SECTION MWI
METER, WARNING LAMP & INDICATOR

CONTENTS

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000012562955

DETAILED FLOW

1.CONFIRM SYMPTOM

Confirm symptom or customer complaint.

>> GO TO 2

2.CHECK SELF-DIAGNOSIS OPERATION OF COMBINATION METER

Perform self-diagnosis of combination meter. Refer to MWI-25, "Diagnosis Description".

Does self-diagnosis mode operate?

YES >> GO TO 3
NO >> Check power supply and ground circuit of combination meter. Refer to MWI-31, "COMBINATION METER : Diagnosis Procedure". Then, GO TO 4

3.CHECK COMBINATION METER (CONSULT)

Select “METER/M&A” on CONSULT and perform “SELF-DIAGNOSIS” of combination meter. Refer to MWI-27, "CONSULT Function (METER/M&A)".

Self-diagnostic results content

No malfunction detected>>Repair or replace the cause of symptom. Then, GO TO 4
Malfunction detected>>Refer to MWI-41, "DTC Index". Then, GO TO 4

4.CONFIRM OPERATION

Does the combination meter operate normally?

YES or NO

YES >> Inspection End.
NO >> GO TO 1

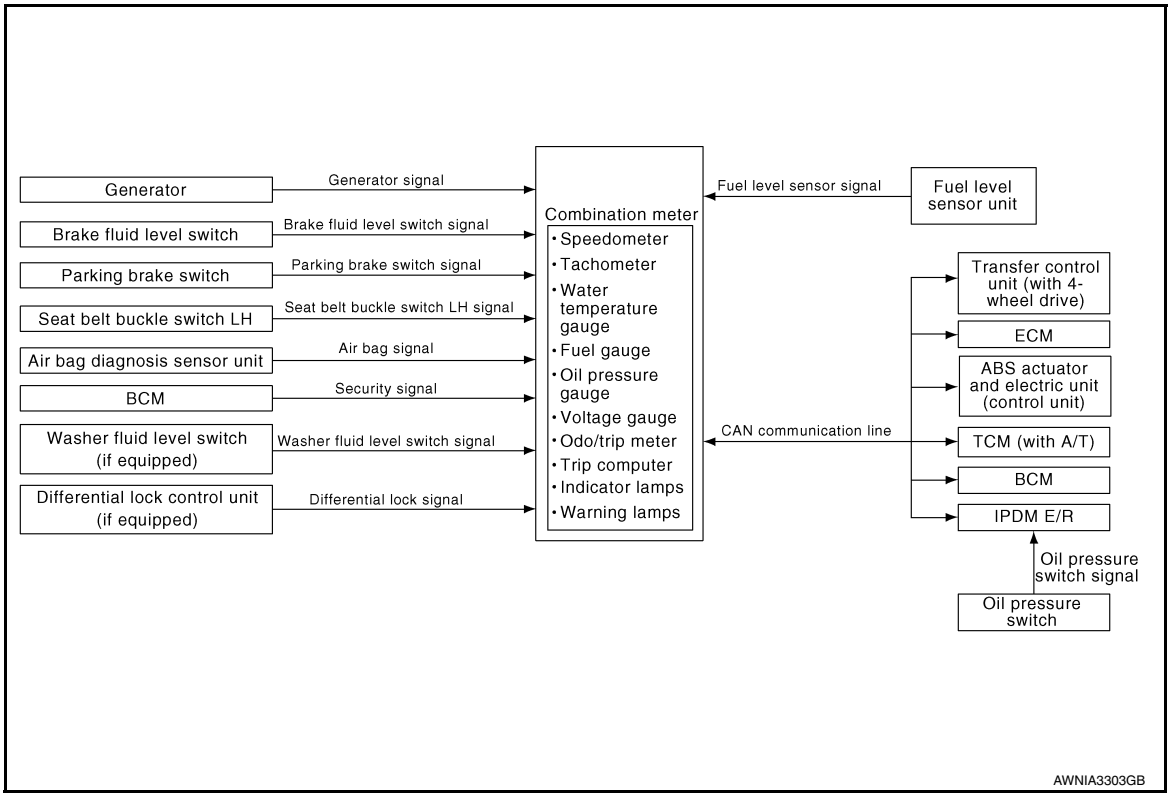
SYSTEM DESCRIPTION

METER SYSTEM

METER SYSTEM

METER SYSTEM : System Diagram

INFOID:0000000012562956



METER SYSTEM : System Description

INFOID:0000000012562957

COMBINATION METER

- Speedometer, odo/trip meter, tachometer, fuel gauge, engine coolant temperature gauge, engine oil pressure gauge (with 6 gauge combination meter), voltage gauge (with 6 gauge combination meter) and trip computer (with trip computer) are controlled by the unified meter control unit, which is built into the combination meter.
- Warning and indicator lamps are controlled by the unified meter control unit and by components connected directly to the combination meter.
- Digital meter is adopted for odo/trip meter*, as well as the A/T position indicator display.
  *The record of the odometer is kept even if the battery cable is disconnected. The record of the trip meter is erased when the battery cable is disconnected.
- Odo/trip meter and A/T indicator segments can be checked in diagnosis mode.
- Meter/gauge can be checked in diagnosis mode.

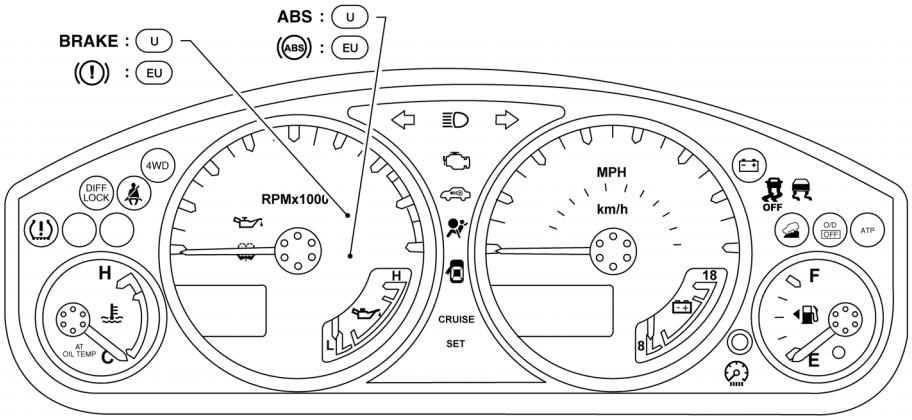
NOTE:

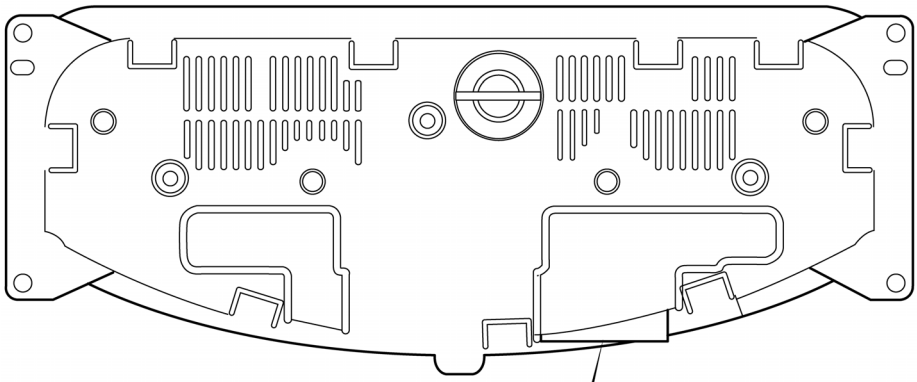
Under the following conditions, the meters will perform a homing function. The meter pointers will move down slightly and then move back to the resting position. This is a normal design condition.

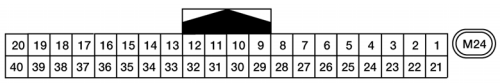
- Approximately 60 seconds after turning the ignition switch from the ON to the OFF position
- If the battery is disconnected and then reconnected

METER SYSTEM : Arrangement of Combination Meter

INFOID:0000000012562958







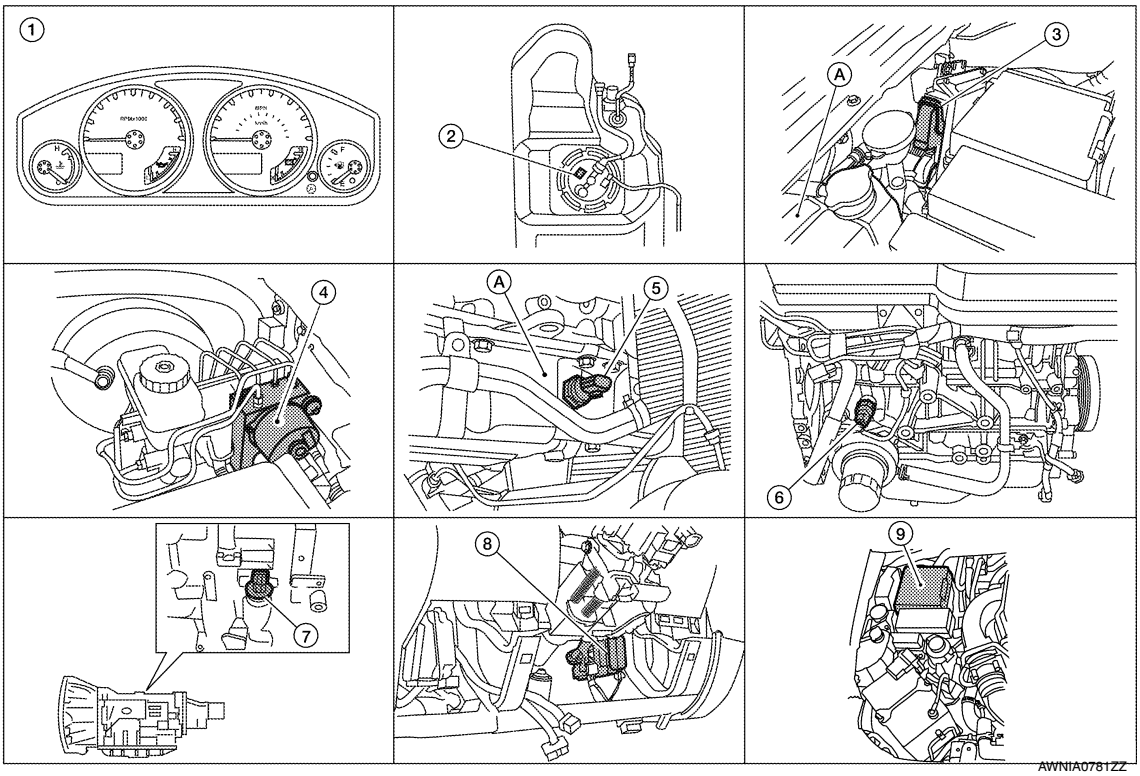
(EU) : Except USA

(U) : USA

AWNIA2494GB

METER SYSTEM : Component Parts Location

INFOID:0000000012562959



1. Combination meter M24
2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)
3. ECM (view with ECM cover removed)
   E8 (with VQ40DE for Mexico)
   E16 (with QR25DE)
   E55 (with VQ40DE except Mexico)
   A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127
5. Oil pressure switch E208 (with VQ40DE)
   A. Oil pan (upper)
6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)
8. BCM M18, M19 (view with instrument lower panel LH removed)
9. IPDM E/R E122, E124

METER SYSTEM : Component Description

INFOID:0000000012562960

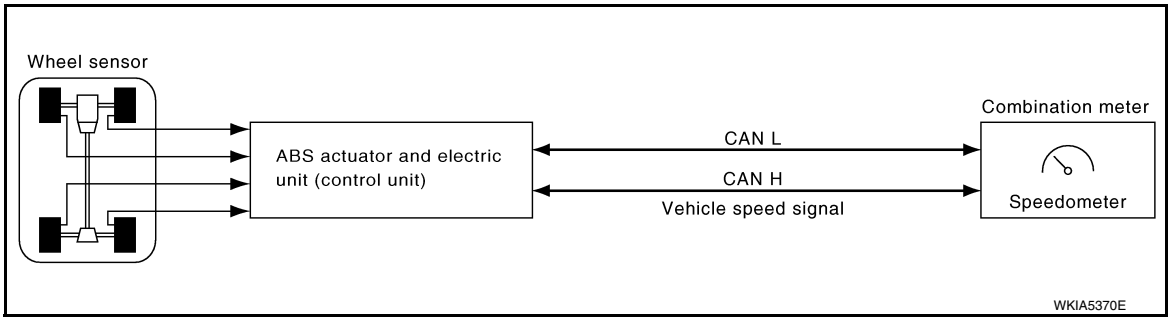
Unit	Description
Combination meter	Controls the following with the signals received from each unit via CAN communication and the signals from switches and sensors. • Speedometer • Tachometer • Engine coolant temperature gauge • Fuel gauge • Engine oil pressure gauge (with 6 gauge combination meter) • Odo/trip meter • Voltage gauge (with 6 gauge combination meter) • Indicator lamps • Warning lamps • Warning chime • Trip computer (with trip computer)
IPDM E/R	IPDM E/R reads the ON/OFF signals of the oil pressure switch and transmits the oil pressure switch signal to the combination meter via BCM with CAN communication line.
Fuel level sensor unit	Refer to MWI-34, "Description".

Unit	Description
Oil pressure switch	Refer to MWI-37, "Description".
ECM	Transmits the following signals to the combination meter with CAN communication line. • Engine speed signal • Engine coolant temperature signal • Fuel consumption monitor signal
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the combination meter with CAN communication line.
BCM	• Transmits signals provided by various units to the combination meter with CAN communication line. • Transmits the security signal to the combination meter.
TCM	Transmits shift position signal to the combination meter with CAN communication line.

SPEEDOMETER

SPEEDOMETER : System Diagram

INFOID:0000000012562961



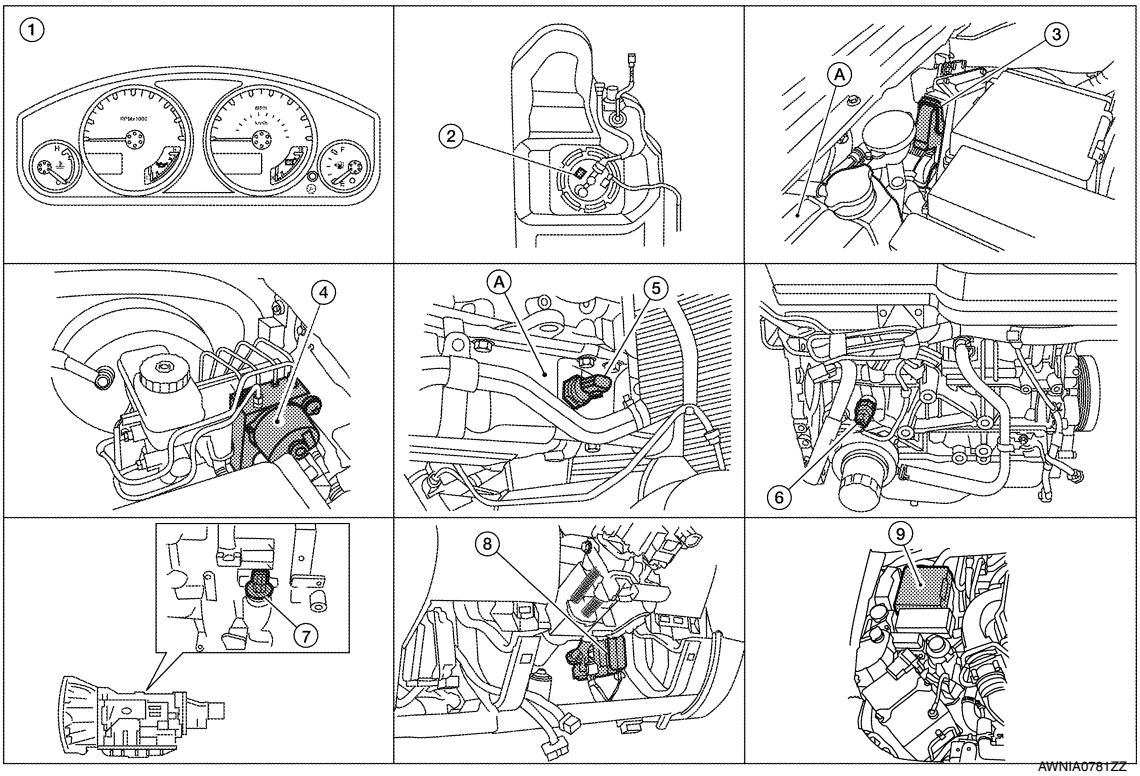
SPEEDOMETER : System Description

INFOID:0000000012562962

The ABS actuator and electric unit (control unit) provides a vehicle speed signal to the combination meter via CAN communication lines.

SPEEDOMETER : Component Parts Location

INFOID:0000000012562963



1. Combination meter M24
2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)
3. ECM (view with ECM cover removed)
   E8 (with VQ40DE for Mexico)
   E16 (with QR25DE)
   E55 (with VQ40DE except Mexico)
   A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127
5. Oil pressure switch E208 (with VQ40DE)
   A. Oil pan (upper)
6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)
8. BCM M18, M19 (view with instrument lower panel LH removed)
9. IPDM E/R E122, E124

SPEEDOMETER : Component Description

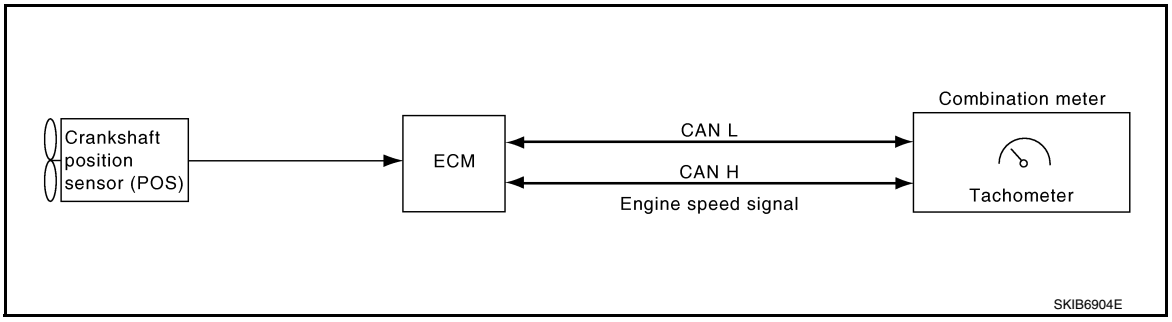
INFOID:0000000012562964

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

TACHOMETER

TACHOMETER : System Diagram

INFOID:0000000012562965



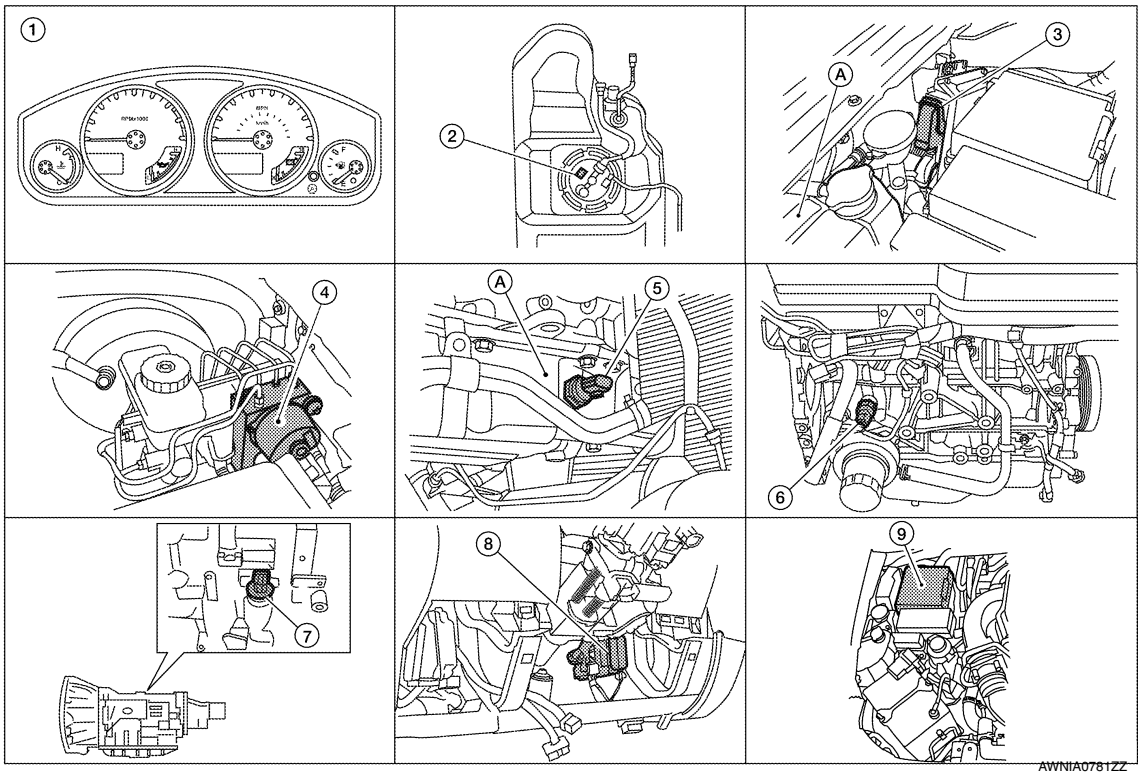
TACHOMETER : System Description

INFOID:0000000012562966

The tachometer indicates engine speed in revolutions per minute (rpm).
The ECM provides an engine speed signal to the combination meter via CAN communication lines.

TACHOMETER : Component Parts Location

INFOID:0000000012562967



1. Combination meter M24
2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)
3. ECM (view with ECM cover removed)
   E8 (with VQ40DE for Mexico)
   E16 (with QR25DE)
   E55 (with VQ40DE except Mexico)
   A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127
5. Oil pressure switch E208 (with VQ40DE)
   A. Oil pan (upper)
6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)
8. BCM M18, M19 (view with instrument lower panel LH removed)
9. IPDM E/R E122, E124

TACHOMETER : Component Description

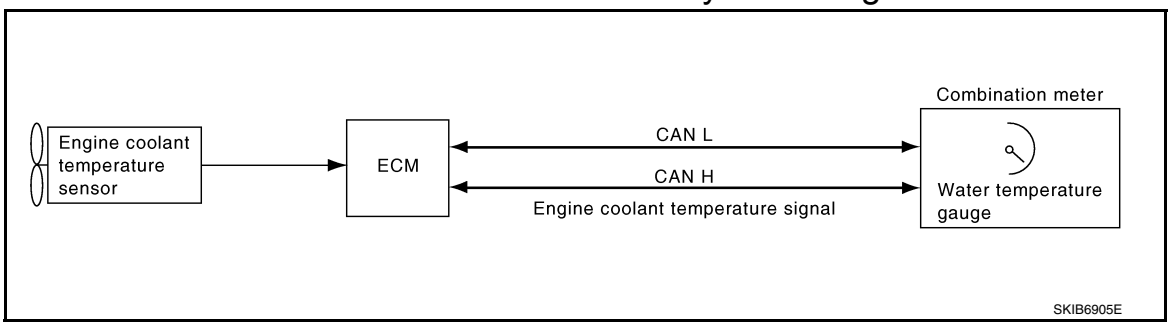
INFOID:0000000012562968

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

ENGINE COOLANT TEMPERATURE GAUGE

ENGINE COOLANT TEMPERATURE GAUGE : System Diagram

INFOID:0000000012562969



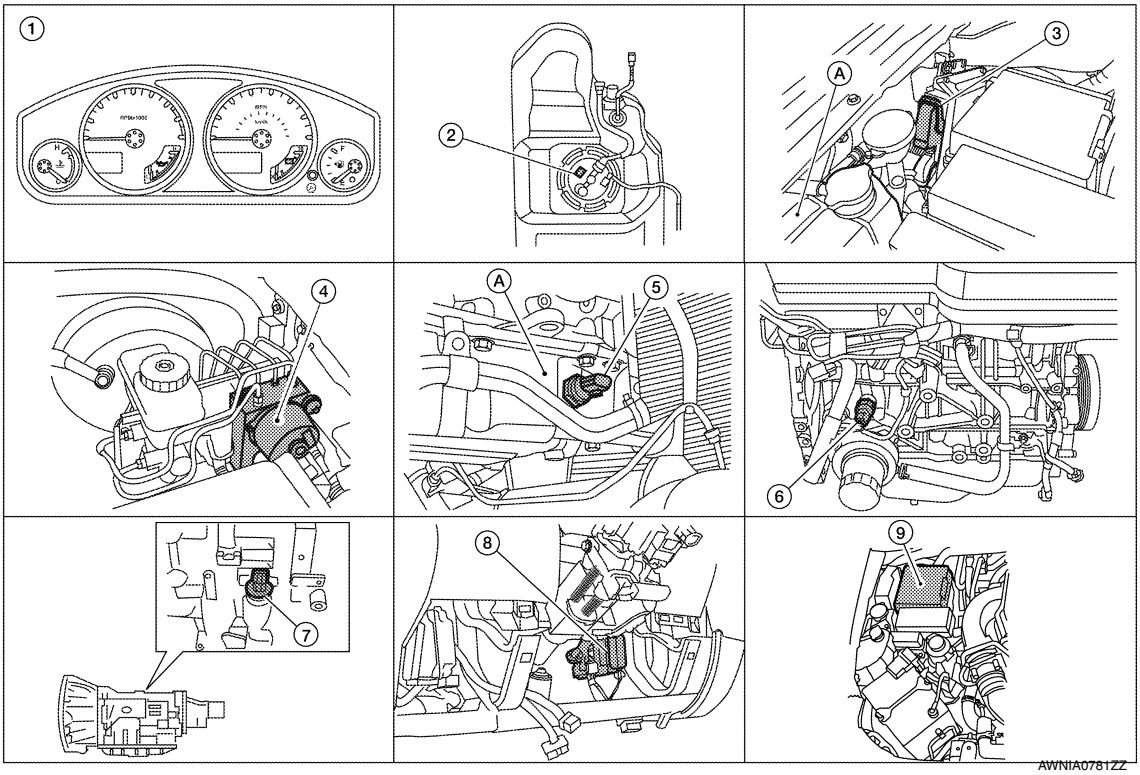
ENGINE COOLANT TEMPERATURE GAUGE : System Description

INFOID:0000000012562970

The engine coolant temperature gauge indicates the engine coolant temperature.
The ECM provides an engine coolant temperature signal to the combination meter via CAN communication lines.

