SECTION LT
LIGHTING SYSTEM

CONTENTS

PRECAUTIONS

PFP:00011

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

EKS00BOI

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.**

General precautions for service operations

EKS00BOJ

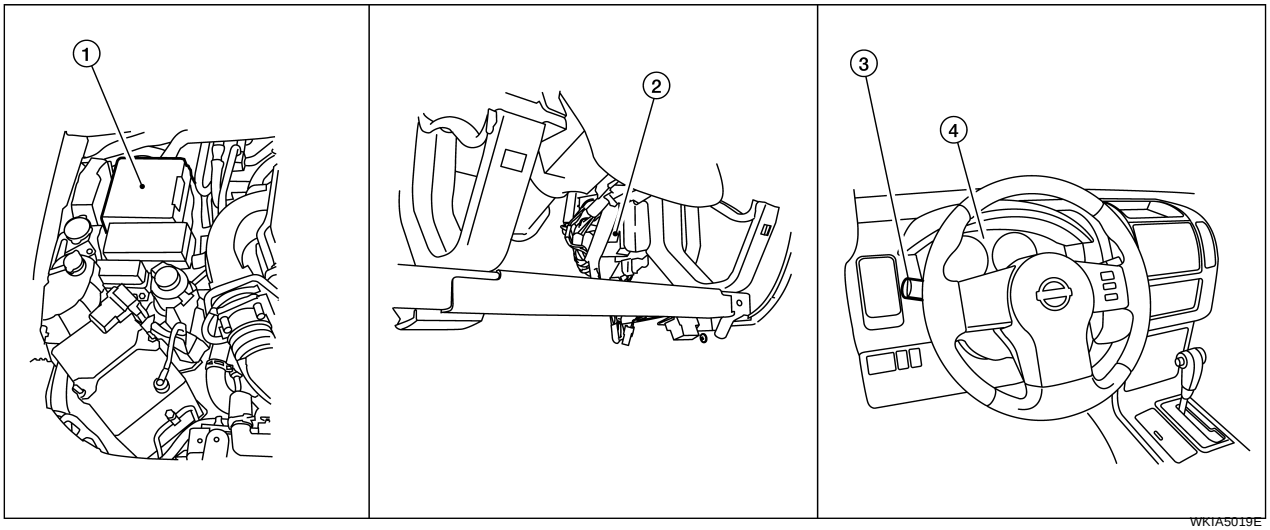
- Never work with wet hands.
- Turn the lighting switch OFF before disconnecting and connecting the connector.
- When checking the headlamp on/off operation, check it on vehicle and with the power connected to the vehicle-side connector.
- Do not touch the headlamp bulb glass surface with bare hands or allow oil or grease to get on it. Do not touch the headlamp bulb just after the headlamp is turned off, because it is very hot.
- When the bulb has burned out, wrap it in a thick vinyl bag and discard. Do not break the bulb.
- Leaving the bulb removed from the headlamp housing for a long period of time can deteriorate the performance of the lens and reflector (dirt, clouding). Always prepare a new bulb and have it on hand when replacing the bulb.
- Do not use organic solvent (paint thinner or gasoline) to clean lamps and to remove old sealant.

HEADLAMP (FOR USA)

PFP:26010

Component Parts and Harness Connector Location

EKS00BOL



1. IPDM E/R
   E122, E123, E124
2. BCM
   M18, M20
   (view with lower instrument panel LH removed)
3. Combination switch (lighting switch)
   M28
4. Combination meter
   M24

System Description

EKS00CLU

Control of the headlamp system operation is dependent upon the position of the combination switch (lighting switch). When the lighting switch is placed in the 2ND position, the BCM (body control module) receives input requesting the headlamps (and tail lamps) illuminate. This input is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The CPU (central processing unit) of the IPDM E/R controls the headlamp high and headlamp low relay coils. When energized, these relays direct power to the respective headlamps, which then illuminate.

OUTLINE

Power is supplied at all times

- to headlamp high relay, located in the IPDM E/R, and
- to headlamp low relay, located in the IPDM E/R, and
- to ignition relay, located in the IPDM E/R, and
- through 20A fuse (No. 53, located in the IPDM E/R)
- to CPU of the IPDM E/R, and
- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM terminal 70.

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

- to ignition relay, located in the IPDM E/R, and
- through 10A fuse [No. 1, located in the fuse block (J/B)]
- to BCM terminal 38.

Ground is supplied

- to BCM terminal 67
- through grounds M57, M61 and M79, and
- to IPDM E/R terminals 38 and 59
- through grounds E9, E15 (all) and E24 (VQ40DE engine only).

Low Beam Operation

With the lighting switch in 2ND position, the BCM receives input requesting the headlamps to illuminate. This input is communicated to the IPDM E/R across the CAN communication lines. The CPU of the IPDM E/R controls the headlamp low relay coil. When energized, this relay directs power

- through 15A fuse (No. 41, located in the IPDM E/R)
- through IPDM E/R terminal 54
- to front combination lamp RH (headlamp) terminal 3, and
- through 15A fuse (No. 40, located in the IPDM E/R)
- through IPDM E/R terminal 52
- to front combination lamp LH (headlamp) terminal 3.

Ground is supplied

- to front combination lamp LH and RH (headlamp) terminal 2
- through grounds E9, E15 (all) and E24 (VQ40DE engine only).

With power and ground supplied, low beam headlamps illuminate.

High Beam Operation/Flash-to-Pass Operation

With the lighting switch in 2ND position and placed in HIGH or PASS position, the BCM receives input requesting the headlamp high beams to illuminate. This input is communicated to the IPDM E/R across the CAN communication lines. The CPU of the combination meter controls the ON/OFF status of the HIGH BEAM indicator. The CPU of the IPDM E/R controls the headlamp high relay coil. When energized, this relay directs power

- through 10A fuse (No. 34, located in the IPDM E/R)
- through IPDM E/R terminal 56
- to front combination lamp RH (headlamp) terminal 1, and
- through 10A fuse (No. 35, located in the IPDM E/R)
- through IPDM E/R terminal 55
- to front combination lamp LH (headlamp) terminal 1.

Ground is supplied

- to front combination lamp LH and RH (headlamp) terminal 2
- through grounds E9, E15 (all) and E24 (VQ40DE engine only).

With power and ground supplied, the high beam headlamps illuminate.

BATTERY SAVER CONTROL

When the combination switch (lighting switch) is in the 2ND position (ON), and the ignition switch is turned from ON or ACC to OFF, the battery saver control feature is activated.
Under this condition, the headlamps remain illuminated for 5 minutes, unless the combination switch (lighting switch) position is changed. If the combination switch (lighting switch) position is changed, then the headlamps are turned off.

AUTO LIGHT OPERATION

Refer to LT-38, "System Description" .

VEHICLE SECURITY SYSTEM (PANIC ALARM)

The vehicle security system (panic alarm) will flash the high beams if the system is triggered. Refer to BL-79, "PANIC ALARM OPERATION" .

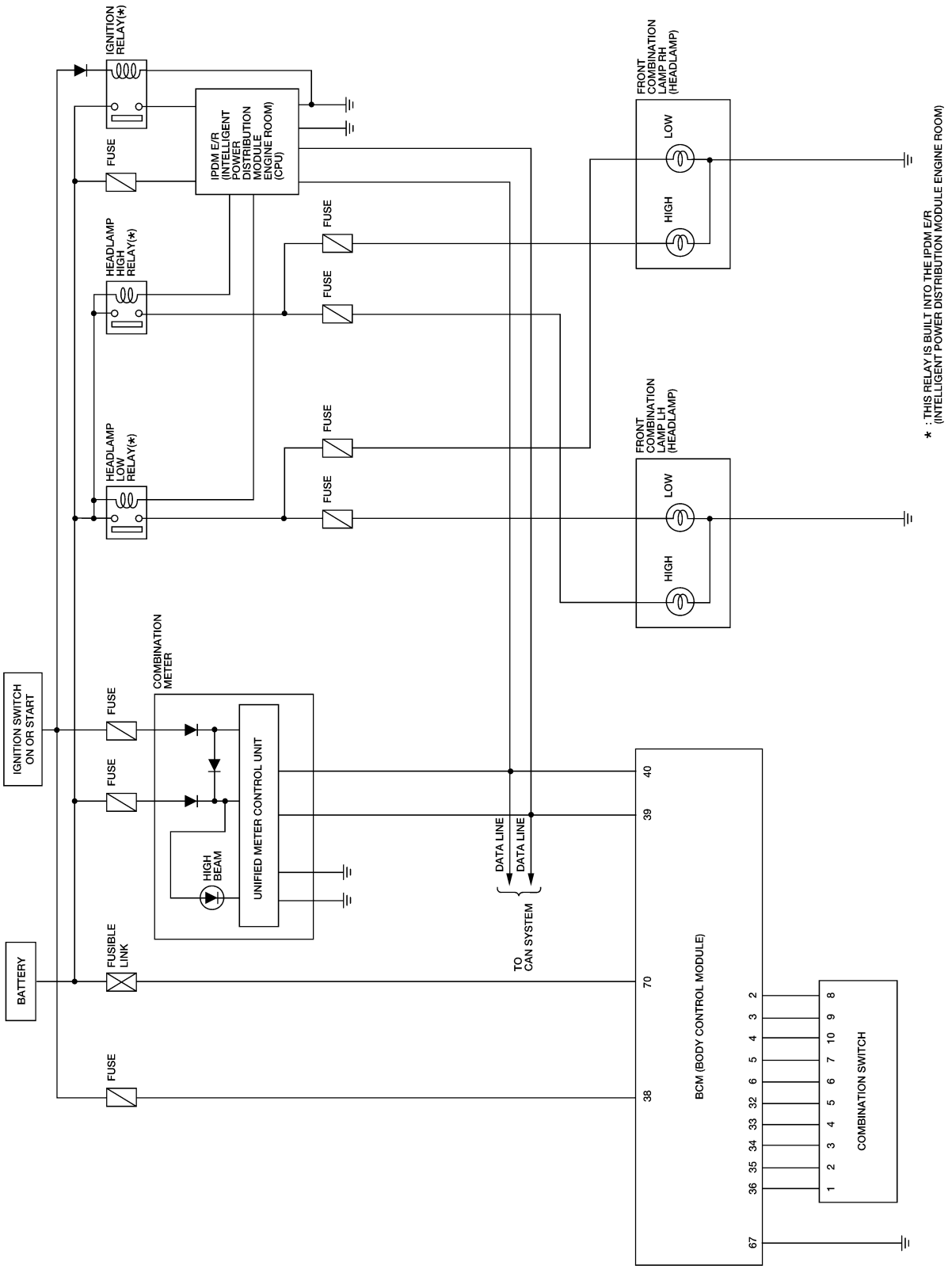
CAN Communication System Description

EKS00BON

Refer to LAN-4, "CAN Communication System" .

Schematic

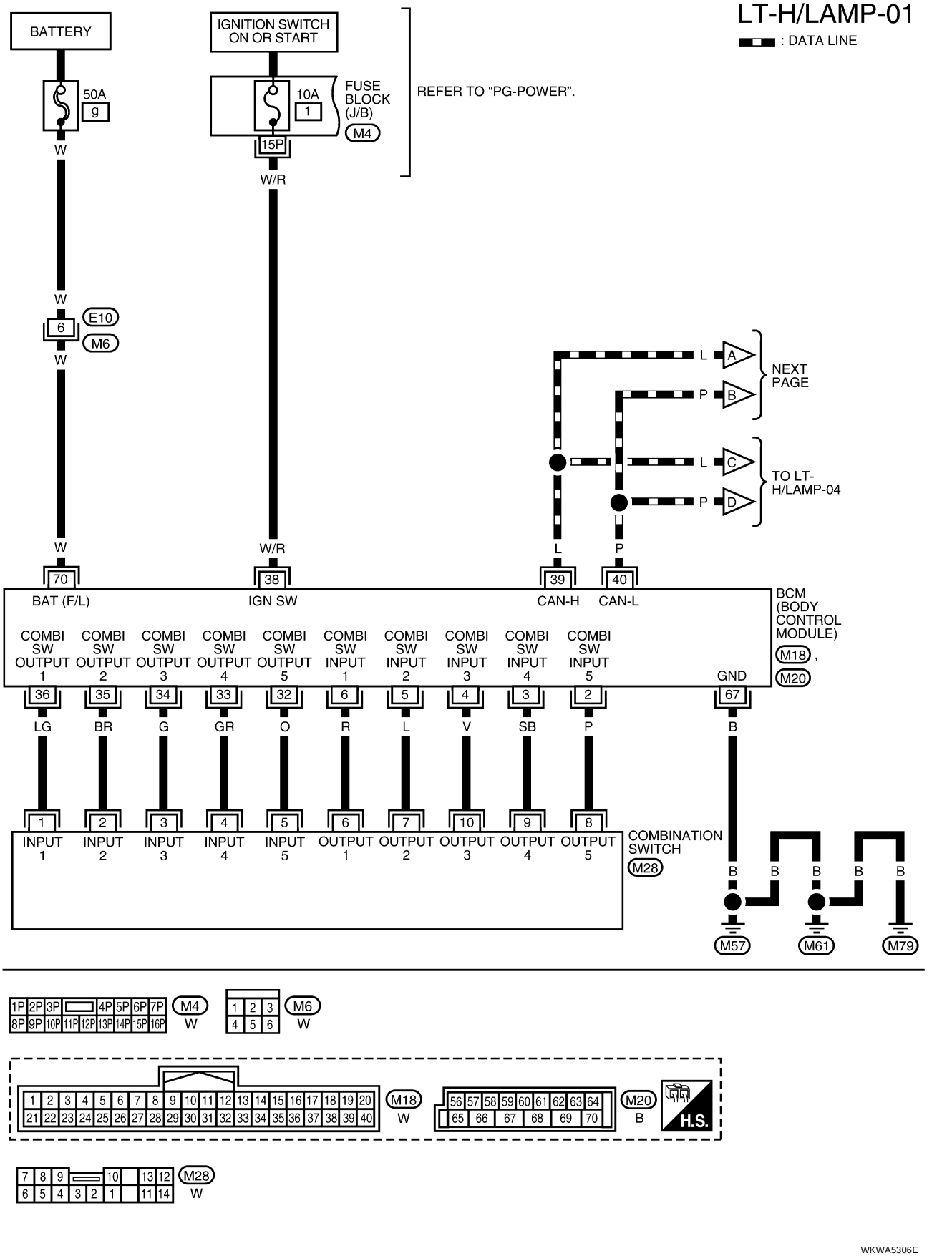
EKS00BOO



WKWA5454E

Wiring Diagram — H/LAMP —

EKS00BOP



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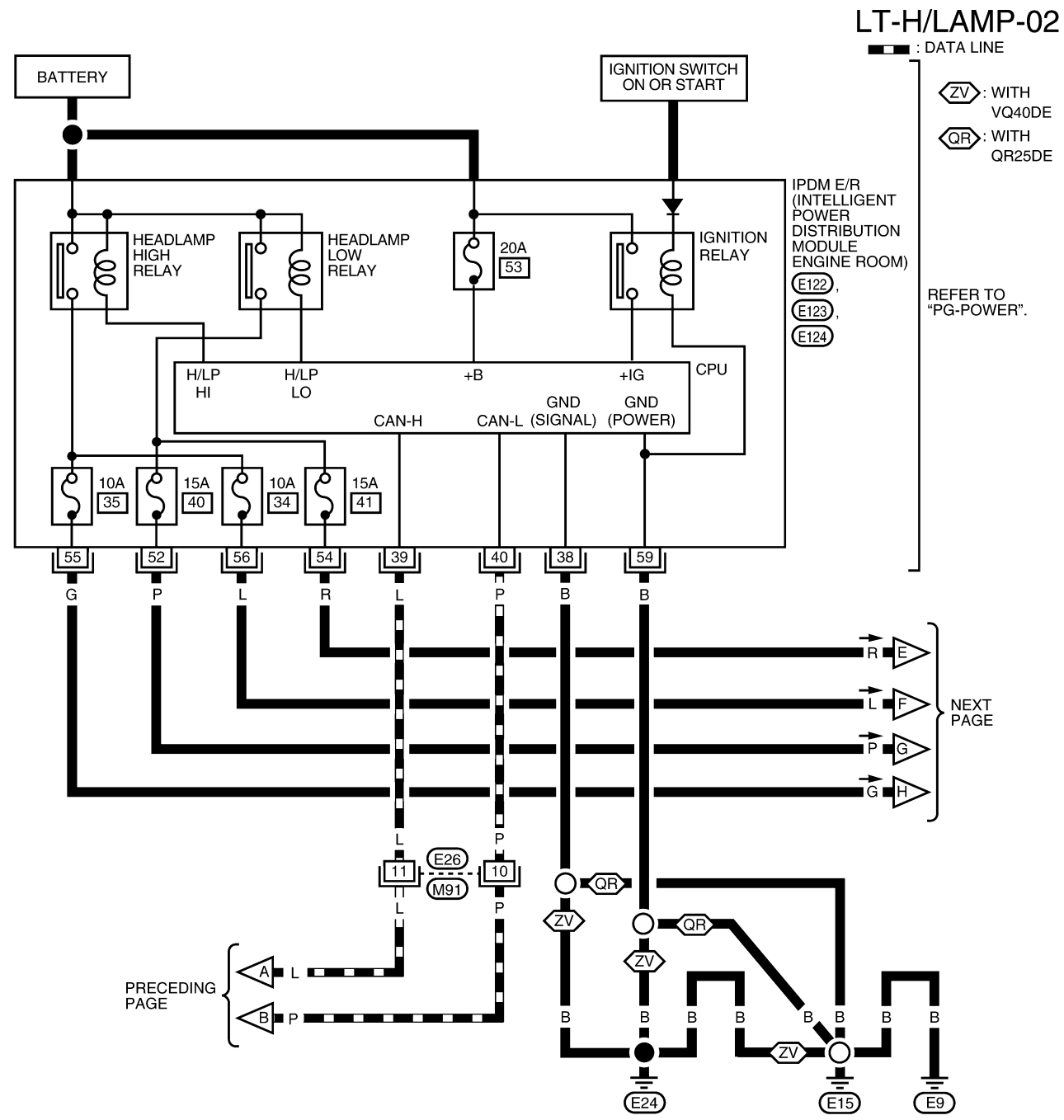
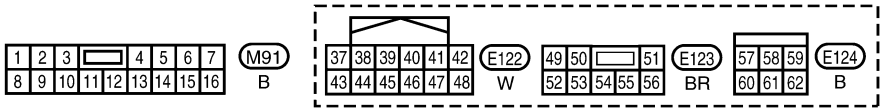
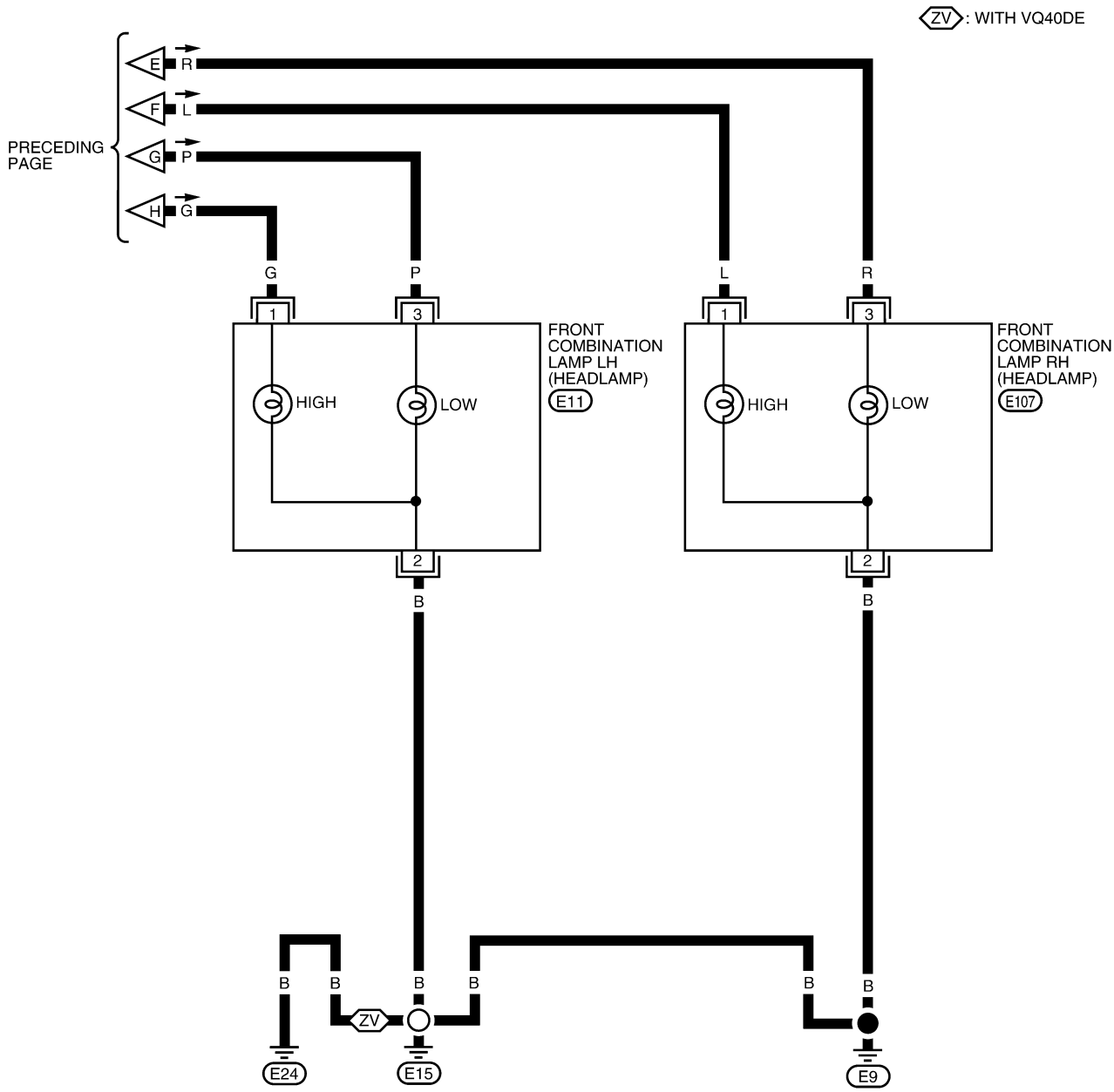
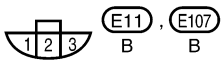

LT-H/LAMP-02
: DATA LINE
ZV: WITH VQ40DE
QR: WITH QR25DE
BATTERY
IGNITION SWITCH ON OR START
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E122, E123, E124
REFER TO "PG-POWER".
HEADLAMP HIGH RELAY
HEADLAMP LOW RELAY
20A 53
IGNITION RELAY
H/LP HI
H/LP LO
+B
+IG
CPU
CAN-H
CAN-L
GND (SIGNAL)
GND (POWER)
10A 35
15A 40
10A 34
15A 41
55 52 56 54 39 40 38 59
G P L R L P B B
R E
L F
P G
G H
NEXT PAGE
L P
E26
11 10
M91
L P
PRECEDING PAGE
A L
B P
QR
ZV
B B B B B B B B
E24 E15 E9


1 2 3 4 5 6 7
8 9 10 11 12 13 14 15 16
M91
B
37 38 39 40 41 42
43 44 45 46 47 48
E122
W
49 50 51
52 53 54 55 56
E123
BR
57 58 59
60 61 62
E124
B

WKWA4348E

LT-H/LAMP-03





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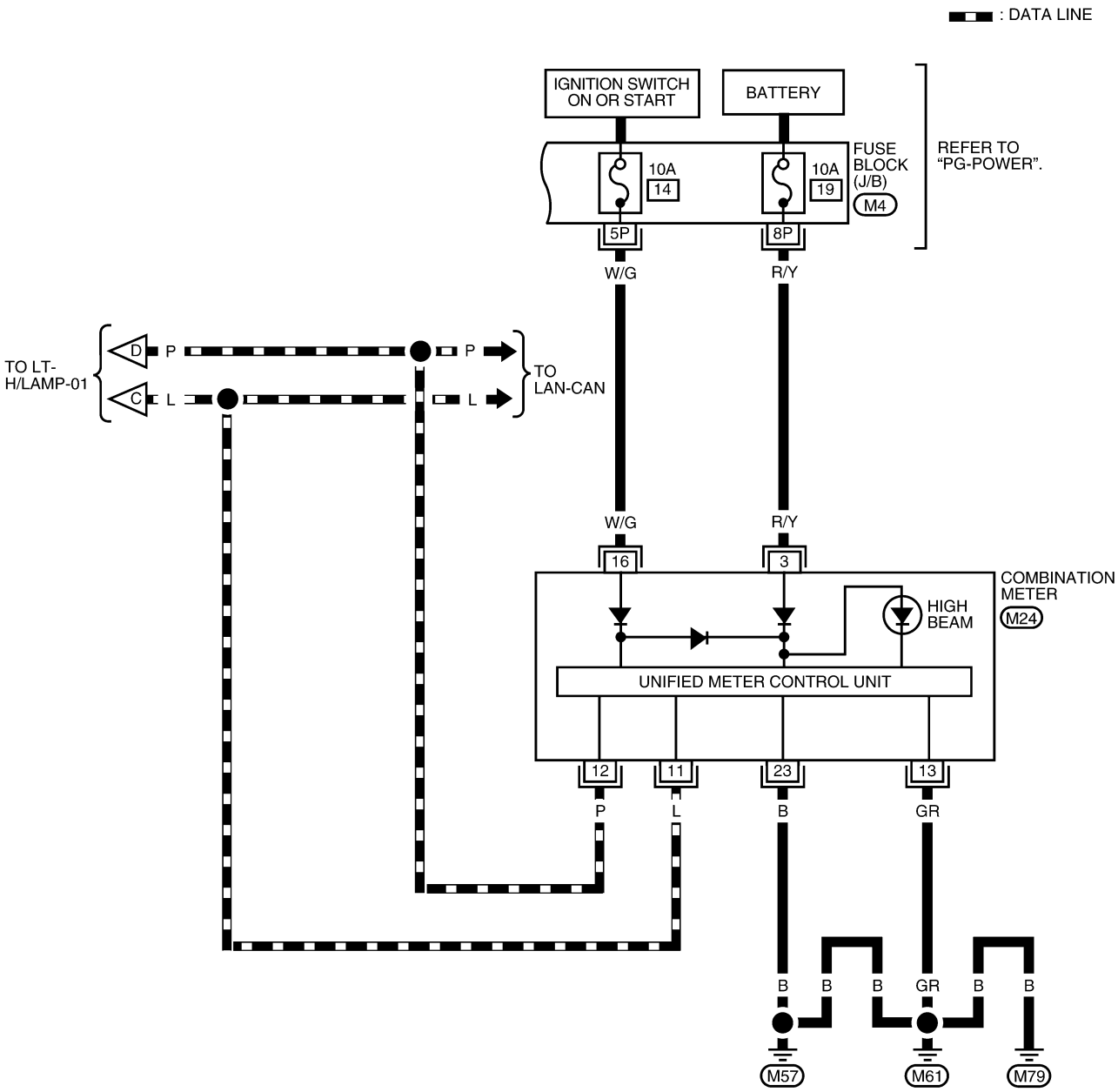
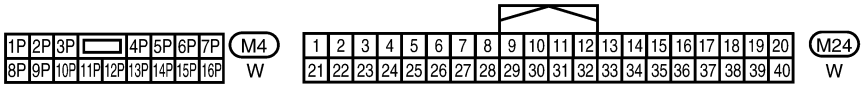
LT-H/LAMP-04





WKWA4349E

Terminals and Reference Values for BCM

EKS00CLV

Refer to BCS-12, "Terminals and Reference Values for BCM" .

Terminals and Reference Values for IPDM E/R

EKS00CLW

Refer to PG-28, "Terminals and Reference Values for IPDM E/R" .

How to Proceed With Trouble Diagnosis

EKS00CLX

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-5, "System Description" .
3. Perform the Preliminary Check. Refer to LT-12, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the headlamp operate normally? If YES: GO TO 6. If NO: GO TO 4.
6. Inspection End.

Preliminary Check

EKS00CLY

CHECK POWER SUPPLY AND GROUND CIRCUIT FOR BCM

Refer to BCS-16, "BCM Power Supply and Ground Circuit Check" .

CHECK POWER SUPPLY AND GROUND CIRCUIT FOR IPDM E/R

Refer to PG-30, "IPDM E/R Power/Ground Circuit Inspection" .

CONSULT-II Function (BCM)

EKS00CLZ

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 START PROCEDURE

Refer to GI-38, "CONSULT-II Start Procedure" .

WORK SUPPORT

Display Item List

Item	Description	CONSULT-II	Factory setting
BATTERY SAVER SET	Exterior lamp battery saver control mode can be changed in this mode. Selects exterior lamp battery saver control mode between ON/OFF.	ON	×
		OFF	—

DATA MONITOR

Display Item List

Monitor item		Contents
IGN ON SW	"ON/OFF"	Displays "IGN position (ON)/OFF, ACC position (OFF)" judged from the ignition switch signal.
ACC ON SW	"ON/OFF"	Displays "ACC (ON)/OFF, Ignition OFF (OFF)" status judged from ignition switch signal.
HI BEAM SW	"ON/OFF"	Displays status (high beam switch: ON/Others: OFF) of high beam switch judged from lighting switch signal.

Monitor item		Contents
HEAD LAMP SW 1	"ON/OFF"	Displays status (headlamp switch 1: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.
HEAD LAMP SW 2	"ON/OFF"	Displays status (headlamp switch 2: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.
LIGHT SW 1ST	"ON/OFF"	Displays status (lighting switch 1st position: ON/Others: OFF) of lighting switch judged from lighting switch signal.
AUTO LIGHT SW	"ON/OFF"	Displays status of the lighting switch as judged from the lighting switch signal. (AUTO position: ON/Other than AUTO position: OFF)
PASSING SW	"ON/OFF"	Displays status (flash-to-pass switch: ON/Others: OFF) of flash-to-pass switch judged from lighting switch signal.
FR FOG SW	"ON/OFF"	Displays status (front fog lamp switch: ON/Others: OFF) of front fog lamp switch judged from lighting switch signal.
DOOR SW-DR	"ON/OFF"	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW-AS	"ON/OFF"	Displays status of the passenger door as judged from the passenger door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW-RR	"ON/OFF"	Displays status of the rear door as judged from the rear door switch (RH) signal. (Door is open: ON/Door is closed: OFF)
DOOR SW-RL	"ON/OFF"	Displays status of the rear door as judged from the rear door switch (LH) signal. (Door is open: ON/Door is closed: OFF)
BACK DOOR SW	"ON/OFF"	Not used.
TURN SIGNAL R	"ON/OFF"	Displays status (Turn right: ON/Others: OFF) as judged from lighting switch signal.
TURN SIGNAL L	"ON/OFF"	Displays status (Turn left: ON/Others: OFF) as judged from lighting switch signal.
CARGO LAMP SW	"ON/OFF"	Displays status of cargo lamp switch.
OPTICAL SENSOR	[0 - 5V]	Displays "ambient light (close to 5V when dark/close to 0V when light)" judged from optical sensor signal.

ACTIVE TEST

Display Item List

Test item	Description
TAIL LAMP	Allows tail lamp relay to operate by switching ON-OFF.
HEAD LAMP	Allows headlamp relay (HI, LO) to operate by switching ON-OFF.
FR FOG LAMP	Allows fog lamp relay to operate by switching ON-OFF.
CARGO LAMP	Allows cargo lamp to operate by switching ON-OFF.
CORNERING LAMP	Not used.

SELF-DIAGNOSTIC RESULTS

Display Item List

Monitored item	CONSULT-II display	Description
CAN communication	CAN communication [U1000]	Malfunction is detected in CAN communication.
CAN communication system	CAN communication system 1 to 6 [U1000]	Malfunction is detected in CAN system.

CONSULT-II Function (IPDM E/R)

EKS00CM0

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

IPDM E/R diagnostic mode	Description
SELF-DIAG RESULTS	Displays IPDM E/R self-diagnosis results.
DATA MONITOR	Displays IPDM E/R input/output data in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.

CONSULT-II START PROCEDURE

Refer to GI-38, "CONSULT-II Start Procedure" .

DATA MONITOR

All Signals, Main Signals, Selection From Menu

Item name	CONSULT-II screen display	Display or unit	Monitor item selection			Description
			ALL SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
Parking, license plate and tail lamps request	TAIL&CLR REQ	ON/OFF	×	×	×	Signal status input from BCM
Headlamp low beam request	HL LO REQ	ON/OFF	×	×	×	Signal status input from BCM
Headlamp high beam request	HL HI REQ	ON/OFF	×	×	×	Signal status input from BCM
Daytime lights request	DTRL REQ	ON/OFF	×	–	×	Signal status input from BCM
Front fog lamps request	FR FOG REQ	ON/OFF	×	×	×	Signal status input from BCM

NOTE:
Perform monitoring of IPDM E/R data with the ignition switch ON. When the ignition switch is at ACC, the display may not be correct.

ACTIVE TEST

Test item	CONSULT-II screen display	Description
Tail lamp relay output	TAIL LAMP	Allows tail lamp relay to operate by switching operation ON-OFF at your option.
Headlamp relay (HI, LO) output	LAMPS	Allows headlamp relay (HI, LO) to operate by switching operation (OFF, HI, LO) at your option (Head lamp high beam repeats ON-OFF every 1 second).
Front fog lamp relay (FOG) output		Allows fog lamp relay (FOG) to operate by switching operation ON-OFF at your option.

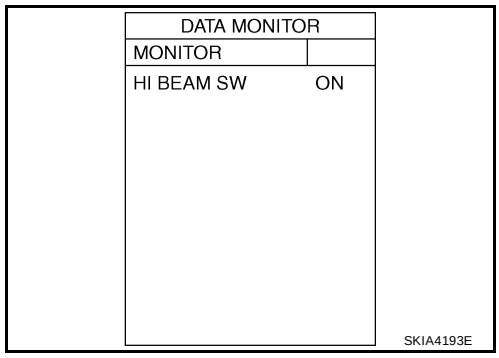
Headlamp HI Does Not Illuminate (Both Sides)

EKS00CM1

1. CHECK COMBINATION SWITCH INPUT SIGNAL

Select "BCM" on CONSULT-II. With "HEAD LAMP" data monitor, make sure "HI BEAM SW" turns ON-OFF linked with operation of lighting switch.

When lighting switch is in HIGH position : HI BEAM SW ON



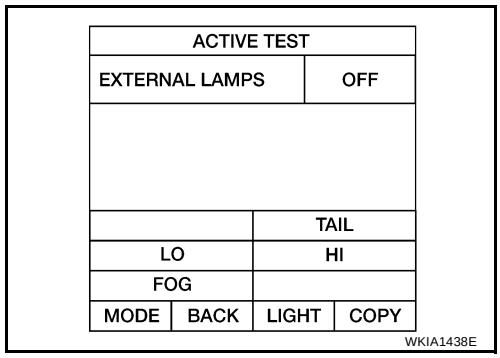
OK or NG

OK >> GO TO 2.
NG >> Check lighting switch. Refer to LT-74, "Combination Switch Inspection" .

2. HEADLAMP ACTIVE TEST

1. Select "IPDM E/R" on CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "EXTERNAL LAMPS" on "SELECT TEST ITEM" screen.
3. Touch "HI" on "ACTIVE TEST" screen.
4. Make sure headlamp high beam operates.

Headlamp high beam should operate.



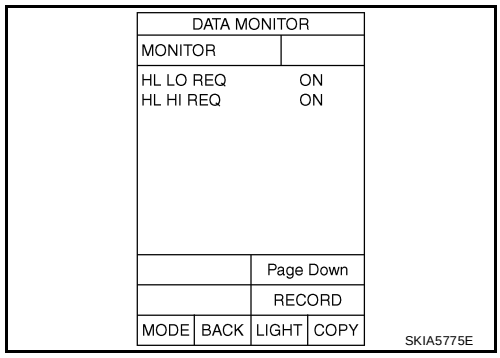
OK or NG

OK >> GO TO 3.
NG >> GO TO 4.

3. CHECK IPDM E/R

1. Select "IPDM E/R" on CONSULT-II, and select "DATA MONITOR" on "SELECT DIAG MODE" screen.
2. Make sure "HL LO REQ" and "HL HI REQ" turns ON when lighting switch is in HIGH position.

When lighting switch is in HIGH position : HL LO REQ ON
: HL HI REQ ON



OK or NG

OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .
NG >> Replace BCM. Refer to BCS-25, "Removal and Installation" .

4. HEADLAMP HIGH FUSE INSPECTION

Inspect 10A fuse No. 34 RH and fuse No. 35 LH (located in IPDM E/R).

OK or NG

OK >> GO TO 5.
NG >> Repair harness and replace fuse.

5. BULB INSPECTION

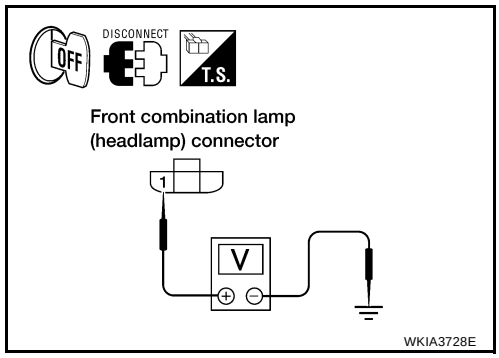
Inspect inoperative headlamp bulbs.

OK or NG

OK >> GO TO 6.
NG >> Replace headlamp bulb. Refer to LT-24, "HEADLAMP BULB" .

6. CHECK HEADLAMP INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH and LH (headlamp) connectors.
3. Select "IPDM E/R" on CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
4. Select "EXTERNAL LAMPS" on "SELECT TEST ITEM" screen.
5. Touch "HI" on "ACTIVE TEST" screen.
6. When headlamp high beam is operating, check voltage between front combination lamp RH and LH (headlamp) harness connector and ground.



Front combination lamp (headlamp)			(–)	Voltage
(+)				
Connector		Terminal		
RH	E107	1	Ground	Battery voltage
LH	E11			

OK or NG

OK >> GO TO 8.
NG >> GO TO 7.

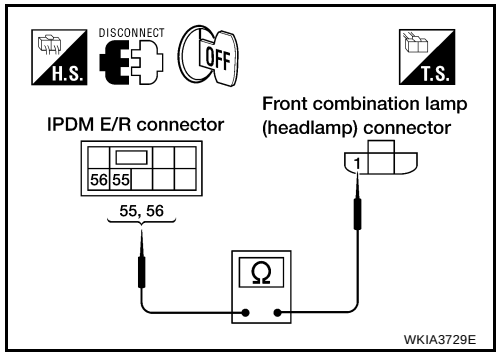
7. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E123 terminal 56 and front combination lamp RH (headlamp) harness connector E107 terminal 1.

56 - 1 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E123 terminal 55 and front combination lamp LH (headlamp) harness connector E11 terminal 1.

55 - 1 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

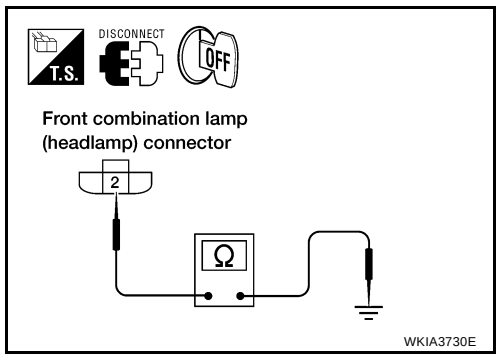
8. CHECK HEADLAMP GROUND

1. Check continuity between front combination lamp RH (headlamp) harness connector E107 terminal 2 and ground.

2 - Ground : Continuity should exist.

2. Check continuity between front combination lamp LH (headlamp) harness connector E11 terminal 2 and ground.

2 - Ground : Continuity should exist.



OK or NG

OK >> Check front headlamp connector for damage or poor connection. Repair as necessary.
NG >> Repair harness or connector.

Headlamp HI Does Not Illuminate (One Side)

EKS00CM2

1. HEADLAMP HIGH FUSE INSPECTION

Inspect 10A fuse No. 34 RH or fuse No. 35 LH (located in IPDM E/R).

OK or NG

OK >> GO TO 2.
NG >> Repair headlamp high power supply circuit.

2. BULB INSPECTION

Inspect inoperative headlamp bulb.

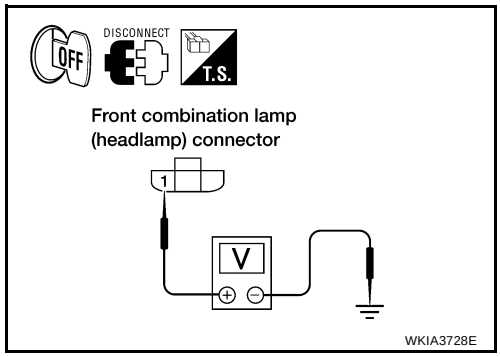
OK or NG

OK >> GO TO 3.
NG >> Replace headlamp bulb. Refer to LT-24, "HEADLAMP BULB" .

3. CHECK POWER TO HEADLAMP

1. Disconnect inoperative headlamp connector.
2. Turn the high beam headlamps ON.
3. Check voltage between inoperative headlamp terminal and ground.

Front combination lamp (headlamp) (+)			(–)	Voltage (Approx.)
Connector		Terminal		
RH	E107	1	Ground	Battery voltage
LH	E11			



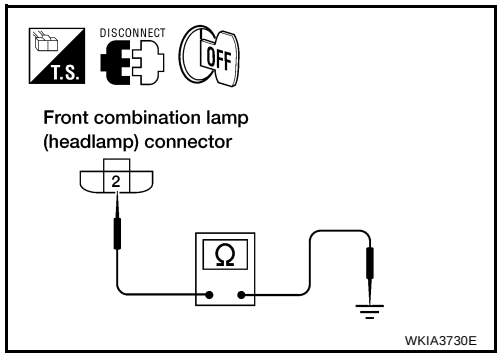
OK or NG

OK >> GO TO 4.
NG >> GO TO 5.

4. CHECK HEADLAMP GROUND

1. Turn the high beam headlamps OFF.
2. Check continuity between inoperative headlamp connector and ground.

Front combination lamp (headlamp)				Continuity
Connector		Terminal		
RH	E107	2	Ground	Yes
LH	E11			



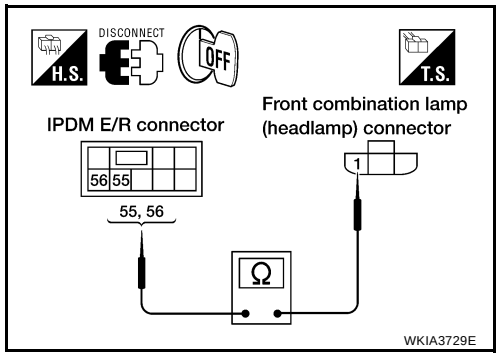
OK or NG

OK >> Check headlamp connector for damage or poor connection. Repair as necessary.
NG >> Repair open circuit in harness between inoperative headlamp and ground.

5. INSPECTION BETWEEN IPDM E/R AND HEADLAMPS

1. Disconnect IPDM E/R connector and inoperative headlamp connector.
2. Check continuity between harness connector terminals of IPDM E/R and harness connector terminals of inoperative headlamp.

IPDM E/R		Front combination lamp (headlamp)			Continuity
Connector	Terminal	Connector		Terminal	
E123	56	RH	E107	1	Yes
	55	LH	E11		



OK or NG

OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .

NG >> Check for short circuits and open circuits in harness between IPDM E/R and headlamps. Repair as necessary.

High Beam Indicator Lamp Does Not Illuminate

EKS00CM3

1. BULB INSPECTION

Inspect CAN communication system. Refer to LAN-4, "CAN Communication System" .

OK or NG

OK >> Replace combination meter. Refer to IP-13, "COMBINATION METER" .

NG >> Repair as necessary.

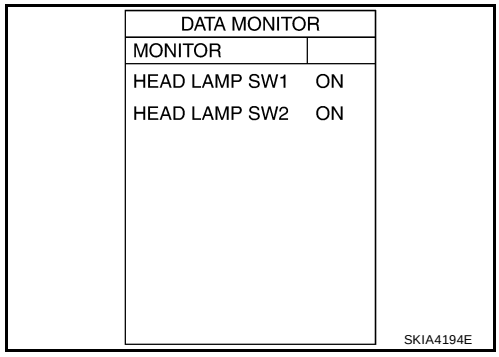
Headlamp LO Does Not Illuminate (Both Sides)

EKS00CM4

1. CHECK COMBINATION SWITCH INPUT SIGNAL

Select "BCM" on CONSULT-II. With "HEAD LAMP" data monitor, make sure "HEAD LAMP SW 1" and "HEAD LAMP SW 2" turns ON-OFF linked with operation of lighting switch.

When lighting switch is in 2ND position : HEAD LAMP SW 1 ON
: HEAD LAMP SW 2 ON



OK or NG

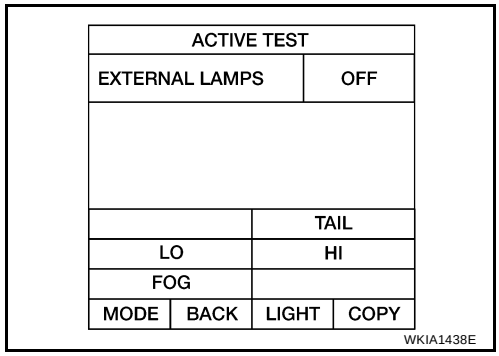
OK >> GO TO 2.

NG >> Check lighting switch. Refer to LT-74, "Combination Switch Inspection" .

2. HEADLAMP ACTIVE TEST

1. Select "IPDM E/R" on CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "EXTERNAL LAMPS" on "SELECT TEST ITEM" screen.
3. Touch "LO" on "ACTIVE TEST" screen.
4. Make sure headlamp low beam operates.

Headlamp low beam should operate.



OK or NG

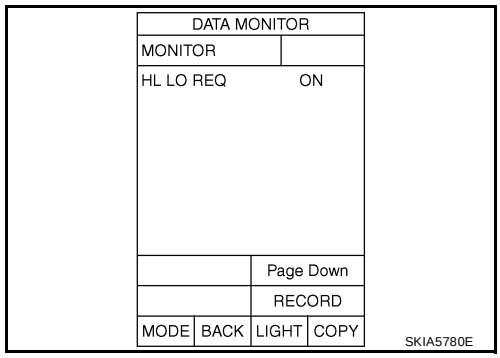
OK >> GO TO 3.

NG >> GO TO 4.

3. CHECK IPDM E/R

1. Select "IPDM E/R" on CONSULT-II, and select "DATA MONITOR" on "SELECT DIAG MODE" screen.
2. Make sure "HL LO REQ" turns ON when lighting switch is in 2ND position.

When lighting switch is in 2ND position : HL LO REQ ON



OK or NG

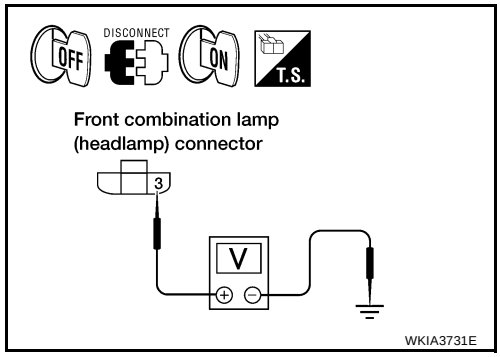
OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .

NG >> Replace BCM. Refer to BCS-25, "Removal and Installation" .

4. CHECK HEADLAMP INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect front combination lamp RH and LH (headlamp) connector.
3. Turn ignition switch ON.
4. Select "IPDM E/R" on CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
5. Select "EXTERNAL LAMPS" on "SELECT TEST ITEM" screen.
6. Touch "LO" on "ACTIVE TEST" screen.
7. When headlamp low beam is operating, check voltage between front combination lamp RH and LH (headlamp) harness connector and ground.

Front combination lamp (headlamp) (+)			(–)	Voltage
Connector		Terminal		
RH	E107	3	Ground	Battery voltage
LH	E11			



OK or NG

OK >> GO TO 6.

NG >> GO TO 5.

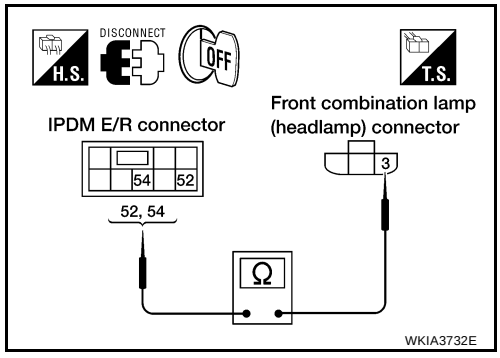
5. CHECK HEADLAMP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E123 terminal 54 and front combination lamp RH (headlamp) harness connector E107 terminal 3.

54 - 3 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E123 terminal 52 and front combination lamp LH (headlamp) harness connector E11 terminal 3.

52 - 3 : Continuity should exist.



OK or NG

OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .

NG >> Repair harness or connector.

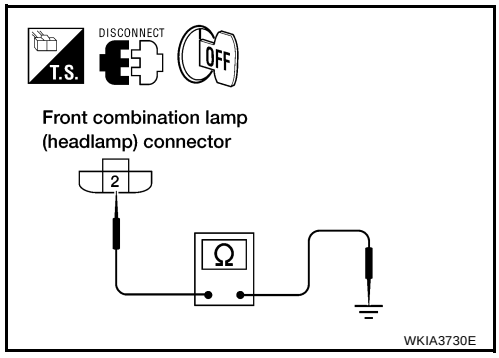
6. CHECK HEADLAMP GROUND

1. Turn ignition switch OFF.
2. Check continuity between front combination lamp RH (headlamp) harness connector E107 terminal 2 and ground.

2 - Ground : Continuity should exist.

3. Check continuity between front combination lamp LH (headlamp) harness connector E11 terminal 2 and ground.

2 - Ground : Continuity should exist.



OK or NG

OK >> Check front combination lamp (headlamp) connector for damage or poor connection. Repair as necessary.
NG >> Repair harness or connector.

Headlamp LO Does Not Illuminate (One Side)

EKS00CM5

1. HEADLAMP LOW FUSE INSPECTION

Inspect 15A fuse No. 40 LH and fuse No. 41 RH (located in IPDM E/R).

OK or NG

OK >> GO TO 2.
NG >> Repair headlamp low power supply circuit.

2. BULB INSPECTION

Inspect inoperative headlamp bulb.

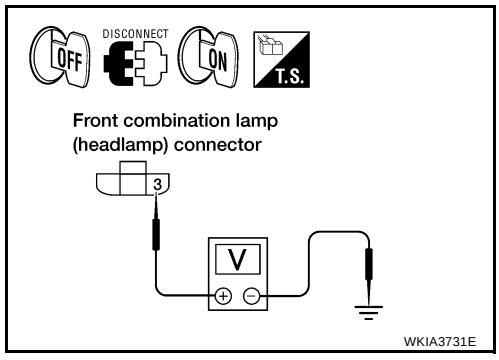
OK or NG

OK >> GO TO 3.
NG >> Replace headlamp bulb. Refer to LT-24, "HEADLAMP BULB" .

3. CHECK POWER TO HEADLAMP

1. Disconnect inoperative headlamp connector.
2. Turn the low beam headlamps ON.
3. Check voltage between inoperative headlamp connector terminal and ground.

Front combination lamp (headlamp) (+)			(–)	Voltage (Approx.)
Connector		Terminal		
RH	E107	3	Ground	Battery voltage
LH	E11			



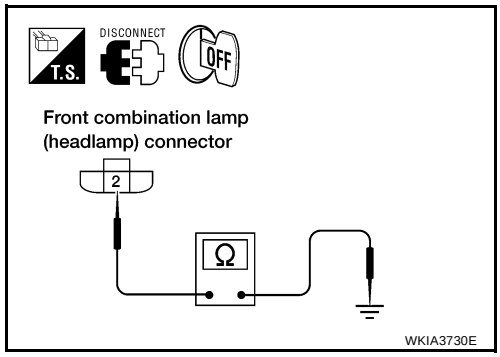
OK or NG

OK >> GO TO 4.
NG >> GO TO 5.

4. CHECK HEADLAMP GROUND

1. Turn the low beam headlamps OFF.
2. Check continuity between inoperative headlamp connector terminal and ground.

Front combination lamp (headlamp)				Continuity
Connector		Terminal		
RH	E107	2	Ground	Yes
LH	E11			



OK or NG

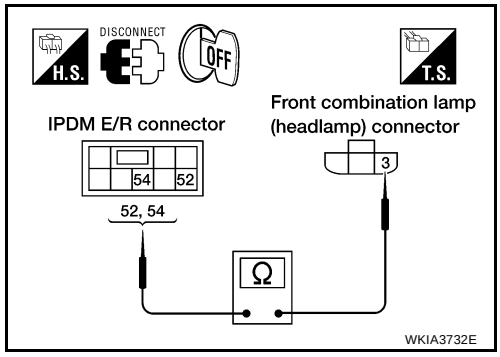
OK >> Check headlamp and IPDM E/R connector. Repair as necessary.

NG >> Repair open circuit in harness between inoperative headlamp and ground.

5. INSPECTION BETWEEN IPDM E/R AND HEADLAMPS

1. Disconnect IPDM E/R connector.
2. Check continuity between harness connector terminals of IPDM E/R and harness connector terminals of inoperative headlamp.

IPDM E/R		Front combination lamp (headlamp)			Continuity
Connector	Terminal	Connector		Terminal	
E123	54	RH	E107	3	Yes
	52	LH	E11		



OK or NG

OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .

NG >> Check for short circuits and open circuits in harness between IPDM E/R and headlamps. Repair as necessary.

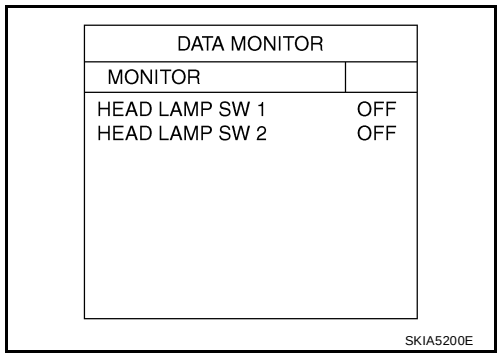
Headlamps Do Not Turn OFF

EKS00CM6

1. CHECK COMBINATION SWITCH INPUT SIGNAL

Select "BCM" on CONSULT-II. With "HEAD LAMP" data monitor, make sure "HEAD LAMP SW 1" and "HEAD LAMP SW 2" turns ON-OFF linked with operation of lighting switch.

When lighting switch is in OFF position
: HEAD LAMP SW 1 OFF
: HEAD LAMP SW 2 OFF



OK or NG

OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .

NG >> GO TO 2.

2. CHECK LIGHTING SWITCH

Check lighting switch. Refer to LT-74, "Combination Switch Inspection" .

OK or NG

OK >> GO TO 3.

NG >> Replace lighting switch. Refer to LT-70, "Removal and Installation" .

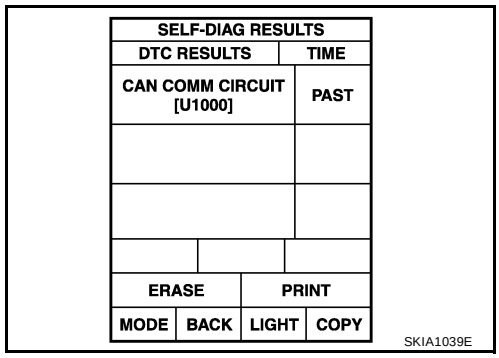
3. CHECKING CAN COMMUNICATIONS BETWEEN BCM AND IPDM E/R

Select "BCM" on CONSULT-II and perform self-diagnosis for BCM.

Display of self-diagnosis results

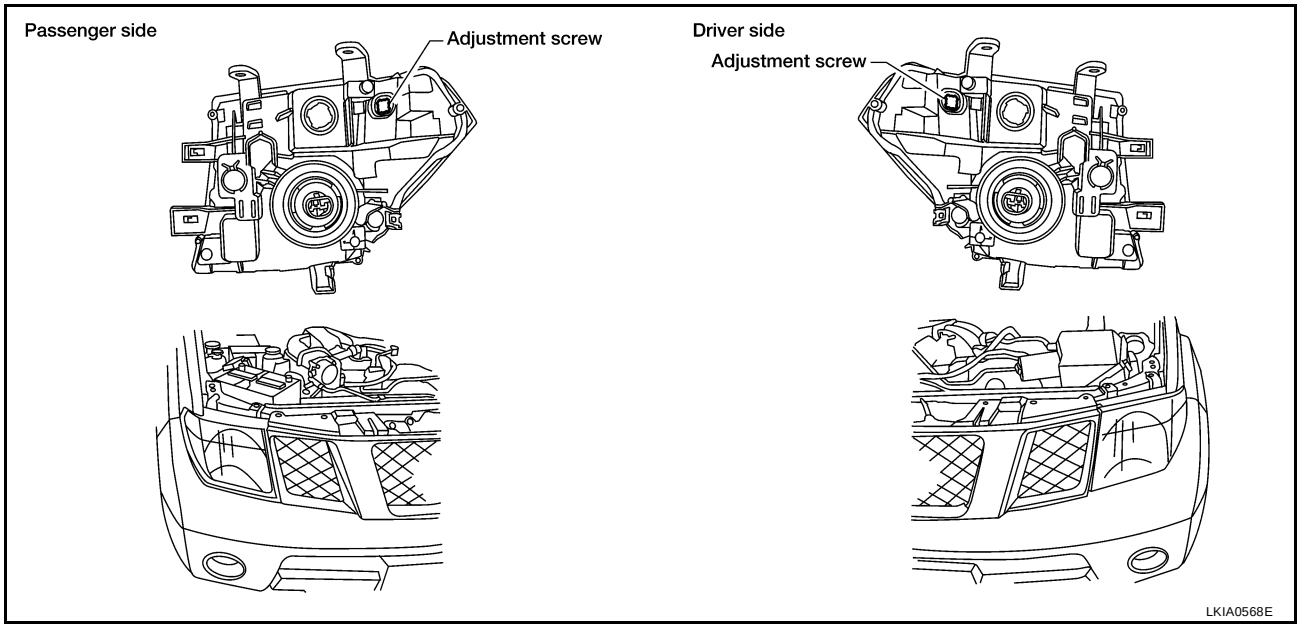
NO DTC>> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .

