

SECTION **DI**

DRIVER INFORMATION SYSTEM

CONTENTS

SERVICE INFORMATION	3	UNIFIED METER AND A/C AMP	25	A
PRECAUTION	3	System Description	25	B
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	3	Schematic	27	C
PREPARATION	4	Unified Meter and A/C Amp. Harness Connector Terminal Layout	28	D
Commercial Service Tool	4	Terminal and Reference Value for Unified Meter and A/C Amp	28	E
COMBINATION METERS	5	CONSULT-III Function (METER A/C AMP)	29	F
Component Parts and Harness Connector Location	5	Unified Meter and A/C Amp	32	G
System Description	5	COMPASS	33	H
Arrangement of Combination Meter	8	System Description	33	I
Internal Circuit	9	Wiring Diagram - COMPAS -	34	J
Wiring Diagram - METER -	10	Trouble Diagnosis	34	
Combination Meter Harness Connector Terminal Layout	12	Zone Variation Change Procedure	35	
Terminal and Reference Value for Combination Meter	12	WARNING LAMPS	37	DI
Terminal and Reference Value for Unified Meter and A/C Amp	13	Schematic	37	L
Self-Diagnosis Mode of Combination Meter	13	Wiring Diagram - WARN -	38	
CONSULT-III Function	14	Oil Pressure Warning Lamp Stays Off (Ignition Switch ON)	44	
How to Proceed with Trouble Diagnosis	14	Oil Pressure Warning Lamp Does Not Turn Off (Oil Pressure Is Normal)	45	M
Preliminary Check	14	Component Inspection	46	
Symptom Chart	15	CVT INDICATOR	47	N
Power Supply and Ground Circuit Inspection	15	Wiring Diagram - CVTIND -	47	
Vehicle Speed Signal Inspection	17	CVT Indicator Does Not Illuminate	48	O
Engine Speed Signal Inspection	18	WARNING CHIME	50	
Water Temperature Signal Inspection	19	Component Parts and Harness Connector Location	50	P
Fuel Level Sensor Signal Inspection 1	19	System Description	50	
Fuel Level Sensor Signal Inspection 2	20	Wiring Diagram - CHIME -	52	
Communication Line Inspection	21	Terminal and Reference Value for BCM	53	
Fuel Gauge Pointer Fluctuates, Indicates Wrong Value, or Varies	23	Terminal and Reference Value for Unified Meter and A/C Amp	53	
Fuel Gauge Does Not Move to Full-position	23	Terminal and Reference Value for Combination Meter	54	
Electrical Component Inspection	23	How to Proceed with Trouble Diagnosis	54	
Combination Meter	24	Preliminary Check	54	

CONSULT-III Function (BCM)	54	Sonar Control Unit Harness Connector Terminal	
All Warning Chimes Do Not Operate	55	Layout	65
Key Warning Chime and Light Warning Chime Do		Terminal and Reference Value for Sonar Control	
Not Operate (Seat Belt Warning Chime Does Op-		Unit	65
erate)	56	How to Proceed with Trouble Diagnosis	66
Key Warning Chime Does Not Operate	57	Pre-diagnosis Inspection	66
Light Warning Chime Does Not Operate	58	Self-Diagnosis Function	66
Seat Belt Warning Chime Does Not Operate	59	Preliminary Check	68
REAR SONAR SYSTEM	61	Symptom Chart	69
Component Parts and Harness Connector Loca-		Component Inspection	69
tion	61	Rear Sonar Sensors	70
System Description	61	Sonar Control Unit	70
Wiring Diagram - SONAR -	63		

PRECAUTION

< SERVICE INFORMATION >

SERVICE INFORMATION

PRECAUTION

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

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

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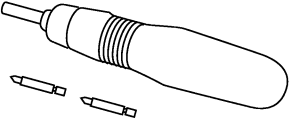
PREPARATION

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PREPARATION

Commercial Service Tool

INFOID:000000001721656

Tool name	Description
<p data-bbox="164 350 272 380">Power tool</p>  <p data-bbox="850 569 922 590">PBIC0191E</p>	<p data-bbox="1013 350 1263 380">Loosening bolts and nuts</p>

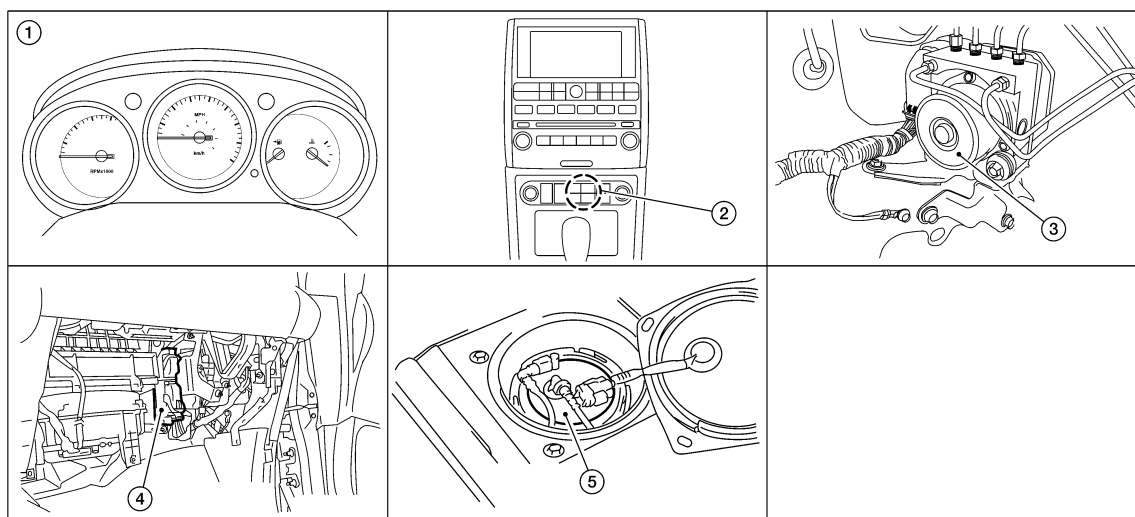
COMBINATION METERS

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COMBINATION METERS

Component Parts and Harness Connector Location

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WKIA5296E

1. Combination meter M24
2. Unified meter and A/C amp. M49, M50, M89
3. ABS actuator and electric unit (control unit) E125 (engine removed for clarity)
4. ECM M82 (view with glove box removed)
5. Fuel level sensor unit and fuel pump B16 (view with rear seat and inspection hole cover removed)

System Description

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UNIFIED METER CONTROL UNIT

- Speedometer, odo/trip meter, tachometer, fuel gauge and water temperature gauge are controlled by the unified meter control unit, which is built into the combination meter. Unified meter control unit receives signals from unified meter and A/C amp.
- Warning lamps and indicator lamps are controlled by signals drawn from the unified meter and A/C amp., BCM (body control module), and components connected directly to the combination meter.
- Digital meter is adopted for odo/trip meter.*
*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 CVT indicator segments can be checked in diagnosis mode.
- Meters/gauges can be checked in diagnosis mode.

Illumination control

The unified meter control unit outputs the odo/trip meter and CVT indicator lighting when the ignition switch is turned ON. When the lighting switch is turned on, the illumination control switch can be used to adjust the brightness of the combination meter illumination and the odo/trip meter illumination. When the ignition switch is in the START position, the combination meter dial lighting and illumination control switch lighting are turned off. For additional combination meter illumination control information, refer to [LT-130, "System Description"](#).

UNIFIED METER AND A/C AMP.

For unified meter and A/C amp. system description information, refer to [DI-25, "System Description"](#).

POWER SUPPLY AND GROUND CIRCUIT

Power is supplied at all times

- through 10A fuse [No.19, located in the fuse block (J/B)]
- to combination meter terminal 24, and
- to unified meter and A/C amp. terminal 21.

With the ignition switch in the ON or START position, power is supplied

COMBINATION METERS

< SERVICE INFORMATION >

- through 10A fuse [No.14, located in the fuse block (J/B)]
- to combination meter terminal 23, and
- through 10A fuse [No.12, located in the fuse block (J/B)]
- to unified meter and A/C amp. terminal 22.

With the ignition switch in the ON position, power is supplied

- through 15A fuse [No.10, located in the fuse block (J/B)], and
- through 15A fuse [No.11, located in the fuse block (J/B)]
- to unified meter and A/C amp. terminal 46.

With the ignition switch in the ACC or ON position, power is supplied

- through 10A fuse [No. 6, located in the fuse block (J/B)]
- to combination meter terminal 6, and
- to unified meter and A/C amp. terminal 35.

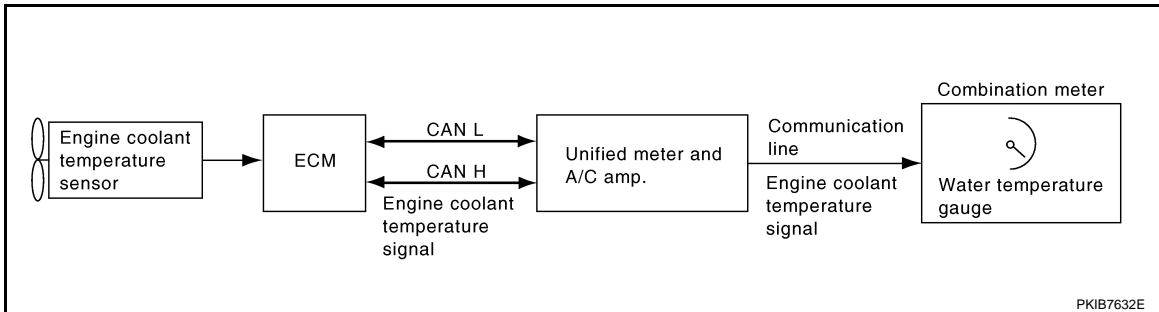
Ground is supplied

- to combination meter terminals 10, 11 and 12, and
- to unified meter and A/C amp. terminals 29 and 30
- through body grounds M57, M61 and M79.

WATER TEMPERATURE GAUGE

The water temperature gauge indicates the engine coolant temperature.

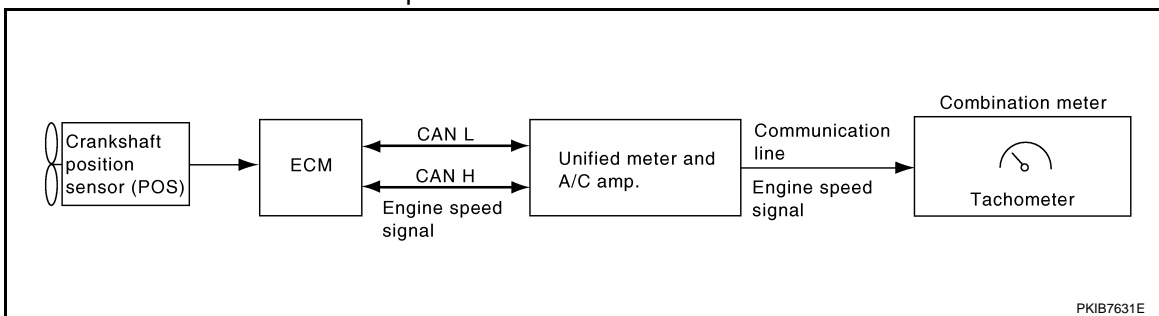
ECM provides a water temperature signal to unified meter and A/C amp. via CAN communication lines. Unified meter and A/C amp. provides a water temperature signal to combination meter for water temperature gauge via communication lines between unified meter and A/C amp. and combination meter.



TACHOMETER

The tachometer indicates engine speed in revolutions per minute (rpm).

ECM provides an engine speed signal to unified meter and A/C amp. via CAN communication lines. Unified meter and A/C amp. provides an engine speed signal to combination meter for tachometer via communication lines between unified meter and A/C amp. and combination meter.



FUEL GAUGE

The fuel gauge indicates the approximate fuel level in the fuel tank.

The fuel gauge is regulated by a variable ground signal supplied

- from unified meter and A/C amp. terminal 36
- through the fuel level sensor unit and fuel pump terminal 5
- through the fuel level sensor unit and fuel pump terminal 2
- to unified meter and A/C amp. terminal 28 for the fuel gauge.

Unified meter and A/C amp. provides a fuel level signal to combination meter for fuel gauge via communication lines between unified meter and A/C amp. and combination meter.

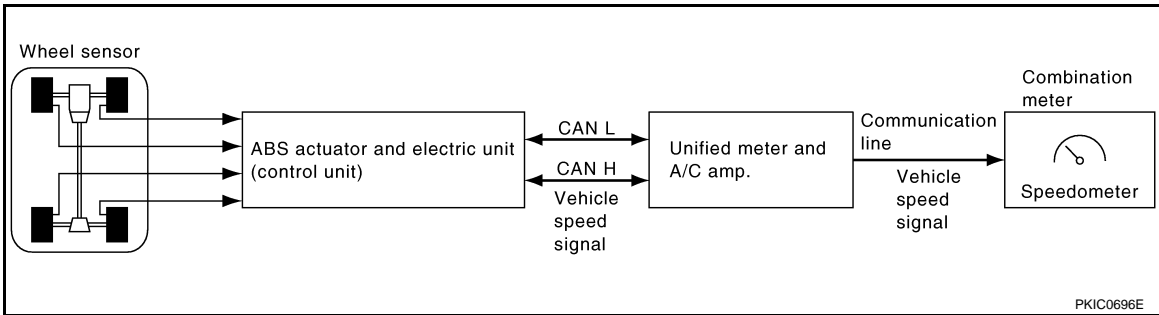
SPEEDOMETER

ABS actuator and electric unit (control unit) provides a vehicle speed signal to the unified meter and A/C amp. via CAN communication lines. After unified meter and A/C amp. receives the vehicle speed signal, it changes

COMBINATION METERS

< SERVICE INFORMATION >

the signal to 8 pulse signal and provides the 8 pulse signal to the combination meter for the speedometer via communication line.



ODO/TRIP METER

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

How to Change the Display

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

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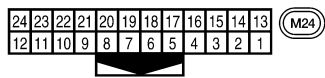
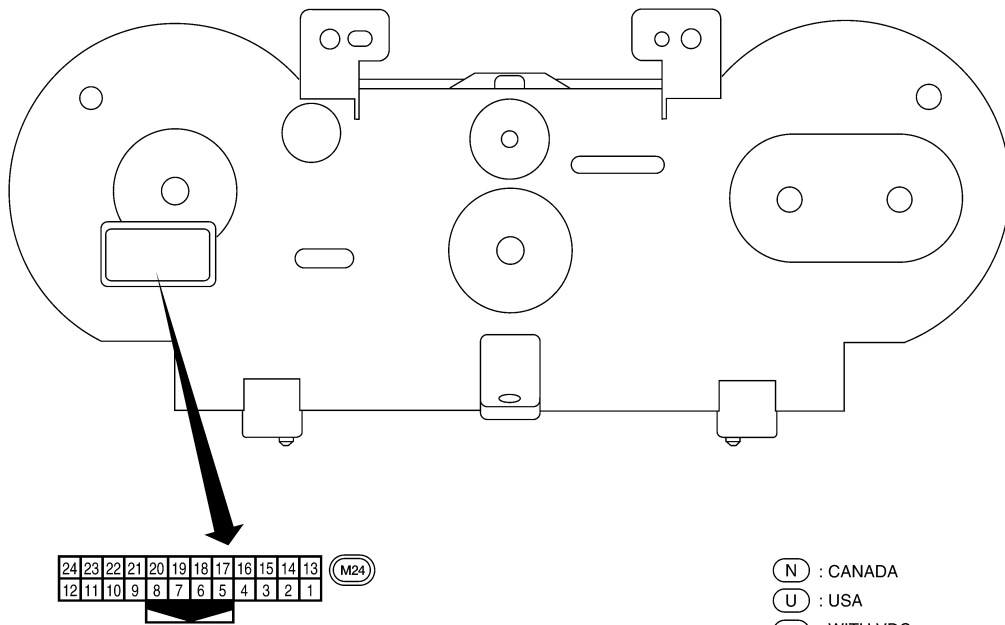
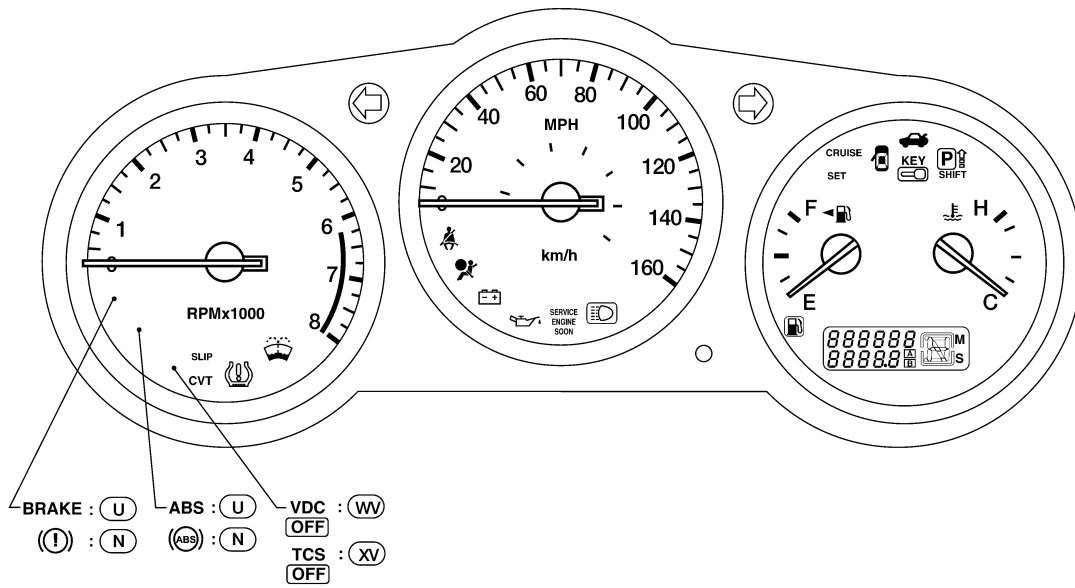
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COMBINATION METERS

< SERVICE INFORMATION >

Arrangement of Combination Meter

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- (N) : CANADA
- (U) : USA
- (WV) : WITH VDC
- (XV) : WITHOUT VDC

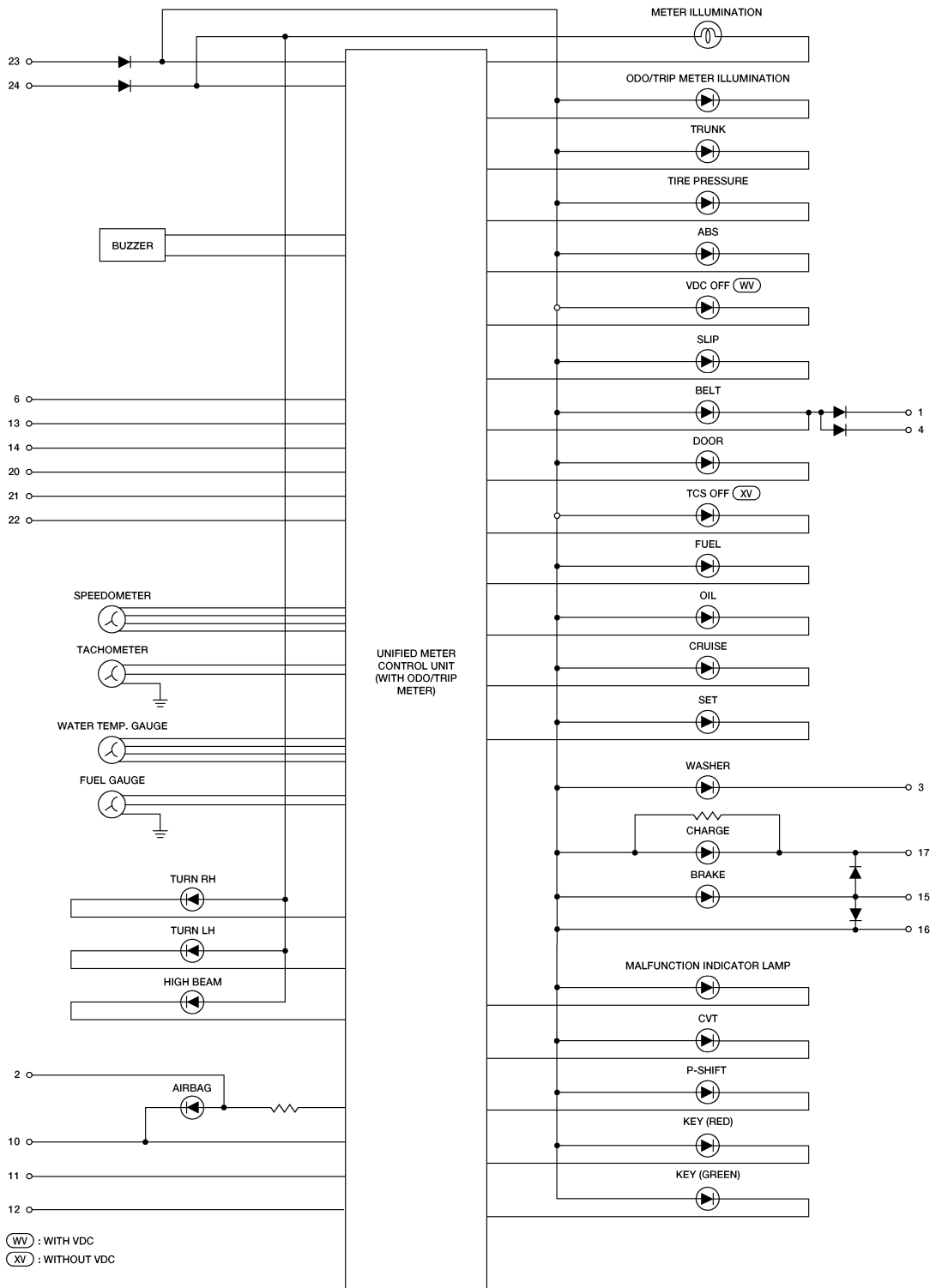
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COMBINATION METERS

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Internal Circuit

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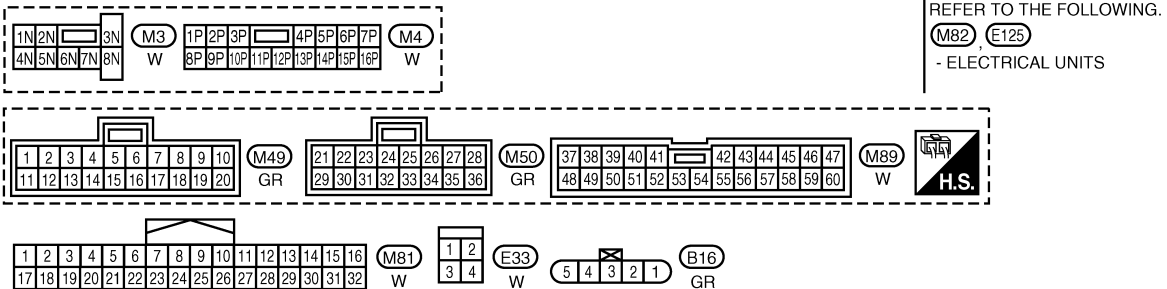
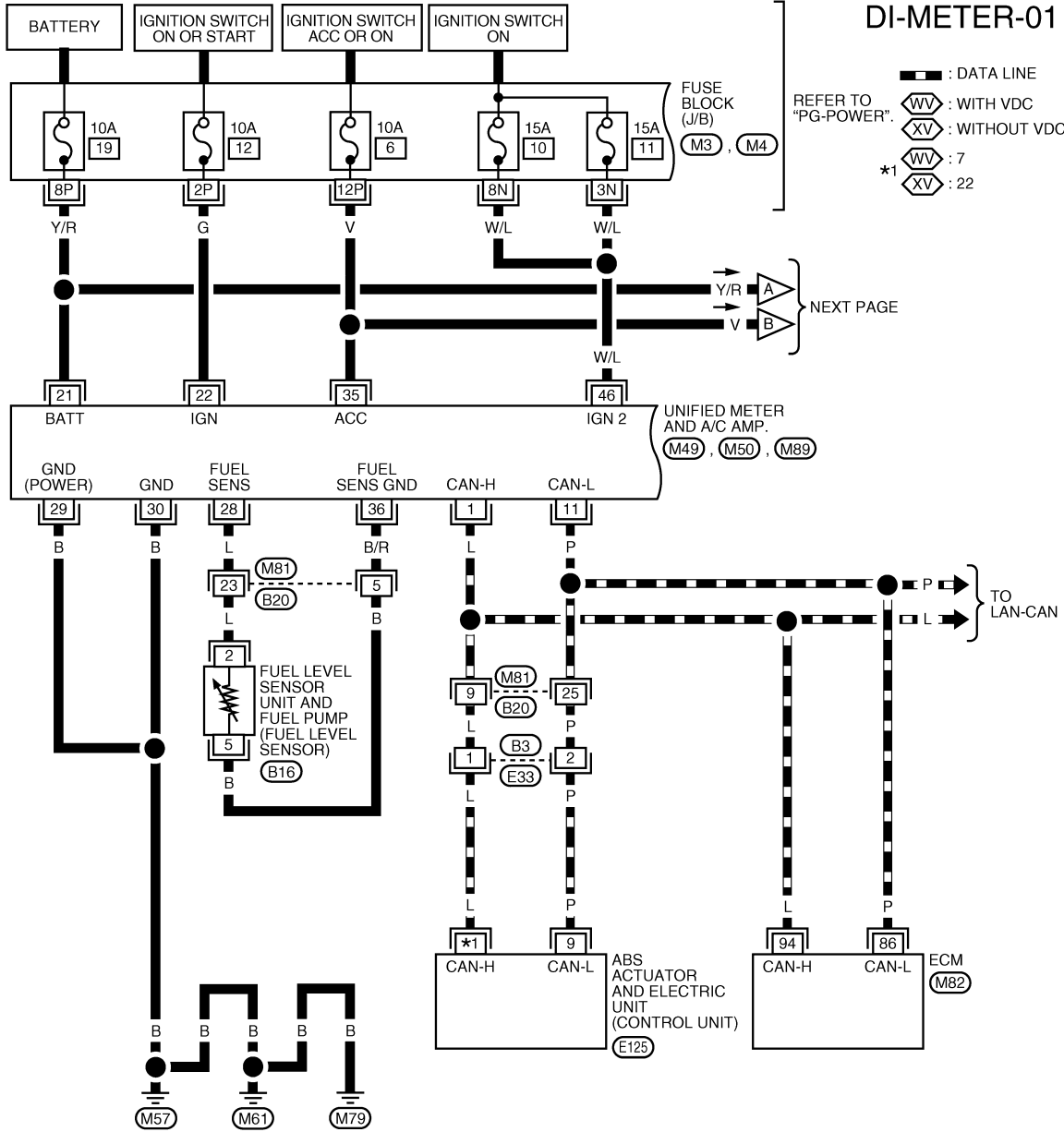
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COMBINATION METERS