ENGINE COOLANT TEMPERATURE GAUGE : Component Parts Location

INFOID:0000000012562971



1. Combination meter M24	2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)	3. ECM (view with ECM cover removed) E8 (with VQ40DE for Mexico) E16 (with QR25DE) E55 (with VQ40DE except Mexico) A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127	5. Oil pressure switch E208 (with VQ40DE) A. Oil pan (upper)	6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)	8. BCM M18, M19 (view with instrument lower panel LH removed)	9. IPDM E/R E122, E124

ENGINE COOLANT TEMPERATURE GAUGE : Component Description

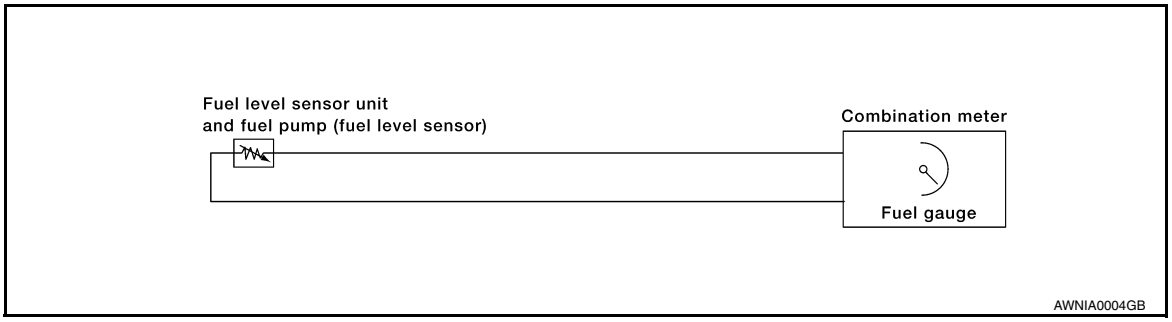
INFOID:0000000012562972

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

FUEL GAUGE

FUEL GAUGE : System Diagram

INFOID:0000000012562973



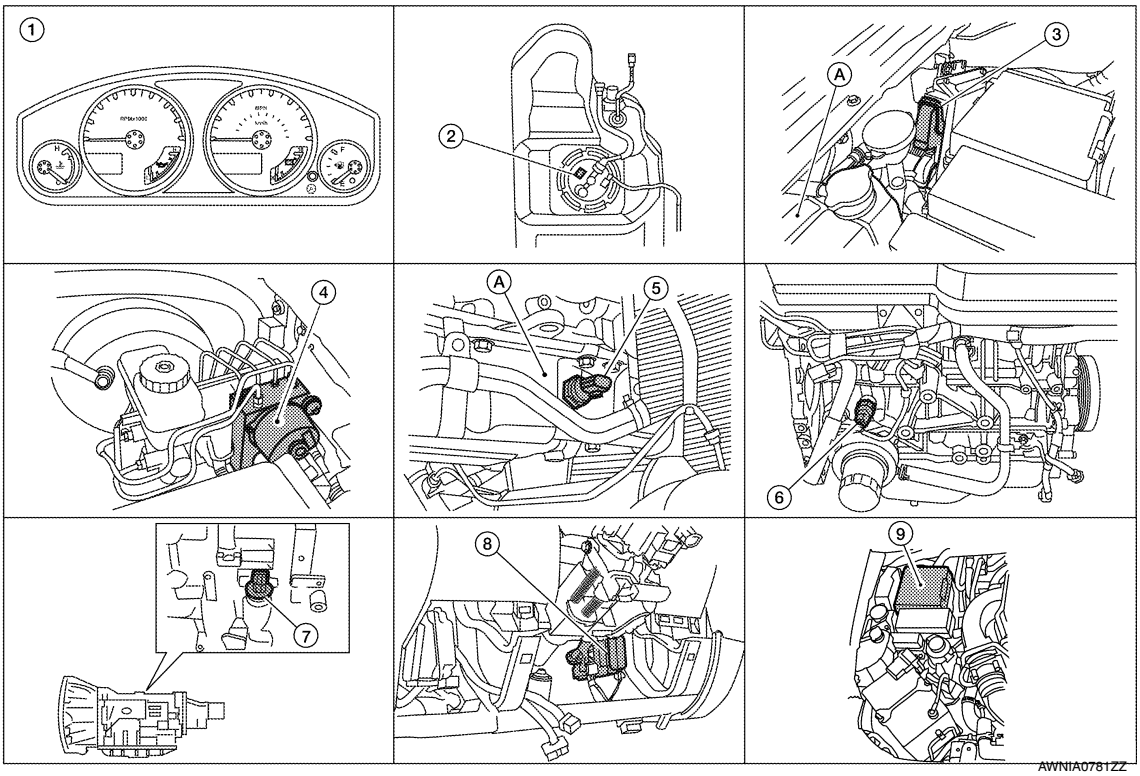
FUEL GAUGE : System Description

INFOID:0000000012562974

The fuel gauge indicates the approximate fuel level in the fuel tank.
The fuel gauge is regulated by the unified meter control unit and a variable resistor signal supplied by the fuel level sensor unit.

FUEL GAUGE : Component Parts Location

INFOID:0000000012562975



1. Combination meter M24
2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)
3. ECM (view with ECM cover removed)
   E8 (with VQ40DE for Mexico)
   E16 (with QR25DE)
   E55 (with VQ40DE except Mexico)
   A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127
5. Oil pressure switch E208 (with VQ40DE)
   A. Oil pan (upper)
6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)
8. BCM M18, M19 (view with instrument lower panel LH removed)
9. IPDM E/R E122, E124

FUEL GAUGE : Component Description

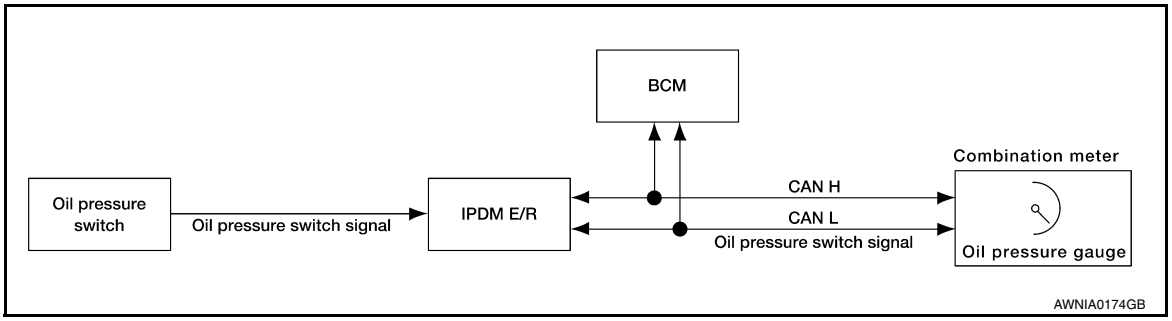
INFOID:0000000012562976

Unit	Description
Combination meter	Indicates the fuel level according to the fuel level sensor signal received from the fuel level sensor unit.
Fuel level sensor unit	Refer to MWI-34, "Description".

ENGINE OIL PRESSURE GAUGE

ENGINE OIL PRESSURE GAUGE : System Diagram

INFOID:0000000012562977



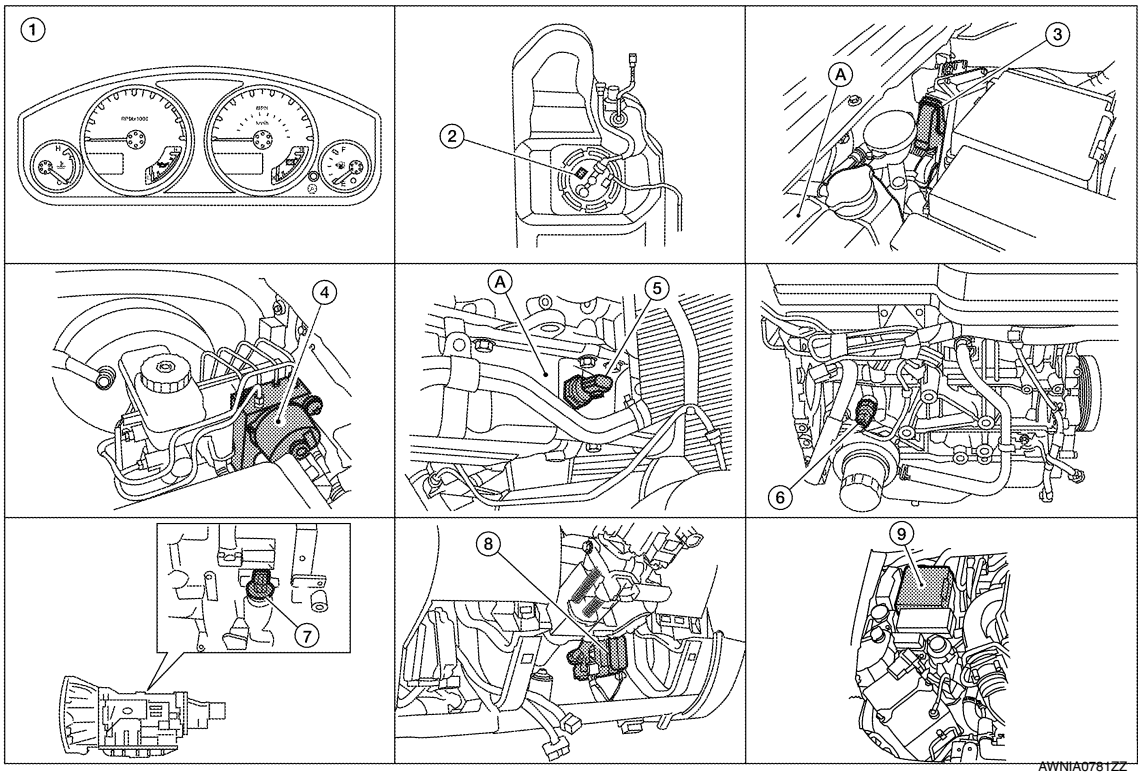
ENGINE OIL PRESSURE GAUGE : System Description

INFOID:0000000012562978

The engine oil pressure gauge indicates whether the engine oil pressure is low or normal.
The oil pressure gauge is controlled by the IPDM E/R. The IPDM E/R reads the ON/OFF signals from the oil pressure switch and transmits the oil pressure switch signal to the combination meter via BCM with the CAN communication line. The oil pressure gauge displays a low or normal indication according to the oil pressure switch signal received via CAN communication.

ENGINE OIL PRESSURE GAUGE : Component Parts Location

INFOID:0000000012562979



1. Combination meter M24
2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)
3. ECM (view with ECM cover removed)
   E8 (with VQ40DE for Mexico)
   E16 (with QR25DE)
   E55 (with VQ40DE except Mexico)
   A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127
5. Oil pressure switch E208 (with VQ40DE)
   A. Oil pan (upper)
6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)
8. BCM M18, M19 (view with instrument lower panel LH removed)
9. IPDM E/R E122, E124

ENGINE OIL PRESSURE GAUGE : Component Description

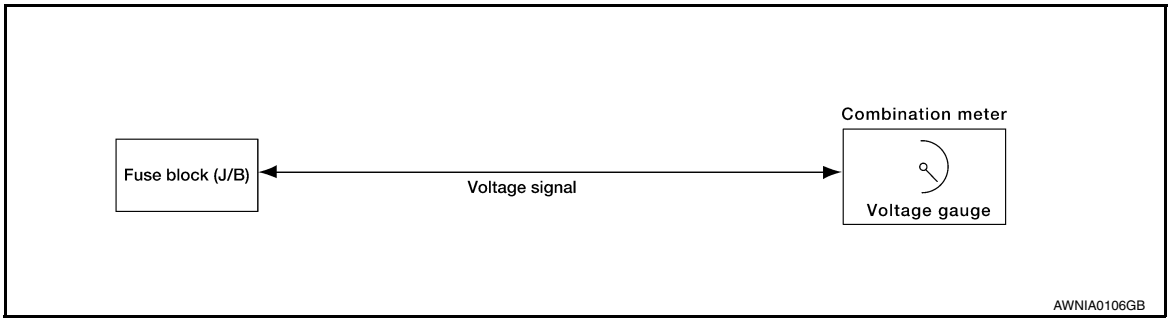
INFOID:0000000012562980

Unit	Description
Combination meter	Indicates the engine oil pressure (low/normal) according to the oil pressure switch signal received from BCM with CAN communication line.
IPDM E/R	Reads the ON/OFF signals from the oil pressure switch and transmits the oil pressure switch signal to the combination meter via BCM with the CAN communication line.
Oil pressure switch	Refer to MWI-37, "Description".
BCM	Transmits the oil pressure switch signal received from IPDM E/R via CAN communication to the combination meter via CAN communication.

VOLTAGE GAUGE

VOLTAGE GAUGE : System Diagram

INFOID:0000000012562981



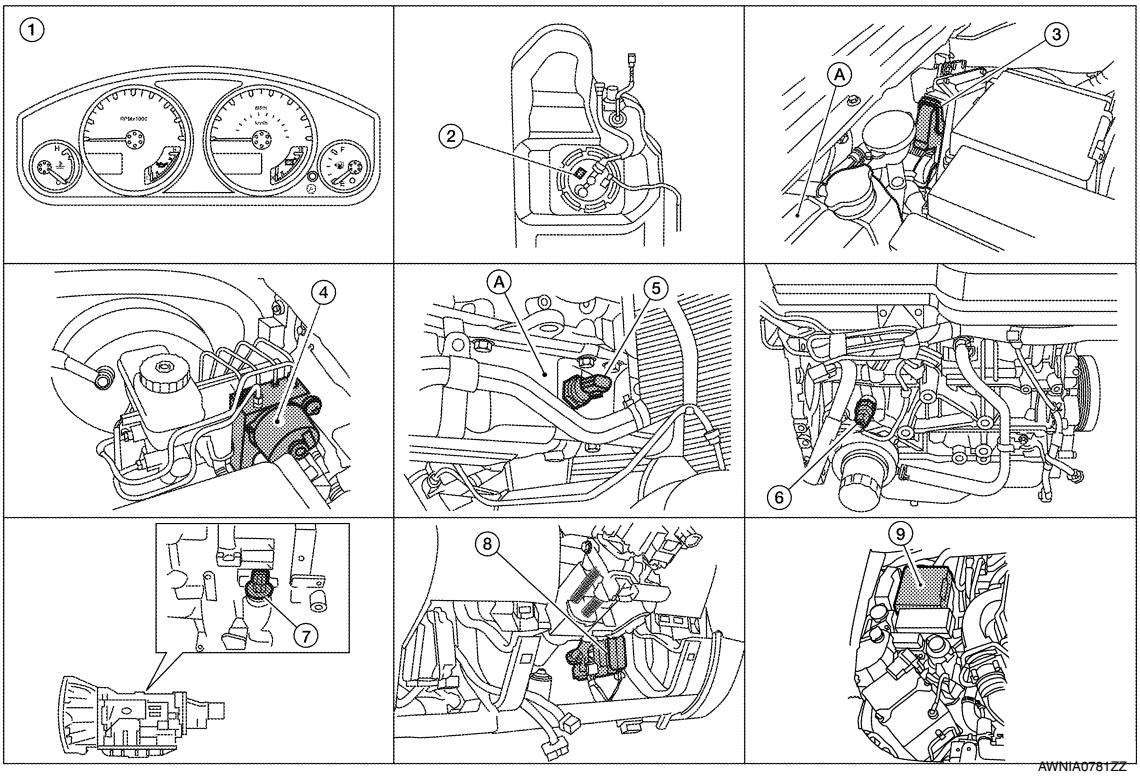
VOLTAGE GAUGE : System Description

INFOID:0000000012562982

The voltage gauge indicates the battery/charging system voltage.
The voltage gauge is regulated by the unified meter control unit.

VOLTAGE GAUGE : Component Parts Location

INFOID:0000000012562983



1. Combination meter M24	2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)	3. ECM (view with ECM cover removed) E8 (with VQ40DE for Mexico) E16 (with QR25DE) E55 (with VQ40DE except Mexico) A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127	5. Oil pressure switch E208 (with VQ40DE) A. Oil pan (upper)	6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)	8. BCM M18, M19 (view with instrument lower panel LH removed)	9. IPDM E/R E122, E124

VOLTAGE GAUGE : Component Description

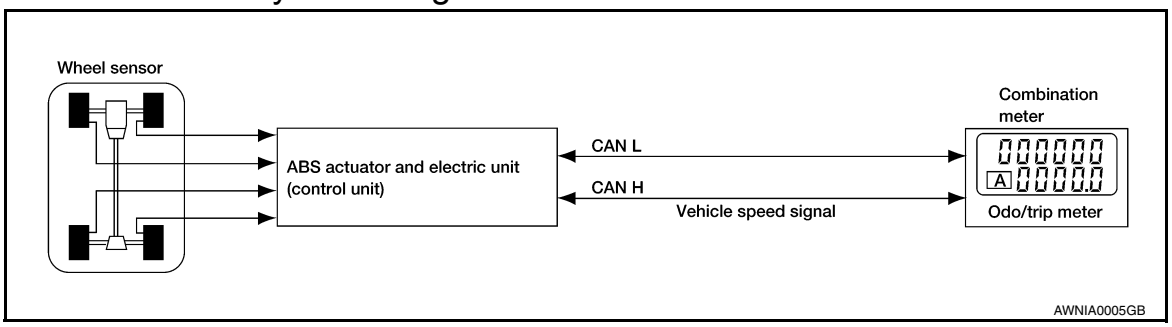
INFOID:0000000012562984

Unit	Description
Combination meter	Indicates the battery voltage according to the voltage signal received from the fuse block (J/B).
Fuse block (J/B)	Transmits the battery voltage signal to the combination meter.

ODO/TRIP METER

ODO/TRIP METER : System Diagram

INFOID:0000000012562985



ODO/TRIP METER : System Description

INFOID:0000000012562986

The vehicle speed signal and the memory signals from the meter memory circuit are processed by the combination meter and the mileage is displayed.

LOOSE FUEL CAP WARNING

The LOOSE FUEL CAP indicator will display in the odometer when the fuel-filler cap is not tightened correctly. The indicator will turn off as soon as the ECM detects the fuel-filler cap is properly tightened. The ECM provides a loose fuel cap signal to the combination meter via CAN communication lines.

CHECK TIRE PRESSURE WARNING

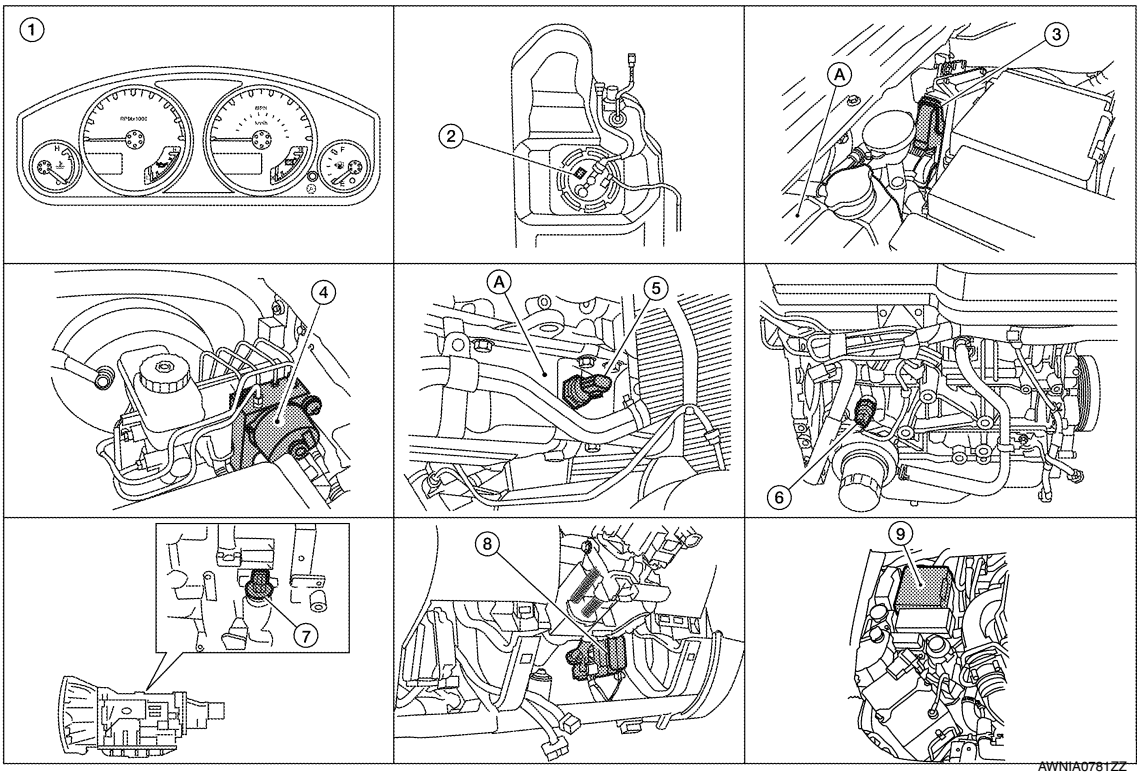
The CHECK TIRE PRESSURE indicator will display in the odometer when BCM has detected a low tire pressure condition.

HOW TO CHANGE THE DISPLAY FOR ODO/TRIP METER

Refer to Owner's Manual for odo/trip meter operating instructions.

