electric unit (control unit) via CAN communication.
SLIP IND [On/Off]		Status of VDC warning lamp detected from VDC warning lamp signal received from ABS actuator and electric unit (control unit) via CAN communication.
BRAKE W/L [On/Off]		Status of brake warning lamp detected from brake warning lamp signal is received from ABS actuator and electric unit (control unit) via CAN communication. **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 open warning detected from door switch signal received from BCM via CAN communication.
TRUNK/GLAS-H [Off]		This item is displayed, but cannot be monitored.
HI-BEAM IND [On/Off]		Status of high beam indicator lamp detected from high beam request signal is received from BCM via CAN communication.
TURN IND [On/Off]		Status of turn indicator lamp detected from turn indicator signal is received from BCM via CAN communication.
FR FOG IND [On/Off]		This item is displayed, but cannot be monitored.
RR FOG IND [Off]		This item is displayed, but cannot be monitored.
LIGHT IND [On/Off]		Status of position lamp indicator lamp detected from position light request signal is received from BCM via CAN communication.
OIL W/L [On/Off]		Status of oil pressure warning lamp detected from oil pressure switch signal is received from BCM via CAN communication.
MIL [On/Off]		Status of malfunction indicator (Yellow) detected from malfunctioning indicator signal is received from ECM via CAN communication.
GLOW IND [Off]		This item is displayed, but cannot be monitored.
C-ENG2 W/L [Off]		This item is displayed, but cannot be monitored.
CRUISE IND [On/Off]		Status of CRUISE indicator detected from ASCD status signal is received from ECM via CAN communication.
SET IND [On/Off]		Status of SET indicator detected from ASCD status signal is received from ECM via CAN communication.
O/D OFF IND [On/Off]		Status of OD OFF indicator lamp detected from OD OFF indicator signal is received from TCM via CAN communication.
ATC/T-AMT W/L [Off]		This item is displayed, but cannot be monitored.
ATF TEMP W/L [Off]		This item is displayed, but cannot be monitored.
CVT IND [Off]		This item is displayed, but cannot be monitored.
4WD W/L [On/Off]		Status of AWD warning lamp judged from AWD warning lamp signal received from AWD control unit with CAN communication line.

Display item [Unit]	MAIN SIGNALS	Description
4WD LOCK IND [On/Off]		Status of AWD lock indicator lamp judged from mode lamp signal received from AWD control unit with CAN communication line.
FUEL W/L [On/Off]		Low fuel warning status detected by the identified fuel level.
WASHER W/L [On/Off]		Status of low washer fluid warning judged from washer level switch input to combination meter.
AIR PRES W/L [On/Off]		Status of low tire pressure warning judged from TPMS malfunction warning lamp signal received from BCM with CAN communication line.
KEY G/Y W/L [On/Off]		Status of Intelligent Key system malfunction detected from KEY/LOCK warning request signal is received from BCM via CAN communication.
KEY R W/L [Off]		This item is displayed, but cannot be monitored.
KEY KNOB W/L [Off]		This item is displayed, but cannot be monitored.
EPS W/L [On/Off]		Status of EPS warning lamp detected from EPS warning lamp signal is received from EPS control unit via CAN communication.
DDS* W/L [Off]		This item is displayed, but cannot be monitored.
SPORT MODE IND [On/Off]		Status of SPORT mode indicator lamp detected from SPORT mode switch signal is received from ECM via CAN communication.
DPF W/L [Off]		This item is displayed, but cannot be monitored.
TRAILER IND [Off]		This item is displayed, but cannot be monitored.
SHIFT IND [P, R, N, D, L, M1, M2, M3, M4, M5, M6]		Status of shift position indicator judged from shift position signal received from TCM with CAN communication line.
O/D OFF SW [On/Off]		Status of overdrive control switch.
M RANGE SW [On/Off]		Status of manual mode switch.
NM RANGE SW [On/Off]		Status of non-manual mode switch.
AT SFT UP SW [On/Off]		Status of manual mode shift up switch.
AT SFT DWN SW [On/Off]		Status of manual mode shift down switch.
ST SFT UP SW [On/Off]		Status of paddle shifter shift up switch.
ST SFT DWN SW [On/Off]		Status of paddle shifter shift down switch.
A/C LOW TEMP [Off]		This item is displayed, but cannot be monitored.
COMP F/B SIG [Off]		This item is displayed, but cannot be monitored.
PKB SW [On/Off]		Status of parking brake switch.
BUCKLE SW [On/Off]		Status of seat belt buckle switch (driver side).
BRAKE OIL SW [On/Off]		Status of brake fluid level switch.

Display item [Unit]	MAIN SIGNALS	Description
A/C AMP CONN [On/Off]		Status of A/C auto amp. connection recognition signal.
DISTANCE [km]		Value of distance to empty calculated by combination meter.
OUTSIDE TEMP [°C or °F]		Ambient temperature value converted from ambient sensor signal received from ambient sensor. **NOTE:** This may not match with the temperature value indicated on the information display. (Because the information display value is a corrected value from the ambient sensor input value.)
FUEL LOW SIG [On/Off]		Status of fuel level low warning signal to output to AV control unit via CAN communication.
SPORT MODE SW [On/Off]		Status of SPORT mode switch.
BUZZER [On/Off]	X	Buzzer status (in the combination meter) is detected from the buzzer output signal received from each unit via CAN communication and the warning output condition of the combination meter.
ASCD SPD BLNK [Off]		This item is displayed, but cannot be monitored.
ASCD STATUS [Off]		This item is displayed, but cannot be monitored.
ASCD REQ SPD [Off]		This item is displayed, but cannot be monitored.

*: DDS (hill descent control)

NOTE:

Some items are not available according to vehicle specification.

WARNING HISTORY

- Stores histories when warning/indicator lamp is turned on.
- “Warning History” indicates the “TIME” when the warning/ indicator lamp is turned on.
- The “TIME” above is:
- 0: The condition that the warning/indicator lamp has been turned on 1 or more times after starting the engine and waiting for 30 seconds.
- 1 - 39: The number of times the engine was restarted after the 0 condition.
- NO Warning History: Stores NO (0) turning on history of warning/indicator lamp.

NOTE:

- Warning History is not stored for approximately 30 seconds after the engine starts.
- Brake warning lamp does not store any history when the parking brake is applied or the brake fluid level gets low.

Display Item

Display item	Description
ABS W/L	Lighting history of ABS warning lamp.
VDC/TCS IND	Lighting history of VDC OFF indicator lamp.
SLIP IND	Lighting history of VDC warning lamp.
BRAKE W/L	Lighting history of brake warning lamp.
DOOR W/L	Lighting history of door open warning.
OIL W/L	Lighting history of oil pressure warning lamp.
C-ENG W/L	Lighting history of malfunction indicator lamp.
CRUISE IND	Lighting history of CRUISE indicator.
SET IND	Lighting history of SET indicator.
O/D OFF IND	Lighting history of OD OFF indicator lamp.

Display item	Description
4WD W/L	Lighting history of AWD warning lamp.
FUEL W/L	Lighting history of low fuel level warning.
WASHER W/L	Lighting history of low washer fluid warning.
AIR PRES W/L	Lighting history of low tire pressure warning lamp.
KEY G/Y W/L	Lighting history of Intelligent Key system malfunction.
EPS W/L	Lighting history of EPS warning lamp.

NOTE:
In items displayed on the CONSULT screen, only those listed in the above table are used.