CAN COMM CIRCUIT>> Refer to BCS-18, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .



Aiming Adjustment

EKS00BP2



NOTE:

- For headlamp aiming details, refer to the regulations in your area.
- If vehicle front body has been repaired or the headlamp assembly has been replaced, check headlamp aiming.
- Before performing aiming adjustment, check the following:

– Confirm headlamp aiming switch is set to "0" (zero) position.
– Ensure all tires are inflated to correct pressure.
– Place vehicle and screen on level surface.
– Ensure there is no load in vehicle other than the driver (or equivalent weight placed in driver's position). Coolant and engine oil filled to correct level, and fuel tank full.
– Confirm spare tire, jack and tools are properly stowed.
– Aim each headlamp individually and ensure other headlamp beam pattern is blocked from screen.
– Use adjusting screw to perform aiming adjustment

LOW BEAM AND HIGH BEAM

CAUTION:

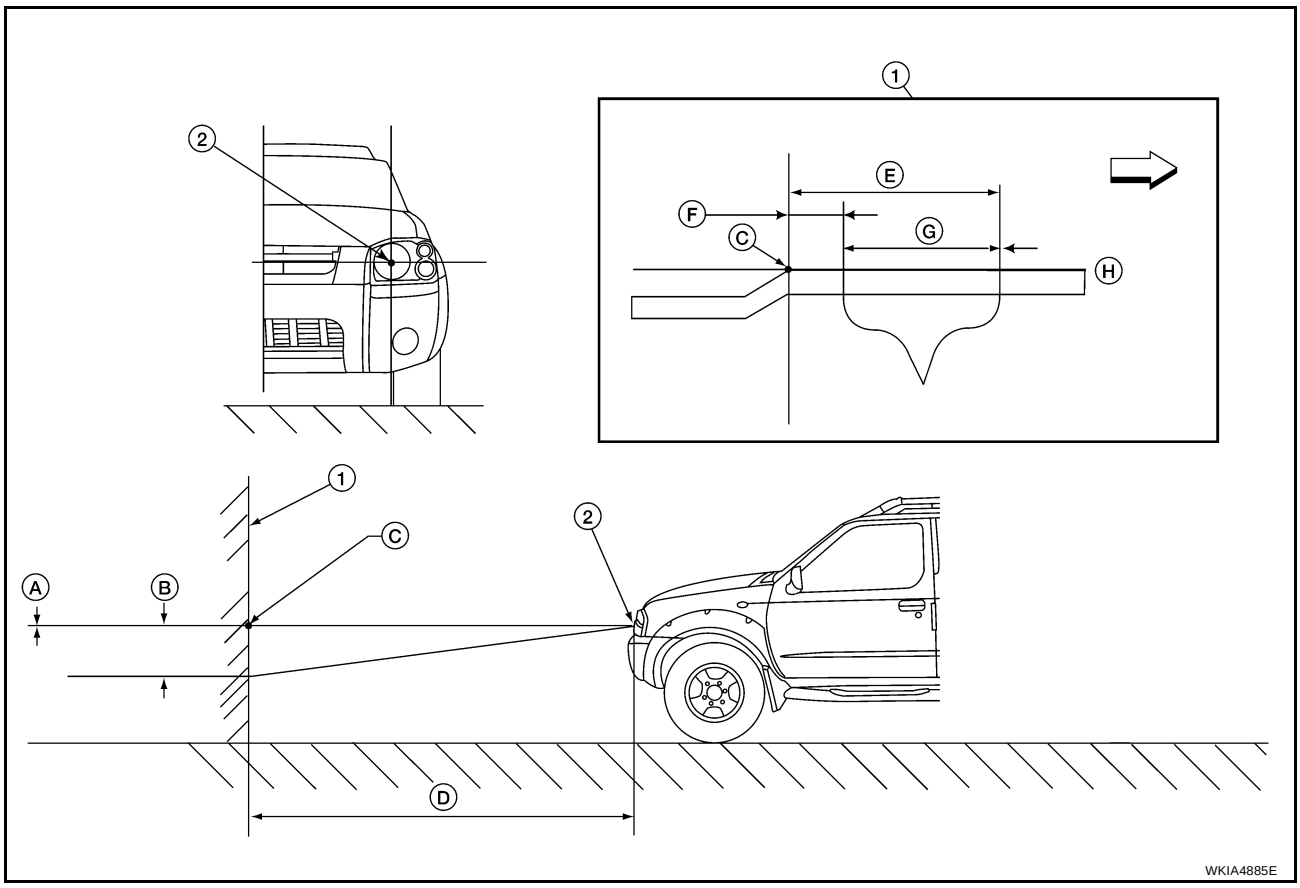
Do not tighten adjustment screw beyond a torque of 1.67 N·m (17 kg-cm, 14.8 in-lb) or damage may occur.

NOTE:

By regulation, no means for horizontal aim adjustment is provided from the factory; only vertical aim is adjustable.

1. Turn headlamp low beam on.
2. Use adjustment screw to perform aiming adjustment.
3. Adjust beam pattern until cut-off line (top edge of illumination area) is positioned at same height off ground as bulb center (on H-line). Measure cut-off line within distance A on H-line. See aiming chart below.
   - Basic illuminating area for adjustment should be within the range shown on the aiming chart. Adjust headlamps accordingly.

HEADLAMP AIMING



1	Adjustment screen	2	Headlamp bulb center (HV point)	A	Minimum acceptable vertical aim dimension (see aiming chart)
B	Maximum acceptable vertical aim dimension (see aiming chart)	C	H-V point	D	Distance of headlamp aiming screen from vehicle 7.62 m (25 ft.)
E	Maximum aim evaluation distance from vertical center on aiming screen 399mm (3° R).	F	Minimum aim evaluation distance from vertical center on aiming screen 133 mm (1°R)	G	Aim evaluation area
H	Horizontal aiming evaluation line.	⇐	Right		

Aiming Chart

A (Minimum acceptable vertical aim dimension)	-3.3 mm (0.13 in)	0.025° up
B (Maximum acceptable vertical aim dimension)	36.6 mm (1.44 in)	0.275° down

Bulb Replacement

EKS00HM3

CAUTION:

Leaving bulb removed from the headlamp housing for a long period of time can deteriorate the performance of the lens and reflector (dirt, clouding). Always prepare a new bulb and have it on hand when replacing a bulb.

HEADLAMP BULB

Removal

CAUTION:

Grasp only the plastic base when handling headlamp bulb. Never touch the glass envelope.

1. Turn front headlamp switch OFF.
2. Disconnect the electrical connector.
3. Rotate the headlamp bulb retaining ring counterclockwise and remove.
4. Pull the headlamp bulb straight out from the headlamp assembly.

Installation

Installation is in the reverse order of removal.

CAUTION:

After installing bulb, be sure to install the bulb socket and plastic cap securely to ensure watertightness.

FRONT TURN SIGNAL/PARKING LAMP

Removal

1. Turn the bulb socket counterclockwise to unlock it.
2. Pull the bulb to remove it from the socket.

Installation

Installation is in the reverse order of removal.

CAUTION:

After installing bulb, be sure to install the bulb socket and plastic cap securely to ensure watertightness.

FRONT SIDE MARKER LAMP

Removal

1. Turn the bulb socket counterclockwise to unlock it.
2. Pull the bulb to remove it from the socket.

Installation

Installation is in the reverse order of removal.

CAUTION:

After installing bulb, be sure to install the bulb socket securely for watertightness.

Removal and Installation

EKS00HM4

FRONT COMBINATION LAMP

Removal

1. Position front fender protector aside. Refer to EI-22, "FENDER PROTECTOR" .
2. Remove the front bumper upper valance. Refer to EI-15, "PLASTIC BUMPER" .
3. Remove the front combination lamp bolts.
4. Disconnect the front combination lamp connector and remove front combination lamp.

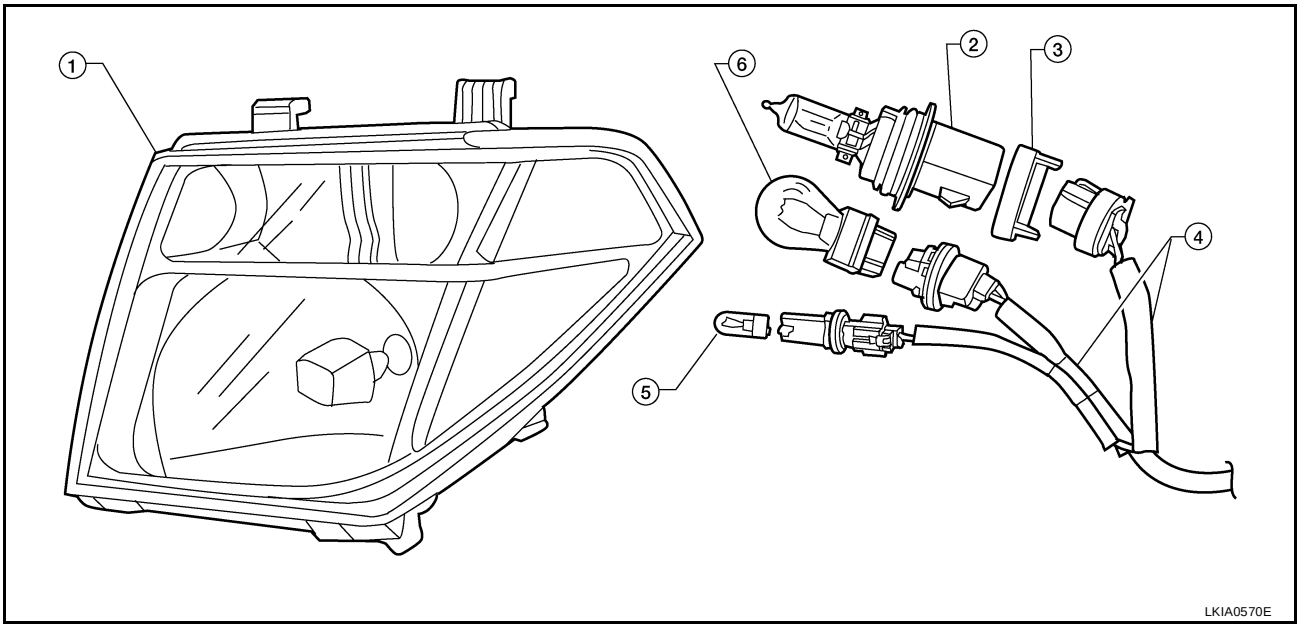
Installation

Installation is in the reverse order of removal.

: 6.0 N·m (0.61 kg-m, 53 in-lb)

Disassembly and Assembly

EKS00BP5



1. Headlamp assembly
2. Headlamp bulb
3. Headlamp bulb retaining ring
4. Wiring harness assembly
5. Front side marker lamp bulb
6. Front turn signal/parking lamp bulb

DISASSEMBLY

CAUTION:

Leaving bulb removed from the headlamp housing for a long period of time can deteriorate the performance of the lens and reflector (dirt, clouding). Always prepare a new bulb and have it on hand when replacing a bulb.

1. Rotate headlamp bulb retaining ring counterclockwise and remove.

   CAUTION:

   Grasp only the plastic base when handling headlamp bulb. Never touch the glass envelope.
2. Turn front turn signal/parking lamp bulb socket counterclockwise to unlock and remove socket.
3. Turn front side marker lamp bulb socket counterclockwise to unlock and remove socket.

ASSEMBLY

Installation is in the reverse order of removal.

CAUTION:

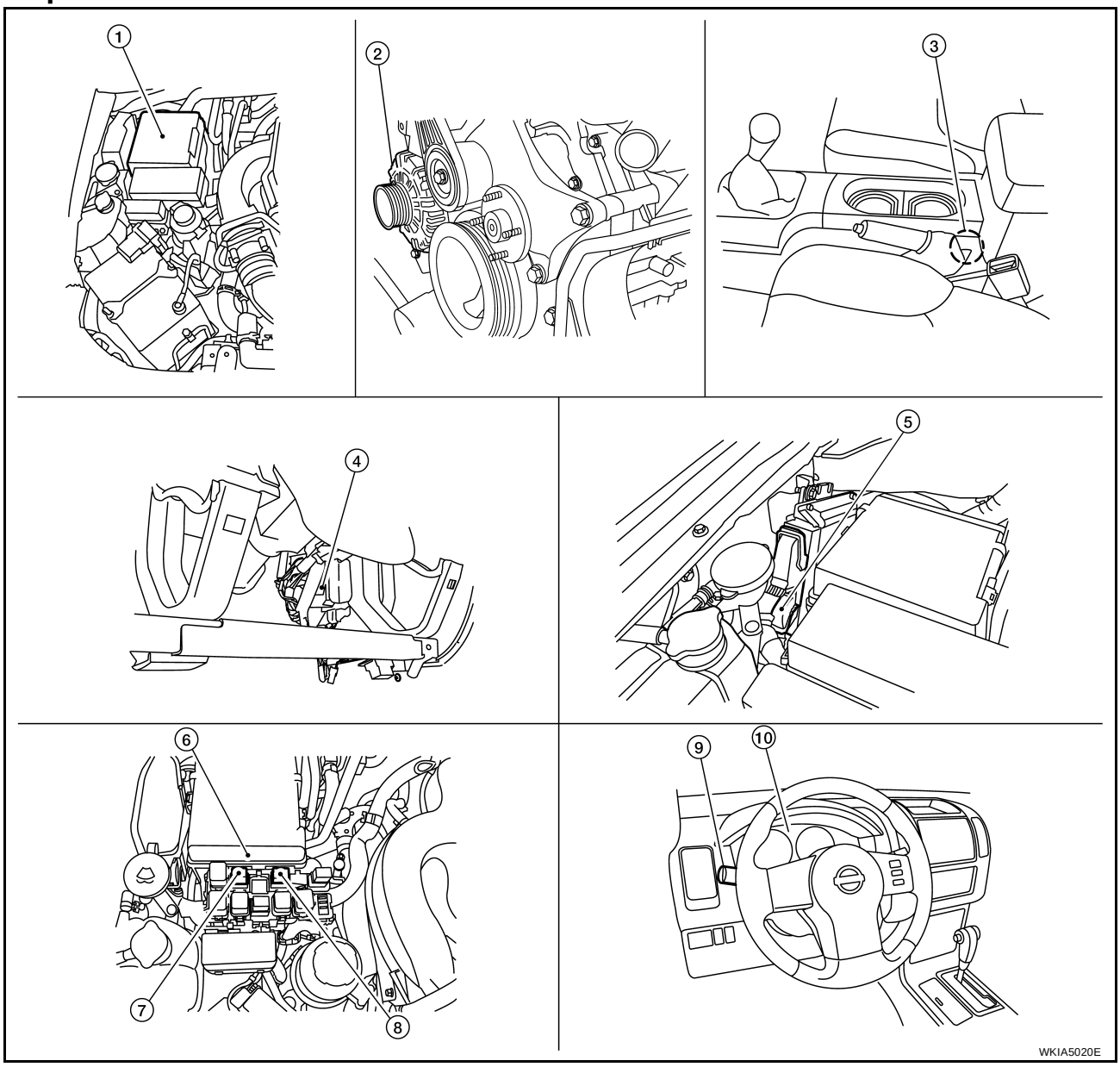
After installing bulb, be sure to install the bulb socket and plastic cap securely to ensure watertightness.

HEADLAMP (FOR CANADA) - DAYTIME LIGHT SYSTEM -

PFP:26010

Component Parts and Harness Connector Location

EKS00BP6



1. IPDM E/R
   E122, E123, E124
2. Generator
   E205
3. Parking brake switch
   B84
4. BCM
   M18, M20
   (view with lower instrument panel LH removed)
5. ECM
   E16
   (view with ECM cover removed)
6. Fuse and relay box
7. Daytime light relay 1
   E103
8. Daytime light relay 2
   E104
9. Combination switch (lighting switch)
   M28
10. Combination meter
    M24

System Description

EKS00CM7

Daytime light system turns on daytime light lamps while driving. Daytime light lamps are not turned on if engine is activated with parking brake on. Take off parking brake to turn on daytime light lamps. The lamps turn off when lighting switch is in the 2ND position or AUTO position (Headlamp is "ON") and when lighting switch is in the PASSING position. (Daytime light lamps are not turned off only by parking brake itself.)
A parking brake signal and engine run or stop signal are sent to BCM (body control module) by CAN communication line.

OUTLINE

Power is supplied at all times

- through 10A fuse [No. 19, located in the fuse block (J/B)]
- to combination meter terminal 3, and
- through 20A fuse [No. 53, located in the IPDM E/R (intelligent power distribution module engine room)]
- to CPU (central processing unit) of IPDM E/R, and
- to ignition relay, located in the IPDM E/R, and
- to headlamp high relay, located in the IPDM E/R, and
- to headlamp low relay, located in the IPDM E/R, and
- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM terminal 70, and
- through 10A fuse (No. 45, located in the IPDM E/R)
- to daytime light relay 1 terminals 2 and 5.

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

- to ignition relay, located in the IPDM E/R, and
- through 10A fuse [No. 14, located in the fuse block (J/B)]
- to combination meter terminal 16, and
- through 10A fuse [No. 1, located in the fuse block (J/B)]
- to BCM terminal 38.

Ground is supplied

- to BCM terminal 67 and
- to combination meter terminals 13 and 23
- through grounds M57, M61 and M79, and
- to IPDM E/R terminals 38 and 59
- through grounds E9, E15 (all) and E24 (VQ40DE engine only).

Low Beam Operation

With the lighting switch in 2ND position, the BCM receives input requesting the headlamps to illuminate. This input is communicated to the IPDM E/R across the CAN communication lines. The CPU of the IPDM E/R controls the headlamp low relay coil. When energized, this relay directs power

- through 15A fuse (No. 41, located in the IPDM E/R)
- through IPDM E/R terminal 54
- to front combination lamp RH (headlamp) terminal 3, and
- through 15A fuse (No. 40, located in the IPDM E/R)
- through IPDM E/R terminal 52
- to daytime light relay 2 terminals 2 and 5, and
- through daytime light relay 2 terminal 3
- to front combination lamp LH (headlamp) terminal 3.

Ground is supplied

- to front combination lamp RH (headlamp) terminal 2
- to daytime light relay 1 terminal 4
- to daytime light relay 2 terminal 1
- through grounds E9, E15 (all) and E24 (VQ40DE engine only).

When the CPU of the IPDM E/R energizes the headlamp low relay, it de-energizes daytime relay 1. When de-energized, this relay supplies ground

- to front combination lamp LH (headlamp) terminal 2
- through daytime light relay 1 terminal 3.

With power and ground supplied, low beam headlamps illuminate.

High Beam Operation/Flash-to-Pass Operation

With the lighting switch in 2ND position and placed in HIGH or PASS position, the BCM receives input requesting the headlamp high beams to illuminate. This input is communicated to the IPDM E/R across the CAN communication lines. The CPU of the combination meter controls the ON/OFF status of the HIGH BEAM indicator. The CPU of the IPDM E/R controls the headlamp high relay coil. When energized, this relay directs power

- through 10A fuse (No. 34, located in the IPDM E/R)
- through IPDM E/R terminal 56
- to front combination lamp RH (headlamp) terminal 1, and
- through 10A fuse (No. 35, located in the IPDM E/R)
- through IPDM E/R terminal 55
- to front combination lamp LH (headlamp) terminal 1.

Ground is supplied

- to front combination lamp RH (headlamp) terminal 2, and
- to daytime light relay 1 terminal 4, and
- to daytime light relay 2 terminal 1
- through grounds E9, E15 (all) and E24 (VQ40DE engine only).

When the CPU of the IPDM E/R energizes the headlamp high relay, it de-energizes daytime relay 1. When de-energized, this relay supplies ground

- to front combination lamp LH (headlamp) terminal 2
- through daytime light relay 1 terminal 3.

With power and ground supplied, the high beam headlamps illuminate.

DAYTIME LIGHT OPERATION

With the engine running, the lighting switch in the OFF or 1ST position and parking brake released, the IPDM E/R receives input requesting the daytime lights illuminate. This input is communicated across the CAN communication lines. The CPU of the IPDM E/R controls daytime light relay 1 which supplies ground

- to daytime light relay 1 terminal 1
- through IPDM E/R terminal 44.

When energized, daytime light relay 1 directs power

- through daytime light relay 1 terminal 3
- through front combination lamp LH (headlamp) terminal 2
- through front combination lamp LH (headlamp) terminal 1
- through IPDM E/R terminal 55
- through 10A fuse (No. 35, located in the IPDM E/R)
- through 10A fuse (No. 34, located in the IPDM E/R)
- through IPDM E/R terminal 56
- to front combination lamp RH (headlamp) terminal 1.

Ground is supplied

- to front combination lamp RH (headlamp) terminal 2
- through grounds E9, E15 (all) and E24 (VQ40DE engine only).

With power and ground supplied, the daytime lights illuminate. The high beam headlamps are now wired in series and illuminate at a reduced intensity.

COMBINATION SWITCH READING FUNCTION

Refer to BCS-3, "COMBINATION SWITCH READING FUNCTION" .

AUTO LIGHT OPERATION

For auto light operation, refer to LT-38, "System Description" .

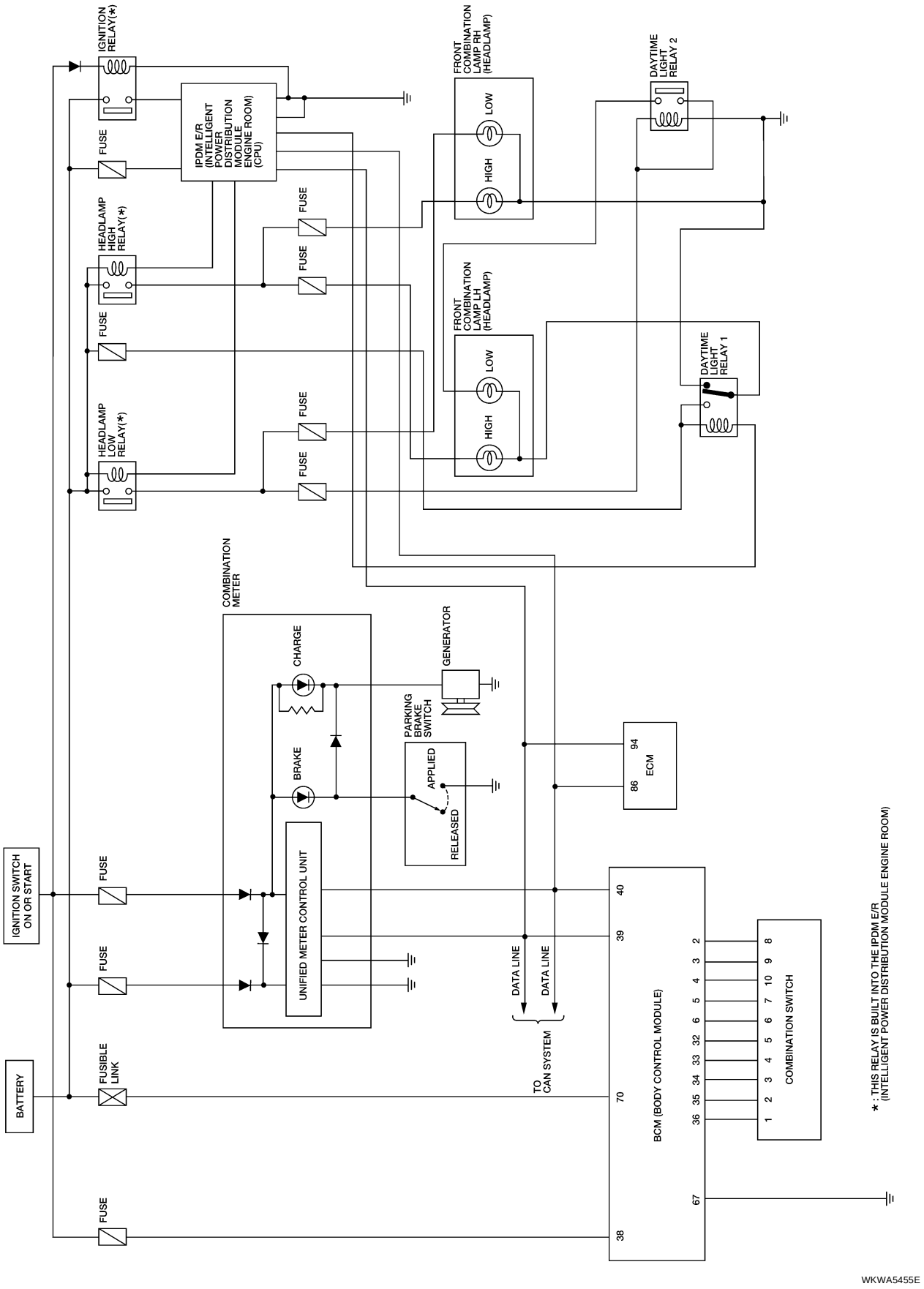
CAN Communication System Description

EKS00BP8

Refer to LAN-4, "CAN Communication System" .

Schematic

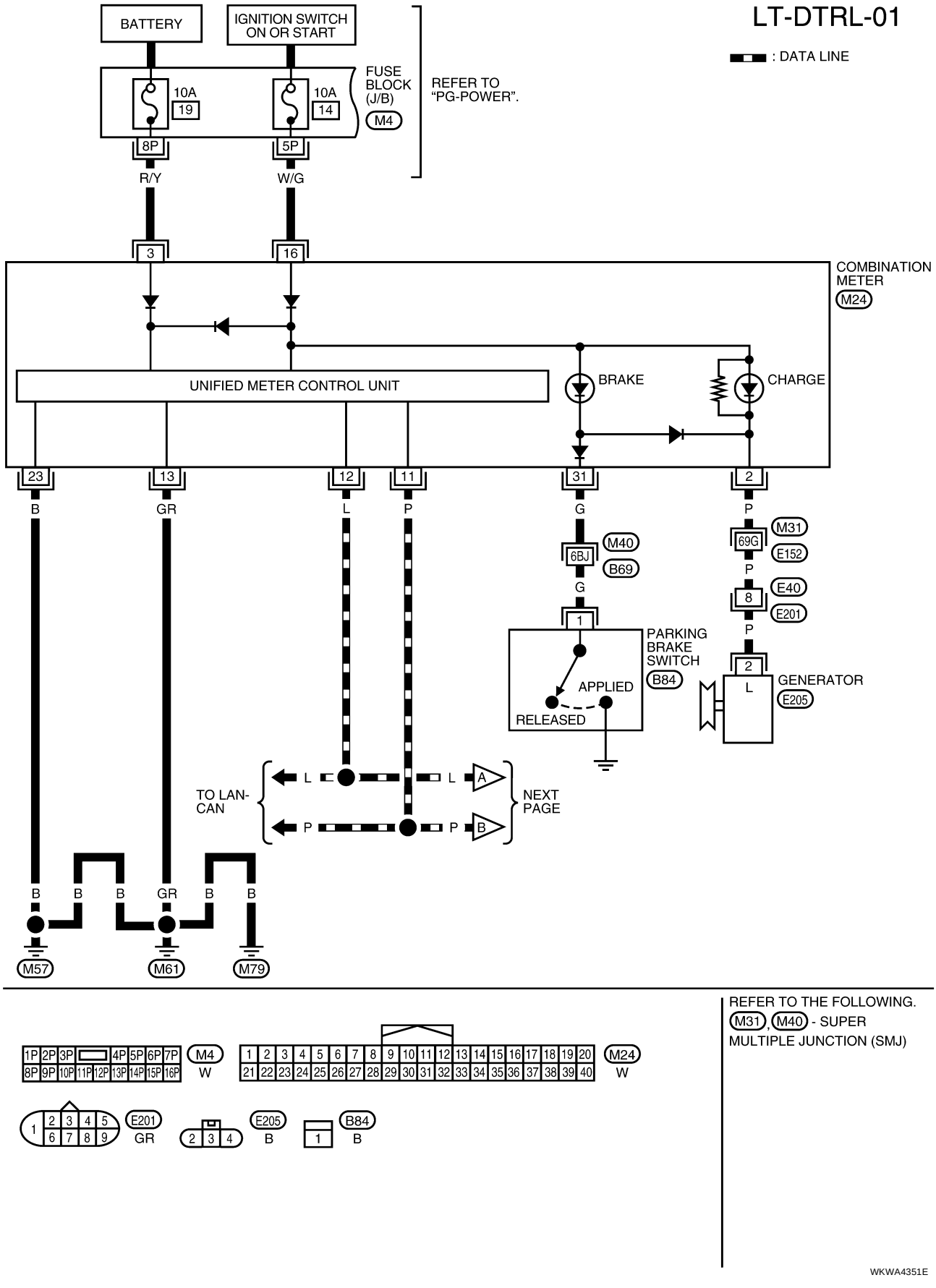
EKS00BP9



WKWA5455E

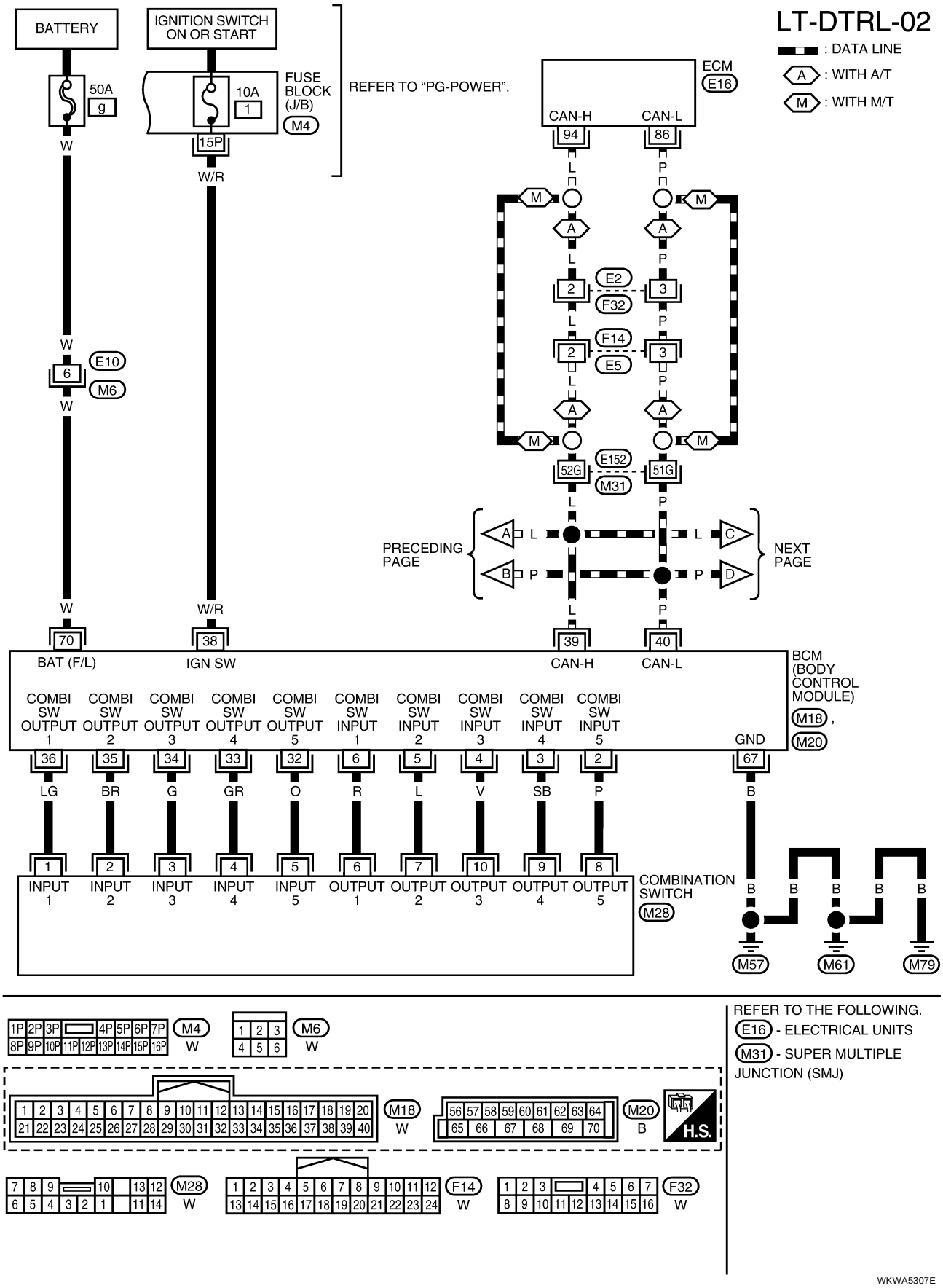
Wiring Diagram — DTRL —

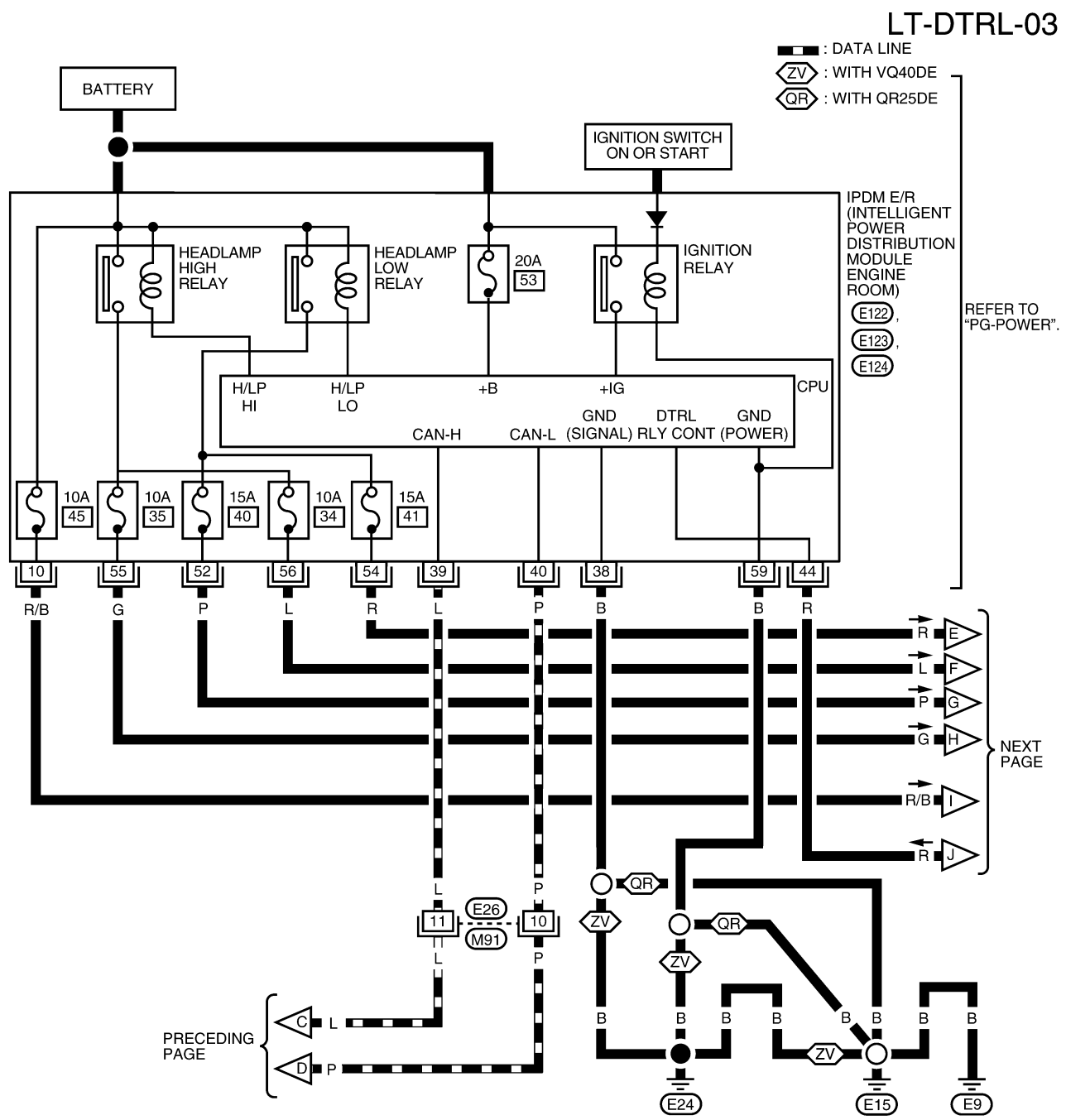
EKS00BPA



REFER TO THE FOLLOWING.
M31, M40 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA4351E

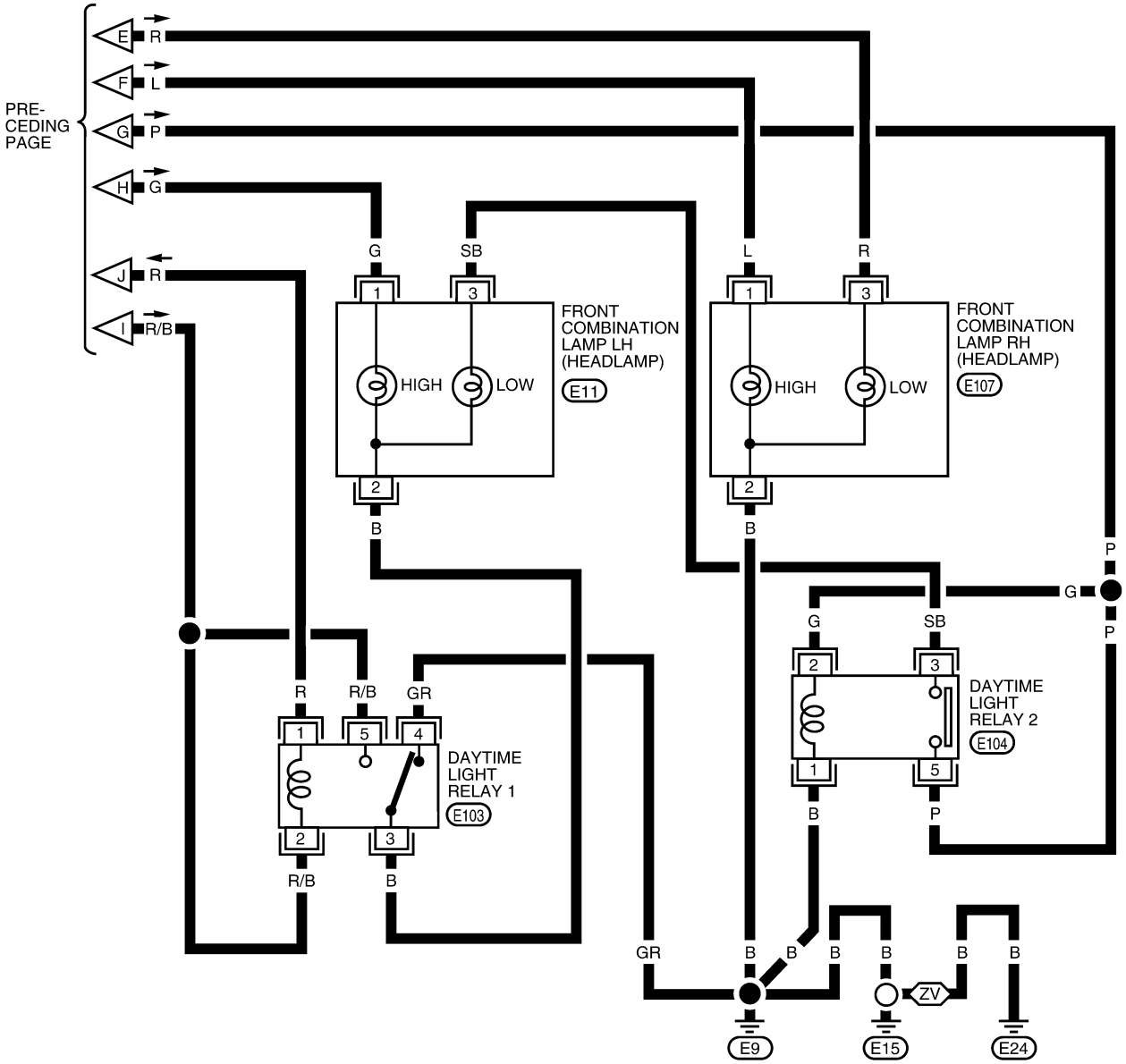

LT-DTRL-02
: DATA LINE
A : WITH A/T
M : WITH M/T
BATTERY
IGNITION SWITCH ON OR START
50A 9
10A 1
FUSE BLOCK (J/B) M4
REFER TO "PG-POWER".
15P
W
W/R
E10
6
M6
ECM E16
CAN-H 94
CAN-L 86
E2
F32
F14
E5
E152
M31
52G
51G
PRECEDING PAGE
NEXT PAGE
70
38
39
40
BAT (F/L)
IGN SW
CAN-H
CAN-L
BCM (BODY CONTROL MODULE) M18, M20
COMBI SW OUTPUT 1
COMBI SW OUTPUT 2
COMBI SW OUTPUT 3
COMBI SW OUTPUT 4
COMBI SW OUTPUT 5
COMBI SW INPUT 1
COMBI SW INPUT 2
COMBI SW INPUT 3
COMBI SW INPUT 4
COMBI SW INPUT 5
GND
36 35 34 33 32 6 5 4 3 2 67
LG BR G GR O R L V SB P B
1 2 3 4 5 6 7 10 9 8
INPUT 1 INPUT 2 INPUT 3 INPUT 4 INPUT 5 OUTPUT 1 OUTPUT 2 OUTPUT 3 OUTPUT 4 OUTPUT 5
COMBINATION SWITCH M28
M57
M61
M79
REFER TO THE FOLLOWING.
E16 - ELECTRICAL UNITS
M31 - SUPER MULTIPLE JUNCTION (SMJ)
M4 W
M6 W
M18 W
M20 B
M28 W
F14 W
F32 W
H.S.
WKWA5307E

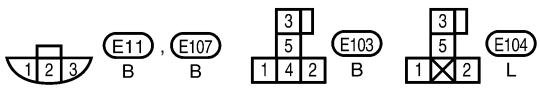

LT-DTRL-03
: DATA LINE
ZV : WITH VQ40DE
QR : WITH QR25DE
BATTERY
IGNITION SWITCH ON OR START
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E122, E123, E124
REFER TO "PG-POWER".
HEADLAMP HIGH RELAY
HEADLAMP LOW RELAY
20A 53
IGNITION RELAY
CPU
H/LP HI
H/LP LO
+B
+IG
CAN-H
CAN-L
GND (SIGNAL)
DTRL RLY CONT
GND (POWER)
10A 45
10A 35
15A 40
10A 34
15A 41
10 55 52 56 54 39 40 38 59 44
R/B G P L R L P B B R
NEXT PAGE
PRECEDING PAGE
E26
M91
11
10
QR
ZV
E24
E15
E9
E122 W
E123 BR
E124 B
M91 W

WKWA4353E

LT-DTRL-04

ZV: WITH VQ40DE





WKWA2871E

Terminals and Reference Values for BCM

EKS00CM8

Refer to BCS-12, "Terminals and Reference Values for BCM" .

How to Proceed With Trouble Diagnosis

EKS00CM9

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-27, "System Description" .
3. Perform the Preliminary Check. Refer to LT-12, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the headlamp operate normally? If YES: GO TO 6. If NO: GO TO 4.
6. Inspection End.

Preliminary Check

EKS00HM5

CHECK BCM CONFIGURATION

1. CHECK BCM CONFIGURATION

Confirm BCM configuration for "DTRL" is set to "WITH". Refer to BCS-18, "READ CONFIGURATION PROCEDURE" .

OK or NG

OK >> Continue preliminary check. Refer to LT-12, "CHECK POWER SUPPLY AND GROUND CIRCUIT FOR BCM" .

NG >> Change BCM configuration for "DTRL" to "WITH". Refer to BCS-21, "WRITE CONFIGURATION PROCEDURE" .

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT FOR BCM

Refer to BCS-16, "BCM Power Supply and Ground Circuit Check" .

INSPECTION PARKING BRAKE SWITCH CIRCUIT

1. CHECK BRAKE INDICATOR

1. Turn ignition switch ON.
2. Apply parking brake.
3. Release parking brake.

Brake indicator in combination meter should illuminate when parking brake is applied and turn OFF when released.

OK or NG

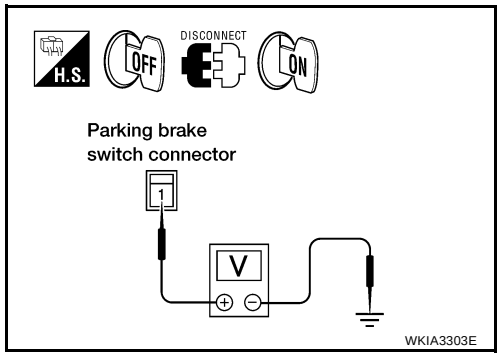
OK >> Inspection End.

NG >> GO TO 2.

2. CHECK PARKING BRAKE SWITCH SIGNAL

1. Disconnect parking brake switch connector.
2. Turn ignition switch ON.
3. Check voltage between parking brake switch harness connector B84 terminal 1 and ground.

1 - Ground : Battery voltage should exist.



OK or NG

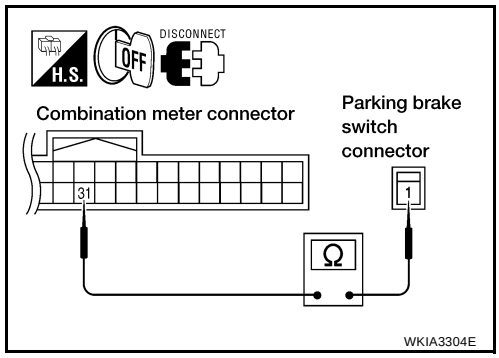
OK >> Replace parking brake switch.

NG >> GO TO 3.

3. CHECK PARKING BRAKE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect combination meter connector.
3. Check continuity between combination meter harness connector M24 terminal 31 and parking brake switch harness connector B84 terminal 1.

1 - 31 : Continuity should exist.



OK or NG

OK >> Replace combination meter. Refer to IP-13, "COMBINATION METER" .
NG >> Repair harness or connector.

CONSULT-II Function (BCM)

EKS00CMB

Refer to LT-12, "CONSULT-II Function (BCM)" .

CONSULT-II Function (IPDM E/R)

EKS00KX2

Refer to LT-13, "CONSULT-II Function (IPDM E/R)" .

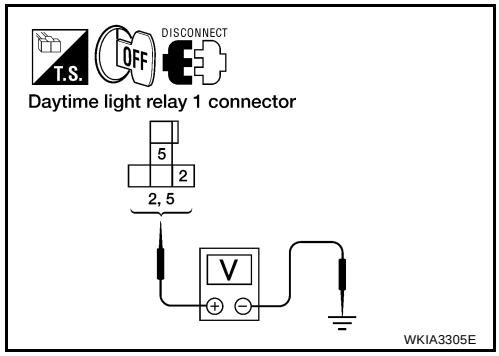
Daytime Light Control Does Not Operate Properly (Normal Headlamps Operate Properly)

EKS00CMC

1. CHECK DAYTIME LIGHT RELAY 1 POWER SUPPLY CIRCUIT

1. Remove daytime light relay 1.
2. Check voltage between daytime light relay 1 harness connector E103 terminals 2, 5 and ground.

2, 5 - Ground : Battery voltage should exist.



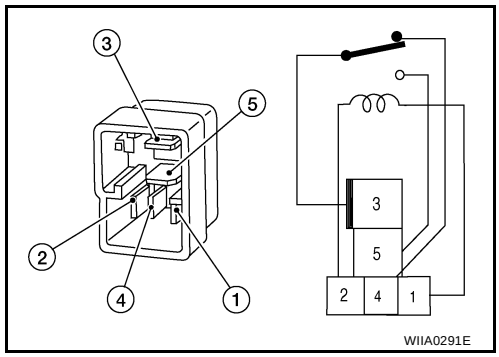
OK or NG

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

2. CHECK DAYTIME LIGHT RELAY 1

1. Apply battery voltage to daytime light relay 1 terminal 2 and ground terminal 1.
2. Check continuity between terminals 3 and 5.

3 - 5 : Continuity should exist.



OK or NG

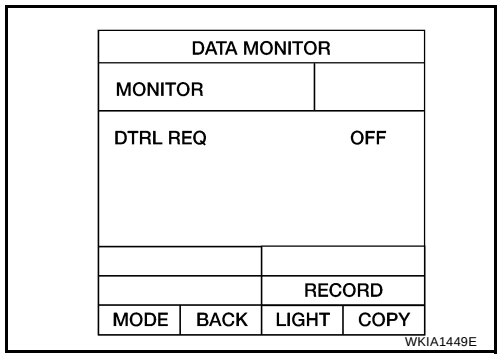
OK >> GO TO 3.
NG >> Replace daytime light relay 1.

3. CHECK INPUT SIGNAL

1. Connect daytime light relay 1.
2. Start engine and release parking brake. Headlamp switch OFF.
3. Select "IPDM E/R" on CONSULT-II. With data monitor, make sure "DTRL REQ" turns ON-OFF linked with operation of parking brake switch.

Parking brake ON : DTRL REQ ON

Parking brake OFF : DTRL REQ OFF



OK or NG

OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .

NG >> GO TO 4.

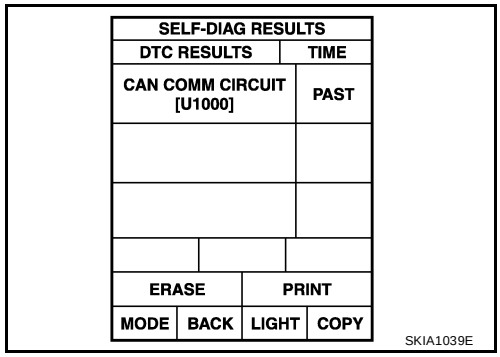
4. CHECKING CAN COMMUNICATIONS

Select "BCM" on CONSULT-II and perform self-diagnosis for BCM.

Displayed self-diagnosis results

NO DTC>>Replace BCM. Refer to BCS-25, "Removal and Installation" .

CAN COMM CIRCUIT>> Check BCM CAN communication system. Refer to BCS-18, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .



Aiming Adjustment

EKS00BPG

Refer to LT-23, "Aiming Adjustment" .

Bulb Replacement

EKS00BPH

Refer to LT-24, "Bulb Replacement" .

Removal and Installation

EKS00BPI

Refer to LT-25, "Removal and Installation" .

Disassembly and Assembly

EKS00BPJ

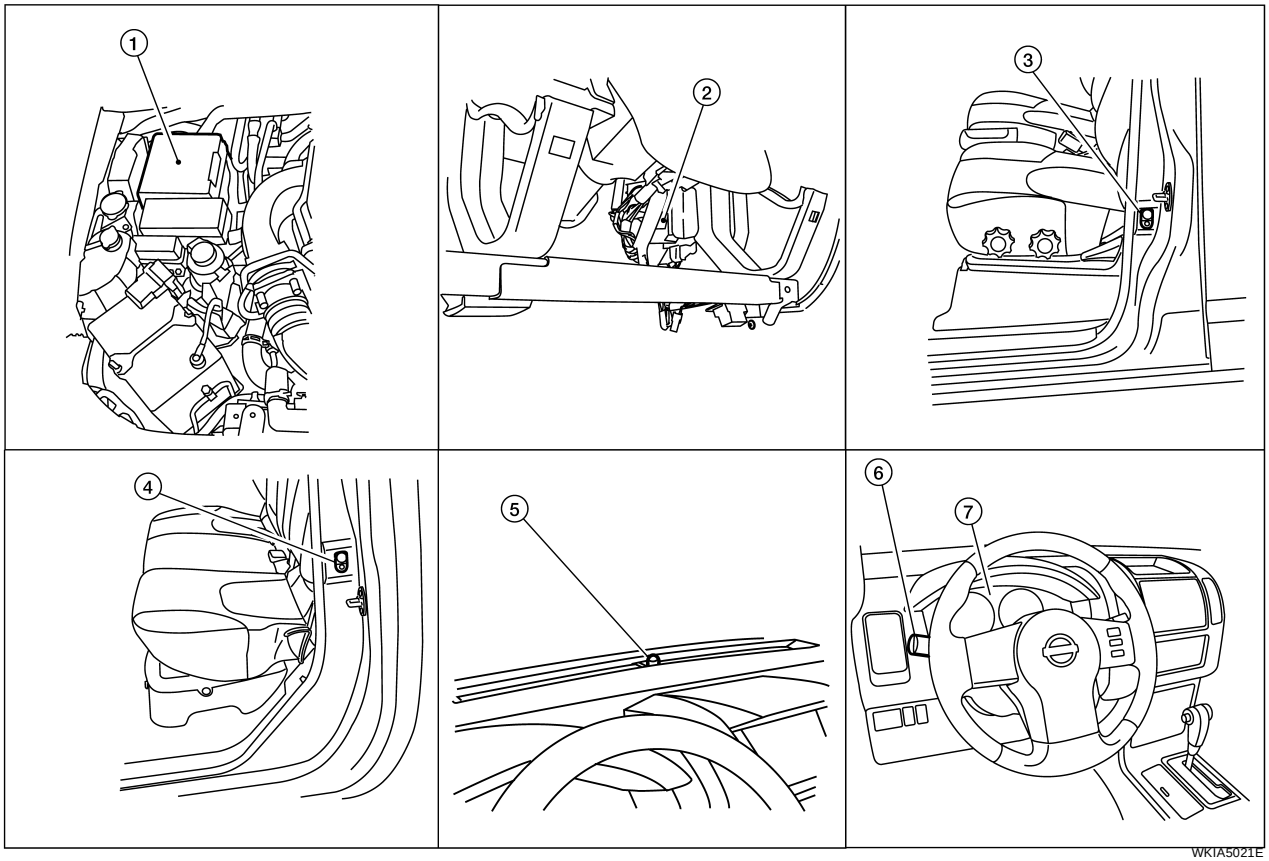
Refer to LT-26, "Disassembly and Assembly" .

AUTO LIGHT SYSTEM

PFP:28491

Component Parts and Harness Connector Location

EKS00BPK



WKIA5021E

1. IPDM E/R
   E122, E123, E124
2. BCM
   M18, M19, M20
   (view with lower instrument panel LH removed)
3. Front door switch
   LH B8
   RH B108
4. Rear door switch
   LH B18
   RH B116
5. Optical sensor
   M14
6. Combination switch (lighting switch)
   M28
7. Combination meter
   M24

System Description

EKS00CMD

Automatically turns on/off the parking lamps and the headlamps in accordance with ambient light.
Timing for when the lamps turn on/off can be selected using four modes.

OUTLINE

The auto light control system uses an optical sensor that detects outside brightness.
When the lighting switch is in "AUTO" position, it automatically turns on/off the parking lamps and the headlamps in accordance with the ambient light. Sensitivity can be adjusted in four steps. For the details of the setting, refer to LT-44, "SETTING CHANGE FUNCTIONS" .
Optical sensor ground is supplied

- to optical sensor terminal 3
- through BCM (body control module) terminal 18.

When ignition switch is turned to "ON" position and when outside brightness is darker than prescribed level, input is supplied

- to BCM terminal 58
- through optical sensor terminal 4.

The headlamps will then illuminate. For a description of headlamp operation, refer to LT-5, "System Description" .

COMBINATION SWITCH READING FUNCTION

Refer to BCS-3, "COMBINATION SWITCH READING FUNCTION" .

EXTERIOR LAMP BATTERY SAVER CONTROL

When the combination switch (lighting switch) is in the AUTO position, and the ignition switch is turned from ON or ACC to OFF, and one of the front doors is opened, the battery saver control feature is activated.
Under this condition, the headlamps remain illuminated for 5 minutes, then the headlamps are turned off.
Exterior lamp battery saver control mode can be changed by the function setting of CONSULT-II.

DELAY TIMER FUNCTION

When the ignition switch is ON and auto light switch is ON, the BCM turns on/off the headlamps. In delay timer function, ignition is OFF, auto light sensor power source is OFF and the headlamps are not turned on/off by the BCM. On condition that:

- when the state of ignition switch ON or ACC is ON and output judgment by auto light function is headlamp ON changes to ignition switch and ACC are OFF and any door switch is ON, output judgment by BCM should be headlamp ON for 5 minutes by timer. After time out, output judgment by BCM should be headlamp OFF.
- when the state of any door switch is turned to ON from OFF while 45 second or 5 minute timer is counting, timer stops, and restarts counting for 5 minutes, then BCM judges output as headlamp ON. After time out, BCM judges output as headlamp OFF.
- when the state of front door switch (LH), front door switch (RH), rear door switch LH or rear door switch RH is ON turns to all door switches are OFF while 45 second or 5 minute timer is counting, timer stops, and restarts counting for 45 seconds, then BCM judges output as headlamp ON. After timer out, BCM judges output as headlamp OFF.
- when the state is ignition switch ON or ACC is ON or auto light switch OFF while timer is counting, timer stops counting and BCM turns on/off lamps according to headlamp function, front fog lamp function, auto light function and headlamp battery save function.