ODO/TRIP METER : Component Parts Location

INFOID:0000000012562987



1. Combination meter M24
2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)
3. ECM (view with ECM cover removed)
   E8 (with VQ40DE for Mexico)
   E16 (with QR25DE)
   E55 (with VQ40DE except Mexico)
   A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127
5. Oil pressure switch E208 (with VQ40DE)
   A. Oil pan (upper)
6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)
8. BCM M18, M19 (view with instrument lower panel LH removed)
9. IPDM E/R E122, E124

ODO/TRIP METER : Component Description

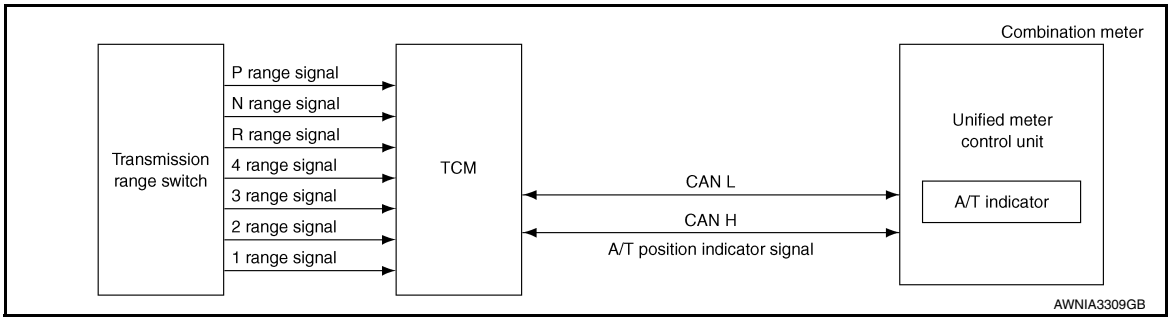
INFOID:0000000012562988

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

SHIFT POSITION INDICATOR

SHIFT POSITION INDICATOR : System Diagram

INFOID:0000000012562989



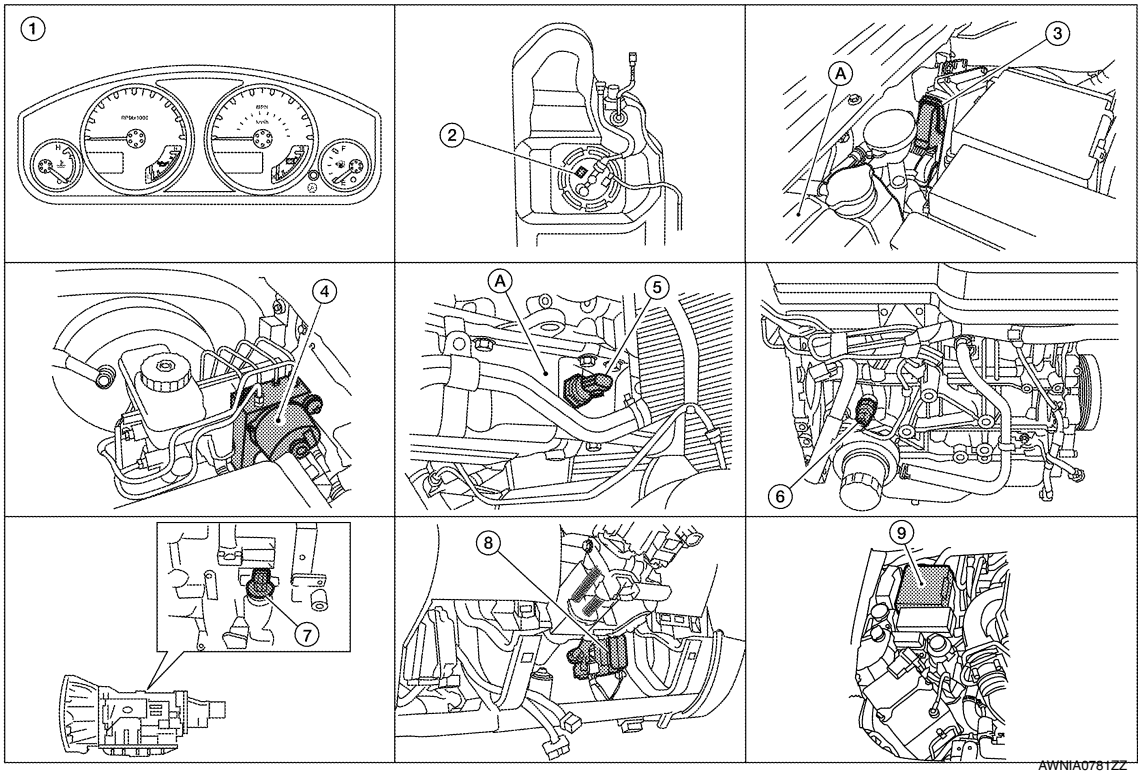
SHIFT POSITION INDICATOR : System Description

INFOID:0000000012562990

The TCM receives A/T indicator signals from the transmission range switch. The TCM then sends A/T position indicator signals to the combination meter via CAN communication lines. The combination meter indicates the received shift position.

SHIFT POSITION INDICATOR : Component Parts Location

INFOID:0000000012562991



1. Combination meter M24
2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)
3. ECM (view with ECM cover removed)
   E8 (with VQ40DE for Mexico)
   E16 (with QR25DE)
   E55 (with VQ40DE except Mexico)
   A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127
5. Oil pressure switch E208 (with VQ40DE)
   A. Oil pan (upper)
6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)
8. BCM M18, M19 (view with instrument lower panel LH removed)
9. IPDM E/R E122, E124

SHIFT POSITION INDICATOR : Component Description

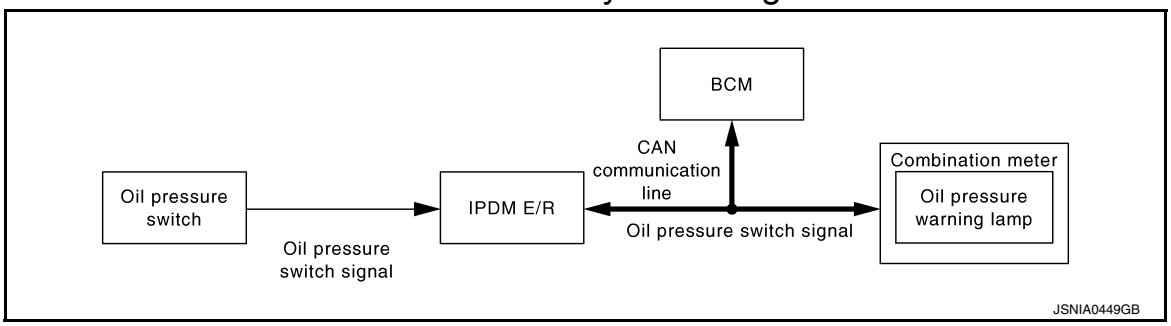
INFOID:0000000012562992

Unit	Description
Combination meter	Displays the shift position using shift position signal received from TCM.
TCM	Transmits the shift position signal to the combination meter via CAN communication.

WARNING LAMPS/INDICATOR LAMPS

WARNING LAMPS/INDICATOR LAMPS : System Diagram

INFOID:0000000012562993



WARNING LAMPS/INDICATOR LAMPS : System Description

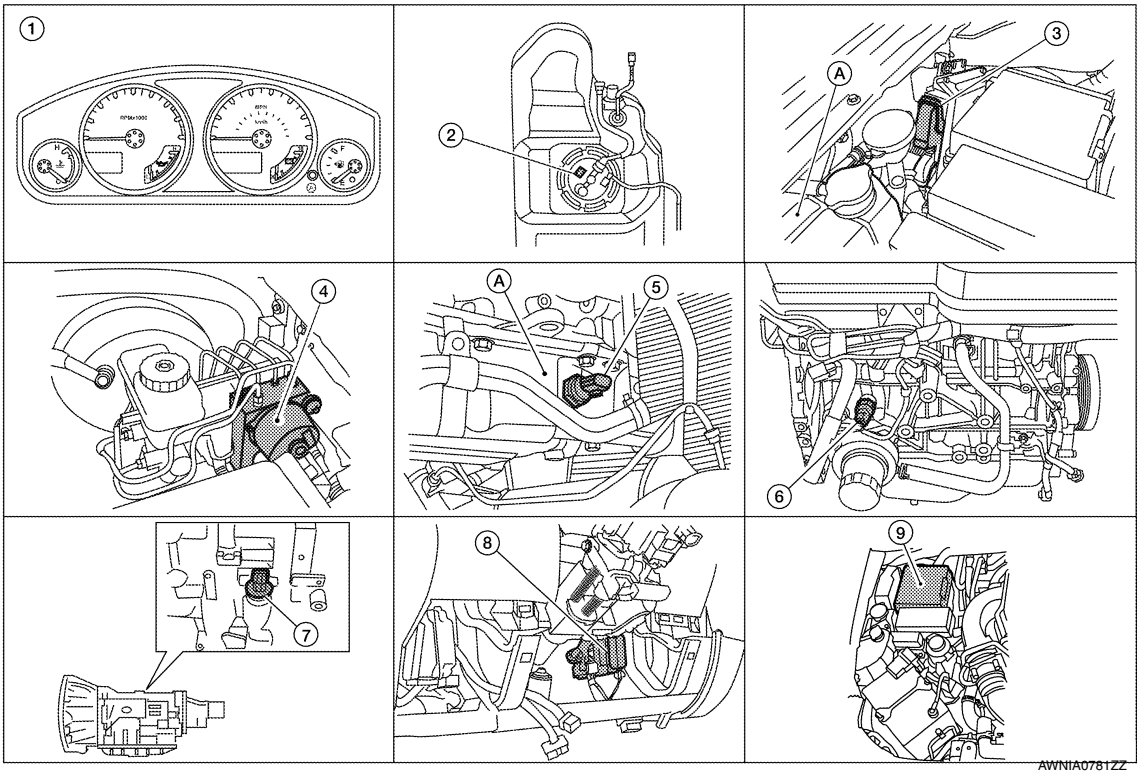
INFOID:0000000012562994

OIL PRESSURE WARNING LAMP

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

WARNING LAMPS/INDICATOR LAMPS : Component Parts Location

INFOID:0000000012562995



1. Combination meter M24	2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)	3. ECM (view with ECM cover removed) E8 (with VQ40DE for Mexico) E16 (with QR25DE) E55 (with VQ40DE except Mexico) A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127	5. Oil pressure switch E208 (with VQ40DE) A. Oil pan (upper)	6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)	8. BCM M18, M19 (view with instrument lower panel LH removed)	9. IPDM E/R E122, E124

WARNING LAMPS/INDICATOR LAMPS : Component Description

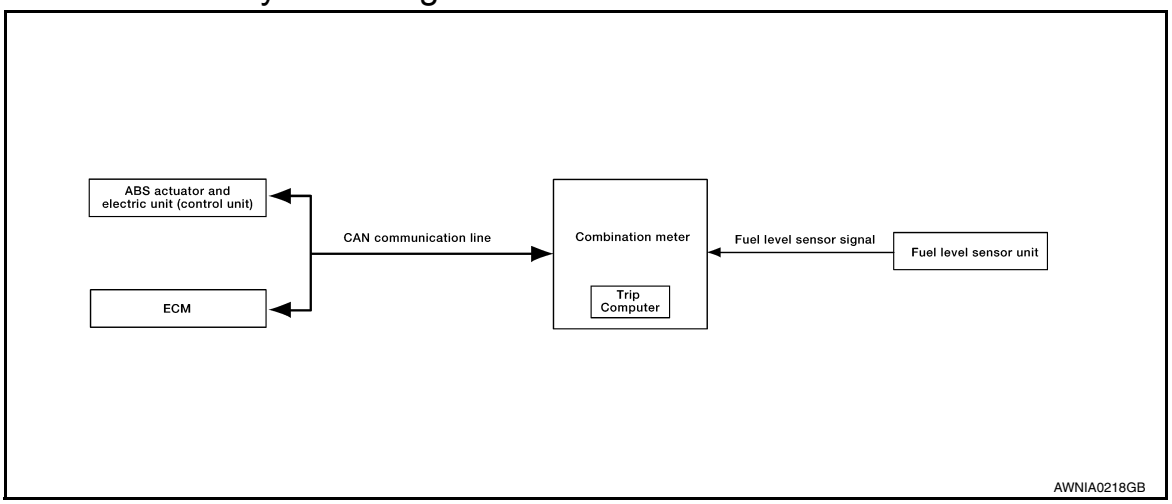
INFOID:0000000012562996

Unit	Description
Combination meter	Turns the oil pressure warning lamp ON/OFF according to the oil pressure switch signal received from BCM by means of communication.
IPDM E/R	Reads the ON/OFF signals from the oil pressure switch and transmits the oil pressure switch signal to the combination meter via BCM with the CAN communication line.
Oil pressure switch	Refer to MWI-37, "Description".
BCM	Transmits the oil pressure switch signal received from IPDM E/R via CAN communication to the combination meter via CAN communication.

TRIP COMPUTER

TRIP COMPUTER : System Diagram

INFOID:0000000012562997



TRIP COMPUTER : System Description

INFOID:0000000012562998

FUNCTION

The trip computer can indicate the following items.

- DTE (distance to empty)
- Trip distance
- Trip time
- Average fuel consumption
- Average vehicle speed

DTE (DISTANCE TO EMPTY) INDICATION

The range indication provides the driver with an estimation of the distance that can be driven before refueling. The range is calculated by signals from the fuel level sensor unit (fuel remaining), ECM (fuel consumption) and the ABS actuator and electric unit (vehicle speed). The indication will be refreshed every 30 seconds. When fuel remaining is less than approximately 11.6 ℓ (3 1/8 US gal, 2 1/2 Imp gal), the indication will blink as a warning. If the fuel remaining is less than approximately 9.6 ℓ (2 1/2 US gal, 2 1/8 Imp gal), the indication will

show "---". In this case, the display will change to the DTE mode even though the display is showing a different mode. When the battery is disconnected and reconnected, DTE mode will display "---" until the vehicle is driven 0.3 miles (0.5 km).

TRIP DISTANCE

Trip distance is calculated by signal from the ABS actuator and electric unit (vehicle speed). If trip distance is reset, trip time will be reset at the same time.

TRIP TIME

Trip time displays cumulative ignition switch ON time. If trip time is reset, trip distance will be reset at the same time.

AVERAGE FUEL CONSUMPTION

Average fuel consumption indication is calculated by signals from the ABS actuator and electric unit (vehicle speed) and the ECM (fuel consumption). The indication will be refreshed every 30 seconds.

AVERAGE VEHICLE SPEED

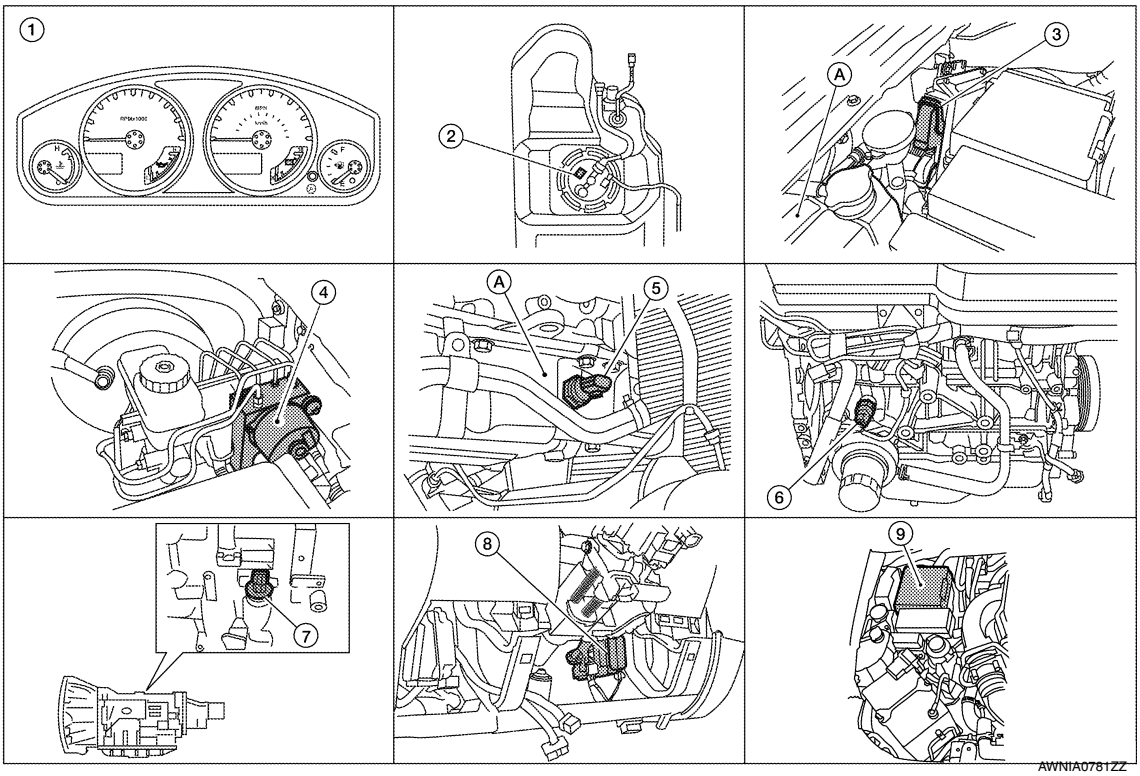
Average vehicle speed indication is calculated by running distance and running time. The indication will be refreshed every 30 seconds. If average vehicle speed is reset, average fuel consumption will be reset at the same time. After resetting, the display will show "---" for 30 seconds.

HOW TO CHANGE/RESET INDICATION

Refer to Owner's Manual for trip computer operating instructions.

TRIP COMPUTER : Component Parts Location

INFOID:0000000012562999



1. Combination meter M24
2. Fuel level sensor unit and fuel pump C5 (view with fuel tank removed)
3. ECM (view with ECM cover removed)
   E8 (with VQ40DE for Mexico)
   E16 (with QR25DE)
   E55 (with VQ40DE except Mexico)
   A. Coolant reservoir
4. ABS actuator and electric unit (control unit) E127
5. Oil pressure switch E208 (with VQ40DE)
   A. Oil pan (upper)
6. Oil pressure switch F4 (with QR25DE) (view with engine removed)
7. A/T assembly F9 (with A/T)
8. BCM M18, M19 (view with instrument lower panel LH removed)
9. IPDM E/R E122, E124

TRIP COMPUTER : Component Description

INFOID:0000000012563000

Unit	Description
Combination meter	Controls the information display according to the signal received from each unit.
Fuel level sensor unit	Refer to MWI-34, "Description".
ECM	Transmits the following signals to the combination meter via CAN communication line. • Engine speed signal • Fuel consumption monitor signal
ABS actuator and electric unit (control unit)	Transmits the vehicle speed signal to the combination meter via CAN communication line.

COMPASS

Description

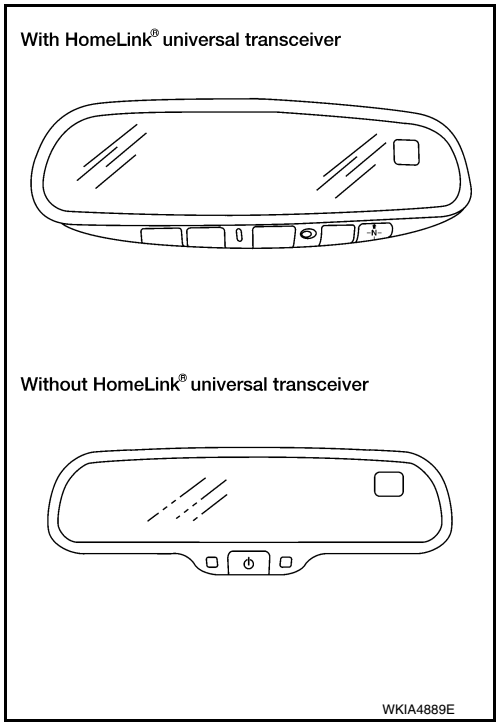
INFOID:0000000012563001

DESCRIPTION

With the ignition switch in the ON position, and the mode or (N) switch ON, the compass display will indicate the direction the vehicle is heading.

Vehicle direction is displayed as follows:

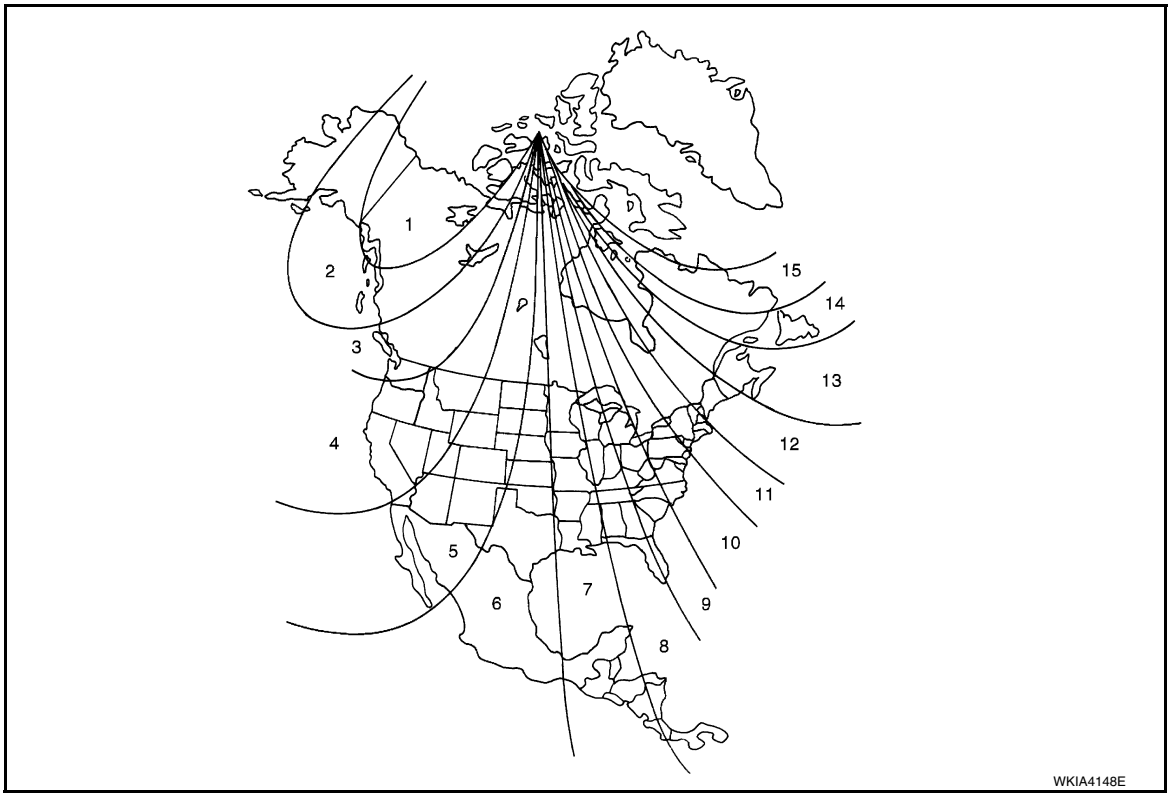
- N: north
- E: east
- S: south
- W: west



ZONE VARIATION SETTING PROCEDURE

The difference between magnetic north and geographical north can sometimes be great enough to cause false compass readings. This difference is known as variance. In order for the compass to operate properly (accurately) in a particular zone, the zone variation must be calibrated using the following procedure.

Zone Variation Chart



1. Determine your location on the zone map.
2. Turn the ignition switch to the ON position.
3. Press and hold the (N) switch (with HomeLink universal transceiver) or the mode switch (without HomeLink universal transceiver) until the current zone number is displayed.
4. Press the (N) or mode switch repeatedly until the desired zone number appears in the display.

Once the desired zone number is displayed, stop pressing the (N) or mode switch and the display will show a compass direction after a few seconds.

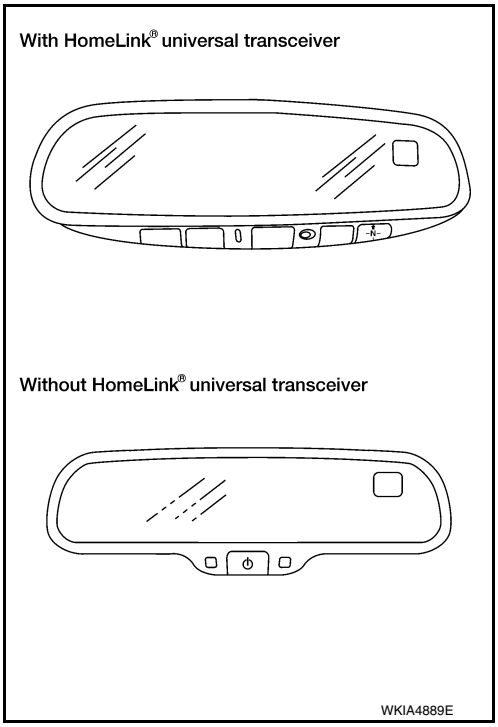
NOTE:
Use zone number 5 for Hawaii.

CALIBRATION PROCEDURE

The compass display is equipped with an automatic correction function. If the compass display reads “CAL” or the direction is not shown correctly, perform the correction procedure below.

1. Press and hold the (N) switch (with HomeLink universal transceiver) or the mode switch (without HomeLink universal transceiver) until the display reads “CAL”.
2. Drive the vehicle slowly in a circle, in an open, safe place. The initial calibration is completed in about 3 turns.

NOTE:
In places where the terrestrial magnetism is extremely disturbed, the initial correction may start automatically.



DIAGNOSIS SYSTEM (METER)

Diagnosis Description

INFOID:0000000012563002

SELF-DIAGNOSIS MODE

The following items can be checked during Combination Meter Self-Diagnosis Mode.

- Gauge sweep and present gauge values.
- Illuminates all odometer/trip meters and A/T indicator segments.
- Illuminates all micro controlled lamps/LEDs regardless of switch position.
- Displays estimated present battery voltage.
- Displays seat belt buckle switch LH status.

OPERATION PROCEDURE

NOTE:

- Once entered, combination meter self-diagnosis mode will function with the ignition switch in ON or START. Combination meter self-diagnosis mode will exit upon turning the ignition switch to OFF or ACC.
- If the diagnosis function is activated with trip A displayed, the mileage on trip A is reset to 0000.0. (Trip B operates the same way.)

To initiate combination meter self-diagnosis mode, refer to the following procedure.

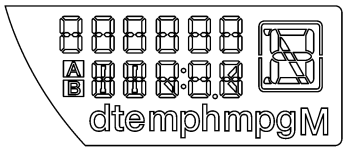
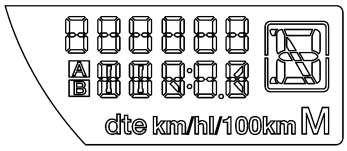
1. Turn the ignition switch ON, while pressing the odometer/trip meter switch for 5 - 8 seconds. When the diagnosis function is activated, the odometer/trip meter will display tESt.