< SERVICE INFORMATION >

Wiring Diagram - METER -

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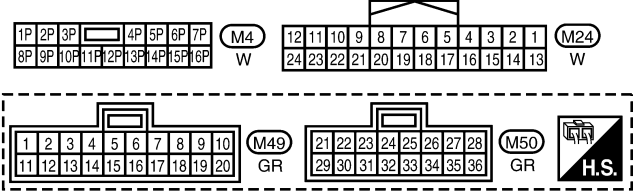
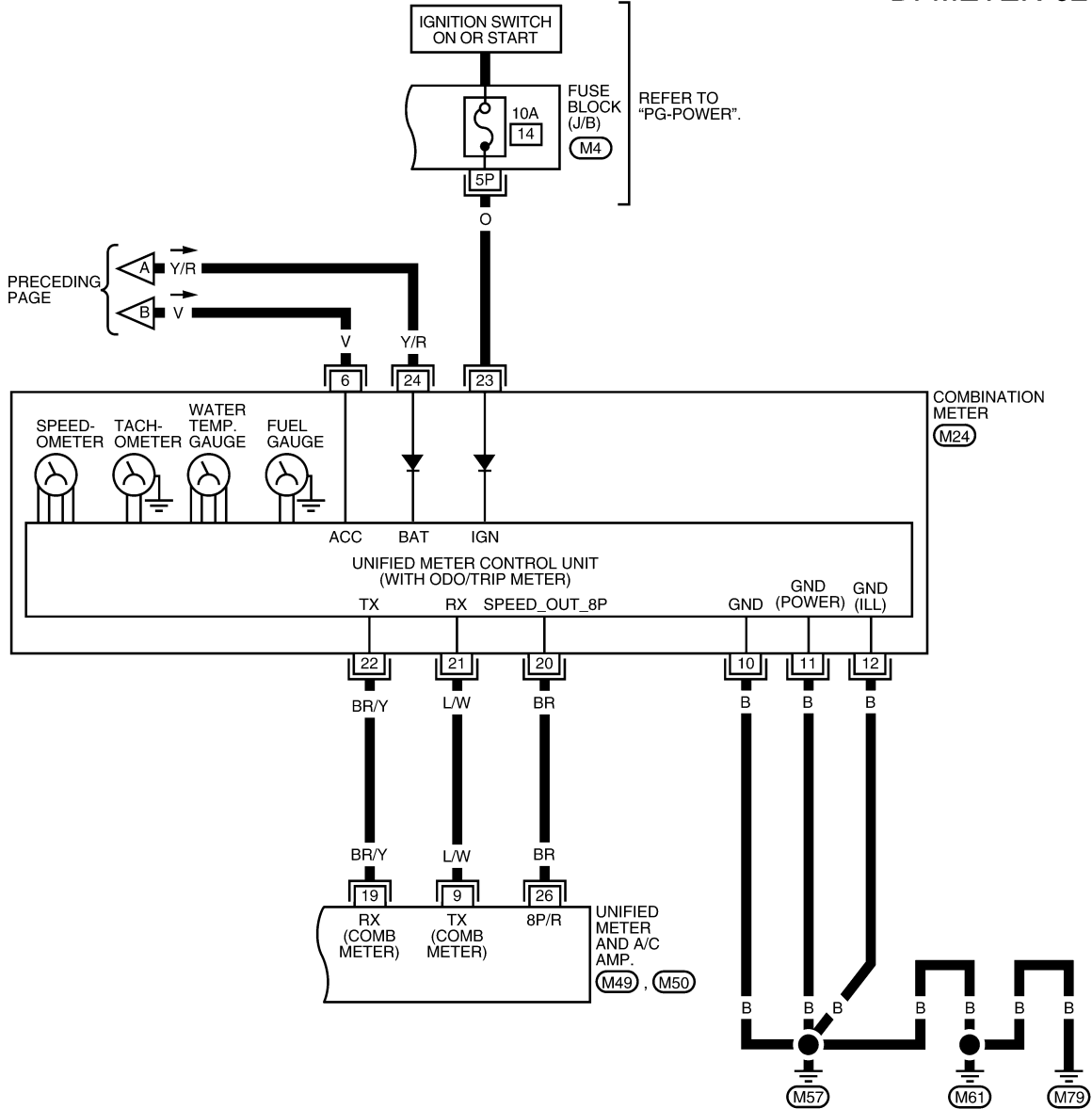


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COMBINATION METERS

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DI-METER-02



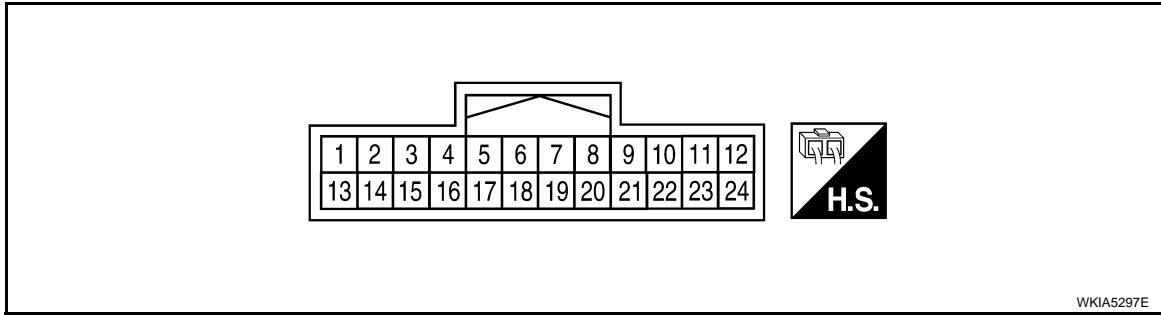
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COMBINATION METERS

< SERVICE INFORMATION >

Combination Meter Harness Connector Terminal Layout

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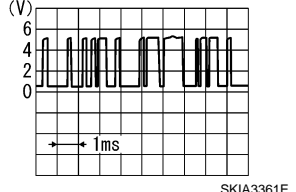
Terminal and Reference Value for Combination Meter

INFOID:000000001721663

Terminal No.	Wire color	Item	Condition		Reference value (V) (Approx.)
			Ignition switch	Operation or condition	
1	O	Seat belt buckle switch LH	ON	Unfastened (ON)	0
				Fastened (OFF)	Battery voltage
3	R/W	Washer fluid level switch	ON	Washer fluid level low	0
				Washer fluid level normal	Battery voltage
4	W	Seat belt buckle switch RH	ON	Unfastened (ON)	0
				Fastened (OFF)	Battery voltage
6	V	Ignition switch ACC or ON	ON	—	Battery voltage
10	B	Ground	OFF	—	0
11	B	Ground	OFF	—	0
12	B	Ground	OFF	—	0
13	R/L	Illumination control switch (+)	—	—	Refer to LT-130, "System Description" .
14	R/Y	Illumination control switch (-)	—	—	Refer to LT-130, "System Description" .
15	SB	Brake fluid level switch	ON	Brake fluid level low	0
				Brake fluid level normal	Battery voltage
16	P/B	Parking Brake switch	ON	Parking brake applied	0
				Parking brake released	Battery voltage
20	BR	Vehicle speed signal (8-pulse)	ON	Speedometer operated [When vehicle speed is approx. 40 km/h (25 MPH)]	<p style="text-align: right;">PKIA1935E</p>
21	L/W	RX communication line (From unified meter and A/C amp.)	ON	—	<p style="text-align: right;">SKIA3362E</p>

COMBINATION METERS

< SERVICE INFORMATION >

Terminal No.	Wire color	Item	Condition		Reference value (V) (Approx.)
			Ignition switch	Operation or condition	
22	BR/Y	TX communication line (To unified meter and A/C amp.)	ON	—	
23	O	Ignition switch ON or START	ON	—	Battery voltage
24	Y/R	Battery power supply	OFF	—	Battery voltage

Terminal and Reference Value for Unified Meter and A/C Amp

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Refer to [DI-28, "Terminal and Reference Value for Unified Meter and A/C Amp"](#).

Self-Diagnosis Mode of Combination Meter

INFOID:000000001721665

SELF-DIAGNOSIS MODE FUNCTION

- Odo/trip meter segment and CVT indicator segment operation can be checked in self-diagnosis mode.
- Meters/gauges can be checked in self-diagnosis mode.

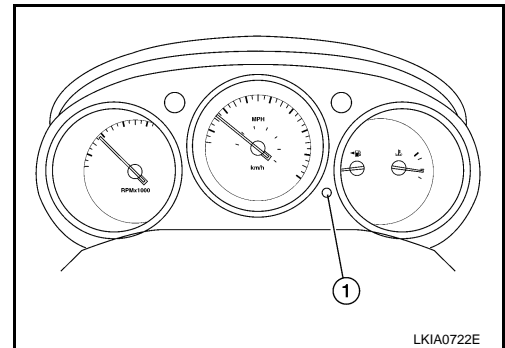
OPERATION PROCEDURE

1. Turn ignition switch ON, and switch the odo/trip meter to "trip A" or "trip B".

NOTE:

If the diagnosis function is activated with trip meter A displayed, the mileage on trip meter A will indicate 0000.0 miles, but the actual trip mileage will be retained. (Trip B operates the same way.)

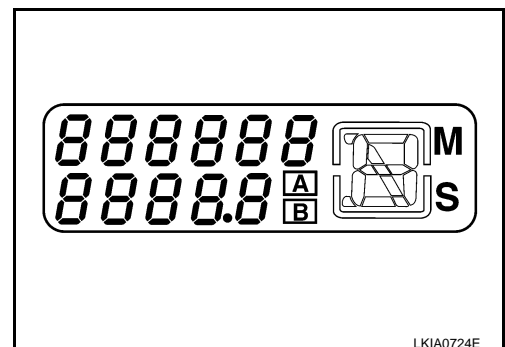
2. Turn ignition switch OFF.
3. While pushing the odo/trip meter switch (1), turn ignition switch ON again.
4. Make sure the trip meter displays "0000.0".
5. Push the odo/trip meter switch (1) at least 3 times within 5 seconds.



6. All the segments on the odo/trip meter and CVT indicator illuminate, and simultaneously the low-fuel warning lamp indicator illuminates. At this time, the unified meter control unit is turned to diagnosis mode.

NOTE:

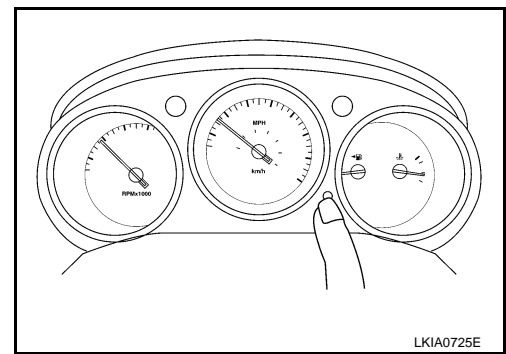
If any of the segments are not displayed, replace the combination meter.



COMBINATION METERS

< SERVICE INFORMATION >

7. Push the odo/trip meter switch. Each meter/gauge should indicate as shown in the figure while pushing odo/trip meter switch. (At this time, the low-fuel warning lamp goes off.)



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CONSULT-III Function

Refer to [DI-29, "CONSULT-III Function \(METER A/C AMP\)"](#).

How to Proceed with Trouble Diagnosis

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1. Confirm the symptom or customer complaint.
2. Perform preliminary check. Refer to [DI-14, "Preliminary Check"](#).
3. According to the symptom chart, repair or replace the cause of the symptom. Refer to [DI-15, "Symptom Chart"](#).
4. Does the meter operate normally? If so, go to 5. If not, go to 2.
5. Inspection End.

Preliminary Check

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1. CHECK SELF-DIAGNOSTIC RESULTS OF UNIFIED METER AND A/C AMP.

1. Start engine.
2. Select "METER A/C AMP" on CONSULT-III, and perform self-diagnosis of unified meter and A/C amp. Refer to [DI-29, "CONSULT-III Function \(METER A/C AMP\)"](#).
3. After erasing the self-diagnosis result, perform self-diagnosis again.

Self-diagnostic results content

No malfunction detected >> GO TO 2.

Malfunction detected >> Go to [DI-29, "CONSULT-III Function \(METER A/C AMP\)"](#).

2. CHECK WARNING LAMP ILLUMINATION

1. Turn ignition switch ON.
2. Make sure warning lamps (such as malfunction indicator lamp and oil pressure warning lamp) illuminate.

Do warning lamps illuminate?

YES >> GO TO 3.

NO >> Check ignition power supply system of combination meter. Refer to [DI-15, "Power Supply and Ground Circuit Inspection"](#).

3. CHECK SELF-DIAGNOSIS OPERATION OF COMBINATION METER

Perform combination meter self-diagnosis. Refer to [DI-13, "Self-Diagnosis Mode of Combination Meter"](#).

Does self-diagnosis mode operate?

YES >> GO TO 4.

NO >> Check combination meter power supply and ground circuit. Refer to [DI-15, "Power Supply and Ground Circuit Inspection"](#).

4. CHECK ODO/TRIP METER OPERATION

COMBINATION METERS

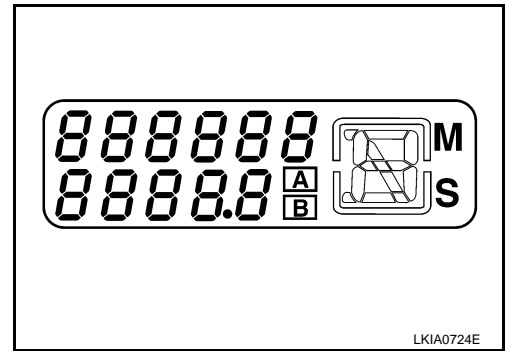
< SERVICE INFORMATION >

Check segment display status of odo/trip meter.

Is the display normal?

YES >> GO TO 5.

NO >> Replace the combination meter. Refer to [DI-24, "Combination Meter"](#).



5. CHECK LOW-FUEL WARNING LAMP ILLUMINATION CONFIRMATION

During low-fuel warning lamp check, confirm illumination of low-fuel warning lamp.

Condition of odo/trip meter switch	Low-fuel warning lamp
Pushed	Does not illuminate
Released	Illuminates

OK or NG

OK >> GO TO 6.

NG >> Replace the combination meter. Refer to [DI-24, "Combination Meter"](#).

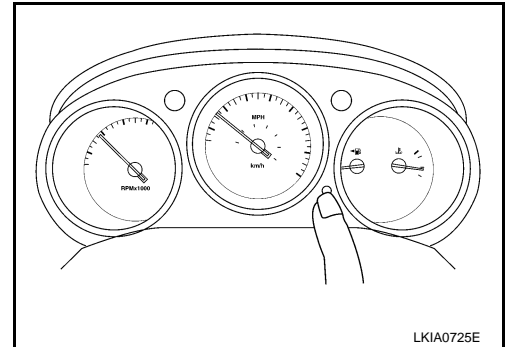
6. CHECK COMBINATION METER CIRCUIT

Check indication of each meter/gauge in self-diagnosis mode.

OK or NG

OK >> Go to [DI-15, "Symptom Chart"](#).

NG >> Replace the combination meter. Refer to [DI-24, "Combination Meter"](#).



Symptom Chart

INFOID:000000001721669

Symptom	Possible cause
Improper speedometer and odo/trip meter indication.	Refer to DI-17, "Vehicle Speed Signal Inspection" .
Improper tachometer indication.	Refer to DI-18, "Engine Speed Signal Inspection" .
Improper water temperature gauge indication.	Refer to DI-19, "Water Temperature Signal Inspection" .
Improper fuel gauge indication.	Refer to DI-19, "Fuel Level Sensor Signal Inspection 1" .
Improper low-fuel warning lamp indication.	Refer to DI-20, "Fuel Level Sensor Signal Inspection 2" .
More than one gauge does not give proper indication.	Replace the combination meter. Refer to DI-24, "Combination Meter" .
Improper CVT position indication.	Refer to DI-47 .
Illumination control does not operate properly.	Refer to LT-130 .

Power Supply and Ground Circuit Inspection

INFOID:000000001721670

1. CHECK FUSE

Check for blown combination meter and unified meter and A/C amp. fuses.

COMBINATION METERS

< SERVICE INFORMATION >

Unit	Power source	Fuse No.
Combination meter	Battery	19
Unified meter and A/C amp.		
Combination meter	Ignition switch ON or START	14
Unified meter and A/C amp.	Ignition switch ON or START	12
Unified meter and A/C amp.	Ignition switch ON	10, 11
Combination meter	Ignition switch ACC or ON	6
Unified meter and A/C amp.		

Refer to [DI-10, "Wiring Diagram - METER -"](#).

OK or NG

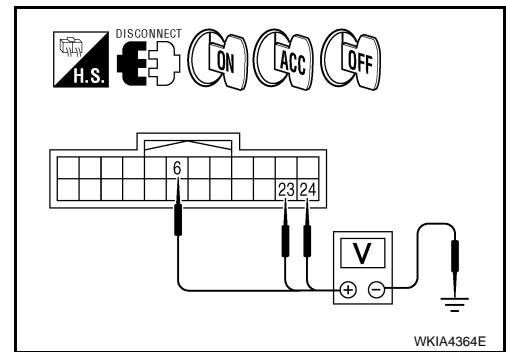
OK >> GO TO 2.

NG >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse. Refer to [PG-3](#).

2. CHECK POWER SUPPLY CIRCUIT

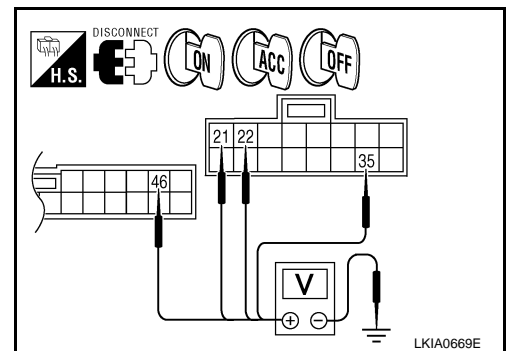
1. Disconnect combination meter connector M24 and unified meter and A/C amp. connectors M50 and M89.
2. Check voltage between combination meter harness connector terminals and ground.

Terminals		(-)	Ignition switch position		
(+)	Terminal		OFF	ACC	ON
M24	6	Ground	0V	Battery voltage	Battery voltage
	23		0V	0V	Battery voltage
	24		Battery voltage	Battery voltage	Battery voltage



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

Terminals		(-)	Ignition switch position		
(+)	Terminal		OFF	ACC	ON
M50	21	Ground	Battery voltage	Battery voltage	Battery voltage
	22		0V	0V	Battery voltage
	35		0V	Battery voltage	Battery voltage
M89	46		0V	0V	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> Check the following.

- Harness for open or short between combination meter and fuse

COMBINATION METERS

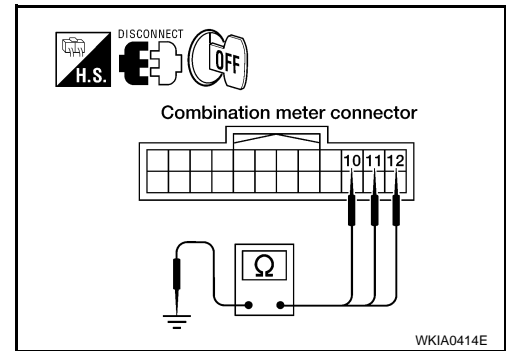
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- Harness for open or short between unified meter and A/C amp. and fuse

3. CHECK GROUND CIRCUIT

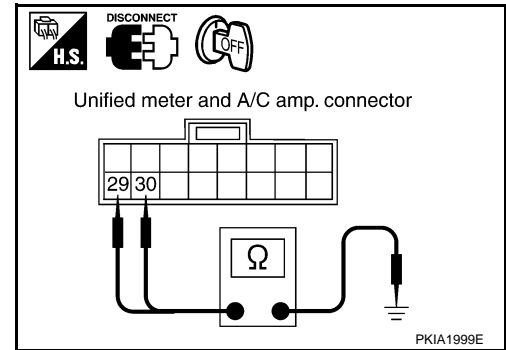
1. Check continuity between combination meter harness connector terminals and ground.

Terminals		(-)	Continuity
(+) Connector			
Connector	Terminal		
M24	10	Ground	Yes
	11		
	12		



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

Terminals		(-)	Continuity
(+) Connector			
Connector	Terminal		
M50	29	Ground	Yes
	30		



OK or NG

- OK >> Inspection End.
- NG >> Repair harness or connector.

Vehicle Speed Signal Inspection

INFOID:000000001721671

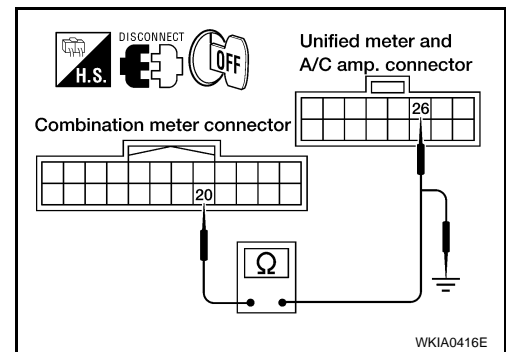
1. CHECK CONTINUITY BETWEEN COMBINATION METER AND UNIFIED METER AND A/C AMP.

1. Disconnect combination meter connector M24 and unified meter and A/C amp. connector M50.
2. Check continuity between combination meter harness connector M24 terminal 20 and unified meter and A/C amp. harness connector M50 terminal 26.

Continuity should exist.

3. Check continuity between combination meter harness connector M24 terminal 20 and ground.

Continuity should not exist.



OK or NG

- OK >> GO TO 2.
- NG >> Repair harness or connector.

2. CHECK VOLTAGE OF COMBINATION METER

1. Connect combination meter connector.
2. Turn ignition switch ON.

COMBINATION METERS

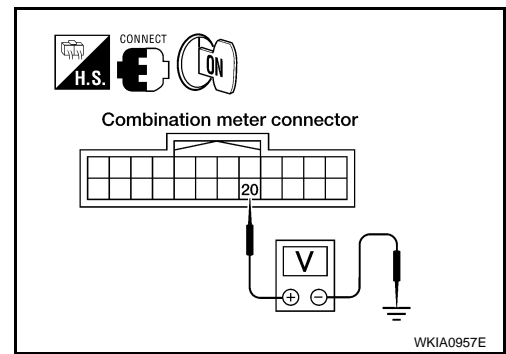
< SERVICE INFORMATION >

3. Check voltage between combination meter harness connector M24 terminal 20 and ground.

Battery voltage should exist.

OK or NG

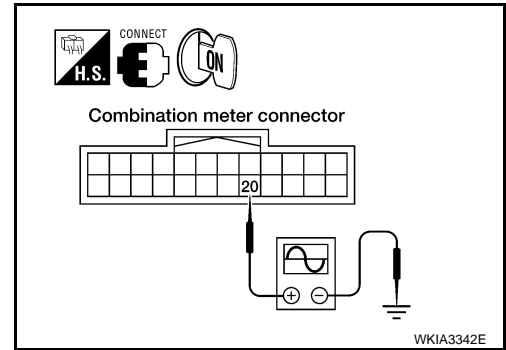
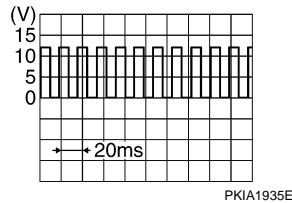
- OK >> GO TO 3.
- NG >> Replace combination meter, refer to [DI-24. "Combination Meter"](#).



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

1. Turn ignition switch OFF.
2. Connect unified meter and A/C amp. connector.
3. Check voltage signal between combination meter harness connector M24 terminal 20 and ground with simple oscilloscope of CONSULT-III.

20 - Ground:



OK or NG

- OK >> Replace the combination meter. Refer to [DI-24. "Combination Meter"](#).
- NG >> GO TO 4.

4. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS

Perform the ABS actuator and electric unit (control unit) self-diagnosis. Refer to [BRC-23. "CONSULT-III Function \(ABS\)"](#).

OK or NG

- OK >> Replace the unified meter and A/C amp. Refer to [DI-32. "Unified Meter and A/C Amp"](#).
- NG >> Check the applicable parts.

Engine Speed Signal Inspection

INFOID:000000001721672

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

1. Start engine and select "METER A/C AMP" on CONSULT-III.
2. Using "TACHOMETER" on the data monitor, compare the value of data monitor with tachometer pointer of combination meter.

OK or NG

- OK >> GO TO 2.
- NG >> Replace the combination meter. Refer to [DI-24. "Combination Meter"](#).

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

1. Select "ENGINE" on CONSULT-III.
2. Using "ENG SPEED" on the data monitor, print out the CONSULT-III screen when the engine is idling.
3. Select "METER A/C AMP" on CONSULT-III.
4. Using "TACHO METER" on the data monitor, compare the value of data monitor of the idling speed with that of the "ENG SPEED".

OK or NG

- OK >> Perform ECM self-diagnosis. Refer to [EC-107. "CONSULT-III Function \(ENGINE\)"](#).
- NG >> Replace the unified meter and A/C amp. Refer to [DI-32. "Unified Meter and A/C Amp"](#).

COMBINATION METERS

< SERVICE INFORMATION >

Water Temperature Signal Inspection

INFOID:000000001721673

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

1. Start engine and select "METER A/C AMP" on CONSULT-III.
2. Using "W TEMP METER" on the data monitor, compare the value of data monitor with water temperature gauge pointer of combination meter.

Water temperature gauge pointer	Reference value of data monitor °C (°F) (Approx.)
Hot	130 (266)
Middle	70-105 (158-221)
Cold	50 (122)

OK or NG

OK >> GO TO 2.

NG >> Replace the combination meter. Refer to [DI-24, "Combination Meter"](#).

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

1. Select "ENGINE" on CONSULT-III.
2. Using "COOLAN TEMP/S" on the data monitor, print out the CONSULT-III screen.
3. Select "METER A/C AMP" on CONSULT-III.
4. Using "W TEMP METER" on the data monitor, compare the value of data monitor with that of the "COOLAN TEMP/S".

OK or NG

OK >> Perform ECM self-diagnosis. Refer to [EC-107, "CONSULT-III Function \(ENGINE\)"](#).

NG >> Replace the unified meter and A/C amp. Refer to [DI-32, "Unified Meter and A/C Amp"](#).

Fuel Level Sensor Signal Inspection 1

INFOID:000000001721674

The following symptoms do not indicate a malfunction.

FUEL GAUGE

- Depending on vehicle position or driving circumstance, the fuel in the tank shifts and the pointer may fluctuate.
- If the vehicle is fueled with the ignition switch ON, the pointer will move slowly.

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

1. Select "METER A/C AMP" on CONSULT-III.
2. Using "FUEL METER" on the data monitor, compare the value of data monitor with fuel gauge pointer of combination meter.

Fuel gauge pointer	Reference value of data monitor (lit.) (Approx.)
Full	81
Three quarters	61
Half	41
One quarter	21
Empty	2

OK or NG

OK >> GO TO 2.

NG >> Replace the combination meter. Refer to [DI-24, "Combination Meter"](#).

2. CHECK FUEL LEVEL SENSOR

Check components. Refer to [DI-23, "Electrical Component Inspection"](#).

OK or NG

OK >> GO TO 3.