Delay timer control mode can be changed by the function setting of CONSULT-II.

CAN Communication System Description

EKS00BPM

Refer to LAN-4, "CAN Communication System" .

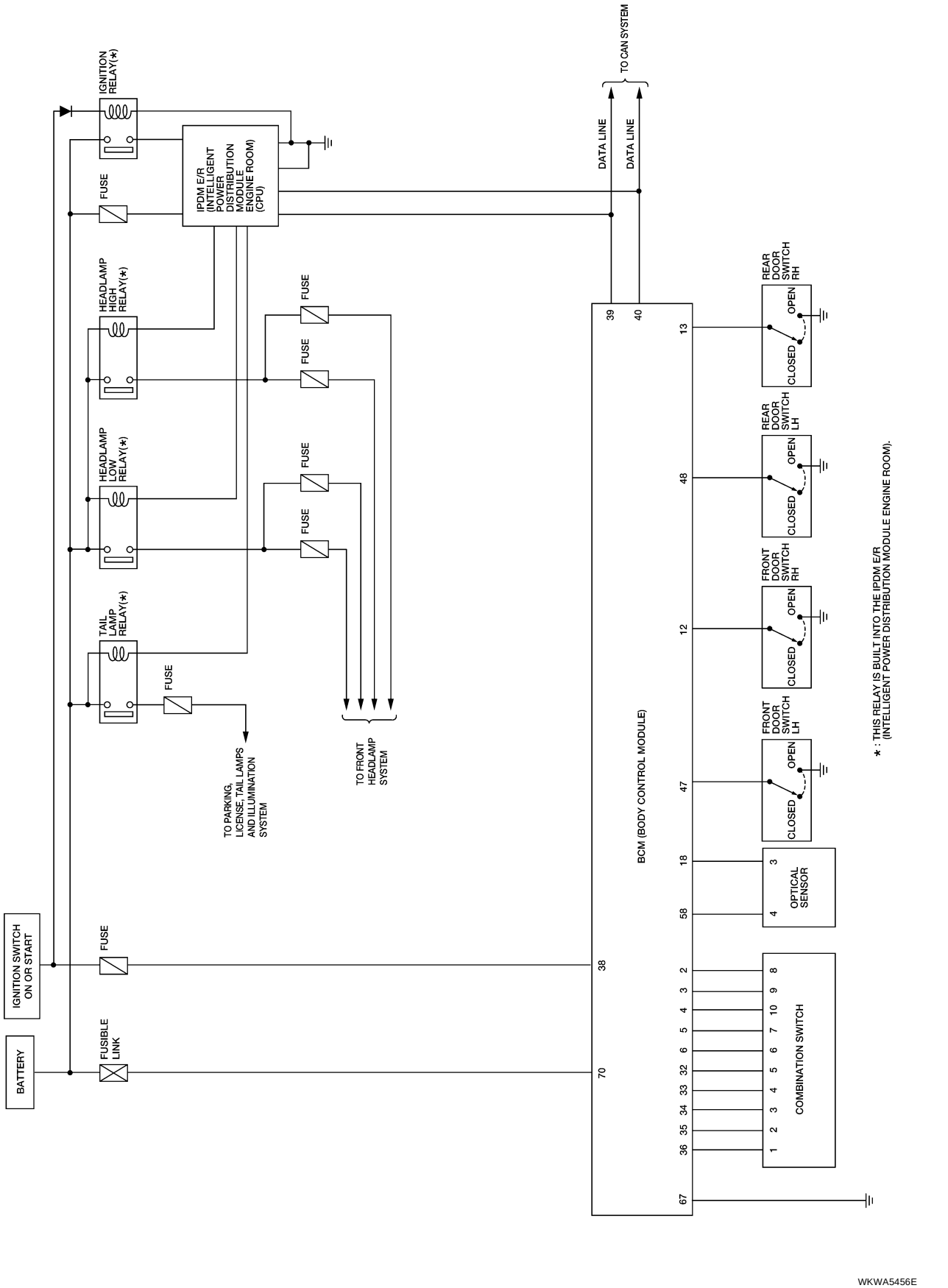
Major Components and Functions

EKS00BPN

Components	Functions
BCM	● Turns on/off circuits of tail light and headlamp according to signals from light sensor, lighting switch (AUTO), front door switch LH, front door switch RH, rear door switches, and ignition switch (ON, OFF).
Optical sensor	● Converts ambient light (lux) to voltage, and sends it to BCM. (Detects lightness of 50 to 1,300 lux)

Schematic

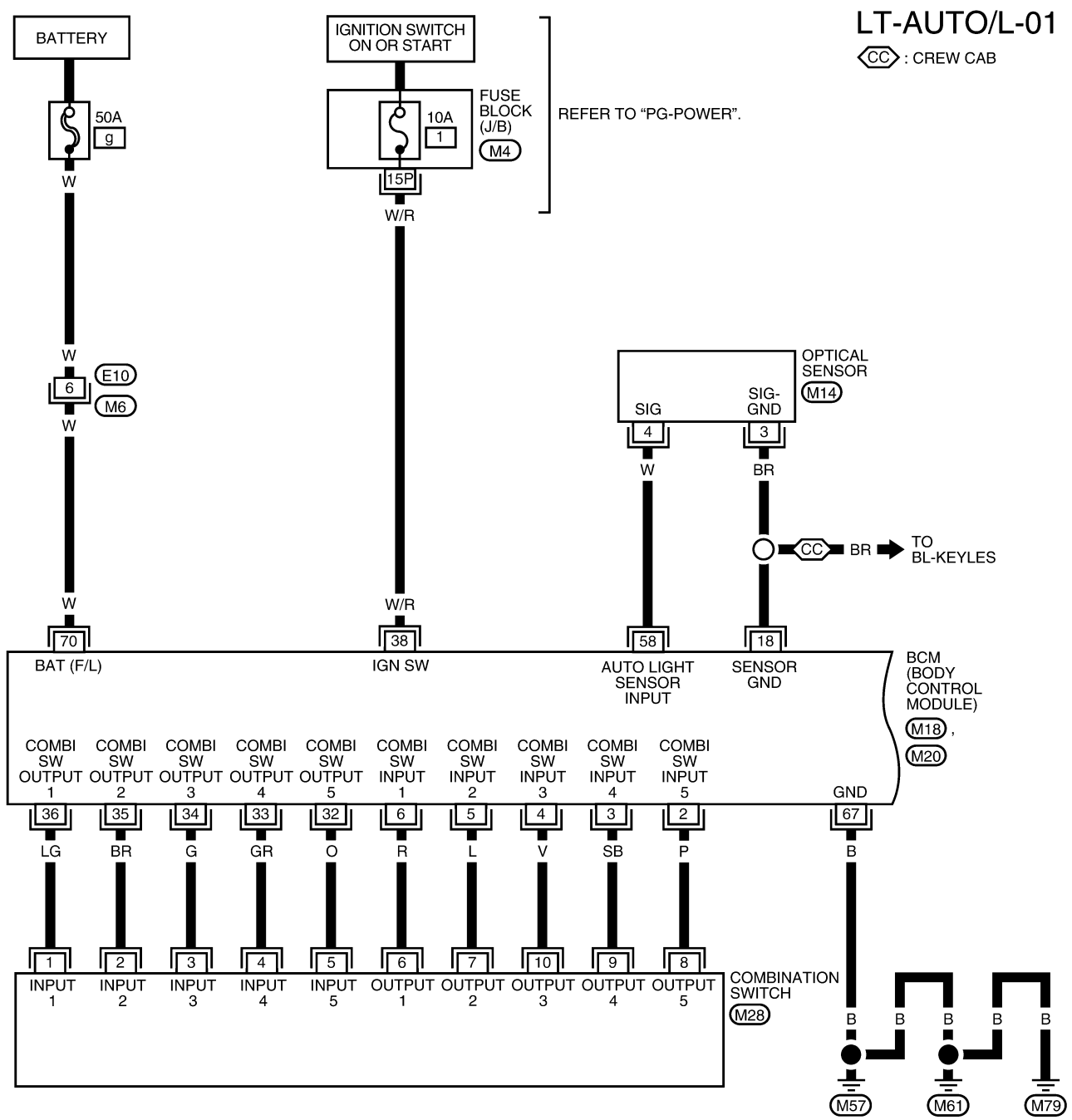
EKS00BPO

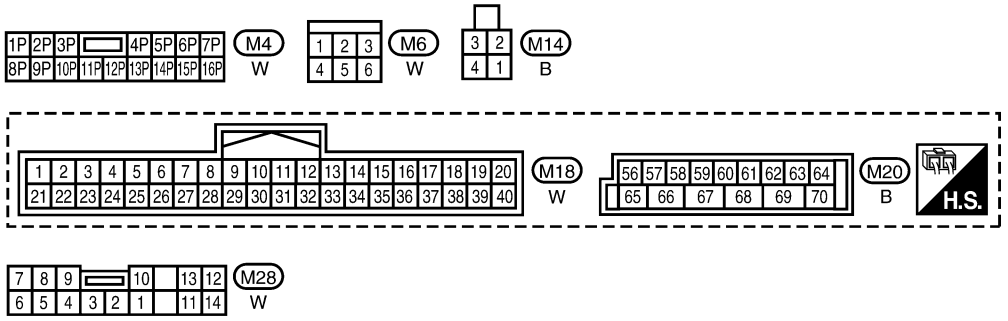


WKWA5456E

Wiring Diagram — AUTO/L —

EKS00BPP





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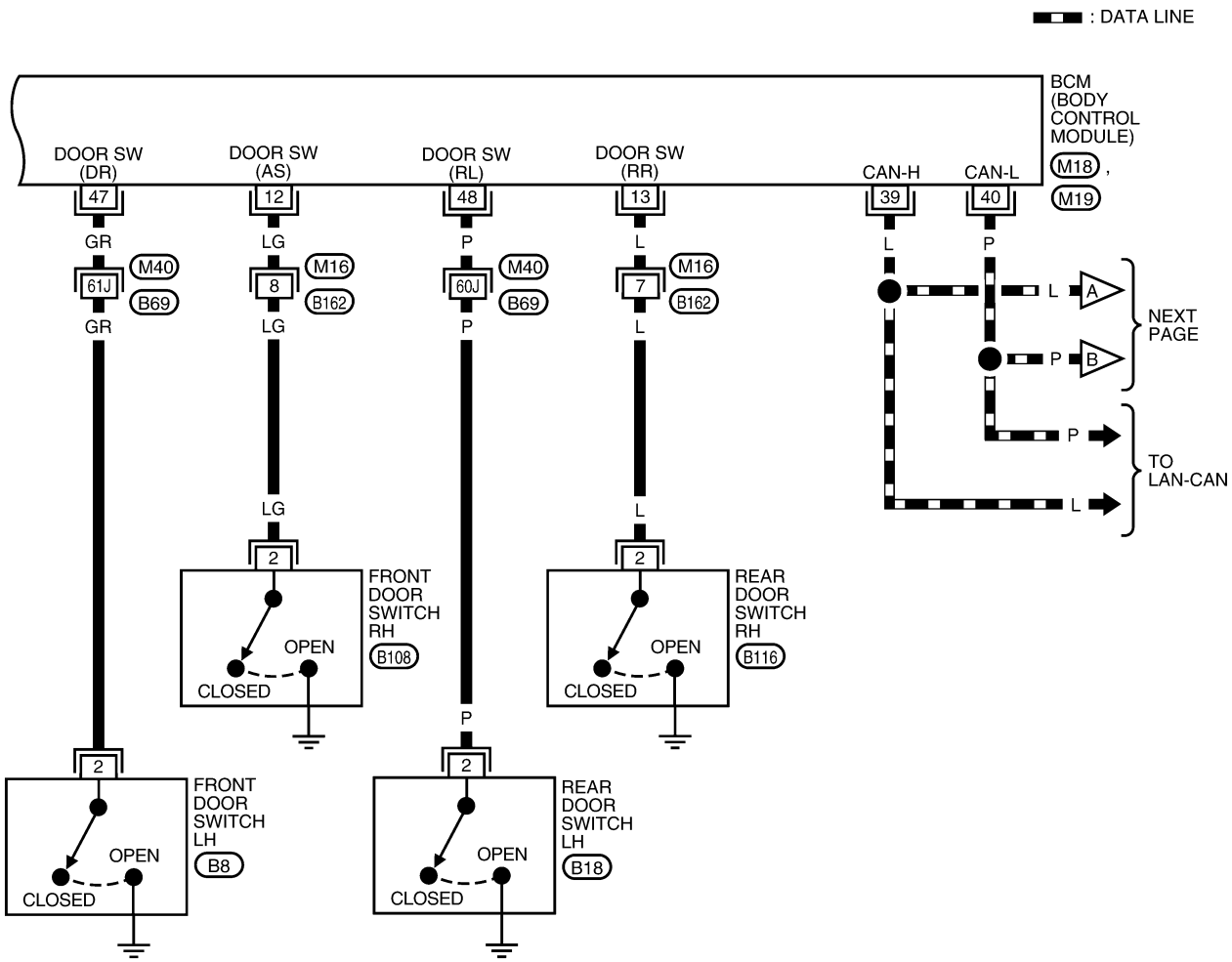
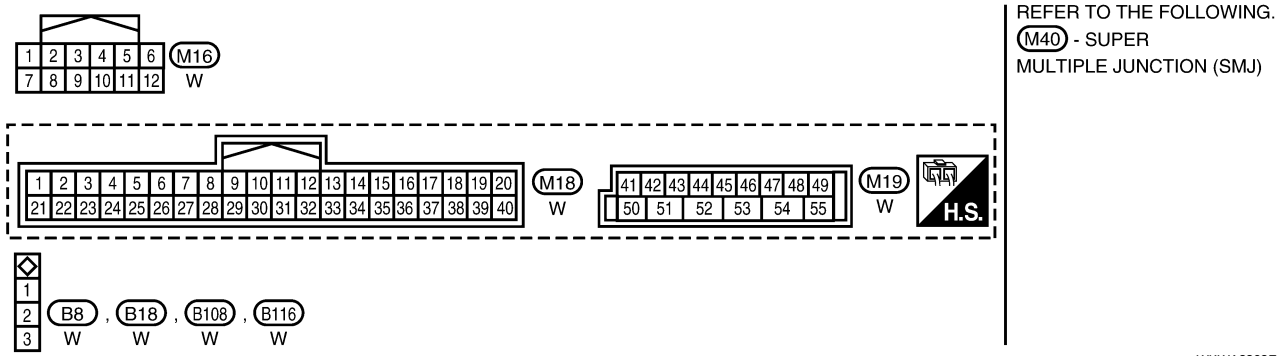
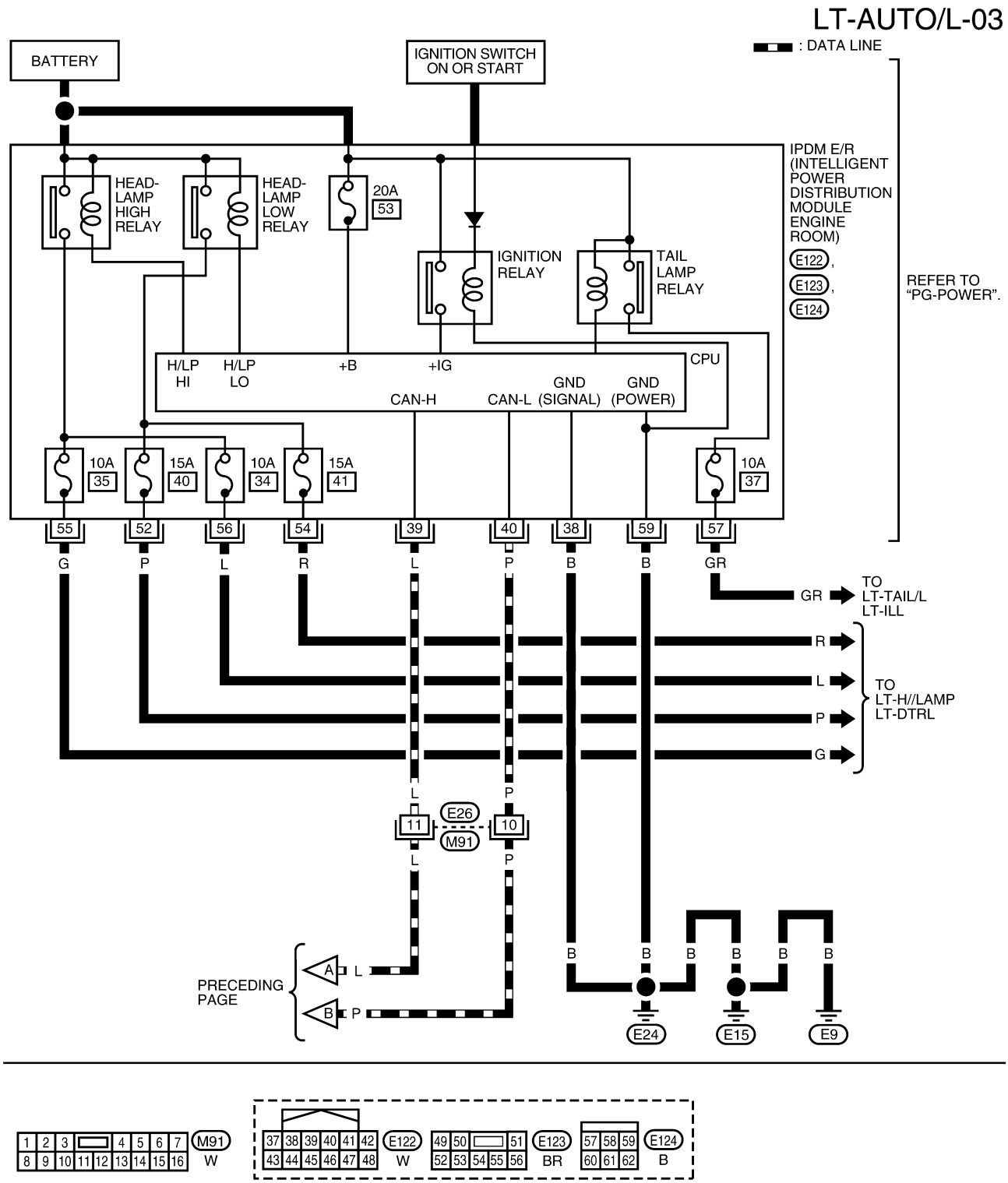
LT-AUTO/L-02





REFER TO THE FOLLOWING.
M40 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA2202E


LT-AUTO/L-03
: DATA LINE
BATTERY
IGNITION SWITCH ON OR START
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E122, E123, E124
REFER TO "PG-POWER".
HEAD-LAMP HIGH RELAY
HEAD-LAMP LOW RELAY
20A 53
IGNITION RELAY
TAIL LAMP RELAY
CPU
H/LP HI
H/LP LO
+B
+IG
CAN-H
CAN-L
GND (SIGNAL)
GND (POWER)
10A 35
15A 40
10A 34
15A 41
10A 37
55 52 56 54 39 40 38 59 57
G P L R L P B B GR
GR TO LT-TAIL/L LT-ILL
R L P G TO LT-H//LAMP LT-DTRL
E26
11 10
M91
PRECEDING PAGE
A L
B P
E24 E15 E9
M91 W
E122 W
E123 BR
E124 B

WKWA4356E

Terminals and Reference Values for BCM

EKS00CME

Refer to BCS-12, "Terminals and Reference Values for BCM" .

Terminals and Reference Values for IPDM E/R

EKS00CMF

Refer to PG-28, "Terminals and Reference Values for IPDM E/R" .

How to Proceed With Trouble Diagnosis

EKS00CMG

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-38, "System Description" .
3. Carry out the Preliminary Check. Refer to LT-44, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction. Refer to LT-46, "Trouble Diagnosis Chart by Symptom" .
5. Does the auto light system operate normally? If YES: GO TO 6. If NO: GO TO 4.
6. Inspection End.

Preliminary Check

EKS00CMH

SETTING CHANGE FUNCTIONS

Sensitivity of auto light system can be adjusted using CONSULT-II. Refer to LT-44, "WORK SUPPORT" .

CHECK BCM CONFIGURATION

1. CHECK BCM CONFIGURATION

Confirm BCM configuration for "AUTO LIGHT" is set to "WITH". Refer to BCS-18, "READ CONFIGURATION PROCEDURE" .

OK or NG

OK >> Continue preliminary check. Refer to LT-44, "CHECK POWER SUPPLY AND GROUND CIRCUIT FOR BCM" .

NG >> Change BCM configuration for "AUTO LIGHT" to "WITH". Refer to BCS-21, "WRITE CONFIGURATION PROCEDURE" .

CHECK POWER SUPPLY AND GROUND CIRCUIT FOR BCM

Refer to BCS-16, "BCM Power Supply and Ground Circuit Check" .

CHECK POWER SUPPLY AND GROUND CIRCUIT FOR IPDM E/R

Refer to PG-30, "IPDM E/R Power/Ground Circuit Inspection" .

CONSULT-II Function (BCM)

EKS00CMI

Refer to LT-12, "CONSULT-II Function (BCM)" .

CONSULT-II START PROCEDURE

Refer to GI-38, "CONSULT-II Start Procedure" .

WORK SUPPORT

Work Support Setting Item

Sensitivity of auto light can be selected and set from four modes.

Work item	Description
CUSTOM A/LIGHT SETTING	Auto light sensitivity can be changed in this mode. Sensitivity can be adjusted in four modes. ● MODE 1 (Normal-default)/ MODE 2 (Desensitized)/MODE 3 (Sensitive)/MODE4 (Insensitive)
ILL DELAY SET	Auto light delay off timer period can be changed in this mode. Selects auto light delay off timer period among eight modes. ● MODE 1 (45 sec.)/MODE 2 (OFF)/MODE 3 (30 sec.)/MODE 4 (60 sec.)/MODE 5 (90 sec.)/ MODE 6 (120 sec.)/MODE 7 (150 sec.)/MODE 8 (180 sec.)

DATA MONITOR
Display Item List

Monitor item		Contents
IGN ON SW	"ON/OFF"	Displays "IGN position (ON)/OFF, ACC position (OFF)" judged from the ignition switch signal.
ACC ON SW	"ON/OFF"	Displays "ACC (ON)/OFF, Ignition OFF (OFF)" status judged from ignition switch signal.
HI BEAM SW	"ON/OFF"	Displays status (high beam switch: ON/Others: OFF) of high beam switch judged from lighting switch signal.
HEAD LAMP SW 1	"ON/OFF"	Displays status (headlamp switch 1: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.
HEAD LAMP SW 2	"ON/OFF"	Displays status (headlamp switch 2: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.
LIGHT SW 1ST	"ON/OFF"	Displays status (lighting switch 1st position: ON/Others: OFF) of lighting switch judged from lighting switch signal.
AUTO LIGHT SW	"ON/OFF"	Displays status of the lighting switch as judged from the lighting switch signal. (AUTO position: ON/Other than AUTO position: OFF)
PASSING SW	"ON/OFF"	Displays status (flash-to-pass switch: ON/Others: OFF) of flash-to-pass switch judged from lighting switch signal.
FR FOG SW	"ON/OFF"	Displays status (front fog lamp switch: ON/Others: OFF) of front fog lamp switch judged from lighting switch signal.
DOOR SW-DR	"ON/OFF"	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW-AS	"ON/OFF"	Displays status of the passenger door as judged from the passenger door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW-RR	"ON/OFF"	Displays status of the rear door as judged from the rear door switch (RH) signal. (Door is open: ON/Door is closed: OFF)
DOOR SW-RL	"ON/OFF"	Displays status of the rear door as judged from the rear door switch (LH) signal. (Door is open: ON/Door is closed: OFF)
BACK DOOR SW	"ON/OFF"	Not used.
TURN SIGNAL R	"ON/OFF"	Displays status (Turn right: ON/Others: OFF) as judged from lighting switch signal.
TURN SIGNAL L	"ON/OFF"	Displays status (Turn left: ON/Others: OFF) as judged from lighting switch signal.
CARGO LAMP SW	"ON/OFF"	Displays status of cargo lamp.
OPTICAL SENSOR	[0 - 5V]	Displays "ambient light (close to 5V when dark/close to 0V when light)" judged from optical sensor signal.

ACTIVE TEST
Display Item List

Test item	Description
TAIL LAMP	Allows tail lamp relay to operate by switching ON-OFF.
HEAD LAMP	Allows headlamp relay (HI, LO) to operate by switching ON-OFF.
FR FOG LAMP	Allows fog lamp relay to operate by switching ON-OFF.
CARGO LAMP	Allows cargo lamp to operate by switching ON-OFF.

CONSULT-II Function (IPDM E/R)

EKS00CMJ

Refer to LT-13, "CONSULT-II Function (IPDM E/R)" .

CONSULT-II START PROCEDURE

Refer to GI-38, "CONSULT-II Start Procedure" .

DATA MONITOR

All Signals, Main Signals, Selection From Menu

Item name	CONSULT-II screen display	Display or unit	Monitor item selection			Description
			ALL SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
Parking, license plate and tail lamps request	TAIL&CLR REQ	ON/OFF	×	×	×	Signal status input from BCM
Headlamp low beam request	HL LO REQ	ON/OFF	×	×	×	Signal status input from BCM
Headlamp high beam request	HL HI REQ	ON/OFF	×	×	×	Signal status input from BCM
Front fog lamps request	FR FOG REQ	ON/OFF	×	×	×	Signal status input from BCM

NOTE:
Perform monitoring of IPDM E/R data with the ignition switch ON. When the ignition switch is at ACC, the display may not be correct.

ACTIVE TEST

Test item	CONSULT-II screen display	Description
Tail lamp relay output	TAIL LAMP	Allows tail lamp relay to operate by switching operation ON-OFF at your option.
Headlamp relay (HI, LO) output	LAMPS	Allows headlamp relay (HI, LO) to operate by switching operation (OFF, HI, LO) at your option (Headlamp high beam repeats ON-OFF every 1 second).
Front fog lamp relay output		Allows fog lamp relay to operate by switching operation ON-OFF at your option.

Trouble Diagnosis Chart by Symptom

EKS00CMK

Trouble phenomenon	Malfunction system and reference
● Parking lamps and headlamps will not illuminate when outside of the vehicle becomes dark. (Lighting switch 1st position and 2nd position operate normally.) ● Parking lamps and headlamp will not go out when outside of the vehicle becomes light. (Lighting switch 1st position and 2nd position operate normally.) ● Headlamps go out when outside of the vehicle becomes light, but parking lamps stay on.	● Refer to LT-44, "WORK SUPPORT" . ● Refer to LT-47, "Lighting Switch Inspection" . ● Refer to LT-47, "Optical Sensor System Inspection" . If above systems are normal, replace BCM. Refer to BCS-25, "Removal and Installation" .
Parking lamps illuminate when outside of the vehicle becomes dark, but headlamps stay off. (Lighting switch 1st position and 2nd position operate normally.)	● Refer to LT-44, "WORK SUPPORT" . ● Refer to LT-47, "Optical Sensor System Inspection" . If above systems are normal, replace BCM. Refer to BCS-25, "Removal and Installation" .
Auto light adjustment system will not operate. (Lighting switch AUTO, 1st position and 2nd position operate normally.)	● Refer to LT-47, "Optical Sensor System Inspection" . If above system is normal, replace BCM. Refer to BCS-25, "Removal and Installation" .

Trouble phenomenon	Malfunction system and reference
Auto light adjustment system will not operate.	● CAN communication line to BCM inspection. Refer to BCS-18, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" .
Shut off delay feature will not operate.	● CAN communication line inspection between BCM and combination meter. Refer to BCS-18, "CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)" . ● Refer to BL-65, "Door Switch Check (King Cab)" or BL-67, "Door Switch Check (Crew Cab)" . If above system is normal, replace BCM. Refer to BCS-25, "Removal and Installation" .

Lighting Switch Inspection

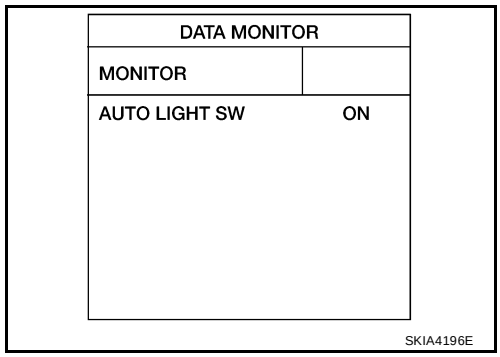
EKS00CML

1. CHECK LIGHTING SWITCH INPUT SIGNAL

With CONSULT-II

Select "BCM" on CONSULT-II. With "HEAD LAMP" data monitor, make sure "AUTO LIGHT SW" turns ON-OFF linked with operation of lighting switch.

When lighting switch is in AUTO position : AUTO LIGHT SW ON



Without CONSULT-II

Refer to LT-74, "Combination Switch Inspection" .

OK or NG

OK >> Inspection End.

NG >> Check lighting switch. Refer to LT-74, "Combination Switch Inspection" .

Optical Sensor System Inspection

EKS00CMM

1. CHECK OPTICAL SENSOR INPUT SIGNAL

With CONSULT-II

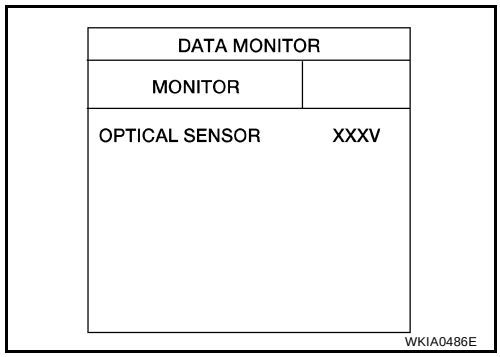
Select "BCM" on CONSULT-II. With "OPTICAL SENSOR" data monitor, check difference in the voltage when the optical sensor is illuminated and not illuminated.

Illuminated

OPTICAL SENSOR : 3.1V or more

Not illuminated

OPTICAL SENSOR : 0.6V or less



NOTE:

Optical sensor must be completely subjected to work lamp light. If the optical sensor is insufficiently illuminated, the measured value may not satisfy the standard.

Without CONSULT-II

GO TO 2.

OK or NG

OK >> Inspection End.

NG >> GO TO 2.

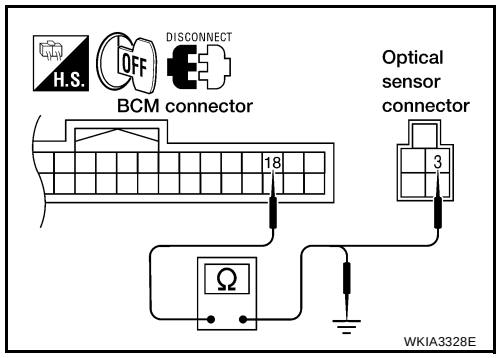
2. CHECK OPTICAL SENSOR SIGNAL GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and optical sensor connector.
3. Check continuity (open circuit) between BCM harness connector M18 terminal 18 and optical sensor harness connector M14 terminal 3.

18 - 3 : Continuity should exist.

4. Check continuity (short circuit) between BCM harness connector M18 terminal 18 and ground.

18 - Ground : Continuity should not exist.



OK or NG

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

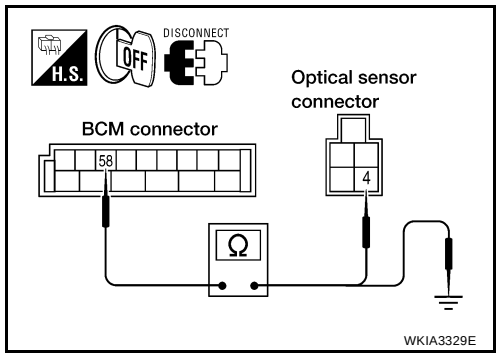
3. CHECK OPTICAL SENSOR SIGNAL CIRCUIT

1. Check continuity (open circuit) between BCM harness connector M20 terminal 58 and optical sensor harness connector M14 terminal 4.

58 - 4 : Continuity should exist.

2. Check continuity (short circuit) between BCM harness connector M20 terminal 58 and ground.

58 - Ground : Continuity should not exist.



OK or NG

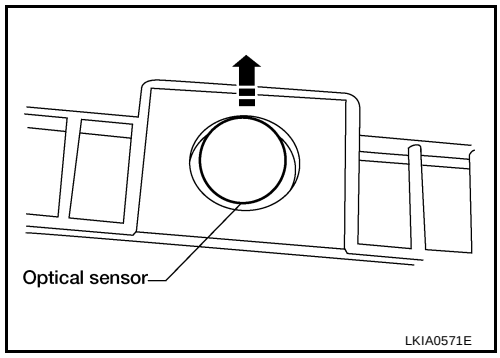
OK >> Replace optical sensor. Refer to LT-49, "Removal and Installation of Optical Sensor" . Recheck sensor output with CONSULT-II. If NG, replace BCM. Refer to BCS-25, "Removal and Installation" .
NG >> Repair harness or connector.

Removal and Installation of Optical Sensor

EKS00BPZ

REMOVAL

1. Using a thin blade screwdriver, gently pry upward to release optical sensor from defrost grille.
2. Disconnect the optical sensor connector.



INSTALLATION

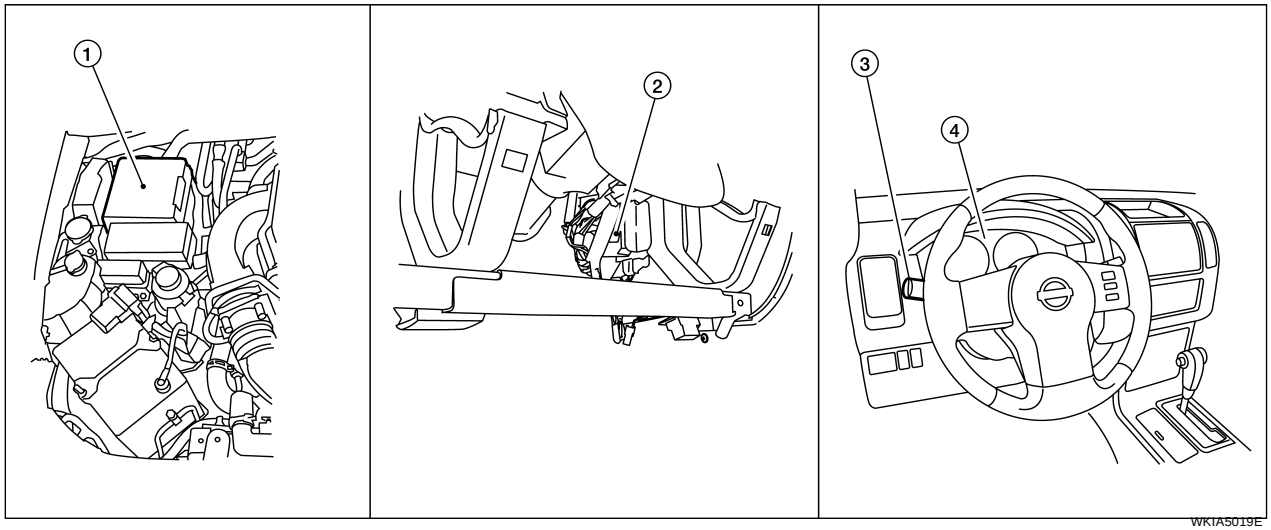
Installation is in the reverse order of removal.

FRONT FOG LAMP

PFP:26150

Component Parts and Harness Connector Location

EKS00BQ0



1. IPDM E/R
   E122, E123, E124
2. BCM
   M18, M20
   (view with lower instrument panel LH removed)
3. Combination switch (lighting switch)
   M28

System Description

EKS00CMN

Control of the fog lamps is dependent upon the position of the combination switch (lighting switch). The lighting switch must be in the 2ND position or AUTO position (LOW beam is ON) for front fog lamp operation. When the lighting switch is placed in the fog lamp position, the BCM (body control module) receives input signal requesting the fog lamps to illuminate. When the headlamps are illuminated, this input signal is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The CPU (central processing unit) of the IPDM E/R controls the front fog lamp relay coil. When activated, this relay directs power to the front fog lamps.

OUTLINE

Power is supplied at all times

- to front fog lamp relay, located in the IPDM E/R, and
- to ignition relay, located in the IPDM E/R, and
- through 20A fuse (No. 53, located in the IPDM E/R)
- to CPU of the IPDM E/R, and
- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM terminal 70.

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

- to ignition relay, located in the IPDM E/R, and
- through 10A fuse [No. 1, located in the fuse block (J/B)]
- to BCM terminal 38.

Ground is supplied

- to BCM terminal 67
- through grounds M57, M61 and M79, and
- to IPDM E/R terminals 38 and 59
- through grounds E9, E15 and E24.

FOG LAMP OPERATION

The fog lamp switch is built into the combination switch. The lighting switch must be in the 2ND position or AUTO position (LOW beam is ON) and the fog lamp switch must be ON for fog lamp operation.
With the fog lamp switch in the ON position, the CPU of the IPDM E/R grounds the coil side of the fog lamp relay. The fog lamp relay then directs power

- through 20A fuse (No. 56, located in the IPDM E/R)
- through IPDM E/R terminal 50
- to front fog lamp LH terminal 1, and
- through IPDM E/R terminal 51
- to front fog lamp RH terminal 1.

Ground is supplied

- to front fog lamp LH and RH terminal 2
- through grounds E9, E15 and E24.

With power and ground supplied, the front fog lamps illuminate.

COMBINATION SWITCH READING FUNCTION

Refer to BCS-3, "COMBINATION SWITCH READING FUNCTION" .

EXTERIOR LAMP BATTERY SAVER CONTROL

When the combination switch (lighting switch) is in the 2ND position (ON), the fog lamp switch is ON, and the ignition switch is turned from ON or ACC to OFF, the battery saver control feature is activated.
Under this condition, the fog lamps (and headlamps) remain illuminated for 5 minutes, then the fog lamps (and headlamps) are turned off.
Exterior lamp battery saver control mode can be changed by the function setting of CONSULT-II.

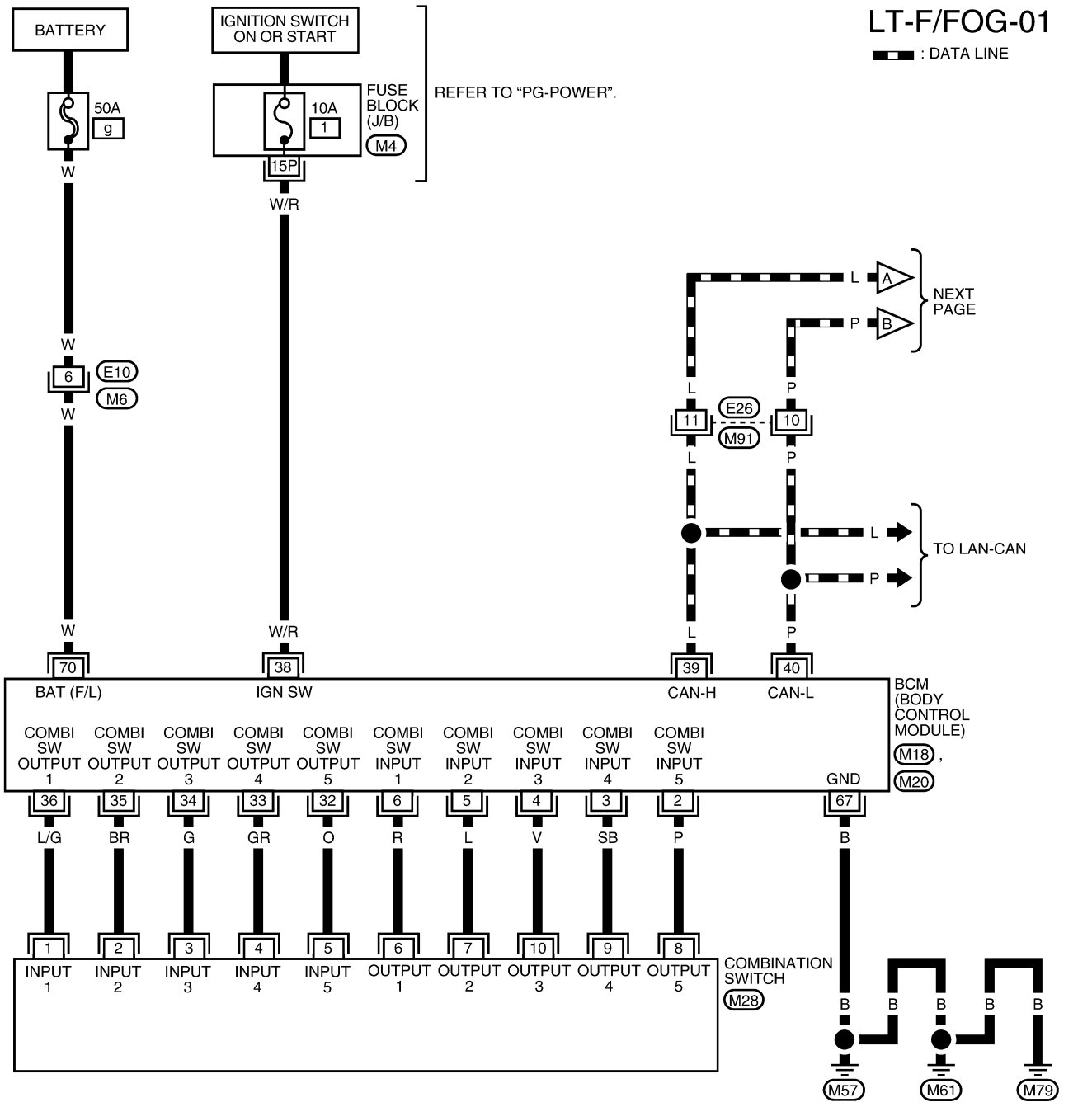
CAN Communication System Description

EKS00BQ2

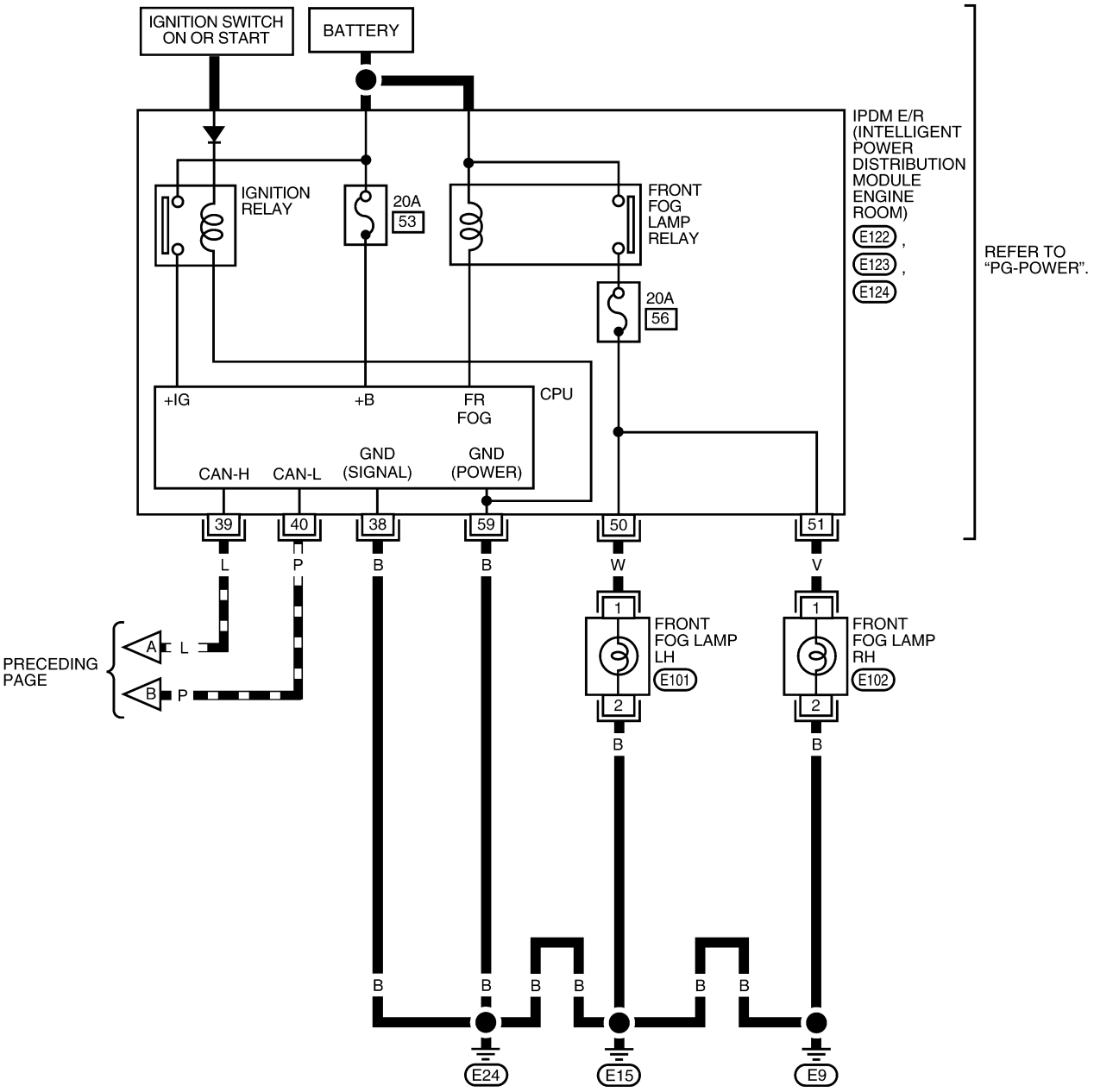
Refer to LAN-4, "CAN Communication System" .

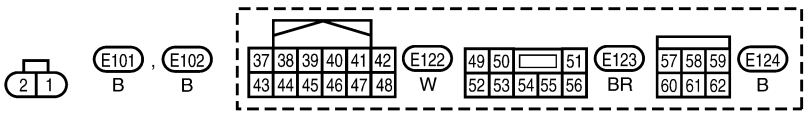
Wiring Diagram — F/FOG —

EKS00BQ3



LT-F/FOG-02





WKWA2846E

Terminals and Reference Values for BCM

EKS00CMO

Refer to BCS-12, "Terminals and Reference Values for BCM" .

Terminals and Reference Values for IPDM E/R

EKS00CMP

Refer to PG-28, "Terminals and Reference Values for IPDM E/R" .

How to Proceed With Trouble Diagnosis

EKS00CMQ

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-50, "System Description" .
3. Perform the Preliminary Check. Refer to LT-54, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the front fog lamp operate normally? If YES: GO TO 6. If NO: GO TO 4.
6. Inspection End.

Preliminary Check

EKS00CMR

CHECK POWER SUPPLY AND GROUND CIRCUIT FOR BCM

Refer to BCS-16, "BCM Power Supply and Ground Circuit Check" .

CHECK POWER SUPPLY AND GROUND CIRCUIT FOR IPDM E/R

Refer to PG-30, "IPDM E/R Power/Ground Circuit Inspection" .

CONSULT-II Function (BCM)

EKS00CMS

Refer to LT-12, "CONSULT-II Function (BCM)" .

CONSULT-II Function (IPDM E/R)

EKS00KX3

Refer to LT-13, "CONSULT-II Function (IPDM E/R)" .

Front Fog Lamps Do Not Illuminate (Both Sides)

EKS00CMT

1. INSPECT FOG LAMP FUSE

Inspect fog lamp 20A fuse (No. 56, located in IPDM E/R).

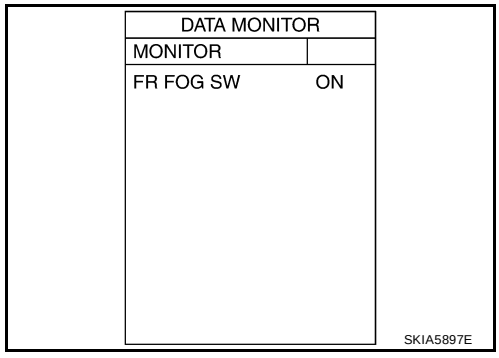
OK or NG

OK >> GO TO 2.
NG >> Repair fog lamp power supply circuit.

2. CHECK COMBINATION SWITCH INPUT SIGNAL

Select "BCM" on CONSULT-II. With "HEAD LAMP" data monitor, make sure "FR FOG SW" turns ON-OFF linked with operation of lighting switch.

When lighting switch is in FOG position : FR FOG SW ON



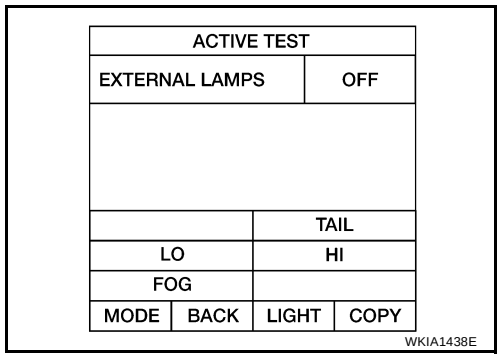
OK or NG

OK >> GO TO 3.
NG >> Check lighting switch. Refer to LT-74, "Combination Switch Inspection" .

3. FOG LAMP ACTIVE TEST

1. Select "IPDM E/R" on CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "EXTERNAL LAMPS" on "SELECT TEST ITEM" screen.
3. Touch "FOG" on "ACTIVE TEST" screen.
4. Make sure fog lamps operate.

Fog lamps should operate.



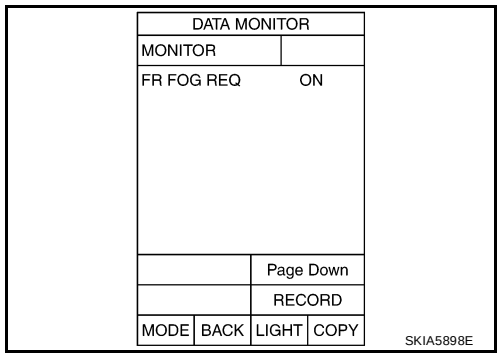
OK or NG

OK >> GO TO 4.
NG >> GO TO 5.

4. CHECK IPDM E/R

1. Select "IPDM E/R" on CONSULT-II, and select "DATA MONITOR" on "SELECT DIAG MODE" screen.
2. Make sure "FR FOG REQ" turns ON when lighting switch is in FOG position.

When lighting switch is in FOG position : FR FOG REQ ON



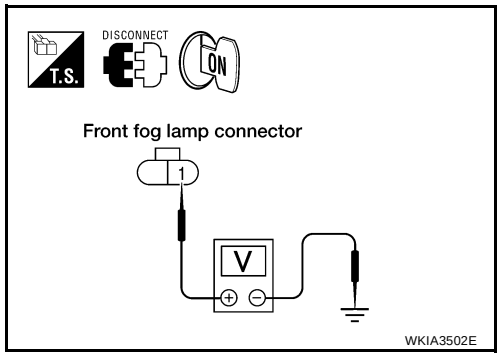
OK or NG

OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .
NG >> Replace BCM. Refer to BCS-25, "Removal and Installation" .

5. IPDM E/R INSPECTION

Start auto active test. Refer to PG-23, "Auto Active Test" . When front fog lamp relay is operating, check voltage between left/right front fog lamp connector terminals and ground.

Front fog lamp (+)		(–)	Voltage (Approx.)
Connector	Terminal		
LH E101	1	Ground	Battery voltage
RH E102			



OK or NG

OK >> Check front fog lamp bulbs and replace as necessary. Refer to LT-58, "Bulb Replacement" .
NG >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .

Front Fog Lamp Does Not Illuminate (One Side)

EKS00CMU

1. BULB INSPECTION

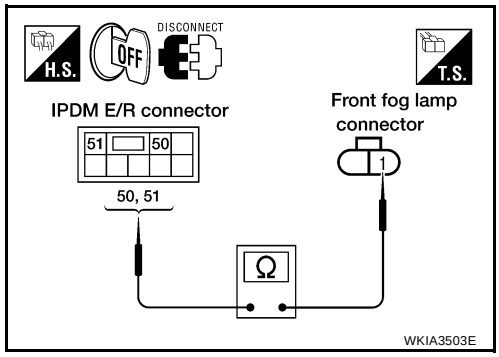
Inspect bulb of lamp which does not illuminate.

OK or NG

OK >> GO TO 2.
NG >> Replace lamp bulb. Refer to LT-58, "Bulb Replacement" .

2. INSPECTION BETWEEN IPDM E/R AND FRONT FOG LAMPS

1. Disconnect IPDM E/R connector and inoperative front fog lamp connector.
2. Check continuity between harness connector terminals of IPDM E/R and harness connector terminal of front fog lamps.



IPDM E/R		Front fog lamp			Continuity
Connector	Terminal	Connector		Terminal	
E123	50	LH	E101	1	Yes
	51	RH	E102		

OK or NG

OK >> Check ground circuit. If OK, replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" . If NG, repair harness or connector.

NG >> Check for short circuits and open circuits in harness between IPDM E/R and front fog lamps.

Aiming Adjustment

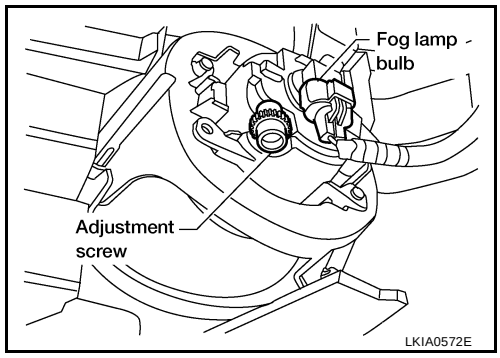
EKS00BQB

The fog lamp is a semi-sealed beam type which uses a replaceable halogen bulb. Before performing aiming adjustment, make sure of the following.

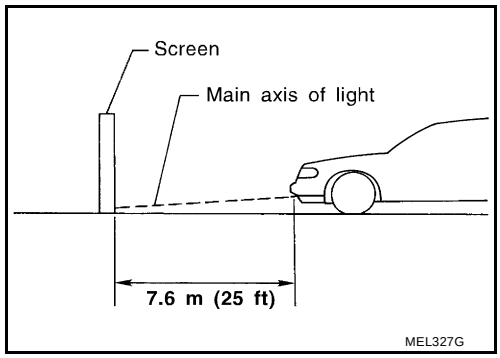
- Keep all tires inflated to correct pressure.
- Place vehicle on level ground.
- See that vehicle is unloaded (except for full levels of coolant, engine oil and fuel, and spare tire, jack, and tools). Have the driver or equivalent weight placed in driver seat.

Adjust aiming in the vertical direction by turning the adjustment screw.

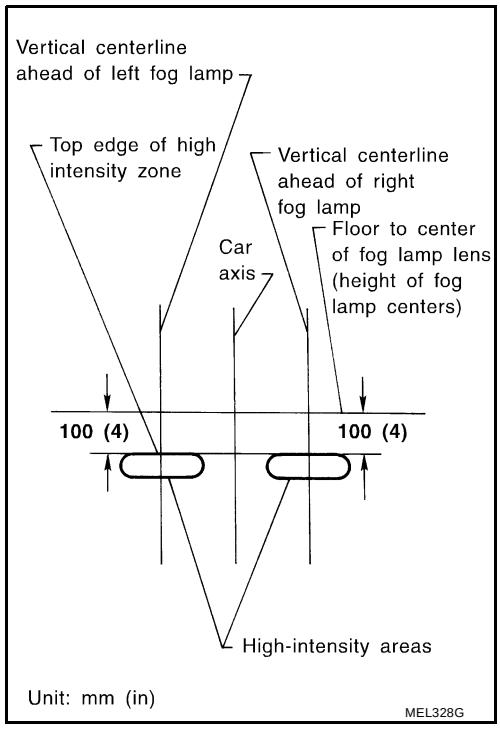
NOTE:
Use a Phillips screwdriver to adjust. Turn screw clockwise to raise pattern and counterclockwise to lower pattern.



1. Set the distance between the screen and the center of the fog lamp lens as shown.



2. Turn front fog lamps ON.
3. Remove front portion of fender protector(s) for adjustment screw access. Refer to EI-23, "Removal and Installation of Front Fender Protector"
4. Adjust front fog lamps using adjustment screw so that the top edge of the high intensity zone is 100 mm (4 in) below the height of the fog lamp centers as shown.
   - When performing adjustment, if necessary, cover the headlamps and opposite fog lamp.

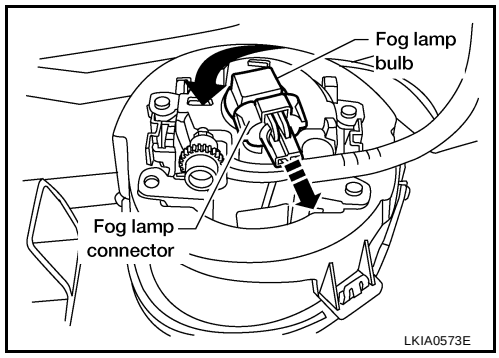


Bulb Replacement

EKS00BQC

REMOVAL

1. Position front fender protector aside. Refer to EI-22, "FENDER PROTECTOR" .
2. Disconnect fog lamp connector.
3. Turn the bulb counterclockwise to remove it.



