SECTION DI
DRIVER INFORMATION SYSTEM

CONTENTS

PRECAUTION

PFP:00011

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

EKS005P8

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.**

Wiring Diagrams and Trouble Diagnosis

EKS005P9

When you read wiring diagrams, refer to the following:

- Refer to GI-13, "How to Read Wiring Diagrams" .
- Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" for power distribution circuit.

When you perform trouble diagnosis, refer to the following:

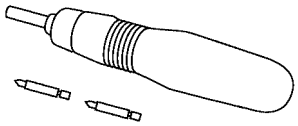
- Refer to GI-10, "HOW TO FOLLOW TEST GROUPS IN TROUBLE DIAGNOSES" .
- Refer to GI-25, "How to Perform Efficient Diagnosis for an Electrical Incident" .

PREPARATION

PFP:00002

Commercial Service Tool

EKS005PA

Tool name	Description
Power tool  PBIC0191E	Loosening bolts and nuts

COMBINATION METERS

PFP:24814

System Description

EKS005PB

UNIFIED METER CONTROL UNIT

- Speedometer, odometer, tachometer, fuel gauge and water temperature gauge are controlled by the unified meter control unit, which is built into the combination meter.
- Warning indicators are controlled by signals drawn from the CAN communication system, BCM (body control module), and components connected directly to the combination meter.
- Digital meter is adopted for odometer.*
  *The record of the odometer is kept even if the battery cable is disconnected.
- Odometer and A/T 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 odometer, A/T indicator, fuel and temperature gauge 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 odometer and 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-155, "System Description" .

POWER SUPPLY AND GROUND CIRCUIT

Power is supplied at all times

- through 15A fuse [No.19, located in the fuse block (J/B)]
- to combination meter terminal 31.

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

- through 10A fuse [No.14, located in the fuse block (J/B)]
- to combination meter terminal 30.

Ground is supplied

- to combination meter terminal 32
- 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 combination meter via CAN communication lines.

TACHOMETER

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

FUEL GAUGE

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

- to combination meter terminal 3
- through fuel level sensor unit and fuel pump terminal 5
- through fuel level sensor unit and fuel pump terminal 2
- from combination meter terminal 2.

SPEEDOMETER

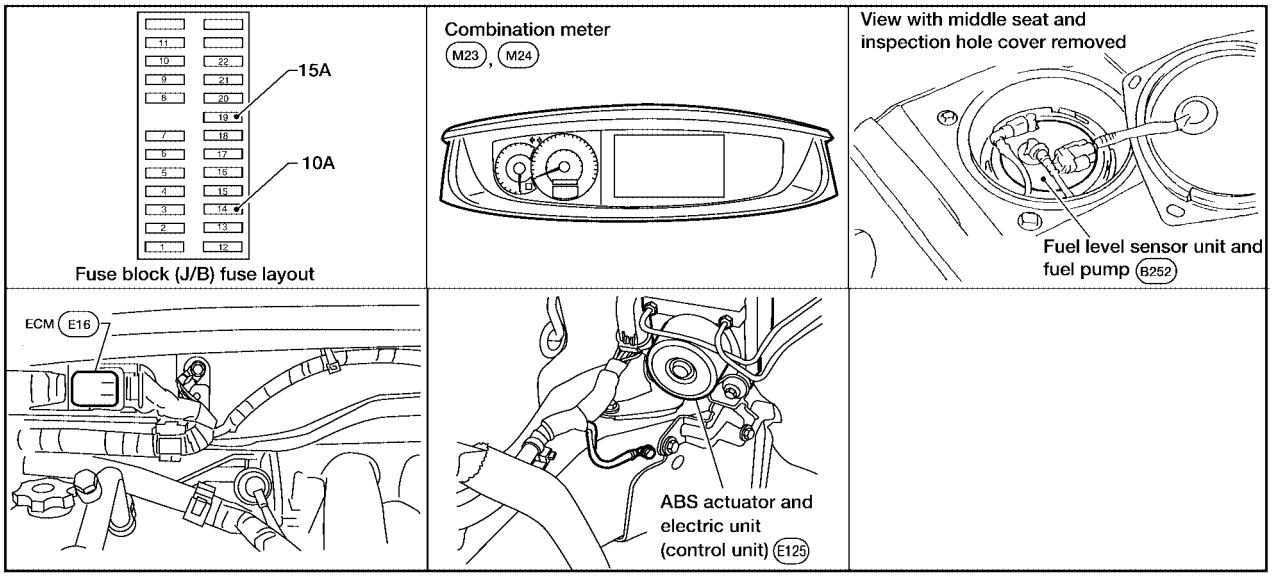
ABS actuator and electric unit (control unit) provides a vehicle speed signal to the combination meter via CAN communication lines.

CAN COMMUNICATION SYSTEM DESCRIPTION

Refer to LAN-5, "CAN COMMUNICATION" .

Component Parts and Harness Connector Location

EKS005PC



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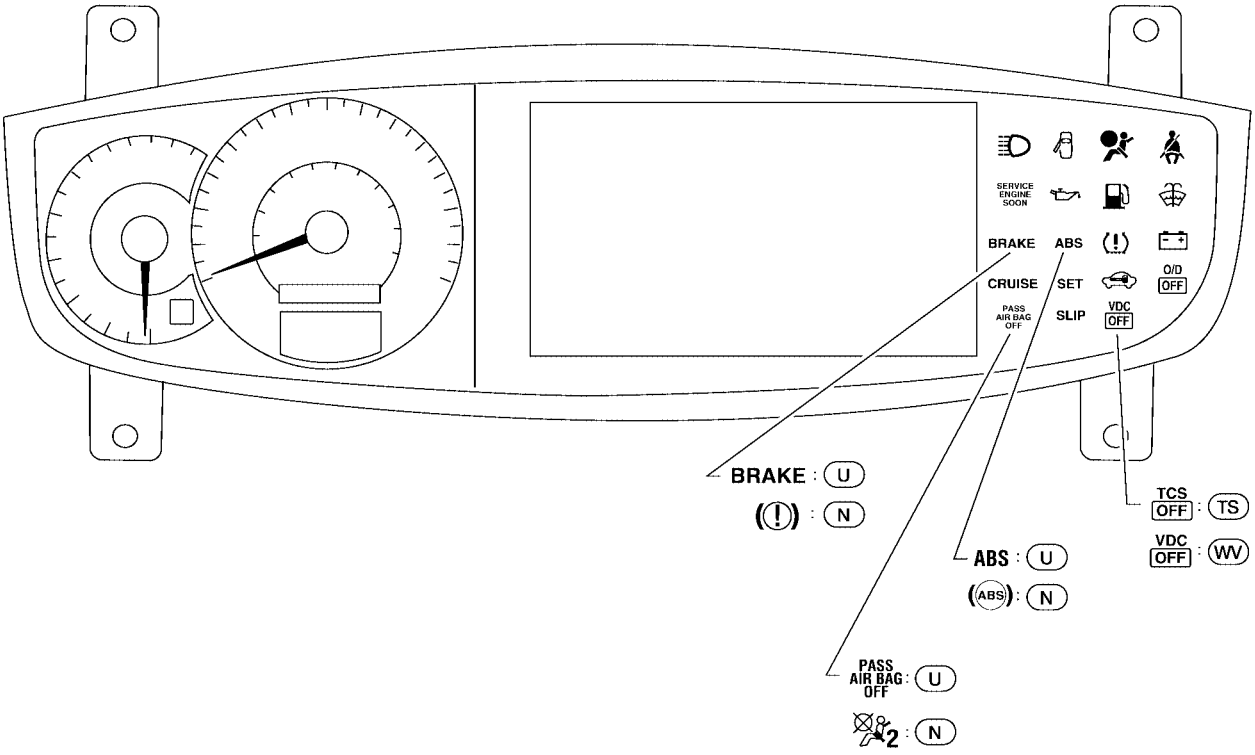
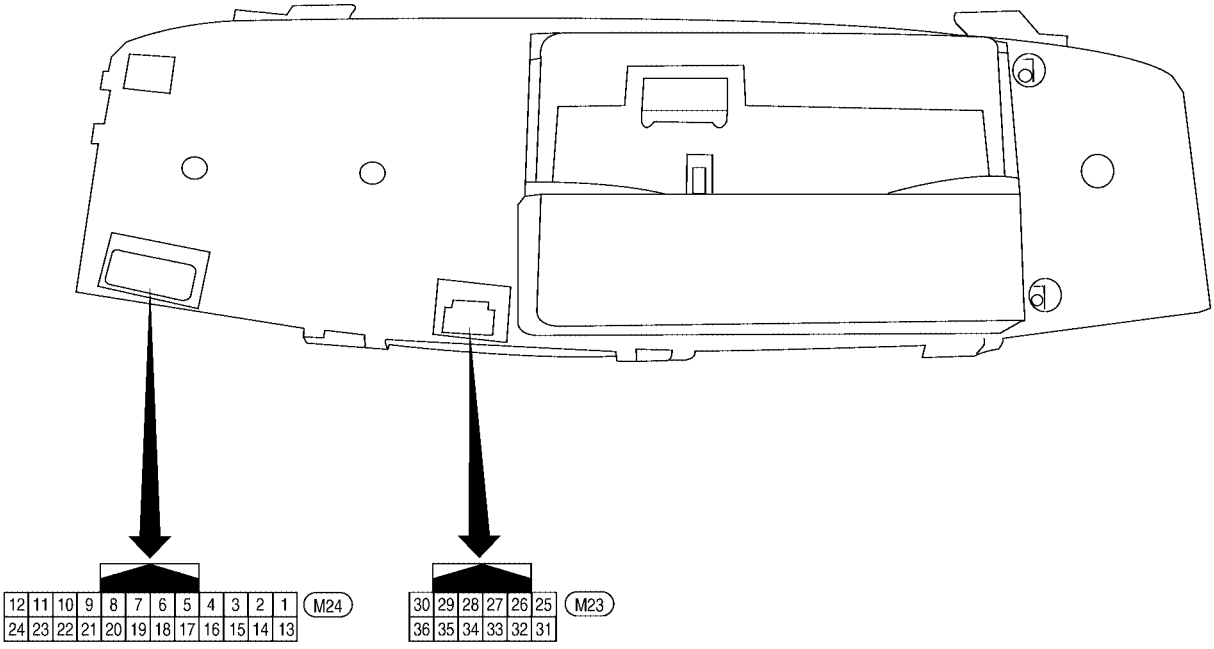
Combination Meter

EKS005PD

CHECK



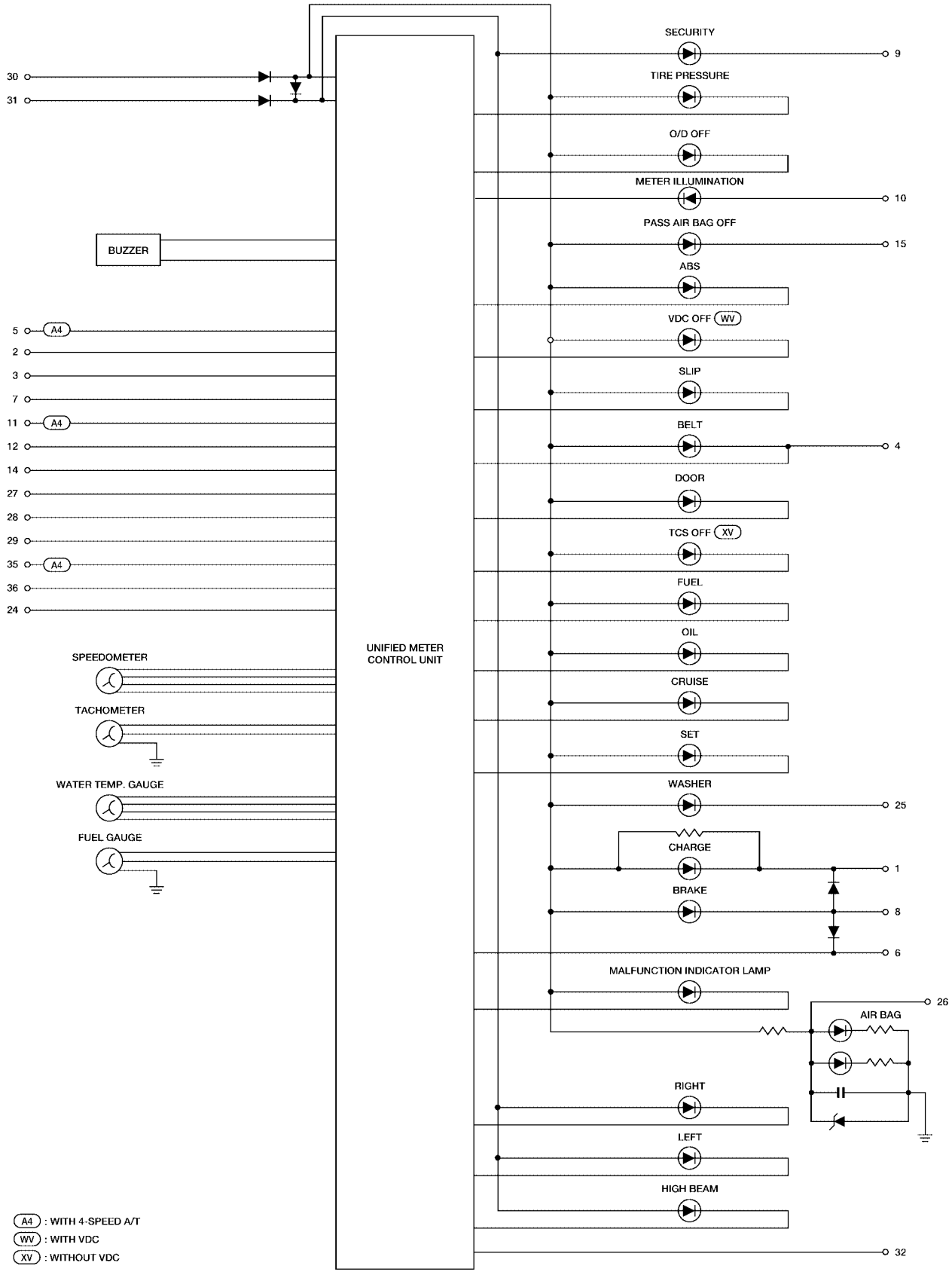


(N) : CANADA
(TS) : WITH TCS
(U) : USA
(WV) : WITH VDC

WKIA3203E

Circuit Diagram

EKS005PE



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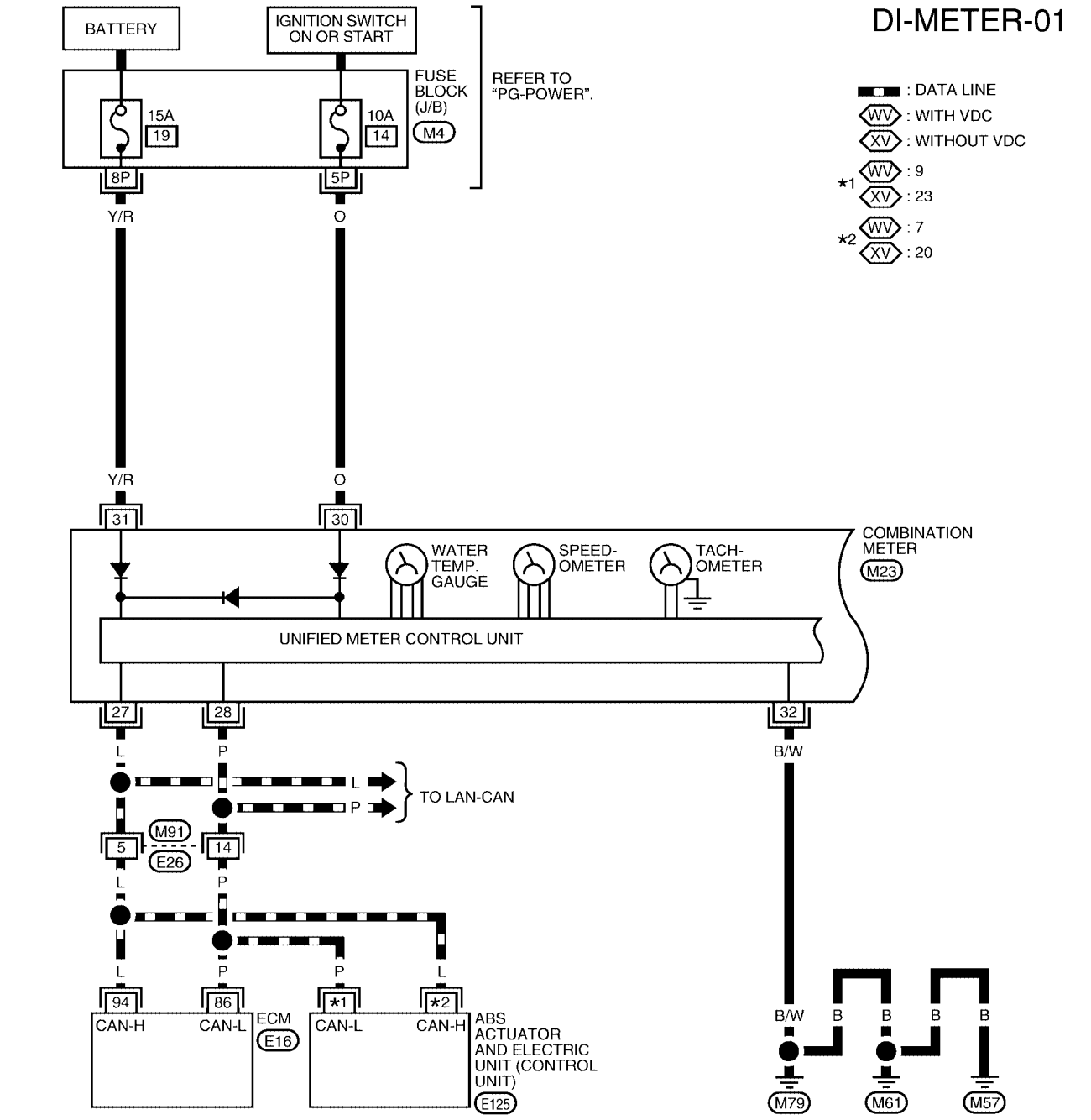
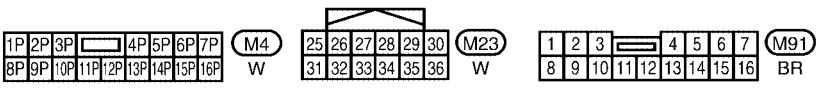
Wiring Diagram — METER —