ECU DIAGNOSIS INFORMATION

COMBINATION METER

Reference Value

INFOID:0000000008280317

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
SPEED METER [km/h]	Ignition switch ON	While driving	Input value of vehicle speed signal (CAN communication signal) **NOTE:** 655.35 is displayed when the malfunction signal is received
SPEED OUTPUT [km/h]	Ignition switch ON	While driving	Output value of vehicle speed signal (CAN communication signal) **NOTE:** 655.35 is displayed when the malfunction signal is received
ODO OUTPUT	Ignition switch ON	—	Output value of odometer signal (CAN communication signal)
TACHO METER [rpm]	Ignition switch ON	While driving	Input value of engine speed signal (CAN communication signal) **NOTE:** 8191.875 is displayed when the malfunction signal is received
FUEL METER [lit]	Ignition switch ON	—	Input value of fuel level sensor signal
W TEMP METER [°C]	Ignition switch ON	—	Input value of engine coolant temperature signal (CAN communication signal) **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	VDC OFF indicator lamp ON	On
		VDC OFF indicator lamp OFF	Off
SLIP IND	Ignition switch ON	VDC warning lamp ON	On
		VDC warning lamp OFF	Off
BRAKE W/L	Ignition switch ON	Brake warning lamp ON	On
		Brake warning lamp OFF	Off
DOOR W/L	Ignition switch ON	During door open warning indication	On
		Other than the above	Off
TRUNK/GLAS-H	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	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	**NOTE:** This item is displayed, but cannot be monitored.	Off

Monitor Item	Condition		Value/Status
RR FOG IND	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
LIGHT IND	Ignition switch ON	Position lamp indicator lamp ON	On
		Position 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 (Yellow) ON	On
		Malfunction indicator (Yellow) OFF	Off
GLOW IND	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
C-ENG2 W/L	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
CRUISE IND	Ignition switch ON	Cruise indicator ON	On
		Cruise indicator OFF	Off
SET IND	Ignition switch ON	SET indicator ON	On
		SET indicator OFF	Off
O/D OFF IND	Ignition switch ON	OD OFF indicator lamp ON	On
		OD OFF indicator lamp OFF	Off
ATC/T-AMT W/L	Ignition switch ON	A/T CHECK indicator lamp ON	On
		A/T CHECK indicator lamp OFF	Off
ATF TEMP W/L	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
CVT IND	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
4WD W/L	Ignition switch ON	AWD warning lamp ON	On
		AWD warning lamp OFF	Off
4WD LOCK IND	Ignition switch ON	AWD LOCK indicator lamp ON	On
		AWD LOCK indicator lamp OFF	Off
FUEL W/L	Ignition switch ON	During low fuel warning indication	On
		Other than the above	Off
WASHER W/L	Ignition switch ON	During low washer fluid warning indication	On
		Other than the above	Off
AIR PRES W/L	Ignition switch ON	Low tire pressure warning lamp ON	On
		Other than the above	Off
KEY G/Y W/L	Ignition switch ON	Intelligent Key system malfunction ON	On
		Intelligent Key system malfunction OFF	Off
KEY R W/L	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
KEY KNOB W/L	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
EPS W/L	Ignition switch ON	EPS warning lamp ON	On
		EPS warning lamp OFF	Off

Monitor Item	Condition		Value/Status
DDS W/L*	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
SPORT MODE IND	Ignition switch ON	SPORT mode indicator lamp ON	On
		SPORT mode indicator lamp OFF	Off
DPF W/L	Engine running	**NOTE:** This item is displayed, but cannot be monitored.	Off
TRAILER IND	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
SHIFT IND	Ignition switch ON	During the indication of “P” by shift position indicator	P
		During the indication of “R” by shift position indicator	R
		During the indication of “N” by shift position indicator	N
		During the indication of “D” by shift position indicator	D
		During the indication of “L” by shift position indicator	L
		During the indication of “M1” by shift position indicator	M1
		During the indication of “M2” by shift position indicator	M2
		During the indication of “M3” by shift position indicator	M3
		During the indication of “M4” by shift position indicator	M4
		During the indication of “M5” by shift position indicator	M5
		During the indication of “M6” by shift position indicator	M6
O/D OFF SW	Ignition switch ON	Overdrive control switch ON	On
		Overdrive control switch OFF	Off
M RANGE SW	Ignition switch ON	Selector lever in manual mode position	On
		Other than the above	Off
NM RANGE SW	Ignition switch ON	Selector lever in manual mode position	Off
		Other than the above	On
AT SFT UP SW	Ignition switch ON	Selector lever in + position	On
		Other than the above	Off
AT SFT DWN SW	Ignition switch ON	Selector lever in – position	On
		Other than the above	Off
ST SFT UP SW	Ignition switch ON	Paddle shifter in + position	On
		Other than the above	Off
ST SFT DWN SW	Ignition switch ON	Paddle shifter in – position	On
		Other than the above	Off
A/C LOW TEMP	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off

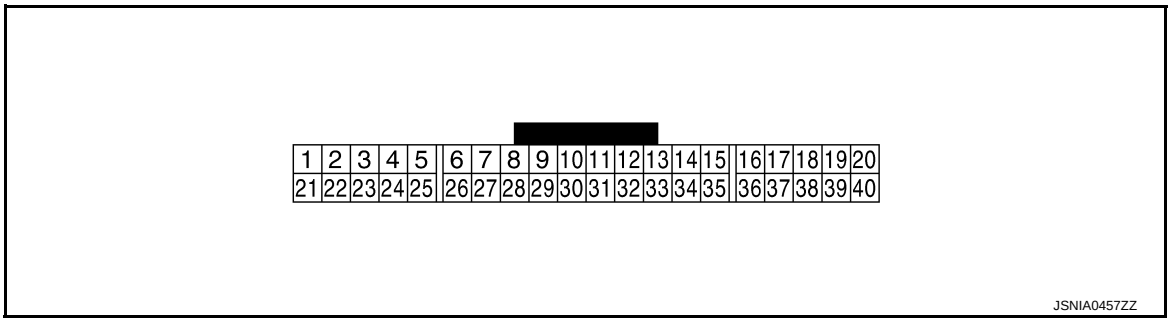
Monitor Item	Condition		Value/Status
COMP F/B SIG	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
PKB SW	Ignition switch ON	Parking brake switch ON	On
		Parking brake switch OFF	Off
BUCKLE SW	Ignition switch ON	Driver seat belt not fastened	On
		Driver seat belt fastened	Off
BRAKE OIL SW	Ignition switch ON	Brake fluid level switch ON	On
		Brake fluid level switch OFF	Off
A/C AMP CONN	Ignition switch ON	Other than the following	On
		Receives A/C auto amp. connection recognition signal	Off
DISTANCE [km]	Ignition switch ON	—	Distance to empty calculated by combination meter
OUTSIDE TEMP [°C or °F]	Ignition switch ON	—	Input value of ambient sensor signal (CAN communication signal) **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
SPORT MODE SW	Ignition switch ON	SPORT mode switch ON	On
		SPORT mode switch OFF	Off
BUZZER	Ignition switch ON	Buzzer ON	On
		Buzzer OFF	Off
ASCD SPD BLNK	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
ASCD STATUS	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
ASCD REQ SPD [km/h or Off]	Ignition switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off

*: DDS (hill descent control)

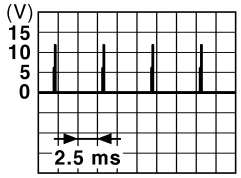
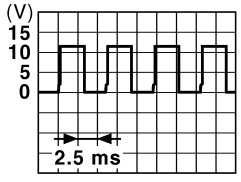
NOTE:

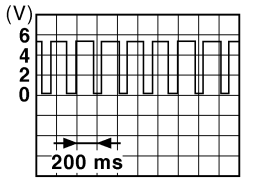
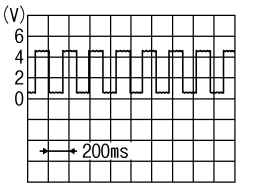
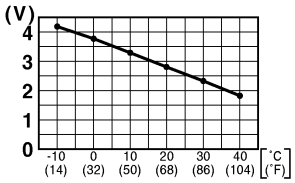
Some items are not available according to vehicle specification.