CAUTION:

- **Do not touch the glass of bulb directly by hand. Keep grease and other oily substances away from it. Do not touch bulb by hand while it is lit or right after being turned off. Burning may result.**
- **Do not leave bulb out of fog lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of fog lamp. When replacing bulb, be sure to replace it with new one.**

INSTALLATION

Installation is in the reverse order of removal.

Removal and Installation

EKS00BQD

FOG LAMP

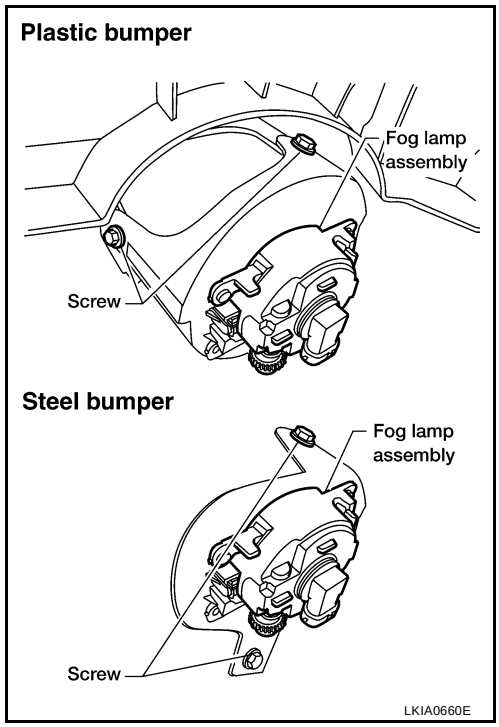
Removal

The fog lamp is a semi-sealed beam type which uses a replaceable halogen bulb.

CAUTION:

- **Do not leave fog lamp assembly without bulb for a long period of time. Dust, moisture, smoke, etc. entering the fog lamp body may affect the performance. Remove the bulb from the headlamp assembly just before replacement bulb is installed.**
- **Grasp only the plastic base when handling the bulb. Never touch the glass envelope. Touching the glass could significantly affect the bulb life and/or fog lamp performance.**

1. Position front fender protector aside. Refer to EI-23, "Removal and Installation of Front Fender Protector"
2. Disconnect fog lamp connector.
3. Remove fog lamp screws and pull fog lamp rearward out of front bumper.



Installation

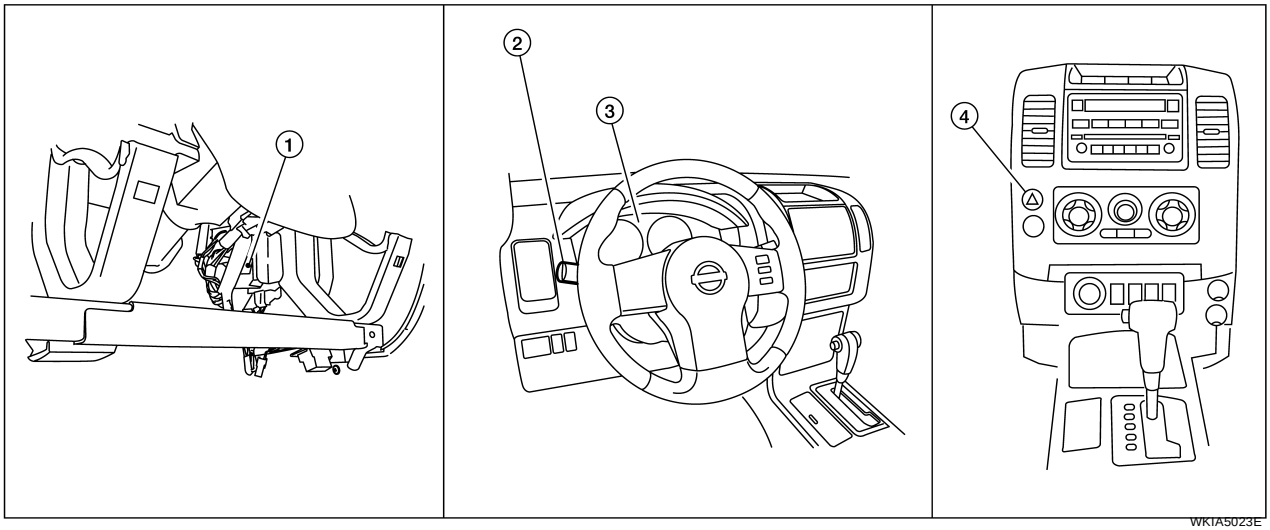
Installation is in the reverse order of removal.

TURN SIGNAL AND HAZARD WARNING LAMPS

PFP:26120

Component Parts and Harness Connector Location

EKS00BQE



1. BCM
   M18, M20
   (view with lower instrument panel LH removed)
2. Combination switch (lighting switch)
   M28
3. Combination meter
   M24
4. Hazard switch
   M55

System Description

EKS00CMV

OUTLINE

Power is supplied at all times

- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM (body control module) terminal 70, and
- through 10A fuse [No. 19, located in the fuse block (J/B)]
- to combination meter terminal 3.

TURN SIGNAL OPERATION

When the ignition switch is in the 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 16.

Ground is supplied

- to BCM terminal 67 and
- to combination meter terminals 13 and 23
- through grounds M57, M61 and M79.

LH Turn

When the turn signal switch is moved to the left position, the BCM, interpreting it as turn signal is ON, outputs turn signal from BCM terminal 60.
The BCM supplies power

- through BCM terminal 60
- to front combination lamp LH (turn signal) terminal 6
- through front combination lamp LH (turn signal) terminal 5, and
- to rear combination lamp LH (turn signal) terminal 4
- through rear combination lamp LH (turn signal) terminal 5
- to grounds E9, E15 (all) and E24 (VQ40DE engine only).

BCM sends signal to combination meter through CAN communication lines and turns on turn signal indicator lamp within combination meter.

RH Turn

When the turn signal switch is moved to the right position, the BCM, interpreting it as turn signal is ON, outputs turn signal from BCM terminal 61.
The BCM supplies power

- through BCM terminal 61
- to front combination lamp RH (turn signal) terminal 6
- through front combination lamp RH (turn signal) terminal 5, and
- to rear combination lamp RH (turn signal) terminal 4
- through rear combination lamp RH (turn signal) terminal 5
- to grounds E9, E15 (all) and E24 (VQ40DE engine only).

BCM sends signal to combination meter through CAN communication lines, and turns on turn signal indicator lamp within combination meter.

HAZARD LAMP OPERATION

Power is supplied at all times

- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM terminal 70, and
- through 10A fuse [No. 19, located in the fuse block (J/B)]
- to combination meter terminal 3.

Ground is supplied

- to BCM terminal 67 and
- to combination meter terminals 13 and 23
- through grounds M57, M61 and M79.

When the hazard switch is depressed, ground is supplied

- to BCM terminal 29
- through hazard switch terminal 2
- through hazard switch terminal 1
- through grounds M57, M61 and M79.

When the hazard switch is depressed, the BCM, interpreting it as turn signal is ON, outputs turn signal from BCM terminals 60 and 61.
The BCM supplies power

- through BCM terminals 60 and 61
- to front combination lamp LH and RH (turn signal) terminal 6
- through front combination lamp LH and RH (turn signal) terminal 5, and
- to rear combination lamp LH and RH (turn signal) terminal 4
- through rear combination lamp LH and RH (turn signal) terminal 5
- to grounds E9, E15 (all) and E24 (VQ40DE engine only).

BCM sends signal to combination meter through CAN communication lines and turns on turn signal indicator lamps within combination meter.

REMOTE KEYLESS ENTRY SYSTEM OPERATION

Power is supplied at all times

- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM terminal 70, and
- through 10A fuse [No. 19, located in the fuse block (J/B)]
- to combination meter terminal 3.

Ground is supplied

- to BCM terminal 67 and
- to combination meter terminals 13 and 23

- through grounds M57, M61 and M79.

When the remote keyless entry system is triggered by input from the keyfob, the BCM, interpreting it as turn signal is ON, outputs turn signal from BCM terminals 60 and 61.
The BCM supplies power

- through BCM terminals 60 and 61
- to front combination lamp LH and RH (turn signal) terminal 6
- through front combination lamp LH and RH (turn signal) terminal 5, and
- to rear combination lamp LH and RH (turn signal) terminal 4
- through rear combination lamp LH and RH (turn signal) terminal 5
- to grounds E9, E15 (all) and E24 (VQ40DE engine only).

BCM sends signal to combination meter through CAN communication lines, and turns on turn signal indicator lamps within combination meter.
With power and input supplied, the BCM controls the flashing of the hazard warning lamps when keyfob is used to activate the remote keyless entry system.

COMBINATION SWITCH READING FUNCTION

Refer to BCS-3, "COMBINATION SWITCH READING FUNCTION" .

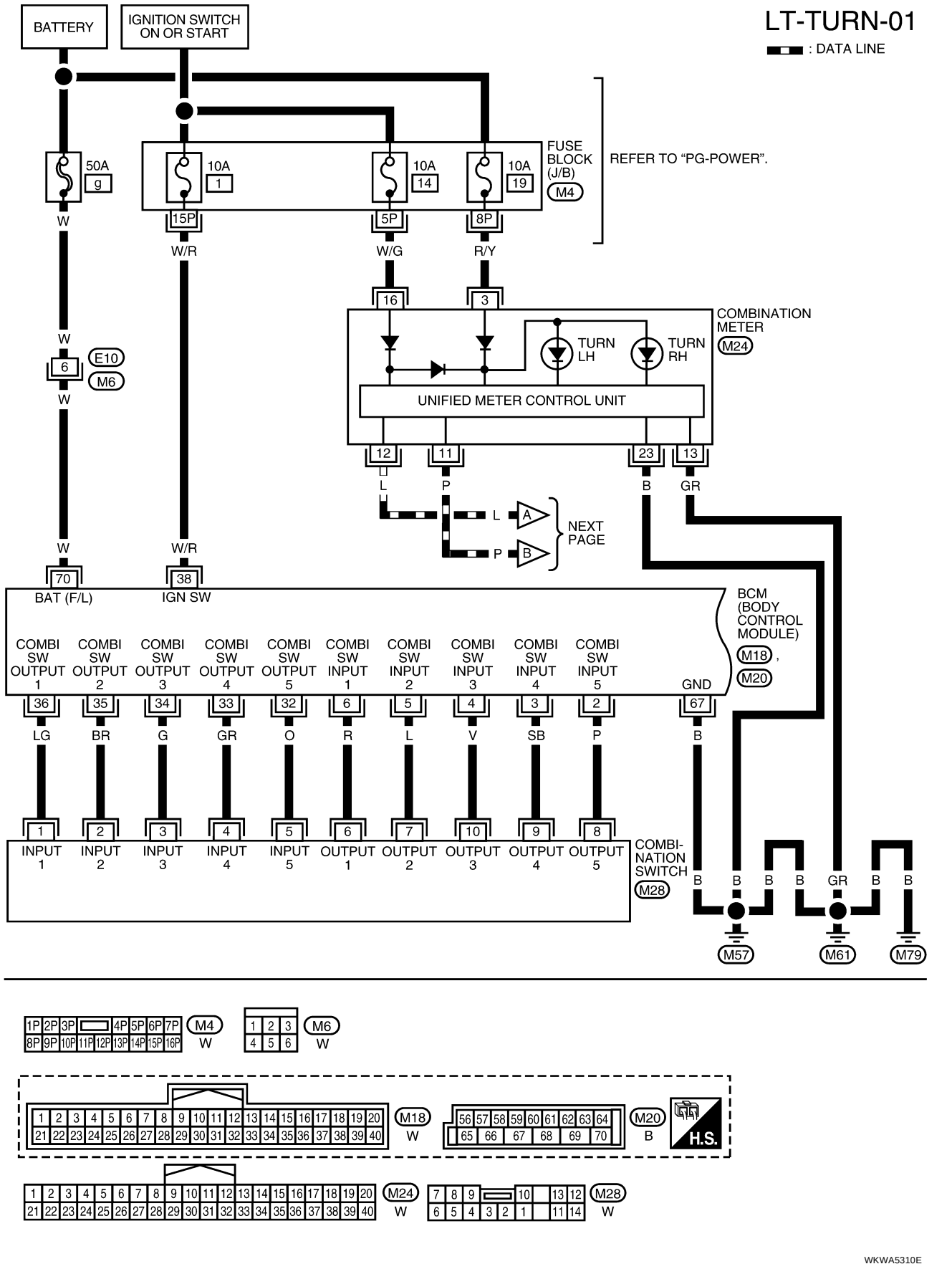
CAN Communication System Description

EKS00BQG

Refer to LAN-4, "CAN Communication System" .

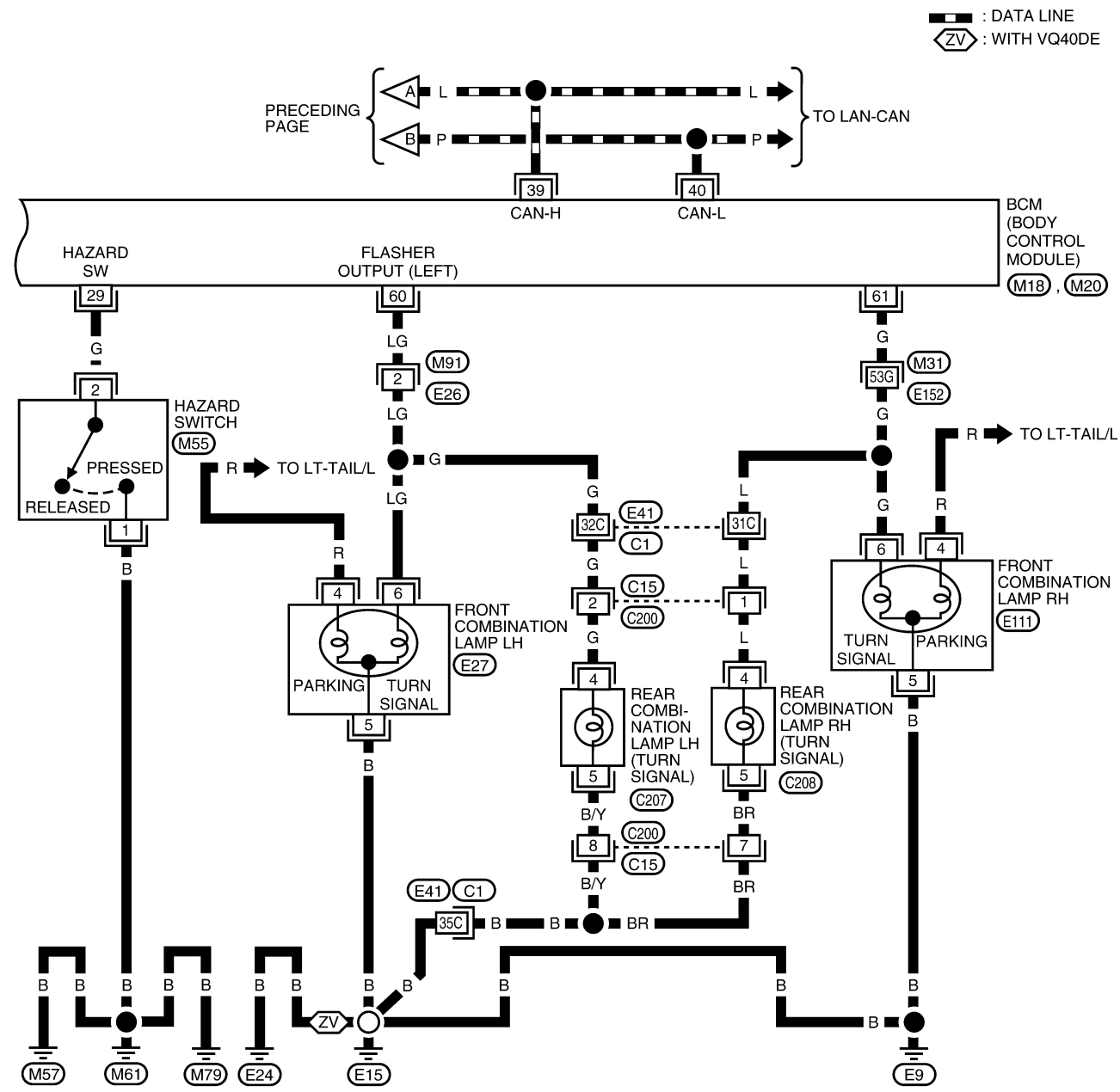
Wiring Diagram — TURN —

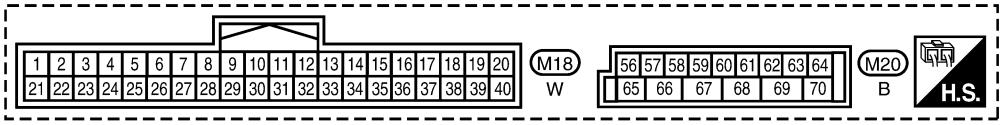
EKS00BQH

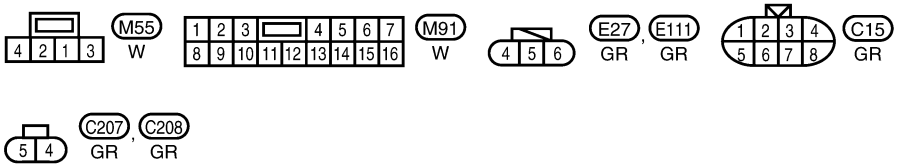


WKWA5310E

LT-TURN-02







REFER TO THE FOLLOWING.
M31 , C1 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA4359E

Terminals and Reference Values for BCM

EKS00CMW

Refer to BCS-12, "Terminals and Reference Values for BCM" .

How to Proceed With Trouble Diagnosis

EKS00CMX

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-59, "System Description" .
3. Perform preliminary check. Refer to LT-64, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Do turn signal and hazard warning lamps operate normally? If YES: GO TO 6. If NO: GO TO 4.
6. Inspection End.

Preliminary Check

EKS00CMY

CHECK POWER SUPPLY AND GROUND CIRCUIT

Refer to BCS-16, "BCM Power Supply and Ground Circuit Check" .

CONSULT-II Function (BCM)

EKS00CMZ

Refer to LT-12, "CONSULT-II Function (BCM)" .

CONSULT-II START PROCEDURE

Refer to GI-38, "CONSULT-II Start Procedure" .

DATA MONITOR

Display Item List

Monitor item		Contents
IGN ON SW	"ON/OFF"	Displays "IGN position (ON)/OFF, ACC position (OFF)" judged from the ignition switch signal.
HAZARD SW	"ON/OFF"	Displays "Hazard ON (ON)/Hazard OFF (OFF)" status, determined from hazard switch signal.
TURN SIGNAL R	"ON/OFF"	Displays "Turn right (ON)/Other (OFF)" status, determined from lighting switch signal.
TURN SIGNAL L	"ON/OFF"	Displays "Turn left (ON)/Other (OFF)" status, determined from lighting switch signal.
BRAKE SW	"ON/OFF"	Displays status of stop lamp switch.

ACTIVE TEST

Display Item List

Test item	Description
FLASHER (RH)	Turn signal lamp (right) can be operated by any ON-OFF operations.
FLASHER (LH)	Turn signal lamp (left) can be operated by any ON-OFF operations.

Turn Signal Lamps Do Not Operate

EKS00CN0

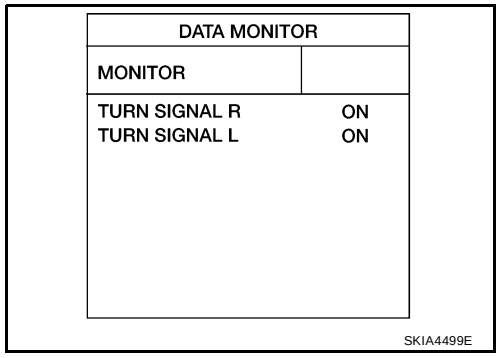
1. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

Select "BCM" on CONSULT-II. With "FLASHER" data monitor, make sure "TURN SIGNAL R" and "TURN SIGNAL L" turns ON-OFF linked with operation of lighting switch.

When lighting switch is in TURN RH position : TURN SIGNAL R ON

When lighting switch is in TURN LH position : TURN SIGNAL L ON



Without CONSULT-II

Refer to LT-74, "Combination Switch Inspection" .

OK or NG

OK >> Replace the BCM. Refer to BCS-25, "Removal and Installation" .

NG >> Check lighting switch. Refer to LT-74, "Combination Switch Inspection" .

Front Turn Signal Lamps Do Not Operate

EKS00KMQ

1. CHECK BULB

Check bulb standard of each turn signal lamp is correct. Refer to LT-149, "Exterior Lamp" .

OK or NG

OK >> GO TO 2.
NG >> Replace turn signal lamp bulb. Refer to LT-25, "FRONT TURN SIGNAL/PARKING LAMP" .

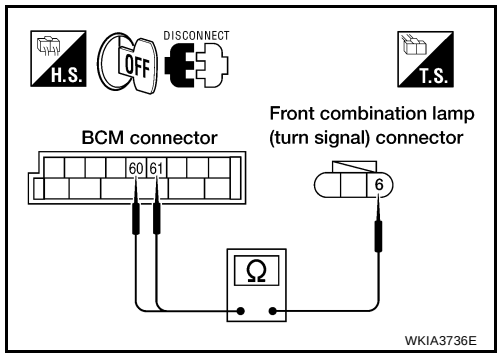
2. CHECK TURN SIGNAL LAMPS CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and front combination lamp LH and RH (turn signal) connectors.
3. Check continuity between BCM harness connector M20 terminal 60 and front combination lamp LH (turn signal) harness connector E27 terminal 6.

60 - 6 : Continuity should exist.

4. Check continuity between BCM harness connector M20 terminal 61 and front combination lamp RH (turn signal) harness connector E111 terminal 6.

61 - 6 : Continuity should exist.



OK or NG

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

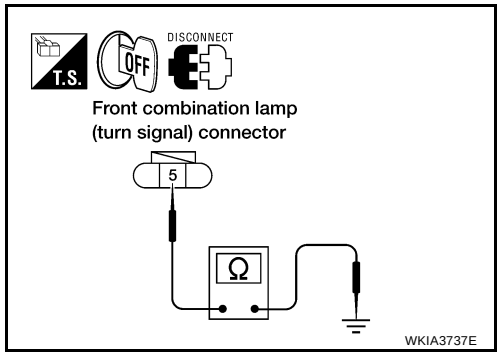
3. CHECK GROUND

1. Check continuity between front combination lamp LH (turn signal) harness connector E27 terminal 5 and ground.

5 - Ground : Continuity should exist.

2. Check continuity between front combination lamp RH (turn signal) harness connector E111 terminal 5 and ground.

5 - Ground : Continuity should exist.



OK or NG

OK >> Inspect connection at front combination lamp.
NG >> Repair harness or connector.

Rear Turn Signal Lamp Does Not Operate

EKS00CN1

1. CHECK TAIL LAMPS AND STOP LAMPS

Check bulb standard of each turn signal lamp is correct. Refer to LT-149, "Exterior Lamp" .

OK or NG

OK >> GO TO 2.
NG >> Replace turn signal lamp bulb. Refer to LT-98, "Bulb Replacement" .

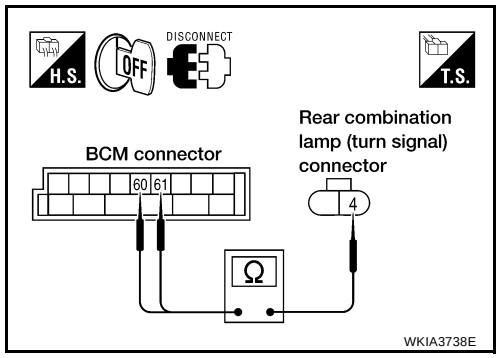
2. CHECK TURN SIGNAL LAMPS CIRCUIT

1. Disconnect BCM connector and rear combination lamp connector.
2. Check continuity between BCM harness connector M20 terminal 60 and rear combination lamp LH (turn signal) harness connector C207 terminal 4.

60 - 4 : Continuity should exist.

3. Check continuity between BCM harness connector M20 terminal 61 and rear combination lamp RH (turn signal) harness connector C208 terminal 4.

61 - 4 : Continuity should exist.



OK or NG

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

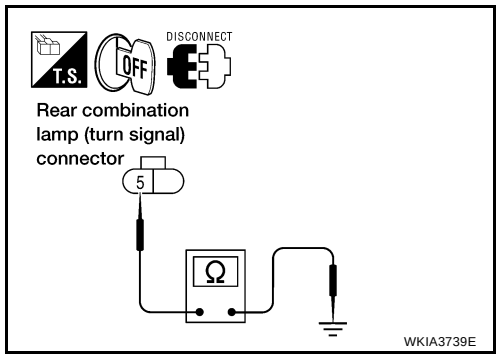
3. CHECK GROUND CIRCUIT

Check continuity between rear combination lamp (turn signal) harness connector C207 (LH) and C208 (RH) terminal 5 and ground.

5 - Ground : Continuity should exist.

OK or NG

OK >> Check rear combination lamp connector for proper connection. Repair as necessary.
NG >> Repair harness or connector.



Hazard Warning Lamp Does Not Operate But Turn Signal Lamps Operate

EKS00CN2

1. CHECK BULB

Make sure bulb standard of each turn signal lamp is correct. Refer to LT-149, "Exterior Lamp" .

OK or NG

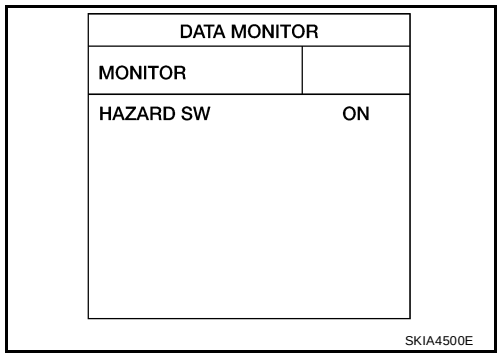
OK >> GO TO 2.
NG >> Replace turn signal lamp bulb. Refer to LT-25, "FRONT TURN SIGNAL/PARKING LAMP" for front turn signal bulb. Refer to LT-98, "Bulb Replacement" for rear turn signal bulb.

2. CHECK HAZARD SWITCH INPUT SIGNAL

With CONSULT-II

Select "BCM" on CONSULT-II. With "FLASHER" data monitor, make sure "HAZARD SW" turns ON-OFF linked with operation of hazard switch.

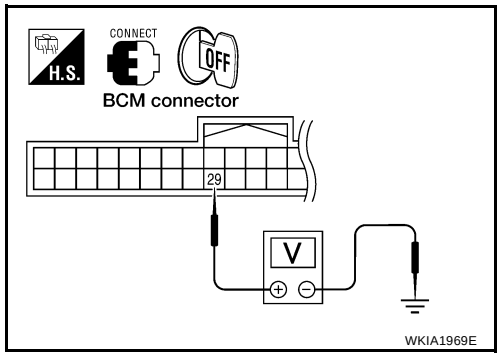
When hazard switch is in ON position : HAZARD SW ON



Without CONSULT-II

Check voltage between BCM harness connector M18 terminal 29 and ground.

BCM (+) Connector	BCM (+) Terminal	(–)	Condition	Voltage (Approx.)
M18	29	Ground	Hazard switch is ON	0V
			Hazard switch is OFF	5V



OK or NG

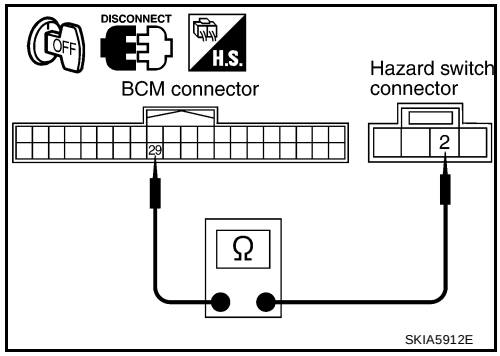
OK >> Replace BCM. Refer to BCS-25, "Removal and Installation" .

NG >> GO TO 3.

3. CHECK HAZARD SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and hazard switch connector.
3. Check continuity between BCM harness connector M18 terminal 29 and hazard switch harness connector M55 terminal 2.

29 - 2 : Continuity should exist.



OK or NG

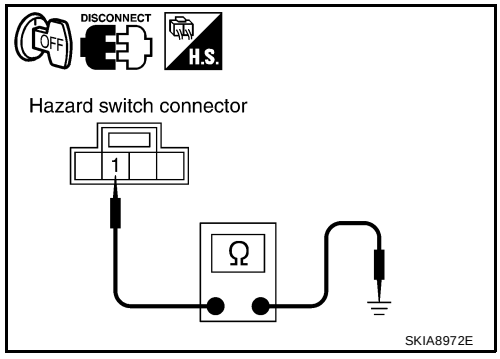
OK >> GO TO 4.

NG >> Repair harness or connector.

4. CHECK GROUND

Check continuity between hazard switch harness connector M55 terminal 1 and ground.

1 - Ground : Continuity should exist.



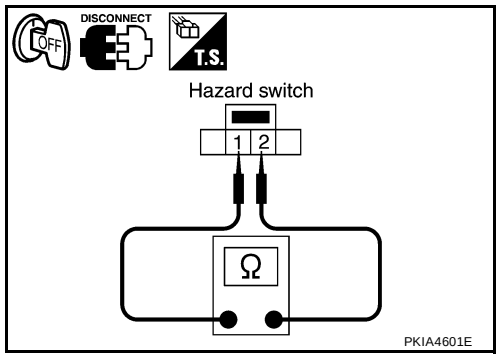
OK or NG

OK >> GO TO 5.

NG >> Repair harness or connector.

5. CHECK HAZARD SWITCH

1. Disconnect hazard switch connector.
2. Check continuity of hazard switch.



Hazard switch		Condition	Continuity
Terminal			
2	1	Hazard switch is ON	Yes
		Hazard switch is OFF	No

OK or NG

OK >> Replace BCM if turn signal lamps does not work after setting the connector again. Refer to BCS-25, "Removal and Installation" .

NG >> Replace hazard switch. Refer to LT-71, "Removal and Installation" .

Turn Signal Indicator Lamp Does Not Operate

EKS00CN3

1. CHECK CAN COMMUNICATION SYSTEM

Check CAN communication. Refer to LAN-4, "CAN Communication System" .

OK or NG

OK >> Replace combination meter. Refer to IP-13, "COMBINATION METER" .

NG >> Repair as necessary.

Bulb Replacement

EKS00BQQ

FRONT TURN SIGNAL LAMP

Refer to LT-25, "FRONT TURN SIGNAL/PARKING LAMP" .

REAR TURN SIGNAL LAMP

Refer to LT-98, "REAR COMBINATION LAMP" .

Removal and Installation

EKS00BQS

FRONT TURN SIGNAL LAMP

Refer to LT-25, "FRONT COMBINATION LAMP" .

REAR TURN SIGNAL LAMP

Refer to LT-98, "Removal and Installation" .

LIGHTING AND TURN SIGNAL SWITCH

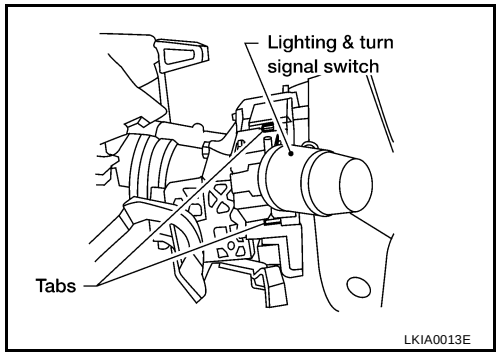
PFP:25540

Removal and Installation

EKS00BQU

REMOVAL

1. Remove lower instrument panel LH. Refer to IP-12, "LOWER INSTRUMENT PANEL LH" .
2. Remove knee protector brace.
3. Remove steering column cover.
4. Disconnect the lighting and turn signal switch connector.
5. While pressing tabs, pull lighting and turn signal switch toward driver door and release from the steering column.



INSTALLATION

Installation is in the reverse order of removal.

HAZARD SWITCH

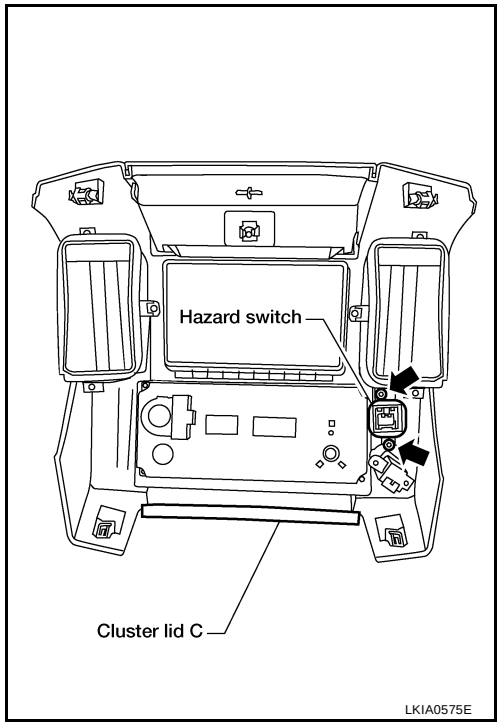
PFP:25290

Removal and Installation

EKS00BQV

REMOVAL

1. Remove cluster lid C. Refer to IP-11, "CLUSTER LID C" .
2. Disconnect the hazard switch connector.
3. Remove the screws and remove the hazard switch.



INSTALLATION

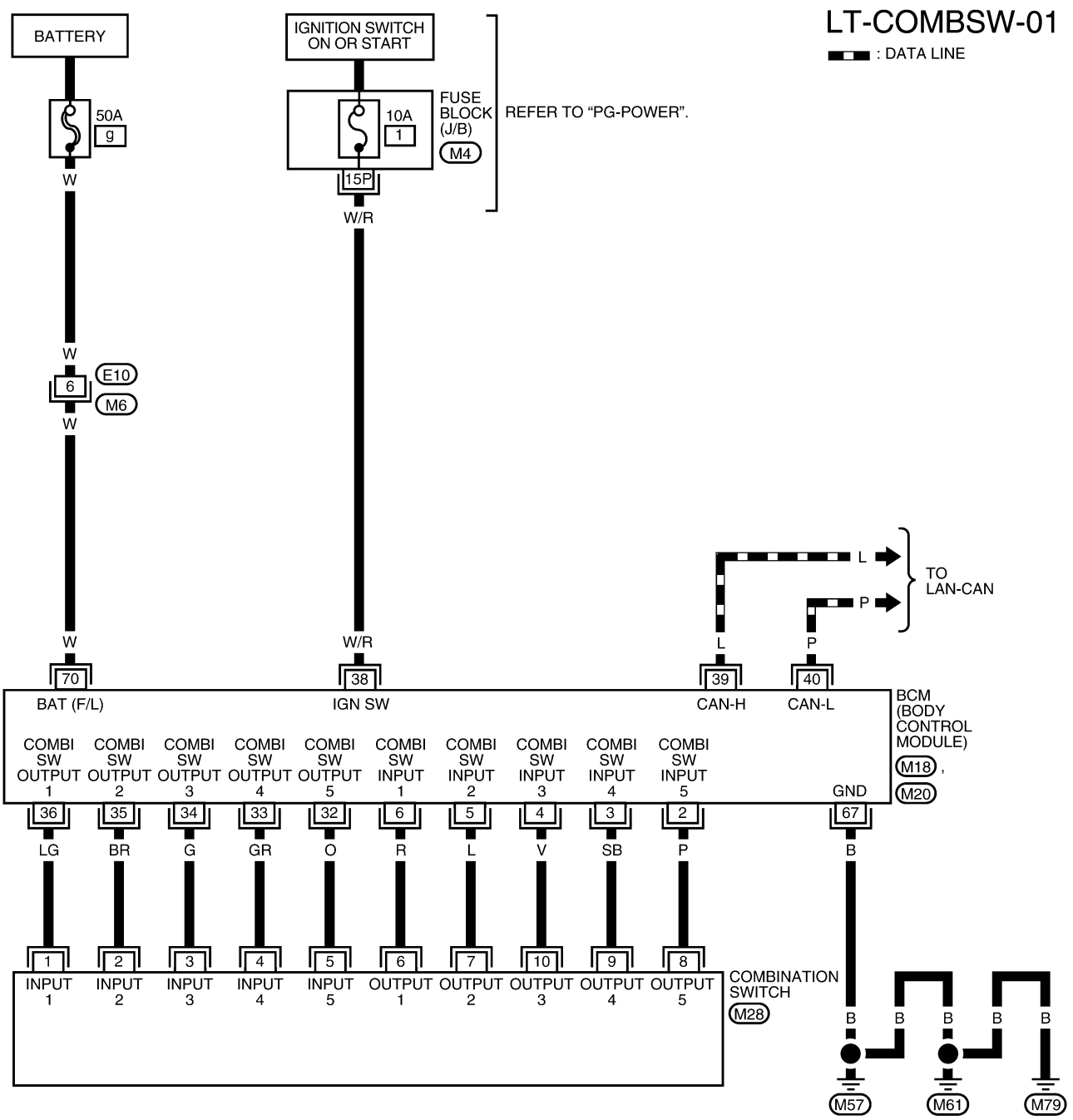
Installation is in the reverse order of removal.

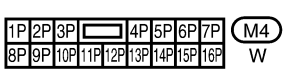
COMBINATION SWITCH

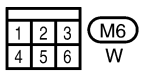
PFP:25567

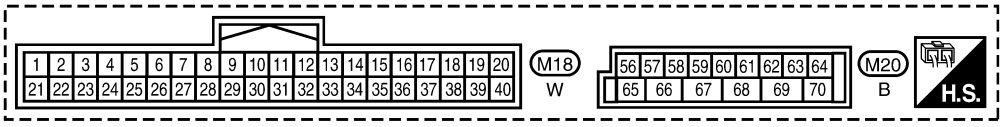
Wiring Diagram — COMBSW —

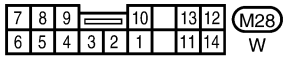
EKS00BQW











WKWA5311E

Combination Switch Reading Function

EKS00C48

For details, refer to BCS-3, "COMBINATION SWITCH READING FUNCTION" .

CONSULT-II Function (BCM)

EKS00CN4

Refer to LT-12, "CONSULT-II Function (BCM)" .

CONSULT-II START PROCEDURE

Refer to GI-38, "CONSULT-II Start Procedure" .

DATA MONITOR

Display Item List

Monitor item name "OPERATION OR UNIT"		Contents
TURN SIGNAL R	"ON/OFF"	Displays "Turn Right (ON)/Other (OFF)" status, determined from lighting switch signal.
TURN SIGNAL L	"ON/OFF"	Displays "Turn Left (ON)/Other (OFF)" status, determined from lighting switch signal.
HI BEAM SW	"ON/OFF"	Displays status (high beam switch: ON/Others: OFF) of high beam switch judged from lighting switch signal.
HEAD LAMP SW 1	"ON/OFF"	Displays "Headlamp switch 1 (ON)/Other (OFF)" status, determined from lighting switch signal.
HEAD LAMP SW 2	"ON/OFF"	Displays status (headlamp switch 2: ON/Others: OFF) of headlamp switch 2 judged from lighting switch signal.
LIGHT SW 1ST	"ON/OFF"	Displays status (lighting switch 1st position: ON/Others: OFF) of lighting switch judged from lighting switch signal.
PASSING SW	"ON/OFF"	Displays status (flash-to-pass switch: ON/Others: OFF) of flash-to-pass switch judged from lighting switch signal.
AUTO LIGHT SW	"ON/OFF"	Displays "Auto light switch (ON)/Other (OFF)" status, determined from lighting switch signal.
FR FOG SW	"ON/OFF"	Displays "Front fog lamp switch (ON)/Other (OFF)" status, determined from lighting switch signal.
FR WIPER HI	"ON/OFF"	Displays "Front Wiper HI (ON)/Other (OFF)" status, determined from wiper switch signal.
FR WIPER LOW	"ON/OFF"	Displays "Front Wiper LOW (ON)/Other (OFF)" status, determined from wiper switch signal.
FR WIPER INT	"ON/OFF"	Displays "Front Wiper INT (ON)/Other (OFF)" status, determined from wiper switch signal.
FR WASHER SW	"ON/OFF"	Displays "Front Washer Switch (ON)/Other (OFF)" status, determined from wiper switch signal.
INT VOLUME	[1 - 7]	Displays intermittent operation knob setting (1 - 7), determined from wiper switch signal.
RR WIPER ON	"ON/OFF"	Displays "Rear Wiper (ON)/(OFF)" status, determined from wiper switch signal.
RR WIPER INT	"ON/OFF"	Displays "Rear Wiper INT (ON)/(OFF)" status, determined from wiper switch signal.
RR WASHER SW	"ON/OFF"	Displays "Rear Washer (ON)/(OFF)" status, determined from wiper switch signal.

Combination Switch Inspection

EKS00CN5

1. SYSTEM CHECK

Referring to table below, check to which system the malfunctioning switch belongs.

System 1	System 2	System 3	System 4	System 5
—	FR WASHER	FR WIPER LO	TURN LH	TURN RH
FR WIPER HI	—	FR WIPER INT	PASSING	HEAD LAMP1
INT VOLUME 1	—	—	HEAD LAMP2	HI BEAM
—	INT VOLUME 3	AUTO LIGHT	—	TAIL LAMP
INT VOLUME 2	—	—	FR FOG	—

>> GO TO 2.

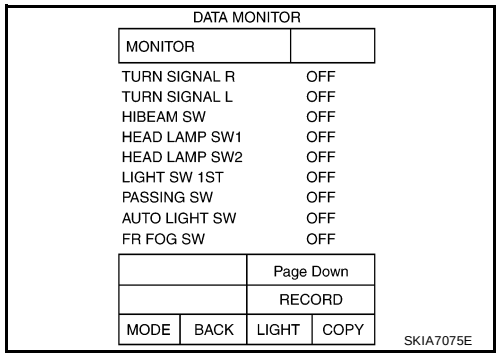
2. SYSTEM CHECK

With CONSULT-II

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. Connect CONSULT-II, and select "COMB SW" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR".
3. Select "START", and confirm that other switches in malfunctioning system operate normally.
   Example: When auto light switch is malfunctioning, confirm that "FRONT WIPER LOW" and "FRONT WIPER INT" in System 3, to which the auto light switch belongs, turn ON-OFF normally.



Without CONSULT-II

Operate combination switch, and confirm that other switches in malfunctioning system operate normally.
Example: When auto light switch is malfunctioning, confirm that "FRONT WIPER LOW" and "FRONT WIPER INT" in System 3, to which the auto light switch belongs, operate normally.

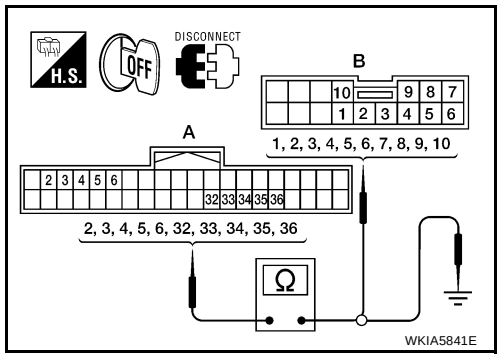
Check results

Other switches in malfunctioning system operate normally.>> Replace lighting switch or wiper switch.
Other switches in malfunctioning system do not operate normally.>> GO TO 3.

3. HARNESS INSPECTION

1. Turn ignition switch OFF.
2. Disconnect BCM and combination switch connectors.
3. Check for continuity between BCM harness connector of the suspect system and the corresponding combination switch connector terminals.

Suspect system	A			B		Continuity
	BCM connector	Terminal		Combination switch connector	Terminal	
1	M18	Input 1	6	M28	6	Yes
		Output 1	36		1	
2		Input 2	5		7	
		Output 2	35		2	
3		Input 3	4		10	
		Output 3	34		3	
4		Input 4	3		9	
		Output 4	33		4	
5		Input 5	2		8	
		Output 5	32		5	



4. Check for continuity between each terminal of BCM harness connector in suspect malfunctioning system and ground.

Suspect system	A				Continuity
	BCM connector	Terminal			
1	M18	Input 1	6	Ground	No
		Output 1	36		
2		Input 2	5		
		Output 2	35		
3		Input 3	4		
		Output 3	34		
4		Input 4	3		
		Output 4	33		
5		Input 5	2		
		Output 5	32		

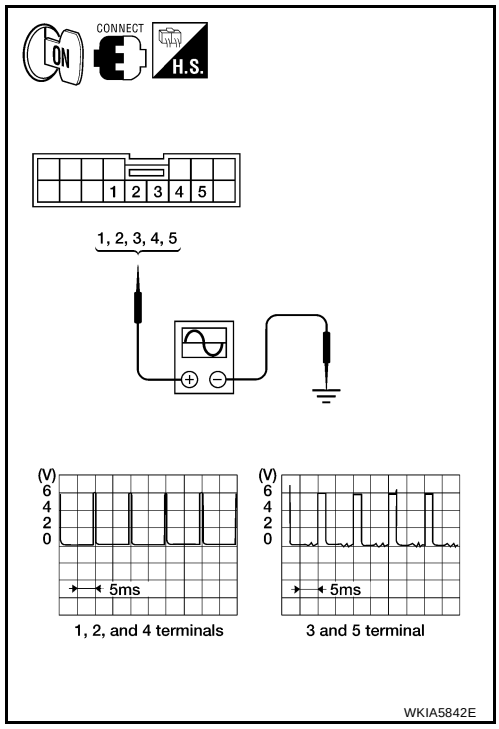
OK or NG

OK >> GO TO 4.
NG >> Check harness between BCM and combination switch for open or short circuit.

4. BCM OUTPUT TERMINAL INSPECTION

1. Turn ignition switch ON.
2. Turn lighting switch and wiper switch to OFF.
3. Set wiper dial to position 4.
4. Connect BCM and combination switch connectors, and check BCM output terminal voltage waveform of suspect malfunctioning system.

Suspect system	Combination switch (+)		
	Connector	Terminal	
1	M28	Output 1	1
2		Output 2	2
3		Output 3	3
4		Output 4	4
5		Output 5	5



OK or NG

OK >> Open circuit in combination switch, GO TO 5.
NG >> Replace BCM. Refer to BCS-25, "Removal and Installation" .

5. COMBINATION SWITCH INSPECTION

Referring to table below, perform combination switch inspection.

Procedure										
1	2		3	4		5	6		7
Replace lighting switch.	Confirm check results.	OK	INSPECTION END	Confirm check results.	OK	INSPECTION END	Confirm check results.	OK	INSPECTION END
		NG	Replace wiper switch.		NG	Replace switch base.		NG	Confirm symptom again.

>> Inspection End.

Removal and Installation

EKS00BR0

Refer to LT-70, "Removal and Installation" .

Switch Circuit Inspection

EKS00BR1

Refer to LT-74, "Combination Switch Inspection" .

STOP LAMP

PFP:26550

System Description

EKS00C4B

Power is supplied at all times

- through 10A fuse [No. 20, located in fuse block (J/B)]
- to stop lamp switch terminal 1, and
- to stop lamp relay terminals 1 and 3 (with VDC).

When the brake pedal is pressed, the stop lamp switch is closed and power is supplied

- through stop lamp switch terminal 2
- to rear combination lamp LH and RH (stop) terminal 1
- to high-mounted stop lamp terminal 1
- to ABS actuator and electric unit (control unit) terminal 41, and
- to stop lamp relay terminal 5 (with VDC).

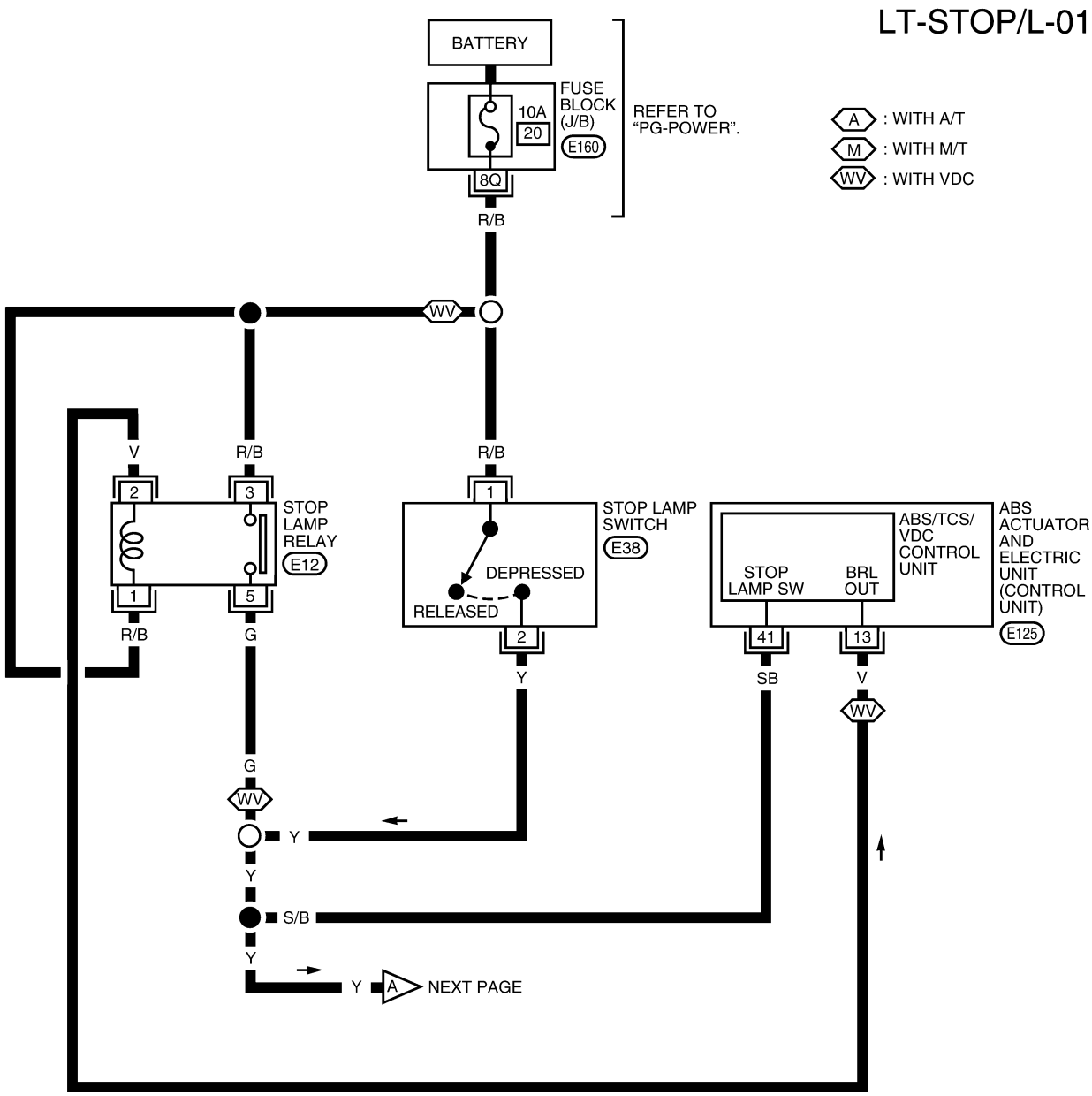
Ground is supplied

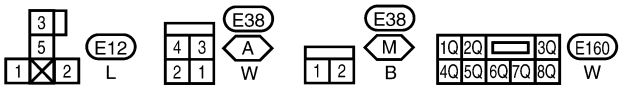
- to rear combination lamp LH and RH (stop) terminal 2
- through grounds E9, E15 (all) and E24 (VQ40DE engine only), and
- to high-mounted stop lamp terminal 2
- through grounds B117 and B132.

With power and ground supplied, the stop lamps illuminate.

Wiring Diagram — STOP/L —

EKS00BR3

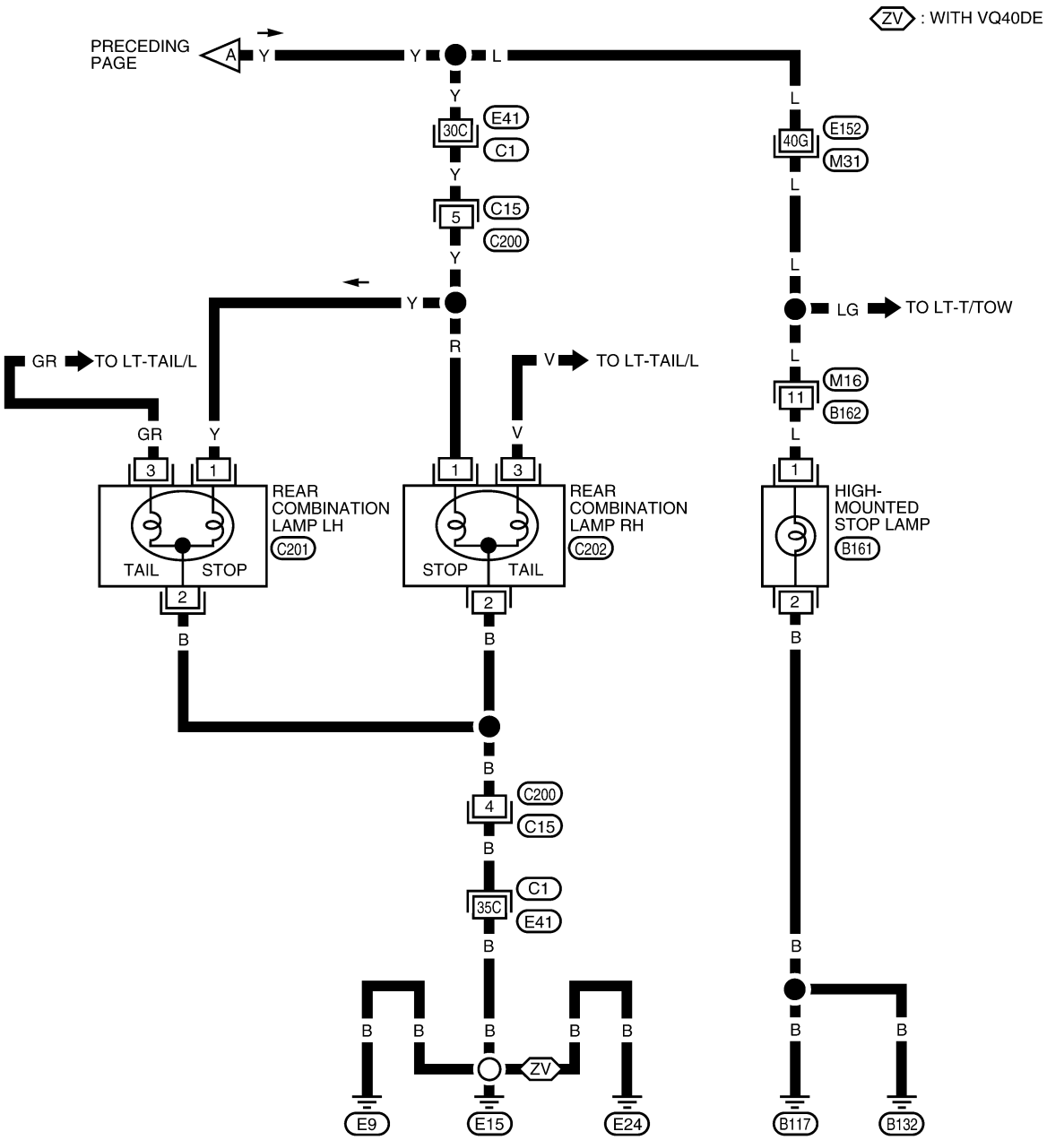


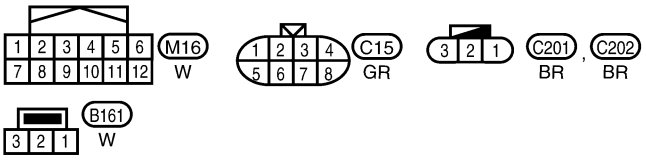


REFER TO THE FOLLOWING.
E125 - ELECTRICAL UNITS

WKWA2209E

LT-STOP/L-02





REFER TO THE FOLLOWING.
M31 , C1 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA4361E

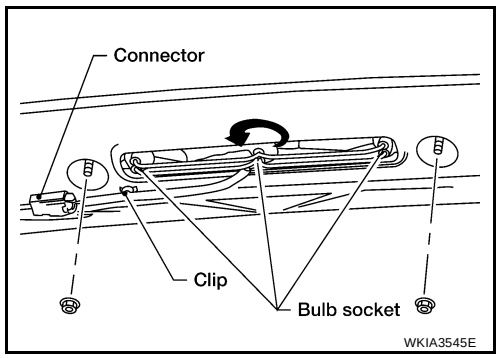
Bulb Replacement

EKS00BR4

HIGH-MOUNTED STOP LAMP

Removal

1. Remove high-mounted stop lamp. Refer to LT-80, "HIGH-MOUNTED STOP LAMP" .
2. Rotate the center bulb socket counterclockwise to release from high-mounted stop lamp assembly.
3. Pull bulb straight out from bulb socket.



Installation

Installation is in the reverse order of removal.

STOP LAMP

Refer to LT-98, "Bulb Replacement" .