EKS005PF

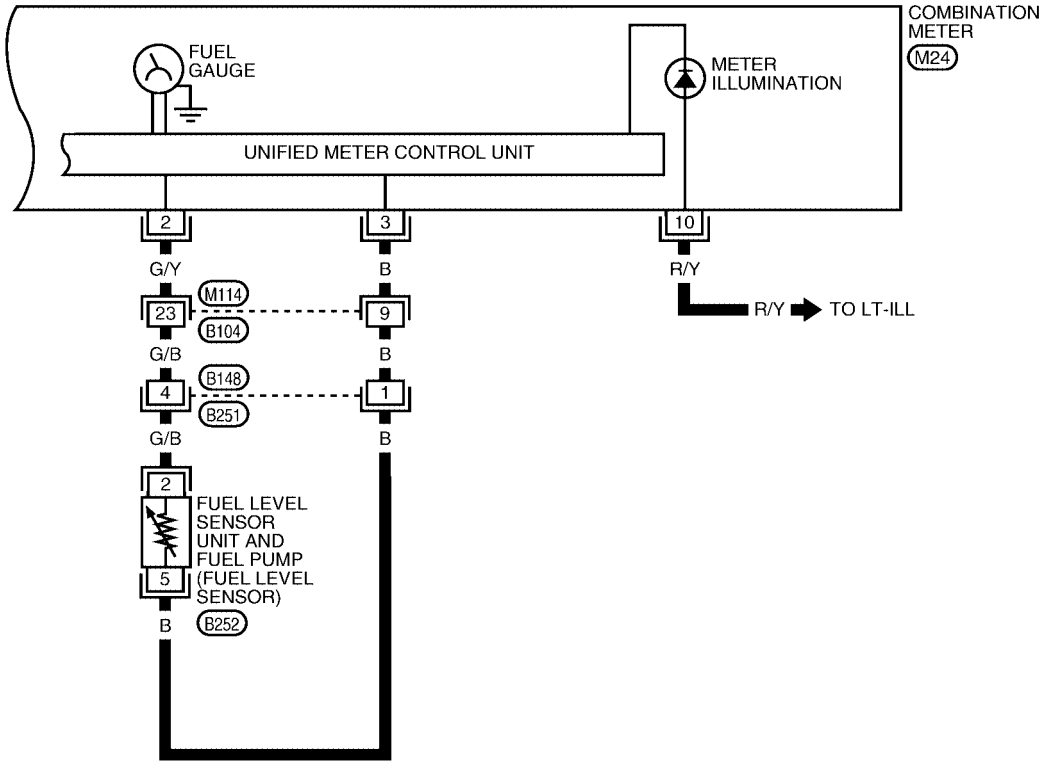


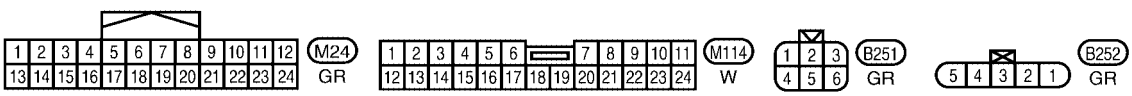


REFER TO THE FOLLOWING.
E16, E125 - ELECTRICAL UNITS

WKWA3884E

DI-METER-02





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Terminals and Reference Value for Combination Meter

EKS005PG

Terminal No.	Wire color	Item	Condition		Reference value (V) (Approx.)
			Ignition switch	Operation or condition	
2	G/Y	Fuel level sensor signal input	—	—	Refer to DI-18, "Fuel Level Sensor Unit Inspection" .
3	B	Fuel level sensor signal output	—	—	Refer to DI-18, "Fuel Level Sensor Unit Inspection" .
10	R/Y	Illumination control switch	—	Lighting switch ON	Refer to LT-156, "ILLUMINATION OPERATION BY LIGHTING SWITCH" .
27	L	CAN-H	—	—	—
28	P	CAN-L	—	—	—
30	O	Ignition switch ON or START	ON	—	Battery voltage
31	Y/R	Battery power supply	OFF	—	Battery voltage
32	B/W	Ground	ON	—	0V

Meter/Gauge Operation and Odo/Trip Meter

EKS005PI

SELF-DIAGNOSIS FUNCTION

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

- Gauge sweep and present gauge values.
- Gauge input signals.
- Odometer, fuel gauge and engine temperature gauge segments.
- Illumination LEDs.
- Current odometer value stored in non-volatile memory (NVM).
- DTCs.
- Estimated present battery voltage.
- Seat belt buckle switch LH status.

HOW TO INITIATE COMBINATION METER SELF- DIAGNOSIS MODE

NOTE:
Once entered, Combination Meter Self-Diagnosis Mode will function with the ignition switch in ON or START. Combination Meter Self-Diagnosis Mode will exit upon turning the ignition switch to OFF.
To initiate Combination Meter Self-Diagnosis Mode, refer to the following procedure.

1. Turn ignition switch and high beam headlamps OFF.
2. Apply brake pedal and turn ignition switch ON.
3. Within 3 seconds of turning ignition switch ON, engage flash to pass and hold for 5 to 8 seconds.

NOTE:
If the self-diagnosis function is activated, the odometer/trip meter will display tESt.

COMBINATION METER SELF- DIAGNOSIS MODE FUNCTIONS

To interpret Combination Meter Self-Diagnosis Mode functions, refer to the following table.

Event	Odometer Display	Description of Test/Data	Notes:
Flash-to-pass and brake pedal held from 5 to 8 seconds or until released	tESt		Initiating self-diagnosis mode
Flash-to-pass and brake pedal held more than 8 seconds	Odometer	Does not enter Combination Meter Self-Diagnosis Mode.	
Flash-to-pass and brake pedal released within 5 to 8 seconds	GAGE	Performs sweep of all gauges, then displays present gauge values. Performs checksum tests on ROM and EE.	Initiating self-diagnosis mode
Flash to pass engaged and released = next test requested	(All segments illuminated)	Lights all A/T indicator, odometer, fuel, and engine temperature display segments.	Initiating self-diagnosis mode complete
Next test requested	bulb	Illuminates all micro-controlled lamps/LEDs regardless of SW configuration.	
Next test requested	rXXXX, FAIL	Return to normal operation of all lamps/LEDs and displays hex ROM rev. If a ROM checksum fault exists, display alternates between "r XXXX" and "FAIL".	
Next test requested	nrXXXX	Displays hex ROM rev as stored in NVM.	

Event	Odometer Display	Description of Test/Data	Notes:
Next test requested	EE XX, FAIL	Hex EE level. If EE checksum fault exists, display alternates between "EE XX" and "FAIL".	
Next test requested	dtXXXX	Hex coding of final manufacturing test date.	
Next test requested	dtc, XXXX	Displays a 16 bit DTC in hex format. DTCs displayed are those detected in continuous operation, not during self-diagnosis. Display alternates between "dtc" and actual DTC ("XXXX") or "NONE".	Each select button press will cause a different DTC to be displayed until all DTC's are displayed. If there are no or no more DTC's, proceed to next function.
Next test requested	XXXXX	Raw speed value in hundredths of MPH. Speedometer indicates present speed.	Will display "-----" if message is not received. Will display "99999" if data received is invalid.
Next test requested	XXXXX	Raw speed value in hundredths of KPH. Speedometer indicates present speed.	Will display "-----" if message is not received. Will display "99999" if data received is invalid.
Next test requested	tXXXXX	Tachometer value in RPM. Tachometer indicates present RPM.	Will display "-----" if message is not received.
Next test requested	F1 XXX	Present ratioed fuel level A/D input 1 in decimal format. Fuel gauge indicates present filtered level.	000-009 = Short circuit 010-254 = Normal range 255 = Open circuit --- = Missing 5 seconds
Next test requested	FGM XXX	Fuel gauge display mode.	0xx = Normal mode xx # of segments 1xx = Expand mode xx # of segments
Next test requested	XXXC	Last temperature gauge input value in degrees C. Temperature gauge indicates present filtered temperature.	Will display "---"C if message is not received. Will display "999" if data received is invalid.
Next test requested	tGX	Temperature gauge display segments.	X = number of display segments commanded
Next test requested	BAtXX.X	Estimated present battery voltage.	
Next test requested	rES -X	Seat belt buckle switch LH status.	1= Buckled 0 = Unbuckled
Next test requested	PA -XX to PAO -XX	Not used.	
Next test requested	GAGE		Return to beginning of self-diagnosis.

How to Proceed With Trouble Diagnosis

EKS005PK

1. Confirm the symptom or customer complaint.
2. Perform diagnosis according to diagnosis flow. Refer to DI-15, "Diagnosis Flow" .
3. According to the symptom chart, repair or replace the cause of the symptom.
4. Does the meter operate normally? If so, go to 5. If not, go to 2.
5. Inspection End.

Diagnosis Flow

EKS005PL

1. CHECK WARNING INDICATOR ILLUMINATION

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

Do warning indicators illuminate?

YES >> GO TO 2.
NO >> Check ignition power supply system of combination meter. Refer to DI-16, "Power Supply and Ground Circuit Inspection" .

2. CHECK SELF-DIAGNOSIS OPERATION OF COMBINATION METER

Perform combination meter self-diagnosis. Refer to DI-13, "SELF-DIAGNOSIS FUNCTION" .

Does self-diagnosis function operate?

YES >> GO TO 3.
NO >> Check the following.

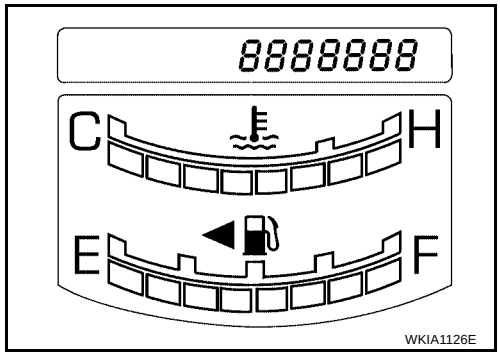
- Combination meter power supply and ground circuit. Refer to DI-16, "Power Supply and Ground Circuit Inspection" .

3. CHECK ODOMETER, FUEL AND TEMPERATURE GAUGE OPERATION

Check segment display status of odometer, fuel and temperature gauge.

Is the display normal?

YES >> GO TO 4.
NO >> Replace the combination meter. Refer to IP-12, "Combination Meter" .



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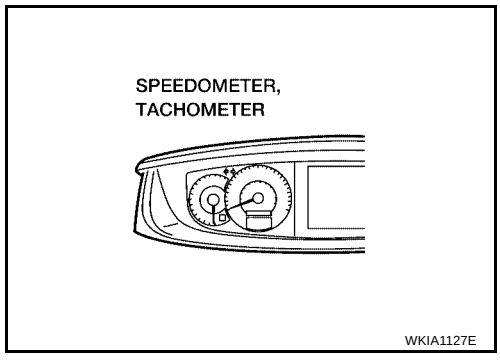
4. CHECK COMBINATION METER CIRCUIT

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

OK or NG

OK >> Go to DI-17, "Symptom Chart" .
NG >> Replace the combination meter. Refer to IP-12, "Combination Meter" .



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Power Supply and Ground Circuit Inspection

EKS005PM

1. CHECK FUSES

Check for blown combination meter fuses.

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

Refer to DI-10, "Wiring Diagram — METER —" .

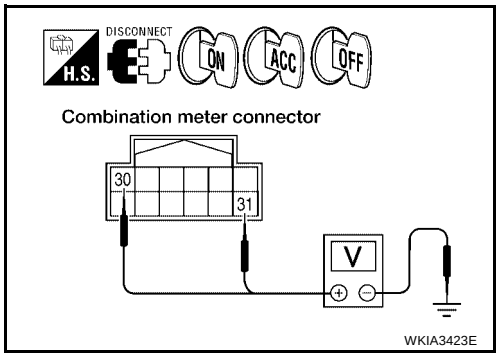
OK or NG

OK >> GO TO 2.
NG >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect combination meter connector M23.
2. Check voltage between combination meter harness connector terminals and ground.

Terminals			Ignition switch position		
(+)		(–)	OFF	ACC	ON
Connector	Terminal (Wire color)				
M23	31 (Y/R)	Ground	Battery voltage	Battery voltage	Battery voltage
	30 (O)		0V	0V	Battery voltage



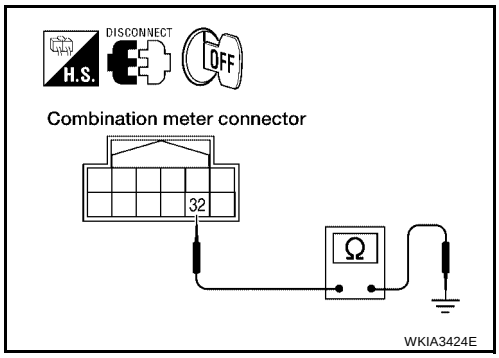
OK or NG

OK >> GO TO 3.
NG >> Check the harness for open between combination meter and fuse.

3. CHECK GROUND CIRCUIT

Check continuity between combination meter harness connector terminals and ground.

Terminals			Continuity
(+)		(–)	
Connector	Terminal (Wire color)		
M23	32 (B/W)	Ground	Yes



OK or NG

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

Symptom Chart

EKS005PN

Trouble phenomenon	Possible cause
Fuel warning lamp indication is irregular.	Replace combination meter. Refer to IP-12, "Combination Meter" .
Improper tachometer indication.	Refer to DI-17, "Engine Speed Signal Inspection" .
Improper water temperature gauge indication.	Refer to DI-17, "Water Temperature Signal Inspection" .
Improper speedometer or odometer.	Refer to DI-17, "Vehicle Speed Signal Inspection" .
Improper fuel gauge indication.	Refer to DI-18, "Fuel Level Sensor Unit Inspection" .
More than one gauge does not give proper indication.	Replace the combination meter. Refer to IP-12, "Combination Meter" .
Improper A/T position indication.	Refer to DI-30, "A/T INDICATOR" .
Illumination control does not operate properly.	Refer to LT-155, "ILLUMINATION" .

Vehicle Speed Signal Inspection

EKS005PP

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

Perform the ABS actuator and electric unit (control unit) self-diagnosis.

- With traction control but without VDC system, refer to BRC-24, "SELF-DIAGNOSIS" .
- With VDC system, refer to BRC-70, "SELF-DIAGNOSIS" .

OK or NG

OK >> Replace the combination meter. Refer to IP-12, "Combination Meter" .
NG >> Perform the "Diagnostic Procedure" for displayed DTC.

Water Temperature Signal Inspection

EKS005PQ

1. CHECK ECM SELF-DIAGNOSIS

1. Perform ECM self-diagnosis. Refer to EC-137, "SELF-DIAG RESULTS MODE" .

OK or NG

OK >> Replace the combination meter. Refer to IP-12, "Combination Meter" .
NG >> Perform "Diagnostic procedure" for displayed DTC.

Engine Speed Signal Inspection

EKS006AE

1. CHECK ECM SELF-DIAGNOSIS

1. Perform ECM self-diagnosis. Refer to EC-137, "SELF-DIAG RESULTS MODE" .

OK or NG

OK >> Replace the combination meter. Refer to IP-12, "Combination Meter" .
NG >> Perform "Diagnostic procedure" for displayed DTC.

Fuel Level Sensor Unit Inspection

EKS005PS

FUEL LEVEL SENSOR UNIT

The following symptoms do not indicate a malfunction.

- Depending on vehicle position or driving circumstance, the fuel in the tank shifts and the indication may fluctuate.
- If the vehicle is fueled with the ignition switch ON, the indication will update slowly.
- If the vehicle is tilted when the ignition switch is turned ON, fuel in the tank may flow to one direction resulting in a change of reading.

LOW-FUEL WARNING LAMP

Depending on vehicle posture or driving circumstances, the fuel level in the tank varies, and the warning lamp ON timing may be changed.

1. CHECK SELF-DIAGNOSIS

Perform the combination meter self-diagnosis. Refer to DI-13, "SELF-DIAGNOSIS FUNCTION" .

OK or NG

OK >> GO TO 2.
NG >> Replace the combination meter. Refer to IP-12, "Combination Meter" .

2. CHECK HARNESS CONNECTOR

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

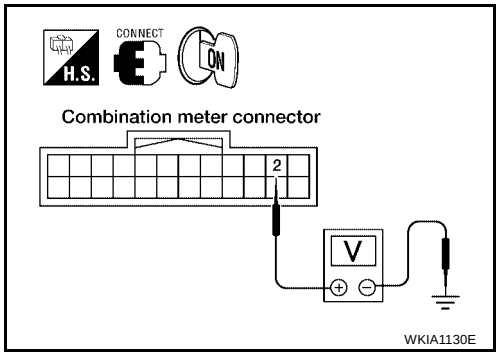
OK or NG

OK >> GO TO 3.
NG >> Repair or replace terminals or connectors.