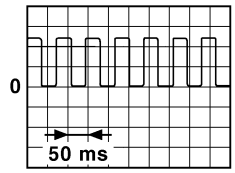
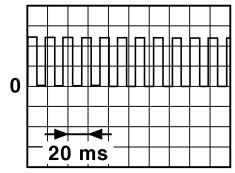
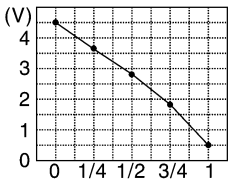
TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (LG)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
2 (BG)	Ground	Ignition signal	Input	Ignition switch ON	—	Battery voltage
3 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
4 (L)	Ground	SPORT mode switch signal	Input	Ignition switch ON	SPORT mode switch pressed	0 V
					SPORT mode switch not pressed	12 V
5 (BR)	Ground	A/C auto amp. connection recognition signal	Input	Ignition switch ON	When auto amp. is connected	5 V
					Other than the above	0 V
7 (GR)	Ground	Overdrive control switch signal	Input	Ignition switch ON	Overdrive control switch pressed	0 V
					Overdrive control switch not pressed	12 V
9 (L)	Ground	Paddle shifter shift up signal	Input	Ignition switch ON	Paddle shifter shift up operation	0 V
					Other than the above	12 V
10 (G)	Ground	Paddle shifter shift down signal	Input	Ignition switch ON	Paddle shifter shift down operation	0 V
					Other than the above	12 V
13 (Y)	Ground	Illumination control signal	Output	Ignition switch ON	• Lighting switch 1ST position • When meter illumination is maximum	 JPNIA1687GB
					• Lighting switch 1ST position • When meter illumination is step 11	 JPNIA1686GB
					• Lighting switch 1ST position • When meter illumination is minimum	12 V
15 (LG)	Ground	Air bag signal	Input	Ignition switch ON	Air bag warning lamp ON	4 V
					Air bag warning lamp OFF	0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
16 (W)	Ground	Engine coolant temperature signal	Output	Ignition switch ON	Engine idling [Approximately 20°C (68°F)]	 PKID0590E
					Engine idling [Approximately 80°C (176°F)]	 SKIB3651J
19 (BR)	Ground	Ambient sensor signal	Input	Ignition switch ON	—	 JSNIA0014GB
20 (SB)	Ground	Ambient sensor ground	—	Ignition switch ON	—	0 V
21 (L)	—	CAN-H	—	—	—	—
22 (P)	—	CAN-L	—	—	—	—
24 (B)	Ground	Fuel level sensor signal ground	—	Ignition switch ON	—	0 V
25 (SB)	Ground	Alternator signal	Input	Ignition switch ON	Charge warning lamp ON	0 V
					Charge warning lamp OFF	12 V
26 (V)	Ground	Parking brake switch signal	Input	Ignition switch ON	Parking brake ON	0 V
					Parking brake OFF	5 V
27 (BR)	Ground	Brake fluid level switch signal	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 OFF	Security warning lamp ON	0 V
					Security warning lamp OFF	12 V
29 (W)	Ground	Washer level switch signal	Input	Ignition switch OFF	Washer level switch ON	0 V
					Washer level switch OFF	12 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
30 (Y)	Ground	Vehicle speed signal (2-pulse)	Output	Ignition switch ON	Speedometer operated [When vehicle speed is approx. 40 km/h (25 MPH)]	**NOTE:** The maximum voltage varies depending on the specification (destination unit).  JSNIA0015GB
31 (L)	Ground	Vehicle speed signal (8-pulse)	Output	Ignition switch ON	Vehicle speed is approximately 40 km/h (25 MPH)	**NOTE:** The maximum voltage varies depending on the specification (destination unit).  JSNIA0012GB
34 (G)	Ground	Fuel level sensor signal	Input	Ignition switch ON	—	 JSNIA3463ZZ
35 (BG)	Ground	Seat belt buckle switch signal (driver side)	Input	Ignition switch ON	When driver seat belt is fastened	12 V
					When driver seat belt is not fastened	0 V
36 (G)	Ground	Seat belt buckle switch signal (passenger side)	Input	Ignition switch ON	• When getting in the passenger seat • When passenger seat belt is fastened	12 V
					• When getting in the passenger seat • When passenger seat belt is not fastened	0 V
37 (P)	Ground	Non-manual mode signal	Input	Ignition switch ON	Manual mode	12 V
					Other than the above	0 V
38 (BG)	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 signal	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

Fail-safe

INFOID:0000000008280318

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

Function			Specifications
Speedometer			Reset to zero by suspending communication.
Tachometer			
Engine coolant temperature gauge			
Meter illumination control			When suspending communication, changes to nighttime mode.
Buzzer			Turned off by suspending communication.
Information display	Trip computer	Current fuel consumption	• When reception time of an abnormal signal is 2 seconds or less, the last received datum is used for calculation to indicate the result. • When reception time of an abnormal signal is more than 2 seconds, the last result calculated during normal condition is indicated.
		Average fuel consumption	
		Average vehicle speed	
		Range (Distance to empty)	
		Driving distance	An indicated value is maintained at communications blackout.
	Interrupt indication	Door open warning	The indicator turns OFF by suspending communication.
		Low tire pressure warning	
		Fuel filler cap warning	
	Odo/trip meter		An indicated value is maintained at communications blackout.
	Shift position indicator		The indicator turns OFF by suspending communication.
Warning lamp/ indicator lamp	ABS warning lamp		Turned on by suspending communication.
	Brake warning lamp		
	EPS warning lamp		
	VDC warning lamp		
	AWD warning lamp		
	Malfunction indicator lamp		
	VDC OFF indicator lamp		Turned off by suspending communication.
	SPORT mode indicator lamp		
	AWD LOCK indicator lamp		
	Oil pressure warning lamp		
	High beam indicator lamp		
	Turn signal indicator lamp		
	Position lamp indicator lamp		
	A/T CHECK indicator lamp		
	OD OFF indicator lamp		
	Low tire pressure warning lamp		After blinking for 1 minute, the lamp remains ON.

DTC Index

INFOID:0000000008280319

Display contents of CONSULT	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-50
CONTROL UNIT (CAN) [U1010]	CRNT, 1 - 39	Detecting error during the initial diagnosis of CAN controller of combination meter.	MWI-51
VEHICLE SPEED [B2205]	CRNT, 1 - 39	The abnormal vehicle speed signal is input from ABS actuator and electric unit (control unit) for 2 seconds or more.	MWI-52
ENGINE SPEED [B2267]	CRNT, 1 - 39	ECM continuously transmits abnormal engine speed signals for 2 seconds or more.	MWI-53
WATER TEMP [B2268]	CRNT, 1 - 39	ECM continuously transmits abnormal engine coolant temperature signals for 60 seconds or more.	MWI-54

IPDM E/R

List of ECU Reference

INFOID:0000000008280320

ECU	Reference
IPDM E/R	PCS-16, "Reference Value"
	PCS-23, "Fail-safe"
	PCS-25, "DTC Index"