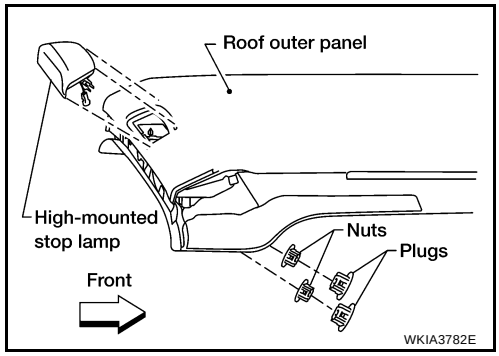
Removal and Installation

EKS00HM6

HIGH-MOUNTED STOP LAMP

Removal

1. Remove plugs on headlining.
2. Remove the nuts and remove high-mounted stop lamp from outside of roof outer panel.
3. Rotate the bulb sockets counterclockwise and remove the high-mounted stop lamp assembly.



Installation

Installation is in the reverse order of removal.

High-mounted stop lamp nuts : 3.38 N·m (0.34 kg-m, 30 in-lb)

STOP LAMP

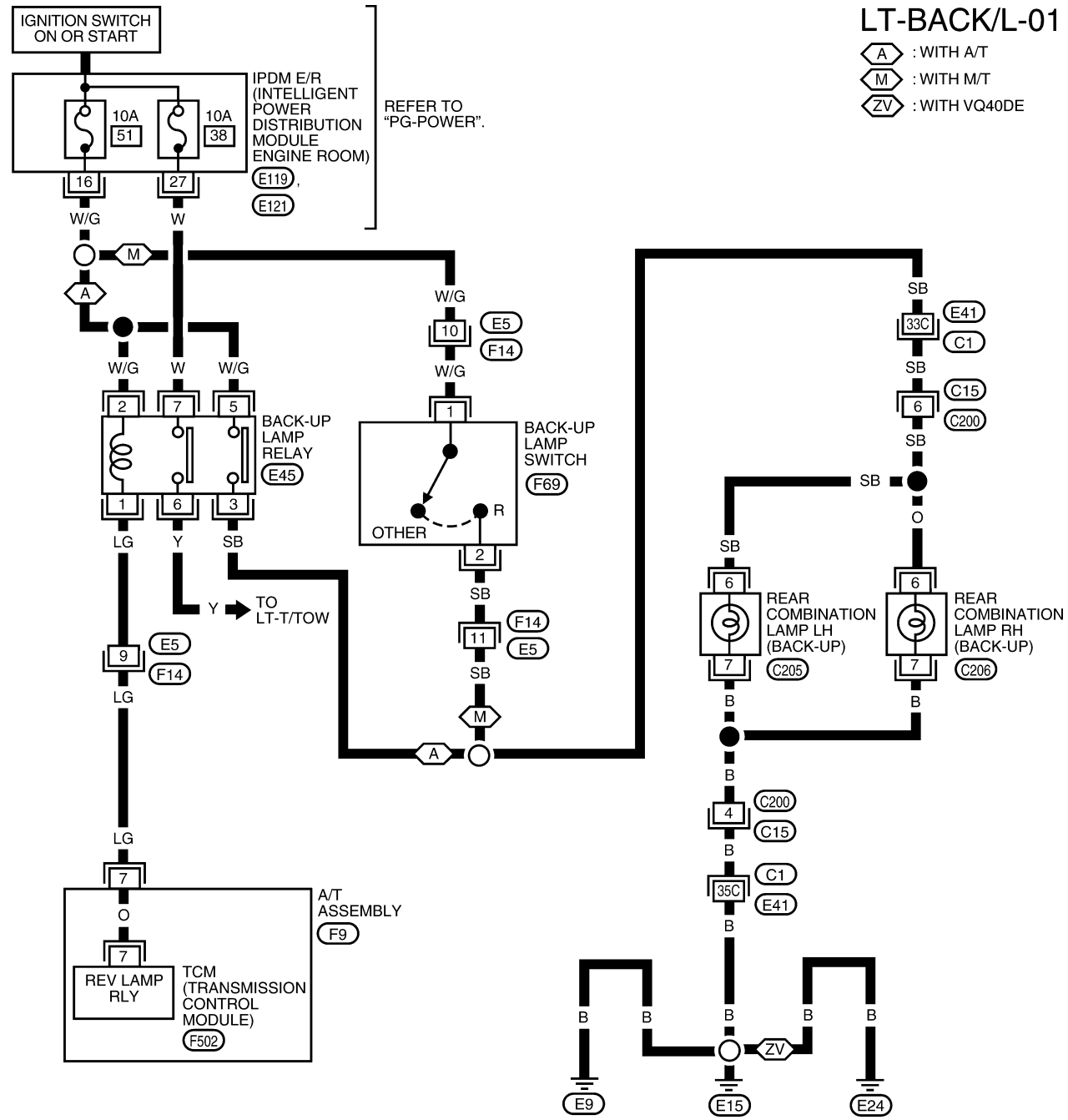
Refer to LT-98, "Removal and Installation" .

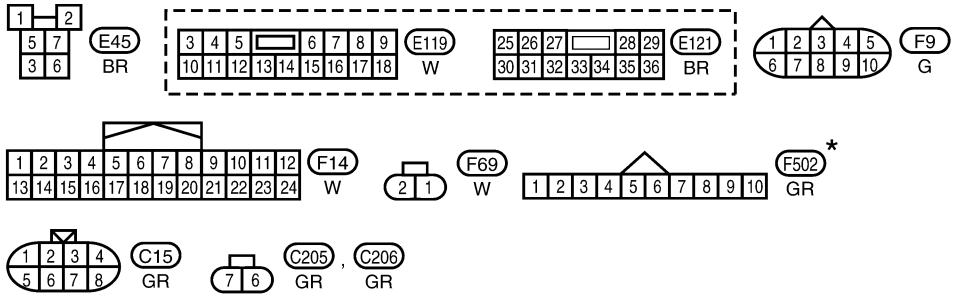
BACK-UP LAMP

PFP:26550

Wiring Diagram — BACK/L —

EKS00BR6





REFER TO THE FOLLOWING.
C1 - SUPER MULTIPLE JUNCTION (SMJ)

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

WKWA5312E

Bulb Replacement

EKS00BR7

Refer to LT-98, "Bulb Replacement" .

Removal and Installation

EKS00BR8

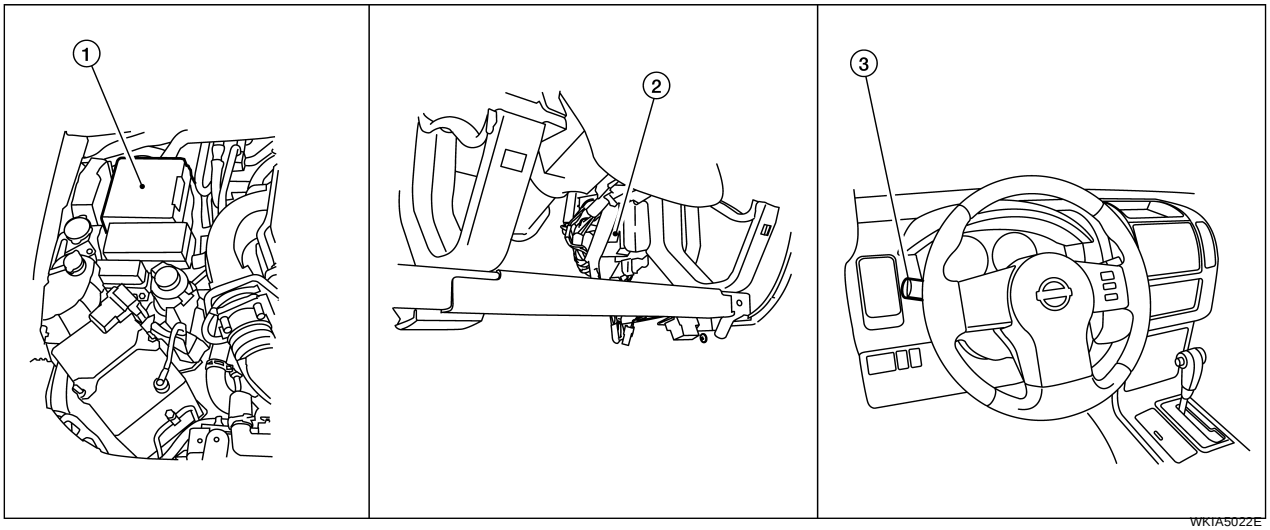
Refer to LT-98, "Removal and Installation" .

PARKING, LICENSE PLATE AND TAIL LAMPS

PFP:26550

Component Parts and Harness Connector Location

EKS00HM7



1. IPDM E/R
   E121, E122, E123, E124
2. BCM
   M18, M20
   (view with lower instrument panel LH removed)
3. Combination switch (lighting switch)
   M28

System Description

EKS00CN6

Control of the parking, license plate, and tail lamp operation is dependent upon the position of the lighting switch (combination switch). When the lighting switch is placed in the 1ST position, the BCM (body control module) receives input signal requesting the parking, license plate, side marker and tail lamps to illuminate. This input signal is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The CPU (central processing unit) of the IPDM E/R controls the tail lamp relay coil. This relay, when energized, directs power to the parking, license plate and tail lamps, which then illuminate.

Power is supplied at all times

- to tail lamp relay, located in the IPDM E/R, and
- through 20A fuse (No. 53, located in the IPDM E/R)
- to CPU of the IPDM E/R, and
- to ignition relay, located in the IPDM E/R, and
- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM terminal 70.

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

- to ignition relay, located in the IPDM E/R, and
- through 10A fuse [No. 1, located in the fuse block (J/B)]
- to BCM terminal 38.

Ground is supplied

- to BCM terminal 67
- through grounds M57, M61 and M79, and
- to IPDM E/R terminals 38 and 59
- through grounds E9, E15 (all) and E24 (VQ40DE engine only).

OPERATION BY LIGHTING SWITCH

With the lighting switch in the 1ST or 2ND position (or if the auto light system is activated), the BCM receives input signal requesting the parking, license plate, side marker and tail lamps to illuminate. This input signal is communicated to the IPDM E/R across the CAN communication lines. The CPU of the IPDM E/R controls the tail lamp relay coil, which when energized, directs power

- through 10A fuse (No. 37, located in the IPDM E/R)

- through IPDM E/R terminal 57
- to license plate lamp LH and RH terminal 1
- to rear combination lamp LH and RH (tail) terminal 3, and
- through 10A fuse (No. 36, located in the IPDM E/R)
- through IPDM E/R terminal 28
- to front combination lamp LH (side marker) terminal 7
- to front combination lamp LH (parking) terminal 4, and
- through IPDM E/R terminal 49
- to front combination lamp RH (side marker) terminal 7
- to front combination lamp RH (parking) terminal 4.

Ground is supplied

- to front combination lamp LH and RH (side marker) terminal 8
- to front combination lamp LH and RH (parking) terminal 5
- to license plate lamp LH and RH terminal 2
- to rear combination lamp LH and RH (tail) terminal 2
- through grounds E9, E15 (all) and E24 (VQ40DE engine only).

With power and ground supplied, the parking, side marker, license plate and tail lamps illuminate.

COMBINATION SWITCH READING FUNCTION

Refer to BCS-3, "COMBINATION SWITCH READING FUNCTION" .

EXTERIOR LAMP BATTERY SAVER CONTROL

When the combination switch (lighting switch) is in the 1ST (or 2ND) position, and the ignition switch is turned from ON or ACC to OFF, the battery saver control feature is activated.
Under this condition, the parking, side marker, license and tail lamps remain illuminated for 5 minutes, then the parking, side marker, license plate and tail lamps are turned off.
Exterior lamp battery saver control mode can be changed by the function setting of CONSULT-II.

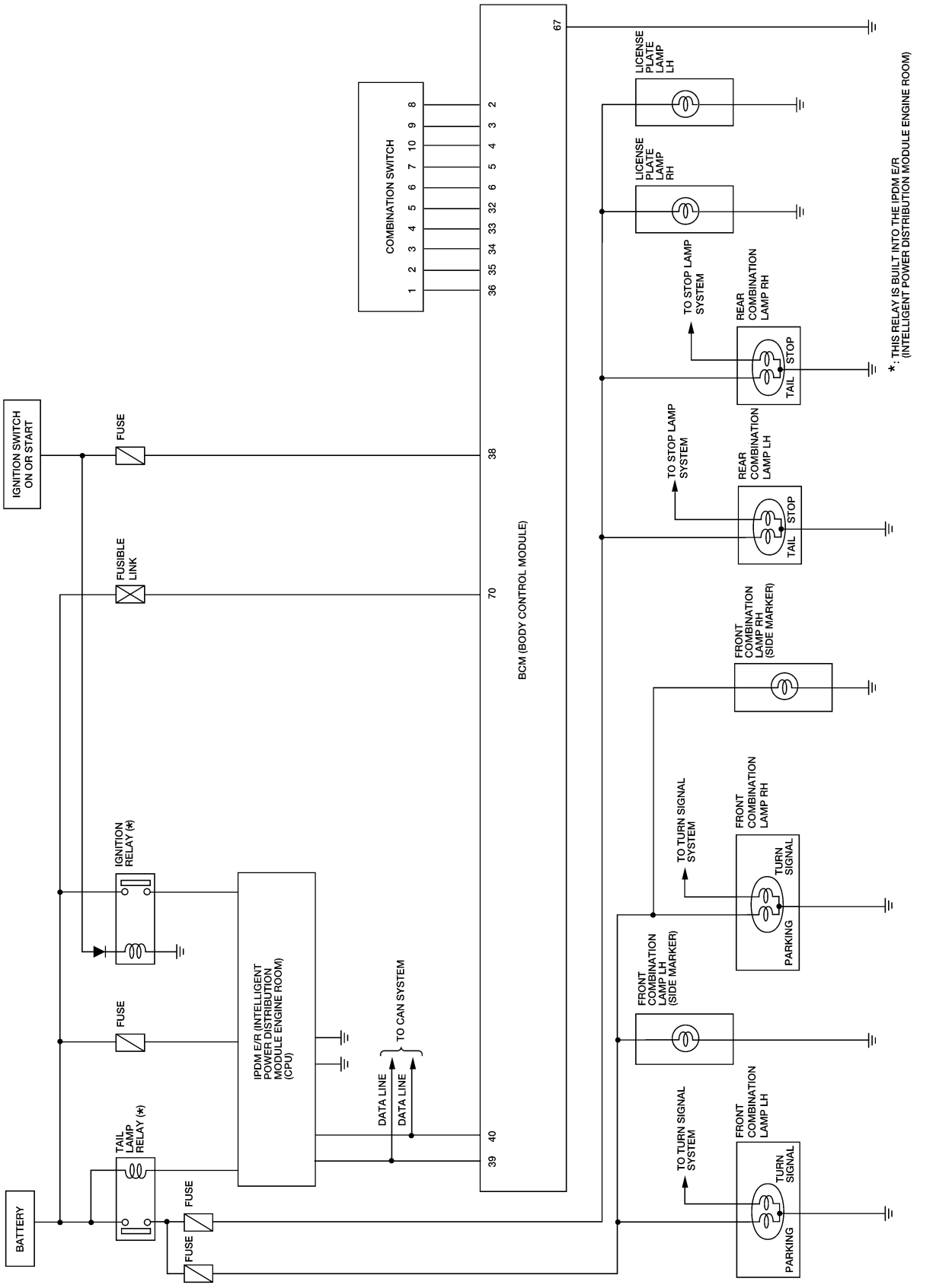
CAN Communication System Description

EKS00BRB

Refer to LAN-4, "CAN Communication System" .

Schematic

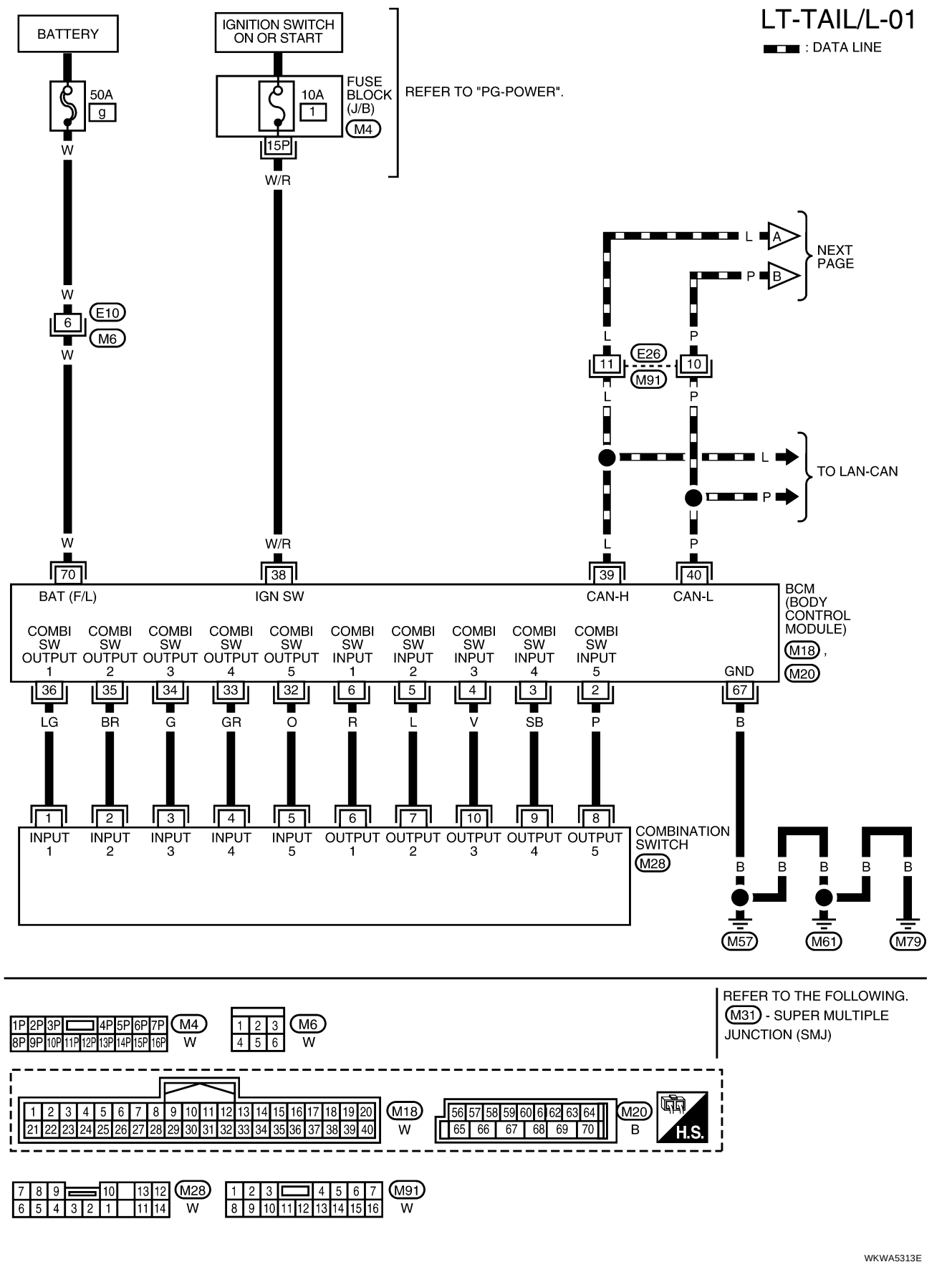
EKS00BRC



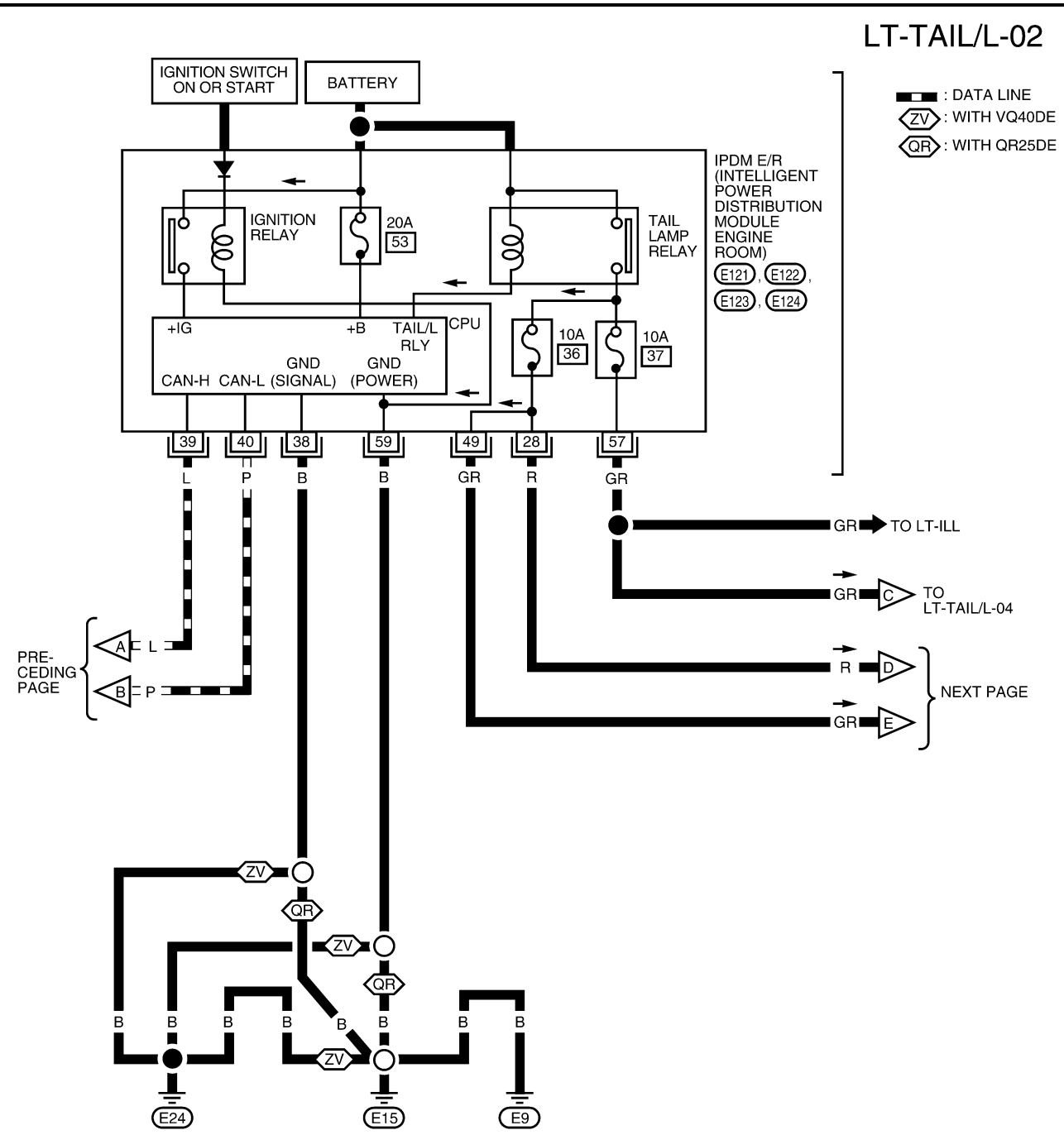
WKWA5457E

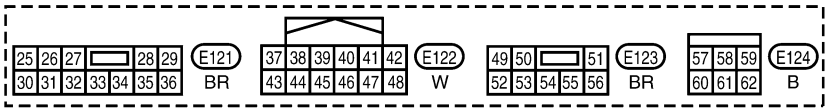
Wiring Diagram — TAIL/L —

EKS00BRD



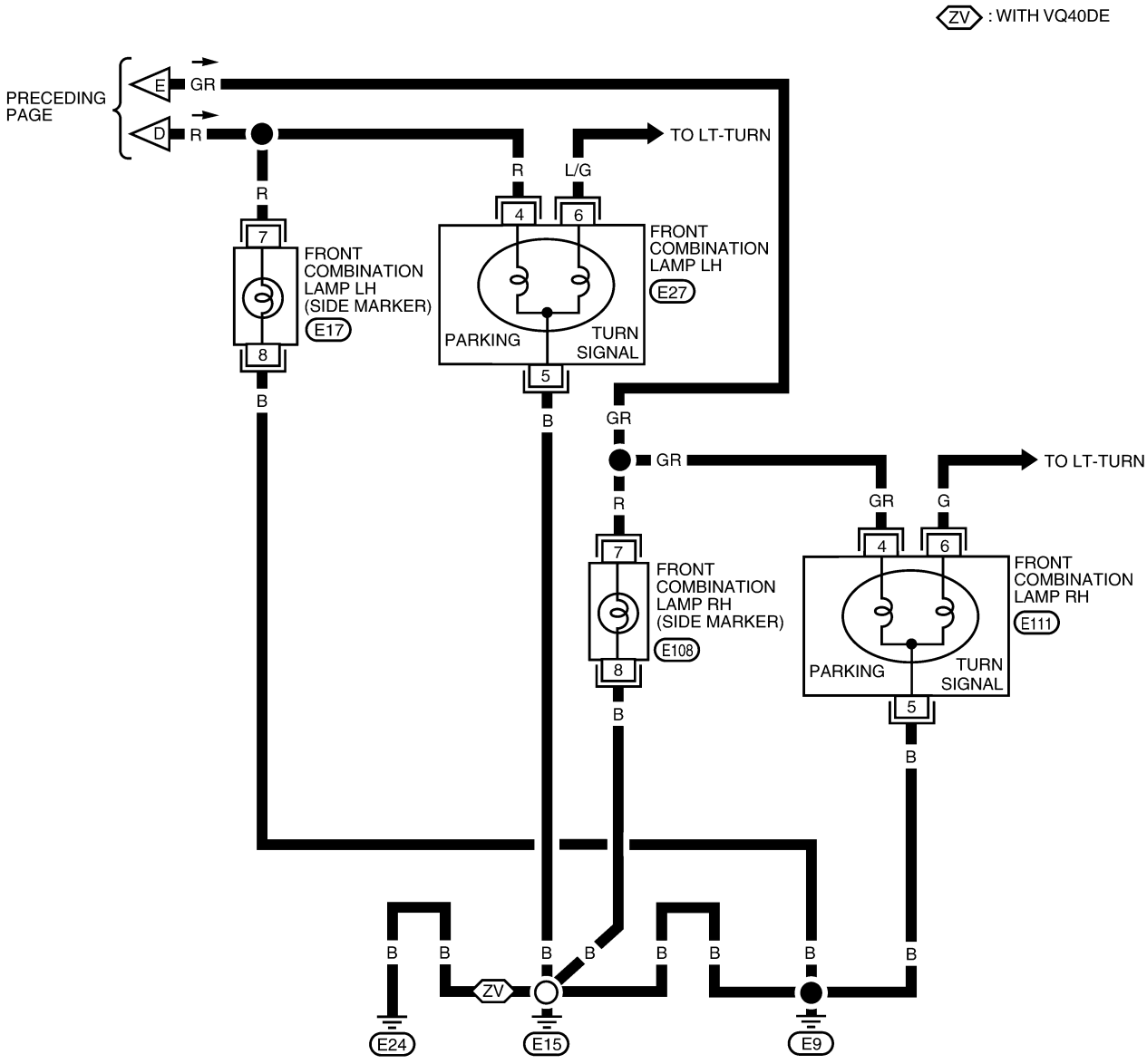
WKWA5313E

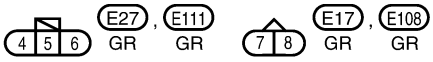

LT-TAIL/L-02
IGNITION SWITCH ON OR START
BATTERY
: DATA LINE
ZV : WITH VQ40DE
QR : WITH QR25DE
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E121, E122, E123, E124
IGNITION RELAY
20A 53
TAIL LAMP RELAY
+IG
+B
TAIL/L RLY
CPU
CAN-H
CAN-L
GND (SIGNAL)
GND (POWER)
10A 36
10A 37
39 40 38 59 49 28 57
L P B B GR R GR
GR TO LT-ILL
GR C TO LT-TAIL/L-04
R D NEXT PAGE
GR E
PRE-CEDING PAGE
A L
B P
ZV
QR
E24
E15
E9


E121 BR
E122 W
E123 BR
E124 B

WKWA2220E

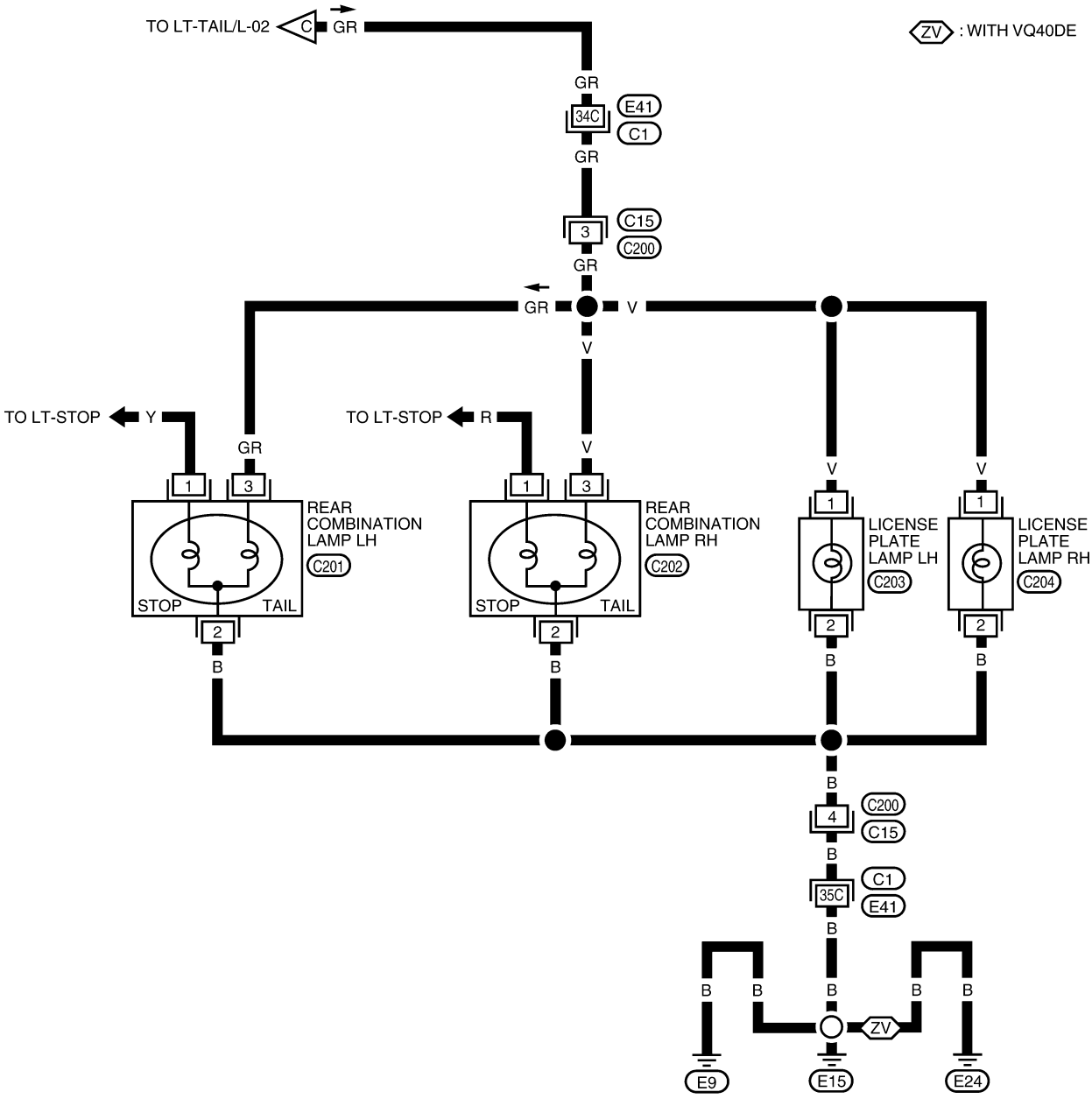
LT-TAIL/L-03

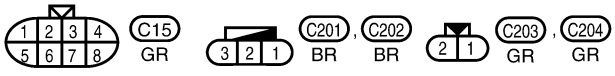




WKWA2221E

LT-TAIL/L-04





REFER TO THE FOLLOWING.
C1 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA4365E

Terminals and Reference Values for BCM

EKS00CN7

Refer to BCS-12, "Terminals and Reference Values for BCM" .

Terminals and Reference Values for IPDM E/R

EKS00CN8

Refer to PG-28, "Terminals and Reference Values for IPDM E/R" .

How to Proceed With Trouble Diagnosis

EKS00CN9

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-83, "System Description" .
3. Carry out the Preliminary Check. Refer to LT-90, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Do the parking, license and tail lamps operate normally? If YES: GO TO 6. If NO: GO TO 4.
6. Inspection End.

Preliminary Check

EKS00CNA

CHECK POWER SUPPLY AND GROUND CIRCUIT FORM BCM

Refer to BCS-16, "BCM Power Supply and Ground Circuit Check" .

CHECK POWER SUPPLY AND GROUND CIRCUIT FORM IPDM E/R

Refer to PG-30, "IPDM E/R Power/Ground Circuit Inspection" .

CONSULT-II Function (BCM)

EKS00CNB

Refer to LT-12, "CONSULT-II Function (BCM)" .

CONSULT-II Function (IPDM E/R)

EKS00KMS

Refer to LT-13, "CONSULT-II Function (IPDM E/R)" .

Parking, Side Marker, License Plate and/or Tail Lamps Do Not Illuminate

EKS00CNC

1. INSPECT FUSES

Inspect 10A fuse (Nos. 36 and 37, located in the IPDM E/R)

OK or NG

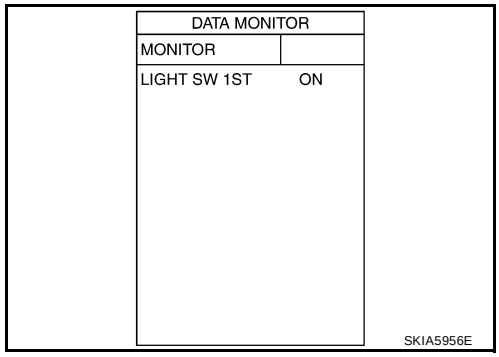
OK >> GO TO 2.
NG >> Repair harness and replace fuse.

2. CHECK COMBINATION SWITCH INPUT SIGNAL

With CONSULT-II

Select "BCM" on CONSULT-II. With "HEAD LAMP" data monitor, make sure "LIGHT SW 1ST" turns ON-OFF linked with operation of lighting switch.

When lighting switch is in 1ST position : LIGHT SW 1ST ON



Without CONSULT-II

Refer to LT-74, "Combination Switch Inspection" .

OK or NG

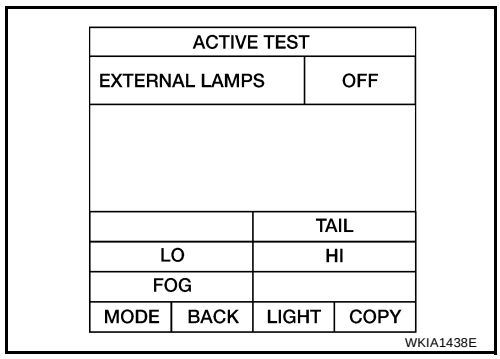
OK >> GO TO 3.
NG >> Check lighting switch. Refer to LT-74, "Combination Switch Inspection" .

3. ACTIVE TEST

With CONSULT-II

1. Select "IPDM E/R" on CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "EXTERNAL LAMPS" on "SELECT TEST ITEM" screen.
3. Touch "TAIL" on "ACTIVE TEST" screen.
4. Make sure front parking, front side marker, license plate and tail lamp operation.

Front parking, front side marker, license plate and tail lamps should operate



Without CONSULT-II

1. Start auto active test. Refer to PG-23, "Auto Active Test" .
2. Make sure front parking, front side marker, license plate and tail lamp operation.

Front parking, front side marker, license plate and tail lamps should operate

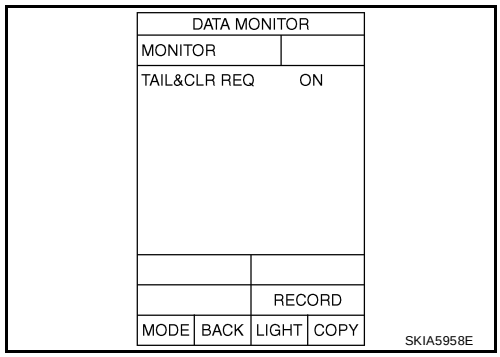
OK or NG

OK >> GO TO 4.
NG >> GO TO 5.

4. CHECK IPDM E/R

1. Select "IPDM E/R" on CONSULT-II, and select "DATA MONITOR" on "SELECT DIAG MODE" screen.
2. Make sure "TAIL&CLR REQ" turns ON when lighting switch is in 1ST position.

When lighting switch is in 1ST position : TAIL&CLR REQ ON



OK or NG

OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .
NG >> Replace BCM. Refer to BCS-25, "Removal and Installation" .

5. CHECK INPUT SIGNAL

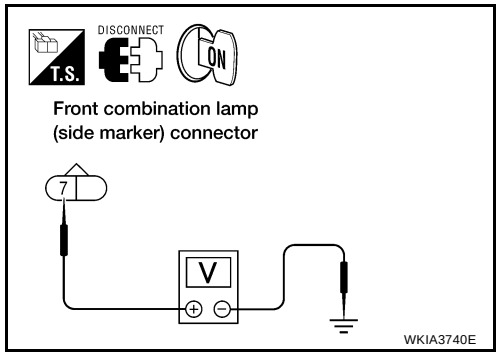
With CONSULT-II

1. Turn ignition switch OFF.
2. Disconnect front combination lamp (side marker), front combination lamp (parking), license plate lamp and rear combination lamp (tail) connectors.
3. Turn ignition switch ON.
4. Select "IPDM E/R" on CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
5. Select "TAIL LAMP" on "SELECT TEST ITEM" screen.
6. Touch "ON" on "ACTIVE TEST" screen.
7. When tail lamp is operating, check voltage between front combination lamp (side marker), front combination lamp (parking), license plate lamp, rear combination lamp (tail) harness connector and ground.

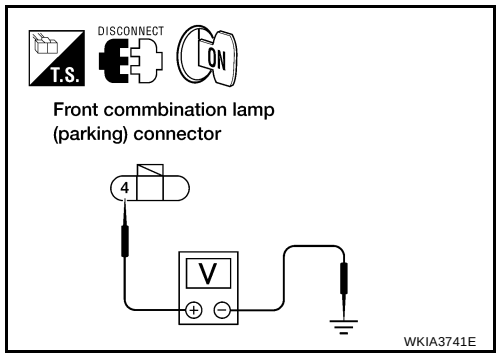
Without CONSULT-II

1. Turn ignition switch OFF.
2. Start auto active test. Refer to PG-23, "Auto Active Test" .
3. When tail lamp is operating, check voltage between front combination lamp (side marker), front combination lamp (parking), license plate lamp, rear combination lamp (tail) harness connector and ground.

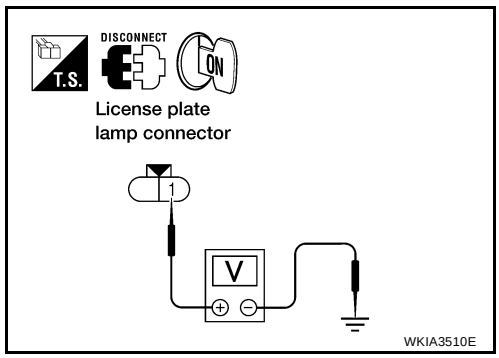
Front combination lamp (side marker)		(–)	Voltage
(+)			
Connector	Terminal		
LH E17	7	Ground	Battery voltage
RH E108			



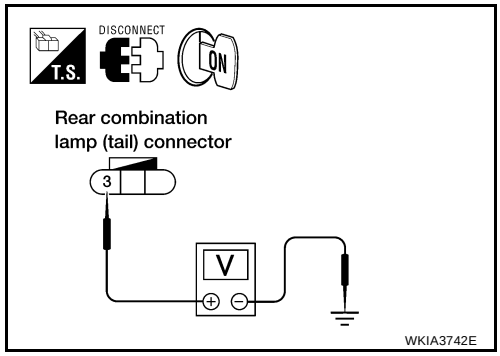
Front combination lamp (parking)		(–)	Voltage
(+)			
Connector	Terminal		
LH E27	4	Ground	Battery voltage
RH E111			



License plate lamp		(–)	Voltage
(+)			
Connector	Terminal		
LH C203	1	Ground	Battery voltage
RH C204			



Rear combination lamp (tail)			(–)	Voltage
(+)				
Connector		Terminal		
LH	C201	3	Ground	Battery voltage
RH	C202			



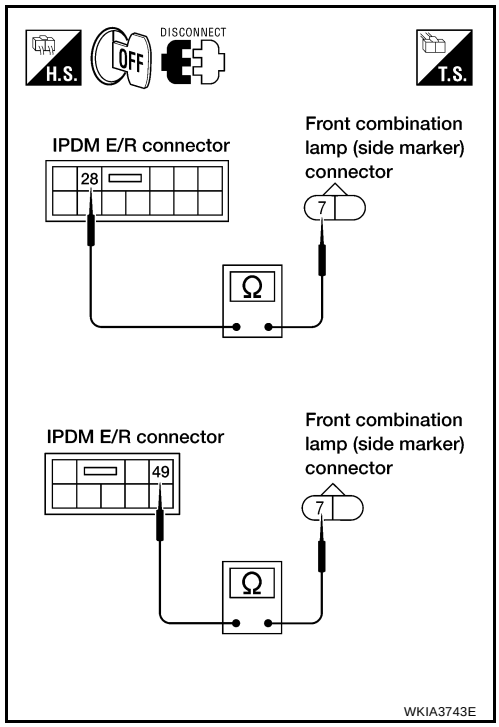
OK or NG

OK >> GO TO 7.
NG >> GO TO 6.

6. CHECK PARKING, SIDE MARKER, LICENSE PLATE AND TAIL LAMP CIRCUIT

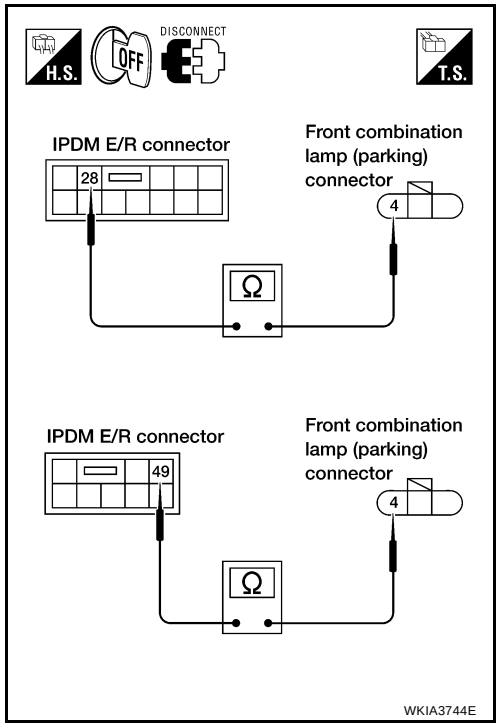
1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector and front combination lamp (side marker) harness connector.

IPDM E/R		Front combination lamp (side marker)			Continuity
Connector	Terminal	Connector		Terminal	
E121	28	LH	E17	7	Yes
E123	49	RH	E108		



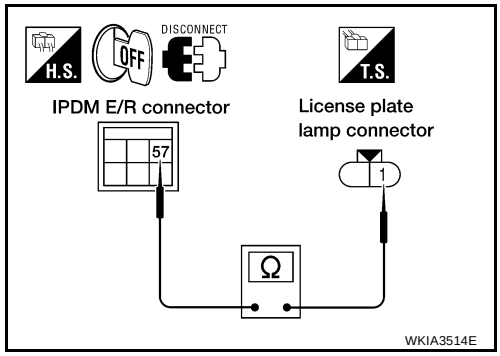
4. Check continuity between IPDM E/R harness connector and front combination lamp (parking) harness connector.

IPDM E/R		Front combination lamp (parking)			Continuity
Connector	Terminal	Connector		Terminal	
E121	28	LH	E27	4	Yes
E123	49	RH	E111		



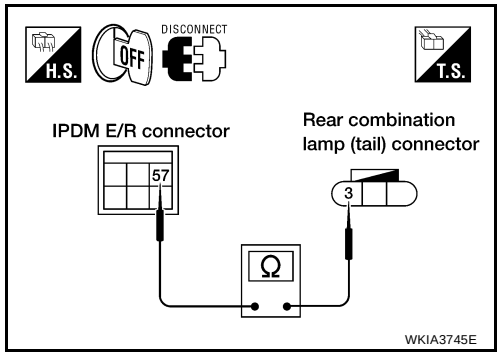
5. Check continuity between IPDM E/R harness connector and license plate lamp harness connector.

IPDM E/R		License plate lamp			Continuity
Connector	Terminal	Connector		Terminal	
E124	57	LH	C203	1	Yes
		RH	C204		



6. Check continuity between IPDM E/R harness connector and rear combination lamp (tail) harness connector.

IPDM E/R		Rear combination lamp (tail)			Continuity
Connector	Terminal	Connector		Terminal	
E124	57	LH	C201	3	Yes
		RH	C202		



OK or NG

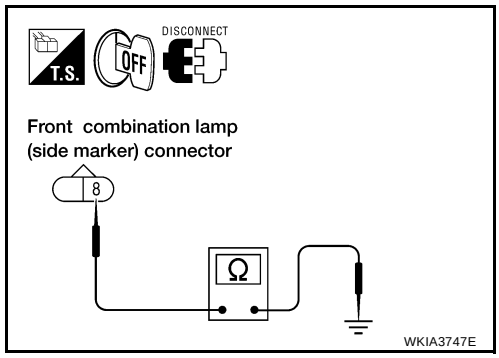
OK >> Replace IPDM E/R. Refer to PG-32, "Removal and Installation of IPDM E/R" .

NG >> Repair harness or connector.

7. CHECK GROUND

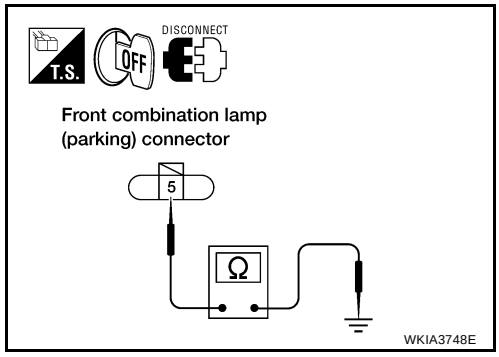
1. Check continuity between front combination lamp (side marker) harness connector and ground.

Front combination lamp (side marker)				Continuity
Connector		Terminal		
LH	E17	8	Ground	Yes
RH	E108			



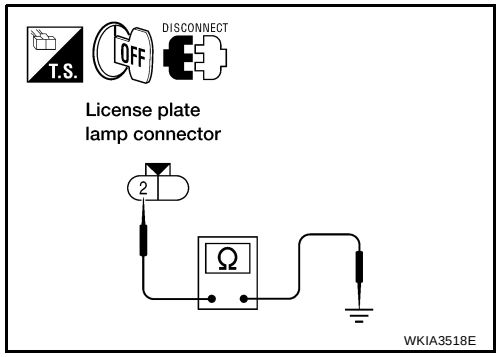
2. Check continuity between front combination lamp (parking) harness connector and ground.

Front combination lamp (parking)				Continuity
Connector		Terminal		
LH	E27	5	Ground	Yes
RH	E111			



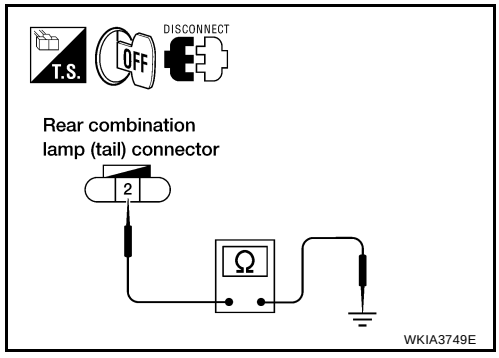
3. Check continuity between license plate lamp harness connector and ground.

License plate lamp				Continuity
Connector		Terminal		
LH	C203	2	Ground	Yes
RH	C204			



4. Check continuity between rear combination lamp (tail) harness connector and ground.

Rear combination lamp (tail)				Continuity
Connector		Terminal		
LH	C201	32	Ground	Yes
RH	C202			



OK or NG

OK >> Check bulbs.
NG >> Repair harness or connector.

Parking, Side Marker, License Plate and Tail Lamps Do Not Turn OFF (After Approx. 10 Minutes)

EKS00CND

1. CHECK IPDM E/R

1. Turn ignition switch ON. Turn the combination switch (lighting switch) to the OFF position. Turn ignition switch OFF.
2. Verify that the front parking, front side marker, license plate, and tail lamps turn on and off after approximately 10 minutes.

OK or NG

OK >> Ignition relay malfunction. Refer to PG-19, "Function of Detecting Ignition Relay Malfunction" .
NG >> Inspection End.

Bulb Replacement

EKS00BRL

FRONT PARKING LAMP

Refer to LT-25, "FRONT TURN SIGNAL/PARKING LAMP" .

LICENSE PLATE LAMP

Removal

1. Turn bulb socket counterclockwise to unlock bulb socket.
2. Pull bulb to remove from bulb socket.

Installation

Installation is in the reverse order of removal.

TAIL LAMP

Refer toLT-98, "REMOVAL"

Removal and Installation

EKS00HM8

FRONT PARKING LAMP

Refer to LT-25, "Removal and Installation" .

LICENSE PLATE LAMP

Removal

1. Disconnect license plate lamp harness.
2. Depress tab to remove license plate lamp from rear bumper.

Installation

Installation is in the reverse order of removal.

TAIL LAMP

Refer to LT-98, "Removal and Installation" .

REAR COMBINATION LAMP

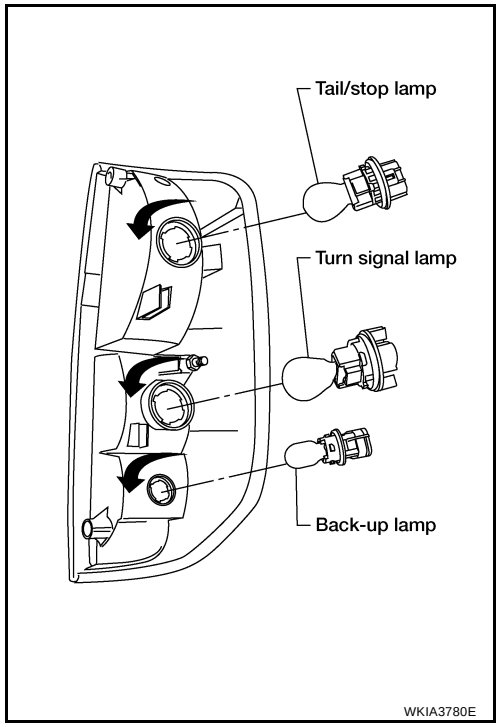
PFP:26554

Bulb Replacement

EKS00BRN

REMOVAL

1. Remove rear combination lamp. Refer to LT-98, "Removal and Installation" .
2. Turn bulb counterclockwise to remove bulb socket.
3. Pull bulb straight out away from socket to release.



INSTALLATION

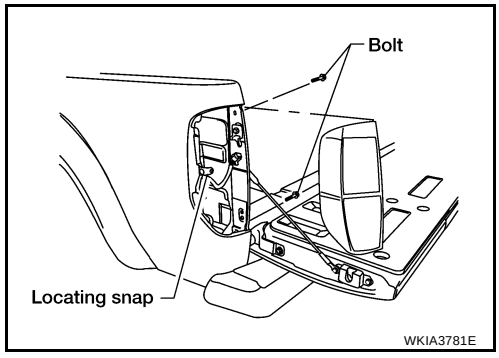
Installation is in the reverse order of removal.

Removal and Installation

EKS00BRO

REMOVAL

1. Open tailgate and remove rear combination lamp bolts.
2. Pull combination lamp housing rearward to release locating snap.
3. Rotate each bulb socket counterclockwise to unlock it from lamp housing and remove from vehicle.



INSTALLATION

Installation is in the reverse order of removal.

NOTE:

During installation, align locating snap on body prior to installing bolts.

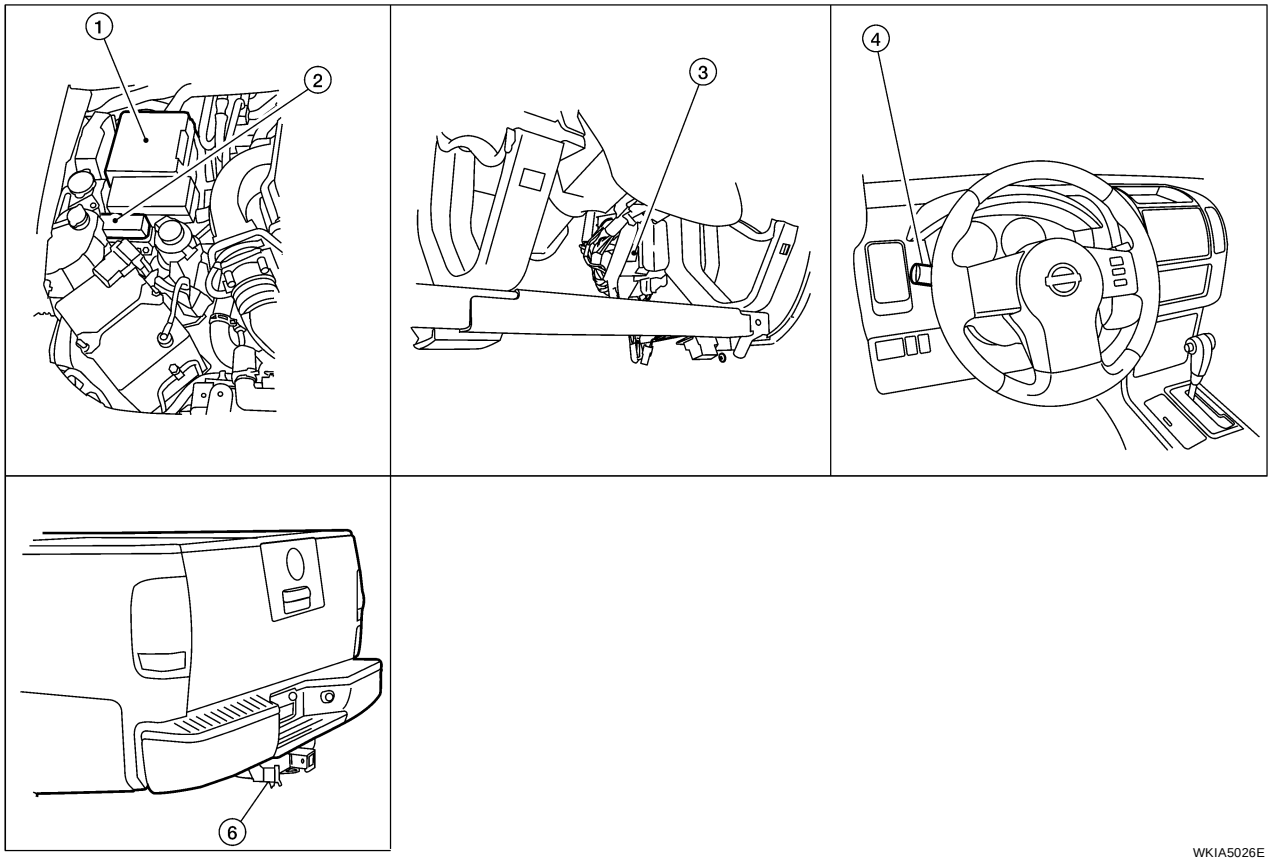
Rear combination lamp bolts : 2.4 Nm (0.24 kg-m, 21 in-lb)

TRAILER TOW

PFP:93020

Component Parts and Harness Connector Location

EKS00BRP



WKIA5026E

1. IPDM E/R
   E121, E122, E124
2. Trailer tow relays
   E140, E148
3. BCM
   M18, M19, M20
   (view with lower instrument panel LH removed)
4. Combination switch (lighting switch)
   M28
5. Trailer
   C126

System Description

EKS00HM9

Power is supplied at all times

- to ignition relay, located in the IPDM E/R (intelligent power distribution module engine room), and
- to tail lamp relay, located in the IPDM E/R, and
- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM (body control module) terminal 70, and
- to 15A fuse (No. 60, located in the fuse and relay box),
- to trailer turn relay RH and LH terminal 5, and
- through 20A fuse (No. 53, located in the IPDM E/R)
- to CPU of the IPDM E/R, and
- through 10A fuse (No. 32, located in the IPDM E/R)
- to IPDM E/R terminal 61
- to trailer tow relay 1 terminal 3, and
- through 30A fusible link (letter **m** , located in the fuse and fusible link box)
- to trailer tow relay 2 terminals 3 and 6, and
- through 30A fusible link (letter **h** , located in the fuse and fusible link box)
- to electric brake (pre-wiring) terminal 5.

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

- to ignition relay, located in the IPDM E/R, and
- through 10A fuse [No. 1, located in the fuse block (J/B)]
- to BCM terminal 38, and
- through 10A fuse (No. 38, located in the IPDM E/R)
- to IPDM E/R terminal 27,
- to trailer tow relay 2 terminal 1, and
- to back-up lamp relay terminal 3 (with M/T).

Ground is supplied

- to BCM terminal 67 and
- to electric brake (pre-wiring) terminal 1
- through grounds M57, M61 and M79, and
- to IPDM E/R terminals 38 and 59
- to trailer tow relay 1 terminal 2
- to trailer tow relay 2 terminal 2
- to trailer connector terminal 2
- to trailer turn relay RH and LH terminal 2, and
- to back-up lamps relay terminal 1 (with M/T)
- through grounds E9, E15 and E24.