3. CHECK HARNESS CONNECTOR OUTPUT SIGNAL

1. Disconnect fuel level sensor unit and fuel pump connector.
2. Turn ignition switch ON.
3. Check voltage between combination meter harness connector M24 terminal 2 (G/Y) and ground.

Battery voltage should exist.



OK or NG

OK >> GO TO 4.
NG >> Replace the combination meter. Refer to IP-12, "Combination Meter" .

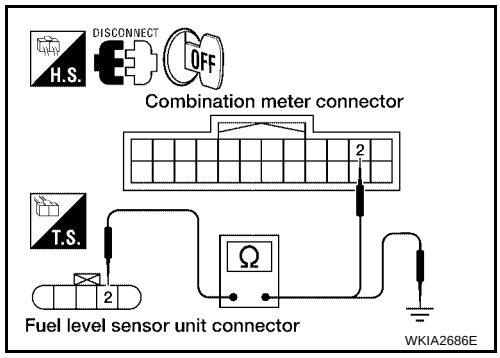
4. CHECK HARNESS FOR OPEN OR SHORT CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect combination meter connector M24.
3. Check continuity between combination meter harness connector M24 terminal 2 (G/Y) and fuel level sensor unit and fuel pump harness connector B252 terminal 2 (G/B).

Continuity should exist.

4. Check continuity between fuel level sensor unit and fuel pump harness connector B252 terminal 2 (G/B) and ground.

Continuity should not exist.



OK or NG

OK >> GO TO 5.
NG >> Repair harness or connector.

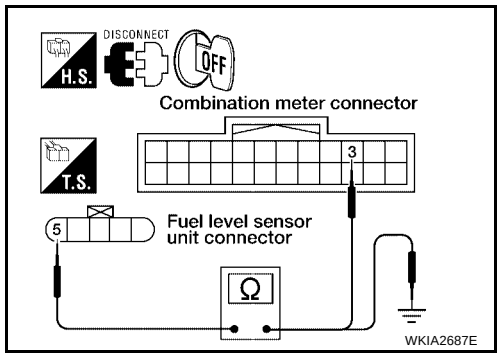
5. CHECK FUEL LEVEL SENSOR CIRCUIT

1. Check continuity between combination meter harness connector M24 terminal 3 (B) and fuel level sensor unit and fuel pump harness connector B252 terminal 5 (B).

Continuity should exist.

2. Check continuity between fuel level sensor unit and fuel pump harness connector B252 terminal 5 (B) and ground.

Continuity should not exist.



OK or NG

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

6. 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 >> GO TO 7.
NG >> Install the fuel level sensor unit properly.

7. CHECK FUEL LEVEL SENSOR UNIT

Check the fuel level sensor unit. Refer to DI-21, "FUEL LEVEL SENSOR UNIT CHECK" .

OK or NG

OK >> Replace the combination meter. Refer to IP-12, "Combination Meter" .
NG >> Replace the fuel level sensor unit. Refer to FL-4, "Removal and Installation" .

Fuel Gauge Fluctuates, Indicates Wrong Value, or Varies

EKS005PV

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 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

EKS005PW

1. CHECK POINTER MOVEMENT TO FULL-POSITION

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. CHECK IGNITION SWITCH POSITION

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. OBSERVE VEHICLE POSITION

Is the vehicle parked on an incline?

YES or NO

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

4. CHECK POINTER MOVEMENT TO EMPTY-POSITION

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

YES or NO

YES >> Check the fuel level sensor unit. Refer to DI-21, "FUEL LEVEL SENSOR UNIT CHECK" .
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 Components Inspection

EKS005PX

FUEL LEVEL SENSOR UNIT CHECK

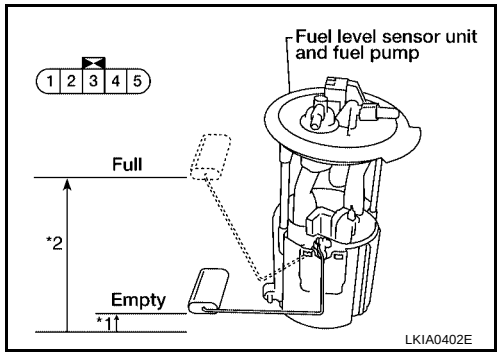
For removal, refer to FL-4, "Removal and Installation" .

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.



Removal and Installation of Combination Meter

EKS005PY

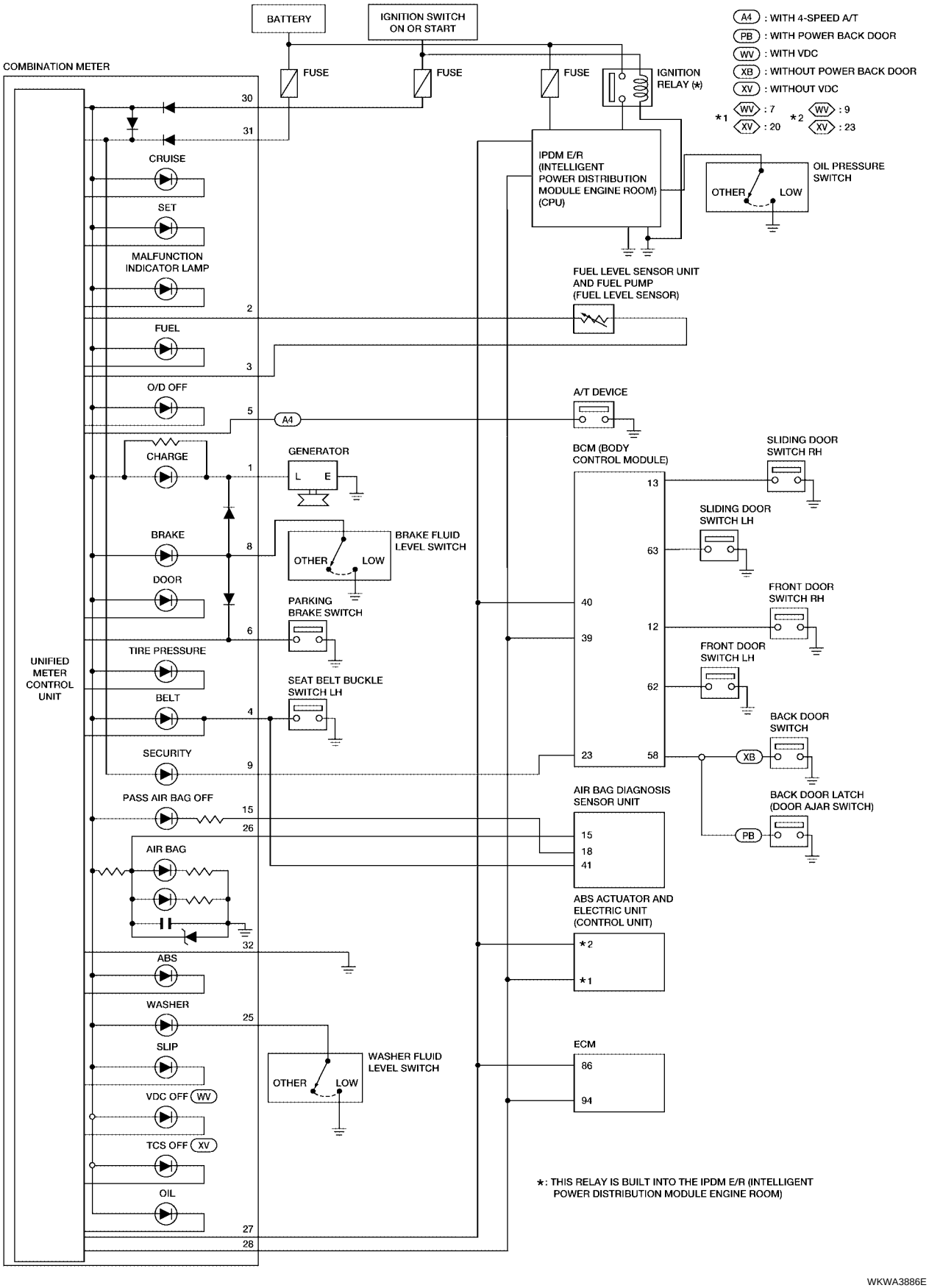
Refer to IP-12, "Combination Meter" for removal and installation procedures.