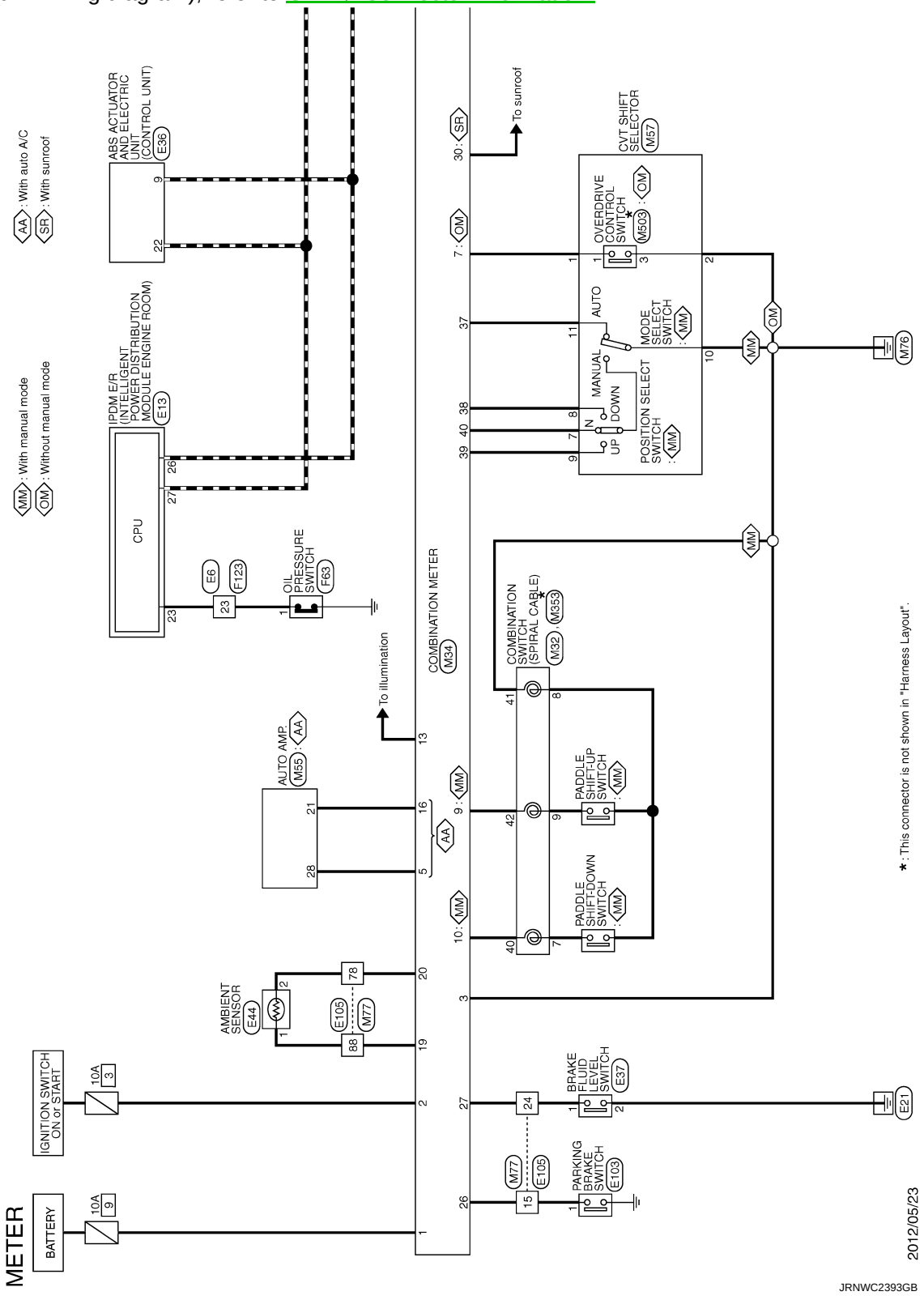
WIRING DIAGRAM

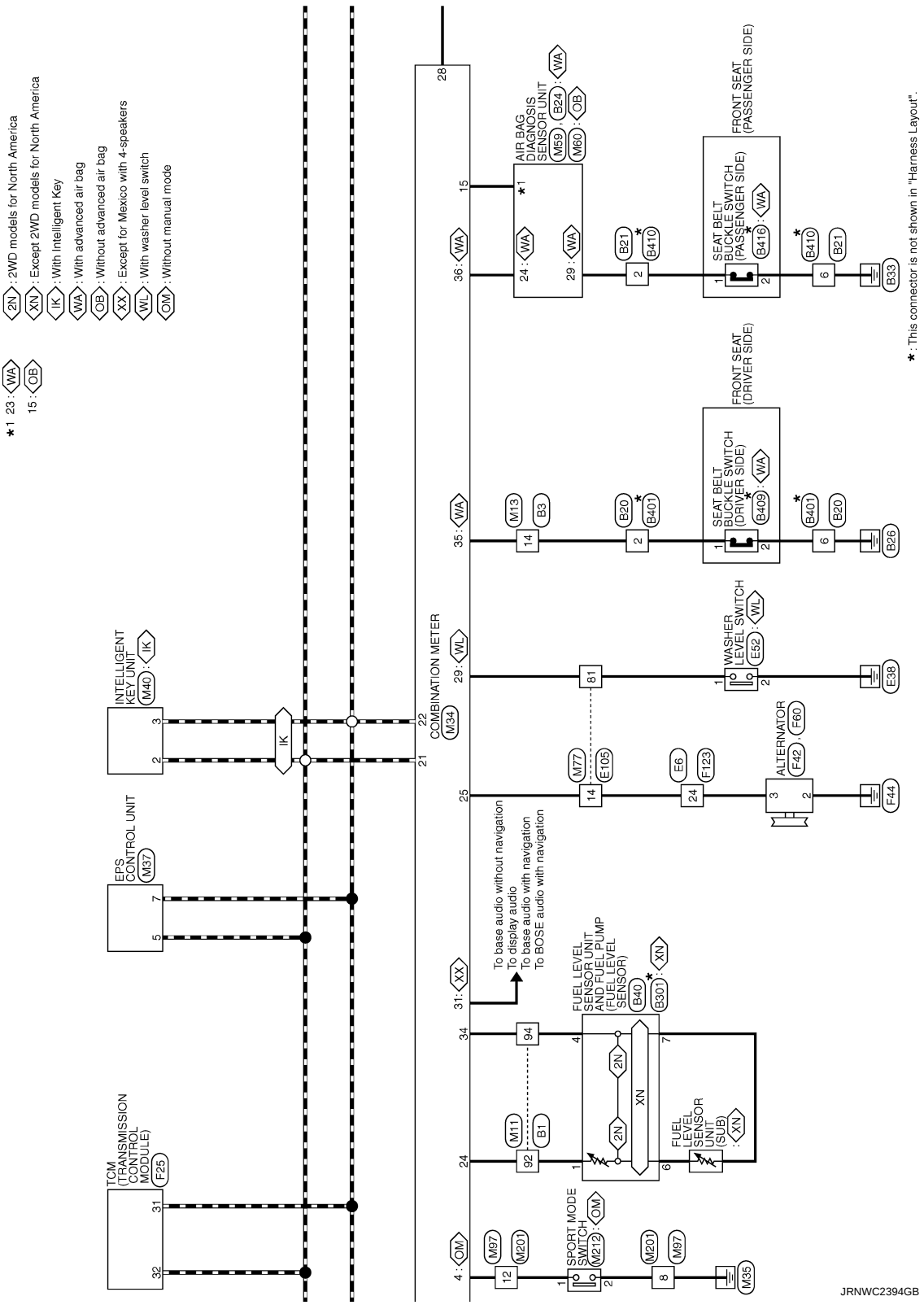
METER SYSTEM

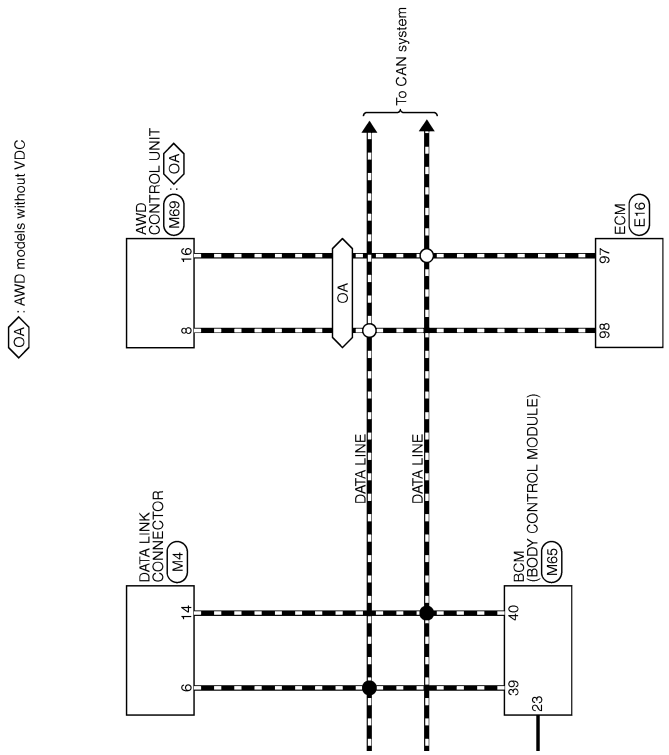
Wiring Diagram

INFOID:0000000008280321

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".