TRAILER TAIL LAMP OPERATION

The trailer tail lamps are controlled by the trailer tow relay 1.
With the lighting switch in the parking and tail lamp ON (1ST) position, AUTO position (and the auto light system is activated) or headlamp ON (2ND) position, power is supplied from the tail lamp relay

- through 10A fuse (No. 37, located in the IPDM E/R)
- through IPDM E/R terminal 29
- to trailer tow relay 1 terminal 1.

When energized, power is supplied

- through trailer tow relay 1 terminal 5
- to trailer connector terminal 4.

TRAILER STOP, TURN SIGNAL AND HAZARD LAMP OPERATION

The trailer stop, turn signal and hazard lamps are controlled by the BCM. If either turn signal or the hazard lamps are turned on, the BCM supplies voltage to the trailer turn relay RH or LH to make them flash. If the BCM receives stop lamp switch signal, the BCM supplies voltage to the trailer turn relay RH and LH to make them illuminate.
Left stop, turn signal and hazard lamp output is supplied

- through BCM terminal 52
- to trailer turn relay LH terminal 1

When energized, trailer turn relay LH supplies power to the left stop, turn signal, and hazard lamp

- through trailer turn relay LH terminal 3
- to trailer connector terminal 3.

Right stop, turn signal and hazard lamp output is supplied

- through BCM terminal 51
- to trailer turn relay RH terminal 1

When energized, trailer turn relay RH supplies power to the right stop, turn signal, and hazard lamp

- through trailer turn relay RH terminal 3
- to trailer connector terminal 6.

TRAILER POWER SUPPLY OPERATION

The trailer power supply is controlled by trailer tow relay 2.
When the ignition switch is in the ON or START position, power is supplied

- through 10A fuse (No. 38, located in the IPDM E/R)

- through IPDM E/R terminal 27
- to trailer tow relay 2 terminal 1.

When energized, trailer tow relay 2 power is supplied

- through trailer tow relay 2 terminals 5 and 7
- to trailer connector terminal 5.

TRAILER BACK-UP LAMPS OPERATION

The trailer back-up lamps are controlled by back-up lamp relay.
When the ignition switch is in the ON or START position, power is supplied

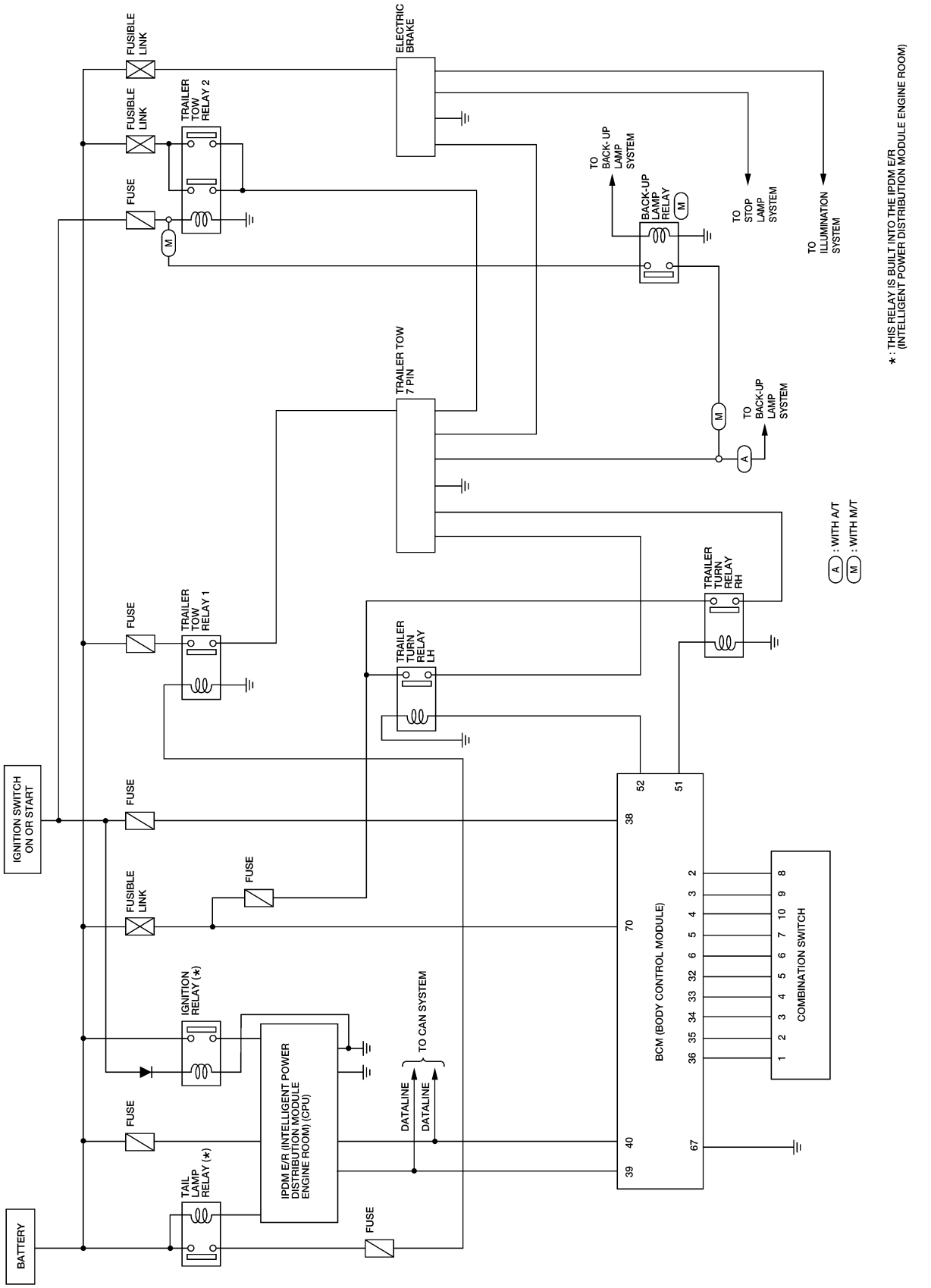
- through 10A fuse (No. 38, located in the IPDM E/R)
- through IPDM E/R terminal 27
- to back-up lamp relay terminal 3 (with M/T) or 7 (with A/T).

When energized, back-up lamp relay power is supplied

- through back-up lamp relay terminal 5 (with M/T) or 6 (with A/T)
- to trailer connector terminal 7.

Schematic

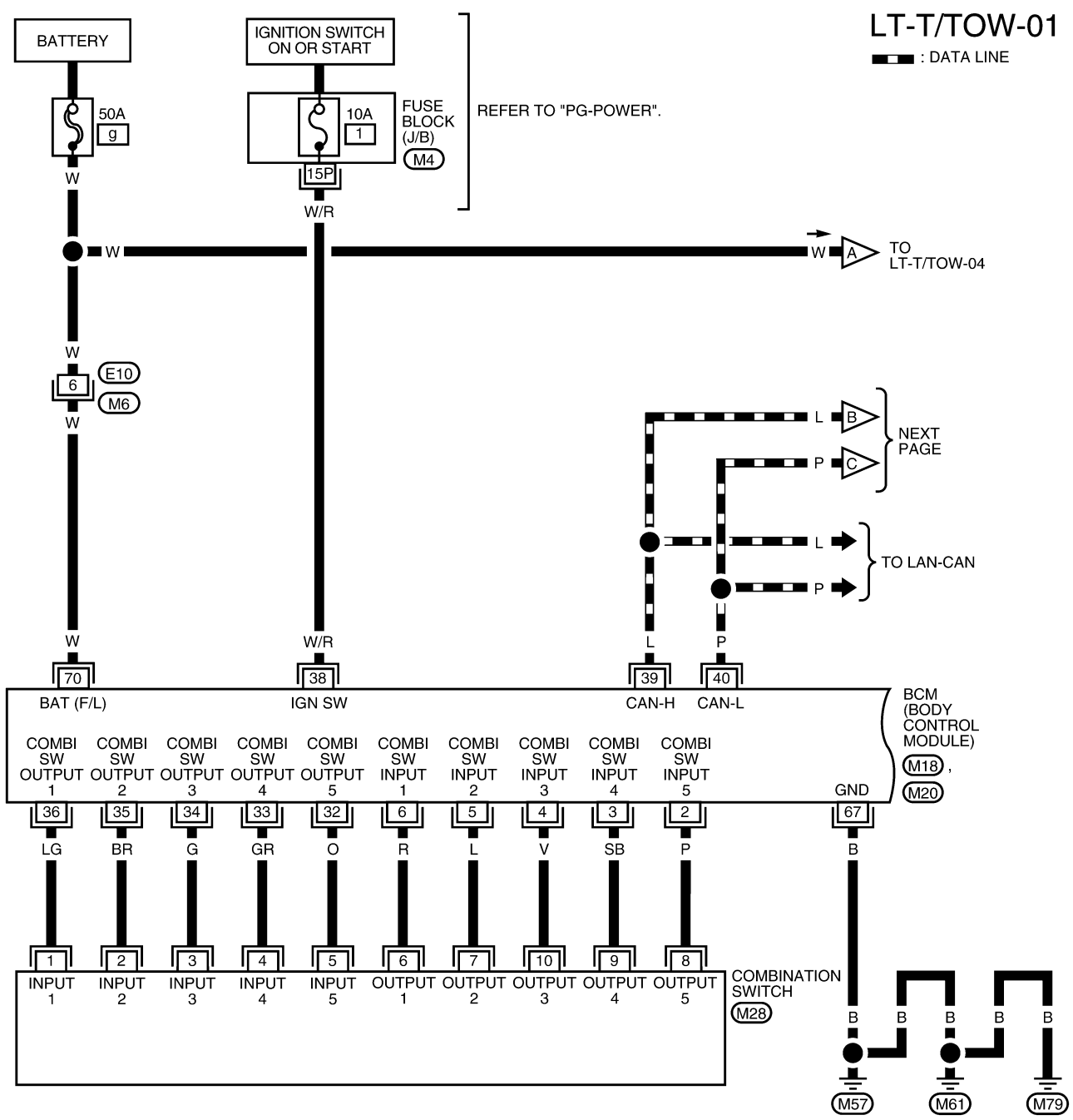
EKS00BRR

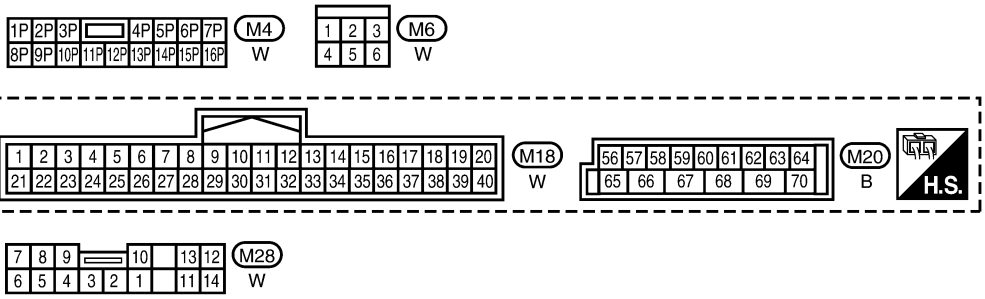


WKWA5458E

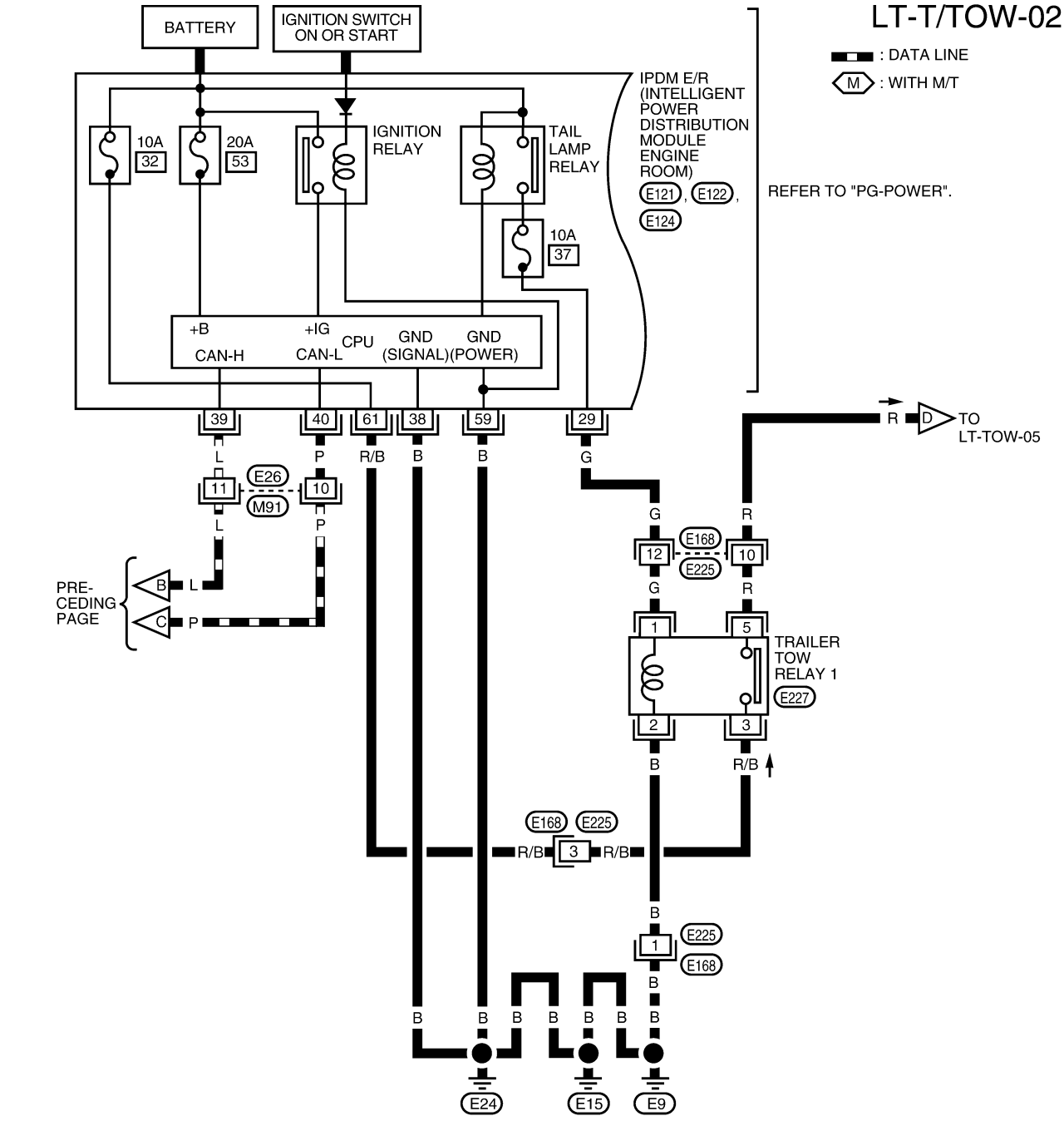
Wiring Diagram — T/TOW —

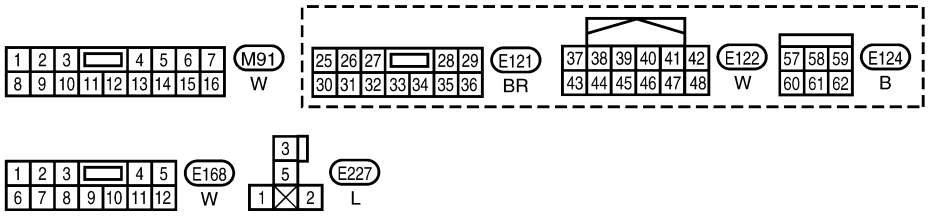
EKS00BRS



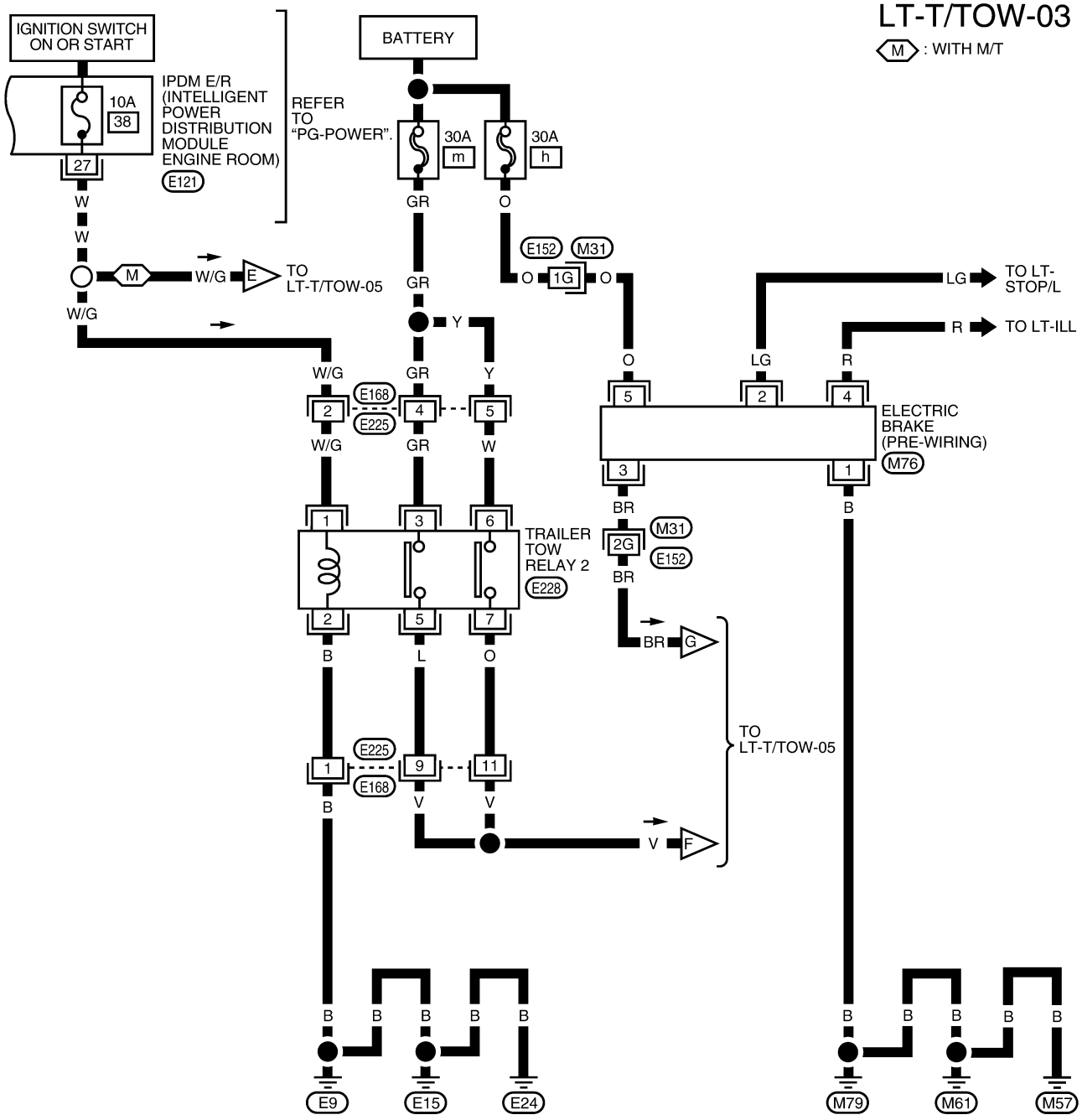


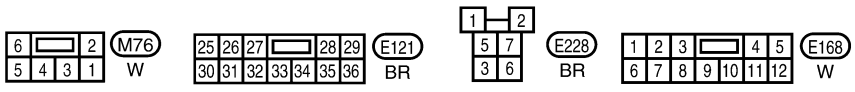
WKWA5314E


LT-T/TOW-02
: DATA LINE
M : WITH M/T
BATTERY
IGNITION SWITCH ON OR START
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E121, E122, E124
REFER TO "PG-POWER".
10A 32
20A 53
IGNITION RELAY
TAIL LAMP RELAY
10A 37
+B
CAN-H
+IG
CAN-L
CPU
GND (SIGNAL)
GND (POWER)
39 40 61 38 59 29
L P R/B B B G
E26
M91
11 10
PRE-CEDING PAGE
B L
C P
R D TO LT-TOW-05
G R
E168
E225
12 10
1 5
TRAILER TOW RELAY 1
E227
2 3
B R/B
E168 E225
R/B 3 R/B
B
1
E225
E168
E24 E15 E9


M91 W
E121 BR
E122 W
E124 B
E168 W
E227 L

WKWA4368E

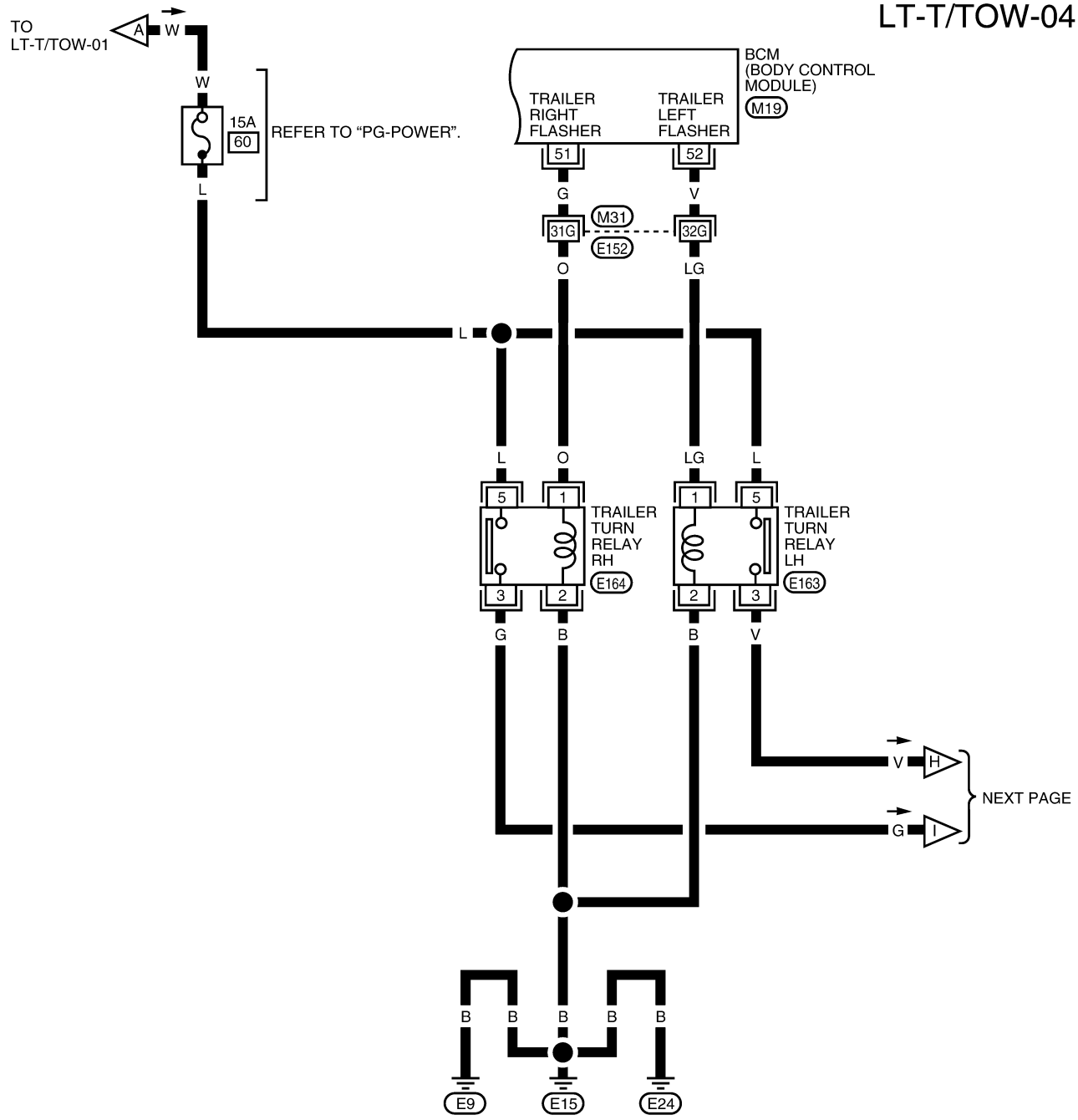


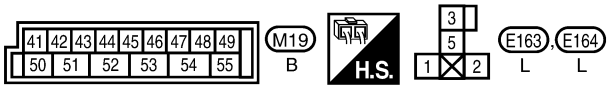


REFER TO THE FOLLOWING.
M31 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA5315E

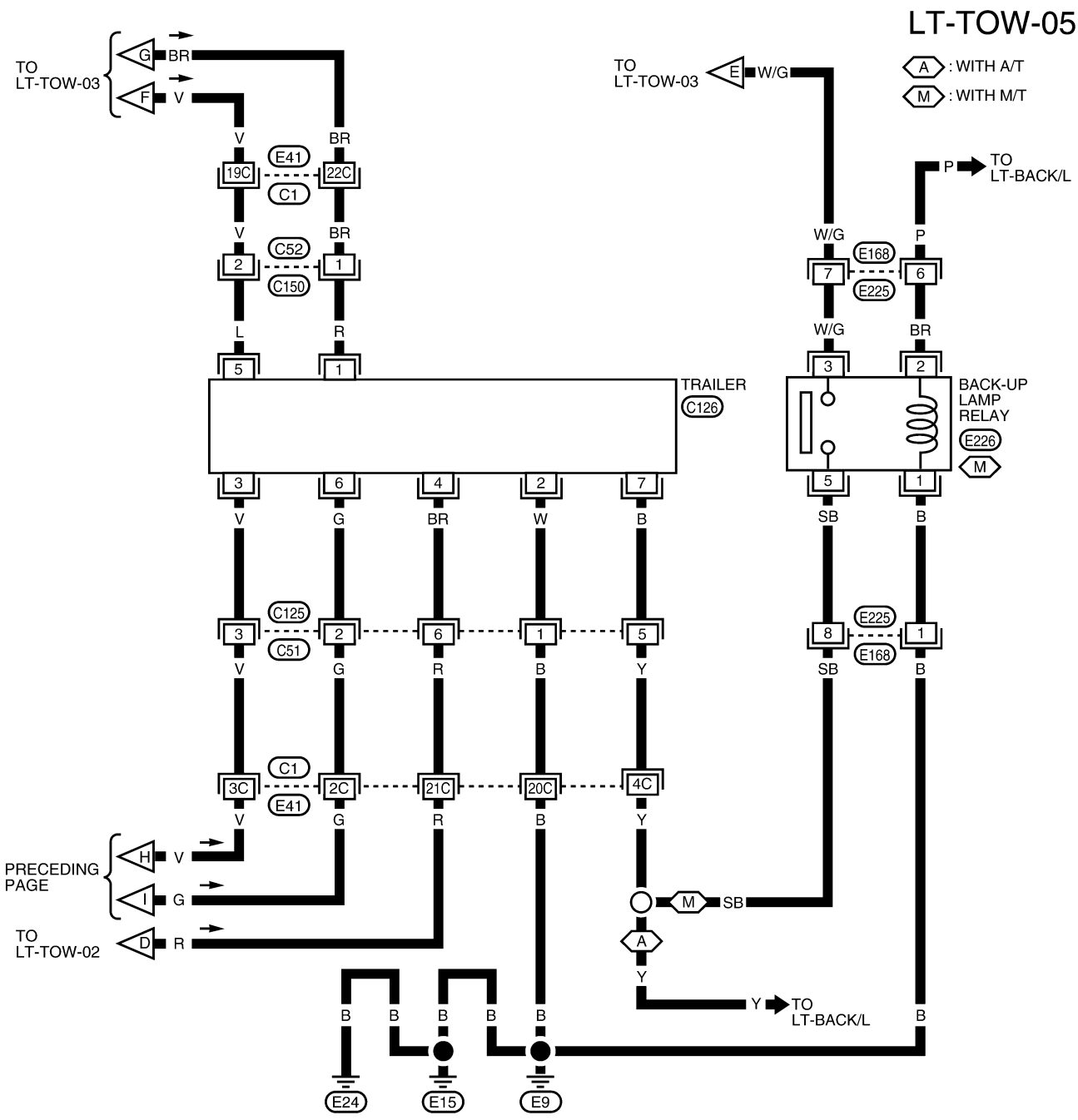
LT-T/TOW-04

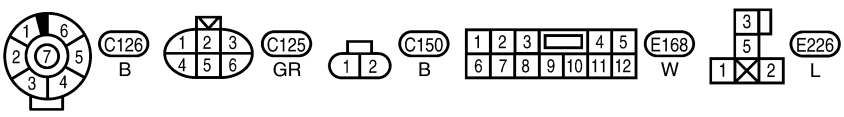




REFER TO THE FOLLOWING.
M31 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA5528E





REFER TO THE FOLLOWING.
C1 - SUPER MULTIPLE JUNCTION (SMJ)

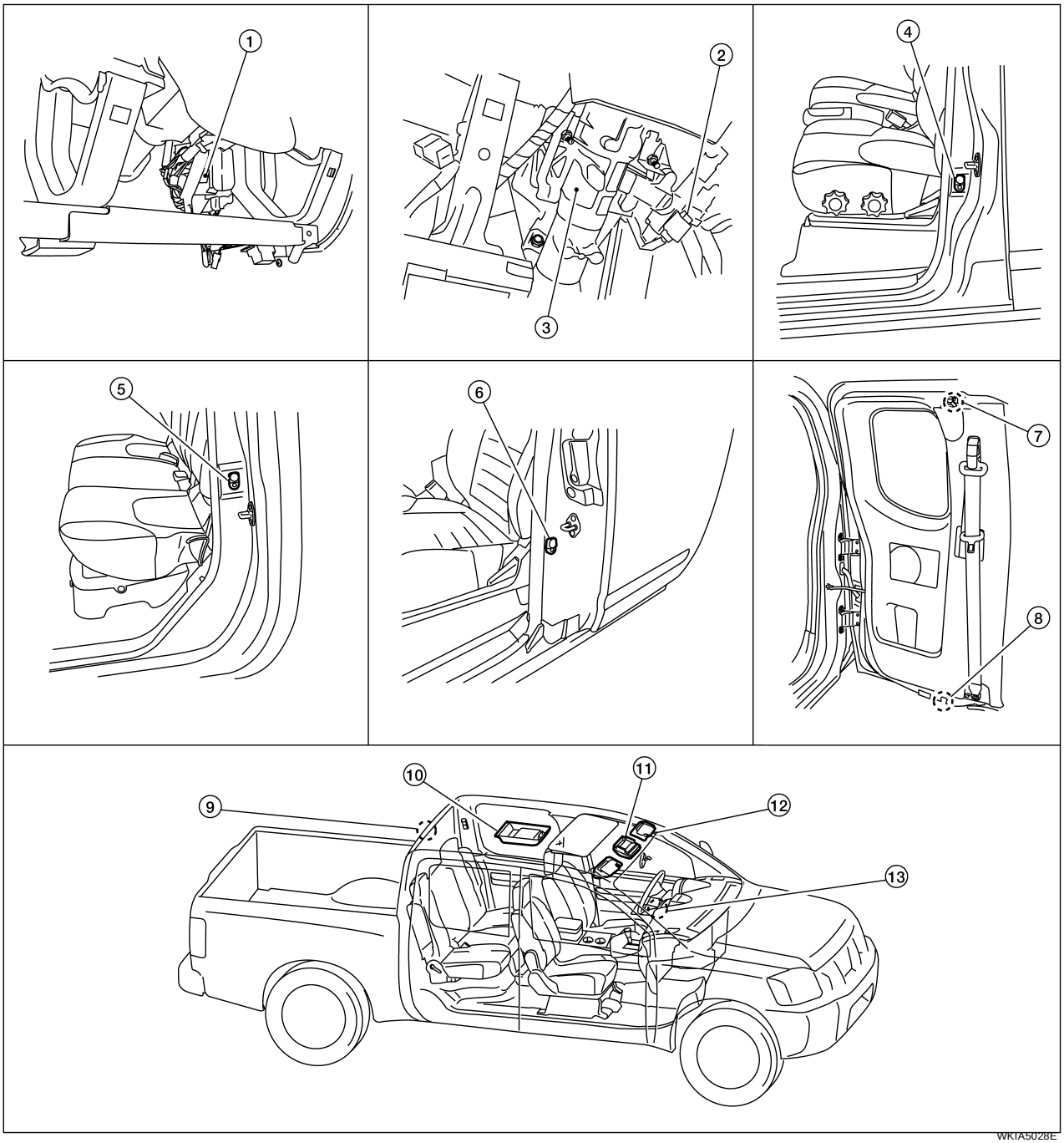
WKWA4371E

INTERIOR ROOM LAMP

PFP:26410

Component Parts and Harness Connector Location

EKS00BRT



1. BCM
   M18, M19, M20
   (view with lower instrument panel LH removed)
2. Key switch
   M27
3. Steering column assembly
4. Front door switch (crew cab)
   LH B8
   RH B108
5. Rear door switch (crew cab)
   LH B18
   RH B116
6. Front door switch (king cab)
   LH D213
   RH D314
7. Rear door switch upper (king cab)
   LH D211
   RH D312
8. Rear door switch lower (king cab)
   LH D212
   RH D313
9. Cargo lamp
   B161

10. Room lamp 2nd row R10
11. Front room/map lamp assembly (with front map lamps) R9
12. Vanity lamp (with vanity lamps) LH B80 RH B81
13. Ignition keyhole illumination M150

System Description

EKS00CNF

MODELS WITHOUT POWER DOOR LOCKS

Power Supply and Ground

Power is supplied at all times

- through 10A fuse (No. 25, located in the fuse and fusible link box)
- to key switch terminal 2, and
- through 10A fuse [No. 18, located in the fuse block (J/B)]
- to BCM (body control module) terminal 57, and
- to ignition keyhole illumination terminal 1, and
- to room lamp 2nd row terminal 2, and
- to front room/map lamp assembly terminal 1, and
- to cargo lamp relay terminals 2 and 5
- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM terminal 70.

When the key is inserted in key switch, power is supplied

- through key switch terminal 1
- to BCM terminal 37.

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

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

Ground is supplied

- to BCM terminal 67
- through grounds M57, M61 and M79.

Switch Operation

When the cargo lamp switch is ON, ground is supplied

- to BCM terminal 31
- through cargo lamp switch terminal 1
- through cargo lamp switch terminal 3
- through grounds M57, M61 and M79, and
- to cargo lamp relay terminal 1
- through BCM terminal 50.

Power is supplied

- through 10A fuse [No. 18, located in the fuse block (J/B)]
- to cargo lamp relay terminals 2 and 5.

When the BCM supplies ground to terminal 50, the cargo lamp relay energizes. When this relay is energized, power is supplied

- to high mounted stop lamp (cargo lamp) terminal 3
- through cargo lamp relay terminal 3.

Ground is supplied

- to high mounted stop lamp (cargo lamp) terminal 2
- through grounds B117 and B132.

With power and ground supplied, the cargo lamp illuminates.
When any door switch is ON (door is opened), ground is supplied

- to front room/map lamp assembly terminal 2 (with front map lamps)

- to room lamp 2nd row terminal 1
- to ignition keyhole illumination terminal 2
- through diode 6 terminal 2 (front door switch LH only)
- through diode 6 terminal 1 (front door switch LH only)
- through door switch terminal 1
- through front door switch LH or RH terminal 3 (king cab)
- through grounds B7 and B19 LH or B117 and B132 RH (king cab), or
- through case ground of any door switch (crew cab).

When the front door LH is open, ground is supplied

- to ignition keyhole illumination terminal 2
- through front door switch terminal 1
- through front door switch terminal 3 (king cab)
- through grounds B7 and B19 (king cab), or
- through case ground of the front door switch LH (crew cab).

Power is supplied

- through 10A fuse [No. 18, located in the fuse block (J/B)]
- to front room/map lamp assembly terminal 1 (with front map lamps)
- to room lamp 2nd row terminal 2, and
- to ignition keyhole illumination terminal 1.

When room lamp 2nd row is ON, ground is supplied through room lamp 2nd row case ground.
When front room/map lamp assembly switch is ON, ground is supplied

- to front room/map lamp assembly terminal 3
- through grounds M57, M61 and M79.

MODELS WITH POWER DOOR LOCKS

When front room/map lamp and room lamp 2nd row switch is in DOOR position, front room/map lamp and room lamp 2nd row ON/OFF is controlled by timer according to signals from switches including key switch, front door switch LH, unlock signal from keyfob (if equipped), door lock and unlock switch, key cylinder switch and ignition switch.
When front room/map lamp and room lamp 2nd row turns ON, there is a gradual brightening over 1 second.
When front room/map lamp and room lamp 2nd row turns OFF, there is a gradual dimming over 1 second.
The front room/map lamp and room lamp 2nd row timer is controlled by the BCM (body control module).
Front room/map lamp and room lamp 2nd row timer control settings can be changed with CONSULT-II.
Ignition keyhole illumination turns ON when front door LH is opened (door switch ON) or key is removed from key cylinder switch. Illumination turns OFF when front door LH is closed (door switch OFF).

Power Supply and Ground

Power is supplied at all times

- through 10A fuse (No. 25, located in the fuse and fusible link box)
- to key switch terminal 2, and
- through 10A fuse [No. 18, located in the fuse block (J/B)]
- to BCM terminal 57, and
- to cargo lamp relay terminals 2 and 5, and
- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM terminal 70.

When the key is inserted in key switch, power is supplied

- through key switch terminal 1
- to BCM terminal 37.

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

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

Ground is supplied

- to BCM terminal 67
- through grounds M57, M61 and M79.

When the front door LH is opened, ground is supplied

- to BCM terminal 47
- through front door switch LH terminal 2
- through front door switch LH terminal 3 (king cab)
- through grounds B7 and B19 (king cab), or
- through case ground of front door switch LH (crew cab).

When the front door RH is opened, ground is supplied

- to BCM terminal 12
- through front door switch RH terminal 2
- through front door switch RH terminal 3 (king cab)
- through grounds B117 and B132 (king cab), or
- through case ground of front door switch RH (crew cab).

When the rear door LH is opened, ground is supplied

- to BCM terminal 47 (king cab)
- through rear door switches lower and upper LH terminal 1
- through rear door switches lower and upper LH terminal 2
- through grounds B7 and B19, or
- to BCM terminal 48 (crew cab)
- through rear door switch LH terminal 2
- through case ground of rear door switch LH.

When the rear door RH is opened, ground is supplied

- to BCM terminal 12 (king cab)
- through rear door switches lower and upper RH terminal 1
- through rear door switches lower and upper RH terminal 2
- through grounds B117 and B132, or
- to BCM terminal 13 (crew cab)
- through rear door switch RH terminal 2
- through case ground of rear door switch RH.

When the front door LH or RH is unlocked by the door lock/unlock switch, BCM receives ground signal

- to BCM terminal 46
- through main power window and door lock/unlock switch terminal 11 or power window and door lock/unlock switch RH terminal 2
- through main power window and door lock/unlock switch terminal 14 or power window and door lock/unlock switch RH terminal 3
- through grounds M57, M61 and M79.

When the front door LH is unlocked by the key, the BCM receives ground signal

- to BCM terminal 7
- through front door lock assembly LH (key cylinder switch) terminal 3
- through front door lock assembly LH (key cylinder switch) terminal 4
- through grounds M57, M61 and M79.

When a signal, or combination of signals is received by BCM, ground is supplied

- to front room/map lamp assembly terminal 2 (with front map lamps)
- to room lamp 2nd row terminal 1
- through BCM terminal 63.

Switch Operation

When the cargo lamp switch is ON, ground is supplied

- to BCM terminal 31

- through cargo lamp switch terminal 1
- through cargo lamp switch terminal 3
- through grounds M57, M61 and M79, and
- to cargo lamp relay terminal 1
- through BCM terminal 50.

Power is supplied

- through 10A fuse [No. 18, located in the fuse block (J/B)]
- to cargo lamp relay terminals 2 and 5.

When the BCM supplies ground to terminal 50, the cargo lamp relay energizes. When this relay is energized, power is supplied

- to high mounted stop lamp (cargo lamp) terminal 3
- through cargo lamp relay terminal 3.

Ground is supplied

- to high mounted stop lamp (cargo lamp) terminal 2
- through grounds B117 and B132.

With power and ground supplied, the cargo lamp illuminates.
When any door switch is ON (door is opened), ground is supplied

- to front room/map lamp assembly terminal 2
- to room lamp 2nd row terminal 1
- through BCM terminal 63, and
- to ignition keyhole illumination terminal 2
- through BCM terminal 1.

Power is supplied

- through BCM terminal 56
- to ignition keyhole illumination terminal 1
- to front room/map lamp assembly terminal 1 (with front map lamps)
- to vanity lamp LH and RH terminal 1 (with vanity lamps), and
- to room lamp 2nd row terminal 2.

When front room/map lamp assembly switch is ON, ground is supplied

- through front room/map lamp assembly terminal 3
- to grounds M57, M61 and M79.

When vanity lamp LH or RH is ON, ground is supplied

- to vanity lamp LH or RH terminal 2
- through grounds B7 and B19.

When room lamp 2nd row is ON, ground is supplied through room lamp case ground.
With power and ground supplied, the lamps illuminate.

Room Lamp Timer Operation

When lamp switch is in DOOR position, and when all conditions below are met, BCM performs timer control (maximum 30 seconds) for interior room lamp and map lamp ON/OFF.
Power is supplied

- through 10A fuse [No. 25, located in the fuse block (J/B)]
- to key switch terminal 2.

Key is removed from ignition key cylinder (key switch OFF), power will not be supplied to BCM terminal 37.
Ground is supplied

- to BCM terminal 46
- through main power window and door lock/unlock switch terminal 11.

At the time that front door LH is opened, BCM detects that front door LH is unlocked. It determines that interior room lamp and map lamp timer operation conditions are met, and turns the interior room lamps ON for 30 seconds.
Key is in ignition key cylinder (key switch ON), power is supplied

- through key switch terminal 1
- to BCM terminal 37.

When key is removed from key switch (key switch OFF), power supply to BCM terminal 37 is terminated. BCM detects that key has been removed, determines that interior room lamp and map lamp timer conditions are met, and turns the interior room lamps ON for 30 seconds.
When front door LH opens → closes, and the key is not inserted in the key switch (key switch OFF), BCM terminal 47 changes between 0V (door open) → 12V (door closed). The BCM determines that conditions for interior room lamp operation are met and turns the interior room lamp ON for 30 seconds.
Timer control is canceled under the following conditions.

- Front door LH is locked [when locked by keyfob (if equipped), main power window and door lock/unlock switch, or front door lock assembly LH (key cylinder switch)]
- Front door LH is opened (front door switch LH turns ON)
- Ignition switch ON.

Interior Lamp Battery Saver Control

If interior lamp is left ON, it will not be turned off even when door is closed.
BCM turns off interior lamp automatically to save battery 30 minutes after ignition switch is turned off.
BCM controls interior lamps listed below:

- Vanity lamp (with vanity lamps)
- Front room/map lamp
- Room lamp 2nd row
- Ignition keyhole illumination

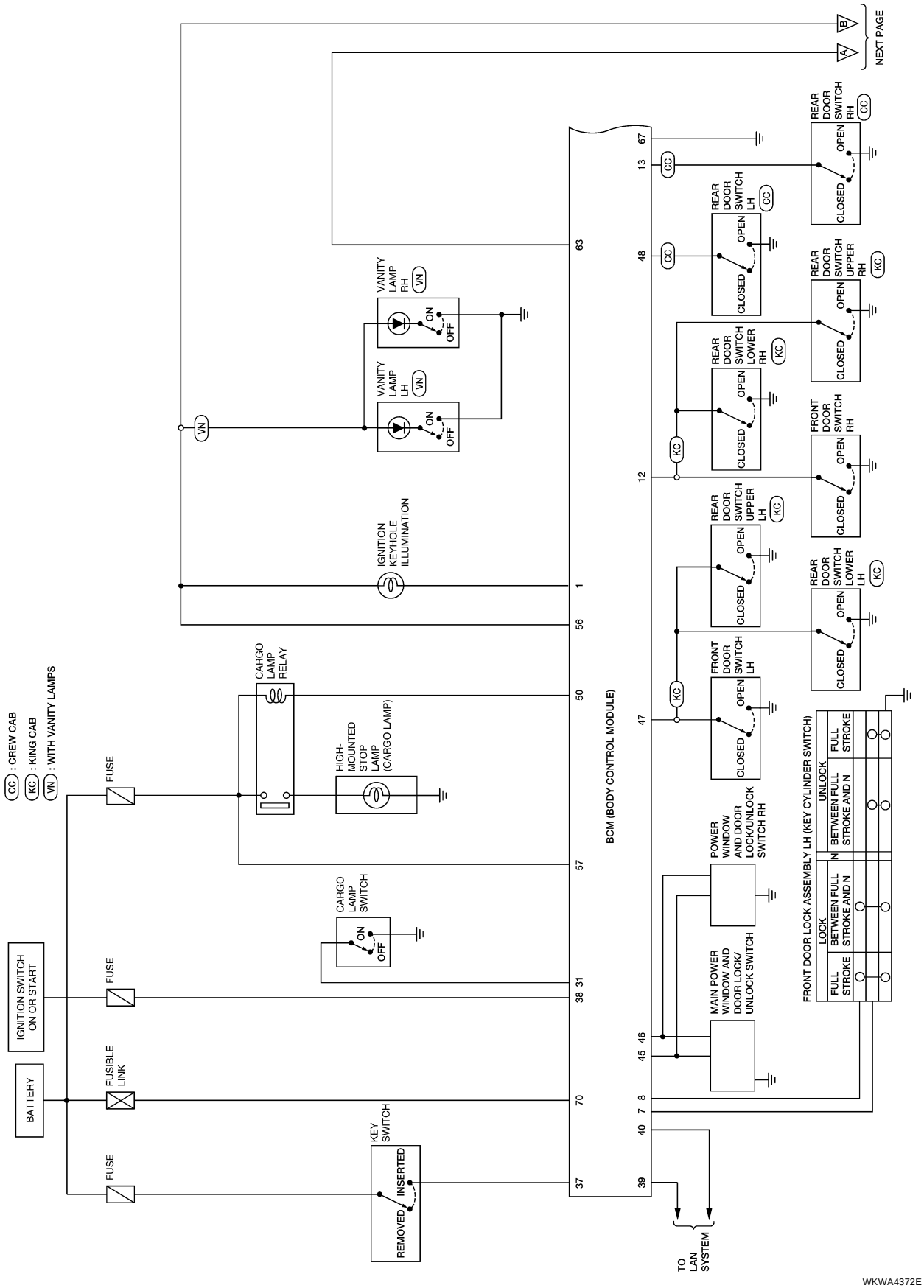
After lamps turn OFF by the battery saver system, the lamps illuminate again when

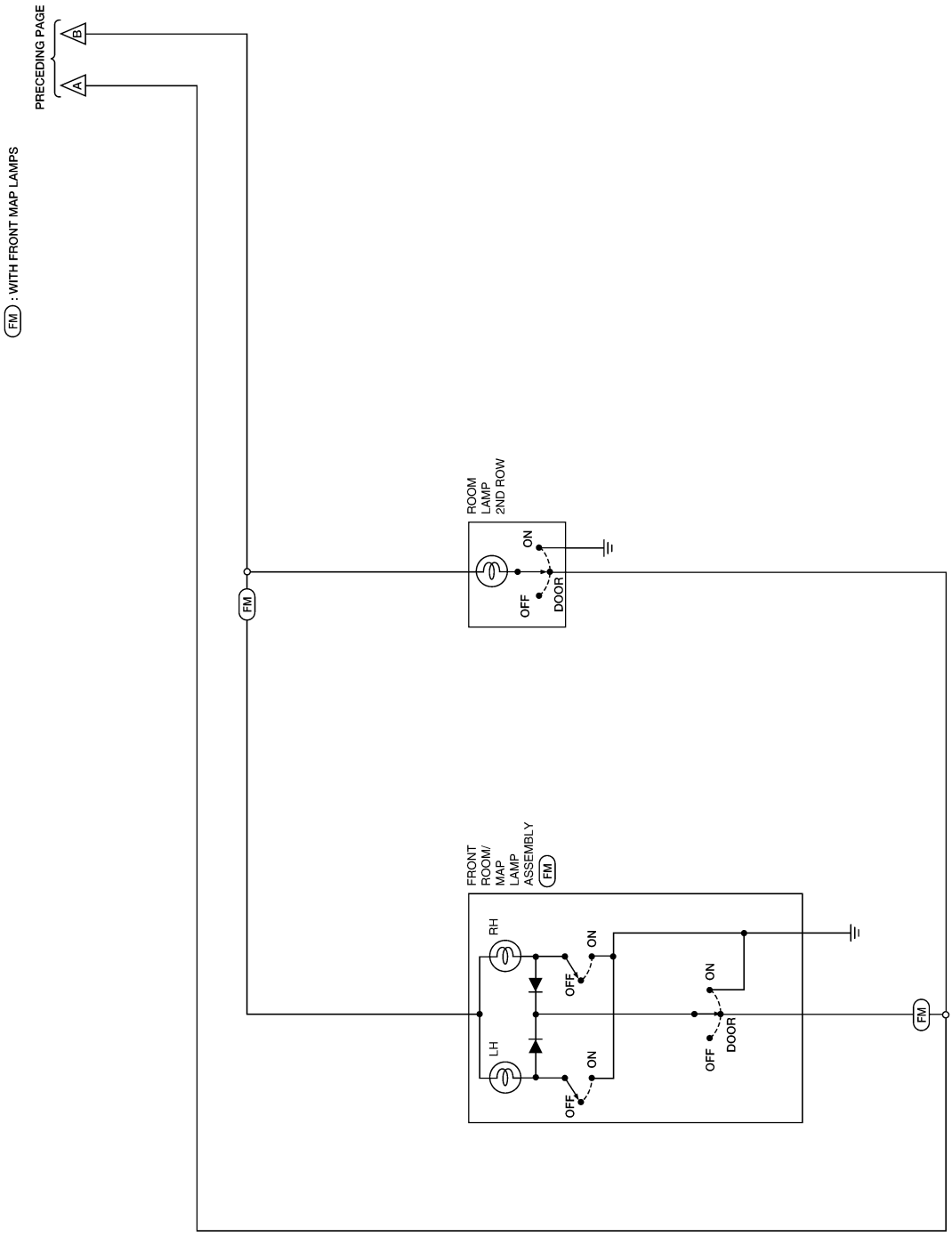
- signal received from keyfob (if equipped), main power window and door lock/unlock switch or front door lock assembly LH (key cylinder switch) is locked or unlocked
- door is opened or closed
- key is removed from ignition key cylinder or inserted in ignition key cylinder.

Interior lamp battery saver control period can be changed by the function setting of CONSULT-II.