COMBINATION METERS

< SERVICE INFORMATION >

NG >> Replace the fuel level sensor unit, refer to [FL-6, "Removal and Installation"](#).

3.CHECK FUEL LEVEL SENSOR CIRCUIT 1

1. Disconnect fuel level sensor unit and fuel pump connector B16 and unified meter and A/C amp. connector M50.
2. Check continuity between fuel level sensor unit and fuel pump harness connector B16 terminal 2 and unified meter and A/C amp. harness connector M50 terminal 28.

Continuity should exist.

3. Check continuity between fuel level sensor unit and fuel pump harness connector B16 terminal 2 and ground.

Continuity should not exist.

OK or NG

OK >> GO TO 4.

NG >> Repair harness or connector.

4.CHECK FUEL LEVEL SENSOR CIRCUIT 2

1. Check continuity between fuel level sensor unit and fuel pump harness connector B16 terminal 5 and unified meter and A/C amp. harness connector M50 terminal 36.

Continuity should exist.

2. Check continuity between fuel level sensor unit and fuel pump harness connector B16 terminal 5 and ground.

Continuity should not exist.

OK or NG

OK >> GO TO 5.

NG >> Repair harness or connector.

5.CHECK INSTALLATION CONDITION

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

OK or NG

OK >> Replace the unified meter and A/C amp. Refer to [DI-32, "Unified Meter and A/C Amp"](#).

NG >> Install the fuel level sensor unit properly.

Fuel Level Sensor Signal Inspection 2

INFOID:000000001721675

The following symptoms do not indicate a malfunction.

LOW-FUEL WARNING LAMP

Depending on vehicle position or driving circumstance, the fuel in the tank shifts and the warning lamp ON timing may change.

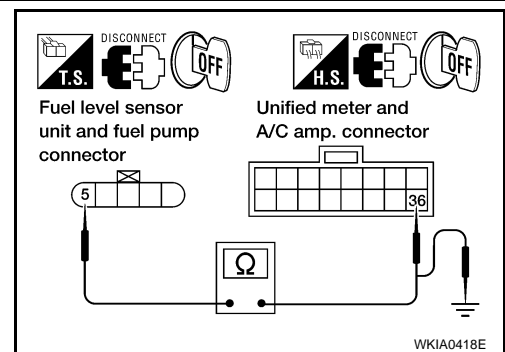
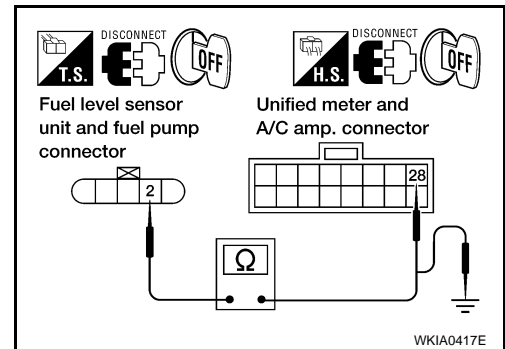
1.CHECK FUEL GAUGE

1. Ensure the fuel level in the tank is high enough so the low-fuel warning lamp should not be on.
2. Verify fuel gauge is operating properly.

OK or NG

OK >> Replace the combination meter. Refer to [DI-24, "Combination Meter"](#).

NG >> Go to [DI-19, "Fuel Level Sensor Signal Inspection 1"](#).



COMBINATION METERS

< SERVICE INFORMATION >

Communication Line Inspection

INFOID:000000001721676

1. CHECK CONNECTOR

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

OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.

2. CHECK METER/GAUGES VISUALLY

Does the pointer on the meter/gauges fluctuate when starting the engine?

Is the fluctuation acceptable?

- YES >> GO TO 3.
- NO >> GO TO 6.

3. CHECK CONTINUITY OF COMMUNICATION CIRCUIT (TX: COMBINATION METER)

1. Turn ignition switch OFF.
2. Disconnect combination meter and unified meter and A/C amp. connectors.
3. Check continuity between combination meter harness connector M24 terminal 22 and unified meter and A/C amp. harness connector M49 terminal 19.

Continuity should exist.

4. Check continuity between combination meter harness connector M24 terminal 22 and ground.

Continuity should not exist.

OK or NG

- OK >> GO TO 4.
- NG >> Repair harness or connector.

4. CHECK VOLTAGE OF UNIFIED METER AND A/C AMP.

1. Connect unified meter and A/C amp. connector.
2. Turn ignition switch ON.
3. Check voltage between combination meter harness connector M24 terminal 22 and ground.

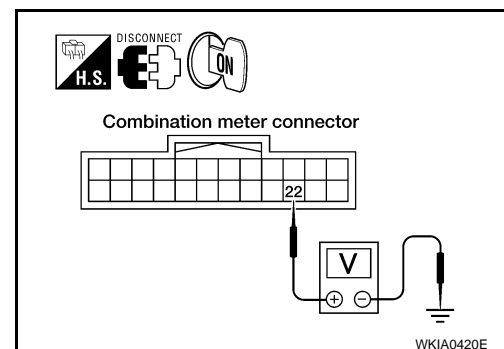
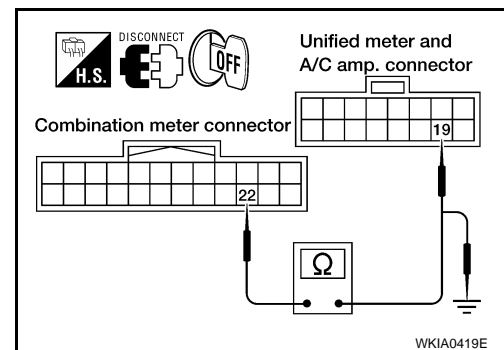
Approx. 5V

OK or NG

- OK >> GO TO 5.
- NG >> Replace the unified meter and A/C amp. Refer to [DI-32](#), "[Unified Meter and A/C Amp.](#)".

5. CHECK VOLTAGE SIGNAL OF COMBINATION METER

1. Turn ignition switch OFF and connect combination meter connector.
2. Turn ignition switch ON.

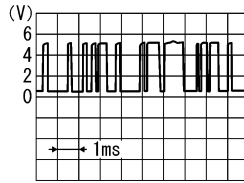


COMBINATION METERS

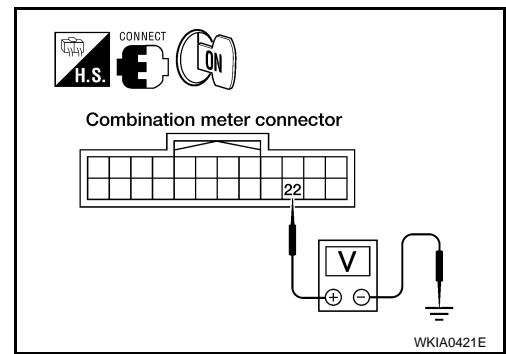
< SERVICE INFORMATION >

3. Check voltage signal between combination meter harness connector M24 terminal 22 and ground with simple oscilloscope of CONSULT-III.

22 - Ground:



SKIA3361E



OK or NG

- OK >> Replace the unified meter and A/C amp. Refer to [DI-32. "Unified Meter and A/C Amp"](#).
- NG >> Replace the combination meter. Refer to [DI-24. "Combination Meter"](#).

6. CHECK CONTINUITY OF COMMUNICATION CIRCUIT (RX: COMBINATION METER)

1. Turn ignition switch OFF.
2. Disconnect combination meter and unified meter and A/C amp. connectors.
3. Check continuity between combination meter harness connector M24 terminal 21 and unified meter and A/C amp. harness connector M49 terminal 9.

Continuity should exist.

4. Check continuity between combination meter harness connector M24 terminal 21 and ground.

Continuity should not exist.

OK or NG

- OK >> GO TO 7.
- NG >> Repair harness or connector.

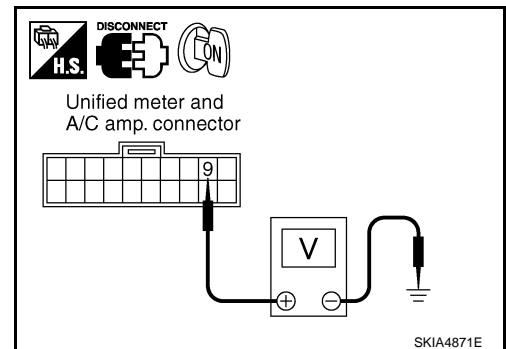
7. CHECK VOLTAGE OF COMBINATION METER

1. Connect combination meter connector.
2. Turn ignition switch ON.
3. Check voltage between unified meter and A/C amp. harness connector M49 terminal 9 and ground.

Approx. 5V

OK or NG

- OK >> GO TO 8.
- NG >> Replace the combination meter. Refer to [DI-24. "Combination Meter"](#).



8. CHECK VOLTAGE SIGNAL OF UNIFIED METER AND A/C AMP.

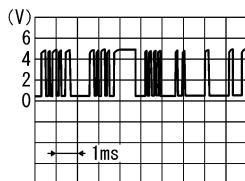
1. Turn ignition switch OFF and connect unified meter and A/C amp. connector.
2. Turn ignition switch ON.

COMBINATION METERS

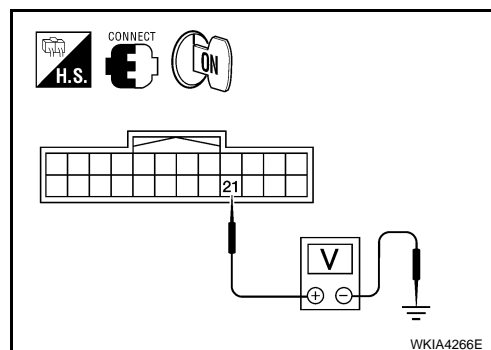
< SERVICE INFORMATION >

3. Check voltage signal between combination meter harness connector M24 terminal 21 and ground with simple oscilloscope of CONSULT-III.

21 - Ground:



SKIA3362E



OK or NG

- OK >> Replace the combination meter. Refer to [DI-24, "Combination Meter"](#).
NG >> Replace the unified meter and A/C amp. Refer to [DI-32, "Unified Meter and A/C Amp"](#).

Fuel Gauge Pointer Fluctuates, Indicates Wrong Value, or Varies

INFOID:000000001721677

1. CHECK FUEL GAUGE FLUCTUATION

Test drive vehicle to see if gauge fluctuates only during driving or just before or just after stopping.

Does the indication value vary only during driving or just before or just after stopping?

- YES >> The pointer fluctuation may be caused by fuel level change in the fuel tank. Condition is normal.
NO >> Ask the customer about the situation when the symptom occurs in detail, and perform the trouble diagnosis.

Fuel Gauge Does Not Move to Full-position

INFOID:000000001721678

1. QUESTION 1

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. QUESTION 2

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 for the pointer to move to full-position because of the characteristic of the fuel gauge.
NO >> GO TO 3.

3. QUESTION 3

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. QUESTION 4

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

YES or NO

- YES >> Check the fuel level sensor unit. Refer to [DI-23, "Electrical Component Inspection"](#).
NO >> Check fuel level sensor unit installation, and determine whether the float arm interferes or binds with any of the internal components in the fuel tank.

Electrical Component Inspection

INFOID:000000001721679

FUEL LEVEL SENSOR UNIT CHECK

For removal, refer to [FL-6](#).

COMBINATION METERS

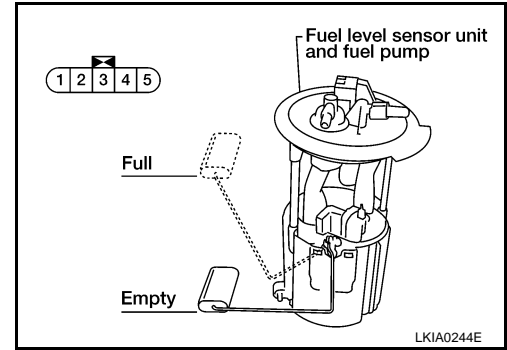
< SERVICE INFORMATION >

Check Fuel Level Sensor Unit and Fuel Pump

Check resistance between fuel level sensor unit and fuel pump connector terminals 2 and 5.

Terminals		Float position mm (in)			Resistance value Ω (Approx.)
2	5	*1	Empty	15 (0.59)	81
		*2	Full	193 (7.6)	2

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



Combination Meter

REMOVAL AND INSTALLATION

Refer to [IP-10, "Instrument Panel"](#).

INFOID:000000001721680

UNIFIED METER AND A/C AMP

< SERVICE INFORMATION >

UNIFIED METER AND A/C AMP

System Description

INFOID:000000001721681

- For the unified meter and A/C amp., the signal line (CAN-H, CAN-L and fuel level sensor) required for controlling the combination meter are integrated in the A/C auto amp.
- In addition to providing input to the A/C auto amp., signals required for combination meter operation are received from various components either directly, or via CAN communication. These signals are sent to the combination meter using the TX and RX communication lines between the combination meter and unified meter and A/C amp. For information regarding A/C control, refer to [ATC-18](#) in ATC section.
- The signals required for the distance to empty (DTE) display are centralized in the unified meter and A/C amp., converted into data, and sent to the display control unit using CAN communication.
- Other input signals are also sent to the ECM, TCM, display control unit and BCM using CAN communication.
- CONSULT-III functions (self-diagnostic results and data monitor) are used to identify errors in the communication lines connected to the unified meter and A/C amp., and to monitor the status of signals received by the combination meter from the unified meter and A/C amp.

INPUT/OUTPUT SIGNALS

Between Unified Meter and A/C Amp. and Combination Meter

Unit	Input	Output
Unified meter and A/C amp.	<ul style="list-style-type: none"> • Seat belt buckle switch signal (Driver's side) • Parking brake signal • Refuel status signal • Low-fuel warning lamp condition signal • Combination meter receiver error signal • Delivery destination data signal • Combination meter specifications signal 	<ul style="list-style-type: none"> • Vehicle speed signal (8-pulse) • Engine speed signal • Engine coolant temperature signal • Fuel level sensor signal (resistance value) • Malfunction indicator signal • ABS warning lamp signal • Brake warning lamp signal • Turn indicator signal • High beam request signal • TCS OFF indicator lamp signal • VDC OFF indicator lamp signal • SLIP indicator lamp signal • CVT position indicator signal • Manual mode gear position signal • Door switch signal • Oil pressure switch signal • Buzzer output signal

FAIL-SAFE

Solution When Communication Error Between the Unified Meter & A/C Amp. and the Combination Meter

Function	Specifications	
Speedometer	Reset to zero by suspending communication.	
Tachometer		
Fuel gauge		
Water temperature gauge		
Illumination control	Combination meter illumination	When suspending communication, change to nighttime mode.
Odo/trip meter		Integrate in response to 8-pulse input.
CVT indicator		The display turns off by suspending communication.
Warning buzzer		The warning buzzer turns off by suspending communication.

UNIFIED METER AND A/C AMP

< SERVICE INFORMATION >

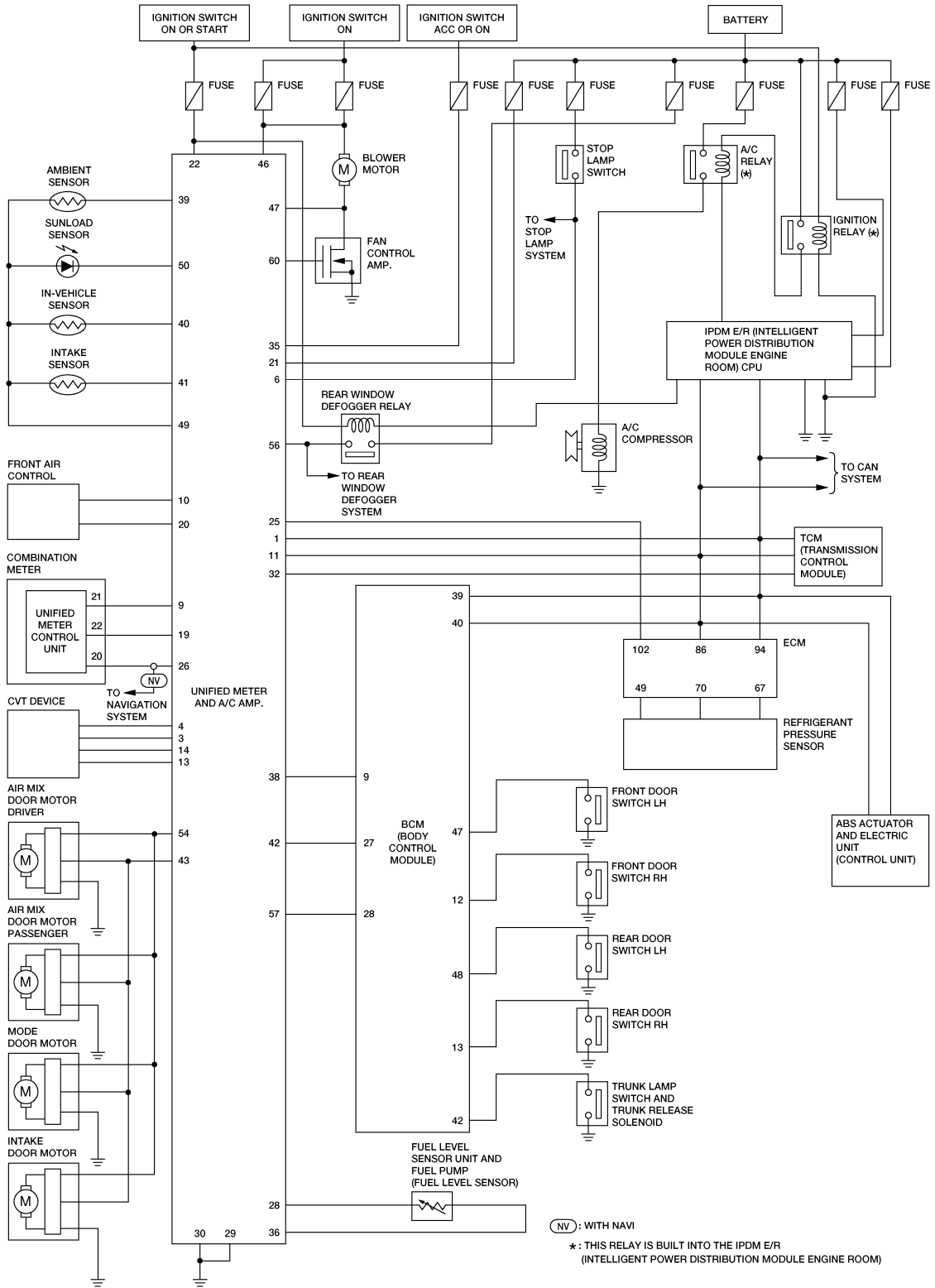
	Function	Specifications
Warning lamp/indicator lamp	ABS warning lamp	The lamp turns on by suspending communication.
	VDC OFF indicator	
	TCS OFF indicator	
	SLIP indicator	
	Brake warning lamp	
	Door warning lamp	The lamp turns off by suspending communication.
	ASCD SET indicator lamp	
	ASCD CRUISE indicator lamp	
	Oil pressure warning lamp	
	Turn signal indicator	
	Malfunction indicator lamp	
	CVT indicator lamp	
	High beam indicator	

UNIFIED METER AND A/C AMP

< SERVICE INFORMATION >

Schematic

INFOID:000000001721683



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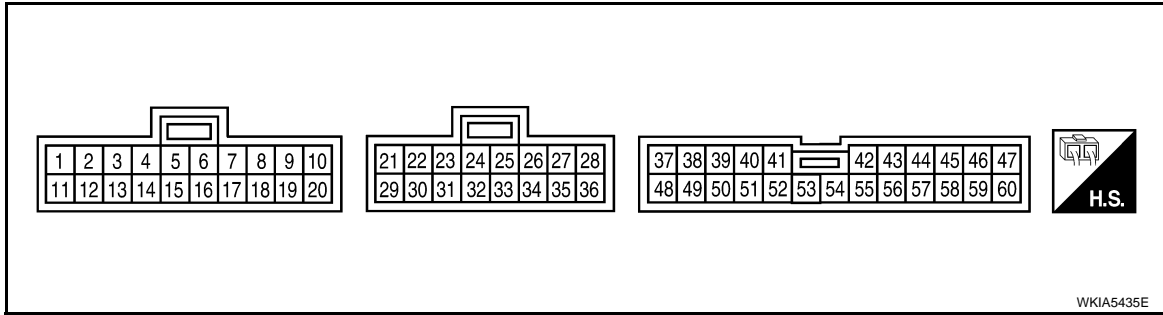
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UNIFIED METER AND A/C AMP

< SERVICE INFORMATION >

Unified Meter and A/C Amp. Harness Connector Terminal Layout

INFOID:000000001721684



Terminal and Reference Value for Unified Meter and A/C Amp

INFOID:000000001721685

Terminal No.	Wire color	Item	Condition		Reference value (V) (Approx.)
			Ignition switch	Operation or condition	
1	L	CAN-H	—	—	—
6	P/L	Stop lamp switch	ON	Brake pedal depressed	Battery voltage
				Brake pedal released	0
9	L/W	TX communication line (To combination meter)	ON	—	<p>SKIA3362E</p>
10	L/R	TX communication line (To front air control)	ON	—	<p>RJIA0212E</p>
11	P	CAN-L	—	—	—
19	BR/Y	RX communication line (From combination meter)	ON	—	<p>SKIA3361E</p>
20	L/Y	RX communication line (From front air control)	ON	—	<p>RJIA0213E</p>
21	Y/R	Battery power supply	OFF	—	Battery voltage
22	G	Ignition switch ON or START	ON	—	Battery voltage

UNIFIED METER AND A/C AMP

< SERVICE INFORMATION >

Terminal No.	Wire color	Item	Condition		Reference value (V) (Approx.)
			Ignition switch	Operation or condition	
26	BR	Vehicle speed signal (8-pulse)	ON	Speedometer operated [When vehicle speed is approx. 40 km/h (25 MPH)]	
28	L	Fuel level sensor signal	—	—	Refer to DI-23, "Electrical Component Inspection" .
29	B	Ground (For power)	OFF	—	0
30	B	Ground	OFF	—	0
35	V	Ignition switch ACC or ON	ON	—	Battery voltage
36	B/R	Fuel level sensor signal ground	—	—	—
38	W	Rear window defogger ON Signal	ON	Rear window defogger switch: Press ON	0
				Rear window defogger switch: Press OFF	Battery voltage
39	O/B	Ambient sensor	—	—	5
40	LG	In-vehicle sensor	—	—	5
41	R/W	Intake sensor	—	—	5
42	O/L	Compressor ON signal	ON	A/C switch: ON	0
				A/C switch: OFF	10
43	L/B	A/C LAN signal	ON	—	
46	W/L	Ignition switch ON	ON	—	Battery voltage
47	L/R	Blower motor feedback	ON	Fan speed: Low	7 - 10
49	B/Y	Sensor ground	ON	—	0
50	O	Sunload sensor	—	—	5
54	L/W	Power supply for each door motor	ON	—	Battery voltage
56	G/B	Rear window defogger	ON	Rear window defogger ON	Battery voltage
				Rear window defogger OFF	0
57	W/B	Blower motor ON signal	ON	—	Battery voltage
60	L/Y	Fan control amp. control signal	ON	Fan speed low, middle low or middle high	2.5 - 3.0
				Fan speed high	9 - 10

CONSULT-III Function (METER A/C AMP)

INFOID:000000001721686

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

UNIFIED METER AND A/C AMP

< SERVICE INFORMATION >

METER A/C AMP diagnosis mode	Description
SELF-DIAG RESULTS	Displays unified meter and A/C amp. self-diagnosis results.
DATA MONITOR	Displays unified meter and A/C amp. input/output data in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.

SELF-DIAGNOSTIC RESULTS

Operation Procedure

1. Touch "SELF-DIAG RESULTS" on "SELECT DIAG MODE" screen.
2. Self-diagnosis results are displayed.

Display Item List

CONSULT-III display	Malfunction
CAN COMM CIRC [U1000]	Malfunction is detected in CAN communication lines. CAUTION: Even when there is no malfunction on CAN communication system, malfunction may be misinterpreted when battery has low voltage (when maintaining 7V-8V for about 2 seconds) or 10A fuse [No. 19, located in the fuse block (J/B)] is removed.
METER COMM CIRC [B2202]	Malfunction is detected in communication lines between combination meter and unified meter and A/C amp.
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, malfunctions may be misinterpreted when battery has low voltage (when maintaining 7V-8V for about 2 seconds).

Time indicates the condition of the self-diagnosis results judged by each signal input.

- Normal: If the system is presently operating properly, but had a malfunction in the past, the time will indicate "1-63".
- Malfunction: Soon after detecting malfunctions by self-diagnoses or current malfunction, "0" is indicated. After the system returns to normal operating condition, every time the ignition switch is cycled (turned to OFF from ON), a value of one is added to the counter (i.e. "1"→"2"→"3"..."63"). When the ignition switch is cycled 64 times, the result of the self-diagnoses will be erased. If a malfunction is detected again, "0" will be indicated.

DATA MONITOR

Operation Procedure

1. Touch "DATA MONITOR" on "SELECT DIAG MODE" screen.
2. Touch either "MAIN SIGNALS" or "SELECTION FROM MENU" on the "DATA MONITOR" screen.

MAIN SIGNALS	Monitors main signals.
SELECTION FROM MENU	Selects and monitors individual signal.

3. Touch "START".
4. When "SELECTION FROM MENU" is selected, touch individual items to be monitored. When "MAIN SIGNALS" is selected, main items will be monitored.
5. Touch "RECORD" while monitoring, then the status of the monitored item can be recorded. To stop recording, touch "STOP".