2N : 2WD models for North America
XN : Except 2WD models for North America
IK : With Intelligent Key
WA : With advanced air bag
OB : Without advanced air bag
XX : Except for Mexico with 4-speakers
WL : With washer level switch
OM : Without manual mode
*1 23 : WA
15 : OB
TCM (TRANSMISSION CONTROL MODULE) F25
EPS CONTROL UNIT M37
INTELLIGENT KEY UNIT M40 : IK
COMBINATION METER M34
AIR BAG DIAGNOSIS SENSOR UNIT M59 : B24 : WA, M60 : OB
SEAT BELT BUCKLE SWITCH (PASSENGER SIDE) B416 : WA
FRONT SEAT (PASSENGER SIDE)
SEAT BELT BUCKLE SWITCH (DRIVER SIDE) B409 : WA
FRONT SEAT (DRIVER SIDE)
WASHER LEVEL SWITCH E52 : WL
ALTERNATOR F42 : F60
FUEL LEVEL SENSOR UNIT AND FUEL PUMP (FUEL LEVEL SENSOR) B40 : B301 : XN
FUEL LEVEL SENSOR UNIT (SUB) : XN
SPORT MODE SWITCH M212 : OM
To base audio without navigation
To display audio
To base audio with navigation
To BOSE audio with navigation
IK
*: This connector is not shown in "Harness Layout".
JRNWC2394GB



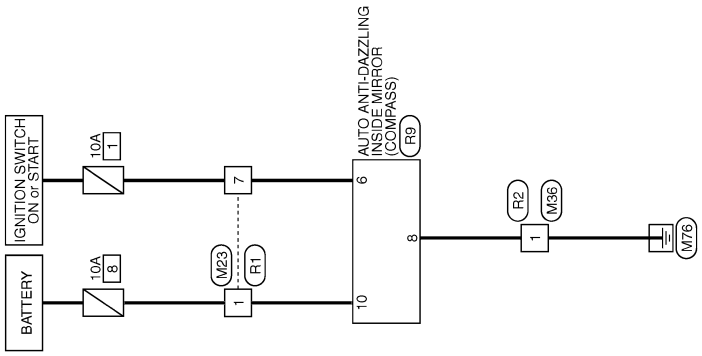
JRNWC2395GB

COMPASS

Wiring Diagram

INFOID:0000000008280322

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".



COMPASS

2012/05/23

JRNWC2396GB

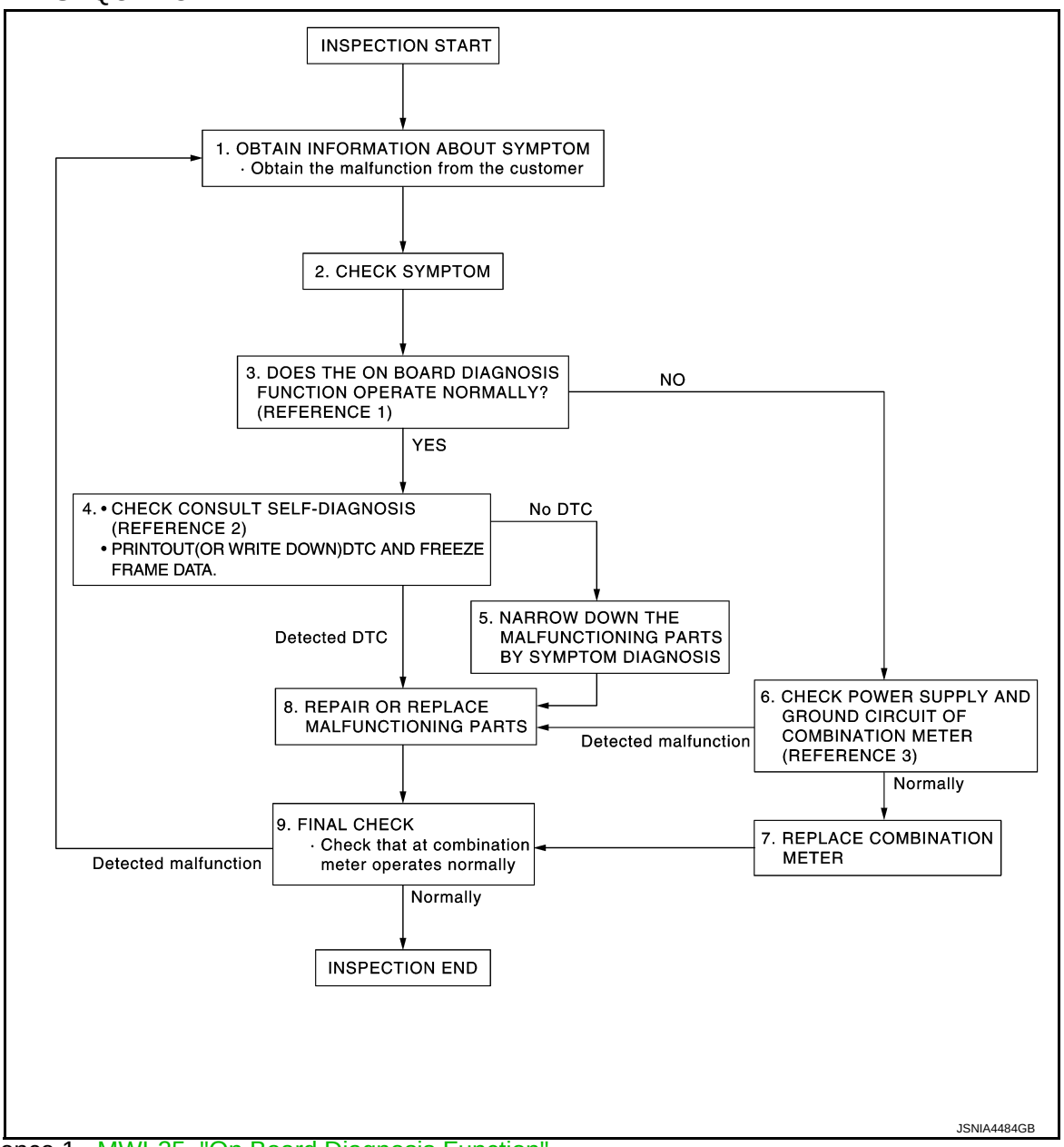
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW (METER SYSTEM)

Work flow

INFOID:0000000008280323

OVERALL SEQUENCE



- Reference 1···MWI-25, "On Board Diagnosis Function".
- Reference 2···MWI-40, "DTC Index".
- Reference 3···MWI-55, "COMBINATION METER : Diagnosis Procedure".

DETAILED FLOW

1.OBTAIN INFORMATION ABOUT SYMPTOM

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

>> GO TO 2.

2.CHECK SYMPTOM

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

>> GO TO 3.

3.CHECK ON BOARD DIAGNOSIS OPERATION

Check that the on board diagnosis function operates. Refer to MWI-25, "On Board Diagnosis Function".

Does the on board diagnosis function operate normally?

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

4.CHECK CONSULT SELF-DIAGNOSIS RESULTS

1. Connect CONSULT and perform self-diagnosis. Refer to MWI-40, "DTC Index".
2. When DTC is detected, follow the instructions below:

- Record DTC and Freeze Frame Data.

Are self-diagnosis results normal?

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

5.NARROW DOWN THE MALFUNCTIONING PARTS BY SYMPTOM DIAGNOSIS

Perform symptom diagnosis and narrow down the malfunctioning parts.

>> GO TO 8.

6.CHECK COMBINATION METER POWER SUPPLY AND GROUND CIRCUITS

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

Is inspection result OK?

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

7.REPLACE COMBINATION METER

Replace combination meter.

>> GO TO 9.

8.REPAIR OR REPLACE MALFUNCTIONING PARTS

Repair or replace the malfunctioning parts.

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

>> GO TO 9.

9.FINAL CHECK

Check that the combination meter operates normally.

Do they operate normally?