Schematic / With Power Door Locks

EKS00BRV

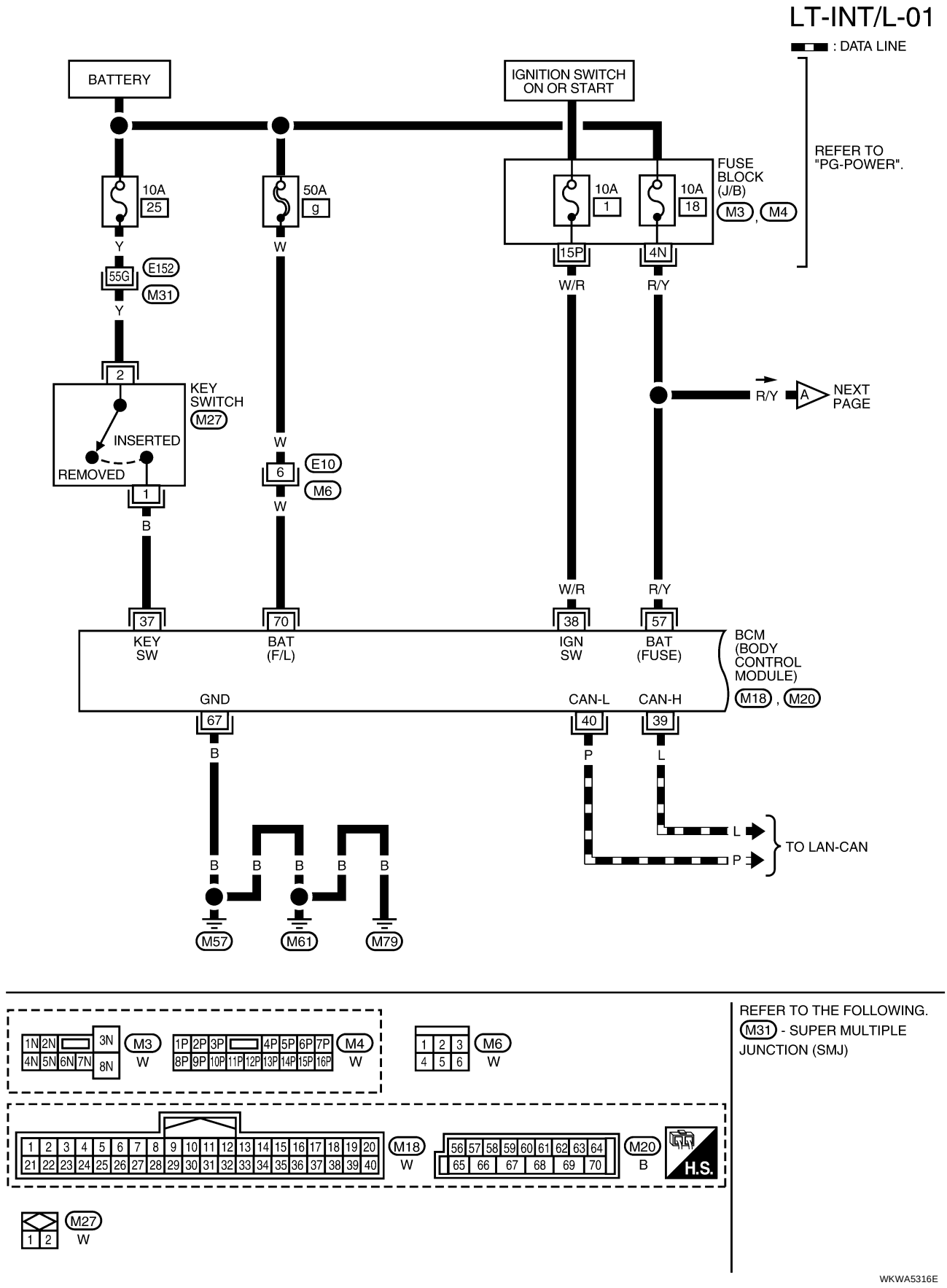



PRECEDING PAGE
B
A
FM : WITH FRONT MAP LAMPS
FM
ROOM LAMP 2ND ROW
ON
OFF
DOOR
FRONT ROOM/ MAP LAMP ASSEMBLY
FM
RH
LH
ON
OFF
ON
OFF
ON
OFF
DOOR
FM

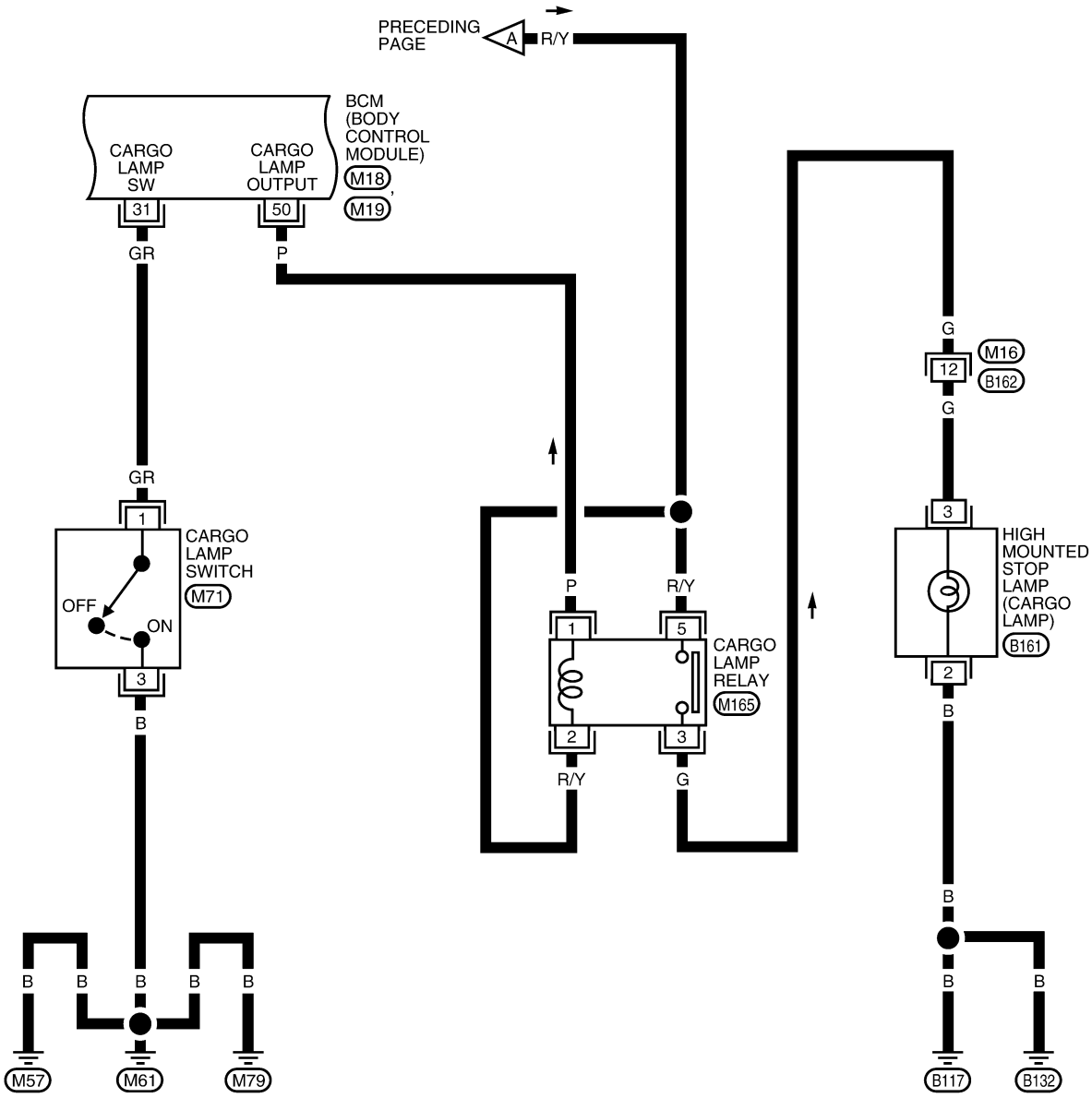
WKWA4373E

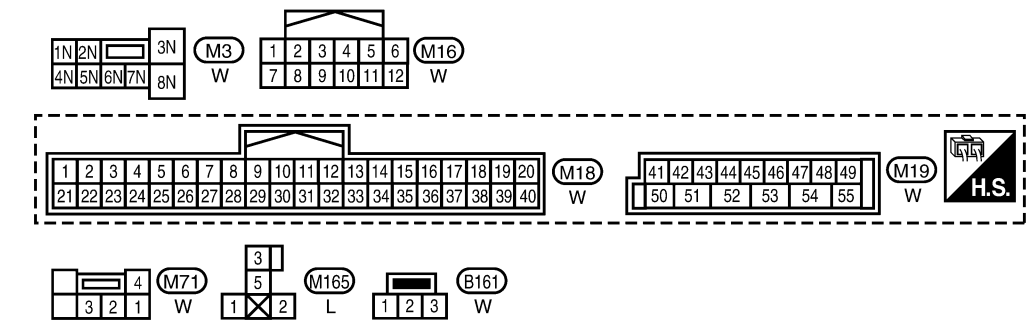
Wiring Diagram — INT/L — / With Power Door Locks

EKS00BRW



LT-INT/L-02

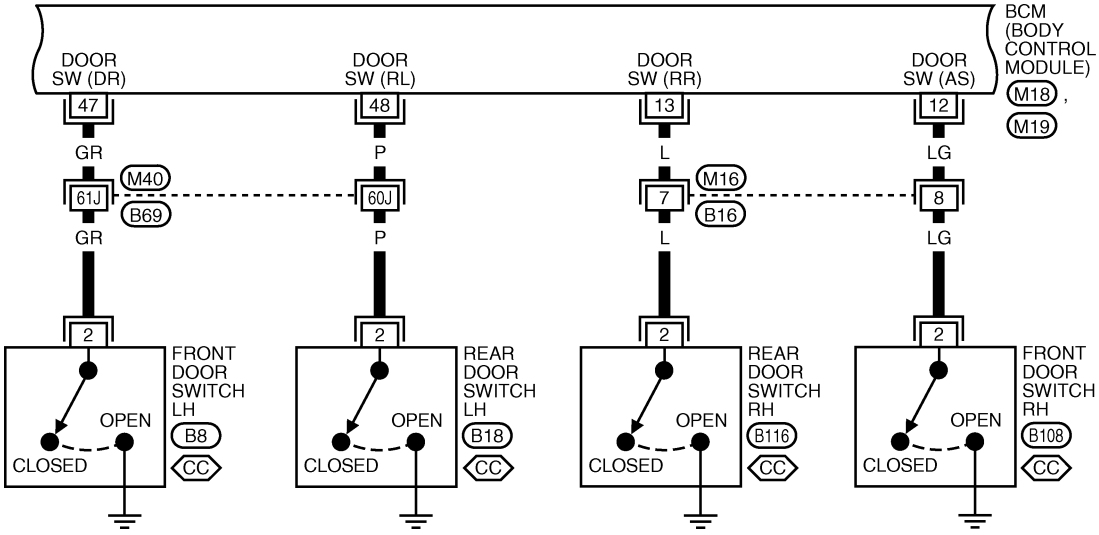


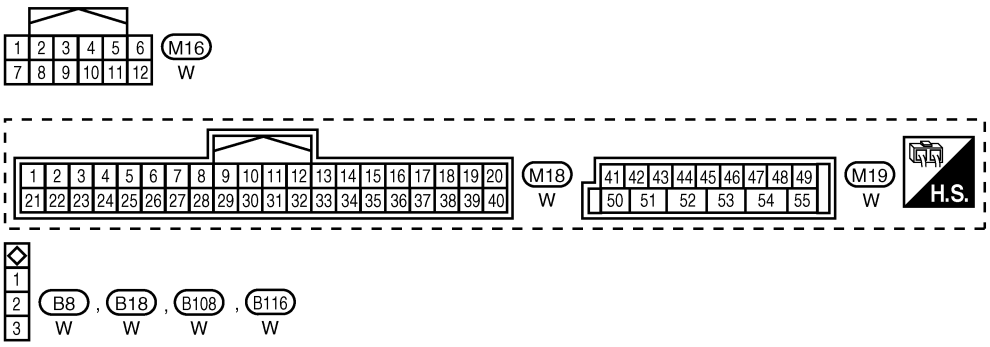


WKWA4375E

LT-INT/L-03

CC : CREW CAB



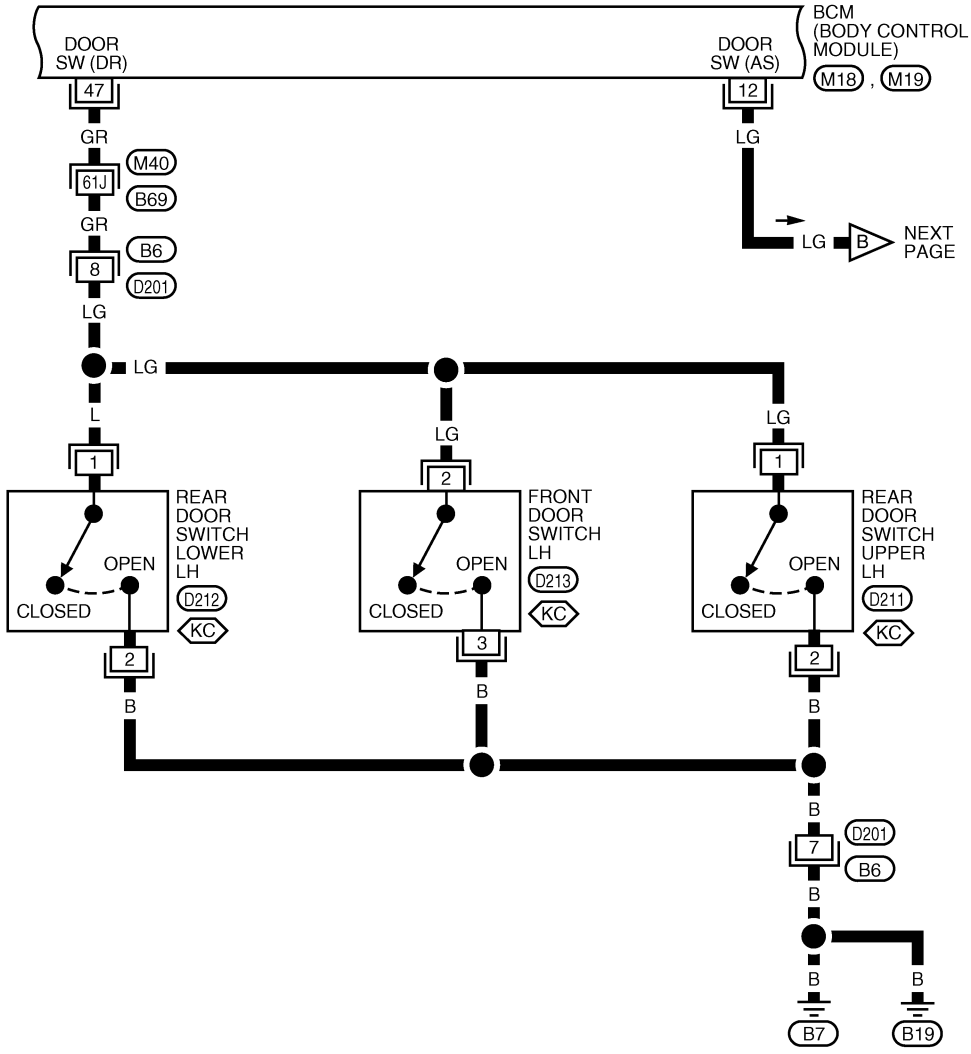


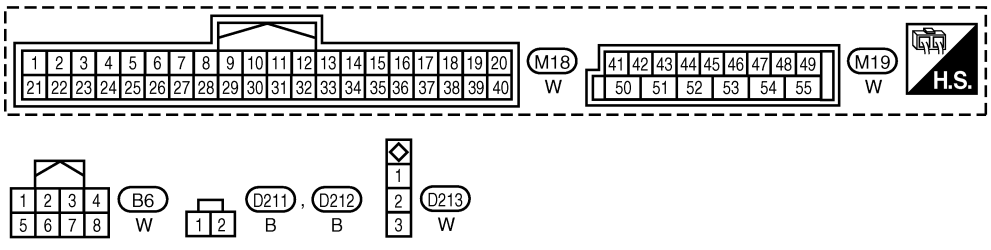
REFER TO THE FOLLOWING.
M40 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA2979E

LT-INT/L-04

KC : KING CAB

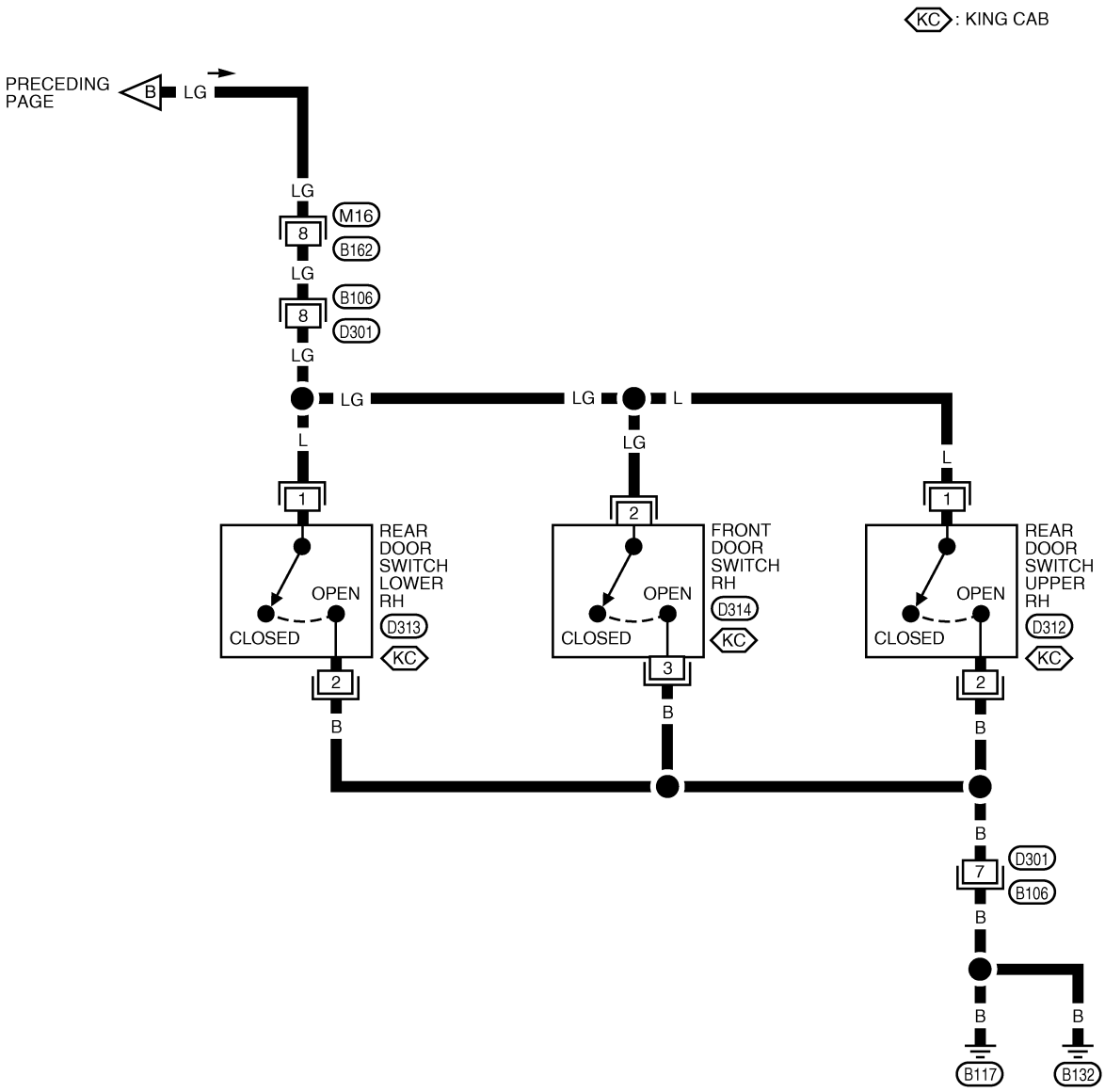


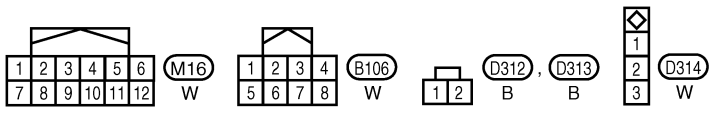


REFER TO THE FOLLOWING.
M40 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA2874E

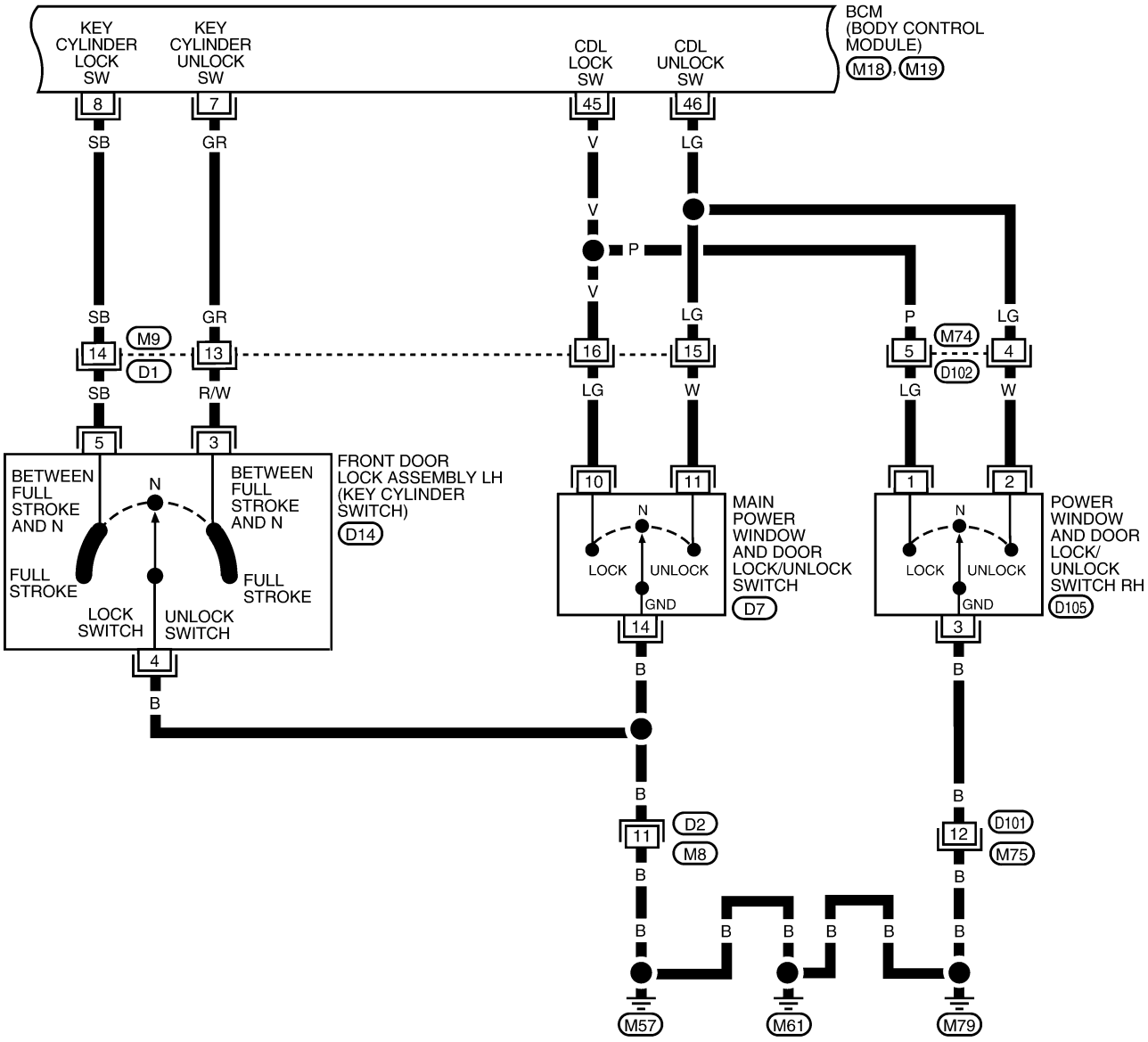
LT-INT/L-05

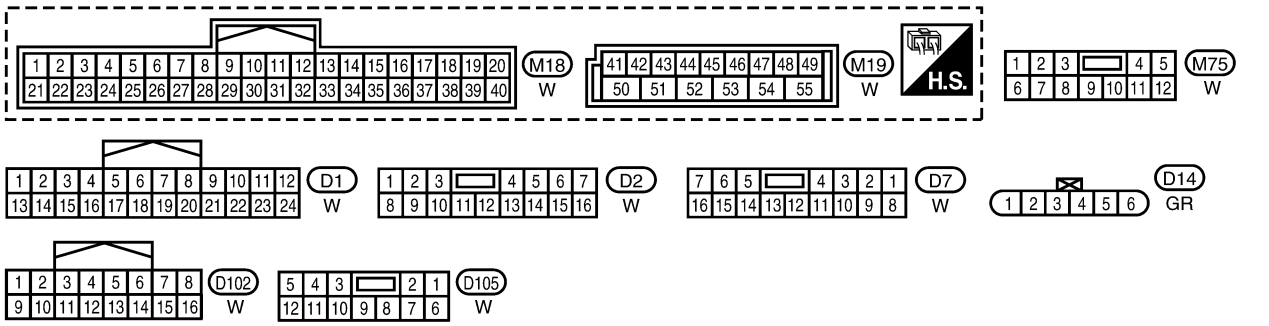




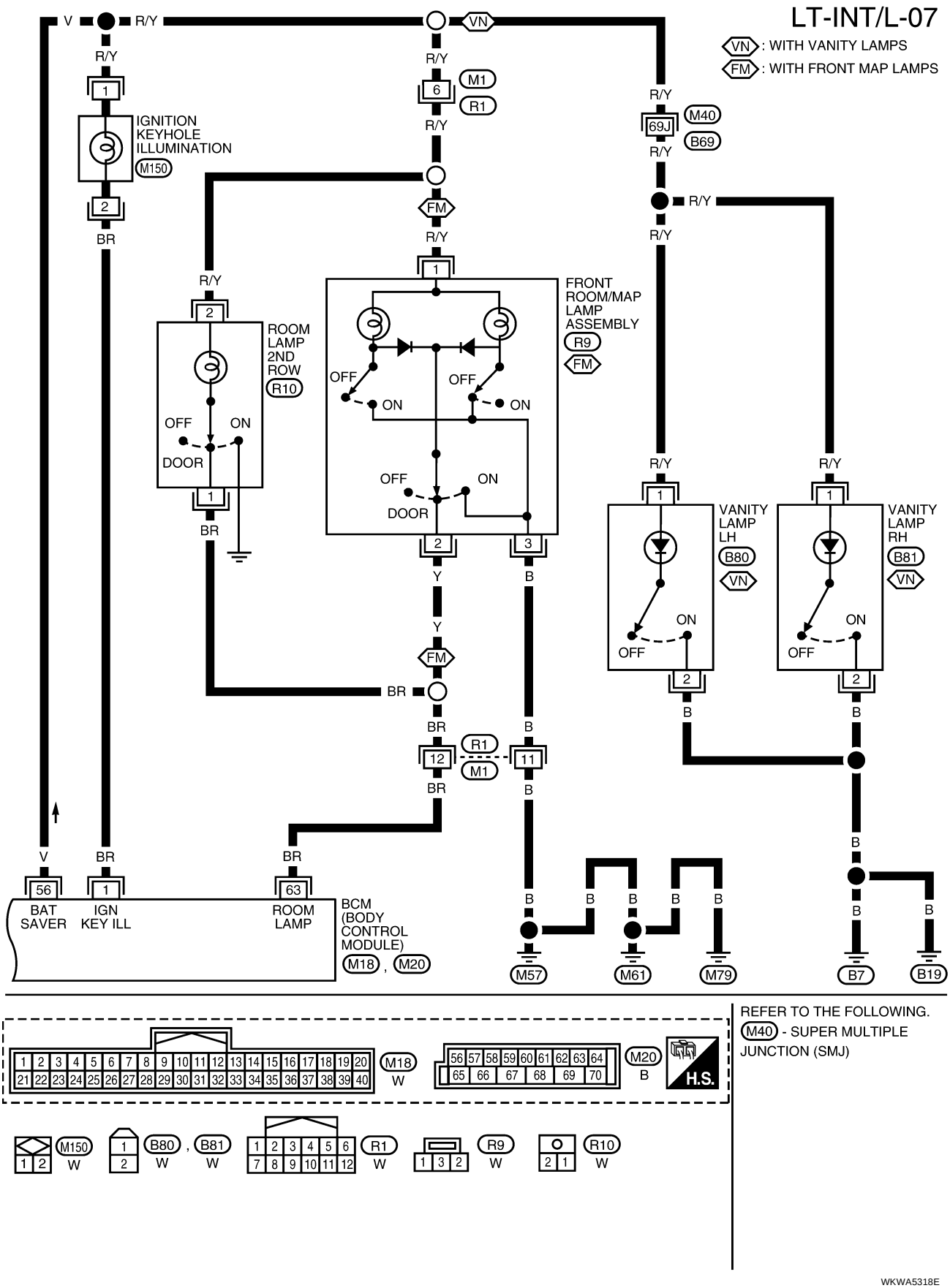
WKWA2875E

LT-INT/L-06



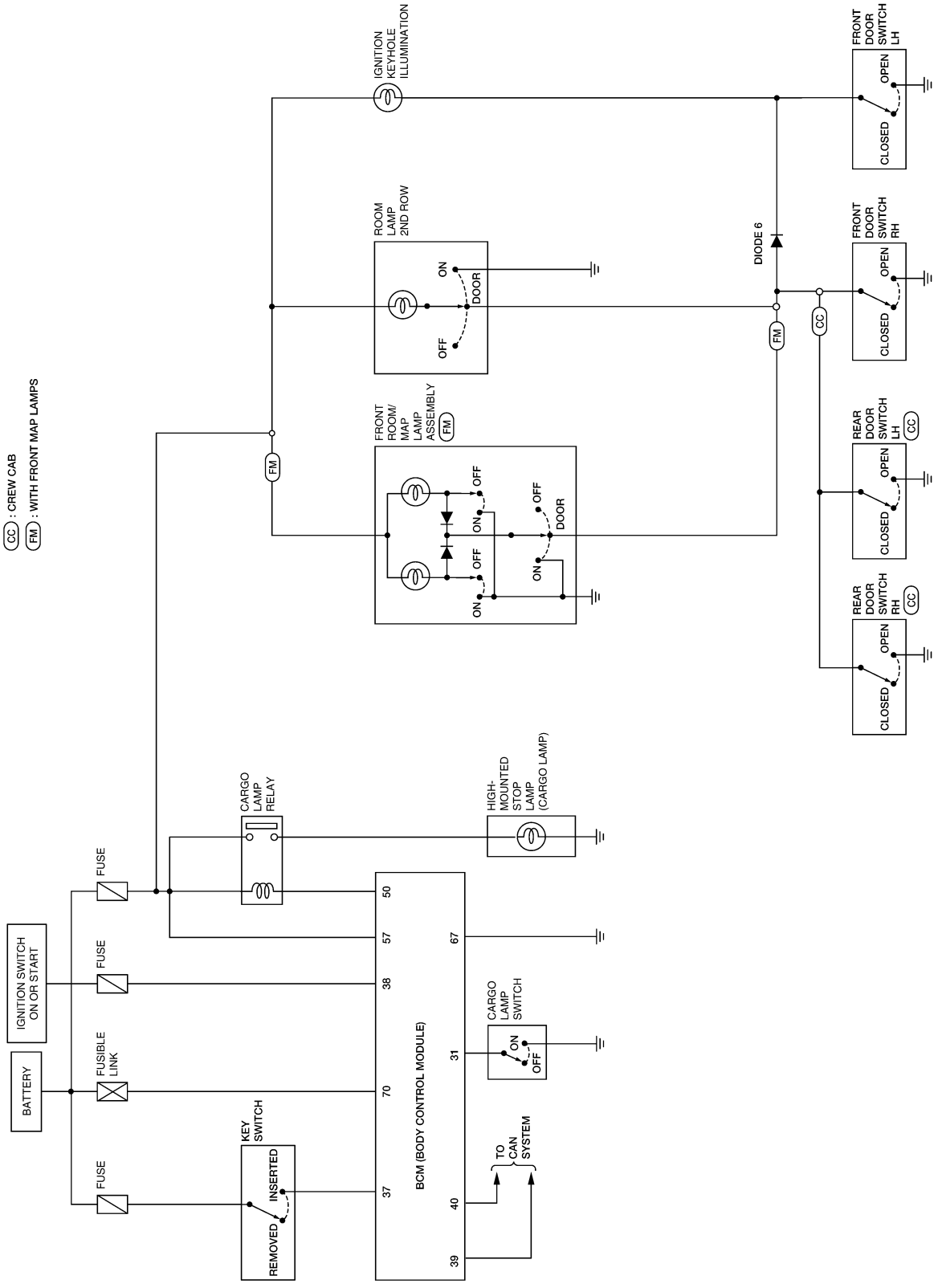


WKWA5317E


LT-INT/L-07
VN : WITH VANITY LAMPS
FM : WITH FRONT MAP LAMPS
IGNITION KEYHOLE ILLUMINATION
M150
ROOM LAMP 2ND ROW
R10
FRONT ROOM/MAP LAMP ASSEMBLY
R9
FM
VANITY LAMP LH
B80
VN
VANITY LAMP RH
B81
VN
M1
R1
M40
B69
BCM (BODY CONTROL MODULE)
M18 , M20
BAT SAVER
IGN KEY ILL
ROOM LAMP
M57
M61
M79
B7
B19
REFER TO THE FOLLOWING.
M40 - SUPER MULTIPLE JUNCTION (SMJ)
H.S.
WKWA5318E

Schematic / Without Power Door Locks

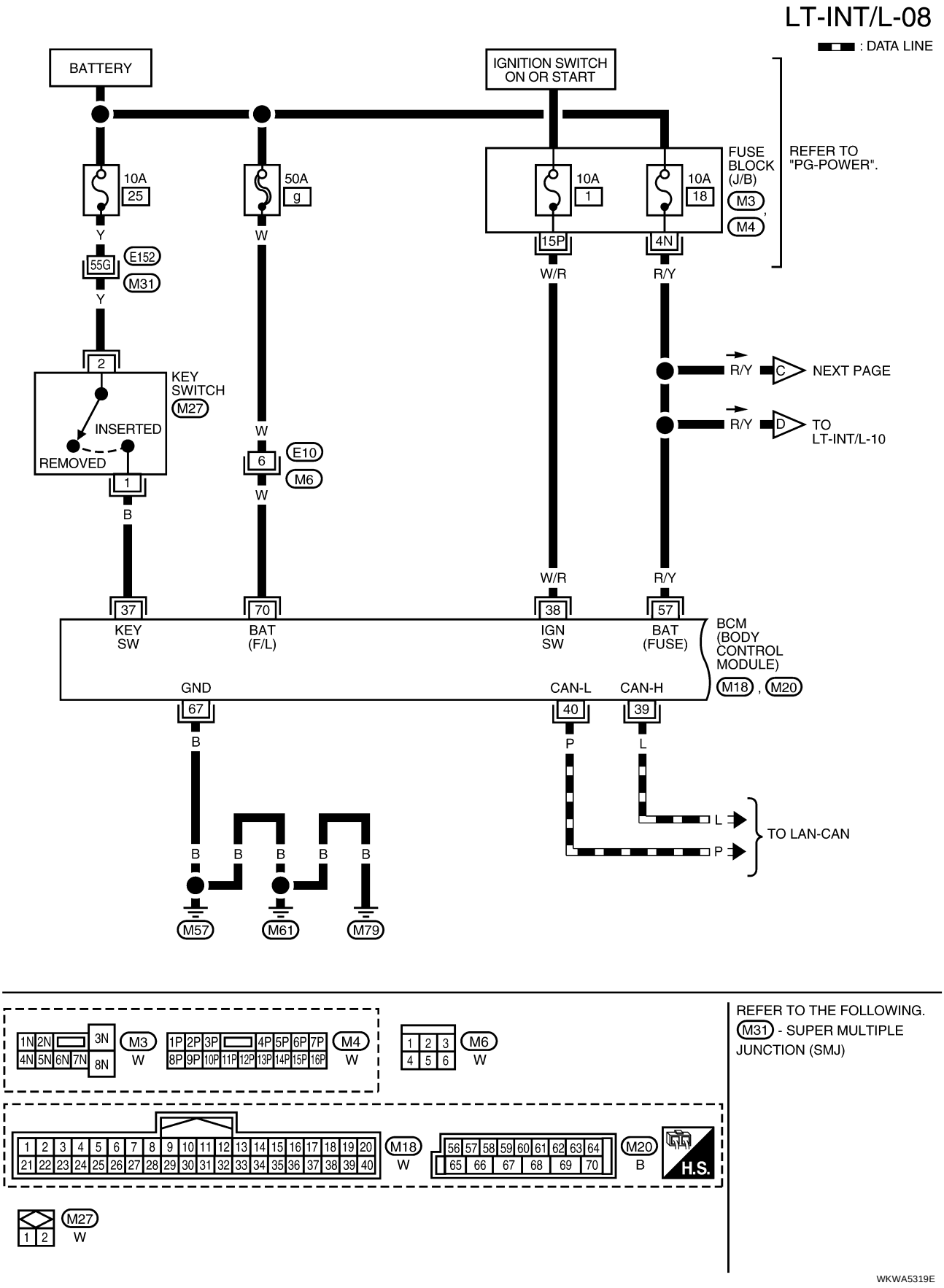
EKS00FPE



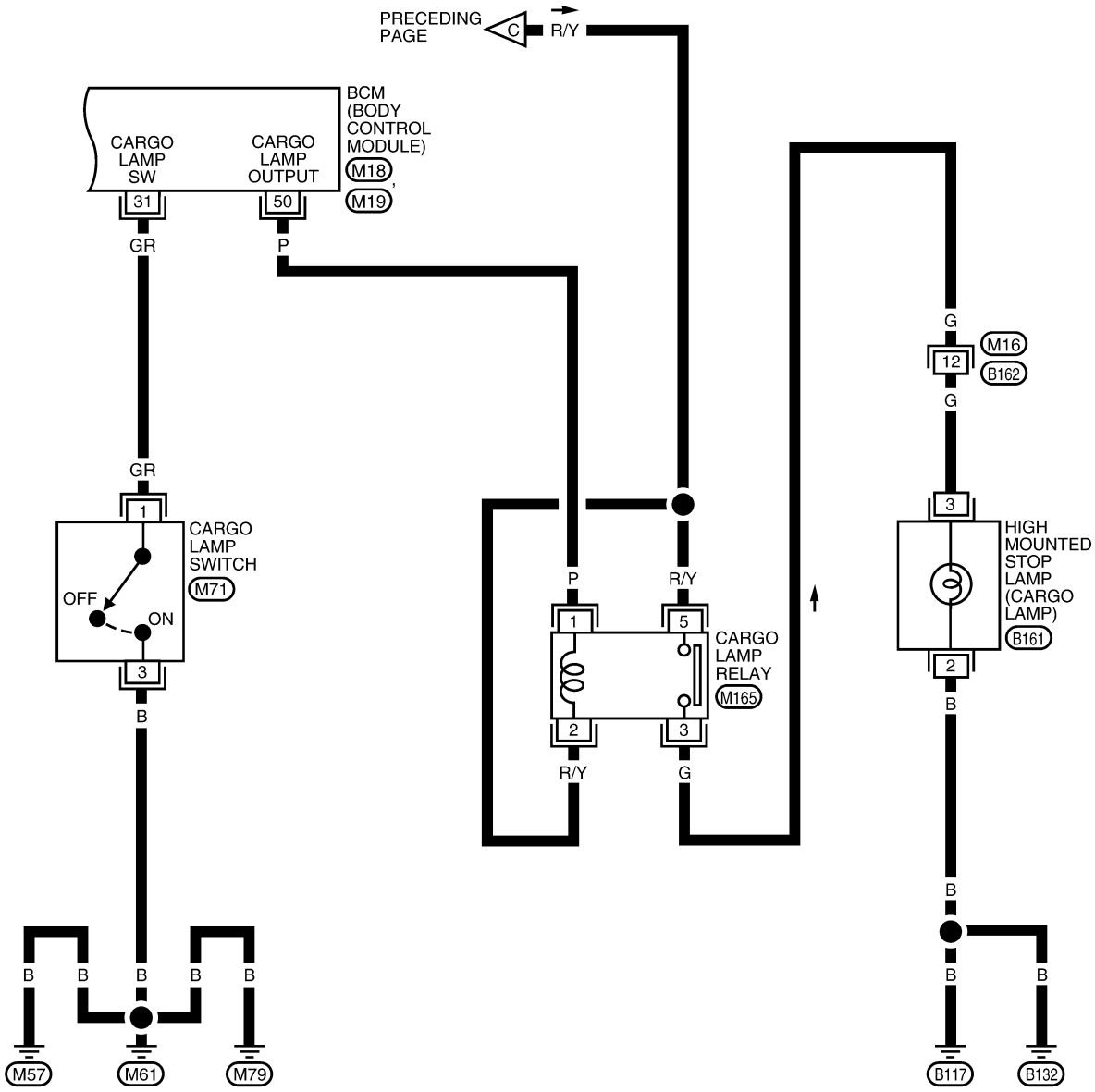
WKWA4377E

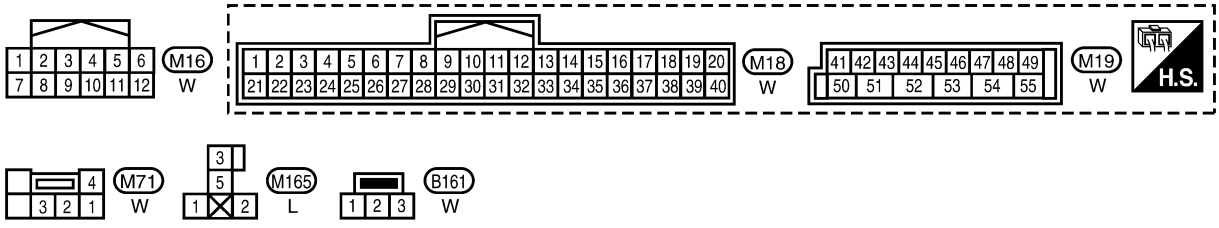
Wiring Diagram — INT/L — / Without Power Door Locks

EKS00FPF



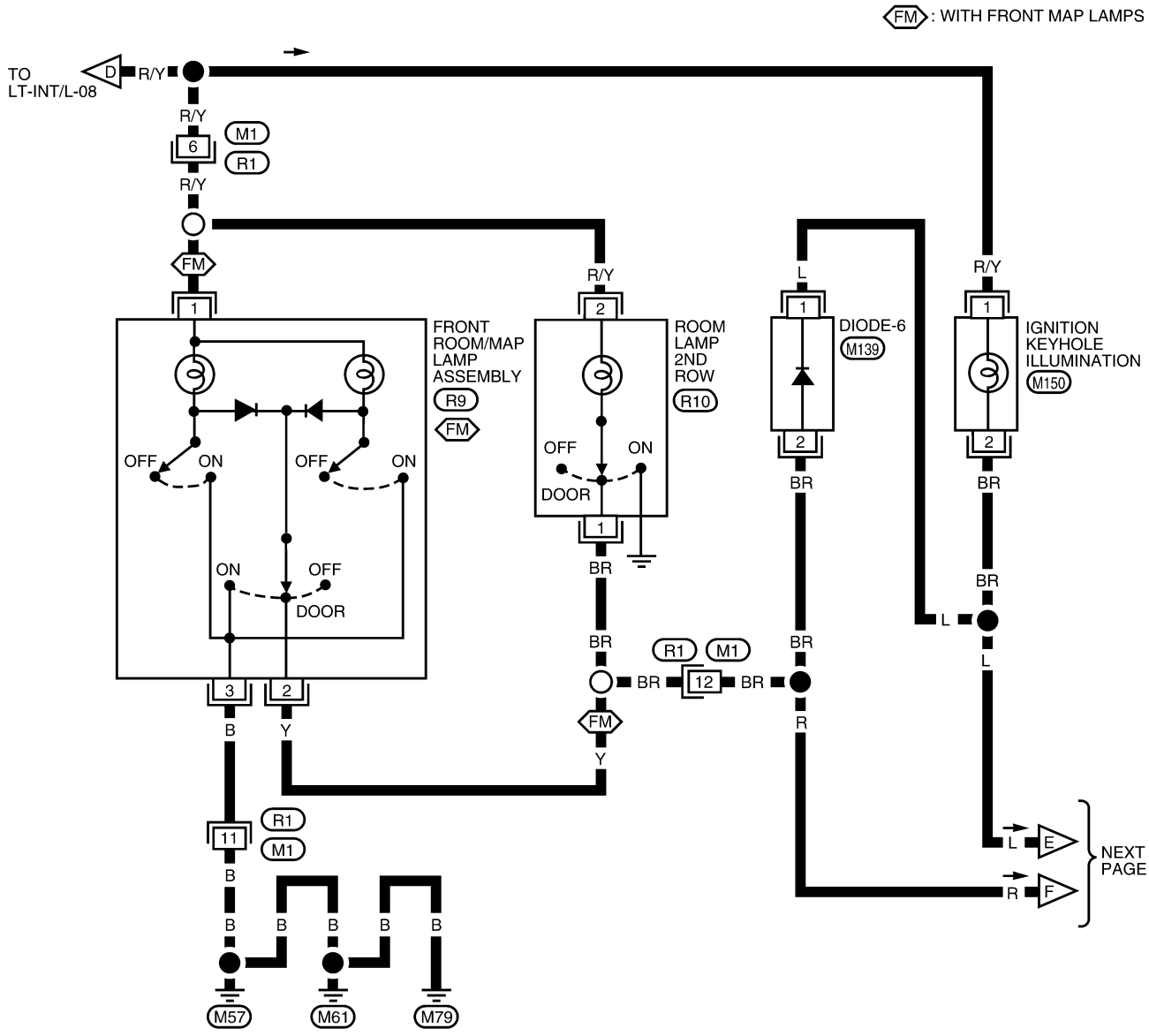
LT-INT/L-09

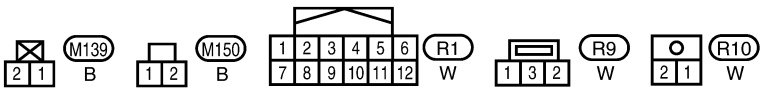




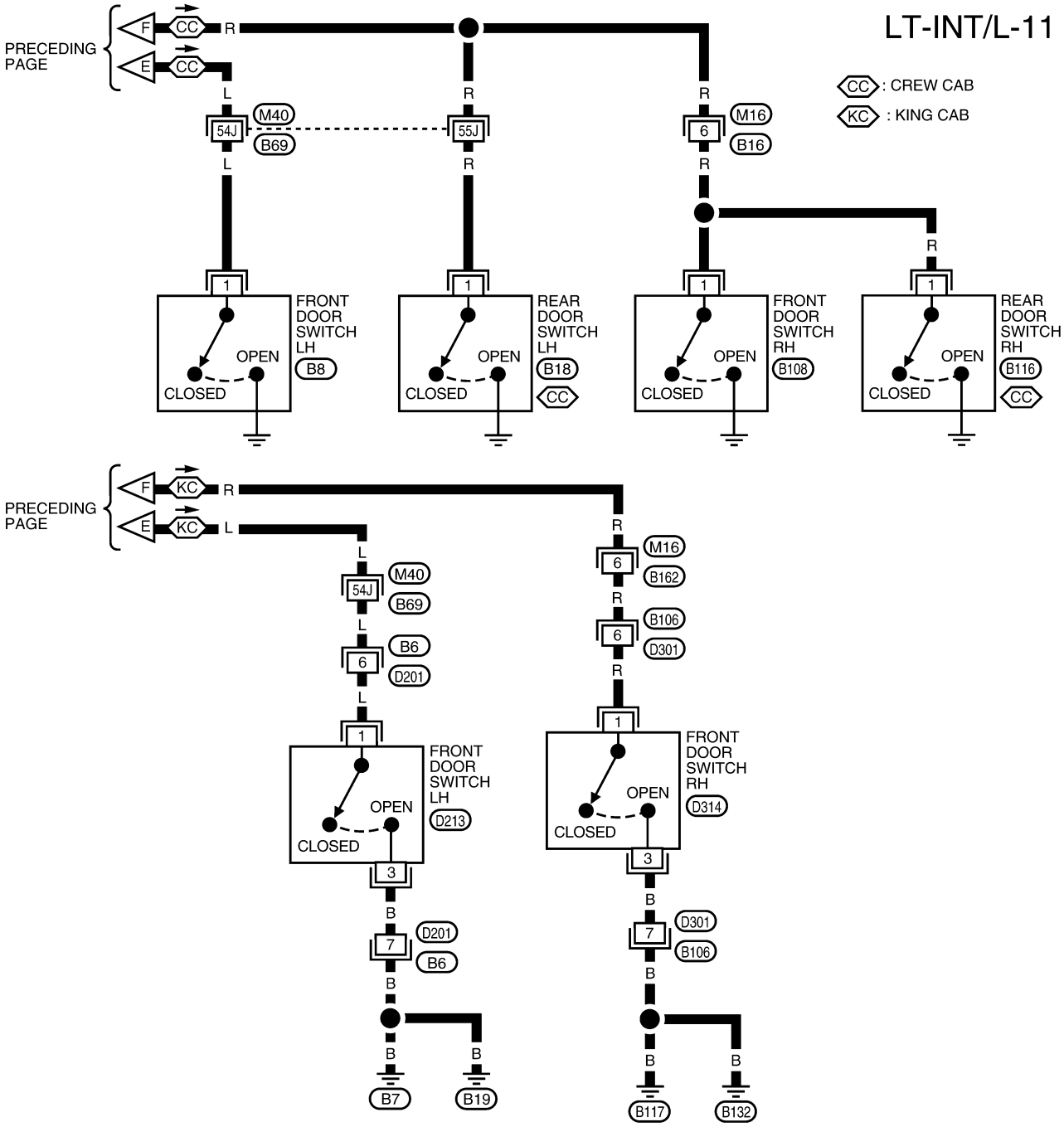
WKWA4379E

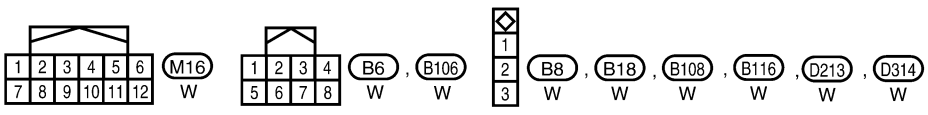
LT-INT/L-10





WKWA4380E





REFER TO THE FOLLOWING.
M40 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA4381E

Terminals and Reference Values for BCM

EKS00CNG

Refer to BCS-12, "Terminals and Reference Values for BCM" .

How to Proceed With Trouble Diagnosis

EKS00CNH

1. Confirm the symptom or customer complaint.
2. Understand operation description and function description. Refer to LT-109, "System Description" .
3. Carry out the Preliminary Check. Refer to LT-128, "Preliminary Check" .
4. Check symptom and repair or replace the cause of malfunction.
5. Does the interior room lamp operate normally? If YES: GO TO 6. If NO: GO TO 4.
6. Inspection End.

Preliminary Check

EKS00CNI

INSPECTION FOR POWER SUPPLY AND GROUND CIRCUIT

Refer to BCS-16, "BCM Power Supply and Ground Circuit Check" .

CONSULT-II Function (BCM)

EKS00CNJ

Refer to LT-12, "CONSULT-II Function (BCM)"

CONSULT-II START PROCEDURE

Refer to GI-38, "CONSULT-II Start Procedure" .

WORK SUPPORT

Display Item List

Item	Description	CONSULT-II
SET I/L D-UNLCK INTCON	The 30 seconds operating function of the interior room lamps and the ignition keyhole illumination can be selected when driver door is released (unlocked).	ON/OFF
ROOM LAMP ON TIME SET	The time in order to escalate illumination can be adjusted when the interior room lamps and the ignition keyhole illumination is turned on.	MODE 1 - 7
ROOM LAMP OFF TIME SET	The time in order to diminish illumination can be adjusted when the interior room lamps and the ignition keyhole illumination is turned off.	MODE 1 - 7

Reference between "MODE" and "TIME" for "TURN ON/OFF".

MODE	1	2	3	4	5	6	7
Time (sec.)	0.5	1	2	3	4	5	0

DATA MONITOR

Display Item List

Monitor item		Contents
IGN ON SW	"ON/OFF"	Displays "IGN position (ON)/OFF, ACC position (OFF)" judged from the ignition switch signal.
KEY ON SW	"ON/OFF"	Displays "Key inserted (ON)/key removed (OFF)" status judged from the key switch signal.
DOOR SW-DR	"ON/OFF"	Displays status of the driver door as judged from the driver door switch signal. (Door is open: ON/Door is closed: OFF)
DOOR SW-AS	"ON/OFF"	Displays "Door open (ON)/Door closed (OFF)" status, determined from passenger door switch signal.
DOOR SW-RR	"ON/OFF"	Displays "Door open (ON)/Door closed (OFF)" status, determined from rear door switch RH signal.
DOOR SW-RL	"ON/OFF"	Displays "Door open (ON)/Door closed (OFF)" status, determined from rear door switch LH signal.
BACK DOOR SW	"ON/OFF"	Displays "Door open (ON)/Door closed (OFF)" status, determined from back door switch signal.

Monitor item		Contents
KEY CYL LK-SW	"ON/OFF"	Displays "Door locked (ON)" status, determined from key cylinder lock switch in driver door.
KEY CYL UN-SW	"ON/OFF"	Displays "Door unlocked (OFF)" status, determined from key cylinder lock switch in driver door.
CDL LOCK SW	"ON/OFF"	Displays "Door locked (ON)/Door unlocked (OFF)" status, determined from locking detection switch in driver door.
CDL UNLOCK SW	"ON/OFF"	Displays "Door unlocked (OFF)" status, determined from locking detection switch in passenger door.
KEYLESS LOCK	"ON/OFF"	Displays "Locked (ON)/Other (OFF)" status, determined from lock signal.
KEYLESS UNLOCK	"ON/OFF"	Displays "Unlocked (ON)/Other (OFF)" status, determined from unlock signal.

ACTIVE TEST

Display Item List

Test item	Description
INT LAMP	Interior room lamp can be operated by any ON-OFF operations.
IGN ILLUM	Ignition keyhole illumination can be operated by ON-OFF operation.

Room/Map Lamp Does Not Turn ON or OFF Properly

EKS00D76

MODELS WITHOUT POWER DOOR LOCKS

1. CHECK FRONT ROOM/MAP LAMP AND ROOM LAMP 2ND ROW FUSE

Check 10A fuse [No. 18, located in fuse block (J/B)].

OK or NG

OK >> GO TO 2.
NG >> Replace fuse. Check harness for short between fuse and front room/map lamp (with map lamp) or room lamp 2nd row.

2. CHECK FRONT ROOM/MAP LAMP AND ROOM 2ND ROW LAMP SWITCH SIGNALS

1. Close all doors, turn ON front room/map lamp and room lamp 2nd row switches.

Front room/map lamp and room lamp 2nd row should turn on.

2. Turn OFF front room/map lamp and room lamp 2nd row switches.

Front room/map lamp and room lamp 2nd row should turn off.

OK or NG

OK >> GO TO 3.
NG >> Check the following.

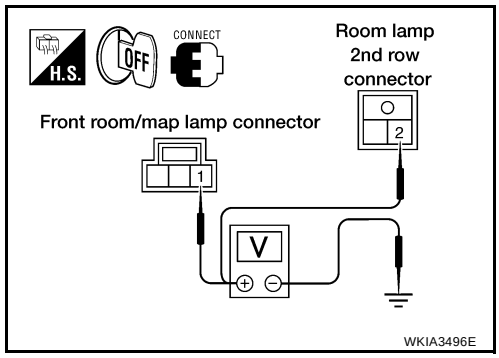
- Front room/map lamp and room lamp 2nd row switch
- Front room/map lamp and room lamp 2nd row ground circuits
- Harness for open or short between front room/map lamp, room lamp 2nd row switches and front door switch LH, front door switch RH, rear door switch LH or rear door switch RH

3. CHECK FRONT ROOM/MAP LAMP AND ROOM LAMP 2ND ROW POWER SUPPLY

Check voltage between front room/map lamp connector R9 terminal 1, room lamp 2nd row connector R10 terminal 2 and ground.

OK or NG

OK >> GO TO 4.
NG >> Check harness for open between fuse and front room/map lamp or room lamp 2nd row.



4. CHECK INTERIOR ROOM LAMP BULB

Check interior room lamp bulb.

OK or NG

OK >> GO TO 5.
NG >> Replace bulb.

5. CHECK KEY SWITCH (INSERTED) AND IGNITION ON SIGNAL

1. Insert key into ignition key cylinder.
2. Open front door LH.

Warning chime should sound.

3. Turn ignition key to ON position.

Warning chime should stop sounding.

OK or NG

OK >> Check harness for open or short between front room/map lamp, room lamp 2nd row switches and front door switch LH, front door switch RH, rear door switch LH or rear door switch RH.
NG >> Refer to DI-44, "WARNING CHIME" .

Room/Map Lamp Control Does Not Operate

EKS00CNK

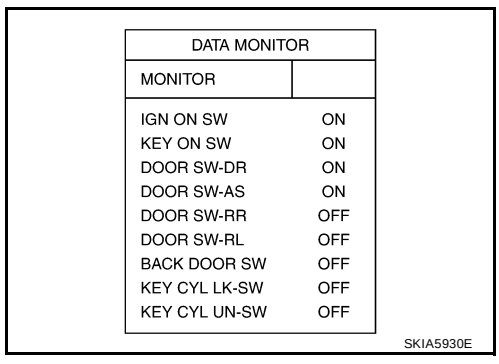
MODELS WITH POWER DOOR LOCKS

1. CHECK EACH SWITCH

Select "BCM" on CONSULT-II. With "INT LAMP" data monitor, make sure switches listed in display item list turn ON-OFF linked with switch operation. Refer to LT-128, "Display Item List" for switches and their functions.

OK or NG

OK >> GO TO 2.
NG >> Inspect malfunctioning switch system.



2. ACTIVE TEST

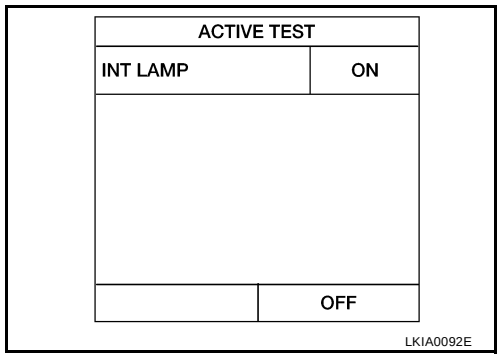
1. Select "BCM" on CONSULT-II. Select "INT LAMP" active test.
2. When switch is in "DOOR" position, use active test to make sure interior room lamp operates.

Room lamps should turn on.

OK or NG

OK >> Replace BCM. Refer to BCS-25, "Removal and Installation" .

NG >> GO TO 3.



3. CHECK INTERIOR ROOM LAMP INPUT

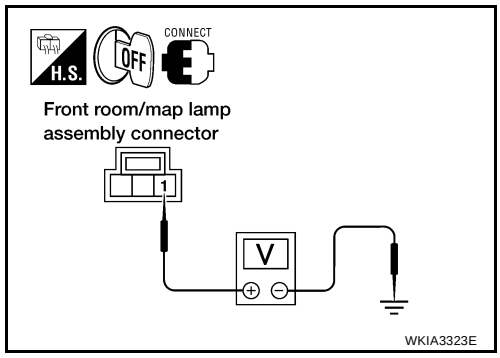
1. Turn ignition switch OFF.
2. Check voltage between front room/map lamp assembly harness connector R9 terminal 1 and ground.

1 - Ground : Battery voltage should exist.

OK or NG

OK >> GO TO 4.

NG >> GO TO 5.



4. CHECK INTERIOR ROOM LAMP CIRCUIT

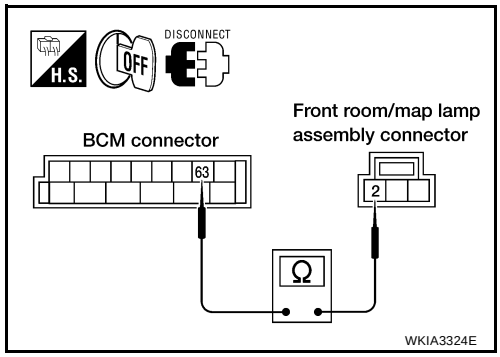
1. Disconnect BCM connector.
2. Check continuity between BCM harness connector M20 terminal 63 and front room/map lamp assembly harness connector R9 terminal 2.

63 - 2 : Continuity should exist.

OK or NG

OK >> Replace BCM if interior lamp does not work after setting the connector again. Refer to BCS-25, "Removal and Installation" .

NG >> Repair harness or connector.



5. CHECK INTERIOR ROOM LAMP CIRCUIT

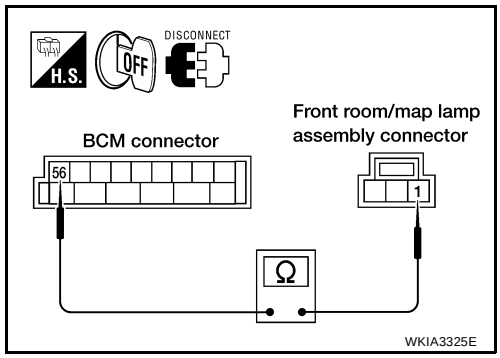
1. Disconnect BCM connector and front room/map lamp assembly connector.
2. Check continuity between BCM harness connector M20 terminal 56 and front room/map lamp assembly harness connector R9 terminal 1.

56 - 1 : Continuity should exist.

OK or NG

OK >> Replace BCM if interior lamp does not work after setting the connector again. Refer to BCS-25, "Removal and Installation" .

NG >> Repair harness or connector between BCM and room/map lamp.

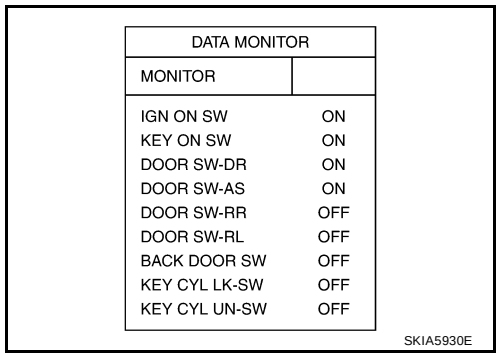


Room Lamp 2nd Row Control Does Not Operate

EKS00D77

1. CHECK EACH DOOR SWITCH

Select "BCM" on CONSULT-II. With "INT LAMP" data monitor, make sure switches listed in display item list turn ON-OFF linked with switch operation. Refer to LT-109, "Switch Operation" (models without power door locks) or LT-111, "Switch Operation" (models with power door locks) for switches and their function.



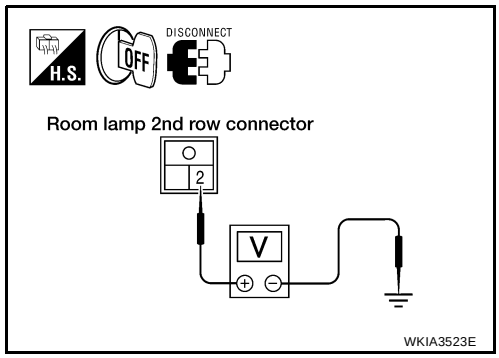
OK or NG

OK >> GO TO 2.
NG >> Inspect malfunctioning door switch.