Display Item List

UNIFIED METER AND A/C AMP

< SERVICE INFORMATION >

Display item [Unit]	MAIN SIGNALS	SELECTION FROM MENU	Contents
SPEED METER [km/h] or [mph]	X	X	This is the angle correction value after the speed signal from the ABS actuator and electric unit (control unit) is converted into the vehicle speed.
SPEED OUTPUT [km/h] or [mph]	X	X	This is the angle correction value before the speed signal from the ABS actuator and electric unit (control unit) is converted into the vehicle speed.
TACHO METER [rpm]	X	X	This is the converted value for the engine speed signal from the ECM.
W TEMP METER [°C] or [°F]	X	X	This is the converted value for the water temp signal from the ECM.
FUEL METER [lit.]	X	X	This is the processed value for the signal (resistance value) from the fuel gauge.
DISTANCE [km]	X	X	This is the calculated value for the speed signal from the ABS actuator and electric unit (control unit), the signal (resistance signal) from the fuel gauge and fuel consumption from ECM.
FUEL W/L [ON/OFF]	X	X	Indicates [ON/OFF] condition of low-fuel warning lamp.
MIL [ON/OFF]		X	Indicates [ON/OFF] condition of malfunction indicator lamp.
AIR PRES W/L [ON/OFF]		X	Indicates [ON/OFF] condition of low 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	Indicates [ON/OFF] condition of buzzer.
DOOR W/L [ON/OFF]		X	Indicates [ON/OFF] condition of door warning lamp.
TRUNK/GLAS-H [ON/OFF]		X	Indicates [ON/OFF] condition of trunk warning lamp.
HI-BEAM IND [ON/OFF]		X	Indicates [ON/OFF] condition of high beam indicator.
TURN IND [ON/OFF]		X	Indicates [ON/OFF] condition of turn indicator.
OIL W/L [ON/OFF]		X	Indicates [ON/OFF] condition of oil pressure warning lamp.
VDC/TCS IND [ON/OFF]		X	Indicates [ON/OFF] condition of VDC/TCS OFF indicator lamp.
ABS W/L [ON/OFF]		X	Indicates [ON/OFF] condition of ABS warning lamp.
SLIP IND [ON/OFF]		X	Indicates [ON/OFF] condition of SLIP indicator lamp.
BRAKE W/L [ON/OFF]		X	Indicates [ON/OFF] condition of brake warning lamp. *1
KEY G/Y W/L [ON/OFF]		X	Indicates [ON/OFF] condition of key warning lamp.
KEY R W/L [ON/OFF]		X	Indicates [ON/OFF] condition of key warning lamp.
KEY KNOB W/L [ON/OFF]		X	Indicates [ON/OFF] condition of key knob warning lamp.
PNP P SW [ON/OFF]	X	X	Indicates [ON/OFF] condition of inhibitor P switch.
PNP N SW [ON/OFF]	X	X	Indicates [ON/OFF] condition of inhibitor N switch.
M RANGE SW [ON/OFF]	X	X	Indicates [ON/OFF] condition of manual mode range switch.
NM RANGE SW [ON/OFF]	X	X	Indicates [ON/OFF] condition of except for manual mode range switch.
AT SFT UP SW [ON/OFF]	X	X	Indicates [ON/OFF] condition of CVT shift-up switch.
AT SFT DWN SW [ON/OFF]	X	X	Indicates [ON/OFF] condition of CVT shift-down switch.
BRAKE SW [ON/OFF]		X	Indicates [ON/OFF] condition of parking brake switch.
AT-M IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of CVT manual mode indicator.
AT-M GEAR [6-1]	X	X	Indicates [6-1] condition of CVT manual mode gear position.
P RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of CVT shift P range indicator.
R RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of CVT shift R range indicator.

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UNIFIED METER AND A/C AMP

< SERVICE INFORMATION >

Display item [Unit]	MAIN SIGNALS	SELECTION FROM MENU	Contents
N RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of CVT shift N range indicator.
D RANGE IND [ON/OFF]	X	X	Indicates [ON/OFF] condition of CVT shift D range indicator.
CVT IND [ON/OFF]		X	Indicates [ON/OFF] condition of CVT indicator.
CRUISE IND [ON/OFF]		X	Indicates [ON/OFF] condition of CRUISE indicator.
SET IND [ON/OFF]		X	Indicates [ON/OFF] condition of SET indicator.

NOTE:

Any monitored item that does not match the vehicle being diagnosed is deleted from the display automatically.
*1: Monitor keeps indicating "OFF" when brake warning lamp is on because of parking brake operation or low brake fluid level.

Unified Meter and A/C Amp

INFOID:000000001721687

REMOVAL AND INSTALLATION

Refer to [IP-13, "Center Stack Assembly"](#).

COMPASS

< SERVICE INFORMATION >

COMPASS

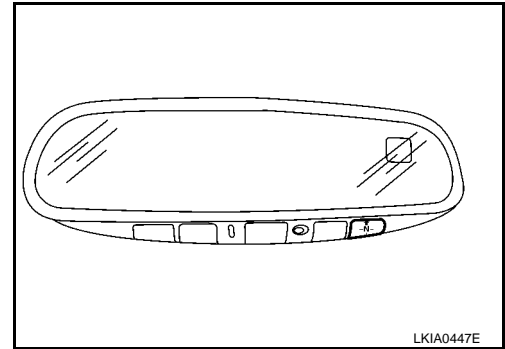
System Description

INFOID:000000001721688

With the ignition switch in the ON position, and the mode (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



POWER SUPPLY AND GROUND CIRCUIT

With the ignition switch in ON or START,

Power is supplied

- through 10A fuse [No. 14, located in the fuse block (J/B)]
- to auto anti-dazzling inside mirror (compass) terminal 6.

Ground is supplied at all times

- to auto anti-dazzling inside mirror (compass) terminal 3
- through body grounds M57, M61, and M79.

CALIBRATION

If the compass display reads "C", the compass needs to be calibrated. Refer to [DI-35. "Zone Variation Change Procedure"](#).

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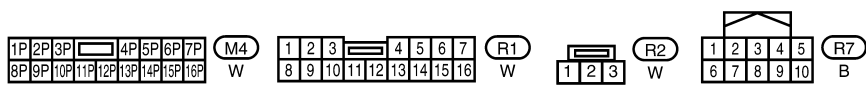
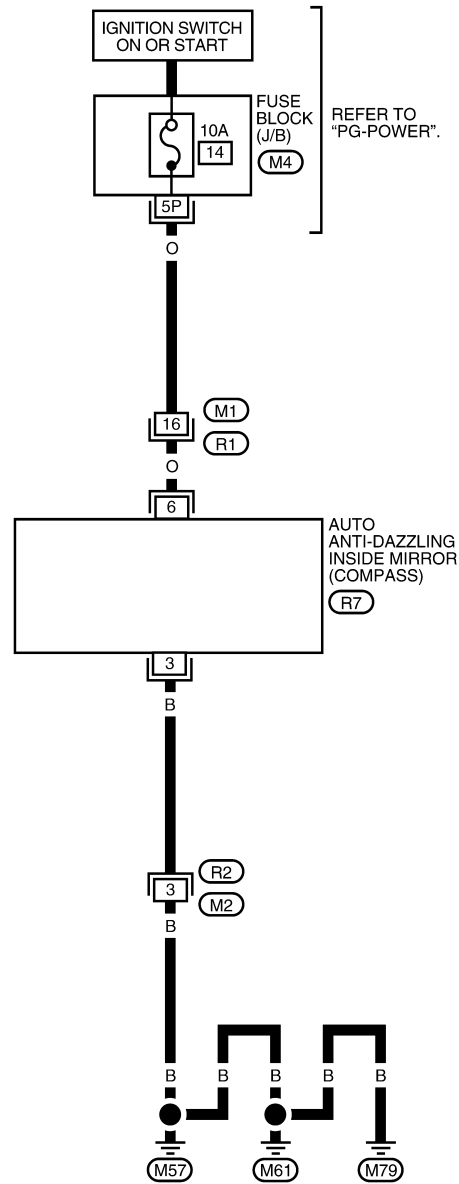
COMPASS

< SERVICE INFORMATION >

Wiring Diagram - COMPAS -

INFOID:000000001721689

DI-COMPAS-01



WKWA3351E

Trouble Diagnosis

COMPASS INSPECTION

INFOID:000000001721690

COMPASS

< SERVICE INFORMATION >

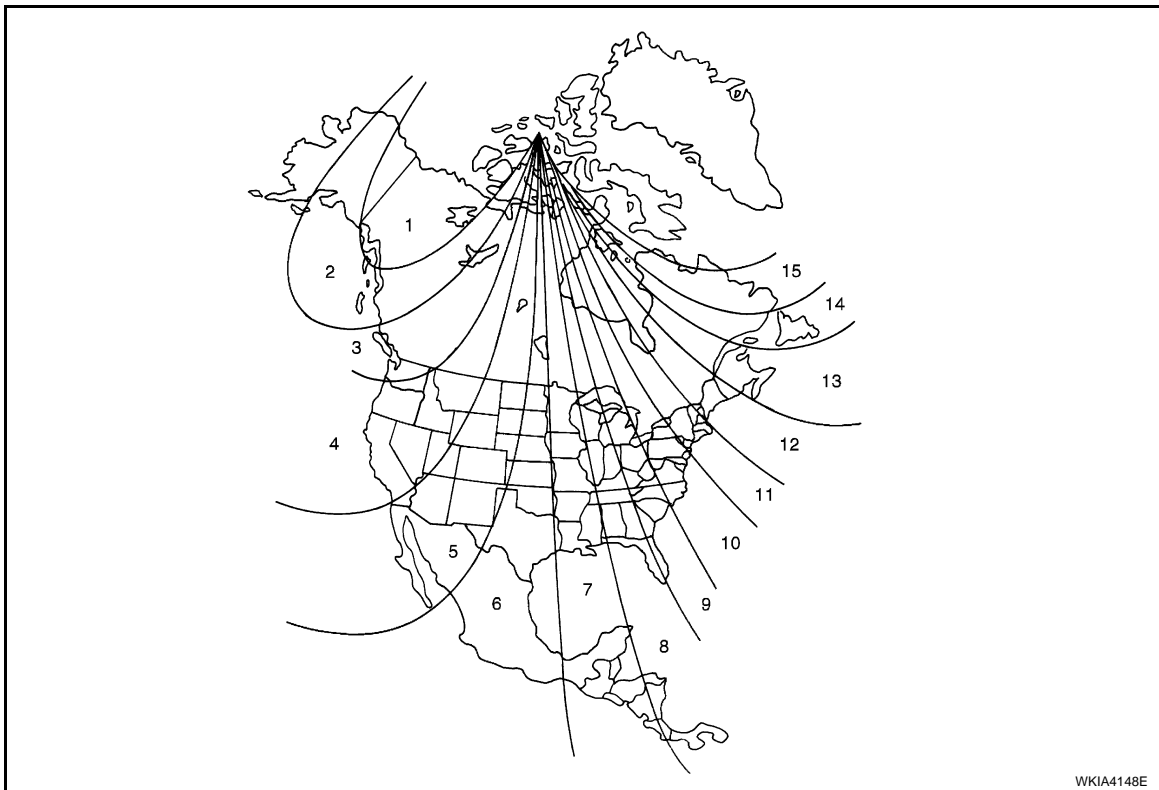
Symptom	Possible causes	Repair order
No display at all	<ol style="list-style-type: none"> 10A fuse Ground circuit Compass 	<ol style="list-style-type: none"> Check 10A fuse [No. 14, located in fuse block (J/B)]. Turn the ignition switch ON and verify that battery positive voltage is at terminal 6 of compass. Check ground circuit for compass. Replace compass.
Forward direction indication slips off the mark or incorrect.	<ol style="list-style-type: none"> Compass not calibrated Zone variation change is not done. 	<ol style="list-style-type: none"> Drive the vehicle in 3 complete circles at less than 8 km/h (5 mph). Perform the zone variation change procedure.
Compass reading remains unchanged.	<ul style="list-style-type: none"> Compass 	<ul style="list-style-type: none"> Replace compass.

Zone Variation Change Procedure

INFOID:000000001721691

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 mode (N) switch for about 5 seconds. The current zone number will appear in the display.
4. Press the mode (N) switch repeatedly until the desired number appears in the display. Once the desired zone number is displayed, stop pressing the mode (N) switch and the display will show a compass direction after a few seconds.

NOTE:

Use zone number 5 for Hawaii.

CALIBRATION FUNCTION OF COMPASS

COMPASS

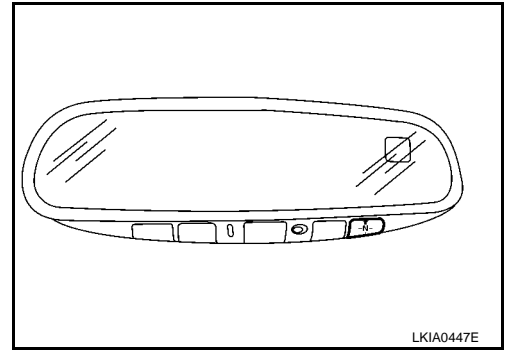
< SERVICE INFORMATION >

The direction display is equipped with a calibration feature. If vehicle direction is not shown correctly, carry out initial correction.

1. Press and hold the mode (N) switch for about 9 seconds. The display will read "C".
2. Drive the vehicle slowly in a circle, in an open, safe place. The initial calibration is completed in about three turns.

NOTE:

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



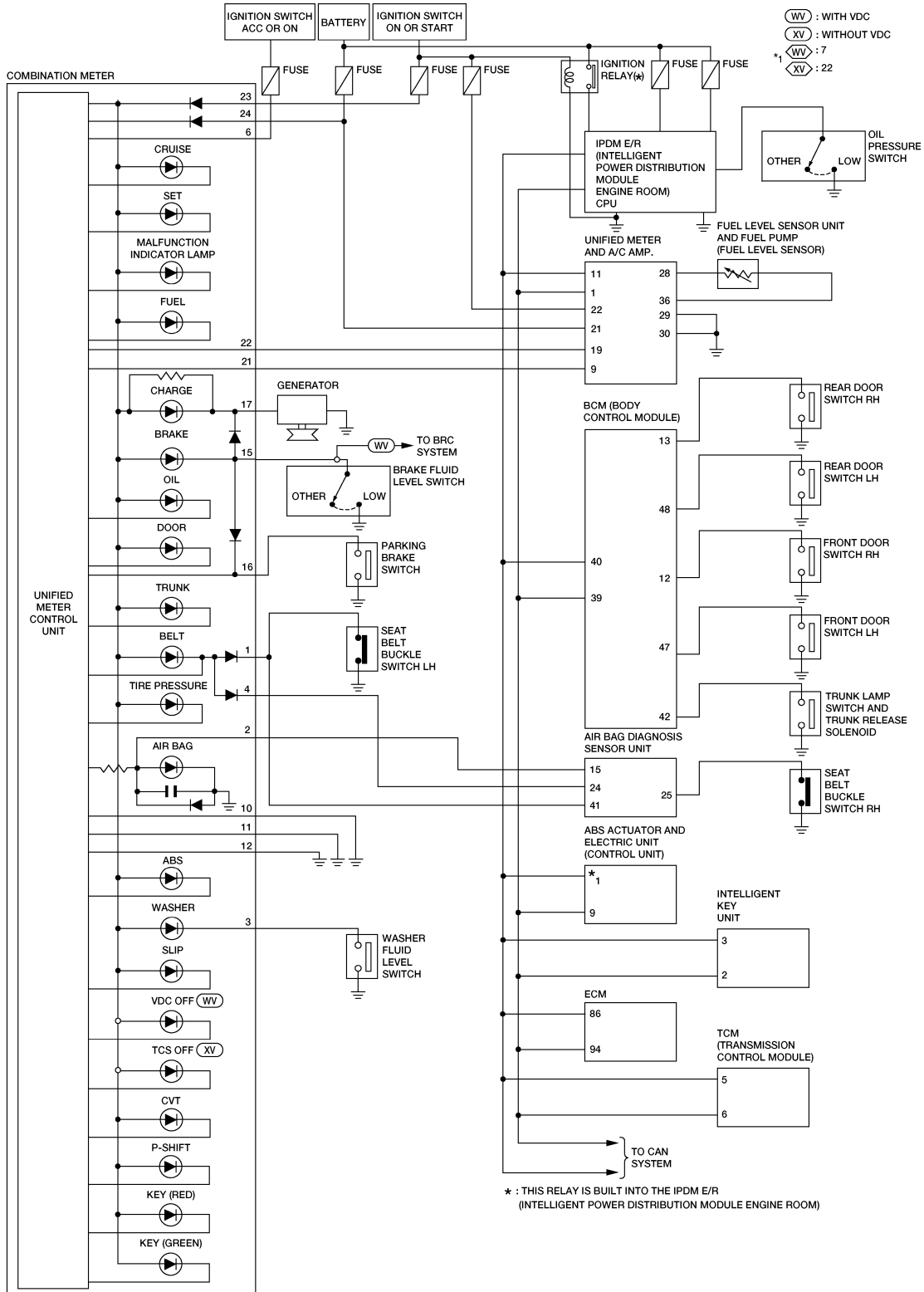
WARNING LAMPS

< SERVICE INFORMATION >

WARNING LAMPS

Schematic

INFOID:000000001721692



WKWA4829E

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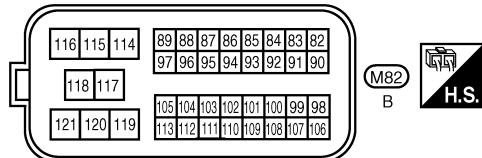
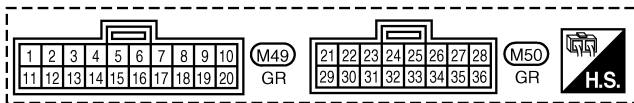
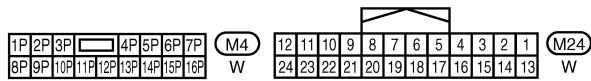
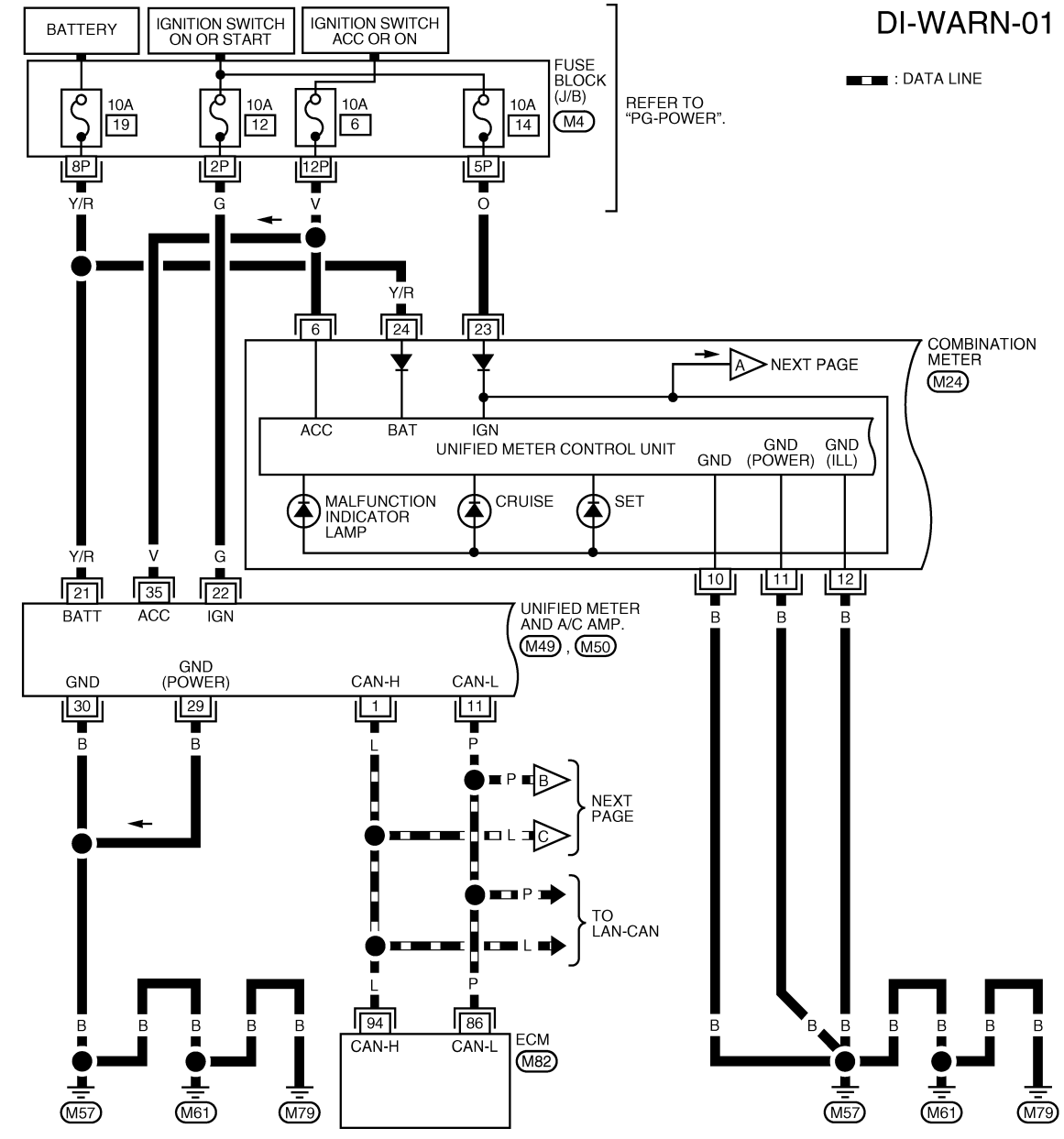
WARNING LAMPS

< SERVICE INFORMATION >

Wiring Diagram - WARN -

INFOID:000000001721693

DI-WARN-01



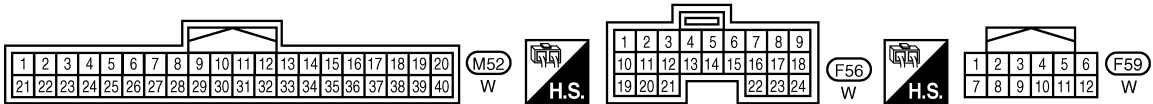
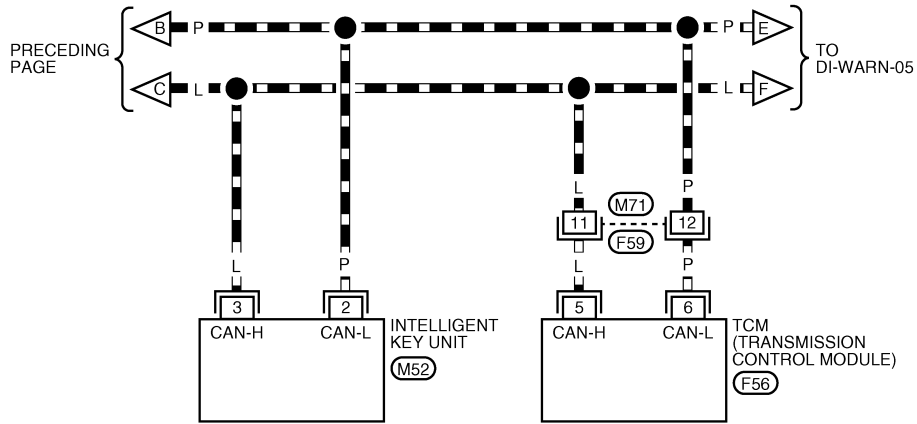
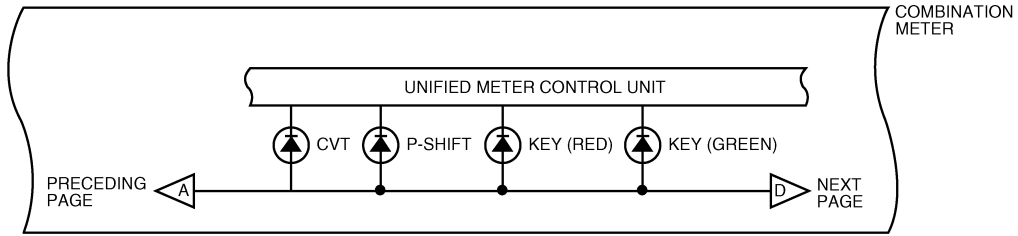
WKWA4830E

WARNING LAMPS

< SERVICE INFORMATION >

DI-WARN-02

— : DATA LINE



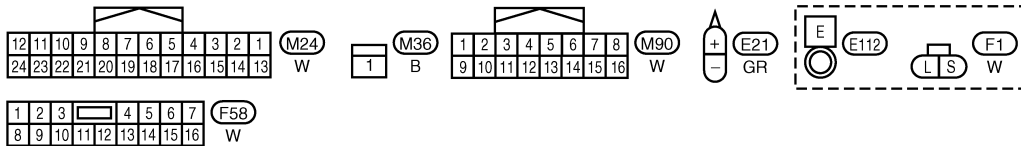
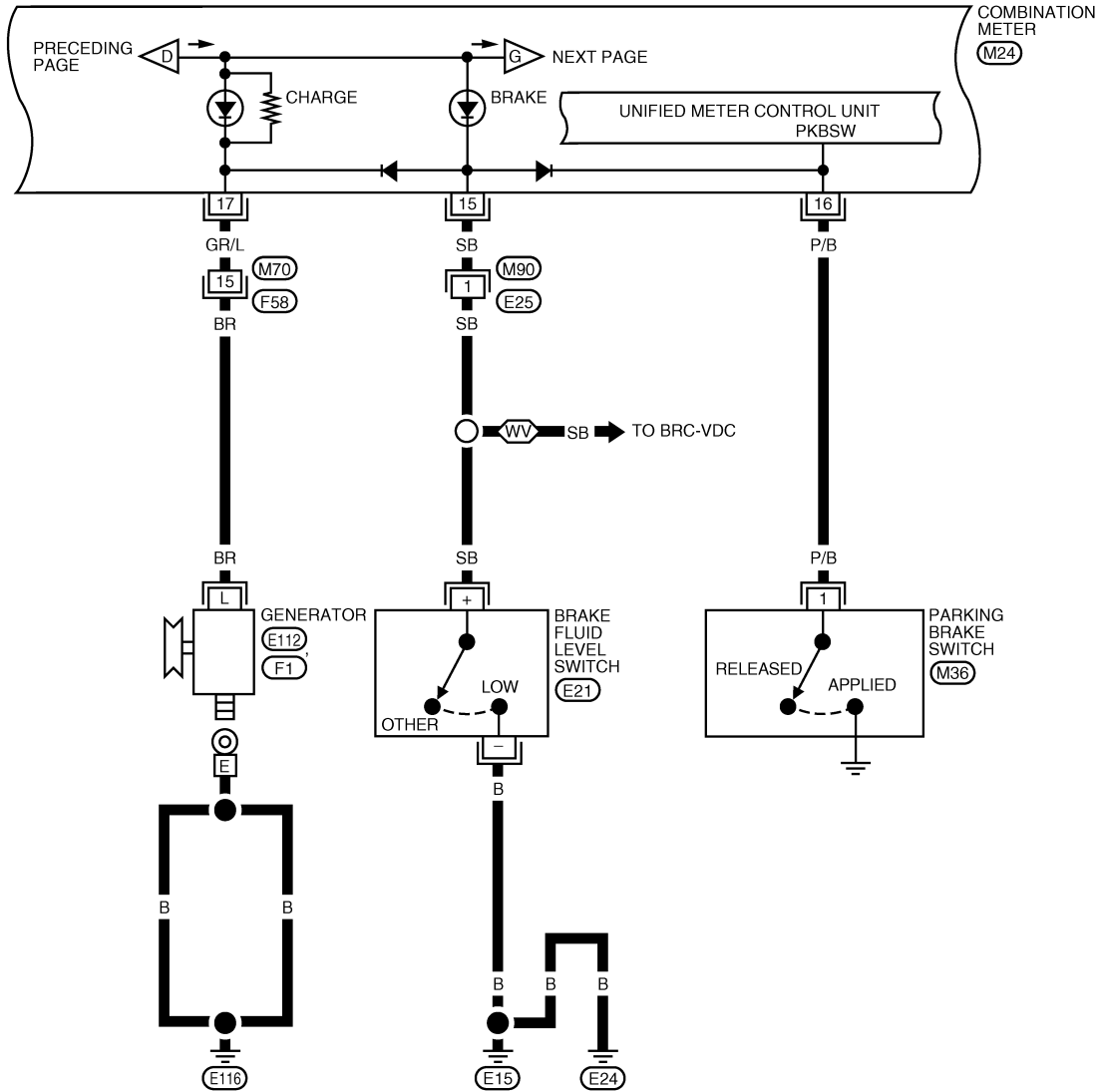
LKWA0317E