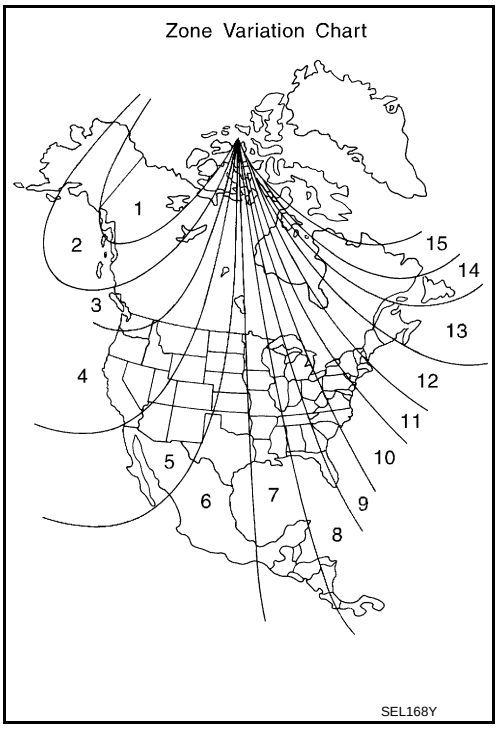
YES >> INSPECTION END
NO >> GO TO 1.

ZONE VARIATION SETTING (COMPASS)

Work Procedure

INFOID:0000000008280324

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



CALIBRATION (COMPASS)

Work Procedure

INFOID:0000000008280325

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

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

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

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000008280326

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-26, "CAN Communication Signal Chart".

DTC Logic

INFOID:0000000008280327

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	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:0000000008280328

1.PERFORM SELF DIAGNOSTIC

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

Is “CAN COMM CIRCUIT” displayed?

YES >> Refer to LAN-16, "Trouble Diagnosis Flow Chart".
NO >> Refer to GI-46, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000008280329

Initial diagnosis of combination meter.

DTC Logic

INFOID:0000000008280330

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	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:0000000008280331

1.REPLACE COMBINATION METER

When DTC “U1010” is detected, replace combination meter.

>> INSPECTION END

B2205 VEHICLE SPEED

Description

INFOID:0000000008280332

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

DTC Logic

INFOID:0000000008280333

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	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.	• Wheel sensor • ABS actuator and electric unit (control unit)

Diagnosis Procedure

INFOID:0000000008280334

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-15, "CONSULT Function" (Without VDC system)
• BRC-94, "CONSULT Function" (With VDC system)

B2267 ENGINE SPEED

Description

INFOID:0000000008280335

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

DTC Logic

INFOID:0000000008280336

DTC DETECTION LOGIC

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

Diagnosis Procedure

INFOID:0000000008280337

1.PERFORM SELF DIAGNOSIS OF ECM

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

>> • EC-106, "CONSULT Function" (EXCEPT FOR MEXICO)
• EC-542, "CONSULT Function" (FOR MEXICO)

B2268 WATER TEMP

Description

INFOID:0000000008280338

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

DTC Logic

INFOID:0000000008280339

DTC DETECTION LOGIC

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

Diagnosis Procedure

INFOID:0000000008280340

1.PERFORM SELF DIAGNOSIS OF ECM

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

>> • EC-106, "CONSULT Function" (EXCEPT FOR MEXICO)
• EC-542, "CONSULT Function" (FOR MEXICO)

POWER SUPPLY AND GROUND CIRCUIT
COMBINATION METER

COMBINATION METER : Diagnosis Procedure

INFOID:0000000008280341

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 and ground.

Terminals			Ignition switch position	
(+)		(–)		
Combination meter			OFF	ON
Connector	Terminal			
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 and ground.

Combination meter		Ground	Continuity
Connector	Terminal		
M34	3		Existed

Is the inspection result normal?

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

FUEL LEVEL SENSOR SIGNAL CIRCUIT

Component Function Check

INFOID:0000000008280342

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	Monitor value [lit]	
	For Mexico	Except for Mexico
1	Approx. 60	Approx. 54
3/4	Approx. 46	Approx. 42
1/2	Approx. 32	Approx. 30
1/4	Approx. 18	Approx. 18
0	Approx. 4	Approx. 5

Does monitor value match fuel gauge reading?

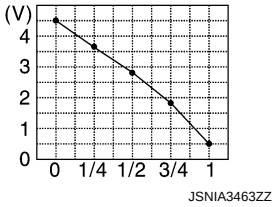
YES >> INSPECTION END
NO >> Replace combination meter.

Diagnosis Procedure

INFOID:0000000008280343

1.CHECK COMBINATION METER INPUT SIGNAL

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

Terminals			Voltage (Approx.)
(+)		(–)	
Combination meter			
Connector	Terminal		
M34	34	Ground	

JSNIA3463ZZ

Does it match fuel gauge reading?

YES >> Replace the combination meter. Refer to MWI-70, "Removal and Installation".
NO >> GO TO 2.

2.CHECK FUEL LEVEL SENSOR UNIT (MAIN) 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 and fuel level sensor unit (main) harness connector.

Combination meter		Fuel level sensor unit (main)		Continuity
Connector	Terminal	Connector	Terminal	
M34	34	B40	4	Existed

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

Combination meter		Ground	Continuity
Connector	Terminal		
M34	34		Not existed

Is the inspection result normal?

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

3.CHECK FUEL LEVEL SENSOR UNIT GROUND CIRCUIT

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

Fuel level sensor unit (main)		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	
B40	1	M34	24	Existed

Is the inspection result normal?

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

Component Inspection

INFOID:0000000008280344

2WD MODELS FOR NORTH AMERICA

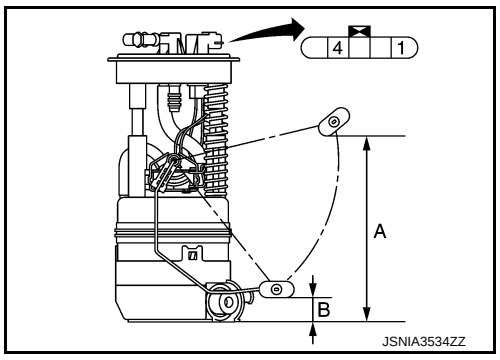
1.REMOVE FUEL LEVEL SENSOR UNIT (MAIN)

Remove the fuel level sensor unit (main). Refer to FL-7, "2WD : Removal and Installation".

>> GO TO 2.

2.CHECK FUEL LEVEL SENSOR UNIT (MAIN)

Check the resistance between fuel level sensor unit and fuel pump.



Terminals		Condition	Resistance (Ω) (Approx.)	Height [mm (in)]
Fuel level sensor unit (main)				
1	4	Full* (A)	5	178.4 (7.02)
		Empty* (B)	81.5	36.2 (1.425)

*: When float rod is contact with stopper.

Is inspection result OK?

YES >> INSPECTION END
NO >> Replace fuel level sensor unit and fuel pump (main). Refer to FL-7, "2WD : Removal and Installation".

4WD MODELS FOR NORTH AMERICA

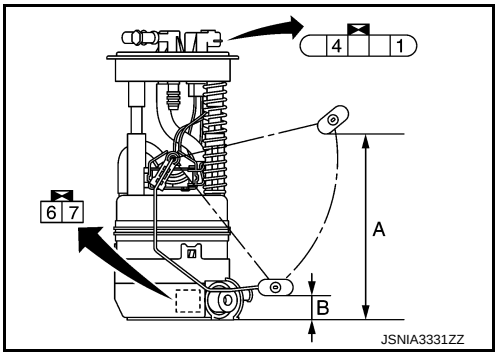
1.REMOVE FUEL LEVEL SENSOR UNIT (MAIN)

Remove the fuel level sensor unit (main). Refer to FL-11, "AWD : Removal and Installation".

>> GO TO 2.

2.CHECK FUEL LEVEL SENSOR UNIT (MAIN)

Check the resistance between fuel level sensor unit and fuel pump.



Terminals		Condition	Resistance (Ω) (Approx.)	Height [mm (in)]
Fuel level sensor unit (main)				
6	1	Full* (A)	2.4	186.3 (7.33)
		Empty* (B)	79	36.3 (1.429)
4	7	—	0	—

*: When float rod is contact with stopper.

Is inspection result OK?

YES >> GO TO 3.
NO >> Replace fuel level sensor unit and fuel pump (main). Refer to FL-11, "AWD : Removal and Installation".