WARNING LAMPS

PFP:24814

Schematic

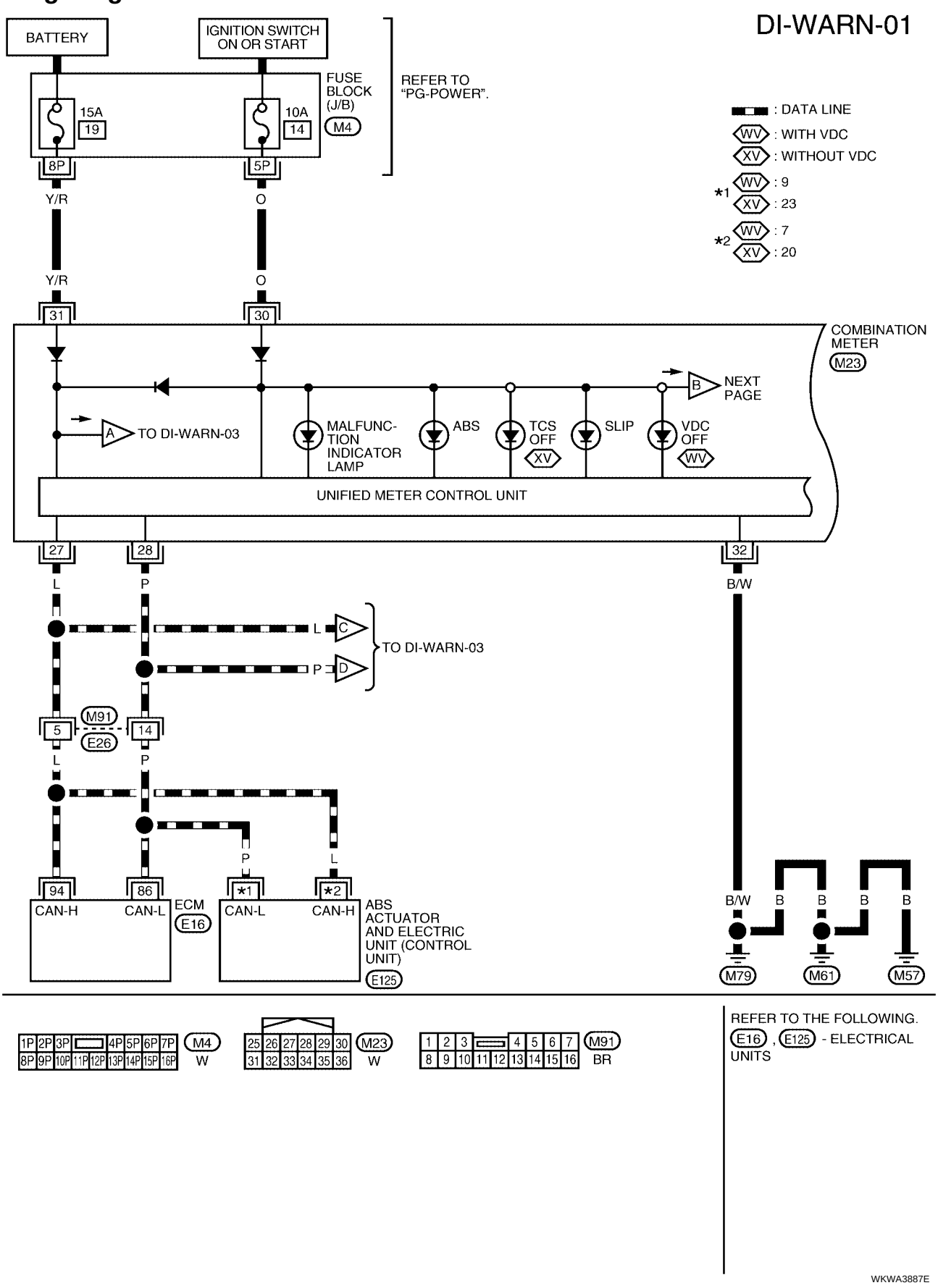
EKS005Q8



WKWA3886E

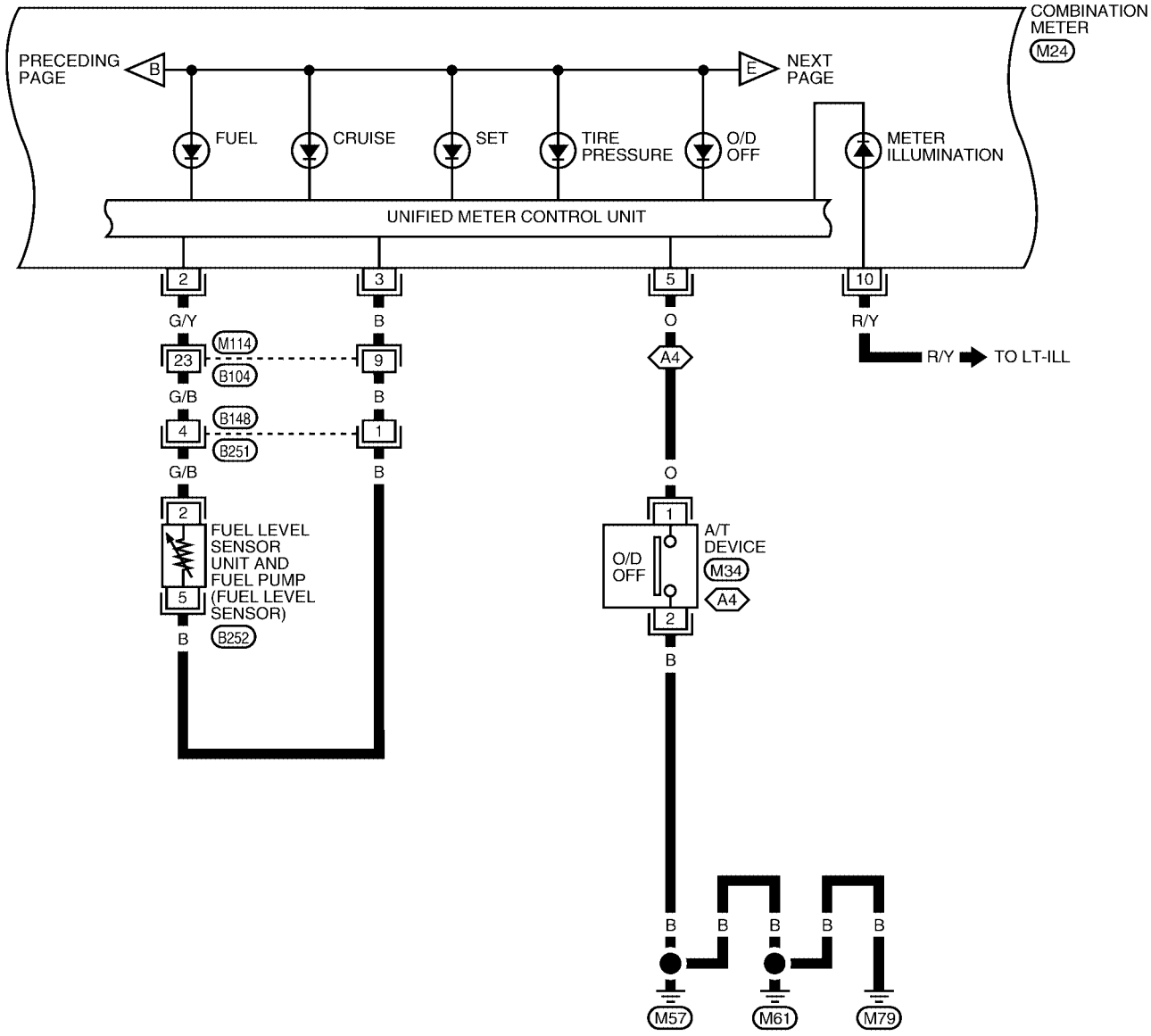
Wiring Diagram — WARN —

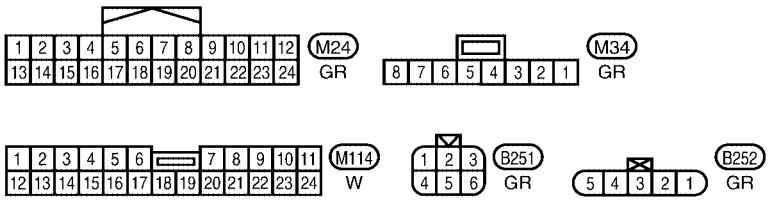
EKS005Q9



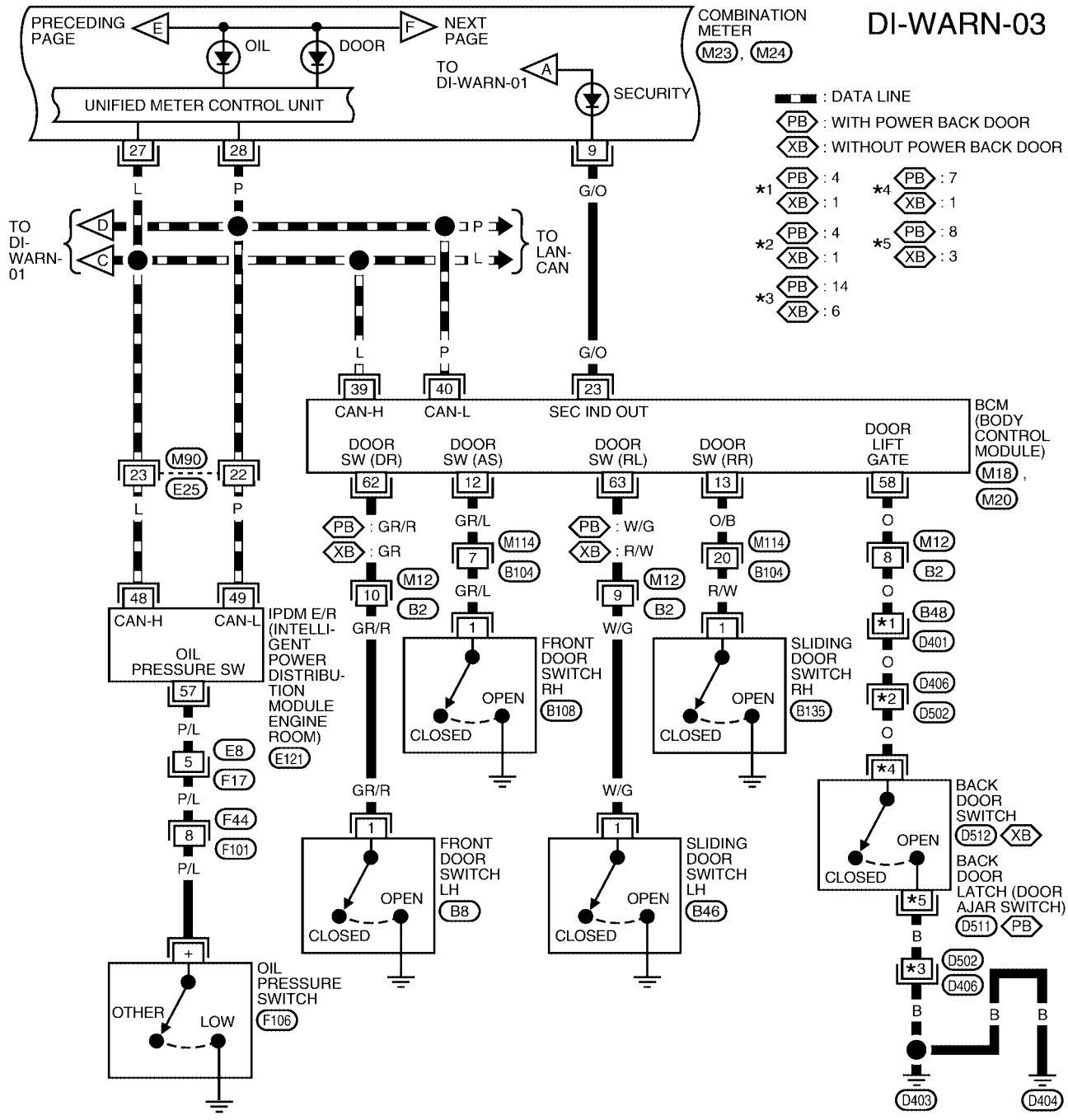
DI-WARN-02

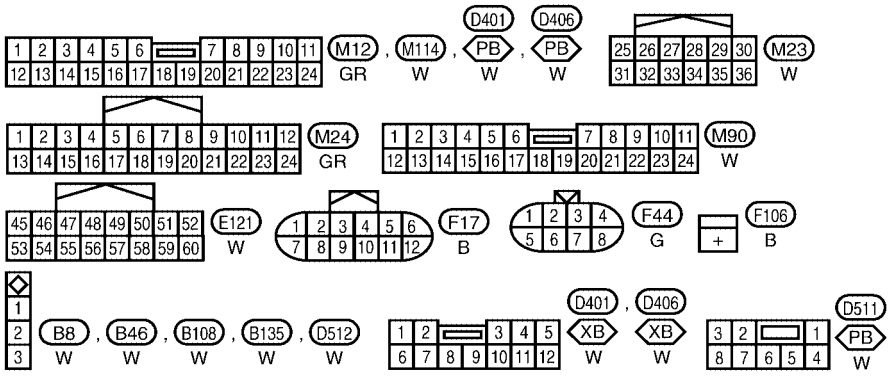
A4 : WITH 4-SPEED A/T





WKWA3888E



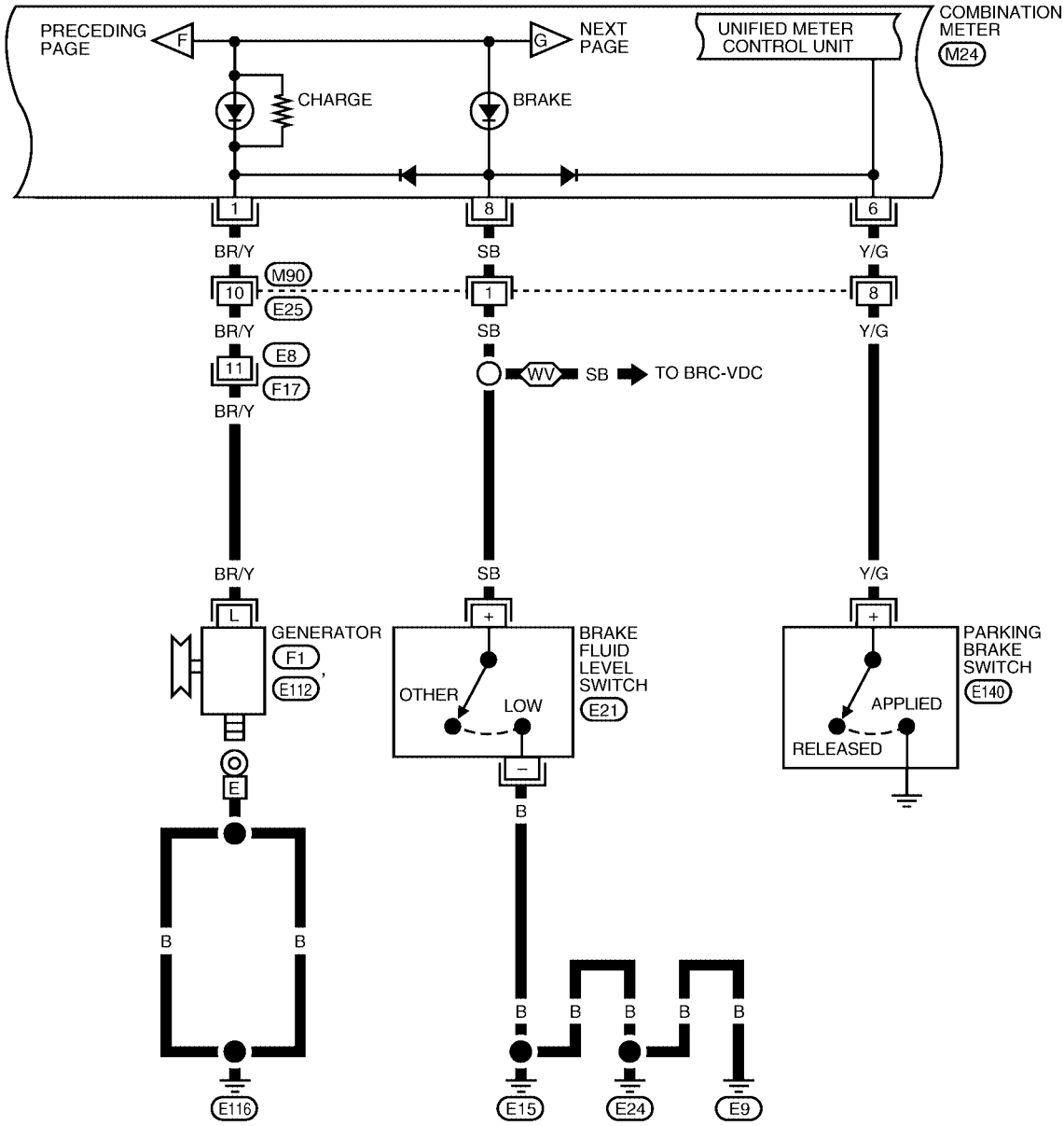


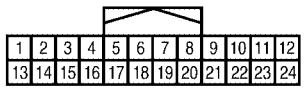
REFER TO THE FOLLOWING.
M18, M20 - ELECTRICAL UNITS

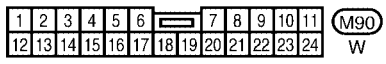
WKWA3889E

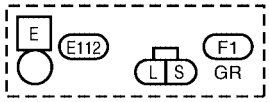
DI-WARN-04

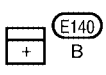
WV : WITH VDC

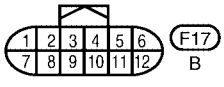






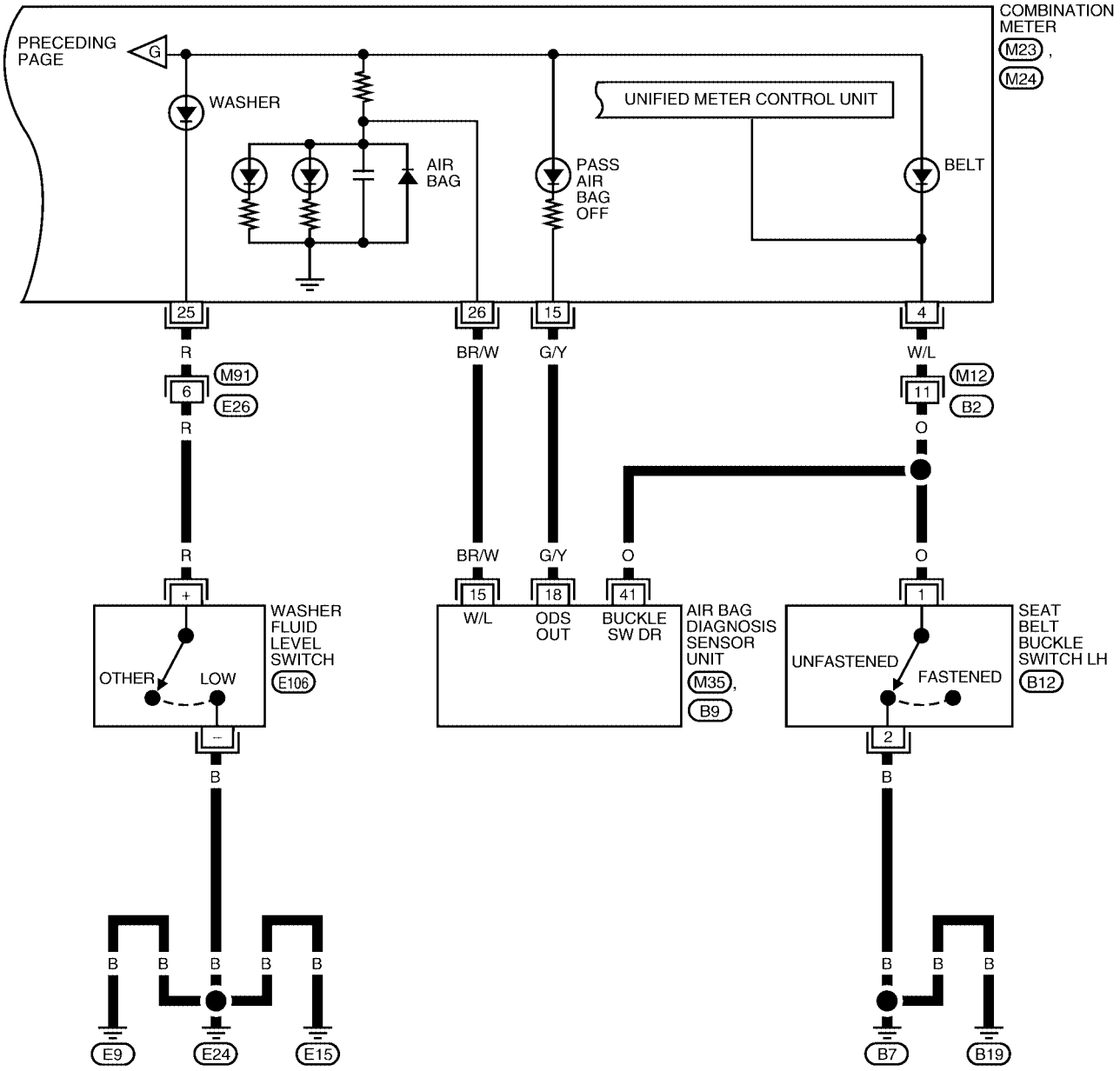


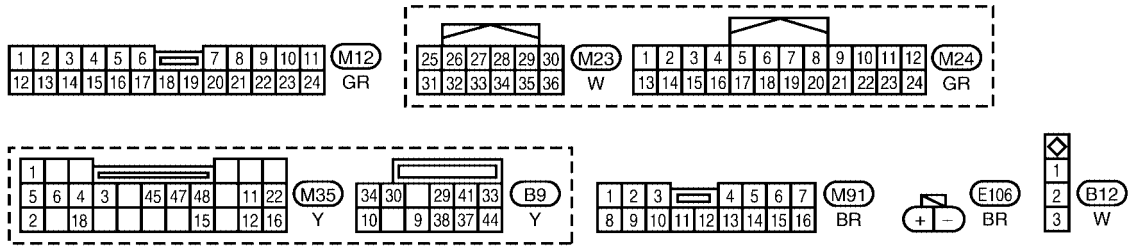




WKWA3890E

DI-WARN-05





WKWA3891E

Oil Pressure Warning Lamp Stays Off (Ignition Switch ON)

EKS005QA

1. CHECK IPDM E/R OUTPUT SIGNAL

Activate IPDM E/R auto active test. Refer to PG-22, "Auto Active Test" .

Is oil pressure warning lamp blinking?

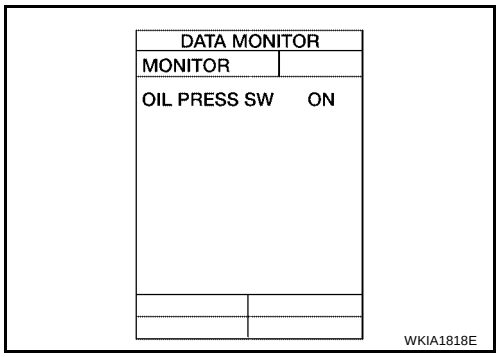
YES >> GO TO 4.
NO >> GO TO 2.

2. CHECK BCM INPUT SIGNAL

Select “DATA MONITOR” of “SIGNAL BUFFER”. Refer to BCS-11, "CONSULT-II Function (BCM)" . Operate ignition switch with “OIL PRESS SW” of data monitor and check operation status.

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

When engine running : OIL PRESS SW OFF



OK or NG

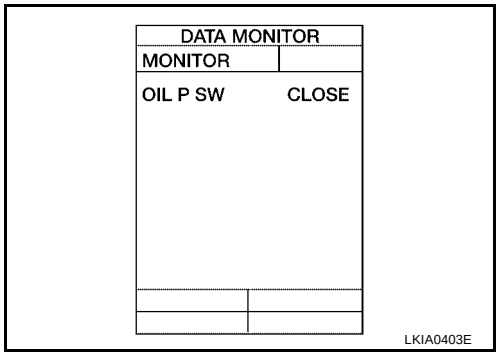
OK >> Replace the combination meter. Refer to IP-12, "Combination Meter" .
NG >> GO TO 3.

3. CHECK IPDM E/R INPUT SIGNAL

Select “DATA MONITOR” of “IPDM E/R”. Refer to BCS-11, "CONSULT-II Function (BCM)" . Operate ignition switch with “OIL P SW” of data monitor and check operation status.

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

When engine running : OIL P SW OPEN



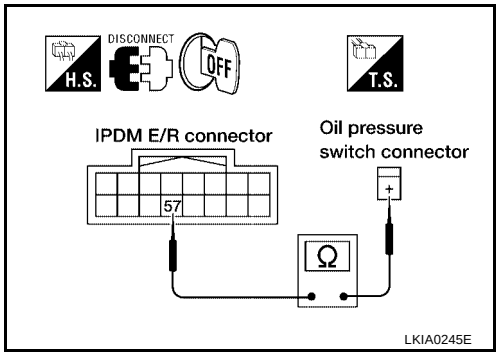
OK or NG

OK >> Replace the BCM. Refer to BCS-19, "Removal and Installation of BCM" .
NG >> Replace the IPDM E/R. Refer to PG-29, "Removal and Installation of IPDM E/R" .

4. 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 terminal 57 (P/L) and oil pressure switch harness connector F106 terminal + (P/L).

Continuity should exist.



OK or NG

OK >> GO TO 5.
NG >> Repair harness or connector.

5. CHECK OIL PRESSURE SWITCH

Check oil pressure switch. Refer to DI-29, "OIL PRESSURE SWITCH" .

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)

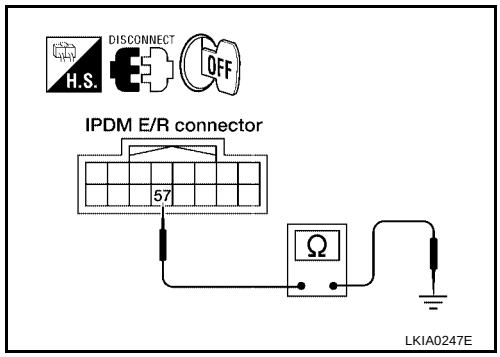
EKS005QB

NOTE:
For oil pressure inspection, refer to LU-7, "ENGINE OIL PRESSURE CHECK" .

1. 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 terminal 57 (P/L) and ground.

Continuity should not exist.



OK or NG

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

2. CHECK OIL PRESSURE SWITCH

Check oil pressure switch. Refer to DI-29, "OIL PRESSURE SWITCH" .

OK or NG

OK >> Replace IPDM E/R. Refer to PG-29, "Removal and Installation of IPDM E/R" .
NG >> Replace oil pressure switch.