NOTE:

Check combination meter power supply and ground circuit when self-diagnosis mode of combination meter does not start. Refer to MWI-31, "COMBINATION METER : Diagnosis Procedure". Replace combination meter if normal. Refer to MWI-91, "Removal and Installation".

COMBINATION METER SELF-DIAGNOSIS MODE FUNCTIONS

To interpret combination meter self-diagnosis mode functions, refer to the following table.

Event	Odometer Display	Description of Test/Data	Notes:
Odometer/trip meter A/B switch held from 5 to 8 seconds (or until released)	tESt		Initiating self-diagnosis mode
Switch released	GAGE	Performs sweep of all gauges, then displays present gauge values.	Gauges sweep within 10 seconds
Switch pressed	(All segments illuminated)	Lights all LCD segments. Compare with picture.	USA  AWNIA3686ZZ Except USA  AWNIA3687ZZ
Switch pressed	bulb	Illuminates all micro-controlled lamps/LEDs.	Part may not be configured for all lamps (functions) that turn on during test. This is normal.
Switch pressed	r XXXX, FAIL	Return to normal operation of all lamps/LEDs and displays “r XXXX”.	If a malfunction exists, “FAIL” will flash.

Event	Odometer Display	Description of Test/Data	Notes:
Switch pressed	nrXXXX	Displays Hex ROM rev as stored in NVM.	
Switch pressed	EE XX, FAIL	Displays “EE XX”.	If a malfunction exists, “FAIL” will flash.
Switch pressed	dtXXXX	Hex coding of final manufacturing test date.	
Switch pressed (3 times)	Sc1 XX through Epr XX	Displays 8 bit software configuration value in Hex format	
Switch pressed	1nF XX	Displays 8-bit market info value in Hex format.	$31 = USA $2A = Canada $23 = EUR-R $1C = EUR-L $38 = Japan $15 = Australia $0E = Middle East $FF = Other
Switch pressed (3 times)	cYL XX through tF	N/A	
Switch pressed	ot1 XX	Displays oil pressure telltale “” in Hex format.	
Switch pressed	ot0 XX	Displays oil pressure telltale “” in Hex format.	
Switch pressed	XXXXX	“Corrected” speed value in hundredths of MPH. Gauge indication may be slightly higher. This is normal.	Will display “-----” if message is not received. Will display “99999” if data received is invalid.
Switch pressed	XXXXX	“Corrected” speed value in hundredths of KPH. Gauge indication may be slightly different. This is normal.	Will display “-----” if message is not received. Will display “99999” if data received is invalid.
Switch pressed	t XXXX	Tachometer value in RPM. Gauge indication may be higher at higher RPM. This is normal.	Will display “-----” if message is not received.
Switch pressed	F1XXXX	Present fuel level A/D input. This input represents fuel sender input.	000-009 = Short circuit 010-254 = Normal range 255 = Open circuit
Switch pressed	XXXC	Last temperature gauge input value in degrees C. Temperature gauge indicates present temperature per indication standard.	Will display “---”C if message is not received. Will display “999” if data received is invalid. High = 130 deg C Normal = 70 - 105 deg C Low = less than 50 deg C
Switch pressed	BAtXX.X	Estimated present battery voltage.	
Switch pressed	rES -X	Seat belt buckle switch LH status.	1= Buckled 0 = Unbuckled
Switch pressed (30 times)	PA -XX through PA1-XX	N/A	
Switch pressed	GAGE		Return to beginning of self-diagnosis cycle.

CONSULT Function (METER/M&A)

INFOID:0000000012563003

CONSULT can display each diagnostic item using the diagnostic test modes shown following.

METER/M&A diagnosis mode	Description
SELF DIAGNOSTIC RESULT	Displays combination meter self-diagnosis results.
DATA MONITOR	Displays combination meter input/output data in real time.
WORK SUPPORT	Displays diagnosis procedure of each work item.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.

SELF-DIAG RESULTS

Display Item List
Refer to MWI-41, "DTC Index".

DATA MONITOR

Display Item List

X: Applicable

Display item [Unit]	MAIN SIGNALS	SELECTION FROM MENU	Description
SPEED METER [km/h] or [mph]	X	X	Displays the value of vehicle speed signal.
SPEED OUTPUT [km/h] or [mph]	X	X	Displays the value of vehicle speed signal, which is transmitted to each unit with CAN communication.
TACHO METER [rpm]	X	X	Displays the value of engine speed signal, which is input from ECM.
W TEMP METER [°C] or [°F]	X	X	Displays the value of engine coolant temperature signal, which is input from ECM.
FUEL METER [lit.]	X	X	Displays the value, which processes a resistance signal from fuel gauge.
DISTANCE [km] or [mile]	X	X	Displays the value, which is calculated by vehicle speed signal, fuel gauge and fuel consumption from ECM.
FUEL W/L [ON/OFF]	X	X	Displays [ON/OFF] condition of low-fuel warning lamp.
C-ENG W/L [ON/OFF]		X	Displays [ON/OFF] condition of malfunction indicator lamp.
AIR PRES W/L [ON/OFF]		X	Displays [ON/OFF] condition of tire pressure warning lamp.
SEAT BELT W/L [ON/OFF]		X	Indicates [ON/OFF] condition of seat belt warning lamp.
BUZZER [ON/OFF]	X	X	Displays [ON/OFF] condition of buzzer.
DOOR W/L [ON/OFF]		X	Displays [ON/OFF] condition of door warning lamp.
HI-BEAM IND [ON/OFF]		X	Displays [ON/OFF] condition of high beam indicator.
TURN IND [ON/OFF]		X	Displays [ON/OFF] condition of turn indicator.
OIL W/L [ON/OFF]		X	Displays [ON/OFF] condition of oil pressure warning lamp.
VDC/TCS IND [ON/OFF]		X	Displays [ON/OFF] condition of VDC OFF indicator lamp.
ABS W/L [ON/OFF]		X	Displays [ON/OFF] condition of ABS warning lamp.
SLIP IND [ON/OFF]		X	Displays [ON/OFF] condition of SLIP indicator lamp.
BRAKE W/L [ON/OFF]		X	Displays [ON/OFF] condition of brake warning lamp.*
O/D OFF SW [ON/OFF]		X	Indicates [ON/OFF] condition of O/D OFF switch.
P RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of A/T shift P range indicator.
R RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of A/T shift R range indicator.
N RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of A/T shift N range indicator.
4 RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of A/T shift 4 range indicator.
3 RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of A/T shift 3 range indicator.
2 RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of A/T shift 2 range indicator.

Display item [Unit]	MAIN SIGNALS	SELECTION FROM MENU	Description
1 RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of A/T shift 1 range indicator.
O/D OFF W/L [ON/OFF]		X	Displays [ON/OFF] condition of AT CHECK (with manual mode) or O/D OFF (without manual mode) warning lamp.
CRUISE IND [ON/OFF]		X	Displays [ON/OFF] condition of CRUISE indicator.
4WD W/L [ON/OFF]		X	Displays [ON/OFF] condition of tire 4WD warning lamp.
SET IND [ON/OFF]		X	Displays [ON/OFF] condition of SET indicator.
4WD LOCK SW [ON/OFF]		X	Indicates [ON/OFF] condition of 4WD lock switch.
4WD LOCK IND [ON/OFF]		X	Indicates [ON/OFF] condition of 4WD lock indicator.
FUEL CAP W/L [ON/OFF]		X	Displays [ON/OFF] condition of loose fuel cap indicator.
TPMS PRESS L [ON/OFF]		X	Displays [ON/OFF] condition of check tire pressure indicator.

NOTE:

Some items are not available due to vehicle specification.

*: The monitor will indicate “OFF” even though the brake warning lamp is on if either of the following conditions exist.

- The parking brake is engaged
- The brake fluid level is low

WORK SUPPORT

Work support item	Description
Turn signal buzzer diagnosis	A possible malfunction can be narrowed down by following displayed instructions.
Fuel meter diagnosis (Analog pointer)	

DTC/CIRCUIT DIAGNOSIS

DTC U1000 CAN COMMUNICATION

DTC Logic

INFOID:0000000012563004

DTC DETECTION LOGIC

DTC	CONSULT display	Detection condition
U1000	CAN COMM CIRC [U1000]	When combination meter is not receiving CAN communication signals for 2 seconds or more.

Diagnosis Procedure

INFOID:0000000012563005

Symptom: Displays “CAN COMM CIRC [U1000]” as a self-diagnosis result of combination meter.

1. CHECK CAN COMMUNICATION

Select “SELF-DIAG RESULTS” mode for “METER/M&A” with CONSULT.

>> Go to “LAN system”. Refer to LAN-14, "Trouble Diagnosis Flow Chart".

DTC B2205 VEHICLE SPEED CIRCUIT

Description

INFOID:0000000012563006

The ABS actuator and electric unit (control unit) provides a vehicle speed signal to the combination meter via CAN communication lines.

DTC Logic

INFOID:0000000012563007

DTC	CONSULT display	Detection condition
B2205	VEHICLE SPEED CIRC [B2205]	Malfunction is detected when an erroneous speed signal is received for 2 seconds or more.

Diagnosis Procedure

INFOID:0000000012563008

Symptom: Displays “VEHICLE SPEED CIRC [B2205]” as a self-diagnosis result of combination meter.

1.CHECK COMBINATION METER INPUT SIGNAL

1. Start engine and select “METER/M&A” on CONSULT.
2. Using “SPEED METER” on “DATA MONITOR”, compare the value of DATA MONITOR with speedometer pointer of combination meter. Speedometer and DATA MONITOR indications should be close.

Is the inspection result normal?

YES >> Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-28, "CONSULT Function (ABS)" (TYPE 1), BRC-176, "CONSULT Function (ABS)" (TYPE 2).

NO >> Replace combination meter. Refer to MWI-91, "Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT
COMBINATION METER

COMBINATION METER : Diagnosis Procedure

INFOID:0000000012563009

Regarding Wiring Diagram information, refer to MWI-66, "Wiring Diagram".

1.CHECK FUSES

Check for blown combination meter fuses.

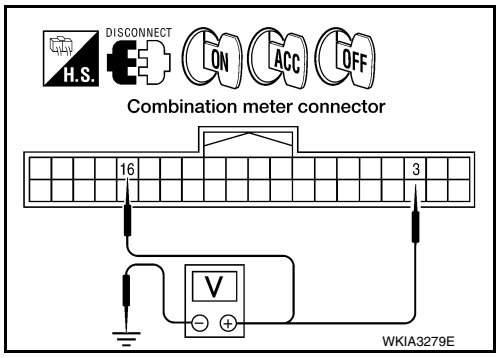
Unit	Power source	Fuse No.
Combination meter	Battery	19
	Ignition switch ON or START	14

Is the inspection result normal?

YES >> GO TO 2
NO >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse.

2.POWER SUPPLY CIRCUIT CHECK

1. Disconnect combination meter connector M24.
2. Check voltage between combination meter harness connector M24 terminals 3, 16 and ground.



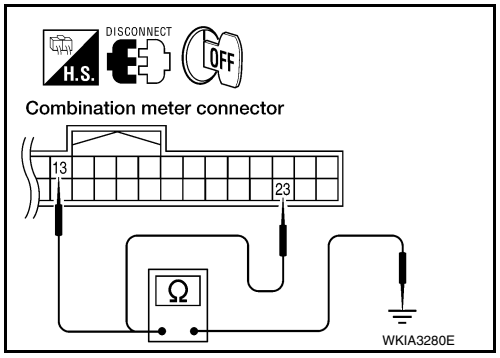
Terminals			Ignition switch position		
(+)		(–)	OFF	ACC	ON
Connector	Terminal				
M24	3	Ground	Battery voltage	Battery voltage	Battery voltage
	16		0V	0V	Battery voltage

Is the inspection result normal?

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

3.GROUND CIRCUIT CHECK

1. Turn ignition switch OFF.
2. Check continuity between combination meter harness connector M24 terminals 13, 23 and ground.



Terminals			Continuity
(+)		(–)	
Connector	Terminal		
M24	13	Ground	Yes
	23		

Is the inspection result normal?

YES >> Inspection End.
NO >> Check ground harness.

BCM (BODY CONTROL MODULE)

BCM (BODY CONTROL MODULE) : Diagnosis Procedure

INFOID:0000000012990853

Regarding Wiring Diagram information, refer to BCS-49, "Wiring Diagram".

1. CHECK FUSES AND FUSIBLE LINK

Check that the following fuses and fusible link are not blown.

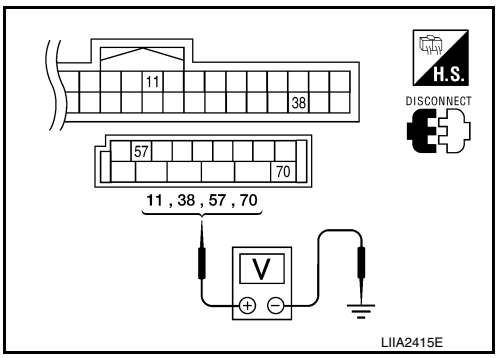
Terminal No.	Signal name	Fuses and fusible link No.
57	Battery power supply	21 (10A)
70		G (50A)
11	Ignition ACC or ON	4 (10A)
38	Ignition ON or START	1 (10A)

Is the fuse blown?

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

2. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM.
3. Check voltage between BCM harness connector and ground.



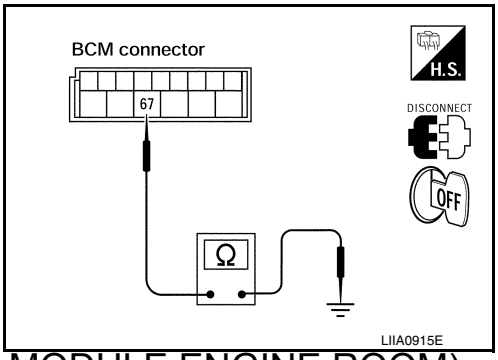
Connector	Terminals (+)	Terminals (-)	Power source	Condition	Voltage (V) (Approx.)
M18	11	Ground	ACC power supply	Ignition switch ACC or ON	Battery voltage
	38	Ground	Ignition power supply	Ignition switch ON or START	Battery voltage
M20	57	Ground	Battery power supply	Ignition switch OFF	Battery voltage
	70	Ground	Battery power supply	Ignition switch OFF	Battery voltage

Is the measurement value normal?

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

3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.



BCM		Ground	Continuity
Connector	Terminal		
M20	67		Yes

Does continuity exist?

YES >> Inspection End.
NO >> Repair or replace harness.

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

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

INFOID:0000000012990860

Regarding Wiring Diagram information, refer to PCS-22, "Wiring Diagram".

1. CHECK FUSIBLE LINKS

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

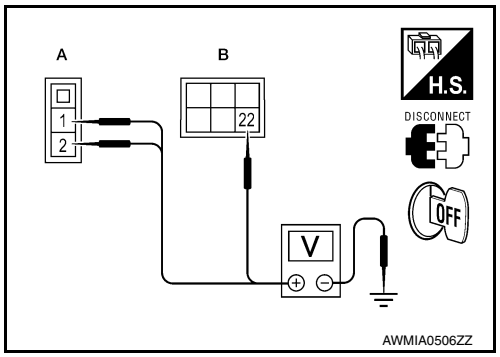
Terminal No.	Signal name	Fusible link No.
1	Battery	A, D
2		C
22		A, E, I

Is the fusible link blown?

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

2. CHECK BATTERY POWER SUPPLY CIRCUIT

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



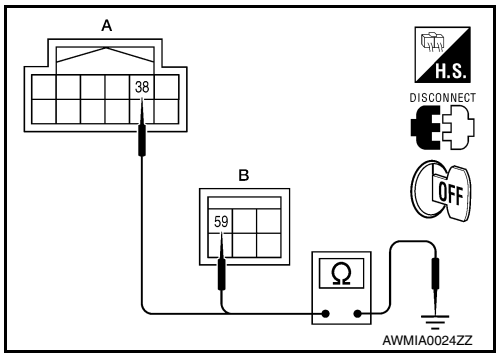
Terminals			Ignition switch position	Voltage (V) (Approx.)
(+)		(–)		
Connector	Terminal			
E118 (A)	1	Ground	OFF	Battery voltage
	2			
E120 (B)	22			

Is there voltage on all pins?

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

3. CHECK GROUND CIRCUIT

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



IPDM E/R		Ground	Continuity
Connector	Terminal		
E122 (A)	38		Yes
E124 (B)	59		

Does continuity exist?

YES >> Inspection End.
NO >> Repair or replace harness.

FUEL LEVEL SENSOR SIGNAL CIRCUIT

Description

INFOID:0000000012563012

The fuel level sensor unit and fuel pump detects the approximate fuel level in the fuel tank and transmits the fuel level signal to the combination meter.

Component Function Check

INFOID:0000000012563013

1.COMBINATION METER INPUT SIGNAL

1. Select “METER/M&A” on CONSULT.
2. Using “FUEL METER” of “DATA MONITOR”, compare the value of DATA MONITOR with fuel gauge pointer of combination meter.

Fuel gauge pointer	Reference value of data monitor [lit.]
Full	Approx. 79.3
3/4	Approx. 58.5
1/2	Approx. 37.1
1/4	Approx. 22.4
Empty	Approx. 7.6

Does the data monitor value approximately match the fuel gauge indication?

YES >> Inspection End.
NO >> Replace combination meter. Refer to MWI-91, "Removal and Installation".

Diagnosis Procedure

INFOID:0000000012563014

Regarding Wiring Diagram information, refer to MWI-66, "Wiring Diagram".

1.CHECK HARNESS CONNECTOR

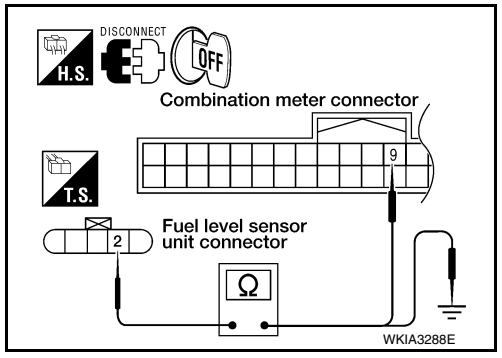
1. Turn ignition switch OFF.
2. Check combination meter and fuel level sensor unit terminals (meter-side and harness-side) for poor connection.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair or replace terminals or connectors.

2.CHECK FUEL LEVEL SENSOR UNIT CIRCUIT

1. Disconnect combination meter connector and fuel level sensor unit connector.
2. Check continuity between combination meter harness connector and fuel level sensor unit and fuel pump harness connector.



Terminals				Continuity
(+)		(-)		
Connector	Terminal	Connector	Terminal	
C5	2	M24	9	Yes

3. Check continuity between fuel level sensor unit and fuel pump harness connector and ground.

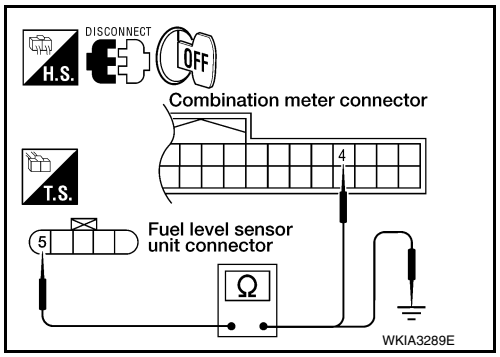
Terminals			Continuity
(+)		(-)	
Connector	Terminal	Ground	
C5	2		No

Is the inspection result normal?

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

3.CHECK FUEL LEVEL SENSOR UNIT GROUND CIRCUIT

1. Check continuity between combination meter harness connector and fuel level sensor unit and fuel pump harness connector.



Terminals				Continuity
(+)		(-)		
Connector	Terminal	Connector	Terminal	
C5	5	M24	4	Yes

2. Check continuity between fuel level sensor unit and fuel pump harness connector and ground.

Terminals			Continuity
(+)		(-)	
Connector	Terminal	Ground	
C5	5		No

Is the inspection result normal?

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

4.CHECK INSTALLATION CONDITION

Check fuel level sensor unit installation, and check whether the float arm interferes or binds with any of the internal components in the fuel tank.

Is the inspection result normal?

YES >> Inspection End.
NO >> Install the fuel level sensor unit properly.

Component Inspection

INFOID:0000000012563015

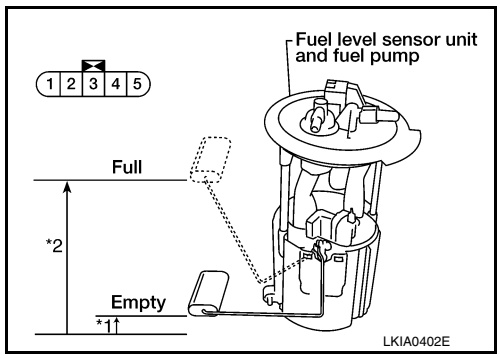
1.REMOVE FUEL LEVEL SENSOR UNIT

Remove the fuel level sensor unit. Refer to FL-11, "Removal and Installation".

>> GO TO 2

2.CHECK FUEL LEVEL SENSOR UNIT AND FUEL PUMP

Check the resistance between terminals 2 and 5.



Terminal		Float position mm (in)			Resistance value (Approx.)
2	5	*1	Empty	10 (0.4)	81.5Ω
		*2	Full	211.1 (8.3)	5Ω

*1 and *2: When float arm is in contact with stopper.

Is inspection result normal?

YES >> Inspection End.

NO >> Replace fuel level sensor unit and fuel pump. Refer to FL-11, "Removal and Installation".

OIL PRESSURE SWITCH SIGNAL CIRCUIT

Description

INFOID:0000000012563016

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

Component Function Check

INFOID:0000000012563017

1.COMBINATION METER INPUT SIGNAL

1. Select “METER/M&A” on CONSULT.
2. Monitor “OIL W/L” of “DATA MONITOR” while operating ignition switch.

OIL W/L

When ignition switch is in ON position (Engine stopped) : ON

When engine is running : OFF

>> Inspection End.

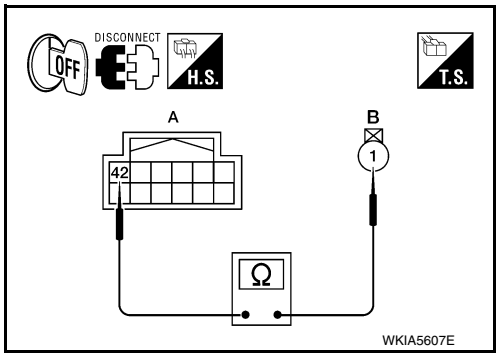
Diagnosis Procedure

INFOID:0000000012563018

Regarding Wiring Diagram information, refer to MWI-66, "Wiring Diagram".

1.CHECK OIL PRESSURE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector E122 and oil pressure switch connector E208 (VQ40DE) or F4 (QR25DE).
3. Check continuity between IPDM E/R harness connector E122 (A) terminal 42 and oil pressure switch harness connector E208 (VQ40DE) or F4 (QR25DE) (B) terminal 1.



Continuity should exist.

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair harness or connector.

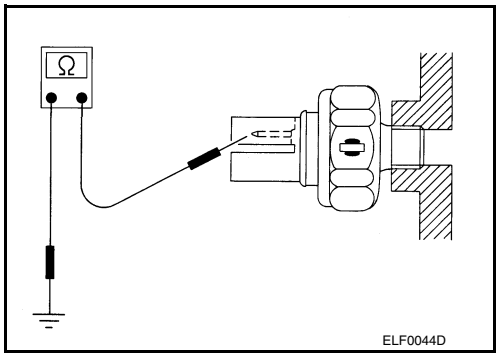
Component Inspection

INFOID:0000000012563019

1.CHECK OIL PRESSURE SWITCH

Check continuity between oil pressure switch and ground.

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



Is the inspection result normal?

YES >> Inspection End.

NO >> Replace the oil pressure switch. Refer to EM-81, "Exploded View" (QR25DE) or Refer to EM-222, "Exploded View" (VQ40DE).