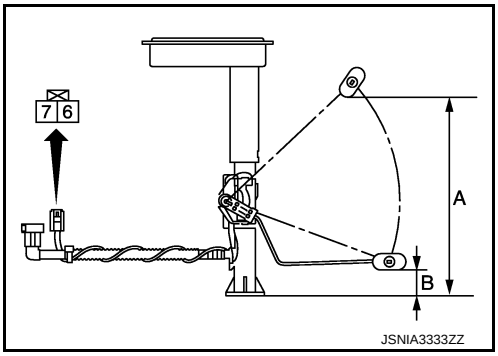
3.REMOVE FUEL LEVEL SENSOR UNIT (SUB)

Remove the fuel level sensor unit (sub). Refer to FL-11, "AWD : Removal and Installation".

>> GO TO 4.

4.CHECK FUEL LEVEL SENSOR UNIT (SUB)

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



Terminals		Condition	Resistance (Ω) (Approx.)	Height [mm (in)]
Fuel level sensor unit (sub)				
7	6	Full* (A)	2.4	188 (7.4)
		Empty* (B)	39	31.5 (1.24)

*: When float rod is contact with stopper.

Is inspection result OK?

YES >> INSPECTION END
NO >> Replace fuel level sensor unit (sub). Refer to FL-11, "AWD : Removal and Installation".

FOR MEXICO

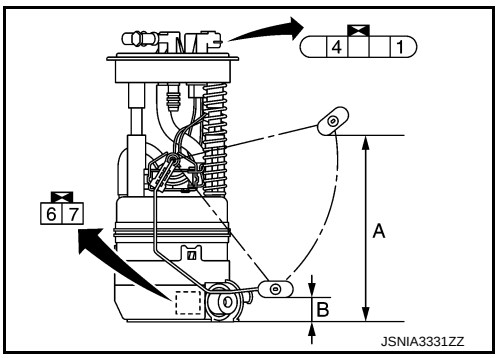
1.REMOVE FUEL LEVEL SENSOR UNIT (MAIN)

Remove the fuel level sensor unit (main). Refer to FL-28, "Removal and Installation".

>> GO TO 2.

2.CHECK FUEL LEVEL SENSOR UNIT (MAIN)

Check the resistance between fuel level sensor unit and fuel pump.



Terminals		Condition	Resistance (Ω) (Approx.)	Height [mm (in)]
Fuel level sensor unit (main)				
6	1	Full* (A)	2.4	187.8 (7.39)
		Empty* (B)	79	30.6 (1.205)
4	7	—	0	—

*: When float rod is contact with stopper.

Is inspection result OK?

YES >> GO TO 3.
NO >> Replace fuel level sensor unit and fuel pump (main). Refer to FL-28, "Removal and Installation".

3.REMOVE FUEL LEVEL SENSOR UNIT (SUB)

Remove the fuel level sensor unit (sub). Refer to FL-28, "Removal and Installation".

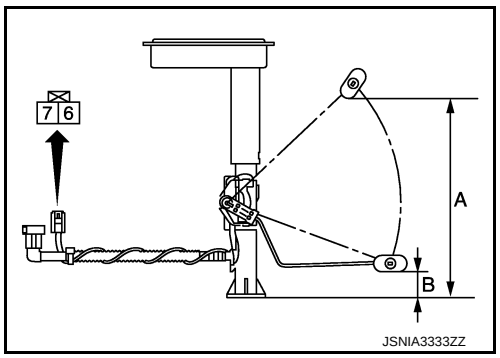
>> GO TO 4.

4.CHECK FUEL LEVEL SENSOR UNIT (SUB)

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

Terminals		Condition	Resistance (Ω) (Approx.)	Height [mm (in)]
Fuel level sensor unit (sub)				
7	6	Full* (A)	2.4	187.8 (7.39)
		Empty* (B)	47	30.6 (1.205)

*: When float rod is contact with stopper.



Is inspection result OK?

YES >> INSPECTION END
NO >> Replace fuel level sensor unit (sub). Refer to FL-28, "Removal and Installation".

OIL PRESSURE SWITCH SIGNAL CIRCUIT

Component Function Check

INFOID:0000000008280345

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:0000000008280346

1.CHECK OIL PRESSURE SWITCH CIRCUIT

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

Terminals				Continuity
(+)		(–)		
IPDM E/R		Oil pressure switch		
Connector	Terminal	Connector	Terminal	
E13	23	F63	1	Existed

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

Terminals			Continuity
(+)		(–)	
IPDM E/R		Ground	
Connector	Terminal		
E13	23		Not existed

Is the inspection result normal?

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

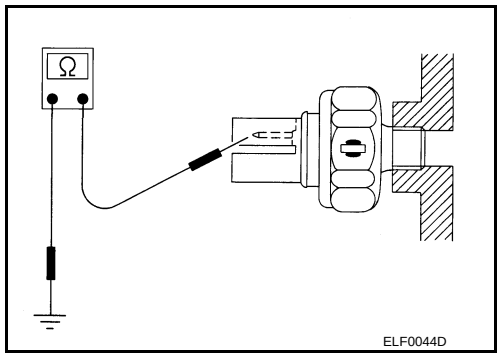
Component Inspection

INFOID:0000000008280347

1.CHECK OIL PRESSURE SWITCH

Check continuity between oil pressure switch and ground.

Condition	Continuity
Engine stopped	Existed
Engine running	Not existed



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace oil pressure switch.

AMBIENT SENSOR SIGNAL CIRCUIT

Diagnosis Procedure

INFOID:0000000008280348

1.CHECK AMBIENT SENSOR CIRCUIT

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

Terminals				Continuity
(+)		(–)		
Combination meter		Ambient sensor		
Connector	Terminal	Connector	Terminal	
M34	19	E44	1	Existed

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

Terminals			Continuity
(+)		(–)	
Combination meter		Ground	
Connector	Terminal		
M34	19		Not existed

Is the inspection result normal?

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

2.CHECK AMBIENT SENSOR GROUND CIRCUIT

Check continuity between combination meter harness connector and ambient sensor harness connector.

Terminals				Continuity
(+)		(–)		
Combination meter		Ambient sensor		
Connector	Terminal	Connector	Terminal	
M34	20	E44	2	Existed

Is the inspection result normal?

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

Component Inspection

INFOID:0000000008280349

Refer to HAC-52, "Component Inspection".

A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL CIRCUIT

Diagnosis Procedure

INFOID:0000000008280350

1.CHECK A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL

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

Terminals			Voltage (Pyrex.)
(+)		(–)	
Combination meter		Ground	
Connector	Terminal		
M34	5		5 V

Is the inspection result normal?

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

2.CHECK A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL CIRCUIT

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

Combination meter		Auto amp.		Continuity
Connector	Terminal	Connector	terminal	
M34	5	M55	28	Existed

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

Combination meter		Ground	Continuity
Connector	Terminal		
M34	5		Not existed

Is the inspection result normal?

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

SYMPTOM DIAGNOSIS

THE FUEL GAUGE DOES NOT MOVE

Description

INFOID:0000000008280351

Fuel gauge does not move from a certain position.

Diagnosis Procedure

INFOID:0000000008280352

2WD MODELS FOR NORTH AMERICA

1.CHECK COMBINATION METER INPUT SIGNAL

Connect CONSULT and check the combination meter input signal. Refer to MWI-56, "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-56, "Diagnosis Procedure".

Is the inspection result normal?

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

3.CHECK FUEL LEVEL SENSOR UNIT

Perform a unit check for the fuel level sensor unit. Refer to MWI-57, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace fuel level sensor unit. Refer to FL-7, "2WD : Removal and Installation".

4.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.

AWD MODELS FOR NORTH AMERICA

1.CHECK COMBINATION METER INPUT SIGNAL

Connect CONSULT and check the combination meter input signal. Refer to MWI-56, "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-56, "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-57, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace fuel level sensor unit (main). Refer to FL-11, "AWD : Removal and Installation".