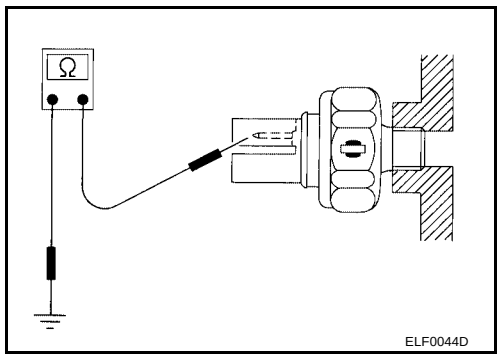
Component Inspection

EKS005QC

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



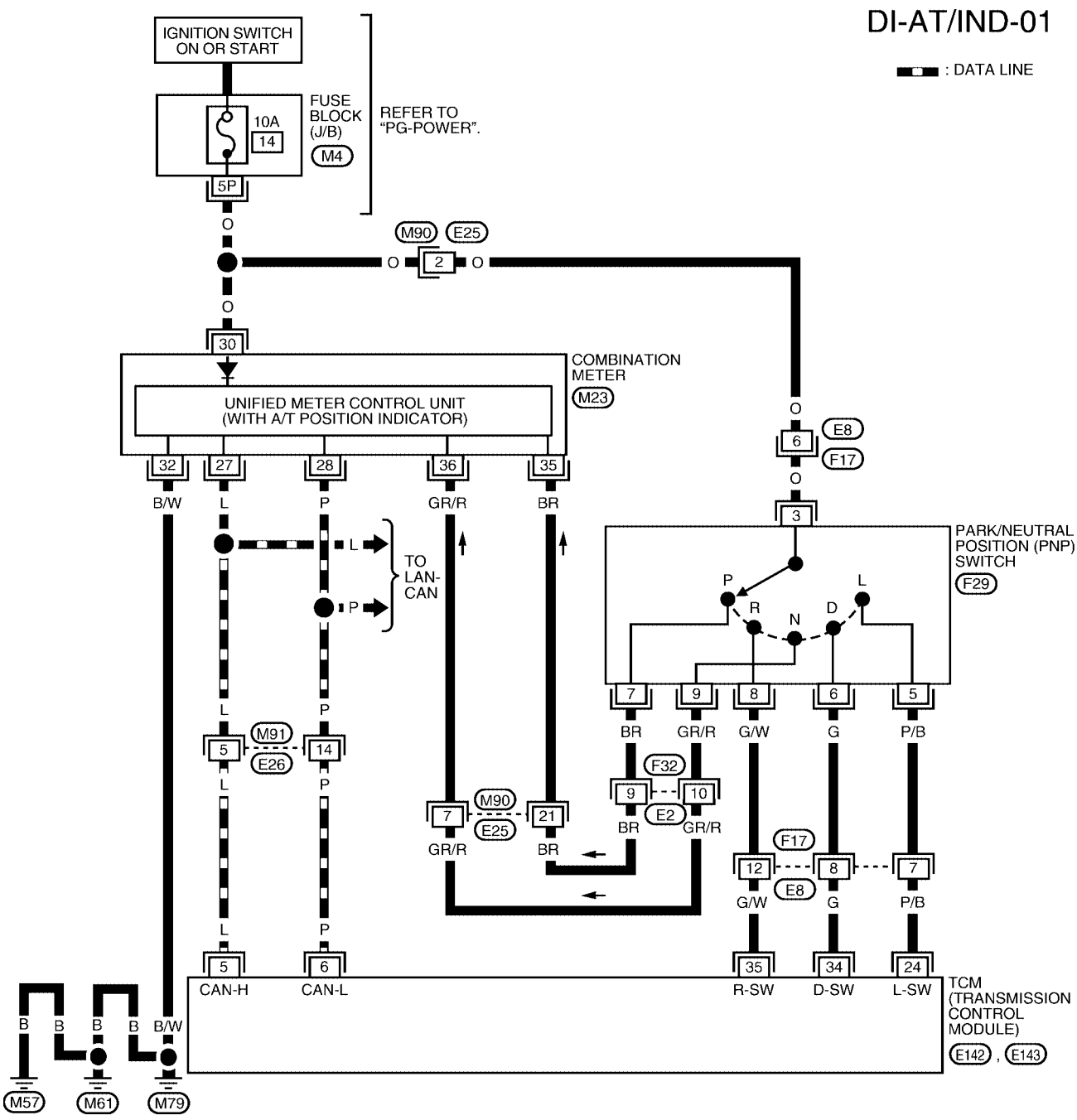
A/T INDICATOR

PFP:24814

Wiring Diagram — AT/IND —

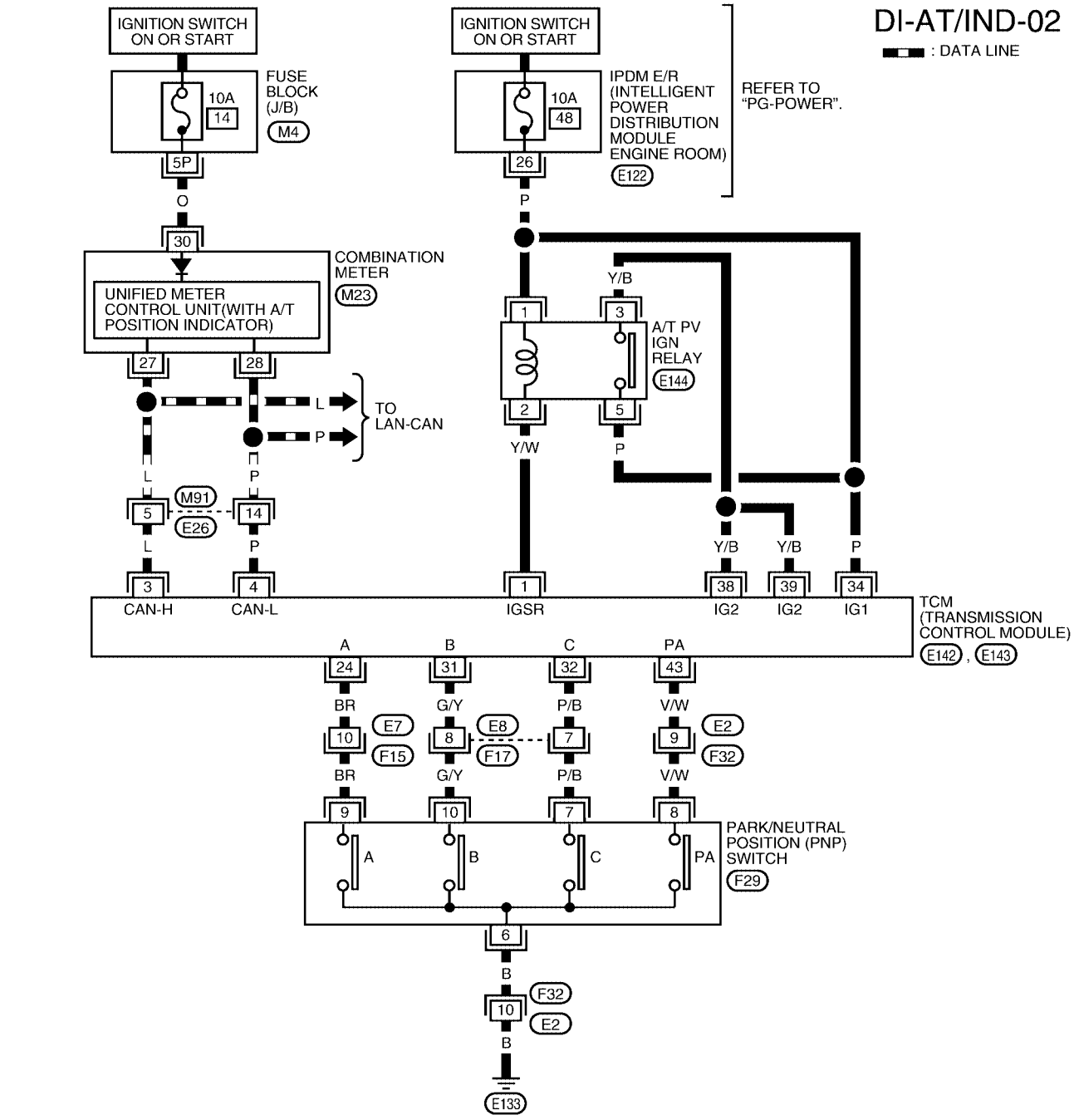
EKS005QD

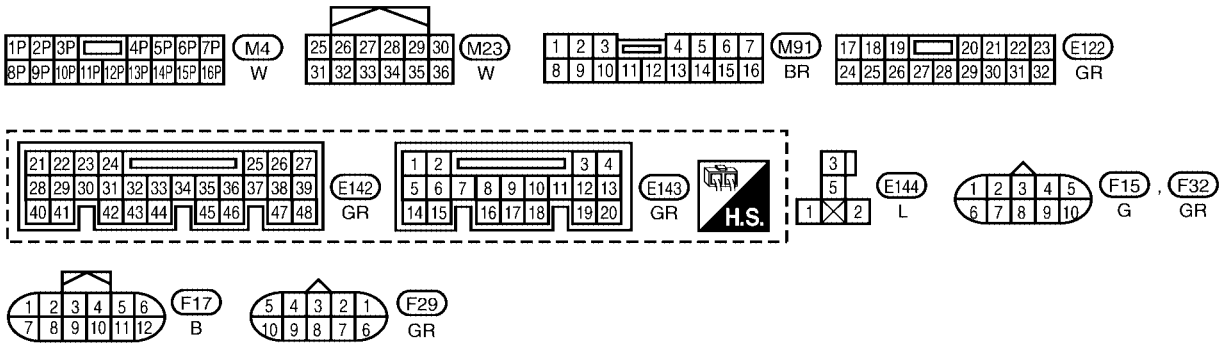
4 SPEED A/T



WKWA3892E

5 SPEED A/T





WKWA3893E

Trouble Diagnosis

EKS005QE

A/T Indicator Does Not Illuminate

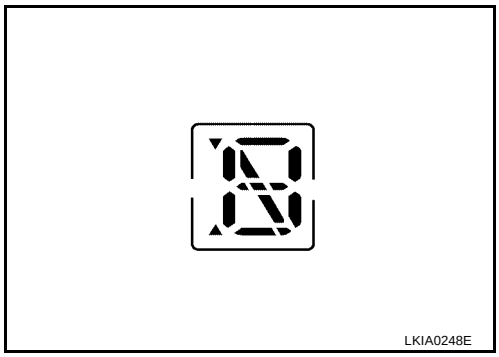
EKS005QF

1. CHECK SELF-DIAGNOSIS OF COMBINATION METER

Perform combination meter self-diagnosis. Refer to DI-13, "SELF-DIAGNOSIS FUNCTION" .

OK or NG

OK >> GO TO 2.
NG >> Replace combination meter. Refer to IP-12, "Combination Meter" .



2. CHECK TCM

Perform self-diagnosis of TCM. For 4 A/T models, refer to AT-43, "SELF-DIAGNOSTIC RESULT TEST MODE" . For 5 A/T models, refer to AT-442, "SELF-DIAG RESULT MODE" .

OK or NG

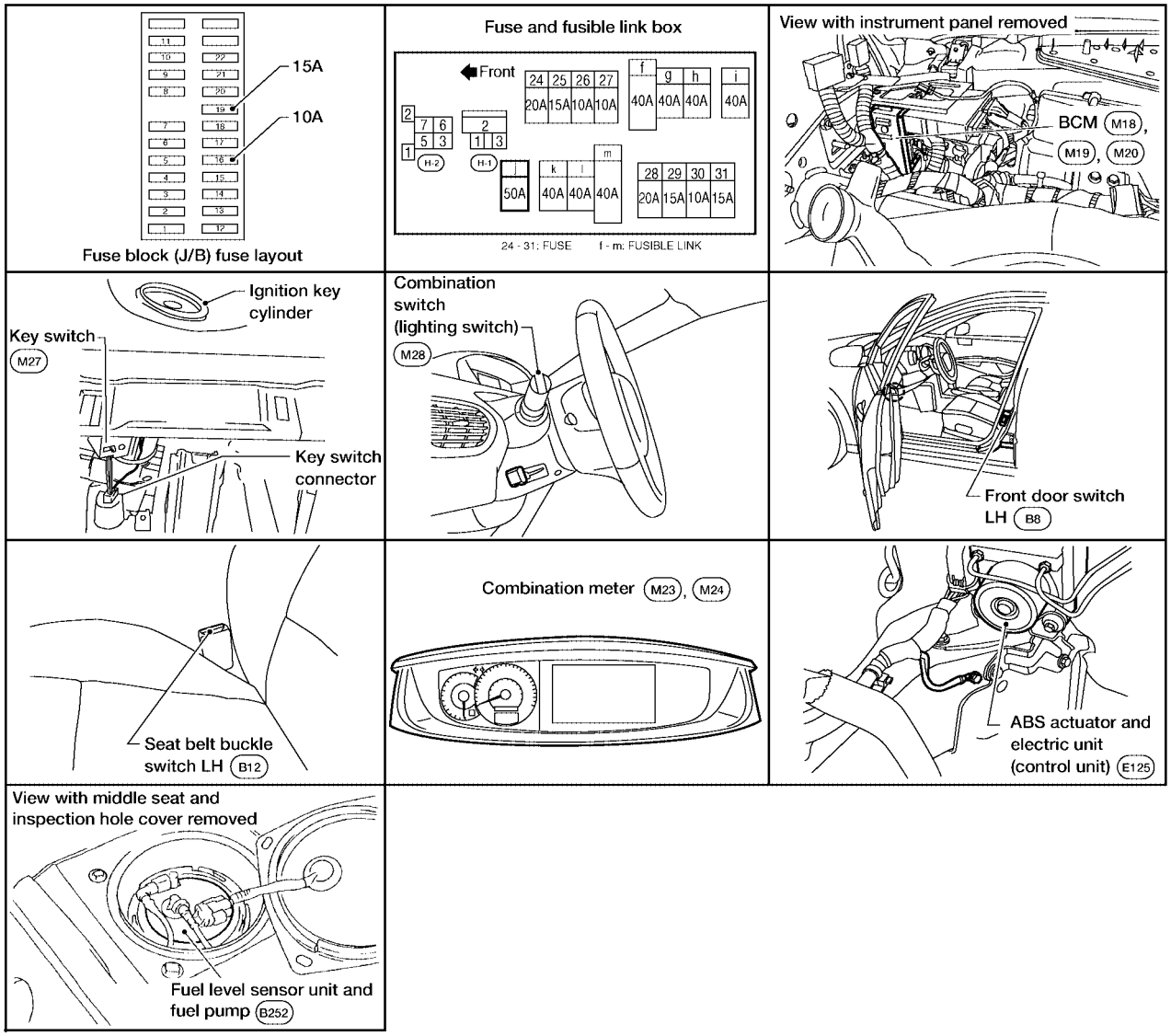
OK >> Replace combination meter. Refer to IP-12, "Combination Meter" .
NG >> Check the applicable parts.

WARNING CHIME

PFP:24814

Component Parts and Harness Connector Location

EKS005QG



WKIA3204E

System Description

EKS005QH

FUNCTION

Power is supplied at all times

- through 50A fuse (letter **j** , located in the fuse and fusible link box)
- to BCM terminal 55, and
- through 15A fuse [No. 19, located in the fuse block (J/B)]
- to key switch terminal 1.

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

- through 10A fuse [No. 14, located in the fuse block (J/B)]
- to combination meter terminal 30
- through 10A fuse [No. 16, located in the fuse block (J/B)]
- to BCM terminal 38.

Ground is supplied

- to combination meter terminal 32 and
- to BCM terminal 52
- through body grounds M57, M61, and M79.

NOTE:
When ignition key warning chime, light warning chime, and seat belt warning chime are required at the same time, the priorities for each chime are the following.

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

IGNITION KEY WARNING CHIME

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 terminal 2
- to BCM terminal 37.

Ground is supplied

- to BCM terminal 62
- through front door switch LH terminal 1.

Front door switch LH is case grounded.
BCM detects key inserted into the ignition switch, and sends key warning signal to combination meter via CAN communication lines. When combination meter receives key warning signal, it sounds warning chime.

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, "COMBINATION SWITCH READING FUNCTION" .

Ground is supplied

- to BCM terminal 62
- through front door switch LH terminal 1.

Front door switch LH is case grounded.
BCM detects headlamps are illuminated, and sends light warning signal to combination meter via CAN communication lines. 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 4
- 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 BCM via CAN communication line.
BCM receives seat belt buckle switch LH unfastened signal from combination meter via CAN communication line, and sends seat belt warning signal to combination meter via CAN communication line. 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.

LOW FUEL WARNING CHIME

When the low fuel warning lamp initially comes on, a warning chime will sound. If the warning lamp turns off while driving and then turns on again, the chime will not sound a second time. The chime will only sound once during an ignition cycle.
A variable resistor signal is supplied

- to combination meter terminal 3
- through fuel level sensor unit and fuel pump terminal 5
- through fuel level sensor unit and fuel pump terminal 2
- from combination meter terminal 2.