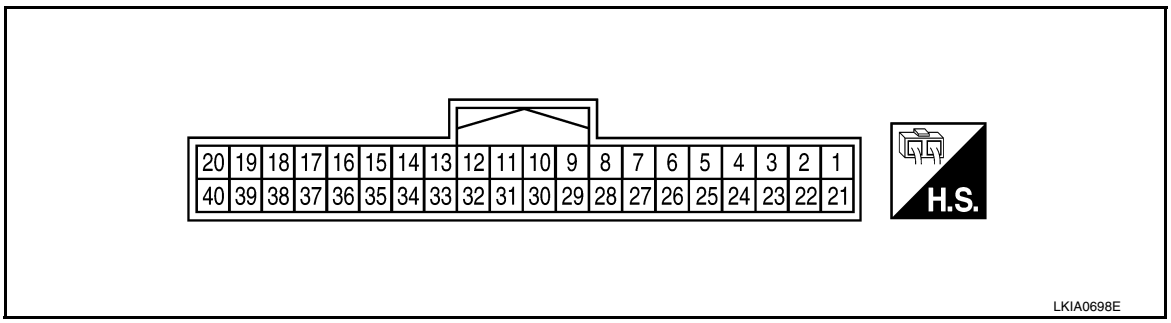
ECU DIAGNOSIS INFORMATION

COMBINATION METER

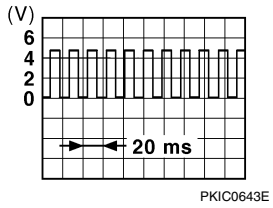
Reference Value

INFOID:0000000012563020

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal	Wire color	Item	Condition		Reference value (V) (Approx.)
			Ignition switch	Operation or condition	
2	P	Generator	ON	Generator voltage low	0
				Generator voltage normal	Battery voltage
3	R/Y	Battery power supply	—	—	Battery voltage
4	B/Y	Fuel level sensor ground	ON	—	0
5	W	Vehicle speed signal output (2-pulse)	ON	Speedometer operated [When vehicle speed is approx. 20 km/h (12 MPH)]	240 Hz
6	SB	Vehicle speed signal output (8-pulse)	ON	Speedometer operated [When vehicle speed is approx. 40 km/h (25 MPH)]	**NOTE:** Maximum voltage may be 12V due to specifications (connected units). 
7	G	Transmission range signal	ON	Shift lever: P or N	0
				Shift lever: Except above	Battery voltage
9	BR	Fuel level sensor signal	—	—	Refer to MWI-12, "FUEL GAUGE : System Description".
11	P	CAN low	—	—	—
12	L	CAN high	—	—	—
13	GR	Ground	—	—	0
16	W/G	Ignition switch ON or START	ON	—	Battery voltage
17	B	AT-PN switch	—	—	—
18	L	AT 1 Range switch	—	—	—
20	Y	O/D off switch	ON	O/D off switch ON	0
				O/D off switch OFF	Battery voltage
22	BR	Illumination control switch	—	—	Refer to INL-74, "System Description".

Terminal	Wire color	Item	Condition		Reference value (V) (Approx.)
			Ignition switch	Operation or condition	
23	B	Ground	—	—	0
24	V	Seat belt buckle switch LH	ON	Unfastened (ON)	0
				Fastened (OFF)	Battery voltage
25	SB	DIFF LOCK indicator input	ON	DIFF LOCK indicator ON	0
				DIFF LOCK indicator OFF	Battery voltage
31	G	Parking brake switch	ON	Parking brake applied	0
				Parking brake released	Battery voltage
32	SB	Brake fluid level switch	ON	Brake fluid level low	0
				Brake fluid level normal	Battery voltage
34	L	Washer fluid level switch	ON	Washer fluid level low	0
				Washer fluid level normal	Battery voltage
37	SB	Air bag warning lamp input	ON	Air bag warning lamp ON	4
				Air bag warning lamp OFF	0
39	G	Security indicator input	OFF	Security indicator ON	0
				Security indicator OFF	Battery voltage
40	LG	Seat belt buckle switch RH	ON	Unfastened (ON)	0
				Fastened (OFF)	Battery voltage

Fail Safe

INFOID:0000000012563021

The combination meter performs a fail-safe operation for the functions listed below when communication is lost.

Function		Specifications
Speedometer		Zero indication.
Tachometer		
Fuel gauge		
Engine coolant temperature gauge		
Engine oil pressure gauge (with 6 gauge combination meter)		
Voltage gauge (with 6 gauge combination meter)		
Illumination control	Meter illumination	Change to nighttime mode when communication is lost.
Segment LCD	Odometer	Freeze current indication.
	A/T position	Display turns off.
Buzzer		Buzzer turns off.

Function		Specifications
Warning lamp/indicator lamp	ABS warning lamp	Lamp turns on when communication is lost.
	Brake warning lamp	
	VDC OFF indicator lamp	
	Malfunction indicator lamp	
	SLIP indicator lamp	
	AT oil temp warning lamp	Lamp turns off when communication is lost.
	Low washer fluid warning lamp	
	Hill descent control indicator lamp	
	Door open warning lamp	
	CRUISE indicator lamp	
	SET indicator lamp	
	O/D OFF indicator lamp	
	Oil pressure warning lamp	
	Air bag warning lamp	
	High beam indicator	
	Turn signal indicator lamp	
	Driver and passenger seat belt warning lamp	Lamp turns off when disconnected.
	Charge warning lamp	
	Security indicator lamp	
	4WD indicator lamp	
	ATP indicator lamp	
	Differential lock indicator lamp	
	Low tire pressure warning lamp	Lamp will flash every second for 1 minute and then stay on continuously thereafter.

DTC Index

INFOID:0000000012563022

CONSULT display	Malfunction	Reference page
CAN COMM CIRC [U1000]	Malfunction is detected in CAN communication. **CAUTION:** **Even when there is no malfunction on CAN communication system, malfunction may be misinterpreted when battery has low voltage (when maintaining 7 - 8 V for about 2 seconds) or 10A fuse [No. 19, located in the fuse block (J/B)] is disconnected.**	MWI-29
VEHICLE SPEED CIRC [B2205]	Malfunction is detected when an erroneous speed signal is input. **CAUTION:** **Even when there is no malfunction on speed signal system, malfunction may be misinterpreted when battery has low voltage (when maintaining 7 - 8 V for about 2 seconds).**	MWI-30

NOTE:
"TIME" indicates the following.
- 0: Indicates that a malfunction is detected at present.
- 1-63: Indicates that a malfunction was detected in the past. (Displays number of ignition switch OFF → ON cycles after malfunction is detected. Self-diagnosis result is erased when "63" is exceeded.)

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:0000000012990854

NOTE:
The Signal Tech II Tool [– (J-50190)] can be used to perform the following functions. Refer to the Signal Tech II User Guide for additional information.

- Activate and display TPMS transmitter IDs
- Display tire pressure reported by the TPMS transmitter
- Read TPMS DTCs
- Register TPMS transmitter IDs
- Test remote keyless entry keyfob relative signal strength

VALUES ON THE DIAGNOSIS TOOL

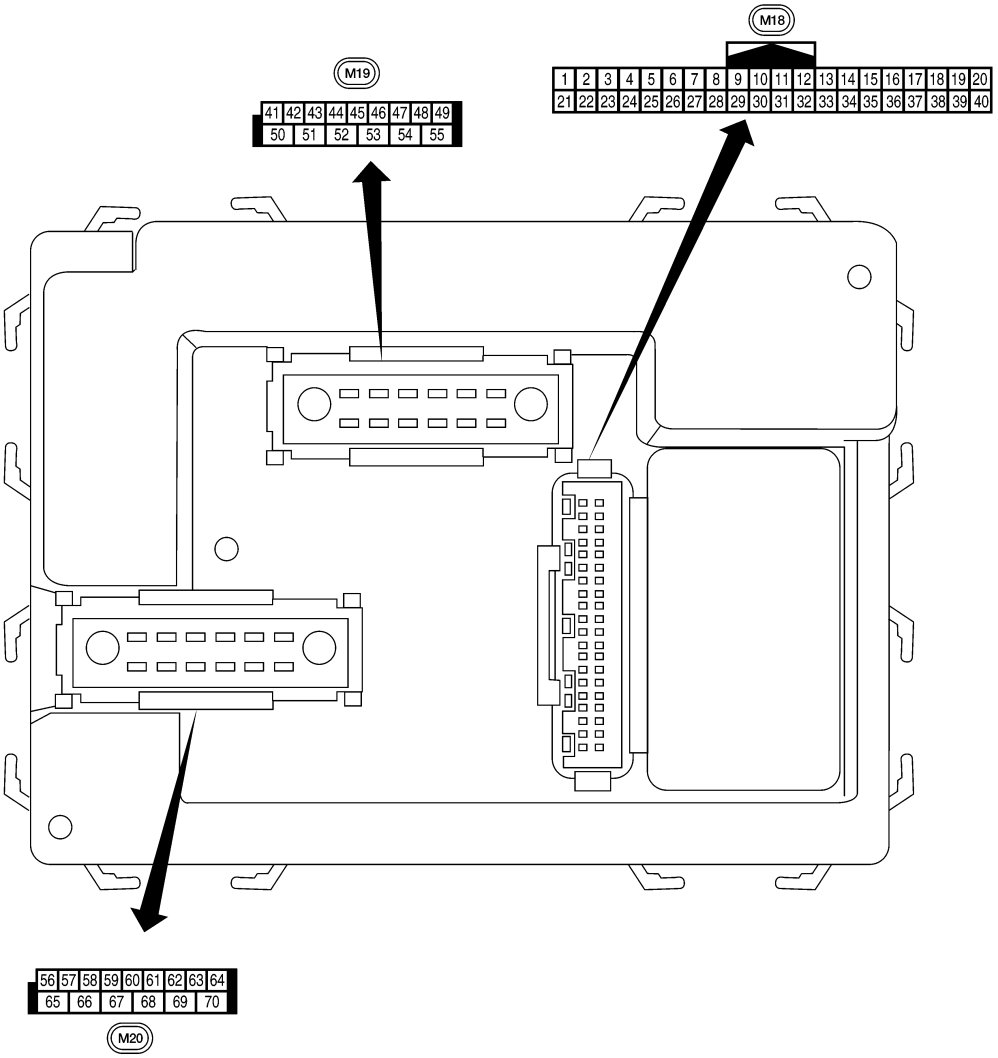
Monitor Item	Condition	Value/Status
ACC ON SW	Ignition switch OFF or ON	Off
	Ignition switch ACC	On
AIR COND SW	A/C switch OFF	Off
	A/C switch ON	On
AIR PRESS FL	Front left tire air pressure value	kPa, kg/cm^2, psi
AIR PRESS FR	Front right tire air pressure value	kPa, kg/cm^2, psi
AIR PRESS RL	Rear left tire air pressure value	kPa, kg/cm^2, psi
AIR PRESS RR	Rear right tire air pressure value	kPa, kg/cm^2, psi
AUTO LIGHT SW	Lighting switch OFF	Off
	Lighting switch AUTO	On
BRAKE SW	Brake pedal released	Off
	Brake pedal applied	On
BUCKLE SW	Seat belt buckle unfastened	Off
	Seat belt buckle fastened	On
BUZZER	Buzzer in combination meter OFF	Off
	Buzzer in combination meter ON	On
CARGO LAMP SW	Cargo lamp switch OFF	Off
	Cargo lamp switch ON	On
CDL LOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the LOCK side	On
CDL UNLOCK SW	Door lock/unlock switch does not operate	Off
	Press door lock/unlock switch to the UNLOCK side	On
DOOR SW-AS	Front door RH closed	Off
	Front door RH opened	On
DOOR SW-DR	Front door LH closed	Off
	Front door LH opened	On
DOOR SW-RL	Rear door LH closed	Off
	Rear door LH opened	On
DOOR SW-RR	Rear door RH closed	Off
	Rear door RH opened	On
FAN ON SIG	Blower motor fan switch OFF	Off
	Blower motor fan switch ON	On

Monitor Item	Condition	Value/Status
FR FOG SW	Front fog lamp switch OFF	Off
	Front fog lamp switch ON	On
FR WASHER SW	Front washer switch OFF	Off
	Front washer switch ON	On
FR WIPER LOW	Front wiper switch OFF	Off
	Front wiper switch LO	On
FR WIPER HI	Front wiper switch OFF	Off
	Front wiper switch HI	On
FR WIPER INT	Front wiper switch OFF	Off
	Front wiper switch INT	On
FR WIPER STOP	Any position other than front wiper stop position	Off
	Front wiper stop position	On
HAZARD SW	When hazard switch is not pressed	Off
	When hazard switch is pressed	On
HEAD LAMP SW 1	Headlamp switch OFF	Off
	Headlamp switch 1st	On
HEAD LAMP SW 2	Headlamp switch OFF	Off
	Headlamp switch 1st	On
HI BEAM SW	High beam switch OFF	Off
	High beam switch HI	On
ID REGST FL1	ID registration of front left tire incomplete	YET
	ID registration of front left tire complete	DONE
ID REGST FR1	ID registration of front right tire incomplete	YET
	ID registration of front right tire complete	DONE
ID REGST RL1	ID registration of rear left tire incomplete	YET
	ID registration of rear left tire complete	DONE
ID REGST RR1	ID registration of rear right tire incomplete	YET
	ID registration of rear right tire complete	DONE
IGN ON SW	Ignition switch OFF or ACC	Off
	Ignition switch ON	On
IGN SW CAN	Ignition switch OFF or ACC	Off
	Ignition switch ON	On
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7
KEY CYL LK-SW	Door key cylinder LOCK position	Off
	Door key cylinder other than LOCK position	On
KEY CYL UN-SW	Door key cylinder UNLOCK position	Off
	Door key cylinder other than UNLOCK position	On
KEY ON SW	Mechanical key is removed from key cylinder	Off
	Mechanical key is inserted to key cylinder	On
KEYLESS LOCK	LOCK button of key fob is not pressed	Off
	LOCK button of key fob is pressed	On
KEYLESS PANIC	PANIC button of key fob is not pressed	Off
	PANIC button of key fob is pressed	On

Monitor Item	Condition	Value/Status
KEYLESS UNLOCK	UNLOCK button of key fob is not pressed	Off
	UNLOCK button of key fob is pressed	On
LIGHT SW 1ST	Lighting switch OFF	Off
	Lighting switch 1st	On
OIL PRESS SW	• Ignition switch OFF or ACC • Engine running	Off
	Ignition switch ON	On
OPTICAL SENSOR	Bright outside of the vehicle	Close to 5V
	Dark outside of the vehicle	Close to 0V
PASSING SW	Other than lighting switch PASS	Off
	Lighting switch PASS	On
REAR DEF SW	Rear window defogger switch OFF	Off
	Rear window defogger switch ON	On
TURN SIGNAL L	Turn signal switch OFF	Off
	Turn signal switch LH	On
TURN SIGNAL R	Turn signal switch OFF	Off
	Turn signal switch RH	On
VEHICLE SPEED	While driving	Equivalent to speedometer reading
WARNING LAMP	Low tire pressure warning lamp in combination meter OFF	Off
	Low tire pressure warning lamp in combination meter ON	On

Terminal Layout

INFOID:0000000012990855



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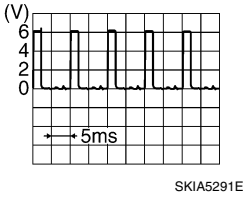
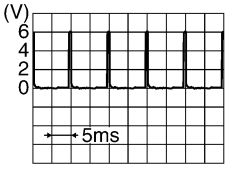
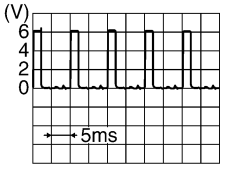
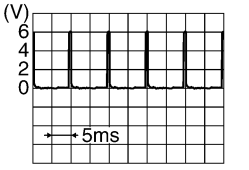
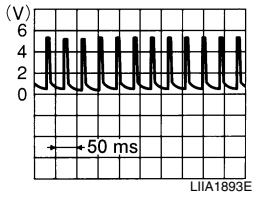
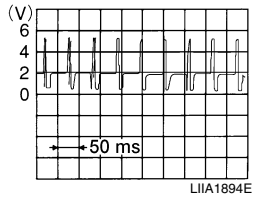
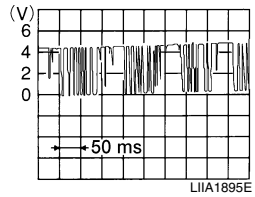
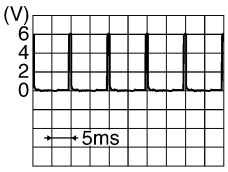
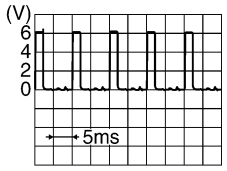
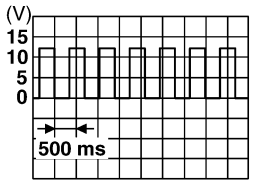
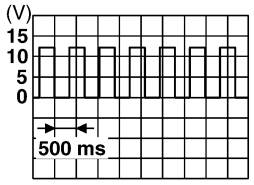
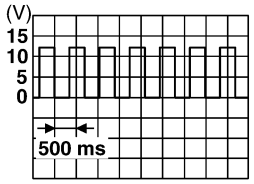
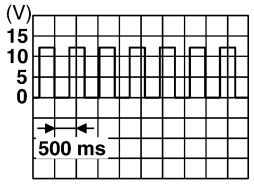
Physical Values

INFOID:0000000012990856

Terminal	Wire color	Item	Signal input/ output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
1	BR	Ignition keyhole illumination	Output	OFF	Door is locked (SW OFF)	Battery voltage
					Door is unlocked (SW ON)	0V
2	P	Combination switch input 5	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
3	SB	Combination switch input 4	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
4	V	Combination switch input 3	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
5	L	Combination switch input 2	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
6	R	Combination switch input 1				
7	GR	Front door lock assembly LH (key cylinder switch) unlock	Input	OFF	ON (open, 2nd turn)	Momentary 1.5V
					OFF (closed)	0V
8	SB	Front door lock assembly LH (key cylinder switch) lock	Input		On (open)	Momentary 1.5V
					OFF (closed)	0V
9	LG	Brake sw	Input	OFF	OFF (brake pedal is not depressed)	0V
					ON (brake pedal is depressed)	Battery voltage
11	G/B	Ignition switch (ACC or ON)	Input	ACC or ON	Ignition switch ACC or ON	Battery voltage
12	LG	Front door switch RH (All)	Input	OFF	ON (open)	0V
		Rear door switch upper RH (King Cab)			OFF (closed)	Battery voltage
		Rear door switch lower RH (King Cab)				

Terminal	Wire color	Item	Signal input/ output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
13	L	Rear door switch RH (Crew Cab)	Input	OFF	ON (open)	0V
					OFF (closed)	Battery voltage
15	W	Tire pressure warning check connector	Input	OFF	—	5V
18	BR	Remote keyless entry receiver and optical sensor (Ground)	Output	OFF	—	0V
19	V	Remote keyless entry receiver (power supply)	Output	OFF	Ignition switch OFF	
20	G	Remote keyless entry receiver signal (Signal)	Input	OFF	Stand-by (keyfob buttons released)	
					When remote keyless entry receiver receives signal from keyfob (keyfob buttons pressed)	
21	GR	NATS antenna amp.	Input	OFF → ON	Ignition switch (OFF → ON)	Just after turning ignition switch ON: Pointer of tester should move.
23	G	Security indicator lamp	Output	OFF	Goes OFF → illuminates (Every 2.4 seconds)	Battery voltage → 0V
25	BR	NATS antenna amp.	Input	OFF → ON	Ignition switch (OFF → ON)	Just after turning ignition switch ON: Pointer of tester should move.
27	W	Compressor ON signal	Input	ON	A/C switch OFF	5V
					A/C switch ON	0V
28	R	Front blower monitor	Input	ON	Front blower motor OFF	Battery voltage
					Front blower motor ON	0V
29	G	Hazard switch	Input	OFF	ON	0V
					OFF	5V
31	GR	Cargo lamp switch	Input	OFF	ON	0V
					OFF	Battery voltage

Terminal	Wire color	Item	Signal input/ output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
32	BG	Combination switch output 5	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
33	GR	Combination switch output 4	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
34	G	Combination switch output 3	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
35	BR	Combination switch output 2	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
36	LG	Combination switch output 1				
37	B	Key switch	Input	OFF	Key inserted	Battery voltage
					Key removed	0V
38	W/R	Ignition switch (ON)	Input	ON	—	Battery voltage
39	L	CAN high	—	—	—	—
40	P	CAN low	—	—	—	—
41	Y	Rear window defogger switch	Input	ON	Rear window defogger switch ON	0V
					Rear window defogger switch OFF	5V
45	V	Lock switch	Input	OFF	ON (lock)	0V
					OFF	Battery voltage
46	LG	Unlock switch	Input	OFF	ON (unlock)	0V
					OFF	Battery voltage
47	GR	Front door switch LH (All)	Input	OFF	ON (open)	0V
		Rear door switch upper LH (King Cab)			OFF (closed)	Battery voltage
		Rear door switch lower LH (King Cab)				

Terminal	Wire color	Item	Signal input/ output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
48	P	Rear door switch LH (Crew Cab)	Input	OFF	ON (open)	0V
					OFF (closed)	Battery voltage
50	P	Cargo lamp	Output	OFF	Any door open (ON)	0V
					All doors closed (OFF)	Battery voltage
51	BG	Trailer turn signal (right)	Output	ON	Turn right ON	 SKIA3009J
52	LG	Trailer turn signal (left)	Output	ON	Turn left ON	 SKIA3009J
56	R/Y	Battery saver output	Output	OFF	10 minutes after ignition switch is turned OFF	0V
				ON	—	Battery voltage
57	R/Y	Battery power supply	Input	—	—	Battery voltage
58	W	Optical sensor	Input	ON	When optical sensor is illuminated	3.1V or more
					When optical sensor is not illuminated	0.6V or less
59	GR	Front door lock assembly LH (unlock)	Output	OFF	OFF (neutral)	0V
					ON (unlock)	Battery voltage
60	LG	Turn signal (left)	Output	ON	Turn left ON	 SKIA3009J
61	G	Turn signal (right)	Output	ON	Turn right ON	 SKIA3009J
63	BR	Interior room/map lamp	Output	OFF	Any door switch: ON (open)	0V
					Any door switch: OFF (closed)	Battery voltage
65	V	All door lock actuators (lock)	Output	OFF	OFF (neutral)	0V
					ON (lock)	Battery voltage

Terminal	Wire color	Item	Signal input/ output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
66	L	Front door lock actuator RH, rear door lock actuators LH/RH (unlock)	Output	OFF	OFF (neutral)	0V
					ON (unlock)	Battery voltage
67	B	Ground	Input	ON	—	0V
68[1]	O	Power window power supply (RAP)	Output	—	Ignition switch ON	Battery voltage
					Within 45 seconds after ignition switch OFF	Battery voltage
					More than 45 seconds after ignition switch OFF	0V
					When front door LH or RH is open or power window timer operates	0V
68[2]	SB	Power window power supply (RAP)	Output	—	Ignition switch ON	Battery voltage
					Within 45 seconds after ignition switch OFF	Battery voltage
					More than 45 seconds after ignition switch OFF	0V
					When front door LH or RH is open or power window timer operates	0V
69	P	Power window power supply (BAT)	Output	OFF	—	Battery voltage
70	W	Battery power supply	Input	OFF	—	Battery voltage

1: King cab

2: Crew cab

Fail Safe

INFOID:0000000012990857

Fail-safe index

BCM performs fail-safe control when any DTC listed below is detected.

Display contents of CONSULT	Fail-safe	Cancellation
U1000: CAN COMM CIRCUIT	Inhibit engine cranking	When the BCM re-establishes communication with the other modules.

DTC Inspection Priority Chart

INFOID:0000000012990858

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	DTC
1	• U1000: CAN COMM CIRCUIT
2	• B2190: NATS ANTENNA AMP • B2191: DIFFERENCE OF KEY • B2192: ID DISCORD BCM-ECM • B2193: CHAIN OF BCM-ECM

Priority	DTC
3	• C1729: VHCL SPEED SIG ERR • C1735: IGNITION SIGNAL
4	• C1704: LOW PRESSURE FL • C1705: LOW PRESSURE FR • C1706: LOW PRESSURE RR • C1707: LOW PRESSURE RL • C1708: [NO DATA] FL • C1709: [NO DATA] FR • C1710: [NO DATA] RR • C1711: [NO DATA] RL • C1712: [CHECKSUM ERR] FL • C1713: [CHECKSUM ERR] FR • C1714: [CHECKSUM ERR] RR • C1715: [CHECKSUM ERR] RL • C1716: [PRESSDATA ERR] FL • C1717: [PRESSDATA ERR] FR • C1718: [PRESSDATA ERR] RR • C1719: [PRESSDATA ERR] RL • C1720: [CODE ERR] FL • C1721: [CODE ERR] FR • C1722: [CODE ERR] RR • C1723: [CODE ERR] RL • C1724: [BATT VOLT LOW] FL • C1725: [BATT VOLT LOW] FR • C1726: [BATT VOLT LOW] RR • C1727: [BATT VOLT LOW] RL

DTC Index

INFOID:0000000012990859

NOTE:

Details of time display

- CRNT: Displays when there is a malfunction now or after returning to the normal condition until turning ignition switch OFF → ON again.
- 1 - 39: Displayed if any previous malfunction is present when current condition is normal. It increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. The counter remains at 39 even if the number of cycles exceeds it. It is counted from 1 again when turning ignition switch OFF → ON after returning to the normal condition if the malfunction is detected again.