4.CHECK FUEL LEVEL SENSOR UNIT (SUB)

Perform a unit check for the fuel level sensor unit (sub). Refer to MWI-57, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace fuel level sensor unit (sub). Refer to FL-11, "AWD : Removal and Installation".

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.

FOR MEXICO

1.CHECK COMBINATION METER INPUT SIGNAL

Connect CONSULT and check the combination meter input signal. Refer to MWI-56, "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-56, "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-57, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace fuel level sensor unit (main). Refer to FL-28, "Removal and Installation".

4.CHECK FUEL LEVEL SENSOR UNIT (SUB)

Perform a unit check for the fuel level sensor unit (sub). Refer to MWI-57, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace fuel level sensor unit (sub). Refer to FL-28, "Removal and Installation".

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

Description

INFOID:0000000008280353

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

Diagnosis Procedure

INFOID:0000000008280354

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-60, "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-60, "Component Inspection".

Is the inspection result normal?

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

THE OIL PRESSURE WARNING LAMP DOES NOT TURN OFF

Description

INFOID:0000000008280355

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

Diagnosis Procedure

INFOID:0000000008280356

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 and ground.

Terminals			Voltage (Approx.)
(+)		(–)	
Oil pressure switch			
Connector	Terminal		
F63	1	Ground	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-60, "Component Inspection".

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-60, "Diagnosis Procedure".

Is the inspection result normal?

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

THE AMBIENT TEMPERATURE DISPLAY IS INCORRECT

Description

INFOID:0000000008280357

- 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:0000000008280358

NOTE:
Check that the symptom is not applicable to the normal operating condition before starting diagnosis. Refer to MWI-69, "INFORMATION DISPLAY : Description".

1.CHECK AMBIENT SENSOR SIGNAL CIRCUIT

Check the ambient sensor signal circuit. Refer to MWI-62, "Diagnosis Procedure".

Is the inspection result normal?

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

2.CHECK A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL CIRCUIT

Check the a/c auto amp. connection recognition signal circuit. Refer to MWI-63, "Diagnosis Procedure".

Is the inspection result normal?

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

3.CHECK AMBIENT SENSOR

Perform a unit check for the ambient sensor. Refer to MWI-62, "Component Inspection".

Is the inspection result normal?

YES >> Replace combination meter.
NO >> Replace ambient sensor. Refer to HAC-114, "Removal and Installation".

NORMAL OPERATING CONDITION
INFORMATION DISPLAY

INFORMATION DISPLAY : Description

INFOID:0000000008280359

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 ambient sensor signal by the combination meter. Refer to MWI-15, "INFORMATION DISPLAY : System Description" for details on the correction process.

POSSIBLE DRIVING DISTANCE

The calculated possible driving distance may differ from the actual distance to empty if the refueling amount is approximately 15 ℓ (4 US gal, 3 - 1/4 lmp 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.

REMOVAL AND INSTALLATION

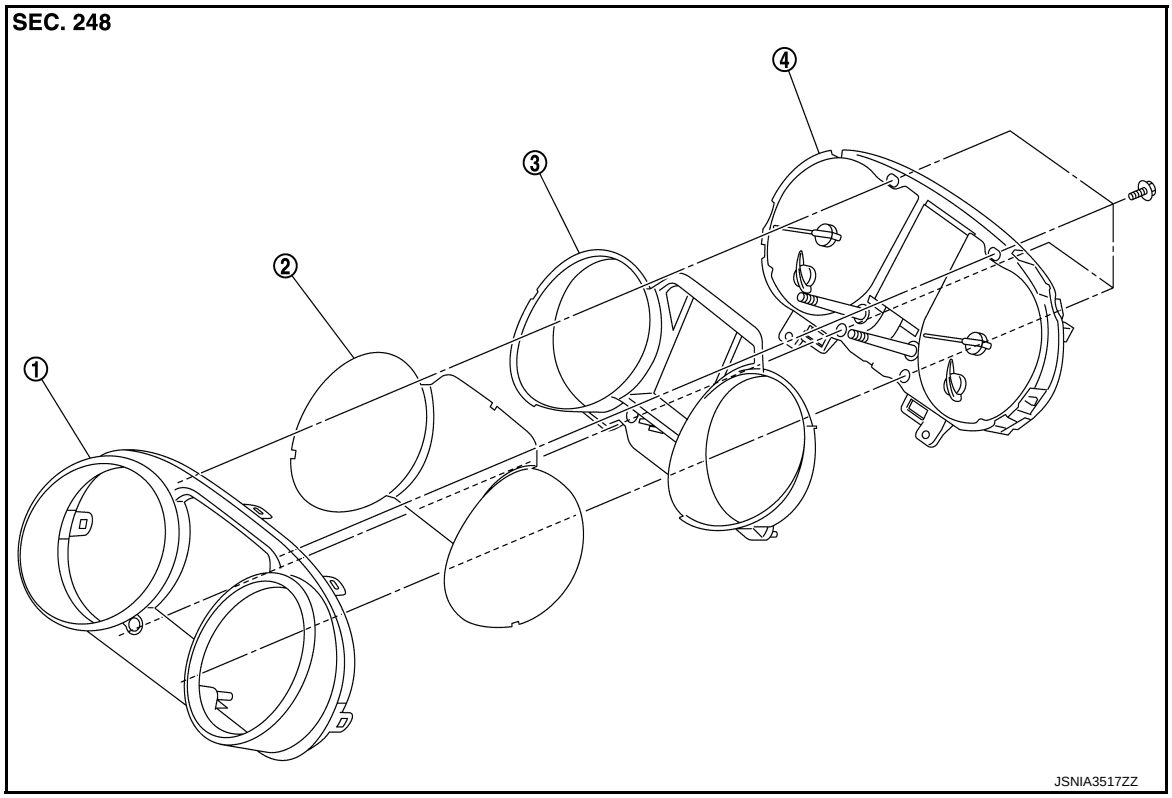
COMBINATION METER

Exploded View

INFOID:0000000008280360

REMOVAL
Refer to IP-13, "Exploded View".

DISASSEMBLY



1. Front cover
2. Meter lens
3. Meter housing
4. Unified meter control unit

Removal and Installation

INFOID:0000000008280361

Removal

1. Remove the cluster lid A. Refer to IP-14, "Removal and Installation".
2. Remove steering column cover upper. Refer to IP-14, "Removal and Installation".
3. Remove screw and connector, and then remove combination meter.

Installation

Install in the reverse order of removal.

Disassembly and Assembly

INFOID:0000000008280362

DISASSEMBLY

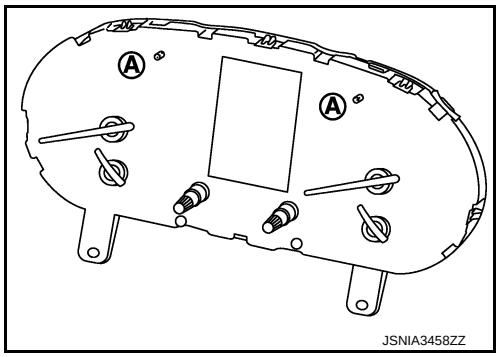
1. Unlatch the pawls and unscrew the screws to remove the front cover assembly from the unified meter control unit.

CAUTION:

- **Never touch the display, pointer, and the printed area of the dial during the work.**
- **Keep away from magnetic sources.**

ASSEMBLY

1. Check that the dial of the unified meter control unit is securely placed in the protrusion (A) and install the front cover assembly to the unified meter control unit.



CAUTION:

- **Never touch the display, pointer, and the printed area of the dial during the work.**
- **Keep away from magnetic sources.**
- **If the front cover assembly is installed with the dial not placed properly, the following malfunction may occur.**
  - **The dial becomes dislocated and the pointer gets stuck, resulting in deactivation.**
  - **The basal portion of the step motor axis bends.**
  - **The dial gets deformed.**

2. Install screws.

COMPASS

Exploded View

INFOID:0000000008280363

Refer to MIR-16, "Exploded View".

Removal and Installation

INFOID:0000000008280364

Refer to MIR-16, "Removal and Installation".