WARNING LAMPS

< SERVICE INFORMATION >

DI-WARN-03

⊠ : WITH VDC

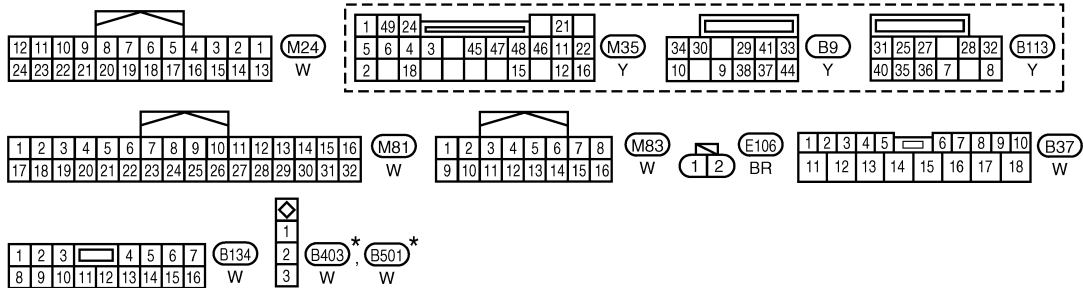
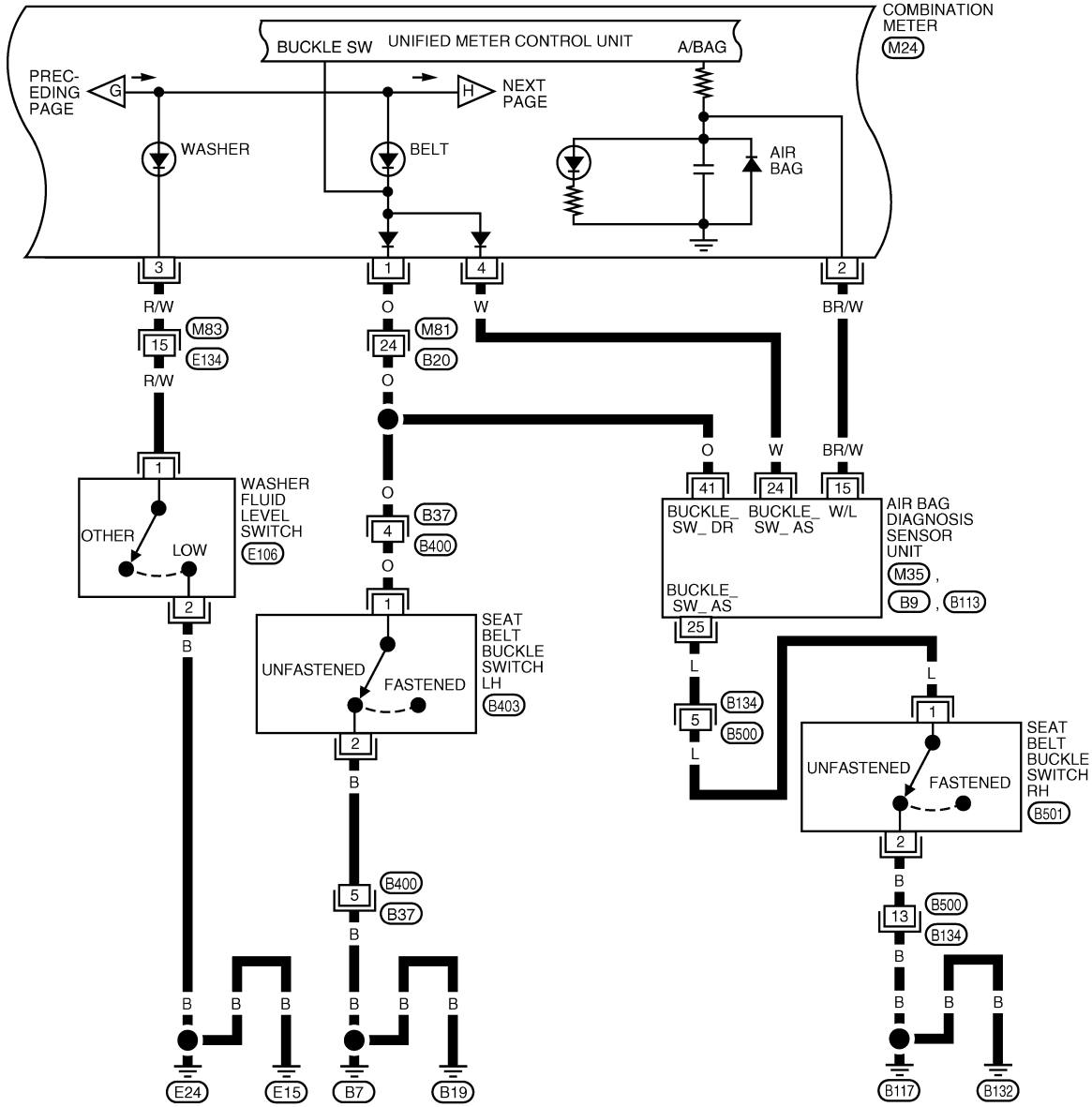


WKWA4831E

WARNING LAMPS

< SERVICE INFORMATION >

DI-WARN-04



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

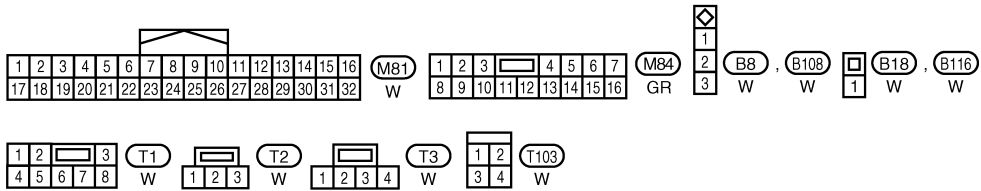
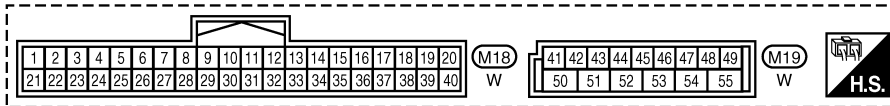
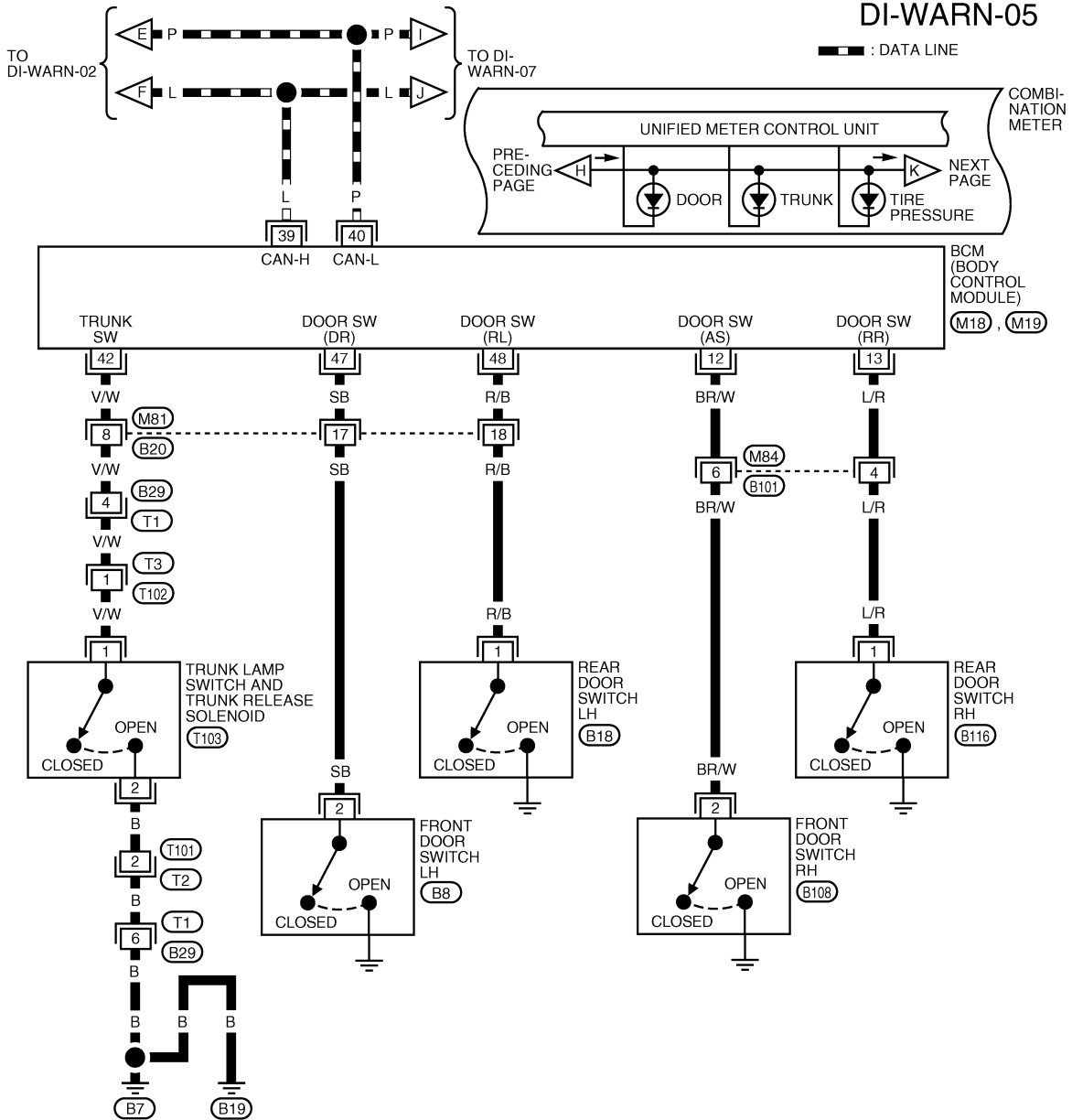
WKWA4832E

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WARNING LAMPS

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DI-WARN-05

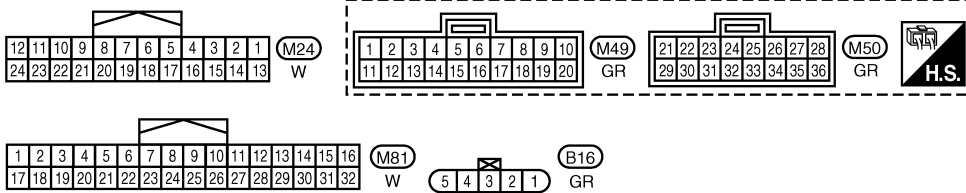
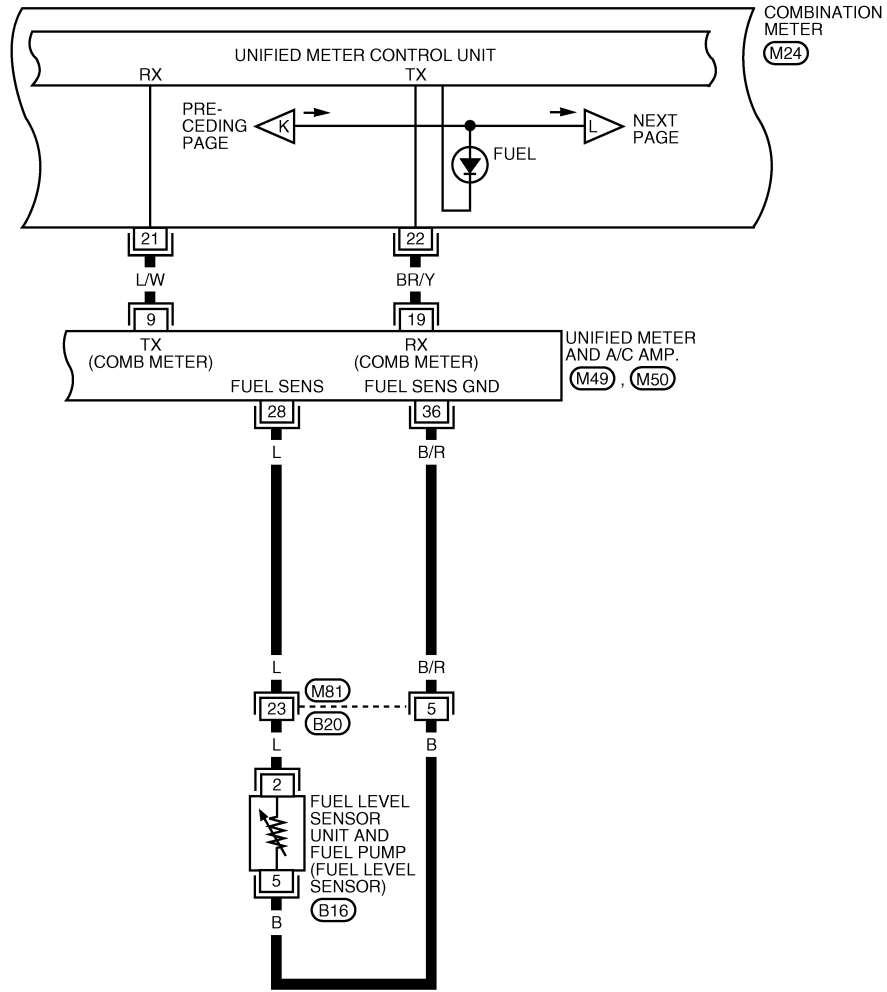


WKWA4833E

WARNING LAMPS

< SERVICE INFORMATION >

DI-WARN-06



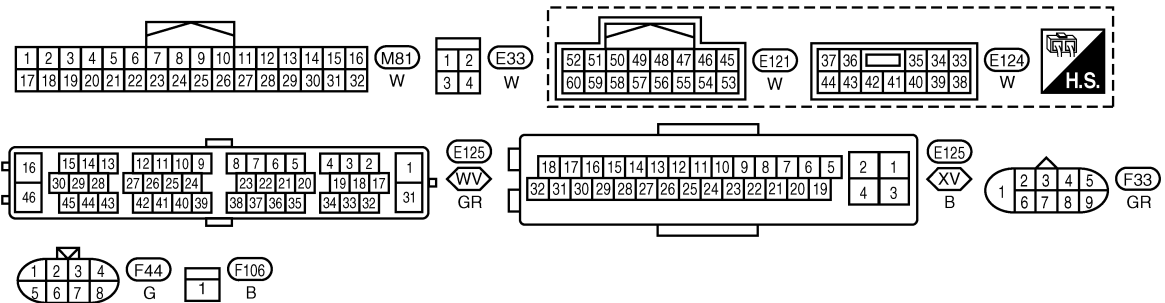
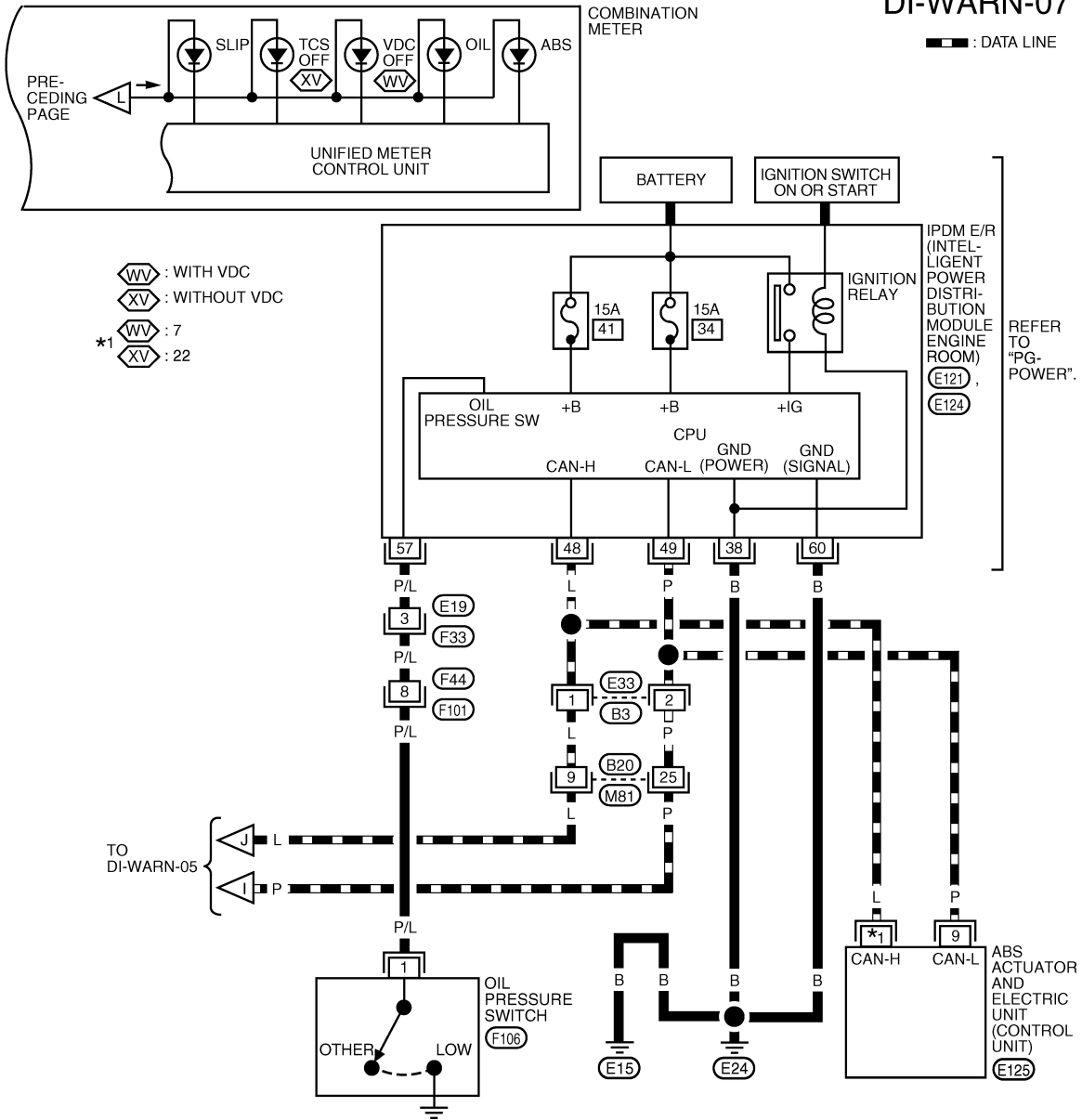
WKWA4834E

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WARNING LAMPS

< SERVICE INFORMATION >

DI-WARN-07



WKWA4835E

INFOID:000000001721694

Oil Pressure Warning Lamp Stays Off (Ignition Switch ON)

1. CHECK SELF-DIAGNOSTIC RESULTS OF UNIFIED METER AND A/C AMP.

1. Start engine.
2. Select "METER A/C AMP" on CONSULT-III, and perform self-diagnosis of unified meter and A/C amp. Refer to [DI-29. "CONSULT-III Function \(METER A/C AMP\)".](#)
3. After erasing the self-diagnostic results, perform self-diagnosis again.

WARNING LAMPS

< SERVICE INFORMATION >

Self-diagnostic results content

No malfunction detected>> GO TO 2.

Malfunction detected>> Go to [DI-29. "CONSULT-III Function \(METER A/C AMP\)".](#)

2.CHECK IPDM E/R OUTPUT SIGNAL

Activate IPDM E/R auto active test. Refer to [PG-21. "Auto Active Test".](#)

Is oil pressure warning lamp blinking?

YES >> GO TO 5.

NO >> GO TO 3.

3.CHECK BCM INPUT SIGNAL

Select "DATA MONITOR" of "SIGNAL BUFFER". Refer to [DI-29. "CONSULT-III Function \(METER A/C AMP\)".](#)

Operate ignition switch with "OIL P SW" of data monitor and check operation status.

**When ignition switch is in ON : OIL P SW CLOSE
position (Engine stopped)**

When engine running : OIL P SW OPEN

OK or NG

OK >> GO TO 4.

NG >> Replace the IPDM E/R. Refer to [PG-29. "Removal and Installation of IPDM E/R".](#)

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

Select "METER A/C AMP" on CONSULT-III. Operate ignition switch with "OIL W/L" of data monitor and check operation status.

**When ignition switch is in ON : OIL W/L ON
position (Engine stopped)**

When engine running : OIL W/L OFF

OK or NG

OK >> Replace the combination meter. Refer to [DI-24. "Combination Meter".](#)

NG >> Replace the BCM. Refer to [BCS-18. "BCM".](#)

5.CHECK OIL PRESSURE SWITCH CIRCUIT

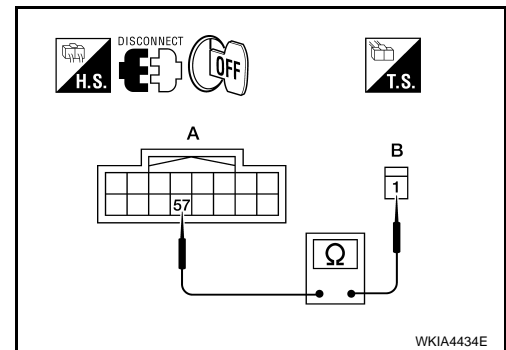
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector E121 and oil pressure switch connector F106.
3. Check continuity between IPDM E/R harness connector E121
(A) terminal 57 and oil pressure switch harness connector F106
(B) terminal 1.

Continuity should exist.

OK or NG

OK >> GO TO 6.

NG >> Repair harness or connector.



6.CHECK OIL PRESSURE SWITCH

Check oil pressure switch. Refer to [DI-46. "Component Inspection".](#)

OK or NG

OK >> Replace the IPDM E/R. Refer to [PG-29. "Removal and Installation of IPDM E/R".](#)

NG >> Replace the oil pressure switch.

Oil Pressure Warning Lamp Does Not Turn Off (Oil Pressure Is Normal)

INFOID:000000001721695

NOTE:

For oil pressure inspection, refer to [LU-7. "Inspection".](#)

WARNING LAMPS

< SERVICE INFORMATION >

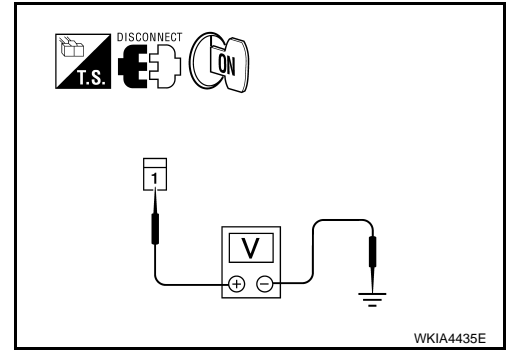
1. CHECK IPDM E/R OUTPUT SIGNAL

1. Disconnect oil pressure switch connector.
2. Turn ignition switch ON.
3. Check voltage between oil pressure switch harness connector F106 terminal 1 and ground.

Battery voltage should exist.

OK or NG

- OK >> GO TO 2.
NG >> GO TO 3.



2. CHECK OIL PRESSURE SWITCH

1. Turn ignition switch OFF.
2. Check oil pressure switch. Refer to [DI-46, "Component Inspection"](#).

OK or NG

- OK >> Replace the IPDM E/R, refer to [PG-29, "Removal and Installation of IPDM E/R"](#).
NG >> Replace the oil pressure switch.

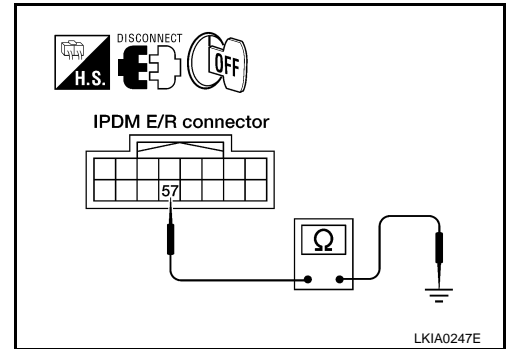
3. CHECK OIL PRESSURE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector E121.
3. Check continuity between IPDM E/R harness connector E121 terminal 57 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace the IPDM E/R, refer to [PG-29, "Removal and Installation of IPDM E/R"](#).
NG >> Repair harness or connector.