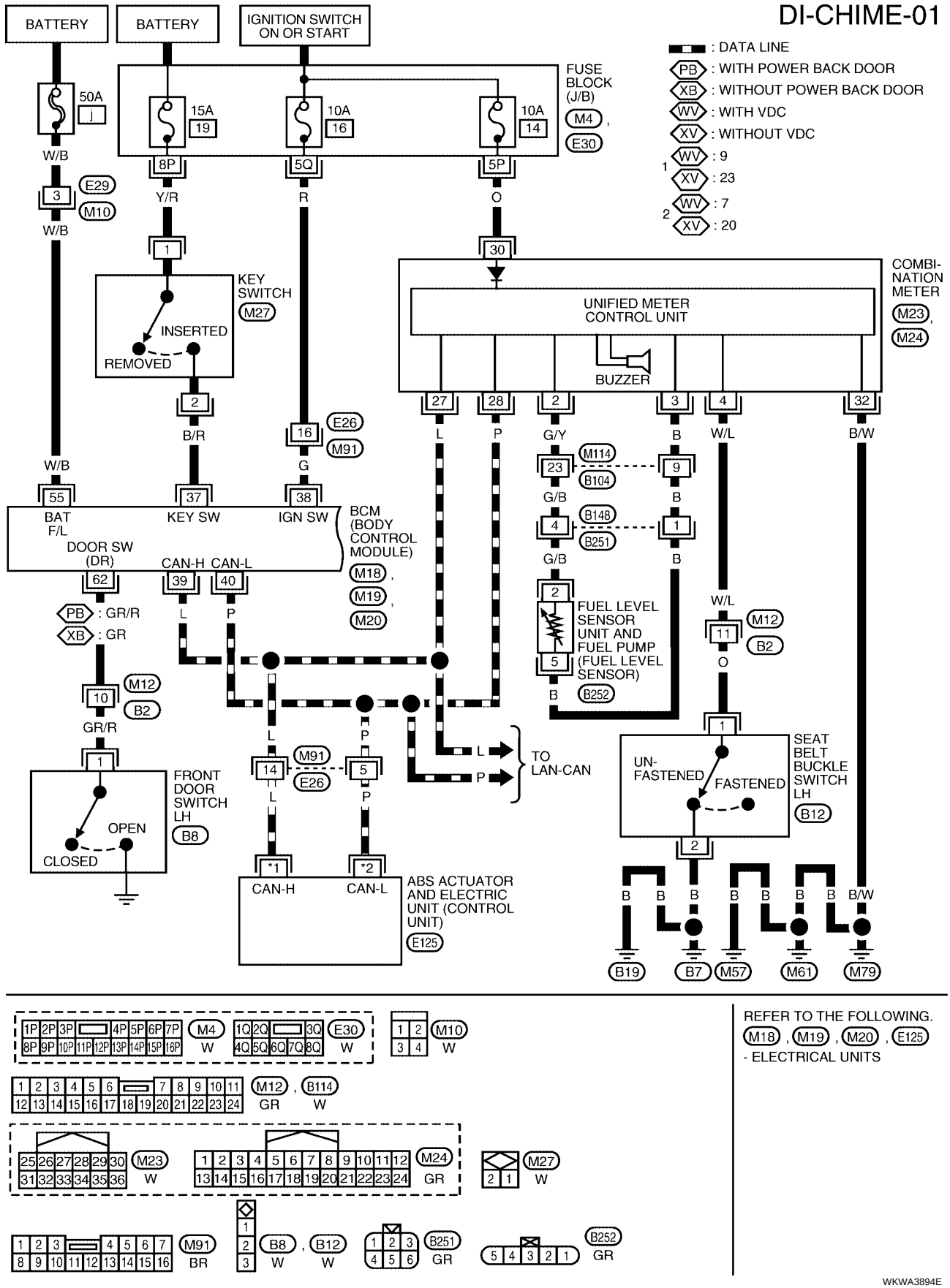
CAN Communication System Description

EKS005QI

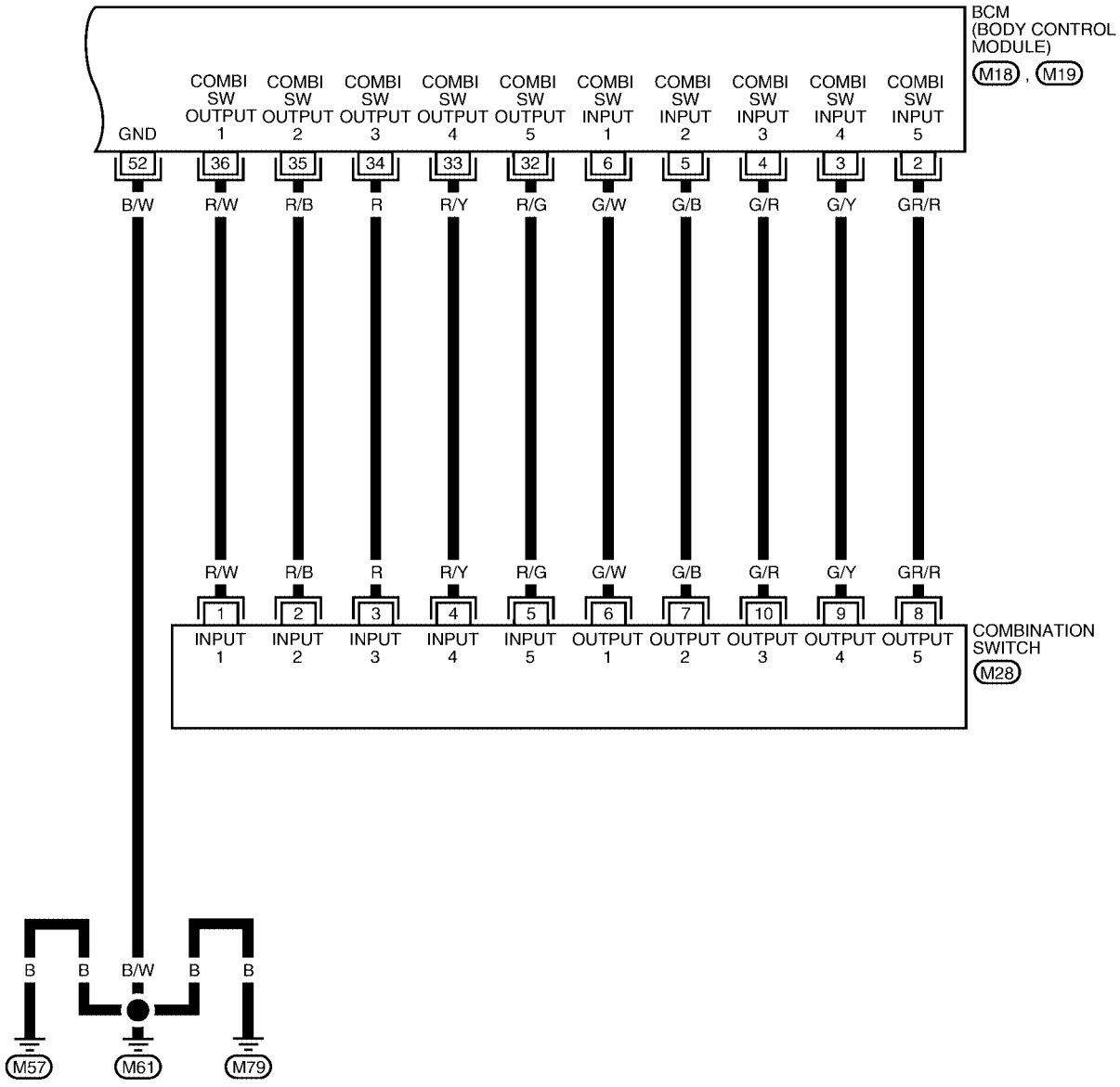
Refer to LAN-5, "CAN COMMUNICATION" .

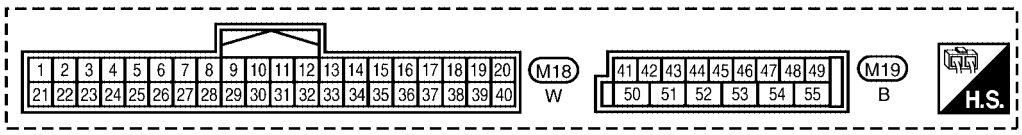
Wiring Diagram — CHIME —

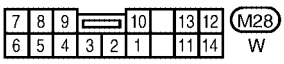
EKS005QJ



DI-CHIME-02



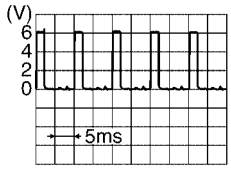
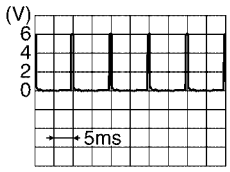
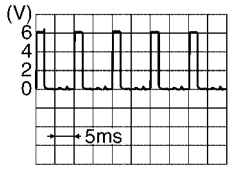
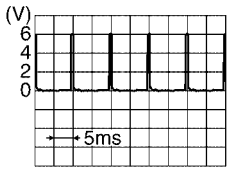
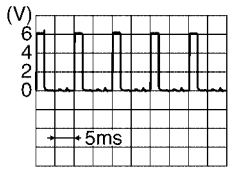
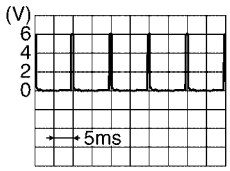
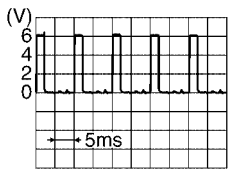


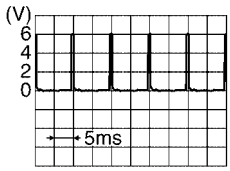


WKWA3895E

Terminals and Reference Value for BCM

EKS005QK

Terminal No.	Wire color	Item	Condition		Reference value (V) (Approx.)
			Ignition switch	Measurement method	
2	GR/R	Combination switch input 5	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5291E
3	G/Y	Combination switch input 4	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5292E
4	G/R	Combination switch input 3	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5291E
5	G/B	Combination switch input 2	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5292E
6	G/W	Combination switch input 1			
32	R/G	Combination switch output 5	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5291E
33	R/Y	Combination switch output 4	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5292E
34	R	Combination switch output 3	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5291E

Terminal No.	Wire color	Item	Condition		Reference value (V) (Approx.)
			Ignition switch	Measurement method	
35	R/B	Combination switch output 2	ON	● Light switch and wiper switch OFF ● Wiper dial position 4	 SKIA5292E
36	R/W	Combination switch output 1			
37	B/R	Key switch signal	OFF	Key is removed	0
				Key is inserted	Battery voltage
38	G	Ignition switch ON or START	ON	—	Battery voltage
39	L	CAN-H	OFF	—	—
40	P	CAN-L	OFF	—	—
52	B/W	Ground	OFF	—	0
55	W/B	Battery power supply	OFF	—	Battery voltage
62	GR/R *1 GR *2	Front door switch LH signal	OFF	ON (open)	0
				OFF (closed)	5

*1: With power back door
*2: Without power back door

Terminals and Reference Value for Combination Meter

EKS005QM

Terminal No.	Wire color	Item	Condition		Reference value (V) (Approx.)
			Ignition switch	Measurement method	
4	W/L	Seat belt buckle switch LH	ON	Unfastened (ON)	0
				Fastened (OFF)	Battery voltage
27	L	CAN-H	OFF	—	—
28	P	CAN-L	OFF	—	—

How to Proceed With Trouble Diagnosis

EKS005QN

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to DI-34, "System Description" .
3. Perform the preliminary check. Refer to DI-40, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the warning chime operate properly? If so, go to 6. If not, go to 3.
6. Inspection End.

Preliminary Check

EKS005QO

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSES

Check for blown BCM fuses.

Unit	Power source	Fuse No.
BCM	Battery	j
	Ignition switch ON or START	16

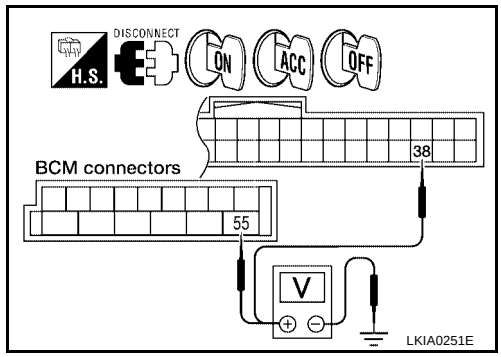
Refer to DI-36, "Wiring Diagram — CHIME —" .

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-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect BCM connectors M18 and M19.
2. Check voltage between BCM harness connector terminals and ground.



Terminals			Ignition switch position		
(+)		(–)	OFF	ACC	ON
Connector	Terminal (Wire color)				
M19	55 (W/B)	Ground	Battery voltage	Battery voltage	Battery voltage
M18	38 (G)		0V	0V	Battery voltage

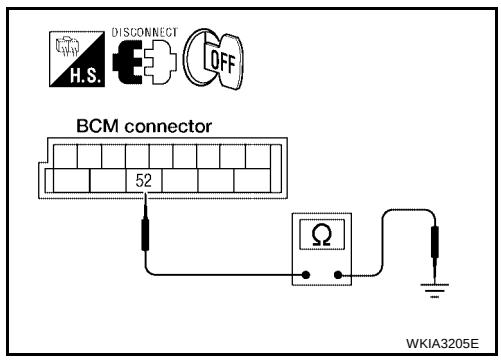
OK or NG

OK >> GO TO 3.
NG >> Check harness for open between BCM and fuse.

3. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between BCM harness connector M19 terminal 52 (B/W) and ground.

Continuity should exist.



OK or NG

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

CONSULT-II Function (BCM)

EKS005QP

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

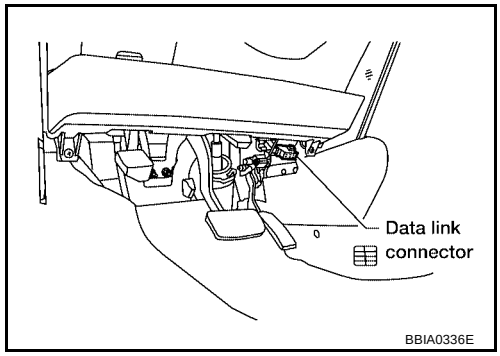
BCM diagnostic test item	Diagnostic mode	Description
Inspection by part	WORK SUPPORT	Supports inspections and adjustments. Commands are transmitted to the BCM for setting the status suitable for required operation, input/output signals are received from the BCM and received data is displayed.
	DATA MONITOR	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.

CONSULT-II BASIC OPERATION PROCEDURE

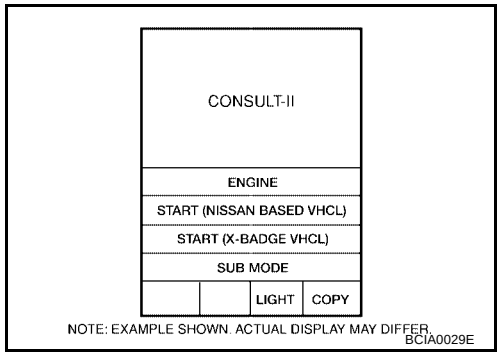
CAUTION:

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carries out CAN communication.

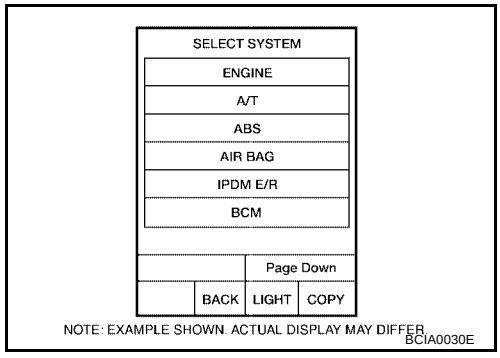
1. With the ignition switch OFF, connect CONSULT-II and CONSULT-II CONVERTER to the data link connector, and turn ignition switch ON.



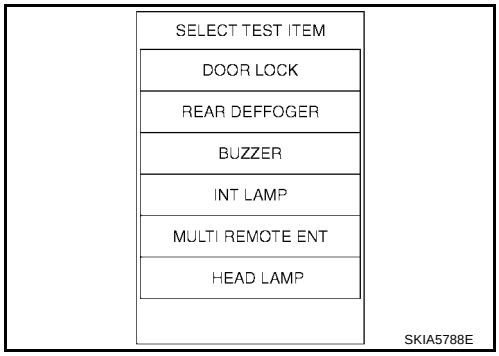
2. Touch “START (NISSAN BASED VHCL)”.



3. Touch “BCM” on “SELECT SYSTEM” screen. If “BCM” is not indicated, go to BCS-11, "CONSULT–II INSPECTION PROCEDURE" .



4. Touch “BUZZER” or “BCM”.
5. Select “DATA MONITOR” or “SELF-DIAG RESULTS”.



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

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 (driver side).
LIGHT SW 1ST	Indicates [ON/OFF] condition of lighting switch.
BUCKLE SW	Indicates [ON/OFF] condition of seat belt buckle switch LH.

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-II 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-II 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-II 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-II 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-5, "CAN COMMUNICATION" .

All Warning Chimes Do Not Operate

EKS005QQ

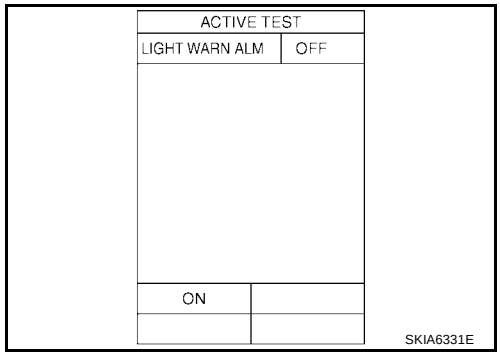
1. CHECK BCM CHIME OPERATION

Select "BUZZER" on CONSULT-II, 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-19, "Removal and Installation of BCM" .

NO >> Replace the combination meter. Refer to DI-21, "Removal and Installation of Combination Meter" .



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

EKS005QR

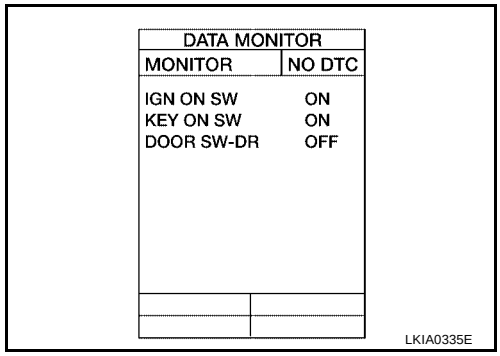
1. CHECK BCM INPUT SIGNAL

With CONSULT-II

1. Select "BCM" on CONSULT-II.
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-II

Check voltage between BCM harness connector M20 terminal 62 [GR/R (with power back door) or G/R (without power back door)] and ground.