CONSULT display	Fail-safe	Low tire pressure warning lamp ON	Reference page
No DTC is detected. further testing may be required.	—	—	—
U1000: CAN COMM CIRCUIT	—	—	BCS-31
B2190: NATS ANTTENA AMP	—	—	SEC-18
B2191: DIFFERENCE OF KEY	—	—	SEC-21
B2192: ID DISCORD BCM-ECM	—	—	SEC-22
B2193: CHAIN OF BCM-ECM	—	—	SEC-24
C1708: [NO DATA] FL	—	X	WT-15
C1709: [NO DATA] FR	—	X	WT-15
C1710: [NO DATA] RR	—	X	WT-15
C1711: [NO DATA] RL	—	X	WT-15
C1712: [CHECKSUM ERR] FL	—	X	WT-17
C1713: [CHECKSUM ERR] FR	—	X	WT-17
C1714: [CHECKSUM ERR] RR	—	X	WT-17
C1715: [CHECKSUM ERR] RL	—	X	WT-17

CONSULT display	Fail-safe	Low tire pressure warning lamp ON	Reference page
C1716: [PRESSDATA ERR] FL	—	X	WT-19
C1717: [PRESSDATA ERR] FR	—	X	WT-19
C1718: [PRESSDATA ERR] RR	—	X	WT-19
C1719: [PRESSDATA ERR] RL	—	X	WT-19
C1720: [CODE ERR] FL	—	X	WT-17
C1721: [CODE ERR] FR	—	X	WT-17
C1722: [CODE ERR] RR	—	X	WT-17
C1723: [CODE ERR] RL	—	X	WT-17
C1724: [BATT VOLT LOW] FL	—	X	WT-17
C1725: [BATT VOLT LOW] FR	—	X	WT-17
C1726: [BATT VOLT LOW] RR	—	X	WT-17
C1727: [BATT VOLT LOW] RL	—	X	WT-17
C1729: VHCL SPEED SIG ERR	—	X	WT-21
C1735: IGNITION SIGNAL	—	X	WT-22

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

Reference Value

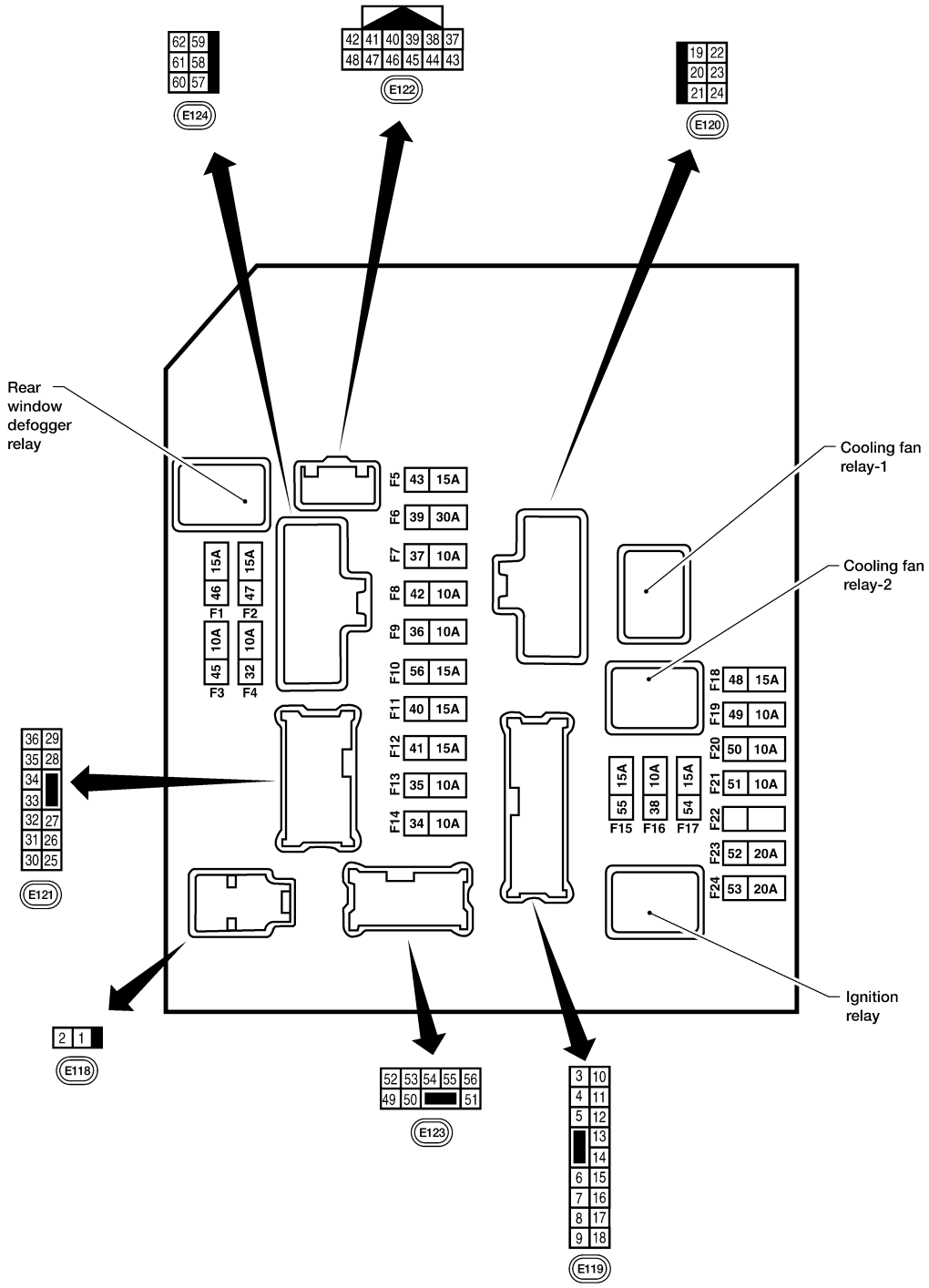
INFOID:0000000012990861

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
MOTOR FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1, 2, 3, 4
A/C COMP REQ	A/C switch OFF		Off
	A/C switch ON		On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST, 2ND, HI or AUTO (Light is illuminated)		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND HI or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI		On
FR FOG REQ	Lighting switch 2ND	Front fog lamp switch OFF	Off
		Front fog lamp switch ON	On
FR WIP REQ	Ignition switch ON	Front wiper switch OFF	Stop
		Front wiper switch INT	1LOW
		Front wiper switch LO	Low
		Front wiper switch HI	HI
WIP AUTO STOP	Ignition switch ON	Front wiper stop position	STOP P
		Any position other than front wiper stop position	ACT P
WIP PROT	Ignition switch ON	Front wiper operates normally	Off
		Front wiper stops at fail-safe operation	BLOCK
ST RLY REQ	Ignition switch OFF or ACC		Off
	Ignition switch START		On
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
RR DEF REQ	Rear defogger switch OFF		Off
	Rear defogger switch ON		On
OIL P SW	Ignition switch OFF, ACC or engine running		Open
	Ignition switch ON		Close
DTRL REQ	Daytime light system requested OFF with CONSULT.		Off
	Daytime light system requested ON with CONSULT.		On
THFT HRN REQ	Not operated		Off
	• Panic alarm is activated • Horn is activated with VEHICLE SECURITY (THEFT WARNING) SYSTEM		On
HORN CHIRP	Not operated		Off
	Door locking with keyfob (horn chirp mode)		On

Terminal Layout

INFOID:0000000012990862



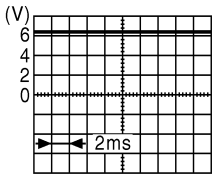
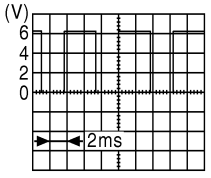
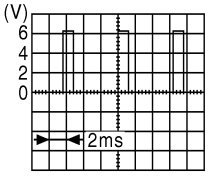
AAMIA0386GB

Physical Values

INFOID:0000000012990863

PHYSICAL VALUES

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value (Approx.)
				Ignition switch	Operation or condition	
1	W	Battery power supply	Input	OFF	—	Battery voltage
2	R	Battery power supply	Input	OFF	—	Battery voltage
3	G	ECM relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
4	P[1] R[2]	ECM relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
6	V	Throttle control motor relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
7	BR	ECM relay control	Input	—	Ignition switch ON or START	0V
					Ignition switch OFF or ACC	Battery voltage
8	W/R	Fuse 54-Air fuel ratio sensor 1, Heated oxygen sensor 2	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
10	R/B	Fuse 45-Daytime light relay 1	Output	ON	Daytime light system active	0V
					Daytime light system inactive	Battery voltage
11	Y	A/C compressor	Output	ON or START	A/C switch ON or defrost A/C switch	Battery voltage
					A/C switch OFF or defrost A/C switch	0V
12	W/G	Ignition switch supplied power	Input	—	OFF or ACC	0V
					ON or START	Battery voltage
13	R	Fuel pump relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
14	W/G	Fuse 49- Clutch interlock switch, clutch interlock cancel switch, clutch interlock cancel relay 2, TCM	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
15	W/R	Fuse 50-ABS actuator, steering angle sensor	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
16	W/G	Fuse 51-Backup lamp switch, back up lamp relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
17	W/G	Fuse 55-Fuel injectors	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
19	W	Starter motor	Output	START	—	Battery voltage
20	BR	Cooling fan motor (low)	Output	ON or START	—	Battery voltage
21	GR	Ignition switch supplied power	Input	—	OFF or ACC	0V
					START	Battery voltage
22	G	Battery power supply	Output	OFF	—	Battery voltage
23	LG	Door mirror defogger output signal	Output	—	When rear defogger switch is ON	Battery voltage
					When raker defogger switch is OFF	0V

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value (Approx.)
				Ignition switch	Operation or condition		
24	P	Cooling fan motor (high)	Output	—	Conditions correct for cooling fan operation		Battery voltage
					Conditions not correct for cooling fan operation		0V
27	W/G	Fuse 38-Back up lamp relay, back up lamp switch	Output	—	Ignition switch ON or START		Battery voltage
					Ignition switch OFF or ACC		0V
28	R	LH front parking and front side marker lamp	Output	OFF	Lighting switch 1st position	OFF	0V
						ON	Battery voltage
29	G	Trailer tow relay	Output	ON	Lighting switch 1st position	OFF	0V
						ON	Battery voltage
30	R/B	Fuse 53-ECM, NATS antenna amp.	Output	—	Ignition switch ON or START		Battery voltage
					Ignition switch OFF or ACC		0V
32	GR	Wiper low speed signal	Output	ON or START	Wiper switch	OFF	Battery voltage
						LO or INT	0V
35	L	Wiper high speed signal	Output	ON or START	Wiper switch	OFF, LO, INT	Battery voltage
						HI	0V
37	Y	Power generation command signal	Output	—	Ignition switch ON		 JPMIA0001GB 6.3 V
					40% is set on "Active test," "ALTERNATOR DUTY" of "ENGINE"		 JPMIA0002GB 3.8 V
					40% is set on "Active test," "ALTERNATOR DUTY" of "ENGINE"		 JPMIA0003GB 1.4 V
38	B	Ground	Input	—	—		0V
39	L	CAN-H	—	ON	—		—
40	P	CAN-L	—	ON	—		—

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition			Reference value (Approx.)
				Ignition switch	Operation or condition		
42	GR	Oil pressure switch	Input	—	Engine running		Battery voltage
					Engine stopped		0V
43	G	Wiper auto stop signal	Input	ON or START	Wiper switch	OFF, LO, INT	Battery voltage
44	R	Daytime light relay control (Canada only)	Input	ON	Daytime light system active		0V
					Daytime light system inactive		Battery voltage
45	LG	Horn relay control	Input	ON	When door locks are operated using keyfob (OFF → ON)[3]		Battery voltage → 0V
46	V	Fuel pump relay control	Input	—	Ignition switch ON or START		0V
					Ignition switch OFF or ACC		Battery voltage
47	W[1] BG[2]	Throttle control motor relay control	Input	—	Ignition switch ON or START		0V
					Ignition switch OFF or ACC		Battery voltage
48	R	Starter relay (inhibit switch)	Input	ON or START	Selector lever in "P" or "N"		0V
					Selector lever any other position		Battery voltage
49	GR	Front RH parking and front side marker lamp	Output	OFF	Lighting switch 1st position	OFF	0V
						ON	Battery voltage
50	W	Front fog lamp (LH)	Output	ON or START	Lighting switch must be in the 2nd position (LOW beam is ON) and the front fog lamp switch	OFF	0V
						ON	Battery voltage
51	V	Front fog lamp (RH)	Output	ON or START	Lighting switch must be in the 2nd position (LOW beam is ON) and the front fog lamp switch	OFF	0V
						ON	Battery voltage
52	P	LH low beam headlamp	Output	—	Lighting switch in 2nd position		Battery voltage
54	R	RH low beam headlamp	Output	—	Lighting switch in 2nd position		Battery voltage
55	G	LH high beam headlamp	Output	—	Lighting switch in 2nd position and placed in HIGH or PASS position		Battery voltage
56	L	RH high beam headlamp	Output	—	Lighting switch in 2nd position and placed in HIGH or PASS position		Battery voltage
57	GR	Parking, license, and tail lamp	Output	ON	Lighting switch 1st position	OFF	0V
						ON	Battery voltage
59	B	Ground	Input	—	—		0V

Terminal	Wire color	Signal name	Signal input/ output	Measuring condition		Reference value (Approx.)
				Ignition switch	Operation or condition	
60	GR	Rear window defogger relay	Output	ON or START	Rear defogger switch ON	Battery voltage
					Rear defogger switch OFF	0V
61	R/B	Fuse 32-Trailer tow relay 1	Output	OFF	—	Battery voltage

[1]: For Mexico

[2]: Except for Mexico

[3]: When horn reminder is ON

Fail Safe

INFOID:0000000012990864

CAN COMMUNICATION CONTROL

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

If No CAN Communication Is Available With ECM

Control part	Fail-safe in operation
Cooling fan (if equipped)	• Turns ON the cooling fan relay when the ignition switch is turned ON • Turns OFF the cooling fan relay when the ignition switch is turned OFF

If No CAN Communication Is Available With BCM

Control part	Fail-safe in operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp (LH/RH) high relays OFF
• Parking lamps • License plate lamps • Tail lamps	• Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF
Front wiper	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.
Rear window defogger	Rear window defogger relay OFF
A/C compressor	A/C relay OFF
Front fog lamps (if equipped)	Front fog lamp relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

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

Ignition switch	Ignition relay	Tail lamp relay
ON	ON	—
OFF	OFF	—

NOTE:

The tail lamp turns OFF when the ignition switch is turned ON.

FRONT WIPER CONTROL

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

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

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

STARTER MOTOR PROTECTION FUNCTION

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

DTC Index

INFOID:0000000012990865

CONSULT display	Fail-safe	TIME[NOTE]		Refer to
No DTC is detected. further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	1 – 39	PCS-13

NOTE:
The details of TIME display are as follows.
- CRNT: The malfunctions that are detected now
- 1 - 39: The number is indicated when it is normal at present and a malfunction was detected in the past. It increases like 0 → 1 → 2 · · · 38 → 39 after returning to the normal condition whenever IGN OFF → ON. It is fixed to 39 until the self-diagnosis results are erased if it is over 39. It returns to 0 when a malfunction is detected again in the process.

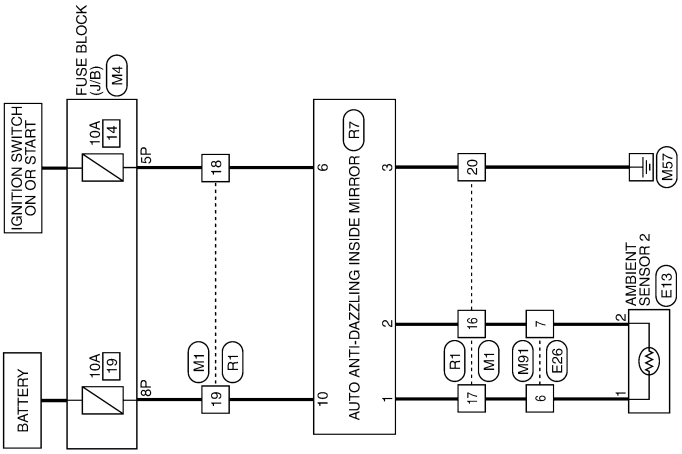
WIRING DIAGRAM

COMPASS

Wiring Diagram - With Homelink Universal Transceiver

INFOID:0000000012563034

COMPASS - WITH HOMELINK UNIVERSAL TRANSCEIVER



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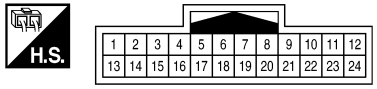
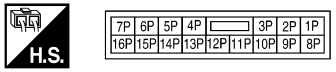
COMPASS CONNECTORS - WITH HOMELINK UNIVERSAL TRANSCEIVER

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



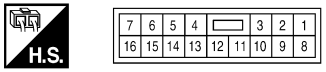
Terminal No.	Color of Wire	Signal Name
16	V	–
17	LG	–
18	W/G	–
19	R/Y	–
20	B	–

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
5P	W/G	–
8P	R/Y	–

Connector No.	M91
Connector Name	WIRE TO WIRE
Connector Color	WHITE

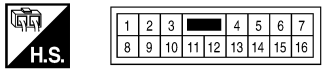


Terminal No.	Color of Wire	Signal Name
6	LG	–
7	V	–

Connector No.	E13
Connector Name	AMBIENT SENSOR 2
Connector Color	BLACK

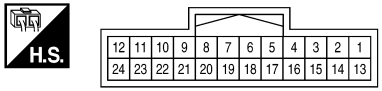
Terminal No.	Color of Wire	Signal Name
1	LG	–
2	V	–

Connector No.	E26
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
6	LG	–
7	V	–

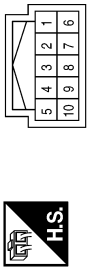
Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
16	V	–
17	LG	–
18	W/G	–
19	R/Y	–
20	B	–

ABNIA4172GB

Connector No.	R7
Connector Name	AUTO ANTI-DAZZLING INSIDE MIRROR (WITH HOMELINK UNIVERSAL TRANSCEIVER)
Connector Color	BLACK



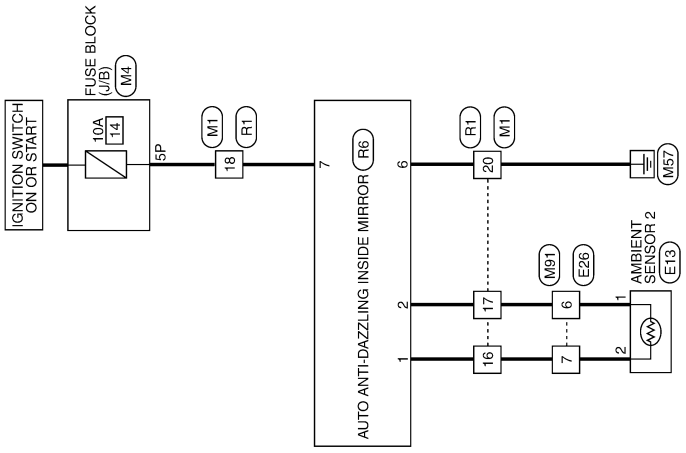
Terminal No.	Color of Wire	Signal Name
1	LG	–
2	V	–
3	B	–
6	W/G	–
10	R/Y	–

ABNIA4173GB

Wiring Diagram - Without Homelink Universal Transceiver

INFOID:0000000012563035

COMPASS - WITHOUT HOMELINK UNIVERSAL TRANSCEIVER



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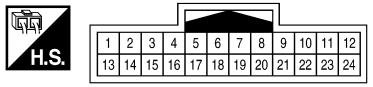
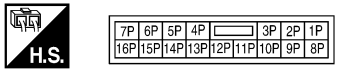
COMPASS CONNECTORS - WITHOUT HOMELINK UNIVERSAL TRANSCEIVER

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



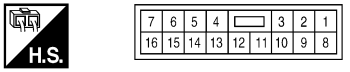
Terminal No.	Color of Wire	Signal Name
16	V	–
17	LG	–
18	W/G	–
20	B	–

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
5P	W/G	–

Connector No.	M91
Connector Name	WIRE TO WIRE
Connector Color	WHITE

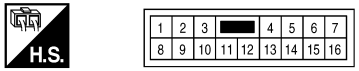


Terminal No.	Color of Wire	Signal Name
6	LG	–
7	V	–

Connector No.	E13
Connector Name	AMBIENT SENSOR 2
Connector Color	BLACK

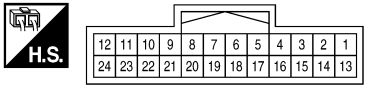
Terminal No.	Color of Wire	Signal Name
1	LG	–
2	V	–

Connector No.	E26
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
6	LG	–
7	V	–

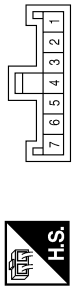
Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
16	V	–
17	LG	–
18	W/G	–
20	B	–

ABNIA4174GB

Connector No.	R6
Connector Name	AUTO ANTI-DAZZLING INSIDE MIRROR (WITHOUT HOMELINK UNIVERSAL TRANSCEIVER)
Connector Color	WHITE



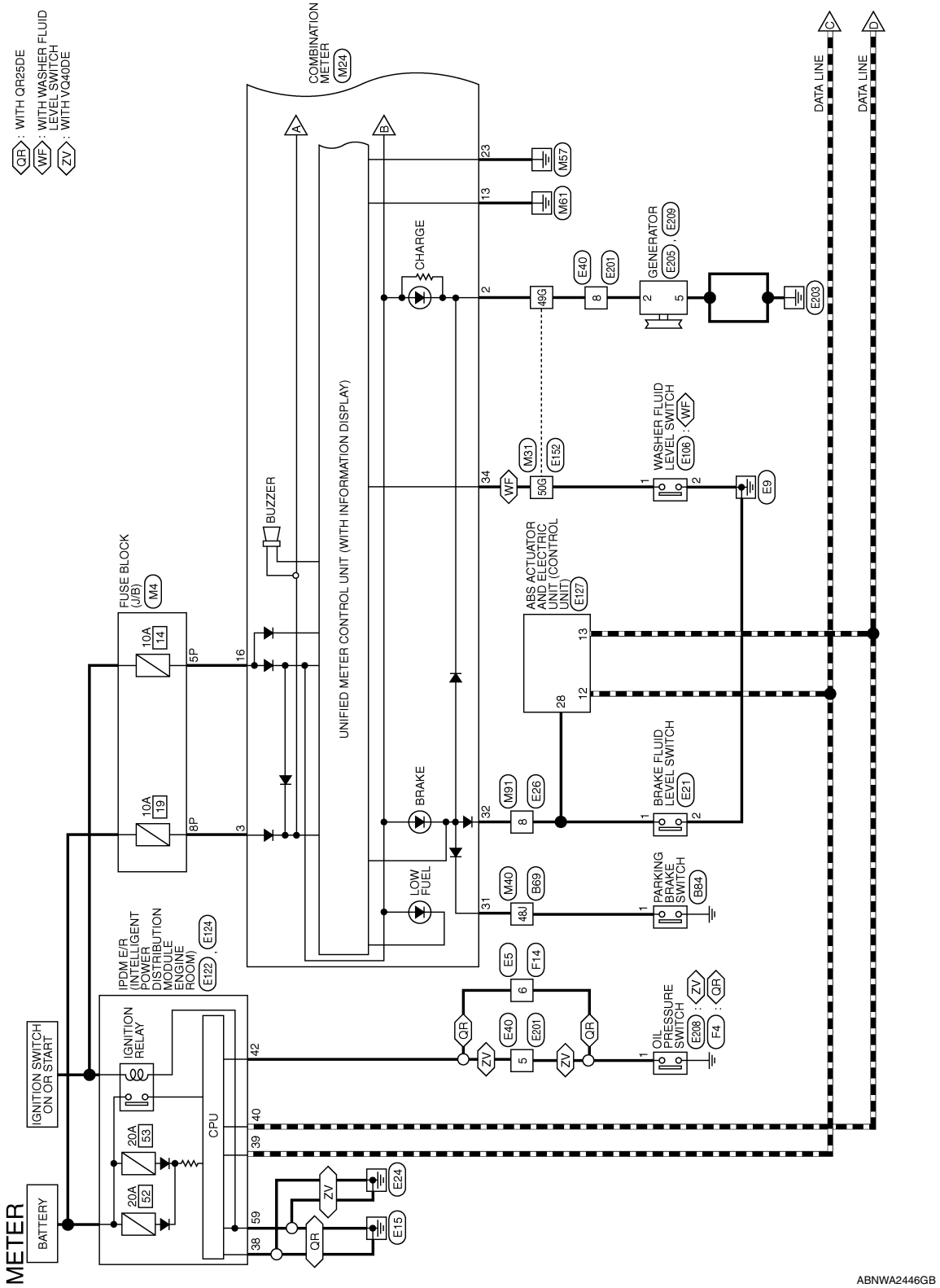
Terminal No.	Color of Wire	Signal Name
1	V	–
2	LG	–
6	B	–
7	W/G	–