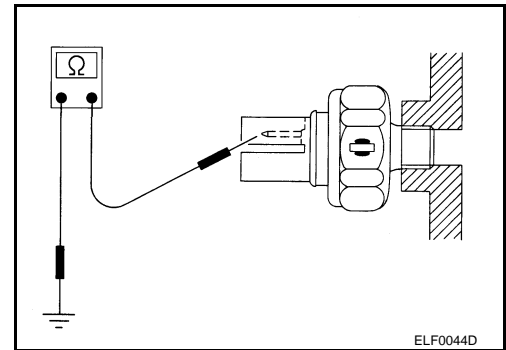


Component Inspection

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



INFOID:000000001721696

CVT INDICATOR

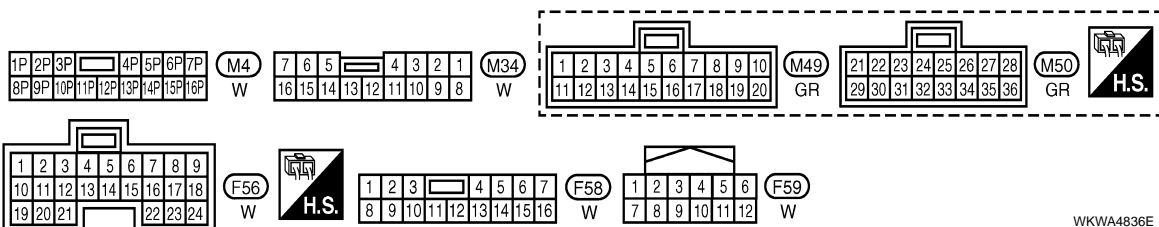
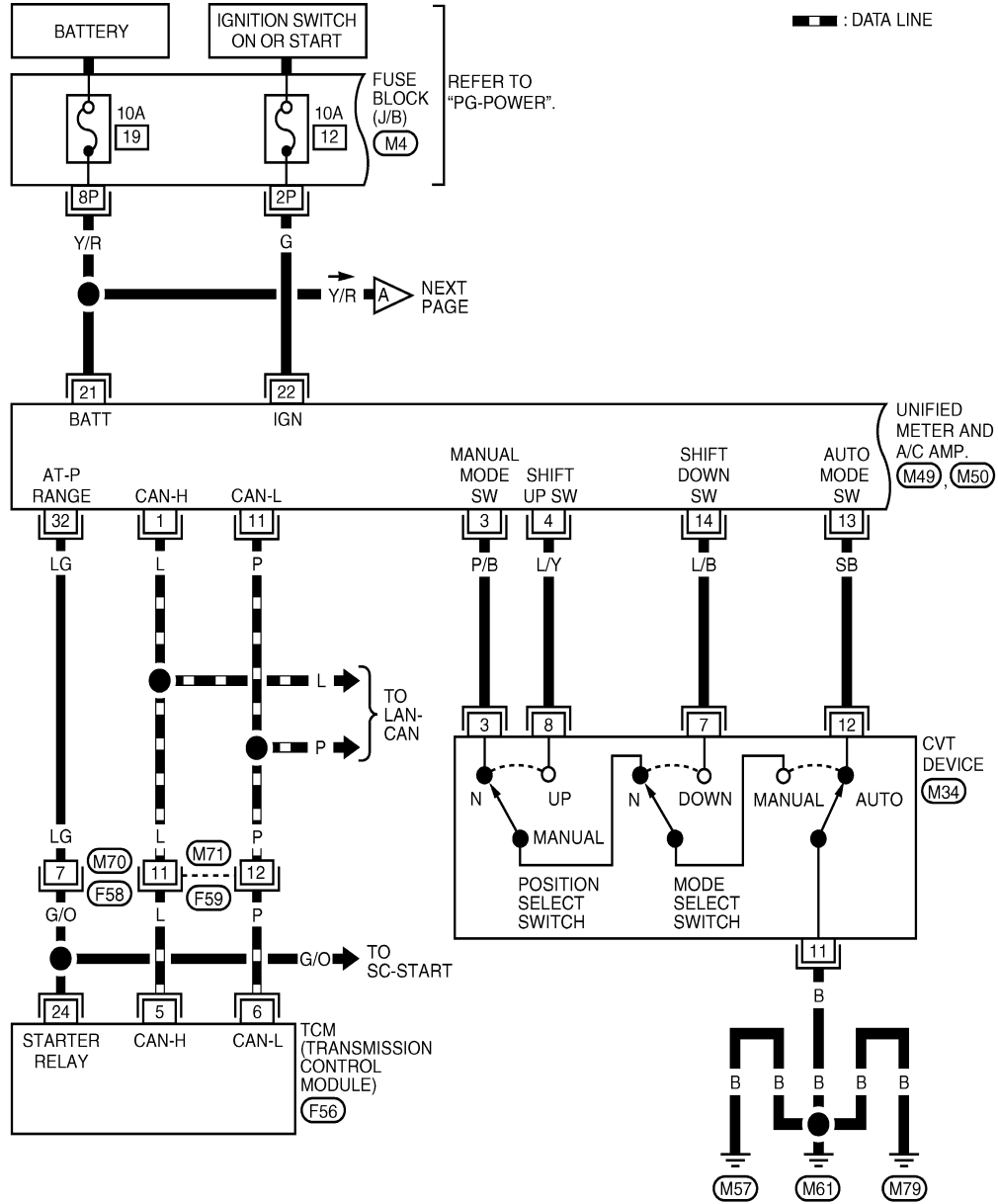
< SERVICE INFORMATION >

CVT INDICATOR

Wiring Diagram - CVTIND -

INFOID:000000001721697

DI-CVTIND-01

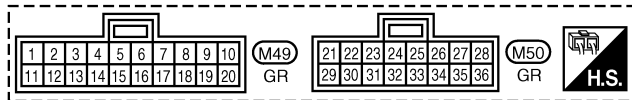
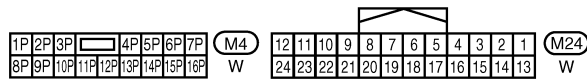
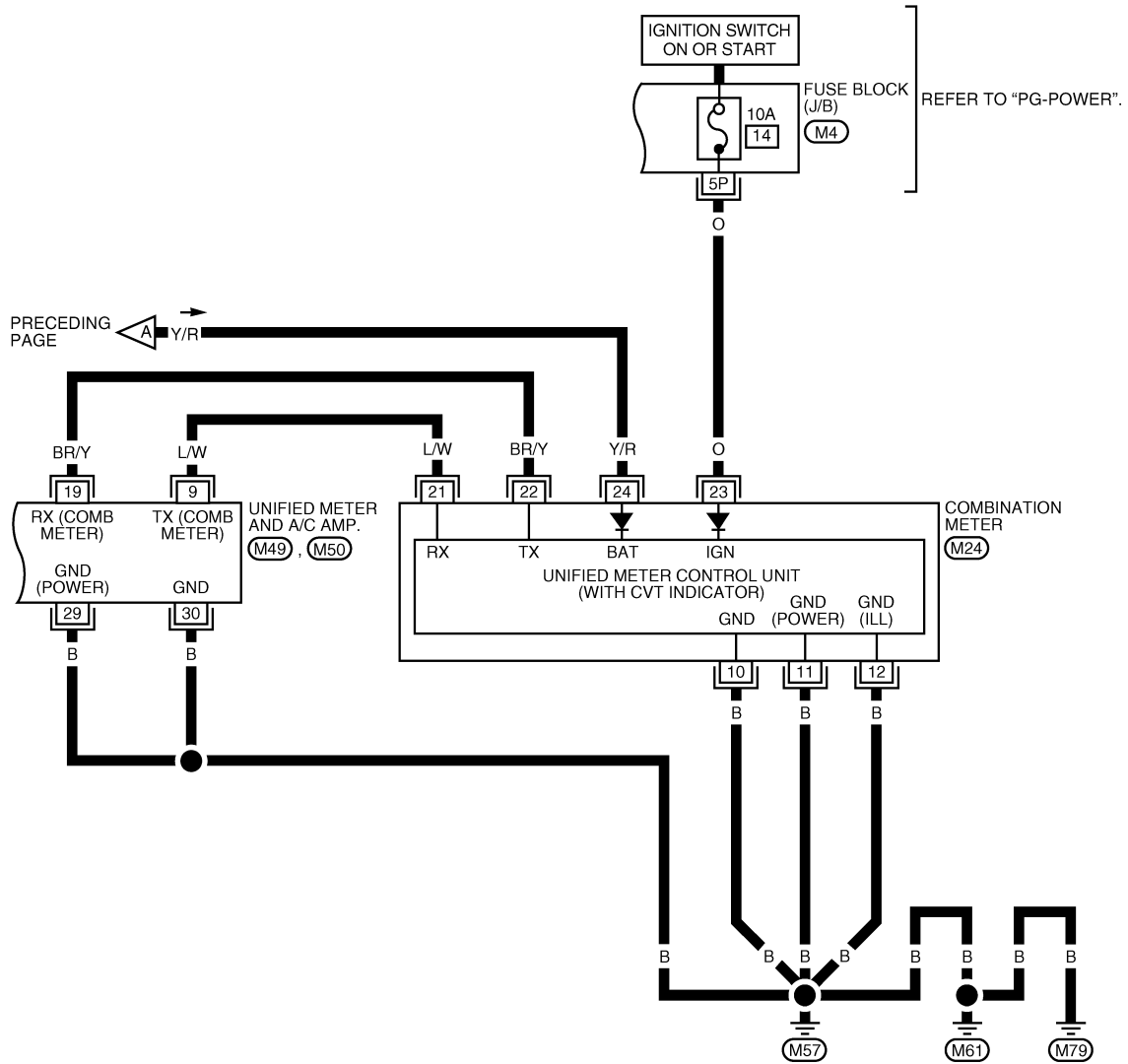


WKWA4836E

CVT INDICATOR

< SERVICE INFORMATION >

DI-CVTIND-02



WKWA4837E

INFOID:000000001721698

CVT Indicator Does Not Illuminate

1. CHECK SELF-DIAGNOSIS OF COMBINATION METER

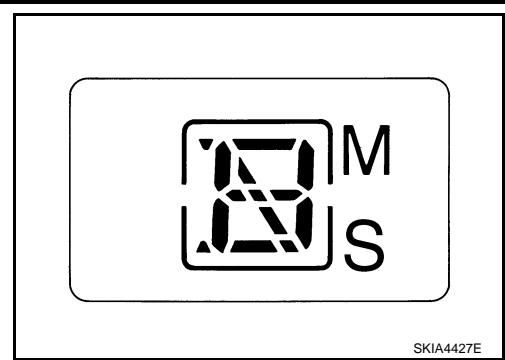
CVT INDICATOR

< SERVICE INFORMATION >

Perform combination meter self-diagnosis. Refer to [DI-13, "Self-Diagnosis Mode of Combination Meter"](#).

OK or NG

- OK >> GO TO 2.
- NG >> Replace combination meter. Refer to [DI-24, "Combina-tion Meter"](#).



2. CHECK SELF-DIAGNOSIS RESULTS OF UNIFIED METER AND A/C AMP.

1. Start engine.
2. Select "METER A/C AMP" on CONSULT-III, and perform self-diagnosis of unified meter and A/C amp. Refer to [DI-29, "CONSULT-III Function \(METER A/C AMP\)"](#).
3. After erasing the self-diagnosis result, perform self-diagnosis again.

Self-diagnosis results content

- No malfunction detected >> GO TO 3.
- Malfunction detected >> Go to [DI-29, "CONSULT-III Function \(METER A/C AMP\)"](#).

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

1. Lift drive wheels.
2. Connect CONSULT-III and start engine.
3. Select "DATA MONITOR" of "METER A/C AMP". Confirm each indication on the monitor when operating the shift lever.

CONSULT-III display	Switch operation	Operation status
AT-M GEAR	Manual mode range (shift up or down)	6-1
	Except for manual mode range	1
P RANGE IND	P range position	ON
	Except for P range position	OFF
R RANGE IND	R range position	ON
	Except for R range position	OFF
N RANGE IND	N range position	ON
	Except for N range position	OFF
D RANGE IND	D range position	ON
	Except for D range position	OFF

OK or NG

- OK >> Replace combination meter. Refer to [DI-24, "Combina-tion Meter"](#).
- NG >> GO TO 4.

4. CHECK TCM

Perform self-diagnosis of TCM. Refer to [CVT-44, "CONSULT-III Function \(TRANSMISSION\)"](#).

OK or NG

- OK >> Replace the unified meter and A/C amp. Refer to [DI-32, "Unified Meter and A/C Amp"](#).
- NG >> Check the applicable parts.

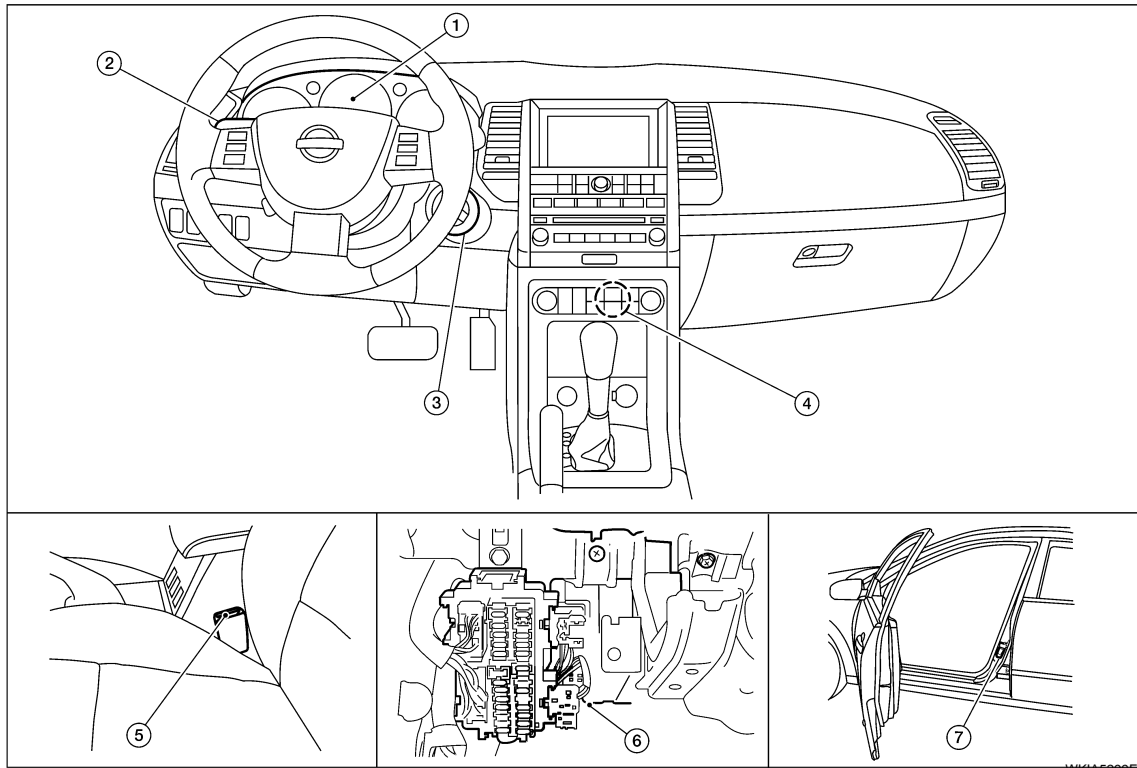
WARNING CHIME

< SERVICE INFORMATION >

WARNING CHIME

Component Parts and Harness Connector Location

INFOID:000000001721699



WKIA5299E

- | | | |
|-----------------------------------|---|---|
| 1. Combination meter M24 | 2. Combination switch (lighting switch) M28 | 3. Key switch and ignition knob switch M73 |
| 4. Unified meter and A/C amp. M49 | 5. Seat belt buckle switch LH B403 | 6. BCM M18, M19, M20 (view with instrument panel removed) |
| 7. Front door switch LH B8 | | |

System Description

INFOID:000000001721700

FUNCTION

Power is supplied at all times

- through 50A fusible link (letter f, located in the fuse and fusible link box)
- to BCM terminal 70,
- through 10A fuse [No. 2, located in the fuse block (J/B)]
- to key switch and ignition knob switch terminals 1 and 3, and
- through 10A fuse [No. 19, located in the fuse block (J/B)]
- to combination meter terminal 24.

With ignition switch in ON or START position, power is supplied

- through 10A fuse [No. 1, located in the fuse block (J/B)]
- to BCM terminal 38, and
- through 10A fuse [No. 14, located in the fuse block (J/B)]
- to combination meter terminal 23.

Ground is supplied

- to BCM terminal 67, and
- to combination meter terminals 10, 11 and 12
- through body grounds M57, M61, and M79.

NOTE:

When ignition key warning chime, light warning chime, and seat belt warning chime should be conducted at the same time, the priorities for each chime are the following.

1. Light warning chime

WARNING CHIME

< SERVICE INFORMATION >

2. Ignition key warning chime
3. Seat belt warning chime

IGNITION KEY WARNING CHIME

When Mechanical Key Is Used

With the key inserted in the ignition switch, the ignition switch in OFF position, and the driver's door open, the warning chime will sound.

Power is supplied

- through key switch and ignition knob switch terminal 4
- to BCM terminal 37.

Ground is supplied

- to BCM terminal 47
- through front door switch LH terminal 2.

Front door switch LH is case grounded.

BCM sends door open signal to unified meter and A/C amp. via CAN communication lines.

BCM detects key inserted into the ignition switch, and sends key warning signal to unified meter and A/C amp. via CAN communication lines. Unified meter and A/C amp. sends key warning signal to combination meter via communication lines between unified meter and A/C amp. and combination meter.

When combination meter receives key warning signal, it sounds warning chime.

When Intelligent Key Is Carried With Driver

Refer to [BL-37, "System Description"](#).

LIGHT WARNING CHIME

With the key removed from the ignition switch, the driver's door open, and the lighting switch (part of the combination switch) in 1st or 2nd position, the warning chime will sound. [This is the operation of the light warning chime, except when headlamp battery saver control operates (for 5 minutes after ignition switch is turned to OFF or ACC position) and headlamps do not illuminate.]

Signal is supplied

- from combination switch (lighting switch) terminals 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10
- to BCM terminals 2, 3, 4, 5, 6, 32, 33, 34, 35 and 36.

NOTE:

BCM detected lighting switch in 1st or 2nd position, refer to [BCS-3, "System Description"](#).

Ground is supplied

- to BCM terminal 47
- through front door switch LH terminal 2.

Front door switch LH is case grounded.

BCM sends door open signal to unified meter and A/C amp. via CAN communication lines.

BCM detects headlamps are illuminated, and sends light warning signal to unified meter and A/C amp. via CAN communication lines. Unified meter and A/C amp. sends light warning signal to combination meter via communication lines between unified meter and A/C amp. and combination meter.

When combination meter receives light warning signal, it sounds warning chime.

SEAT BELT WARNING CHIME

When the ignition switch is turned ON with the seat belt unfastened [seat belt buckle switch LH unfastened], warning chime will sound for approximately 6 seconds.

Ground is supplied

- to combination meter terminal 1
- through seat belt buckle switch LH terminal 1.

Seat belt buckle switch LH terminal 2 is grounded through body grounds B7 and B19.

Combination meter sends seat belt buckle switch LH unfastened signal to unified meter and A/C amp. via communication lines between unified meter and A/C amp. and combination meter.

BCM receives seat belt buckle switch LH unfastened signal from unified meter and A/C amp. via CAN communication line, and sends seat belt warning signal to unified meter and A/C amp. via CAN communication line. Unified meter and A/C amp. sends seat belt warning signal to combination meter via communication line between unified meter and A/C amp. and combination meter.

When the combination meter receives the seat belt warning signal, it sounds the warning chime. The BCM controls the (6 second) duration of the seat belt warning chime.

A

B

C

D

E

F

G

H

I

J

DI

L

M

N

O

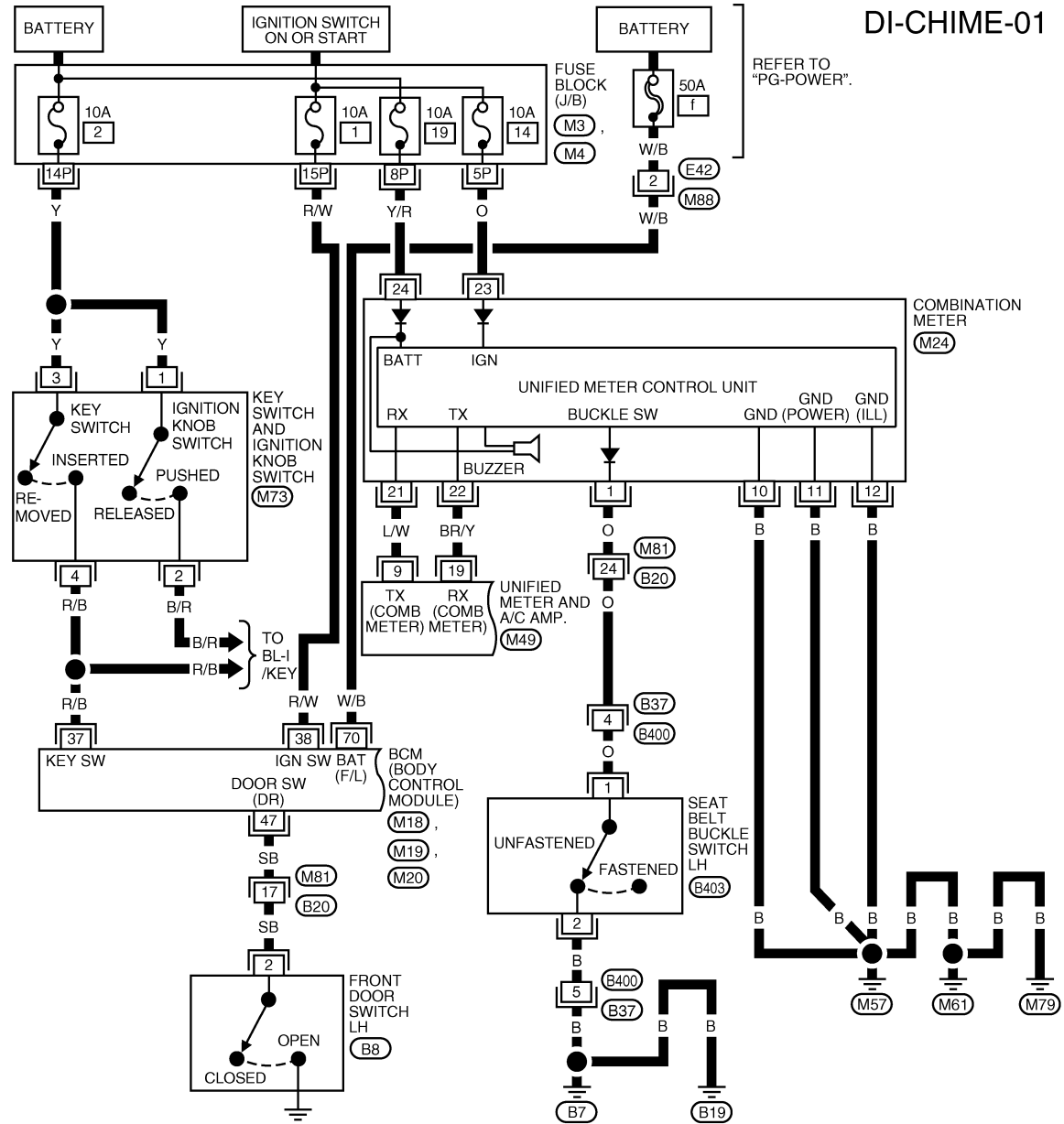
P

WARNING CHIME

< SERVICE INFORMATION >

Wiring Diagram - CHIME -

INFOID:000000001721702

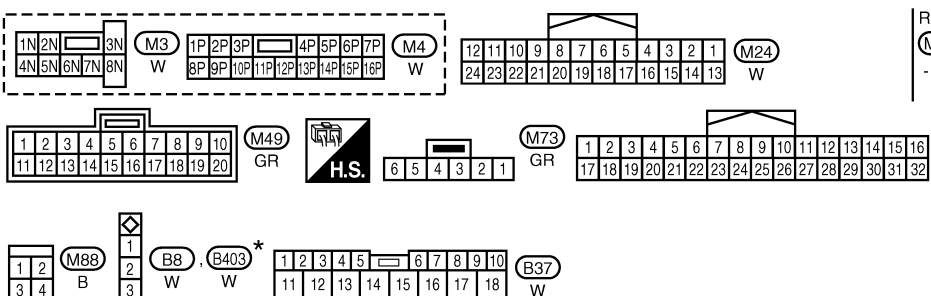


DI-CHIME-01

REFER TO "PG-POWER".

COMBINATION METER (M24)

REFER TO THE FOLLOWING.
(M18) (M19) (M20)
- ELECTRICAL UNITS



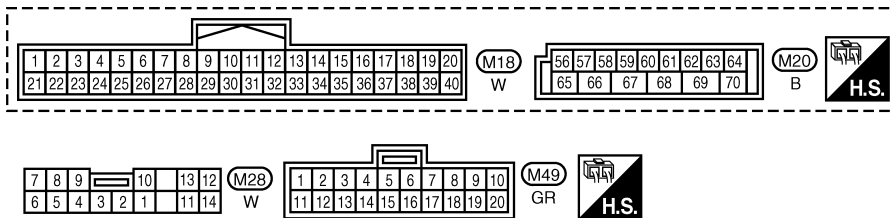
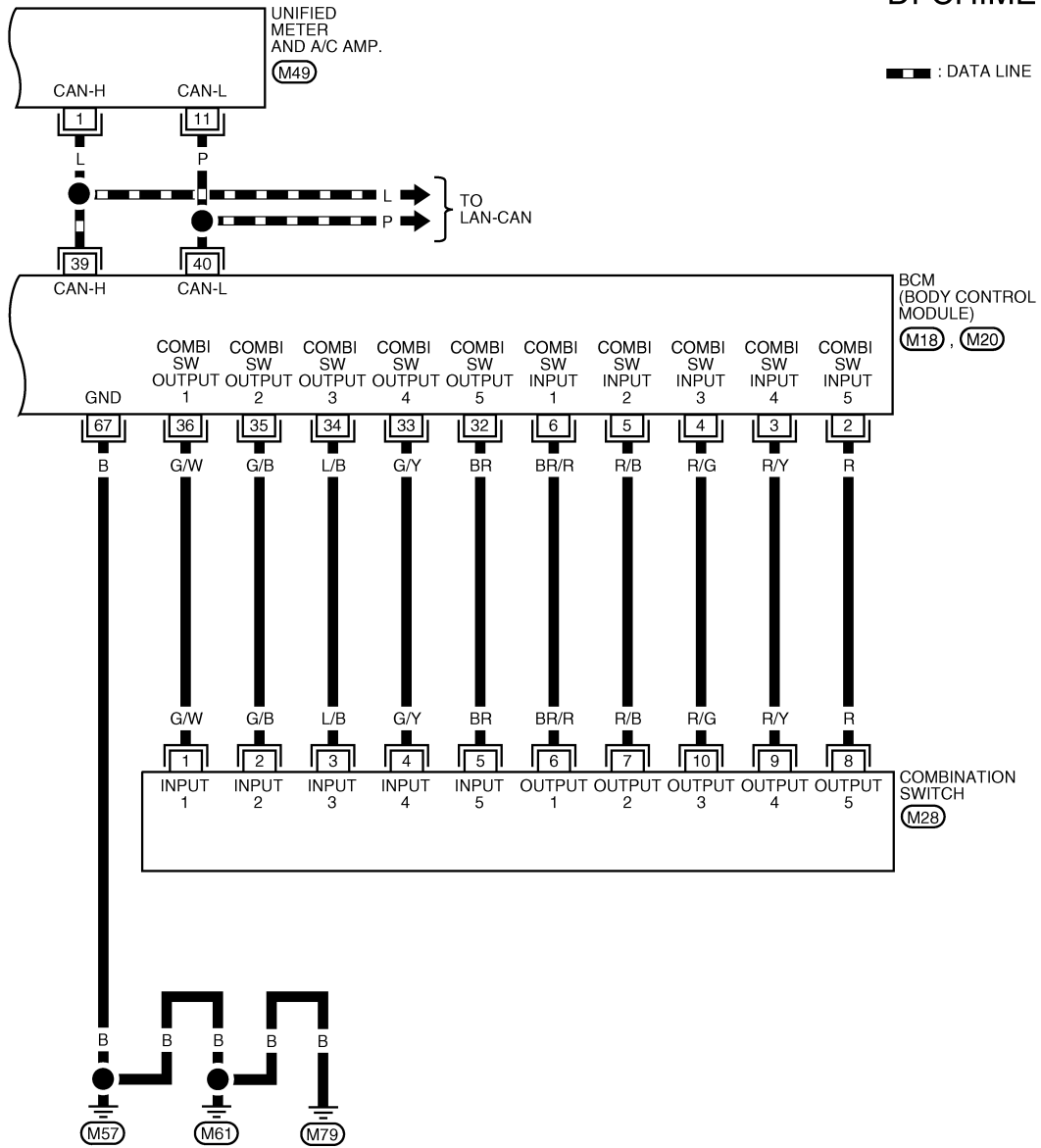
*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

WKWA4838E

WARNING CHIME

< SERVICE INFORMATION >

DI-CHIME-02



Terminal and Reference Value for BCM

Refer to [BCS-11, "Terminal and Reference Value for BCM"](#).

Terminal and Reference Value for Unified Meter and A/C Amp

Refer to [DI-28, "Terminal and Reference Value for Unified Meter and A/C Amp"](#).

WKWA4839E

INFOID:000000001721703

INFOID:000000001721704

WARNING CHIME

< SERVICE INFORMATION >

Terminal and Reference Value for Combination Meter

INFOID:000000001721705

Refer to [DI-12, "Terminal and Reference Value for Combination Meter"](#).