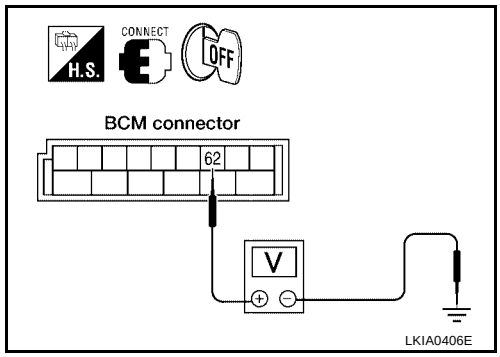
When front door LH is opened : Approx. 0V

When front door LH is closed : Approx. 5V

OK or NG

OK >> Replace the BCM. Refer to BCS-19, "Removal and Installation of BCM" .

NG >> GO TO 2.



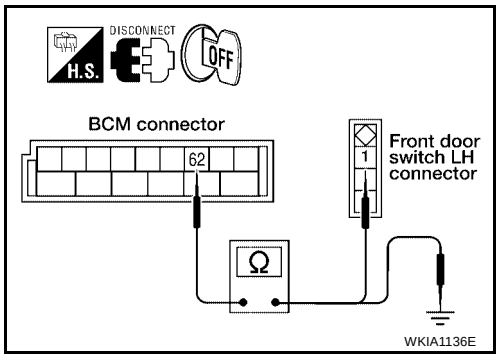
2. CHECK FRONT DOOR SWITCH LH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector M20 and front door switch LH connector B8.
3. Check continuity between BCM harness connector M20 terminal 62 [GR/R (with power back door) or GR (without power back door)] and front door switch LH harness connector B8 terminal 1 (GR/R).

   Continuity should exist.

4. Check continuity between BCM harness connector M20 terminal 62 [GR/R (with power back door) or GR (without power back door)].

   Continuity should not exist.



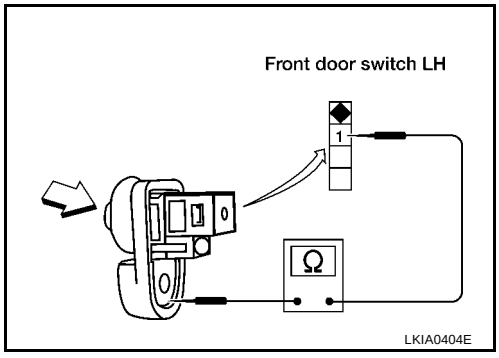
OK or NG

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

3. CHECK FRONT DOOR SWITCH LH

Check continuity between front door switch LH terminal 1 and exposed metal of switch while pushing and releasing switch.

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



OK or NG

OK >> Replace the BCM. Refer to BCS-19, "Removal and Installation of BCM" .
NG >> Replace the front door switch LH.

Key Warning Chime Does Not Operate

EKS005QS

1. CHECK FUSE

Check if the key switch fuse [fuse 19, located in the fuse block (J/B)] is blown. Refer to DI-36, "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-43, "All Warning Chimes Do Not Operate" or DI-43, "Key Warning Chime and Light Warning Chime Do Not Operate (Seat Belt Warning Chime Does Operate)" .

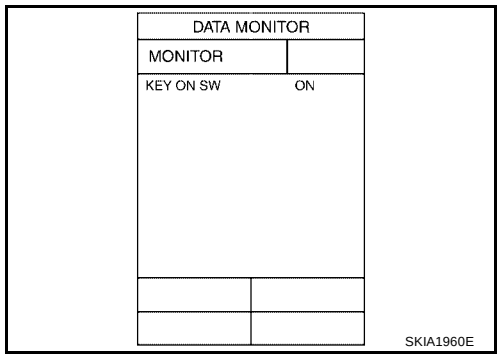
3. CHECK BCM INPUT SIGNAL

With CONSULT-II

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

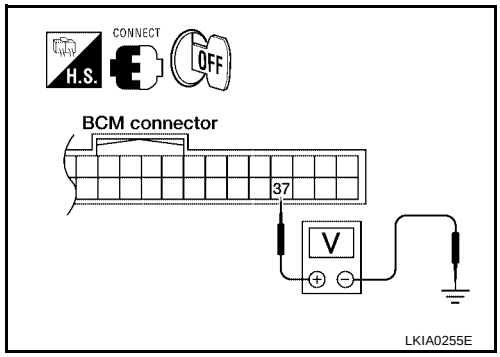
When key is removed from ignition key cylinder : KEY ON SW OFF



Without CONSULT-II

Check voltage between BCM harness connector M18 terminal 37 (B/R) and ground.

Terminals			Condition	Voltage (V)
(+)		(–)		
Connector	Terminal (Wire color)			
M18	37 (B/R)	Ground	Key is inserted	Battery voltage
			Key is removed	0



OK or NG

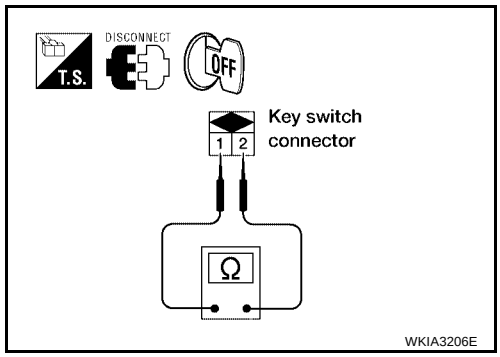
OK >> Replace the BCM. Refer to BCS-19, "Removal and Installation of BCM" .

NG >> GO TO 4.

4. CHECK KEY SWITCH

1. Disconnect key switch connector.
2. Check continuity between key switch connector M27 terminals 1 and 2.

Terminals		Condition	Continuity
1	2	Key is inserted	Yes
		Key is removed	No



OK or NG

OK >> GO TO 5.

NG >> Replace the key switch.

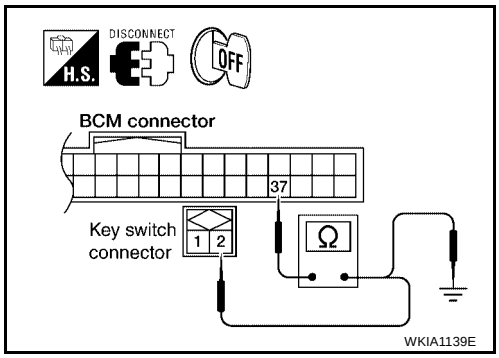
5. CHECK KEY SWITCH CIRCUIT

1. Disconnect BCM connector M18.
2. Check continuity between BCM harness connector M18 terminal 37 (B/R) and key switch harness connector M27 terminal 2 (B/R).

Continuity should exist.

3. Check continuity between BCM harness connector M18 terminal 37 (B/R) and ground.

Continuity should not exist.



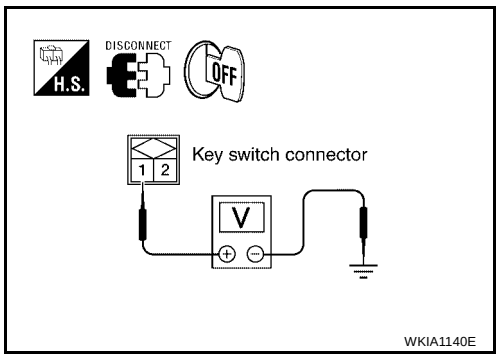
OK or NG

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

6. CHECK KEY SWITCH POWER SUPPLY CIRCUIT

Check voltage between key switch harness connector M27 terminal 1 (Y/R) and ground.

Battery voltage should exist.



OK or NG

OK >> Replace the BCM. Refer to BCS-19, "Removal and Installation of BCM" .
NG >> Check harness for open between key switch and fuse.

Light Warning Chime Does Not Operate

EKS005QT

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?

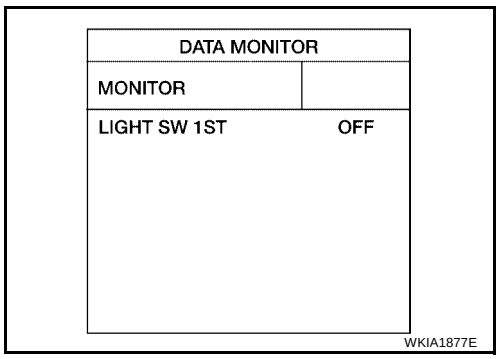
YES >> GO TO 2.
NO >> Go to DI-43, "All Warning Chimes Do Not Operate" .

2. CHECK BCM INPUT SIGNAL

With CONSULT-II

1. Select "BCM".
2. 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



Without CONSULT-II

Check combination switch. Refer to LT-102, "Combination Switch Reading Function" .

OK or NG

OK >> Replace the BCM. Refer to BCS-19, "Removal and Installation of BCM" .
NG >> Check lighting switch. Refer to LT-102, "Combination Switch Reading Function" .

Seat Belt Warning Chime Does Not Operate

EKS005QU

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-43, "All Warning Chimes Do Not Operate" .

2. CHECK SEAT BELT WARNING LAMP OPERATION

Turn ignition switch ON. Buckle and unbuckle driver seat belt while watching seat belt warning lamp.

When seat belt is fastened : Warning lamp OFF
When seat belt is unfastened : Warning lamp ON

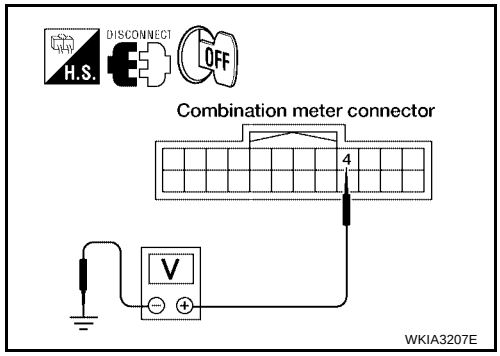
OK or NG

OK >> Replace the BCM. Refer to BCS-19, "Removal and Installation of 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 4 (W/L) and ground.

Terminals			Condition	Voltage (V) (Approx.)
(+)		(–)		
Connector	Terminal			
M24	4 (W/L)	Ground	Seat belt is fastened	Battery voltage
			Seat belt is unfastened	0



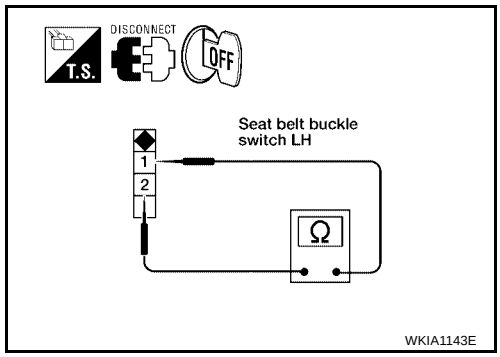
OK or NG

OK >> Replace the combination meter. Refer to IP-12, "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 harness connector B12 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.

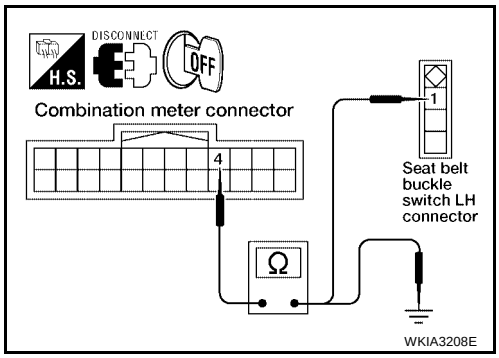
5. CHECK SEAT BELT BUCKLE SWITCH CIRCUIT

1. Disconnect combination meter connector M24.
2. Check continuity between combination meter harness connector M24 terminal 4 (W/L) and seat belt buckle switch LH harness connector B12 terminal 1 (O).

Continuity should exist.

3. Check continuity between combination meter harness connector M24 terminal 4 (W/L) and ground.

Continuity should not exist.



OK or NG

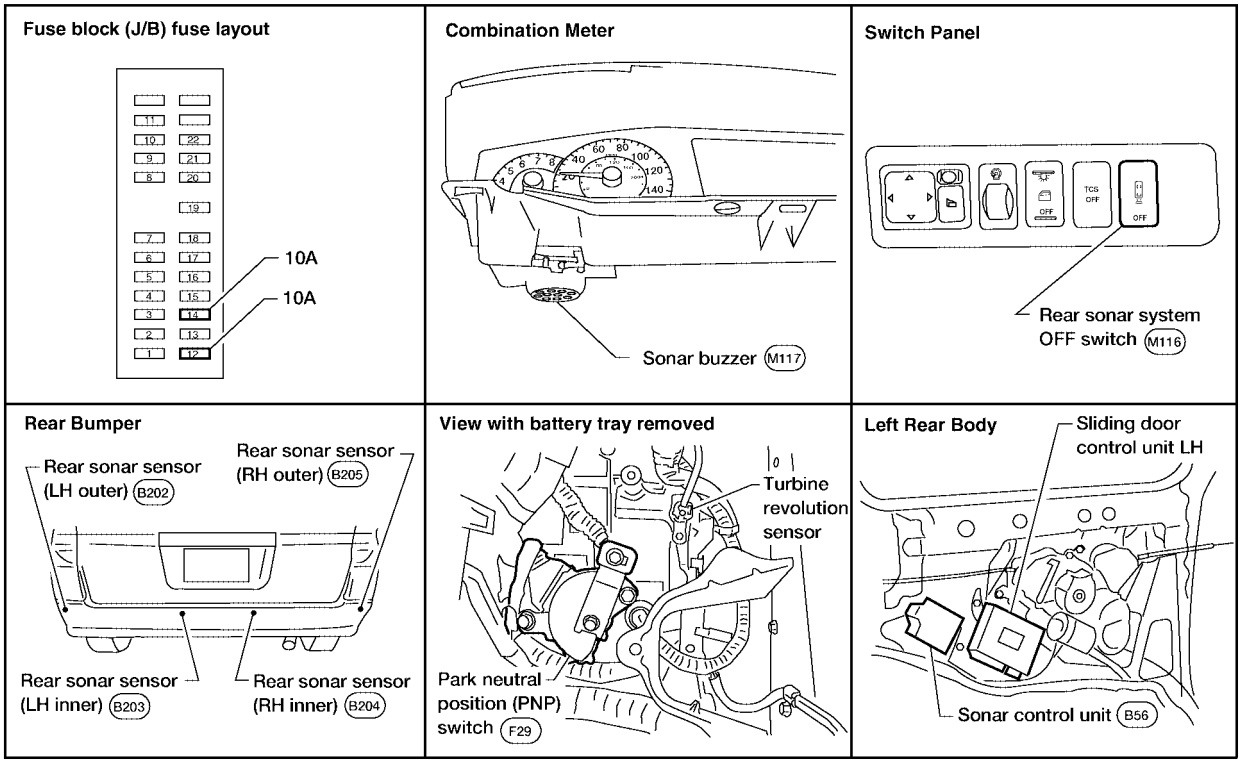
OK >> Check seat belt buckle switch ground circuit.
NG >> Repair harness or connector.

REAR SONAR SYSTEM

PFP:28532

Component Parts and Harness Connector Location

EKS006HL



WKIA3209E

System Description

EKS006HM

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 park/neutral position (PNP) switch terminal 3 (4-speed A/T) or 2 (5-speed A/T).

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 park/neutral position (PNP) switch terminal 8 (4-speed A/T) or 4 (5-speed A/T).

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, selector lever in R position, the sonar system can be disabled and the sonar buzzer silenced by momentarily pressing the rear sonar system 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 10.0 cm (3.9 in.) tall closer than 1.8 meters (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

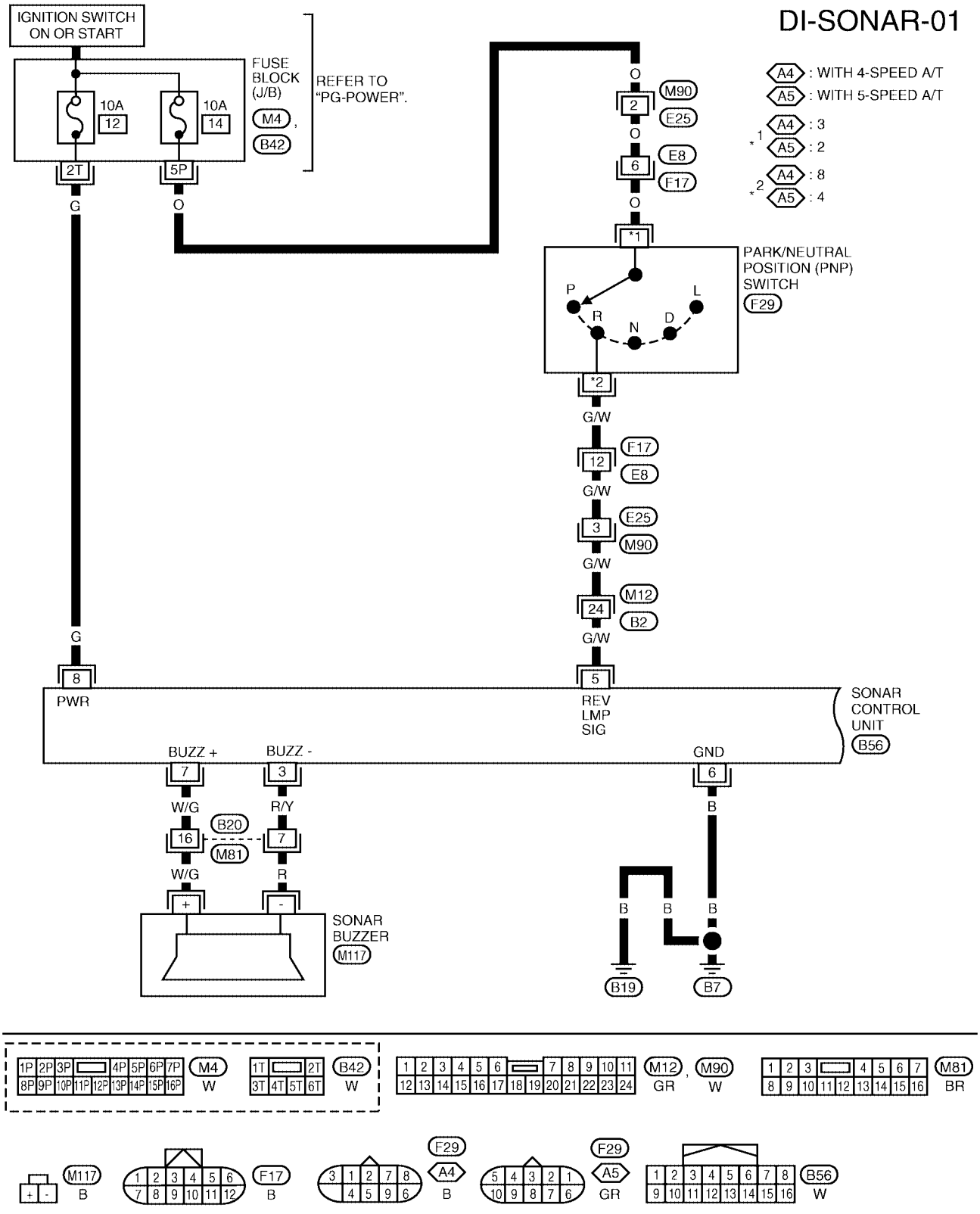
- to rear sonar sensors terminal 3
- from sonar control unit terminal 15.