2. CHECK ROOM LAMP 2ND ROW OUTPUT

1. Turn ignition switch OFF.
2. Confirm lamp switch is in the "DOOR" position.
3. Disconnect room lamp 2nd row connector.
4. Open any door.
5. Check voltage between room lamp 2nd row harness connector R10 terminal 2 and ground.

2 - Ground : Battery voltage should exist.



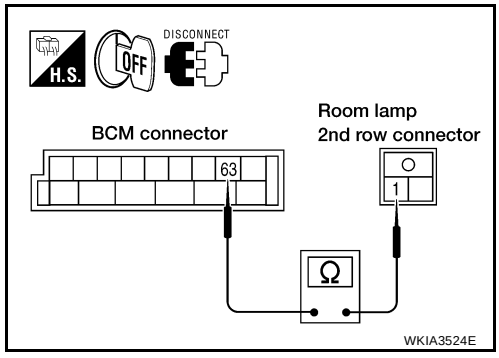
OK or NG

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

3. CHECK ROOM LAMP 2ND ROW CONTROL CIRCUIT

1. Disconnect BCM connector M20.
2. Check continuity between BCM harness connector M20 terminal 63 and room lamp 2nd row harness connector R10 terminal 1.

63 - 1 : Continuity should exist.



OK or NG

OK >> Replace room lamp 2nd row.
NG >> Repair harness or connector.

All Interior Room Lamps Do Not Operate

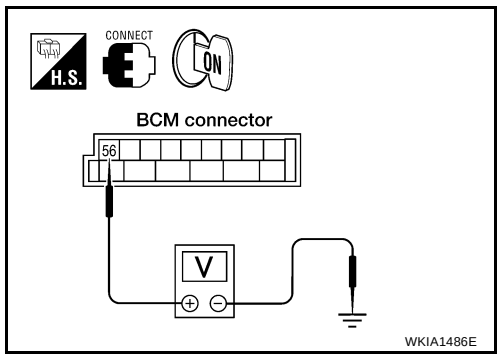
EKS00CNM

MODELS WITH POWER DOOR LOCKS

1. CHECK POWER SUPPLY CIRCUIT

1. All interior room lamp switches are OFF.
2. Turn ignition switch ON.
3. Check voltage between BCM harness connector M20 terminal 56 and ground.

56 - Ground : Battery voltage should exist.



OK or NG

OK >> Repair harness or connector. To prevent making a short circuit, be sure to disconnect battery negative cable after repairing harness, and then reconnect.

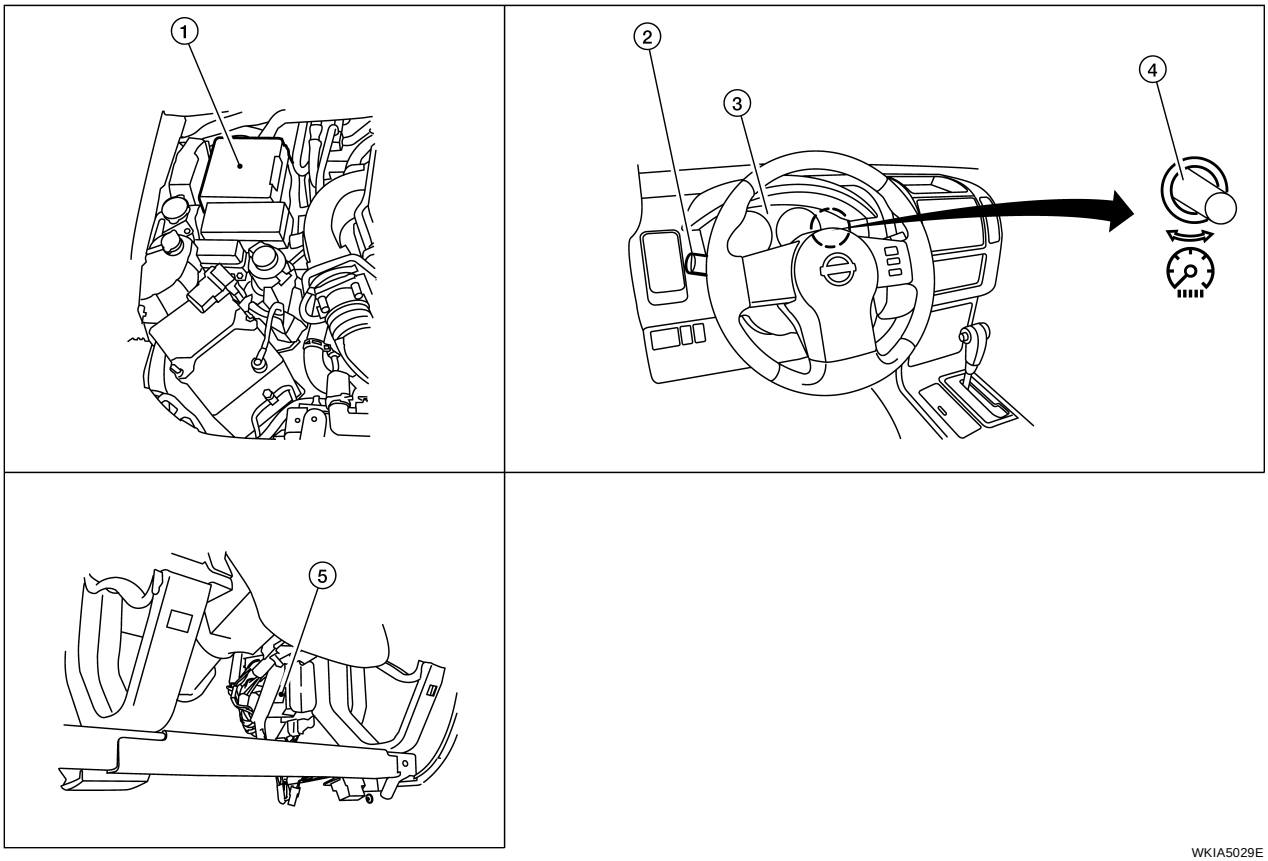
NG >> Replace BCM. Refer to BCS-25, "Removal and Installation" .

ILLUMINATION

PFP:27545

Component Parts and Harness Connector Location

EKS00HMA



WKIA5029E

1. IPDM E/R
   E122, E123, E124
2. Combination switch (lighting switch)
   M28
3. Combination meter
   M24
4. Illumination control switch
   (built into combination meter)
5. BCM
   M18, M20
   (view with instrument lower panel LH removed)

System Description

EKS00CNN

Control of the illumination lamps operation is dependent upon the position of the lighting switch (combination switch). When the lighting switch is placed in the 1ST or 2ND position (or if the auto light system is activated) the BCM (body control module) receives input signal requesting the illumination lamps to illuminate. This input signal is communicated to the IPDM E/R (intelligent power distribution module engine room) across the CAN communication lines. The CPU (central processing unit) of the IPDM E/R controls the tail lamp relay coil. This relay, when energized, directs power to the illumination lamps, which then illuminate.
Power is supplied at all times

- to ignition relay, located in the IPDM E/R, and
- to tail lamp relay, located in the IPDM E/R, and
- through 50A fusible link (letter **g** , located in the fuse and fusible link box)
- to BCM terminal 70, and
- through 20A fuse (No. 53, located in the IPDM E/R)
- to CPU of the IPDM E/R, and
- through 10A fuse [No.19, located in the fuse block (J/B)]
- to combination meter terminal 3.

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

- to ignition relay, located in the IPDM E/R, and
- through 10A fuse [No. 1, located in the fuse block (J/B)]
- to BCM terminal 38.

Ground is supplied
- to BCM terminal 67 and
- to combination meter terminals 13 and 23
- through grounds M57, M61 and M79, and
- to IPDM E/R terminals 38 and 59
- through grounds E9, E15 (all) and E24 (VQ40DE engine only).

ILLUMINATION OPERATION BY LIGHTING SWITCH

With the lighting switch in the 1ST or 2ND position (or if the auto light system is activated), the BCM receives input signal requesting the illumination lamps to illuminate. This input signal is communicated to the IPDM E/R across the CAN communication lines. The CPU of the IPDM E/R controls the tail lamp relay coil, which, when energized, directs power
- through 10A fuse (No. 37, located in the IPDM E/R)
- through IPDM E/R terminal 57
- to door mirror remote control switch terminal 16 (with power outside mirrors)
- to hazard switch terminal 3
- to audio unit terminal 8 (with audio unit)
- to 4WD shift switch terminal 7 (with 4-wheel drive)
- to front air control terminal 8
- to clutch interlock cancel switch terminal 5 (with clutch interlock cancel switch)
- to cargo lamp switch terminal 4
- to differential lock switch terminal 4 (with electronic locking rear differential)
- to electric brake (pre-wiring) terminal 4
- to A/T device terminal 3 (with A/T)
- to front heated seat switch LH and RH terminal 5 (with heated seats)
- to VDC OFF switch terminal 3 (with VDC)
- to HDC switch terminal 5 (with VDC).

Illumination is controlled
- through combination meter terminal 22
- to door mirror remote control switch terminal 15 (with power outside mirrors)
- to hazard switch terminal 4
- to audio unit terminal 7 (with audio unit)
- to 4WD switch terminal 8 (with 4-wheel drive)
- to front air control terminal 9
- to clutch interlock cancel switch terminal 6 (with clutch interlock cancel switch)
- to cargo lamp switch terminal 2
- to differential lock switch terminal 5 (with electronic locking rear differential)
- to A/T device terminal 5 (with A/T)
- to front heated seat switch LH and RH terminal 6 (with heated seats)
- to VDC OFF switch terminal 4 (with VDC)
- to HDC switch terminal 6 (with VDC).

Ground is supplied
- to electric brake (pre-wiring) terminal 1
- through grounds M57, M61 and M79.

With power and ground supplied, illumination lamps illuminate.

EXTERIOR LAMP BATTERY SAVER CONTROL

When the combination switch (lighting switch) is in the 1ST or 2ND position (or if auto light system is activated), and the ignition switch is turned from ON or ACC to OFF, the battery saver control function is activated. Under this condition, the illumination lamps remain illuminated for 5 minutes, then the illumination lamps are turned off.

When the lighting switch is turned from OFF to 1ST or 2ND position (or if auto light system is activated) after illumination lamps are turned off by the battery saver control, the illumination lamps illuminate again.
Exterior lamp battery saver control mode can be changed by the function setting of CONSULT-II.

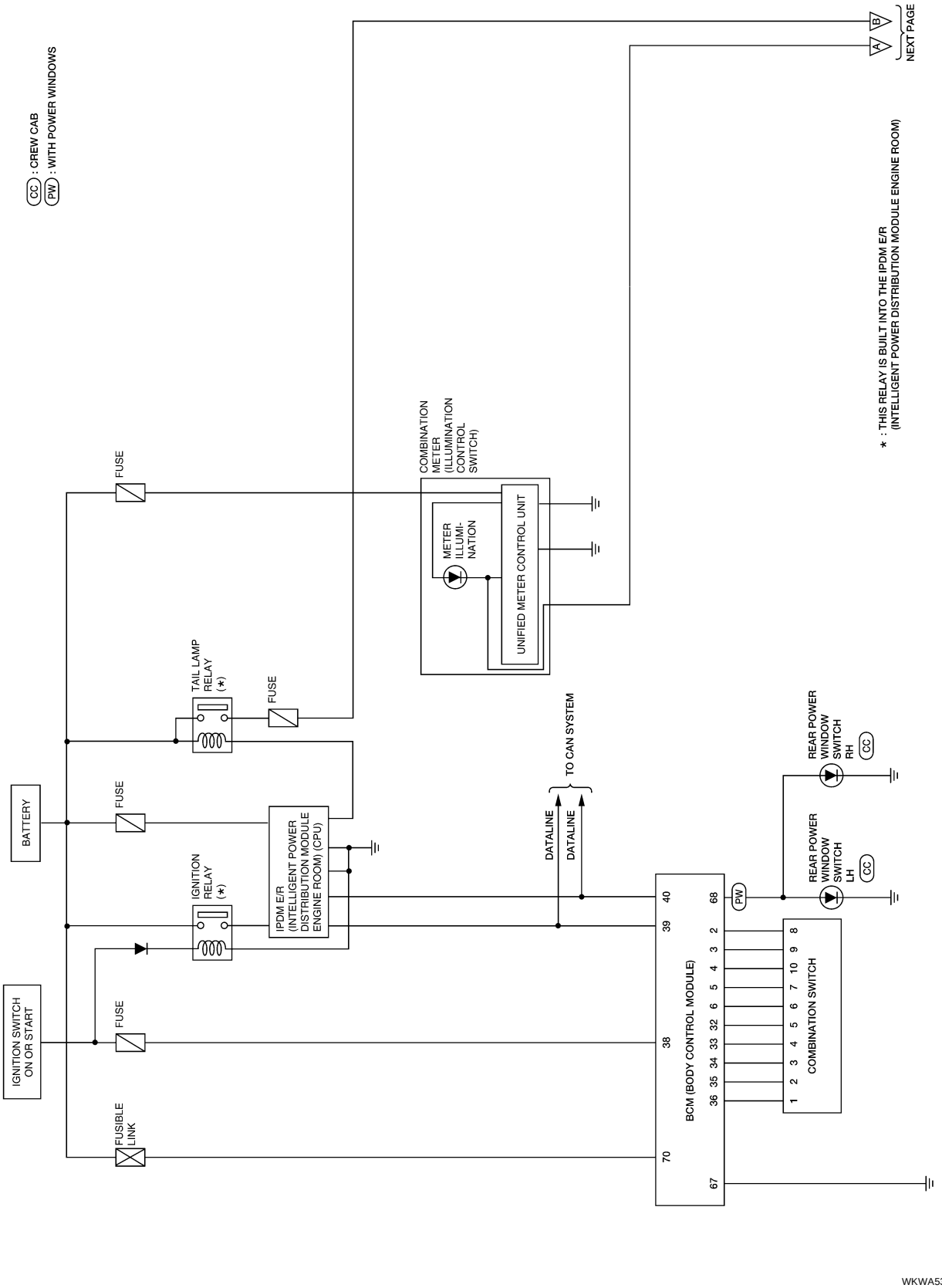
CAN Communication System Description

EKS00BS6

Refer to LAN-4, "CAN Communication System" .

Schematic

EKS00BS7



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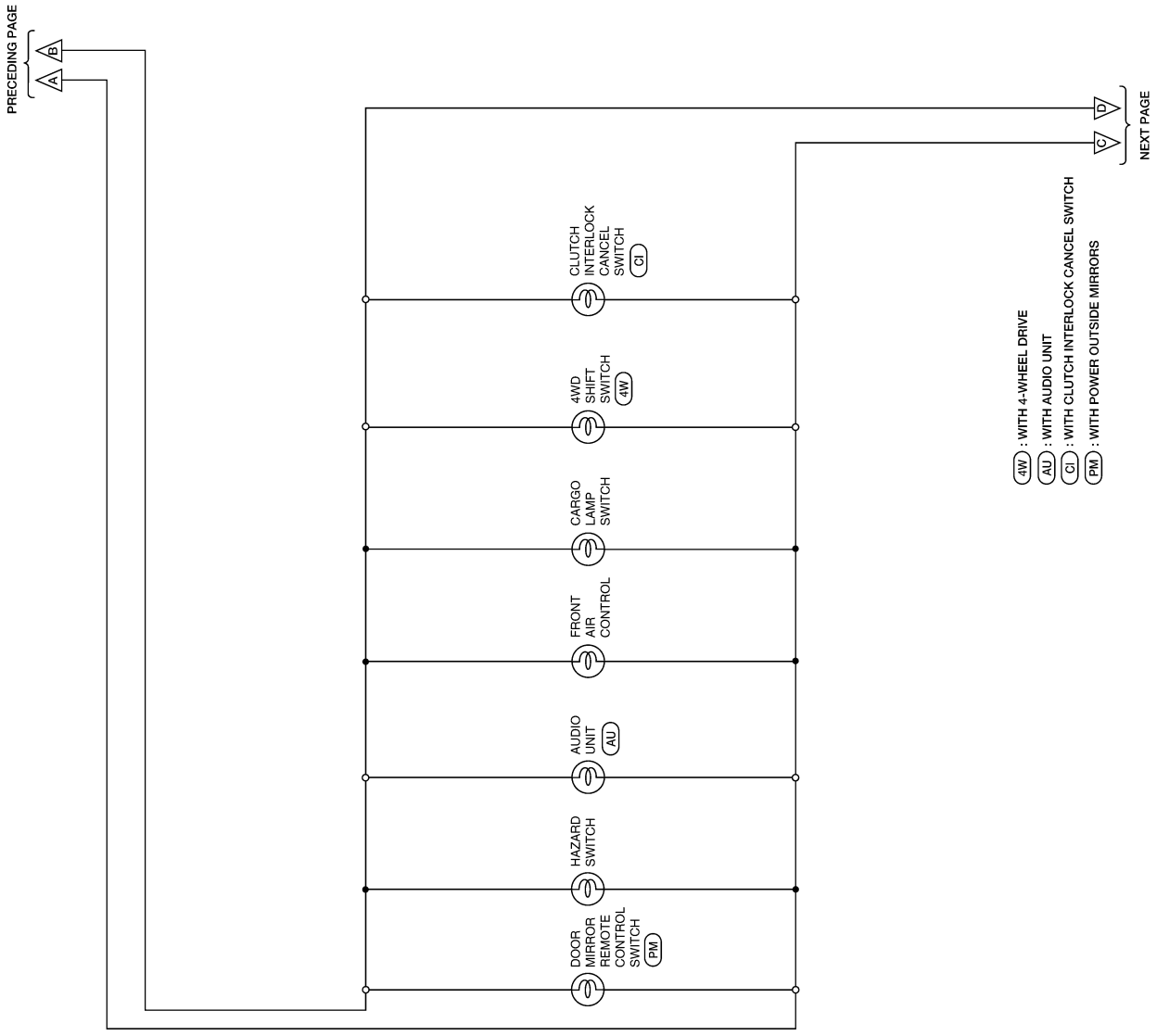
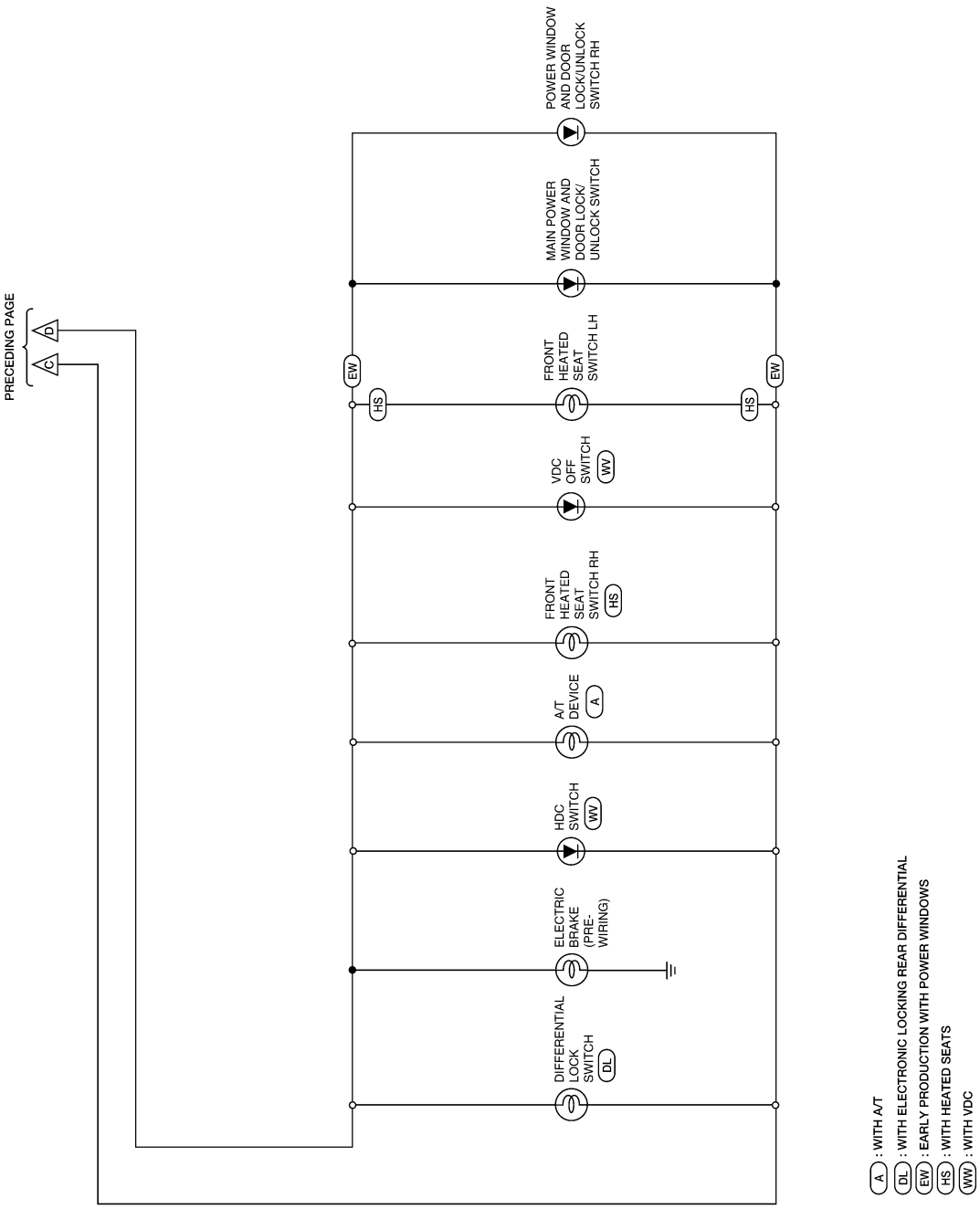

PRECEDING PAGE
A
B
NEXT PAGE
C
D
CLUTCH INTERLOCK CANCEL SWITCH CI
4WD SHIFT SWITCH 4W
CARGO LAMP SWITCH
FRONT AIR CONTROL
AUDIO UNIT AU
HAZARD SWITCH
DOOR MIRROR REMOTE CONTROL SWITCH PM
4W : WITH 4-WHEEL DRIVE
AU : WITH AUDIO UNIT
CI : WITH CLUTCH INTERLOCK CANCEL SWITCH
PM : WITH POWER OUTSIDE MIRRORS

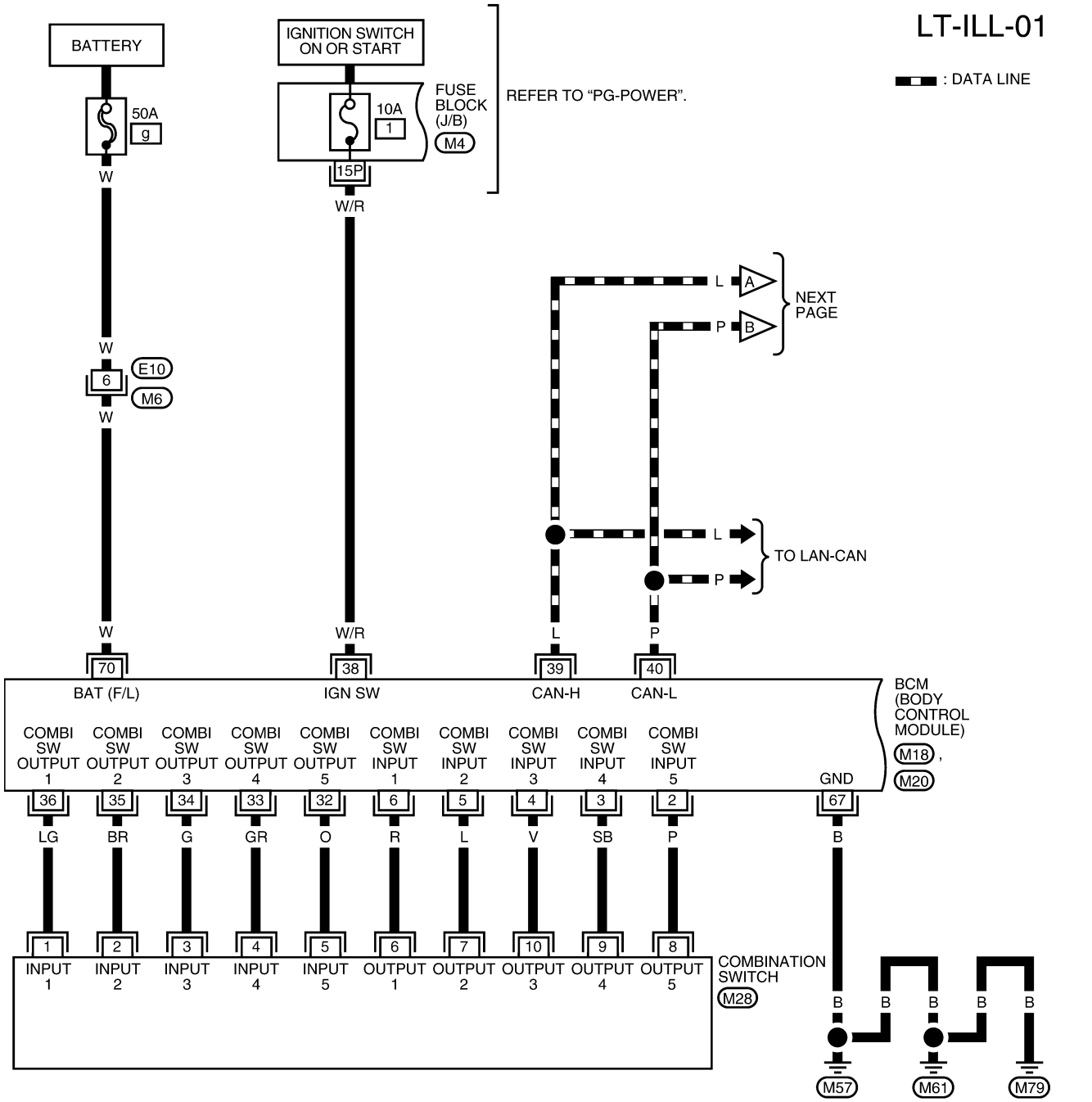
WKWA2878E

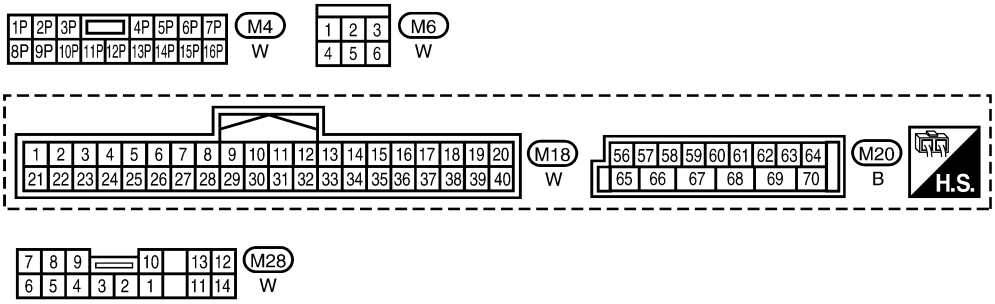

PRECEDING PAGE
B
C
POWER WINDOW AND DOOR LOCK/UNLOCK SWITCH RH
MAIN POWER WINDOW AND DOOR LOCK/ UNLOCK SWITCH
FRONT HEATED SEAT SWITCH LH
EW
HS
VDC OFF SWITCH
WW
FRONT HEATED SEAT SWITCH RH
HS
A/T DEVICE
A
HDC SWITCH
WW
ELECTRIC BRAKE (PRE-WIRING)
DIFFERENTIAL LOCK SWITCH
DL
A : WITH A/T
DL : WITH ELECTRONIC LOCKING REAR DIFFERENTIAL
EW : EARLY PRODUCTION WITH POWER WINDOWS
HS : WITH HEATED SEATS
WW : WITH VDC

WKWA5322E

Wiring Diagram — ILL —

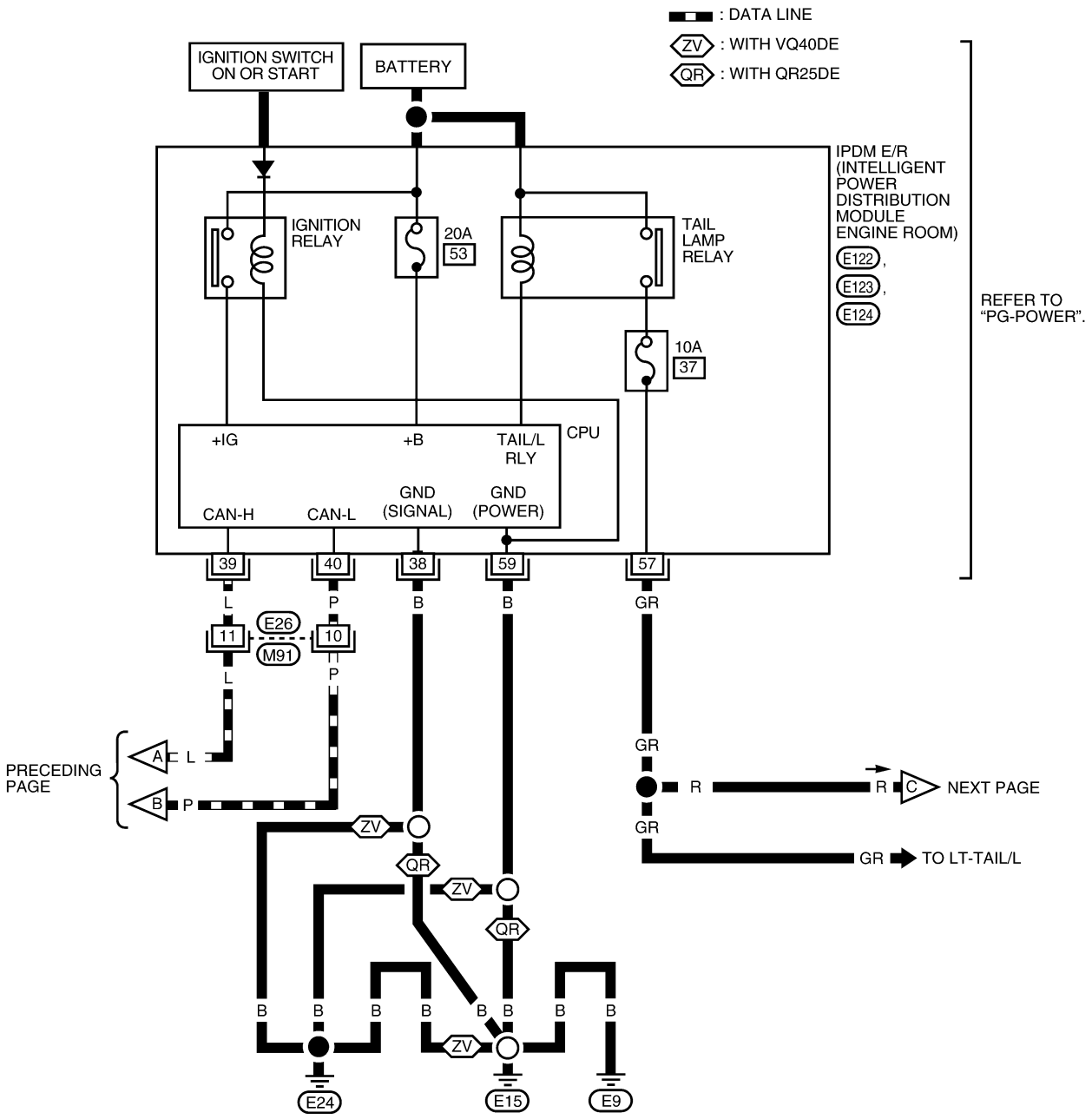
EKS00BS8

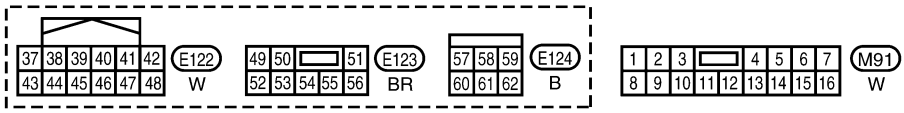




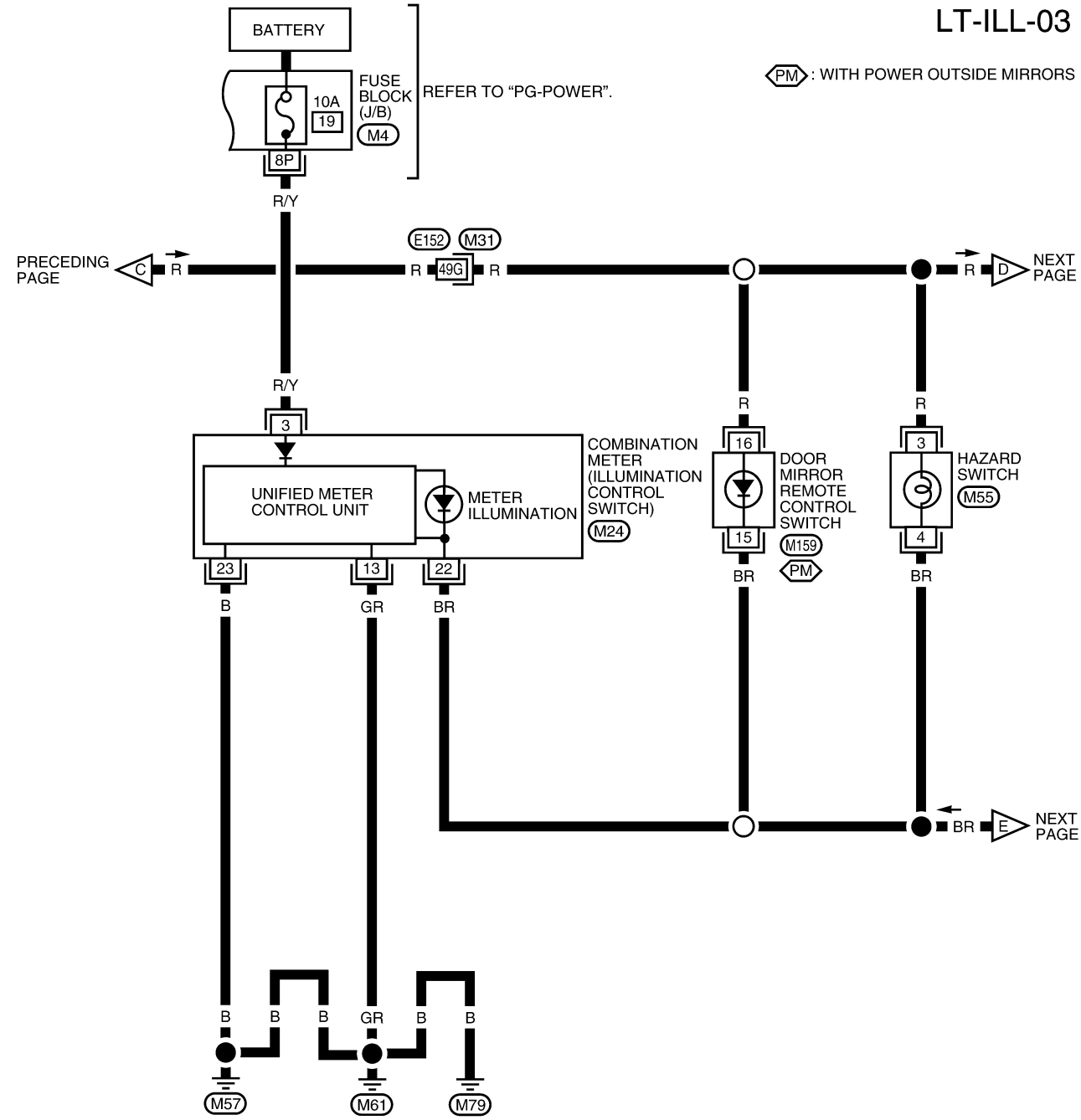
WKWA5323E

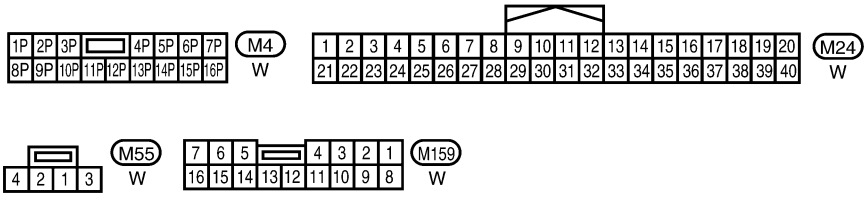
LT-ILL-02





WKWA4385E

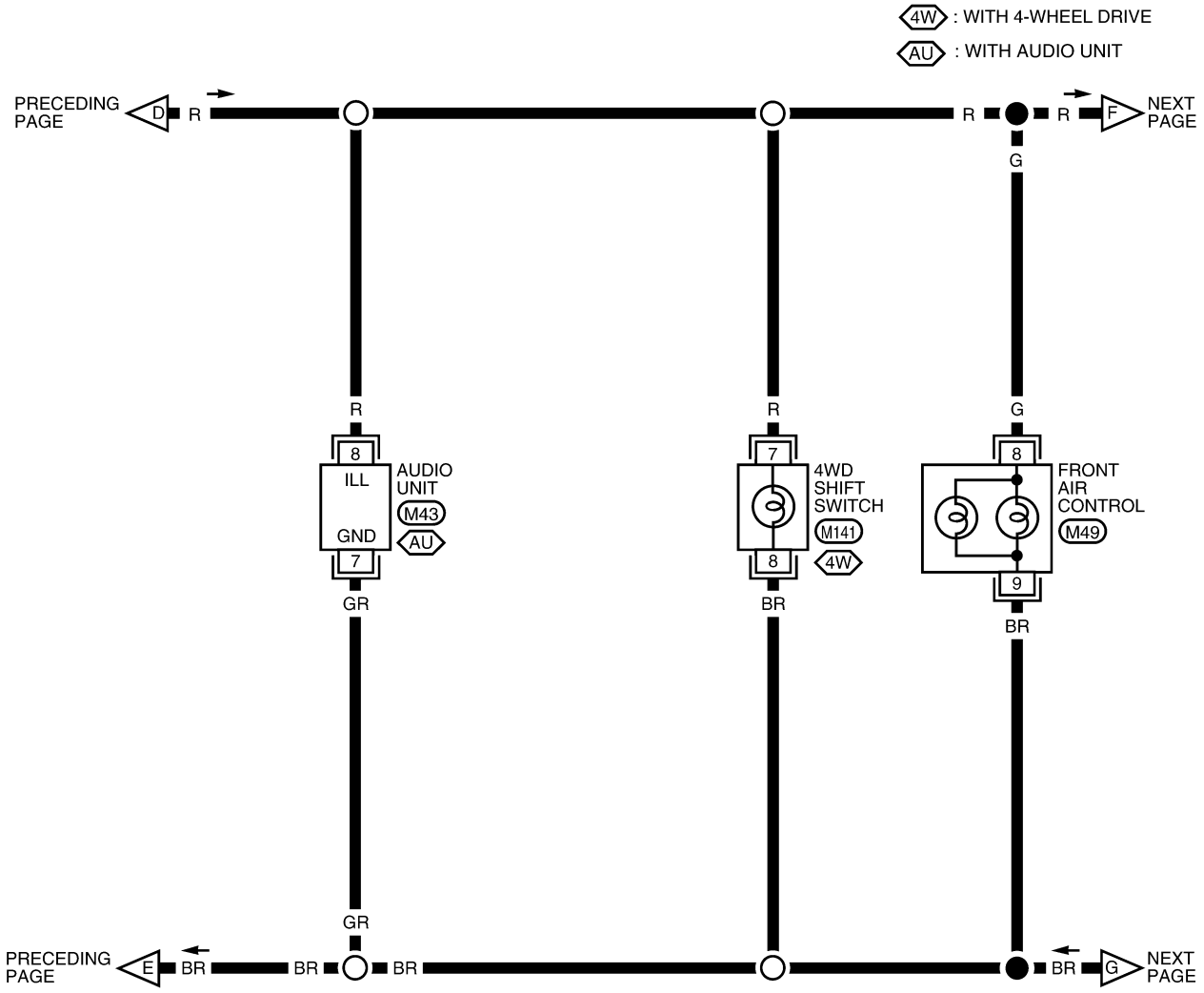


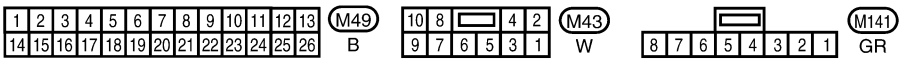


REFER TO THE FOLLOWING.
M31 - SUPER MULTIPLE JUNCTION (SMJ)

WKWA4386E

LT-ILL-04

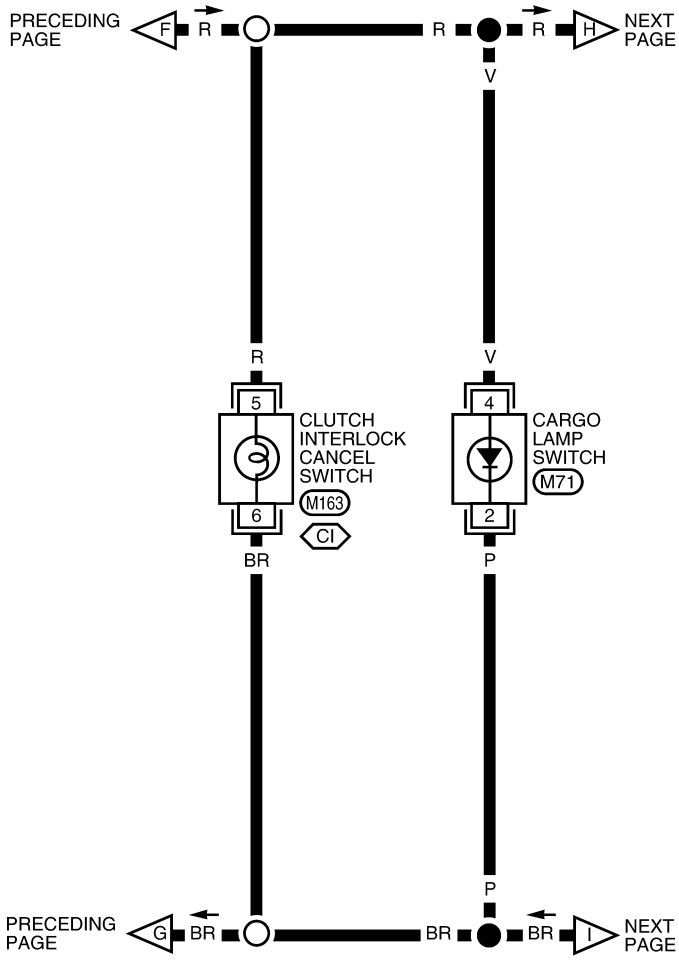


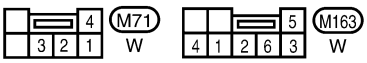


WKWA2862E

LT-ILL-05

CI : WITH CLUTCH INTERLOCK CANCEL SWITCH

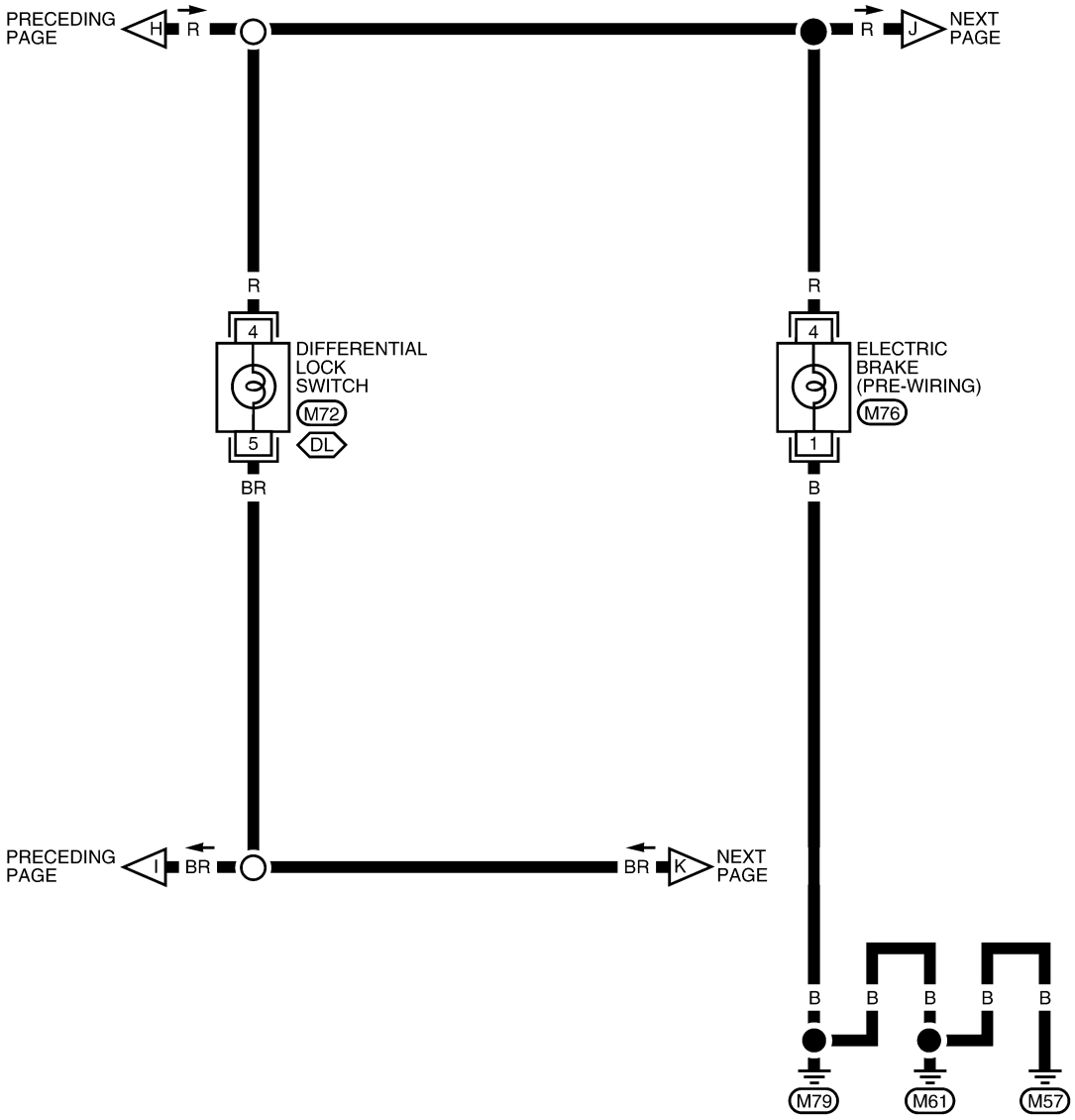


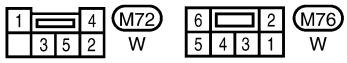


WKWA2863E

LT-ILL-06

DL : WITH ELECTRONIC LOCKING REAR DIFFERENTIAL

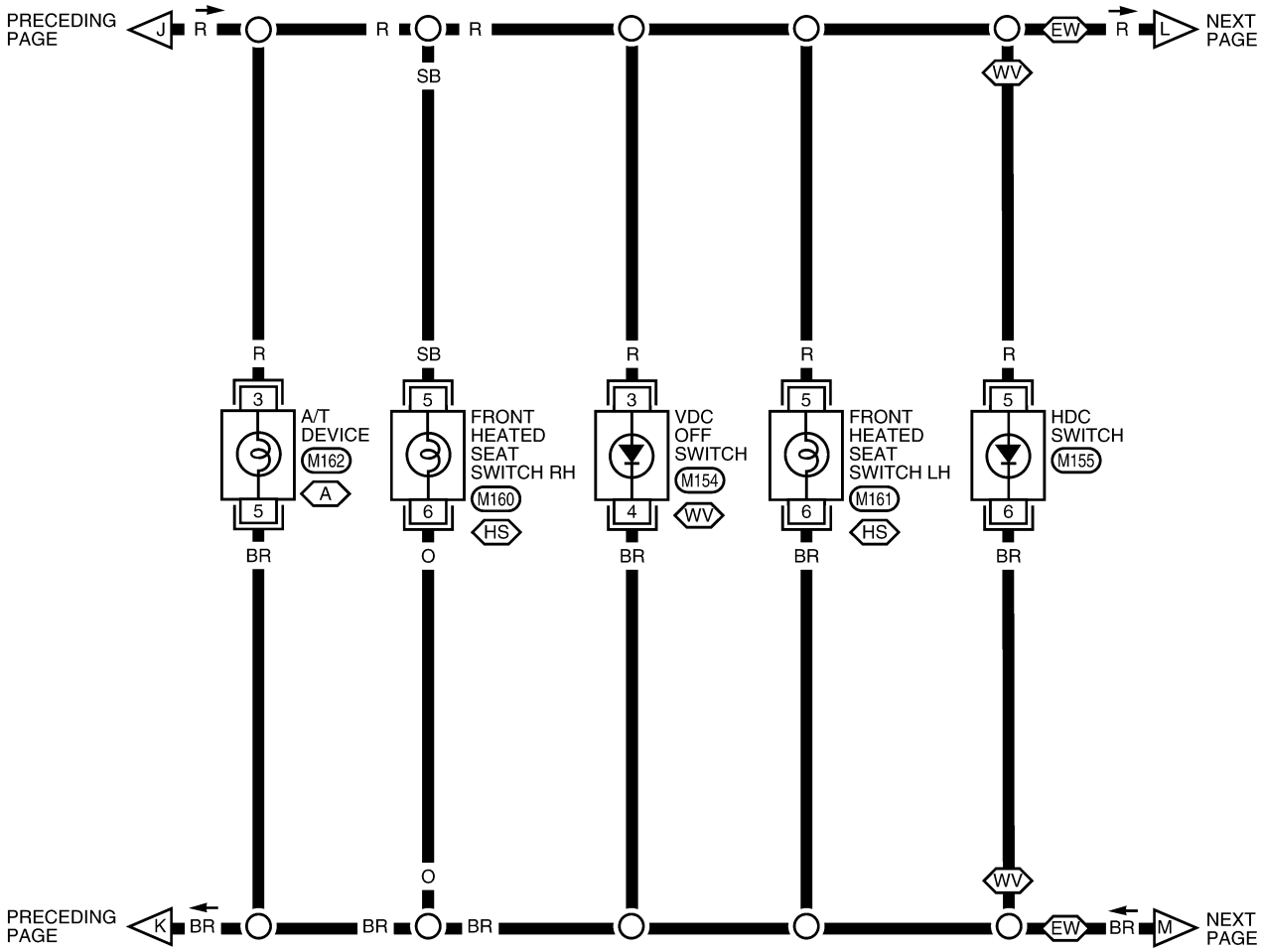


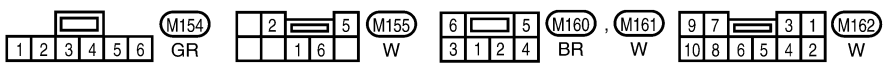


WKWA4488E

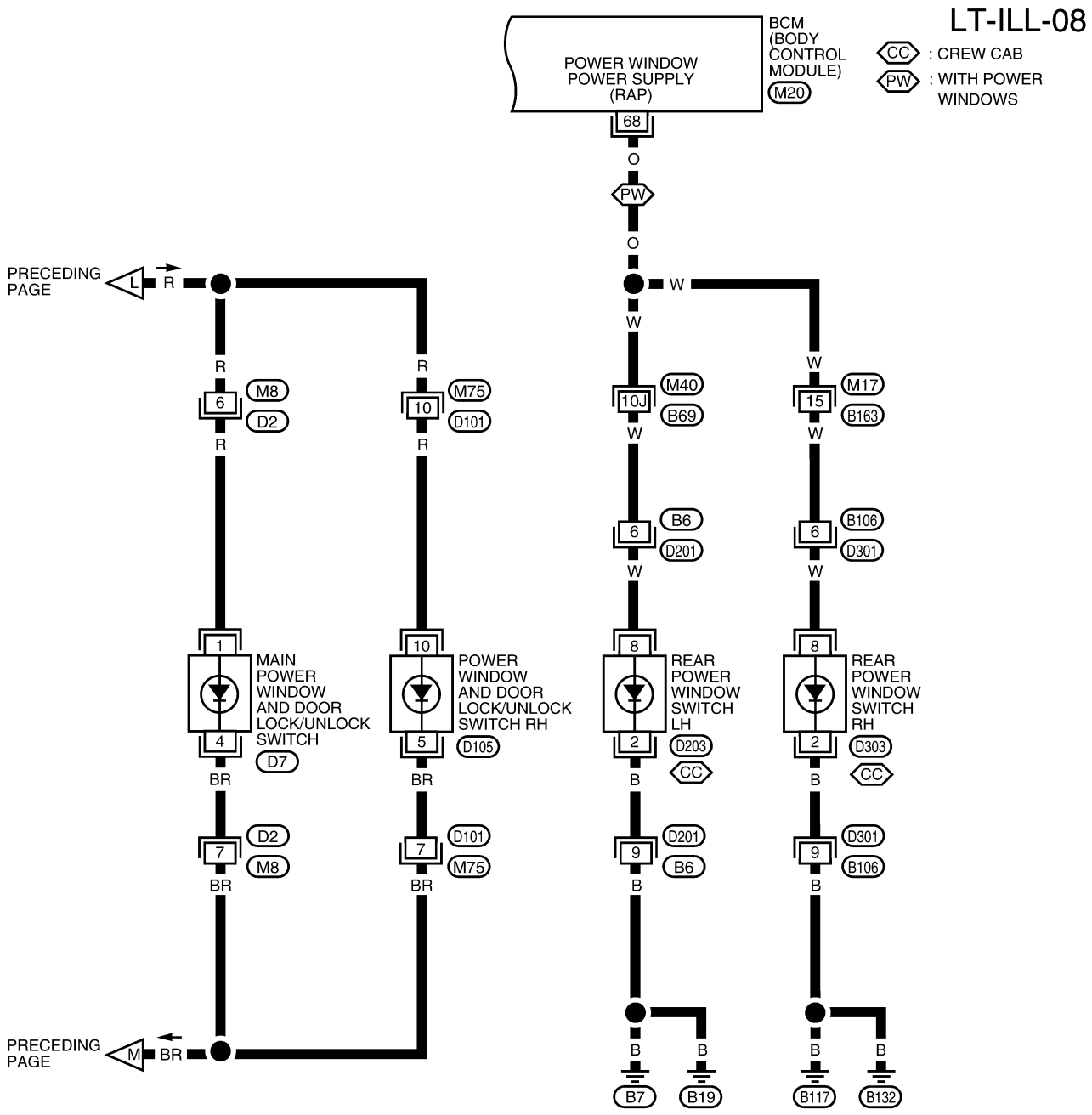
LT-ILL-07

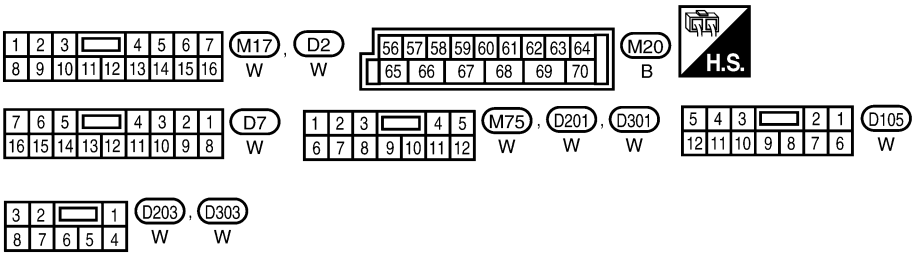
A : WITH A/T
EW : EARLY PRODUCTION WITH POWER WINDOWS
HS : WITH HEATED SEATS
WV : WITH VDC





WKWA5324E





REFER TO THE FOLLOWING.
M40 - SUPER MULTIPLE JUNCTION (SMJ)

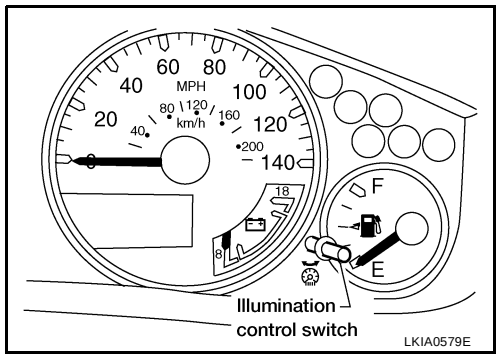
WKWA5325E

Removal and Installation

EKS00BS9

ILLUMINATION CONTROL SWITCH

The illumination control switch is a function of the combination meter, and not serviced separately. For replacement, refer to IP-13, "COMBINATION METER"



BULB SPECIFICATIONS

PFP:26297

Headlamp

EKS00BSA

Item	Wattage (W)*
Low/High	65/55 (HB5)

*: Always check with the Parts Department for the latest parts information.

Exterior Lamp

EKS00BSB

Item		Wattage (W)*
Front combination lamp	Turn signal lamp/parking lamp	28/8
	Side marker	3.8
Rear combination lamp	Stop/Tail lamp	27/8
	Turn signal lamp	27
	Back-up lamp	18
Fog lamp		55
License plate lamp		5
High-mounted stop lamp		16
Cargo lamp (in high-mounted stop lamp)		16

*: Always check with the Parts Department for the latest parts information.

Interior Lamp/Illumination

EKS00BSC

Item	Wattage (W)*
Room lamp	8
A/T device lamp	3
Vanity lamp	*
Map/Personal lamp	8

*: Always check with the Parts Department for the latest parts information.