How to Proceed with Trouble Diagnosis

INFOID:000000001721706

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to [DI-50, "System Description"](#).
3. Perform the preliminary check. Refer to [DI-54, "Preliminary Check"](#).
4. Start engine.
5. Select "METER A/C AMP" on CONSULT-III, and perform self-diagnosis of unified meter and A/C amp. Refer to [DI-29, "CONSULT-III Function \(METER A/C AMP\)"](#). When no malfunction is detected, go to step 7. When malfunction is detected, go to [DI-29, "CONSULT-III Function \(METER A/C AMP\)"](#).
6. After erasing the self-diagnostic results, perform self-diagnosis again. When no malfunction is detected, go to [DI-15, "Symptom Chart"](#).
7. Check symptom and repair or replace the cause of malfunction.
8. Does the warning chime operate properly? If so, go to 9. If not, go to 5.
9. Inspection End.

Preliminary Check

INFOID:000000001721707

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

Refer to [BCS-15, "BCM Power Supply and Ground Circuit Inspection"](#).

CONSULT-III Function (BCM)

INFOID:000000001721708

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

Diagnostic mode	Description
WORK SUPPORT	Supports inspections and adjustments. Commands are transmitted to the BCM for setting the status suitable for required operation, input/output signals are received from the BCM and received data is displayed.
DATA MONITOR	Displays BCM input/output data in real time.
ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
SELF-DIAG RESULTS	Displays BCM self-diagnosis results.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ECU PART NUMBER	BCM part number can be read.
CONFIGURATION	Performs BCM configuration read/write functions.

DATA MONITOR

Operation Procedure

1. Touch "BUZZER" on "SELECT TEST ITEM" screen.
2. Touch "DATA MONITOR" on "SELECT DIAG MODE" screen.
3. Touch "ALL SIGNALS" or "SELECTION FROM MENU" on "DATA MONITOR" screen.

ALL SIGNALS	Monitors main items.
SELECTION FROM MENU	Selects and monitors items.

4. Touch "START".
5. If "SELECTION FROM MENU" is selected, touch the item you desire to monitor. If "ALL SIGNALS" is selected, all control items are monitored.
6. During monitoring, touching "RECORD" can start recording the monitored item status.

Data Monitor Item

WARNING CHIME

< SERVICE INFORMATION >

Monitored item	Description
IGN ON SW	Indicates [ON/OFF] condition of ignition switch.
KEY ON SW	Indicates [ON/OFF] condition of key switch.
DOOR SW-DR	Indicates [ON/OFF] condition of front door switch LH.
LIGHT SW 1ST	Indicates [ON/OFF] condition of lighting switch.

ACTIVE TEST

Operation Procedure

1. Touch "BUZZER" on "SELECT TEST ITEM" screen.
2. Touch "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Touch the item to be tested, and check the operation.
4. During the operation check, touching "OFF" deactivates the operation.

Active Test Item

Test item	Malfunction is detected when
LIGHT WARN ALM	This test is able to check light warning chime operation. Light warning chime sounds for 2 seconds after touching "ON" on CONSULT-III screen.
IGN KEY WARN ALM	This test is able to check key warning chime operation. Key warning chime sounds for 2 seconds after touching "ON" on CONSULT-III screen.
SEAT BELT WARN TEST	This test is able to check seat belt warning chime operation. Seat belt warning chime sounds for 2 seconds after touching "ON" on CONSULT-III screen.

SELF-DIAGNOSTIC RESULTS

Operation Procedure

1. Touch "BCM" on "SELECT TEST ITEM" screen.
2. Touch "SELF-DIAG RESULTS" on "SELECT DIAG MODE" screen.
3. Self-diagnostic results are displayed.

Display Item List

Monitored Item	CONSULT-III display	Description
CAN communication	CAN communication [U1000]	Malfunction is detected in CAN communication.

NOTE:

If "CAN communication [U1000]" is indicated, after printing the monitor item, go to "CAN System". Refer to [LAN-38](#).

All Warning Chimes Do Not Operate

INFOID:000000001721709

1. CHECK CHIME OPERATION

Select "BUZZER" on CONSULT-III, and perform "LIGHT WARN ALM", "IGN KEY WARN ALM", OR "SEAT BELT WARN TEST" active test.

Does chime sound?

- YES >> Replace the BCM. Refer to [BCS-18. "BCM"](#).
 NO >> GO TO 2.

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

Select "METER A/C AMP" on CONSULT-III. Observe "BUZZER" of data monitor while operating switches in order to meet the requirements to sound warning chime.

- When requirements are met to sound warning chime** : BUZZER ON
Except above : BUZZER OFF

WARNING CHIME

< SERVICE INFORMATION >

OK or NG

- OK >> Replace the combination meter. Refer to [DI-24, "Combination Meter"](#).
- NG >> Replace the BCM. Refer to [BCS-18, "BCM"](#).

Key Warning Chime and Light Warning Chime Do Not Operate (Seat Belt Warning Chime Does Operate)

INFOID:000000001721710

1. CHECK BCM INPUT SIGNAL

Ⓟ With CONSULT-III

1. Select "BCM" on CONSULT-III.
2. With "DATA MONITOR" of "BUZZER", confirm "DOOR SW-DR" changes with the status of front door LH.

When front door LH is opened : DOOR SW-DR ON

When front door LH is closed : DOOR SW-DR OFF

ⓧ Without CONSULT-III

1. Turn ignition switch OFF.
2. Disconnect BCM connector M19.
3. Check continuity between BCM harness connector M19 terminal 47 and ground.

When front door LH is opened : Continuity should exist.

When front door LH is closed : Continuity should not exist.

OK or NG

- OK >> Replace the BCM. Refer to [BCS-18, "BCM"](#).
- NG >> GO TO 2.

2. CHECK FRONT DOOR SWITCH LH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and front door switch LH connector.
3. Check continuity between BCM harness connector M19 terminal 47 and front door switch LH harness connector B8 terminal 2.

Continuity should exist.

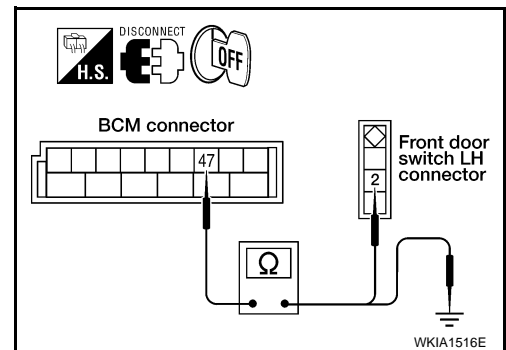
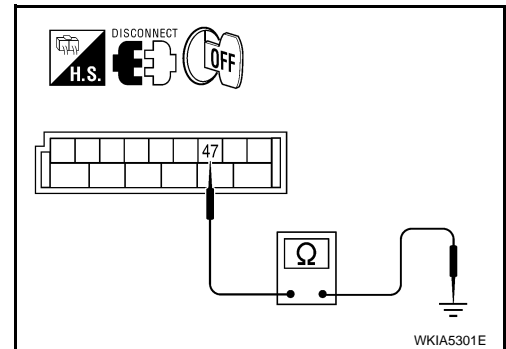
4. Check continuity between BCM harness connector M19 terminal 47 and ground.

Continuity should not exist.

OK or NG

- OK >> GO TO 3.
- NG >> Repair harness or connector.

3. CHECK FRONT DOOR SWITCH LH AND GROUND CIRCUIT

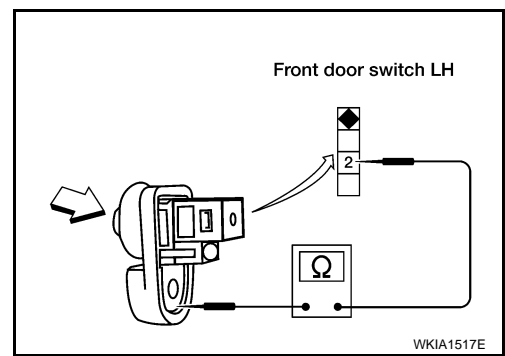


WARNING CHIME

< SERVICE INFORMATION >

Check continuity between front door switch LH terminal 2 and ground while switching the door switch from ON (open) to OFF (closed).

- When front door switch LH is pressed : Continuity should not exist.**
- When front door switch LH is released : Continuity should exist.**



OK or NG

- OK >> Replace the BCM. Refer to [BCS-18. "BCM"](#).
- NG >> Replace the front door switch LH.

Key Warning Chime Does Not Operate

INFOID:000000001721711

1. CHECK FUSE

Check if the key switch and ignition knob switch 10A fuse [No. 2, located in the fuse block (J/B)] is blown. Refer to [DI-52. "Wiring Diagram - CHIME -"](#).

Is the fuse blown?

- YES >> Replace the fuse. Be sure to repair the cause of malfunction before installing new fuse.
- NO >> GO TO 2.

2. CHECK WARNING CHIME OPERATION

With key removed from the ignition and the front door LH open, turn the lighting switch to 1st or 2nd position.

Does warning chime sound?

- YES >> GO TO 3.
- NO >> Go to [DI-55. "All Warning Chimes Do Not Operate"](#) or [DI-56. "Key Warning Chime and Light Warning Chime Do Not Operate \(Seat Belt Warning Chime Does Operate\)"](#).

3. CHECK BCM INPUT SIGNAL

With CONSULT-III

Check key switch ("KEY ON SW") in "DATA MONITOR" mode with CONSULT-III.

1. Select "BCM".
2. With "DATA MONITOR" of "BUZZER", confirm "KEY ON SW" changes when the key is inserted/removed from the ignition key cylinder.

When key is inserted in ignition key cylinder : KEY ON SW ON

When key is removed from ignition key cylinder : KEY ON SW OFF

Without CONSULT-III

Check voltage between BCM harness connector M18 terminal 37 and ground.

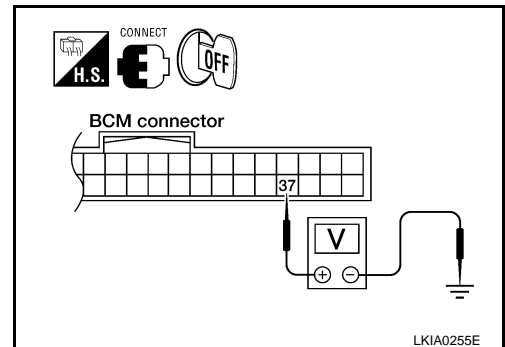
Terminals		Condition	Voltage (V)
(+)	(-)		
Connector	Terminal		
M18	37	Key is inserted	Battery voltage
		Key is removed	0

OK or NG

- OK >> Replace the BCM. Refer to [BCS-18. "BCM"](#).
- NG >> GO TO 4.

4. CHECK KEY SWITCH

1. Disconnect key switch and ignition knob switch connector.



WARNING CHIME

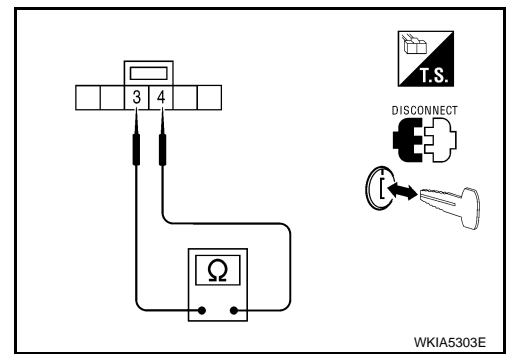
< SERVICE INFORMATION >

- Check continuity between key switch and ignition knob switch terminals 3 and 4.

Terminals		Condition	Continuity
3	4	Key is inserted	Yes
		Key is removed	No

OK or NG

- OK >> GO TO 5.
 NG >> Replace the key switch and ignition knob switch.



5. CHECK KEY SWITCH CIRCUIT

- Disconnect BCM connector M18.
- Check continuity between BCM harness connector M18 terminal 37 and key switch and ignition knob switch harness connector M73 terminal 4.

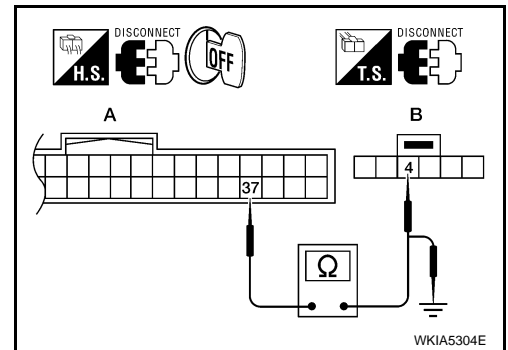
Continuity should exist.

- Check continuity between BCM harness connector M18 terminal 37 and ground.

Continuity should not exist.

OK or NG

- OK >> GO TO 6.
 NG >> Repair harness or connector.



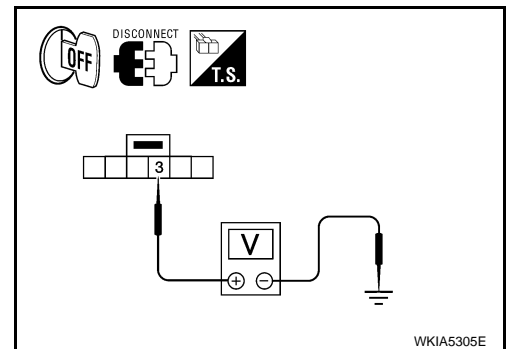
6. CHECK KEY SWITCH POWER SUPPLY CIRCUIT

Check voltage between key switch and ignition knob switch harness connector M73 terminal 3 and ground.

Battery voltage should exist.

OK or NG

- OK >> Replace the BCM. Refer to [BCS-18, "BCM"](#).
 NG >> Check harness for open between key switch and key lock solenoid and fuse.



Light Warning Chime Does Not Operate

INFOID:000000001721712

1. CHECK WARNING CHIME OPERATION

Check key warning chime and seat belt warning chime functions.

Do key warning chime and seat belt warning chime sound?

- YES >> GO TO 2.
 NO >> Go to [DI-55, "All Warning Chimes Do Not Operate"](#).

2. CHECK BCM INPUT SIGNAL

- Select "BCM".
- With "DATA MONITOR" of "BUZZER", confirm "LIGHT SW 1ST" status changes when the lighting switch is moved from ON (1st position) to OFF.

Lighting switch ON (1st position) : LIGHT SW 1ST ON

Lighting switch OFF : LIGHT SW 1ST OFF

OK or NG

- OK >> Replace the BCM. Refer to [BCS-18, "BCM"](#).

WARNING CHIME

< SERVICE INFORMATION >

NG >> Check lighting switch. Refer to [LT-88](#).

Seat Belt Warning Chime Does Not Operate

INFOID:000000001721713

1. CHECK WARNING CHIME OPERATION

1. With key removed from the ignition and the front door LH open, turn the lighting switch to 1st or 2nd position.
2. Return lighting switch to OFF position, and insert key into ignition.

Does warning chime sound for both steps?

YES >> GO TO 2.

NO >> Go to [DI-55, "All Warning Chimes Do Not Operate"](#).

2. CHECK BCM INPUT SIGNAL

With "SEAT BELT ALM" on the data monitor, confirm "SEAT BELT SW" when the seat belt buckle switch LH is operated.

1. Select "METER A/C AMP".
2. With "DATA MONITOR" of "METER A/C AMP", confirm "SEAT BELT W/L" status changes with the operation of the seat belt.

When seat belt LH is fastened : SEAT BELT W/L OFF

When seat belt LH is unfastened : SEAT BELT W/L ON

OK or NG

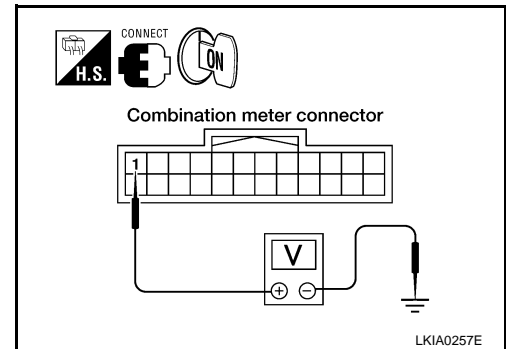
OK >> Replace the BCM. Refer to [BCS-18, "BCM"](#).

NG >> GO TO 3.

3. CHECK COMBINATION METER INPUT SIGNAL

1. Turn ignition switch ON.
2. Check voltage between combination meter harness connector M24 terminal 1 and ground.

Terminals		(-)	Condition	Voltage (V) (Approx.)
(+)	Connector			
	Terminal			
M24	1	Ground	Seat belt is fastened	Battery voltage
			Seat belt is unfastened	0



OK or NG

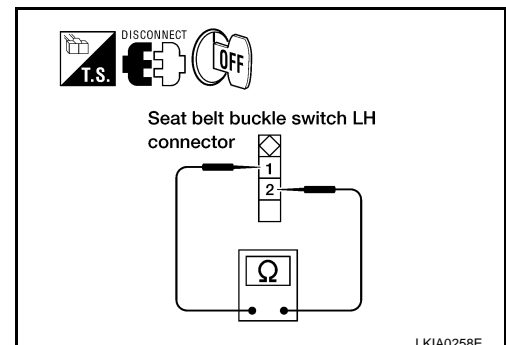
OK >> Replace the combination meter. Refer to [DI-24, "Combination Meter"](#).

NG >> GO TO 4.

4. CHECK SEAT BELT BUCKLE SWITCH

1. Turn ignition switch OFF.
2. Disconnect seat belt buckle switch LH connector.
3. Check continuity between seat belt buckle switch LH terminals 1 and 2.

Terminals		Condition	Continuity
1	2		
		Seat belt is fastened	No
		Seat belt is unfastened	Yes



OK or NG

OK >> GO TO 5.

NG >> Replace the seat belt buckle switch LH.

WARNING CHIME

< SERVICE INFORMATION >

5. CHECK SEAT BELT BUCKLE SWITCH CIRCUIT

1. Disconnect combination meter connector.
2. Check continuity between combination meter harness connector M24 terminal 1 and seat belt buckle switch LH harness connector B403 terminal 1.

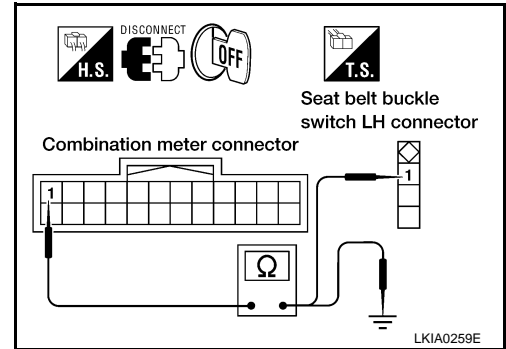
Continuity should exist.

3. Check continuity between combination meter harness connector M24 terminal 1 and ground.

Continuity should not exist.

OK or NG

- OK >> Check seat belt buckle switch LH ground circuit.
NG >> Repair harness or connector.



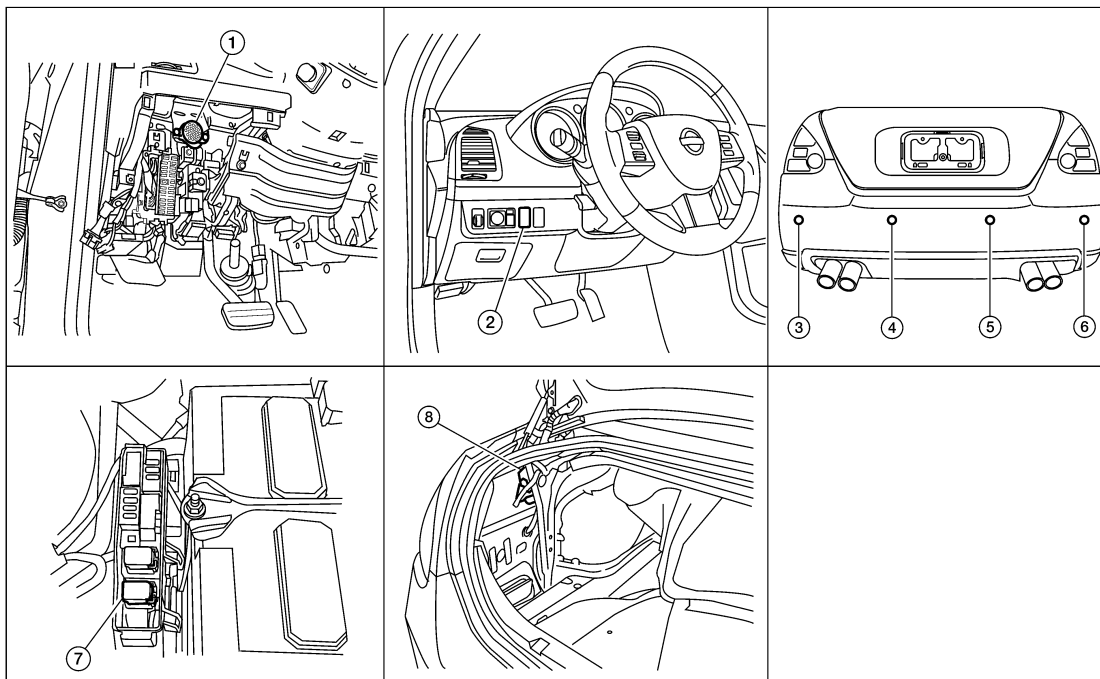
REAR SONAR SYSTEM

< SERVICE INFORMATION >

REAR SONAR SYSTEM

Component Parts and Harness Connector Location

INFOID:000000001721714



- | | | |
|--|--|------------------------------------|
| 1. Sonar buzzer M117 (view with lower driver instrument panel removed) | 2. Rear sonar system OFF switch M116 | 3. Rear sonar sensor LH outer B301 |
| 4. Rear sonar sensor LH inner B302 | 5. Rear sonar sensor RH inner B303 | 6. Rear sonar sensor RH outer B304 |
| 7. Back-up lamp relay H-2 | 8. Sonar control unit B56 (view with trunk side finisher LH removed) | |

LKIA0726E

System Description

INFOID:000000001721715

FUNCTION

With the ignition switch in the ON or START position, power is supplied

- through 10A fuse [No. 12, located in the fuse block (J/B)]
- to sonar control unit terminal 8, and
- through 10A fuse [No. 14, located in the fuse block (J/B)]
- to back-up lamp relay terminals 1 and 3.

Ground is supplied

- to sonar control unit terminal 6
- through body grounds B7 and B19.

With the ignition switch in the ON or START position, and the selector lever in the R position, power is supplied

- to sonar control unit terminal 5
- from back-up lamp relay terminal 5.

With power and ground supplied, selector lever in R position, and the rear sonar system OFF switch ON, the rear sonar system will detect obstacles within 1.8 m (5.9 ft) of the rear sonar sensors. The vehicle operator is notified of obstacles by varied lengths of tone from the sonar buzzer depending on distance of obstacle being sensed.

REAR SONAR SYSTEM OFF SWITCH

With power and ground supplied to the sonar control unit, and the selector lever in the P or R position, the sonar system can be disabled and the sonar buzzer silenced by momentarily pressing the rear sonar system

REAR SONAR SYSTEM

< SERVICE INFORMATION >

OFF switch. The rear sonar system OFF indicator lamp will be illuminated in the rear sonar system OFF switch.

To disable the rear sonar system, ground is supplied

- to sonar control unit terminal 13
- through rear sonar system OFF switch terminal 7
- through rear sonar system OFF switch terminal 6
- from body grounds M57, M61, and M79.

To light the rear sonar system OFF indicator, power is supplied

- to the rear sonar system OFF switch terminal 3
- from sonar control unit terminal 4.

Ground is supplied

- to the rear sonar system OFF switch terminal 2
- from body grounds M57, M61, and M79.

The rear sonar system and buzzer will be disabled and the rear sonar system OFF indicator will be illuminated until the ignition switch is turned OFF. When the ignition is turned ON, the rear sonar system will be enabled. Depressing the rear sonar system OFF switch momentarily will enable the rear sonar system also. Enabling the rear sonar system will cause the rear sonar system OFF indicator to go out.

SONAR BUZZER

With the power supplied to the sonar control unit, selector lever in R position and a stationary object at least 7.0 cm (2.8 in.) wide and 1.0 m (3 ft.) tall closer than 1.8 m (5.9 ft.) will be detected by the rear sonar sensors, the sonar buzzer will sound a tone. As the vehicle approaches the object, the rate of the tone will increase. When the object is less than 25.0 cm (10 in.) from the rear bumper, the tone will sound continuously.

Power is supplied

- to sonar buzzer terminal +
- from sonar control unit terminal 7.

Ground is supplied

- to sonar buzzer terminal -
- from sonar control unit terminal 3.

REAR SONAR SENSOR

With power and ground supplied to the rear sonar sensors, the sonar sensors transmit a 38.4 kHz ultrasonic signal. This signal is reflected back to the sensor by objects large enough and close enough to be detected. The rear sonar sensors measure the time from the transmitted signal to the time the signal is reflected back and sends this information to the sonar control unit.

Power is supplied

- to rear sonar sensors terminal 1
- from sonar control unit terminal 16.

Ground is supplied

- to rear sonar sensors terminal 3
- from sonar control unit terminal 15.

Signal is supplied

- to sonar control unit terminals 9, 10, 11 and 12
- from rear sonar sensors terminal 2.