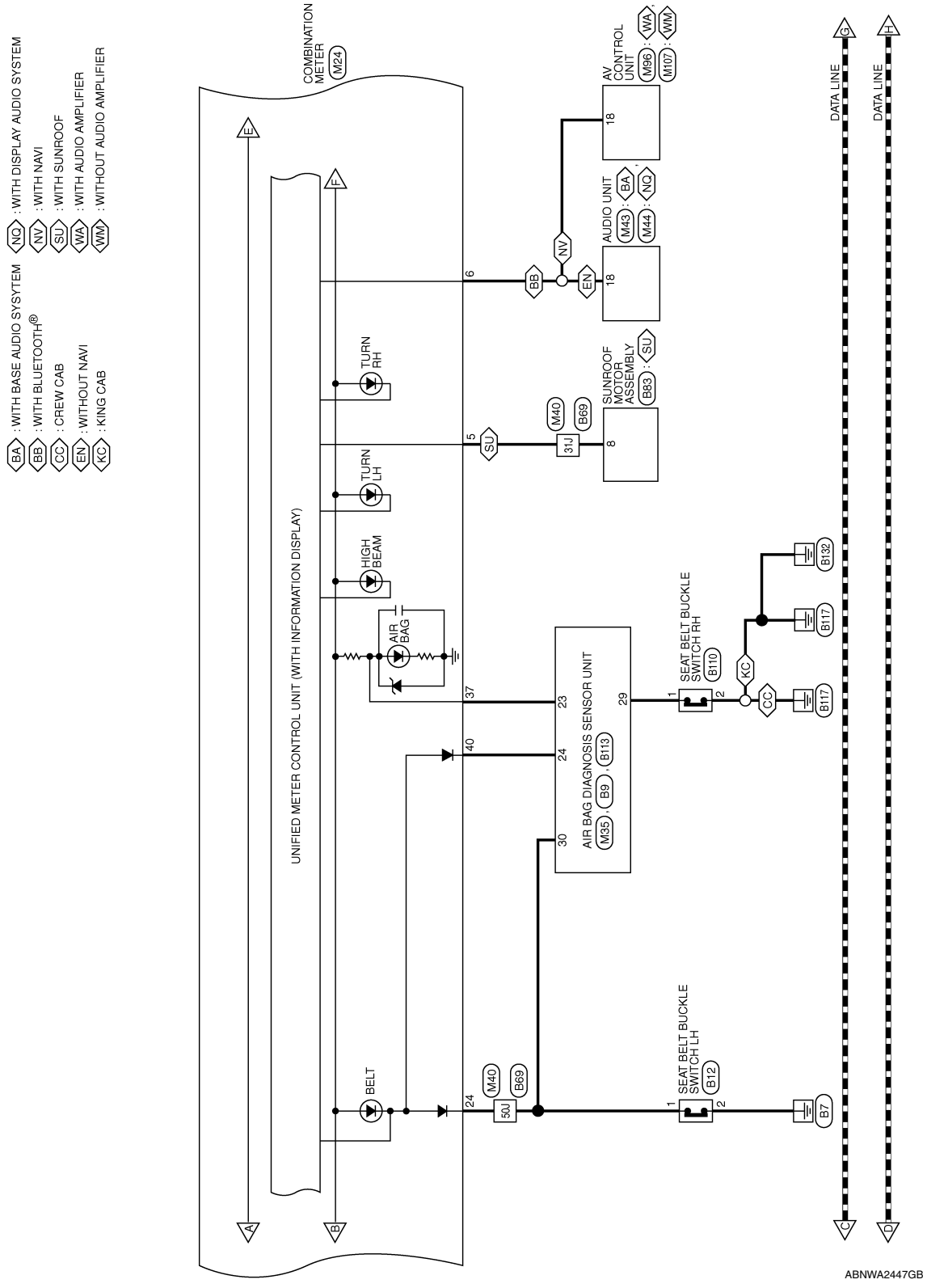
ABNIA4175GB

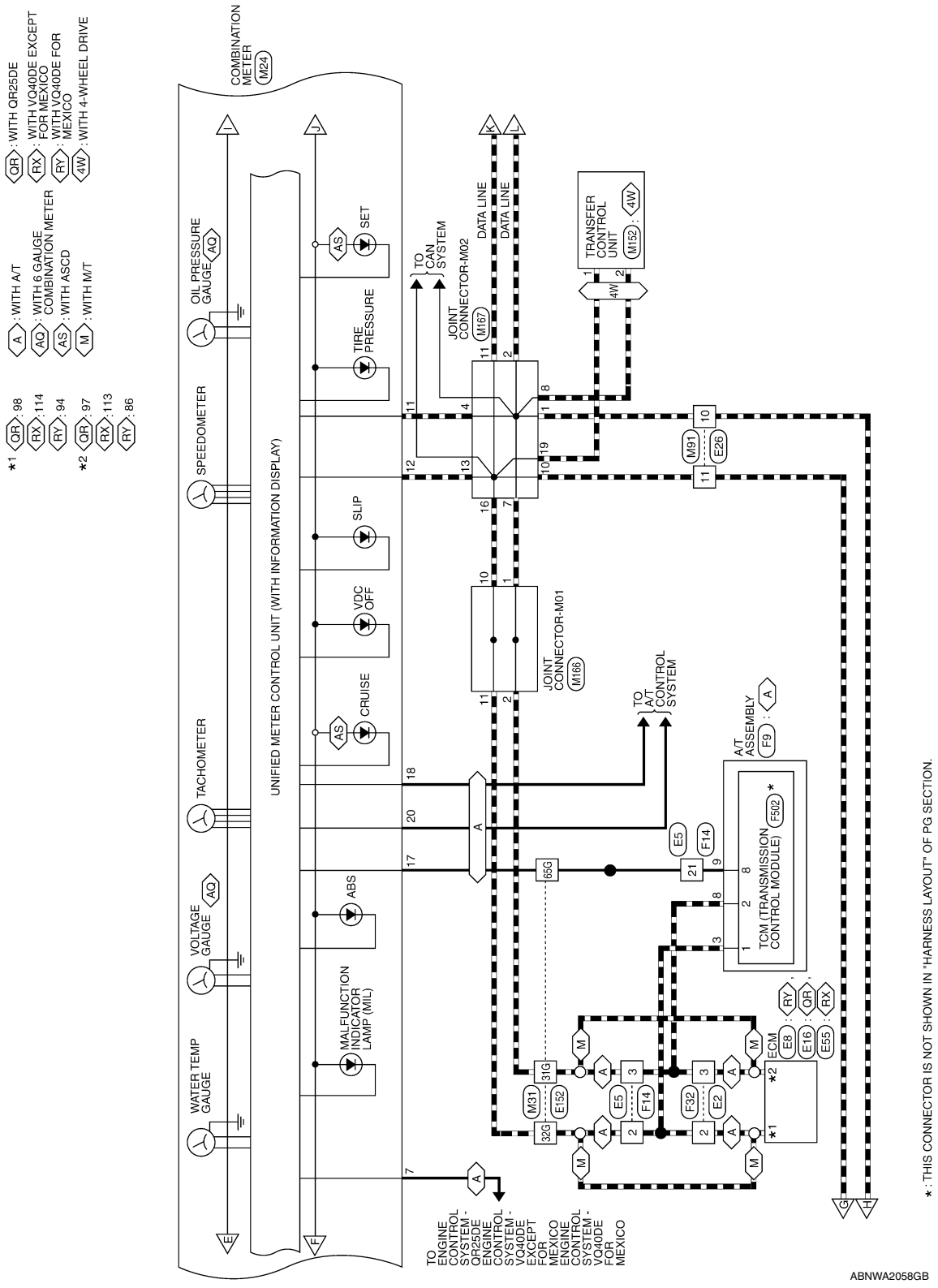
METER

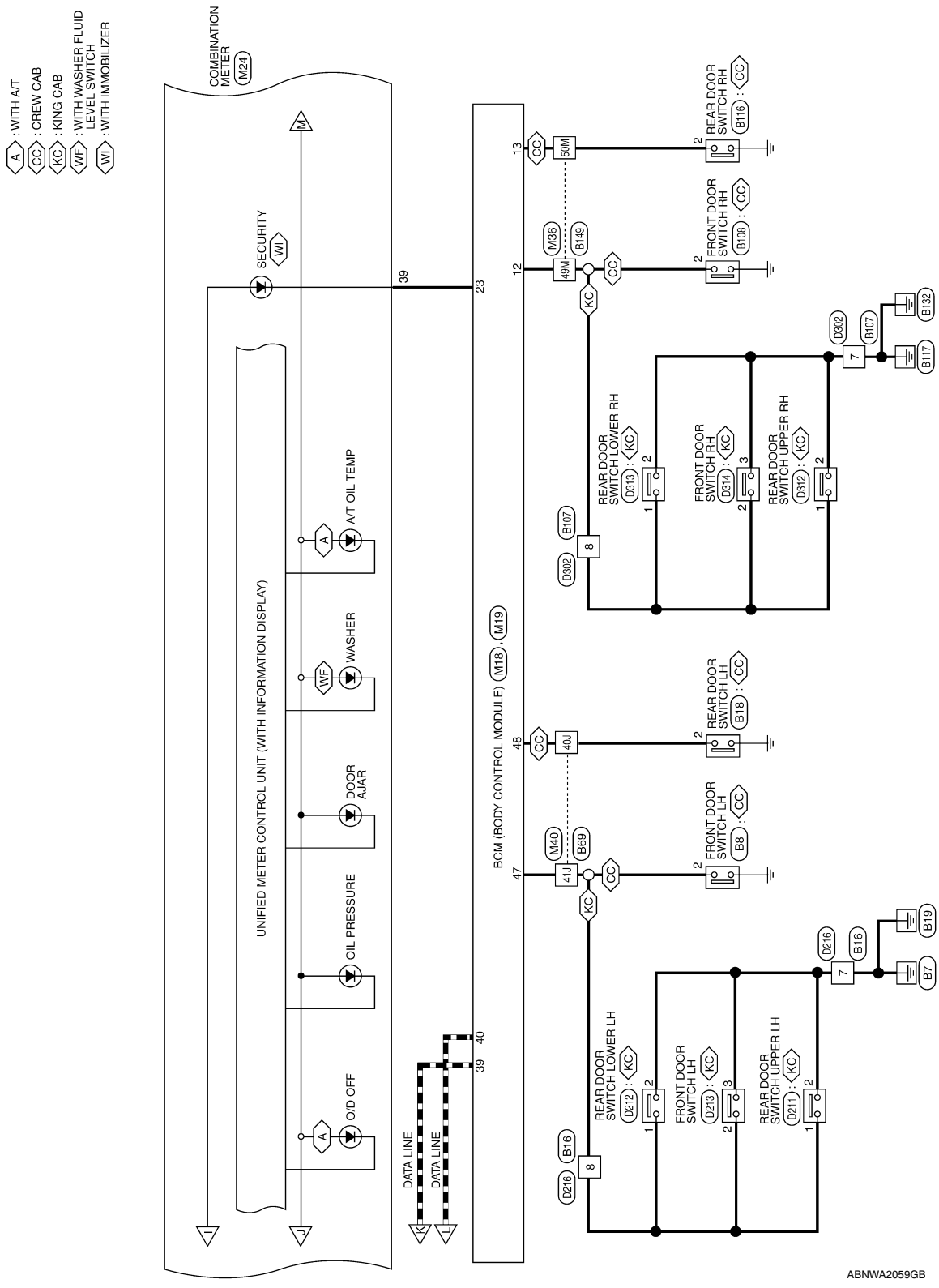
Wiring Diagram

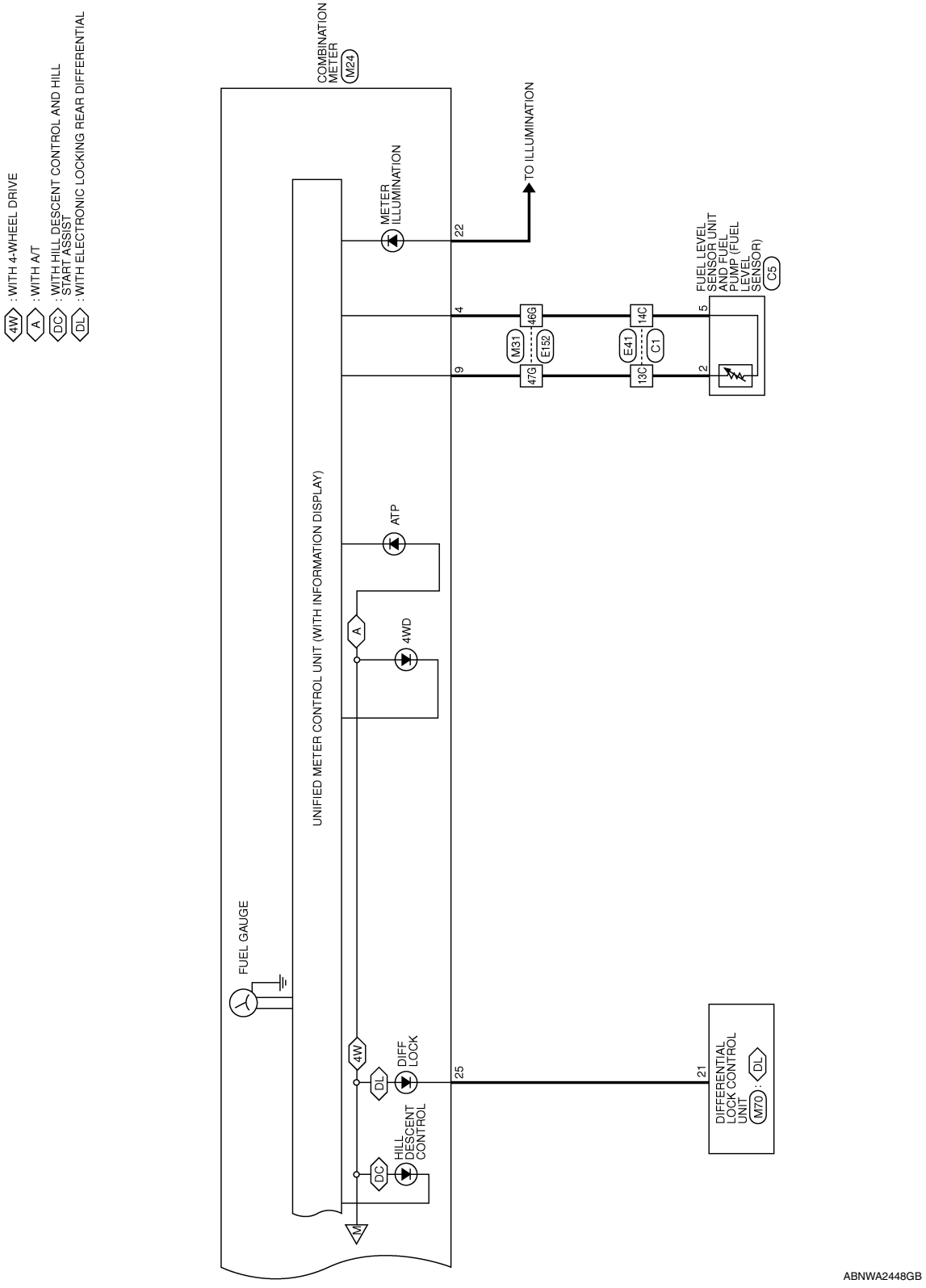
INFOID:0000000012563036




BA : WITH BASE AUDIO SYSTEM
BB : WITH BLUETOOTH®
CC : CREW CAB
EN : WITHOUT NAVI
KC : KING CAB
NQ : WITH DISPLAY AUDIO SYSTEM
NV : WITH NAVI
SU : WITH SUNROOF
WA : WITH AUDIO AMPLIFIER
WM : WITHOUT AUDIO AMPLIFIER
COMBINATION METER M24
UNIFIED METER CONTROL UNIT (WITH INFORMATION DISPLAY)
TURN RH
TURN LH
HIGH BEAM
AIR BAG
BELT
AIR BAG DIAGNOSIS SENSOR UNIT M35 B9 B113
SEAT BELT BUCKLE SWITCH RH B110
SEAT BELT BUCKLE SWITCH LH B12
SUNROOF MOTOR ASSEMBLY B83
AUDIO UNIT M43 BA M44 NQ
AV CONTROL UNIT M96 WA M107 WM
DATA LINE
DATA LINE
B132
B117
B117
B7
M40 B69 31J
M40 B69 50J
ABNWA2447GB


COMBINATION METER (M24)
UNIFIED METER CONTROL UNIT (WITH INFORMATION DISPLAY)
SPEEDOMETER
TACHOMETER
VOLTAGE GAUGE (AQ)
WATER TEMP GAUGE
OIL PRESSURE GAUGE (AQ)
TIRE PRESSURE
SLIP
VDC OFF
CRUISE (AS)
SET (AS)
ABS
MALFUNCTION INDICATOR LAMP (MIL)
TO CAN SYSTEM
DATA LINE
JOINT CONNECTOR-M02 (M167)
JOINT CONNECTOR-M01 (M166)
TRANSFER CONTROL UNIT (M152 : 4W)
TO A/T CONTROL SYSTEM
A/T ASSEMBLY (F9 : A)
TCM (TRANSMISSION CONTROL MODULE) (F502) *
ECM *2 (E8, E16, E55) : RY, QR, RX
*1
M91, E26
E5, F14, F32, E2, M31, E152, 31G, 32G, 65G
TO ENGINE CONTROL SYSTEM - QR25DE
TO ENGINE CONTROL SYSTEM - VQ40DE EXCEPT FOR MEXICO
TO ENGINE CONTROL SYSTEM - VQ40DE FOR MEXICO
QR : WITH QR25DE
RX : WITH VQ40DE EXCEPT FOR MEXICO
RY : WITH VQ40DE FOR MEXICO
4W : WITH 4-WHEEL DRIVE
A : WITH A/T
AQ : WITH 6 GAUGE COMBINATION METER
AS : WITH ASCD
M : WITH M/T
*1 QR : 98, RX : 114, RY : 94
*2 QR : 97, RX : 113, RY : 86
* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.
ABNWA2058GB


A : WITH A/T
CC : CREW CAB
KC : KING CAB
WF : WITH WASHER FLUID LEVEL SWITCH
WI : WITH IMMOBILIZER
COMBINATION METER
M24
UNIFIED METER CONTROL UNIT (WITH INFORMATION DISPLAY)
SECURITY
WI
A/T OIL TEMP
WASHER
DOOR AJAR
OIL PRESSURE
O/D OFF
DATA LINE
BCM (BODY CONTROL MODULE)
M18
M19
REAR DOOR SWITCH RH
B116
FRONT DOOR SWITCH RH
B108
REAR DOOR SWITCH LOWER RH
D313
FRONT DOOR SWITCH RH
D314
REAR DOOR SWITCH UPPER RH
D312
REAR DOOR SWITCH LH
B18
FRONT DOOR SWITCH LH
B8
REAR DOOR SWITCH LOWER LH
D212
FRONT DOOR SWITCH LH
D213
REAR DOOR SWITCH UPPER LH
D211
ABNWA2059GB


4W : WITH 4-WHEEL DRIVE
A : WITH A/T
DC : WITH HILL DESCENT CONTROL AND HILL START ASSIST
DL : WITH ELECTRONIC LOCKING REAR DIFFERENTIAL
COMBINATION METER
M24
METER ILLUMINATION
TO ILLUMINATION
22
4
9
M31
46G
47G
E152
E41
14C
13C
C1
FUEL LEVEL SENSOR UNIT AND FUEL PUMP (FUEL LEVEL SENSOR)
C5
5
2
UNIFIED METER CONTROL UNIT (WITH INFORMATION DISPLAY)
ATP
A
4WD
FUEL GAUGE
4W
DL
DIFF LOCK
DC
HILL DESCENT CONTROL
25
21
DIFFERENTIAL LOCK CONTROL UNIT
M70
DL
M
ABNWA2448GB

METER CONNECTORS

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

7P	6P	5P	4P		3P	2P	1P
16P	15P	14P	13P	12P	11P	10P	9P	8P

Terminal No.	Color of Wire	Signal Name
5P	W/G	–
8P	R/Y	–

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
12	LG	DOOR SW (AS)
13	L	DOOR SW (RR)
23	G	SECURITY INDICATOR OUTPUT
39	L	CAN-H
40	P	CAN-L

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	WHITE

H.S.

41	42	43	44	45	46	47	48	49
50	51	52	53	54	55			

Terminal No.	Color of Wire	Signal Name
47	GR	DOOR SW (DR)
48	P	DOOR SW (RL)

ABNIA5534GB

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

H.S.

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21

Terminal No.	Color of Wire	Signal Name
1	–	–
2	P	CHARGE (ALT) INPUT
3	R/Y	BATTERY
4	B/Y	FUEL SENDER RETURN
5	W	SPEED OUT 2
6	SB	SPEED OUT 8
7	G	AT-PN ECM
8	–	–
9	BR	FUEL SENDER INPUT
10	–	–
11	P	CAN-L
12	L	CAN-H
13	GR	GROUND
14	–	–
15	–	–
16	W/G	RUN START
17	B	AT-PN SWITCH
18	L	AT 1 RANGE SWITCH
19	–	–
20	Y	O/D OFF SWITCH

Terminal No.	Color of Wire	Signal Name
21	–	–
22	BR	ILLUMINATION CONTROL
23	B	POWER GND
24	V	BUCKLE (SEATBELT) SW
25	SB	DIFF LOCK
26	–	–
27	–	–
28	–	–
29	–	–
30	–	–
31	G	PARK BRAKE SW
32	SB	BRAKE OIL SWITCH
33	–	–
34	L	WASHER FLUID SW
35	–	–
36	–	–
37	SB	AIRBAG CONT
38	–	–
39	G	SECURITY
40	LG	PASS SEATBELT

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

1G	2G	3G	4G	5G
6G	7G	8G	9G	10G

11G	12G	13G	14G	15G	16G	17G	18G	19G	20G	21G
	22G	23G	24G	25G	26G	27G	28G	29G	30G	

31G	32G	33G	34G	35G	36G	37G	38G	39G	40G	41G
	42G	43G	44G	45G	46G	47G	48G	49G	50G	

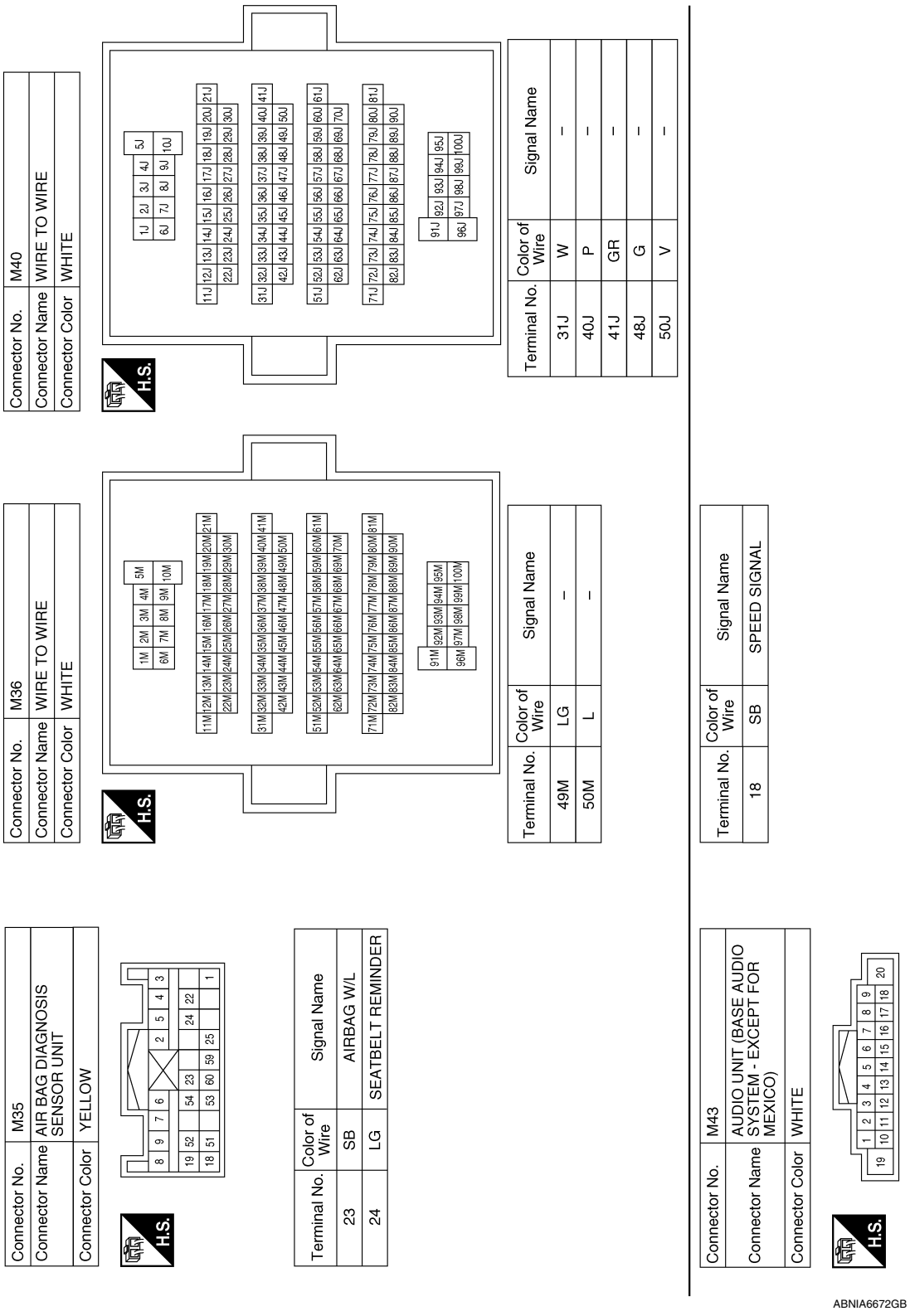
51G	52G	53G	54G	55G	56G	57G	58G	59G	60G	61G
	62G	63G	64G	65G	66G	67G	68G	69G	70G	

71G	72G	73G	74G	75G	76G	77G	78G	79G	80G	81G
	82G	83G	84G	85G	86G	87G	88G	89G	90G	

91G	92G	93G	94G	95G
96G	97G	98G	99G	100G

Terminal No.	Color of Wire	Signal Name
31G	P	–
32G	L	–
46G	B/Y	–
47G	BR	–
49G	P	–
50G	L	–
65G	B	–

ABNIA5535GB


Connector No. M40
Connector Name WIRE TO WIRE
Connector Color WHITE
H.S.
Terminal No. Color of Wire Signal Name
31J W –
40J P –
41J GR –
48J G –
50J V –
Connector No. M36
Connector Name WIRE TO WIRE
Connector Color WHITE
H.S.
Terminal No. Color of Wire Signal Name
49M LG –
50M L –
Terminal No. Color of Wire Signal Name
18 SB SPEED SIGNAL
Connector No. M35
Connector Name AIR BAG DIAGNOSIS SENSOR UNIT
Connector Color YELLOW
H.S.
Terminal No. Color of Wire Signal Name
23 SB AIRBAG W/L
24 LG SEATBELT REMINDER
Connector No. M43
Connector Name AUDIO UNIT (BASE AUDIO SYSTEM - EXCEPT FOR MEXICO)
Connector Color WHITE
H.S.
ABNIA6672GB

Connector No.	M44
Connector Name	AUDIO UNIT (WITH DISPLAY AUDIO SYSTEM)
Connector Color	WHITE

H.S.