Signal is supplied

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

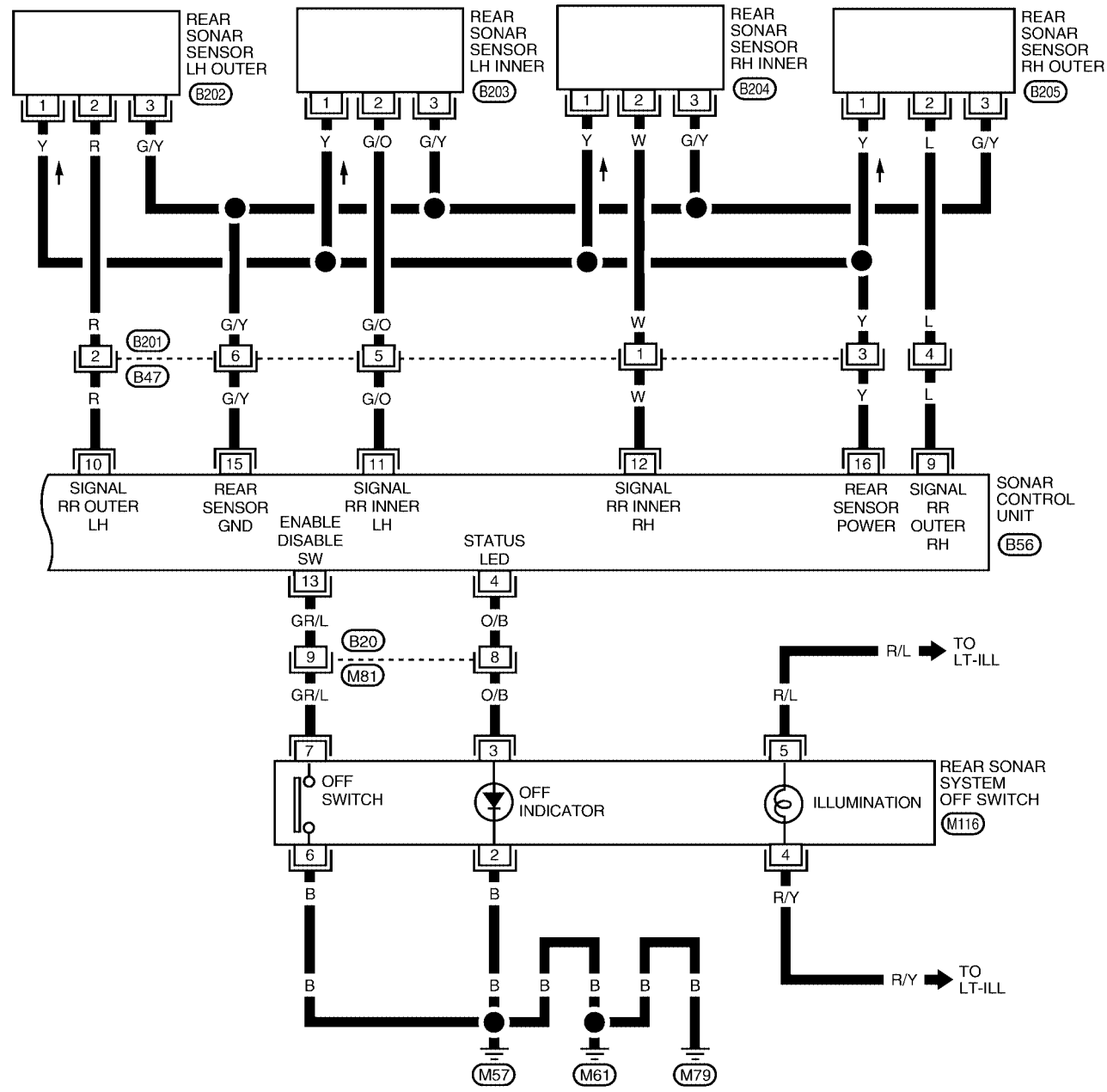
Wiring Diagram — SONAR —

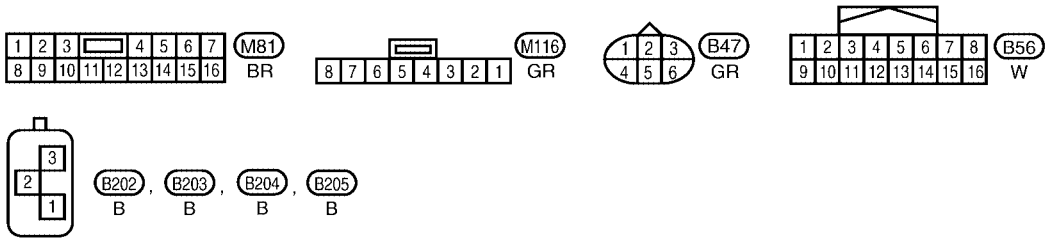
EKS006HN



WKWA1859E

DI-SONAR-02





WKWA3896E

Terminals And Reference Value For Sonar Control Unit

EKS006HO

TERMINAL (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	ON	—		0
7 (W/G)	Sonar buzzer drive signal	ON	● Rear sonar system OFF switch ON ● Selector lever in R position ● No obstacles		Battery voltage
			● 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
			● 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	● Rear sonar system OFF switch ON ● Selector lever in R position ● No obstacles		Battery voltage
10 (R)	Rear sonar sensor signal - LH outer	ON	● 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	● Rear sonar system OFF switch ON ● Selector lever in R position ● Distance obstacles		Battery voltage
12 (W)	Rear sonar sensor signal - RH inner	ON	● Rear sonar system OFF switch ON ● Selector lever in R position ● Distance obstacles		Battery voltage
13 (GR/L)	Rear sonar system OFF switch signal	ON	Rear sonar system OFF switch	ON	0
				OFF	9
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

EKS006HP

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to DI-49, "System Description" .
3. Perform pre-diagnosis inspection. Refer to DI-54, "Pre-diagnosis Inspection" .
4. Perform self-diagnosis. Refer to DI-54, "Self-diagnosis Function" .
5. Perform the preliminary check. Refer to DI-56, "Preliminary Check" .
6. Check symptom and repair or replace the cause of malfunction. Refer to DI-57, "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

EKS006HQ

SENSOR STATUS CHECK

- Check that the rear sonar sensor is not frozen.
- 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.

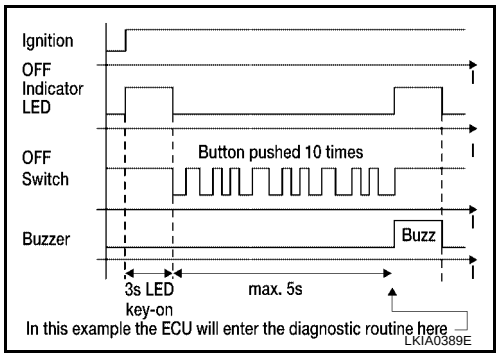
Self-diagnosis Function

EKS006HR

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

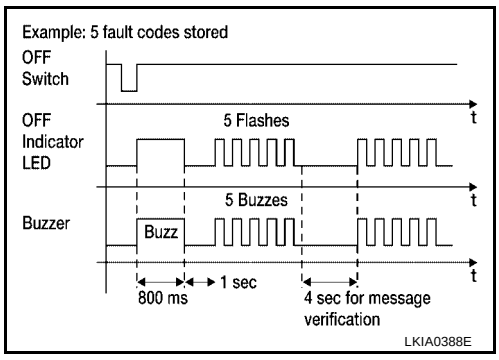
1. Turn ignition switch ON. Rear sonar system OFF switch indicator lamp comes on for three seconds and then goes out.
2. Immediately push rear sonar system OFF switch ten times within five seconds.
3. The the sonar buzzer sounds once and the rear sonar system OFF indicator flashes once.



REQUESTING NUMBER OF FAULT CODES MODE

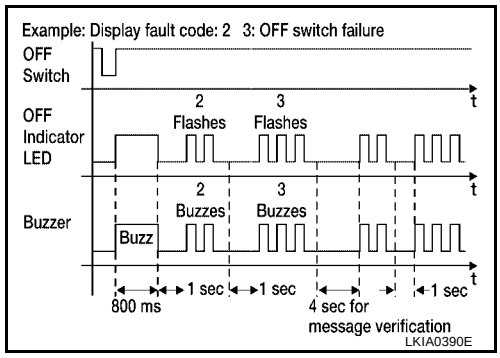
1. While in diagnostic mode, push rear sonar system OFF switch once.
2. The sonar buzzer will sound once.
3. Rear sonar system OFF indicator will flash once and sonar buzzer will sound once for each fault code detected.
4. There will be a four second pause.
5. The number of fault codes will repeat then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



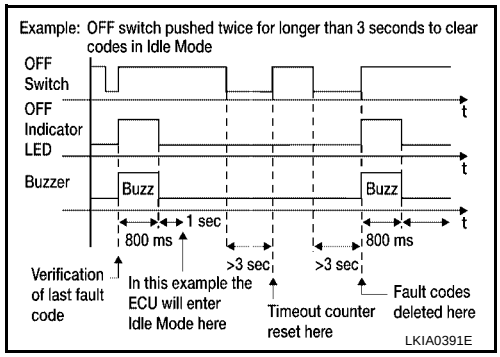
NOTE:
Requesting fault codes will exit unless the fault code is acknowledged before five repeats ends.
The fault code is acknowledged by pushing the rear sonar system OFF switch once (the sonar buzzer may sound). When all fault codes have been indicated, idle mode will be entered. See the following table 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-58, "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-58, "SONAR BUZZER"
2 2	Rear sonar system OFF indicator	DI-58, "REAR SONAR SYSTEM OFF INDICATOR"
2 3	Rear sonar system OFF switch	DI-58, "REAR SONAR SYSTEM OFF SWITCH"
2 4	Sonar control unit	Replace sonar control unit. Refer to DI-58, "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.

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

EKS006HS

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-51, "Wiring Diagram — SONAR —" .

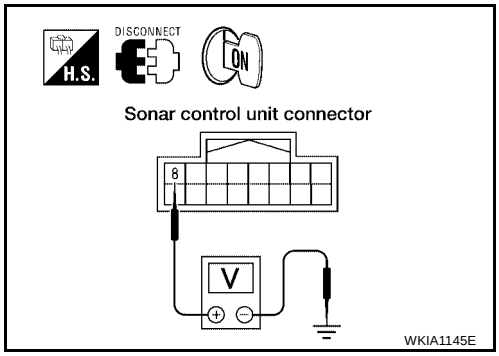
OK or NG

OK >> GO TO 2.
NG >> If fuse is blown, be sure to eliminate cause of problem before installing new fuse. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

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

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



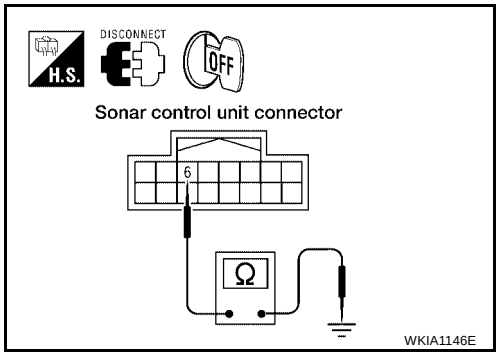
OK or NG

OK >> GO TO 3.
NG >> Check harness for open or short 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 (Wire color)		
B56	6 (B)	Ground	Yes



OK or NG

OK >> Inspection End.
NG >> Check harness ground circuit.

Symptom Chart

EKS006HT

Symptom	Repair order
When the rear sonar system OFF switch is OFF, the indicator lamp does not light and the buzzer does not sound.	1. Check rear sonar system OFF switch for malfunction. Refer to DI-58, "REAR SONAR SYSTEM OFF SWITCH" . 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-58, "SONAR CONTROL UNIT" .
When the rear sonar system OFF switch is OFF, the indicator lamp does not light but buzzer sounds.	1. Check rear sonar system OFF indicator for malfunction. Refer to DI-58, "REAR SONAR SYSTEM OFF INDICATOR" . 2. Check harness and connections between rear sonar system OFF indicator and sonar control unit. 3. Replace sonar control unit. Refer to DI-58, "SONAR CONTROL UNIT" .
When the rear sonar system OFF switch is OFF, the sonar buzzer does not sound but indicator lamp lights up.	1. Check sonar buzzer. Refer to DI-58, "SONAR BUZZER" . 2. Check harness and connections between sonar buzzer and sonar control unit. 3. Replace sonar control unit. Refer to: DI-58, "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).	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-58, "SONAR CONTROL UNIT" .
The rear sonar system operates with the rear sonar system OFF switch ON.	1. Check rear sonar system OFF switch for malfunction. Refer to DI-58, "REAR SONAR SYSTEM OFF SWITCH" . 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-58, "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.	1. Check for PNP switch failure. Refer to AT-42, "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)" for 4-speed A/T or AT-447, "Diagnostic Procedure" for 5-speed A/T. 2. Check harness and connections between sonar control unit and PNP/reverse lamp circuits. 3. Replace sonar control unit. Refer to DI-58, "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.	1. Check for adhesion of snow, mud, or other foreign objects to rear sonar sensors; dew condensation; etc. Refer to DI-54, "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-58, "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.)	1. Check rear sonar sensors for malfunction. 2. Replace sonar control unit. Refer to DI-58, "SONAR CONTROL UNIT" .

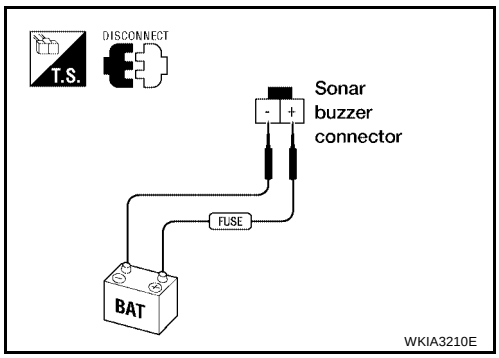
Component Inspection

EKS006HU

SONAR BUZZER

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.

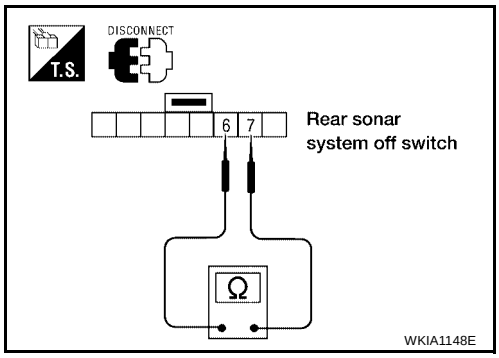
	Terminal to be inspected	Condition	Operation
Sonar buzzer	+	Approx. 12V	Sonar buzzer sounds
	-	Ground	



REAR SONAR SYSTEM OFF SWITCH

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

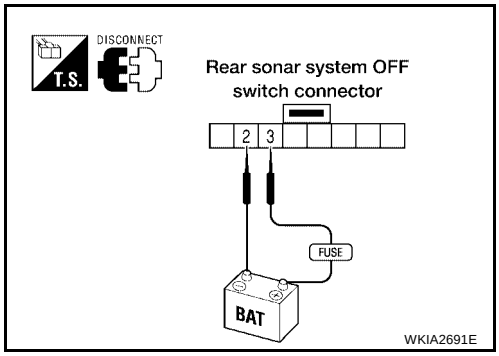
Rear sonar system OFF switch	Terminal to be inspected	Continuity
ON	6 - 7	Yes
OFF		No



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	



Removal and Installation of Rear Sonar System

EKS006HV

REAR SONAR SENSORS

Refer to EI-16, "Removal and Installation" for rear sonar sensor removal and installation procedures.

SONAR CONTROL UNIT

1. Remove the rear lower finisher assembly LH. Refer to EI-32, "LEFT SIDE" to gain access to sonar control unit.
2. Disconnect electrical connector then remove sonar control unit. Refer to DI-49, "Component Parts and Harness Connector Location" .

Installation is in the reverse order of removal.