REAR SONAR SYSTEM

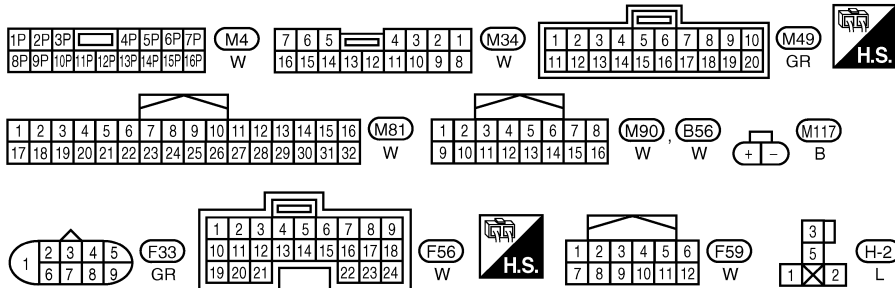
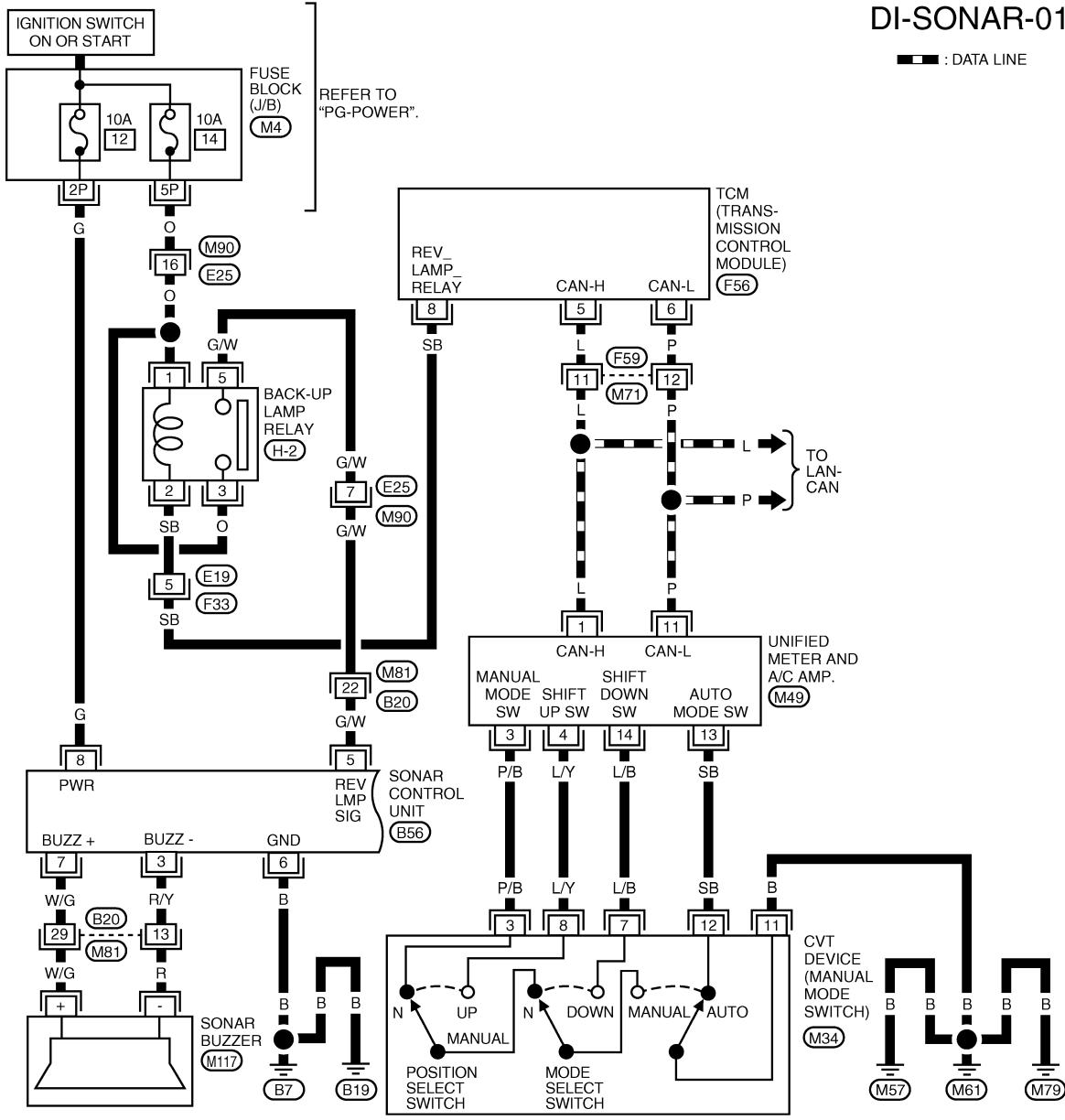
< SERVICE INFORMATION >

Wiring Diagram - SONAR -

INFOID:000000001721716

DI-SONAR-01

— : DATA LINE



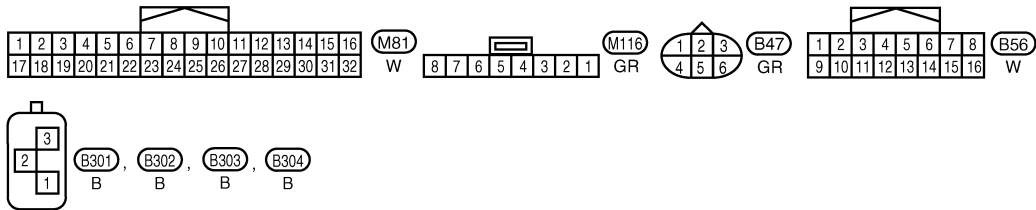
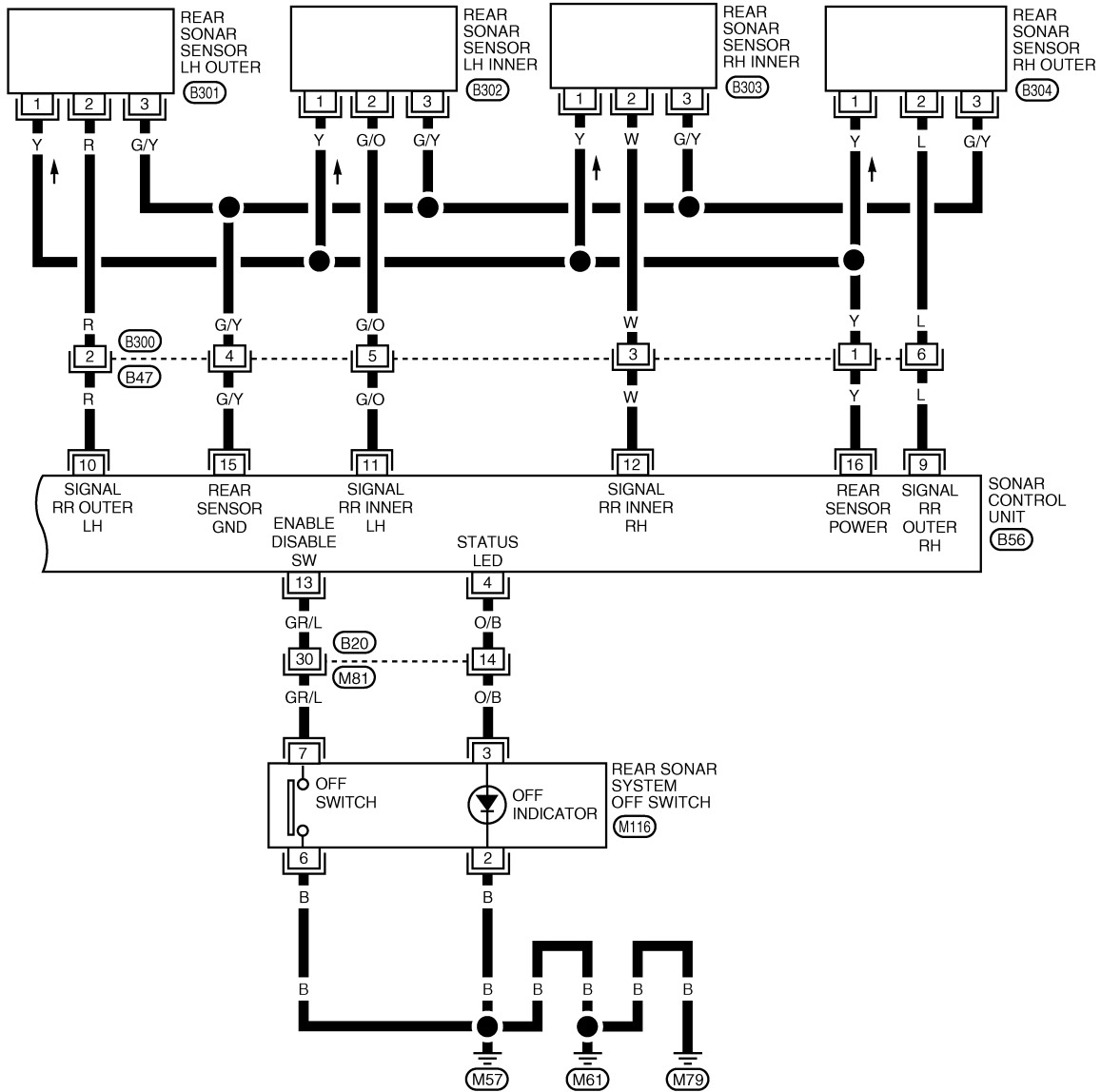
*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

WKWA4840E

REAR SONAR SYSTEM

< SERVICE INFORMATION >

DI-SONAR-02



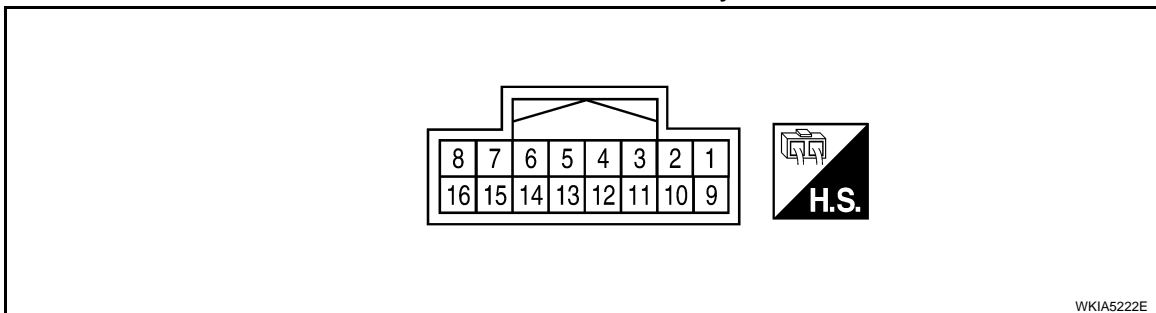
WKWA4841E

REAR SONAR SYSTEM

< SERVICE INFORMATION >

Sonar Control Unit Harness Connector Terminal Layout

INFOID:000000001721717



Terminal and Reference Value for Sonar Control Unit

INFOID:000000001721718

Terminal (Wire color)	Item	Condition		Reference value (V) (Approx.)	
		Ignition switch	Operation		
3 (R/Y)	Sonar buzzer return	ON	—	0	
4 (O/B)	Rear sonar system OFF indicator output	ON	Rear sonar system OFF switch	ON	0
				OFF	Battery voltage
5 (G/W)	Reverse signal	ON	Selector lever	R position	Battery voltage
			Selector lever	Not R position	0
6 (B)	Sonar control unit ground	OFF	—	0	
7 (W/G)	Sonar buzzer drive signal	ON	<ul style="list-style-type: none"> • Rear sonar system OFF switch ON • Selector lever in R position • No obstacles 		Battery voltage
			<ul style="list-style-type: none"> • Rear sonar system OFF switch ON • Selector lever in R position • Distance between rear sonar sensor and obstacle is <0.25 m (0.82 ft) or less. 		0
			<ul style="list-style-type: none"> • Rear sonar system OFF switch ON • Selector lever in R position • Distance between rear sonar sensor and obstacle is 0.25 to 1.8 m (0.82 to 5.9 ft). 		Cycles between 0.001 and 12
8 (G)	Sonar control unit power	ON	—	Battery voltage	
9 (L)	Rear sonar sensor signal - RH outer	ON	<ul style="list-style-type: none"> • Rear sonar system OFF switch ON • Selector lever in R position • No obstacles 	Battery voltage	
10 (R)	Rear sonar sensor signal - LH outer	ON	<ul style="list-style-type: none"> • Rear sonar system OFF switch ON • Selector lever in R position • No obstacles 	Battery voltage	
11 (G/O)	Rear sonar sensor signal - LH inner	ON	<ul style="list-style-type: none"> • Rear sonar system OFF switch ON • Selector lever in R position • No obstacles 	Battery voltage	
12 (W)	Rear sonar sensor signal - RH inner	ON	<ul style="list-style-type: none"> • Rear sonar system OFF switch ON • Selector lever in R position • No obstacles 	Battery voltage	
13 (GR/L)	Rear sonar system OFF switch signal	ON	Rear sonar system OFF switch	ON	0
				OFF	9

REAR SONAR SYSTEM

< SERVICE INFORMATION >

Terminal (Wire color)	Item	Condition		Reference value (V) (Approx.)
		Ignition switch	Operation	
15 (G/Y)	Rear sonar sensor ground	ON	—	0
16 (Y)	Rear sonar sensor power	ON	Ignition switch ON	Battery voltage

How to Proceed with Trouble Diagnosis

INFOID:000000001721719

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to [DI-61, "System Description"](#).
3. Perform pre-diagnosis inspection. Refer to [DI-66, "Pre-diagnosis Inspection"](#).
4. Perform self-diagnosis. Refer to [DI-66, "Self-Diagnosis Function"](#).
5. Perform the preliminary check. Refer to [DI-68, "Preliminary Check"](#).
6. Check symptom and repair or replace the cause of malfunction. Refer to [DI-69, "Symptom Chart"](#).
7. Does the rear sonar system operate properly? If so, go to 8. If not, go to 3.
8. Inspection End.

Pre-diagnosis Inspection

INFOID:000000001721720

SENSOR STATUS CHECK

- Check that snow, mud, or other foreign objects are not adhering to the rear sonar sensor.
- Check that there is no deformation, scratches, or other damage to the rear sonar sensor.
- Check that water has not accumulated in the rear sonar sensor.

CAUTION:

Use water, cotton swab, or other soft material for cleaning the sensor.

1. Check that there are no obstacles within each rear sonar sensor's detection range.

	Detection range
Rear sonar sensors	Approx. 1.8 m (5.9 ft) maximum

2. Check that there are no nearby ultrasound sources (such as the sounds of vehicle horns, motorcycle engines, or truck air brakes).
3. Check that the vehicle is on a level surface.

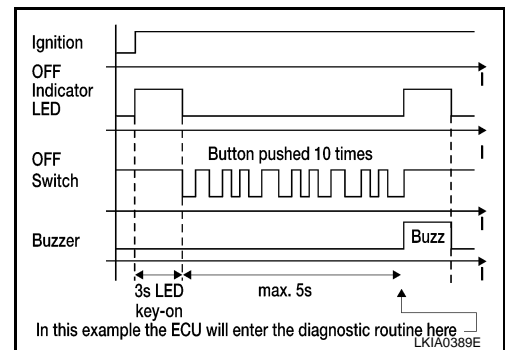
Self-Diagnosis Function

INFOID:000000001721721

There are four modes of self-diagnosis; entering diagnostics, requesting number of fault codes, requesting fault codes, and idling or clearing fault codes. These steps must be followed in order. Self-diagnosis can be manually exited by turning the ignition OFF, or selecting reverse gear. Self-diagnosis will automatically exit if a message is repeated five times without acknowledgement, before reporting number of faults if no switch activity is detected for thirty seconds or in idle mode if no switch activity is detected for thirty seconds.

ENTERING DIAGNOSTICS MODE

1. Turn ignition switch ON. Rear sonar system OFF switch indicator lamp comes on for three seconds and then goes out.
2. Immediately push rear sonar system OFF switch ten times within five seconds.
3. The the sonar buzzer sounds once and the rear sonar system OFF indicator flashes once.



REAR SONAR SYSTEM

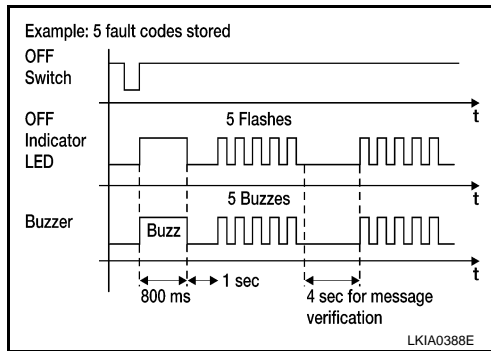
< SERVICE INFORMATION >

REQUESTING NUMBER OF FAULT CODES MODE

1. While in diagnostic mode, push rear sonar system OFF switch once.
2. The sonar buzzer will sound once.
3. Rear sonar system OFF indicator will flash once and sonar buzzer will sound once for each fault code detected.
4. There will be a four second pause.
5. The number of fault codes will repeat then pause five times.

NOTE:

Self-diagnosis will exit unless requesting fault codes occurs before five repeats ends.



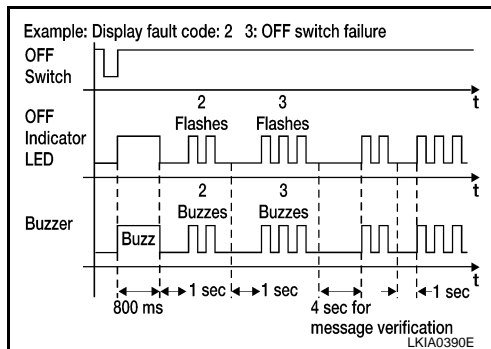
REQUESTING FAULT CODES MODE

1. While in requesting number of fault codes mode, push rear sonar system OFF switch once.
2. The sonar buzzer will sound once.
3. Rear sonar system OFF indicator will flash and sonar buzzer will sound the first digit of the fault code followed by a one second pause.
4. Rear sonar system OFF indicator will flash and sonar buzzer will sound the second digit of the fault code followed by a four second pause.
5. The fault codes will repeat then pause five times.

NOTE:

Requesting fault codes will exit unless the fault code is acknowledged before five repeats ends.

The fault code is acknowledged by pushing the rear sonar system OFF switch once (the sonar buzzer may sound). When all fault codes have been indicated, idle mode will be entered. See the following table for fault code identification.



Fault Code	Malfunction	Page Reference
1 1	Rear sonar sensor LH outer	Check harness for open or short. If NG repair or replace harness. If OK replace sensor. Refer to DI-70, "Rear Sonar Sensors" .
1 2	Rear sonar sensor LH inner	
1 3	Rear sonar sensor RH inner	
1 4	Rear sonar sensor RH outer	
2 1	Sonar buzzer	DI-69, "Component Inspection"
2 2	Rear sonar system OFF indicator	DI-69, "Component Inspection"
2 3	Rear sonar system OFF switch	DI-69, "Component Inspection"
2 4	Sonar control unit	Replace sonar control unit. Refer to DI-70, "Sonar Control Unit"

IDLING OR CLEARING FAULT CODES MODE

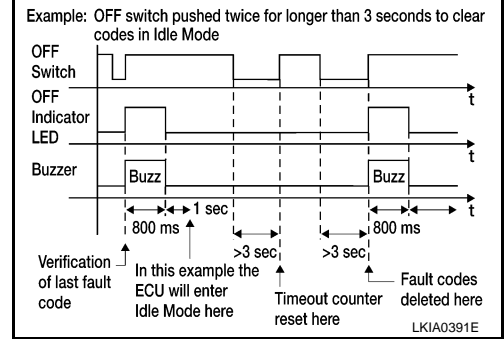
NOTE:

While in idle mode, self-diagnosis will automatically exit if no activity occurs for thirty seconds.

REAR SONAR SYSTEM

< SERVICE INFORMATION >

1. Push and hold rear sonar system OFF switch for three seconds to reset time-out counter.
2. Push and hold rear sonar system OFF switch for three seconds to clear codes.



Preliminary Check

INFOID:000000001721722

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

1.CHECK FUSES

Check for blown rear sonar system fuses.

UNIT	POWER SOURCE	FUSE
Sonar control unit	ON or START	12

Refer to [DI-63, "Wiring Diagram - SONAR -"](#).

OK or NG

OK >> GO TO 2.

NG >> If fuse is blown, be sure to eliminate cause of problem before installing new fuse. Refer to [PG-3](#).

2.CHECK POWER SUPPLY CIRCUIT

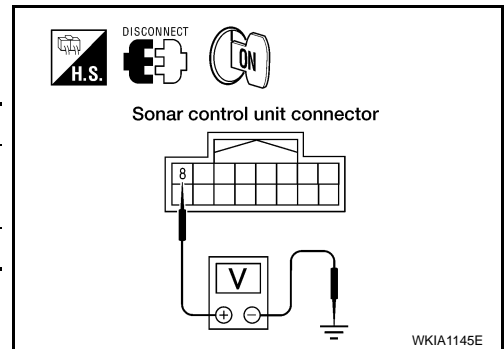
1. Disconnect sonar control unit connector.
2. Check voltage between sonar control unit connector B56 terminal 8 and ground.

Terminals		Ignition switch position	
(+)		(-)	
Connector	Terminal	ON or START	
B56	8	Ground	Battery voltage

OK or NG

OK >> GO TO 3.

NG >> Check harness for open between sonar control unit and fuse.



3.CHECK GROUND CIRCUIT

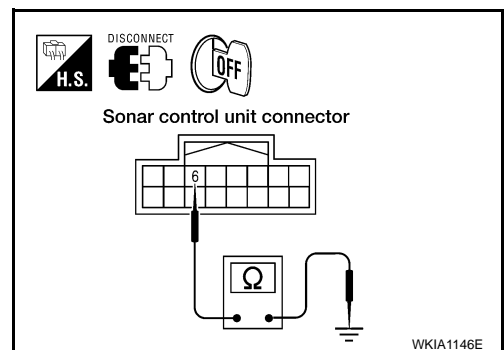
1. Turn ignition switch OFF.
2. Check continuity between sonar control unit connector B56 terminal 6 and ground.

Terminals		Continuity
(+)		
Connector	Terminal	(-)
B56	6	Ground
		Yes

OK or NG

OK >> Inspection End.

NG >> Repair harness or connector.



REAR SONAR SYSTEM

< SERVICE INFORMATION >

Symptom Chart

INFOID:000000001721723

Symptom	Repair order
When the rear sonar system OFF switch is OFF, the indicator lamp does not light and the buzzer does not sound.	<ol style="list-style-type: none"> 1. Check rear sonar system OFF switch for malfunction. Refer to DI-69, "Component Inspection". 2. Check rear sonar system OFF switch ground circuit. 3. Check harness and connections between rear sonar system OFF switch and sonar control unit. 4. Replace sonar control unit. Refer to DI-70, "Sonar Control Unit".
When the rear sonar system OFF switch is OFF, the indicator lamp does not light but buzzer sounds.	<ol style="list-style-type: none"> 1. Check rear sonar system OFF indicator for malfunction. Refer to DI-69, "Component Inspection". 2. Check harness and connections between rear sonar system OFF indicator and sonar control unit. 3. Replace sonar control unit. Refer to DI-70, "Sonar Control Unit".
When the rear sonar system OFF switch is OFF, the sonar buzzer does not sound but indicator lamp lights up.	<ol style="list-style-type: none"> 1. Check sonar buzzer. Refer to DI-69, "Component Inspection". 2. Check harness and connections between sonar buzzer and sonar control unit. 3. Replace sonar control unit. Refer to: DI-70, "Sonar Control Unit".
When rear sonar system OFF switch is OFF, the rear sonar system OFF indicator lamp lights up and the sonar buzzer sounds intermittently (for about 4 seconds).	<ol style="list-style-type: none"> 1. Check harness between rear sonar sensors and sonar control unit for an open condition. 2. Check rear sonar sensors for malfunction. 3. Replace sonar control unit. Refer to DI-70, "Sonar Control Unit".
The rear sonar system operates with the rear sonar system OFF switch ON.	<ol style="list-style-type: none"> 1. Check rear sonar system OFF switch for malfunction. Refer to DI-69, "Component Inspection". 2. Check rear sonar system OFF switch ground circuit. 3. Check harness and connections between rear sonar system OFF switch and sonar control unit. 4. Replace sonar control unit. Refer to DI-70, "Sonar Control Unit".
When the selector lever is in the R position and the rear sonar system OFF switch is OFF, the sonar system does not operate.	<ol style="list-style-type: none"> 1. Check for back-up lamp relay malfunction. Refer to LT-96. 2. Check harness and connections between sonar control unit and back-up lamp relay circuits. 3. Replace sonar control unit. Refer to DI-70, "Sonar Control Unit".
When the rear sonar system OFF switch is OFF, the indicator lamp lights up and buzzer sounds although there is no obstacle within the detection range.	<ol style="list-style-type: none"> 1. Check for adhesion of snow, mud, or other foreign objects to rear sonar sensors; dew condensation; etc. Refer to DI-66, "Pre-diagnosis Inspection". 2. Check harness and connections between rear sonar sensors and sonar control unit. 3. Check rear sonar sensors for malfunction. 4. Replace sonar control unit. Refer to DI-70, "Sonar Control Unit".
The rear sonar sensors do not operate according to the distance between each sensor and the obstacle. (There is a large error in the obstacle detection distance.)	<ol style="list-style-type: none"> 1. Check rear sonar sensors for malfunction. 2. Replace sonar control unit. Refer to DI-70, "Sonar Control Unit".

Component Inspection

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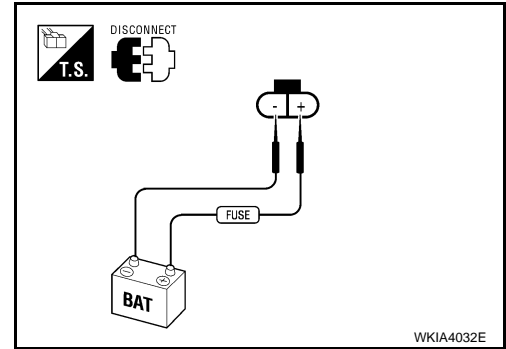
SONAR BUZZER

REAR SONAR SYSTEM

< SERVICE INFORMATION >

Disconnect the sonar buzzer connector M117, and apply battery voltage (approx. 12V) to terminal +. Check the buzzer operation when terminal - is connected to battery ground.

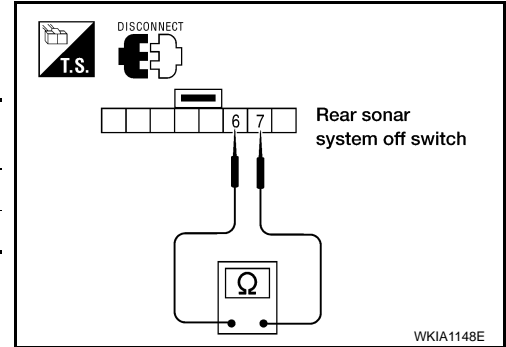
	Terminal to be inspected	Condition	Operation
Sonar buzzer	+	Approx. 12V	Sonar buzzer sounds
	-	Ground	



REAR SONAR SYSTEM OFF SWITCH

Disconnect the rear sonar system OFF switch connector M116. Check continuity between the following terminals.

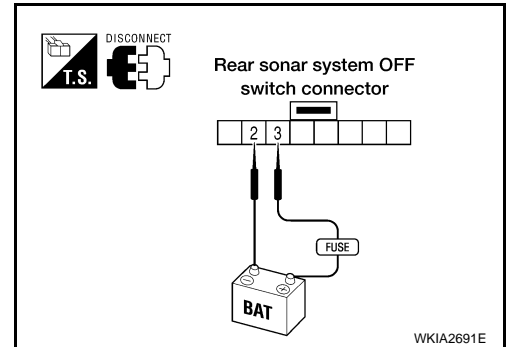
Rear sonar system OFF switch	Terminal to be inspected	Continuity
ON	6 - 7	Yes
OFF		No



REAR SONAR SYSTEM OFF INDICATOR

Disconnect the rear sonar system OFF switch connector M116, and apply battery voltage (approx. 12V) to terminal 3. Check the rear sonar system OFF indicator operation when terminal 2 is connected to battery ground.

	Terminal to be inspected	Condition	Operation
Rear sonar system OFF switch	3	Approx. 12V	Rear sonar system OFF indicator lights
	2	Ground	



Rear Sonar Sensors

INFOID:000000001721725

REMOVAL AND INSTALLATION

Refer to [EI-15](#) for rear sonar sensor removal and installation procedures.

Sonar Control Unit

INFOID:000000001721726

REMOVAL AND INSTALLATION

Removal

1. Remove the trunk side finisher, LH. Refer to [EI-39, "Removal and Installation"](#) to gain access to sonar control unit.
2. Disconnect electrical connector, remove the clips and sonar control unit.

Installation

Installation is in the reverse order of removal.