19	10	11	12	13	14	15	16	17	18	20
	1	2	3	4	5	6	7	8	9	

Terminal No.	Color of Wire	Signal Name
18	SB	SPD

Connector No.	M70
Connector Name	DIFFERENTIAL LOCK CONTROL UNIT
Connector Color	WHITE

H.S.

12	11	10	9	8	7	6	5	4	3	2	1	
26	25	24	23	22	21	20	19	18	17	16	15	14	13

Terminal No.	Color of Wire	Signal Name
21	SB	DIFF LOCK IND

Connector No.	M91
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

7	6	5	4		3	2	1
16	15	14	13	12	11	10	9	8

Terminal No.	Color of Wire	Signal Name
8	SB	–
10	P	–
11	L	–

Connector No.	M96
Connector Name	AV CONTROL UNIT (WITH NAVI WITH AMPLIFIER)
Connector Color	WHITE

H.S.

19	10	11	12	13	14	15	16	17	18	20
	1	2	3	4	5	6	7	8	9	

Terminal No.	Color of Wire	Signal Name
18	SB	SPD

Connector No.	M107
Connector Name	AV CONTROL UNIT (WITH NAVI WITHOUT AMPLIFIER)
Connector Color	WHITE

H.S.

19	10	11	12	13	14	15	16	17	18	20
	1	2	3	4	5	6	7	8	9	

Terminal No.	Color of Wire	Signal Name
18	SB	SPD

Connector No.	M152
Connector Name	TRANSFER CONTROL UNIT
Connector Color	WHITE

H.S.

6	5	4	3	2	1	
17	16	15	14	13	12	11	10	9	8	7
26	25	24	23	22				21	20	19	18

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	P	CAN-L

ABNIA6673GB

Connector No.	E2
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

1	2	3		4	5	6	7
8	9	10	11	12	13	14	15	16

Terminal No.	Color of Wire	Signal Name
2	L	–
3	P	–

Connector No.	M167
Connector Name	JOINT CONNECTOR-M02
Connector Color	BLUE

H.S.

9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11	10

Terminal No.	Color of Wire	Signal Name
1	P	–
2	P	–
4	P	–
7	P	–
8	P	–
10	L	–
11	L	–
13	L	–
16	L	–
19	L	–

Connector No.	E16
Connector Name	ECM (WITH QR25DE)
Connector Color	BLACK

H.S.

81	85	89	93	97	101	105	109
82	86	90	94	98	102	106	110
83	87	91	95	99	103	107	111
84	88	92	96	100	104	108	112

Terminal No.	Color of Wire	Signal Name
97	P	CAN-L
98	L	CAN-H

Connector No.	E8
Connector Name	ECM (WITH VQ40DE FOR MEXICO)
Connector Color	BLACK

H.S.

116	115	114	89	88	87	86	85	84	83	82
			97	96	95	94	93	92	91	90
		118	117							
			105	104	103	102	101	100	99	98
121	120	119	113	112	111	110	109	108	107	106

Terminal No.	Color of Wire	Signal Name
86	P	CAN-L
94	L	CAN-H

Connector No.	M166
Connector Name	JOINT CONNECTOR-M01
Connector Color	BLUE

H.S.

9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11	10

Terminal No.	Color of Wire	Signal Name
1	P	–
2	P	–
10	L	–
11	L	–

Connector No.	E5
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

Terminal No.	Color of Wire	Signal Name
2	L	–
3	P	–
6	GR	–
21	R	–

ABNIA5538GB

Connector No. E40
Connector Name WIRE TO WIRE
Connector Color GRAY
H.S.
1 2 3 4 5 6 7 8 9
Terminal No. Color of Wire Signal Name
5 GR –
8 P –
Connector No. E26
Connector Name WIRE TO WIRE
Connector Color WHITE
H.S.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Terminal No. Color of Wire Signal Name
8 SB –
10 P –
11 L –
Connector No. E106
Connector Name WASHER FLUID LEVEL SWITCH
Connector Color BROWN
H.S.
2 1
Terminal No. Color of Wire Signal Name
1 L –
2 B –
Connector No. E21
Connector Name BRAKE FLUID LEVEL SWITCH
Connector Color GRAY
H.S.
1 2
Terminal No. Color of Wire Signal Name
1 SB –
2 B –
Connector No. E55
Connector Name ECM (WITH VQ40DE EXCEPT FOR MEXICO)
Connector Color GRAY
H.S.
97 101 105 109 113 117 121 125
98 102 106 110 114 118 122 126
99 103 107 111 115 119 123 127
100 104 108 112 116 120 124 128
Terminal No. Color of Wire Signal Name
113 P CAN-L
114 L CAN-H
Connector No. E41
Connector Name WIRE TO WIRE
Connector Color BLACK
H.S.
1C 10C 19C 31C 40C
2C 11C 20C 26C 32C 41C
3C 12C 21C 27C 33C 42C
4C 13C 22C 28C 34C 43C
5C 14C 23C 29C 35C 44C
6C 15C 24C 30C 36C 45C
7C 16C 25C 37C 46C
8C 17C 38C 47C
9C 18C 39C 48C
Terminal No. Color of Wire Signal Name
13C BR –
14C B/Y –
ABNIA5539GB

Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

42	41	40	39	38	37
48	47	46	45	44	43

Terminal No.	Color of Wire	Signal Name
38	B	GND (SIGNAL)
39	L	CAN-H
40	P	CAN-L
42	GR	OIL PRESSURE SW

Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK

H.S.

59	58	57
62	61	60

Terminal No.	Color of Wire	Signal Name
59	B	GND (POWER)

Connector No.	E127
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Color	BLACK

H.S.

47	46	45	44	43	42	41	40	39	38	37	36	35	34	33		32
16	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	1
	15	14	13	12	11	10	9	8	7	6	5	4	3	2		

Terminal No.	Color of Wire	Signal Name
12	L	CAN-H
13	P	CAN-L
28	GR	FLUID LEVEL SW

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
31G	P	–
32G	L	–
46G	B/Y	–
47G	BR	–
49G	P	–
50G	L	–
65G	B	–

Connector No.	E201
Connector Name	WIRE TO WIRE
Connector Color	GRAY

H.S.

5	4	3	2	1
9	8	7	6	

Terminal No.	Color of Wire	Signal Name
5	GR	–
8	P	–

ABNIA5540GB

Connector No.	E205
Connector Name	GENERATOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
2	P	–

Connector No.	E208
Connector Name	OIL PRESSURE SWITCH (WITH VQ40DE)
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	GR	–

Connector No.	E209
Connector Name	GENERATOR
Connector Color	–

H.S.

Terminal No.	Color of Wire	Signal Name
5	B	–

Connector No.	F4
Connector Name	OIL PRESSURE SWITCH (WITH QR25DE)
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1	GR	–

Connector No.	F9
Connector Name	A/T ASSEMBLY
Connector Color	GREEN

H.S.

Terminal No.	Color of Wire	Signal Name
3	L	–
8	P	–
9	R	–

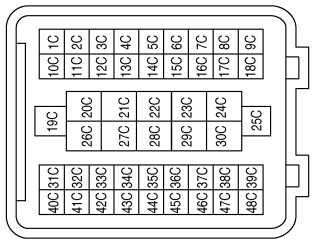
Connector No.	F14
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
2	L	–
3	P	–
6	GR	–
21	R	–

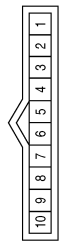
ABNIA5541GB

Connector No.	C1
Connector Name	WIRE TO WIRE
Connector Color	BLACK



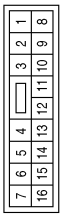
Terminal No.	Color of Wire	Signal Name
13C	BR	–
14C	B/Y	–

Connector No.	F502
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Color	GRAY



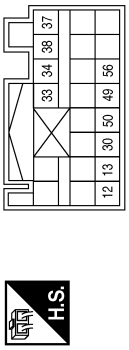
Terminal No.	Color of Wire	Signal Name
1	BR	CAN-H
2	L/Y	CAN-L
8	G	START-RLY

Connector No.	F32
Connector Name	WIRE TO WIRE
Connector Color	WHITE



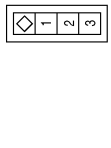
Terminal No.	Color of Wire	Signal Name
2	L	–
3	P	–

Connector No.	B9
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT
Connector Color	YELLOW



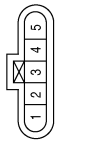
Terminal No.	Color of Wire	Signal Name
30	BG	LH BUCKLE SW INPUT

Connector No.	B8
Connector Name	FRONT DOOR SWITCH LH (CREW CAB)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2	GR	–

Connector No.	C5
Connector Name	FUEL LEVEL SENSOR UNIT AND FUEL PUMP
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
2	BR	–
5	B/Y	–

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Connector No.	B12
Connector Name	SEAT BELT BUCKLE SWITCH LH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	BG	–
2	B	–

Connector No.	B16
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
7	B	–
8	GR	–

Connector No.	B18
Connector Name	REAR DOOR SWITCH LH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
2	P	–

Connector No.	B69
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
31J	W	–
40J	P	–
41J	GR	–
48J	G	–
50J	V	–

Connector No.	B83
Connector Name	SUNROOF MOTOR ASSEMBLY
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
8	W	VEHICLE SPEED (2P)

ABNIA6721GB

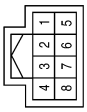
Connector No.	B84
Connector Name	PARKING BRAKE SWITCH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	G	–

Connector No.	B107
Connector Name	WIRE TO WIRE
Connector Color	WHITE

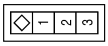
H.S.



Terminal No.	Color of Wire	Signal Name
7	B	–
8	LG	–

Connector No.	B108
Connector Name	FRONT DOOR SWITCH RH (CREW CAB)
Connector Color	WHITE

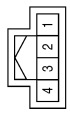
H.S.



Terminal No.	Color of Wire	Signal Name
2	LG	–

Connector No.	B110
Connector Name	SEAT BELT BUCKLE SWITCH RH
Connector Color	WHITE

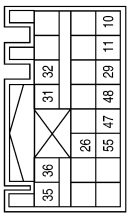
H.S.



Terminal No.	Color of Wire	Signal Name
1	L	–
2	B	–

Connector No.	B113
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT
Connector Color	YELLOW

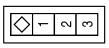
H.S.



Terminal No.	Color of Wire	Signal Name
29	L	RH BUCKLE SW INPUT

Connector No.	B116
Connector Name	REAR DOOR SWITCH RH
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
2	L	–

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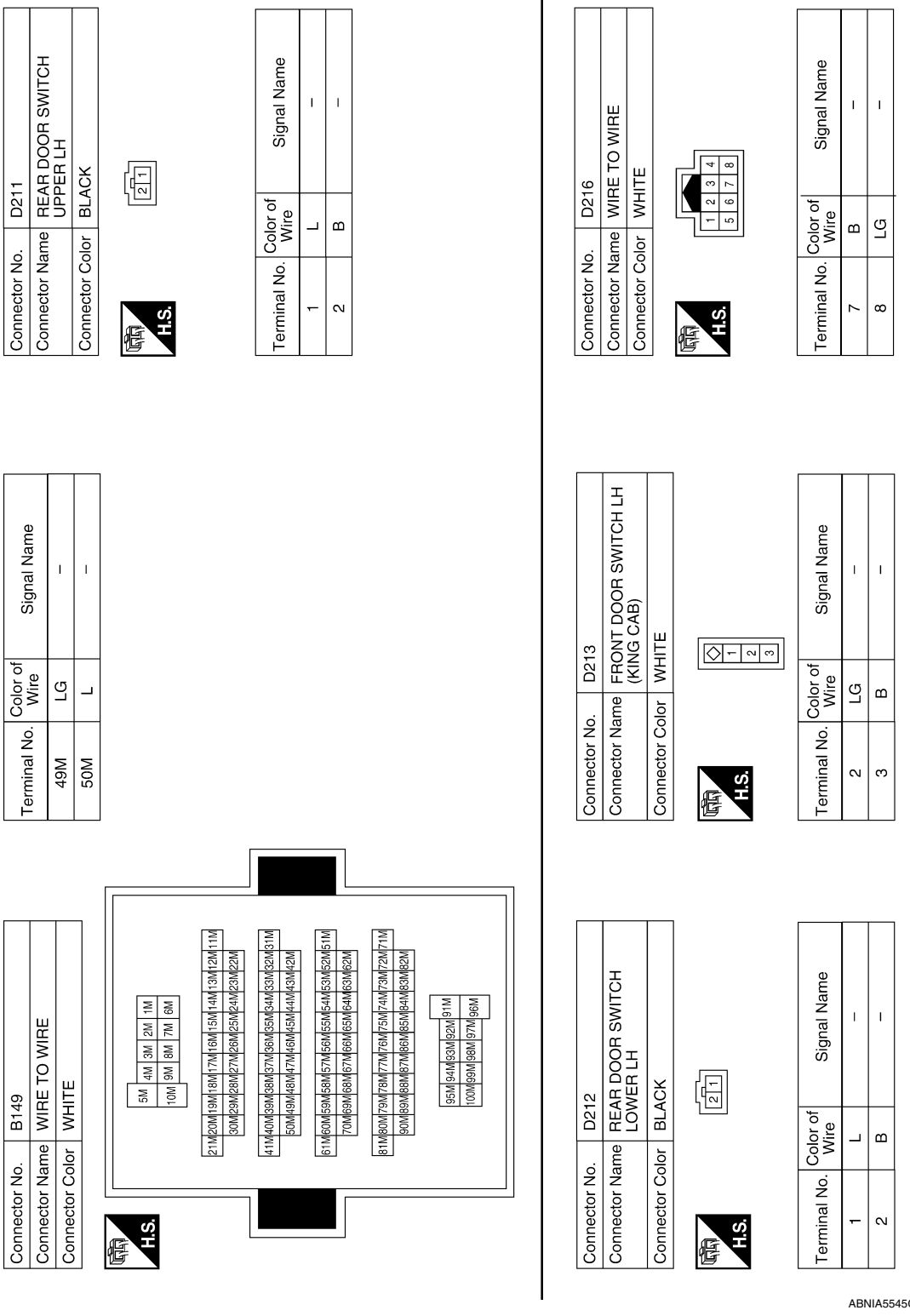

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Connector No.	D302
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
7	B	–
8	LG	–

Connector No.	D312
Connector Name	REAR DOOR SWITCH UPPER RH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	–
2	B	–

Connector No.	D313
Connector Name	REAR DOOR SWITCH LOWER RH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	–
2	B	–

Connector No.	D314
Connector Name	FRONT DOOR SWITCH RH (KING CAB)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
2	LG	–
3	B	–

ABNIA5546GB

SYMPTOM DIAGNOSIS

THE FUEL GAUGE POINTER DOES NOT MOVE

Description

INFOID:0000000012563037

Fuel gauge needle will not move from a certain position.

Diagnosis Procedure

INFOID:0000000012563038

1.CHECK COMBINATION METER INPUT SIGNAL

1. Select “METER/M&A” on CONSULT.
2. Using “FUEL METER” of “DATA MONITOR”, compare the monitor value with the fuel gauge reading on the combination meter. Refer to MWI-34, "Component Function Check".

Does monitor value match fuel gauge reading?

YES >> GO TO 2
NO >> Replace combination meter. Refer to MWI-91, "Removal and Installation".

2.CHECK FUEL LEVEL SENSOR SIGNAL CIRCUIT

Check the fuel level sensor signal circuit. Refer to MWI-34, "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-35, "Component Inspection".

Is the inspection result normal?

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

4.CHECK FLOAT INTERFERENCE

Check that the float arm does not interfere or bind with any of the components in the fuel tank.

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-91, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

THE FUEL GAUGE POINTER DOES NOT MOVE TO "F" WHEN REFUELING

Description

INFOID:0000000012563039

The fuel gauge needle will not move to “F” position when refueling.

Diagnosis Procedure

INFOID:0000000012563040

1.OBSERVE FUEL GAUGE

Does it take a long time for the pointer to move to FULL position?

YES or NO

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

2.IDENTIFY FUELING CONDITION

Was the vehicle fueled with the ignition switch ON?

YES or NO

YES >> Be sure to fuel the vehicle with the ignition switch OFF. Otherwise, it will take a long time to move to FULL position because of the characteristic of the fuel gauge.
NO >> GO TO 3

3.OBSERVE VEHICLE POSITION

Is the vehicle parked on an incline?

YES or NO

YES >> Check the fuel level indication with vehicle on a level surface.
NO >> GO TO 4

4.OBSERVE FUEL GAUGE POINTER

During driving, does the fuel gauge pointer move gradually toward EMPTY position?

YES or NO

YES >> Check the components. Refer to MWI-35, "Component Inspection".
NO >> The float arm may interfere or bind with any of the components in the fuel tank.

THE OIL PRESSURE WARNING LAMP DOES NOT TURN ON

Description

INFOID:0000000012563041

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

Diagnosis Procedure

INFOID:0000000012563042

1.CHECK OIL PRESSURE WARNING LAMP

Perform IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".

Is oil pressure warning lamp illuminated?

YES >> GO TO 2
NO >> Replace combination meter. Refer to MWI-91, "Removal and Installation".

2.CHECK OIL PRESSURE SWITCH SIGNAL CIRCUIT

Check the oil pressure switch signal circuit. Refer to MWI-37, "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-37, "Component Inspection".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".
NO >> Replace oil pressure switch. Refer to EM-81, "Exploded View" (QR25DE) or EM-222, "Exploded View" (VQ40DE).

THE OIL PRESSURE WARNING LAMP DOES NOT TURN OFF

Description

INFOID:0000000012563043

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

Diagnosis Procedure

INFOID:0000000012563044

Regarding Wiring Diagram information, refer to MWI-66, "Wiring Diagram".

1.CHECK OIL PRESSURE WARNING LAMP

Perform IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".

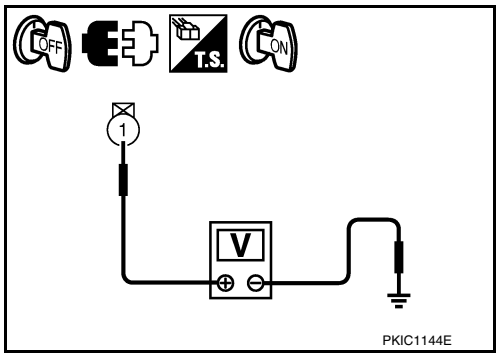
Is oil pressure warning lamp illuminated?

YES >> GO TO 2
NO >> Replace combination meter. Refer to MWI-91, "Removal and Installation".

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 E208 (VQ40DE) or F4 (QR25DE) terminal 1 and ground.

1 – Ground : Approx. 12V



Is the inspection result normal?

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

3.CHECK OIL PRESSURE SWITCH

Perform a unit check for the oil pressure switch. Refer to MWI-37, "Component Inspection".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".
NO >> Replace oil pressure switch. Refer to EM-81, "Exploded View" (QR25DE) or EM-222, "Exploded View" (VQ40DE).

4.CHECK OIL PRESSURE SWITCH SIGNAL CIRCUIT

Check the oil pressure switch signal circuit. Refer to MWI-37, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".
NO >> Repair harness or connector.

NORMAL OPERATING CONDITION
COMPASS

COMPASS : Description

INFOID:0000000012563045

COMPASS

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

Symptom Chart

Symptom	Cause	Solution / Reference
The compass display reads "C".	• Compass is not calibrated. • Incorrect zone variance setting. • Large change in magnetic field (Steel bridges, subways, concentrations of metal, car washes, etc.) • Compass was calibrated incorrectly or in the presence of a strong magnetic field.	Perform Calibration. Refer to MWI-23, "Description".
Compass shows the wrong direction.		
Compass does not change direction appears "Locked".		
Compass does not show all the directions, one or more is missing.		
The compass was calibrated but it "loses" calibration.		
On long trips the compass shows the wrong direction.		Perform Zone Variation Setting if correct reading is desired in that location. Refer to MWI-23, "Description".

PRECAUTION

PRECAUTIONS

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

INFOID:0000000012563046

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 SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

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

WARNING:

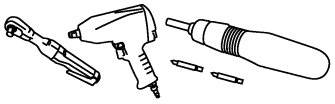
- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least three minutes before performing any service.**

PREPARATION

PREPARATION

Commercial Service Tools

INFOID:0000000012563047

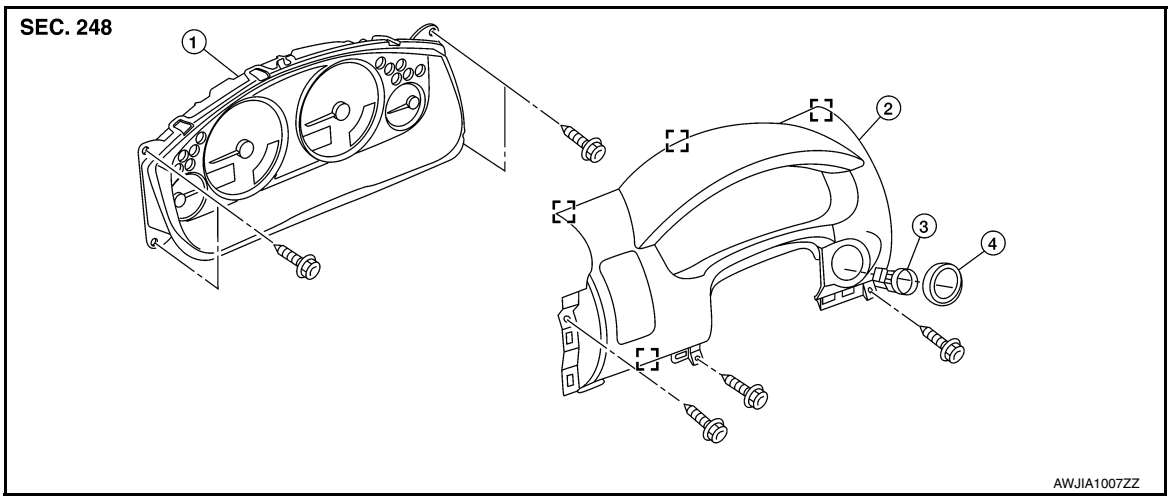
Tool name	Description
Power tool  PIIB1407E	Loosening nuts, screws and bolts

REMOVAL AND INSTALLATION

COMBINATION METER

Removal and Installation

INFOID:0000000012563048



1. Combination meter
2. Cluster lid A
3. Ignition key lamp assembly
4. Steering lock escutcheon
- Metal clip

1. Remove the cluster lid A. Refer to IP-17, "Removal and Installation".
2. Remove the combination meter, using a power tool.
3. Disconnect the harness connectors from the combination meter.

INSTALLATION

Installation is in the reverse order of removal.